

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST - FOX AREA

GEOLOGICAL REPORT

1987

APPENDIX III

DIAMOND DRILL HOLE DATA

VOLUME I

KPNLRDDH 87001

TO

KPNLRDDH 87008



GULF CANADA RESOURCES LIMITED
COAL DIVISION

740

CONFIDENTIAL

APPENDIX III

LOST-FOX AREA

1987 DIAMOND DRILL HOLE DATA

DATA SOURCE

SUMMARY

GULF CANADA CORPORATION - COAL DIVISION
 15/MAR/88 PROJECT DATA SOURCE SUMMARY PAGE 1

| DATA SOURCE | LOCATION | | ELEVATION | LENGTH | ANGLE | AZIMUTH | LOG TYPE |
|----------------|------------|-----------|-----------|--------|-------|---------|----------|
| | NORTHING | EASTING | | | | | |
| KPNLRDDH87001 | 6345007.34 | 508063.36 | 1507.5 | 132.0 | 90.0 | | |
| KPNLRDDH87002 | 6345393.82 | 508172.54 | 1480.8 | 205.5 | 90.0 | | |
| KPNLRDDH87003 | 6345148.65 | 508294.18 | 1493.4 | 101.8 | 90.0 | | |
| KPNLRDDH87004 | 6345072.18 | 508530.99 | 1479.5 | 101.6 | 90.0 | | |
| KPNLRDDH87005 | 6345612.18 | 508230.62 | 1452.2 | 201.6 | 90.0 | | |
| KPNLRDDH87006 | 6345329.93 | 508433.08 | 1462.3 | 153.8 | 90.0 | | |
| KPNLRDDH87007 | 6343325.08 | 505991.54 | 1694.5 | 204.8 | 90.0 | | |
| KPNLRDDH87008 | 6345453.72 | 507877.83 | 1484.8 | 199.5 | 90.0 | | |
| KPNLRDDH87009 | 6345828.14 | 508266.33 | 1454.7 | 125.8 | 90.0 | | |
| KPNLRDDH87010 | 6342981.92 | 505255.36 | 1705.4 | 59.7 | 90.0 | | |
| KPNLRDDH87011 | 6342980.77 | 505254.96 | 1705.3 | 93.3 | 90.0 | | |
| KPNLRDDH87012 | 6345680.44 | 507950.35 | 1466.4 | 132.1 | 90.0 | | |
| KPNLRDDH87013 | 6342487.49 | 504339.18 | 1674.2 | 138.3 | 90.0 | | |
| KPNLRDDH87014 | 6345653.48 | 507707.30 | 1473.8 | 104.7 | 90.0 | | |
| KPNLRDDH87015 | 6342109.47 | 504253.22 | 1632.5 | 122.2 | 90.0 | | |
| KPNLRDDH87016 | 6343561.68 | 506631.20 | 1679.2 | 66.2 | 90.0 | | |

GULF CANADA CORPORATION - COAL DIVISION
 15/MAR/88 PROJECT DATA SOURCE SUMMARY PAGE 2

| DATA SOURCE | LOCATION | | ELEVATION | LENGTH | ANGLE | AZIMUTH | LOG TYPE |
|----------------|------------|-----------|-----------|--------|-------|---------|----------|
| | NORTHING | EASTING | | | | | |
| KPNLRDDH87017 | 6345801.44 | 507505.26 | 1472.0 | 118.2 | 90.0 | | |
| KPNLRDDH87018 | 6342328.11 | 508842.56 | 1629.3 | 152.4 | 90.0 | | |
| KPNLRDDH87019 | 6345555.91 | 507468.12 | 1486.7 | 210.2 | 90.0 | | |
| KPNLRDDH87020 | 6343087.65 | 508244.57 | 1582.8 | 163.7 | 90.0 | | |
| KPNLRDDH87021 | 6345236.49 | 507990.43 | 1501.4 | 96.2 | 90.0 | | |
| KPNLRDDH87022 | 6343789.84 | 508630.40 | 1554.9 | 146.9 | 90.0 | | |
| KPNLRDDH87023 | 6345709.44 | 508573.13 | 1460.8 | 188.1 | 90.0 | | |
| KPNLRDDH87024 | 6344342.82 | 509312.57 | 1536.2 | 161.6 | 90.0 | | |
| KPNLRDDH87025 | 6344833.23 | 507123.79 | 1525.3 | 112.6 | 90.0 | | |
| KPNLRDDH87026 | 6346044.95 | 508677.41 | 1444.1 | 181.5 | 90.0 | | |
| KPNLRDDH87027 | 6346025.03 | 508322.85 | 1441.0 | 127.1 | 90.0 | | |
| KPNLRDDH87028 | 6346510.17 | 508643.92 | 1418.9 | 224.6 | 90.0 | | |
| KPNLRDDH87029 | 6346467.17 | 508209.75 | 1420.7 | 211.8 | 90.0 | | |
| KPNLRDDH87030 | 6347236.20 | 508236.46 | 1376.5 | 250.1 | 90.0 | | |
| KPNLRDDH87031 | 6346975.89 | 508782.51 | 1393.8 | 205.2 | 90.0 | | |
| KPNLRDDH87032 | 6345000.24 | 505860.97 | 1615.7 | 57.0 | 90.0 | | |

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15/MAR/88 PROJECT DATA SOURCE SUMMARY PAGE 3

| DATA SOURCE | LOCATION | | ELEVATION | LENGTH | ANGLE | AZIMUTH | LOG TYPE |
|----------------|------------|-----------|-----------|--------|-------|---------|----------|
| | NORTHING | EASTING | | | | | |
| KPNLRDDH87033 | 6344798.90 | 506456.91 | 1643.7 | 124.1 | 90.0 | | |
| KPNLRDDH87034 | 6344895.56 | 506207.14 | 1620.1 | 57.0 | 90.0 | | |

SIMPLE SAMPLE SUMMARY

11/MAR/88

GULF CANADA CORPORATION - COAL DIVISION

SIMPLE SAMPLE SUMMARY

PAGE 1

TRUE THICKNESS

KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL - ROCK |
|-------------|-------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-------------------|
| ----- | | | | | | | | | | |
| DDH87001 | | 7101 | 19.24 | 19.60 | 100.00 | | 0.260 | | | 0.000- 0.260 |
| | I | 7102 | 19.60 | 22.35 | 55.27 | 0.456 | 0.687 | 0.687 | 0.264 | 1.143- 0.951 |
| | | 7103 | 22.35 | 22.57 | 100.00 | | 0.180 | | | 0.000- 0.180 |
| | | 7104 | 118.18 | 118.78 | 100.00 | | 0.591 | | | 0.000- 0.591 |
| | H | 7105 | 118.78 | 123.05 | 95.78 | 3.710 | 0.254 | 0.176 | | 3.886- 0.254 |
| | H | 7106 | 123.05 | 125.05 | 100.00 | | 1.918 | | | 0.000- 1.918 |
| | H | 7107 | 125.05 | 126.38 | 97.74 | 1.263 | | 0.029 | | 1.292- 0.000 |
| | | 7108 | 126.38 | 127.00 | 100.00 | | 0.606 | | | 0.000- 0.606 |
| DDH87002 | | 5980 | 132.57 | 132.63 | 100.00 | | 0.055 | | | 0.000- 0.055 |
| | | 5981 | 23.05 | 23.08 | 100.00 | | 0.029 | | | 0.000- 0.029 |
| | | 6801 | 132.93 | 133.26 | 100.00 | | 0.302 | | | 0.000- 0.302 |
| | I REP | 6802 | 133.26 | 135.74 | 63.71 | 1.417 | 0.046 | 0.661 | 0.166 | 2.078- 0.212 |
| | I REP | 6803 | 135.74 | 138.16 | 57.85 | 1.251 | 0.065 | 0.693 | 0.261 | 1.944- 0.326 |
| | I REP | 6804 | 138.16 | 141.73 | 91.60 | 3.117 | | 0.289 | | 3.406- 0.000 |
| | | 6805 | 141.73 | 143.36 | 100.00 | | 1.574 | | | 0.000- 1.574 |
| | | 6806 | 193.12 | 193.64 | 100.00 | | 0.452 | | | 0.000- 0.452 |
| | H | 6807 | 193.89 | 196.13 | 77.23 | 1.187 | 0.300 | 0.439 | | 1.626- 0.300 |
| | H | 6808 | 196.13 | 197.44 | 91.60 | | 1.018 | | 0.093 | 0.000- 1.111 |
| | H | 6809 | 197.44 | 200.04 | 64.23 | 1.189 | 0.209 | 0.558 | 0.217 | 1.747- 0.426 |
| | | 6810 | 200.04 | 200.31 | 100.00 | | 0.223 | | | 0.000- 0.223 |
| | | 6811 | 47.98 | 48.80 | 100.00 | | 0.307 | | | 0.000- 0.307 |
| | I OVT | 6812 | 48.80 | 51.67 | 100.00 | 1.234 | | | | 1.234- 0.000 |
| | I OVT | 6813 | 51.67 | 56.45 | 70.92 | 1.711 | 0.162 | 0.569 | 0.194 | 2.280- 0.356 |
| | | 6814 | 56.45 | 57.05 | 100.00 | | 0.386 | | | 0.000- 0.386 |
| | | 6815 | 23.08 | 23.27 | 89.47 | | 0.166 | | 0.019 | 0.000- 0.185 |
| | I | 6816 | 23.27 | 27.29 | 59.95 | 2.303 | 0.020 | 1.382 | 0.130 | 3.685- 0.150 |
| | I | 6817 | 27.29 | 30.09 | 48.93 | 1.224 | | 1.311 | | 2.535- 0.000 |

GULF CANADA CORPORATION - COAL DIVISION
 11/MAR/88 SIMPLE SAMPLE SUMMARY PAGE 2
 TRUE THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL - ROCK |
|-------------|------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-------------------|
| | | 6818 | 30.09 | 30.54 | 100.00 | | 0.395 | | | 0.000- 0.395 |
| DDH87003 | | 5983 | 38.39 | 38.49 | 100.00 | | 0.100 | | | 0.000- 0.100 |
| | | 7109 | 38.73 | 38.90 | 100.00 | | 0.170 | | | 0.000- 0.170 |
| | I | 7110 | 38.90 | 40.49 | 72.96 | 1.030 | 0.130 | 0.430 | | 1.460- 0.130 |
| | I | 7111 | 40.49 | 42.28 | 72.63 | 1.150 | 0.150 | 0.360 | 0.130 | 1.510- 0.280 |
| | I | 7112 | 42.28 | 44.42 | 67.76 | 1.450 | | 0.690 | | 2.140- 0.000 |
| | | 7113 | 44.42 | 45.55 | 100.00 | | 1.130 | | | 0.000- 1.130 |
| | | 7114 | 89.50 | 90.27 | 100.00 | | 0.593 | | | 0.000- 0.593 |
| | H | 7115 | 90.27 | 92.49 | 50.45 | 0.650 | 0.315 | 0.751 | 0.173 | 1.401- 0.488 |
| | H | 7116 | 92.49 | 94.27 | 65.17 | 1.079 | | 0.373 | 0.207 | 1.452- 0.207 |
| | | 7117 | 94.27 | 94.82 | 100.00 | | 0.532 | | | 0.000- 0.532 |
| DDH87004 | | 5979 | 32.95 | 32.97 | 100.00 | | 0.020 | | | 0.000- 0.020 |
| | | 7118 | 33.32 | 33.43 | 100.00 | | 0.109 | | | 0.000- 0.109 |
| | H/I | 7119 | 33.43 | 34.75 | 71.97 | 0.822 | 0.119 | 0.368 | | 1.190- 0.119 |
| | | 7120 | 34.75 | 35.43 | 100.00 | | 0.670 | | | 0.000- 0.670 |
| | | 7121 | 52.17 | 52.97 | 100.00 | | 0.797 | | | 0.000- 0.797 |
| | ? | 7122 | 52.97 | 53.49 | 55.77 | 0.290 | | 0.229 | | 0.519- 0.000 |
| | | 7123 | 53.49 | 53.80 | 64.52 | 0.050 | 0.149 | 0.030 | 0.080 | 0.080- 0.229 |
| | I | 7124 | 18.52 | 22.77 | 18.35 | 0.701 | | 3.119 | | 3.820- 0.000 |
| | H | 7126 | 69.08 | 70.99 | 74.35 | 1.357 | 0.060 | 0.179 | 0.309 | 1.536- 0.369 |
| | | 7127 | 70.99 | 71.64 | 23.08 | | 0.149 | | 0.498 | 0.000- 0.647 |
| | | 7128 | 94.40 | 94.80 | 100.00 | | 0.387 | | | 0.000- 0.387 |
| | PH | 7129 | 94.80 | 96.27 | 64.63 | 0.921 | | 0.504 | | 1.425- 0.000 |
| | | 7130 | 96.27 | 96.44 | 100.00 | | 0.166 | | | 0.000- 0.166 |
| DDH87005 | | 7131 | 18.55 | 19.00 | 100.00 | | 0.423 | | | 0.000- 0.423 |
| | K/L | 7132 | 19.00 | 23.74 | 39.87 | 1.383 | 0.384 | 2.667 | | 4.050- 0.384 |

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 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL - ROCK |
|-------------|------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-------------------|
| | | 7133 | 23.74 | 24.06 | 100.00 | | 0.298 | | | 0.000- 0.298 |
| | | 7134 | 49.52 | 49.66 | 100.00 | | 0.139 | | | 0.000- 0.139 |
| | K | 7135 | 49.66 | 54.70 | 66.87 | 3.214 | 0.139 | 1.490 | 0.170 | 4.704- 0.309 |
| | K | 7136 | 54.70 | 55.88 | 100.00 | | 1.176 | | | 0.000- 1.176 |
| | K | 7137 | 55.88 | 58.93 | 71.80 | 1.927 | 0.260 | 0.720 | 0.140 | 2.647- 0.400 |
| | | 7138 | 58.93 | 59.15 | 100.00 | | 0.220 | | | 0.000- 0.220 |
| | | 7139 | 129.48 | 130.23 | 100.00 | | 0.705 | | | 0.000- 0.705 |
| | I | 7140 | 130.23 | 132.23 | 100.00 | 1.673 | 0.240 | | | 1.673- 0.240 |
| | I | 7141 | 132.23 | 133.80 | 100.00 | 1.531 | | | | 1.531- 0.000 |
| | | 7142 | 133.80 | 134.55 | 100.00 | | 0.739 | | | 0.000- 0.739 |
| | | 7143 | 182.23 | 182.40 | 100.00 | | 0.139 | | | 0.000- 0.139 |
| DDH87006 | H | 7144 | 182.40 | 184.30 | 82.63 | 0.800 | 0.377 | 0.239 | | 1.039- 0.377 |
| | | 6819 | 120.40 | 120.57 | 100.00 | | 0.154 | | | 0.000- 0.154 |
| | H | 6821 | 145.02 | 146.46 | 100.00 | 1.280 | | | | 1.280- 0.000 |
| | | 6822 | 146.46 | 146.66 | 100.00 | | 0.186 | | | 0.000- 0.186 |
| | | 7146 | 93.65 | 93.75 | 100.00 | | 0.056 | | | 0.000- 0.056 |
| | I | 7147 | 93.75 | 97.47 | 43.28 | 0.553 | 0.236 | 0.406 | 0.633 | 0.959- 0.869 |
| | | 7148 | 97.47 | 98.21 | 100.00 | | 0.302 | | | 0.000- 0.302 |
| | | 7149 | 117.43 | 117.94 | 100.00 | | 0.469 | | | 0.000- 0.469 |
| DDH87007 | H/I | 7150 | 117.94 | 120.40 | 73.98 | 1.661 | | 0.585 | | 2.246- 0.000 |
| | | 6837 | 10.98 | 11.45 | 100.00 | | 0.302 | | | 0.000- 0.302 |
| | K? | 6838 | 11.45 | 20.80 | 25.24 | 0.816 | 0.700 | 4.493 | | 5.309- 0.700 |
| | | 6839 | 20.80 | 23.52 | 71.69 | | 1.253 | | 0.495 | 0.000- 1.748 |
| | | 6840 | 77.57 | 77.75 | 100.00 | | 0.133 | | | 0.000- 0.133 |
| | I? | 6841 | 77.75 | 80.82 | 70.36 | 1.185 | 0.385 | 0.521 | 0.137 | 1.706- 0.522 |
| | | 6842 | 80.82 | 81.11 | 100.00 | | 0.207 | | | 0.000- 0.207 |
| | H? | 6844 | 91.32 | 96.19 | 90.76 | 1.813 | 0.855 | 0.117 | 0.147 | 1.930- 1.002 |

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GULF CANADA CORPORATION - COAL DIVISION

SIMPLE SAMPLE SUMMARY

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TRUE THICKNESS

KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED | | MISSING | | TOTAL | |
|-------------|------|-----------|------------|----------|-------------|-----------|-------|---------|-------|--------|-------|
| | | | | | | COAL | ROCK | COAL | ROCK | COAL | ROCK |
| | | 6856 | 41.07 | 42.22 | 100.00 | | 1.081 | | | 0.000- | 1.081 |
| | I | 6857 | 42.22 | 47.53 | 32.02 | 1.283 | 0.264 | 3.119 | 0.126 | 4.402- | 0.390 |
| | | 6858 | 47.53 | 47.83 | 100.00 | | 0.260 | | | 0.000- | 0.260 |
| | | 6859 | 98.02 | 98.57 | 100.00 | | 0.456 | | | 0.000- | 0.456 |
| | H | 6860 | 98.57 | 100.33 | 45.45 | 0.385 | 0.220 | 0.692 | 0.056 | 1.077- | 0.276 |
| | H | 6861 | 100.33 | 101.61 | 96.09 | | 0.894 | | 0.038 | 0.000- | 0.932 |
| | H | 6862 | 101.61 | 103.40 | 64.25 | 0.786 | 0.116 | 0.464 | 0.058 | 1.250- | 0.174 |
| | | 6863 | 103.40 | 105.29 | 100.00 | | 1.637 | | | 0.000- | 1.637 |
| | | 6864 | 117.67 | 118.31 | 100.00 | | 0.592 | | | 0.000- | 0.592 |
| | PH | 6865 | 118.31 | 119.08 | 72.73 | 0.018 | 0.494 | 0.193 | | 0.211- | 0.494 |
| | PH | 6866 | 119.08 | 120.70 | 62.35 | 0.907 | | 0.550 | | 1.457- | 0.000 |
| | | 6867 | 120.70 | 121.67 | 100.00 | | 0.854 | | | 0.000- | 0.854 |
| DDH87010 | | 6868 | 28.36 | 28.85 | 100.00 | | 0.375 | | | 0.000- | 0.375 |
| | H | 6869 | 28.85 | 31.98 | 43.45 | 0.890 | 0.231 | 1.432 | | 2.322- | 0.231 |
| | H | 6870 | 31.98 | 34.39 | 96.68 | 1.910 | 0.144 | 0.073 | | 1.983- | 0.144 |
| | | 6871 | 34.39 | 34.83 | 100.00 | | 0.397 | | | 0.000- | 0.397 |
| DDH87011 | | 6872 | 27.41 | 28.85 | 100.00 | | 1.199 | | | 0.000- | 1.199 |
| | H | 6873 | 28.85 | 32.00 | 55.87 | 1.085 | 0.459 | 1.219 | | 2.304- | 0.459 |
| | H | 6874 | 32.00 | 34.39 | 72.80 | 1.473 | 0.140 | 0.591 | | 2.064- | 0.140 |
| | | 6875 | 34.39 | 34.54 | 100.00 | | 0.141 | | | 0.000- | 0.141 |
| | | 6876 | 67.08 | 68.53 | 100.00 | | 1.290 | | | 0.000- | 1.290 |
| | PH | 6877 | 68.53 | 69.10 | 100.00 | 0.338 | 0.170 | | | 0.338- | 0.170 |
| | | 6878 | 69.10 | 71.07 | 100.00 | | 1.707 | | | 0.000- | 1.707 |
| DDH87012 | | 6879 | 73.67 | 74.45 | 32.05 | | 0.238 | | 0.503 | 0.000- | 0.741 |
| | I | 6880 | 74.45 | 76.05 | 60.00 | 0.837 | 0.066 | 0.433 | 0.169 | 1.270- | 0.235 |
| | | 6881 | 76.05 | 76.50 | 100.00 | | 0.421 | | | 0.000- | 0.421 |

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GULF CANADA CORPORATION - COAL DIVISION
 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

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| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED | | MISSING | | TOTAL | |
|-------------|------|-----------|------------|----------|-------------|-----------|-------|---------|-------|-------|-------|
| | | | | | | COAL | ROCK | COAL | ROCK | COAL | ROCK |
| DDH87013 | | 6882 | 117.97 | 119.45 | 100.00 | | 1.436 | | | 0.000 | 1.436 |
| | H | 6883 | 119.45 | 122.05 | 70.00 | 1.339 | 0.413 | 0.444 | 0.307 | 1.783 | 0.720 |
| | H | 6884 | 122.05 | 125.00 | 78.64 | 2.089 | 0.114 | 0.534 | 0.066 | 2.623 | 0.180 |
| | | 6885 | 125.00 | 126.33 | 100.00 | | 1.250 | | | 0.000 | 1.250 |
| | | 6891 | 13.28 | 14.36 | 100.00 | | 0.990 | | | 0.000 | 0.990 |
| | J | 6892 | 14.36 | 15.36 | 88.00 | 0.762 | 0.066 | 0.114 | | 0.876 | 0.066 |
| | | 6893 | 15.36 | 16.52 | 81.03 | | 0.908 | | 0.210 | 0.000 | 1.118 |
| | | 6894 | 61.40 | 61.83 | 100.00 | | 0.356 | | | 0.000 | 0.356 |
| | I | 6895 | 61.83 | 63.27 | 88.19 | 0.845 | 0.217 | 0.142 | | 0.987 | 0.217 |
| | I | 6896 | 63.27 | 67.43 | 90.38 | 3.224 | | 0.343 | | 3.567 | 0.000 |
| | 6897 | 67.43 | 68.50 | 100.00 | | 0.938 | | | 0.000 | 0.938 | |
| | 6898 | 96.21 | 97.42 | 100.00 | | 0.973 | | | 0.000 | 0.973 | |
| H | 6899 | 97.42 | 99.06 | 76.83 | 1.036 | | 0.317 | | 1.353 | 0.000 | |
| | 6900 | 99.06 | 100.52 | 100.00 | | 1.235 | | | 0.000 | 1.235 | |
| | 7051 | 128.61 | 128.87 | 100.00 | | 0.223 | | | 0.000 | 0.223 | |
| PH | 7052 | 128.87 | 130.45 | 79.75 | 1.025 | 0.060 | 0.276 | | 1.301 | 0.060 | |
| | 7053 | 130.45 | 130.57 | 100.00 | | 0.104 | | | 0.000 | 0.104 | |
| DDH87014 | | 5989 | 57.00 | 57.15 | 100.00 | | 0.106 | | | 0.000 | 0.106 |
| | 7054 | 29.88 | 30.60 | 100.00 | | 0.650 | | | 0.000 | 0.650 | |
| K | 7055 | 30.60 | 32.67 | 40.58 | 0.685 | 0.072 | 1.112 | | 1.797 | 0.072 | |
| | 7056 | 57.15 | 57.40 | 100.00 | | 0.177 | | | 0.000 | 0.177 | |
| I | 7057 | 57.40 | 61.63 | 58.16 | 1.589 | 0.179 | 1.068 | 0.201 | 2.657 | 0.380 | |
| | 7058 | 61.63 | 61.75 | 100.00 | | 0.087 | | | 0.000 | 0.087 | |
| H/12 | 7059 | 104.17 | 104.68 | 100.00 | 0.216 | | | | 0.216 | 0.000 | |
| DDH87015 | | 5986 | 74.23 | 74.25 | 100.00 | | 0.018 | | | 0.000 | 0.018 |
| | 7089 | 8.34 | 8.80 | 100.00 | | 0.372 | | | 0.000 | 0.372 | |

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 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL - ROCK |
|-------------|-------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-------------------|
| | | 7060 | 28.31 | 29.18 | 100.00 | | 0.858 | | | 0.000- 0.858 |
| | ? | 7061 | 29.18 | 30.35 | 40.17 | 0.443 | 0.020 | 0.689 | | 1.132- 0.020 |
| | | 7062 | 30.35 | 30.93 | 48.28 | | 0.275 | | 0.294 | 0.000- 0.569 |
| | | 7063 | 53.44 | 53.78 | 100.00 | | 0.334 | | | 0.000- 0.334 |
| | ? | 7064 | 53.78 | 55.35 | 73.89 | 0.993 | 0.126 | 0.342 | 0.058 | 1.335- 0.184 |
| | ? | 7065 | 55.35 | 57.86 | 76.10 | 0.238 | 1.536 | 0.546 | | 0.784- 1.536 |
| | | 7066 | 57.86 | 58.24 | 100.00 | | 0.341 | | | 0.000- 0.341 |
| DDH87019 | | 6901 | 113.72 | 114.39 | 100.00 | | 0.457 | | | 0.000- 0.457 |
| | I FLD | 6902 | 114.39 | 117.87 | 83.05 | 1.907 | 0.027 | 0.394 | | 2.301- 0.027 |
| | I FLD | 6903 | 117.87 | 134.92 | 57.71 | 7.385 | 1.261 | 5.720 | 0.802 | 13.105- 2.063 |
| | | 6904 | 134.92 | 135.00 | 100.00 | | 0.076 | | | 0.000- 0.076 |
| | | 6905 | 197.16 | 197.64 | 100.00 | | 0.345 | | | 0.000- 0.345 |
| | H FLD | 6906 | 197.64 | 200.52 | 73.96 | 0.702 | 0.760 | 0.521 | | 1.223- 0.760 |
| | | 7098 | 165.39 | 166.02 | 100.00 | | 0.595 | | | 0.000- 0.595 |
| | H/I | 7099 | 166.02 | 167.92 | 41.58 | 0.612 | 0.132 | 1.047 | | 1.659- 0.132 |
| | | 7100 | 167.92 | 168.48 | 19.64 | | 0.104 | | 0.423 | 0.000- 0.527 |
| DDH87020 | | 7077 | 66.02 | 66.57 | 100.00 | | 0.531 | | | 0.000- 0.531 |
| | ? | 7078 | 66.57 | 68.06 | 65.10 | 0.575 | 0.339 | 0.487 | | 1.062- 0.339 |
| | | 7079 | 68.06 | 68.65 | 100.00 | | 0.537 | | | 0.000- 0.537 |
| | | 7080 | 82.02 | 82.46 | 100.00 | | 0.413 | | | 0.000- 0.413 |
| | M | 7081 | 82.46 | 86.32 | 70.21 | 1.026 | 1.505 | 0.972 | 0.103 | 1.998- 1.608 |
| | | 7082 | 86.32 | 86.71 | 100.00 | | 0.363 | | | 0.000- 0.363 |
| | | 7083 | 95.22 | 95.90 | 100.00 | | 0.624 | | | 0.000- 0.624 |
| | L | 7084 | 95.90 | 100.70 | 70.00 | 2.320 | 0.748 | 1.225 | 0.091 | 3.545- 0.839 |
| | | 7085 | 100.70 | 101.17 | 100.00 | | 0.427 | | | 0.000- 0.427 |
| | | 7086 | 146.96 | 147.85 | 100.00 | | 0.775 | | | 0.000- 0.775 |
| | K/L | 7087 | 147.85 | 153.68 | 78.56 | 2.399 | 1.208 | 1.029 | | 3.428- 1.208 |

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 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED | | MISSING | | TOTAL | | |
|-------------|---------|-----------|------------|----------|-------------|-----------|-------|---------|-------|-------|-------|-------|
| | | | | | | COAL | ROCK | COAL | ROCK | COAL | ROCK | |
| DDH87024 | K PART | 6949 | 102.70 | 104.42 | 100.00 | | 1.408 | | | 0.000 | 1.408 | |
| | | 6950 | 104.42 | 105.10 | 54.41 | 0.170 | 0.116 | 0.240 | | 0.410 | 0.116 | |
| | | 7001 | 105.10 | 106.88 | 74.72 | | 0.941 | | 0.336 | 0.000 | 1.277 | |
| | K/L OVT | 7002 | 177.17 | 177.95 | 100.00 | | 0.443 | | | 0.000 | 0.443 | |
| | | 7003 | 177.95 | 180.29 | 46.15 | 0.455 | 0.326 | 0.974 | | 1.429 | 0.326 | |
| | | 7004 | 180.29 | 181.22 | 100.00 | | 0.836 | | | 0.000 | 0.836 | |
| | | 7005 | 20.33 | 20.47 | 100.00 | | 0.108 | | | 0.000 | 0.108 | |
| | K/L | 7006 | 20.47 | 22.25 | 69.10 | 0.721 | 0.332 | 0.418 | 0.081 | 1.139 | 0.413 | |
| | | 7007 | 22.25 | 22.64 | 100.00 | | 0.373 | | | 0.000 | 0.373 | |
| | O | 6907 | 15.03 | 15.17 | 100.00 | | 0.090 | | | 0.000 | 0.090 | |
| | | 6908 | 15.17 | 16.19 | 44.12 | 0.289 | | 0.366 | | 0.655 | 0.000 | |
| | | 6909 | 16.19 | 16.38 | 100.00 | | 0.122 | | | 0.000 | 0.122 | |
| | | 6910 | 41.19 | 41.87 | 63.24 | | 0.396 | | 0.233 | 0.000 | 0.629 | |
| | | 6911 | 41.87 | 43.10 | 75.61 | 0.762 | 0.125 | 0.286 | | 1.048 | 0.125 | |
| | | 6912 | 43.10 | 43.33 | 100.00 | | 0.223 | | | 0.000 | 0.223 | |
| | | 6913 | 68.51 | 70.09 | 100.00 | | 1.464 | | | 0.000 | 1.464 | |
| | | ? | 6914 | 70.09 | 71.35 | 82.54 | 0.947 | | 0.198 | | 1.145 | 0.000 |
| | | | 6915 | 71.35 | 72.72 | 19.71 | | 0.240 | | 0.980 | 0.000 | 1.220 |
| | | M | 6916 | 85.10 | 86.45 | 100.00 | | 1.269 | | | 0.000 | 1.269 |
| | 6917 | | 86.45 | 89.02 | 73.93 | 1.710 | 0.065 | 0.560 | 0.066 | 2.270 | 0.131 | |
| | 6918 | | 89.02 | 89.66 | 100.00 | | 0.595 | | | 0.000 | 0.595 | |
| | L | 6919 | 117.00 | 117.50 | 100.00 | | 0.439 | | | 0.000 | 0.439 | |
| | | 6920 | 117.50 | 119.80 | 72.17 | 1.437 | 0.044 | 0.575 | | 2.012 | 0.044 | |
| | | 6921 | 119.80 | 120.60 | 100.00 | | 0.730 | | | 0.000 | 0.730 | |
| | | 6922 | 133.60 | 134.50 | 100.00 | | 0.834 | | | 0.000 | 0.834 | |
| ? | 6923 | 134.50 | 134.90 | 55.00 | 0.204 | | 0.168 | | 0.372 | 0.000 | | |
| | 6924 | 134.90 | 135.60 | 100.00 | | 0.654 | | | 0.000 | 0.654 | | |
| | 6925 | 151.71 | 152.00 | 100.00 | | 0.254 | | | 0.000 | 0.254 | | |

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 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED | | MISSING | | TOTAL | |
|-------------|---------|-----------|------------|----------|-------------|-----------|-------|---------|-------|-------|-------|
| | | | | | | COAL | ROCK | COAL | ROCK | COAL | ROCK |
| DDH87025 | K/L | 6926 | 152.00 | 153.40 | 85.00 | 0.964 | 0.088 | | 0.186 | 0.964 | 0.274 |
| | K/L | 6927 | 153.40 | 155.21 | 74.59 | 0.848 | 0.366 | | 0.413 | 0.848 | 0.779 |
| | | 6928 | 155.21 | 155.51 | 100.00 | | 0.273 | | | 0.000 | 0.273 |
| | | 6929 | 34.50 | 35.69 | 100.00 | | 1.030 | | | 0.000 | 1.030 |
| | K | 6930 | 35.69 | 36.89 | 100.00 | 0.365 | 0.676 | | | 0.365 | 0.676 |
| | K | 6931 | 36.89 | 41.44 | 91.21 | 3.248 | 0.347 | 0.208 | 0.139 | 3.456 | 0.486 |
| | | 6932 | 41.44 | 42.00 | 100.00 | | 0.485 | | | 0.000 | 0.485 |
| | | 6933 | 102.33 | 102.67 | 100.00 | | 0.294 | | | 0.000 | 0.294 |
| | I | 6934 | 102.67 | 105.71 | 97.70 | 2.312 | 0.261 | 0.061 | | 2.373 | 0.261 |
| | I | 6935 | 105.71 | 107.97 | 91.15 | 1.784 | | 0.173 | | 1.957 | 0.000 |
| DDH87026 | | 6936 | 107.97 | 108.34 | 100.00 | | 0.320 | | | 0.000 | 0.320 |
| | | 6960 | 18.55 | 18.93 | 100.00 | | 0.122 | | | 0.000 | 0.122 |
| | H OVT | 6961 | 18.93 | 23.05 | 58.98 | 0.878 | 0.086 | 0.514 | 0.137 | 1.392 | 0.223 |
| | | 6962 | 23.05 | 23.73 | 100.00 | | 0.317 | | | 0.000 | 0.317 |
| | | 6963 | 47.40 | 48.69 | 100.00 | | 0.684 | | | 0.000 | 0.684 |
| | H/I OVT | 6964 | 48.69 | 49.35 | 74.24 | 0.286 | | 0.097 | | 0.383 | 0.000 |
| | | 6965 | 49.35 | 49.72 | 100.00 | | 0.223 | | | 0.000 | 0.223 |
| | | 6966 | 78.39 | 79.06 | 95.52 | | 0.510 | | 0.023 | 0.000 | 0.533 |
| | I PART. | 6967 | 79.06 | 80.17 | 88.29 | 0.688 | 0.015 | 0.091 | | 0.779 | 0.015 |
| | | 6968 | 80.17 | 80.67 | 100.00 | | 0.314 | | | 0.000 | 0.314 |
| DDH87027 | | 6969 | 136.81 | 138.26 | 100.00 | | 1.094 | | | 0.000 | 1.094 |
| | H | 6970 | 138.26 | 139.97 | 73.68 | 0.525 | 0.393 | 0.328 | | 0.853 | 0.393 |
| | | 6971 | 139.97 | 140.55 | 100.00 | | 0.415 | | | 0.000 | 0.415 |
| | PH | 6972 | 171.87 | 172.84 | 100.00 | 0.136 | 0.746 | | | 0.136 | 0.746 |
| | PH | 6973 | 172.84 | 173.78 | 84.04 | 0.623 | 0.090 | | 0.136 | 0.623 | 0.226 |
| | | 6974 | 173.78 | 174.21 | 100.00 | | 0.388 | | | 0.000 | 0.388 |

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GULF CANADA CORPORATION - COAL DIVISION
 SIMPLE SAMPLE SUMMARY
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| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED | | MISSING | | TOTAL | | |
|-------------|------|-----------|------------|----------|-------------|-----------|-------|---------|--------|--------|--------|-------|
| | | | | | | COAL | ROCK | COAL | ROCK | COAL | ROCK | |
| DDH87028 | H-1 | 6996 | 68.87 | 69.10 | 100.00 | | 0.196 | | | 0.000- | 0.196 | |
| | | 6997 | 49.00 | 49.79 | 59.49 | | 0.407 | | 0.277 | 0.000- | 0.684 | |
| | | 6998 | 49.79 | 51.30 | 64.90 | 0.606 | 0.243 | 0.459 | | 1.065- | 0.243 | |
| | | 6999 | 51.30 | 51.55 | 100.00 | 0.017 | 0.199 | | | 0.017- | 0.199 | |
| | | 7044 | 30.54 | 31.33 | 100.00 | | 0.770 | | | 0.000- | 0.770 | |
| | H | 7045 | 31.33 | 33.55 | 41.44 | 0.628 | 0.262 | 1.263 | | 1.891- | 0.262 | |
| | H | 7046 | 33.55 | 37.37 | 76.44 | 0.577 | 2.232 | 0.516 | 0.344 | 1.093- | 2.576 | |
| | H | 7047 | 37.37 | 40.32 | 72.20 | 1.694 | 0.321 | 0.694 | 0.086 | 2.388- | 0.407 | |
| | | 7048 | 40.32 | 40.54 | 100.00 | | 0.207 | | | 0.000- | 0.207 | |
| | | 7049 | 66.97 | 67.65 | 100.00 | | 0.481 | | | 0.000- | 0.481 | |
| | PH | 7050 | 67.65 | 68.87 | 51.64 | 0.485 | | | 0.485 | 0.970- | 0.000 | |
| | | | 7011 | 40.65 | 40.90 | 100.00 | | 0.242 | | | 0.000- | 0.242 |
| | N | 7012 | 40.90 | 41.81 | 89.01 | 0.787 | | 0.097 | | 0.884- | 0.000 | |
| | | 7013 | 41.81 | 42.50 | 100.00 | | 0.675 | | | 0.000- | 0.675 | |
| | | 7014 | 61.36 | 61.55 | 100.00 | | 0.190 | | | 0.000- | 0.190 | |
| | M/N | 7015 | 61.55 | 62.43 | 84.09 | 0.400 | 0.340 | 0.090 | 0.050 | 0.490- | 0.390 | |
| | | 7016 | 62.43 | 62.74 | 100.00 | | 0.309 | | | 0.000- | 0.309 | |
| | | 7017 | 76.11 | 76.43 | 100.00 | | 0.310 | | | 0.000- | 0.310 | |
| | ? | 7018 | 76.43 | 77.00 | 100.00 | 0.553 | | | | 0.553- | 0.000 | |
| | | 7019 | 77.00 | 77.25 | 100.00 | 0.068 | 0.175 | | | 0.068- | 0.175 | |
| | | 7020 | 88.50 | 89.74 | 100.00 | | 1.187 | | | 0.000- | 1.187 | |
| | M | 7021 | 89.74 | 91.30 | 92.95 | 1.082 | 0.293 | 0.104 | | 1.186- | 0.293 | |
| | | 7022 | 91.30 | 91.58 | 100.00 | | 0.264 | | | 0.000- | 0.264 | |
| | | 7023 | 108.23 | 108.67 | 100.00 | | 0.381 | | | 0.000- | 0.381 | |
| | L | 7024 | 108.67 | 109.50 | 100.00 | 0.681 | 0.053 | | | 0.681- | 0.053 | |
| | | 7025 | 109.50 | 109.78 | 100.00 | | 0.252 | | | 0.000- | 0.252 | |
| | | 7026 | 122.49 | 123.47 | 100.00 | | 0.975 | | | 0.000- | 0.975 | |
| ? | 7027 | 123.47 | 123.77 | 100.00 | 0.259 | 0.040 | | | 0.259- | 0.040 | | |

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GULF CANADA CORPORATION - COAL DIVISION
 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

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| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED | | MISSING | | TOTAL | |
|-------------|----------|-----------|------------|----------|-------------|-----------|-------|---------|-------|--------|-------|
| | | | | | | COAL | ROCK | COAL | ROCK | COAL | ROCK |
| | | 7028 | 123.77 | 124.36 | 100.00 | | 0.588 | | | 0.000- | 0.588 |
| | | 7029 | 138.53 | 139.94 | 100.00 | | 1.331 | | | 0.000- | 1.331 |
| | K/L | 7030 | 139.94 | 150.95 | 89.28 | 3.539 | 5.196 | 0.399 | 0.607 | 3.938- | 5.803 |
| | | 7031 | 150.95 | 151.24 | 100.00 | | 0.238 | | | 0.000- | 0.238 |
| | ? | 7033 | 190.21 | 191.40 | 100.00 | 0.308 | 0.175 | | | 0.308- | 0.175 |
| | ? | 7034 | 191.40 | 193.80 | 87.92 | 0.858 | | 0.118 | | 0.976- | 0.000 |
| | | 7035 | 193.80 | 194.16 | 100.00 | | 0.146 | | | 0.000- | 0.146 |
| | | 7036 | 199.58 | 200.09 | 100.00 | | 0.233 | | | 0.000- | 0.233 |
| | K | 7037 | 200.09 | 201.85 | 100.00 | 0.898 | 0.066 | | | 0.898- | 0.066 |
| | K | 7038 | 201.85 | 202.33 | 100.00 | | 0.304 | | | 0.000- | 0.304 |
| | K | 7039 | 202.33 | 203.79 | 66.44 | 0.663 | | 0.264 | 0.053 | 0.927- | 0.053 |
| | | 7040 | 203.79 | 204.17 | 100.00 | | 0.217 | | | 0.000- | 0.217 |
| | | 7041 | 212.41 | 213.22 | 100.00 | | 0.521 | | | 0.000- | 0.521 |
| | ? | 7042 | 213.22 | 213.87 | 84.62 | 0.346 | | | 0.063 | 0.346- | 0.063 |
| | | 7043 | 213.87 | 214.38 | 100.00 | | 0.315 | | | 0.000- | 0.315 |
| DDH87029 | | 6975 | 19.73 | 20.65 | 100.00 | | 0.834 | | | 0.000- | 0.834 |
| | H | 6976 | 20.65 | 24.28 | 61.71 | 1.794 | 0.236 | 1.187 | 0.073 | 2.981- | 0.309 |
| | | 6977 | 24.28 | 24.65 | 100.00 | | 0.335 | | | 0.000- | 0.335 |
| | | 6978 | 48.94 | 49.30 | 100.00 | | 0.188 | | | 0.000- | 0.188 |
| | H REP | 6979 | 49.30 | 50.81 | 46.36 | 0.319 | 0.071 | 0.419 | 0.040 | 0.738- | 0.111 |
| | | 6980 | 50.81 | 51.89 | 100.00 | | 0.664 | | | 0.000- | 0.664 |
| | | 6981 | 82.34 | 83.15 | 100.00 | | 0.557 | | | 0.000- | 0.557 |
| | H/I2 OVT | 6982 | 83.15 | 84.70 | 52.26 | 0.452 | 0.080 | 0.451 | 0.039 | 0.903- | 0.119 |
| | | 6983 | 84.70 | 85.17 | 100.00 | | 0.298 | | | 0.000- | 0.298 |
| | | 6984 | 109.15 | 109.84 | 100.00 | | 0.618 | | | 0.000- | 0.618 |
| | H/I2 | 6985 | 109.84 | 110.60 | 88.16 | 0.553 | 0.045 | | 0.080 | 0.553- | 0.125 |
| | | 6986 | 110.60 | 111.08 | 100.00 | | 0.426 | | | 0.000- | 0.426 |
| | | 6987 | 137.99 | 138.28 | 100.00 | | 0.197 | | | 0.000- | 0.197 |

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GULF CANADA CORPORATION - COAL DIVISION
 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

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| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL - ROCK | |
|-------------|----------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-------------------|--------------|
| DDH87030 | H | 6988 | 138.28 | 139.62 | 73.13 | 0.578 | 0.097 | 0.068 | 0.178 | 0.646- 0.275 | |
| | | 6989 | 139.62 | 140.40 | 100.00 | | 0.544 | | | 0.000- 0.544 | |
| | | 6990 | 160.65 | 161.31 | 100.00 | | 0.631 | | | 0.000- 0.631 | |
| | PH | 6991 | 161.31 | 162.72 | 95.04 | 1.167 | 0.104 | 0.067 | | 1.234- 0.104 | |
| | | 6992 | 162.72 | 162.98 | 100.00 | | 0.245 | | | 0.000- 0.245 | |
| | | 6993 | 204.36 | 204.73 | 100.00 | | 0.304 | | | 0.000- 0.304 | |
| | F | 6994 | 204.73 | 206.47 | 98.28 | 1.075 | 0.353 | 0.025 | | 1.100- 0.353 | |
| | | 6995 | 206.47 | 207.78 | 100.00 | | 1.125 | | | 0.000- 1.125 | |
| | | | | | | | | | | | |
| | DDH87031 | L | 5851 | 58.66 | 59.98 | 100.00 | | 1.319 | | | 0.000- 1.319 |
| | | | 5852 | 59.98 | 61.96 | 66.67 | 1.320 | | 0.660 | | 1.980- 0.000 |
| | | | 5853 | 61.96 | 62.33 | 100.00 | | 0.370 | | | 0.000- 0.370 |
| | | ? | 5854 | 74.62 | 75.25 | 90.48 | | 0.561 | | 0.059 | 0.000- 0.620 |
| | | | 5855 | 75.25 | 75.73 | 97.92 | 0.461 | | 0.010 | | 0.471- 0.000 |
| | | | 5856 | 75.73 | 76.18 | 100.00 | | 0.440 | | | 0.000- 0.440 |
| | | K/L | 5857 | 86.14 | 86.60 | 100.00 | | 0.375 | | | 0.000- 0.375 |
| | | | 5858 | 86.60 | 89.32 | 61.40 | 0.905 | 0.252 | 0.444 | 0.318 | 1.349- 0.570 |
| | | | 5859 | 89.32 | 91.62 | 92.61 | 0.268 | 1.163 | 0.150 | | 0.418- 1.163 |
| | | K | 5860 | 91.62 | 92.04 | 100.00 | | 0.387 | | | 0.000- 0.387 |
| 5861 | | | 184.78 | 185.12 | 100.00 | | 0.241 | | | 0.000- 0.241 | |
| 5862 | | | 185.12 | 189.15 | 53.60 | 1.404 | 0.368 | 1.175 | 0.313 | 2.579- 0.681 | |
| I | 5863 | 189.15 | 189.81 | 69.70 | | 0.419 | | 0.181 | 0.000- 0.600 | | |
| | 5865 | 241.29 | 244.57 | 71.65 | 1.799 | 0.262 | 0.810 | | 2.609- 0.262 | | |
| | 5866 | 244.57 | 244.67 | 100.00 | | 0.083 | | | 0.000- 0.083 | | |
| M | 5867 | 33.16 | 34.42 | 100.00 | | 1.241 | | | 0.000- 1.241 | | |
| | 5868 | 34.42 | 36.68 | 78.32 | 1.359 | 0.385 | 0.483 | | 1.842- 0.385 | | |
| | 5869 | 36.68 | 37.16 | 100.00 | | 0.473 | | | 0.000- 0.473 | | |
| | | 5804 | 29.62 | 30.45 | 100.00 | | 0.772 | | 0.000- 0.772 | | |

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | ROCK | MISSING COAL | ROCK | TOTAL COAL - ROCK |
|-------------|----------|-----------|------------|----------|-------------|----------------|-------|--------------|-------|-------------------|
| | M | 5805 | 30.45 | 32.72 | 66.52 | 1.329 | 0.055 | 0.701 | | 2.030- 0.055 |
| | | 5806 | 32.72 | 32.97 | 100.00 | | 0.227 | | | 0.000- 0.227 |
| | | 5807 | 45.78 | 46.37 | 100.00 | 0.054 | 0.379 | | | 0.054- 0.379 |
| | L | 5808 | 46.37 | 47.91 | 38.96 | 0.572 | | 0.874 | | 1.446- 0.000 |
| | | 5809 | 47.91 | 48.70 | 100.00 | | 0.767 | | | 0.000- 0.767 |
| | | 5810 | 59.44 | 60.11 | 100.00 | | 0.661 | | | 0.000- 0.661 |
| | ? | 5811 | 60.11 | 60.70 | 100.00 | 0.491 | 0.088 | | | 0.491- 0.088 |
| | | 5812 | 60.70 | 61.38 | 100.00 | | 0.663 | | | 0.000- 0.663 |
| | ? | 5813 | 65.57 | 66.46 | 100.00 | | 0.800 | | | 0.000- 0.800 |
| | | 5814 | 66.46 | 67.25 | 93.67 | 0.459 | 0.193 | 0.044 | | 0.503- 0.193 |
| | | 5815 | 67.25 | 67.48 | 100.00 | | 0.200 | | | 0.000- 0.200 |
| | | 5816 | 81.47 | 81.71 | 75.00 | 0.071 | 0.088 | | 0.053 | 0.071- 0.141 |
| | K/L PART | 5817 | 81.71 | 82.53 | 93.90 | 0.657 | | 0.044 | | 0.701- 0.000 |
| | | 5818 | 82.53 | 82.76 | 100.00 | | 0.190 | | | 0.000- 0.190 |
| | | 5819 | 94.28 | 94.89 | 100.00 | | 0.586 | | | 0.000- 0.586 |
| | L REP | 5820 | 94.89 | 96.59 | 85.29 | 0.793 | 0.610 | 0.241 | | 1.034- 0.610 |
| | | 5821 | 96.59 | 97.16 | 100.00 | | 0.555 | | | 0.000- 0.555 |
| | | 5822 | 132.50 | 132.80 | 100.00 | | 0.254 | | | 0.000- 0.254 |
| | K/L REP | 5823 | 132.80 | 136.92 | 72.82 | 2.366 | 0.283 | 0.711 | 0.293 | 3.077- 0.576 |
| | | 5825 | 136.92 | 137.37 | 57.78 | | 0.240 | | 0.175 | 0.000- 0.415 |
| | | 5826 | 182.06 | 182.60 | 100.00 | | 0.507 | | | 0.000- 0.507 |
| | K | 5827 | 182.60 | 183.80 | 76.67 | 0.664 | 0.196 | 0.261 | | 0.925- 0.196 |
| | K | 5828 | 183.80 | 185.96 | 91.67 | 1.692 | 0.139 | 0.046 | 0.121 | 1.738- 0.260 |
| | K | 5829 | 185.96 | 187.11 | 59.13 | 0.255 | 0.365 | 0.256 | 0.174 | 0.511- 0.539 |
| | | 5830 | 187.11 | 187.45 | 100.00 | | 0.309 | | | 0.000- 0.309 |
| | | 5992 | 192.35 | 192.41 | 100.00 | | 0.053 | | | 0.000- 0.053 |
| DDH87032 | I | 5801 | 44.46 | 48.76 | 51.40 | 1.740 | 0.250 | 1.615 | 0.262 | 3.355- 0.512 |
| | I | 5802 | 48.76 | 50.63 | 92.51 | 1.591 | | 0.130 | | 1.721- 0.000 |

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 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | ROCK | MISSING COAL | ROCK | TOTAL COAL - ROCK |
|-------------|------|-----------|------------|----------|-------------|----------------|-------|--------------|-------|-------------------|
| | | 5803 | 50.63 | 52.30 | 100.00 | | 1.555 | | | 0.000- 1.555 |
| | | 7000 | 44.20 | 44.46 | 100.00 | | 0.229 | | | 0.000- 0.229 |
| DDH87033 | | 5873 | 34.80 | 35.96 | 100.00 | | 1.133 | | | 0.000- 1.133 |
| | K | 5874 | 35.96 | 40.82 | 75.51 | 3.127 | 0.267 | 1.004 | 0.123 | 4.131- 0.390 |
| | K | 5875 | 40.82 | 41.89 | 90.65 | | 0.842 | | 0.085 | 0.000- 0.927 |
| | K | 5876 | 41.89 | 42.84 | 68.42 | 0.518 | 0.025 | 0.254 | | 0.772- 0.025 |
| | | 5877 | 42.84 | 43.25 | 100.00 | | 0.336 | | | 0.000- 0.336 |
| | | 5878 | 111.61 | 113.04 | 100.00 | | 1.257 | | | 0.000- 1.257 |
| | I | 5879 | 113.04 | 114.77 | 67.63 | 1.032 | 0.027 | 0.510 | | 1.542- 0.027 |
| | I | 5880 | 114.77 | 117.37 | 64.62 | 1.210 | 0.374 | 0.777 | 0.083 | 1.987- 0.457 |
| | I | 5881 | 117.37 | 118.97 | 100.00 | 1.545 | | | | 1.545- 0.000 |
| | | 5882 | 118.97 | 120.07 | 100.00 | | 1.076 | | | 0.000- 1.076 |
| DDH87034 | | 5870 | 45.27 | 45.50 | 100.00 | | 0.161 | | | 0.000- 0.161 |
| | I | 5871 | 45.50 | 52.46 | 44.68 | 1.940 | 0.187 | 2.535 | 0.117 | 4.475- 0.304 |
| | | 5872 | 52.46 | 52.54 | 100.00 | | 0.054 | | | 0.000- 0.054 |

COMPOSITE SAMPLE SUMMARY

11/MAR/88

GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

PAGE 1

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|-------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| ----- | | | | | | | | | | | | |
| DDH87001 | | | | | | | | | | | | |
| | H | 1 | 7105 | 7105 | 118.78 | 123.05 | 95.78 | 3.83 | 0.26 | 0.18 | 0.00 | 4.01- 0.26 |
| | H | 2 | 7106 | 7106 | 123.05 | 125.05 | 100.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00- 2.00 |
| | H | 3 | 7107 | 7107 | 125.05 | 126.38 | 97.74 | 1.30 | 0.00 | 0.03 | 0.00 | 1.33- 0.00 |
| | H | 200 | 7105 | 7107 | 118.78 | 126.38 | 96.25 | 5.13 | 0.26 | 0.21 | 0.00 | 5.34- 0.26 |
| | H | 400 | 7105 | 7107 | 118.78 | 126.38 | 96.25 | 5.13 | 0.26 | 0.21 | 0.00 | 5.34- 0.26 |
| DDH87002 | | | | | | | | | | | | |
| | I | 4 | 6816 | 6816 | 23.27 | 27.29 | 59.95 | 2.39 | 0.02 | 1.47 | 0.14 | 3.86- 0.16 |
| | I | 5 | 6817 | 6817 | 27.29 | 30.09 | 48.92 | 1.37 | 0.00 | 1.43 | 0.00 | 2.80- 0.00 |
| | I OVT | 6 | 6812 | 6812 | 48.80 | 51.67 | 100.00 | 2.87 | 0.00 | 0.00 | 0.00 | 2.87- 0.00 |
| | I OVT | 7 | 6813 | 6813 | 51.67 | 56.45 | 70.92 | 3.08 | 0.31 | 1.05 | 0.34 | 4.13- 0.65 |
| | I REP | 8 | 6802 | 6803 | 133.26 | 138.16 | 60.81 | 2.86 | 0.12 | 1.46 | 0.46 | 4.32- 0.58 |
| | I REP | 9 | 6804 | 6804 | 138.16 | 141.73 | 91.59 | 3.27 | 0.00 | 0.30 | 0.00 | 3.57- 0.00 |
| | H | 10 | 6807 | 6807 | 193.89 | 196.13 | 77.23 | 1.38 | 0.35 | 0.51 | 0.00 | 1.89- 0.35 |
| | H | 11 | 6808 | 6808 | 196.13 | 197.44 | 91.60 | 0.00 | 1.20 | 0.00 | 0.11 | 0.00- 1.31 |
| | H | 12 | 6809 | 6809 | 197.44 | 200.04 | 64.23 | 1.42 | 0.25 | 0.67 | 0.26 | 2.09- 0.51 |
| | I | 201 | 6816 | 6816 | 23.27 | 27.29 | 59.95 | 2.39 | 0.02 | 1.47 | 0.14 | 3.86- 0.16 |
| | I | 202 | 6817 | 6817 | 27.29 | 30.09 | 48.92 | 1.37 | 0.00 | 1.43 | 0.00 | 2.80- 0.00 |
| | H | 203 | 6807 | 6807 | 193.89 | 196.13 | 77.23 | 1.38 | 0.35 | 0.51 | 0.00 | 1.89- 0.35 |
| | H | 204 | 6809 | 6809 | 197.44 | 200.04 | 64.23 | 1.42 | 0.25 | 0.67 | 0.26 | 2.09- 0.51 |
| | I | 401 | 6816 | 6817 | 23.27 | 30.09 | 55.42 | 3.76 | 0.02 | 2.90 | 0.14 | 6.66- 0.16 |
| | H | 402 | 6807 | 6809 | 193.89 | 200.04 | 70.24 | 2.80 | 0.60 | 1.18 | 0.26 | 3.98- 0.86 |
| DDH87003 | | | | | | | | | | | | |
| | I | 13 | 7110 | 7111 | 38.90 | 42.28 | 72.78 | 2.18 | 0.28 | 0.79 | 0.13 | 2.97- 0.41 |
| | I | 14 | 7112 | 7112 | 42.28 | 44.42 | 67.75 | 1.45 | 0.00 | 0.69 | 0.00 | 2.14- 0.00 |
| | H | 15 | 7115 | 7115 | 90.27 | 92.49 | 50.45 | 0.75 | 0.37 | 0.90 | 0.20 | 1.65- 0.57 |
| | H | 16 | 7116 | 7116 | 92.49 | 94.27 | 65.16 | 1.16 | 0.00 | 0.40 | 0.22 | 1.56- 0.22 |
| | I | 205 | 7110 | 7111 | 38.90 | 42.28 | 72.78 | 2.18 | 0.28 | 0.79 | 0.13 | 2.97- 0.41 |
| | I | 206 | 7112 | 7112 | 42.28 | 44.42 | 67.75 | 1.45 | 0.00 | 0.69 | 0.00 | 2.14- 0.00 |

GULF CANADA CORPORATION - COAL DIVISION
 11/MAR/88 COMPOSITE SAMPLE SUMMARY PAGE 2
 APPARENT THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| DDH87004 | I | 403 | 7110 | 7112 | 38.90 | 44.42 | 70.83 | 3.63 | 0.28 | 1.48 | 0.13 | 5.11- 0.41 |
| | I | 17 | 7124 | 7124 | 18.52 | 22.77 | 18.35 | 0.78 | 0.00 | 3.47 | 0.00 | 4.25- 0.00 |
| | H/I | 18 | 7119 | 7119 | 33.43 | 34.75 | 71.96 | 0.83 | 0.12 | 0.37 | 0.00 | 1.20- 0.12 |
| | ? | 19 | 7122 | 7122 | 52.97 | 53.49 | 55.76 | 0.29 | 0.00 | 0.23 | 0.00 | 0.52- 0.00 |
| | H | 20 | 7126 | 7126 | 69.08 | 70.99 | 74.34 | 1.36 | 0.06 | 0.18 | 0.31 | 1.54- 0.37 |
| | PH | 21 | 7129 | 7129 | 94.80 | 96.27 | 64.62 | 0.95 | 0.00 | 0.52 | 0.00 | 1.47- 0.00 |
| | H/I | 207 | 7119 | 7119 | 33.43 | 34.75 | 71.96 | 0.83 | 0.12 | 0.37 | 0.00 | 1.20- 0.12 |
| | H | 208 | 7126 | 7126 | 69.08 | 70.99 | 74.34 | 1.36 | 0.06 | 0.18 | 0.31 | 1.54- 0.37 |
| | Ph | 209 | 7129 | 7129 | 94.80 | 96.27 | 64.62 | 0.95 | 0.00 | 0.52 | 0.00 | 1.47- 0.00 |
| | H/I | 404 | 7119 | 7119 | 33.43 | 34.75 | 71.96 | 0.83 | 0.12 | 0.37 | 0.00 | 1.20- 0.12 |
| DDH87005 | H | 405 | 7126 | 7126 | 69.08 | 70.99 | 74.34 | 1.36 | 0.06 | 0.18 | 0.31 | 1.54- 0.37 |
| | Ph | 406 | 7129 | 7129 | 94.80 | 96.27 | 64.62 | 0.95 | 0.00 | 0.52 | 0.00 | 1.47- 0.00 |
| | K/L | 22 | 7132 | 7132 | 19.00 | 23.74 | 39.87 | 1.48 | 0.41 | 2.85 | 0.00 | 4.33- 0.41 |
| | K | 23 | 7135 | 7135 | 49.66 | 54.70 | 66.86 | 3.23 | 0.14 | 1.50 | 0.17 | 4.73- 0.31 |
| | K | 24 | 7136 | 7136 | 54.70 | 55.88 | 100.00 | 0.00 | 1.18 | 0.00 | 0.00 | 0.00- 1.18 |
| | K | 25 | 7137 | 7137 | 55.88 | 58.93 | 71.80 | 1.93 | 0.26 | 0.72 | 0.14 | 2.65- 0.40 |
| | I | 26 | 7140 | 7140 | 130.23 | 132.23 | 100.00 | 1.75 | 0.25 | 0.00 | 0.00 | 1.75- 0.25 |
| | I | 27 | 7141 | 7141 | 132.23 | 133.80 | 100.00 | 1.57 | 0.00 | 0.00 | 0.00 | 1.57- 0.00 |
| | H | 28 | 7144 | 7144 | 182.40 | 184.30 | 82.63 | 1.07 | 0.50 | 0.33 | 0.00 | 1.40- 0.50 |
| | K | 210 | 7135 | 7135 | 49.66 | 54.70 | 66.86 | 3.23 | 0.14 | 1.50 | 0.17 | 4.73- 0.31 |
| | K | 211 | 7137 | 7137 | 55.88 | 58.93 | 71.80 | 1.93 | 0.26 | 0.72 | 0.14 | 2.65- 0.40 |
| | I | 212 | 7140 | 7140 | 130.23 | 132.23 | 100.00 | 1.75 | 0.25 | 0.00 | 0.00 | 1.75- 0.25 |
| | I | 213 | 7141 | 7141 | 132.23 | 133.80 | 100.00 | 1.57 | 0.00 | 0.00 | 0.00 | 1.57- 0.00 |
| | H | 214 | 7144 | 7144 | 182.40 | 184.30 | 82.63 | 1.07 | 0.50 | 0.33 | 0.00 | 1.40- 0.50 |
| | K | 407 | 7135 | 7137 | 49.66 | 58.93 | 68.72 | 5.16 | 0.40 | 2.22 | 0.31 | 7.38- 0.71 |
| I | 408 | 7140 | 7141 | 130.23 | 133.80 | 100.00 | 3.32 | 0.25 | 0.00 | 0.00 | 3.32- 0.25 | |
| H | 409 | 7144 | 7144 | 182.40 | 184.30 | 82.63 | 1.07 | 0.50 | 0.33 | 0.00 | 1.40- 0.50 | |

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 11/MAR/88 COMPOSITE SAMPLE SUMMARY PAGE 3
 APPARENT THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|---------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| ----- | | | | | | | | | | | | |
| DDH87006 | I | 29 | 7147 | 7147 | 93.75 | 97.47 | 43.27 | 1.13 | 0.48 | 0.89 | 1.22 | 2.02- 1.70 |
| | H/I | 30 | 7150 | 7150 | 117.94 | 120.40 | 73.98 | 1.82 | 0.00 | 0.64 | 0.00 | 2.46- 0.00 |
| | H | 31 | 6821 | 6821 | 145.02 | 146.46 | 100.00 | 1.44 | 0.00 | 0.00 | 0.00 | 1.44- 0.00 |
| | H/I | 215 | 7150 | 7150 | 117.94 | 120.40 | 73.98 | 1.82 | 0.00 | 0.64 | 0.00 | 2.46- 0.00 |
| | H | 216 | 6821 | 6821 | 145.02 | 146.46 | 100.00 | 1.44 | 0.00 | 0.00 | 0.00 | 1.44- 0.00 |
| | H/I | 410 | 7150 | 7150 | 117.94 | 120.40 | 73.98 | 1.82 | 0.00 | 0.64 | 0.00 | 2.46- 0.00 |
| | H | 411 | 6821 | 6821 | 145.02 | 146.46 | 100.00 | 1.44 | 0.00 | 0.00 | 0.00 | 1.44- 0.00 |
| DDH87007 | K | 32 | 6838 | 6838 | 11.45 | 20.80 | 25.24 | 1.27 | 1.09 | 6.99 | 0.00 | 8.26- 1.09 |
| | I | 33 | 6841 | 6841 | 77.75 | 80.82 | 70.35 | 1.63 | 0.53 | 0.72 | 0.19 | 2.35- 0.72 |
| | H/H LOW | 34 | 6844 | 6844 | 91.32 | 96.19 | 90.75 | 3.02 | 1.40 | 0.20 | 0.25 | 3.22- 1.65 |
| | H/H LOW | 35 | 6845 | 6845 | 96.19 | 99.14 | 93.55 | 0.00 | 2.76 | 0.00 | 0.19 | 0.00- 2.95 |
| | H/H LOW | 36 | 6846 | 6846 | 99.14 | 101.29 | 90.23 | 1.86 | 0.08 | 0.16 | 0.05 | 2.02- 0.13 |
| | PH | 37 | 6849 | 6849 | 121.35 | 122.85 | 98.66 | 1.48 | 0.00 | 0.02 | 0.00 | 1.50- 0.00 |
| | G | 38 | 6852 | 6853 | 192.62 | 195.50 | 93.05 | 2.28 | 0.40 | 0.20 | 0.00 | 2.48- 0.40 |
| | G | 39 | 6854 | 6854 | 195.50 | 197.55 | 89.75 | 0.28 | 1.56 | 0.21 | 0.00 | 0.49- 1.56 |
| | I | 217 | 6841 | 6841 | 77.75 | 80.82 | 70.35 | 1.63 | 0.53 | 0.72 | 0.19 | 2.35- 0.72 |
| | H | 218 | 6844 | 6844 | 91.32 | 96.19 | 90.75 | 3.02 | 1.40 | 0.20 | 0.25 | 3.22- 1.65 |
| | H (low) | 219 | 6846 | 6846 | 99.14 | 101.29 | 90.23 | 1.86 | 0.08 | 0.16 | 0.05 | 2.02- 0.13 |
| | Ph | 220 | 6849 | 6849 | 121.35 | 122.85 | 98.66 | 1.48 | 0.00 | 0.02 | 0.00 | 1.50- 0.00 |
| | G | 221 | 6852 | 6853 | 192.62 | 195.50 | 93.05 | 2.28 | 0.40 | 0.20 | 0.00 | 2.48- 0.40 |
| | I | 412 | 6841 | 6841 | 77.75 | 80.82 | 70.35 | 1.63 | 0.53 | 0.72 | 0.19 | 2.35- 0.72 |
| | H | 413 | 6844 | 6844 | 91.32 | 96.19 | 90.75 | 3.02 | 1.40 | 0.20 | 0.25 | 3.22- 1.65 |
| | H (low) | 414 | 6846 | 6846 | 99.14 | 101.29 | 90.23 | 1.86 | 0.08 | 0.16 | 0.05 | 2.02- 0.13 |
| | Ph | 415 | 6849 | 6849 | 121.35 | 122.85 | 98.66 | 1.48 | 0.00 | 0.02 | 0.00 | 1.50- 0.00 |
| | G | 416 | 6852 | 6853 | 192.62 | 195.50 | 93.05 | 2.28 | 0.40 | 0.20 | 0.00 | 2.48- 0.40 |
| DDH87008 | I OVT | 40 | 6824 | 6826 | 9.50 | 18.76 | 63.71 | 4.50 | 1.40 | 0.04 | 3.32 | 4.54- 4.72 |

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GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

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| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|-------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| | I | 41 | 6829 | 6829 | 119.71 | 122.45 | 88.68 | 2.23 | 0.20 | 0.00 | 0.31 | 2.23- 0.51 |
| | I | 42 | 6830 | 6830 | 122.45 | 126.75 | 59.06 | 2.44 | 0.10 | 1.76 | 0.00 | 4.20- 0.10 |
| | I OVT | 43 | 6833 | 6833 | 165.78 | 173.78 | 100.00 | 8.00 | 0.00 | 0.00 | 0.00 | 8.00- 0.00 |
| | I OVT | 44 | 6834 | 6834 | 173.78 | 184.08 | 80.38 | 8.28 | 0.00 | 2.02 | 0.00 | 10.30- 0.00 |
| | I OVT | 45 | 6835 | 6835 | 184.08 | 191.67 | 61.26 | 3.84 | 0.81 | 2.67 | 0.27 | 6.51- 1.08 |
| | I | 222 | 6829 | 6829 | 119.71 | 122.45 | 88.68 | 2.23 | 0.20 | 0.00 | 0.31 | 2.23- 0.51 |
| | I | 223 | 6830 | 6830 | 122.45 | 126.75 | 59.06 | 2.44 | 0.10 | 1.76 | 0.00 | 4.20- 0.10 |
| | I | 417 | 6829 | 6830 | 119.71 | 126.75 | 70.59 | 4.67 | 0.30 | 1.76 | 0.31 | 6.43- 0.61 |
| DDH87009 | | | | | | | | | | | | |
| | I | 46 | 6857 | 6857 | 42.22 | 47.53 | 32.01 | 1.41 | 0.29 | 3.47 | 0.14 | 4.88- 0.43 |
| | H | 47 | 6860 | 6860 | 98.57 | 100.33 | 45.45 | 0.51 | 0.29 | 0.89 | 0.07 | 1.40- 0.36 |
| | H | 48 | 6861 | 6861 | 100.33 | 101.61 | 96.09 | 0.00 | 1.23 | 0.00 | 0.05 | 0.00- 1.28 |
| | H | 49 | 6862 | 6862 | 101.61 | 103.40 | 64.24 | 1.00 | 0.15 | 0.57 | 0.07 | 1.57- 0.22 |
| | PH | 50 | 6865 | 6865 | 118.31 | 119.08 | 72.72 | 0.02 | 0.54 | 0.21 | 0.00 | 0.23- 0.54 |
| | PH | 51 | 6866 | 6866 | 119.08 | 120.70 | 62.34 | 1.01 | 0.00 | 0.61 | 0.00 | 1.62- 0.00 |
| | H | 224 | 6862 | 6862 | 101.61 | 103.40 | 64.24 | 1.00 | 0.15 | 0.57 | 0.07 | 1.57- 0.22 |
| | Ph | 225 | 6866 | 6866 | 119.08 | 120.70 | 62.34 | 1.01 | 0.00 | 0.61 | 0.00 | 1.62- 0.00 |
| | H | 418 | 6862 | 6862 | 101.61 | 103.40 | 64.24 | 1.00 | 0.15 | 0.57 | 0.07 | 1.57- 0.22 |
| | Ph | 419 | 6866 | 6866 | 119.08 | 120.70 | 62.34 | 1.01 | 0.00 | 0.61 | 0.00 | 1.62- 0.00 |
| DDH87010 | | | | | | | | | | | | |
| | H | 52 | 6869 | 6869 | 28.85 | 31.98 | 43.45 | 1.08 | 0.28 | 1.77 | 0.00 | 2.85- 0.28 |
| | H | 53 | 6870 | 6870 | 31.98 | 34.39 | 96.68 | 2.17 | 0.16 | 0.08 | 0.00 | 2.25- 0.16 |
| | H | 226 | 6869 | 6870 | 28.85 | 34.39 | 66.60 | 3.25 | 0.44 | 1.85 | 0.00 | 5.10- 0.44 |
| | H | 420 | 6869 | 6870 | 28.85 | 34.39 | 66.60 | 3.25 | 0.44 | 1.85 | 0.00 | 5.10- 0.44 |
| DDH87011 | | | | | | | | | | | | |
| | H | 54 | 6873 | 6873 | 28.85 | 32.00 | 55.87 | 1.24 | 0.52 | 1.39 | 0.00 | 2.63- 0.52 |
| | H | 55 | 6874 | 6874 | 32.00 | 34.39 | 72.80 | 1.59 | 0.15 | 0.65 | 0.00 | 2.24- 0.15 |
| | PH | 56 | 6877 | 6877 | 68.53 | 69.10 | 100.00 | 0.38 | 0.19 | 0.00 | 0.00 | 0.38- 0.19 |
| | H | 227 | 6873 | 6874 | 28.85 | 34.39 | 63.17 | 2.83 | 0.67 | 2.04 | 0.00 | 4.87- 0.67 |

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GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

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| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| DDH87012 | H | 421 | 6873 | 6874 | 28.85 | 34.39 | 63.17 | 2.83 | 0.67 | 2.04 | 0.00 | 4.87- 0.67 |
| | I | 57 | 6880 | 6880 | 74.45 | 76.05 | 60.00 | 0.89 | 0.07 | 0.46 | 0.18 | 1.35- 0.25 |
| | H | 58 | 6883 | 6883 | 119.45 | 122.05 | 70.00 | 1.39 | 0.43 | 0.46 | 0.32 | 1.85- 0.75 |
| | H | 59 | 6884 | 6884 | 122.05 | 125.00 | 78.64 | 2.20 | 0.12 | 0.56 | 0.07 | 2.76- 0.19 |
| | I | 228 | 6880 | 6880 | 74.45 | 76.05 | 60.00 | 0.89 | 0.07 | 0.46 | 0.18 | 1.35- 0.25 |
| | H | 229 | 6883 | 6884 | 119.45 | 125.00 | 74.59 | 3.59 | 0.55 | 1.02 | 0.39 | 4.61- 0.94 |
| | I | 422 | 6880 | 6880 | 74.45 | 76.05 | 60.00 | 0.89 | 0.07 | 0.46 | 0.18 | 1.35- 0.25 |
| DDH87013 | H | 423 | 6883 | 6884 | 119.45 | 125.00 | 74.59 | 3.59 | 0.55 | 1.02 | 0.39 | 4.61- 0.94 |
| | J | 60 | 6892 | 6892 | 14.36 | 15.36 | 88.00 | 0.81 | 0.07 | 0.12 | 0.00 | 0.93- 0.07 |
| | I | 61 | 6895 | 6895 | 61.83 | 63.27 | 88.19 | 1.01 | 0.26 | 0.17 | 0.00 | 1.18- 0.26 |
| | I | 62 | 6896 | 6896 | 63.27 | 67.43 | 90.38 | 3.76 | 0.00 | 0.40 | 0.00 | 4.16- 0.00 |
| | H | 63 | 6899 | 6899 | 97.42 | 99.06 | 76.82 | 1.26 | 0.00 | 0.38 | 0.00 | 1.64- 0.00 |
| | PH | 64 | 7052 | 7052 | 128.87 | 130.45 | 79.74 | 1.19 | 0.07 | 0.32 | 0.00 | 1.51- 0.07 |
| | J | 230 | 6892 | 6892 | 14.36 | 15.36 | 88.00 | 0.81 | 0.07 | 0.12 | 0.00 | 0.93- 0.07 |
| | I | 231 | 6895 | 6895 | 61.83 | 63.27 | 88.19 | 1.01 | 0.26 | 0.17 | 0.00 | 1.18- 0.26 |
| | I | 232 | 6896 | 6896 | 63.27 | 67.43 | 90.38 | 3.76 | 0.00 | 0.40 | 0.00 | 4.16- 0.00 |
| | H | 233 | 6899 | 6899 | 97.42 | 99.06 | 76.82 | 1.26 | 0.00 | 0.38 | 0.00 | 1.64- 0.00 |
| | Ph | 234 | 7052 | 7052 | 128.87 | 130.45 | 79.74 | 1.19 | 0.07 | 0.32 | 0.00 | 1.51- 0.07 |
| | J | 424 | 6892 | 6892 | 14.36 | 15.36 | 88.00 | 0.81 | 0.07 | 0.12 | 0.00 | 0.93- 0.07 |
| | I | 425 | 6895 | 6896 | 61.83 | 67.43 | 89.82 | 4.77 | 0.26 | 0.57 | 0.00 | 5.34- 0.26 |
| | H | 426 | 6899 | 6899 | 97.42 | 99.06 | 76.82 | 1.26 | 0.00 | 0.38 | 0.00 | 1.64- 0.00 |
| Ph | 427 | 7052 | 7052 | 128.87 | 130.45 | 79.74 | 1.19 | 0.07 | 0.32 | 0.00 | 1.51- 0.07 | |
| DDH87014 | K | 65 | 7055 | 7055 | 30.60 | 32.67 | 40.57 | 0.76 | 0.08 | 1.23 | 0.00 | 1.99- 0.08 |
| | I | 66 | 7057 | 7057 | 57.40 | 61.63 | 58.15 | 2.21 | 0.25 | 1.49 | 0.28 | 3.70- 0.53 |
| | I | 235 | 7057 | 7057 | 57.40 | 61.63 | 58.15 | 2.21 | 0.25 | 1.49 | 0.28 | 3.70- 0.53 |
| | I | 428 | 7057 | 7057 | 57.40 | 61.63 | 58.15 | 2.21 | 0.25 | 1.49 | 0.28 | 3.70- 0.53 |

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 11/MAR/88 COMPOSITE SAMPLE SUMMARY PAGE 6
 APPARENT THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| | | 7092 | | | | | 0.00 | | | | | - |
| | | 7094 | | | | | | | | | | - |
| DDH87015 | | | | | | | | | | | | |
| | L | 67 | 7090 | 7090 | 8.80 | 14.72 | 57.43 | 2.56 | 0.84 | 2.34 | 0.18 | 4.90- 1.02 |
| | K | 68 | 7093 | 7093 | 25.51 | 27.68 | 80.64 | 1.53 | 0.22 | 0.30 | 0.12 | 1.83- 0.34 |
| | H | 69 | 7096 | 7096 | 81.80 | 85.59 | 74.14 | 1.88 | 0.93 | 0.98 | 0.00 | 2.86- 0.93 |
| | L | 236 | 7090 | 7090 | 8.80 | 14.72 | 57.43 | 2.56 | 0.84 | 2.34 | 0.18 | 4.90- 1.02 |
| | K | 237 | 7093 | 7093 | 25.51 | 27.68 | 80.64 | 1.53 | 0.22 | 0.30 | 0.12 | 1.83- 0.34 |
| | H | 238 | 7096 | 7096 | 81.80 | 85.59 | 74.14 | 1.88 | 0.93 | 0.98 | 0.00 | 2.86- 0.93 |
| | L | 429 | 7090 | 7090 | 8.80 | 14.72 | 57.43 | 2.56 | 0.84 | 2.34 | 0.18 | 4.90- 1.02 |
| | K | 430 | 7093 | 7093 | 25.51 | 27.68 | 80.64 | 1.53 | 0.22 | 0.30 | 0.12 | 1.83- 0.34 |
| | H | 431 | 7096 | 7096 | 81.80 | 85.59 | 74.14 | 1.88 | 0.93 | 0.98 | 0.00 | 2.86- 0.93 |
| DDH87016 | | | | | | | | | | | | |
| | I | 70 | 6887 | 6887 | 48.60 | 50.16 | 76.92 | 1.17 | 0.03 | 0.36 | 0.00 | 1.53- 0.03 |
| | I | 71 | 6888 | 6888 | 50.16 | 51.80 | 82.31 | 1.27 | 0.08 | 0.24 | 0.05 | 1.51- 0.13 |
| | I | 72 | 6889 | 6889 | 51.80 | 53.55 | 100.00 | 1.75 | 0.00 | 0.00 | 0.00 | 1.75- 0.00 |
| | I | 239 | 6887 | 6887 | 48.60 | 50.16 | 76.92 | 1.17 | 0.03 | 0.36 | 0.00 | 1.53- 0.03 |
| | I | 240 | 6888 | 6888 | 50.16 | 51.80 | 82.31 | 1.27 | 0.08 | 0.24 | 0.05 | 1.51- 0.13 |
| | I | 241 | 6889 | 6889 | 51.80 | 53.55 | 100.00 | 1.75 | 0.00 | 0.00 | 0.00 | 1.75- 0.00 |
| | I | 432 | 6887 | 6889 | 48.60 | 53.55 | 86.86 | 4.19 | 0.11 | 0.60 | 0.05 | 4.79- 0.16 |
| DDH87017 | | | | | | | | | | | | |
| | K | 73 | 7068 | 7068 | 25.34 | 28.80 | 50.00 | 1.30 | 0.43 | 1.61 | 0.12 | 2.91- 0.55 |
| | K | 74 | 7069 | 7069 | 28.80 | 31.02 | 72.97 | 0.53 | 1.09 | 0.38 | 0.22 | 0.91- 1.31 |
| | I | 75 | 7072 | 7072 | 60.67 | 62.93 | 77.43 | 1.60 | 0.15 | 0.51 | 0.00 | 2.11- 0.15 |
| | H/I | 76 | 7075 | 7075 | 95.37 | 96.92 | 63.22 | 0.83 | 0.15 | 0.52 | 0.05 | 1.35- 0.20 |
| | K | 242 | 7068 | 7068 | 25.34 | 28.80 | 50.00 | 1.30 | 0.43 | 1.61 | 0.12 | 2.91- 0.55 |
| | I | 243 | 7072 | 7072 | 60.67 | 62.93 | 77.43 | 1.60 | 0.15 | 0.51 | 0.00 | 2.11- 0.15 |
| | H/I | 244 | 7075 | 7075 | 95.37 | 96.92 | 63.22 | 0.83 | 0.15 | 0.52 | 0.05 | 1.35- 0.20 |
| | K | 433 | 7068 | 7068 | 25.34 | 28.80 | 50.00 | 1.30 | 0.43 | 1.61 | 0.12 | 2.91- 0.55 |

GULF CANADA CORPORATION - COAL DIVISION
 11/MAR/88 COMPOSITE SAMPLE SUMMARY PAGE 7
 APPARENT THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|-------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| DDH87018 | I | 434 | 7072 | 7072 | 60.67 | 62.93 | 77.43 | 1.60 | 0.15 | 0.51 | 0.00 | 2.11- 0.15 |
| | H/I | 435 | 7075 | 7075 | 95.37 | 96.92 | 63.22 | 0.83 | 0.15 | 0.52 | 0.05 | 1.35- 0.20 |
| | ? | 77 | 7061 | 7061 | 29.18 | 30.35 | 40.17 | 0.45 | 0.02 | 0.70 | 0.00 | 1.15- 0.02 |
| | ? | 78 | 7064 | 7064 | 53.78 | 55.35 | 73.88 | 1.03 | 0.13 | 0.35 | 0.06 | 1.38- 0.19 |
| | ? | 79 | 7065 | 7065 | 55.35 | 57.86 | 76.09 | 0.26 | 1.65 | 0.60 | 0.00 | 0.86- 1.65 |
| DDH87019 | ? | 245 | 7064 | 7064 | 53.78 | 55.35 | 73.88 | 1.03 | 0.13 | 0.35 | 0.06 | 1.38- 0.19 |
| | ? | 436 | 7064 | 7064 | 53.78 | 55.35 | 73.88 | 1.03 | 0.13 | 0.35 | 0.06 | 1.38- 0.19 |
| | I FLD | 80 | 6902 | 6902 | 114.39 | 117.87 | 83.04 | 2.85 | 0.04 | 0.59 | 0.00 | 3.44- 0.04 |
| | I FLD | 81 | 6903 | 6903 | 117.87 | 134.92 | 57.71 | 8.39 | 1.45 | 6.32 | 0.89 | 14.71- 2.34 |
| | H/I | 82 | 7099 | 7099 | 166.02 | 167.92 | 41.57 | 0.65 | 0.14 | 1.11 | 0.00 | 1.76- 0.14 |
| DDH87020 | H FLD | 83 | 6906 | 6906 | 197.64 | 200.52 | 73.95 | 1.03 | 1.10 | 0.75 | 0.00 | 1.78- 1.10 |
| | I | 246 | 6902 | 6902 | 114.39 | 117.87 | 83.04 | 2.85 | 0.04 | 0.59 | 0.00 | 3.44- 0.04 |
| | I | 247 | 6903 | 6903 | 117.87 | 134.92 | 57.71 | 8.39 | 1.45 | 6.32 | 0.89 | 14.71- 2.34 |
| | H | 248 | 6906 | 6906 | 197.64 | 200.52 | 73.95 | 1.03 | 1.10 | 0.75 | 0.00 | 1.78- 1.10 |
| | I | 437 | 6902 | 6903 | 114.39 | 134.92 | 62.00 | 11.24 | 1.49 | 6.91 | 0.89 | 18.15- 2.38 |
| | H | 438 | 6906 | 6906 | 197.64 | 200.52 | 73.95 | 1.03 | 1.10 | 0.75 | 0.00 | 1.78- 1.10 |
| | ? | 84 | 7078 | 7078 | 66.57 | 68.06 | 65.10 | 0.61 | 0.36 | 0.52 | 0.00 | 1.13- 0.36 |
| | M | 85 | 7081 | 7081 | 82.46 | 86.32 | 70.20 | 1.10 | 1.61 | 1.04 | 0.11 | 2.14- 1.72 |
| DDH87020 | L | 86 | 7084 | 7084 | 95.90 | 100.70 | 70.00 | 2.54 | 0.82 | 1.34 | 0.10 | 3.88- 0.92 |
| | K/L | 87 | 7087 | 7087 | 147.85 | 153.68 | 78.55 | 3.06 | 1.52 | 1.25 | 0.00 | 4.31- 1.52 |
| | M | 249 | 7081 | 7081 | 82.46 | 86.32 | 70.20 | 1.10 | 1.61 | 1.04 | 0.11 | 2.14- 1.72 |
| | L | 250 | 7084 | 7084 | 95.90 | 100.70 | 70.00 | 2.54 | 0.82 | 1.34 | 0.10 | 3.88- 0.92 |
| | K/L | 251 | 7087 | 7087 | 147.85 | 153.68 | 78.55 | 3.06 | 1.52 | 1.25 | 0.00 | 4.31- 1.52 |
| | M | 439 | 7081 | 7081 | 82.46 | 86.32 | 70.20 | 1.10 | 1.61 | 1.04 | 0.11 | 2.14- 1.72 |
| | L | 440 | 7084 | 7084 | 95.90 | 100.70 | 70.00 | 2.54 | 0.82 | 1.34 | 0.10 | 3.88- 0.92 |
| | K/L | 441 | 7087 | 7087 | 147.85 | 153.68 | 78.55 | 3.06 | 1.52 | 1.25 | 0.00 | 4.31- 1.52 |

11/MAR/88

GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

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| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|---------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| DDH87021 | | | | | | | | | | | | |
| | I | 88 | 6952 | 6952 | 28.93 | 31.60 | 59.55 | 1.16 | 0.43 | 1.08 | 0.00 | 2.24- 0.43 |
| | I | 89 | 6953 | 6953 | 31.60 | 32.96 | 100.00 | 1.33 | 0.03 | 0.00 | 0.00 | 1.33- 0.03 |
| | H | 90 | 6956 | 6956 | 84.27 | 88.65 | 53.19 | 1.52 | 0.81 | 1.91 | 0.14 | 3.43- 0.95 |
| | H | 91 | 6957 | 6957 | 88.65 | 90.53 | 100.00 | 0.00 | 1.88 | 0.00 | 0.00 | 0.00- 1.88 |
| | H | 92 | 6958 | 6958 | 90.53 | 92.78 | 32.88 | 0.70 | 0.04 | 1.38 | 0.13 | 2.08- 0.17 |
| | I | 252 | 6952 | 6952 | 28.93 | 31.60 | 59.55 | 1.16 | 0.43 | 1.08 | 0.00 | 2.24- 0.43 |
| | I | 253 | 6953 | 6953 | 31.60 | 32.96 | 100.00 | 1.33 | 0.03 | 0.00 | 0.00 | 1.33- 0.03 |
| | H | 254 | 6956 | 6958 | 84.27 | 92.78 | 46.30 | 2.22 | 0.85 | 3.29 | 0.27 | 5.51- 1.12 |
| | I | 442 | 6952 | 6953 | 28.93 | 32.96 | 73.20 | 2.49 | 0.46 | 1.08 | 0.00 | 3.57- 0.46 |
| DDH87022 | | | | | | | | | | | | |
| | P | 93 | 6938 | 6938 | 15.23 | 15.65 | 85.71 | 0.36 | 0.00 | 0.06 | 0.00 | 0.42- 0.00 |
| | O | 94 | 6941 | 6941 | 62.87 | 65.53 | 85.33 | 1.74 | 0.53 | 0.34 | 0.05 | 2.08- 0.58 |
| | N | 95 | 6944 | 6944 | 98.16 | 101.45 | 95.44 | 2.93 | 0.21 | 0.15 | 0.00 | 3.08- 0.21 |
| | M/N | 96 | 6947 | 6947 | 124.93 | 127.09 | 80.09 | 1.43 | 0.30 | 0.35 | 0.08 | 1.78- 0.38 |
| | ? | 97 | 7009 | 7009 | 137.35 | 138.13 | 57.69 | 0.40 | 0.05 | 0.33 | 0.00 | 0.73- 0.05 |
| DDH87023 | | | | | | | | | | | | |
| | K/L | 98 | 7006 | 7006 | 20.47 | 22.25 | 69.10 | 0.85 | 0.38 | 0.46 | 0.09 | 1.31- 0.47 |
| | K PART | 99 | 6950 | 6950 | 104.42 | 105.10 | 54.41 | 0.22 | 0.15 | 0.31 | 0.00 | 0.53- 0.15 |
| | K/L OVT | 100 | 7003 | 7003 | 177.95 | 180.29 | 46.15 | 0.61 | 0.47 | 1.26 | 0.00 | 1.87- 0.47 |
| DDH87024 | | | | | | | | | | | | |
| | O | 101 | 6908 | 6908 | 15.17 | 16.19 | 44.11 | 0.45 | 0.00 | 0.57 | 0.00 | 1.02- 0.00 |
| | M/N | 102 | 6911 | 6911 | 41.87 | 43.10 | 75.60 | 0.80 | 0.13 | 0.30 | 0.00 | 1.10- 0.13 |
| | ? | 103 | 6914 | 6914 | 70.09 | 71.35 | 82.53 | 1.04 | 0.00 | 0.22 | 0.00 | 1.26- 0.00 |
| | M | 104 | 6917 | 6917 | 86.45 | 89.02 | 73.92 | 1.83 | 0.07 | 0.60 | 0.07 | 2.43- 0.14 |
| | L | 105 | 6920 | 6920 | 117.50 | 119.80 | 72.17 | 1.61 | 0.05 | 0.64 | 0.00 | 2.25- 0.05 |
| | K/L | 106 | 6926 | 6927 | 152.00 | 155.21 | 79.12 | 2.03 | 0.51 | 0.00 | 0.67 | 2.03- 1.18 |
| DDH87025 | | | | | | | | | | | | |
| | K | 107 | 6930 | 6930 | 35.69 | 36.89 | 100.00 | 0.42 | 0.78 | 0.00 | 0.00 | 0.42- 0.78 |

11/MAR/88

GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

PAGE 9

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|---------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| DDH87026 | K | 108 | 6931 | 6931 | 36.89 | 41.44 | 91.20 | 3.75 | 0.40 | 0.24 | 0.16 | 3.99- 0.56 |
| | I | 109 | 6934 | 6934 | 102.67 | 105.71 | 97.69 | 2.67 | 0.30 | 0.07 | 0.00 | 2.74- 0.30 |
| | I | 110 | 6935 | 6935 | 105.71 | 107.97 | 91.15 | 2.06 | 0.00 | 0.20 | 0.00 | 2.26- 0.00 |
| | H OVT | 111 | 6961 | 6961 | 18.93 | 23.05 | 58.98 | 2.23 | 0.20 | 1.33 | 0.36 | 3.56- 0.56 |
| | H/I OVT | 112 | 6964 | 6964 | 48.69 | 49.35 | 74.24 | 0.49 | 0.00 | 0.17 | 0.00 | 0.66- 0.00 |
| | I PART | 113 | 6967 | 6967 | 79.06 | 80.17 | 88.28 | 0.96 | 0.02 | 0.13 | 0.00 | 1.09- 0.02 |
| DDH87027 | H | 114 | 6970 | 6970 | 138.26 | 139.97 | 73.68 | 0.72 | 0.54 | 0.45 | 0.00 | 1.17- 0.54 |
| | PH | 115 | 6973 | 6973 | 172.84 | 173.78 | 84.04 | 0.69 | 0.10 | 0.00 | 0.15 | 0.69- 0.25 |
| | H | 116 | 7045 | 7045 | 31.33 | 33.55 | 41.44 | 0.65 | 0.27 | 1.30 | 0.00 | 1.95- 0.27 |
| DDH87028 | H | 117 | 7046 | 7046 | 33.55 | 37.37 | 76.43 | 0.60 | 2.32 | 0.54 | 0.36 | 1.14- 2.68 |
| | H | 118 | 7047 | 7047 | 37.37 | 40.32 | 72.20 | 1.79 | 0.34 | 0.73 | 0.09 | 2.52- 0.43 |
| | H-1 | 119 | 6998 | 6998 | 49.79 | 51.30 | 64.90 | 0.70 | 0.28 | 0.53 | 0.00 | 1.23- 0.28 |
| | PH | 120 | 7050 | 7050 | 67.65 | 68.87 | 51.63 | 0.63 | 0.00 | 0.59 | 0.00 | 1.22- 0.00 |
| | N | 121 | 7012 | 7012 | 40.90 | 41.81 | 89.01 | 0.81 | 0.00 | 0.10 | 0.00 | 0.91- 0.00 |
| DDH87029 | M/N | 122 | 7015 | 7015 | 61.55 | 62.43 | 84.09 | 0.40 | 0.34 | 0.09 | 0.05 | 0.49- 0.39 |
| | ? | 123 | 7018 | 7018 | 76.43 | 77.00 | 100.00 | 0.57 | 0.00 | 0.00 | 0.00 | 0.57- 0.00 |
| | M | 124 | 7021 | 7021 | 89.74 | 91.30 | 92.94 | 1.14 | 0.31 | 0.11 | 0.00 | 1.25- 0.31 |
| | L | 125 | 7024 | 7024 | 108.67 | 109.50 | 100.00 | 0.77 | 0.06 | 0.00 | 0.00 | 0.77- 0.06 |
| | ? | 126 | 7027 | 7027 | 123.47 | 123.77 | 100.00 | 0.26 | 0.04 | 0.00 | 0.00 | 0.26- 0.04 |
| | K/L | 127 | 7030 | 7030 | 139.94 | 150.95 | 89.28 | 3.97 | 5.86 | 0.47 | 0.71 | 4.44- 6.57 |
| | ? | 128 | 7033 | 7033 | 190.21 | 191.40 | 100.00 | 0.76 | 0.43 | 0.00 | 0.00 | 0.76- 0.43 |
| | ? | 129 | 7034 | 7034 | 191.40 | 193.80 | 87.91 | 2.11 | 0.00 | 0.29 | 0.00 | 2.40- 0.00 |
| | K | 130 | 7037 | 7039 | 200.09 | 203.79 | 86.75 | 2.61 | 0.60 | 0.41 | 0.08 | 3.02- 0.68 |
| | ? | 131 | 7042 | 7042 | 213.22 | 213.87 | 84.61 | 0.55 | 0.00 | 0.00 | 0.10 | 0.55- 0.10 |
| | H | 132 | 6976 | 6976 | 20.65 | 24.28 | 61.70 | 1.98 | 0.26 | 1.31 | 0.08 | 3.29- 0.34 |

11/MAR/88

GULF CANADA CORPORATION - COAL DIVISION
 COMPOSITE SAMPLE SUMMARY
 APPARENT THICKNESS
 KLAPPAN PROJECT

PAGE 10

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | TOTAL COAL-ROCK |
|-------------|----------|---------|-------------|-----------|------------|----------|-------------|----------------|----------------|--------------|--------------|-----------------|
| | H REP | 133 | 6979 | 6979 | 49.30 | 50.81 | 46.35 | 0.57 | 0.13 | 0.74 | 0.07 | 1.31- 0.20 |
| | H/I OVT | 134 | 6982 | 6982 | 83.15 | 84.70 | 52.25 | 0.69 | 0.12 | 0.68 | 0.06 | 1.37- 0.18 |
| | H/I | 135 | 6985 | 6985 | 109.84 | 110.60 | 88.15 | 0.62 | 0.05 | 0.00 | 0.09 | 0.62- 0.14 |
| | H | 136 | 6988 | 6988 | 138.28 | 139.62 | 73.13 | 0.84 | 0.14 | 0.10 | 0.26 | 0.94- 0.40 |
| | PH | 137 | 6991 | 6991 | 161.31 | 162.72 | 95.03 | 1.23 | 0.11 | 0.07 | 0.00 | 1.30- 0.11 |
| | F | 138 | 6994 | 6994 | 204.73 | 206.47 | 98.27 | 1.29 | 0.42 | 0.03 | 0.00 | 1.32- 0.42 |
| DDH87030 | | | | | | | | | | | | |
| | M | 139 | 5868 | 5868 | 34.42 | 36.68 | 78.31 | 1.38 | 0.39 | 0.49 | 0.00 | 1.87- 0.39 |
| | L | 140 | 5852 | 5852 | 59.98 | 61.96 | 66.66 | 1.32 | 0.00 | 0.66 | 0.00 | 1.98- 0.00 |
| | ? | 141 | 5855 | 5855 | 75.25 | 75.73 | 97.91 | 0.47 | 0.00 | 0.01 | 0.00 | 0.48- 0.00 |
| | K/L | 142 | 5858 | 5859 | 86.60 | 91.62 | 75.69 | 1.66 | 2.14 | 0.78 | 0.44 | 2.44- 2.58 |
| | K | 143 | 5862 | 5862 | 185.12 | 189.15 | 53.59 | 1.71 | 0.45 | 1.48 | 0.39 | 3.19- 0.84 |
| | I | 144 | 5865 | 5865 | 241.29 | 244.57 | 71.64 | 2.05 | 0.30 | 0.93 | 0.00 | 2.98- 0.30 |
| DDH87031 | | | | | | | | | | | | |
| | M | 145 | 5805 | 5805 | 30.45 | 32.72 | 66.51 | 1.45 | 0.06 | 0.76 | 0.00 | 2.21- 0.06 |
| | L | 146 | 5808 | 5808 | 46.37 | 47.91 | 38.96 | 0.60 | 0.00 | 0.94 | 0.00 | 1.54- 0.00 |
| | ? | 147 | 5811 | 5811 | 60.11 | 60.70 | 100.00 | 0.50 | 0.09 | 0.00 | 0.00 | 0.50- 0.09 |
| | ? | 148 | 5814 | 5814 | 66.46 | 67.25 | 93.67 | 0.52 | 0.22 | 0.05 | 0.00 | 0.57- 0.22 |
| | K/L PART | 149 | 5817 | 5817 | 81.71 | 82.53 | 93.90 | 0.77 | 0.00 | 0.05 | 0.00 | 0.82- 0.00 |
| | L REP | 150 | 5820 | 5820 | 94.89 | 96.59 | 85.29 | 0.82 | 0.63 | 0.25 | 0.00 | 1.07- 0.63 |
| | K/L REP | 151 | 5823 | 5823 | 132.80 | 136.92 | 72.81 | 2.68 | 0.32 | 0.80 | 0.32 | 3.48- 0.64 |
| | K | 152 | 5827 | 5829 | 182.60 | 187.11 | 79.37 | 2.82 | 0.76 | 0.61 | 0.32 | 3.43- 1.08 |
| DDH87032 | | | | | | | | | | | | |
| | I | 153 | 5801 | 5801 | 44.46 | 48.76 | 51.39 | 1.93 | 0.28 | 1.80 | 0.29 | 3.73- 0.57 |
| | I | 154 | 5802 | 5802 | 48.76 | 50.63 | 92.51 | 1.73 | 0.00 | 0.14 | 0.00 | 1.87- 0.00 |
| DDH87033 | | | | | | | | | | | | |
| | K | 155 | 5874 | 5874 | 35.96 | 40.82 | 75.51 | 3.38 | 0.29 | 1.06 | 0.13 | 4.44- 0.42 |
| | K | 156 | 5875 | 5875 | 40.82 | 41.89 | 90.65 | 0.00 | 0.97 | 0.00 | 0.10 | 0.00- 1.07 |
| | K | 157 | 5876 | 5876 | 41.89 | 42.84 | 68.42 | 0.62 | 0.03 | 0.30 | 0.00 | 0.92- 0.03 |

GULF CANADA CORPORATION - COAL DIVISION
 11/MAR/88 COMPOSITE SAMPLE SUMMARY PAGE 11
 APPARENT THICKNESS
 KLAPPAN PROJECT

| DATA SOURCE | SEAM | COMP ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | PERCENT REC | RECOVERED COAL | ROCK | MISSING COAL | ROCK | TOTAL COAL-ROCK |
|-------------|------|---------|-------------|-----------|------------|----------|-------------|----------------|------|--------------|------|-----------------|
| | I | 158 | 5879 | 5879 | 113.04 | 114.77 | 67.63 | 1.14 | 0.03 | 0.56 | 0.00 | 1.70- 0.03 |
| | I | 159 | 5880 | 5880 | 114.77 | 117.37 | 64.61 | 1.28 | 0.40 | 0.83 | 0.09 | 2.11- 0.49 |
| | I | 160 | 5881 | 5881 | 117.37 | 118.97 | 100.00 | 1.60 | 0.00 | 0.00 | 0.00 | 1.60- 0.00 |
| DDH87034 | I | 161 | 5871 | 5871 | 45.50 | 52.46 | 44.68 | 2.84 | 0.27 | 3.68 | 0.17 | 6.52- 0.44 |

KPNLRDDH87001

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87001

DATE - 03/04/88

- HISTORY -

START DATE - 08/25/87

END DATE - 08/26/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SRIVASTAVA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - VERTICAL HOLE, SITE A, SEAM I,H.

- LOCATION -

PROVINCE - BC

ELEVATION - 1507.48

ZONE - 9

NORTHING - 6345007.34

EASTING - 508063.36

LICENCE/LEASE NUMBER -

LATITUDE - 571500

LONGITUDE - 1285159

- ORIENTATION -

LENGTH - 132.03

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 7.62

AQUIFER DEPTHS (M) - 0.00

0.00

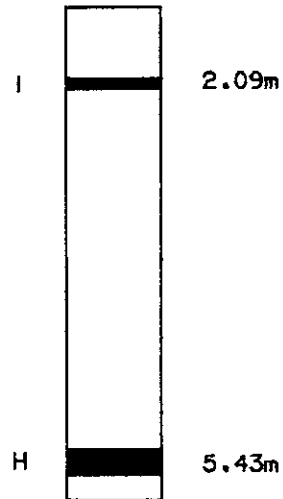
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87001**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: (205057)880072012.L6



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|---------|---------|-----------|--------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 7.62 | 7.62 | 67 | | | CASING | |
| 1 | 7.62 | 7.77 | 0.15 | 67 | | | SANDSTONE | SLTY.VFG.MEL.GY.VBRKN HEAVY WTHD. IRON STAINING. CASING DEPTH = 7.62 M. |
| 1 | 7.77 | 8.57 | 0.80 | 67 | | | ROCK LOSS | |
| 1 | 8.57 | 9.74 | 1.17 | *67 | | | SANDSTONE | SLTY.VFG.MEL.GY.LAM.BRKN SLTY INTERLAM. THROUGHOUT. |
| 1 | 9.74 | 10.02 | 0.28 | 66 | | | SANDSTONE | SLTY.VFG.MEL.GY.LAM.BRKN AS ABOVE. |
| 2 | 10.02 | 11.21 | 1.19 | *65 | | | SANDSTONE | SLTY.VFG.MEL.GY.LAM.BRKN AS ABOVE. |
| 2 | 11.21 | 11.88 | 0.67 | 66 | | | SANDSTONE | SLTY.VFG.MEL.GY.LAM.BRKN AS ABOVE. |
| 3 | 11.88 | 12.80 | 0.92 | *67 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.LAM.XBDG.BRKN AS ABOVE BUT COLOUR IS LIGHTER GY, X-8D G IS MINOR AND WISPY IN APPEARANCE. |
| 3 | 12.80 | 12.85 | 0.05 | 67 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.LAM.BRKN BRECCIATED, ABUNDANT QTZ, POSSIBLE FAULT. |

* DENOTES MEASURED BCA

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| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|---------|---------|-----------|--------------------------------------------------------------------------------------|
| 3 | 12.85 | 13.12 | 0.27 | 67 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.LAM.BRKN SLTY INTERLAM. QTZ VEINING. |
| 4 | 13.12 | 13.73 | 0.61 | 67 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.LAM.XBDG.VBRKN SLTY INTERLAM. MINOR QTZ VEINING. |
| 4 | 13.73 | 13.83 | 0.10 | 67 | | | ROCK LOSS | |
| 4 | 13.83 | 15.09 | 1.26 | 67 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.LAM.XBDG.VBRKN AS ABOVE. |
| 5 | 15.09 | 15.66 | 0.57 | 68 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.LAM.VBRKN 12 CM INTENSELY QTZ VEINED AT CENTER OF INTERVAL. |
| 5 | 15.66 | 16.00 | 0.34 | 68 | | | ROCK LOSS | |
| 5 | 16.00 | 16.87 | 0.87 | 68 | | | SANDSTONE | VFG.MEL.LT.GY.LAM.SLD MINOR SLTY LAMINATIONS, MINOR QTZ VEINING. |
| 5 | 16.87 | 17.29 | 0.42 | *68 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.MAS.BRKN AS ABOVE, BECOMING TUFFACEOUS. |
| 6 | 17.29 | 17.67 | 0.38 | 64 | | | SANDSTONE | SLTY.VFG.MEL.LT.GY.MAS.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 6 | 17.67 | 17.95 | 0.28 | 61 | | SILTSTONE | M. GY. LAM. SLD FINE INTERLAMINAE. |
| 6 | 17.95 | 18.30 | 0.35 | 58 | | BENTONITE | WH. THNB. VBRKN BENTONITE ABOVE 'Y' SEAM. |
| 6 | 18.30 | 19.24 | 0.94 | *52 | | SILTSTONE | M. GY. MAS. BRKN ABUNDANT PLANT FRAGMENTS. |
| 7 | 19.24 | 19.50 | 0.26 | 47 | 07101 | SILTSTONE | FG. M-DK. GY. MAS. SLD CARB PLANT FRAGMENTS PRESENT. ABUNDANT QTZ STRINGERS & HAIRLINE FRACTURE FILLS |
| 7 | 19.50 | 19.60 | 0.10 | *45 | 07101 | MUDSTONE | SLTY. DK. GY. MAS. SLD ABUNDANT QTZ STRINGERS & HAIRLINE FRACTURE FILLS. CARB PLANT FRAGMENTS PRESENT |
| 7 | 19.60 | 19.84 | 0.24 | 46 | 07102 I | COAL LOSS | |
| 7 | 19.84 | 19.90 | 0.06 | 46 | 07102 I | COAL | C-3. BLK. SLD MINOR C-1 TO C-2 LAMS. SOFT AND CRUMBLE EASILY. |

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| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 7 | 19.90 | 20.07 | 0.17 | 46 | 07102 I | COAL | C-3. BLK. VBRKN POWDERY IN PLACES. SOME C-1 TO C-2 LAMS |
| 7 | 20.07 | 20.97 | 0.90 | 48 | 07102 I | SILTSTONE | FG. M. GY. BRKN SILICEOUS. 20 M SMALL BRECCIA ZONE. V FOSSILIFEROUS. BENT. CHIPS AT TOP OF INTE RVAL. |
| 7 | 20.97 | 21.17 | 0.20 | 50 | 07102 I | COAL | C-4. BLK. PHRD SOME C-6 BANDS. |
| 7 | 21.17 | 21.51 | 0.34 | 51 | 07102 I | ROCK LOSS | |
| 7 | 21.51 | 21.53 | 0.02 | 51 | 07102 I | MUDSTONE | CLYY. M. BN. VBRKN SOFT (CLAY) & PASTY. |
| 7 | 21.53 | 22.18 | 0.65 | 53 | 07102 I | COAL LOSS | |
| 7 | 22.18 | 22.23 | 0.05 | 54 | 07102 I | COAL | C-3. BLK. VBRKN MINOR C-2 BANDS & SPECKS. |
| 7 | 22.23 | 22.35 | 0.12 | 54 | 07102 I | COAL | C-4. BLK. VBRKN SOME C-2 SPECKS. |
| 7 | 22.35 | 22.40 | 0.05 | 54 | 07103 | MUDSTONE | CARB. BLK. MAS. BRKN |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 8 | 22.40 | 22.57 | 0.17 | 55 | 07103 | MUDSTONE | CARB. DK. GY. MAS. BRKN QTZ FILLED VEIN. BLK. |
| 8 | 22.57 | 22.82 | 0.25 | 55 | | SILTSTONE | CLYY. FG. DK. GY. MAS. BRKN QTZ FILLED VEIN (1 CM) -20 DEGREES TO C .A. |
| 8 | 22.82 | 23.32 | 0.50 | 57 | | SILTSTONE | FG. M-DK. GY. MAS. BRKN PLANT FOSSILS. |
| 8 | 23.32 | 23.72 | 0.40 | *58 | | SILTSTONE | SSY. CG. LY-M. GY. MAS. BRKN |
| 8 | 23.72 | 24.37 | 0.65 | 56 | | SANDSTONE | FG. LT. GY. MAS. SLD SOME QTZ FILLED FRACTURES. BRKN. |
| 9 | 24.37 | 25.35 | 0.98 | 54 | | SANDSTONE | FG. WEL. LT. GY. MAS. VBRKN QTZ VEINING. |
| 9 | 25.35 | 26.04 | 0.69 | 51 | | ROCK LOSS | |
| 9 | 26.04 | 26.54 | 0.50 | 49 | | SANDSTONE | FG. WEL. LT. GY. MAS. SLD AS ABOVE W/MINOR PEBBLES. |
| 10 | 26.54 | 27.98 | 1.44 | 46 | | SANDSTONE | PBLY. FG. WEL. LT. GY. MAS. SLD NUMEROUS PEBBLES W/IN, QTZ VEINING. |
| 10 | 27.98 | 28.54 | 0.56 | 43 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN MINOR SLTY WISPS, MINOR QTZ VEINS. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 28.54 | 28.86 | 0.32 | 42 | | SANDSTONE | FG. WEL. LT. GY. MAS. SLD MINOR QTZ VEINS. |
| 11 | 28.86 | 30.51 | 1.65 | 39 | | SANDSTONE | MG. WEL. LT. GY. MAS. SLD MINOR SLTY WISPS, VERY MINOR QTZ VEININ G, MINOR INTERCLASTS OVER 5 CM INTERVAL - CHERT (?) DK GY. |
| 12 | 30.51 | 31.22 | 0.71 | 35 | | SANDSTONE | FG. WEL. LT. GY. MAS. SLD MINOR QTZ VEINING. |
| 12 | 31.22 | 31.78 | 0.56 | 33 | | MUDSTONE | SLTY. M-DK. GY. LAM. BRKN SLTY. LAMINATIONS. |
| 12 | 31.78 | 32.08 | 0.30 | *32 | | MUDSTONE | SLTY. M-DK. GY. LAM. SLD AS ABOVE. LOAD CASTS. INDICATE WAY UP. |
| 13 | 32.08 | 33.55 | 1.47 | *32 | | MUDSTONE | SLTY. M-DK. GY. LAM. SLD AS ABOVE. COLOUR SLIGHTLY DARKER. LOAD CASTS - RIGHT WAY UP. |
| 13 | 33.55 | 34.15 | 0.60 | 37 | | MUDSTONE | M-DK. GY. LAM. SLD AS ABOVE. |
| 14 | 34.15 | 34.98 | 0.23 | 39 | | MUDSTONE | SLTY. M-DK. GY. LAM. SLD SLTY LAMS. |

* DENOTES MEASURED BCA

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| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 14 | 34.38 | 35.89 | 1.51 | *43 | | | MUDSTONE | SLTY. DK. GY. LAM. SLD MINOR SLTY LAMS. LOAD CASTS INDICATES W AY UP. |
| 15 | 35.89 | 37.57 | 1.68 | 43 | | | MUDSTONE | DK. GY. MAS. BRKN FEATURELESS. |
| 16 | 37.57 | 39.18 | 1.61 | 44 | | | MUDSTONE | DK. GY. MAS. BRKN FEATURELESS, VERY MINOR QTZ VEINING, MI NOR LISTRIC SURFACES. |
| 17 | 39.18 | 39.50 | 0.32 | 44 | | | MUDSTONE | DK. GY. MAS. BRKN FEATURELESS, VERY MINOR QTZ VEINING, MI NOR LISTRIC SURFACE. |
| 17 | 39.50 | 40.83 | 1.33 | 44 | | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE, SOMEWHAT SLTY. |
| 18 | 40.83 | 41.74 | 0.91 | 44 | | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE, W/SOME CARBONACEOUS PATCHES O N FRESH BROKEN SURFACES. |
| 18 | 41.74 | 42.89 | 1.15 | 45 | | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE. |
| 19 | 42.89 | 43.60 | 0.71 | 45 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN AS ABOVE. |

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| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 43.60 | 44.60 | 1.00 | *45 | | | SANDSTONE | SLTY. VFG. M-DK. GY. LAM. SSD. BRKN FINE SLTY LAMINATIONS, QTZ VEINING IN T OP. .4 M OF INTERVAL, GRADATIONAL Contac TS ABOVE, CORE TWIST-OFF. |
| 19 | 44.60 | 45.60 | 1.00 | 44 | | | ROCK LOSS | |
| 20 | 45.60 | 47.17 | 1.57 | 43 | | | SILTSTONE | SSY. DK. GY. LAM. SSD. BRKN FINE SDY LAMINATIONS, TOPS UP, LISTRIC SURFACES ON FS AT 30 DEGREES TO CORE AX IS X-CUT. BDG. |
| 20 | 47.17 | 47.55 | 0.38 | 42 | | | MUDSTONE | DK. GY. MAS SMALL SAND LENSES W/IN (UP TO 4CM LONG AND 2CM WIDE), INTENSELY BURROWED. .25 CM TO 1 CM LONG, ELONGATE & CIRCULAR SH APES. |
| 21 | 47.55 | 48.45 | 0.90 | *42 | | | SILTSTONE | SSY. M. GY. LAM. WRMBU. BRKN SDY LAMINATIONS WITHIN, HEAVILY BURROME D, LISTRIC SURFACES. |

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|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 48.45 | 49.19 | 0.74 | 39 | | MUDSTONE | SLTY. DK. GY. LAM. SLD FINE SLTY LAMS WITHIN. MINOR REVERSE FAULT NEAR TOP OF UNIT SHOWING 14 MM OF DISPLACEMENT. 5 CM BAND OF INTENSE QTZ VEINING, CORE TWIST-OFF, POSSIBLY CORE LOSS. |
| 21 | 49.19 | 50.05 | 0.86 | 35 | | ROCK LOSS | |
| 21 | 50.05 | 50.23 | 0.18 | 33 | | MUDSTONE | SLTY. M-DK. GY. MAS. WRMBU. BRKN PERCENTAGE OF SLTST HAS INCREASED, V. SM ALL WRMBURS WHICH APPEAR CRESENTIC IN SHAPE - HELMINTHOPSIS. |
| 22 | 50.23 | 51.68 | 1.45 | *30 | | SANDSTONE | SLTY. YFG. WEL. LT. GY. MAS. WRMBU. SLD SLTY LAMS UP TO 4 CM THK (IRREGULAR SHAPE). BURROWS RANGE FROM < 5 CM LONG TO 3 CM LONG & 2MM TO 1.5 CM WIDE. TRUNCATED BEDS INDICATE WAY UP, GRADATIONAL CHANGE BELOW. |
| 22 | 51.68 | 52.34 | 0.66 | 35 | | SANDSTONE | MG. WEL. LT. GY. THNB. SSD. SLD SLTY LENSES UP TO 2.5 CM THICK AND UP TO 0.10 CM LONG. MINOR SLTY WISPS PRESENT. |

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|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 52.34 | 52.39 | 0.05 | 36 | | SANDSTONE | MG. WEL. LT. GY. LAM. SSD. SLD AS ABOVE BUT SLTST LENSES ARE 2 MM WIDE AND UP TO 2 CM LONG, COALY FRAG ON FS. |
| 23 | 52.39 | 53.10 | 0.71 | 38 | | SANDSTONE | MG. WEL. LT. GY. LAM. SSD. SLD SLTY LAMS DEFINE BCA, SOME SLT LAMS ARE IRREGULAR IN SHAPE (HISPY TO NODULAR) 2 CM WIDE TO 6 CM LONG, QTZ LENSES (.5 CM WIDE TO 2 CM LONG). |
| 23 | 53.10 | 54.51 | 1.41 | *43 | | SANDSTONE | SLTY. YFG. WEL. LT-M. GY. LAM. WRMBU. SLD HEAVILY BURROWED, BURROWS RANGE FROM 2 MM WIDE TO 1.5 CM WIDE AND FROM 1 MM LONG TO 3 CM LONG. LOAD CASTS INDICATE WAY UP. |
| 24 | 54.51 | 55.39 | 0.88 | 37 | | SANDSTONE | SLTY. YFG. WEL. LT-M. GY. LAM. WRMBU. SLD AS ABOVE, MINOR QTZ VEINING AT BOTTOM OF INTERVAL. |
| 24 | 55.39 | 56.48 | 1.09 | 32 | | SANDSTONE | PBLY. CG. PR. LT. GY. MAS. BRKN MUDDY TOP 6CM GRADES TO PBLY SS (<1 TO 3CM CHERT BOTZ), ONE BLACK CHERT PBL .3 BY 2CM, MARKERS 10' OFF FROM NOW ON, SHOULD BE 56.69M |

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|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------|
| 25 | 56.48 | 56.66 | 0.18 | 29 | | SANDSTONE | PBLY. CG. PR. LT. GY. MAS. SLD AS ABOVE WITH VERY MINOR QTZ VEINING, LOWER CONTACT GRADATIONAL. |
| 25 | 56.66 | 58.45 | 1.79 | 24 | | SANDSTONE | VCG. PR. LT. GY. MAS. BRKN MINOR QTZ VEINING, ONE ELONGATE CHERT C LAST, BLACK IN COLOR AND 1 CM WIDE BY 5.5 CM LONG. |
| 26 | 58.45 | 58.56 | 0.11 | 20 | | SANDSTONE | VCG. PR. LT. GY. MAS. BRKN AS ABOVE. CORE TWIST-OFF - POSSIBLE CORE LOSS. |
| 26 | 58.56 | 59.11 | 0.55 | 18 | | ROCK LOSS | |
| 26 | 59.11 | 60.97 | 1.86 | *12 | | SANDSTONE | VCG. PR. LT. GY. MAS. SLD ONE LONG MUDDY BAND 3 CM WIDE IS PARALLEL TO BEDDING (NEAR BOTTOM OF INTERVAL), QTZ VEINING. |
| 27 | 60.97 | 61.92 | 0.95 | 16 | | SANDSTONE | VCG. PR. LT. GY. MAS. SLD AS ABOVE, W/ONE MUD CLAST. |
| 27 | 61.92 | 62.47 | 0.55 | 19 | | SANDSTONE | VCG. PR. LT. GY. MAS. SLD VCG SAND GRADING INTO A PEBBLY SS AT BOTTOM OF INTERVAL. CHERT CLASTS 2-3 MM IN DIAMETER. |

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|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27 | 62.47 | 62.86 | 0.39 | 20 | | SANDSTONE | FG. MOD. LT. GY. MAS. WRMBU. SLD CORE TWIST-OFF, POSSIBLE CORE LOSS(?) HEAVILY BIOTURBATED, VERY IRREGULAR SHAPES INFILLED WITH VFG. SLTY. SS. |
| 27 | 62.86 | 62.95 | 0.09 | 21 | | ROCK LOSS | |
| 28 | 62.95 | 63.45 | 0.50 | 22 | | SANDSTONE | PBLY. VCG. PR. LT. GY. LAM. SLD SOME FINE SLTY LAMS. PEBBLES ARE IMM TO 2 MM IN DIAMETER AND APPEAR TO BE WHITE AND BLACK CHERT. VERY POROUS. |
| 28 | 63.45 | 65.00 | 1.55 | *25 | | SANDSTONE | SLTY. VFG. WEL. M. GY. LAM. WRMBU. BRKN SLTY LAMS WITHIN (UP TO 2 CM THICK), HEAVILY BIOTURBATED NEAR MIDDLE OF INTERVAL (VERY IRREGULAR SHAPES), WRMBUR AT BASE. |
| 29 | 65.00 | 66.37 | 1.37 | 30 | | SANDSTONE | SLTY. FG. WEL. M. GY. YTHNB. WRMBU LITRIC SURFACES, QTZ VEINING. LOAD CASTS INDICATE WAY UP. |
| 29 | 66.37 | 67.06 | 0.69 | *33 | | SANDSTONE | MG. WEL. M. GY. YTHNB. SLD MINOR SLTY INCLUSIONS AND WISPS. VERY MINOR QTZ VEINING. |

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 67.06 | 67.98 | 0.92 | *48 | | | SANDSTONE | MG. PR. LT. GY. YTHNB. SSD. BRKN SLTST BANDS UP TO 2 CM THK, WRMBUR OF I RREGULAR SHAPES AND SIZES. |
| 30 | 67.98 | 68.59 | 0.61 | 55 | | | SANDSTONE | MG. PR. LT. GY. YTHNB. SSD AS ABOVE W/ONE 5 CM BAND OF QTZ VEINING WHICH FOLLOWS BEDDING PLANE. |
| 30 | 68.59 | 68.96 | 0.37 | 60 | | | SANDSTONE | MG. WEL. LT. GY. LAM. SLD SLTY WISPS W/IN SOME WHITE CHERT CLASTS AT TOP, SOME FINE SLTY LAMS DEFINING B CA. |
| 31 | 68.96 | 69.29 | 0.33 | 63 | | | SANDSTONE | PBLY. VCG. PR. LT. GY. MAS. BRKN BLACK & WHITE CHERT & QTZ CLASTS RANGIN G IN SIZE FROM <1 MM TO 2.0 CM. CORE TH IST-OFF - POSSIBLE CORE LOSS. |
| 31 | 69.29 | 69.93 | 0.64 | 68 | | | ROCK LOSS | |
| 31 | 69.93 | 70.17 | 0.24 | *72 | | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. BRKN SLTY BANDS DEFINING BCA LOAD CASTS INDI CATE WAY UP. MINOR QTZ VEINING WHICH CR OSS CUTS BEDDING. |

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| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 70.17 | 71.45 | 1.28 | *68 | | | SANDSTONE | SLTY. VFG. WEL. LT. GY. LAM. SSD. BRKN SLTY LAMINATIONS THROUGHOUT, BIOTURBATI ON NEAR TOP. 10 CM QTZ VEIN NEAR MIDDLE OF INTERVAL. OTHERWISE MINOR VEINING T HROUGHOUT. |
| 31 | 71.45 | 71.70 | 0.25 | 69 | | | MUDSTONE | DK. GY. MAS. BRKN QTZ VEINING, LISTRIC APPEARANCE ON FS B ECOMING A LITTLE CARBONACEOUS. |
| 31 | 71.70 | 71.94 | 0.24 | 70 | | | ROCK LOSS | |
| 32 | 71.94 | 72.01 | 0.07 | 70 | | | COAL | C-4. BLK. BRKN QTZ VEINING. TWIST-OFF NEAR TOP. |
| 32 | 72.01 | 72.55 | 0.54 | 71 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN BECOMES SILTIER DOWN SECTION. |
| 32 | 72.55 | 73.87 | 1.32 | 72 | | | SILTSTONE | CLYY. M. GY. MAS. SLD SLICKENSIDED SURFACE AT <10 DEGREES TO CORE AXIS. COAL & CARBONATE FILLED. POL ISHED LISTRIC SURFACE ~25 DEGREES TO CO RE AXIS. |

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|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 73.87 | 74.46 | 0.59 | *74 | | | SANDSTONE | SLTY. VFG. WEL. M. GY. LAM. BRKN FINE SLTY LAMINATIONS, LOAD CAST INDICATES TOPS, LITRISTIC APPEARANCE OF FS, QTZ FLECKS ON FS. |
| 33 | 74.46 | 75.69 | 1.23 | 77 | | | SANDSTONE | FG. WEL. LT. GY. LAM. SLD SLTY LAMINATIONS AT BASE OF INTERVAL DEFINING BCA, MINOR QTZ VEINING CUTTING BEDDING PLANES. CHERT CLASTS NEAR TOP RANGING IN SIZE FROM .5 CM TO 2CM IN DIAMETER. |
| 34 | 75.69 | 76.63 | 0.94 | *80 | | | SANDSTONE | MG. WEL. LT. GY. MAS. SLD VERY MASSIVE, MINOR CHERT RIPUP CLASTS WHICH ARE 2-4 MM IN DIAMETER. |
| 34 | 76.63 | 76.84 | 0.21 | 81 | | | SANDSTONE | VFG. WEL. M. GY. MAS. VBRKN TOO BROKEN UP TO SEE ANY DISTINCTIVE FEATURES. |
| 34 | 76.84 | 77.09 | 0.25 | 81 | | | ROCK LOSS | |
| 34 | 77.09 | 77.80 | 0.71 | 82 | | | SANDSTONE | VFG. WEL. LT. GY. MAS. BRKN VERY MASSIVE, MINOR SLTY. WISPS, GRADES INTO A MG SS AT TOP. |

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| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 77.80 | 78.19 | 0.39 | 82 | | | SANDSTONE | MG. WEL. LT. GY. MAS. BRKN MINOR SLTST LAMS, RIPUP CLASTS UP TO 1.5 CM IN DIAMETER, QTZ VEINS CROSS CUT BEDDING. |
| 35 | 78.19 | 78.77 | 0.58 | 83 | | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. VBRKN SLTY LAM THROUGHOUT, TOO BROKEN UP TO SEE ANY DISTINCTIVE FEATURES. |
| 35 | 78.77 | 79.48 | 0.71 | 84 | | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. SLD SLTST BANDS UP TO 1 CM THICK, GENERALLY VERY MASSIVE AND APPEARS TO GRADE INTO MG. SS AT TOP (.60M OF MG. SS). |
| 36 | 79.48 | 79.52 | 0.04 | 84 | | | SANDSTONE | MG. WEL. LT-M. GY. MAS. SLD THIN MASSIVE BAND WITH SHARP CONTACT BELOW. |
| 36 | 79.52 | 81.24 | 1.72 | *85 | | | SILTSTONE | SSY. VFG. M. GY. VTHNB. SSD. BRKN FINE SDY LAMS THROUGHOUT DEFINING BCA. LOAD CASTS INDICATE WAY UP. |
| 37 | 81.24 | 83.38 | 2.14 | *80 | | | MUDSTONE | SLTY. DK. GY. LAM. SSD. SLD VERY FINE SLTST LAMINAE, GENERALLY FEATURELESS. |
| 38 | 83.38 | 83.62 | 0.24 | 76 | | | MUDSTONE | SLTY. DK. GY. LAM. SSD. SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 83.62 | 85.36 | 1.74 | 74 | | SANDSTONE | SLTY. YFG. M. GY. LAM. SSD. SLD SLTST LAMINAE THROUGHOUT, WRMBURS THROU GHOUT, HELMINTHOPSIS. |
| 39 | 85.36 | 86.03 | 0.67 | *70 | | SILTSTONE | SSV. DK. GY. LAM. SSD. SLD AS ABOVE. |
| 39 | 86.03 | 86.46 | 0.43 | 71 | | SANDSTONE | SLTY. M. GY. MAS. SLD MINOR CARBONACEOUS WISPS. |
| 39 | 86.46 | 86.56 | 0.10 | 72 | | SANDSTONE | MG. WEL. M. GY. MAS. SLD VERY MAS. MINOR QTZ VEIN, CUTTING ACROS S. BEDDING. |
| 39 | 86.56 | 87.45 | 0.89 | 72 | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. MAS. SSD. SLD BOTTOM CM OF INTERVAL IS MG SS WHICH GR ADES INTO A FG SLTY SS. FINE SLTY LAMIN ATIONS AND WISPS. |
| 40 | 87.45 | 89.19 | 1.74 | *75 | | SANDSTONE | SLTY. YFG. WEL. M-DK. GY. LAM. SSD SLTY LAMINATIONS THROUGHOUT, WHICH INCR EASE IN FREQUENCY DOWN INTERVAL. MINOR NORMAL FAULT OCCURS AT .41M MARK. LOAD CASTS INDICATE WAY UP. SHARP LOWER CONT ACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | 89.19 | 89.49 | 0.30 | *77 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SSD. SLD APPEARS TO BE A CHURNED UP DIRTY SS. FI NE SLTY LAMS, SMALL CHERT & QTZ GRAINS (1-2 MM. IN DIAMETER). |
| 41 | 89.49 | 89.60 | 0.11 | 77 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SSD. SLD AS ABOVE. CORE TWIST-OFF. |
| 41 | 89.60 | 89.65 | 0.05 | 77 | | ROCK LOSS | |
| 41 | 89.65 | 89.96 | 0.31 | 77 | | SANDSTONE | SLTY. MG. MOD. M. GY. LAM. SSD. SLD SLTY INTERLAMs AND BURROHS WHICH ARE VE RY IRREGULAR IN SHAPE & SIZE APPEARS MO RE CHURNED UP. GRADATIONAL LOWER Contac T. |
| 41 | 89.96 | 91.71 | 1.75 | *78 | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. SSD. SLD SLTY LAMS THROUGHOUT, LOAD CAST INDICAT ES WAY UP. QTZ VEIN AT BOTTOM. CROSS CUT S BEDDING. |
| 42 | 91.71 | 92.15 | 0.44 | *76 | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. SSD. SLD AS ABOVE, SHARP CONTACT BELOW. |
| 42 | 92.15 | 92.65 | 0.50 | 74 | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN MG SS BECOMES PEBBLY AND INTENSE QTZ VE INING OCCURS OVER A .18 M SECTION NEAR BASE OF INTERVAL. VEIN CROSS CUT BEDDIN G. SHARP LOWER CONTACT. CG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 92.65 | 92.80 | 0.15 | 73 | | SANDSTONE | SLTY. FG. WEL. M. GY. MAS. BRKN SLTY LAMS. |
| 42 | 92.80 | 92.90 | 0.10 | 72 | | ROCK LOSS | |
| 42 | 92.90 | 93.90 | 1.00 | *70 | | SANDSTONE | SLTY. VFG. MOD. M. GY. LAM. SSD. SLD CORE TWIST-OFF AT TOP. MAJOR WRMBUR AT TOP OF INTERVAL. SLTY LAMS THROUGHOUT W HIGH INCREASE IN FREQUENCY GOING DOWN I NTERVAL. BOTTOM 12 CM IS PBLY (2-5 MM D IAMETER). FG. |
| 43 | 93.90 | 95.06 | 1.16 | *68 | | SANDSTONE | SLTY. FG. MOD. M. GY. LAM. SSD. BRKN SLTY INTERLAMs, WRMBUR, GRADATIONAL LOW ER CONTACT. |
| 43 | 95.06 | 95.28 | 0.22 | 69 | | ROCK LOSS | |
| 43 | 95.28 | 95.80 | 0.52 | 69 | | MUDSTONE | DK. GY. MAS. VBRKN FEATURELESS, LISTRIC FS. |
| 43 | 95.80 | 96.00 | 0.20 | 69 | | ROCK LOSS | |
| 43 | 96.00 | 96.12 | 0.12 | 69 | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE. |
| 44 | 96.12 | 98.01 | 1.89 | *70 | | MUDSTONE | DK. GY. MAS. VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 98.01 | 98.80 | 0.79 | *60 | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE, POLISHED FS. |
| 45 | 98.80 | 99.60 | 0.80 | 64 | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE WITH A 5 CM COALY BAND AT .29 M OF THE INTERVAL. MUDST APPEARS TO BE CARBONACEOUS. C-3. LOTS OF VITRINITE FL ECKS. |
| 46 | 99.60 | 101.57 | 1.97 | *72 | | MUDSTONE | DK. GY. MAS. BRKN FEATURELESS, POLISHED FS SOMEWHAT CARBO NACEOUS. |
| 46 | 101.57 | 101.78 | 0.21 | 74 | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE. |
| 47 | 101.78 | 103.71 | 1.93 | *75 | | SILTSTONE | SSY. M. GY. LAM. SSD. VBRKN FINE INTERLAMINATIONS OF SLTST DEFINE B CA. LOAD CAST INDICATES MAY UP. 1.5 CM QTZ BAND AT 1.37 M MARK WHICH FOLLOWS B EDDING. |
| 47 | 103.71 | 103.93 | 0.22 | 75 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 103.93 | 104.86 | 0.93 | *75 | | | SANDSTONE | SLTY. VFG. WEL. LT. GY. LAM. XBDG SLTST INTERLAMINATIONS, MINOR X-BDG (WEAK TOPS INDICATOR). |
| 48 | 104.86 | 106.13 | 1.27 | 78 | | | SANDSTONE | SLTY. FG. WEL. LT. GY. LAM. SSD. BRKN SLTY INTERLAMINATIONS DEFINE BCA. CG SS INFILLING CRACK NEAR BASE OF INTERVAL OBLIQUE TO BDG. SLTST BLEBS (2 MM x 3-4 MM) ALSO NEAR BASE OF INTERVAL. |
| 49 | 106.13 | 106.30 | 0.17 | *80 | | | SANDSTONE | PBLY. FG. MOD. LT. GY. MAS. SLD BLACK & WHITE CHERT & QTZ CLASTS (1-2 M M. IN DIAMETER), SLTST BLEBS THROUGH OUT. |
| 49 | 106.30 | 107.98 | 1.68 | 80 | | | SILTSTONE | SSY. FG. M. GY. LAM. BRKN FINE SLTY INTERLAMINATIONS, WEAK X-BDG, LOAD CAST INDICATES MAY UP. |
| 49 | 107.98 | 108.19 | 0.21 | 80 | | | SILTSTONE | SSY. FG. M. GY. LAM. BRKN AS ABOVE. |
| 50 | 108.19 | 110.30 | 2.11 | *80 | | | SILTSTONE | M. GY. LAM FINE SLTST LAMINATIONS THROUGHOUT, LOAD CAST INDICATES MAY UP, PLANT HASH. |
| 51 | 110.30 | 110.91 | 0.61 | 79 | | | SILTSTONE | M. GY. LAM. BRKN VERY FINELY LAMINATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 51 | 110.91 | 112.43 | 1.52 | *78 | | | SILTSTONE | M. GY. LAM. BRKN AS ABOVE, PLANT HASH. |
| 52 | 112.43 | 113.98 | 1.55 | *80 | | | SILTSTONE | SSY. LT-M. GY. LAM. BRKN AS ABOVE, PLANT HASH, FOSSILIZED WOOD. |
| 52 | 113.98 | 114.51 | 0.53 | 81 | | | SILTSTONE | SSY. LT-M. GY. LAM. BRKN FINELY LAMINATED, SAND IS WEL SORTED AND VFG. POLISHED FS. PLANT HASH, FOSSIL WOOD. |
| 53 | 114.51 | 116.71 | 2.20 | *83 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. LAM. XBDG. BRKN FINE SLTST LAMS. PLANT HASH SEEN IN FS. FOSSIL WOOD. LOW ANGLE X-BDG. |
| 54 | 116.71 | 117.04 | 0.33 | *80 | | | SILTSTONE | CLYY. FG. M-DK. GY. LAM. XBDG. SLD INTERLAM MUD AND SLTST. PLANT FOSSIL. |
| 54 | 117.04 | 118.18 | 1.14 | 80 | | | MUDSTONE | SLTY. M-DK. GY. MAS. SLD MINOR SLTST LAMS. |
| 54 | 118.18 | 118.78 | 0.60 | *80 | 07104 | | MUDSTONE | CARB. DK. GY. MAS. SLD BECOMES CARB NEAR BASE. COAL BAND .46 M FROM TOP (C-1), LOWER 25 CM SAMPLED. |
| 54 | 118.78 | 118.92 | 0.14 | 79 | 07105 H | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------|
| 54 | 118.92 | 119.02 | 0.10 | 79 | 07105 H | COAL | C-3. BLK. LAM. SLD MODERATELY CLEATED. SOME C-2 BANDS (MIN OR C-1 BANDS). |
| 55 | 119.02 | 119.06 | 0.04 | 79 | 07105 H | COAL | C-6. BLK. BRKN VERY MUDDY. CARB STRINGERS. |
| 55 | 119.06 | 119.13 | 0.07 | 79 | 07105 H | COAL | C-3. BLK. VBRKN |
| 55 | 119.13 | 119.22 | 0.09 | 79 | 07105 H | COAL | C-2. BLK. PWRD SOME C-1. |
| 55 | 119.22 | 119.28 | 0.06 | 79 | 07105 H | COAL | C-3. BLK. BRKN |
| 55 | 119.28 | 119.29 | 0.01 | 79 | 07105 H | COAL | C-6. BLK. BRKN |
| 55 | 119.29 | 119.31 | 0.02 | 79 | 07105 H | COAL | C-4. BLK. BRKN SPARKLY APPEARANCE. |
| 55 | 119.31 | 119.39 | 0.08 | 79 | 07105 H | COAL | C-3. BLK. BRKN SOME C-2 BANDS. WELL CLEATED. |
| 55 | 119.39 | 119.53 | 0.14 | 78 | 07105 H | MUDSTONE | DK. BN. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------|
| 55 | 119.53 | 119.98 | 0.45 | 78 | 07105 H | COAL | C-3. BLK. SLD MINOR C-2 BANDS. |
| 55 | 119.98 | 120.04 | 0.06 | 77 | 07105 H | COAL | C-2. BLK. BRKN VERY WELL CLEATED. SOME C-1 BANDS. |
| 55 | 120.04 | 120.11 | 0.07 | 77 | 07105 H | COAL | C-4. BLK. BRKN |
| 55 | 120.11 | 120.12 | 0.01 | 77 | 07105 H | MUDSTONE | DK. BN. |
| 55 | 120.12 | 120.15 | 0.03 | 77 | 07105 H | COAL | C-5. BLK. BRKN |
| 55 | 120.15 | 120.28 | 0.13 | 77 | 07105 H | COAL | C-3. BLK. SLD MINOR C-2 BANDS. |
| 55 | 120.28 | 120.31 | 0.03 | 77 | 07105 H | MUDSTONE | CARB. BLK. SLD |
| 55 | 120.31 | 120.39 | 0.08 | 77 | 07105 H | MUDSTONE | DK. BN. YBRKN |
| 55 | 120.39 | 120.59 | 0.20 | 77 | 07105 H | COAL | C-5. BLK. BRKN |
| 55 | 120.59 | 120.76 | 0.17 | 76 | 07105 H | COAL | C-3. BLK. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------|
| 55 | 120.76 | 120.86 | 0.10 | 76 | 07105 H | COAL | C-2.BLK.SLD SOFT. WELL CLEATED. |
| 55 | 120.86 | 120.97 | 0.11 | 76 | 07105 H | COAL | C-3.BLK.BRKN |
| 55 | 120.97 | 120.98 | 0.01 | 76 | 07105 H | COAL | C-5.BLK.BRKN |
| 56 | 120.98 | 121.09 | 0.11 | 76 | 07105 H | COAL | C-3.BLK.VBRKN MODERATELY CLEATED. |
| 56 | 121.09 | 121.26 | 0.17 | 75 | 07105 H | COAL | C-2.BLK.VBRKN |
| 56 | 121.26 | 121.29 | 0.03 | 75 | 07105 H | COAL | C-4.BLK.BRKN |
| 56 | 121.29 | 121.62 | 0.33 | 75 | 07105 H | COAL | C-2.BLK.BRKN INTERBEDDED C-2 & C-3. |
| 56 | 121.62 | 121.66 | 0.04 | 75 | 07105 H | COAL | C-3.BLK.BRKN |
| 56 | 121.66 | 121.91 | 0.25 | 74 | 07105 H | COAL | C-2.BLK.BRKN |
| 56 | 121.91 | 121.94 | 0.03 | 74 | 07105 H | COAL | C-6.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------|
| 56 | 121.94 | 122.03 | 0.09 | 74 | 07105 H | COAL | C-2.BLK.BRKN SOME C-1 BANDS. VERY WELL CLEATED. |
| 56 | 122.03 | 122.07 | 0.04 | 74 | 07105 H | COAL LOSS | |
| 56 | 122.07 | 122.19 | 0.12 | 74 | 07105 H | COAL | C-6.BLK.BRKN BECOMES C-5 NEAR BASE. |
| 56 | 122.19 | 122.48 | 0.29 | 73 | 07105 H | COAL | C-2.BLK.BRKN |
| 56 | 122.48 | 122.66 | 0.18 | 73 | 07105 H | COAL | C-4.BLK.PHRD |
| 56 | 122.66 | 122.76 | 0.10 | 73 | 07105 H | COAL | C-3.BLK.SLD CONTAINS A PYRITE LENS (4.5 x 1 CM). SO FT, CLEATED. |
| 56 | 122.76 | 122.80 | 0.04 | 73 | 07105 H | COAL | C-5.SLD |
| 56 | 122.80 | 123.00 | 0.20 | 72 | 07105 H | COAL | C-3.BLK.PHRD |
| 57 | 123.00 | 123.05 | 0.05 | 72 | 07105 H | COAL | C-4.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 57 | 123.05 | 123.22 | 0.17 | *72 | 07106 H | MUDSTONE | CARB. BLK. SLD CONTAINS 2-1 CM COAL BANDS. ABUNDANT PLANT FOSSILS. SOME QTZ VEINING. |
| 57 | 123.22 | 125.05 | 1.83 | 74 | 07106 H | MUDSTONE | SLTY. DK. GY. SLD .17 TO .43 (FROM TOP) NUMEROUS SLTST LAMS. 1.73 - BRECCIATED ZONE. (QTZ FILLED) |
| 58 | 125.05 | 126.19 | 1.14 | 76 | 07107 H | COAL | C-4. BLK. BRKN C-3 BANDS PRESENT. PWRD. |
| 58 | 126.19 | 126.22 | 0.03 | 77 | 07107 H | COAL LOSS | |
| 58 | 126.22 | 126.38 | 0.16 | 77 | 07107 H | COAL | C-3. BLK. SLD |
| 58 | 126.38 | 127.00 | 0.62 | *78 | 07108 | MUDSTONE | DK. GY. SLD CARBONATE FILLED FRACTURE (SIDERITE?) 15 DEGREES TO CORE AXIS, UPPER 25 CM SAMPLED. |
| 59 | 127.00 | 127.52 | 0.52 | 77 | | MUDSTONE | CARB. DK. GY. MAS. BRKN VITRINITE FLECKS VISIBLE ON FS. GENERAL LY. FEATURES. QTZ FRACTURE FILL AT BOTTOM OF INTERVAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 59 | 127.52 | 128.28 | 0.76 | 77 | | MUDSTONE | CARB. DK. GY. MAS. BIOTR. BRKN QTZ VEIN NEAR TOP OF INTERVAL. APPEARS CONTORTED POSSIBLY BIOTURBATED. MINOR V FG SS. INTERLAMINAE. |
| 59 | 128.28 | 128.97 | 0.69 | *76 | | SANDSTONE | VFG. MEL. LT. GY. MAS QTZ VEIN AT TOP OF INTERVAL NEARLY PERPENDICULAR TO BEDDING. MINOR SLTST WISPS AND BLEBS. |
| 60 | 128.97 | 129.43 | 0.46 | 70 | | SANDSTONE | VFG. MEL. LT. GY. MAS AS ABOVE. |
| 60 | 129.43 | 129.61 | 0.18 | 66 | | SANDSTONE | SLTY. VFG. MEL. LT. GY. VTHNB. SSD. SLD INTERBEDDED SS & SLTST. MINOR X-BDG. GR ADATIONAL LOWER CONTACT. |
| 60 | 129.61 | 130.55 | 0.94 | *60 | | SANDSTONE | VFG. MEL. LT. GY. VTHNB. SLD QTZ VEINING AND SLTST LAMS. AT TOP OF INTERVAL. SS IS VFG FOR .11 M AT TOP AND THEN GRADES QUICKLY TO A FG SS, GRADATIONAL LOWER CONTACT. |
| 60 | 130.55 | 130.76 | 0.21 | 60 | | SANDSTONE | PBLY. MG. PR. LT. GY. MAS. SLD CG PORTION CONTAINS PEBBLES 1-3 MM IN DIAMETER. GRADATIONAL LOWER CONTACT. CG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87001

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 60 | 130.76 | 131.09 | 0.33 | 60 | | | SANDSTONE | MG. PR. LT. GY. MAS. BRKN INTERBEDDED FG & MG SS. RYPOUP CLASTS UP TO 1.5 CM WIDE & 5 CM LONG AT BOTTOM OF INTERVAL - GY IN COLOR. FINE SLTY W/IN. |
| 61 | 131.09 | 132.03 | 0.94 | 60 | | | SANDSTONE | FG. HEL. LT. GY. MAS. SLD SLTY WISPS WITHIN. VERY MAS. T.D. DRILLER'S MARK (TIME SHEETS 132.0 M). |

* DENOTES MEASURED BCA NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87001

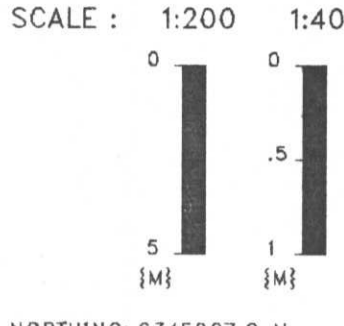
740

GEOLOGIST : SRIVASTAVA

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

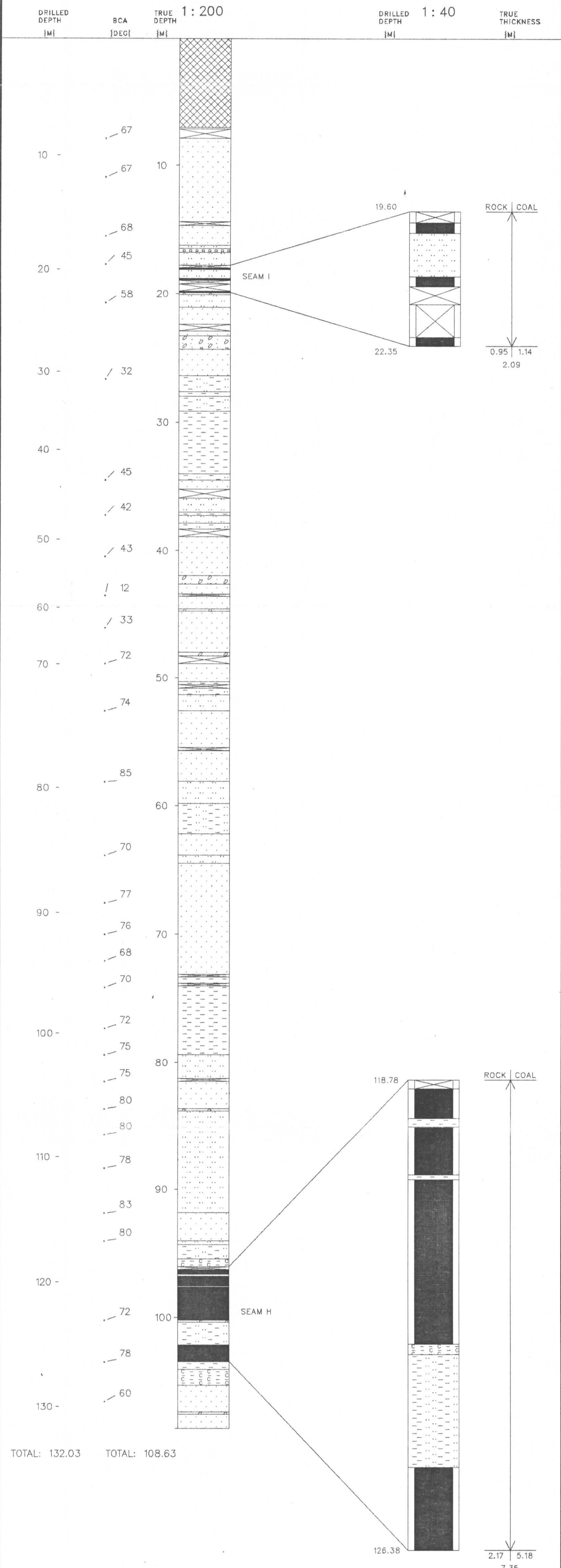


NORTHING: 6345007.0 N
 EASTING: 508063.3 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited Coal Division

740

Geophysical Log

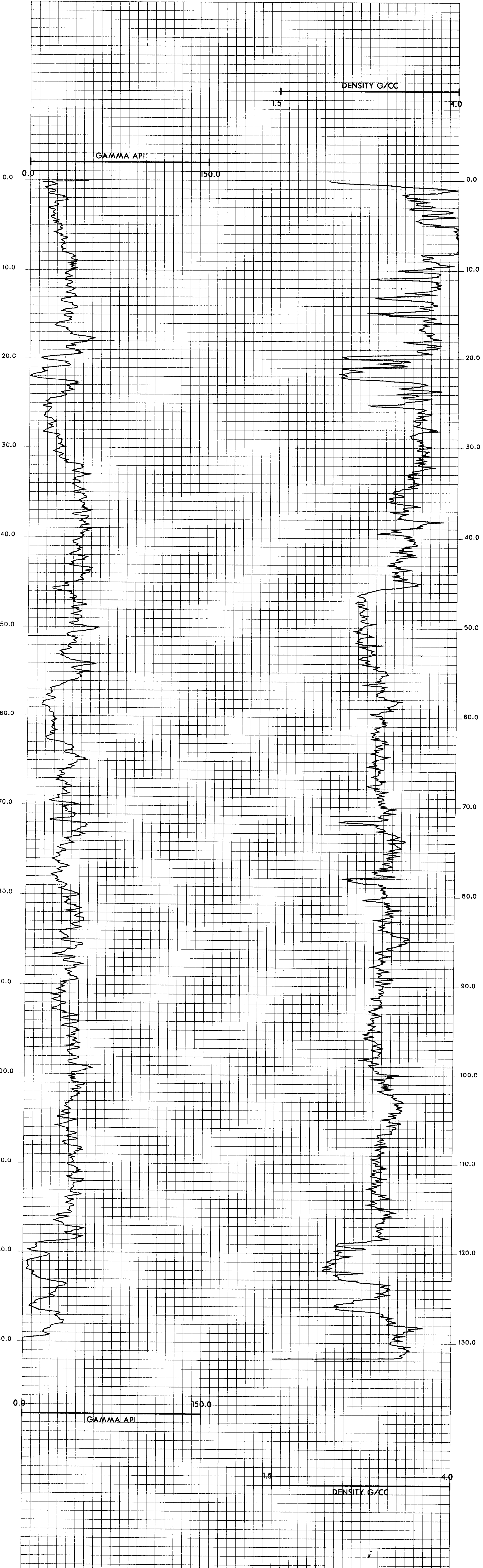
Datasource: **KPNLRDDH87001**
 Log Date: 87-08-25
 Company: CENTURY
 Geologist: SRIVASTAVA

Province: BC Northing: 6345010.00 Lat: 571500
 Zone: 9 Easting: 508063.00 Long: 1285159
 Measuring Point: GROUND LEVEL Elevation: 1507.4

Scale: 1 to 200.0
 Depth Range: 0.0 to 136.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS. NO NEUTRON LOG AVAILABLE.
 2.

| Logs Plotted: | | | | | |
|-----------------|--------------|-------------|------------------|-------|-----------|
| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | 1 IN PIPE |
| 2. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1 IN PIPE |



KPNLRDDH87002

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH87002

DATE - 03/01/88

- HISTORY -

START DATE - 08/28/87

END DATE - 08/30/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - MURRAY

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED I, I (OVT), I (REP), H/I, H. VER
TICAL HOLE.

- LOCATION -

PROVINCE - BC
ELEVATION - 1480.79

ZONE - 9
NORTHING - 6345393.82
EASTING - 508172.54

LICENCE/LEASE NUMBER -

LATITUDE - 571512
LONGITUDE - 1285152

- ORIENTATION -

LENGTH - 205.47

INCLINATION - 90.0

AZIMUTH - 0.0

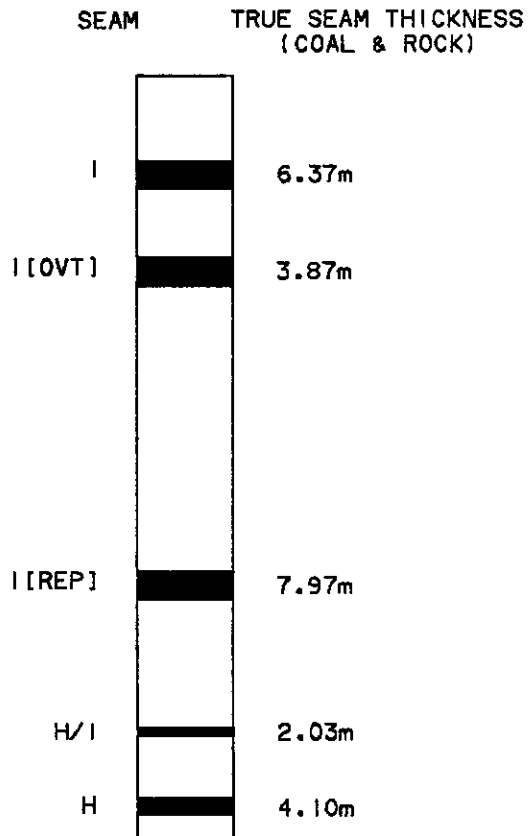
CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 3.66
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87002

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|------------|----------------------------------------------------------------------|
| | 0.00 | 3.66 | 3.66 | 84 | | | CASING | CASING DEPTH |
| 1 | 3.66 | 4.15 | 0.49 | 84 | | | ROCK LOSS | |
| 1 | 4.15 | 4.30 | 0.15 | 84 | | | OVERBURDEN | VBRKN |
| 1 | 4.30 | 4.44 | 0.14 | 84 | | | MUDSTONE | M.GY UNCONSOLIDATED WITH .2-.5 CM PEBBLES, PROBABLY TILL. |
| 1 | 4.44 | 4.54 | 0.10 | *84 | | | SANDSTONE | MG.LT.GY.VTHNB TILL. |
| 1 | 4.54 | 4.89 | 0.35 | 84 | | | MUDSTONE | M.GY UNCONSOLIDATED SMALL PEBBLES WITHIN TILL. |
| 1 | 4.89 | 4.97 | 0.08 | 84 | | | MUDSTONE | M.GY.LAM.VBRKN |
| 1 | 4.97 | 5.45 | 0.48 | 85 | | | MUDSTONE | M.GY.VBRKN UNCONSOLIDATED WITH PEBBLES AND MINOR M.G.SS WITHIN TILL. |
| 1 | 5.45 | 5.69 | 0.24 | 85 | | | SANDSTONE | MG.M.GY.VTHNB.VBRKN THIN QTZ STRINGERS THROUGHOUT TILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 2 | 5.69 | 5.70 | 0.01 | 85 | | | MUDSTONE | M.GY.VSHRD UNCONSOLIDATED WITH SMALL PEBBLES <.5 CM, TILL. |
| 2 | 5.70 | 7.62 | 1.92 | 86 | | | ROCK LOSS | |
| 2 | 7.62 | 7.81 | 0.19 | 87 | | | MUDSTONE | DK.GY.LAM.VBRKN PROBABLE CORE LOSS. |
| 2 | 7.81 | 7.89 | 0.08 | 87 | | | MUDSTONE | DK.GY.LAM.VBRKN PROBABLE CORE LOSS. |
| 2 | 7.89 | 8.20 | 0.31 | 87 | | | ROCK LOSS | |
| 2 | 8.20 | 8.53 | 0.33 | 88 | | | MUDSTONE | SLTY.DK.GY.LAM.VBRKN INTERBEDS OF SLTST WHICH BECOME MORE DOMINATE NEAR BASE. MANY TWIST-OFF PIECES & MINOR QTZ STRINGERS. |
| 2 | 8.53 | 9.28 | 0.75 | *88 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD.VBRKN INTERBEDS OF WISPY SLTST. MINOR QTZ STRINGERS THROUGHOUT. |
| 3 | 9.28 | 9.67 | 0.39 | 86 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD.VBRKN SILT INTERBEDS. NUMEROUS TWIST-OFF PIECES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------|
| 3 | 9.67 | 10.97 | 1.30 | 84 | | | ROCK LOSS | |
| 3 | 10.97 | 11.85 | 0.88 | *81 | | | MUDSTONE | SLTY. DK. GY. LAM. SSD. VBRKN SILT BECOMES MORE DOMINATE NEAR BASE. F US. |
| 3 | 11.85 | 12.19 | 0.34 | 85 | | | ROCK LOSS | |
| 4 | 12.19 | 12.90 | 0.71 | *88 | | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN UNCONSOLIDATED IN PARTS WITH NUMEROUS T MIST-OFFS. QIZ & CALCITE FRACTURE FILLI NG. CORE LOSS. |
| 4 | 12.90 | 13.30 | 0.40 | 88 | | | ROCK LOSS | |
| 4 | 13.30 | 13.82 | 0.52 | 88 | | | MUDSTONE | DK. GY. LAM. VBRKN UNCONSOLIDATED MUD WITH CONSOLIDATED MU D RUBBLE. NUMEROUS MIST-OFFS. CORE LOS S. |
| 4 | 13.82 | 13.89 | 0.07 | 88 | | | MUDSTONE | DK. GY. LAM. VBRKN AS ABOVE. |
| 5 | 13.89 | 13.98 | 0.09 | 88 | | | MUDSTONE | DK. GY. LAM. VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | 13.98 | 15.56 | 1.58 | *88 | | | SILTSTONE | CLYY. LT. GY. LAM. WRMBU. VBRKN WRMBUR THROUGHOUT INDICATE TOPS UP. MUD ST INTERBEDS. FAINT TRUNCATIONS INDICAT ES TOPS UP. SSD THROUGHOUT. SLICKENSIDES ON SOME BED PLANES. |
| 6 | 15.56 | 16.46 | 0.90 | *82 | | | MUDSTONE | SLTY. DK. GY. LAM. WRMBU. BRKN NUMERDUS WRMBUR AND SCOUR FILL INDICATE TOPS UP. SLICKENSIDES ON BEDDING SURFA CES. |
| 6 | 16.46 | 16.87 | 0.41 | 85 | | | ROCK LOSS | |
| 6 | 16.87 | 17.78 | 0.91 | *88 | | | MUDSTONE | SLTY. DK. GY. LAM. BIOTR. VBRKN SCOUR & FILL INDICATE TOPS UP. LITHOLOG Y AS ABOVE. |
| 7 | 17.78 | 18.13 | 0.35 | 83 | | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN UNCONSOLIDATED RUBBLE THROUGHOUT IS VFG . LAM. BRECCIATED SS. CORE LOSS. |
| 7 | 18.13 | 18.25 | 0.12 | 81 | | | ROCK LOSS | |
| 7 | 18.25 | 18.71 | 0.46 | *78 | | | MUDSTONE | SLTY. DK. GY. LAM. XBDG. BRKN X-BEDS INDICATE TOPS UP. MINOR BURROWS. MUD IS INTERBEDDED WITH SILT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 18.71 | 18.77 | 0.06 | 83 | | MUDSTONE | SLTY.DK.GY.LAM.VBRKN MOSTLY UNCONSOLIDATED MUDST WITH TWIST-OFF PIECES OF LAMINATED MUD W/IN. |
| 7 | 18.77 | 19.18 | 0.41 | *87 | | MUDSTONE | SLTY.DK.GY.LAM.WRMBU.BRKN BURROWS INDICATE TOPS UP. |
| 7 | 19.18 | 19.28 | 0.10 | 87 | | MUDSTONE | SLTY.DK.GY.LAM.VBRKN PIECES OF TWIST-OFF MIXED WITH M GY UNCONSOLIDATED CLAY. |
| 7 | 19.28 | 19.47 | 0.19 | 87 | | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN MINOR SSD. |
| 8 | 19.47 | 21.20 | 1.73 | *86 | | MUDSTONE | SLTY.DK.GY.LAM.WRMBU.BRKN INTERBEDDED MUD & SILT. WRMBUR INDICATE TOPS UP. MINOR OFFSET WITH DISPLACEMENT LESS THAN .5 CM. LISTRIC SURFACES ON SOME BEDDING PLANES. |
| 9 | 21.20 | 21.77 | 0.57 | 82 | | MUDSTONE | SLTY.DK.GY.LAM.WRMBU.VBRKN BURROW INDICATES TOPS UP. |
| 9 | 21.77 | 22.25 | 0.48 | 81 | | MUDSTONE | SLTY.DK.GY.LAM.VBRKN UNCONSOLIDATED MUD AND MANY TWIST-OFF PIECES. QTZ STRINGERS AND LISTRIC SURFACES ON BEDDING PLANES THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------|
| 9 | 22.25 | 22.51 | 0.26 | 79 | | ROCK LOSS | |
| 9 | 22.51 | 22.62 | 0.11 | 79 | | MUDSTONE | SLTY.VBRKN AS ABOVE, CORE LOSS. |
| 9 | 22.62 | 23.05 | 0.43 | *78 | | MUDSTONE | SLTY.DK.GY.LAM.SSD.SLD COAL AND QTZ STRINGERS THROUGHOUT. |
| 10 | 23.05 | 23.08 | 0.03 | 77 05981 | | BENTONITE | LT.GY.BRKN PUTTY LIKE SAMPLED. WH. |
| 10 | 23.08 | 23.25 | 0.17 | 77 06815 | | MUDSTONE | CARB.DK.GY.BRKN DEFINITE CORE LOSS. BCA = 15 (UNRELIABLE VALUE -> THEREFORE NOT USED). |
| 10 | 23.25 | 23.27 | 0.02 | 77 06815 | | ROCK LOSS | |
| 10 | 23.27 | 23.35 | 0.08 | 77 06816 I | | COAL | C-4.BLK.PHRD |
| 10 | 23.35 | 23.38 | 0.03 | 77 06816 I | | COAL | C-4.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------|
| 10 | 23.38 | 23.50 | 0.12 | 77 06816 | I | COAL | C-5.BLK.PWRD |
| 10 | 23.50 | 23.58 | 0.08 | 76 06816 | I | COAL | C-2.BLK.VBRKN |
| 10 | 23.58 | 23.63 | 0.05 | 76 06816 | I | COAL | C-2.BLK.VBRKN MINOR C-1. |
| 10 | 23.63 | 23.67 | 0.04 | 76 06816 | I | COAL | C-3.BLK |
| 10 | 23.67 | 23.70 | 0.03 | 76 06816 | I | COAL | C-3 |
| 10 | 23.70 | 23.72 | 0.02 | 76 06816 | I | COAL | C-2.BLK.BRKN |
| 10 | 23.72 | 23.74 | 0.02 | 76 06816 | I | COAL | C-3.BLK.BRKN |
| 10 | 23.74 | 23.75 | 0.01 | 76 06816 | I | COAL | C-2.BLK.PWRD |
| 10 | 23.75 | 23.80 | 0.05 | 76 06816 | I | COAL | C-3.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------|
| 10 | 23.80 | 23.82 | 0.02 | 76 06816 | I | COAL | C-4.BLK.VBRKN CORE TWIST-OFF. |
| 10 | 23.82 | 23.98 | 0.16 | 76 06816 | I | COAL | C-3.BLK.VBRKN PWRD TO V. BROKEN. |
| 10 | 23.98 | 23.99 | 0.01 | 75 06816 | I | MUDSTONE | M.BN.VBRKN |
| 10 | 23.99 | 24.02 | 0.03 | 75 06816 | I | COAL | C-5.BLK.VBRKN |
| 10 | 24.02 | 24.08 | 0.06 | 75 06816 | I | COAL | C-3.BLK.VBRKN |
| 10 | 24.08 | 24.12 | 0.04 | 75 06816 | I | COAL | C-4.BLK.VBRKN |
| 10 | 24.12 | 24.18 | 0.06 | 75 06816 | I | COAL | C-3.BLK.VBRKN |
| 10 | 24.18 | 24.22 | 0.04 | 75 06816 | I | COAL | C-4.BLK.VBRKN |
| 10 | 24.22 | 24.37 | 0.15 | 75 06816 | I | COAL | C-3.BLK.VBRKN ABUNDANT C-2 PIECES. |
| 11 | 24.37 | 24.43 | 0.06 | 75 06816 | I | COAL | C-2.BLK |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------|
| 11 | 24.43 | 24.58 | 0.15 | 74 | 06816 I | COAL | C-3.BLK.PHRD |
| 11 | 24.58 | 24.68 | 0.10 | 74 | 06816 I | COAL | C-2.BLK.VBRKN |
| 11 | 24.68 | 24.84 | 0.16 | 74 | 06816 I | COAL | C-3.BLK.VBRKN SOME C-2 PIECES. |
| 11 | 24.84 | 24.87 | 0.03 | 74 | 06816 I | COAL | C-4.BLK.VBRKN |
| 11 | 24.87 | 24.90 | 0.03 | 73 | 06816 I | COAL | C-2.BLK.PHRD |
| 11 | 24.90 | 24.98 | 0.08 | 73 | 06816 I | COAL | C-2.BLK.VBRKN |
| 11 | 24.98 | 24.99 | 0.01 | 73 | 06816 I | MUDSTONE | M.BN.VBRKN |
| 11 | 24.99 | 25.08 | 0.09 | 73 | 06816 I | COAL | C-3 |
| 11 | 25.08 | 25.11 | 0.03 | 73 | 06816 I | COAL | C-6.BLK.VBRKN |
| 11 | 25.11 | 25.18 | 0.07 | 73 | 06816 I | COAL | C-4.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------|
| 11 | 25.18 | 25.37 | 0.19 | 73 | 06816 I | COAL | C-3.BLK.PHRD |
| 11 | 25.37 | 25.38 | 0.01 | 72 | 06816 I | COAL | C-6.BLK.VBRKN |
| 11 | 25.38 | 25.41 | 0.03 | 72 | 06816 I | COAL | C-3.BLK.VBRKN |
| 11 | 25.41 | 25.42 | 0.01 | 72 | 06816 I | COAL | C-1.BLK.VBRKN |
| 11 | 25.42 | 25.64 | 0.22 | 72 | 06816 I | COAL | C-3.BLK.VBRKN |
| 11 | 25.64 | 25.68 | 0.04 | 72 | 06816 I | COAL | C-2.BLK.VBRKN |
| 11 | 25.68 | 27.15 | 1.47 | 70 | 06816 I | COAL LOSS | |
| 11 | 27.15 | 27.29 | 0.14 | 68 | 06816 I | ROCK LOSS | |
| 11 | 27.29 | 28.72 | 1.43 | 66 | 06817 I | COAL LOSS | |
| 11 | 28.72 | 28.94 | 0.22 | 65 | 06817 I | COAL | C-1.BLK.VBRKN |
| 12 | 28.94 | 29.44 | 0.50 | 64 | 06817 I | COAL | C-1.BLK.VBRKN ABUNDANT C-2 BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 12 | 29.44 | 29.54 | 0.10 | 63 | 06817 | I | COAL | C-1.BLK.VBRKN |
| 12 | 29.54 | 29.64 | 0.10 | 63 | 06817 | I | COAL | C-3.BLK.PHRD |
| 12 | 29.64 | 29.69 | 0.05 | 63 | 06817 | I | COAL | C-2.BLK.VBRKN |
| 12 | 29.69 | 30.09 | 0.40 | 62 | 06817 | I | COAL | C-1.BLK.VBRKN ABUNDANT C-2 BANDS. |
| 12 | 30.09 | 30.54 | 0.45 | 61 | 06818 | | SILTSTONE | CLYY.FG.M.GY.BRKN SLIGHTLY CARBONACEOUS. ABUNDANT PLANT FOSSILS. |
| 12 | 30.54 | 31.35 | 0.81 | 60 | | | ROCK LOSS | |
| 13 | 31.35 | 32.30 | 0.95 | *58 | | | SILTSTONE | CLYY.M.GY.LAM.SSD.SLD SLTST WITH MUDST INTERBEDS, COALY-QTZ STRINGERS THROUGHOUT. LISTRIC SURFACES THROUGHOUT. |
| 13 | 32.30 | 33.32 | 1.02 | *36 | | | SILTSTONE | SSY.M.GY.LAM.BRKN PREDOMINATELY SLTST WITH FG SS INTERBEDS. QZ FRACTURE. FUS. LISTRIC SURFACES THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 33.32 | 34.47 | 1.15 | 25 | | | SILTSTONE | SSY.M.GY.LAM.BRKN INTERBEDDED SS AND SLTST. PYR NODULES THIN. |
| 14 | 34.47 | 35.18 | 0.71 | *15 | | | SANDSTONE | SLTY.VFG.M.GY.LAM.BRKN QTZ INFILLED FRACTURES. DK GY SLTST LAM S. |
| 15 | 35.18 | 35.23 | 0.05 | 16 | | | SANDSTONE | SLTY.VFG.M.GY.LAM.VBRKN AS ABOVE. |
| 15 | 35.23 | 35.36 | 0.13 | 16 | | | ROCK LOSS | |
| 15 | 35.36 | 36.57 | 1.21 | *18 | | | SANDSTONE | SLTY.VFG.M.GY.LAM.VBRKN SS INTERBEDDED WITH DK GY SLT. QTZ INFILLED FRACTURES THROUGHOUT. LISTRIC SURFACES CONTAIN TALC LIKE MATERIAL THROUGHOUT, BECOMES SILTY NEAR BASE. |
| 15 | 36.57 | 36.91 | 0.34 | 13 | | | ROCK LOSS | |
| 15 | 36.91 | 37.35 | 0.44 | *10 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE. |
| 16 | 37.35 | 38.16 | 0.81 | *04 | | | SILTSTONE | SSY.M.GY.LAM.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------|
| 16 | 38.16 | 38.33 | 0.17 | 02 | | | SILTSTONE | SSY.M.GY.LAM.SHRD AS ABOVE. |
| 16 | 38.33 | 39.06 | 0.73 | *01 | | | SILTSTONE | SSY.M.GY.LAM.SLD AS ABOVE. QTZ STRINGERS HAVE BRECCIATED APPEARANCE. |
| 17 | 39.06 | 40.38 | 1.32 | *01 | | | SANDSTONE | SLTY.VFG.M.GY.LAM.BRKN INTERBEDDED WITH FG SS AND SILT. |
| 17 | 40.38 | 40.86 | 0.48 | *05 | | | SANDSTONE | SLTY.FG.LT.GY.VTHNB.VBRKN QTZ FRACTURE FILL THROUGHOUT. SLTST LAM S THROUGHOUT. |
| 17 | 40.86 | 40.93 | 0.07 | 05 | | | ROCK LOSS | |
| 18 | 40.93 | 41.38 | 0.45 | 06 | | | SANDSTONE | SLTY.FG.LT.GY.VTHNB.VBRKN AS ABOVE. WITH FEWER LAMS. |
| 18 | 41.38 | 41.67 | 0.29 | 07 | | | ROCK LOSS | |
| 18 | 41.67 | 42.99 | 1.32 | *08 | | | SANDSTONE | SLTY.VFG.M.GY.LAM.BRKN AS ABOVE. SLTST LAMS INCREASING. |
| 19 | 42.99 | 44.43 | 1.44 | 15 | | | SILTSTONE | SSY.M.GY.LAM.SSD.VBRKN SLTST WITH MINOR VFG SS THROUGHOUT, MIN OR BURROWS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 44.43 | 44.71 | 0.28 | 20 | | | SILTSTONE | SSY.M.GY.LAM.SSD.VBRKN AS ABOVE. |
| 20 | 44.71 | 46.57 | 1.86 | *25 | | | SILTSTONE | M.GY.LAM.SSD.BRKN AS ABOVE. |
| 21 | 46.57 | 47.32 | 0.75 | 24 | | | SILTSTONE | SSY.M.GY.LAM WHITE TALC MINERAL ON LISTRIC SURFACES THROUGHOUT. MINOR QTZ STRINGERS THROUGH OUT. |
| 21 | 47.32 | 47.98 | 0.66 | *23 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN AS ABOVE. |
| 22 | 47.98 | 48.80 | 0.82 | *22 | 06811 | | SILTSTONE | M.GY.VTHNB.SLD BECOMES A MUDDY SLTST NEAR BASE OF INTE RYAL. PLANT FOSSILS (COALIFIED). BECOME S CARB NEAR BASE. LOWER 25 CM SAMPLED. |
| 22 | 48.80 | 48.90 | 0.10 | 23 | 06812 | I OVT | COAL | C-1.BLK.VBRKN |
| 22 | 48.90 | 48.97 | 0.07 | 23 | 06812 | I OYT | COAL | C-5.BLK.PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------|
| 22 | 48.97 | 49.04 | 0.07 | 23 | 06812 | I OVT | COAL | C-3.BLK.PHRD |
| 22 | 49.04 | 49.11 | 0.07 | 23 | 06812 | I OVT | COAL | C-2.BLK.PHRD |
| 22 | 49.11 | 49.36 | 0.25 | 24 | 06812 | I OVT | COAL | C-2.BLK.PHRD INTERMIXED C-4 & C-1 WITH ABUNDANT C-2, AVERAGE = C-2. |
| 22 | 49.36 | 49.42 | 0.06 | 24 | 06812 | I OVT | COAL | C-1.BLK.VBRKN |
| 23 | 49.42 | 49.60 | 0.18 | 24 | 06812 | I OVT | COAL | C-1.BLK.VBRKN |
| 23 | 49.60 | 49.62 | 0.02 | 24 | 06812 | I OVT | COAL | C-3.BLK.PHRD |
| 23 | 49.62 | 50.02 | 0.40 | 25 | 06812 | I OVT | COAL | C-1.BLK.PHRD SOME C-2. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------|
| 23 | 50.02 | 50.08 | 0.06 | 25 | 06812 | I OVT | COAL | C-6.BLK.PHRD |
| 23 | 50.08 | 50.28 | 0.20 | 25 | 06812 | I OVT | COAL | C-3.BLK.PHRD SOME C-1 FLAKES. |
| 23 | 50.28 | 50.48 | 0.20 | 26 | 06812 | I OVT | COAL | C-1.BLK.VBRKN |
| 23 | 50.48 | 50.70 | 0.22 | 26 | 06812 | I OVT | COAL | C-2.BLK.PHRD ABUNDANT C-1. |
| 24 | 50.70 | 51.11 | 0.41 | 27 | 06812 | I OVT | COAL | C-1.BLK.VBRKN |
| 24 | 51.11 | 51.15 | 0.04 | 27 | 06812 | I OVT | COAL | C-2.BLK.VBRKN |
| 24 | 51.15 | 51.20 | 0.05 | 27 | 06812 | I OVT | COAL | C-1.BLK.VBRKN |
| 24 | 51.20 | 51.42 | 0.22 | 28 | 06812 | I OVT | COAL | C-3.BLK.PHRD C-1 MIXED WITH C-4, AVERAGE = C-3. |
| 24 | 51.42 | 51.67 | 0.25 | 28 | 06812 | I OVT | COAL | C-4.BLK.BRKN VERY MUDDY IN PLACES. |
| 24 | 51.67 | 51.71 | 0.04 | 28 | 06813 | I OVT | MUDSTONE | CARB.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------|
| 24 | 51.71 | 51.74 | 0.03 | 28 06813 | I OVT | COAL | C-4. BLK. BRKN |
| 24 | 51.74 | 51.88 | 0.14 | 28 06813 | I OVT | COAL | C-2. BLK. PMRD |
| 24 | 51.88 | 51.92 | 0.04 | 29 06813 | I OVT | MUDSTONE | CARB. BLK. BRKN |
| 24 | 51.92 | 51.95 | 0.03 | 29 06813 | I OVT | COAL | C-6. BLK. BRKN |
| 24 | 51.95 | 52.03 | 0.08 | 29 06813 | I OVT | COAL | C-2. BLK. BRKN C-1 COMMON. |
| 24 | 52.03 | 52.12 | 0.09 | 29 06813 | I OVT | COAL | C-1. BLK. BRKN |
| 25 | 52.12 | 52.50 | 0.38 | 29 06813 | I OVT | COAL | C-2. BLK. SHRD |
| 25 | 52.50 | 52.56 | 0.06 | 30 06813 | I OVT | COAL | C-3. BLK. PMRD |
| 25 | 52.56 | 52.71 | 0.15 | *30 06813 | I OVT | MUDSTONE | M-DK. BN. BRKN SOFT. |
| 25 | 52.71 | 52.73 | 0.02 | 30 06813 | I OVT | COAL | C-5. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------|
| 25 | 52.73 | 52.77 | 0.04 | 30 06813 | I OVT | COAL | C-3. BLK. BRKN |
| 25 | 52.77 | 53.07 | 0.30 | 31 06813 | I OVT | COAL | C-2. BLK. VBRKN |
| 25 | 53.07 | 53.17 | 0.10 | 31 06813 | I OVT | ROCK LOSS | |
| 25 | 53.17 | 54.12 | 0.95 | 32 06813 | I OVT | COAL LOSS | |
| 25 | 54.12 | 54.24 | 0.12 | 34 06813 | I OVT | COAL | C-3. BLK. VBRKN |
| 25 | 54.24 | 54.44 | 0.20 | 34 06813 | I OVT | COAL | C-2. BLK. VBRKN NUMEROUS BANDS OF C-1 MAKING UP ABOUT 5 % OF THE INTERVAL. |
| 25 | 54.44 | 54.72 | 0.28 | 35 06813 | I OVT | COAL | C-2. BLK. VBRKN SOME C-1 BANDS. |
| 25 | 54.72 | 54.82 | 0.10 | 35 06813 | I OVT | COAL | C-6. BLK. BRKN |
| 25 | 54.82 | 55.00 | 0.18 | 36 06813 | I OVT | ROCK LOSS | |
| 25 | 55.00 | 55.10 | 0.10 | 36 06813 | I OVT | COAL LOSS | |
| 25 | 55.10 | 55.32 | 0.22 | 36 06813 | I OVT | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------|
| 26 | 55.32 | 55.68 | 0.36 | 37 | 06813 | I OVT | COAL | C-2.BLK.PHRD MIXED WITH C-3. |
| 26 | 55.68 | 55.71 | 0.03 | 37 | 06813 | I OVT | COAL | C-5.BLK.BRKN |
| 26 | 55.71 | 55.77 | 0.06 | 38 | 06813 | I OVT | ROCK LOSS | |
| 26 | 55.77 | 55.80 | 0.03 | 38 | 06813 | I OVT | MUDSTONE | SLTY.M.BN.BRKN |
| 26 | 55.80 | 55.84 | 0.04 | 38 | 06813 | I OVT | COAL | C-2.BLK.PHRD |
| 26 | 55.84 | 55.90 | 0.06 | 38 | 06813 | I OVT | COAL | C-5.BLK.BRKN |
| 26 | 55.90 | 55.95 | 0.05 | 38 | 06813 | I OVT | MUDSTONE | M-DK.BN.BRKN |
| 26 | 55.95 | 56.25 | 0.30 | 38 | 06813 | I OVT | COAL | C-3.BLK.BRKN |
| 26 | 56.25 | 56.45 | 0.20 | 39 | 06813 | I OVT | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 26 | 56.45 | 57.05 | 0.60 | *40 | 06814 | | MUDSTONE | CARB.DK.GY.BRKN PLANT FOSSILS. VERY CARB. BECOMES SLTY AWAY FROM COAL SEAM (UP SECTION). SOME QTZ VEINING. |
| 26 | 57.05 | 57.12 | 0.07 | 37 | | | MUDSTONE | CARB.DK.GY.VBRKN |
| 26 | 57.12 | 57.27 | 0.15 | 37 | | | ROCK LOSS | |
| 27 | 57.27 | 57.38 | 0.11 | 36 | | | BENTONITE | M.GY.LAM LAM.MUD.WITHIN. SOAPY.FEEL. |
| 27 | 57.38 | 58.99 | 1.61 | *29 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD MINOR BURROWS AND MINOR QTZ STRINGERS A LONG BEDDING PLANES. |
| 27 | 58.99 | 59.24 | 0.25 | *34 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN AS ABOVE. |
| 28 | 59.24 | 59.95 | 0.71 | *30 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN INTERBEDDED MUDST AND M'GY SLTST. FUS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------|
| 28 | 59.95 | 61.34 | 1.39 | *39 | | MUDSTONE | SLTY, DK. GY. LAM. BRKN AS ABOVE WITH LISTRIC SURFACES AND QTZ FRACTURE FILL. |
| 29 | 61.34 | 62.05 | 0.71 | 31 | | MUDSTONE | SLTY, DK. GY. SLD AS ABOVE. |
| 29 | 62.05 | 63.45 | 1.40 | *22 | | SILTSTONE | CLYY, DK. GY. LAM. SSD. SLD MINOR SSD. LITHOLOGY AS ABOVE, WITH INC REASING SILT AND YFG SS. OVERTURNED FUS. |
| 30 | 63.45 | 65.00 | 1.55 | *28 | | SILTSTONE | SSY, DK. GY. LAM. BRKN. OVERTURNED FUS. AS ABOVE. |
| 30 | 65.00 | 65.51 | 0.51 | 29 | | SILTSTONE | SSY, M. GY. LAM. BRKN. AS ABOVE. |
| 31 | 65.51 | 67.58 | 2.07 | *30 | | SILTSTONE | SSY, M. GY. LAM. SSD. SLD MINOR SSD. FUS. |
| 32 | 67.58 | 67.88 | 0.30 | *20 | | SILTSTONE | SSY, M. GY. LAM. SLD AS ABOVE. |
| 32 | 67.88 | 68.95 | 1.07 | *13 | | SILTSTONE | SSY, M. GY. LAM. XBDG. SLD X-BEDS INDICATE OVERTURNED. |
| 32 | 68.95 | 69.66 | 0.71 | *17 | | SILTSTONE | SSY, M. GY. LAM. SSD. SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 69.66 | 70.88 | 1.22 | *18 | | SILTSTONE | SSY, M. GY. LAM. BIOTR. SLD SCOUR AND FILL INDICATE TOPS DOWN. |
| 33 | 70.88 | 71.78 | 0.90 | *17 | | SILTSTONE | SSY, M. GY. LAM. BRKN LISTRIC SURFACES ON SOME BEDDING PLANES. SCOUR & FILL INDICATE TOPS DOWN. |
| 34 | 71.78 | 73.76 | 1.98 | *30 | | SILTSTONE | SSY, M. GY. LAM. BRKN QTZ WITH SOME CALCITE ALONG BEDDING PLANES. HELMINTHOPSIS LIKE TRACE. |
| 35 | 73.76 | 73.83 | 0.07 | 31 | | SILTSTONE | SSY, M. GY. LAM. BRKN AS ABOVE. |
| 35 | 73.83 | 75.40 | 1.57 | *32 | | SILTSTONE | SSY, M. GY. LAM. VBRKN QTZ FILLED FRACTURES WITH BRECCIA APPEARANCE. LISTRIC SURFACES ON SOME BEDDING PLANES. HELMINTHOPSIS - LIKE TRACE. POSSIBLE CORE LOSS. |
| 35 | 75.40 | 75.78 | 0.38 | 21 | | ROCK LOSS | |
| 36 | 75.78 | 77.08 | 1.30 | *12 | | SILTSTONE | SSY, M. GY. LAM. VBRKN SCOUR & FILL INDICATE TOPS DOWN. MINOR QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 36 | 77.08 | 77.28 | 0.20 | 16 | | | ROCK LOSS | |
| 36 | 77.28 | 77.86 | 0.58 | *18 | | | SILTSTONE | SSY.M.GY.LAM AS ABOVE, LISTRIC SURFACES. |
| 37 | 77.86 | 79.93 | 2.07 | *22 | | | SILTSTONE | SSY.M.GY.LAM AS ABOVE. SCOUR & FILL INDICATE TOPS DOWN. |
| 38 | 79.93 | 80.12 | 0.19 | 15 | | | SILTSTONE | SSY.M.GY.LAM.BRKN AS ABOVE. |
| 38 | 80.12 | 81.76 | 1.64 | *09 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN QTZ FRACTURE INFILL THROUGHOUT. |
| 39 | 81.76 | 82.41 | 0.65 | *05 | | | SILTSTONE | SSY.M.GY.LAM.BRKN QTZ STRINGERS THROUGHOUT. |
| 39 | 82.41 | 82.58 | 0.17 | 08 | | | ROCK LOSS | |
| 39 | 82.58 | 83.16 | 0.58 | 11 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN POORLY CONSOLIDATED IN PARTS, QTZ STRINGERS THROUGHOUT, LISTRIC SURFACES THROUGHOUT. |
| 39 | 83.16 | 83.57 | 0.41 | *15 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------|
| 40 | 83.57 | 84.44 | 0.87 | *20 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE, LISTRIC SURFACES. QTZ FRACTURE FILL AND STRINGERS. |
| 40 | 84.44 | 84.92 | 0.48 | 22 | | | SILTSTONE | SSY.M.GY.LAM.SHRD MOSTLY RUBBLE, MANY THIST-OFFS, LISTRIC SURFACES. |
| 40 | 84.92 | 85.32 | 0.40 | 23 | | | ROCK LOSS | |
| 41 | 85.32 | 85.94 | 0.62 | *24 | | | SILTSTONE | SSY.M.GY.LAM.SHRD LISTRIC SURFACES THROUGHOUT. MINOR BREC CIA NEAR BASE. |
| 41 | 85.94 | 86.21 | 0.27 | 16 | | | ROCK LOSS | |
| 41 | 86.21 | 87.03 | 0.82 | *07 | | | SILTSTONE | SSY.M.GY.LAM.MRMBU.VBRKN AS ABOVE, QTZ ALONG BEDDING AND X-CUTTING BEDDING. |
| 42 | 87.03 | 88.49 | 1.46 | *26 | | | SILTSTONE | SSY.M.GY.LAM.SHRD AS ABOVE, QTZ ALONG BEDDING PLANES. TALC ON LISTRIC SURFACES. |
| 42 | 88.49 | 89.00 | 0.51 | 31 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------|
| 43 | 89.00 | 89.26 | 0.26 | *33 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE. |
| 43 | 89.26 | 90.41 | 1.15 | *20 | | | SILTSTONE | SSY.M.GY.LAM.XBDG.VBRKN SCOUR & FILL AND TRUNCATIONS INDICATE TOPS DOWN. |
| 43 | 90.41 | 90.88 | 0.47 | 24 | | | ROCK LOSS | |
| 44 | 90.88 | 91.97 | 1.09 | *28 | | | SILTSTONE | SSY.M.GY.LAM.XBDG.BRKN QTZ FILL ALONG BEDDING AND X-CUTTING BEDDING. |
| 44 | 91.97 | 92.30 | 0.33 | *04 | | | SILTSTONE | SSY.M.GY.LAM.BIOTR.BRKN AS ABOVE. |
| 44 | 92.30 | 92.47 | 0.17 | *09 | | | SILTSTONE | SSY.M.GY.LAM.BRKN AS ABOVE. |
| 45 | 92.47 | 93.29 | 0.82 | *06 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE. |
| 45 | 93.29 | 94.03 | 0.74 | *13 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE. SCOUR & FILL INDICATE TOPS DOWN. |
| 45 | 94.03 | 94.41 | 0.38 | 21 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 94.41 | 95.36 | 0.95 | *30 | | | SILTSTONE | SSY.M.GY.LAM.WRMBU.VBRKN AS ABOVE. TOPS DOWN. |
| 46 | 95.36 | 96.18 | 0.82 | *46 | | | SANDSTONE | SLTY.VFG.LT.GY.LAM.BRKN OVERTURNED CUS WITH MG SS AT TOP. SOME SILTY BANDS THROUGHOUT. QTZ BRECCIA AND LISTRIC SURFACES THROUGHOUT. |
| 47 | 96.18 | 98.06 | 1.88 | *33 | | | SANDSTONE | SLTY.MG.LT.GY.VTHNB.BRKN SILTY LAMS AND QTZ STRINGERS THROUGHOUT. LISTRIC SURFACES QTZ FRACTURE FILL & STRINGERS. |
| 47 | 98.06 | 98.17 | 0.11 | 28 | | | ROCK LOSS | |
| 48 | 98.17 | 98.40 | 0.23 | 27 | | | SANDSTONE | SLTY.MG.LT.GY.VTHNB.BRKN AS ABOVE. |
| 48 | 98.40 | 98.67 | 0.27 | 26 | | | SANDSTONE | SLTY.SHRD RUBBLE. PROBABLE CORE LOSS. QTZ THROUGHOUT. |
| 48 | 98.67 | 99.17 | 0.50 | *24 | | | SANDSTONE | SLTY.MG.LT.GY.VTHNB.BRKN LAMINATED SLTST THROUGHOUT. LISTRIC SURFACES. QTZ INFILL THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------|
| 48 | 99.17 | 99.73 | 0.56 | *28 | | | SANDSTONE | SLTY.MG.LT.GY.THNB.VBRKN AS ABOVE. .05CM BAND OF M'GY CLAY WITHIN. |
| 49 | 99.73 | 100.96 | 1.23 | *19 | | | SANDSTONE | SLTY.MG.LT.GY.THNB.VBRKN AS ABOVE. |
| 49 | 100.96 | 101.45 | 0.49 | 16 | | | ROCK LOSS | |
| 49 | 101.45 | 102.15 | 0.70 | *14 | | | SANDSTONE | SLTY.MG.LT.GY.THNB.VBRKN AS ABOVE. |
| 50 | 102.15 | 104.06 | 1.91 | 17 | | | SANDSTONE | SLTY.MG.LT.GY.THNB.VBRKN AS ABOVE. |
| 51 | 104.06 | 104.50 | 0.44 | 20 | | | SANDSTONE | MG.LT.GY.MB.SLD MINOR QTZ THROUGHOUT. |
| 51 | 104.50 | 106.22 | 1.72 | 22 | | | SANDSTONE | MG.LT.GY.MB.SLD VERY MINOR SILT LAMS. MINOR QTZ THROUGHOUT. |
| 52 | 106.22 | 107.32 | 1.10 | 25 | | | SANDSTONE | MG.LT.GY.MB.SLD QTZ INFILLED FRACTURES. |
| 52 | 107.32 | 107.55 | 0.23 | 27 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 52 | 107.55 | 108.34 | 0.79 | *28 | | | SANDSTONE | MG.LT.GY.THNB.VBRKN QTZ INFILLING, WELL ROUNDED MUD RIPUPS NEAR BASE. |
| 52 | 108.34 | 108.45 | 0.11 | 28 | | | ROCK LOSS | |
| 53 | 108.45 | 108.58 | 0.13 | 28 | | | SANDSTONE | MG.LT.GY.THNB.SHRD LISTRIC SURFACES THROUGHOUT, QTZ THROUGHOUT. |
| 53 | 108.58 | 109.99 | 1.41 | 28 | | | SANDSTONE | MG.LT.GY.THNB.VBRKN THICK QTZ FRACTURE FILL, UP TO 5 CM THICK WITH BRECCIA APPEARANCE THROUGHOUT. |
| 53 | 109.99 | 110.39 | 0.40 | 28 | | | ROCK LOSS | |
| 53 | 110.39 | 110.49 | 0.10 | 28 | | | SANDSTONE | MG.LT.GY.THNB.VBRKN AS ABOVE. |
| 54 | 110.49 | 111.67 | 1.18 | 28 | | | SANDSTONE | MG.LT.GY.THNB.VBRKN AS ABOVE. |
| 54 | 111.67 | 111.97 | 0.30 | 28 | | | ROCK LOSS | |
| 54 | 111.97 | 112.57 | 0.60 | *28 | | | SANDSTONE | SLTY.MG.LT.GY.VTHNB.VBRKN SILTY NEAR TOP DECREASING TOWARDS BASE. ANGULAR MUD RIP-UPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 55 | 112.57 | 114.04 | 1.47 | 31 | | SANDSTONE | MG.LT.GY.VTHNB.VBRKN MINOR QTZ THROUGHOUT. LISTRIC SURFACES NEAR TOP. |
| 55 | 114.04 | 114.54 | 0.50 | 33 | | SANDSTONE | MG.LT.GY.VTHNB.BRKN AS ABOVE. |
| 56 | 114.54 | 116.01 | 1.47 | 35 | | SANDSTONE | MG.LT.GY.MB.SLD QTZ FRACTURE FILL THROUGHOUT. |
| 56 | 116.01 | 116.56 | 0.55 | *38 | | SANDSTONE | SLTY.MG.M.GY.VTHNB LISTRIC SURFACES NEAR TOP. QTZ THROUGH OUT. SLTST LAMS. THROUGHOUT. |
| 57 | 116.56 | 116.63 | 0.07 | 37 | | SANDSTONE | MG.M.GY.VBRKN AS ABOVE. |
| 57 | 116.63 | 116.79 | 0.16 | 37 | | ROCK LOSS | |
| 57 | 116.79 | 118.72 | 1.93 | *35 | | SANDSTONE | MG.LT.GY.VTHNB.BRKN QTZ INFILL THROUGHOUT. SLTST LAMS INCRE ASE TOWARDS BASE AND CONTAIN COALIFIED PLANT MATERIAL. |
| 58 | 118.72 | 119.80 | 1.08 | *45 | | SANDSTONE | SLTY.MG.M.GY.VTHNB.BRKN MINOR LISTRIC SURFACES AT TOP. SLTST LA MS CONTAIN COALIFIED MATERIAL. MUDST RI P-UPS THROUGHOUT. QTZ FRACTURE INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 119.80 | 120.63 | 0.83 | *34 | | SANDSTONE | SLTY.MG.M.GY.VTHNB.SSD.BRKN RIP-UP CLASTS THROUGHOUT. SAND INFILL S TRUCTURES INDICATE TOPS UP! SSD THROUGH OUT. QTZ FRACTURE INFILL. |
| 59 | 120.63 | 122.64 | 2.01 | *47 | | SANDSTONE | SLTY.FG.M.GY.VTHNB.SSD.BRKN X-BEDS AND SAND INFILL INDICATE TOPS UP MUDST RIP-UPS THROUGHOUT. CUS WITH FG SS AND ABUNDANT SLTST AT BASE GRADING INTO MG.SS WITH SILT LAMS. |
| 60 | 122.64 | 122.77 | 0.13 | 53 | | SANDSTONE | SLTY.FG.M.GY.VTHNB.SSD.BRKN AS ABOVE. |
| 60 | 122.77 | 124.80 | 2.03 | *60 | | SILTSTONE | SSY.M.GY.LAM.WRMBU.SLD PREDOMINATELY M.GY.SLTST WITH INTERBEDS OF LT.GY.FG.SS. X-BED AND WRMBUR THROU GHOUT. BURROWS INDICATE TOPS UP. |
| 61 | 124.80 | 125.81 | 1.01 | *63 | | SILTSTONE | SSY.M.GY.LAM.BRKN MINOR PLANT HASH. INTERBEDDED SLTST AND FG.SS. FAINT X-BEDS. MINOR LISTRIC SUR FACES ON BEDDING PLANES. |
| 61 | 125.81 | 126.87 | 1.06 | *61 | | SILTSTONE | SSY.DK.GY.LAM.BRKN INTERBEDDED FG.SS AND SLTST BECOMING PR EDOMINATELY SLTST AT BASE (CUS). LISTRI C SURFACES. QTZ INFILL ON BEDDING PLANE AND X-CUTTING & BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 62 | 126.87 | 127.37 | 0.50 | 60 | | SILTSTONE | SSY, DK. GY. LAM. BRKN SAND INFILL INDICATES TOPS UP. BECOMES LESS SANDY NEAR BASE (CUS) PLANT FRAGS THROUGHOUT. |
| 62 | 127.37 | 127.52 | 0.15 | *60 | | SILTSTONE | SSY, DK. GY. LAM. BRKN AS ABOVE. |
| 62 | 127.52 | 128.88 | 1.36 | *52 | | SILTSTONE | CLYY, M. GY. LAM. BIOTR. BRKN SOME VFG SS LAMS NEAR TOP. GRADES TO MU DST LAM AT BOTTOM (CUS). MUD BANDS UP T O 3 CM THICK. EXTENSIVE BIOTRB THROUGH WT. MINOR RIP-UPS. |
| 63 | 128.88 | 129.15 | 0.27 | 56 | | SILTSTONE | CLYY, M. GY. LAM. BRKN AS ABOVE. |
| 63 | 129.15 | 131.00 | 1.85 | *61 | | SILTSTONE | CLYY, DK. GY. LAM. SLD INTERBEDDED SSY SLTST AND CLYY SLTST. I NFILL STRUCTURES INDICATE TOPS UP. |
| 64 | 131.00 | 131.59 | 0.59 | 64 | | SILTSTONE | CLYY, FG, M. GY. LAM. SLD |
| 64 | 131.59 | 132.16 | 0.57 | *65 | | MUDSTONE | M-DK. GY. LAM. SLD MINOR SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 64 | 132.16 | 132.38 | 0.22 | 65 | | MUDSTONE | M-DK. GY. LAM. BRKN AS ABOVE. QTZ VEINING PARALLEL TO BEDDI NG. |
| 64 | 132.38 | 132.57 | 0.19 | 66 | | MUDSTONE | CARB. DK. GY 2 C-1 COAL BANDS <1 CM. |
| 64 | 132.57 | 132.63 | 0.06 | 66 | 05980 | BENTONITE | LT. GY. LAM. VBRKN SAMPLED. BN. |
| 64 | 132.63 | 132.93 | 0.30 | 66 | | ROCK LOSS | |
| 64 | 132.93 | 133.26 | 0.33 | 66 | 06801 | MUDSTONE | CARB. DK. GY. LAM. BRKN BECOMES VERY CARB NEAR BASE. SOME QTZ V EINS (2) NEAR BASE. POSSIBLE ROCK LOSS. LOWER 25 CM SAMPLED. |
| 64 | 133.26 | 133.68 | 0.42 | 66 | 06802 I REP | COAL LOSS | |
| 65 | 133.68 | 133.71 | 0.03 | 67 | 06802 I REP | COAL | C-3, BLK. VBRKN |
| 65 | 133.71 | 133.78 | 0.07 | 67 | 06802 I REP | COAL | C-2, BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|----------------------------------------------|
| 65 | 133.78 | 133.85 | 0.07 | 67 | 06802 I REP | COAL | C-1.BLK.BRKN VERY WELL CLEATED. SOME C-2. |
| 65 | 133.85 | 134.15 | 0.30 | 67 | 06802 I REP | COAL LOSS | |
| 65 | 134.15 | 134.33 | 0.18 | 67 | 06802 I REP | ROCK LOSS | |
| 65 | 134.33 | 134.38 | 0.05 | 67 | 06802 I REP | MUDSTONE | CARB.DK.BN.VBRKN |
| 65 | 134.38 | 134.44 | 0.06 | 67 | 06802 I REP | COAL | C-2.BLK.SHRD LISTRIC SURFACES. |
| 65 | 134.44 | 134.48 | 0.04 | 67 | 06802 I REP | COAL | C-2.BLK.BRKN |
| 65 | 134.48 | 134.50 | 0.02 | 67 | 06802 I REP | COAL | C-1.BLK.BRKN |
| 65 | 134.50 | 134.65 | 0.15 | 68 | 06802 I REP | COAL | C-2.BLK.BRKN |
| 65 | 134.65 | 134.66 | 0.01 | 68 | 06802 I REP | COAL | C-1.BLK.BRKN VERY WELL CLEATED. |
| 65 | 134.66 | 134.71 | 0.05 | 68 | 06802 I REP | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-----------------------------------------------------------------------------------------------------------|
| 65 | 134.71 | 135.04 | 0.33 | 68 | 06802 I REP | COAL | C-2.BLK.BRKN SOME C-2 BANDS. |
| 65 | 135.04 | 135.54 | 0.50 | 68 | 06802 I REP | COAL | C-2.BLK.BRKN ALL CORE (EXCEPT VERY WELL CLEATED) IS SHEARED AND HAVE ABUNDANT LISTRIC SURFA CES. |
| 66 | 135.54 | 135.59 | 0.05 | 68 | 06802 I REP | COAL | C-3.BLK.VBRKN |
| 66 | 135.59 | 135.69 | 0.10 | 69 | 06802 I REP | COAL | C-4.BLK.BRKN |
| 66 | 135.69 | 135.74 | 0.05 | 69 | 06802 I REP | COAL | C-4.BLK.BRKN |
| 66 | 135.74 | 135.78 | 0.04 | 69 | 06803 I REP | MUDSTONE | SSY.DK.BN.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-----------------------------------|
| 66 | 135.78 | 136.03 | 0.25 | 69 | 06803 I REP | ROCK LOSS | |
| 66 | 136.03 | 136.38 | 0.35 | 69 | 06803 I REP | COAL LOSS | |
| 66 | 136.38 | 136.52 | 0.14 | 69 | 06803 I REP | COAL | C-2. BLK. BRKN SHEARED. |
| 66 | 136.52 | 136.55 | 0.03 | 69 | 06803 I REP | COAL | C-4. BLK. BRKN SHEARED. |
| 66 | 136.55 | 136.70 | 0.15 | 69 | 06803 I REP | COAL | C-2. BLK. SHRD |
| 66 | 136.70 | 136.75 | 0.05 | 70 | 06803 I REP | COAL | C-5. BLK. SHRD |
| 66 | 136.75 | 137.05 | 0.30 | 70 | 06803 I REP | COAL LOSS | |
| 66 | 137.05 | 137.35 | 0.30 | 70 | 06803 I REP | COAL | C-3. BLK. VBRKN |
| 66 | 137.35 | 137.42 | 0.07 | 70 | 06803 I REP | COAL | C-1. BLK. VBRKN LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-----------------|
| 66 | 137.42 | 137.57 | 0.15 | 70 | 06803 I REP | COAL | C-2. BLK. SHRD |
| 66 | 137.57 | 137.60 | 0.03 | 70 | 06803 I REP | ROCK LOSS | |
| 66 | 137.60 | 137.63 | 0.03 | 70 | 06803 I REP | MUDSTONE | SLTY. BLK. BRKN |
| 66 | 137.63 | 137.83 | 0.20 | 70 | 06803 I REP | COAL | C-2. BLK. SHRD |
| 66 | 137.83 | 138.05 | 0.22 | 71 | 06803 I REP | COAL | C-1. BLK. VBRKN |
| 66 | 138.05 | 138.14 | 0.09 | 71 | 06803 I REP | COAL LOSS | |
| 67 | 138.14 | 138.16 | 0.02 | 71 | 06803 I REP | COAL | C-5. BLK. BRKN |
| 67 | 138.16 | 138.40 | 0.24 | 71 | 06804 I REP | COAL | C-2. BLK. VBRKN |
| 67 | 138.40 | 138.48 | 0.08 | 71 | 06804 I REP | COAL | C-3. BLK. BRKN |
| 67 | 138.48 | 138.88 | 0.40 | 71 | 06804 I REP | COAL | C-1. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 67 | 138.88 | 139.73 | 0.85 | 72 | 06804 | I REP | COAL | C-1.BLK.VBRKN PHRD. |
| 68 | 139.73 | 140.63 | 0.90 | 73 | 06804 | I REP | COAL | C-1.BLK.VBRKN FLAKEY. INTERMIXED C-1 & C-2. |
| 68 | 140.63 | 140.88 | 0.25 | 73 | 06804 | I REP | COAL | C-2.BLK.PHRD |
| 68 | 140.88 | 141.13 | 0.25 | 74 | 06804 | I REP | COAL | C-1.BLK.PHRD C-1 TO C-2 |
| 69 | 141.13 | 141.43 | 0.30 | 74 | 06804 | I REP | COAL | C-1.BLK.VBRKN SOME C-2. |
| 69 | 141.43 | 141.73 | 0.30 | 74 | 06804 | I REP | COAL LOSS | |
| 69 | 141.73 | 143.36 | 1.63 | *75 | 06805 | | SILTSTONE | CG.M.GY.MAS.SSD.BRKN 2 FG.SS.BANDS. 1) 5 CM FROM 142.04 (2 CM THICK). 2) 33 CM FROM 142.04 (2 CM THICK). LOAD CAST IN SAND INDICATE RIGHT WAY UP. UPPER 25 CM SAMPLED. |
| 70 | 143.36 | 144.61 | 1.25 | 79 | | | SILTSTONE | M.GY.LAM.BIOTR.SLD SLTST BECOMES SANDY NEAR BASE. MINOR BIOTR. FREQUENT PLANT FRAGS. TENIDCAULIS NEAR TOP. SOME LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 144.61 | 145.33 | 0.72 | 82 | | | SANDSTONE | SLTY.VFG.M.GY.LAM.BIOTR.SLD EXTENSIVE BURROWS. TOPS UP. SLTST CONTACT DECREASES NEAR BASE. FUS. |
| 71 | 145.33 | 146.42 | 1.09 | *85 | | | SANDSTONE | SLTY.FG.M.GY.VTHNB.XBDG.BRKN GRADATIONAL UPPER CONTACT. SLTST LAM DECREASE TOWARDS BASE. QTZ FRACTURE FILL NEAR BASE. |
| 71 | 146.42 | 146.87 | 0.45 | *88 | | | SANDSTONE | MG.LT.GY.VTHNB.BRKN GRADATIONAL UPPER CONTACT. SOME BANDS CONTAIN SLTST RIP-UPS WHICH SHOW IMBRICATION. QTZ FRACTURE FILL THROUGHOUT. LISTRIC SURFACES NEAR BASE. SHARP BASAL CONTACT. |
| 71 | 146.87 | 147.10 | 0.23 | *88 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN SS INTERBEDS, LISTRIC SURFACES THROUGHOUT. BECOMES SANDY NEAR BASE. MINOR QTZ. |
| 71 | 147.10 | 147.31 | 0.21 | 88 | | | ROCK LOSS | |
| 71 | 147.31 | 147.41 | 0.10 | 88 | | | SANDSTONE | MG.M.GY.VTHNB.BRKN SHARP UPPER CONTACT. |
| 72 | 147.41 | 147.66 | 0.25 | 88 | | | SANDSTONE | MG.M.GY.VTHNB.BRKN VERY MINOR QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 72 | 147.66 | 149.25 | 1.59 | | 87 | | SANDSTONE | MG.M.GY.VTHNB.BRKN MINOR RIP-UP SLTST CLASTS. MINOR QTZ TH ROUGHOUT. |
| 73 | 149.25 | 150.22 | 0.97 | | *87 | | SANDSTONE | MG.LT.GY.VTHNB.VBRKN MINOR RIP-UPS THROUGHOUT. MINOR QTZ. SL TST CONTENT INCREASES TOWARDS BASE. |
| 73 | 150.22 | 150.27 | 0.05 | | 82 | | ROCK LOSS | |
| 73 | 150.27 | 150.71 | 0.44 | | *80 | | SANDSTONE | SLTY.FG.M.GY.VTHNB.WRMBU.BRKN WHITE TALC MATERIAL ON SOME SURFACES. I NTERBEDDED SAND AND DK GY SLTST. BURROW S INDICATE TOPS UP. |
| 73 | 150.71 | 151.15 | 0.42 | | 74 | | SANDSTONE | SLTY.FG.M.GY.VTHNB.WRMBU.BRKN AS ABOVE, WITH VERY MINOR QTZ THROUGHOU T. |
| 74 | 151.13 | 152.41 | 1.28 | | *62 | | SANDSTONE | SLTY.FG.M.GY.VTHNB.WRMBU.BRKN AS ABOVE, WITH MORE QTZ. BECOMES MG AT BASE (CUS). SHARP CONTACT WITH MUD BELO M. TOPS UP. |
| 74 | 152.41 | 153.04 | 0.63 | | *78 | | MUDSTONE | SLTY.M.GY.LAM.VBRKN SILTY M GY INTERBEDS. |
| 74 | 153.04 | 153.19 | 0.15 | | 78 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 75 | 153.19 | 153.76 | 0.57 | | 78 | | MUDSTONE | DK.GY.LAM LISTRIC SURFACES THROUGHOUT. |
| 75 | 153.76 | 154.92 | 1.16 | | 77 | | MUDSTONE | DK.GY.LAM AS ABOVE WITH QTZ FRACTURE FILL THROUGH OUT. |
| 76 | 154.92 | 156.37 | 1.45 | | 76 | | MUDSTONE | DK.GY.LAM.VBRKN COARSENS TO FG SS AT BASE (FUS). WH TAL C MINERAL ON LISTRIC SURFACES THROUGHOU T. MINOR QTZ AND COALY QTZ STRINGERS. |
| 76 | 156.37 | 156.81 | 0.44 | | 76 | | ROCK LOSS | |
| 77 | 156.81 | 158.17 | 1.36 | | *75 | | SANDSTONE | SLTY.MG.LY.GY.THNB.VBRKN FUS WITH FG SS AT TOP. SLTST BANDS UP I 0.3CM PRESENT. SCOUR AND INFILL INDICAT E TOPS UP. SLTST RIP-UPS THROUGHOUT. MI NOR QTZ FRACTURE FILL. |
| 77 | 158.17 | 158.32 | 0.15 | | 74 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 77 | 158.32 | 158.96 | 0.64 | *73 | | | SANDSTONE | SLTY. FG. M. GY. THNB. BRKN VFG SS AT TOP COARSENS DOWN TO FG AT BA SE. SHARP UPPER CONTACT, FUS. SCOUR AND FILL INDICATES TOPS UP. |
| 78 | 158.96 | 159.90 | 0.94 | 71 | | | SANDSTONE | SLTY. FG. M. GY. VTHNB. HRMBU. BRKN INTERBEDDED WITH DK. GY. SLTST. 10 CM BUR ROW INDICATES TOPS UP. MINOR QTZ AND LI STRIC SURFACES WITH WHITE TALC MINERAL AT BASE. |
| 78 | 159.90 | 160.94 | 1.04 | 69 | | | SANDSTONE | SLTY. FG. M. GY. VTHNB. SLD FUS. WITH MG. LT. GY. SS. AT BASE. |
| 79 | 160.94 | 161.15 | 0.21 | *68 | | | SANDSTONE | SLTY. MG. LT. GY. VTHNB. BRKN SILTY LAMS UP TO 1 CM IN THICKNESS. SHA RP LOWER SCOUR CONTACT WITH VFG SS BELO W, TOPS UP. |
| 79 | 161.15 | 162.09 | 0.94 | *88 | | | SANDSTONE | SLTY. VFG. M. GY. LAM INTERBEDDED DK. GY. SLTST AND MUDST NEAR BASE. MINOR QTZ ALONG BEDDING PLANE INC REASES AT BASE. |
| 79 | 162.09 | 162.28 | 0.19 | 82 | | | SILTSTONE | CLYY. DK. GY. LAM. YBRKN QTZ ALONG BEDDING. |
| 79 | 162.28 | 162.47 | 0.19 | 80 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 79 | 162.47 | 162.73 | 0.26 | 78 | | | SANDSTONE | SLTY. MG. M. GY. VTHNB. BRKN INTERBEDDED MG. SS AND DK. GY. SLTST. SAND COARSENS TO CG AT SHARP BASAL CONTACT AND IS. FG. AT TOP. FUS. |
| 79 | 162.73 | 163.12 | 0.39 | *75 | | | SANDSTONE | SLTY. FG. M. GY. VTHNB. BIOTR. SLD FUS. FROM MG. SS AT SHARP BASE TO FG. AT T OP. MINOR QTZ THROUGHOUT. SCOUR IN SLTS T ABOVE INDICATES TOPS UP. SHARP UPPER CONTACT, LISTRIC SURFACES. |
| 79 | 163.12 | 163.17 | 0.05 | 79 | | | SILTSTONE | CLYY. DK. GY. BRKN MINOR QTZ. |
| 80 | 163.17 | 163.32 | 0.15 | 80 | | | SANDSTONE | SLTY. M. GY. VTHNB. HRMBU. SLD FUS. AS ABOVE WITH COARSE. SS. TO SLTST. M RMBUR INDICATES TOPS UP. |
| 80 | 163.32 | 163.98 | 0.66 | *87 | | | SANDSTONE | SLTY. M. GY. VTHNB. HRMBU. SLD AS ABOVE, MINOR QTZ FRACTURE FILL. |
| 80 | 163.98 | 165.27 | 1.29 | *75 | | | SANDSTONE | SLTY. M. GY. VTHNB. HRMBU. SLD AS ABOVE, LISTRIC SURFACES. |
| 81 | 165.27 | 165.38 | 0.11 | *63 | | | SANDSTONE | SLTY. VFG. M. GY. LAM. BRKN UPPER PORTION OF FUS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 81 | 165.38 | 166.61 | 1.23 | 69 | | SANDSTONE | SLTY. FG. M. GY. LAM. BRKN INTERBEDD FG SS AND DK GY SLTST. MINOR MG SS WITHIN FUS. GRADATIONAL LOWER CON TACT. |
| 81 | 166.61 | 167.17 | 0.56 | *78 | | SANDSTONE | SLTY. CG. LT. GY. THNB. SLD SCOURED SLTST LAMS WITHIN SLTST RIP-UP CLASTS. SAND IS YCG IN PARTS, MINOR QTZ |
| 82 | 167.17 | 168.27 | 1.10 | *78 | | SANDSTONE | SLTY. CG. LT. GY. THNB. BRKN AS ABOVE SAND VARIES FROM MG TO YCG. SC OURED SLTST LAMS INDICATE TOPS UP. APPE ARS TO BE REPEATING FUS. MINOR QTZ THRO UGHOUT. |
| 82 | 168.27 | 169.23 | 0.96 | 81 | | SANDSTONE | YCG. LT. GY. THNB. BRKN YCG SS AT BASE FINING UPWARDS TO FG SS AT TOP. MINOR QTZ. SLTST LAMS AT TOP. |
| 83 | 169.23 | 169.39 | 0.16 | 83 | | SANDSTONE | YCG. LT. GY. THNB. BRKN AS ABOVE. |
| 83 | 169.39 | 170.29 | 0.90 | *85 | | SANDSTONE | CG. LT. GY. THNB. BIOTR. BRKN FG-MG BIOTRB SS (TOP) GRADES DOWN TO CG SS SLTST RIP-UPS. MINOR QTZ. BURROWS INDICATE TOPS DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83 | 170.29 | 171.25 | 0.96 | *76 | | SANDSTONE | SLTY. FG. M. GY. LAM. BIOTR. BRKN VFG SS AT TOP GRADES INTO FG AT BASE. W ORM BURROW AND SCOUR INDICATE TOPS UP. |
| 84 | 171.25 | 171.32 | 0.07 | 77 | | SANDSTONE | SLTY. FG. M. GY. LAM. BRKN SLTST LAMS. GRADATIONAL BASAL CONTACT. |
| 84 | 171.32 | 171.78 | 0.46 | 77 | | SANDSTONE | MG. M. GY. VTHNB. BRKN SLTST LAMS. MINOR QTZ FRACTURE FILL. SH ARP BASAL CONTACT FUS. LISTRIC SURFACES NEAR BASE. |
| 84 | 171.78 | 173.14 | 1.36 | *78 | | SANDSTONE | SLTY. FG. M. GY. LAM. BIOTR. BRKN PREDOMINATELY FG SS WITH LAMINATIONS OF DK GY SLTST. SAND FINES UPWARD FROM MG AT BASE TO VFG AT TOP. SHARP UPPER CON TACT. BURROWS INDICATE TOPS UP. LISTRIC SURFACES THROUGHOUT. MINOR QTZ AND SHE LL FRAGS. |
| 85 | 173.14 | 174.05 | 0.91 | 77 | | SANDSTONE | FG. MEL. LT-M. GY. MAS. BIOTR. SLD OCCASIONAL THIN MUDDY LAMINAE AND LENSE S. TOPS UP AS INDICATED BY SOFT SED DEF ORMATION. SHARP LOWER CONTACT. |
| 85 | 174.05 | 174.36 | 0.31 | 77 | | MUDSTONE | CARB. DK. GY. MAS. SLD ABUNDANT PLANT FRAGMENTS (SOME COALIFIE D). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 85 | 174.36 | 174.95 | 0.59 | 76 | | MUDSTONE | CARB. DK. GY. MAS. SLD AS ABOVE. |
| 85 | 174.95 | 175.12 | 0.17 | 76 | H/I | COAL | C-3 BRKN BANDED, MINOR PYRITE WITHIN, MINOR CARB -QTZ STRINGERS. |
| 85 | 175.12 | 175.17 | 0.05 | 76 | H/I | COAL | C-4 VITRAIN BAND (1-4 MM), PYRITE (MINOR). |
| 86 | 175.17 | 175.90 | 0.73 | 76 | H/I | MUDSTONE | CARB. DK. GY. BRKN VERY ABUNDANT COALY STRINGERS AND THIN BANDS, MANY VISIBLE COALIFIED PLANT REMAINS. PYRITE NODULES WITHIN. |
| 86 | 175.90 | 175.98 | 0.08 | 76 | H/I | COAL | C-3 SLD |
| 86 | 175.98 | 177.05 | 1.07 | 75 | H/I | MUDSTONE | CARB ABUNDANT COALIFIED PLANT FRAGMENTS AND STRINGERS, MINOR PYRITE BLEBS WITHIN, BECOMES LESS CARBONACEOUS TOWARDS BASE OF UNIT, SIGNS OF TWIST-OFF WITHIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 86 | 177.05 | 177.21 | 0.16 | 75 | | MUDSTONE | CARB |
| 87 | 177.21 | 177.68 | 0.47 | 75 | | MUDSTONE | DK. GY. LAM. BRKN NUMEROUS PLANT FRAGS THROUGHOUT. TENUCA ULIS, BAIERA FURCATA. |
| 87 | 177.68 | 179.10 | 1.42 | 74 | | MUDSTONE | DK. GY. LAM. BRKN AS ABOVE WITH SMALLER COALY BLEBS THROUGHOUT. WHITE TALC LIKE POWDER ON SOME SURFACES. |
| 88 | 179.10 | 180.43 | 1.33 | *73 | | MUDSTONE | DK. GY. LAM. YBRKN AS ABOVE WITH LESS PLANT FRAGMENTS, BECOMES SILTIER AT BASE, FUS, LISTRIC SURFACES, SMALL 1-2 CM. COALY-QTZ STRINGERS THROUGHOUT. |
| 88 | 180.43 | 180.86 | 0.43 | 33 | | ROCK LOSS | |
| 88 | 180.86 | 181.25 | 0.39 | *15 | | MUDSTONE | SLTY. DK. GY. LAM. YBRKN LISTRIC SURFACES THROUGHOUT WITH TALC LIKE MINERAL, MINOR QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88 | 181.25 | 181.48 | 0.23 | 17 | | | ROCK LOSS | |
| 89 | 181.48 | 183.47 | 1.99 | *26 | | | SILTSTONE | SSY.M.GY.LAM.XBDG.VBRKN LISTRIC SURFACES THROUGHOUT. AMBIGUOUS TRUNCATIONS. FUS WITH VFG SS AT BASE. |
| 89 | 183.47 | 183.61 | 0.14 | 34 | | | ROCK LOSS | |
| 90 | 183.61 | 184.27 | 0.66 | *37 | | | SILTSTONE | SSY.M.GY.LAM.WRMBU.BRKN INTERBEDDED M GY SLTST WITH LT GY VFG S S. WRMBUR INDICATE TOPS UP. LISTRIC SURFACES ON SOME BEDDING PLANES. SSD THROUGHOUT. |
| 90 | 184.27 | 184.97 | 0.70 | *40 | | | SILTSTONE | SSY.M.GY.LAM.WRMBU.BRKN AS ABOVE. |
| 90 | 184.97 | 185.63 | 0.66 | *45 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN MINOR OFFSETS (< 5 CM) WITHIN QTZ FRACTURE FILL WITH RIP-UP CLASTS IN QTZ. LISTRIC SURFACES NEAR BASE. |
| 91 | 185.63 | 186.26 | 0.63 | *63 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN MINOR QTZ INFILL. LISTRIC SURFACES THROUGHOUT. TALC-MATERIAL ON LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 91 | 186.26 | 186.36 | 0.10 | 70 | | | ROCK LOSS | |
| 91 | 186.36 | 187.32 | 0.96 | *80 | | | SILTSTONE | SSY.M.GY.LAM.SSD AS ABOVE. |
| 91 | 187.32 | 187.69 | 0.37 | 76 | | | SILTSTONE | SSY.M.GY.LAM.SSD SAND INFILL INDICATES TOPS UP. |
| 92 | 187.69 | 189.05 | 1.36 | *70 | | | SILTSTONE | SSY.M.GY.LAM.WRMBU.BRKN INTERBEDDED SS AND SLTST. WRMBUR INDICATE TOPS UP. MINOR PLANT FRAGS. |
| 92 | 189.05 | 189.79 | 0.74 | *78 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN MINOR COALIFIED PLANT FRAGS. |
| 93 | 189.79 | 190.22 | 0.43 | *74 | | | SILTSTONE | SSY.M.GY.LAM.XBDG.BRKN FAINT TRUNCATIONS INDICATE TOPS UP. MINOR SSD THROUGHOUT. |
| 93 | 190.22 | 191.80 | 1.58 | *62 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN PLANT FOSSILS (SPHENOPTERIS) ARE TALC FILLLED. SAND INFILLING INDICATES TOPS DOWN. |
| 94 | 191.80 | 193.12 | 1.32 | 61 | | | SILTSTONE | SSY.M.GY.LAM.SSD.VBRKN TALC FRAC FILL. COALIFIED PLANT FRAGS. SSD THROUGHOUT. MINOR COALY LENSES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 94 | 193.12 | 193.64 | 0.52 | 60 | 06806 | SILTSTONE | SSY, M. GY. LAM. SSD. BRKN AS ABOVE. BOTTOM .25 M SAMPLED. |
| 94 | 193.64 | 193.89 | 0.25 | 60 | | ROCK LOSS | |
| 95 | 193.89 | 194.02 | 0.13 | 60 | 06807 H | COAL LOSS | |
| 95 | 194.02 | 194.11 | 0.09 | 60 | 06807 H | COAL | C-5. BLK. SLD OCC BRIGHT STRINGERS 1-2 MM WIDE. |
| 95 | 194.11 | 194.12 | 0.01 | 60 | 06807 H | COAL | C-6. BLK. SLD |
| 95 | 194.12 | 194.16 | 0.04 | 60 | 06807 H | COAL | C-5. BLK. BRKN LISTRIC SURFACES. |
| 95 | 194.16 | 194.18 | 0.02 | 60 | 06807 H | COAL | C-3. BLK. SLD LISTRIC SURFACES. |
| 95 | 194.18 | 194.20 | 0.02 | 60 | 06807 H | COAL | C-2. BLK. SLD POLISHED FRAC SURFACE. |
| 95 | 194.20 | 194.24 | 0.04 | 60 | 06807 H | MUDSTONE | CARB. BLK. SLD NUMEROUS COALIFIED WOOD BITS & C-3 BAND S UP TO 3 MM WIDE. TALC. & CALCITE FILL D VEINLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 95 | 194.24 | 194.28 | 0.04 | 60 | 06807 H | COAL LOSS | |
| 95 | 194.28 | 194.34 | 0.06 | 60 | 06807 H | COAL | C-5. BLK. SLD CALCITE VEINLETS. POLISHED FRAC SURFACE S AND SLICKENSIDES WITH TALC. ON ENDS OF PIECES. |
| 95 | 194.34 | 194.45 | 0.11 | 60 | 06807 H | COAL | C-2. BLK. SLD ONE ANKERITE VEINLET 1 MM WIDE. |
| 95 | 194.45 | 194.56 | 0.11 | 60 | 06807 H | COAL | C-5. BLK. BRKN OCC BRIGHT BANDS OF C-2 UP TO 5 MM WIDE . COALIFIED WOOD WITH VISIBLE RESIN. |
| 95 | 194.56 | 194.59 | 0.03 | 60 | 06807 H | COAL | C-3. BLK. SLD |
| 95 | 194.59 | 194.72 | 0.13 | 59 | 06807 H | COAL | C-2. BLK. BRKN COULD BE COAL LOSS BETWEEN PIECES IN TH IS INTERVAL. |
| 95 | 194.72 | 194.74 | 0.02 | 59 | 06807 H | MUDSTONE | CARB. BLK. SLD OCC C-5 STRINGERS 1-2 MM WIDE. |
| 95 | 194.74 | 194.77 | 0.03 | 59 | 06807 H | COAL | C-3. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 95 | 194.77 | 194.81 | 0.04 | 59 06807 | H | MUDSTONE | CARB. BLK. BRKN 7 MM OF C-6 AT BOTTOM CONTACT. PLANT HA SH. |
| 95 | 194.81 | 194.89 | 0.08 | 59 06807 | H | COAL | C-2. BLK. BRKN |
| 95 | 194.89 | 194.92 | 0.03 | 59 06807 | H | MUDSTONE | CARB. DK. GY. SLD VERY HARD. MUCH ANKERITE VEINING THROUG HOUT. OCC COALY STRINGERS 1-3 MM WIDE. |
| 95 | 194.92 | 194.94 | 0.02 | 59 06807 | H | COAL | C-3. BLK. SLD HARD. MUCH ASSOC ANKERITE. |
| 95 | 194.94 | 194.96 | 0.02 | 59 06807 | H | MUDSTONE | CARB. DK. GY. SLD VERY HARD. MUCH ANKERITE & SOME ASSOC C OALIFIED PLANT HASH. |
| 95 | 194.96 | 195.12 | 0.16 | 59 06807 | H | COAL LOSS | |
| 95 | 195.12 | 195.28 | 0.16 | 59 06807 | H | COAL | C-3. BLK. VBRKN OCC FINE ANKERITE VEINLETS, VERY SOFT I N PLACES. SHEARED? |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 95 | 195.28 | 195.46 | 0.18 | 59 06807 | H | COAL | C-3. BLK. VBRKN FINE ANKERITE VEINLETS THROUGHOUT. SLIG HTLY HARDER THAN BELOW; OCC BANDS OF C- 5 <1 CM WIDE. CORE TWIST-OFF R. BASE. |
| 95 | 195.46 | 195.52 | 0.06 | 59 06807 | H | CLAYSTONE | CARB. DK. GY. SLD FAIRLY SOFT - SHEARED IN PLACES. ANKERI TE VEINS UP TO 1 CM WIDE. |
| 95 | 195.52 | 195.56 | 0.04 | 59 06807 | H | MUDSTONE | CARB. BLK. BRKN HARD. C-2 LENSES 5-7 MM WIDE. |
| 95 | 195.56 | 195.59 | 0.03 | 59 06807 | H | MUDSTONE | CARB. BLK. LAM. SLD FINE STRINGERS (<1 MM) OF BLACK ORGANIC -RICH BEDS, SOME COALIFIED. |
| 95 | 195.59 | 195.66 | 0.07 | 59 06807 | H | CLAYSTONE | DK. BN. BRKN FAIRLY SOFT. NO COAL. |
| 95 | 195.66 | 195.71 | 0.05 | 59 06807 | H | COAL | C-3. BLK. VBRKN |
| 95 | 195.71 | 195.77 | 0.06 | 59 06807 | H | COAL | C-3. BLK. VSHRD COMPLETELY SHEARED, CRUMBLED. VERY SOFT |
| 95 | 195.77 | 195.88 | 0.11 | 59 06807 | H | COAL | C-3. BLK. BRKN MUCH BETTER CONSOLIDATION. GOOD CLEAT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 95 | 195.88 | 195.95 | 0.07 | 59 | 06807 H | COAL | C-2, BLK, BRKN BANDS OF C-2 AND C-3 5 MM WIDE WITH MUCH ANKERITE VEINING. SLICKENSIDES. |
| 95 | 195.95 | 196.13 | 0.18 | 59 | 06807 H | COAL LOSS | |
| 95 | 196.13 | 196.24 | 0.11 | 58 | 06808 H | MUDSTONE | CARB. BLK. MAS. BRKN PLANT HASH THROUGHOUT. NUMEROUS BRIGHT CRALY. MISPS. (LESS THAN 1 MM WIDE). |
| 96 | 196.24 | 197.33 | 1.09 | 58 | 06808 H | MUDSTONE | CARB. DK. GY. MAS. BRKN NUMEROUS LISTRIC SURFACES. COALIFIED PLANT HASH THROUGHOUT. SOME COAL STRINGERS UP TO 5 MM WIDE. SOME ASSOC ANKERITE. |
| 96 | 197.33 | 197.44 | 0.11 | 58 | 06808 H | ROCK LOSS | |
| 96 | 197.44 | 197.55 | 0.11 | 58 | 06809 H | COAL LOSS | |
| 96 | 197.55 | 197.56 | 0.01 | 57 | 06809 H | COAL | C-1, BLK, SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 96 | 197.56 | 197.63 | 0.07 | 57 | 06809 H | COAL | C-3, BLK, VBRKN |
| 96 | 197.63 | 197.70 | 0.07 | 57 | 06809 H | CLAYSTONE | CARB. BLK, VSHRD VERY SOFT. MAXY. COMPLETELY SHRD. LOSS HERE? |
| 96 | 197.70 | 197.79 | 0.09 | 57 | 06809 H | ROCK LOSS | |
| 96 | 197.79 | 198.13 | 0.34 | 57 | 06809 H | COAL | C-3, BLK, VSHRD COAL LOSS HERE? VERY CRUMBLD/VSHRD. GOOD CLEAT ON MORE SOLID PIECES. VEINING ON C-2. |
| 96 | 198.13 | 198.22 | 0.09 | 57 | 06809 H | COAL | C-3, BLK, BRKN GOOD CLEAT. WELL CONSOLIDATED. VEINING ON C-2. |
| 97 | 198.22 | 198.42 | 0.20 | 57 | 06809 H | COAL | C-3, BLK, VBRKN VERY CRUMBLD/SHRD CORE. VEINING ON C-2 |
| 97 | 198.42 | 198.47 | 0.05 | 57 | 06809 H | COAL | C-4, BLK, BRKN POLISHED FRACTURE & LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 97 | 198.47 | 198.49 | 0.02 | 57 | 06809 H | CLAYSTONE | CARB. BLK. VSHRD SLICKENSIDES WITH TALC. |
| 97 | 198.49 | 198.53 | 0.04 | 57 | 06809 H | MUDSTONE | CARB. BLK. BRKN HARD, COAL STRINGERS UP TO 3 MM WIDE. M INOR ANKERITE. |
| 97 | 198.53 | 198.86 | 0.33 | 57 | 06809 H | COAL | C-3. BLK. VSHRD VERGING ON C-2. VERY CRUMBLD. |
| 97 | 198.86 | 198.91 | 0.05 | 57 | 06809 H | MUDSTONE | CARB. BLK. VBRKN RUBBLE. |
| 97 | 198.91 | 199.19 | 0.28 | 56 | 06809 H | COAL | C-3. BLK. VSHRD VERGING ON C-2. VERY CRUMBLD/VSHRD. CO RE. LOSS HERE? OCC ANKERITE VEINING. |
| 97 | 199.19 | 199.47 | 0.28 | 56 | 06809 H | COAL LOSS | |
| 97 | 199.47 | 199.64 | 0.17 | 56 | 06809 H | ROCK LOSS | |
| 97 | 199.64 | 199.71 | 0.07 | 56 | 06809 H | MUDSTONE | CARB. BLK. BRKN LITRICK SHEARED SURFACES. ABUNDANT COAL Y MISPS THROUGHOUT. ANKERITE VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 97 | 199.71 | 199.76 | 0.05 | 56 | 06809 H | COAL | C-5. BLK. VSHRD VSHRD CORE. LITRICK & POLISHED FRAC SUR FACES ABUNDANT. |
| 97 | 199.76 | 200.04 | 0.28 | 56 | 06809 H | COAL LOSS | |
| 97 | 200.04 | 200.31 | 0.27 | 56 | 06810 | MUDSTONE | CARB. DK. GY. MAS. SLD HARD. RARE COALIFIED PLANT HASH. RARE PYRITE MISPS LESS THAN 1 MM WIDE. TOP .25 M SAMPLED. |
| 98 | 200.31 | 200.59 | 0.28 | 55 | | MUDSTONE | CARB. BLK. LAM. BRKN NUMEROUS PLANT FRAGS AND COALIFIED PLANT FRAGS THROUGHOUT. LOWER .02 METER QTZ |
| 98 | 200.59 | 201.68 | 1.09 | *55 | | MUDSTONE | SLTY. DK. GY. LAM. BIOTR. BRKN FUS: SSS. SLTST NEAR BASE MUDST AT TOP. DISSEMINATED PYRITE WITHIN. HORIZONTAL WRMBUR. TALC ON SOME BEDDING SURFACES. |
| 98 | 201.68 | 202.39 | 0.71 | *71 | | SANDSTONE | SLTY. FG. LT. GY. VTHNB. BRKN YFG SS AT TOP, FG SS AT BASE, MINOR TALC AND QTZ FRACTURE FILL. FUS. |
| 99 | 202.39 | 202.49 | 0.10 | 74 | | SANDSTONE | SLTY. FG. LT. GY. VTHNB. BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87002

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 99 | 202.49 | 204.17 | 1.68 | *80 | | SANDSTONE | SLTY. MG. LT. GY. VTHNB. BRKN TALC AND QTZ FRACTURE FILL. FUS SS IS F G AT TOP AND MG AT BASE. DISSEMINATED P YRITE NEAR BASE. |
| 100 | 204.17 | 205.47 | 1.30 | *80 | | SANDSTONE | SLTY. FG. LT. GY. VTHNB. BRKN COARSENS LOCALLY TO MG SS. SLTST LAMS G ENERALLY <2 CM. TALC FRACTURE FILL. END OF HOLE T.D. = 206.04 M DRILLER'S MARK |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87002 SEAM : 10VT TOTAL INTERVAL(M) : 48.80 - 58.45 ELEVATION(M) : 1480.8
 GEOLOGIST : MURRAY SCALE: 1:40 INTERVAL(M) : 48.80 - 51.67 DRAWING NO. :
 DATE : MAR 04/88

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | |
|---------------|--------------------------|---------------------|--------------------|------|-----------|-----------|------|---------------------|-------------------|---------------------|------|-------|------|-------|------------------|--|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL.VAL MJ/KG | | |
| 1 2 3 4 5 6 | 48.80 | ↑ | | | | | | | | | | | | | | | |
| | 51.67 | ↓ | | 1.23 | 100.0 | 6812 | 6 | 1.23 / 0.00 1.23 | 0.49 | 15.02 | 6.63 | 77.86 | 0.45 | 29.66 | — | | |

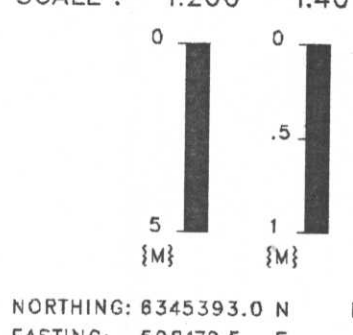
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87002

740

GEOLOGIST : MURRAY

DATE : MAR 08/88

DRAWING NO. :



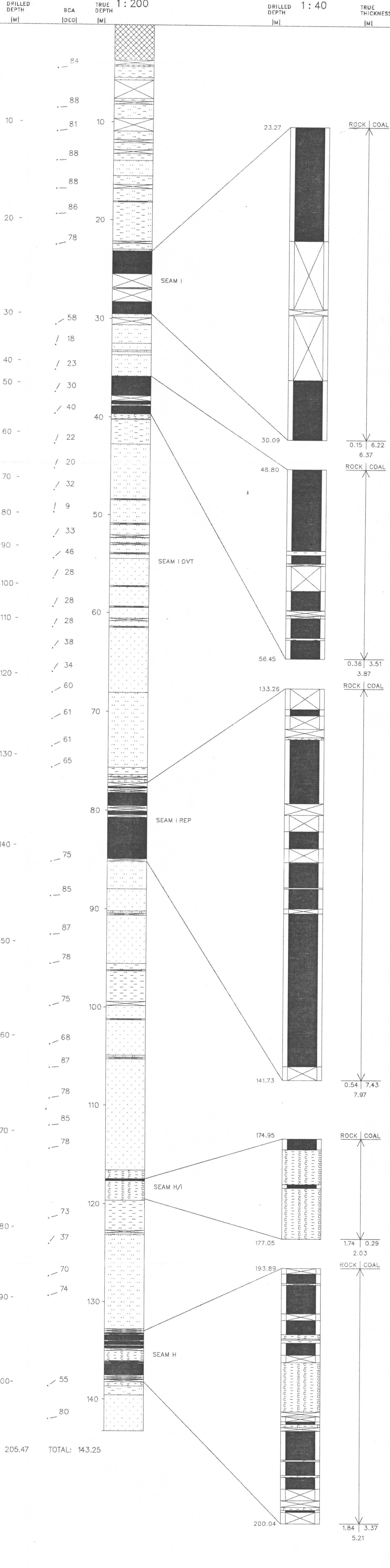
NORTHING: 8345393.0 N
 EASTING: 508172.5 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

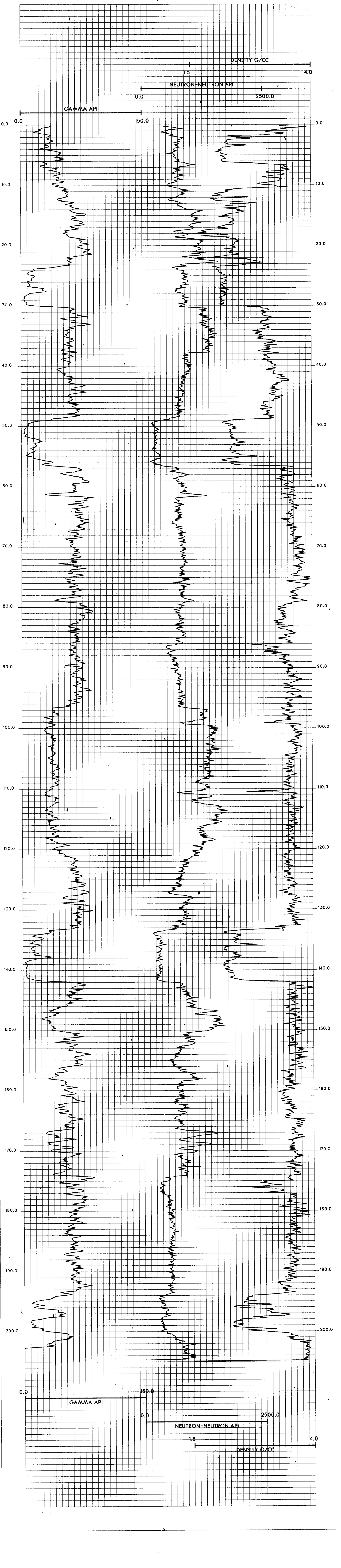
Geophysical Log

| | | |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Datasource: KPNLRDDH87002 Log Date: 87-08-29 Company: CENTURY Geologist: MURRAY | Province: BC Northing: 6345390.00 Zone: 9 Easting: 508173.00 Measuring Point: GROUND LEVEL | Lat: 571512 Long: 1285152 Elevation: 1480.7 |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------|

Scale: 1 to 200.0
 Depth Range: 0.0 to 209.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87003

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87003

DATE - 03/07/88

- HISTORY -

START DATE - 08/29/87

END DATE - 08/31/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SRIVASTAVA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - VERTICAL HOLE, SEAM I, H/I, H.

- LOCATION -

PROVINCE - BC

ELEVATION - 1493.35

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6345148.65

EASTING - 508294.18

LATITUDE - 571504

LONGITUDE - 1285145

- ORIENTATION -

LENGTH - 101.75

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 4.57

AQUIFER DEPTHS (M) - 0.00

0.00

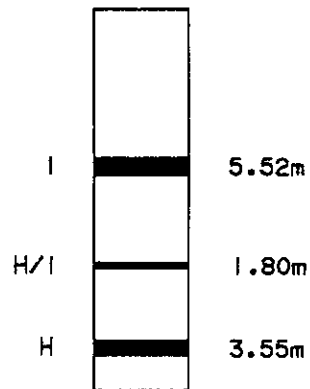
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87003**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: (205057)8800720 12.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|------------|--------------------------------------------------------------------------------------------------|
| | 0.00 | 4.57 | 4.57 | 74 | | | CASING | CASING DEPTH |
| 1 | 4.57 | 5.79 | 1.22 | 74 | | | ROCK LOSS | |
| 1 | 5.79 | 5.93 | 0.14 | 74 | | | OVERBURDEN | VBRKN RUBBLE - OVBDN FROM WITHIN CASING - COR E. LOSS(?). CASING 4.57 M. |
| 1 | 5.93 | 7.65 | 1.72 | *74 | | | SANDSTONE | FG. MOD. LT. GY. BRKN DK. GY. SLTST INTERLAMINAE THROUGHOUT. MINOR TRUNCATION INDICATES TOPS UP. |
| 2 | 7.65 | 8.77 | 1.12 | *75 | | | SANDSTONE | FG. MOD. LT.-M. GY. BRKN AS ABOVE. |
| 2 | 8.77 | 9.42 | 0.65 | 79 | | | SANDSTONE | FG. MEL. LT.-M. GY. BRKN AS ABOVE, SLTST LAMS WISPY AT TOP OF INTERVAL. |
| 3 | 9.42 | 10.99 | 1.57 | *84 | | | SANDSTONE | FG. MEL. LT.-M. GY. MAS. VBRKN MINOR SLTY WISPS, MINOR QTZ VEINING CROSS-CUTTING BDG. |
| 3 | 10.99 | 11.24 | 0.25 | 85 | | | ROCK LOSS | |
| 4 | 11.24 | 11.63 | 0.39 | 86 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 4 | 11.63 | 13.09 | 1.46 | *87 | | | SANDSTONE | FG. MEL. LT. GY. BRKN MDY SLTST INTERLAMINATIONS AND WISPS TH ROUGHOUT. QTZ VEINING NEAR BOTTOM CROSS-CUTS BEDS. |
| 5 | 13.09 | 13.80 | 0.71 | 88 | | | SANDSTONE | FG. MEL. M. GY. LAM. SLD THIN SLTST BANDS WITHIN (UP TO 5 CM THICK). |
| 5 | 13.80 | 14.67 | 0.87 | *89 | | | SANDSTONE | MG. MOD. LT. GY. LAM. BRKN LOAD CAST INDICATES WAY UP. FG. |
| 5 | 14.67 | 15.27 | 0.60 | 89 | | | SANDSTONE | MG. MOD. LT. GY. LAM. VBRKN FINE SLTY LAMINATIONS. |
| 5 | 15.27 | 15.42 | 0.15 | 89 | | | ROCK LOSS | |
| 6 | 15.42 | 17.33 | 1.91 | 90 | | | SILTSTONE | SSY. LT. GY. LAM. BIOTR. SLD VERY HEAVILY BIOTURBATED GIVING A MOTTLED APPEARANCE. HRMBUR INDICATE WAY UP. |
| 7 | 17.33 | 18.01 | 0.68 | *90 | | | SILTSTONE | SSY. LT. GY. LAM. BIOTR. SLD MDY LAMINATIONS AND WISPS. INTENSELY BIOTR AT BASE OF INTERVAL, SDY LAMS AS WELL. |
| 7 | 18.01 | 19.42 | 1.41 | 90 | | | SILTSTONE | SSY. LT. GY. SLD AS ABOVE. HRMBUR INDICATES TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 19.42 | 20.92 | 1.50 | *89 | | SILTSTONE | SSY. LT. GY. LAM. BIOTR. SLD AS ABOVE, ONE QTZ VEIN RUNNING PERPENDI CULAR TO BDG. |
| 9 | 20.92 | 22.98 | 2.06 | *88 | | SILTSTONE | LT. GY. LAM. BIOTR. SLD AS ABOVE, PLANT HASH. |
| 10 | 22.98 | 23.58 | 0.60 | 87 | | SANDSTONE | SLTY. VFG. MOD. LT. GY. LAM. BIOTR. SLD BECOMING A LITTLE MORE SDY (OTHER WISE AS ABOVE). PLANTS. |
| 10 | 23.58 | 25.14 | 1.56 | *87 | | SANDSTONE | SLTY. VFG. MOD. LT. GY. LAM. BIOTR. SLD AS ABOVE, PLANT HASH. |
| 11 | 25.14 | 26.48 | 1.34 | *74 | | SILTSTONE | SSY. LT. GY. LAM. BIOTR. SLD FINELY LAMINATED, INTENSELY BURROWED AT TOP OF INTERVAL FOR 13 CH. |
| 11 | 26.48 | 27.22 | 0.74 | 74 | | SILTSTONE | SSY. LT. GY. BIOTR. SLD AS ABOVE, TOPS INDICATOR. |
| 12 | 27.22 | 29.38 | 2.16 | *73 | | SILTSTONE | LT-M. GY. LAM. SSD. SLD. SOMEWHAT SDY (VFG), 1 CM THICK FINING U P CYCLES OVER AN INTERVAL OF 24 CM. WRM BUR. INDICATE MAY UP. |
| 13 | 29.38 | 29.46 | 0.08 | 75 | | SILTSTONE | LT-M. GY. LAM. SLD FINELY LAMINATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 13 | 29.46 | 30.83 | 1.37 | *77 | | SILTSTONE | LT-M. GY. LAM. BRKN MINOR SSD, FINELY LAM. |
| 14 | 30.83 | 32.06 | 1.23 | *88 | | SILTSTONE | LT-M. GY. LAM. SLD MDY LAMINATIONS WITHIN. |
| 14 | 32.06 | 32.94 | 0.88 | 85 | | SILTSTONE | LT-M. GY. LAM. SLD AS ABOVE. |
| 15 | 32.94 | 34.90 | 1.96 | *80 | | SILTSTONE | LT-M. GY. LAM. BIOTR. BRKN SSD. MDY WISPS & LAMS, HELMINTHOPSIS. |
| 16 | 34.90 | 35.08 | 0.18 | 82 | | SILTSTONE | LT-M. GY. MAS. BRKN FEATURELESS. |
| 16 | 35.08 | 36.86 | 1.78 | 85 | | SILTSTONE | M. GY. LAM. BRKN FINE MDY LAMS, LOAD CAST INDICATES TOP UP, HELMINTHOPSIS. |
| 17 | 36.86 | 38.06 | 1.20 | 88 | | SILTSTONE | CLYY. M. GY. MAS. SLD INTERBEDDED MUDDY SLTST & SLTY MUDST. |
| 17 | 38.06 | 38.39 | 0.33 | *90 | | SILTSTONE | CLYY. M. GY. MAS. SLD INTERBEDDED MUDDY SLTST & SLTY MUDST. L AM. BEDDING IN PLACES. |
| 17 | 38.39 | 38.49 | 0.10 | 90 05983 | | BENTONITE | LT. MH. MAS. BRKN MAXY. GY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------|
| 17 | 38.49 | 38.73 | 0.24 | 90 | | | SILTSTONE | CLYY, LT-M. GY. MAS. BRKN SLIGHTLY CARB. PLANT FOSSILS. |
| 17 | 38.73 | 38.90 | 0.17 | 90 | 07109 | | MUDSTONE | CARB. DK. GY. MAS. BRKN PLANT FOSSILS. |
| 17 | 38.90 | 39.02 | 0.12 | 90 | 07110 | I | COAL LOSS | |
| 17 | 39.02 | 39.03 | 0.01 | 90 | 07110 | I | COAL | C-1. BLK. BRKN |
| 18 | 39.03 | 39.06 | 0.03 | 90 | 07110 | I | COAL | C-1. BLK. BRKN |
| 18 | 39.06 | 39.09 | 0.03 | 90 | 07110 | I | MUDSTONE | M. BN. BRKN |
| 18 | 39.09 | 39.40 | 0.31 | 90 | 07110 | I | COAL LOSS | |
| 18 | 39.40 | 39.50 | 0.10 | 90 | 07110 | I | COAL | C-1. BLK. BRKN |
| 18 | 39.50 | 39.56 | 0.06 | 90 | 07110 | I | COAL | C-3. BLK. YBRKN |
| 18 | 39.56 | 39.59 | 0.03 | 90 | 07110 | I | COAL | C-2. BLK. BRKN |
| 18 | 39.59 | 39.65 | 0.06 | 90 | 07110 | I | MUDSTONE | M. BN. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------|
| 18 | 39.65 | 39.75 | 0.10 | 90 | 07110 | I | COAL | C-3. BLK. YBRKN |
| 18 | 39.75 | 39.76 | 0.01 | 90 | 07110 | I | MUDSTONE | CARB. M. BN. BRKN CONTAINS CARB LENSES. |
| 18 | 39.76 | 39.81 | 0.05 | 90 | 07110 | I | COAL | C-4. BLK. YBRKN |
| 18 | 39.81 | 39.83 | 0.02 | 90 | 07110 | I | COAL | C-3. BLK. YBRKN |
| 18 | 39.83 | 39.88 | 0.05 | 90 | 07110 | I | COAL | C-2. BLK. BRKN CONTAINS SOME C-1. |
| 18 | 39.88 | 39.91 | 0.03 | 90 | 07110 | I | MUDSTONE | DK. BN. BRKN VERY HARD. |
| 18 | 39.91 | 39.93 | 0.02 | 90 | 07110 | I | COAL | C-2. BLK. YBRKN |
| 18 | 39.93 | 39.95 | 0.02 | 90 | 07110 | I | COAL | C-4. BLK. YBRKN |
| 18 | 39.95 | 40.17 | 0.22 | 90 | 07110 | I | COAL | C-3. BLK. PWRD MINOR C-4 & C-2. |
| 18 | 40.17 | 40.26 | 0.09 | 90 | 07110 | I | COAL | C-2. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------|
| 18 | 40.26 | 40.31 | 0.05 | 90 07110 I | | COAL | C-3.BLK.VBRKN |
| 18 | 40.31 | 40.34 | 0.03 | 90 07110 I | | COAL | C-4.BLK.VBRKN |
| 18 | 40.34 | 40.37 | 0.03 | 90 07110 I | | COAL | C-3.BLK.BRKN |
| 18 | 40.37 | 40.49 | 0.12 | 90 07110 I | | COAL | C-2.BLK.BRKN WELL CLEATED. |
| 18 | 40.49 | 40.52 | 0.03 | 90 07111 I | | COAL | C-6.BLK.BRKN VERY MUDDY. |
| 18 | 40.52 | 40.59 | 0.07 | 90 07111 I | | MUDSTONE | LT.BN.BRKN |
| 18 | 40.59 | 40.62 | 0.03 | 90 07111 I | | MUDSTONE | CARB.BLK.BRKN |
| 18 | 40.62 | 40.75 | 0.13 | 90 07111 I | | ROCK LOSS | |
| 18 | 40.75 | 40.79 | 0.04 | 90 07111 I | | COAL | C-2.BLK.BRKN WELL CLEATED. |
| 18 | 40.79 | 40.80 | 0.01 | 90 07111 I | | MUDSTONE | SLTY.M.BN.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------|
| 18 | 40.80 | 40.88 | 0.08 | 90 07111 I | | COAL | C-2.BLK.BRKN |
| 18 | 40.88 | 41.01 | 0.13 | 90 07111 I | | COAL | C-6.BLK.BRKN HARD. VERY MUDDY. SOME CARB MUDST. |
| 18 | 41.01 | 41.37 | 0.36 | 90 07111 I | | COAL LOSS | |
| 18 | 41.37 | 41.45 | 0.08 | 90 07111 I | | COAL | C-1.BLK.BRKN SOME C-2. WELL CLEATED. |
| 18 | 41.45 | 41.53 | 0.08 | 90 07111 I | | COAL | C-2.BLK.BRKN |
| 19 | 41.53 | 41.69 | 0.16 | 90 07111 I | | COAL | C-2.BLK.BRKN WELL CLEATED. |
| 19 | 41.69 | 41.74 | 0.05 | 90 07111 I | | COAL | C-1.BLK.VBRKN |
| 19 | 41.74 | 41.88 | 0.14 | 90 07111 I | | COAL | C-2.BLK.VBRKN |
| 19 | 41.88 | 41.93 | 0.05 | 90 07111 I | | COAL | C-3.BLK.VBRKN |
| 19 | 41.93 | 42.03 | 0.10 | 90 07111 I | | COAL | C-2.BLK.VBRKN |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------|
| 19 | 42.03 | 42.07 | 0.04 | 90 | 07111 | I | MUDSTONE | CARB. BLK. BRKN |
| 19 | 42.07 | 42.09 | 0.02 | 90 | 07111 | I | COAL | C-1. BLK. VBRKN |
| 19 | 42.09 | 42.11 | 0.02 | 90 | 07111 | I | COAL | C-5. BLK. BRKN |
| 19 | 42.11 | 42.28 | 0.17 | 90 | 07111 | I | COAL | C-2. BLK. PMRD EVEN AMOUNT OF C-1 & C-2. |
| 19 | 42.28 | 42.97 | 0.69 | 90 | 07112 | I | COAL LOSS | |
| 19 | 42.97 | 43.59 | 0.62 | 89 | 07112 | I | COAL | C-1. SLD VERY WELL CLEATED. SOME C-2 & C-3 BANDS |
| 20 | 43.59 | 44.32 | 0.73 | 89 | 07112 | I | COAL | C-1. BLK. SLD MINOR C-2. VERY WELL CLEATED. BECOMES B RKN NEAR BASE. |
| 20 | 44.32 | 44.39 | 0.07 | 89 | 07112 | I | COAL | C-2. BLK. VBRKN SOME C-1. SOFT. CONTAINS A 1 CM C-6 BAN D. |
| 20 | 44.39 | 44.42 | 0.03 | 89 | 07112 | I | COAL | C-6. BLK. VBRKN |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | 44.42 | 45.55 | 1.13 | 89 | 07113 | | MUDSTONE | SLTY. M-DK. GY CARB NEAR BASE. PLANT FOSSILS. BN. UPPE R 25 CM SAMPLED. |
| 21 | 45.55 | 46.48 | 0.93 | 89 | | | MUDSTONE | CARB. DK. GY. SLD LT GY MOTTLING (MINOR), CARBONACEOUS PL ANT FRAGS ON FS. GRADATIONAL LOWER CONT ACT OTHERWISE GENERALLY FEATURELESS. |
| 21 | 46.48 | 47.35 | 0.87 | 89 | | | ROCK LOSS | |
| 21 | 47.35 | 48.45 | 1.10 | *89 | | | SANDSTONE | FG. MEL. LT. GY. MAS. VBRKN MINOR SLTY & MDY WISPS AND LAMINATIONS. |
| 22 | 48.45 | 50.28 | 1.83 | *90 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN VERY MINOR SLTY/MDY WISPS. EXTREMELY MA S. |
| 23 | 50.28 | 50.51 | 0.23 | 89 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN AS ABOVE. |
| 23 | 50.51 | 52.00 | 1.49 | 87 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN AS ABOVE. SHARP LOWER CONTACT. BRECCIAT ED AT .46 M FOR .09 M. |
| 23 | 52.00 | 52.04 | 0.04 | 86 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 52.04 | 52.32 | 0.28 | *86 | | SILTSTONE | M.GY.LAM.BRKN MINOR CLY WISPS & LAMS. LOAD CAST INDICATES MAY UP. |
| 24 | 52.32 | 53.56 | 1.24 | *83 | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN CLYY INTERLAMINATIONS, WRMBUR AND LOAD CASTS INDICATE TOPS UP. |
| 24 | 53.56 | 54.29 | 0.73 | 79 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN FINE LAMINATIONS, MINOR SAND LENSES AT TOP OF INTERVAL. |
| 24 | 54.29 | 54.49 | 0.20 | 77 | | ROCK LOSS | |
| 25 | 54.49 | 55.42 | 0.93 | 75 | | MUDSTONE | DK.GY.MAS.BRKN SOME FINE LAMINATIONS BUT GENERALLY FEATURELESS. MINOR CARB PLANT FRAGS ON FS. MINOR LISTRIC SURFACES. |
| 25 | 55.42 | 56.20 | 0.78 | *72 | | MUDSTONE | SLTY.DK.GY.MAS.SSD.BRKN BECOMING SLTY. SSD COULD BE BIOTRB. MEL MINTHOPSIS AT BASE, QTZ VEIN FOLLOWS BEDDING AT/NEAR BASE AND IS UP TO 2.5CM THICK. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 25 | 56.20 | 56.30 | 0.10 | 75 | | ROCK LOSS | |
| 26 | 56.30 | 56.52 | 0.22 | 77 | | MUDSTONE | SLTY.DK.GY.THNB.BRKN INTERBEDDED MUDST & SLTST. POLISHED (LISTRIC) SURFACES (FRESH). |
| 26 | 56.52 | 56.62 | 0.10 | 78 | | ROCK LOSS | |
| 26 | 56.62 | 56.96 | 0.34 | 80 | | SILTSTONE | M.GY.MAS.BRKN MINOR DK GY WISPS AND LAMINATIONS. LISTRIC SURFACES. |
| 26 | 56.96 | 58.30 | 1.34 | *86 | | SANDSTONE | FG.M.GY.LAM.BRKN SLTY & CLYY WISPS AND LAMINATIONS. |
| 27 | 58.30 | 59.21 | 0.91 | *80 | | SANDSTONE | FG.WEL.M.GY.LAM.SSD.BRKN SLTY & CLAYEY WISPS AND INTERLAMINATION & BIVALVE SHELLS (X-SECTIONAL VEINS). |
| 27 | 59.21 | 60.05 | 0.84 | 81 | | SANDSTONE | SLTY.FG.WEL.M.GY.LAM.SSD.BRKN AS ABOVE WITH MINOR MUDST RIP-UP CLASTS UP TO 1 CM LONG BY 0.5 CM WIDE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 60.05 | 60.72 | 0.67 | 81 | | SANDSTONE | SLTY. MG. MOD. LT-M. GY. LAM. SLD MINOR SLTY LAMINATIONS. MINOR SSD AT BASE. FG. |
| 28 | 60.72 | 61.11 | 0.39 | 82 | | SILTSTONE | SSY. M. GY. LAM. SSD. SLD FINE LAMINAE, BIOTRB. LOAD CASTS INDICATE MAY UP. |
| 28 | 61.11 | 62.09 | 0.98 | *82 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM DK. GY. SLTY. BANDS WITHIN. BOTTOM. .29M C CONTAINS WHITE CHERT(?) CLASTS UP TO 2 M M IN DIAMETER. |
| 29 | 62.09 | 62.17 | 0.08 | 82 | | SANDSTONE | PBLY. CG. PR. M. GY. THNB. SLD CLYY BANDS WITHIN UP TO .5 CM THICK. GR ADATIONAL. LOWER CONTACT. |
| 29 | 62.17 | 62.28 | 0.11 | 83 | | SANDSTONE | PBLY. VCG. PR. M. GY. MAS. SLD CHERT & QUARTZ CLASTS UP TO 3 MM IN DIA METER. MUDDY LENSES WITHIN. SHARP LOWER CONTACT. |
| 29 | 62.28 | 62.34 | 0.06 | 83 | | MUDSTONE | DK. GY. MAS. BRKN SOME FINE DK GY WISPS. QTZ VEIN ALONG B EDDING. SHARP LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 62.34 | 62.70 | 0.36 | 83 | | SANDSTONE | PBLY. VCG. PR. LT-M. GY. MAS. BRKN 2 MUDDY BANDS WITHIN WHICH ARE 1.5 CM T HICK. PEBBLES ARE UP TO 3 MM IN DIAMETE R. |
| 29 | 62.70 | 63.41 | 0.71 | 83 | | SANDSTONE | VCG. PR. LT-M. GY. MAS. SLD PEBBLES OCCUR IN MUCH LESS FREQUENCY. M INOR MUDDY BANDING. |
| 29 | 63.41 | 63.63 | 0.22 | 84 | | ROCK LOSS | |
| 29 | 63.63 | 63.73 | 0.10 | 84 | | MUDSTONE | CARB. DK. GY. MAS. SLD VITRINITE FLECKS VISIBLE. GRADATIONAL L OWER CONTACT. |
| 29 | 63.73 | 64.35 | 0.62 | *84 | | SANDSTONE | MG. MOD. M-DK. GY. YTHNB. SLD INTERBEDDED MG SS, FG SS, SLTST, COARSE NING UP CYCLES. DIFFICULT TO DETERMINE EXACT WIDTH OF CYCLE. |
| 30 | 64.35 | 65.51 | 1.16 | 86 | | SANDSTONE | CG. PR. M. GY. YTHNB. SSD. SLD SERIES OF COARSENING UP CYCLES GOING FR OM MUDDY TO CG SS. MINOR RIP-UP CLASTS 1 CM LONG BY .5 CM WIDE. ONE COALIFIED VEIN ALONG BEDDING. LOAD CASTS INDICATE MAY UP. FG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|---------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 65.51 | 65.59 | 0.08 | *87 | | | SANDSTONE | CG-PR-DK-GY-MAS-STD MINOR WHITE CHERT PEBBLES 1 MM IN DIAMETER. THIN COALIFIED VEIN ALONG BEDDING. MG. |
| 30 | 65.59 | 65.66 | 0.07 | 87 | | | MUDSTONE | CARB-DK-GY-MAS-BRKN FG-SS AT TOP GRADING VERY QUICKLY INTO CARBONACEOUS MUDST. |
| 30 | 65.66 | 66.35 | 0.69 | 85 | | | SANDSTONE | MG-MOD-M-GY-THNB-BRKN INTERBEDDED FG & MG SS WITH MINOR SLTY (DK GY) WISPS ALONG BEDDING. APPEARS TO BE A FINING UP CYCLE. MUDST RIP-UPS AT TOP .05 M OF INTERVAL. |
| 31 | 66.35 | 66.64 | 0.29 | *82 | | | SANDSTONE | FG-MOD-LT-GY-MAS-STD LAST 5 CM BECOME POORLY SORTED (FG-CG). |
| 31 | 66.64 | 67.07 | 0.43 | 82 | | | SANDSTONE | VFG-LT-MH-VTHNB-STD INTERBEDDED CG SANDSTONE, VFG SANDSTONE AND DARK GREY MUDSTONE. POOR FINING UP CYCLES (.15 M). SOME MUDST RIP-UP CLAS IS. CG, GY, THNB. |
| 31 | 67.07 | 68.07 | 1.00 | 82 | | | SANDSTONE | VFG-LT-GY-VTHNB-STD FG-VFG SS WITH LESSER MUDST LAMINATIONS, BIOTURBATION & LOAD CASTS (RIGHT WAY UP). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|---------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 68.07 | 68.43 | 0.36 | 82 | | | MUDSTONE | CARB-BLK SLIGHTLY CARB. PLANT FOSSILS. COAL PARTING (1 CM) NEAR BASE (C-1). PYRITE LENS ES & STRINGERS .15 CM FROM TOP OF UNIT. |
| 31 | 68.43 | 68.48 | 0.05 | 82 | | H/I | COAL | C-1.BLK |
| 32 | 68.48 | 68.85 | 0.37 | 82 | | H/I | MUDSTONE | CARB-BRKN |
| 32 | 68.85 | 69.14 | 0.29 | 82 | | H/I | COAL | C-6.BLK-BRKN CONTAINS A C-1 COAL BAND (.7 CM). |
| 32 | 69.14 | 69.15 | 0.01 | 82 | | H/I | COAL | C-1.BLK-BRKN |
| 32 | 69.15 | 69.60 | 0.45 | 82 | | H/I | COAL | C-6.BLK-BRKN |
| 32 | 69.60 | 69.62 | 0.02 | 82 | | H/I | COAL | C-5.BLK-BRKN |
| 32 | 69.62 | 69.66 | 0.04 | 82 | | H/I | COAL | C-6.BLK-BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 32 | 69.66 | 69.69 | 0.03 | 82 | | H/I | COAL | C-2.BLK.BRKN |
| 32 | 69.69 | 69.75 | 0.06 | 82 | | H/I | COAL | C-6.BLK.BRKN |
| 32 | 69.75 | 69.78 | 0.03 | 82 | | H/I | COAL | C-1.BLK.BRKN ABUNDANT C-1 MIXED WITH LESSER C-6. |
| 32 | 69.78 | 70.10 | 0.32 | 82 | | H/I | COAL | C-6.BLK.BRKN |
| 32 | 70.10 | 70.18 | 0.08 | 82 | | H/I | COAL | C-5.BLK.BRKN |
| 32 | 70.18 | 70.25 | 0.07 | 82 | | H/I | COAL | C-6.BLK.BRKN |
| 32 | 70.25 | 70.52 | 0.27 | 82 | | | MUDSTONE | DK.BN.BRKN SOME PLANT FOSSILS. |
| 33 | 70.52 | 71.40 | 0.88 | 82 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN GENERALLY FEATURELESS. MINOR SSD AT BASE AND LOAD CAST INDICATES MAY UP. |
| 33 | 71.40 | 72.51 | 1.11 | *82 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN SLTY LAMINATIONS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 72.51 | 74.05 | 1.54 | 85 | | | MUDSTONE | DK.GY.MAS.SLD MINOR IRREGULAR SHAPED SLTY LENSES NEAR BASE. OTHERWISE FEATURELESS. |
| 34 | 74.05 | 74.61 | 0.56 | *88 | | | MUDSTONE | DK.GY.MAS.SLD FEATURELESS. |
| 35 | 74.61 | 75.20 | 0.59 | 85 | | | MUDSTONE | DK.GY.MAS.SLD AS ABOVE. |
| 35 | 75.20 | 76.42 | 1.22 | *80 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN FINE SLTY & SSS LAMINATIONS. LOAD CAST INDICATES MAY UP. POSSIBLY BIOTURBATED. |
| 36 | 76.42 | 78.36 | 1.94 | *82 | | | SANDSTONE | VFG.LT.GY.LAM.BRKN FINE SLTY INTERLAMINATIONS. MINOR QTZ VEINS. PARALLEL BEDDING BECOMES LESS SLTY NEAR BASE. |
| 37 | 78.36 | 80.32 | 1.96 | 77 | | | SANDSTONE | FG.LT.GY.MAS.BRKN ONE SLTY BAND 10 CM THK NEAR TOP, SLTY MISPS AND LAMINAE THROUGHOUT. RIP-UPS AT BASE (MUDST). |
| 38 | 80.32 | 80.69 | 0.37 | 74 | | | SANDSTONE | FG.MEL.LT.GY.MAS.SLD MINOR SLTY MISPS & LAM. 10 CM QTZ VEIN ALONG BEDDING AT MIDDLE OF INTERVAL OVERLYING CLAY FRACTURE FILL 7 CM THICK. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 38 | 80.69 | 80.84 | 0.15 | 73 | | | MUDSTONE | SLTY. DK. GY. MAS. YBRKN HIGHLY SILICEOUS. |
| 38 | 80.84 | 81.14 | 0.30 | 72 | | | ROCK LOSS | |
| 38 | 81.14 | 81.32 | 0.18 | 72 | | | SANDSTONE | VFG. LT. GY. LAM. BRKN CLYY LAMS. & WISPS. LOOSELY CONSOLIDATED. |
| 38 | 81.32 | 81.58 | 0.26 | 71 | | | ROCK LOSS | |
| 38 | 81.58 | 82.84 | 1.26 | 69 | | | MUDSTONE | SLTY. M-DK. GY. LAM. YBRKN SLTY LAMS W/IN, LOAD CASTS INDICATE WAY UP, MINOR REVERSE FAULT W/1 MM OF DISPLACEMENT. |
| 39 | 82.84 | 83.50 | 0.66 | 67 | | | MUDSTONE | SLTY. DK. GY. LAM. SLD FINELY LAMINATED. PLANT HASH ON FS. |
| 39 | 83.50 | 84.88 | 1.38 | *64 | | | MUDSTONE | SLTY. DK. GY. LAM. SLD LAMINATED AND BECOMING SANDIER AT BASE. |
| 39 | 84.88 | 84.99 | 0.11 | 62 | | | ROCK LOSS | |
| 40 | 84.99 | 86.46 | 1.47 | *60 | | | SANDSTONE | FG. WEL. LT. GY. LAM. BRKN SLTY LAMINATIONS. MINOR NORMAL FAULT - 2 MM OF DISPLACEMENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 40 | 86.46 | 86.95 | 0.49 | 70 | | | SANDSTONE | FG. MOD. LT-M. GY. LAM. SLD SLTY LAMINATIONS & WISPS, LOAD CASTS INDICATE WAY UP. |
| 41 | 86.95 | 88.93 | 1.98 | *83 | | | SANDSTONE | SLTY. MOD. GY. LAM. SSD. BRKN SLTY & MUDDY BANDS THROUGHOUT. SERIES OF MINOR FAULTS (SPLAY) WITH 1-2 MM OF DISPLACEMENT. |
| 41 | 88.93 | 89.10 | 0.17 | 64 | | | ROCK LOSS | |
| 42 | 89.10 | 89.50 | 0.40 | 59 | | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. LAM. BRKN MINOR SOFT SED DEF. INTERLAM VFG SS & S LYST. |
| 42 | 89.50 | 90.13 | 0.63 | *50 | 07114 | | SILTSTONE | SSY. LT-M. GY. LAM. BRKN MINOR SOFT SED DEF. QTZ VEIN - 11 TO BEDDING (1 CM THICK). LOWER 11 CM SAMPLED |
| 42 | 90.13 | 90.27 | 0.14 | 52 | 07114 | | SILTSTONE | CLYY. DK. BN. BRKN |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 21

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------|
| 42 | 90.27 | 90.35 | 0.08 | 53 | 07115 H | COAL | C-4.BLK.VBRKN |
| 42 | 90.35 | 90.55 | 0.20 | 53 | 07115 H | COAL LOSS | |
| 42 | 90.55 | 90.71 | 0.16 | 54 | 07115 H | SANDSTONE | CARB.BLK.BRKN HIGHLY CARB. |
| 42 | 90.71 | 90.72 | 0.01 | 55 | 07115 H | COAL | C-6.BLK.VBRKN |
| 42 | 90.72 | 90.73 | 0.01 | 55 | 07115 H | COAL | C-4.BLK.VBRKN |
| 42 | 90.73 | 90.79 | 0.06 | 55 | 07115 H | COAL | C-2.BLK.VBRKN |
| 42 | 90.79 | 90.81 | 0.02 | 55 | 07115 H | COAL | C-6.BLK.VBRKN |
| 42 | 90.81 | 90.84 | 0.03 | 55 | 07115 H | COAL | C-2.BLK.VBRKN |
| 42 | 90.84 | 91.54 | 0.70 | 57 | 07115 H | COAL LOSS | |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 22

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------|
| 42 | 91.54 | 91.74 | 0.20 | 60 | 07115 H | ROCK LOSS | |
| 42 | 91.74 | 91.89 | 0.15 | 61 | 07115 H | MUDSTONE | CARB.M.BN.SHRD SLIGHTLY CARB. |
| 42 | 91.89 | 91.96 | 0.07 | 61 | 07115 H | COAL | C-5.BLK.BRKN |
| 43 | 91.96 | 92.08 | 0.12 | 62 | 07115 H | COAL | C-6.BLK.BRKN |
| 43 | 92.08 | 92.18 | 0.10 | 62 | 07115 H | COAL | C-3.BLK.BRKN |
| 43 | 92.18 | 92.30 | 0.12 | 63 | 07115 H | COAL | C-4.BLK.BRKN |
| 43 | 92.30 | 92.43 | 0.13 | 64 | 07115 H | COAL | C-6.BLK.VBRKN TWIST-OFF. |
| 43 | 92.43 | 92.49 | 0.06 | 64 | 07115 H | MUDSTONE | CARB.BLK.BRKN |
| 43 | 92.49 | 92.57 | 0.08 | 65 | 07116 H | COAL | C-3.BLK.PWRD |
| 43 | 92.57 | 92.59 | 0.02 | 65 | 07116 H | COAL | C-3.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------|
| 43 | 92.59 | 92.64 | 0.05 | 65 | 07116 | H | COAL | C-3.BLK.PWRD |
| 43 | 92.64 | 92.69 | 0.05 | 65 | 07116 | H | COAL | C-3.BLK.VBRKN |
| 43 | 92.69 | 92.99 | 0.30 | 66 | 07116 | H | COAL | C-2.BLK.BRKN VERY CLOSE TO C-1 (C-1 TO C-2). VERY WELL CLEATED. |
| 43 | 92.99 | 93.01 | 0.02 | 67 | 07116 | H | COAL | C-4.BLK.BRKN |
| 43 | 93.01 | 93.13 | 0.12 | 67 | 07116 | H | COAL | C-6.BLK.BRKN |
| 43 | 93.13 | 93.53 | 0.40 | 69 | 07116 | H | COAL LOSS | |
| 43 | 93.53 | 93.75 | 0.22 | 71 | 07116 | H | ROCK LOSS | |
| 43 | 93.75 | 93.95 | 0.20 | 72 | 07116 | H | COAL | C-1.BLK.BRKN VERY WELL CLEATED. |
| 44 | 93.95 | 94.10 | 0.15 | 73 | 07116 | H | COAL | C-2.BLK.PWRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 44 | 94.10 | 94.16 | 0.06 | 73 | 07116 | H | COAL | C-2.BLK.VBRKN |
| 44 | 94.16 | 94.18 | 0.02 | 73 | 07116 | H | COAL | C-6.BLK.VBRKN |
| 44 | 94.18 | 94.27 | 0.09 | 74 | 07116 | H | COAL | C-6.BLK.BRKN |
| 44 | 94.27 | 94.82 | 0.55 | 75 | 07117 | | MUDSTONE | CARB.M-DK.GY CARB NEAR TOP OF UNIT (PLANT FOSSILS). UPPER 25 CM SAMPLED. |
| 44 | 94.82 | 95.12 | 0.30 | 78 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN |
| 44 | 95.12 | 95.69 | 0.57 | *80 | | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN LOAD CAST (RIGHT WAY UP). ALSO MUDDY. |
| 45 | 95.69 | 95.84 | 0.15 | 81 | | | MUDSTONE | SLTY.DK.GY.MAS.SSD.SLD INTENSELY BIOTURBATED. LOAD CAST INDICATES WAY UP. |
| 45 | 95.84 | 96.39 | 0.55 | 82 | | | MUDSTONE | SLTY.DK.GY.MAS.SSD.SLD LAMINATED AND BECOMING SDY NEAR BASE. GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 45 | 96.39 | 97.16 | 0.77 | 84 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD MINOR SLTY/CLY WISPS. GRADATIONAL LOWE R CONTACT. |
| 45 | 97.16 | 97.54 | 0.38 | 85 | | | SANDSTONE | MG.MOD.LT.GY.MAS.SLD AS ABOVE. FG. |
| 45 | 97.54 | 97.76 | 0.22 | 86 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD AS ABOVE. |
| 46 | 97.76 | 98.17 | 0.41 | *87 | | | SANDSTONE | MG.PR.LT.GY.MAS.SLD MINOR FG SS BANDING, RIP-UP CLASTS UP T O 2 CM WIDE BY 4 CM LONG. |
| 46 | 98.17 | 98.41 | 0.24 | 87 | | | CLAYSTONE | LT.GY.MAS.VSHRD VERY SOFT AND CRUMBLY. NO DISTINCTIVE F EATURES VISIBLE. |
| 46 | 98.41 | 98.52 | 0.11 | 87 | | | COAL | C-6 EXTREMELY CARBONACEOUS WITH VITRINITE F LECKS. |
| 46 | 98.52 | 98.84 | 0.32 | 87 | | | SANDSTONE | CARB.FG.M-DK.GY.MAS.BRKN VERY CARBONACEOUS, VITRINITE FLECKS WIT MIN. |
| 46 | 98.84 | 99.75 | 0.91 | 87 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN VERY MINOR SLTY WISPS AND INTERLAMINATI ONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87003

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 47 | 99.75 | 100.06 | 0.31 | 87 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN AS ABOVE. SHARP LOWER CONTACT. |
| 47 | 100.06 | 101.03 | 0.97 | 87 | | | MUDSTONE | DK.GY.MAS.BRKN MINOR SLTY INTERLAM THROUGHOUT, QTZ VE IN ALONG BEDDING PLANE (1 CM THICK), PL ANT FRAGS ON FS. |
| 47 | 101.03 | 101.75 | 0.72 | 87 | | | MUDSTONE | M-DK.GY.MAS.SSD.SLD HEAVILY BIOTURBATED. MINOR PLANT FRAGS ON FS. T.D. END OF HOLE = 102.72 M. DRI LLER'S MARK. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87003

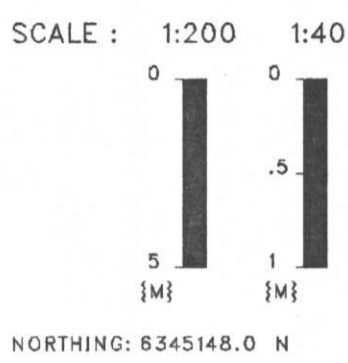
740

GEOLOGIST : SRIVASTAVA

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

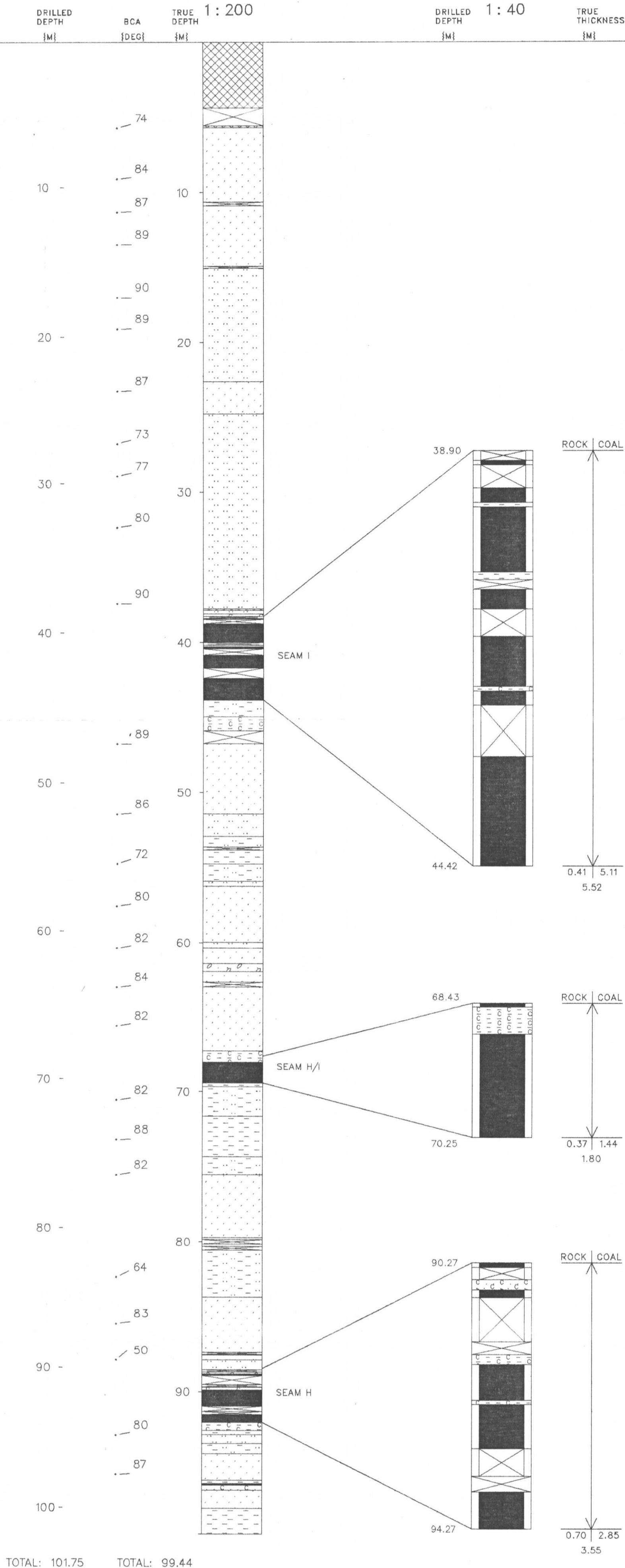


NORTHING: 6345148.0 N
 EASTING: 508294.1 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87003**
 Log Date: 87-08-27
 Company: CENTURY
 Geologist: SRIVASTAVA

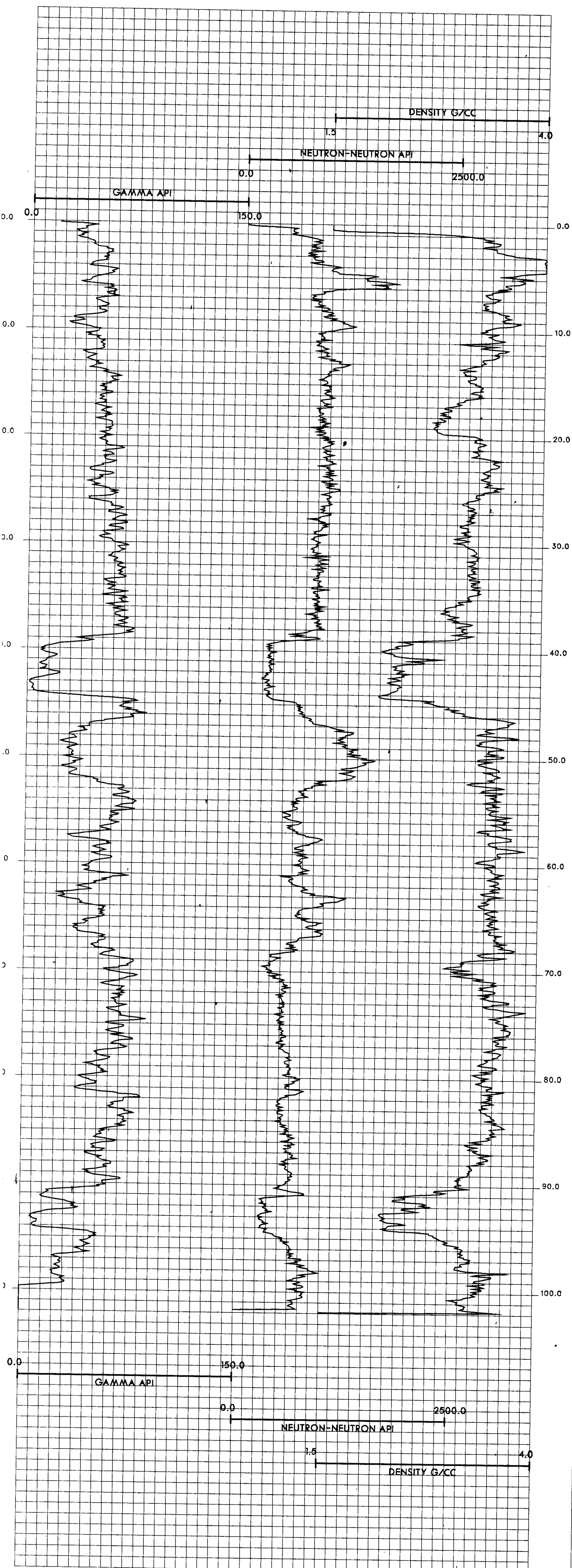
Province: BC Northing: 6345150.00 Lat: 571504
 Zone: 9 Easting: 508294.00 Long: 1285145
 Measuring Point: GROUND LEVEL Elevation: 1493.3

Scale: 1' to 200.0
 Depth Range: 0.0 to 106.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87004

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87004

DATE - 12/14/87

- HISTORY -

START DATE - 28/08/87

END DATE - 30/08/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SAVOIE

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED I, H/I, ?, H, PH. VERTICAL HOLE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1479.52

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6345072.00

EASTING - 508530.94

LATITUDE - 571502

LONGITUDE - 1285131

- ORIENTATION -

LENGTH - 101.83

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 4.57

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|------------|-------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 4.57 | 4.57 | 64 | | | CASING | CASING DEPTH |
| 1 | 4.57 | 4.67 | 0.10 | 64 | | | OVERBURDEN | SLD TILL. CASING DEPTH 4.57 M. TILL TO DEPT H OF APPROX 20 M. |
| 1 | 4.67 | 6.37 | 1.70 | 64 | | | OVERBURDEN | SLD TILL. |
| 2 | 6.37 | 7.47 | 1.10 | 64 | | | OVERBURDEN | SLD TILL. |
| 2 | 7.47 | 8.40 | 0.93 | 64 | | | OVERBURDEN | SLD TILL. PREDOMINATELY CLAY & MUD MIXED WI TH SUBROUNDED TO SUBANGULAR BLOCKS OF M G SS (.01 TO 15 CM). |
| 3 | 8.40 | 10.28 | 1.88 | 64 | | | OVERBURDEN | SLD TILL. |
| 3 | 10.28 | 10.48 | 0.20 | 64 | | | OVERBURDEN | SLD TILL. |
| 4 | 10.48 | 12.61 | 2.13 | 64 | | | OVERBURDEN | SLD TILL. |
| 5 | 12.61 | 13.27 | 0.66 | 64 | | | OVERBURDEN | SLD TILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|------------|----------------------------------------------------------------------|
| 5 | 13.27 | 14.67 | 1.40 | 64 | | | OVERBURDEN | SLD TILL. |
| 6 | 14.67 | 16.33 | 1.66 | 64 | | | OVERBURDEN | SLD TILL. |
| 6 | 16.33 | 16.68 | 0.35 | 64 | | | OVERBURDEN | SLD TILL. |
| 7 | 16.68 | 18.10 | 1.42 | 64 | | | OVERBURDEN | BRKN TILL. |
| 8 | 18.10 | 18.45 | 0.35 | 64 | | | SANDSTONE | SLTY. YFG. LT. GY. YBRKN OVBDN (TILL). |
| 8 | 18.45 | 18.52 | 0.07 | 64 | | | MUDSTONE | CARB. DK. BN. PHRD TILL. |
| 8 | 18.52 | 18.70 | 0.18 | 64 | 07124 | I | COAL LOSS | |
| 8 | 18.70 | 18.83 | 0.13 | 64 | 07124 | I | COAL | C-4. BLK. PHRD TILL. GRAB SAMPLE # 7124 FROM 18.52 TO 22.77 M. |
| 8 | 18.83 | 19.28 | 0.45 | 64 | 07124 | I | COAL | C-2. BLK. PHRD TILL. |
| 8 | 19.28 | 22.57 | 3.29 | 64 | 07124 | I | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------|
| 8 | 22.57 | 22.77 | 0.20 | 64 | 07124 | I | COAL | C-4, BLK, PHRD C-3. |
| 8 | 22.77 | 22.88 | 0.11 | 64 | | | SANDSTONE | VFG, LT. GY. BRKN TILL. |
| 8 | 22.88 | 23.07 | 0.19 | 64 | | | MUDSTONE | DK. BN. BRKN SOFT. TILL. |
| 8 | 23.07 | 23.18 | 0.11 | 64 | | | MUDSTONE | SSY, DK. BN. BRKN TILL. |
| 9 | 23.18 | 23.48 | 0.30 | 64 | | | SANDSTONE | YCG, PR, S-P, GY, BRKN STILL IN TILL? |
| 9 | 23.48 | 23.69 | 0.21 | 64 | | | MUDSTONE | M-DK, GY, SLD SOFT. COALY AT BASE. |
| 9 | 23.69 | 23.75 | 0.06 | 64 | | | SANDSTONE | FG, MOD. M. GY. BRKN ABUNDANT SMALL QTZ VEINS (<0.5 CM) SHOWI NG DISPLACEMENT. |
| 9 | 23.75 | 24.12 | 0.37 | 64 | | | ROCK LOSS | |
| 9 | 24.12 | 25.09 | 0.97 | 64 | | | SANDSTONE | FG, MOD. M. GY. MAS. BIOTR. VBRKN ABUNDANT BLEBS AND WISPS OF SLTY MUDST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | 25.09 | 25.86 | 0.77 | *64 | | | SANDSTONE | MG. WEL. LT. GY. MAS. SLD MINOR DISCONTINUOUS ELONGATE BLEBS OF S LTY MUDST. VERY MINOR HAIRLINE QTZ FILL ED FRACTURES PERPENDICULAR TO BDG. |
| 10 | 25.86 | 25.96 | 0.10 | 65 | | | SANDSTONE | MG. WEL. LT. GY. MAS. SLD AS ABOVE. |
| 10 | 25.96 | 26.01 | 0.05 | 65 | | | CLAYSTONE | LT. GY. VTHNB VERY SOFT. POSSIBLY DRILLING MUD. JAGGE D BROKEN CONTACTS. NOT SAMPLED. |
| 10 | 26.01 | 26.60 | 0.59 | *66 | | | SANDSTONE | MG. MOD. M. GY. MAS. WRMBU MINOR .5 TO 1 CM BANDS OF SLTY MUDST. P OSSIBLE VERTICAL BURROW (3 CM X 0.6 CM) |
| 10 | 26.60 | 26.64 | 0.04 | 67 | | | BRECCIA | ABUNDANT QTZ. |
| 10 | 26.64 | 27.07 | 0.43 | 67 | | | SANDSTONE | MG. MOD. M. GY. MAS. SLD MINOR SLTY MUDST BANDS (10 CM ZONE) AT BASE. TOPS UP. SOME BLACK PELLETS AT BA SE (.1 X .2 CM). SLICKENSIDES AT 45 DEG REES TO CORE AXIS. |
| 11 | 27.07 | 27.92 | 0.85 | 69 | | | SANDSTONE | FG. MOD. M. GY. MAS. SLD AS ABOVE. TRACES OF QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 27.92 | 28.68 | 0.76 | *71 | | | SANDSTONE | FG. PR. M. GY. MAS. SSD. SLD TOPS UP. LOAD STRUCTURES. INCREASE OF SLTY MUDST LAMINATIONS TOWARD BASE. NUMEROUS BLACK PELLETS AS DESC ABOVE. TRACE OF QTZ VEINING NEAR BASE (<.3CH) |
| 11 | 28.68 | 29.15 | 0.47 | *76 | | | SANDSTONE | FG. PR. M-DK. GY. VTHNB. SSD. BRKN INCREASE OF SLTST AND MUDST LAMINATIONS |
| 12 | 29.15 | 29.46 | 0.31 | 77 | | | SANDSTONE | VFG. PR. M-DK. GY. VTHNB. SSD. BRKN AS ABOVE. SLICKENSIDE SURFACE AT BASE OF INTERVAL (45 DEGREE TO CORE). |
| 12 | 29.46 | 31.30 | 1.84 | *80 | | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN ABUNDANT INTERLAM MUDST WISPS. NUMEROUS CARBONACEOUS PLANT FRAGMENTS ON MUDST BDG SURFACES. |
| 12 | 31.30 | 31.48 | 0.18 | 72 | | | ROCK LOSS | |
| 13 | 31.48 | 31.82 | 0.34 | *70 | | | SILTSTONE | M-DK. GY. LAM. SSD. BRKN AS ABOVE. FG. TOWARD BASE. GRADUAL CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 13 | 31.82 | 32.95 | 1.13 | 77 | | | MUDSTONE | SLTY. DK. GY. LAM. SSD. BRKN ABUNDANT INTERLAMINATED SLTY WISPS. SLICKENSIDES AT 45 DEGREE. MUDDIER TOWARDS BASE. |
| 13 | 32.95 | 32.97 | 0.02 | 83 | 05979 | | CLAYSTONE | LT. GY. VTHNB VERY SOFT. SAMPLED. |
| 13 | 32.97 | 33.32 | 0.35 | *85 | | | MUDSTONE | DK. GY. MB. SSD LESS FREQUENT SLTST WISPS. ABUNDANT CARBONACEOUS PLANT FRAGMENTS. |
| 14 | 33.32 | 33.43 | 0.11 | 84 | 07118 | | MUDSTONE | CARB. DK. BN. BRKN SLIGHTLY CARB & SLTY. |
| 14 | 33.43 | 33.55 | 0.12 | 84 | 07119 | H/I | COAL | C-6. BLK. VBRKN |
| 14 | 33.55 | 33.92 | 0.37 | 84 | 07119 | H/I | COAL LOSS | |
| 14 | 33.92 | 34.00 | 0.08 | 83 | 07119 | H/I | COAL | C-3. BLK. VBRKN |
| 14 | 34.00 | 34.09 | 0.09 | 83 | 07119 | H/I | COAL | C-2. BLK. BRKN |
| 14 | 34.09 | 34.19 | 0.10 | 83 | 07119 | H/I | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|---------------------------------------------------------|
| 14 | 34.19 | 34.29 | 0.10 | 82 | 07119 H/I | COAL | C-1.BLK.BRKN VERY WELL CLEATED, NUMEROUS C-2 BANDS. |
| 14 | 34.29 | 34.33 | 0.04 | 82 | 07119 H/I | COAL | C-2.BLK.BRKN PYRITE STRINGERS. |
| 14 | 34.33 | 34.43 | 0.10 | 82 | 07119 H/I | COAL | C-1.BLK.VBRKN VERY WELL CLEATED, NUMEROUS C-2 BANDS. |
| 14 | 34.43 | 34.53 | 0.10 | 82 | 07119 H/I | COAL | C-2.BLK.PHRD |
| 14 | 34.53 | 34.65 | 0.12 | 82 | 07119 H/I | MUDSTONE | M.BN.BRKN |
| 14 | 34.65 | 34.71 | 0.06 | 81 | 07119 H/I | COAL | C-2.BLK.BRKN |
| 14 | 34.71 | 34.75 | 0.04 | 81 | 07119 H/I | COAL | C-5.BLK.BRKN QTZ VEINING. |
| 14 | 34.75 | 34.93 | 0.18 | 81 | 07120 | MUDSTONE | CARB. DK. BN. SLD ALMOST C-6. |
| 14 | 34.93 | 35.13 | 0.20 | 81 | 07120 | MUDSTONE | M-DK. GY. SLD |
| 14 | 35.13 | 35.43 | 0.30 | *80 | 07120 | MUDSTONE | SLTY. M-DK. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 35.43 | 36.58 | 1.15 | *79 | | MUDSTONE | SLTY. M-DK. GY. LAM. SSD. SLD MINOR PLANT FRAGMENTS. INTERLAM. SLTST. TOPS UP. 3CM BAND CONTAINING PYRITE. GR ADUAL COARSENING DOWN SECTION. |
| 15 | 36.58 | 37.55 | 0.97 | 81 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. SSD. SLD NUMEROUS BIVALVE (2.4 CM LONG MAX). CAL CITE REPLACED SHELLS. MINOR PLANT FRAGM ENTS WITHIN MUDST BANDS. BIVALVES HAVE NO. SPECIFIC ORIENTATION. |
| 16 | 37.55 | 37.90 | 0.35 | *82 | | SANDSTONE | SLTY. F-MG. VPR. M. GY. LAM. WRMBU. SLD AS ABOVE. VERTICAL. WRMBUR. 10. CM. LONG. x 1 CM WIDE. TOPS UP. |
| 16 | 37.90 | 39.08 | 1.18 | 82 | | SANDSTONE | SLTY. FG. VPR. M-DK. GY. LAM. SSD. SLD INCREASE IN MUD CONTENT (INTERLAM). SHA RP LOWER CONTACT. |
| 16 | 39.08 | 39.23 | 0.15 | 82 | | SILTSTONE | LT. GY. THNB. SLD SLTST WITH SOME RECRYSTALIZATION. UNEVE N BDG. MAYBE THE TYPICAL. ORANGE WEATHER ING CONCRETIONARY BANDS. SHARP LOWER CO NTACT. VERY HARD. |
| 16 | 39.23 | 39.50 | 0.27 | 82 | | SANDSTONE | MG. VPR. M. GY. MB. SLD MINOR WISPS OF SLTST AND TWO <2 CM DISC ONTINUOUS BANDS OF BLACK PELLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 17 | 39.50 | 39.78 | 0.28 | 82 | | SANDSTONE | F-MG. VPR. M-DK. GY. MB. SLD MINOR WISPS OF SLTST. |
| 17 | 39.78 | 39.89 | 0.11 | 82 | | SILTSTONE | LT. GY. THNB. SLD VERY SIMILAR TO PREVIOUS SLTST. SHARP CONTACTS. |
| 17 | 39.89 | 40.79 | 0.90 | *82 | | SILTSTONE | SSY. M-DK. GY. LAM. SLD INTERLAM MUDST. NUMEROUS CARBONACEOUS PLANT SURFACES. SHEAR SURFACES COATED WITH A WHITE POWDER (15 DEGREES TO CA. |
| 17 | 40.79 | 41.15 | 0.36 | *78 | | SILTSTONE | SSY. M-DK. GY. LAM. SLD AS ABOVE. SLICKENSIDES AT 45 DEGREES. SENSE OF MOVEMENT IS NORMAL DIP SLIP. |
| 17 | 41.15 | 41.29 | 0.14 | 78 | | SILTSTONE | LT. GY. THNB. SLD SHARP CONTACTS. RECRYSTALLIZATION. CONCRETIONARY BAND? EXTREMELY HARD. |
| 17 | 41.29 | 41.52 | 0.23 | 78 | | MUDSTONE | SLTY. M-DK. GY. LAM. SLD THINLY INTERLAMINATED MUDST WITH ABUNDANT CARBONACEOUS PLANT FRAGMENTS ON BDG SURFACES. |
| 18 | 41.52 | 43.04 | 1.52 | *77 | | MUDSTONE | SLTY. M-DK. GY. LAM. BRKN AS ABOVE. ABUNDANT HELMINTHOPSIS SCATTERED THRU TOP HALF OF INTERVAL. SOME SLICKENSIDE SURFACES AT 45 DEGREES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 43.04 | 43.49 | 0.45 | 79 | | MUDSTONE | DK. GY. MAS. SLD FEATURELESS. DESTINED TO CRUMBLE. |
| 19 | 43.49 | 44.51 | 1.02 | *80 | | MUDSTONE | DK. GY. MAS. BRKN TOP 20 CM OF INTERVAL CONTAINS ABUNDANT MINUTE BLEBS OF PYRITE. REDUCING ENVIRONMENT. |
| 19 | 44.51 | 44.82 | 0.31 | 79 | | ROCK LOSS | |
| 19 | 44.82 | 45.42 | 0.60 | 79 | | MUDSTONE | M-DK. GY. MAS. VBRKN SOME OF THIS INTERVAL APPEARS TO BE GRUND UP MUD. POSSIBLY FAULT GOUGE. |
| 19 | 45.42 | 45.66 | 0.24 | 78 | | SANDSTONE | FG. M. GY. SSD. BRKN NUMEROUS WISPS OF MUDST. SPARSE DISCONTINUOUS BANDS (<2CM) OF BLACK PELLETS (<1 X .2 CM). |
| 19 | 45.66 | 45.97 | 0.31 | 78 | | ROCK LOSS | |
| 20 | 45.97 | 46.28 | 0.31 | 78 | | SANDSTONE | MG. LT-M. GY. MAS. VBRKN THIN WISPS AND BANDS OF BLACK PELLETS. GRADATIONAL COARSENING DOWN SECTION. SLICKENSIDE SURFACE AT BASE (45 DEGREES). |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | 46.28 | 46.98 | 0.70 | *77 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN MINOR THIN WISPS OF SLTST, MIXED WITH S. |
| 20 | 46.98 | 47.29 | 0.31 | 78 | | | ROCK LOSS | |
| 20 | 47.29 | 48.03 | 0.74 | 78 | | | SANDSTONE | M-CG. LT-M. GY. MAS. VBRKN BANDS OF VCG SS (5 CM). QTZ VEINING <1 CM SUB-PARALLEL TO CORE LENGTH. GRADATI ONAL CONTACT. MG. |
| 21 | 48.03 | 50.05 | 2.02 | 80 | | | SANDSTONE | VCG. VPR. S-P. GY. MAS. BRKN GRADATIONAL CONTACTS. SOME 25 CM GRANUL AR ZONES. MINOR QTZ VEINING <1 CM SUB-P ARALLEL TO CORE. TWO <1 CM CARBONACEOUS MUDST PARTINGS. |
| 22 | 50.05 | 52.17 | 2.12 | 83 | | | SANDSTONE | VCG. VPR. S-P. GY. MAS. BRKN SOME GRANULAR ZONES. LARGE 2 CM QTZ VEI N SUB-PARALLEL TO CORE IN BOTTOM THIRD OF INTERVAL. A FEW <.3 CM COALY PARTING S. |
| 23 | 52.17 | 52.97 | 0.80 | *85 | 07121 | | SANDSTONE | CG. VPR. S-P. GY. MAS. BRKN AS ABOVE. LOWER 25 CM SAMPLED. VCG. |
| 23 | 52.97 | 53.00 | 0.03 | 85 | 07122 ? | | COAL | C-4. BLK. PWRD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------|
| 23 | 53.00 | 53.03 | 0.03 | 85 | 07122 ? | | COAL | C-3. BLK. BRKN |
| 23 | 53.03 | 53.07 | 0.04 | 85 | 07122 ? | | COAL | C-3. BLK. PWRD |
| 23 | 53.07 | 53.12 | 0.05 | 85 | 07122 ? | | COAL | C-2. BLK. BRKN |
| 23 | 53.12 | 53.17 | 0.05 | 85 | 07122 ? | | COAL | C-3. BLK. VBRKN |
| 23 | 53.17 | 53.21 | 0.04 | 85 | 07122 ? | | COAL | C-2. BLK. VBRKN |
| 23 | 53.21 | 53.22 | 0.01 | 85 | 07122 ? | | COAL | C-5. BLK. VBRKN |
| 23 | 53.22 | 53.26 | 0.04 | 85 | 07122 ? | | COAL | C-2. BLK. VBRKN |
| 23 | 53.26 | 53.49 | 0.23 | 85 | 07122 ? | | COAL LOSS | |
| 23 | 53.49 | 53.64 | 0.15 | 85 | 07123 | | MUDSTONE | CARB. BLK. VBRKN |
| 23 | 53.64 | 53.72 | 0.08 | 85 | 07123 | | ROCK LOSS | |
| 23 | 53.72 | 53.75 | 0.03 | 85 | 07123 | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 53.75 | 53.80 | 0.05 | 85 | 07123 | COAL | C-4, BLK. YBRKN |
| 23 | 53.80 | 54.20 | 0.40 | *85 | | MUDSTONE | CARB. BLK. BRKN QTZ VEINING. PYRITE BLEBS. SMALL COAL B ANDS. |
| 24 | 54.20 | 54.46 | 0.26 | *79 | | MUDSTONE | SLTY. M-DK. GY. LAM. SSD. SLD INTERLAM SLTST. TOPS UP, LOAD CASTS. |
| 24 | 54.46 | 54.96 | 0.50 | 80 | | SILTSTONE | SSY. M. GY. VTHNB. SSD. SLD INTERBEDDED MUDST. FINING UP SEQUENCE. G RADATIONAL CONTACTS. TOPS UP. |
| 24 | 54.96 | 56.26 | 1.30 | 81 | | SANDSTONE | FG. M. GY. MAS. BRKN FUS. VERY SPARSE WISPS OF MUD. |
| 25 | 56.26 | 57.92 | 1.66 | 83 | | SANDSTONE | MG. LT-M. GY. MAS. BRKN AS ABOVE. QTZ VEIN .1 CM WIDE SUB-PARAL LEL TO CORE. SHARP LOWER CONTACT. TWO 1 0 CM ZONES CONTAINING WHITE POWDER. SHE AR SURFACES AT 15 DEGREES. |
| 25 | 57.92 | 58.24 | 0.32 | *85 | | SILTSTONE | SSY. M. GY. LAM. SLD CRUDELY INTERLAM MUDST. WAVY BDG. ABUND ANT HELMINTHOPSIS. ONE BURROW 2 CM VERT ICAL x 1 CM WIDE. TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 26 | 58.24 | 59.01 | 0.77 | *85 | | SILTSTONE | SSY. M. GY. VTHNB. BIOTR. SLD ABUNDANT HELMINTHOPSIS. TOPS UP. GRADAT IONAL CONTACT. |
| 26 | 59.01 | 59.16 | 0.15 | 85 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. XBDG. SLD SOME HELMINTHOPSIS. SMALL SCALE TROUGH X-BDG (<10 CM). |
| 26 | 59.16 | 59.28 | 0.12 | 85 | | SILTSTONE | LT. GY. THNB. SLD VERY HARD. SOME RECRYSTALLIZATION. MINOR BLACK PELLETS. SILICEOUS. |
| 26 | 59.28 | 60.31 | 1.03 | 85 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. LAM. XBDG. SLD MINOR MUDDY SLTST LAM. ABUNDANT TROUGH X-BDG THROUGHOUT. TOPS UP. |
| 27 | 60.31 | 60.83 | 0.52 | 85 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. LAM. XBDG. SLD AS ABOVE. |
| 27 | 60.83 | 60.86 | 0.03 | 85 | | BRECCIA | MH. SLD MOSTLY QUARTZ WITH ANGULAR SS FRAGMENT AS INCLUSIONS. |
| 27 | 60.86 | 62.19 | 1.33 | 85 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. LAM. XBDG. SLD MINOR MUDST LAM. ABUNDANT TROUGH X-BDG. TOPS UP. A FEW LOAD CASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 27 | 62.19 | 62.43 | 0.24 | 85 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. LAM. XBDG. SLD AS ABOVE. |
| 28 | 62.43 | 64.58 | 2.15 | 84 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. LAM. XBDG. SLD AS ABOVE. |
| 29 | 64.58 | 64.68 | 0.10 | 84 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. LAM. XBDG. SLD AS ABOVE. |
| 29 | 64.68 | 64.91 | 0.23 | 84 | | SANDSTONE | MG. MOD. M. GY. THNB. SLD ABUNDANT CARBONACEOUS PLANT MATERIAL ON BDG SURFACES. LACK OF X-BDG IN THIS INTERVAL. |
| 29 | 64.91 | 64.96 | 0.05 | 84 | | BRECCIA | GY. SLD QUARTZ WITH ANGULAR SS. CLASTS. AS INCLUSIONS. |
| 29 | 64.96 | 65.16 | 0.20 | 84 | | SANDSTONE | MG. MOD. M. GY. THNB. SLD LISTRIC SURFACES PARALLEL TO BDG. |
| 29 | 65.16 | 66.71 | 1.55 | 84 | | SANDSTONE | F-MG. PR. M. GY. LAM. XBDG. SLD TROUGH X-BDG. ABUNDANT MUDST WISPS. |
| 30 | 66.71 | 68.21 | 1.50 | *84 | | SANDSTONE | F-MG. MOD. M. GY. LAM. XBDG. SLD AS ABOVE. X-BDG BECOMING LESS APPARENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------|
| 30 | 68.21 | 68.67 | 0.46 | 84 | | SANDSTONE | F-MG. MOD. M. GY. LAM. XBDG. SLD MINOR INDISTINCT WISPS OF MUDST. SHARP LOWER CONTACT. |
| 30 | 68.67 | 68.73 | 0.06 | 84 | | SANDSTONE | SLTY. VFG. M. GY. SLD ABUNDANT CARBONACEOUS PLANT FRAGMENTS IN MUDST. LAM. |
| 31 | 68.73 | 68.74 | 0.01 | 84 | | SANDSTONE | SLTY. VFG. LT. GY. BRKN SLIGHTLY CARB. |
| 31 | 68.74 | 69.05 | 0.31 | 84 | | ROCK LOSS | |
| 31 | 69.05 | 69.08 | 0.03 | 84 | | MUDSTONE | CARB. DK. BN. BRKN |
| 31 | 69.08 | 69.26 | 0.18 | 84 | 07126 H | COAL LOSS | |
| 31 | 69.26 | 69.28 | 0.02 | 84 | 07126 H | COAL | C-2. BLK. BRKN ABUNDANT PYRITE (70% OF UNIT). |
| 31 | 69.28 | 69.32 | 0.04 | 84 | 07126 H | MUDSTONE | CARB. DK. BN. BRKN |
| 31 | 69.32 | 69.42 | 0.10 | 84 | 07126 H | COAL | C-2. BLK. BRKN PYRITE STRINGERS. |
| 31 | 69.42 | 69.50 | 0.08 | 84 | 07126 H | COAL | C-3. BLK. VBRKN PYRITE STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------|
| 31 | 69.50 | 69.67 | 0.17 | 84 | 07126 | H | COAL | C-2.BLK.PHRD |
| 31 | 69.67 | 69.98 | 0.31 | 85 | 07126 | H | ROCK LOSS | |
| 31 | 69.98 | 70.01 | 0.03 | 85 | 07126 | H | COAL | C-6.BLK.VBRKN |
| 31 | 70.01 | 70.06 | 0.05 | 85 | 07126 | H | COAL | C-5.BLK.PHRD |
| 31 | 70.06 | 70.16 | 0.10 | 85 | 07126 | H | COAL | C-3.BLK.PHRD |
| 31 | 70.16 | 70.20 | 0.04 | 85 | 07126 | H | COAL | C-2.BLK.VBRKN |
| 31 | 70.20 | 70.27 | 0.07 | 85 | 07126 | H | COAL | C-4.BLK.VBRKN |
| 31 | 70.27 | 70.44 | 0.17 | 85 | 07126 | H | COAL | C-2.BLK.VBRKN CLOSE TO C-1. VERY WELL CLEATED. |
| 31 | 70.44 | 70.46 | 0.02 | 85 | 07126 | H | COAL | C-3.BLK.BRKN |
| 31 | 70.46 | 70.61 | 0.15 | 85 | 07126 | H | COAL | C-2.BLK.BRKN ALMOST C-1. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------|
| 31 | 70.61 | 70.63 | 0.02 | 85 | 07126 | H | MUDSTONE | CARB.BLK.BRKN |
| 31 | 70.63 | 70.69 | 0.06 | 85 | 07126 | H | COAL | C-3.BLK.PHRD |
| 31 | 70.69 | 70.71 | 0.02 | 85 | 07126 | H | COAL | C-1.BLK.VBRKN |
| 31 | 70.71 | 70.72 | 0.01 | 85 | 07126 | H | COAL | C-6.BLK.VBRKN |
| 31 | 70.72 | 70.77 | 0.05 | 85 | 07126 | H | COAL | C-1.BLK.VBRKN |
| 31 | 70.77 | 70.78 | 0.01 | 85 | 07126 | H | COAL | C-5.BLK.VBRKN |
| 31 | 70.78 | 70.79 | 0.01 | 85 | 07126 | H | COAL | C-1.BLK.VBRKN |
| 31 | 70.79 | 70.81 | 0.02 | 85 | 07126 | H | COAL | C-5.BLK.VBRKN |
| 31 | 70.81 | 70.88 | 0.07 | 85 | 07126 | H | COAL | C-1.BLK.VBRKN |
| 31 | 70.88 | 70.90 | 0.02 | 85 | 07126 | H | COAL | C-5.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 31 | 70.90 | 70.95 | 0.05 | 85 07126 | H | COAL | C-1.BLK.VBRKN |
| 31 | 70.95 | 70.97 | 0.02 | 85 07126 | H | COAL | C-2.BLK.VBRKN |
| 31 | 70.97 | 70.98 | 0.01 | 85 07126 | H | COAL | C-4.BLK.VBRKN |
| 31 | 70.98 | 70.99 | 0.01 | 85 07126 | H | COAL | C-5.BLK.VBRKN |
| 31 | 70.99 | 71.01 | 0.02 | 85 07127 | | MUDSTONE | CARB.BLK.VBRKN |
| 31 | 71.01 | 71.51 | 0.50 | 85 07127 | | ROCK LOSS | |
| 31 | 71.51 | 71.64 | 0.13 | 85 07127 | | MUDSTONE | CARB.BLK.SLD SOME QTZ VEINING. |
| 32 | 71.64 | 72.07 | 0.43 | *85 | | MUDSTONE | CARB.DK.GY.LAM.SLD SLTY LAM MORE FREQUENT TOWARD BASE OF I. NTERVAL. NUMEROUS COALY STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 32 | 72.07 | 72.62 | 0.55 | 85 | | SANDSTONE | SLTY.VFG.MEL.M.GY.LAM.SSD.SLD MINOR MUDST LAMINATIONS BECOMING LESS F REQUENT WITH DEPTH. SOME CARBONACEOUS P LANT FRAGMENTS ON BDG SURFACES. FINING UP SEQUENCE.GRADATIONAL CONTACTS. |
| 32 | 72.62 | 73.79 | 1.17 | 84 | | SANDSTONE | MG.MOD.LT-M.GY.MAS.SLD MINOR INFREQUENT HISPS OF MUDST. MINOR QTZ VEIN SUB-PARALLEL TO CORE (0.1 CM). |
| 33 | 73.79 | 74.41 | 0.62 | 83 | | SANDSTONE | M-CG.MOD.LT.GY.MAS.SLD INDISTINCT CARBONACEOUS PLANT STRINGER ON FRESH BROKEN SURFACE. |
| 33 | 74.41 | 75.02 | 0.61 | 82 | | SANDSTONE | F-MG.MOD.LT-M.GY.MAS.SLD SOME MUDST HISPS. |
| 33 | 75.02 | 75.48 | 0.46 | 82 | | SANDSTONE | MG.MOD.LT-M.GY.MAS.VBRKN |
| 33 | 75.48 | 76.08 | 0.60 | 81 | | ROCK LOSS | |
| 33 | 76.08 | 76.28 | 0.20 | 81 | | SANDSTONE | FG.PR.M.GY.THNB.BRKN ABUNDANT MUDST HISPS. |
| 34 | 76.28 | 76.80 | 0.52 | 81 | | SANDSTONE | F-MG.PR.M.GY.THKB.SSD.SLD NUMEROUS MUDST BANDS. TOPS UP, LOAD GAS T. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 76.80 | 76.92 | 0.12 | 80 | | SANDSTONE | MG. MOD. LT. GY. THNB. SSD. SLD GRADATIONAL CONTACTS. |
| 34 | 76.92 | 77.83 | 0.91 | *80 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. MAS. SSD. SLD NUMEROUS MUDST WISPS. ONE 3 CM BAND OF MG SS. GRADATIONAL CONTACTS. |
| 34 | 77.83 | 78.34 | 0.51 | 80 | | SANDSTONE | SLTY. F-MG. PR. LT-M. GY. MAS. SSD. SLD NUMEROUS MUDST WISPS. |
| 35 | 78.34 | 78.39 | 0.05 | 80 | | SANDSTONE | SLTY. F-MG. PR. M. GY. MAS. SLD AS ABOVE. |
| 35 | 78.39 | 78.61 | 0.22 | 80 | | SILTSTONE | SSY. LT. GY. THNB. SSD. SLD VERY HARD. CALCAREOUS REFLIZATION. |
| 35 | 78.61 | 80.35 | 1.74 | 80 | | SANDSTONE | FG. M. GY. MAS. SSD. BRKN NUMEROUS ZONES CONTAIN MUDST LAMINAE AN D WISPS. CRUDE FRACTURE SUB-PARALLEL TO CORE. POOR QTZ CRYSTAL DEVELOPMENT ALO NG FRACTURE. |
| 36 | 80.35 | 80.74 | 0.39 | 80 | | SANDSTONE | FG. LT-M. GY. MAS. SLD VERY MINOR WISPS OF MUDST. |
| 36 | 80.74 | 82.17 | 1.43 | *80 | | SANDSTONE | SLTY. F-MG. LT-M. GY. MAS. SLD MINOR SSD. NUMEROUS MUDST WISPS. 2 CM B AND OF SPARSELY DISTRIBUTED BLACK PELLE TS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 36 | 82.17 | 82.44 | 0.27 | 73 | | SANDSTONE | SLTY. VFG. PR. M. GY. MB. SLD ABUNDANT MUDST WISPS. |
| 37 | 82.44 | 82.53 | 0.09 | 71 | | SANDSTONE | SLTY. VFG. PR. M. GY. MR. SLD AS ABOVE. |
| 37 | 82.53 | 82.70 | 0.17 | 70 | | SANDSTONE | F-MG. MOD. LT-M. GY. THNB. SLD VERY MINOR MUDST WISPS. |
| 37 | 82.70 | 82.75 | 0.05 | 70 | | SANDSTONE | MG. MOD. LT-M. GY. VTHNB. SLD ABUNDANT ELONGATE MUDST RIP-UP CLASTS (1.5 x .3 CM AVG). |
| 37 | 82.75 | 83.79 | 1.04 | *65 | | SANDSTONE | F-MG. LT-M. GY. MAS. SLD NUMEROUS SLTY MUDST WISPS. FRACTURE AT 25 DEGREES. IRREGULAR QTZ FRACTURE FILL |
| 37 | 83.79 | 84.33 | 0.54 | 66 | | SANDSTONE | MG. LT-M. GY. MAS. SLD FRACTURE AT 25 DEGREES WITH POORLY DEVE LOPED CRYSTALIZATION ON SURFACE. |
| 38 | 84.33 | 84.63 | 0.30 | 66 | | SANDSTONE | MG. LT-M. GY. MAS. BRKN AS ABOVE. MINOR WISPS OF MUDST. |
| 38 | 84.63 | 84.69 | 0.06 | 66 | | SANDSTONE | MG. LT-M. GY. VTHNB. SSD. SLD ONE CM BAND CONTAINING A SPARSE AMOUNT OF BLACK PELLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------|
| 38 | 84.69 | 85.75 | 1.06 | *67 | | SANDSTONE | MG. LT-M. GY. MAS. BRKN FRACTURES AT 25 DEGREES AS DESCRIBED ABOVE. |
| 38 | 85.75 | 86.27 | 0.52 | 74 | | SANDSTONE | SLTY. F-MG. PR. M. GY. MAS. SLD ABUNDANT MUDST WISPS. |
| 39 | 86.27 | 86.54 | 0.27 | *78 | | SANDSTONE | SLTY. F-MG. PR. M. GY. MAS. SLD AS ABOVE. |
| 39 | 86.54 | 86.72 | 0.18 | 77 | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD FRACTURE AT 25 DEGREES. |
| 39 | 86.72 | 86.97 | 0.25 | 77 | | SANDSTONE | F-MG. PR. M. GY. MAS. SLD ABUNDANT MUDST WISPS. |
| 39 | 86.97 | 87.75 | 0.78 | 75 | | SANDSTONE | F-MG. PR. LT-M. GY. MAS. XBDG. SLD AS ABOVE. MINOR TROUGH X-BDG. SOME SSD. TOPS UP. |
| 39 | 87.75 | 88.20 | 0.45 | 73 | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD VERY SPARSE MUDST WISPS. |
| 39 | 88.20 | 88.39 | 0.19 | 72 | | SANDSTONE | F-MG. PR. M. GY. MAS. SLD ABUNDANT MUDST WISPS. |
| 40 | 88.39 | 88.56 | 0.17 | 72 | | SANDSTONE | F-MG. PR. M. GY. MAS. SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 40 | 88.56 | 88.62 | 0.06 | 71 | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD SHARP CONTACTS. LOAD CASTS, TOPS UP. |
| 40 | 88.62 | 89.33 | 0.71 | *70 | | SANDSTONE | F-MG. PR. M. GY. MAS. SLD ABUNDANT MUDST WISPS. |
| 40 | 89.33 | 89.69 | 0.36 | 68 | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD VERY MINOR MUDST WISPS. GRADATIONAL LOWER CONTACT. |
| 40 | 89.69 | 89.95 | 0.26 | 67 | | SANDSTONE | F-MG. PR. M. GY. MAS. SLD ABUNDANT MUDST WISPS. |
| 40 | 89.95 | 90.47 | 0.52 | *65 | | SANDSTONE | F-MG. PR. M. GY. MAS. SLD SEVERAL ZONES WITH ABUNDANT MUDST WISPS |
| 41 | 90.47 | 91.11 | 0.64 | *55 | | SANDSTONE | F-MG. PR. M. GY. MAS. SSD. BRKN NUMEROUS MUDST WISPS. TOPS UP. BCA AVG OF 2 MEASUREMENTS. |
| 41 | 91.11 | 91.76 | 0.65 | 63 | | SANDSTONE | F-MG. PR. M. GY. MAS. SSD. BRKN ABUNDANT IRREGULAR QTZ VEINING (VUGGY). APPEARS TO BE BRECCIATED IN PLACES. ABUNDANT MUDST WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|----------|-----------|-------------------------------------------------------------------------------------------------------|
| 41 | 91.76 | 92.28 | 0.52 | 70 | | SANDSTONE | SLTY. F-MG. PR. M. GY. MAS. BRKN TWO FRACTURES AT 25 DEGREES WITH POOR MINERAL GROWTH ON SURFACES. |
| 42 | 92.28 | 92.74 | 0.46 | 76 | | SANDSTONE | SLTY. FG. PR. M. GY. MAS. SLD 20 CM BAND OF SLIGHTLY COARSER SAND. MIN SPS. OF MUDST. |
| 42 | 92.74 | 93.33 | 0.59 | *82 | | SANDSTONE | SLTY. VFG. M. GY. LAM. SLD INCREASINGLY MUDDY. GRADATIONAL CONTACT S. |
| 42 | 93.33 | 94.40 | 1.07 | 78 | | SILTSTONE | SSY. M. GY. LAM. ABUNDANT MUDST LAMINAE. 3 DISCONT QTZ VEINS PARALLEL TO BDG (<1 CM). |
| 43 | 94.40 | 94.64 | 0.24 | *75 | 07128 | SILTSTONE | SSY. PR. M-DK. GY. LAM. SLD VFG SS. MUDDY, BECOMES VERY MUDDY NEAR BASE. |
| 43 | 94.64 | 94.76 | 0.12 | 75 | 07128 | SILTSTONE | CLYY. CG. DK. GY. LAM. SLD PLANT FOSSILS. |
| 43 | 94.76 | 94.80 | 0.04 | 75 | 07128 | MUDSTONE | CARB. BLK. BRKN |
| 43 | 94.80 | 95.32 | 0.52 | 76 | 07129 PH | COAL LOSS | |
| 43 | 95.32 | 95.35 | 0.03 | 76 | 07129 PH | COAL | C-3. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|----------|-----------|-----------------------------------------------|
| 43 | 95.35 | 95.44 | 0.09 | 76 | 07129 PH | COAL | C-3. BLK. BRKN VERY WELL CLEATED. |
| 43 | 95.44 | 95.49 | 0.05 | 76 | 07129 PH | COAL | C-4. BLK. PHRD |
| 43 | 95.49 | 95.55 | 0.06 | 76 | 07129 PH | COAL | C-3. BLK. PHRD |
| 43 | 95.55 | 95.75 | 0.20 | 76 | 07129 PH | COAL | C-2. BLK. YBRKN SOME C-1. |
| 43 | 95.75 | 95.77 | 0.02 | 76 | 07129 PH | COAL | C-1. BLK. YBRKN |
| 43 | 95.77 | 95.87 | 0.10 | 76 | 07129 PH | COAL | C-2. BLK. YBRKN |
| 43 | 95.87 | 95.97 | 0.10 | 76 | 07129 PH | COAL | C-3. BLK. PHRD |
| 43 | 95.97 | 96.09 | 0.12 | 76 | 07129 PH | COAL | C-2. BLK. YBRKN INTERMIXED C-1, C-4 & C-3. |
| 43 | 96.09 | 96.11 | 0.02 | 77 | 07129 PH | COAL | C-1. BLK. YBRKN |
| 43 | 96.11 | 96.13 | 0.02 | 77 | 07129 PH | COAL | C-5. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 96.13 | 96.22 | 0.09 | 77 | 07129 | PH | COAL | C-1.BLK.BRKN VERY WELL CLEATED. SOFT & CRUMBLY. BANDS OF C-2. |
| 43 | 96.22 | 96.27 | 0.05 | 77 | 07129 | PH | COAL | C-6.BLK.BRKN |
| 43 | 96.27 | 96.44 | 0.17 | 77 | 07130 | | MUDSTONE | CARB.BLK.BRKN |
| 44 | 96.44 | 96.90 | 0.46 | 77 | | | MUDSTONE | CARB.BLK.MB.SLD QUICKLY GRADES INTO A SLTY SS. |
| 44 | 96.90 | 98.53 | 1.63 | 78 | | | SANDSTONE | SLTY.FG.LT-M.GY.LAM.SSD.BRKN ABUNDANT MUDST LAMS. LOAD CASTS (TOPS UP) P). VERY MINOR SIDERITE LINED VEINS. SS BECOMES COARSER GRAINED WITH DEPTH. FG -MG. |
| 45 | 98.53 | 98.91 | 0.38 | 79 | | | SANDSTONE | MG.VPR.M.GY.MAS.SSD.BRKN ABUNDANT WISPS AND SOME LAM OF MUDST. |
| 45 | 98.91 | 98.96 | 0.05 | 79 | | | SANDSTONE | M-CG.VPR.LT-M.GY.VTHNB.SLD A FEW MUDST CLASTS. IRREGULAR BLEB OF Q TZ PARALLEL TO CORE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87004

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 98.96 | 99.01 | 0.05 | 79 | | | MUDSTONE | SLTY.M.GY.VTHNB.BRKN MINOR BANDS OF MG SS. |
| 45 | 99.01 | 100.25 | 1.24 | *80 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN NUMEROUS MUDST WISPS AND A FEW ELONGATE BLEBS OF MUDST. SS CONT BANDS OF CG MA TERIAL. NUMEROUS LITRIC SURFACES AT BO TTOM OF INTERVAL. GRADUAL LOWER CONTACT |
| 46 | 100.25 | 100.57 | 0.32 | 80 | | | SANDSTONE | SLTY.FG.LT-M.GY.MAS.BRKN MINOR MUDST WISPS. 10 CM ZONE INTERFING ERING QTZ VEINING AT APPROX 30 TO CORE. |
| 46 | 100.57 | 101.60 | 1.03 | 80 | | | SANDSTONE | SLTY.VFG.LT-M.GY.LAM.BRKN INTERLAMINATED MUDST BANDS. NUMEROUS LI STRIC SURFACES. VERY MINOR DISJOINTED Q TZ VEINING. T.D. = 105.77 M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87004

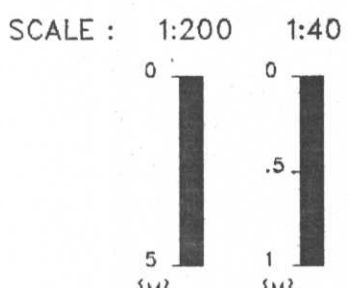
740

GEOLOGIST : SAVOIE

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

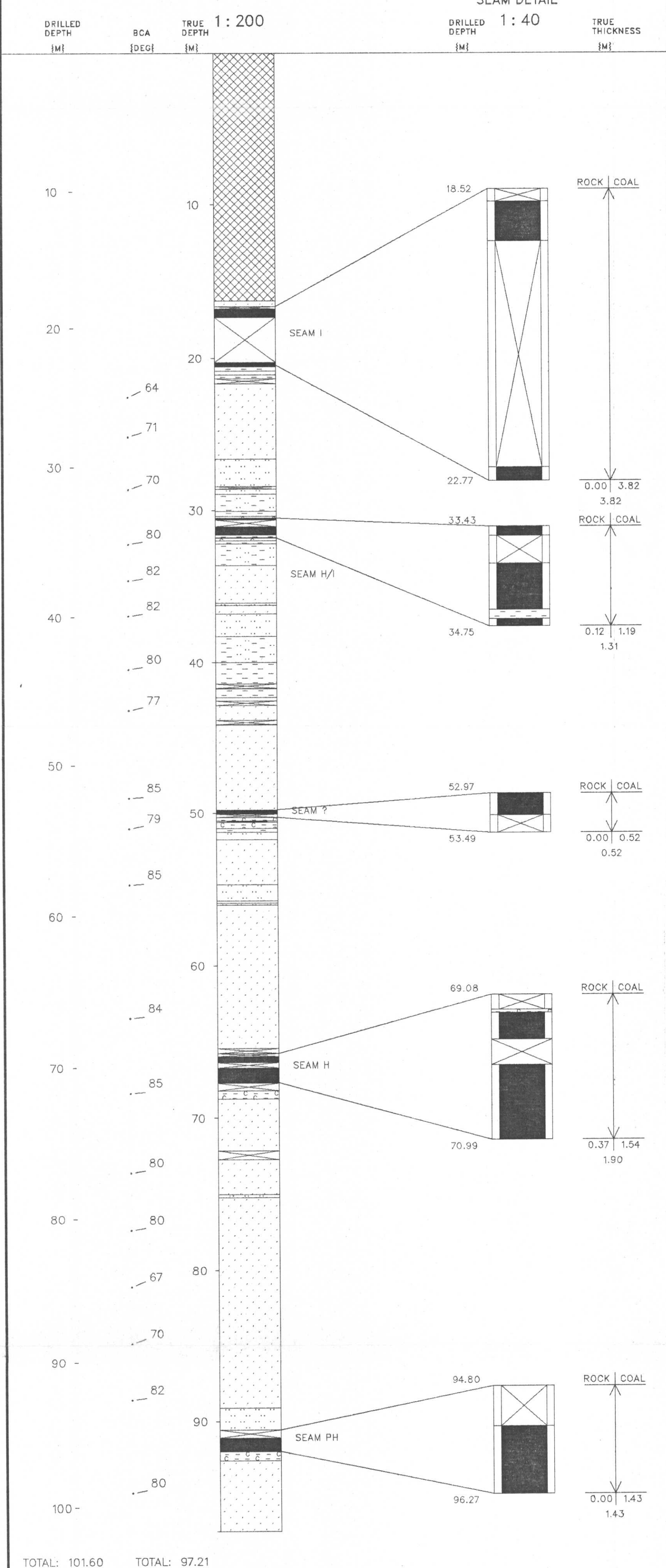


NORTHING: 6345072.0 N
 EASTING: 508530.9 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



TOTAL: 101.60 TOTAL: 97.21

Gulf Canada Resources Limited

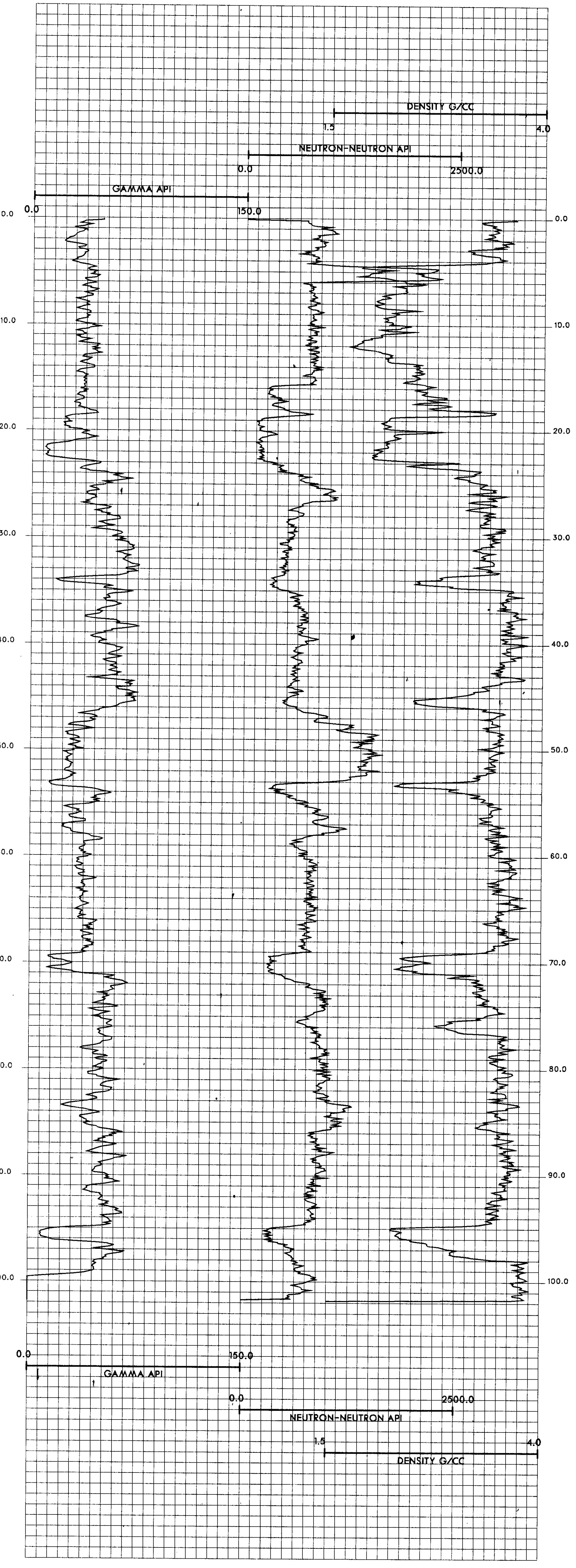
Coal Division

740

Geophysical Log

| | | |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Datasource: KPNLRDDH87004 Log Date: 87-08-29 Company: CENTURY Geologist: SAVOIE | Province: BC Northing: 6345070.00 Zone: 9 Easting: 508531.00 Measuring Point: GROUND LEVEL | Lat: 571502 Long: 1285131 Elevation: 1479.5 |
| Scale: 1 to 200.0 Depth Range: 0.0 to 106.0 True Thickness: NO | | Comments: 1. LOGGED THROUGH RODS. 2. |

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87005

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87005

DATE - 03/01/88

- HISTORY -

START DATE - 08/31/87

END DATE - 09/03/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEDDA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - VERTICAL HOLE. 202.43 M. SEAMS K/L, K, J, I, ?, H/
I, ?, H. CASING WAS ADDED FROM 9.75 TO 28.04 M.

- LOCATION -

PROVINCE - BC

ELEVATION - 1452.19

ZONE - 9

NORTHING - 6345612.18

EASTING - 508230.62

LICENCE/LEASE NUMBER -

LATITUDE - 571519

LONGITUDE - 1285149

- ORIENTATION -

LENGTH - 201.62

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 9.75

AQUIFER DEPTHS (M) - 0.00

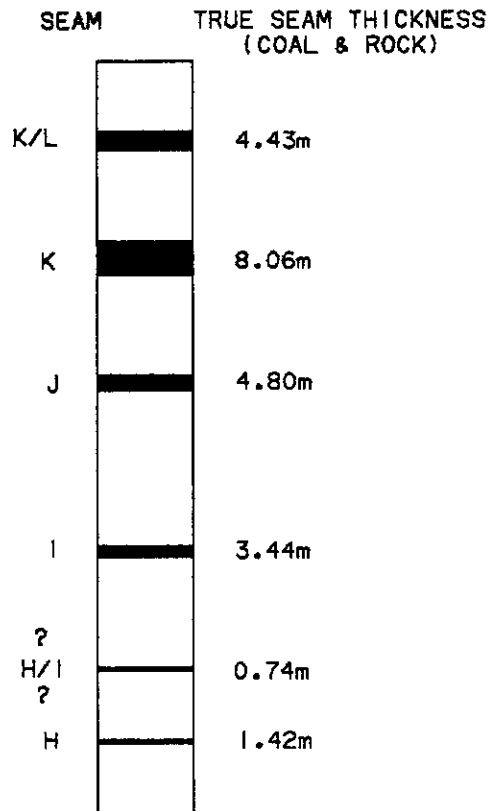
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH67005

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: (205057)880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 9.75 | 9.75 | 70 | | | CASING | CASING DEPTH |
| 1 | 9.75 | 9.93 | 0.18 | 70 | | | OVERBURDEN | YBRKN BROKEN. DOMINATELY SS WITH SOME CONGLOMERATE. |
| 1 | 9.93 | 10.38 | 0.45 | 70 | | | ROCK LOSS | |
| 1 | 10.38 | 10.87 | 0.49 | 70 | | | SANDSTONE | FG. MEL. LT. GY. MAS. YBRKN SOME OVBDRN MIXING WITH SS. SS IS BROKEN & WEATHERED, SOMETIMES BECOMING FRIABLE & SOFT. |
| 1 | 10.87 | 11.80 | 0.93 | 70 | | | SANDSTONE | VFG. VHEL. M. GY. LAM. BRKN MUCH OF SS IS WEATHERED AND BECOMES VERY FRIABLE & SOFT. VERY CLEAN WITH COMMON SLTST LAMS AND OCC CARB MUDST LAMINAE W/IN. LAMINAE ARE HORIZONTAL & BECOME LESS COMMON NEAR BASE. |
| 2 | 11.80 | 12.22 | 0.42 | 70 | | | SANDSTONE | VFG. VHEL. M. GY. BRKN MOST OF SS STILL WEATHERED, THEREFORE SOFT & FRIABLE. HORIZONTAL SLTST LAMINAE STILL PRESENT BUT RARE (UP TO 1 MM THICK). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 12.22 | 12.46 | 0.24 | *70 | | | SANDSTONE | SLTY. VFG. MEL. M-DK. GY. VTHNB. BRKN SS AS ABOVE SEPERATED BY THIN SUB-HORIZONTAL SLTST BEDS & LENSES. SS/SLTST = 65/35. MAX SS. BED THICKNESS = 10. CM: SLTST = 1.0 CM. |
| 2 | 12.46 | 13.37 | 0.91 | 70 | | | SANDSTONE | VFG. VHEL. LT-M. GY. VTHKB. SLD CLEAN MOD CONSOLIDATED SS WITH VERY RARE WIDELY SPACED SLTST LAMINAE PRESENT. |
| 2 | 13.37 | 13.84 | 0.47 | 69 | | | SANDSTONE | SLTY. VFG. VHEL. M-DK. GY. THNB. BRKN DOMINATELY SS AS ABOVE BROKEN BY THIN SLTST BEDS (UP TO 1.5 CM) & LAMINAE. SLTST BEDS ARE SUB-HORIZONTAL & SOMETIMES DISCONTINUOUS FORMING THIN LENSES. SS/SLTST = 70/30. |
| 3 | 13.84 | 15.21 | 1.37 | 69 | | | SANDSTONE | VFG. VHEL. M. GY. THKB. BRKN DOMINANTLY CLEAN SS BROKEN BY 3 DISTINCT THIN SLTST BEDS (AT .17 M, .69 M & 1.10 M) 4-6 CM THICK AND OCCASIONAL LAMINAE & VTHN BEDS. SLTST IS DK. GY. MASSIVE & HAVE SHARP UPPER & LOWER CONTACTS. LOWER CONTACT OF COMPLETE UNIT = GRADATIONAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 15.21 | 15.49 | 0.28 | *68 | | SANDSTONE | SLTY. VFG. WEL. M-DK. GY. THNB. BRKN SS/SLTST INTERBEDS DOM BY SS 70/30. SLT ST BEDS RANGE FROM COMMON LAMINAE TO OC CASIONAL THIN BEDS UP TO 3 CM. SLTST BE DS ARE WAVY TO SUB-HORIZONTAL. |
| 3 | 15.49 | 15.92 | 0.43 | 68 | | SANDSTONE | VFG. WVEL. M. GY. MB. BRKN CLEAN MOD CONSOLIDATED SS A/A WITH OCCA SIONAL VTHN SLTST BEDS & LAMINAE. |
| 4 | 15.92 | 16.81 | 0.89 | *67 | | SANDSTONE | SLTY. VFG. WEL. M. GY. VTHNB. XBDG. BRKN INTBD SS/SLTST (65/35). SLTST: VTHNB & L AM. SOME LOW ANGLE XBDG. SHARP BDG CON TACTS W/ SOME FINING UP CYCLES. RARE FG SS. TOPS UP, MORE CONSOL. + SLTIER AT B ASE. |
| 4 | 16.81 | 17.06 | 0.25 | *65 | | SANDSTONE | SLTY. VFG. WEL. M. GY. VTHNB. BRKN INTERBEDDED SS/SLTST (70/30) A/A. CORE TWIST-OFF AT BASE. MINOR MUDST. |
| 4 | 17.06 | 17.15 | 0.09 | 66 | | ROCK LOSS | |
| 4 | 17.15 | 17.50 | 0.35 | 66 | | SILTSTONE | SSY. M-DK. GY. VTHNB. SSD. VBRKN INTERBEDDED SS/SLTST (45/55). BEDDING I S SUB-HORIZONTAL AT TOP BECOMING DEFORM ED NEAR BASE (SSD). CORE TWIST-OFF AT B ASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | 17.50 | 17.59 | 0.09 | 67 | | ROCK LOSS | |
| 4 | 17.59 | 18.12 | 0.53 | 68 | | SILTSTONE | SSY. M. GY. VTHNB. VBRKN SOFT POORLY CONSOL INTBD SLTST/SS/A SOM E MUDST. SUB-HORIZONTAL BDG & LAMS. COR E TWIST-OFF AT .15 M. MUDST INCREASE NE AR BASE. OVERALL, BOXES 1-4 REP A COARS ENING UPWARD TREND, BECOMING SANDIER & COARSER GRAINED NEAR THE TOP OF THE HOL E. |
| 4 | 18.12 | 18.21 | 0.09 | 69 | | ROCK LOSS | |
| 5 | 18.21 | 18.41 | 0.20 | *70 | | MUDSTONE | M-DK. GY. LAM. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | 18.41 | 18.55 | 0.14 | 70 | | MUDSTONE | M.GY. BRKN POORLY CONSOLIDATED. |
| 5 | 18.55 | 19.00 | 0.45 | 70 | 07131 | MUDSTONE | CARB. M-DK. GY. BRKN CARB. PLANT FRAGMENTS WITHIN, MINOR PYRITE BANDS. BECOMES MORE CARB. NEAR BASE WITH COALIFIED PLANT FRAGS. BECOMING PRESENT. LOWER 25 CM SAMPLED. |
| 5 | 19.00 | 20.75 | 1.75 | 70 | 07132 K/L | COAL LOSS | |
| 5 | 20.75 | 20.82 | 0.07 | 69 | 07132 K/L | COAL | C-4. VBRKN VERY MASHED AND MIXED WITH DRILL MUD. |
| 5 | 20.82 | 20.89 | 0.07 | 69 | 07132 K/L | MUDSTONE | CARB. DK. GY. VBRKN ABUNDANT VITRAIN STRINGERS. |
| 5 | 20.89 | 20.92 | 0.03 | 69 | 07132 K/L | COAL | C-4. VBRKN |
| 5 | 20.92 | 21.01 | 0.09 | 69 | 07132 K/L | MUDSTONE | CLYY. M-DK. GY. UNCONSOLIDATED, MIXED WITH COALY FLECKS |
| 5 | 21.01 | 21.11 | 0.10 | 69 | 07132 K/L | COAL | C-4. VBRKN MIXED WITH DRILL MUD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|---------------------------------------------------------------------------------------------------|
| 5 | 21.11 | 21.14 | 0.03 | 69 | 07132 K/L | MUDSTONE | CLYY. M. GY. SLD POORLY CONSOLIDATED. |
| 5 | 21.14 | 21.17 | 0.03 | 69 | 07132 K/L | COAL | C-4. SLD BANDED. |
| 5 | 21.17 | 21.25 | 0.08 | 69 | 07132 K/L | SILTSTONE | SSY. M. GY. MAS. SLD QTZ CARB. VEINS AND THIN VITRAIN BANDING |
| 5 | 21.25 | 21.36 | 0.11 | 69 | 07132 K/L | COAL | C-3. VBRKN CONTORTED BADLY. |
| 5 | 21.36 | 21.39 | 0.03 | 69 | 07132 K/L | MUDSTONE | CLYY. M-DK. GY. VBRKN POORLY CONSOL. |
| 5 | 21.39 | 21.41 | 0.02 | 69 | 07132 K/L | COAL | C-4. VBRKN |
| 5 | 21.41 | 21.44 | 0.03 | 69 | 07132 K/L | MUDSTONE | CLYY. M-DK. GY. VBRKN POORLY CONSOL. |
| 5 | 21.44 | 21.56 | 0.12 | 69 | 07132 K/L | COAL | C-2. VBRKN SHEARED WITH LISTRIC SURFACES. |
| 6 | 21.56 | 22.11 | 0.55 | 69 | 07132 K/L | COAL | C-2. VBRKN HIGHLY SHEARED AND CONTORTED & MIXED WITH DRILL MUD. C-3 BANDS, MINOR PYRITE BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------|
| 6 | 22.11 | 22.15 | 0.04 | 69 | 07132 | K/L | COAL | C-4.SLD |
| 6 | 22.15 | 22.30 | 0.15 | 69 | 07132 | K/L | COAL LOSS | |
| 6 | 22.30 | 22.35 | 0.05 | 69 | 07132 | K/L | MUDSTONE | CARB.DK.GY.VBRKN COALY STRINGERS WITHIN. |
| 6 | 22.35 | 22.42 | 0.07 | 69 | 07132 | K/L | COAL | C-3.BRKN |
| 6 | 22.42 | 22.55 | 0.13 | 69 | 07132 | K/L | COAL LOSS | |
| 6 | 22.55 | 22.58 | 0.03 | 69 | 07132 | K/L | MUDSTONE | CARB.DK.GY.SLD |
| 6 | 22.58 | 22.64 | 0.06 | 69 | 07132 | K/L | COAL | C-4.VBRKN MINOR PYRITE. |
| 6 | 22.64 | 22.79 | 0.15 | 69 | 07132 | K/L | COAL | C-2.VBRKN |
| 6 | 22.79 | 22.92 | 0.13 | 69 | 07132 | K/L | COAL | C-4.PWRD MIXED COAL & MUD. SHEARED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 6 | 22.92 | 23.74 | 0.82 | 69 | 07132 | K/L | COAL LOSS | C-6. POSSIBLY SOME CARB MUDST. |
| 6 | 23.74 | 24.06 | 0.32 | 69 | 07133 | | MUDSTONE | CARB.DK.GY.VBRKN ABUNDANT PLANT FRAGS & VITRAIN STRINGER S THROUGHOUT. UPPER 25 CM SAMPLED. |
| 6 | 24.06 | 24.56 | 0.50 | 69 | | | ROCK LOSS | |
| 6 | 24.56 | 24.69 | 0.13 | 69 | | | MUDSTONE | CARB.DK.GY.PWRD UNCONSOLIDATED, SHEARED AND MIXED WITH COAL FLECKS. |
| 6 | 24.69 | 25.19 | 0.50 | 69 | | | ROCK LOSS | |
| 6 | 25.19 | 25.33 | 0.14 | 69 | | | MUDSTONE | CARB.DK.GY.VBRKN COALY STRINGERS THROUGHOUT. |
| 6 | 25.33 | 25.68 | 0.35 | 68 | | | ROCK LOSS | |
| 7 | 25.68 | 26.03 | 0.35 | 68 | | | MUDSTONE | CARB.DK.GY.VBRKN MINOR COALY STRINGERS. MINOR QTZ-CARB V EINING. |
| 7 | 26.03 | 26.43 | 0.40 | 68 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 26.43 | 26.74 | 0.31 | 68 | | SILTSTONE | CLYY M. GY. VBRKN MINOR CARB-MUDDY LAMINAE. |
| 7 | 26.74 | 27.19 | 0.45 | 68 | | ROCK LOSS | |
| 7 | 27.19 | 27.40 | 0.21 | 68 | | MUDSTONE | CARB. DK. GY COALY PLANT FRAGS WITHIN. |
| 7 | 27.40 | 28.30 | 0.90 | *68 | | SILTSTONE | M. GY MINOR CARB-COALY STRINGERS. |
| 7 | 28.30 | 28.65 | 0.35 | 73 | | ROCK LOSS | |
| 8 | 28.65 | 28.84 | 0.19 | 74 | | MUDSTONE | CARB. BLK. VBRKN DARK GREY/BLK SLIGHTLY CARB MUDST. OCCA SIONAL THIN & OFTEN DISCONTINUOUS COALY LAMS PRESENT. |
| 8 | 28.84 | 29.29 | 0.45 | 77 | | ROCK LOSS | |
| 8 | 29.29 | 29.40 | 0.11 | 79 | | MUDSTONE | CARB. BLK. VBRKN EXTREMELY BROKEN MUDSTONE A/A (DOMINANT LY), SLTST & C-S COAL. COAL OCCURS AS R ARE BROKEN PIECES (UP TO 4 CM) & MAY NO T REPRESENT INSITU ROCK. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 29.40 | 30.05 | 0.65 | 82 | | ROCK LOSS | |
| 8 | 30.05 | 30.20 | 0.15 | 84 | | SILTSTONE | CARB. BLK. VBRKN EXTREMELY BROKEN AT TOP. DOMINANTLY SLT ST (W CARBY LAMS & STRINGERS) WITH MUDD STONE COMMON ESP IN LOWER PORTION. LOWER CONTACT = ROCK BRECK; ABRUPT LITHOLOGY CHANGE. |
| 8 | 30.20 | 30.35 | 0.15 | 85 | | ROCK LOSS | |
| 8 | 30.35 | 30.39 | 0.04 | 86 | | SANDSTONE | FG. YWEL. LT-M. GY. MAS. BRKN CLEAN WELL CEMENTED SALT & PEPPER SLIGH TLY CARB. APPARENTLY MASSIVE (LACKS INT ERNAL STRUCTURE) SS. UPPER & LOWER CONT ACTS MISSING (ROCK BREAK). |
| 8 | 30.39 | 30.47 | 0.08 | 87 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 30.47 | 30.78 | 0.31 | *88 | | MUDSTONE | CARB. BLK. HRMBU. BRKN FEEDING TRAIL/HRMBUR ? OCC. CARB. LAM., GINKGO MANA, NILSSONIA SP., N. TENUICAU- LIS, N. SCHAUMBERGENSIS ? BAIERA GRACILI S. B. FURACTA ? WOOD FRAG., CORE TWIST OFF AT BASE. |
| 8 | 30.78 | 30.86 | 0.08 | 88 | | ROCK LOSS | |
| 8 | 30.86 | 31.63 | 0.77 | 87 | | MUDSTONE | CARB. BLK. BRKN MUDST SAME A/A. FOSSILIZED PLANT REMAIN- S. INCLUDE "SPHENOPTERIS SP", "NILSSONIA TENUICAU-LIS", "NILSSONIA SP", "BAIERA GRACILIS", WOOD FRAGMENTS & POSSIBLY "B AIERA FURCATA". |
| 9 | 31.63 | 31.79 | 0.16 | 86 | | MUDSTONE | CARB. BLK. BRKN SAME A/A BUT PLANT DEBRIS RARER & TOO B- ROKEN TO IDENTIFY. COALIFIED WOOD FRAG- MENTS PRESENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 31.79 | 32.44 | 0.65 | *85 | | MUDSTONE | SLTY. DK. GY. LAM. BRKN OVERALL FINING UPWARD TREND WITH SILTY NESS INCREASING TOWARD UNIT'S BASE. WOOD FRAGMENTS (COALIFIED) ARE PRESENT AS WELL AS SOME PLANT DEBRIS & FOSSILS; "S PHENOPTERIS SP". GRADATIONAL LOWER CONT- ACT. |
| 9 | 32.44 | 33.51 | 1.07 | *80 | | SILTSTONE | SSY. M-DK. GY. THNB. HRMBU. BRKN INTBD VFG SS/SLTST/OCC MUDST (TOP). FOS- SIL FRAGS. AT TOP SPHENOPTERIS SP., COA- LY WOOD, ROOTLETS ? HORIZ LAM NEAR TOP. XLAM DOWNWARDS. HRMBUR. & SSD INDICATE TOPS UP. |
| 10 | 33.51 | 34.80 | 1.29 | *83 | | SILTSTONE | SSY. M-DK. GY. LAM. BIOTR. SLD CORRECT WAY UP - SSD & XBDG. SLIGHTLY C- ARB INTERBEDDED SS/SLTST/& OCC MUDST (4 5/50/5). LAMS & YTHNB ARE SUB-HORIZONTA- L - WAVY WITH SOME BIOTRB & SSD. |
| 10 | 34.80 | 35.53 | 0.73 | 83 | | SILTSTONE | SSY. M-DK. GY. YTHNB. SLD SLIGHT CARB INTERBEDDED VFG SS/SLTST/MU- DST (40/45/15). SLTST BEDS ARE UP TO 1 0 CM WHILE SS BEDS ARE GENERALLY <.5 CM & OFTEN DISCONTINUOUS LENSES. BDG IS W- AVY - HORIZ WITH SHARP OR RAPID GRADATI- ONAL CONTACTS. BASAL CONTACT IS GRADATI- ON |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 35.53 | 36.31 | 0.78 | | 83 | | SILTSTONE | SSY, M-DK, GY, VTHNB, BRKN AS PREVIOUS SS/SLTST/MUDST BUT (35/50/15). GRADATIONAL BASAL CONTACT. |
| 11 | 36.31 | 36.66 | 0.35 | * | 83 | | SANDSTONE | SLTY, M-DK, GY, LAM, BRKN SLIGHT CARB, INTBDD SS/SLTST/OCC MUDST (35/40/05). LAMINAE ARE HORIZONTAL WITH SHARP CONTACTS. OCC QUARTZ VEIN FILLING. |
| 11 | 36.66 | 36.90 | 0.24 | | 82 | | SANDSTONE | VFG, WEL, LT, GY, SLD BASAL 15 CM OF UNIT IS SOLID WHITE QUARTZ VEINFILL. SS IN CONTACT WITH QUARTZITE IS BRECCIATED. BASE OF QUARTZITE IS IN CONTACT WITH BRECCIATED CARB, MUDST & OCC SS FRAGMENTS (FROM UPPER PORTION OF VEIN). |
| 11 | 36.90 | 37.05 | 0.15 | | 82 | | MUDSTONE | CARB, BLK, THNB, BRKN DOMINANTLY POORLY CONSOLIDATED SL CARB MUDST. SOME COALIFIED WOOD FRAGS NEAR TOP. ONE THIN (2 CM) CONSOL SLTST INTERBED 2 CM FROM TOP OF UNIT. |
| 11 | 37.05 | 37.10 | 0.05 | | 82 | | SANDSTONE | SLTY, VFG, PR, LT-M, GY, SLD THIN QUARTZ VEIN-FILLING PRESENT W/IN THE SILTY SS. CORE TWIST-OFF AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 37.10 | 37.30 | 0.20 | | 82 | | ROCK LOSS | |
| 11 | 37.30 | 37.47 | 0.17 | | 81 | | SILTSTONE | SSY, DK, GY, VTHNB, SSD, BRKN MUDDY SLTST (ESP NEAR TOP) WITH SOME INTERBEDDED VFG SS SSD. |
| 12 | 37.47 | 37.85 | 0.38 | * | 81 | | SILTSTONE | SSY, DK, GY, VTHNB, SSD, SLD INTERBEDDED SS/SLTST (40/60) SS = VFG, LISTRIC SURFACES NEAR THE TOP & BASE OF UNIT. |
| 12 | 37.85 | 39.22 | 1.37 | * | 79 | | SILTSTONE | SSY, M-DK, GY, LAM, SSD, BRKN INTBD SS/SLTST (35/65). MAX BED THKNSS = 1CM (SLTST) W/ THE SS FORMING LAMS UP TO 2MM. CORRECT MAY UP (SSD). CONTACTS BETWEEN LAMS = GENERALLY RAPID GRAD. SSD IN THE UNIT'S UPPER HALF & SOME SMALL-SCALE HIGH ANGLE REVERSE FAULTING. |
| 13 | 39.22 | 40.12 | 0.90 | * | 80 | | SILTSTONE | SSY, M-DK, GY, LAM, BRKN INTBD VFG SS/SLTST (40/60) A/A BUT LACKING DEFN STRUCTURES. HAVY BGG & ONLY MINOR SSD. SS BEDS ARE SLIGHTLY THICKER THAN ABOVE. SHARP CONTACT WITH THIN MUDST BED (2 CM) AT BASE (W/ SHARP LOWER CONTACT). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 40.12 | 40.63 | 0.51 | 86 | | SILTSTONE | SSY.M-DK.GY.THNB.BRKN INTERBEDDED VFG SS/SLTST (45/55). BEDS UP TO 10 CM ARE LAMINATED THROUGH OUT B Y THE OTHER LITHOLOGY. |
| 13 | 40.63 | 41.06 | 0.43 | *90 | | SANDSTONE | SLTY.VFG.MOD.M-DK.GY.THNB.BRKN INTERBEDDED & INTERLAM VFG SS/SLTST (65 /35) BUT BECOMES SILTIER NEAR BASE. SS IS DIRTY & LAM BY SL CARB SLTST. LAM CO NTACTS USUALLY SHARP. |
| 14 | 41.06 | 41.15 | 0.09 | 89 | | SANDSTONE | SLTY.VFG.PR.M-DK.GY.VTHNB.VBRKN VERY SILTY INTERBEDDED SS/SLTST (50/50) . CONTACT = ROCK BREAK. |
| 14 | 41.15 | 41.38 | 0.23 | 88 | | ROCK LOSS | |
| 14 | 41.38 | 41.61 | 0.23 | 87 | | MUDSTONE | SLTY.DK.GY.VBRKN POORLY CONSOL MUDST BECOMING SILTIER NE AR BASE. |
| 14 | 41.61 | 41.96 | 0.35 | 86 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 41.96 | 43.65 | 1.69 | *82 | | SANDSTONE | SLTY.VFG.WEL.M-DK.GY.VTHNB.SSD.BRKN INTBD & INTLAM SS/SLTST (55/45) BECOMIN G SILTIER TOWARDS BASE. INDIVIDUAL LAMS ARE SUB-HORIZ TO HAVY & HAVE SHARP CON TACTS. OCC SMALL-SCALE XBDG. CORRECT WA Y UP (SSD & XBDG). BCA'S 82 TO 89. |
| 15 | 43.65 | 44.20 | 0.55 | *82 | | SANDSTONE | SLTY.VFG.WEL.M-DK.GY.VTHNB.SSD.BRKN INTBD & INTLAM SS/SLTST A/A. OCC HRMBUR S. LOWER CONTACT = CORE TWIST OFF. |
| 15 | 44.20 | 44.23 | 0.03 | 81 | | ROCK LOSS | |
| 15 | 44.23 | 44.79 | 0.56 | 79 | | SILTSTONE | SSY.M-DK.GY.VTHNB.SSD.BRKN A/A BUT 45/55 & BECOMING SILTIER CLOSER TO BASE. BASAL CONTACT=GRADATIONAL. COR RECT WAY UP (XBDG & SSD). |
| 15 | 44.79 | 45.71 | 0.92 | *76 | | SANDSTONE | SLTY.VFG.WEL.M-DK.GY.VTHNB.SSD.BRKN INTBD & INTLAM SS/SLTST (65/35). BEDDIN G & LAM ARE SUB-HORIZONTAL BUT OFTEN DI SRUPTED BY SSD. OCC SMALL SCALE XBDG. S ANDIER AT TOP, BECOMING SILTIER TOWARDS BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 45.71 | 47.10 | 1.39 | *83 | | | SILTSTONE | SSY.M-DK.GY.VTHNB.WRMBU.BRKN INTBD & INTLAM VFG SS/SLTST (45/55). BE DS & LAMS WAVY BUT SUB-HORIZ. BIOTURB. CORRECT MAY UP (XBDG). |
| 16 | 47.10 | 47.57 | 0.47 | *81 | | | SILTSTONE | SSY.DK.GY.LAM.BRKN THIN QUARTZ-VEINS (AT .25-.30 M) (<1 C M THK). INTBD & INTLAM VFG SS/SLTST (25 /75). DOMINANTLY SS LAMS W/IN SLTST BED DING. |
| 17 | 47.57 | 48.26 | 0.69 | 81 | | | SILTSTONE | SSY.DK.GY.VTHNB.BRKN OVERALL COARSENING UPWARD TREND IN UNIT ; INTBD VFG SS/SLTST AT TOP GRADING DOW N INTO MUDDY SLTST AT BASE. NEAR BASE C OALIFIED WOOD FRAGMENTS PRESENT W/IN SL TST. |
| 17 | 48.26 | 48.41 | 0.15 | 82 | | | MUDSTONE | CARB.BLK.YBRKN PARTLY POORLY CONSOL. SOME SMALL LISTRI C SURFACES VISIBLE. BASE OF UNIT - CORE TWIST-OFF. |
| 17 | 48.41 | 48.44 | 0.03 | 82 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17 | 48.44 | 49.52 | 1.08 | *82 | | | MUDSTONE | SLTY.BLK.BRKN SILTY NEAR TOP BECOMING LESS COMMON TOW ARDS BASE. PLANT FRAGS COMMON THROUGHOU T: "NILSSONIA SP" "CZEKANOWSKIA RIGIDA " "NILSSONIA NIGRACOLLENSIS" & POSSIB LY "BAIERA FURCATA" & "BAIERA GRACILIS ". WOOD FRAGS & COAL LAMS NEAR BASE. |
| 18 | 49.52 | 49.63 | 0.11 | 82 | 07134 | | MUDSTONE | CARB.DK.GY.BRKN COAL LENSES & STRINGERS. |
| 18 | 49.63 | 49.66 | 0.03 | 82 | 07134 | | MUDSTONE | CARB.DK.GY.BRKN COAL LENSES & STRINGERS. |
| 18 | 49.66 | 50.17 | 0.51 | 82 | 07135 K | | COAL LOSS | |
| 18 | 50.17 | 50.23 | 0.06 | 83 | 07135 K | | COAL | C-3.VBRKN |
| 18 | 50.23 | 50.53 | 0.30 | 83 | 07135 K | | COAL | C-2.VBRKN |
| 18 | 50.53 | 50.59 | 0.06 | 83 | 07135 K | | COAL | C-4.SLD THIN VITRAIN STRINGERS. |
| 18 | 50.59 | 50.67 | 0.08 | 83 | 07135 K | | MUDSTONE | CLYY.M-DK.GY.BRKN MINOR PLANT FRAGMENTS. |
| 18 | 50.67 | 50.70 | 0.03 | 83 | 07135 K | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------|
| 18 | 50.70 | 50.77 | 0.07 | 83 | 07135 | K | COAL LOSS | |
| 18 | 50.77 | 51.24 | 0.47 | 83 | 07135 | K | COAL | C-2.BRKN C2-C3 COMBINATION. |
| 18 | 51.24 | 51.38 | 0.14 | 83 | 07135 | K | COAL | C-3.SHRD |
| 18 | 51.38 | 51.53 | 0.15 | 83 | 07135 | K | COAL | C-2.BRKN |
| 18 | 51.53 | 51.57 | 0.04 | 83 | 07135 | K | MUDSTONE | CARB.M-DK.GY.BRKN VERY MINOR COALY PLANT FRAGMENTS. |
| 18 | 51.57 | 51.62 | 0.05 | 83 | 07135 | K | ROCK LOSS | |
| 18 | 51.62 | 52.20 | 0.58 | 84 | 07135 | K | COAL LOSS | |
| 18 | 52.20 | 52.24 | 0.04 | 84 | 07135 | K | COAL | C-3.SLD |
| 18 | 52.24 | 52.41 | 0.17 | 84 | 07135 | K | COAL | C-2.VBRKN |
| 19 | 52.41 | 53.08 | 0.67 | 84 | 07135 | K | COAL | C-2.VBRKN |
| 19 | 53.08 | 53.18 | 0.10 | 84 | 07135 | K | COAL | C-3.BRKN SLIGHTLY BANDED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------|
| 19 | 53.18 | 53.26 | 0.08 | 84 | 07135 | K | COAL | C-2.SLD |
| 19 | 53.26 | 53.54 | 0.28 | 84 | 07135 | K | COAL | C-4.BRKN BANDED WITH VITRAIN BAND (<1 CM). |
| 19 | 53.54 | 53.63 | 0.09 | 84 | 07135 | K | COAL | C-2.SLD |
| 19 | 53.63 | 53.68 | 0.05 | 84 | 07135 | K | COAL | C-3.SLD BONE COAL WISPS THROUGHOUT. |
| 19 | 53.68 | 53.70 | 0.02 | 84 | 07135 | K | MUDSTONE | CARB.M-DK.GY.SLD |
| 19 | 53.70 | 53.79 | 0.09 | 85 | 07135 | K | ROCK LOSS | |
| 19 | 53.79 | 54.13 | 0.34 | 85 | 07135 | K | COAL LOSS | |
| 19 | 54.13 | 54.29 | 0.16 | 85 | 07135 | K | COAL | C-4.BRKN C-2 BANDS THROUGHOUT. |
| 19 | 54.29 | 54.32 | 0.03 | 85 | 07135 | K | COAL | C-2.SLD |
| 19 | 54.32 | 54.37 | 0.05 | 85 | 07135 | K | COAL | C-4.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 19 | 54.37 | 54.39 | 0.02 | 85 | 07135 | K | COAL | C-5.BRKN SOFT. |
| 19 | 54.39 | 54.43 | 0.04 | 85 | 07135 | K | COAL | C-2.BRKN |
| 19 | 54.43 | 54.57 | 0.14 | 85 | 07135 | K | COAL | C-3.VBRKN C-2 BANDS THROUGHOUT. |
| 19 | 54.57 | 54.60 | 0.03 | 85 | 07135 | K | COAL | C-6.SLD BONE COAL. |
| 20 | 54.60 | 54.66 | 0.06 | 85 | 07135 | K | COAL | C-3.BRKN |
| 20 | 54.66 | 54.70 | 0.04 | 85 | 07135 | K | COAL | C-6.SLD BONE COAL, QTZ WITHIN. |
| 20 | 54.70 | 54.76 | 0.06 | 85 | 07136 | K | MUDSTONE | CARB.M-DK.GY.BRKN |
| 20 | 54.76 | 55.88 | 1.12 | 85 | 07136 | K | MUDSTONE | SLTY.M.GY MINOR COALY LENSES AND STRINGERS THROUGHOUT, MINOR QTZ-CARB VEINS. |
| 20 | 55.88 | 56.02 | 0.14 | 86 | 07137 | K | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------|
| 20 | 56.02 | 56.52 | 0.50 | 86 | 07137 | K | COAL | C-3.VBRKN SOFT & WEATHERED. |
| 21 | 56.52 | 56.59 | 0.07 | 86 | 07137 | K | MUDSTONE | CARB.DK.GY.BRKN VERY CARB WITH LISTRIC SURFACES. |
| 21 | 56.59 | 56.95 | 0.36 | 86 | 07137 | K | COAL | C-3.PWRD VERY SOFT. |
| 21 | 56.95 | 57.00 | 0.05 | 86 | 07137 | K | COAL | C-2.VBRKN |
| 21 | 57.00 | 57.50 | 0.50 | 86 | 07137 | K | COAL | C-3.SHRD HIGHLY SHEARED & POWDERED, LISTRIC SURFACES. |
| 21 | 57.50 | 57.59 | 0.09 | 87 | 07137 | K | COAL | C-2.BRKN |
| 21 | 57.59 | 57.70 | 0.11 | 87 | 07137 | K | COAL | C-3.PWRD POWDERED & SHEARED. |
| 21 | 57.70 | 57.87 | 0.17 | 87 | 07137 | K | COAL LOSS | |
| 21 | 57.87 | 57.93 | 0.06 | 87 | 07137 | K | COAL | C-1.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 21 | 57.93 | 58.07 | 0.14 | 87 | 07137 K | MUDSTONE | CARB. M-DK. GY. SLD MINOR COALY STRINGERS. |
| 21 | 58.07 | 58.09 | 0.02 | 87 | 07137 K | COAL | C-2. SLD |
| 21 | 58.09 | 58.14 | 0.05 | 87 | 07137 K | MUDSTONE | CARB. M-DK. GY. SLD |
| 21 | 58.14 | 58.38 | 0.24 | 87 | 07137 K | COAL | C-4. BRKH ABUNDANT C-2 BANDS. |
| 21 | 58.38 | 58.43 | 0.05 | 87 | 07137 K | COAL LOSS | |
| 21 | 58.43 | 58.57 | 0.14 | 87 | 07137 K | ROCK LOSS | |
| 21 | 58.57 | 58.93 | 0.36 | 87 | 07137 K | COAL LOSS | |
| 21 | 58.93 | 58.99 | 0.06 | 87 | 07138 | MUDSTONE | SLTY. M. GY. SLD ABUNDANT PLANT FRAGS. |
| 22 | 58.99 | 59.13 | 0.14 | 87 | 07138 | MUDSTONE | DK. GY. YBRKH PLANT DEBRIS TOO SMALL TO I.D. BUT COMM ON THROUGHOUT. ALSO OCC COALY LAMS W/IN |
| 22 | 59.13 | 59.15 | 0.02 | 87 | 07138 | MUDSTONE | CLYY. M-DK. GY. MAS. YBRKH POORLY CONSOL. SOFT & PLIABLE CLAYSTONE. UPPER & LOWER CONTACTS = ROCK BREAKS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 59.15 | 59.52 | 0.37 | 87 | | MUDSTONE | CARB. LT. BLK. MAS. SLD PLANT DEBRIS PRESENT OFTEN VERY BROKEN. FOSSIL PLANTS INCLUDE: "CLAUDOPHLEBIS VIRGINIENSIS SP" & WOOD FRAGMENTS. OFTE N COALIFIED. PLANT DEBRIS MOST COMMON N EAR TOP. |
| 22 | 59.52 | 61.13 | 1.61 | *88 | | SILTSTONE | CARB. LT. BLK. SLD MUDDY SLTST AT TOP GRADING DOWN TO SLTS T W THIN SS LAMS NEAR ITS BASE. FINING UPWARD TREND. LAM CONTACTS ARE GRADATIO NAL & SUB-HORIZONTAL WITH WITH ONLY MIN OR SSD (CORRECT WAY UP). SMALL PLANT DE BRIS COMMON "NILSSONIA SP". |
| 23 | 61.13 | 61.99 | 0.86 | 86 | | SILTSTONE | SSY. PR. DK. GY. YTHNB. SSD. SLD PREVIOUSLY INTBED & INTLAM VFG SS/SLTST & RARE MUDST (CARB) (30/60/10) BUT NOW MIXED BY SSD & POSSIBLY BIOTURBATION. OCCASIONAL PLANT DEBRIS BECOMING SANDIE R TOWARDS BASE. |
| 23 | 61.99 | 62.62 | 0.63 | *85 | | SANDSTONE | SLTY. VFG. PR. M-DK. GY. THNB. SLD INTBD & INTLAM FG SS/VFG SS/ & SLTST (ON LY OCC MUDST(LAMS)) (10/45/45). UPPER & LOWER CONTACTS BETWEEN LAMS ARE VERY GRADATIONAL & ARE SUB HORIZONTAL. SOME QTZ/CAC03 VEIN FILLING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 62.62 | 63.21 | 0.59 | *88 | | SANDSTONE | SLTY. VFG. PR. M-DK. GY. VTHNB. SLD SAME A/A LACKING ANY FG SS THEREFORE VFG SS/SLTST (65/35). SOME QUARTZ & CACOS VEIN FILLING. |
| 24 | 63.21 | 64.51 | 1.30 | 86 | | SILTSTONE | SSY. DK. GY. LAM. BRKN INTLAM VFG SS/SLTST BUT UPPER & LOWER LAM CONTACTS ARE GRADATIONAL THEREFORE MIXING THROUGHOUT (30/70). LOWER CONTACT OF UNIT = GRADATIONAL. |
| 24 | 64.51 | 65.15 | 0.64 | 85 | | SANDSTONE | SLTY. VFG. M. GY. LAM. SLD INTBD. & INTLAM. VFG. SS/SLTST (85/15). GRADATIONAL UPPER & LOWER LAM CONTACT SMALL RIP-UP CLASTS (SLTST/MUDST) AT .33 M (SUB-ANGULAR & 1 CM. x .25 CM.). SOME VEIN FILLING. |
| 24 | 65.15 | 65.40 | 0.25 | 84 | | SILTSTONE | SSY. M-DK. GY. SLD SAME AS PREVIOUS SLTST UNIT ABOVE. |
| 25 | 65.40 | 65.65 | 0.25 | 83 | | SILTSTONE | SSY. DK. GY. LAM. BIOTR. SLD INTBD & INTLAM VFG SS/MUDDY SLTST (25/75). TRACE FOSSILS (FEEDING TRAILS) COMMON ON SOME BEDDING SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 65.65 | 66.82 | 1.17 | *82 | | SANDSTONE | SLTY. VFG. VNEL. M-DK. GY. LAM. SLD SAME A/A BUT 55/45. SUB-HORIZONTAL & SLT MARY LAMS WITH RAPID GRADATIONAL SHARP CONTACTS. CARB LAMS & PLANT DEBRIS INC. REASE TOWARDS THE UNIT'S BASE. FEEDING TRAILS (TRACE FOSSILS) ALSO PRESENT (OC C). |
| 25 | 66.82 | 67.52 | 0.70 | 87 | | SANDSTONE | VFG. VNEL. M. GY. SLD CLEAN WELL CEMENTED VFG SS WITH OCC. SLT ST LAM PRESENT. SOME SL GRADING UP & DOWN W/IN SS AS WELL. SLTST INCREASES TOWARDS UNIT'S BASE. |
| 26 | 67.52 | 67.85 | 0.33 | *89 | | SILTSTONE | SSY. DK. GY. LAM. SLD COARSENING UP TREND W/ INTLAM VFG SS/SLTST AT TOP (45/65) BECOMING GRADATIONAL LY SILTIER TOWARDS BASE (THEREFORE 10/90 AT BASE). SHARP LOWER CONTACT. |
| 26 | 67.85 | 68.24 | 0.39 | 89 | | SANDSTONE | FG. M. GY. MAS. SLD CLEAN WELL CEMENTED SS WITH RARE SLTST LAMS APPEARING NEAR THE UNIT'S BASE. |
| 26 | 68.24 | 68.80 | 0.56 | 88 | | SILTSTONE | DK. GY. MAS. SLD VFG SS LAMS NEAR TOP OF UNIT TO 15 CM & THEN MASSIVE SLTST TO BASE. ONLY OCC PLANT FRAGS W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 68.80 | 69.63 | 0.83 | 88 | | | SILTSTONE | DK.GY.SLD DOM MASSIVE WITH ONLY OCC THIN VFG SS LAM W/IN. FRACTURE RARELY PARALLELS BEDDING. |
| 27 | 69.63 | 70.32 | 0.69 | 87 | | | SILTSTONE | DK.GY.SLD SAME A/A. OCC THIN SS LAM APPEAR NEAR BASE OF UNIT. |
| 27 | 70.32 | 70.69 | 0.37 | 87 | | | SANDSTONE | SLTY.VFG.M-DK.GY.VTHNB.BRKN INTBD & INTLAM VFG-FG SS/SLTST (70/30). LAMINAE ARE GENERALLY WAVY WITH RAPID GRADATIONAL CONTACTS. SHORT FINING UPWARD TRENDS (1 CM) INDICATE CORRECT MAY UP. |
| 27 | 70.69 | 71.83 | 1.14 | *86 | | | SILTSTONE | SSY.M-DK.GY.THNB.XBDG.SLD INTBD & INTLAM VFG SS/SLTST (40/60), BECOMING SILTIER TOWARDS BASE. CORRECT MAY UP INDICATED BY XBDG. LAM ARE SUB-HORIZONTAL TO WAVY WITH RAPID GRADATIONAL CONTACTS. |
| 28 | 71.83 | 73.06 | 1.23 | 87 | | | SANDSTONE | SLTY.VFG.M-DK.GY.LAM.SLD INTLAM VFG SS/SLTST (55/45). LAM ARE WAVY WITH RAPID GRADATIONAL UPPER & LOWER CONTACTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 73.06 | 73.97 | 0.91 | 88 | | | SILTSTONE | SSY.M-DK.GY.MAS.SLD ALMOST ENTIRELY WELL CEMENTED SLTST WITH FAINT HORIZONTAL THIN DARKER AND ONLY OCCASIONAL VFG SS LAMINAE. |
| 29 | 73.97 | 74.51 | 0.54 | 89 | | | SILTSTONE | DK.GY.MAS.SLD MASSIVE WELL CEMENTED MUDDY SLTST. VERY RARE SSD. GRADATIONAL LOWER CONTACT. START OF COASTER ZONE. |
| 29 | 74.51 | 74.57 | 0.06 | 89 | | | MUDSTONE | M.GY.MAS.SLD MASSIVE WELL CEMENTED MUDST WITH RARE SLTST LAM W/IN. NEAR TOP. |
| 29 | 74.57 | 74.86 | 0.29 | 89 | | | SILTSTONE | M-DK.GY.LAM.SLD WELL CEMENTED MUDDY SLTST. BECOMES MUDDIER TOWARDS BASE. FAINT LAM W/IN. |
| 29 | 74.86 | 76.09 | 1.23 | *90 | | | SILTSTONE | M-DK.GY.MAS.SLD WELL CEMENTED SL MUDDY SLTST. FAINT LAMINAE VISIBLE. |
| 30 | 76.09 | 77.91 | 1.82 | *81 | | | SILTSTONE | M-DK.GY.LAM.SLD VERY RESISTIVE SLTST A/A. LAMS W/IN THE UNIT CONSIST OF VERY SLIGHT GRAIN SIZE VARIATIONS W/IN THE SLTST. THEREFORE COLOUR VARIATIONS/GRAIN SIZE VARIATIONS DUE TO MUDDY SLTST-SLTST. COASTERS? FINING UPWARD CYCLE (1-2 MM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 77.91 | 78.18 | 0.27 | *83 | | SILTSTONE | M-DK.GY.LAM.SLD SAME A/A. |
| 31 | 78.18 | 80.15 | 1.97 | *81 | | SILTSTONE | M.GY.LAM.BRKN VERY RESISTIVE SLTST WITH LAMINAE (1-2 MM) THROUGHOUT. EACH LAMINAE REPS AN IN DIVIDUAL SHORT FINING UPWARD CYCLE AND HAS ABRUPT CONTACTS. LAMINAE ARE HORIZONAL & ONLY RARELY WAVY. |
| 32 | 80.15 | 80.83 | 0.68 | 81 | | SILTSTONE | M.GY.LAM.SLD SAME A/A. |
| 33 | 80.83 | 82.24 | 1.41 | *81 | | SILTSTONE | M.GY.LAM.SLD SAME A/A NEAR TOP OF THE UNIT BUT BECOMING MUDDIER TOWARDS THE UNIT'S BASE. LAMS NOW GRADE FROM SLTST AT BASE UP TO MUDST AT THEIR TOP. LAMS STILL HORIZONTAL & RARELY WAVY. |
| 33 | 82.24 | 83.25 | 1.01 | 83 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN WELL LAMINATED SILTY MUDST, BECOMING LESS SILTY & MORE CARB TOWARDS THE BASE OF THE UNIT. LAMINAE HAVE VERY ABRUPT CONTACTS & ARE HORIZONTALLY STRATIFIED & BRAKE EASILY ALONG BEDDING PLANES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 83.25 | 83.73 | 0.48 | *85 | | MUDSTONE | CARB.BLK.LAM.VBRKN SILTY NEAR IT'S TOP, THE UNIT BECOMES MORE CARB WITH DEPTH. THE LOWER HALF OF THE UNIT IS VERY CARB WITH THIN COALY LAMS & STRINGERS W/IN. NO VISIBLE PLANT DEBRIS PRESENT. END OF COASTER ZONE. |
| 33 | 83.73 | 84.08 | 0.35 | 83 | | ROCK LOSS | |
| 33 | 84.08 | 84.34 | 0.26 | 81 | J | MUDSTONE | CARB.DK.GY.VBRKN VERY CARB MUDST UP TO .12 M & AGAIN FROM .20 M-.26 M. FROM .12-.20 M MUDST IS VERY DENSE. VERY RESISTIVE LT GY & MASSIVE IN NATURE. |
| 34 | 84.34 | 84.55 | 0.21 | 80 | J | MUDSTONE | CARB.M-DK.GY.VTHNB.VBRKN DOM MUDST W COMMON DIRTY SLTST THIN BEDS & LAM. UPPER CONTACT SHARP. |
| 34 | 84.55 | 84.64 | 0.09 | 79 | J | SILTSTONE | CARB.DK.GY.BRKN TOP OF UNIT = 1 CM COAL(C4-C5) W/ SHARP UPPER & LOWER CONTACT. MUDDY SLTST DOMINATES, CUT BY QTZ & CaCO3 VEIN FILLING (MAINLY QTZ). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 84.64 | 84.87 | 0.23 | 78 | | J | MUDSTONE | CARB. BLK. THNB. BRKN CARB MUDST WITH COMMON THIN COALY STRINGS & LAMS. PLANT DEBRIS PRESENT IN SM ALL AMOUNTS BUT TOO BROKEN TO IDENTIFY. |
| 34 | 84.87 | 84.92 | 0.05 | 77 | | J | MUDSTONE | CARB. BLK. VTHNB. SLD CARB MUDST A/A BUT WITH COMMON THIN COAL BANDS THROUGHOUT. MUDST/COAL = 70/30. COAL BANDS ARE GENERALLY <.5 CM THK. GRADATIONAL LOWER CONTACT. |
| 34 | 84.92 | 85.03 | 0.11 | 77 | | J | COAL | C-4. BLK. BRKN VITRINITE BANDS COMMON THROUGHOUT AS WELL AS THIN MUDST LAMINAE. "J" SEAM. GRADATIONAL LOWER CONTACT. |
| 34 | 85.03 | 85.30 | 0.27 | 76 | | J | MUDSTONE | CARB. BLK. BRKN VERY CARB FOSSILIFEROUS MUDST BECOMING LESS CARB. & MORE SILTY TOWARDS BASE. COMMON COALY LAMS NEAR TOP OF UNIT. PLANT DEBRIS TOO BROKEN TO I.D. |
| 34 | 85.30 | 86.08 | 0.78 | 73 | | J | MUDSTONE | SILTY. DK. GY. BRKN SLIGHTLY CARB. VERY SILTY MUDST. NEAR ITS BASE BEDDING BEGINS TO BECOME WAVY & STEEPER (BCA = 40 DEGREES). RAPID GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 86.08 | 86.30 | 0.22 | *70 | | J | MUDSTONE | CARB. BLK. BRKN VERY CARB MUDST WITH COMMON COALY LAMS ESP W/IN THE CENTRAL 10 CM. PLANT DEBRIS IS COMMON THROUGHOUT THE LOWER 10 CM. BUT IS VBRKN. VEIN FILLING QUARTZ IS COMMON AS WELL. BEDDING RESUMES ITS PREVIOUSLY HORIZONTAL NATURE. |
| 35 | 86.30 | 87.01 | 0.71 | 73 | | J | MUDSTONE | CARB. BLK. MAS. SLD CARB MUDST WITH COMMON SMALL COALY BLEBS (COALIFIED WOOD FRAGS) THROUGHOUT AS WELL AS VERY COMMON BROKEN UP PLANT DEBRIS. |
| 35 | 87.01 | 88.15 | 1.14 | *79 | | J | MUDSTONE | CARB. BLK. BRKN SAME AS ABOVE. IN UPPER 20 CM PLANT & WOOD DEBRIS IS VERY COMMON & IS OFTEN COALIFIED. SMALL MICROFOLDING IS ALSO PRESENT 10 CM FROM TOP WITH ASSOCIATED VEIN FILLING & VOID FILLING 'SQUEEZED' COAL. |
| 36 | 88.15 | 89.01 | 0.86 | 81 | | J | MUDSTONE | CARB. BLK. SLD BLACK CARB MUDST WITH PLANT DEBRIS (SMALL & BROKEN) COMMON THROUGHOUT. OCCASIONAL COALY BLEBS NEAR BASE OF UNIT. MUDST BECOMES LESS CONSOLIDATED. ABRUPT LOWER CONTACT WITH 1 CM VEIN FILLING QTZ AT THE CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 89.01 | 89.45 | 0.44 | 83 | | SILTSTONE | M-DK. GY. THNB. BRKN OVERALL FINING UPWARD TREND WITH MUDDY SLTST AT THE UNIT'S TOP GRADING DOWN TO SANDY DIRTY SLTST AT THE UNIT'S BASE. RAPID GRADITIONAL LOWER CONTACT. |
| 36 | 89.45 | 89.93 | 0.48 | 84 | | SANDSTONE | FG. LT-H. GY. MAS. BRKN DIRTY SS AT TOP BECOMING CLEANER TOWARD S BASE. MINOR QUARTZ VEINING. |
| 37 | 89.93 | 91.33 | 1.40 | 86 | | SANDSTONE | FG. MOD. LT-H. GY. MAS. VBRKN MASSIVE STRUCTURELESS SL CARB SS CLEAN. RESISTIVE. WELL CEMENTED. NOT FRACTURING ALONG BEDDING PLANES. OCCASIONAL THIN QUARTZ VEINS. |
| 37 | 91.33 | 91.53 | 0.20 | 88 | | ROCK LOSS | |
| 38 | 91.53 | 93.06 | 1.53 | *90 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN MASSIVE SS A/A BUT SHOWING FAINT BEDDING DEFINITION DUE TO SLIGHT GRAIN SIZE VARIATIONS & RIP-UP CLAST HORIZONS (AT 64 M). RIP-UP CLASTS ARE SMALL (<1 CM X .25 CM) & CONSIST OF QTZITE. BCA = 76 DEGREES NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39 | 93.06 | 94.75 | 1.69 | 75 | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN BIMODALLY SORTED. DOM GR SIZE = FG W/ 2 NDARY GR SIZE = CG (UP TO 1MM) BUT TEND TO BE WIDELY DISPERSED & ONLY RARELY CONCENTRATED IN THIN BEDS. 2NDARY GRAINS ARE LAM/BUFF COLORED & SUB-ANGULAR IN CONTRAST TO THE S&P DOM SS. OTHERWISE SS IS A/A. |
| 40 | 94.75 | 95.79 | 1.04 | *63 | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN BRECCIATED & QTZ VEIN-FILLING FROM 40-52 CM. OTHERWISE SS IS AS ABOVE. BEDDING IS VERY OBSCURE. |
| 40 | 95.79 | 96.70 | 0.91 | 63 | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN SAME A/A. MINOR QTZ VEINING. ESP. NEAR TO P (UP TO 1 CM THK). |
| 41 | 96.70 | 98.30 | 1.60 | *62 | | SANDSTONE | FG. MOD. LT. GY. MAS. VBRKN SAME SS AS OVERLYING BUT MINOR RIP-UP HORIZON AT 1.64 M. RIP-UPS ARE MUDST (BL ACK) & 5 CM BY .25 CM & SUB-ANGULAR. QUARTZ VEIN-FILLING UP TO .25 CM IS PRESENT SOMETIMES CUTTING STRATA AT HIGH ANGLES TO BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 98.30 | 98.50 | 0.20 | 68 | | | ROCK LOSS | |
| 42 | 98.50 | 99.04 | 0.54 | 70 | | | SANDSTONE | FG. MOD. LT. GY. MAS. VBRKN QUARTZ VEIN FILLING NEAR TOP (UP TO 2 CM THK). STILL BIMODALLY SORTED SS AS PREVIOUSLY DESCRIBED. OCC CONCENTRATIONS OF THE CG SIZE DEFINING BEDDING. SS = C LEAN & VERY RESISTIVE BUT IS COMMONLY FRACTURED. |
| 42 | 99.04 | 99.19 | 0.15 | 72 | | | ROCK LOSS | |
| 42 | 99.19 | 100.50 | 1.31 | *77 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN SAME A/A. NO VEIN FILLING QUARTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 100.50 | 102.06 | 1.56 | *82 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN SAME A/A. SOME VFG SS & OCC MG SS OCCUR S. USUALLY WITH GRAD CONTACTS. SECONDARY GRAIN SIZE MAY BE A POST DEPOSITIONAL DIAGENETIC FEATURE, POSSIBLY OVERRGROWN OVER PREFERENTIAL GRAINS W/IN THE SS UNIT. VERY RARE RIP-UPS & FRIABLE ZONES |
| 43 | 102.06 | 102.41 | 0.35 | 83 | | | ROCK LOSS | |
| 44 | 102.41 | 103.72 | 1.31 | 84 | | | SANDSTONE | FG. MOD. LT. GY. MAS. VBRKN SAME SS A/A BUT MASSIVE IN APPEARANCE. A GAIN. RARE QTZ VEINING. |
| 44 | 103.72 | 103.92 | 0.20 | 84 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD SAME A/A. |
| 45 | 103.92 | 105.32 | 1.40 | *85 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SHRD SOME THIN FRIABLE SS ZONES BUT OTHERWISE A/A. MARKER PROBABLY IN WRONG PLACE. OCCASIONAL THIN SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------|
| 45 | 105.32 | 105.75 | 0.43 | 76 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD SAME A/A. |
| 46 | 105.75 | 107.65 | 1.90 | *64 | | | SANDSTONE | FG.MOD.LT.GY.MAS.BRKN SAME MASSIVE SS A/A. VERY RARE SLTST LAM PRESENT TO INDICATE BEDDING. RARE QTZ VEINING. |
| 47 | 107.65 | 108.18 | 0.53 | 65 | | | SANDSTONE | FG.MOD.LT.GY.MAS.VBRKN SAME A/A BUT SLIGHTLY FEWER SECONDARY G RAIN SIZE CLASTS. NO INTERNAL STRUCTURE S. |
| 47 | 108.18 | 108.52 | 0.34 | 65 | | | ROCK LOSS | |
| 47 | 108.52 | 109.59 | 1.07 | *66 | | | SANDSTONE | FG.MOD.LT.GY.MAS.BRKN SAME A/A. |
| 48 | 109.59 | 110.83 | 1.24 | *71 | | | SANDSTONE | FG.WEL.LT.GY.VTHKB.VBRKN SAME AS ABOVE BUT SLTST LAM OCCASIONALL Y APPEAR AGAIN. SHARP UPPER & LOWER CON TACTS ON LAMS. |
| 48 | 110.83 | 111.08 | 0.25 | 74 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 111.08 | 111.61 | 0.53 | 75 | | | SANDSTONE | FG.VWEL.LT.GY.MAS.SHRD BIMODAL SORTING HAS DISAPPEARED, ONLY F G GREY SALT & PEPPER SS. CLEAN, RESISTI VE SS WITH OCCASIONAL QUARTZ VEIN-FILLI NG, SOMETIMES AT HIGH ANGLES TO BEDDING |
| 48 | 111.61 | 111.71 | 0.10 | 77 | | | ROCK LOSS | |
| 49 | 111.71 | 112.25 | 0.54 | *78 | | | SANDSTONE | FG.WEL.LT-M.GY.THNB.SHRD THIN ZONES OF VFG SS & OCC SLTST LAMS P RESENT. BEDDING & LAMS ARE HORIZONTAL & HAVE RAPID GRADATIONAL - ABRUPT Contac TS. LOWER CONTACT OF COMPLETE UNIT IS A BRUPT. SMALL RIP-UPS OCCUR 10 CM FROM U NIT'S BASE. |
| 49 | 112.25 | 112.45 | 0.20 | 69 | | | SILTSTONE | SSY.DK.GY.VSHRD BRECCIATED SL CARB SLTST & OCC VFG SS. |
| 49 | 112.45 | 112.75 | 0.30 | 63 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 112.75 | 113.87 | 1.12 | *46 | | SILTSTONE | SSY, DK, GY, THNB, SSD, BRKN INTERBEDDED VFG SS/SLTST (20/80). BEDDING IS WAVY & DISCONTINUOUS DUE TO SSD. LITRIFIC SURFACES ARE COMMON THROUGHOUT AS WELL AS OCC POORLY CONSOLIDATED ZONE S. SLIGHT CARB ESP NEARING BASE OF UNIT |
| 50 | 113.87 | 114.10 | 0.23 | 55 | | SILTSTONE | M-DK, GY, BRKN SEVERELY BRECCIATED, QUARTZ VEIN FILLING THROUGHOUT. |
| 50 | 114.10 | 114.63 | 0.53 | 60 | | SILTSTONE | SSY, M-DK, GY, VTHNB, BIOTR, YBRKN INTBD & INTLAM VFG SS/SLTST (20/80) LATER DISTURBED BY SSD OR BIOTRB RESULTING IN WAVY OFTEN MIXED & BROKEN BEDDING. CONTACTS BETWEEN LITHOLOGIES ARE USUALLY GRADITIONAL. |
| 50 | 114.63 | 114.67 | 0.04 | 64 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50 | 114.67 | 115.57 | 0.90 | *70 | | SILTSTONE | SSY, M-DK, GY, VTHNB, SSD, BRKN INTBD & INTLAM VFG SS/SLTST (35/65). MIXING BETWEEN LITHOLOGIES COMMON. SOME MUDST PRESENT AS WELL IN SMALL AMOUNTS ESP NEAR TOP. OCCASIONAL WORM BURROWS & COMMON SSD AND RARER BIOTRB. CORRECT WAY UP (SSD). SOME SL CARB ZONES WITH PLANT DEBRIS. |
| 50 | 115.57 | 115.61 | 0.04 | 69 | | ROCK LOSS | |
| 51 | 115.61 | 117.40 | 1.79 | *66 | | SILTSTONE | SSY, M-DK, GY, VTHNB, SSD, YBRKN INTBD & INTLAM, SOMETIMES MIXED VFG SS/SLTST (45/55). THIN CARB ZONES WITH OCC PLANT FRAGS. WELL DEVELOPED BALL/PILLO M SSD STRUCTURES - CORRECT WAY UP. |
| 52 | 117.40 | 117.45 | 0.05 | *70 | | SILTSTONE | SSY, M-DK, GY, VTHNB, SLD SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 117.45 | 119.01 | 1.56 | 74 | | SILTSTONE | SSY M-DK.GY.VTHNB.SSD.VBRKN SAME A/A. RARE HORIZONTAL LAMINAE - USUALLY DISRUPTED BDG. OCC WEAK POORLY DEFINED XBDG SS/SLTST (40/60). |
| 52 | 119.01 | 119.05 | 0.04 | 78 | | ROCK LOSS | |
| 53 | 119.05 | 119.67 | 0.62 | *80 | | SILTSTONE | SSY M-DK.GY.VTHNB.SSD.BRKN INTBD, OFTEN MIXED VFG SS/SLTST WITH SS D COMMON THROUGHOUT. SAME A/A. CORRECT MAY UP. |
| 53 | 119.67 | 119.85 | 0.18 | 80 | | SILTSTONE | M.GY.MAS.SLD MASSIVE RESISTIVE SLTST/MUDST WITH RARE QUARTZ VEIN-FILLING. SOME CARBONATE RECRYSTALLIZATION OF MUDST/SLTST. |
| 53 | 119.85 | 120.40 | 0.55 | *80 | | SILTSTONE | SSY M-DK.GY.THNB.SSD.SLD INTBD VFG SS/SLTST (40/60) COMMONLY MIXED & ALMOST ALWAYS DISRUPTED BY SSD. WELL DEVELOPED BALL/PILLOW STRUCTURES UP TO 1.5 CM. CORRECT MAY UP. |
| 53 | 120.40 | 121.05 | 0.65 | 74 | | SILTSTONE | SSY M-DK.GY.THNB.SSD.SLD SAME A/A BUT SLIGHTLY CARB WITH ONLY VERY RARE PLANT DEBRIS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 54 | 121.05 | 123.02 | 1.97 | *61 | | SILTSTONE | SSY M-DK.GY.THNB.SSD.BRKN SUB-HORIZ, OFTEN WAVY & DISRUPTED (SSD) INTBD & INTLAM VFG SS/SLTST (35/65) BECOMING SILTIER TOWARDS BASE. SAME A/A. BCA = 69 DEG. NEAR BASE. |
| 55 | 123.02 | 123.28 | 0.26 | 66 | | SILTSTONE | SSY M-DK.GY.LAM.SLD INTERLAMINATED VFG SS/SLTST (50/50). LAMINAE IS SUB-HORIZONTAL & OCC WAVY WITH RAPID GRADATIONAL CONTACTS. SSD IS VERY RARE. |
| 55 | 123.28 | 124.99 | 1.71 | *70 | | SILTSTONE | SSY M-DK.GY.VTHNB.SSD.BRKN THIN VEIN-FILLING QTZ ZONE PARALLEL TO BEDDING AT .42 M. SAME A/A BUT MORE DISRUPTED BEDDING & STRONGLY DOMINATED BY SLTST (15/85). CORRECT MAY UP. |
| 56 | 124.99 | 126.37 | 1.38 | *69 | | SILTSTONE | SSY DK.GY.THNB.SSD.SLD DOMINATED BY SLTST A/A (15/85). OCC MUDST/DIRTY SLTST. BEDDING CONTACTS ARE OFTEN VERY GRADATIONAL & DISRUPTED. AT .84 M PLANT DEBRIS TOO SMALL TO I.D. COMMON. |
| 56 | 126.37 | 127.07 | 0.70 | 71 | | SILTSTONE | SSY DK.GY.THNB.SLD SAME A/A BUT (35/65). SLIGHT CARB WITH OCC PLANT DEBRIS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 57 | 127.07 | 129.23 | 2.16 | *73 | | SILTSTONE | SSY M-DK. GY. LAM. SSD. SLD. INTBD & INTLAM VFG SS/SCTST (45/55) COM. MONLY DISRUPTED BY SSD. LAM ARE SUB-HOR. IZONTAL TO WAVY & BROKEN & OFTEN HAVE G. RADATIONAL CONTACTS. PLANT DEBRIS COMMO. N ESP NEAR BASE. THIN (.5 CM) FG SS LAM AT .56 M. |
| 58 | 129.23 | 129.48 | 0.25 | 71 | | MUDSTONE | SLTY. M. GY. LAM. SLD. THIN. SLTY. LAMINAE THROUGHOUT. |
| 58 | 129.48 | 130.23 | 0.75 | *70 | 07139 | MUDSTONE | SLTY. M. GY. LAM. SLD. AS. ABOVE. CONTORTED WITH QTZ. YEINING. NE. AR. BASE. LOWER 25 CM SAMPLED. |
| 58 | 130.23 | 130.88 | 0.65 | 72 | 07140 I | COAL | C-3. SHRD. INTENSELY SHEARED & POWDERED. LISTRIC SURFACES ABUNDANT, GRADE DIFFICULT TO TELE. |
| 58 | 130.88 | 130.97 | 0.09 | 72 | 07140 I | MUDSTONE | M. GY. BRKN. LISTRIC SURFACES. |
| 58 | 130.97 | 130.99 | 0.02 | 73 | 07140 I | COAL | C-6. SLD. BONE. COAL. |
| 59 | 130.99 | 131.27 | 0.28 | 73 | 07140 I | COAL | C-3. SHRD. VERY BROKEN & SHEARED. LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------|
| 59 | 131.27 | 131.82 | 0.55 | 74 | 07140 I | COAL | C-2. VBRKN |
| 59 | 131.82 | 131.93 | 0.11 | 75 | 07140 I | MUDSTONE | M-DK. GY. SLD. MINOR PLANT FRAGS. |
| 59 | 131.93 | 131.98 | 0.05 | 75 | 07140 I | COAL | C-5. SLD. VITRAIN STRINGERS & CARB STRINGERS. |
| 59 | 131.98 | 132.08 | 0.10 | 75 | 07140 I | COAL | C-2. BRKN. |
| 59 | 132.08 | 132.13 | 0.05 | 75 | 07140 I | COAL | C-4. BRKN. C-2 BANDS. |
| 59 | 132.13 | 132.18 | 0.05 | 75 | 07140 I | COAL | C-3. SLD. |
| 59 | 132.18 | 132.20 | 0.02 | 75 | 07140 I | MUDSTONE | CARB. DK. GY. SLD. ABUNDANT PLANT FRAGS. |
| 59 | 132.20 | 132.23 | 0.03 | 75 | 07140 I | MUDSTONE | CLYY. M. GY. SLD. POORLY CONSOLIDATED. |
| 59 | 132.23 | 132.29 | 0.06 | 76 | 07141 I | COAL | C-2. SLD. |
| 59 | 132.29 | 132.41 | 0.12 | 76 | 07141 I | COAL | C-3. SHRD. VERY BROKEN, LISTRIC SURFACES ABUNDANT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------|
| 59 | 132.41 | 132.43 | 0.02 | 76 | 07141 I | COAL | C-6.SLD |
| 59 | 132.43 | 132.54 | 0.11 | 76 | 07141 I | COAL | C-3.VBRKN |
| 59 | 132.54 | 132.66 | 0.12 | 76 | 07141 I | COAL | C-3.SHRD ABUNDANT LISTRIC SURFACES. |
| 60 | 132.66 | 132.79 | 0.13 | 77 | 07141 I | COAL | C-3.SHRD AS ABOVE. |
| 60 | 132.79 | 133.34 | 0.55 | 77 | 07141 I | COAL | C-2.BRKN |
| 60 | 133.34 | 133.60 | 0.26 | 78 | 07141 I | COAL | C-3.SHRD POWDERED, LISTRIC SURFACES. |
| 60 | 133.60 | 133.80 | 0.20 | 79 | 07141 I | COAL | C-2.VBRKN |
| 60 | 133.80 | 134.55 | 0.75 | *80 | 07142 | MUDSTONE | CARB.M.GY ABUNDANT COALY CARB FRAGMENTS AND STRIN GERS. UPPER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 61 | 134.55 | 135.33 | 0.78 | 75 | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.LAM.SLD INTLAM'D VFG SS/FG SS/SLTST/& OCC MUOYST (45/25/25/5). SHARP CONTACTS BUT GRADE D INTERNALLY WITH REVERSE & NORMAL GRAD ING. DOM SUB-HORIZ LAMS. VERY SMALL (.2 5CM x 1MM) BLK RIP-UPS OCCUR AT .42M IN A VARIETY OF ORIENTATIONS.GRADATIONAL LOWER CONTACT. |
| 61 | 135.33 | 136.09 | 0.76 | *70 | | SILTSTONE | CARB.DK.GY.MAS.BRKN MASSIVE SLTST BECOMING MUDDY & MORE CAR B TOWARDS ITS BASE. PLANT DEBRIS IS PRE SENT ALSO INCREASING DOWN SECTION. MUOY FRAGMENTS, PLANT DEBRIS & ONLY OCC COA LY STRINGERS EXIST. |
| 61 | 136.09 | 136.39 | 0.30 | 69 | | ROCK LOSS | |
| 61 | 136.39 | 136.82 | 0.43 | 68 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SLTY MUOYST (SLIGHT CARB). OCCASIONAL PL ANT DEBRIS W/IN. SOME LISTRIC SURFACES. |
| 61 | 136.82 | 137.13 | 0.31 | 68 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 62 | 137.13 | 137.37 | 0.24 | 67 | | SILTSTONE | SSY. M-DK. GY. VTHNB. BRKN INTBD/INTLAM VFG SS/DIRTY SLTST (35/65) . NAVY & DISTORTED BEDDING. BECOMING SANDIER TOWARDS BASE. |
| 62 | 137.37 | 137.77 | 0.40 | 67 | | SANDSTONE | SLTY. VFG. WEL. LT-M. GY. LAM. XBDG. BRKN INTBD & INTLAM FG SS/VFG SS/SLTST & OCC MUDST (35/40/20/5). OVERALL FINING UPWARD TREND OF UNIT WITH INDIVIDUAL LAM GRADATIONAL. CORRECT MAY UP. LAM ARE MAY Y, BECOMING X-LAM & MORE HORIZONTAL TOWARDS BASE. |
| 62 | 137.77 | 137.87 | 0.10 | 66 | | ROCK LOSS | |
| 62 | 137.87 | 138.99 | 1.12 | 65 | | SANDSTONE | FG. WEL. LT. GY. MAS. SLD RESISTIVE SS WITH POORLY DEFINED BEDDING (DEFINED ONLY BY SMALL RIP-UP CLASTS & OCC SLIGHT GRAIN SIZE VARIATIONS). RIP-UPS THROUGHOUT & ARE BLACK SLTST & < 5 CM x .25 CM, AND SUB-ANGULAR - SUB-ROUNDED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 63 | 138.99 | 140.68 | 1.69 | *63 | | SANDSTONE | FG. MOD. LT. GY. VTHKB. BRKN SAME A/A BUT MORE COMMON & LARGER RIP-UPS (UP TO 2CM x 1CM & SUB-ROUNDED). ALSO RARE SMALL SUB-ANGULAR QUARTZ PEBBLES EXIST FORMING THIN HORIZONS OR ARE FOUND AT RANDOM. PEBBLES RANGE FROM 2 MM - 8 MM IN SIZE. |
| 63 | 140.68 | 140.82 | 0.14 | 68 | | ROCK LOSS | |
| 64 | 140.82 | 142.03 | 1.21 | 72 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN MASSIVE FG SS A/A WITH ONLY OCCASIONAL VERY SMALL RIP-UPS AND NO QUARTZ PEBBLES. VERY RARE THIN SLTST/CARB LAMS TO DE FINE BEDDING. SOME QUARTZ VEINING UP TO 1 CM PRESENT BUT ONLY AT 1.11 M. |
| 64 | 142.03 | 142.21 | 0.18 | *76 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN SAME A/A. UPPER CONTACT HAS SOME QUARTZ VEIN-FILLING UP TO 1 CM. LOWER CONTACT MISSING-ROCK BREAK. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 64 | 142.21 | 142.59 | 0.38 | *62 | | SILTSTONE | SSY. M-DK. GY. LAM. XBDG. BRKN INTLAM VFG SS/SLTST/MINOR MUDST (40/50/10). X-BDG (PLANAR) - CORRECT WAY UP. MINOR DEFORMATION OF SUB-HORIZONTAL LAM. SMALL SCALE FOLDING, REVERSE FAULTING & BRECCIATION NEAR BASE. |
| 64 | 142.59 | 142.74 | 0.15 | 64 | | ROCK LOSS | |
| 65 | 142.74 | 144.80 | 2.06 | *70 | | SILTSTONE | SSY. M-DK. GY. SSD. BRKN THINLY INTBD & INTLAM VFG SS/SLTST (45/55). SSD IS COMMON THROUGHOUT. SUB-HORIZONTAL LAM. LAM CONTACTS USUALLY SHARP. THIN QTZ-VEINED BRECCIATED ZONES ARE PRESENT AT THE TOP (.76 M & 1.2 M (2 CM THK & PARALLEL TO BDG). OCCASIONAL BURROWS. |
| 65 | 144.80 | 144.94 | 0.14 | 72 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 66 | 144.94 | 145.32 | 0.38 | *72 | | SILTSTONE | DK. GY. MAS. BRKN PYRITE BLEBS COMMON W/IN THE FAINTLY LAM SLTST UNIT. |
| 66 | 145.32 | 146.82 | 1.50 | 67 | | SILTSTONE | DK. GY. MAS. BRKN SAME A/A BUT MUCH LESS PYRITE. SMALL PYRITE BLEBS OCCUR ONLY AT UNIT'S TOP. INDIVIDUAL LAMINAE SHOW SLIGHT INTERNAL FINING UPWARD TREND (LAM ARE VERY RARE). |
| 67 | 146.82 | 148.22 | 1.40 | 60 | | SILTSTONE | DK. GY. MAS. SLD SMALL PYRITE BLEBS COMMON ESP IN UPPER HALF. OTHERWISE SAME A/A. BEDDING IS NOT APPARENT. |
| 67 | 148.22 | 148.94 | 0.72 | 55 | | SILTSTONE | DK. GY. MAS. SLD SAME A/A BUT LACKING PYRITE. THIN BRECCIATED ZONE (1 CM) AT .58 M. |
| 68 | 148.94 | 149.62 | 0.68 | *52 | | SILTSTONE | CARB. DK. GY. SLD MASSIVE SLTST AT TOP BECOMING SANDIER GRADATIONALLY TOWARDS BASE. COMPLETE UNIT CONSISTS OF 60% SLTST 40% VFG SS. LITHOLOGIES ARE MIXED. GRADATIONAL LOWER CONTACT. SLIGHT CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 68 | 149.62 | 150.34 | 0.72 | 49 | | SANDSTONE | SLTY. VFG. MEL. DK. GY. SLD BROAD SLIGHT FINING UPWARD TREND W/IN THE SAND. FAINTLY BEDDED SILTY SAND WITH OCCASIONAL WISPS OF CARB LAMINATIONS PRESENT. BROKEN WOOD FRAGMENTS & PLANT DEBRIS PRESENT THROUGHOUT. |
| 68 | 150.34 | 150.55 | 0.21 | 48 | | SILTSTONE | DK. GY. MAS. SLD MASSIVE SLIGHTLY SANDY SLTST WITH SOME PLANT DEBRIS. |
| 68 | 150.55 | 150.82 | 0.27 | 47 | | SILTSTONE | SSY. DK. GY. THNB. SSD. BRKN THINLY INTBD. VFG. SS/SLTST (40/60) OFTEN WITH BEDDING BROKEN & DISTORTED. LARGE PROXIMAL SLTST RIP-UPS LIE WITHIN THE SAND BEDS. ALSO COMMON. SHARP CONTACTS BETWEEN THIN BEDS. COALY FRAGS & PLANT DEBRIS OCCUR ESP NEAR BASE OF UNIT. |
| 68 | 150.82 | 151.01 | 0.19 | *46 | | SANDSTONE | FG. MEL. LT-M. GY. MAS. SLD CLEAN SLIGHT CARB SS WITH OCCASIONAL, USUALLY DISCONTINUOUS CARBONACEOUS LAMINATIONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 69 | 151.01 | 151.12 | 0.11 | 46 | | SANDSTONE | FG. MEL. M-DK. GY. THNB. SSD. SLD INTERBEDDED FG SS/SLTST (65/35). SS FINES UPWARD TO SLTST (OVER 1.5 CM) WITH SLTST UPPER CONTACT -> SHARP BUT DISRUPTED BY SSD. SLTST RIP-UPS W/IN SS FROM UNDERLYING BED. CORRECT WAY UP. |
| 69 | 151.12 | 151.62 | 0.50 | *47 | | SANDSTONE | FG. MEL. LT-M. GY. THNB. SLD OVERALL COARSENING UPWARD TREND: SILTY VFG. SS AT BASE GRADING UP TO FG CLEAN SS AT TOP OF UNIT. THIN CARB LAMS W/IN UPPER SS. THIN (5 CM) PLANT DEBRIS ZONE AT .36 M. |
| 69 | 151.62 | 152.62 | 1.00 | 52 | | SILTSTONE | SSY. M-DK. GY. VTHNB. SSD. BRKN THINLY INTBD & INTLAM VFG. SS/SLTY (45/55). MIXING OFTEN OCCURS & SSD IS COMMON THROUGHOUT. AT .80 M SLTST BECOMES BEDDED & QTZ VEINED. THIN CARB MUDST BED AT .85 M (2 CM). LOWEST 10 CM IS FG SS WITH OCC. SLTST LAMS. |
| 70 | 152.62 | 153.01 | 0.39 | 57 | | SANDSTONE | MG. PR. LT-M. GY. THNB. BRKN UNIT REPS A FINING UPWARD CYCLE WITH MASSIVE CG. POORLY SORTED SS AT BASE FINING UP GRADATIONALLY TO VFG. SS & SLTST LAM AT THE TOP OF THE UNIT. SHARP LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 153.01 | 153.06 | 0.05 | 58 | | | ROCK LOSS | |
| 70 | 153.06 | 153.88 | 0.82 | *61 | | | SANDSTONE | CG. PR. LT-M. GY. MB. BRKN THIN - MED BEDS (LAM-20 CM) OF PEBBLY T O FG SS WITH RAPID GRADATIONAL OR ABRUP T LOWER CONTACTS AND SLOW GRADATIONAL U PPER CONTACTS (FINING UP). 3 VERY COARS E ZONES EXIST AT .26 M, .43 M & .51 M W ITH RIP-UPS (UP TO 3CM) OF SLTST & SS (UP TO 2 MM). |
| 70 | 153.88 | 153.93 | 0.05 | 61 | | | ROCK LOSS | |
| 70 | 153.93 | 154.33 | 0.40 | 61 | | | SANDSTONE | VFG. MOD. M-DK. GY. THNB. BRKN INTBD VFG. SS/SLTST (70/30). TOP OF UNIT (10 CM) IS CG SS WITH SMALL RIP-UP CLA STS OF SS. SOME SSD IN INTBD UNIT. CORR ECT MAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 154.33 | 154.73 | 0.40 | 61 | | | SANDSTONE | CG. PR. LT-M. GY. MAS. BRKN SAME AS PREVIOUS CG SS UNIT EXCEPT UNIT IS MASSIVE WITH RIPUPS THROUGHOUT. DOM RIP-UP SIZE IS .20-.5 CM (OF SS) WITH SOME 8 CM x 2 CM AT .10 M FROM TOP (OF SLTST). |
| 71 | 154.73 | 155.80 | 1.07 | *61 | | | SANDSTONE | CG. PR. LT. GY. MB. BRKN INTBD CG-VFG SS. DOM BY C-MG WITH COMMO N SMALL RIP-UPS OF LT. GY. SS & QTZITE. Y FG SS BEDS ARE THIN (UP TO 5 CM). |
| 71 | 155.80 | 156.58 | 0.78 | 57 | | | SANDSTONE | FG. WEL. LT-M. GY. THNB. BRKN INTBD CG SS/FG SS/SLTST (10/80/10). BED S ARE SUB-HORIZONTAL WITH SOME SSD. BUT GENERALLY HAVE ABRUPT CONTACTS. BEDS A RE USUALLY 2-5 CM WITH OCC LAM. |
| 72 | 156.58 | 156.90 | 0.32 | 55 | | | MUDSTONE | CARB. M-DK. GY. SLD ABUNDANT COALY PLANT FRAGS AND STRINGER S. |
| 72 | 156.90 | 157.20 | 0.30 | 54 | | | MUDSTONE | CARB. M-DK. GY. SLD ABUNDANT COALY PLANT FRAGS AND STRINGER S. |
| 72 | 157.20 | 157.26 | 0.06 | 53 | ? | | COAL | C-2. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 72 | 157.26 | 157.27 | 0.01 | 53 | ? | | MUDSTONE | CARB. DK. GY. SLD COALY STRINGERS. |
| 72 | 157.27 | 157.41 | 0.14 | 52 | ? | | COAL | C-4. BRKN C-2 BANDS THROUGHOUT. |
| 72 | 157.41 | 157.45 | 0.04 | 52 | ? | | MUDSTONE | CARB. M-DK. GY. |
| 72 | 157.45 | 158.34 | 0.89 | *50 | | | MUDSTONE | CARB. M-DK. GY. BRKN ABUNDANT COALY STRINGERS & DARK PLANT FRAGS. |
| 73 | 158.34 | 158.71 | 0.37 | 50 | | | MUDSTONE | CARB. BLK. LAM. VBRKN VERY CARB BLK MUDST WITH COMMON COAL LAMINAE THROUGHOUT. MUDST/COAL=70/30. MAX THICKNESS OF INDIVIDUAL COAL LAM = .4 CM BUT USUALLY 1-2 MM. WOOD FRAGS COMMON. RAPID GRADATION TO SLTST AT LOWER CONTACT. |
| 73 | 158.71 | 159.48 | 0.77 | 51 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 73 | 159.48 | 160.32 | 0.84 | *51 | | | SILTSTONE | SSY. DK. GY. LAM. BRKN INTERLAMINATED VFG SS/SLTST (40/60). SLTY AT TOP BECOMING SANDIER TOWARDS BASE. LAM ARE SUB-HORIZONTAL TO WAVY WITH RAPID GRADATIONAL CONTACTS. INTERNALLY LAMINATIONS USUALLY FINE UPWARDS. OCCASIONAL PLANT DEBRIS. |
| 73 | 160.32 | 160.70 | 0.38 | 48 | | | SILTSTONE | SSY. DK. GY. LAM. BRKN SAME A/A. |
| 74 | 160.70 | 161.13 | 0.43 | *46 | | | SILTSTONE | SSY. M-DK. GY. LAM. BRKN SAME A/A BUT BECOMING SANDIER TOWARDS BASE SS/SLTST = (45/55). |
| 74 | 161.13 | 161.69 | 0.56 | *51 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN MASSIVE SS WITH COMMON CARB LAMINATIONS THROUGHOUT, BECOMING LESS COMMON TOWARDS BASE. SHARP LOWER CONTACT. |
| 74 | 161.69 | 162.41 | 0.72 | 56 | | | SANDSTONE | SLTY. VFG. M-DK. GY. VTHNB. VBRKN INTBD VFG. SS/SLTST (55/45) WITH THIN CARB LAMS NEAR THE TOP OF THE UNIT. CONTACTS ARE RAPID GRADATIONAL BUT BDG IS INDISTINCT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 74 | 162.41 | 162.55 | 0.14 | 60 | | ROCK LOSS | |
| 75 | 162.55 | 163.07 | 0.52 | *63 | | SANDSTONE | CARB. VFG. M. GY. LAM. XBDG. BRKN VFG SILTY SS WITH CARBONACEOUS LAMS THRU OUGHOUT. CORRECT WAY UP (XBDG). |
| 75 | 163.07 | 163.45 | 0.38 | 66 | | SANDSTONE | CARB. FG. LT-M. GY. MAS. YBRKN FRIABLE SS A/A BUT FG, BRECCIATED WITH SOME QUARTZ VEINING & LACKING LAMINAE. |
| 75 | 163.45 | 163.88 | 0.43 | 69 | H/I | ROCK LOSS | |
| 75 | 163.88 | 164.07 | 0.19 | 71 | H/I | MUDSTONE | CARB. BLK. VSHRD SOME SS NEAR UNIT'S TOP BUT DOMINANTLY POORLY CONSOLIDATED CARB MUDST WITH THIN COAL LAMS W/IN. RAPID GRADATIONAL LOWER CONTACT. |
| 75 | 164.07 | 164.24 | 0.17 | 72 | H/I | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 75 | 164.24 | 164.57 | 0.33 | 74 | | ROCK LOSS | |
| 75 | 164.57 | 164.95 | 0.38 | 76 | | SANDSTONE | CARB. FG. MOD. LT-M. GY. LAM. SSD. BRKN FINE & VFG SS WITH COMMON CARB MUDST LAM. SOME SSD. CARB MUDST LAMS ARE UP TO 1 CM THK. |
| 76 | 164.95 | 165.74 | 0.79 | 80 | | SILTSTONE | CARB. M-DK. GY. THNB. BRKN COARSENING UPWARD TREND. SS A/A AT TOP OF UNIT. GRADING DOWN THROUGH INTBD SS/SILTST & INTO SLTY MUDST AT UNIT'S BASE. SOME BREC & QTZ VEIN-FILLING UP TO 1 CM IN BASAL 10 CM OF UNIT. 1ST APPEARANCE OF GASTROPODS: RARE & SOLITARY (.5 CM LONG). |
| 76 | 165.74 | 166.37 | 0.63 | *85 | | SILTSTONE | CARB. LT. BLK. MAS. SHRD VERY MUDDY SILTST. SOME BRECCIATION & QUARTZ VEIN-FILLING. SL. CARR. BASE OF UNIT IS MARKED BY RARE SMALL SOLITARY GASTROPODS A/A AND BIVALVES. BIVALVE BED IS 5 CM THK WITH WHOLE & PARTIAL BIVALVES - "FERGANOCONDNA" RANGING FROM 1 X 1 CM TO 3.5 X 2.25CM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 76 | 166.37 | 166.66 | 0.29 | 85 | | | ROCK LOSS | |
| 77 | 166.66 | 168.21 | 1.55 | *85 | | | MUDSTONE | SLTY. M. GY. LAM. BRKN ABUNDANT BIVALVES (<1.5 CM) AND GASTROPODS (<.5 CM) SCATTERED THROUGHOUT, CONCENTRATION OF GASTROPODS IN A BAND AT 70 CM. LOCAL CONCENTRATIONS OF QTZ VEINING, SLTY BANDS, MINOR PYRITE AT BASE OF UNIT. |
| 77 | 168.21 | 168.36 | 0.15 | 77 | ? | | COAL | C-3. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 77 | 168.36 | 168.50 | 0.14 | 76 | ? | | ROCK LOSS | |
| 77 | 168.50 | 168.66 | 0.16 | 74 | | | ROCK LOSS | |
| 77 | 168.66 | 168.77 | 0.11 | 73 | | | MUDSTONE | CARB. M-DK. GY. SHRD BROKEN & SHEARED LISTRIC SURFACES. |
| 78 | 168.77 | 168.92 | 0.15 | 72 | | | MUDSTONE | CARB. BLK. MAS. VSHRD VERY CARB. BLACK MUDST. WITH VERY RARE COALY LAMS. LISTRIC SURFACES COMMON. LOWER CONTACT RAPID GRADATIONAL THROUGH SLT ST. & INTO SS. (3 CM). |
| 78 | 168.92 | 169.22 | 0.30 | 69 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 78 | 169.22 | 169.39 | 0.17 | 67 | | | SANDSTONE | CARB. FG. MOD. M. GY. MAS. SLD BLACK DISCONTINUOUS CARB LAMS WITH GRAD ATIONAL & DISTORTED/PATCHY CONTACTS THR OUGHOUT. |
| 78 | 169.39 | 170.31 | 0.92 | *62 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SSD. BRKN SLIGHT CARB MASSIVE SS. BEDDING DEFINED ONLY BY THIN CARB LAMS A/A BUT ONLY OC CASIONALLY. BASE OF UNIT HAS SOME INTBD SLTST WITH X-BDG (CORRECT MAY UP). SSD IN MIDDLE OF UNIT HAS SOME MIXING OF V FG SS & FG SS. |
| 78 | 170.31 | 170.74 | 0.43 | 64 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SSD. BRKN SAME A/A BUT LARGE DISRUPTED ZONE (25 C M. AT TOP) WITH MIXED & SLIGHT BRECCIATE D SLTST. |
| 79 | 170.74 | 172.29 | 1.55 | *66 | | | SANDSTONE | FG. MEL. LT. GY. MAS. XBDG. BRKN CLEAN MASSIVE SS WITH OCCASIONAL LAMS & RARE SLTST LAMS. X-BDG PRESENT INDICAT ING CORRECT MAY UP. |
| 79 | 172.29 | 172.42 | 0.13 | 65 | | | SILTSTONE | CARB. DK. GY. VSHRD RAPID GRADATION FROM SS A/A TO VERY CAR B SLTST AT THE UNIT'S BASE. LOWER CONTA CT = ROCK BREAK. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 79 | 172.42 | 172.69 | 0.27 | 65 | | | ROCK LOSS | |
| 80 | 172.69 | 174.66 | 1.97 | *64 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN MASSIVE CLEAN RESISTIVE SS WITH RARE RI P-UPS AT .25 M & 1.40 M. RIP-UPS ARE SUB -ROUNDED - SUB-ANGULAR SLTST & RANGE UP TO 2 CM X 1 CM. AT .17M THE SS IS BRKN BY A THIN (2 CM) SLTST BAND WITH SHARP CONTACTS. SS OCCASIONALLY BECOMES MG. SLIGHTLY CARB. |
| 81 | 174.66 | 175.37 | 0.71 | 63 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN INTBD FG SS/MG SS BUT STRONGLY DOM BY F G SS. SLIGHT CARB WITH ONLY OCC RIP-UPS (SMALL). SLIGHTLY BRECCIATED NEAR THE UNIT'S TOP. |
| 81 | 175.37 | 176.21 | 0.84 | 63 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN SAME A/A. AT .61 M, SLTST RIP-UPS (2.5 CM X 1.5 & SUB-ANGULAR), OCCASIONAL SLI GHT BRECCIATED ZONES. RARE MG SS ZONES. |
| 82 | 176.21 | 177.63 | 1.42 | *62 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN SAME A/A WITH SOME INTBD MG SS & VFG SS . SLIGHT COARSENING UPWARD TREND OVER C OMplete UNIT. OCC SLTST LAM (THIN). SLI GHT CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 82 | 177.63 | 178.05 | 0.42 | 67 | | | SANDSTONE | VFG. MOD. M. GY. MAS. VBRKN DIRTY SLIGHT BRECCIATED OCCASIONALLY SLTY VFG SS. NEAR HORIZONTAL LAMINAE. |
| 82 | 178.05 | 178.18 | 0.13 | 68 | | | ROCK LOSS | |
| 83 | 178.18 | 180.21 | 2.03 | *74 | | | SANDSTONE | CARB. FG. HEL. M. GY. MAS. BRKN MASSIVE RESISTIVE DOMINANTLY FG SS WITH OCCASIONAL VERY CARB THIN BEDS (AT .31 & .48 M) AND RARE CARB & SLTST LAM. DISRUPTED CARB LAMS AT .11 (WITH SOME SMALL RIP-UPS) & .56 M. LOWER CONTACT IS A BRUPT WITH THIN CARBY ZONE. |
| 84 | 180.21 | 180.69 | 0.48 | 66 | | | SANDSTONE | FG. VHEL. LT. GY. MAS. SLD MASSIVE THROUGHOUT WITH BASE MARKED BY THIN CARB LAMS. |
| 84 | 180.69 | 182.23 | 1.54 | *60 | | | SANDSTONE | CARB. FG. VHEL. LT-M. GY. MAS. BRKN MASSIVE SS A/A WITH COMMON CARBONACEOUS LAMS THROUGHOUT. BECOMING SLIGHTLY MORE CARB TOWARDS BASE OF UNIT. |
| 85 | 182.23 | 182.40 | 0.17 | 55 | 07143 | | SANDSTONE | FG. LT-M. GY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------|
| 85 | 182.40 | 182.52 | 0.12 | 54 | 07144 | H | COAL | C-4. SHRD SHEARED & POWDERED, LISTRIC SURFACES. |
| 85 | 182.52 | 182.55 | 0.03 | 53 | 07144 | H | MUDSTONE | CARB. M-DK. GY. BRKN LISTRIC SURFACES. |
| 85 | 182.55 | 182.76 | 0.21 | 53 | 07144 | H | COAL | C-3. SHRD CONTORTED, LISTRIC SURFACES. |
| 85 | 182.76 | 182.79 | 0.03 | 52 | 07144 | H | MUDSTONE | CARB. DK. GY. BRKN LISTRIC SURFACES. |
| 85 | 182.79 | 182.92 | 0.13 | 51 | 07144 | H | SILTSTONE | CLYY. M. GY. SLD |
| 85 | 182.92 | 183.16 | 0.24 | 50 | 07144 | H | COAL | C-3. VBRKN MIXED WITH DRILL MUD, SOUPY. |
| 85 | 183.16 | 183.23 | 0.07 | 49 | 07144 | H | COAL | C-5. SLD |
| 85 | 183.23 | 183.33 | 0.10 | 49 | 07144 | H | MUDSTONE | M-DK. GY. SLD COALY STRINGERS. |
| 85 | 183.33 | 183.47 | 0.14 | 48 | 07144 | H | COAL LOSS | |
| 85 | 183.47 | 183.54 | 0.07 | 47 | 07144 | H | COAL | C-3. SHRD LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 85 | 183.54 | 183.75 | 0.21 | 46 | 07144 H | MUDSTONE | SLTY. M-DK. GY. BRKN MINOR COALY CARB STRINGERS. |
| 85 | 183.75 | 183.94 | 0.19 | 45 | 07144 H | COAL LOSS | |
| 85 | 183.94 | 184.01 | 0.07 | 44 | 07144 H | COAL | C-3. SHRD LITRIC SURFACES. |
| 85 | 184.01 | 184.30 | 0.29 | 43 | 07144 H | COAL | C-5. SHRD LITRIC SURFACES. |
| 86 | 184.30 | 184.49 | 0.19 | 42 | | MUDSTONE | CARB. BLK. SHRD VERY CARB. MUDST. WITH COMMON THIN COAL L AMINAE. |
| 86 | 184.49 | 185.21 | 0.72 | 39 | | SILTSTONE | CARB. DK. GY. SSD. VBRKN VERY CARB AT TOP GRADING DOWN TO SLTST & RARELY SLTY SS AT THE UNIT'S BASE. SS D. IS COMMON (ESP. H/IN THE SLTST). |
| 86 | 185.21 | 185.54 | 0.33 | 36 | | SANDSTONE | FG. VWEL. LT. GY. MAS. SLD CLEAN MASSIVE SS WITH QUARTZ-FILLED FRA CTURES ALMOST PERPENDICULAR TO BEDS (.5 CM THICK). GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 86 | 185.54 | 186.10 | 0.56 | *33 | | SANDSTONE | VFG. MOD. LT-M. GY. VTHNB. SSD. BRKN INTERBED & INTERLAM FG SS/VFG SS/SLTST (30/40/30). BEDDING IS WAVY & OFTEN DIS RUPTED BY SSD. CROSS-BEDDING & SSD INDI CATE WAY UP. |
| 87 | 186.10 | 187.29 | 1.19 | *31 | | SANDSTONE | FG. MOD. LT-M. GY. VTHNB. SSD. BRKN SAME A/A BUT (35/35/30); FG SS DOMINATE S IN THE UPPER HALF OF THE UNIT WHILE V FG SS & SLTST DOMINATES IN THE LOWER HA LF. SSD THROUGHOUT & SOME X-BDG. BRECCI ATED NEAR BASE. |
| 87 | 187.29 | 187.99 | 0.70 | *41 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN CLEAN, MASSIVE SLIGHTLY BRECCIATED SS. |
| 88 | 187.99 | 188.60 | 0.61 | *30 | | SANDSTONE | VFG. MOD. LT-M. GY. VTHNB. SSD. BRKN INTBD FG SS/VFG SS/SLTST (35/40/25). SS D COMMON THROUGHOUT, AS WELL AS MINOR B RECCIATION & QTZ VEIN-FILLING. SMALL SC ALE HIGH ANGLE REVERSE FAULTING (DISPLA CEMENT 2 CM). OVERALL COARSENING UPWARD TREND. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 67

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88 | 188.60 | 189.91 | 1.31 | 32 | | SILTSTONE | DK.GY.MAS.BRKN MUDDY SLTST WITH BIVALVES (RARE) APPEARING AT .70 M (UP TO 1 CM x 1 CM x 1 CM THEREFORE ALMOST ROUND). SANDY NEAR UNIT'S TOP WITH SSD. BIVALVE HORIZON = 15 CM THICK (MOST LIKELY "HERZOGINA" BUT POSSIBLY "ASTARTE" OR "STAFFINELLA"). |
| 89 | 189.91 | 190.25 | 0.34 | 34 | | MUDSTONE | CARB.BLK.SHRD VERY CARB BLACK MUDST WITH COMMON THIN COAL LAMS THROUGHOUT. GRADES DOWN INTO LESS CARB SLTST TOWARDS BASE. |
| 89 | 190.25 | 190.42 | 0.17 | 34 | | MUDSTONE | CARB.BLK.BRKN VERY CARB BLACK MUDST, SOMETIMES SLIGHTLY SLTY. |
| 89 | 190.42 | 190.46 | 0.04 | 34 | | COAL | C-4.BLK.VSHRD DOMINANTLY C-4 & C-5 WITH SOME THIN (UP TO .5 CM) C-2 - C-3 LAM. RAPID GRADATIONAL UPPER & LOWER CONTACT. |
| 89 | 190.46 | 190.86 | 0.40 | 35 | | MUDSTONE | CARB.BLK.VBRKN VERY CARB MUDST AT TOP WITH THIN COAL LAM GRADING DOWN INTO CARB SLTST AT UNIT'S BASE. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 68

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 89 | 190.86 | 191.64 | 0.78 | *36 | | SILTSTONE | DK.GY.MAS.SSD.BRKN OVERALL FINING UPWARD TREND: MUDDY SLTST AT TOP GRADING THROUGH SLTST WITH SS APPEARING AT UNIT'S BASE. SSD IS APPARENT WHEN VFG SS BEGINS BECOMING THIN BEDDED W/IN THE SLTST. |
| 90 | 191.64 | 192.09 | 0.45 | 40 | | SANDSTONE | MG.PR.LY.GY.MAS.SLD POORLY SORTED RESISTIVE SS WITH COMMON ANGULAR & OCC WELL ROUNDED RIP-UP CLASTS RANGING FROM 1 MM TO 1 CM IN SIZE. |
| 90 | 192.09 | 193.08 | 0.99 | 45 | | SANDSTONE | FG.PR.LI-M.GY.VTHNB.BRKN OVERALL COARSENING UPWARD TREND. THE UPPER HALF OF THE UNIT IS INTBD SS A/A & SLTST WITH COMMON RIP-UP CLASTS DERIVED FROM PROXIMAL BEDS (USUALLY SLTST). THE LOWER HALF OF THE UNIT IS FG SS/SLTST INTERBEDS WITH RARE RIP-UPS BUT COMMON SSD. |
| 90 | 193.08 | 193.49 | 0.41 | *50 | | SILTSTONE | SSY.DK.GY.VTHNB.SSD.BRKN INTBD & INTLAM VFG SS/SLTST (35/65) WITH COMMON SSD THROUGHOUT. GRADATIONAL (RAPID) TO SHARP INTERLAM. CONTACTS WITH SOME MIXING. |

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 91 | 193.49 | 193.76 | 0.27 | 62 | | | SANDSTONE | SLTY. FG. M. GY. THNB. XBDG. BRKN DOMINANTLY FG SS WITH COMMON SLTST LAM & THIN BEDS W/IN, OFTEN BROKEN & DISCON TINUOUS. CORRECT WAY UP (X-BDG). |
| 91 | 193.76 | 194.09 | 0.33 | *72 | | | MUDSTONE | CARB. BLK. BRKN VERY CARB MUDST WITH COMMON COAL LAMINA E & SMALL BLEBS W/IN. HOOD FRAGMENT & S OME PLANT DEBRIS ASSOCIATED WITH COALY AREAS. VERY COALY AT 23 M. |
| 91 | 194.09 | 195.20 | 1.11 | 67 | | | SANDSTONE | SLTY. VFG. MEL. M-DK. GY. LAM. BIOTR. BRKN INTERLAM. VFG. SS/SLTST (55/45) IN SUB-HO RIZONTAL LAMINAE, SOMETIMES BIOTURBATED OR DEFORMED BY SSD. CORRECT WAY UP. FR OM TOP OF UNIT TO 39 M. PYRITE IS VERY COMMON. CARB LAM COMMON AS WELL. |
| 91 | 195.20 | 195.39 | 0.19 | 62 | | | MUDSTONE | SLTY. BLK. SHRD VERY CARB SILTY MUDSTONE WITH SOME PYRI TE W/IN. |
| 92 | 195.39 | 195.42 | 0.03 | 62 | | | MUDSTONE | CARB. BLK. VSHRD VERY CARB/COALY MUDST WITH THIN COAL LA MS W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 92 | 195.42 | 195.82 | 0.40 | 60 | | | SANDSTONE | SLTY. FG. LT-M. GY. THNB. BRKN BRECCIATED & DISTORTED INTBD FG SS/SLTS T (65/35). SHARP CONTACTS BETWEEN LITHO LOGIES. |
| 92 | 195.82 | 196.01 | 0.19 | *58 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD WEAK HORIZONTAL LAMINATIONS DEFINED BY SLIGHT GRAIN SIZE VARIATIONS. |
| 92 | 196.01 | 197.24 | 1.23 | *49 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN MASSIVE FG SS WITH OCCASIONAL VERY THIN CARB LAMS & RARE SLIGHT GRAIN SIZE VAR IATIONS. SOME THIN FRACTURE FILL QUARTZ |
| 93 | 197.24 | 197.82 | 0.58 | 53 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD SAME A/A. |
| 93 | 197.82 | 198.18 | 0.36 | *55 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. THNB. BRKN INTBD & MIXED VFG SS/SLTST (80/20). SLI GHT CARB. |
| 93 | 198.18 | 198.88 | 0.70 | 56 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN MASSIVE FG SS. QUARTZ-FILLED FRACTURES PRESENT AS WELL AS OCCASIONAL THIN CARB LAMS. SOME VFG SS AS WELL. |
| 93 | 198.88 | 198.96 | 0.08 | 56 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD SAME A/A BUT NO VFG SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87005

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 94 | 198.96 | 200.76 | 1.80 | 58 | | SANDSTONE | FG.MEL.LT.GY.MB.BRKN INTBD FG SS/VFG SS/SLTST (50/40/10). HO RIZ BDD WITH SHARP CONTACTS BETWEEN BED S. INTERNALLY SOME BEDS HAVE SHORT FINI NG UPWARD TREND (FROM SLTST-FG SS). SS IS OFTEN MAS BRKN ONLY BY VTHN CARB OR SLTST LAM. SMALL SCALE NORMAL FAULTS (D ISPLACEMENT=1CM) |
| 95 | 200.76 | 201.14 | 0.38 | *59 | | SANDSTONE | FG.VMEL.LT.GY.VTHNB.SLD SAME A/A BUT VERY THINLY BEDDED/LAM. |
| 95 | 201.14 | 201.62 | 0.48 | *71 | | SILTSTONE | SSY.M-DK.GY.VTHNB.SSD.BRKN THINLY INTBD & INTLAM VFG SS/SLTST (20/ 80). WEAKLY DEFINED SUB-HORIZONTAL TO H AVY BEDDING OFTEN DISRUPTED BY SSD CAUS ING LITHOLOGY CONTACTS TO BE MIXED & OB SCURE. UNIT BECOMES SLIGHTLY CARBONACEO US NEAR ITS BASE. END OF HOLE. T.D. = 2 03.00 |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87005

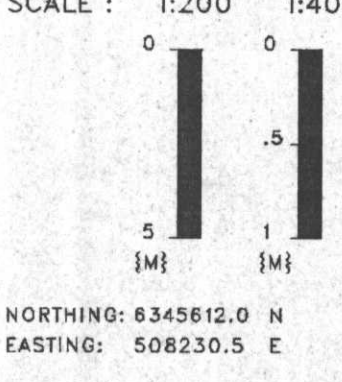
740

GEOLOGIST : LEDDA

DATE : MAR 08/88

DRAWING NO. :

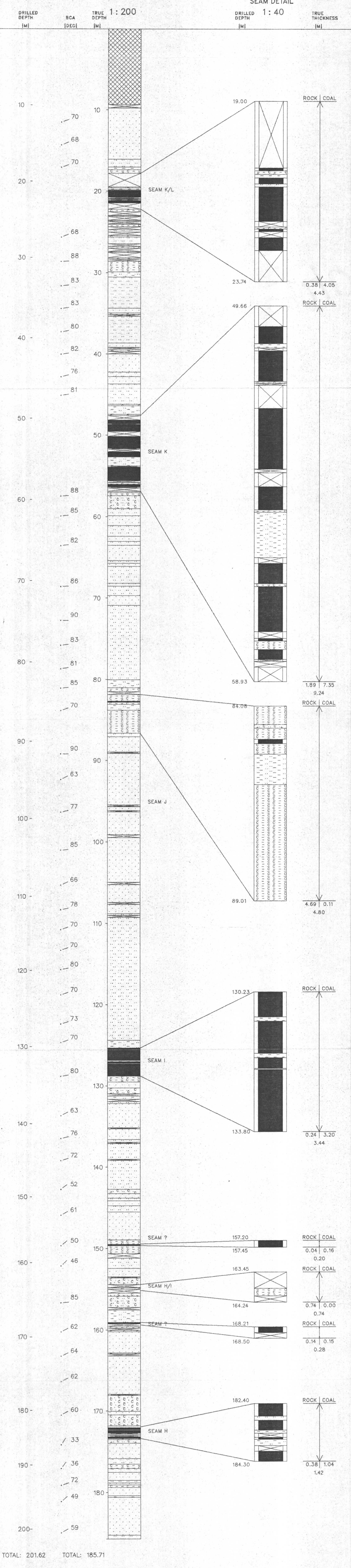
LITHOLOGIC SYMBOLS



NORTHING: 8345612.0 N
 EASTING: 508230.5 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87005**

Province: BC

Northing: 6345610.00

Lat: 571519

Log Date: 87-09-02

Zone: 9

Easting: 508231.00

Long: 1285149

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1452.1

Geologist: LEDDA

Scale: 1' to 200.0

Depth Range: 0.0 to 207.0

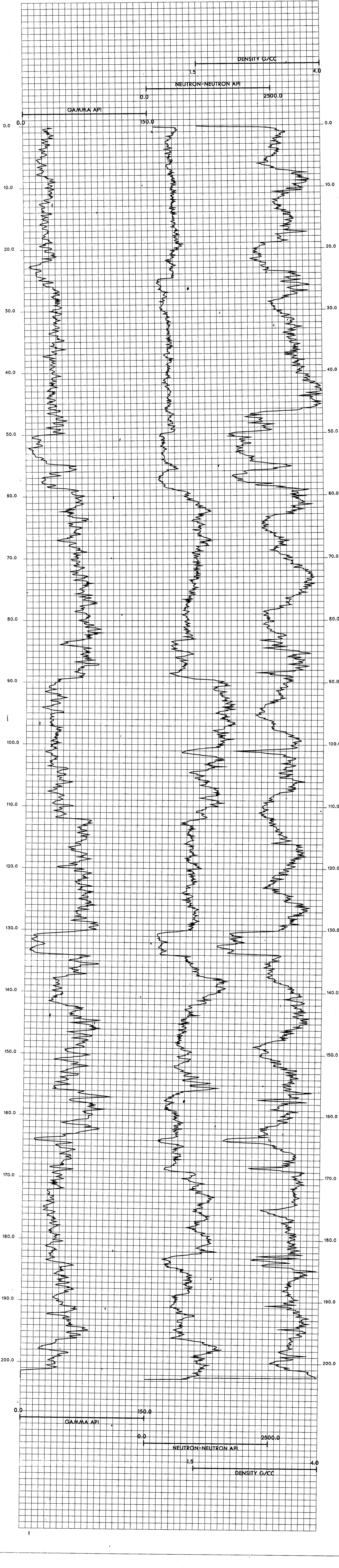
True Thickness: NO

Comments:

1. LOGGED THROUGH RODS.
- 2.

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87006

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPMLRDDH87006

DATE - 03/01/88

- HISTORY -

START DATE - 08/31/87
END DATE - 09/03/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - LEE

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - INTERSECTS SEAMS I, H/I, H. SITE J.

- LOCATION -

PROVINCE - BC
ELEVATION - 1462.33

ZONE - 9
NORTHING - 6345329.93
EASTING - 508433.08

LICENCE/LEASE NUMBER -

LATITUDE - 571510
LONGITUDE - 1285137

- ORIENTATION -

LENGTH - 153.76
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 6.10
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|------------|-------------------------------------------------------------------------------------------------------------|
| | 0.00 | 6.10 | 6.10 | 75 | | CASING | CASING DEPTH |
| 1 | 6.10 | 6.20 | 0.10 | 75 | | OVERBURDEN | CASING = 6.10 M. MG SS PIECES; TILL; MU DST CHUNKS. |
| 1 | 6.20 | 7.28 | 1.08 | 75 | | ROCK LOSS | |
| 1 | 7.28 | 7.72 | 0.44 | 75 | | MUDSTONE | DK.GY.LAM.XBDG.VBRKN WITH LT.GY.SLTY.LAM.XBDG - TOPS UP, UNCONSOLIDATED MUDST BELOW, POSSIBLY FROM UP HOLE. |
| 1 | 7.72 | 8.00 | 0.28 | *75 | | MUDSTONE | DK.GY.LAM.BIOTR.SLD LT.GY.SLTY.LAM. TWIST-OFF AT BASE. |
| 1 | 8.00 | 8.42 | 0.42 | 81 | | ROCK LOSS | |
| 1 | 8.42 | 9.03 | 0.61 | *89 | | MUDSTONE | DK.GY.LAM.BIOTR.VBRKN OCC LT.GY.SLTY.LAM.BANDS 2 CM THICK, WR MBUR - TOPS UP. |
| 1 | 9.03 | 9.10 | 0.07 | 81 | | SANDSTONE | SLTY.VFG.LT.GY.THNB.BIOTR.BRKN W/ MUDST LAM. LOAD CAST - TOPS UP. |
| 2 | 9.10 | 9.13 | 0.03 | 80 | | SANDSTONE | SLTY.LT.GY.THNB.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 9.13 | 10.13 | 1.00 | *69 | | MUDSTONE | DK.GY.LAM.XBDG.VBRKN SLTY LT.GY.LAM, WRMBUR - TOPS UP; BIOTR B. |
| 2 | 10.13 | 10.93 | 0.80 | 71 | | ROCK LOSS | |
| 2 | 10.93 | 11.35 | 0.42 | *72 | | MUDSTONE | DK.GY.LAM.WRMBU.VBRKN SSSY SLTST LAM. |
| 3 | 11.35 | 11.42 | 0.07 | 73 | | MUDSTONE | DK.GY.LAM.XBDG.SLD LT.GY.SLTY.LAM INCREASE DOWN, TWIST-OFF |
| 3 | 11.42 | 12.36 | 0.94 | *74 | | MUDSTONE | DK.GY.LAM.XBDG.VBRKN OCC SLTY.LAM.(LT.GY), WRMBUR - TOPS UP, LOAD CAST, 3 TWIST-OFFS (.1, .19 & .9 4 FROM TOP), LESS SLTY.LAM DOWNWARDS. |
| 3 | 12.36 | 12.45 | 0.09 | 77 | | MUDSTONE | H.GY UNCONSOLIDATED MUD POSSIBLY FROM UP HOL E. |
| 3 | 12.45 | 12.60 | 0.15 | 78 | | MUDSTONE | DK.GY.LAM H/LT.GY.SLTY.LAM THROUGHOUT. |
| 4 | 12.60 | 13.31 | 0.71 | 80 | | MUDSTONE | SLTY.DK.GY.VBRKN |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------|
| 4 | 13.31 | 14.11 | 0.80 | | 84 | | ROCK LOSS | |
| 4 | 14.11 | 14.74 | 0.63 | *88 | | | MUDSTONE | SLTY. DK. GY. VBRKN BECOMING CARBONACEOUS, ABUNDANT COAL ST RINGERS & QTZ CARB VEINING. |
| 4 | 14.74 | 15.19 | 0.45 | | 69 | | ROCK LOSS | |
| 4 | 15.19 | 15.54 | 0.35 | | 54 | | COAL | C-4. BRKN C-2 BANDS THROUGHOUT, MINOR QTZ CARB VEINING, MUD BANDS THROUGHOUT. |
| 5 | 15.54 | 15.57 | 0.03 | | 48 | | BRECCIA | DK. GY. SLD QTZ VEIN WITH BRECCIATED MUDST. |
| 5 | 15.57 | 15.79 | 0.22 | | 43 | | MUDSTONE | SLTY. M. GY. LAM. BRKN WITH SLTST LAM (LT GY), OCC QTZ VEINS < .5 CM THICK. SILTIER DOWN WARDS, THIST-OFF AT BASE. |
| 5 | 15.79 | 15.96 | 0.17 | | 36 | | ROCK LOSS | |
| 5 | 15.96 | 16.35 | 0.39 | *26 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN LT GY SLTST LAM, QTZ VEIN <.5 CM THICK (CUTS. BDG). |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | 16.35 | 16.47 | 0.12 | *32 | | | MUDSTONE | SLTY. DK. GY. LAM. SLD W/SLTST LAM (LT GY). |
| 5 | 16.47 | 16.54 | 0.07 | | 33 | | BRECCIA | DK. GY. QTZ VEIN W/MUDST BRECCIA. |
| 5 | 16.54 | 16.71 | 0.17 | | 34 | | MUDSTONE | SLTY. DK. GY. LAM. BRKN W/LT GY SLTST LAM. |
| 5 | 16.71 | 16.84 | 0.13 | | 35 | | MUDSTONE | DK. GY. QTZ VEINING, OCC SLTY LAM. |
| 5 | 16.84 | 17.38 | 0.54 | *38 | | | MUDSTONE | DK. GY. LAM. BRKN SLTST LAMS INCREASE TO BECOME DOMINANT, SOME BIOTRB. |
| 6 | 17.38 | 19.10 | 1.72 | *35 | | | SILTSTONE | LT. GY. LAM. BIOTR. BRKN MUDST LAMS (DK GY), OCC RIPMK, HRMBUR & SLTST LOAD CASTS (TOPS UP). SSD, APPRO X 50/50 SLTST/MUDST IN LOWER HALF, OCC QTZ VEIN APPROX 1 CM THICK. |
| 6 | 19.10 | 19.45 | 0.35 | *29 | | | SILTSTONE | LT. GY. LAM. BIOTR. BRKN AS ABOVE. |
| 6 | 19.45 | 19.50 | 0.05 | | 27 | | ROCK LOSS | |

* DENOTES MEASURED BCA

4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 19.50 | 19.70 | 0.20 | 26 | | MUDSTONE | DK.GY.LAM.SSD.SLD W/LT GY SLTST LAM, QTZ VEINING 1.5 CM T HICK W/MUDST BRECCIA AT TOP, <1 CM VEIN S FURTHER DOWN. |
| 7 | 19.70 | 19.99 | 0.29 | 23 | | MUDSTONE | DK.GY.LAM.SLD AS ABOVE QTZ VEINING IS MORE ABUND AND SOME BRECCIA IS FOUND. |
| 7 | 19.99 | 20.09 | 0.10 | 21 | | BRECCIA | DK.GY.SLD MUDST BRECCIA IN QTZ VEIN. |
| 7 | 20.09 | 20.17 | 0.08 | 20 | | MUDSTONE | DK.GY.LAM.BIOTR.SLD W/LT GY SLTST LAM, DISCONTINUOUS QTZ PI ECES. |
| 7 | 20.17 | 20.32 | 0.15 | 19 | | BRECCIA | DK.GY.SLD MUDST BRECCIA, PIECES 1-3 CM LENGTH. |
| 7 | 20.32 | 21.43 | 1.11 | *12 | | MUDSTONE | DK.GY.LAM.SSD.SLD W/LT GY SLTST LAM, RIP-UP - TOPS UP. PO SSIBLE CORE LOSS SINCE QTZ VEINS IN THI S BOX DON'T CONTINUE INTO PREVIOUS BOX. |
| 8 | 21.43 | 21.72 | 0.29 | 12 | | MUDSTONE | DK.GY.LAM.SSD.SLD QTZ VEINING APPROX 1 CM THICK ALMOST PA RALLELS BDG, SLTST LAM (LT GY), SOME BR ECCIA IN QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 8 | 21.72 | 21.90 | 0.18 | 12 | | BRECCIA | DK.GY.SLD QTZ VEIN PARALLELS BDG (5CM THICK). |
| 8 | 21.90 | 22.08 | 0.18 | 12 | | MUDSTONE | LAM.YBRKN W/LT GY SLTST LAM & THNBDS, TWIST-OFF A T BASE. |
| 8 | 22.08 | 22.20 | 0.12 | 12 | | ROCK LOSS | |
| 8 | 22.20 | 22.75 | 0.55 | *12 | | MUDSTONE | DK.GY.THNB.SSD.BRKN W/LT GY SLTST BEDS AND LAM, MUDST IS LA M TO THNB, QTZ VEIN & BRECCIA AT TOP. |
| 8 | 22.75 | 23.22 | 0.47 | *18 | | MUDSTONE | DK.GY.LAM.SSD.SLD AS ABOVE. |
| 8 | 23.22 | 23.39 | 0.17 | *12 | | SANDSTONE | YFG.M.GY.THNB DK.GY.MUDST LAM, HRMBUR (TOPS DOWN). |
| 9 | 23.39 | 23.83 | 0.44 | *04 | | SANDSTONE | YFG.M.GY.THNB.BRKN W/OCC DK.MUDST LAM. |
| 9 | 23.83 | 23.99 | 0.16 | *14 | | SANDSTONE | YFG.M.GY.THNB.BRKN AS ABOVE. |
| 9 | 23.99 | 24.23 | 0.24 | *44 | | SILTSTONE | M-DK.GY.THNB.SSD.BRKN FG SS INTERBEDS AND DK.GY.MUDST LAM, LO AD CAST - TOPS DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------|
| 9 | 24.23 | 24.34 | 0.11 | 41 | | MUDSTONE | DK.GY QTZ VEINING, SOME BRECCIATION, VFG SS I NTERBEDS. |
| 9 | 24.34 | 24.59 | 0.25 | 38 | | ROCK LOSS | |
| 9 | 24.59 | 24.83 | 0.24 | 34 | | MUDSTONE | DK.GY.VTHNB.BIOTR.VBRKN SLTY SS INTERBEDS, SOME QTZ VEINING <1 CM THICK. |
| 9 | 24.83 | 25.54 | 0.71 | *26 | | SANDSTONE | SLTY.M.GY.VTHNB.SSD.SLD M/DK.GY.MUDST.LAM, QTZ VEINING CUTS BED DING. |
| 10 | 25.54 | 25.80 | 0.26 | *01 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN INTERBED W/SLTST (M.GY), OCC MUDST LAM, .5 CM QTZ VEIN AT BASE. |
| 10 | 25.80 | 26.05 | 0.25 | *01 | | SANDSTONE | VFG.BRKN INTERBEDDED W/SLTST AS ABOVE, QTZ VEINI NG. |
| 10 | 26.05 | 26.18 | 0.13 | 02 | | ROCK LOSS | |
| 10 | 26.18 | 26.46 | 0.28 | 03 | | SILTSTONE | M.GY.LAM.VBRKN W/MUDST, MUCH QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 10 | 26.46 | 27.02 | 0.56 | 05 | | SILTSTONE | M.GY.LAM.SSD.BRKN W/MUDST LAM (DK.GY). |
| 11 | 27.02 | 27.38 | 0.36 | *07 | | SILTSTONE | M.GY.LAM.SSD.SLD W/MUDST LAM AS ABOVE, WRMBUR (TOPS UP). |
| 11 | 27.38 | 27.86 | 0.48 | 07 | | SILTSTONE | M.GY.VTHNB.VBRKN OCC MUDST BEDS, OCC SSSY LAM (LT-M.GY) T OWARDS BASE, QTZ VEIN (2 CM) AT BASE. |
| 11 | 27.86 | 28.14 | 0.28 | 07 | | ROCK LOSS | |
| 11 | 28.14 | 28.48 | 0.34 | 07 | | SILTSTONE | LT-M.GY.VTHNB.BRKN OCC MUDST LAM. |
| 11 | 28.48 | 29.13 | 0.65 | *07 | | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN W/VFG SS INTERBEDS. |
| 12 | 29.13 | 30.70 | 1.57 | *11 | | MUDSTONE | SLTY.M-DK.GY.VTHNB.SSD.BRKN OCC SSSY LAM, BIOTR, PLANT FRAGS. |
| 12 | 30.70 | 31.16 | 0.46 | *10 | | MUDSTONE | SLTY.M-DK.GY.VTHNB.SSD.BRKN W/SSY BANDS OF VFG SS & MUDST AS ABOVE. |
| 13 | 31.16 | 31.72 | 0.56 | *26 | | MUDSTONE | DK.GY.LAM.SSD.BRKN INTERLAM W/SLTST (LT-M.GY), OCC MM THIC K QTZ VEINS ALONG BEDDING PLANES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------|
| 13 | 31.72 | 31.90 | 0.18 | *24 | | MUDSTONE | DK.GY.LAM.SSD.BRKN AS ABOVE, LOAD CAST? TOPS UP, THNB FG'S S INTERBEDS (LT-M GY). |
| 13 | 31.90 | 32.20 | 0.30 | *22 | | SANDSTONE | VFG.LT-M.GY.THNB.BRKN W/DK GY MUDST (VTHNB AT BASE TO LAM). 0 CC MM QTZ VEIN CUTTING BEDDING. |
| 13 | 32.20 | 32.23 | 0.03 | 22 | | SANDSTONE | VFG.VBRKN AS ABOVE. |
| 13 | 32.23 | 32.34 | 0.11 | 21 | | ROCK LOSS | |
| 13 | 32.34 | 32.37 | 0.03 | 21 | | BRECCIA | MUDST IN QTZ VEIN, BRECCIA APPROX 1 CM LENGTH. |
| 13 | 32.37 | 32.48 | 0.11 | 21 | | ROCK LOSS | |
| 13 | 32.48 | 32.69 | 0.21 | 20 | | MUDSTONE | DK.GY.VTHNB.BRKN W/SLTY SS INTERBEDS, QTZ VEINING CAUSES MINOR BRECCIA TOWARDS TOP. |
| 13 | 32.69 | 33.40 | 0.71 | *19 | | SANDSTONE | FG.LT-M.GY.VTHNB W/DK GY MUDST LAM (SOME ARE DISCONTINUO US), OCC QTZ VEIN (MM THICK). |
| 14 | 33.40 | 33.75 | 0.35 | 13 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD OCC MUDST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 14 | 33.75 | 34.62 | 0.87 | *07 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD OCCASIONAL DISCONTINUOUS MUDST AND ABUN DANT SLTST LAM TO VTHNB INTERBEDS. |
| 14 | 34.62 | 35.10 | 0.48 | *16 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN SLTST INTERBEDS & LAM, BIOTRB. |
| 14 | 35.10 | 35.34 | 0.24 | *22 | | SILTSTONE | M.GY.VTHNB.SSD.BRKN INTERBEDDED W/FG SS AND MUDST LAM, WRMB UR - TOPS UP. |
| 15 | 35.34 | 35.54 | 0.20 | *20 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD INTERBEDDED W/SLTST WHICH BECOME LAM DO WNWARDS. |
| 15 | 35.54 | 36.47 | 0.93 | 18 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN W/DISCONTINUOUS DK GY MUDST LAM. |
| 15 | 36.47 | 36.67 | 0.20 | *17 | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN INTERBEDDED W/SLTST. |
| 15 | 36.67 | 36.91 | 0.24 | *13 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BIOTR.BRKN INTERBEDDED W/SLTST. |
| 15 | 36.91 | 37.48 | 0.57 | *04 | | SANDSTONE | FG.LT-M.GY.VTHNB.WRMBU.SLD W/SLTST LAM, WRMBUR - TOPS UP? |
| 16 | 37.48 | 38.28 | 0.80 | *08 | | SANDSTONE | FG.LT-M.GY.VTHNB.WRMBU.SLD SLTST LAM, SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 38.28 | 39.38 | 1.10 | *11 | | SANDSTONE | FG. LT-M. GY. VTHNB. BIOTR. BRKN SLTST LAM (DISCONTINUOUS), OCC MM QTZ VEIN. |
| 17 | 39.38 | 40.87 | 1.49 | *17 | | SANDSTONE | FG. LT-M. GY. VTHNB. BIOTR. BRKN INTERLAM TO BEDDED WITH SLTST (M GY). DISCONTINUOUS MUDST LAM (DK GY), WRMBUR - TOPS DOWN, BDG VARIES FROM LAM TO 2 CM THICK, SS LOAD CAST (TOPS DOWN). |
| 17 | 40.87 | 41.22 | 0.35 | *09 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN INTERLAM FG SS, WRMBUR - TOPS DOWN, OCC 1 MM MUDST LAM. |
| 17 | 41.22 | 41.37 | 0.15 | 07 | | SILTSTONE | M. GY. VTHNB. BIOTR. SLD M/VFG SS INTERBEDS & MUDST LAMS. |
| 18 | 41.37 | 41.90 | 0.53 | *04 | | SILTSTONE | M. GY. LAM. BIOTR. SLD INTERLAM M/VFG SS & OCC FG SS BEDS. |
| 18 | 41.90 | 43.41 | 1.51 | 03 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN AS ABOVE M/OCC MUDST BLEBS FORMING DISCONTINUOUS LAM, OCC <1 MM QTZ VEIN CUTTING BEDS, SSD. |
| 19 | 43.41 | 44.15 | 0.74 | *02 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN INTERLAM VFG SS (LT-M GY), RIP-UPS, OCC 2MM QTZ VEIN CUTS BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 44.15 | 45.33 | 1.18 | *12 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN INTERLAM M/VFG SS (LT-M GY), WRMBUR - TOPS DOWN, OCC DK GY MUDST LAM. |
| 20 | 45.33 | 46.70 | 1.37 | *11 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN M/VFG SS LAM LESS ABUNDANT THAN PREVIOUS (1-3 MM THICK), MUDST LAM <1 MM THICK. |
| 20 | 46.70 | 47.11 | 0.41 | *14 | | SILTSTONE | M. GY. LAM. BRKN DISCONTINUOUS MUDST LAM, VFG SS LAM, OCC .5 CM QTZ VEIN. |
| 20 | 47.11 | 47.40 | 0.29 | 14 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN M/VFG SS LAM AND DISCONTINUOUS <1 MM MUDST LAM, AS ABOVE. |
| 21 | 47.40 | 47.92 | 0.52 | 15 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN AS ABOVE. |
| 21 | 47.92 | 48.12 | 0.20 | 15 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN M/MUDST LAM. |
| 21 | 48.12 | 49.45 | 1.33 | *16 | | SILTSTONE | M. GY. LAM. BIOTR. BRKN INTERLAM M/MUDST AND VFG SS, MUDST MORE ABUNDANT THAN ABOVE. RIP-UP CLASTS (TOPS UP), DISCONT 1MM QTZ VEIN PARALLEL TO BDG & CUTTING BEDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 22 | 49.45 | 49.62 | 0.17 | *11 | | | SILTSTONE | M. GY. LAM. BIOTR. SLD AS ABOVE. |
| 22 | 49.62 | 49.75 | 0.13 | 10 | | | ROCK LOSS | |
| 22 | 49.75 | 50.18 | 0.43 | 09 | | | MUDSTONE | DK. GY. SHRD HIGHLY SHEARED, POORLY CONSOLIDATED, VERY SOFT SHEARED SURFACES THROUGH OUT, ABUNDANT QTZ VEINING. |
| 22 | 50.18 | 50.44 | 0.26 | 08 | | | ROCK LOSS | |
| 22 | 50.44 | 51.24 | 0.80 | 06 | | | MUDSTONE | DK. GY. LAM. VBRKN INTERLAM W/SLTST, OCC VFG SS LAM, GOOD LOCATION FOR CORE LOSS, TWIST-OFF 2/3 OFF MAY DOWN. |
| 22 | 51.24 | 51.44 | 0.20 | 04 | | | ROCK LOSS | |
| 23 | 51.44 | 51.55 | 0.11 | 03 | | | MUDSTONE | DK. GY. LAM. VBRKN INTERLAM W/SLTST, SOME .5 CM QTZ VEINING, TWIST-OFF AT BASE. |
| 23 | 51.55 | 51.70 | 0.15 | 03 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 23 | 51.70 | 52.46 | 0.76 | *01 | | | MUDSTONE | DK. GY. LAM. XBDG. BRKN INTERLAM W/SLTST AND SOME VFG SS. |
| 23 | 52.46 | 52.79 | 0.33 | 01 | | | SILTSTONE | M. GY. LAM. XBDG. SLD INTERLAM W/VFG SS AND MUDST. |
| 23 | 52.79 | 53.45 | 0.66 | *01 | | | MUDSTONE | DK. GY. LAM. BRKN INTERLAM W/SLTST AND VFG SS, SMALL SCALE X-BDG. |
| 24 | 53.45 | 53.67 | 0.22 | 02 | | | MUDSTONE | DK. GY. LAM. VBRKN INTERLAM W/SLTST, SHEAR SURFACES ALONG BEDDING PLANES, RIPK. |
| 24 | 53.67 | 53.82 | 0.15 | 02 | | | ROCK LOSS | |
| 24 | 53.82 | 54.41 | 0.59 | 03 | | | MUDSTONE | DK. GY. LAM. XBDG. BRKN INTERLAM W/SSY. SLTST AND VFG SS. DOWNHARD. |
| 24 | 54.41 | 55.42 | 1.01 | *04 | | | MUDSTONE | DK. GY. LAM. BRKN INTERLAM W/SSY SLTST, SOME SHEARED SURFACES ALONG BEDDING PLANES, OCC DISCONTINUOUS QTZ VEIN. |
| 25 | 55.42 | 55.83 | 0.41 | 03 | | | MUDSTONE | XBDG. BRKN INTERLAM W/SLTST AND VFG SS, SOME SHEAR SURFACES ON BEDDING PLANES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 55.83 | 57.43 | 1.60 | *01 | | | SILTSTONE | SSY.LT-M.GY.LAM.XBDG.SLD INTERLAM W/MUDST AND VFG SS, OCC <1 MM QTZ VEINS PARALLELING BDG PLANES. |
| 26 | 57.43 | 58.88 | 1.45 | *01 | | | SILTSTONE | SSY.LT-M.GY.LAM.XBDG.BRKN INTERLAM W/MUDST, QTZ VEINING (<1 MM TH ICK) CUTS BEDDING CAUSING MM DISPLACEME NTS. SOME SHEARED SURFACES ON BDG PLANE S AT TOP AND BOTTOM, FINING UPWARDS SEQ UENCES. |
| 26 | 58.88 | 59.36 | 0.48 | 03 | | | SANDSTONE | VFG.LT-M.GY.LAM.XBDG.BRKN INTERLAM W/SLTST AND SOME MUDST., SHEARE D SURFACES ON BEDDING PLANE. |
| 27 | 59.36 | 59.94 | 0.58 | *04 | | | SILTSTONE | SSY.M.GY.LAM.BRKN INTERLAM W/MUDST, NUMEROUS 1CM OR LESS DISPLACEMENT OF BEDS, SOME QTZ VEINING CUTTING BEDS, SHEARED SURFACES ON BDG P LANES. |
| 27 | 59.94 | 60.13 | 0.19 | 05 | | | MUDSTONE | DK.GY.LAM.YBRKN ABUNDANT QTZ VEINING 1 CM THICK, SHEARE D SURFACES ON BDG PLANES. |
| 27 | 60.13 | 60.22 | 0.09 | 05 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27 | 60.22 | 61.06 | 0.84 | 06 | | | MUDSTONE | DK.GY.LAM.YBRKN INTERLAM W/SSY SLTST, ABUNDANT SHEARED SURFACES ON BDG PLANES, SOME POORLY CON SOLIDATED ZONES. |
| 28 | 61.06 | 61.92 | 0.86 | *07 | | | SILTSTONE | M.GY.LAM.XBDG.BRKN INTERLAM W/MUDST, RIPMKS, SHEARED SURFA CES ON BDG PLANES. |
| 28 | 61.92 | 63.03 | 1.11 | *03 | | | SILTSTONE | M.GY.LAM.SLD INTERLAM W/MUDST AND VFG SS, MINOR RIPM KS. |
| 29 | 63.03 | 63.92 | 0.89 | *10 | | | SILTSTONE | M.GY.LAM.XBDG.BRKN AS ABOVE, SOME SHEARED SURFACES ON BDG PLANES, 1 CM QTZ VEINING (DISCONT.) 3/4 WAY DOWN TO BASE, .5 CM BED DISPLACEME NT AT BASE. |
| 29 | 63.92 | 64.91 | 0.99 | *11 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN INTERLAM W/MUDST AND MINOR VFG SS, AS A BOVE, NUMEROUS (<1 CM DISPLACEMENT) FAU LTS, SOME X-BDG, SOME SHEAR SURFACES ON BEDDING PLANE. |
| 30 | 64.91 | 64.97 | 0.06 | 16 | | | SILTSTONE | M.GY.LAM.YBRKN AS ABOVE, MUCH QTZ VEINING AND SOME BRE CCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 64.97 | 65.45 | 0.48 | *19 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM M/MUDST AND SOME VFG SS. OCC 1 CM QTZ VEIN. SOME SHEARED SURFACES ON BEDDING PLANE. FAULTING (APPROX 1CM DIS PLACEMENT). |
| 30 | 65.45 | 65.93 | 0.48 | *08 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE WITH MORE FAULTING AND SHEARED SURFACES. |
| 30 | 65.93 | 66.20 | 0.27 | 15 | | | SILTSTONE | M.GY.LAM.BRKN ABUNDANT QTZ VEINING, SOME BRECC, MUDST INTERLAM. |
| 30 | 66.20 | 66.23 | 0.03 | 17 | | | SILTSTONE | DK.GY.VBRKN POORLY CONSOLIDATED, SHEARED, SOFT. |
| 30 | 66.23 | 66.27 | 0.04 | 18 | | | ROCK LOSS | |
| 30 | 66.27 | 66.85 | 0.58 | 24 | | | BRECCIA | PR.M.GY.MAS.BRKN ABUNDANT QTZ VEINING MM'S TO 2 CM THICK SS IS BRECCIATED INTO PIECES FROM 4 J 0 7 CM LONG, MG SS, QTZ/FELDSPAR & 30% MAFICS. |
| 31 | 66.85 | 67.09 | 0.24 | 31 | | | SANDSTONE | F-MG.PR.LT-M.GY.MAS.BRKN ABUNDANT QTZ VEINING UP TO 2 CM THICK, SHEARED SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 67.09 | 67.11 | 0.02 | 33 | | | SANDSTONE | F-MG.PR.LT-M.GY.VBRKN HIGHLY SHEARED. |
| 31 | 67.11 | 67.90 | 0.79 | 41 | | | SANDSTONE | MG.VPR ABUNDANT QTZ VEINING. AT TOP QTZ MASSIV E WITH SOME MASSIVE SS AND SOME SS BREC CIA UP TO 1 CM LONG. AT 48 DOWN QTZ MA SSIVE, MINOR SS BRECCIA UP TO 1 CM LONG |
| 31 | 67.90 | 68.47 | 0.57 | 53 | | | SANDSTONE | MG.PR.LT-M.GY.MAS.BRKN QTZ VEINING <1 MM TO 1 CM THICK. OCC SL TST LAM (M.GY). AT TOP QTZ UNCONSOLID ATED GROUND UP, SOME SS BRECCIA. |
| 32 | 68.47 | 68.84 | 0.37 | 61 | | | SANDSTONE | MG.PR.LT-M.GY.MAS QTZ VEINING AS ABOVE. |
| 32 | 68.84 | 69.22 | 0.38 | *68 | | | SANDSTONE | BRKN AS ABOVE WITH OCC VFG SS LAM. |
| 32 | 69.22 | 69.36 | 0.14 | 64 | | | SANDSTONE | VBRKN INTERLAM MUDST, HIGHLY SHEARED, QTZ VEI NING. |
| 32 | 69.36 | 69.69 | 0.33 | 60 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 32 | 69.69 | 70.01 | 0.32 | 55 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN THIN QTZ VEINS, .75 MM BIEGE BLEBS (10%) , ANGULAR SHAPE. |
| 32 | 70.01 | 70.21 | 0.20 | 51 | | | BRECCIA | BRKN ABUNDANT QTZ VEINING <1 MM TO 1.5 CM TH ICK. SS BRECCIA UP TO 9 CM LONG. |
| 32 | 70.21 | 70.61 | 0.40 | 46 | | | SANDSTONE | BRKN AS ABOVE, BIEGE SHARDS: IRREGULAR (SOME CLUSTERED SOME SPREAD OUT). |
| 33 | 70.61 | 71.12 | 0.51 | *39 | | | SANDSTONE | BRKN AS ABOVE W/RARE <1 MM MUDST LAM, QTZ VE INING. |
| 33 | 71.12 | 72.48 | 1.36 | 35 | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN AS ABOVE, SHARDS LESS ABUNDANT DOWNWARD S. 2 CM QTZ VEINING AT .90 AND 1.5 CM, QTZ VEIN AT 1.13. |
| 34 | 72.48 | 72.64 | 0.16 | 32 | | | SANDSTONE | MG. LT-M. GY. MAS. VBRKN AS ABOVE. |
| 34 | 72.64 | 72.79 | 0.15 | 32 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 72.79 | 73.08 | 0.29 | 31 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN ABUNDANT QTZ VEINING APPROX 1 CM THICK, SS IS BRECCIATED, LESS BRECCIATED TOWA RDS. BOTTOM. |
| 34 | 73.08 | 73.11 | 0.03 | 30 | | | SANDSTONE | MG. LT-M. GY. MAS. VBRKN LITTLE PIECES OF QTZ AND SOME SS CHUNKS. POSSIBLE CORE LOSS. |
| 34 | 73.11 | 73.26 | 0.15 | 30 | | | ROCK LOSS | |
| 34 | 73.26 | 73.68 | 0.42 | 29 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN 1 MM QTZ VEINS AT APPROX 8 CM INTERVALS , VEINS SHOW SOME DISPLACEMENTS (.5 MM) , SPORADIC BEIGE BLOBS THROUGHOUT. |
| 34 | 73.68 | 74.04 | 0.36 | 28 | | | SANDSTONE | VBRKN AS ABOVE. |
| 34 | 74.04 | 74.09 | 0.05 | 27 | | | ROCK LOSS | |
| 35 | 74.09 | 74.94 | 0.85 | *25 | | | SANDSTONE | BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 74.94 | 76.16 | 1.22 | 33 | | | SANDSTONE | MG.LT-M.GY.MAS.SLD AS ABOVE, THICK 1-2 CM QTZ VEINS, 7 TO 17 CM APART, .5 MM VEINS OCC IN BETWEEN, SPORADIC BEIGE BLOBS. AT TOP MASSIVE QTZ VEIN (4.5CM), <1 CM VEINS BELOW IN BRECC SS. |
| 36 | 76.16 | 76.30 | 0.14 | 38 | | | SANDSTONE | BRKN AS ABOVE. |
| 36 | 76.30 | 76.98 | 0.68 | 41 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN BEIGE BLOBS MORE CLUSTERED, OCC THICK Q TZ VEIN 1.5 TO 6 CM. |
| 36 | 76.98 | 77.10 | 0.12 | 44 | | | BRECCIA | SLD ABUNDANT QTZ AND SS BREC (UP TO 7 CM). |
| 36 | 77.10 | 78.04 | 0.94 | 49 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE W/OCC QTZ VEINS AND RARE DISCONTINUOUS MUDST LAM. |
| 37 | 78.04 | 80.07 | 2.03 | *60 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN DISCONTINUOUS MUDST LAM, SPORADIC AND CLUSTERED BEIGE BLEBS, THIN <1 CM QTZ VEINS 0.47 M DOWN, A 5.5 CM VEIN 1.82 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 38 | 80.07 | 81.29 | 1.22 | *57 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN DISCONTINUOUS MUDST LAM MORE ABUNDANT THAN ABOVE, OCC .5 CM QTZ VEIN. |
| 38 | 81.29 | 81.33 | 0.04 | 68 | | | SANDSTONE | MG.LT-M.GY.YTHNB.SLD MUDST LAM ARE CONTINUOUS. |
| 38 | 81.33 | 81.35 | 0.02 | 69 | | | SANDSTONE | VBRKN MUDST IS SHEARED, 1 CM QTZ VEIN. |
| 38 | 81.35 | 81.45 | 0.10 | 70 | | | ROCK LOSS | |
| 38 | 81.45 | 81.59 | 0.14 | *72 | | | SANDSTONE | MG.LT-M.GY.YTHNB.BRKN CONTINUOUS MUDST LAM. |
| 38 | 81.59 | 82.16 | 0.57 | 72 | | | SANDSTONE | MAS.SLD DISCONTINUOUS MUDST LAM NOT AS ABUNDANT AS ABOVE. |
| 39 | 82.16 | 82.71 | 0.55 | *71 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN MUDST LAM SOME CONTINUOUS AT TOP THEN DISCONTINUOUS FURTHER DOWN. |
| 39 | 82.71 | 82.91 | 0.20 | *62 | | | SANDSTONE | MG.LT-M.GY.YTHNB.BRKN CONTINUOUS MUDST LAM, APPROX 1 TO 1.4 CM APART, BEIGE SHARDS ARE RARE. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 39 | 82.91 | 83.12 | 0.21 | | 61 | | SANDSTONE | SLD AS ABOVE BUT LESS MUDST LAM, QTZ VEIN AT TOP. |
| 39 | 83.12 | 84.01 | 0.89 | | 59 | | SANDSTONE | MG. LT-M. GY. MAS. BRKN RARE MUDST LAM NEAR TOP, OCC MM QTZ VEIN, 2.8 CM QTZ VEIN WITH BRECCIA .12 M.F. FROM TOP. |
| 40 | 84.01 | 84.20 | 0.19 | | *57 | | SANDSTONE | MG. LT-M. GY. MAS. BRKN BEIGE SHARDS ABSENT. |
| 40 | 84.20 | 84.64 | 0.44 | | 55 | | MUDSTONE | DK. GY. YTHNB. SSD. BRKN SLTST LAM (LT-M GY). AT BASE UNCONSOLIDATED QTZ AND SOFT, STICKY MUD. |
| 40 | 84.64 | 84.80 | 0.16 | | 54 | | BRECCIA | ABUNDANT QTZ VEINING (<1 CM THICK), MUDST BRECCIA UP TO 5 CM LONG. |
| 40 | 84.80 | 85.72 | 0.92 | | *51 | | MUDSTONE | DK. GY. YTHNB. SSD. BRKN WITH SLTST LAM, MINOR BED DISPLACEMENT NEAR TOP, OCC 1 MM QTZ VEINING TO .38 M DOWN. WAMBUR & LOAD CASTS - TOPS UP. |
| 41 | 85.72 | 85.85 | 0.13 | | 58 | | MUDSTONE | DK. GY. YTHNB. YBRKN WITH SLTST LAM, QTZ VEIN AT BOTTOM (.5 CM THICK), SOME SHEARED SURFACES. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 85.85 | 85.95 | 0.10 | | 60 | | ROCK LOSS | |
| 41 | 85.95 | 86.15 | 0.20 | | 62 | | MUDSTONE | DK. GY. YTHNB. YSHRD WITH SLTST LAM, SOFT, POORLY CONSOLIDATED. |
| 41 | 86.15 | 86.50 | 0.35 | | *66 | | MUDSTONE | DK. GY. YTHNB. XBDG. BRKN W/ SLTST LAMS, SMALL SCALE (2 MM) DISPLACEMENTS AT .21 M DOWN, SHEARED SURFACES CUTTING BEDDING PLANES, 1 MM QTZ VEIN NEAR BASE. |
| 41 | 86.50 | 86.80 | 0.30 | | 65 | | MUDSTONE | DK. GY. LAM. SHRD POORLY CONSOLIDATED, ABUNDANT SMALL SCALE DISPLACEMENTS AT EVERY ANGLE, SLTST LAMS. |
| 41 | 86.80 | 86.90 | 0.10 | | 65 | | ROCK LOSS | |
| 41 | 86.90 | 86.94 | 0.04 | | 64 | | MUDSTONE | YSHRD AS ABOVE. |
| 41 | 86.94 | 87.43 | 0.49 | | 64 | | MUDSTONE | DK. GY. YTHNB. SSD. BRKN WITH SLTST LAM INCREASE TO YTHNB DOWNWARDS, SSD INCREASE DOWNWARDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 87.43 | 87.55 | 0.12 | 63 | | | SILTSTONE | LT-M.GY.VTHNB.VBRKN WITH MUDST VTHN INTERBEDS, MINOR QTZ VEINING. |
| 41 | 87.55 | 87.65 | 0.10 | 63 | | | ROCK LOSS | |
| 41 | 87.65 | 87.99 | 0.34 | 62 | | | SILTSTONE | BRKN AS ABOVE. |
| 42 | 87.99 | 89.33 | 1.34 | *60 | | | MUDSTONE | DK.GY.LAM.SSD.BRKN INTERLAM SLTST, WRMBUR - TOPS UP, MINOR QTZ VEINING, MINOR DISPLACEMENTS NEAR TOP. |
| 42 | 89.33 | 89.43 | 0.10 | 56 | | | MUDSTONE | DK.GY.LAM.BRKN INTERLAM WITH SLTST, REGULAR LAM NO SSD |
| 42 | 89.43 | 89.82 | 0.39 | 54 | | | MUDSTONE | DK.GY.LAM.SSD.BRKN INTERLAM SLTST, MINOR DISPLACEMENT TOWA RDS BASE. |
| 43 | 89.82 | 90.83 | 1.01 | *50 | | | MUDSTONE | DK.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, WRMBUR - TOPS UP, MINOR FAULTS (DISCONT.) 2 MM DISPLACEMENTS, AT BASE QTZ VEINS WITH MUDST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 90.83 | 91.63 | 0.80 | *41 | | | MUDSTONE | SLTY.DK.GY.VTHNB.SSD.BRKN VARIES FROM VTHNB TO LAM, MINOR QTZ VEINING. |
| 44 | 91.63 | 91.73 | 0.10 | 39 | | | SILTSTONE | LT-M.GY.SLD WITH MUDST GIVING A MOTTLED APPEARANCE. |
| 44 | 91.73 | 92.38 | 0.65 | *38 | | | SILTSTONE | LT-M.GY.THNB.BRKN INTERBEDDED WITH SLTY MUDST, SSD AT LIT NO CONTACTS, LAM AT BASE (BOTTOM 0.14 M) MINOR QTZ VEINING. |
| 44 | 92.38 | 93.65 | 1.27 | 36 | | | MUDSTONE | DK.GY.SHRD HIGHLY SHEARED AND SOFT, POORLY CONSOLIDATED BUT WHOLE CORE, MORE CONSOLIDATED DOWN ARDS, SLTST LAMS, THIN QTZ VEINS, A FEW 7 CM UNSHEARED CHUNKS. |
| 45 | 93.65 | 93.75 | 0.10 | 34 | 07146 | | SANDSTONE | MG.LT.GY.SLD APPEARS BRECCIATED, MINOR MUDDY BLEBS. |
| 45 | 93.75 | 93.99 | 0.24 | 34 | 07147 I | | COAL | C-4.VSHRD VERY SHEARED, POWDERED WITH LISTRIC SURFACES. |
| 45 | 93.99 | 94.36 | 0.37 | 33 | 07147 I | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------|
| 45 | 94.36 | 94.57 | 0.21 | 32 | 07147 I | MUDSTONE | CARB.DK.GY.VSHRD AS ABOVE. |
| 45 | 94.57 | 95.11 | 0.54 | 31 | 07147 I | ROCK LOSS | |
| 45 | 95.11 | 95.18 | 0.07 | 31 | 07147 I | COAL LOSS | |
| 45 | 95.18 | 95.39 | 0.21 | 30 | 07147 I | COAL | C-3.VSHRD SHEARED INTENSELY, LISTRIC SURFACES, POWDERED. |
| 45 | 95.39 | 95.42 | 0.03 | 30 | 07147 I | COAL | C-5.SLD |
| 45 | 95.42 | 95.60 | 0.18 | 30 | 07147 I | COAL | C-4.VSHRD LISTRIC SURFACES. |
| 45 | 95.60 | 95.91 | 0.31 | 29 | 07147 I | ROCK LOSS | |
| 45 | 95.91 | 96.32 | 0.41 | 28 | 07147 I | COAL LOSS | |
| 45 | 96.32 | 96.52 | 0.20 | 28 | 07147 I | SILTSTONE | CLYY.M-DK.GY.LAM QTZ VEINLETS, MINOR COALY-CARB STRINGER S. |
| 45 | 96.52 | 96.59 | 0.07 | 27 | 07147 I | MUDSTONE | CARB.DK.GY.BRKN SHEARED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 96.59 | 96.79 | 0.20 | 27 | 07147 I | COAL | C-4.VSHRD POWDERED, LISTRIC SURFACES. |
| 45 | 96.79 | 97.02 | 0.23 | 26 | 07147 I | COAL | C-2.VBRKN MINOR SHEARING. |
| 46 | 97.02 | 97.06 | 0.04 | 26 | 07147 I | COAL | C-4.PWRD |
| 46 | 97.06 | 97.47 | 0.41 | 25 | 07147 I | COAL LOSS | |
| 46 | 97.47 | 97.55 | 0.08 | 25 | 07148 | MUDSTONE | CARB.DK.GY.BRKN QTZ WITHIN, MINOR LISTRIC SURFACES. |
| 46 | 97.55 | 98.21 | 0.66 | *24 | 07148 | SILTSTONE | CLYY.M.GY.LAM.SLD MINOR QTZ VEINING. |
| 46 | 98.21 | 98.92 | 0.71 | 26 | | SANDSTONE | SLTY.FG.LT-M.GY.LAM.SLD SLTY MUDST LAMINAE AND BLEBS, MINOR QTZ VEINLETS. |
| 46 | 98.92 | 98.94 | 0.02 | 27 | | SANDSTONE | SLTY.FG.LT-M.GY.LAM.SLD AS ABOVE. |
| 47 | 98.94 | 99.83 | 0.89 | 29 | | SANDSTONE | F-MG.PR.LT-M.GY.MAS.BRKN OCCASIONAL DISCONTINUOUS MUDST LAM, <1 MM QTZ VEINS AND OCC 1 CM QTZ VEIN, COM POSITION: QTZ/FELDSPAR, 30% MAFICS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 47 | 99.83 | 100.22 | 0.39 | 30 | | | SANDSTONE | F-MG. PR. LT-M. GY. MAS. BRKN ABUNDANT QTZ VEINING 1-1.5 CM THICK WITH SOME BRECCIA (UP TO 2 CM LONG), SOME SHEARING. |
| 47 | 100.22 | 100.76 | 0.54 | 32 | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. BRKN WITH OCCASIONAL ANGULAR QTZ SHARD (1.5 MM) INCREASING IN ABUNDANCE DOWNWARDS. 5CM QTZ VEINS (APPROX 8CM APART), RARE MUDST. BLOB. |
| 48 | 100.76 | 101.04 | 0.28 | 33 | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. BRKN QTZ SHARDS MORE ABUNDANT (20% OF ROCK) AND LARGER (UP TO 3 MM), OCCASIONAL LT YELLOW ANGULAR BLOBS (CAN BE CUT WITH KNIFE), OCCASIONAL MUDST. BLOBS (UP TO 3.5 CM LONG), MINOR FAULT (DISPLACED . 2 CM), VEINING. |
| 48 | 101.04 | 101.05 | 0.01 | 34 | | | MUDSTONE | DK. GY. VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 48 | 101.05 | 101.31 | 0.26 | 34 | | | ROCK LOSS | |
| 48 | 101.31 | 102.01 | 0.70 | 35 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN MINOR QTZ BLOBS, QTZ VEINING, OCCASIONAL MUDST. BLOBS (UP TO 2 CM, AVG <1 CM). |
| 48 | 102.01 | 102.13 | 0.12 | 37 | | | SANDSTONE | MG. LT-M. GY. MAS. SLD DISCONTINUOUS QTZ VEINS, MUDST. BLOBS (RIP-UPS?). |
| 48 | 102.13 | 102.29 | 0.16 | *37 | | | MUDSTONE | SLTY. LAM. SHRD INTERLAM WITH SLTST, POORLY CONSOLIDATED. |
| 48 | 102.29 | 102.49 | 0.20 | 40 | | | MUDSTONE | SLTY. LAM. SHRD AS ABOVE BUT MODERATELY CONSOL. AT BASE QTZ VEIN & SOME BRECCIA. |
| 48 | 102.49 | 102.82 | 0.33 | 44 | | | MUDSTONE | DK. GY. LAM. SHRD MODERATE CONSOLIDATION, INTERLAM SLTST, LT GY MUDST BAND (7MM THICK & .19M FROM TOP). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 102.82 | 103.42 | 0.60 | 52 | | | ROCK LOSS | |
| 48 | 103.42 | 103.49 | 0.07 | 57 | | | MUDSTONE | DK.GY.VSHRD VERY POORLY CONSOLIDATED. |
| 48 | 103.49 | 103.79 | 0.30 | 60 | | | ROCK LOSS | |
| 49 | 103.79 | 103.91 | 0.12 | 64 | | | MUDSTONE | VSHRD POORLY CONSOLIDATED, MINOR QTZ VEINS. |
| 49 | 103.91 | 104.45 | 0.54 | *69 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN INTERLAM WITH SLTST, MINOR MM DISPLACEMENTS, BROKEN PLANT PIECES, MILSSONIA PT EROPHYLLUM RECTANGULARE, C. VIRGINIENSIS S MARTINIANA (WELL PRESERVED). |
| 49 | 104.45 | 105.74 | 1.29 | *84 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN WITH SLTST LAM, SLTY MUDST LAM TOWARDS BASE, LOAD CAST - TOPS UP, SOME BIOTRB NEAR BASE, OCCASIONAL QTZ VEIN. |
| 49 | 105.74 | 105.91 | 0.17 | 77 | | | SANDSTONE | F-MG.LT-M.GY.THNB.SLD WITH DISCONTINUOUS MUDST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50 | 105.91 | 106.66 | 0.75 | *72 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD OCCASIONAL MUDST LAM, DISCONTINUOUS THROUGHOUT AND CONCENTRATED IN 4 CM BANDS 36 CM APART. F-MG. |
| 50 | 106.66 | 107.21 | 0.55 | 68 | | | SANDSTONE | FG.PR.LT-M.GY.THNB.BRKN FINING UP SEQUENCE FROM MG SS TO SLTST, OCCASIONAL MUDST LAM, SOME 4MM QTZ VEINING. |
| 50 | 107.21 | 107.46 | 0.25 | *65 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN WITH FG SS BLOBS AND DISCONT BEDS, OCC DISCONT MUDST LAM. ONE MG DISCONT SS BED D 1 CM THICK AND .17 M DOWN, ZONE OF SS Y BLEBS NEAR BASE. |
| 50 | 107.46 | 107.56 | 0.10 | 66 | | | ROCK LOSS | |
| 50 | 107.56 | 108.07 | 0.51 | 68 | | | SANDSTONE | M.GY.THNB.BRKN GRADED BDG YCG SS TO SSS SLTST, OCC DISCONT MUDST LAM AND BLOBS (POSSIBLY RIPS), 1.5 CM PEBBLY BAND AT TOP. |
| 50 | 108.07 | 108.13 | 0.06 | *70 | | | SILTSTONE | M.GY.VTHNB.SLD SHARP CONTACT W/ABOVE, MUDDIER DOWNWARD S, DISCONT SSS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 51 | 108.13 | 108.50 | 0.37 | 70 | | SILTSTONE | M.GY.LAM.BRKN W/MUDST LAM. SSSY SLTST LAM DOWNWARDS, RARE QTZ VEINS ALONG BEDDING PLANES, PLANT FRAGS. |
| 51 | 108.50 | 108.69 | 0.19 | *70 | | SANDSTONE | VFG.M.GY.LAM.BRKN INTERLAM W/SLTST. BECOMES VTHNB TOWARDS BASE. |
| 51 | 108.69 | 109.49 | 0.80 | 69 | | SANDSTONE | FG.PR.LT-M.GY.VTHNB.BRKN W/SLTST LAM. |
| 51 | 109.49 | 110.17 | 0.68 | *67 | | SANDSTONE | FG.PR.LT-M.GY.VTHNB.BRKN AS ABOVE W/SOME SHEARED SURFACES, SOME FINING UP TO VTHN SLTST BEDS, RARE QTZ VEINS. |
| 52 | 110.17 | 111.75 | 1.58 | *67 | | SANDSTONE | MG.LT-M.GY.THNB.BRKN INTERBEDDED W/FG SS. BEDS AVG 5 CM THICK, REGULAR SLTY MUDST LAM (SOME ARE DISCONT.), BOTTOM .23 M CONTAIN .6 CM SLTY MUDST LAM. |
| 52 | 111.75 | 111.94 | 0.19 | 68 | | SANDSTONE | FG INTERLAM W/SLTST, MINOR QTZ, PLANT FRAGS. |
| 52 | 111.94 | 112.05 | 0.11 | 69 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.SLD W/SLTST VTHNBDS TO LAM DOWNWARDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 112.05 | 112.20 | 0.15 | 69 | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN W/MUDST & SLTST, DISCONT LAM AND RIP-UPS (?) |
| 52 | 112.20 | 112.45 | 0.25 | 69 | | ROCK LOSS | |
| 53 | 112.45 | 112.53 | 0.08 | 70 | | SANDSTONE | VFG.LT-M.GY.LAM.VBRKN W/<1MM MUDST LAM, SOME SHEAR SURFACES, QTZ VEINING, POORLY CONSOL. |
| 53 | 112.53 | 113.01 | 0.48 | *70 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN <1 MM MUDST LAM AT REGULAR INTERVALS 1.5 CM APART, QTZ VEINING CUTTING BEDS, SOME SHEARING PARALLEL TO VEINS. |
| 53 | 113.01 | 113.04 | 0.03 | 68 | | SANDSTONE | VBRKN AS ABOVE. |
| 53 | 113.04 | 113.19 | 0.15 | 67 | | ROCK LOSS | |
| 53 | 113.19 | 114.49 | 1.30 | *61 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN SLTST LAM, QTZ VEINING, A .03 M OF BAND OF SLTST .56 M DOWN, LT GREENISH TINGE TO QTZ VEIN .93 M DOWN. |
| 54 | 114.49 | 114.89 | 0.40 | 63 | | SANDSTONE | FG.LT-M.GY.VTHNB.XBDG.BRKN W/SLTST LAM, XBDG SHOWS TOPS UP, MUDDIER LAMINAE TOWARDS BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------|
| 54 | 114.89 | 116.31 | 1.42 | 64 | | | SANDSTONE | FG.LT-M.GY.VTHNB.XBDG.BRKN AS ABOVE. QTZ AT BASE. TWIST-OFF. |
| 54 | 116.31 | 116.56 | 0.25 | 66 | | | ROCK LOSS | |
| 54 | 116.56 | 116.69 | 0.13 | 66 | | | SANDSTONE | VBRKN AS ABOVE. SS. |
| 55 | 116.69 | 117.43 | 0.74 | *67 | | | SANDSTONE | SLTY.FG.LT-M.GY.LAM.BRKN SILTY MUD LAMINAE. |
| 55 | 117.43 | 117.91 | 0.48 | 67 | 07149 | | SANDSTONE | SLTY.FG.LT-M.GY.LAM.SLD AS ABOVE. LOWER 22 CM SAMPLED. |
| 55 | 117.91 | 117.94 | 0.03 | 67 | 07149 | | MUDSTONE | CARB.SLD COALY STRINGERS THROUGHOUT. |
| 55 | 117.94 | 118.16 | 0.22 | 67 | 07150 | H/I | COAL | C-5.BRKN THIN VITRAIN BANDS WITHIN. ABUNDANT PYR ITE BLEBS & LENSES. |
| 55 | 118.16 | 118.48 | 0.32 | 66 | 07150 | H/I | COAL | C-2.BRKN MINOR PYRITE AND CARB STRINGERS. |
| 56 | 118.48 | 118.62 | 0.14 | 66 | 07150 | H/I | COAL | C-3.BRKN AS ABOVE. |
| 56 | 118.62 | 118.69 | 0.07 | 66 | 07150 | H/I | COAL | C-4.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------|
| 56 | 118.69 | 118.77 | 0.08 | 66 | 07150 | H/I | COAL | C-5.SHRD LITRIC SURFACES. |
| 56 | 118.77 | 119.41 | 0.64 | 66 | 07150 | H/I | COAL LOSS | |
| 56 | 119.41 | 119.49 | 0.08 | 66 | 07150 | H/I | COAL | C-4.VBRKN SHEARED. LITRIC SURFACES. |
| 55 | 119.49 | 119.55 | 0.06 | 66 | 07150 | H/I | COAL | C-3.BRKN |
| 56 | 119.55 | 119.60 | 0.05 | 66 | 07150 | H/I | COAL | C-4.BRKN VITRAIN STRINGERS WITHIN. |
| 56 | 119.60 | 119.78 | 0.18 | 66 | 07150 | H/I | COAL | C-2.BRKN MINOR QTZ-CARB. |
| 56 | 119.78 | 119.82 | 0.04 | 66 | 07150 | H/I | COAL | C-4.SLD |
| 56 | 119.82 | 119.92 | 0.10 | 66 | 07150 | H/I | COAL | C-2.VBRKN |
| 56 | 119.92 | 119.94 | 0.02 | 66 | 07150 | H/I | COAL | C-4.BRKN |
| 56 | 119.94 | 120.03 | 0.09 | 66 | 07150 | H/I | COAL | C-2.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 120.03 | 120.08 | 0.05 | 66 | 07150 | H/I | COAL | C-4. BRKN VITRAIN BANDS WITHIN. |
| 56 | 120.08 | 120.25 | 0.17 | 65 | 07150 | H/I | COAL | C-2. BRKN |
| 56 | 120.25 | 120.35 | 0.10 | 65 | 07150 | H/I | COAL | C-4. BRKN C-2 BANDS. |
| 56 | 120.35 | 120.40 | 0.05 | 65 | 07150 | H/I | COAL | C-4. BRKN C-2 BANDS. |
| 56 | 120.40 | 120.57 | 0.17 | 65 | 06819 | | MUDSTONE | CARB. M-DK. GY. BRKN CORE TWIST-OFF, COAL STRINGERS. |
| 57 | 120.57 | 120.75 | 0.18 | 65 | | | MUDSTONE | DK. GY. LAM. BRKN COAL STRINGERS (DISCONTINUOUS), ABUNDANT PLANT FRAGS. |
| 57 | 120.75 | 121.38 | 0.63 | *65 | | | SILTSTONE | M-DK. GY. LAM. BRKN W/MUDST LAM, RARE FRAGS. |
| 57 | 121.38 | 122.72 | 1.34 | 67 | | | SANDSTONE | VFG. M. GY. VTHNB. BRKN COAL AT TOP, W/SLTST GRADING TO MUDST L AM. QTZ VEIN CUTTING BDG. PYRITE FLECK BAND AT .2 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 122.72 | 123.69 | 0.97 | 68 | | | SANDSTONE | FG. M. GY. THNB. SSD. SLD INTERBEDDED W/VFG SS, SLTST AND MUDST L AM, OCC QTZ VEINING. |
| 58 | 123.69 | 124.68 | 0.99 | *70 | | | SANDSTONE | FG. M. GY. THNB. BRKN AS ABOVE. |
| 59 | 124.68 | 125.64 | 0.96 | 72 | | | SILTSTONE | INTERBEDDED W/VFG SS, DISCONT MUDST LAM + QTZ VEINING, PLANT FRAGS (SOME COALIF IED), PYR FLECKS AT .25 M DOWN, COAL ST RINGERS W/QTZ AT .82M DOWN. |
| 59 | 125.64 | 125.65 | 0.01 | 72 | | | ROCK LOSS | |
| 59 | 125.65 | 126.61 | 0.96 | 73 | | | SILTSTONE | LT-M. GY. LAM. XBDG. BRKN INTERLAM W/VFG SS, SOME MUDST LAM, VTHN B AT TOP BECOMES LAM DOWNWARDS, OCC .5 TO 1.5 CM QTZ VEIN W/SOME BRECCIA, GETS MUDDY AT BASE. |
| 59 | 126.61 | 126.67 | 0.06 | *74 | | | SILTSTONE | LT-M. GY. LAM. XBDG. BRKN W/SLTST LAM AND INTERLAM SSS. SLTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 60 | 126.67 | 127.15 | 0.48 | 74 | | | MUDSTONE | DK.GY.LAM.BRKN INTERLAM W/SLTST, QTZ VEINS (.5 CM) CUT BDG, SHEARED SURFACES, COAL STRINGER A T .2 M DOWN. |
| 60 | 127.15 | 127.37 | 0.22 | 74 | | | SANDSTONE | FG DISCONT MUDST LAM, COAL STRINGER AT BAS E W/QTZ. |
| 60 | 127.37 | 127.61 | 0.24 | 75 | | | SILTSTONE | VTHNB.SLD W/SSY LAM AND OCC MUDST BLOBS. |
| 60 | 127.61 | 127.88 | 0.27 | 75 | | | SANDSTONE | FG.VTHNB.SLD W/SLTST LAM, SOME DISCONTINUOUS. |
| 60 | 127.88 | 128.59 | 0.71 | *75 | | | SILTSTONE | LAM.SSD.BRKN INTERLAM W/FG SS, SANDIER TOWARDS BASE. |
| 60 | 128.59 | 128.79 | 0.20 | 66 | | | SANDSTONE | FG.LT-M.GY.MAS.SLD OCCASIONAL DISCONTINUOUS MUDST LAM (<1 MM). |
| 61 | 128.79 | 129.00 | 0.21 | 62 | | | SANDSTONE | FG.LT-M.GY.THNB.SSD.SLD W/MUDST LAM UP TO 1 MM THICK. |
| 61 | 129.00 | 129.53 | 0.53 | *55 | | | MUDSTONE | M.GY.VTHNB.SSD.BRKN INTERLAM W/SLTST, TINY PLANT FRAGS, FAU LTS WITH SMALL DISPLACEMENTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 61 | 129.53 | 129.74 | 0.21 | 54 | | | MUDSTONE | M.GY.LAM.SSD.SLD INTERLAM W/SLTST, AS ABOVE. |
| 61 | 129.74 | 130.21 | 0.47 | 54 | | | SANDSTONE | FG.GY.BRKN INTERBED W/VFG SS AND SLTST W/MUDST LAM |
| 61 | 130.21 | 130.98 | 0.77 | *53 | | | SANDSTONE | F-MG.BRKN W/ INTERBEDS OF FG SS, MUDST LAM AT BAS E, MINOR PYRITE FLECKS AT BASE, QTZ VIE NING. |
| 62 | 130.98 | 131.31 | 0.33 | 57 | | | SANDSTONE | F-MG.LT-M.GY.VTHNB.SLD AS ABOVE, PYRITE FLECKS AT .14 FROM TOP , MUDST LAM AT BASE. |
| 62 | 131.31 | 131.35 | 0.04 | 59 | | | SILTSTONE | M.GY.BRKN W/MUDST LAM, SSY TOWARDS BASE. |
| 62 | 131.35 | 132.20 | 0.85 | 62 | | | SANDSTONE | FG.LT-M.GY.THNB.BRKN W/ BEDS OF FG SS AND MG SS, SLTST AND M UDST CLASTS (RIP-UPS?) NEAR BASE, OCCAS IONAL QTZ VEIN, COAL STRINGER 0.76 M DO WN. F-MG. |
| 62 | 132.20 | 132.39 | 0.19 | *66 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN W/SLTST LAM, MUDST LAM FURTHER DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 62 | 132.39 | 132.84 | 0.45 | 65 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN W/FG SS VERY THIN INTERBEDS, QZ VEININ G, 1 CM VEIN 0.04 M DOWN. |
| 62 | 132.84 | 133.06 | 0.22 | 64 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN W/FG INTERBEDS AS ABOVE. |
| 63 | 133.06 | 133.22 | 0.16 | 63 | | | SANDSTONE | MG.LT-M.GY.THNB.SLD AS ABOVE. |
| 63 | 133.22 | 133.79 | 0.57 | 62 | | | SANDSTONE | FG.LT-M.GY.THNB.BRKN W/VFG LAM, BANDS OF SLTST W/MUDST INTER LAM (7 TO 9 CM THICK AND 4 TO 9 CM APAR T). |
| 63 | 133.79 | 133.90 | 0.11 | 60 | | | SANDSTONE | VFG.M.GY.THNB.SLD W/SLTST LAM. |
| 63 | 133.90 | 134.03 | 0.13 | 60 | | | SILTSTONE | LAM.SLD W/ 1 MM VFG SS LAM. |
| 63 | 134.03 | 134.47 | 0.44 | 59 | | | SANDSTONE | FG.LT-M.GY.THNB.SLD W/LAM SLTST BANDS (W/<1 MM MUDST LAM) A T 0.11 M & 0.19 M DOWN, QZ VEINS. |
| 63 | 134.47 | 134.83 | 0.36 | 57 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN W/SLTST LAM, SOME DISCONTINUOUS, MINOR QZ VEINS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 63 | 134.83 | 135.16 | 0.33 | *56 | | | SANDSTONE | FG W/VFG BANDS (W/SLTST LAMS). |
| 64 | 135.16 | 135.32 | 0.16 | *72 | | | SANDSTONE | FG.LT-M.GY.THNB.BRKN CONTAINS BEIGE GRAINS 0.75 MM LONG, CON CENTRATED IN BANDS AND MAKING UP 5 TO 2 % OF BAND, OCC DISCONT MUDST LAM, QZ VEINING, SLTY TOWARDS TOP. |
| 64 | 135.32 | 135.38 | 0.06 | 72 | | | SANDSTONE | FG.LT.GY.SLD W/MUDST LAM (DISCONT). |
| 64 | 135.38 | 135.45 | 0.07 | 71 | | | SANDSTONE | FG.LT-M.GY.THNB.BRKN |
| 64 | 135.45 | 135.72 | 0.27 | 71 | | | SANDSTONE | VFG.M.GY.VTHNB.SLD W/SLTST LAM AND QZ VEINS. |
| 64 | 135.72 | 135.80 | 0.08 | 70 | | | SANDSTONE | FG.LT-M.GY.THNB.SLD QZ VEINS. |
| 64 | 135.80 | 136.51 | 0.71 | 69 | | | SANDSTONE | FG.LT-M.GY.THNB OCCASIONAL SSS SLTST BEDS W/MUDST LAM, QZ VEINING. F-MG. |
| 64 | 136.51 | 136.70 | 0.19 | *67 | | | SANDSTONE | VFG.M.GY.VTHNB SLTST LAM W/<1 MM MUDST LAM, QZ VEINS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 64 | 136.70 | 137.18 | 0.48 | 69 | | | SANDSTONE | MG. LT-M. GY. THNB. BRKN W/ A SSSY SLTST BAND 3 CM THICK AND 0.14 M DOWN, QTZ VEINING. |
| 65 | 137.18 | 137.41 | 0.23 | 71 | | | SANDSTONE | MG. LT-M. GY. THNB. BRKN QTZ VEINING, MUDST RIP-UPS TOWARDS BASE |
| 65 | 137.41 | 137.61 | 0.20 | 72 | | | SILTSTONE | SSY. M. GY. LAM. YBRKN W/MUDST AND VEG. SS. LAM. SHEARED SURFACE S, QTZ VEINS. |
| 65 | 137.61 | 137.64 | 0.03 | 73 | | | ROCK LOSS | |
| 65 | 137.64 | 138.65 | 1.01 | *76 | | | SANDSTONE | FG. M. GY. VTHNB. HRMBU. BRKN W/SLTST LAM. MINOR BED DISPLACEMENTS, SOME BANDS ARE MUDDIER, HRMBUR - TOPS UP QTZ VEINING (ESPECIALLY AT .57M DOWN) SOME SSD AT BASE. |
| 65 | 138.65 | 139.03 | 0.38 | 75 | | | SANDSTONE | FG. M. GY. VTHNB. SSD. SLD W/SLTST AND MUDST LAM, MINOR QTZ VEINING. |
| 66 | 139.03 | 139.32 | 0.29 | *75 | | | SILTSTONE | LAM. SSD. BRKN INTERLAM MUDST AND OCCASIONAL FG SS, WR MBUR. SOME SHEARED SURFACES PARALLEL TO BDG PLANES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 66 | 139.32 | 139.45 | 0.13 | 78 | | | SANDSTONE | FG. LT-M. GY. VTHNB. SLD W/SLTST LAM, QTZ VEINS. |
| 66 | 139.45 | 139.60 | 0.15 | 80 | | | SILTSTONE | SSY. M. GY. LAM. BRKN W/MUDST LAM AND FG SS LAM TOWARDS BASE, 5 CM SS BLOB (RIP-UP?), QTZ VEINS. |
| 66 | 139.60 | 140.29 | 0.69 | *86 | | | SILTSTONE | M. GY. LAM. SSD. BRKN INTERBANDED W/FG SS, SS BANDS 6 CM THIC K AND 14 TO 22 CM APART, PLANT FRAGS IN SLTST (COALIFIED). |
| 66 | 140.29 | 140.99 | 0.70 | 87 | | | SANDSTONE | FG. LT-M. GY. THNB. BRKN W/OCC SLTST LAM, OCC QTZ VEIN PARALLEL TO BDG. |
| 66 | 140.99 | 141.11 | 0.12 | 88 | | | SILTSTONE | LAM W/MUDST INTERLAM. |
| 67 | 141.11 | 141.57 | 0.46 | *89 | | | SILTSTONE | M. GY. LAM. SSD. SLD W/MUDST LAM AND SSSY LAM, SOME FG SS BAN DS 6 CM THICK, QTZ VEINS. |
| 67 | 141.57 | 142.94 | 1.37 | *66 | | | SILTSTONE | M. GY. LAM. SSD. BRKN W/FG SS INTERLAM AND BANDS OF SS UP TO 15 CM W/SLTST LAM, <1 MM MUDST LAM, RAR E COALIFIED PLANT FRAGS IN MUDST "P. NO ROENSKIOLDII". QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------|
| 68 | 142.94 | 144.36 | 1.42 | *70 | | SILTSTONE | M. GY. VTHNB. SSD. BRKN INTERBEDDED W/MUDST, SOME SSSY SLTST BED S, OCC QTZ VEINS, SOME SHEARED SURFACES, BIOTRB ZONE. |
| 68 | 144.36 | 144.59 | 0.23 | *55 | | SILTSTONE | M. GY. VTHNB. BRKN AS ABOVE W/ABUNDANT PLANT FRAGS, NILSSO NIA SP. |
| 68 | 144.59 | 145.02 | 0.43 | 57 | | SILTSTONE | AS ABOVE W/ABUNDANT PLANT FRAGS. |
| 69 | 145.02 | 145.04 | 0.02 | 58 | 06821 H | COAL | C-5. SLD VITRAIN STRINGERS. |
| 69 | 145.04 | 145.20 | 0.16 | 59 | 06821 H | COAL | C-2. VBRKN |
| 69 | 145.20 | 145.37 | 0.17 | 60 | 06821 H | COAL | C-5. SHRD VERY BROKEN, SHEARED AND SOFT. |
| 69 | 145.37 | 145.63 | 0.26 | 61 | 06821 H | COAL | C-3. SHRD POWDERED & SHEARED, LISTRIC SURFACES. |
| 69 | 145.63 | 146.46 | 0.83 | 65 | 06821 H | COAL | C-2. SHRD BROKEN, SHEARED & POWDERED, LISTRIC SURFACES. |
| 69 | 146.46 | 146.66 | 0.20 | 68 | 06822 | MUDSTONE | CARB. M-DK. GY. BRKN MINOR COALIFIED PLANT FRAGS WITHIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 146.66 | 147.72 | 1.06 | *72 | | MUDSTONE | DK. GY. LAM. SSD. BRKN W/PLANT FRAGS, DECREASE DOWNWARDS, SLTS T LAM INCREASE DOWNWARDS, OCC QTZ VEIN. |
| 70 | 147.72 | 148.12 | 0.40 | 72 | | SILTSTONE | M. GY. LAM. SSD. BRKN W/MUDST AND FG SS LAM, LOAD CASTS - TOP S UP. |
| 70 | 148.12 | 148.61 | 0.49 | 72 | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN W/MUDST AND SOME SLTST LAM (<1 TO 4 MM THICK), LOAD CASTS - TOPS UP, SOME MG SS BANDS TOWARDS BASE. |
| 70 | 148.61 | 148.75 | 0.14 | 72 | | MUDSTONE | DK. GY. LAM. SSD. BRKN W/SSY SLTST AND FG SS LAM, QTZ VEINING. |
| 71 | 148.75 | 150.70 | 1.95 | *72 | | SANDSTONE | MG. LT-M. GY. BRKN W/DISCONT MUDST LAM AND OCC CLAST, QTZ VEINING STARTING 0.73 M DOWN, TALC (VERY SOFT WHITE & LT GREEN) AT 1.31M DOWN, SOME M-CG SS BEDS TOWARD BASE. |
| 71 | 150.70 | 150.83 | 0.13 | 78 | | SANDSTONE | MG. LY-M. GY. THNB. BRKN DISCONT MUDST LAM AND CLASTS. |
| 72 | 150.83 | 151.78 | 0.95 | 81 | | SANDSTONE | MG. LY-M. GY. THNB. BRKN SOME LIGHTER GREY SS BEDS (MG), MUDST LAM AND CLASTS, OCC QTZ VEINS, TALC AT 0.57 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87006

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 72 | 151.78 | 151.81 | 0.03 | *84 | | MUDSTONE | DK.GY.BRKN SOME SHEARED SURFACES. |
| 72 | 151.81 | 152.28 | 0.47 | 84 | | SANDSTONE | MG.THNB W/FG SS INTERBEDS, QZ VEINS AT BASE. |
| 72 | 152.28 | 152.54 | 0.26 | 85 | | SANDSTONE | MG.LT-M.GY.THNB.SLD W/OCC MUDST CLAST BANDS, COAL STRINGER AT BASE. |
| 72 | 152.54 | 152.75 | 0.21 | 86 | | SANDSTONE | MG.LT-M.GY.SLD W/NUMEROUS BANDS OF ELONGATE MUDST CLAS TS. COAL STRINGER 0.08 M DOWN. |
| 72 | 152.75 | 152.85 | 0.10 | 86 | | MUDSTONE | DK.GY.LAM.SLD W/FG SS LAM NEAR BASE. |
| 73 | 152.85 | 153.76 | 0.91 | *87 | | SANDSTONE | MG.LT-M.GY.VTHNB.SSD.BRKN W/SLTST INTERBEDS & LAM & MUDST LAM. NR HUR - TOPS UP, COALIFIED PLANT FRAGS. SLTST IS PREDOM IN BANDS 12 TO 18 CM TH ICK AND 9 TO 23 CM APART. F-MG. END OF HOLE. TD = 154.53M DRILLER'S MARK. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87006 SEAM : H INTERVAL(M) : 145.02 - 146.46 ELEVATION(M) : 1462.3
 GEOLOGIST : LEE SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. 1 2 3 4 5 6 | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | |
|---------------------------|-----------------------|---------------|-----------------|------|--------|-----------|------|---------------------|---------------------|---------------------|-------|------|-------|------|----------------|---|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | | |
| | 145.02 | ↑ | | | | | | | | | | | | | | | |
| | 146.46 | ↓ | | 1.28 | 100.0 | 6621 | 31 | 1.28 / 0.00 1.28 | 1.28 / 0.00 1.28 | 0.61 | 17.73 | 6.29 | 75.37 | 0.51 | 27.01 | — | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87006

740

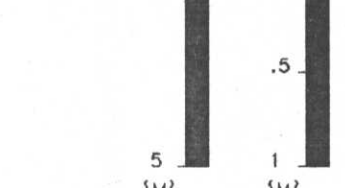
GEOLOGIST : LEE

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40

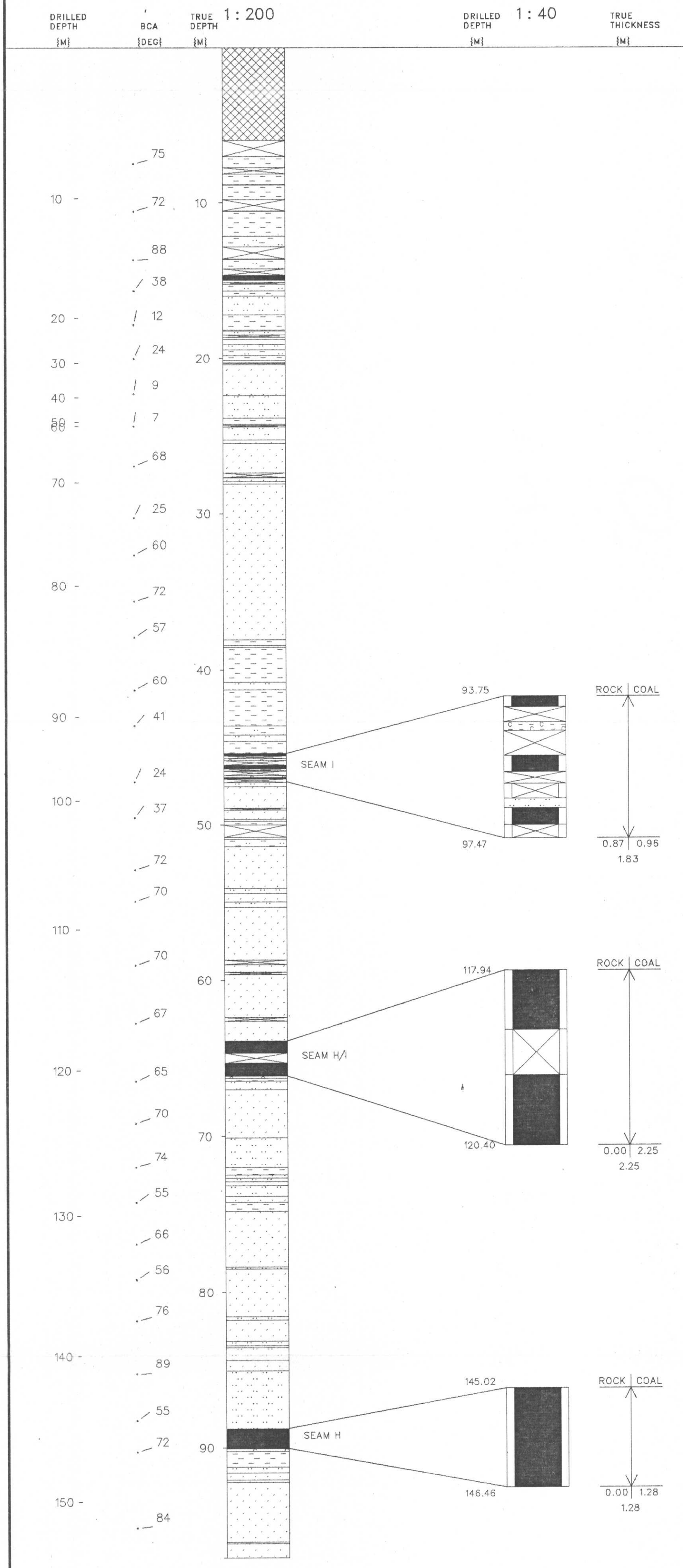


NORTHING: 6345329.0 N
 EASTING: 508433.0 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



TOTAL: 153.76 TOTAL: 97.12

Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

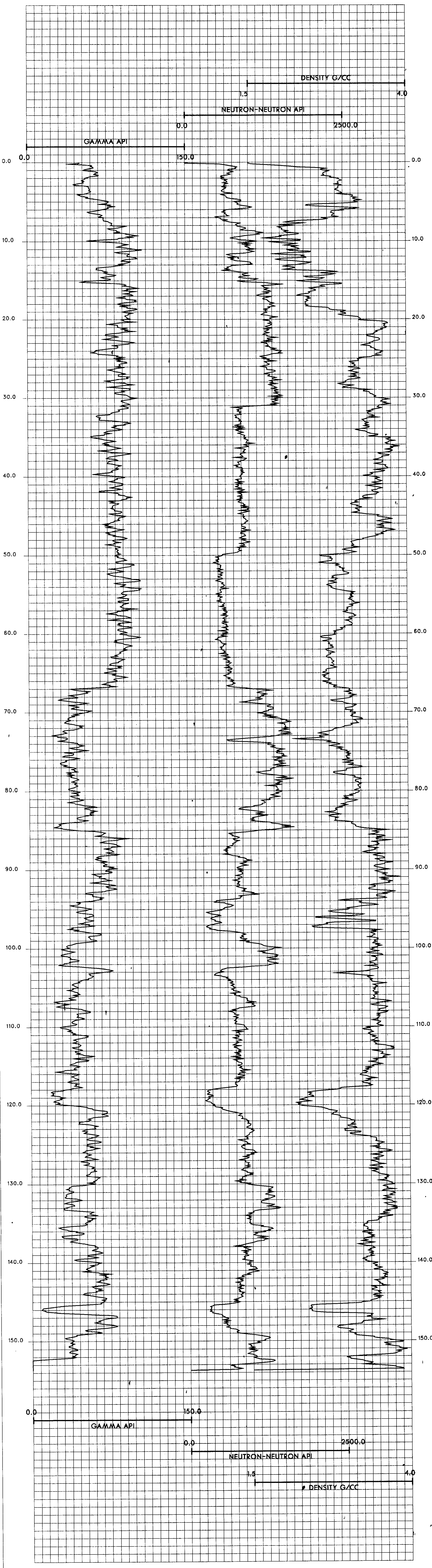
Datasource: **KPNLRDDH87006**
 Log Date: 87-09-02
 Company: CENTURY
 Geologist: LEE

Province: BC Northing: 6345330.00 Lat: 571510
 Zone: 9 Easting: 508433.00 Long: 1285137
 Measuring Point: GROUND LEVEL Elevation: 1462.3

Scale: 1 to 200.0
 Depth Range: 0.0 to 158.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87007

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87007

DATE - 03/01/88

- HISTORY -

START DATE - 09/03/87

END DATE - 09/07/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - BARKER

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS K?, I?, H?, H LOWER?, PH? (ALL W
/ FAULT BRECCIA) AND G? SEAM. SITE R.

- LOCATION -

PROVINCE - BC

ELEVATION - 1694.47

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6343325.08

EASTING - 505991.54

LATITUDE - 571406

LONGITUDE - 1285403

- ORIENTATION -

LENGTH - 204.76

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 9.75

AQUIFER DEPTHS (M) - 0.00

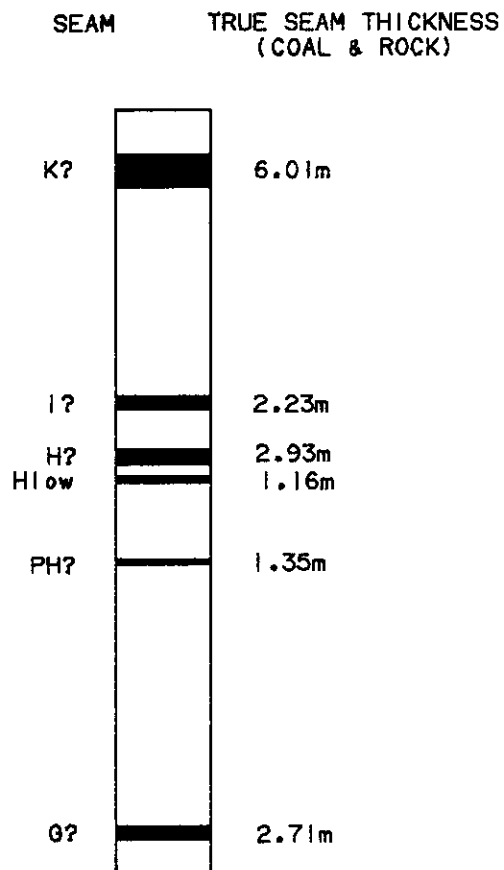
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87007

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------|
| | 0.00 | 9.75 | 9.75 | 40 | | | CASING | CASING DEPTH |
| 1 | 9.75 | 9.81 | 0.06 | 40 | | | MUDSTONE | DK.GY.SLD UNCONSOLIDATED MUD. |
| 1 | 9.81 | 9.91 | 0.10 | 40 | | | MUDSTONE | DK.GY.SLD UNCONSOLIDATED MUD. |
| 1 | 9.91 | 10.28 | 0.37 | 40 | | | MUDSTONE | CARB.DK.GY.SLD CORE TWIST-OFF AT ONE POINT, POORLY CONSOLIDATED, ONE 1 CM COALY LENS. |
| 2 | 10.28 | 10.98 | 0.70 | 40 | | | MUDSTONE | CARB.DK.GY.BRKN COALY PLANT FRAGS, BECOMES FILLED WITH COALY FLECKS NEAR BASE, POORLY CONSOLIDATED. |
| 2 | 10.98 | 11.45 | 0.47 | 40 | 06837 | | MUDSTONE | CARB.DK.GY.BRKN COALY FLECKS THROUGHOUT, LOWER 25 CM SAMPLED. |
| 2 | 11.45 | 11.83 | 0.38 | 40 | 06838 | K? | COAL | C-3.PWRD VERY SHEARED & WEATHERED AND MIXED WITH MUD. |
| 2 | 11.83 | 11.86 | 0.03 | 40 | 06838 | K? | MUDSTONE | CARB.DK.GY.VBRKN SHEARED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------|
| 2 | 11.86 | 12.07 | 0.21 | 40 | 06838 | K? | COAL | C-3.PWRD SHEARED, WEATHERED AND MIXED WITH MUD. |
| 2 | 12.07 | 12.15 | 0.08 | 40 | 06838 | K? | MUDSTONE | M.GY.SLD POORLY CONSOLIDATED. |
| 2 | 12.15 | 12.17 | 0.02 | 40 | 06838 | K? | COAL | C-3.BRKN |
| 3 | 12.17 | 12.25 | 0.08 | 40 | 06838 | K? | COAL | C-3.SLD CORE TWIST-OFF, MIXED WITH MUD, SOFT. |
| 3 | 12.25 | 12.29 | 0.04 | 40 | 06838 | K? | COAL | C-2.VBRKN |
| 3 | 12.29 | 12.32 | 0.03 | 40 | 06838 | K? | MUDSTONE | CARB.DK.GY.SLD POORLY CONSOLIDATED. |
| 3 | 12.32 | 12.48 | 0.16 | 40 | 06838 | K? | COAL | C-2.BRKN UPPER HALF POWDERED. |
| 3 | 12.48 | 19.47 | 6.99 | 40 | 06838 | K? | COAL LOSS | SHEARED COAL/MUD MIX. |
| 3 | 19.47 | 19.52 | 0.05 | 40 | 06838 | K? | MUDSTONE | SLTY.M-DK.GY.SLD |
| 3 | 19.52 | 19.55 | 0.03 | 40 | 06838 | K? | COAL | C-4.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 3 | 19.55 | 19.66 | 0.11 | 40.06838 | K? | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 3 | 19.66 | 19.70 | 0.04 | 40.06838 | K? | COAL | C-3. PHRD |
| 3 | 19.70 | 19.77 | 0.07 | 40.06838 | K? | MUDSTONE | CARB. DK. GY. BRKN |
| 3 | 19.77 | 19.91 | 0.14 | 40.06838 | K? | COAL | C-3. PHRD MIXED WITH MUD. |
| 3 | 19.91 | 20.09 | 0.18 | 40.06838 | K? | MUDSTONE | CARB. DK. GY. SLD COALY PLANT FRAGS THROUGHOUT. |
| 3 | 20.09 | 20.18 | 0.09 | 40.06838 | K? | COAL | C-3. PHRD MIXED WITH MUD. |
| 3 | 20.18 | 20.72 | 0.54 | 40.06838 | K? | MUDSTONE | CARB. DK. GY. SLD PLANT FRAGS. |
| 3 | 20.72 | 20.80 | 0.08 | 40.06838 | K? | COAL | C-2. PHRD |
| 3 | 20.80 | 21.57 | 0.77 | 40.06839 | | ROCK LOSS | |
| 4 | 21.57 | 23.52 | 1.95 | *40.06839 | | MUDSTONE | CARB. DK. GY. BRKN COALY STRINGERS THROUGHOUT, MINOR PYRIT E LENSES. UPPER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | 23.52 | 23.77 | 0.25 | 35 | | MUDSTONE | CARB. DK. GY. MAS. BRKN HIGHLY FRACTURED, BUT FAIRLY CONSOLIDATED IN CORE. OCC. C-1 COAL PIECES 2 MM IN DIAMETER - GROUND UP COAL STRINGER. DISSEMINATED PYRITE. |
| 5 | 23.77 | 24.96 | 1.19 | *32 | | MUDSTONE | DK. GY. LAM. BRKN OCC FINE SILT AND VFG SS LAMINAE. HIGHLY FRACTURED BUT FAIRLY CONSOLIDATED IN CORE. BRECCIATED M/CLAY FRAC FILL. |
| 5 | 24.96 | 25.51 | 0.55 | 39 | | SANDSTONE | FG. YPR. LT-M. GY. MAS. BRKN PREDOMINANTLY MASSIVE WITH MINOR 1-2 MM WIDE SILT LAYERS. POORLY CONSOLIDATED, SOFT, GROUND UP, BUT STILL IN THE SHAPE OF SOLID CORE. |
| 6 | 25.51 | 26.56 | 1.05 | 45 | | SANDSTONE | FG. YPR. LT-M. GY. MAS. BRKN CORE THIST-OFF WITHIN THIS INTERVAL. VERY SOFT & POORLY CONSOLIDATED (LIKE PLASTICENE). GROUND UP AND BRECCIATED WITH CLAY FRACTURE FILL AND GROUND UP QTZ. ON FRACTURE SURFACES. |
| 6 | 26.56 | 26.82 | 0.26 | 50 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 26.82 | 27.68 | 0.86 | 54 | | SANDSTONE | FG.VPR.LT-M.GY.MAS.BRKN PREDOMINANTLY MASSIVE. MINOR SILTY LAMINAE. BRECCIATED SS WITH CLAY FRAC FILL & MINOR QTZ VEINING. VERY SOFT, BUT IN THE SHAPE OF FAIRLY SLD CORE. |
| 7 | 27.68 | 28.46 | 0.78 | *60 | | SANDSTONE | FG.VPR.LT-M.GY.THNB.SLD BEDDING FINES UP FROM F-HG SS AT BASE TO 0.1 CM WIDE MUD BAND AT TOP OVER 18 CM. HIGHLY FRACTURED BUT IN THE SHAPE OF FAIRLY SOLID CORE. MODERATE QTZ VEINING. |
| 7 | 28.46 | 28.66 | 0.20 | 59 | | SANDSTONE | FG.VPR.M.GY.MAS.VBRKN MUCH CORE LOSS. CRUSHED CORE. MODERATE QTZ VEINING. |
| 7 | 28.66 | 29.56 | 0.90 | 57 | | ROCK LOSS | |
| 7 | 29.56 | 29.71 | 0.15 | 55 | | SANDSTONE | FG.VPR.M.GY.MAS.VBRKN CORE LOSS HERE. CRUSHED CORE. SS BECOMING SILTIER OVERALL THAN ABOVE. |
| 7 | 29.71 | 30.37 | 0.66 | 54 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 30.37 | 30.68 | 0.31 | 53 | | SANDSTONE | SILTY VPR.M.GY.MAS.VBRKN CRUSHED CORE. LOSS HERE. MODERATE QTZ VEINING. LARGER PIECES ARE VERY POORLY CONSOLIDATED. |
| 8 | 30.68 | 31.23 | 0.55 | 51 | | ROCK LOSS | |
| 8 | 31.23 | 31.51 | 0.28 | *50 | | SILTSTONE | SSY.VPR.M-DK.GY.VTHNB.VBRKN OCCASIONAL VERY FINE GRAINED SAND LAYERS. |
| 8 | 31.51 | 31.98 | 0.47 | 50 | | SILTSTONE | SSY.DK.GY.LAM.VBRKN BRECCIATED WITH CLAY FRACTURE FILL, SOFT & POORLY CONSOLIDATED BUT LARGER PIECES IN THE SHAPE OF WHOLE CORE. TWIST-OFF. |
| 8 | 31.98 | 32.48 | 0.50 | 50 | | ROCK LOSS | |
| 8 | 32.48 | 32.67 | 0.19 | 50 | | BRECCIA | DK.GY.SLD HIGHLY BRECCIATED SILTY MUDST HELD TOGETHER BY SILTY CLAY FRACTURE FILL. SLICK SIDES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 32.67 | 34.78 | 2.11 | *50 | | BRECCIA | DK.GY.SLD HIGHLY BRECCIATED SILTY MUDST HELD TOGETHER BY GOUGE & CLAY FRACTURE FILL. BCA MEASURED ON A LARGER PIECE IN PLACE AT ORIGINAL ORIENTATION ??? QUESTIONABLE. |
| 10 | 34.78 | 34.99 | 0.21 | 50 | | BRECCIA | DK.GY.BRKN MUDST BRECCIA. VERY SOFT, POORLY CONSOLIDATED BUT IN THE SHAPE OF WHOLE CORE. FAULT GOUGE? PYRITE PIECES 1-2 MM. IN DIAMETER. |
| 10 | 34.99 | 36.71 | 1.72 | 50 | | BRECCIA | DK.GY.SLD MUDST BRECCIA W/CLAY & GOUGE FRACTURE FILL; VERY SOFT AND POORLY CONSOL. PYRITE PIECES 1-2 MM. |
| 11 | 36.71 | 38.01 | 1.30 | 49 | | BRECCIA | DK.GY.SLD MUDSTONE BRECCIA WITH CLAY & GOUGE FRACTURE FILL. VERY SOFT, POORLY CONSOLIDATED BUT IN THE SHAPE OF WHOLE CORE. PYRITE PIECES 1-2 MM. |
| 11 | 38.01 | 38.72 | 0.71 | 49 | | BRECCIA | DK.GY.SLD SILTY MUDST FAULT GOUGE - INDIVIDUAL PIECES ALMOST INDISTINGUISHABLE, FINELY GROUNDED UP. POORLY CONSOLIDATED, SOFT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 38.72 | 39.14 | 0.42 | 49 | | ROCK LOSS | |
| 12 | 39.14 | 41.00 | 1.86 | 49 | | BRECCIA | DK.GY.BRKN SILTY MUDST BRECCIA. EXTREMELY BRECCIATED BUT HELD TOGETHER INTO THE SHAPE OF WHOLE CORE BY CLAY & FINE GOUGE. EVEN QTZ & TALC VEINS ARE CRUSHED. |
| 12 | 41.00 | 41.25 | 0.25 | 48 | | ROCK LOSS | |
| 13 | 41.25 | 41.54 | 0.29 | 48 | | BRECCIA | DK.GY.SLD FINELY CRUSHED/BRECCIATED SILTY MUDST INTO FAULT GOUGE. VERY SOFT LIKE PLASTIC FINE. HELD TOGETHER IN THE SHAPE OF WHOLE CORE. |
| 13 | 41.54 | 43.27 | 1.73 | 48 | | BRECCIA | DK.GY.SLD COMPLETELY BRECCIATED MUDST. HELD TOGETHER IN THE SHAPE OF WHOLE CORE BY FINE FAULT GOUGE & CLAY. |
| 14 | 43.27 | 44.38 | 1.11 | 48 | | BRECCIA | DK.GY.BRKN BRECCIATED MUDST AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 14 | 44.38 | 44.59 | 0.21 | 48 | | | ROCK LOSS | |
| 14 | 44.59 | 45.50 | 0.91 | 48 | | | BRECCIA | DK.GY.BRKN BRECCIATED MUDST AS ABOVE. |
| 15 | 45.50 | 47.27 | 1.77 | 47 | | | BRECCIA | DK.GY.VBRKN BRECCIATED SSS SLTST. ABUNDANT QTZ VEINING. VERY SOFT. POORLY CONSOL. HELD TOGETHER, IN PLACES, BY CLAY & GOUGE. |
| 15 | 47.27 | 47.53 | 0.26 | 47 | | | ROCK LOSS | |
| 16 | 47.53 | 47.64 | 0.11 | 47 | | | BRECCIA | FINELY BRECCIATED SLTST FAULT GOUGE. HELD TOGETHER INTO SOLID WHOLE CORE. VERY SOFT LIKE PLASTICENE. |
| 16 | 47.64 | 48.07 | 0.43 | 47 | | | BRECCIA | SLTST FAULT GOUGE AS ABOVE. AS SOFT AS PLASTICENE. |
| 16 | 48.07 | 48.18 | 0.11 | 47 | | | SANDSTONE | FG.MOD.M.GY.VBRKN CRUSHED - RUBBLE. CORE LOSS HERE. MODERATE QTZ VEINING. NO CLAY OR GOUGE HOLDING THESE PIECES TOGETHER. |
| 16 | 48.18 | 48.80 | 0.62 | 47 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 48.80 | 49.10 | 0.30 | 47 | | | BRECCIA | FG.M.GY.VBRKN SOME SS RUBBLE, AS ABOVE. WITH SOME GRUND UP SAND HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. VERY SOFT LIKE PLASTICENE. MUCH CORE LOSS HERE. |
| 16 | 49.10 | 50.50 | 1.40 | 47 | | | ROCK LOSS | |
| 17 | 50.50 | 50.56 | 0.06 | 46 | | | BRECCIA | M-DK.GY.VBRKN CRUSHED SANDSTONE FAULT GOUGE HELD TOGETHER INTO WHOLE CORE. VERY SOFT. POORLY CONSOLIDATED. |
| 17 | 50.56 | 52.39 | 1.83 | 46 | | | BRECCIA | DK.GY.BRKN SSS SLTST BRECCIA, HELD TOGETHER INTO THE SHAPE OF WHOLE CORE BY CLAY FRACTURE FILL & GOUGE. VERY SOFT; POORLY CONSOLIDATED. |
| 17 | 52.39 | 52.52 | 0.13 | 46 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 52.52 | 53.67 | 1.15 | 46 | | BRECCIA | DK.GY.BRKN POORLY CONSOLIDATED SLTST BRECCIA & FAULT GOUGE AS ABOVE. IN SHAPE OF WHOLE CORE. |
| 18 | 53.67 | 54.56 | 0.89 | 46 | | BRECCIA | DK.GY.BRKN POORLY CONSOLIDATED SLTST BRECCIA & FAULT GOUGE AS ABOVE. IN SHAPE OF WHOLE CORE. |
| 18 | 54.56 | 54.82 | 0.26 | 46 | | ROCK LOSS | |
| 19 | 54.82 | 56.78 | 1.96 | 45 | | BRECCIA | DK.GY.BRKN POORLY CONSOLIDATED SLTST BRECCIA & FAULT GOUGE AS ABOVE. IN SHAPE OF WHOLE CORE. |
| 20 | 56.78 | 58.55 | 1.77 | *45 | | BRECCIA | M-DK.GY.BRKN SILTY SANDSTONE BRECCIA. VERY POORLY CONSOLIDATED. HELD TOGETHER INTO THE SHAPE OF WHOLE CORE BY GOUGE & CLAY FRACTURE FILL. SOME LARGER PIECES LAMINATED. |
| 20 | 58.55 | 58.79 | 0.24 | 57 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 58.79 | 59.83 | 1.04 | *65 | | BRECCIA | M-DK.GY.BRKN SILTY SS BRECCIA AS ABOVE. ONE LARGER PIECE SHOWS INTERBEDDED VFG SS AND MUD BANDS. 1-4 CM. WIDE. SHARP CONTACTS. |
| 21 | 59.83 | 60.71 | 0.88 | 64 | | BRECCIA | DK.GY.BRKN SLTST BRECCIA. POORLY CONSOLIDATED. HELD TOGETHER BY GOUGE & CLAY FRACTURE FILL. SOME VITRINITE PIECES 0.5 MM (DUST) IN GOUGE. |
| 21 | 60.71 | 60.92 | 0.21 | 63 | | ROCK LOSS | |
| 22 | 60.92 | 62.88 | 1.96 | 62 | | BRECCIA | DK.GY.SLD VERY FINELY GROUND UP MUDST BRECCIA - MORE LIKELY ALL FAULT GOUGE. HELD TOGETHER IN SHAPE OF WHOLE CORE. VERY SOFT. POORLY CONSOLIDATED. |
| 22 | 62.88 | 62.95 | 0.07 | 61 | | BRECCIA | DK.GY.SLD FINELY GROUND UP MUDST BRECCIA/FAULT GOUGE AS ABOVE. |
| 23 | 62.95 | 65.02 | 2.07 | 59 | | BRECCIA | DK.GY.SLD FINELY GROUND UP MUDST BRECCIA/FAULT GOUGE AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 65.02 | 65.91 | 0.89 | 57 | | BRECCIA | M-DK.GY.BRKN FINELY GROUND UP MUDST AS ABOVE; A FEW F-MG SS CHUNKS AT TOP GRADING DOWN TO A LL GROUND UP CARB MUDST WITH ABUNDANT VITRINITE SPECKS AT BASE OF INTERVAL. VERY SOFT LIKE PLASTICENE. |
| 24 | 65.91 | 65.93 | 0.02 | 57 | | ROCK LOSS | |
| 24 | 65.93 | 66.92 | 0.99 | 56 | | MUDSTONE | CARB.BLK.BRKN FINELY GROUND UP. ABUNDANT VITRINITE SP ECKS THROUGHOUT. GROUND UP COAL SEAM. VERY SOFT & POORLY CONSOLIDATED - LIKE COFFEE GROUNDS MIXED WITH PLASTICENE. IN SHAPE OF SOLID CORE. |
| 25 | 66.92 | 67.13 | 0.21 | 56 | | MUDSTONE | DK.GY.MAS.SLD FAIRLY SOLID PIECE. NO BEDDING VISIBLE. POLISHED & SHEARED FRACTURE SURFACES WITH TALC. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 67.13 | 68.70 | 1.57 | 54 | | BRECCIA | DK.GY.BRKN VERY BRECCIATED MUDST - POORLY CONSOLIDATED; SOFT; WAXY; IN SHAPE OF WHOLE CORE. OCCASIONAL VITRINITE SPECKS. FAULT GOUGE & CLAY FRACTURE FILL MAKE UP THE bulk OF THIS INTERVAL. |
| 25 | 68.70 | 68.93 | 0.23 | 53 | | ROCK LOSS | |
| 26 | 68.93 | 69.66 | 0.73 | 53 | | BRECCIA | DK.GY.SLD POORLY CONSOLIDATED. WAXY, HIGHLY BRECCIATED MUDST AS ABOVE. |
| 26 | 69.66 | 70.76 | 1.10 | 52 | | BRECCIA | LT-M.GY.BRKN RELATIVELY SHARP UPPER CONTACT. HIGHLY BRECCIATED F-MG SS. CLAY FRACTURE FILL. NO BEDDING VISIBLE. |
| 26 | 70.76 | 70.99 | 0.23 | 51 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN HIGHLY FRACTURED, BUT FAIRLY WELL CONSOLIDATED INTO WHOLE CORE. SHARP UPPER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 70.99 | 71.16 | 0.17 | 51 | | ROCK LOSS | |
| 27 | 71.16 | 71.98 | 0.82 | *50 | | MUDSTONE | DK.GY.VTHNB.BRKN VERY FAINT PLANAR BEDDING. HIGHLY FRACTURED, BUT HELD TOGETHER WITH CLAY FRACTURE FILL. SKS AND LISTRIC SURFACES. |
| 27 | 71.98 | 73.11 | 1.13 | *45 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN DISRUPTED BEDDING. SSD? LAMS GRADING FROM FINE DK MUD TO FG SAND. CORE HIGHLY FRACTURED, BUT CONSOLIDATED INTO WHOLE CORE. SKS. |
| 28 | 73.11 | 74.89 | 1.78 | *50 | | SILTSTONE | DK.GY.LAM.VBRKN FINELY LAMINATED MUDDY SLTST WITH EACH LAMINAE FINING UP FROM VFG SS TO FINE D ARK MUD. COALIFIED PIECE OF WOOD. QUESTIONABLE SCOURS AND SSD. SKS. HIGHLY FRACTURED, SO DIFFICULT TO TELL TOPS. |
| 28 | 74.89 | 75.03 | 0.14 | 49 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|----------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 75.03 | 76.80 | 1.77 | 49 | | MUDSTONE | SLTY.DK.GY.VTHNB.BRKN BEDDING FAINTER & MORE GRADATIONAL THAN ABOVE. HIGHLY FRACTURED; BRECCIATED; BUT CONSOLIDATED & HELD TOGETHER INTO FAIRLY WHOLE CORE. |
| 30 | 76.80 | 77.57 | 0.77 | 48 | | MUDSTONE | CARB.DK.GY.SLD COALY PLANT FRAGS AND STRINGERS, BRECCIATED APPEARANCE. |
| 30 | 77.57 | 77.75 | 0.18 | 48 | 06840 | MUDSTONE | CARB.DK.GY.BRKN AS ABOVE. |
| 30 | 77.75 | 78.06 | 0.31 | 47 | 06841 I? | COAL LOSS | |
| 30 | 78.06 | 78.40 | 0.34 | 47 | 06841 I? | COAL | C-3.PHRD SOFT, SPOIL LIKE. |
| 30 | 78.40 | 78.48 | 0.08 | 47 | 06841 I? | COAL | C-4.SLD C-2 BANDS. |
| 30 | 78.48 | 78.65 | 0.17 | 47 | 06841 I? | COAL | C-3.BRKN PARTIALLY POWDERED. |
| 30 | 78.65 | 79.02 | 0.37 | 47 | 06841 I? | MUDSTONE | CARB.DK.GY.SLD ABUNDANT COALY PLANT FRAGS & STRINGERS. |
| 30 | 79.02 | 79.19 | 0.17 | 47 | 06841 I? | COAL | C-2.PHRD SOFT, DUST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 79.19 | 79.57 | 0.38 | 46 | 06841 I? | COAL | C-2, PMRD SOFT, DUST. |
| 31 | 79.57 | 79.76 | 0.19 | 46 | 06841 I? | ROCK LOSS | |
| 31 | 79.76 | 79.92 | 0.16 | 46 | 06841 I? | MUDSTONE | CARB. DK. GY. SLD ABUNDANT COALY LENSES & STRINGERS. |
| 31 | 79.92 | 80.41 | 0.49 | 46 | 06841 I? | COAL | C-3, SLD POWDERY & SHEARED IN PLACES, MIXED WITH MUD. |
| 31 | 80.41 | 80.82 | 0.41 | 46 | 06841 I? | COAL LOSS | |
| 31 | 80.82 | 81.11 | 0.29 | 45 | 06842 | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 31 | 81.11 | 81.64 | 0.53 | 45 | | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 32 | 81.64 | 83.70 | 2.06 | 44 | | BRECCIA | DK. GY. SLD VERY HIGHLY BRECCIATED TO THE POINT OF ONLY ABOUT 20% FG SS CHUNKS REMAINING; 80% CLAY FILL AND FINE FAULT GOUGE; IN THE SHAPE OF WHOLE CORE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 83.70 | 84.04 | 0.34 | 44 | | BRECCIA | DK. GY. BRKN INTENSE BRECCIATION AS ABOVE. SOFT, WAXY FAULT GOUGE HELD TOGETHER INTO WHOLE CORE. |
| 33 | 84.04 | 85.69 | 1.65 | 43 | | BRECCIA | DK. GY. SLD INTENSE BRECCIATION. FAULT GOUGE AS ABOVE. |
| 34 | 85.69 | 86.94 | 1.25 | 42 | | BRECCIA | DK. GY. BRKN INTENSE BRECCIATION. FAULT GOUGE AS ABOVE. SLICKENSIDES W/ TALC ON SOME FRACTURE SURFACES. |
| 34 | 86.94 | 87.57 | 0.63 | 41 | | BRECCIA | DK. GY. BRKN FAULT GOUGE AS ABOVE. VERY SOFT LIKE PL. ASTICENE THROUGHOUT. |
| 35 | 87.57 | 89.28 | 1.71 | 41 | | BRECCIA | DK. GY. BRKN EXTREMELY BRECCIATED MUDST. MOSTLY SOFT WAXY FAULT GOUGE AS ABOVE. POORLY CONSOLIDATED, BUT IN THE SHAPE OF WHOLE CORE. |
| 36 | 89.28 | 89.51 | 0.23 | 40 | | BRECCIA | DK. GY. SLD MUDST BRECCIA/FAULT GOUGE AS ABOVE. |
| 36 | 89.51 | 91.32 | 1.81 | 39 | | BRECCIA | DK. GY. SLD MUDST BRECCIA/FAULT GOUGE AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 91.32 | 91.34 | 0.02 | 39 06844 | H? | COAL | C-3. BLK. PHRD GROUND UP & MIXED WITH CLAY FILL. DIFFI CULT TO TELL GRADE; POSSIBLY C-3. LOOKS LIKE SPARKLEY COFFEE GROUNDS. |
| 37 | 91.34 | 91.62 | 0.28 | 39 06844 | H? | COAL | C-3. SHRD SHEARED & MIXED WITH MUD. |
| 37 | 91.62 | 92.03 | 0.41 | 38 06844 | H? | MUDSTONE | CARB. DK. GY. SHRD VERY SHEARED & MIXED WITH COAL FLECKS. |
| 37 | 92.03 | 92.48 | 0.45 | 38 06844 | H? | COAL | C-4. SHRD MIXED WITH MUD. |
| 37 | 92.48 | 92.83 | 0.35 | 38 06844 | H? | MUDSTONE | CARB. DK. GY. SHRD COALY FLECKS & STRINGERS THROUGHOUT. |
| 37 | 92.83 | 93.19 | 0.36 | 38 06844 | H? | COAL | C-3. SHRD MIXED WITH MUD. |
| 38 | 93.19 | 93.31 | 0.12 | 37 06844 | H? | COAL | C-3. SHRD MIXED WITH MUD. |
| 38 | 93.31 | 93.43 | 0.12 | 37 06844 | H? | SILTSTONE | CARB. M-DK. GY. SLD COALY STRINGERS. |
| 38 | 93.43 | 93.95 | 0.52 | 37 06844 | H? | MUDSTONE | CARB. DK. GY. SLD SHEARED & MIXED WITH COAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|----------|-----------|-----------------------------------------------|
| 38 | 93.95 | 95.07 | 1.12 | 37 06844 | H? | COAL | C-3. SHRD HIGHLY SHEARED & MIXED WITH MUD. |
| 38 | 95.07 | 95.32 | 0.25 | 36 06844 | H? | ROCK LOSS | |
| 38 | 95.32 | 95.52 | 0.20 | 36 06844 | H? | COAL LOSS | |
| 39 | 95.52 | 95.65 | 0.13 | 36 06844 | H? | COAL | C-3. SHRD HIGHLY SHEARED & MIXED WITH MUD. |
| 39 | 95.65 | 96.19 | 0.54 | 36 06844 | H? | COAL | C-3. SHRD HIGHLY SHEARED & MIXED WITH MUD. |
| 39 | 96.19 | 96.38 | 0.19 | 35 06845 | | ROCK LOSS | |
| 39 | 96.38 | 97.70 | 1.32 | 35 06845 | | MUDSTONE | CARB. DK. GY. SHRD SHEARED & CONTORTED. |
| 40 | 97.70 | 98.94 | 1.24 | 34 06845 | | MUDSTONE | CARB. DK. GY. SHRD SHEARED & CONTORTED. |
| 40 | 98.94 | 99.14 | 0.20 | 34 06845 | | MUDSTONE | CARB. DK. GY. SHRD SHEARED & CONTORTED. |
| 40 | 99.14 | 99.64 | 0.50 | 33 06846 | H. LOWER | COAL | C-4. SHRD SHEARED & MIXED WITH MUD. |
| 41 | 99.64 | 99.81 | 0.17 | 33 06846 | H. LOWER | COAL | C-3. SHRD MIXED WITH MUD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 41 | 99.81 | 99.97 | 0.16 | 33 | 06846 | H LOWER | COAL LOSS | |
| 41 | 99.97 | 100.02 | 0.05 | 33 | 06846 | H LOWER | ROCK LOSS | |
| 41 | 100.02 | 100.05 | 0.03 | 33 | 06846 | H LOWER | MUDSTONE | CARB.DK.GY.SLD |
| 41 | 100.05 | 100.29 | 0.24 | 33 | 06846 | H LOWER | COAL | C-4.SHRD SHEARED & MIXED WITH MUD. |
| 41 | 100.29 | 100.34 | 0.05 | 33 | 06846 | H LOWER | MUDSTONE | CARB.DK.GY.SHRD |
| 41 | 100.34 | 101.29 | 0.95 | 32 | 06846 | H LOWER | COAL | C-4.SHRD HIGHLY SHEARED & MIXED WITH MUD, GRADE ESTIMATED FOR ENTIRE SEAM. |
| 41 | 101.29 | 101.51 | 0.22 | 32 | 06847 | | MUDSTONE | CARB.DK.GY.SHRD CONTORTED & SHEARED. |
| 42 | 101.51 | 101.86 | 0.35 | 32 | | | MUDSTONE | CARB.DK.GY.BRKN POORLY CONSOLIDATED, SOFT, MAXY CARB. MU DST. GOUGE? IN SHAPE OF WHOLE CORE. OCC ASIONAL VITRINITE SPECKS. |
| 42 | 101.86 | 102.81 | 0.95 | 31 | | | MUDSTONE | CARB.DK.GY.BRKN CARB MUDST FAULT GOUGE; SOFT, MAXY; AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 102.81 | 103.59 | 0.78 | 31 | | | BRECCIA | M-DK.GY.BRKN HIGHLY BRECCIATED FG SS. HELD TOGETHER WITH CLAY FRACTURE FILL & GOUGE. BRECCIATED/CHEMED UP QTZ & TALC VEINS. |
| 43 | 103.59 | 104.84 | 1.25 | 30 | | | BRECCIA | M-DK.GY.BRKN HIGHLY BRECCIATED FG SS & QTZ/TALC VEIN S AS ABOVE. POORLY CONSOLIDATED; SOFT. |
| 43 | 104.84 | 105.49 | 0.65 | 30 | | | BRECCIA | M-DK.GY.BRKN HIGHLY BRECCIATED FG SS & QTZ/TALC VEIN S AS ABOVE. POORLY CONSOLIDATED; SOFT. |
| 44 | 105.49 | 106.21 | 0.72 | 29 | | | BRECCIA | DK.GY.SLD MUDST BRECCIA WITH ABUNDANT DISSEMINATED PYRITE IN UPPER 1/2 OF INTERVAL. SOFT. HELD TOGETHER BY CLAY FRACTURE FILL. |
| 44 | 106.21 | 107.32 | 1.11 | 29 | | | SANDSTONE | FG.VPR.LT-M.GY.MAS.VBRKN HIGHLY BRECCIATED SS FINING UP FROM MG AT BASE TO FG SS AT TOP. 3 MUDST RIP-UP CLASTS. HIGHLY FRACTURED. HELD TOGETHER BY CLAY FRACTURE FILL. |
| 44 | 107.32 | 107.77 | 0.45 | 28 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 45 | 107.77 | 109.37 | 1.60 | 27 | | SANDSTONE | MG.VPR.LT-M.GY.MAS.VBRKN HIGHLY BRECCIATED SS AS ABOVE. VERY POORLY SORTED, MOSTLY MG. |
| 45 | 109.37 | 109.92 | 0.55 | 27 | | ROCK LOSS | |
| 46 | 109.92 | 110.15 | 0.23 | 26 | | SANDSTONE | MG.VPR.LT-M.GY.MAS.VBRKN CRUSHED CORE. RUBBLE. HIGHLY BRECCIATED MG.SS AS ABOVE. CORE LOSS. |
| 46 | 110.15 | 110.34 | 0.19 | 26 | | ROCK LOSS | |
| 46 | 110.34 | 111.07 | 0.73 | 26 | | SANDSTONE | MG.VPR.LT-M.GY.MAS.VBRKN HIGHLY BRECCIATED MG.SS AS ABOVE. WHOLE PIECES HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. |
| 47 | 111.07 | 111.41 | 0.34 | 26 | | SANDSTONE | MG.VPR.LT-M.GY.MAS.SLD HIGHLY BRECCIATED MG.SS AS ABOVE. |
| 47 | 111.41 | 112.88 | 1.47 | *25 | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN BRECCIATED - HELD TOGETHER BY CLAY. FINELY INTERLAMINATED. DARK GREY MUD & F-VF G.SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 112.88 | 113.32 | 0.44 | 36 | | MUDSTONE | CARB.BLK.VBRKN HIGHLY BRECCIATED MUDST. HELD TOGETHER WITH CLAY FRACTURE FILL. |
| 48 | 113.32 | 113.64 | 0.32 | 40 | | ROCK LOSS | |
| 48 | 113.64 | 114.96 | 1.32 | *50 | | MUDSTONE | CARB.BLK.BRKN HIGHLY BRECCIATED CARB MUDST WITH GROUND UP COAL IN FRACTURE FILL AT TOP OF IN TERVAL. DISSEMINATED PYRITE & SOME PYRI TIZED LAMINAE. BEDDING FAINT. |
| 49 | 114.96 | 116.43 | 1.47 | *01 | | SANDSTONE | SLTY.FG.VPR.M-DK.GY.LAM.SLD FINELY INTERLAMINATED MUD & FG SS. DISS EMINATED PYRITE AT TOP OF INTERVAL. 0.8 CA. HIGHLY FRACTURED; HELD TOGETHER WIT H CLAY FRACTURE FILL. |
| 49 | 116.43 | 116.53 | 0.10 | 21 | | MUDSTONE | CARB.BLK.BRKN VERY SOFT MIXTURE OF WAXY SHEARED CARB MUDST AND VITRINITE SPECKS (1 MM ACROSS). |
| 49 | 116.53 | 116.60 | 0.07 | 23 | | COAL | C-2.BLK.PHRD HIGHLY SHEARED; GROUND UP. PROBABLY COR E LOSS HERE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 116.60 | 117.13 | 0.53 | 31 | | | COAL LOSS | |
| 49 | 117.13 | 117.33 | 0.20 | 41 | | | ROCK LOSS | |
| 49 | 117.33 | 117.47 | 0.14 | 45 | | | MUDSTONE | CARB. BLK. SLD WAXY, SOFT (LIKE PLASTICENE), MIXTURE OF F GROUND UP COAL AND CARB MUDST FAULT G OUGE, VERY COALY. |
| 50 | 117.47 | 119.28 | 1.81 | *70 | | | BRECCIA | DK.GY.LAM.BRKN BRECCIATED SLTY MUDST HELD TOGETHER WIT H CLAY FRACTURE FILL & GOUGE. MODERATE CHEMED UP QTZ VEINS. LARGER PIECES SHOW FINE PLANAR LAMINAE. |
| 51 | 119.28 | 119.79 | 0.51 | 68 | | | BRECCIA | DK.GY.MAS.BRKN BRECCIATED SLTY MUDST AS ABOVE. OCCASIO NAL CHEMED UP QTZ VEINS. CLAY & GOUGE F RACTURE FILL. |
| 51 | 119.79 | 121.35 | 1.56 | 66 | 06848 | | BRECCIA | DK.GY.MAS.SLD BRECCIATED SLTY MUDST AS ABOVE. LOWER 2 5 CM SAMPLED. |
| 51 | 121.35 | 121.37 | 0.02 | 65 | 06849 | PH? | COAL | BLK.PHRD GROUND UP COAL MIXED WITH SOFT MUD. SHE ARED W/LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 121.37 | 122.83 | 1.46 | 64 | 06849 | PH? | COAL | C-5.SHRD HIGHLY SHEARED, MIXTURE OF MUD AND COAL FLECKS, GRADE APPROXIMATE (C3-C5), ABU NDANT MUD BANDS NEAR BASE. |
| 52 | 122.83 | 122.85 | 0.02 | 63 | 06849 | PH? | COAL LOSS | |
| 52 | 122.85 | 123.02 | 0.17 | 62 | 06850 | | MUDSTONE | CARB.DK.GY.SLD BRECCIATED APPEARANCE, COALY STRINGERS & QTZ CLASTS. |
| 52 | 123.02 | 123.38 | 0.36 | 62 | | | MUDSTONE | CARB.DK.GY.SLD COALIFIED PLANT FRAGS AND LENSES. |
| 53 | 123.38 | 125.38 | 2.00 | *60 | | | SILTSTONE | SSY.VPR.M.GY.THNB.SSD.SLD RIP-UPS & LOADING SHOWS TOPS DOWN, AS W ELL AS 7 CM WIDE BAND OF CARBONATE RECR YSTALLIZATION TOPOGRAPHICALLY ABOVE A S HARP CONTACT & MUDST BAND. COALIFIED PL ANT MATERIAL AT TOP OF INTERVAL. |
| 54 | 125.38 | 125.68 | 0.30 | 60 | | | SILTSTONE | SSY.VPR.M.GY.MAS.BRKN NUMEROUS FRACTURES BUT NOT THE INTENSE BRECCIATION MENTIONED EARLIER. NO DISTI NCT BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 54 | 125.68 | 126.68 | 1.00 | *60 | | SILTSTONE | SSY.VPR.M.GY.THNB.SSD.BRKN LOAD CASTS SHOW TOPS UP - CONTRADICTORY TOPS INDICATORS. HIGHLY FRACTURED BUT HELD TOGETHER BY CLAY FRACTURE FILL IN ONE AREA. |
| 54 | 126.68 | 127.29 | 0.61 | 62 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN FINELY INTERLAMINATED DARK MUDST/FG SS. RIPPED UP LAYER INDICATES TOPS UP. |
| 54 | 127.29 | 127.57 | 0.28 | 64 | | ROCK LOSS | |
| 55 | 127.57 | 128.82 | 1.25 | *66 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN FINELY INTERLAMINATED DARK SLTST AND VF G-FG SAND. ABUNDANT SLTST RIP-UP CLASTS. HIGHLY FRACTURED CORE HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. |
| 55 | 128.82 | 129.40 | 0.58 | 67 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN FINELY INTERLAMINATED SLTST & FG SAND AS ABOVE. BRECCIATED, BUT HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. |
| 55 | 129.40 | 129.65 | 0.25 | 68 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 129.65 | 130.10 | 0.45 | 68 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN FINELY INTERLAMINATED SLTST & VFG SAND AS ABOVE. BRECCIATED IN PLACES. |
| 56 | 130.10 | 131.04 | 0.94 | 69 | | SANDSTONE | SLTY.FG.VPR.M.GY.THNB.VBRKN OCCASIONAL FINE SLTY LAYERS. MINOR QTZ VEINING. SILT LAYERS BECOMING LESS COMM ON DOWNWARD. SCOUR SHOWS TOPS DEFINITELY UP. |
| 56 | 131.04 | 131.40 | 0.36 | 70 | | ROCK LOSS | |
| 57 | 131.40 | 131.98 | 0.58 | 71 | | SANDSTONE | MG.MOD.LT-M.GY.MAS.VBRKN PREDOMINANTLY MASSIVE WITH ABUNDANT MUD ST RIP-UPS RANGING FROM 0.5 CM TO 4 CM IN DIAMETER. CORE BRECCIATED IN PLACES. |
| 57 | 131.98 | 133.13 | 1.15 | *72 | | SANDSTONE | FG.PR.LT-M.GY.MAS.VBRKN PREDOMINANTLY MASSIVE. OCCASIONAL FINE SLTY WISPS. ABUNDANT SLTST RIP-UP CLAST S. CARBONACEOUS PLANT MATERIAL ON SOME BEDDING PLANES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 57 | 133.13 | 133.53 | 0.40 | 69 | | | ROCK LOSS | |
| 58 | 133.53 | 134.12 | 0.59 | 67 | | | SANDSTONE | FG. VPR. LT-M. GY. MAS. VBRKN F-MG. SS. WITH EXTREMELY ABUNDANT MUDST. R. IP-UP CLASTS THROUGHOUT. |
| 58 | 134.12 | 134.57 | 0.45 | 66 | | | SANDSTONE | MG. MOD. LT-M. GY. MAS. VBRKN ONE ROUNDED CHERT CLAST 1 CM IN DIAMETE R. NO BEDDING VISIBLE: 22 CM ZONE OF PO ORLY CONSOLIDATED GROUND UP SANDSTONE. PROBABLE CORE LOSS HERE. |
| 58 | 134.57 | 135.07 | 0.50 | 64 | | | ROCK LOSS | |
| 59 | 135.07 | 136.28 | 1.21 | 61 | | | SANDSTONE | MG. WEL. LT. GY. MAS. VBRKN NO BEDDING VISIBLE. MASSIVE. FAIRLY CLE AN SAND. 3 CHERT CLASTS 0.5 CM IN DIAME TER. |
| 59 | 136.28 | 136.78 | 0.50 | 58 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 60 | 136.78 | 137.18 | 0.40 | 56 | | | SANDSTONE | MG. WEL. LT. GY. MAS. VBRKN MG MASSIVE SANDSTONE AS ABOVE. RUBBLE. |
| 60 | 137.18 | 138.08 | 0.90 | 54 | | | ROCK LOSS | |
| 60 | 138.08 | 138.72 | 0.64 | 51 | | | SANDSTONE | MG. WEL. LT. GY. MAS. VBRKN MG SS AS ABOVE. BRECCIATED CORE HELD TO GETHER BY CLAY FRACTURE FILL. |
| 61 | 138.72 | 139.80 | 1.08 | 48 | | | SANDSTONE | MG. MOD. LT. GY. MAS. VBRKN MG SS AS ABOVE. INTENSELY FRACTURED - B RECCIATED. MOSTLY RUBBLE. MODERATE QTZ VEINING. |
| 61 | 139.80 | 140.41 | 0.61 | 45 | | | ROCK LOSS | |
| 62 | 140.41 | 141.21 | 0.80 | 43 | | | SANDSTONE | FG. PR. M. GY. MAS. VBRKN F-MG SS. SLIGHTLY SILTIER THAN ABOVE. B RECCIATED, HELD TOGETHER WITH CLAY FRAC TURE FILL. |
| 62 | 141.21 | 141.33 | 0.12 | 41 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 62 | 141.33 | 141.89 | 0.56 | 40 | | | SANDSTONE | FG. PR. M. GY. MAS. BRKN NO BEDDING VISIBLE. F-MG SS. COARSENS DOWNWARD TO MG SAND AT BASE. |
| 63 | 141.89 | 143.84 | 1.95 | 35 | | | BRECCIA | M. GY. SLD BRECCIATED FG SANDSTONE WITH 1 CM WIDE BLACK MUDST LAYERS. CORE HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. MODERATE QTZ VEINING. |
| 64 | 143.84 | 144.07 | 0.23 | 31 | | | SANDSTONE | SLTY. FG. VPR. M. GY. VTHNB. VBRKN BRECCIATED INTERBEDDED FG SS AND DARK SILTY MUD LAYERS. |
| 64 | 144.07 | 144.37 | 0.30 | 30 | | | ROCK LOSS | |
| 64 | 144.37 | 145.47 | 1.10 | *28 | | | SANDSTONE | SLTY. FG. VPR. M. GY. VTHNB. VBRKN INTERBEDDED FG SS & DK. SILTY MUD AS ABOVE; INTENSE DEFORMATION (SLUMPING?) & RIPPING APART OF THE MUD LAYERS. |
| 65 | 145.47 | 146.76 | 1.29 | *20 | | | SILTSTONE | SSY. VPR. M-DK. GY. VTHNB. SSD. VBRKN MUCH LARGER PROPORTION OF SILTY MUD BANDS THAN ABOVE. STILL INTENSE DEFORMATION (SLUMPING?) & RIP-UPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 65 | 146.76 | 147.42 | 0.66 | 22 | | | ROCK LOSS | |
| 65 | 147.42 | 147.78 | 0.36 | 23 | | | SANDSTONE | FG. MOD. M. GY. MAS. BRKN NO BEDDING VISIBLE. INTENSELY FRACTURED & HELD TOGETHER BY CLAY FRACTURE FILL. |
| 66 | 147.78 | 148.56 | 0.78 | 24 | | | SANDSTONE | FG. MOD. M. GY. MAS. VBRKN MASSIVE FG. SS. AS ABOVE. INTENSELY FRACTURED; HELD TOGETHER BY CLAY FRACTURE FILL. |
| 66 | 148.56 | 148.66 | 0.10 | 25 | | | ROCK LOSS | |
| 66 | 148.66 | 149.80 | 1.14 | 26 | | | SANDSTONE | FG. VPR. M-DK. GY. MAS. BRKN DENSE ACCUMULATION OF MUDST RIP-UPS. 70% RIP-UPS AND 30% F-MG SAND. CLASTS ARE STRETCHED, ELONGATED RIPPED UP LAYERS. |
| 67 | 149.80 | 150.47 | 0.67 | 28 | | | SANDSTONE | FG. VPR. M-DK. GY. MAS. SLD DENSE ACCUMULATION OF MUDST RIP-UPS IN FG. SS. AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 67 | 150.47 | 151.61 | 1.14 | 29 | | SANDSTONE | F-MG. MOD. LT-M. GY. MAS. BRKN F-MG SS. MASSIVE. NO RIP-UPS. 49 CM OF POORLY CONSOLIDATED GROUND UP SS HELD T OGETHER BY CLAY FRACTURE FILL. |
| 67 | 151.61 | 152.14 | 0.53 | 31 | | ROCK LOSS | |
| 68 | 152.14 | 153.52 | 1.38 | 33 | | SANDSTONE | FG. MOD. LT. GY. MAS. VBRKN MOSTLY FG SAND WITH SOME MG SAND MIXED IN. VERY FRACTURED CORE. |
| 68 | 153.52 | 153.72 | 0.20 | 34 | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD INTENSELY FRACTURED (HELD TOGETHER BY C LAY FRACTURE FILL). MASSIVE FG. SS. AS AB OVE. |
| 69 | 153.72 | 154.94 | 1.22 | 36 | | SANDSTONE | FG. MOD. LT. GY. MAS. VBRKN INTENSELY FRAC. HAS F-MG SANDSTONE AS A BOVE. RARE 3-4 MM DIAMETER CHERT CLASTS |
| 69 | 154.94 | 155.34 | 0.40 | 37 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 155.34 | 156.57 | 1.23 | 39 | | SANDSTONE | FG. PR. LT. GY. MAS. VBRKN INTENSELY FRACTURED HAS F-MG SANDSTONE WITH RARE 4 MM DIAMETER CHERT CLASTS (A S. ABOVE). BRECCIATED SS. |
| 71 | 156.57 | 157.39 | 0.82 | 41 | | SANDSTONE | MG. PR. M. GY. MAS. VBRKN BRECCIATED MG MASSIVE SS AS ABOVE; HELD TOGETHER IN PLACES BY CLAY FRACTURE FI LL AND GOUGE WITH VITRINITE SPECKS IN C LAY NEAR BASE. |
| 71 | 157.39 | 158.39 | 1.00 | 42 | | ROCK LOSS | |
| 72 | 158.39 | 158.59 | 0.20 | 43 | | SANDSTONE | F-MG. MOD. M. GY. MAS. VBRKN RUBBLE. BRECCIATED SS AS ABOVE. |
| 72 | 158.59 | 159.61 | 1.02 | 45 | | ROCK LOSS | |
| 72 | 159.61 | 160.36 | 0.75 | 46 | | SANDSTONE | F-MG. MOD. M. GY. MAS. VBRKN RUBBLE. POORLY CONSOLIDATED. PULVERIZED SS HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. CORE LOSS? |
| 72 | 160.36 | 161.33 | 0.97 | 48 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 73 | 161.33 | 161.44 | 0.11 | 49 | | | SANDSTONE | F-MG. MOD. M. GY. MAS. VBRKN PULVERIZED SS AS ABOVE. |
| 73 | 161.44 | 161.52 | 0.08 | 49 | | | SANDSTONE | PBLY. MG. VPR. M. GY. MAS. VBRKN OCCASIONAL CHERT CLASTS. |
| 73 | 161.52 | 161.97 | 0.45 | 50 | | | ROCK LOSS | |
| 73 | 161.97 | 163.00 | 1.03 | 51 | | | CONGLOMERATE | VPR. M. GY. MAS. VBRKN MOSTLY CLAST SUPPORTED SUB-ROUNDED CHERT CLASTS (1-10 MM IN DIAMETER). |
| 74 | 163.00 | 163.11 | 0.11 | 52 | | | CONGLOMERATE | VPR. M. GY. MAS. VBRKN CONGLOMERATE AS ABOVE. SHARP LOWER CONTACT. |
| 74 | 163.11 | 163.56 | 0.45 | 53 | | | ROCK LOSS | |
| 74 | 163.56 | 164.43 | 0.87 | 54 | | | SANDSTONE | PR. M. GY. MAS. VBRKN INTENSELY FRACTURED. MINOR CHERT CLASTS LESS THAN 1 CM IN DIAMETER. |
| 75 | 164.43 | 166.11 | 1.68 | 56 | | | SANDSTONE | MG. VPR. M. GY. MAS. VBRKN ABUNDANT SLTST & MUDST RIP-UP CLASTS & RIPPED UP LAYERS OF LAMINATED MUDST & SLTST. INTENSELY FRACTURED CORE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 75 | 166.11 | 167.35 | 1.24 | 59 | | | ROCK LOSS | |
| 76 | 167.35 | 168.08 | 0.73 | 61 | | | SANDSTONE | MG. VPR. M. GY. MAS. VBRKN F-MG SS WITH ABUNDANT SLTST & MUDST RIP-UP CLASTS THROUGHOUT. |
| 76 | 168.08 | 168.38 | 0.30 | 62 | | | SANDSTONE | MG. VPR. M. GY. MAS. BRKN F-MG SS WITH ABUNDANT RIP-UP CLASTS AS ABOVE. |
| 76 | 168.38 | 168.67 | 0.29 | 62 | | | SANDSTONE | MG. VPR. M. GY. MAS. SLD VERY DENSE ACCUMULATION OF ELONGATED MUDST & SLTST CLASTS & RIPPED UP LAYERS. 70% RIP-UP CLASTS, 30% MG. SS MATRIX. |
| 76 | 168.67 | 168.91 | 0.24 | 63 | | | SANDSTONE | MG. VPR. M. GY. MAS. SLD MASSIVE MG. SS WITH RARE MUDST RIP-UP CLASTS. |
| 77 | 168.91 | 170.84 | 1.93 | *65 | | | SANDSTONE | MG. VPR. M. GY. MAS. BRKN MG SS AT TOP OF INTERVAL FINING DOWN TO FG SS AT BASE. OCC MUDST RIP-UP CLASTS UP TO 2 CM IN DIA. CARBONACEOUS PLANT MATERIAL ON SOME BEDDING PLANES. ROUND BLACK SPECKS 1 MM IN DIA (NORM PELLETS?)) . YITRINITE SPECKS IN CLAY FRACTURE FILL. F-MG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 78 | 170.84 | 172.01 | 1.17 | | 63 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. WRMBU. BRKN SILTY FG SS WITH ABUNDANT MUD LAMINAE (SHARP CONTACTS) THROUGHOUT. ABUNDANT BIVALVE ESCAPE BURROWS 1 CM WIDE x 5 CM LONG. TOPS UP. |
| 78 | 172.01 | 172.66 | 0.65 | | 62 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. WRMBU. BRKN SILTY FG SS WITH MUD BANDS AND WORM BURROWS AS ABOVE. TYPICAL H/I INTERSEAM. "SILTY BANDED SANDSTONE". |
| 79 | 172.66 | 174.47 | 1.81 | | 61 | | SANDSTONE | SLTY. FG. VPR. M. GY. VTHNB. WRMBU. BRKN INTERBEDDED FG SS AND DARK MUD AS ABOVE. SILTY BANDED SS. BIVALVE ESCAPE STRUCTURES. CARBONACEOUS PLANT MATERIAL ON SOME MUD BEDDING PLANES. DARK BLACK SPEC KS 1 MM IN DIAMETER; WORM PELLETS? |
| 80 | 174.47 | 175.08 | 0.61 | *60 | | | SANDSTONE | SLTY. FG. VPR. M. GY. VTHNB. SLD SILTY BANDED SANDSTONE AS ABOVE. INTERBEDDED FG SS AND DARK MUDST. |
| 80 | 175.08 | 176.34 | 1.26 | | 50 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. BRKN SILTY BANDED SS AS ABOVE EXCEPT FOR THINNER BEDDING. BRECCIATED IN PLACES. ONE CALCAREOUS SLTST BED 3 CM WIDE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 81 | 176.34 | 177.72 | 1.38 | *37 | | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. WRMBU. BRKN INTERBEDDED FG SS AND MUD LAMINAE AS ABOVE. SILTY BANDED SS, BRECCIATED IN PLACES. CARBONACEOUS PLANT MATERIAL ON SOME BDG PLANES, HORIZ WRMBR SHOW TOPS UP. |
| 81 | 177.72 | 178.24 | 0.52 | | 42 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. BRKN SILTY BANDED SS AS ABOVE. BRECCIATED, HELD TOGETHER BY CLAY FRACTURE FILL. |
| 82 | 178.24 | 180.02 | 1.78 | *49 | | | SILTSTONE | SSY. VPR. DK. GY. VTHNB. WRMBU. VBRKN LESS SAND THAN ABOVE. ALL BEDS APPEAR TO FINE UP FROM VFG SAND TO DARK MUD. ABUNDANT HELMINTHOPSIS THROUGHOUT & OCCASIONAL BIVALVE ESCAPE STRUCTURES. TOPS UP. BRECCIATED CORE. |
| 82 | 180.02 | 180.73 | 0.71 | | 49 | | ROCK LOSS | |
| 83 | 180.73 | 181.08 | 0.35 | | 49 | | SILTSTONE | VPR. DK. GY. BIOTR. VBRKN BEDDING COMPLETELY DISRUPTED FROM BIOTURBATION. BRECCIATED CORE. |
| 83 | 181.08 | 181.28 | 0.20 | | 49 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83 | 181.28 | 182.39 | 1.11 | 48 | | SILTSTONE | VPR.DK.GY.VTHNB.VBRKN BEDS GRADING FROM VFG SS & SILT TO DARK MUDST AS ABOVE. ABUNDANT HELMINTHOPSIS. BAND OF CARBONATE RECRYSTALLIZATION "SNOWFLAKE ZONE". BRECCIATED CORE. |
| 83 | 182.39 | 182.83 | 0.44 | 48 | | ROCK LOSS | |
| 84 | 182.83 | 184.33 | 1.50 | *48 | | SILTSTONE | VPR.DK.GY.VTHNB.SLD BRECCIATED CORE HELD TOGETHER BY CLAY. FRACTURE FILL & GOUGE. ABUNDANT HELMINTHOPSIS. SLTST AS ABOVE. |
| 84 | 184.33 | 184.78 | 0.45 | 53 | | BRECCIA | DK.GY.VTHNB.SLD HIGHLY BRECCIATED VTHNB SLTST. HELD TOGETHER IN SHAPE OF WHOLE CORE BY CLAY. FRACTURE FILL & GOUGE. |
| 85 | 184.78 | 186.69 | 1.91 | *60 | | BRECCIA | DK.GY.VTHNB.BRKN HIGHLY BRECCIATED VTHNB SILTY MUDST. ABUNDANT HELMINTHOPSIS. LESS SILT & VFG SS THAN ABOVE. CORE HELD TOGETHER BY CLAY FRACTURE FILL & GOUGE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 85 | 186.69 | 186.99 | 0.30 | 65 | | ROCK LOSS | |
| 86 | 186.99 | 187.38 | 0.39 | 66 | | BRECCIA | DK.GY.SLD HIGHLY BRECCIATED MUDST AS ABOVE. VTHNB ? HELD TOGETHER BY CLAY & GOUGE. |
| 86 | 187.38 | 188.97 | 1.59 | *70 | | MUDSTONE | VPR.DK.GY.LAM.BRKN BRECCIATED THROUGHOUT BUT NOT QUITE AS INTENSELY AS ABOVE THEREFORE LITHOLOGY & BEDDING IS IDENTIFIABLE. MUCH FAINTER BEDDING (LESS SILT) THAN ABOVE. |
| 86 | 188.97 | 189.13 | 0.16 | 70 | | ROCK LOSS | |
| 87 | 189.13 | 190.42 | 1.29 | 70 | | MUDSTONE | VPR.DK.GY.VTHNB.BRKN VERY FAINT BEDDING. HELMINTHOPSIS PRESENT IN SILTIER FINING UP BANDS. BRECCIATED THROUGHOUT. |
| 87 | 190.42 | 191.12 | 0.70 | 70 | | MUDSTONE | VPR.DK.GY.MAS.BRKN PREDOMINANTLY MASSIVE WITH MINOR SILTY BANDS 3 CM WIDE. HELMINTHOPSIS. BRECCIATED THROUGHOUT. LESS SILT THAN ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------|
| 88 | 191.12 | 191.61 | 0.49 | 70 | | MUDSTONE | CARB. DK. GY. BRKN CONTORTED COAL AND QTZ STRINGERS. |
| 88 | 191.61 | 191.65 | 0.04 | 70 | | COAL | C-2. SLD |
| 88 | 191.65 | 191.71 | 0.06 | 70 | | MUDSTONE | CARB. DK. GY. SLD MINOR COAL STRINGERS. |
| 88 | 191.71 | 191.78 | 0.07 | 70 | | COAL | C-4. BRKN C-6 BANDS. |
| 88 | 191.78 | 192.11 | 0.33 | 70 | | MUDSTONE | CLYY. M-DK. GY. BRKN PARTIALLY SHEARED, LISTRIC SURFACES. |
| 88 | 192.11 | 192.53 | 0.42 | *70 06851 | | MUDSTONE | CARB. DK. GY. SLD COALY STRINGERS & LENSES. LOWER 16 CM'S AMPLED. |
| 88 | 192.53 | 192.58 | 0.05 | 70 06851 | | COAL | C-4. SLD |
| 88 | 192.58 | 192.62 | 0.04 | 70 06851 | | MUDSTONE | CLYY. DK. GY. SLD UNCONSOLIDATED. |
| 88 | 192.62 | 192.82 | 0.20 | 70 06852 G? | | COAL LOSS | |
| 88 | 192.82 | 192.96 | 0.14 | 70 06852 G? | | COAL | C-2. PWRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------|
| 88 | 192.96 | 193.01 | 0.05 | 70 06852 G? | | COAL | C-3. SLD |
| 88 | 193.01 | 193.29 | 0.28 | 70 06852 G? | | COAL | C-2. BRKN |
| 89 | 193.29 | 193.42 | 0.13 | 70 06852 G? | | COAL | C-4. BRKN ABUNDANT C-2 BANDS. |
| 89 | 193.42 | 193.87 | 0.45 | 70 06852 G? | | COAL | C-2. BRKN |
| 89 | 193.87 | 193.89 | 0.02 | 70 06852 G? | | COAL | C-6. SLD |
| 89 | 193.89 | 193.93 | 0.04 | 70 06852 G? | | COAL | C-3. SLD |
| 89 | 193.93 | 194.13 | 0.20 | 70 06853 G? | | MUDSTONE | CARB. DK. GY. BRKN MIXTURE OF CONTORTED COAL & MUDST, SHEA RED. |
| 89 | 194.13 | 194.34 | 0.21 | 70 06853 G? | | COAL | C-4. BRKN |
| 89 | 194.34 | 194.46 | 0.12 | 70 06853 G? | | COAL | C-6. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------|
| 89 | 194.46 | 194.51 | 0.05 | 70 06853 | G? | COAL | C-4.BRKN |
| 89 | 194.51 | 194.69 | 0.18 | 70 06853 | G? | MUDSTONE | CARB.DK.GY.SLD MIXTURE OF SHEARED, CONTORTED COAL & MU DST. |
| 89 | 194.69 | 194.87 | 0.18 | 70 06853 | G? | COAL | C-2.VBRKN |
| 89 | 194.87 | 194.89 | 0.02 | 70 06853 | G? | MUDSTONE | CARB.DK.GY.SLD |
| 89 | 194.89 | 194.99 | 0.10 | 70 06853 | G? | COAL | C-4.SLD C-2 BANDS WITHIN. |
| 89 | 194.99 | 195.08 | 0.09 | 70 06853 | G? | COAL | C-2.VBRKN |
| 90 | 195.08 | 195.26 | 0.18 | 70 06853 | G? | COAL | C-2.VBRKN |
| 90 | 195.26 | 195.40 | 0.14 | 70 06853 | G? | COAL | C-6.SLD BONE COAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 90 | 195.40 | 195.50 | 0.10 | 70 06853 | G? | COAL | C-3.VSHRD MIXED WITH MUD. |
| 90 | 195.50 | 196.40 | 0.90 | 70 06854 | G? | MUDSTONE | CARB.DK.GY.VSHRD HIGHLY SHEARED MIXTURE OF MUD AND COAL, LOCAL DENSITY VARIATION. |
| 90 | 196.40 | 196.78 | 0.38 | 70 06854 | G? | MUDSTONE | CARB.DK.GY.VSHRD HIGHLY SHEARED & CONTORTED MIXTURE OF C OAL & MUDST. LOCAL DENSITY VARIATIONS. |
| 91 | 196.78 | 197.06 | 0.28 | 70 06854 | G? | MUDSTONE | CARB.DK.GY.VSHRD CONTORTED & SHEARED. MIXTURE OF MUD & C OAL. |
| 91 | 197.06 | 197.27 | 0.21 | 70 06854 | G? | COAL LOSS | |
| 91 | 197.27 | 197.55 | 0.28 | 70 06854 | G? | COAL | C-3.VSHRD MIXTURE OF MUDST & COAL. |
| 91 | 197.55 | 197.66 | 0.11 | 70 06855 | | MUDSTONE | CARB.DK.GY.VSHRD CONTORTED & SHEARED, MIXTURE OF MUDST & COAL. |
| 91 | 197.66 | 198.93 | 1.27 | *70 06855 | | MUDSTONE | DK.GY.SLD BRECCIATED IN PLACES, CARB NEAR TOP, SI LTY LAMINATIONS NEAR BASE. UPPER 14 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 92 | 198.93 | 199.59 | 0.66 | 69 | | | SILTSTONE | DK. GY. VTHNB. BRKN MUDDY SLTST. VERY FAINT BEDDING. HELWIN THOPSIS THROUGHOUT. MINOR FG SAND WISPS AT TOP OF UNIT. |
| 92 | 199.59 | 200.80 | 1.21 | 68 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN PREDOMINANTLY HOMOGENEOUS & MASSIVE BUT WITH RARE FINE SLTY WISPS. LISTRIC SUR FACES. MINOR QTZ VEINING. SLICKENSIDES, SHEARED BUT INTACT. |
| 93 | 200.80 | 202.30 | 1.50 | *67 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN FAIRLY HOMOGENEOUS, MOSTLY MASSIVE SILT Y MUDST. ONE LENS OF DISSEMINATED PYRIT E. MODERATE QTZ VEINING. |
| 93 | 202.30 | 202.47 | 0.17 | 65 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN HOMOGENEOUS SILTY MUDST AS ABOVE. |
| 94 | 202.47 | 203.10 | 0.63 | 63 | | | MUDSTONE | DK. GY. MAS. BRKN ONE BAND 2 CM WIDE OF FG ANGULAR QTZ CL ASTS. |
| 94 | 203.10 | 203.42 | 0.32 | 62 | | | MUDSTONE | SSY. DK. GY. MAS. BRKN MILKY WAY ZONE. F-MG SAND SIZED ANGULAR QTZ CLASTS MIXED IN WITH DARK MUDST HO ST ROCK. GRADATIONAL UPPER CONTACT, SHA RP LOWER. QTZ REPLACED BIVALVE SHELLS 1 -2 CM IN DIAMETER. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87007

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 94 | 203.42 | 203.72 | 0.30 | 61 | | | MUDSTONE | DK. GY. MAS. BRKN DARK FAIRLY HOMOGENEOUS MUDST. BIVALVE SHELLS 1-2 CM ACROSS. |
| 94 | 203.72 | 204.21 | 0.49 | *60 | | | SILTSTONE | SSY. M-DK. GY. LAM INTERLAMINATED FG SS AND DARK GY SLTST. ABUNDANT PYRITE BLEBS & LENSES OVER A ZONE 8 CM WIDE. QTZ REPLACED BIVALVES 2 -3 CM ACROSS. BLACK SOUP AT END OF BOX. |
| 95 | 204.21 | 204.26 | 0.05 | 60 | | | MUDSTONE | CARB. BLK. PWRD CARB MUDST & C-2 CHUNKS MIXED TOGETHER. (PART OF "SOUP" AT END OF LAST BOX). |
| 95 | 204.26 | 204.53 | 0.27 | 60 | | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN VERY FINE PLANAR SLTY. LAMINAE THROUGHOU T. |
| 95 | 204.53 | 204.76 | 0.23 | 60 | | | SILTSTONE | SSY. DK. GY. VTHNB. VBRKN INTERBEDDED FG TO VFG SAND AND DK GY SL TST. LAYERING HAS GRADATIONAL CONTACTS WITH MINOR RIP-UP CLASTS IN THE SAND LA YERS. END OF HOLE. T.D. = 677' (DRILLER 'S MARK). 206.35M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

SEAM DETAIL

**COAL DIVISION
MOUNT KLAPPAN PROJECT**

TRUE THICKNESS

| | | | |
|------------------------------|----------------|------------------------------------|-----------------------|
| DATA SOURCE: KPN LR DDH87007 | SEAM : H/H LOW | TOTAL INTERVAL(M) : 91.32 - 101.29 | ELEVATION(M) : 1894.5 |
| GEOLOGIST : BARKER | SCALE: 1:40 | INTERVAL(M) : 96.19 - 99.14 | DRAWING NO. : |
| | | DATE : MAR 04/88 | |

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | |
|------------|--------------------|---------------|-----------------|------|--------|-----------|--------|---------------------|----------------|---------------------|------|------|----|------|----------------|--|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/Kg | | |
| | 96.19 | ↑ | | | | | | 1.93 / 1.00 2.93 | | | | | | | | | |
| | | (0.11) | | | | | ↑ ↓ | | | | | | | | | | |
| | 99.14 | ↓ | 1.56 | | 93.4 | 8845 | 35 | 0.00 / 1.47 1.67 | 1.18 | 88.44 | 9.29 | 1.09 | — | 1.15 | — | | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87007

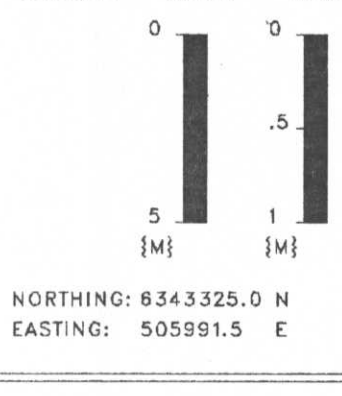
740

GEOLOGIST : BARKER

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

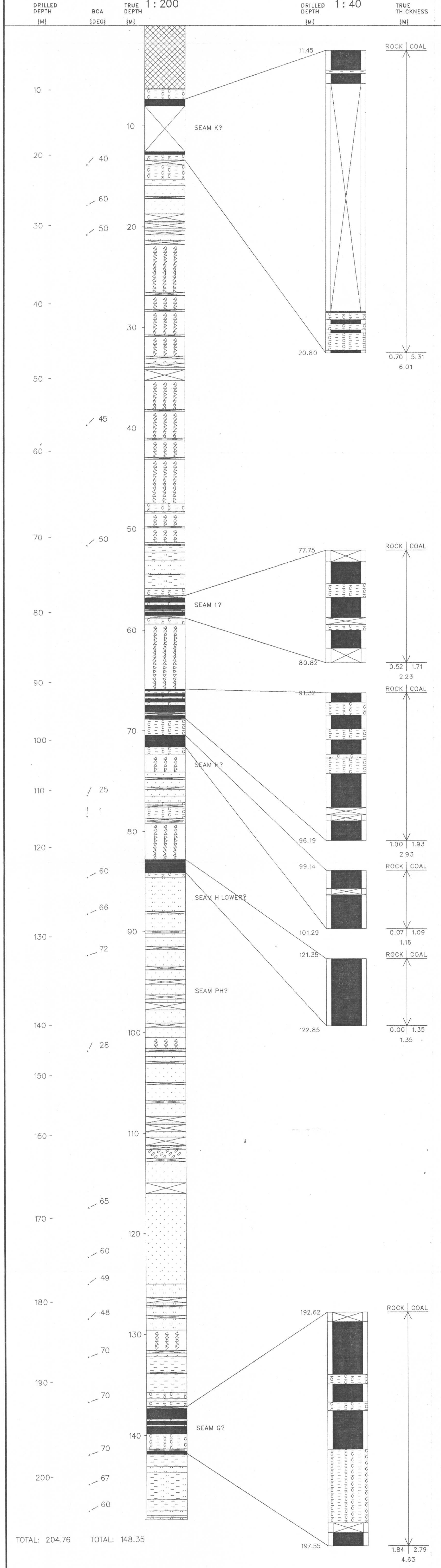


NORTHING: 6343325.0 N
 EASTING: 505991.5 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87007**

Province: BC Northing: 6343330.00 Lat: 571406

Log Date: 87-09-07

Zone: 9 Easting: 505992.00 Long: 1285403

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1694.4

Geologist: BARKER

Scale: 1 to 200.0

Comments:

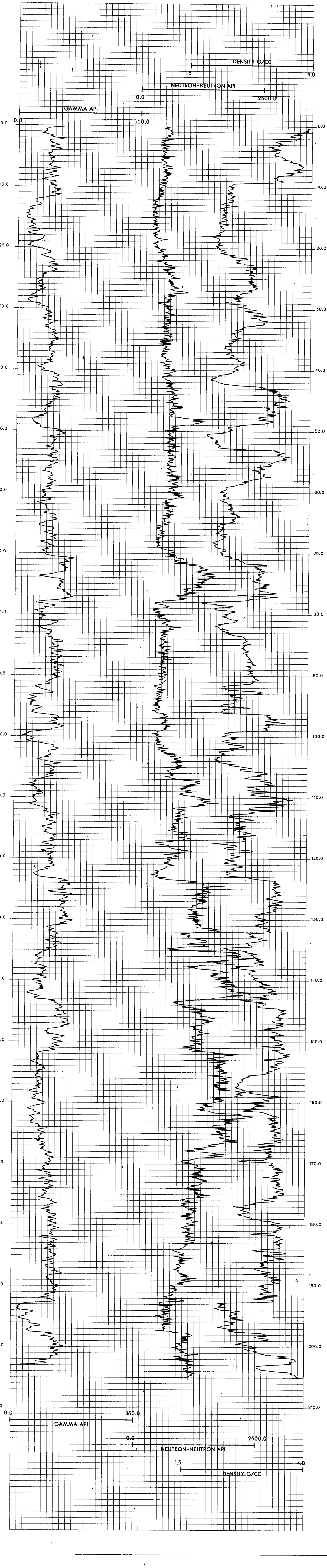
Depth Range: 0.0 to 210.0

1. LOGGED THROUGH RODS.
- 2.

True Thickness: NO

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87008

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87008

DATE - 03/01/88

- HISTORY -

START DATE - 09/04/87
END DATE - 09/08/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - PARRY

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - THREE SEAMS: 1 (OVTN), 1, 1 (OVTN).

- LOCATION -

PROVINCE - BC
ELEVATION - 1484.76

ZONE - 9
NORTHING - 6345453.72
EASTING - 507877.83

LICENCE/LEASE NUMBER -

LATITUDE - 571514
LONGITUDE - 1285210

- ORIENTATION -

LENGTH - 199.50
CORE SIZE - 0.0

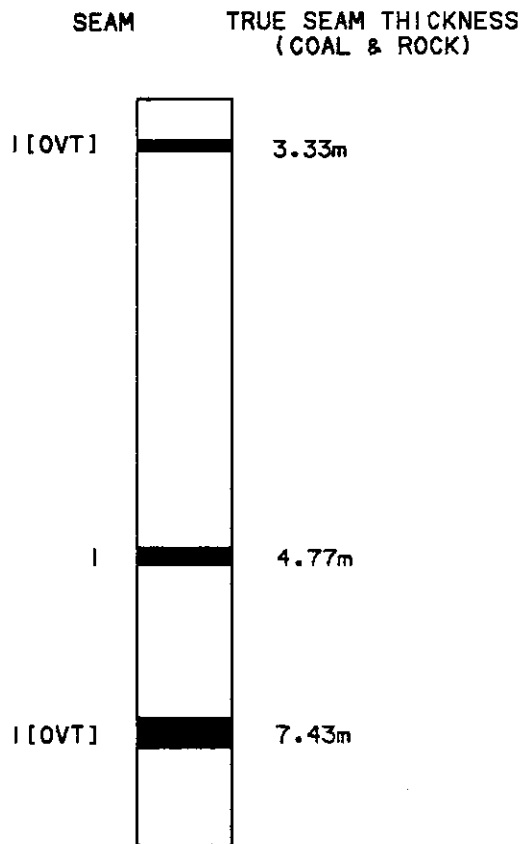
INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 3.05
AQUIFER DEPTHS (M) - 0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87008

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:[205057]880072012.LG



88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|------------------------------------------------------------------------------------|
| | 0.00 | 3.05 | 3.05 | 65 | | CASING | CASING DEPTH |
| 1 | 3.05 | 3.78 | 0.73 | *65 | 06823 | SANDSTONE | FG.LT-M.GY.THNB.VBRKN FE WEATHERING, SILTY BANDS NEAR BASE. C ORE TWIST-OFF. |
| 1 | 3.78 | 9.50 | 5.72 | 50 | 06823 | ROCK LOSS | |
| 1 | 9.50 | 9.77 | 0.27 | 36 | 06824 I OVT | COAL | C-3.PWRD SHEARED, POWDERED & MIXED WITH MUD, GRA DE HARD TO TELL, SOUPY. |
| 1 | 9.77 | 9.91 | 0.14 | 35 | 06824 I OVT | ROCK LOSS | |
| 1 | 9.91 | 9.93 | 0.02 | 34 | 06824 I OVT | MUDSTONE | CARB.DK.GY.SLD MINOR VITRAIN BANDS. |
| 1 | 9.93 | 10.50 | 0.57 | 33 | 06824 I OVT | COAL | C-3.PWRD SHEARED, POWDERED & MIXED WITH MUD, GRA DE HARD TO TELL, |
| 2 | 10.50 | 10.80 | 0.30 | 31 | 06825 I OVT | MUDSTONE | SLTY.M.GY.BRKN POORLY CONSOLIDATED. |
| 2 | 10.80 | 13.98 | 3.18 | 23 | 06825 I OVT | ROCK LOSS | |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-------------------------------------------------------------------------|
| 2 | 13.98 | 14.09 | 0.11 | 15 | 06825 I OVT | COAL | C-3.SHRD VERY SHEARED & SOFT. |
| 2 | 14.09 | 14.20 | 0.11 | 15 | 06825 I OVT | MUDSTONE | CARB.M-DK.GY.BRKN |
| 2 | 14.20 | 14.27 | 0.07 | 14 | 06825 I OVT | COAL | C-4.BRKN C-2 BANDS WITHIN. |
| 2 | 14.27 | 14.51 | 0.24 | 14 | 06825 I OVT | COAL | C-6.BRKN C-2 BANDS WITHIN. |
| 2 | 14.51 | 14.58 | 0.07 | 13 | 06825 I OVT | COAL | C-4.BRKN C-2 BANDS WITHIN. |
| 2 | 14.58 | 14.84 | 0.26 | 12 | 06825 I OVT | COAL | C-6.VBRKN C-2 BANDS WITHIN (LOW BCA <25 DEGREES). |
| 2 | 14.84 | 15.05 | 0.21 | 11 | 06825 I OVT | MUDSTONE | CARB.DK.GY.SLD MINOR VITRAIN BANDS WITHIN, ABUNDANT PL ANT FRAGS. |
| 2 | 15.05 | 15.23 | 0.18 | *10 | 06825 I OVT | COAL | C-4.SLD C-2 BANDS WITHIN. |
| 2 | 15.23 | 15.33 | 0.10 | 11 | 06825 I OVT | COAL | C-2.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-------------------------------------------|
| 3 | 15.33 | 16.06 | 0.73 | 13 | 06825 I OVT | COAL | C-2.BRKN MUDDY BANDS PARALLELING CORE. |
| 3 | 16.06 | 16.80 | 0.74 | 16 | 06825 I OVT | MUDSTONE | CARB.M-DK.GY.SLD POORLY CONSOLIDATED. |
| 3 | 16.80 | 16.90 | 0.10 | 18 | 06826 I OVT | COAL | C-2.BRKN |
| 3 | 16.90 | 17.19 | 0.29 | 19 | 06826 I OVT | COAL | C-3.YBRKN SHEARED & POWDERED. |
| 3 | 17.19 | 17.24 | 0.05 | 19 | 06826 I OVT | COAL | C-2.BRKN |
| 4 | 17.24 | 17.32 | 0.08 | 20 | 06826 I OVT | COAL | C-2.BRKN THIN MUD BANDS. |
| 4 | 17.32 | 17.58 | 0.26 | 20 | 06826 I OVT | COAL | C-2.BRKN |
| 4 | 17.58 | 17.76 | 0.18 | 21 | 06826 I OVT | COAL | C-3.YBRKN SHEARED & SOFT, WEATHERED. |
| 4 | 17.76 | 18.31 | 0.55 | 23 | 06826 I OVT | COAL | C-2.BRKN PARTIALLY SHEARED. |
| 4 | 18.31 | 18.33 | 0.02 | 24 | 06826 I OVT | COAL | C-6.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|------------------------------------------------------------------------------------------------------------|
| 4 | 18.33 | 18.35 | 0.02 | 25 | 06826 I OVT | MUDSTONE | CARB.DK.GY.SLD |
| 4 | 18.35 | 18.72 | 0.37 | 25 | 06826 I OVT | COAL | C-3.BRKN |
| 4 | 18.72 | 18.76 | 0.04 | 26 | 06826 I OVT | COAL LOSS | |
| 4 | 18.76 | 18.85 | 0.09 | 27 | 06827 | MUDSTONE | CARB.DK.GY.BRKN ABUNDANT COALY STRINGERS, MINOR QTZ CAR B VEINING. |
| 5 | 18.85 | 19.13 | 0.28 | 27 | | MUDSTONE | CARB.BLK.MAS.BRKN SOME QTZ VEINING. |
| 5 | 19.13 | 19.22 | 0.09 | 28 | | BENTONITE | TAN.MAS.SLD POORLY CONSOLIDATED. CONTAINS SOME MUDS T CHIPS. |
| 5 | 19.22 | 19.45 | 0.23 | 29 | | SILTSTONE | CARB.DK.GY.MAS.BRKN |
| 5 | 19.45 | 19.65 | 0.20 | *30 | | SILTSTONE | LT.GY.LAM.BRKN FOSSILIFEROUS (PLANT)-PTEROPHYLLUM RECT ANGULARE. CALCAREOUS. SMALL BLK VEINLET S. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 5 | 19.65 | 20.05 | 0.40 | 31 | | | SILTSTONE | M.GY.LAM.VBRKN |
| 5 | 20.05 | 20.75 | 0.70 | 31 | | | ROCK LOSS | |
| 5 | 20.75 | 20.97 | 0.22 | 32 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN NUMEROUS HAIRLINE QTZ FILLED VEINS. |
| 5 | 20.97 | 21.16 | 0.19 | 33 | | | SILTSTONE | LT-M.GY.LAM.SLD CALCAREOUS. |
| 6 | 21.16 | 21.61 | 0.45 | 33 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN |
| 6 | 21.61 | 23.31 | 1.70 | *35 | | | MUDSTONE | SLTY.M-DK.GY.LAM.BRKN SLTY LAMINATIONS. MUD BAND .13 M THICK NEAR END OF BOX. |
| 7 | 23.31 | 23.61 | 0.30 | 36 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN |
| 7 | 23.61 | 23.68 | 0.07 | 37 | | | SILTSTONE | M.GY.MAS.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------|
| 7 | 23.68 | 23.84 | 0.16 | 37 | | | MUDSTONE | SLTY.DK.GY.LAM.SLD |
| 7 | 23.84 | 24.11 | 0.27 | 37 | | | SILTSTONE | LT-M.GY.MAS.BRKN CALCAREOUS. |
| 7 | 24.11 | 24.72 | 0.61 | 38 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN |
| 7 | 24.72 | 25.29 | 0.57 | 38 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN SMALL BLACK PELLETS. |
| 8 | 25.29 | 25.53 | 0.24 | 39 | | | SILTSTONE | LT-M.GY.LAM.BRKN CALCAREOUS. THIN BLACK VEINLETS. |
| 8 | 25.53 | 26.99 | 1.46 | *40 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN BLACK PELLETS (<1 MM) 1.0 M FROM CALCAR EQU.SILTST (ABOVE). |
| 8 | 26.99 | 27.08 | 0.09 | 41 | | | SILTSTONE | LT-M.GY.MAS.SLD SMALL BLACK PELLETS. MINOR SILTST BANDS. |
| 8 | 27.08 | 27.28 | 0.20 | 41 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SOME LAM. REGIONS. SMALL BLACK PELLETS. |
| 9 | 27.28 | 27.91 | 0.63 | 41 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN BLK.PELLETS .47 M FROM START OF BOX. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 9 | 27.91 | 29.16 | 1.25 | *42 | | SILTSTONE | CLYY.M.GY.LAM.VBRKN |
| 9 | 29.16 | 29.46 | 0.30 | 46 | | ROCK LOSS | |
| 10 | 29.46 | 29.71 | 0.25 | 47 | | SILTSTONE | CLYY.M.GY.LAM.VBRKN QTZ YEIN .04 M THICK AT BASE OF UNIT. (CONTAINS BRECCIATED SLTST CHIPS). |
| 10 | 29.71 | 29.89 | 0.18 | 48 | | MUDSTONE | DK.GY.LAM.BRKN |
| 10 | 29.89 | 30.61 | 0.72 | *50 | | SILTSTONE | CLYY.M-DK.GY.LAM.BRKN CONTAINS SLTST LAMS AND SOME MUD LAMS. |
| 10 | 30.61 | 30.76 | 0.15 | 60 | | SILTSTONE | CLYY.M-DK.GY.VBRKN SOME MUD LAMS. |
| 10 | 30.76 | 30.96 | 0.20 | 64 | | ROCK LOSS | |
| 10 | 30.96 | 31.40 | 0.44 | *72 | | SILTSTONE | CLYY.M-DK.GY.LAM.BRKN CONTAINS SOME SLTST LAMS & MUD LAMS. |
| 11 | 31.40 | 31.50 | 0.10 | 70 | | SILTSTONE | SSY.VFG.VPR.LT.GY.LAM.SLD |
| 11 | 31.50 | 31.84 | 0.34 | 68 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------|
| 11 | 31.84 | 32.12 | 0.28 | 66 | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN |
| 11 | 32.12 | 32.39 | 0.27 | 64 | | SILTSTONE | CLYY.DK.GY.MAS.BRKN MINOR SLTST LAMS. |
| 11 | 32.39 | 32.64 | 0.25 | 62 | | SILTSTONE | CLYY.DK.GY.VBRKN |
| 11 | 32.64 | 33.20 | 0.56 | 59 | | ROCK LOSS | |
| 11 | 33.20 | 33.61 | 0.41 | *55 | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN VERY MELL LAM. MINOR MUD LAMS. |
| 12 | 33.61 | 34.01 | 0.40 | 54 | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN SAME AS ABOVE. |
| 12 | 34.01 | 34.51 | 0.50 | 53 | | SILTSTONE | SSY.LT-M.GY.LAM.VBRKN SAME AS ABOVE. |
| 12 | 34.51 | 34.91 | 0.40 | 52 | | ROCK LOSS | |
| 12 | 34.91 | 35.13 | 0.22 | 52 | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN SAME AS ABOVE. |
| 12 | 35.13 | 35.23 | 0.10 | 51 | | SILTSTONE | M.GY.MAS.SLD SAME AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------|
| 12 | 35.23 | 35.37 | 0.14 | 51 | | | SILTSTONE | SSY, LT-M, GY, LAM, VBRKN SAME AS ABOVE, PROBABLE CORE LOSS, CORE TWIST-OFF. |
| 12 | 35.37 | 35.68 | 0.31 | 51 | | | ROCK LOSS | |
| 12 | 35.68 | 35.85 | 0.17 | *50 | | | SANDSTONE | SLTY, VFG, PR, LT-M, GY, LAM, SLD |
| 13 | 35.85 | 36.01 | 0.16 | *50 | | | SANDSTONE | SLTY, VFG, PR, LT-M, GY, LAM, BRKN |
| 13 | 36.01 | 36.23 | 0.22 | 51 | | | SANDSTONE | VFG, MOD, LT, GY, VTHNR, SLD SLTST RIP-UP CLAST (.5 CH). |
| 13 | 36.23 | 36.59 | 0.36 | 53 | | | SANDSTONE | SLTY, VFG, PR, LT-M, GY, LAM, BRKN |
| 13 | 36.59 | 36.71 | 0.12 | 54 | | | SILTSTONE | M, GY, LAM, BRKN |
| 13 | 36.71 | 36.91 | 0.20 | 55 | | | SILTSTONE | SSY, LT-M, GY, LAM, SSD, BRKN LOAD CAST - OVERTURNED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 13 | 36.91 | 37.41 | 0.50 | 57 | | | SILTSTONE | M, GY, LAM, VBRKN TWIST-OFF, RUBBLE, NUMEROUS HAIRLINE QT Z FILLED FRACTURES. |
| 13 | 37.41 | 37.71 | 0.30 | 59 | | | ROCK LOSS | |
| 14 | 37.71 | 37.90 | 0.19 | 60 | | | SILTSTONE | M, GY, LAM, BRKN |
| 14 | 37.90 | 38.43 | 0.53 | 62 | | | SILTSTONE | SSY, M, GY, LAM, BRKN |
| 14 | 38.43 | 38.83 | 0.40 | *65 | | | SILTSTONE | SSY, M, GY, LAM, SSD, VBRKN LOAD CAST - OVERTURNED. |
| 14 | 38.83 | 39.14 | 0.31 | 64 | | | ROCK LOSS | |
| 14 | 39.14 | 39.44 | 0.30 | 64 | | | SILTSTONE | M-DK, GY, VBRKN TWIST-OFF, SOME SMALL BLACK PELLETS. |
| 14 | 39.44 | 39.54 | 0.10 | 63 | | | ROCK LOSS | |
| 14 | 39.54 | 39.59 | 0.05 | 63 | | | SILTSTONE | SSY, M, GY, LAM, SSD, SLD SOME SLTST BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 15 | 39.59 | 39.97 | 0.38 | 63 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN LOAD CAST - OVERTURNED, POSSIBLE TWIST-OFF, MINOR SLTST BAND. |
| 15 | 39.97 | 40.17 | 0.20 | 62 | | | ROCK LOSS | |
| 15 | 40.17 | 40.27 | 0.10 | 62 | | | SILTSTONE | M.GY.VBRKN RUBBLED. |
| 15 | 40.27 | 40.35 | 0.08 | 62 | | | SILTSTONE | FG.WEL.S-P.MAS.VBRKN RUBBLED, CORE LOSS? |
| 15 | 40.35 | 40.65 | 0.30 | 61 | | | ROCK LOSS | |
| 15 | 40.65 | 41.00 | 0.35 | 61 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN |
| 15 | 41.00 | 41.60 | 0.60 | *60 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN QTZ VEINING (-20 DEGREES TO C.A.). |
| 16 | 41.60 | 42.37 | 0.77 | *60 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN LOAD CASTS (OVERTURNED), VERY THIN SLTST BANDS. |
| 16 | 42.37 | 43.03 | 0.66 | 58 | | | SILTSTONE | SSY.M.GY.LAM.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 16 | 43.03 | 43.23 | 0.20 | 57 | | | SILTSTONE | M.GY.LAM.BRKN |
| 17 | 43.23 | 43.41 | 0.18 | 57 | | | SILTSTONE | M-DK.GY.LAM.BRKN QTZ VEIN (.04 CM THICK). |
| 17 | 43.41 | 45.11 | 1.70 | *55 | | | SANDSTONE | FG.WEL.S-P.MAS.BRKN QTZ VEINS -AT 30-45 DEGREES TO C.A. |
| 17 | 45.11 | 45.23 | 0.12 | 52 | | | SANDSTONE | FG.WEL.S-P.MAS.SLD AS ABOVE. |
| 18 | 45.23 | 46.93 | 1.70 | 49 | | | SANDSTONE | FG.WEL.S-P.MAS.BRKN AS ABOVE, QTZ VEINS THICKER (0.5-1.0 CM). |
| 18 | 46.93 | 47.23 | 0.30 | *45 | | | SILTSTONE | M-DK.GY.MAS.BRKN SOME LAM BEDDING, ABUND BLK PELLETS (LO OK MORE LIKE MICRO HELMINTHOPSIS). |
| 19 | 47.23 | 48.38 | 1.15 | 47 | | | SANDSTONE | FG.MOD.S-P.GY.MAS.BRKN SOME VBRKN REGIONS, SOME PORTIONS ARE M G, QTZ VEINING. |
| 19 | 48.38 | 48.42 | 0.04 | 49 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------|
| 19 | 48.42 | 49.12 | 0.70 | 50 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN AS ABOVE. |
| 20 | 49.12 | 50.53 | 1.41 | 53 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN AS ABOVE. LARGE QTZ VEIN .37 M FROM TOP OF BOX (.04 M THICK). |
| 20 | 50.53 | 50.78 | 0.25 | *55 | | | SANDSTONE | VFG.MOD.LT-M.GY.MAS.SLD BECOMES COARSER NEAR BASE, SLIGHTLY SILTY. SOME QTZ VEINING. |
| 20 | 50.78 | 50.93 | 0.15 | 54 | | | SILTSTONE | M.GY.MAS.VBRKN OVERALL COARSENING UP. (OVERTURNED) SEQUENCE. FG SS - VFG SS - SLTST. |
| 20 | 50.93 | 50.97 | 0.04 | 53 | | | ROCK LOSS | |
| 20 | 50.97 | 51.00 | 0.03 | 53 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN |
| 20 | 51.00 | 53.70 | 2.70 | 44 | | | SANDSTONE | FG.PR.LY.GY.MAS.BRKN LOWER FG. |
| 21 | 53.70 | 53.90 | 0.20 | 35 | | | SANDSTONE | FG.PR.LY.GY.MAS LOWER FG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 21 | 53.90 | 55.20 | 1.30 | *30 | | | SILTSTONE | SSY.M.GY.LAM.BRKN BCA BECOMES 22 DEGREES NEAR END OF BOX. NEAR AXIS OR FOLD? PROBABLY STILL OVERTURNED. |
| 22 | 55.20 | 55.48 | 0.28 | 43 | | | SILTSTONE | LT-M.GY.THNB.SSD.BRKN |
| 22 | 55.48 | 56.82 | 1.34 | 56 | | | SILTSTONE | LY.GY.VBRKN RUBBLE, BRECCIATED, SOME POWDERED REGIONS. SOME MUDDY REGIONS. THIN BLACK VEINLETS. |
| 22 | 56.82 | 56.89 | 0.07 | 68 | | | ROCK LOSS | |
| 22 | 56.89 | 57.11 | 0.22 | *70 | | | SILTSTONE | LY.GY.LAM.VBRKN RUBBLE, SOME MUDDY REGIONS, THIN BLACK VEINLETS. |
| 23 | 57.11 | 57.28 | 0.17 | 69 | | | SILTSTONE | LT.GY.VTHNB.BRKN QTZ VEIN (2 CM THICK). SMALL BLACK VEINLETS, SMALL PELLETS. |
| 23 | 57.28 | 57.91 | 0.63 | 68 | | | SANDSTONE | FG.MEL.S-P.MAS.BRKN QTZ FILLED BRECCIA ZONE (7 CM THICK). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 57.91 | 58.70 | 0.79 | *65 | | | SILTSTONE | LT. GY. LAM. BRKN RUBBLE IN ONE PLACE. VFG SLTST BLEBS IN FINER SLTST. LARGE GASTROPODS (1.5 CM IN DIAMETER). BLK HAIRLINE FRACTURES. |
| 23 | 58.70 | 58.90 | 0.20 | 53 | | | SANDSTONE | SLTY. VFG. PR. LT. GY. LAM. SLD CONTAINS SLTST. BLEBS AND STREAKS. |
| 24 | 58.90 | 59.10 | 0.20 | *48 | | | SANDSTONE | SLTY. VFG. PR. LT. GY. LAM. SSD. SLD LOAD. CASTS (RIGHT WAY UP). |
| 24 | 59.10 | 59.25 | 0.15 | 52 | | | SILTSTONE | SSY. M. GY. VTHNB. VBRKN |
| 24 | 59.25 | 59.33 | 0.08 | 54 | | | ROCK LOSS | |
| 24 | 59.33 | 59.79 | 0.46 | 59 | | | SANDSTONE | FG. WEL. S-P. MAS. BRKN RUBBLED AT 56.39. |
| 24 | 59.79 | 59.95 | 0.16 | 66 | | | ROCK LOSS | |
| 24 | 59.95 | 60.70 | 0.75 | *75 | | | SANDSTONE | SSY. LT-M. GY. LAM. BRKN INTLAM & VERY THINLY BEDDED SLTST & VFG SS. |
| 25 | 60.70 | 60.85 | 0.15 | 74 | | | SILTSTONE | SSY. M. GY. LAM. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 25 | 60.85 | 61.45 | 0.60 | 72 | | | SILTSTONE | SSY. M. GY. LAM. VBRKN INTLAM VFG SS & SLTST. RUBBLED IN PLACE S. |
| 25 | 61.45 | 61.65 | 0.20 | 71 | | | ROCK LOSS | |
| 25 | 61.65 | 62.07 | 0.42 | *70 | | | SANDSTONE | SLTY. FG. MOD. S-P. VTHNB. BRKN MINOR SLTST WISPS, HIGHLY FRACTURED (HA IR. LINE). |
| 25 | 62.07 | 62.37 | 0.30 | 65 | | | MUDSTONE | SLTY. M. GY. LAM. BRKN COASTERS. SLTY. LAMINATED. MUD. |
| 26 | 62.37 | 62.77 | 0.40 | *60 | | | MUDSTONE | SLTY. M. GY. LAM. VBRKN COASTERS. VERY CRUSHED IN PLACES. |
| 26 | 62.77 | 63.39 | 0.62 | 57 | | | ROCK LOSS | |
| 26 | 63.39 | 64.09 | 0.70 | 54 | | | MUDSTONE | SLTY. M. GY. LAM. BRKN COASTERS. |
| 26 | 64.09 | 64.37 | 0.28 | 51 | | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN COASTERS. |
| 26 | 64.37 | 64.44 | 0.07 | 50 | | | ROCK LOSS | |
| 27 | 64.44 | 64.64 | 0.20 | 49 | | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN COASTERS, CRUSHED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 27 | 64.64 | 64.70 | 0.06 | 49 | | | ROCK LOSS | |
| 27 | 64.70 | 65.15 | 0.45 | 47 | | | MUDSTONE | SLTY.DK.GY.LAM.VBRKN COASTERS, RUBBLED. |
| 27 | 65.15 | 65.48 | 0.33 | *45 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN COASTERS. |
| 27 | 65.48 | 65.98 | 0.50 | 52 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN COASTERS. |
| 28 | 65.98 | 66.42 | 0.44 | *60 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN COASTERS. MAJORITY OF COASTERS IS A SILTY MUDST. PORTIONS NEAR THE TOP ARE SILTIER THAN THE BOTTOM. |
| 28 | 66.42 | 66.92 | 0.50 | *65 | | | MUDSTONE | CARB.BLK.MAS.BRKN |
| 28 | 66.92 | 67.33 | 0.41 | 62 | | | MUDSTONE | CARB.BLK.MAS.BRKN CONTAINS COAL STRINGERS, VERY CARB. |
| 29 | 67.33 | 68.54 | 1.21 | *58 | | | MUDSTONE | CARB.BLK.MAS.BRKN AS ABOVE. |
| 29 | 68.54 | 69.09 | 0.55 | 59 | | | SILTSTONE | CLYY.LT-M.GY.MAS.BIOTR.SLD CONTAINS BLK PELLETS & VEINLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 69.09 | 69.43 | 0.34 | 59 | | | SANDSTONE | SLTY.VFG.MOD.LT.GY.MAS.BIOTR.BRKN MASSIVE WITH SLTST LAMS, POSSIBLE TWIST-OFF. |
| 29 | 69.43 | 69.45 | 0.02 | 59 | | | ROCK LOSS | |
| 30 | 69.45 | 69.49 | 0.04 | 59 | | | SANDSTONE | SLTY.VFG.MOD.LT.GY.MAS.BIOTR.VBRKN |
| 30 | 69.49 | 71.42 | 1.93 | *60 | | | SANDSTONE | SLTY.VFG.MOD.LT.GY.VTHNB.SSD.BRKN LARGE QTZ FILLED BRECCIA ZONE AT 70.49 (.13 M THK). TALC FILLED FRACTURE, POSSIBLE WORM BURROW (RIGHT WAY UP). LOAD C ASTS CONTRADICT WHAT SHOULD BE EXPECTED (OVERTURNED). |
| 30 | 71.42 | 71.55 | 0.13 | 58 | | | SANDSTONE | FG.MEL.S-P.MAS.BRKN |
| 31 | 71.55 | 72.52 | 0.97 | 56 | | | SANDSTONE | SLTY.FG.MOD.MAS SLIGHTLY SILTY NEAR 72.24. FG-VFG SS. L OAD CAST (RIGHT WAY UP). SOME THIN BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 72.52 | 72.63 | 0.11 | | 55 | | SANDSTONE | FG.MEL.MAS.SLD |
| 31 | 72.63 | 73.66 | 1.03 | | 54 | | SANDSTONE | SLTY.VFG.MOD.VTHNB.BRKN LAM-THIN INTERBEDS OF SS & SLTST. |
| 32 | 73.66 | 74.25 | 0.59 | | *52 | | SANDSTONE | SLTY.VFG.PR.VTHNB.XBDG.BRKN SMALL BLACK PELLETS, QTZ FILLED VEIN (.1 CM) PARALLEL TO BEDDING. SOME SSD. |
| 32 | 74.25 | 75.35 | 1.10 | | *42 | | SANDSTONE | FG.MEL.S-P.WH.MAS.BRKN OCCASIONAL SLTST LAM. QTZ VEINS (.07 M THICK & .02 M THICK). QTZ VEINING, SS C CONTAINS SOFT GRAINS - CLAY. |
| 32 | 75.35 | 75.53 | 0.18 | | 46 | | SANDSTONE | FG.MEL.S-P.WH.MAS.SLD CLAY GRAINS (BIEGE). |
| 33 | 75.53 | 77.45 | 1.92 | | 52 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN 2 LARGE QTZ VEINS (.05 & .07 M), MINOR LAMS. CLAY GRAINS. |
| 34 | 77.45 | 78.35 | 0.90 | | *60 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN CONTAINS CLAY GRAINS. MINOR QTZ VEINING |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------|
| 34 | 78.35 | 79.29 | 0.94 | | 64 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN AS ABOVE. |
| 35 | 79.29 | 81.29 | 2.00 | | *70 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN QTZ VEIN (0.08M THICK). SS CONTAINS CLAY GRAINS. |
| 36 | 81.29 | 81.45 | 0.16 | | 67 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN CLAY GRAINS. |
| 36 | 81.45 | 83.00 | 1.55 | | *65 | | SANDSTONE | MG.MEL.S-P.MAS.BRKN AS ABOVE, 0.5 CM QTZ VEIN AT 40 DEGREES TO C.A. |
| 37 | 83.00 | 84.24 | 1.24 | | *55 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN CLAY FRAGS. QTZ VEIN .04 M THICK. |
| 37 | 84.24 | 84.66 | 0.42 | | 61 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN CLAY FRAGS. QTZ VEIN 2 CM THICK. |
| 38 | 84.66 | 86.66 | 2.00 | | *70 | | SANDSTONE | MG.MEL.S-P.MAS.BRKN CLOSE TO COARSE GRAIN. AS ABOVE. |
| 39 | 86.66 | 87.98 | 1.32 | | *65 | | SANDSTONE | MG.MEL.S-P.WH.MAS.BRKN CLAY FRAGS. |
| 39 | 87.98 | 88.67 | 0.69 | | 65 | | SANDSTONE | MG.MEL.S-P.MAS AS ABOVE, QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------|
| 40 | 88.67 | 90.24 | 1.57 | *65 | | SANDSTONE | MG.WEL.S-P.WH.MAS CLAY FRAGS. |
| 41 | 90.24 | 90.74 | 0.50 | 62 | | SANDSTONE | MG.WEL.S-P.MAS AS ABOVE. |
| 41 | 90.74 | 92.24 | 1.50 | *60 | | SANDSTONE | MG.WEL.S-P.GY.MAS AS ABOVE. FROM COASTERS TO BOX 42, FINI NG UP. |
| 42 | 92.24 | 92.31 | 0.07 | 62 | | SANDSTONE | FG.WEL.S-P.MAS.SLD AS ABOVE, BECOMING FINER GRAINED. |
| 42 | 92.31 | 93.83 | 1.52 | *65 | | SANDSTONE | FG.WEL.S-P.MAS.BRKN AS ABOVE. |
| 42 | 93.83 | 94.17 | 0.34 | 62 | | SANDSTONE | FG.WEL.S-P.MAS.BRKN AS ABOVE. |
| 43 | 94.17 | 94.79 | 0.62 | 60 | | SANDSTONE | FG.WEL.S-P.MAS.BRKN BECOMING SILTY. |
| 43 | 94.79 | 95.05 | 0.26 | 59 | | SILTSTONE | CLYY.M.GY.MAS.BRKN |
| 43 | 95.05 | 95.93 | 0.88 | *57 | | SILTSTONE | SSY.VFG.PR.LT-M.GY.THNB.SSD.BRKN LOAD CAST (RIGHT WAY UP). INTERBEDDED S LTST & SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 44 | 95.93 | 96.23 | 0.30 | 56 | | SILTSTONE | SSY.LT-M.GY.LAM.SLD INTLAM SS & SLTST SHOWING A COARSENING UPWARD TREND OVER 3/4 CM. SMALL BLACK P ELLETS. |
| 44 | 96.23 | 96.53 | 0.30 | 56 | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.LAM.BRKN INTLAM SS & SLTST. SANDIER THAN ABOVE. |
| 44 | 96.53 | 96.57 | 0.04 | 56 | | SILTSTONE | M.GY.MAS.BRKN |
| 44 | 96.57 | 96.68 | 0.11 | 56 | | SILTSTONE | M.GY.MAS.BRKN |
| 44 | 96.68 | 97.98 | 1.30 | *55 | | SANDSTONE | SLTY.VFG.LT.GY.LAM.SSD.BRKN LOAD CASTS (RIGHT WAY UP). HRMBUR (RIGH T WAY UP). INTLAM SS & SLTST. SOME THIN BEDS, BLACK PELLETS. |
| 45 | 97.98 | 98.40 | 0.42 | 56 | | SANDSTONE | SLTY.VFG.PR.LT.GY.LAM.XBDG.SLD XBDG & LOAD CASTS (RIGHT WAY UP). BLACK PELLETS. |
| 45 | 98.40 | 98.57 | 0.17 | 56 | | SILTSTONE | M.GY.MAS.SLD |
| 45 | 98.57 | 98.75 | 0.18 | 56 | | SANDSTONE | SLTY.VFG.LAM.SLD INTLAM SS & SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 98.75 | 98.87 | 0.12 | 57 | | SILTSTONE | LT.GY.MAS.SLD |
| 45 | 98.87 | 99.53 | 0.66 | *57 | | SANDSTONE | SLTY.VFG.LT.GY.LAM.XBDG.SLD INTLAM SS & SLTST, COARSENING UP OVER 2 -4 CM. |
| 45 | 99.53 | 99.96 | 0.43 | 56 | | SANDSTONE | SLTY.VFG.LT.GY.LAM.SSD.SLD LOAD CAST (RIGHT WAY UP). RIPMK & BIOTR R. INTLAM SS & SLTST, CLOSE TO 50/50 SS TO SLTST. |
| 46 | 99.96 | 101.79 | 1.83 | *55 | | SILTSTONE | SSY.M.GY.MAS.SSD.BRKN BLK PELLETS, BIVALVE ESCAPE STRUCTURE (RIGHT WAY UP). LOAD CASTS (RIGHT WAY UP). MASSIVE WITH SS LAMS. |
| 47 | 101.79 | 102.57 | 0.78 | 53 | | SILTSTONE | SSY.M.GY.MAS.BRKN BLACK PELLETS, SS LAMS. |
| 47 | 102.57 | 102.98 | 0.41 | *52 | | SILTSTONE | SSY.LT-M.GY.LAM.XBDG.BRKN INTERLAM SS & SLTST, BLK PELLETS, SS BA ND 1/2 WAY DOWN UNIT. |
| 47 | 102.98 | 103.46 | 0.48 | 51 | | SANDSTONE | SLTY.LT.GY.LAM.SSD.SLD INTERLAM SS & SLTST, BAND OF HIGHLY CON CENTRATED BLK PELLETS (5 CM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------|
| 47 | 103.46 | 103.63 | 0.17 | 51 | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN INTERLAM SS & SLTST. |
| 48 | 103.63 | 105.39 | 1.76 | *50 | | SILTSTONE | SSY.M.GY.LAM.BRKN SS LAMS, BLACK PELLETS. |
| 48 | 105.39 | 105.49 | 0.10 | 52 | | SILTSTONE | SSY.M.GY.LAM.BRKN SS LAMS. |
| 49 | 105.49 | 105.98 | 0.49 | 53 | | SILTSTONE | M.GY.LAM.HRMBU.BRKN MINOR SS LAMS. |
| 49 | 105.98 | 106.27 | 0.29 | 53 | | MUDSTONE | DK.GY.MAS.BRKN 2 QTZ VEINS PARALLEL TO BEDDING. |
| 49 | 106.27 | 107.37 | 1.10 | *55 | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN LOAD CAST (RIGHT WAY UP). UPPER PART IS MASSIVE. |
| 50 | 107.37 | 107.83 | 0.46 | 49 | | SILTSTONE | SSY.M.GY.LAM.SLD SOME SS LAMS. |
| 50 | 107.83 | 108.51 | 0.68 | 45 | | SILTSTONE | M.GY.LAM.BRKN COARSENING UP OVER 1 CM INTERVALS. |
| 50 | 108.51 | 108.85 | 0.34 | 42 | | SILTSTONE | M.GY.MAS.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 50 | 108.85 | 108.97 | 0.12 | *40 | | | SILTSTONE | SSY.M.GY.LAM.SLD |
| 50 | 108.97 | 109.20 | 0.23 | 41 | | | SILTSTONE | M.GY.MAS.SLD SOME SAND CLASTS & BLEBS. |
| 50 | 109.20 | 109.45 | 0.25 | 43 | | | SILTSTONE | SSY.M.GY.LAM.BRKN |
| 51 | 109.45 | 110.25 | 0.80 | 47 | | | SILTSTONE | M.GY.LAM.BRKN |
| 51 | 110.25 | 110.82 | 0.57 | 52 | | | MUDSTONE | SLTY.M.GY.MAS.BRKN |
| 51 | 110.82 | 110.86 | 0.04 | 54 | | | MUDSTONE | SLTY.M.GY.MAS.SLD |
| 51 | 110.86 | 111.09 | 0.23 | *55 | | | SILTSTONE | LT.GY.MAS.SLD CALCAREOUS. BLK PELLETS NUMEROUS. |
| 51 | 111.09 | 111.26 | 0.17 | 54 | | | SILTSTONE | M.GY.LAM.SLD |
| 52 | 111.26 | 112.90 | 1.64 | *52 | | | SILTSTONE | M.GY.MAS.SSD.BRKN BLK PELLETS MIDWAY. LOAD CAST (RIGHT WAY UP). LAM REGIONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 52 | 112.90 | 113.00 | 0.10 | 43 | | | SILTSTONE | M.GY.MAS.BRKN BLACK PELLETS. |
| 53 | 113.00 | 114.35 | 1.35 | 36 | | | SILTSTONE | CLYY.M.GY.MAS.SSD.BRKN BLK PELLETS, LAM REGIONS, LOAD CAST (RIGHT WAY UP). |
| 53 | 114.35 | 114.52 | 0.17 | *28 | | | MUDSTONE | M.GY.MAS.VBRKN BRECCIATED. |
| 53 | 114.52 | 114.62 | 0.10 | 31 | | | ROCK LOSS | |
| 53 | 114.62 | 114.82 | 0.20 | 34 | | | SILTSTONE | M.GY.VBRKN |
| 54 | 114.82 | 116.71 | 1.89 | *55 | | | MUDSTONE | SLTY.M.GY.MAS.BRKN LAM REGIONS. |
| 55 | 116.71 | 118.23 | 1.52 | *40 | | | MUDSTONE | SLTY.M.GY.MAS.SSD.BRKN LOAD CAST (RIGHT WAY UP). |
| 55 | 118.23 | 118.39 | 0.16 | 40 | | | MUDSTONE | M.GY.MAS.BRKN |
| 56 | 118.39 | 119.28 | 0.89 | 41 | | | MUDSTONE | CARB.M-DK.GY.BRKN ABUNDANT PLANT FRAGS & COALY-CARB STRINGS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------|
| 56 | 119.28 | 119.47 | 0.19 | 41 05982 | | BENTONITE | LT. GY. SLD POORLY CONSOLIDATED, CLAYEY. |
| 56 | 119.47 | 119.71 | 0.24 | 41 06828 | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT COALY-CARB STRINGERS & PLANT F RAGS. |
| 56 | 119.71 | 119.87 | 0.16 | 41 06829 I | | COAL | C-6. SLD ABUNDANT VITRAIN STRINGERS & CARB VEINL ETS. |
| 56 | 119.87 | 120.04 | 0.17 | 41 06829 I | | COAL | C-3. BRKN MINOR THIN MUDDY BANDS. |
| 56 | 120.04 | 120.08 | 0.04 | 41 06829 I | | MUDSTONE | CARB. DK. GY. SLD |
| 56 | 120.08 | 120.24 | 0.16 | 41 06829 I | | ROCK LOSS | |
| 56 | 120.24 | 120.41 | 0.17 | 41 06829 I | | COAL | C-2. VBRKN PARTIALLY POWDERED AND SOFT. |
| 57 | 120.41 | 121.64 | 1.23 | 42 06829 I | | COAL | C-2. SHRD SHEARED, POWDERED & BROKEN, LOCALLY APP ROACHES. C-3. |
| 57 | 121.64 | 121.66 | 0.02 | 42 06829 I | | MUDSTONE | CARB. DK. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------|
| 57 | 121.66 | 121.75 | 0.09 | 42 06829 I | | COAL | C-3. BRKN |
| 57 | 121.75 | 121.86 | 0.11 | 42 06829 I | | COAL | C-4. BRKN |
| 57 | 121.86 | 122.01 | 0.15 | 42 06829 I | | ROCK LOSS | |
| 57 | 122.01 | 122.16 | 0.15 | 42 06829 I | | COAL | C-3. BRKN |
| 57 | 122.16 | 122.24 | 0.08 | 42 06829 I | | COAL | C-2. YBRKN |
| 57 | 122.24 | 122.31 | 0.07 | 42 06829 I | | MUDSTONE | CARB. DK. GY. SLD PLANT FRAGMENTS. |
| 57 | 122.31 | 122.38 | 0.07 | 42 06829 I | | COAL | C-3. BRKN MINOR THIN MUDDY BANDS. |
| 58 | 122.38 | 122.45 | 0.07 | 42 06829 I | | MUDSTONE | CARB. M-DK. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------|
| 58 | 122.45 | 122.48 | 0.03 | 42 | 06830 I | COAL | C-6.SLD |
| 58 | 122.48 | 123.79 | 1.31 | 43 | 06830 I | COAL LOSS | |
| 58 | 123.79 | 124.13 | 0.34 | 43 | 06830 I | COAL | C-3.BRKN MINOR BONE COAL BANDS, ABUND QTZ-CARB V EINING, MINOR VITRAIN BANDS. |
| 58 | 124.13 | 124.85 | 0.72 | 43 | 06830 I | COAL | C-2.YBRKN |
| 58 | 124.85 | 125.01 | 0.16 | 43 | 06830 I | COAL | C-3.BRKN |
| 58 | 125.01 | 125.04 | 0.03 | 43 | 06830 I | MUDSTONE | CARB.DK.GY.SLD |
| 58 | 125.04 | 125.22 | 0.18 | 43 | 06830 I | COAL | C-2.YBRKN PARTIALLY SHEARED. |
| 58 | 125.22 | 125.42 | 0.20 | 44 | 06830 I | COAL | C-3.YBRKN SOOPY, SOFT & WEATHERED LOOKING, PARTIA LLY POWDERED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 59 | 125.42 | 125.48 | 0.06 | 44 | 06830 I | COAL | C-2.SHRD LITRISTIC SURFACES. |
| 59 | 125.48 | 125.53 | 0.05 | 44 | 06830 I | COAL | C-4.SHRD LITRISTIC SURFACES. |
| 59 | 125.53 | 126.05 | 0.52 | 44 | 06830 I | COAL | C-2.YBRKN PARTIALLY SHEARED. |
| 59 | 126.05 | 126.15 | 0.10 | 44 | 06830 I | COAL | C-3.YBRKN |
| 59 | 126.15 | 126.52 | 0.37 | 44 | 06830 I | COAL LOSS | |
| 59 | 126.52 | 126.59 | 0.07 | 44 | 06830 I | MUDSTONE | CARB MINOR VITRAIN. |
| 59 | 126.59 | 126.67 | 0.08 | 44 | 06830 I | COAL | C-3.YBRKN |
| 59 | 126.67 | 126.75 | 0.08 | 44 | 06830 I | COAL LOSS | |
| 59 | 126.75 | 127.68 | 0.93 | 44 | 06831 | MUDSTONE | CARB.DK.GY.SLD ABUNDANT PLANT FRAGS. |
| 60 | 127.68 | 129.40 | 1.72 | *45 | | SILTSTONE | CLYY.M.GY.MAS.BRKN FOSSILIFEROUS, GRADES FROM A FINE MUDDY SLTST TO A COARSE SLTST TOWARDS THE BAS E. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 60 | 129.40 | 129.62 | 0.22 | | 52 | | SANDSTONE | SLTY.LT-M.GY.MAS.BRKN |
| 60 | 129.62 | 129.74 | 0.12 | | 53 | | SANDSTONE | FG.MOD.S-P.MAS.BRKN |
| 61 | 129.74 | 131.44 | 1.70 | | *60 | | SANDSTONE | MG.WEL.S-P.GY.MAS.BRKN SOME QTZ VEINING, MUD CLASTS, CHERT GRANULES (.9 MM). |
| 61 | 131.44 | 131.66 | 0.22 | | 62 | | ROCK LOSS | |
| 62 | 131.66 | 132.24 | 0.58 | | 63 | | SANDSTONE | MG.WEL.S-P.MAS.BRKN |
| 62 | 132.24 | 133.34 | 1.10 | | *65 | | SANDSTONE | MG.WEL.S-P.GY.MAS.BRKN ABUNDANT QTZ VEINING, OCCASIONAL CHERT GRANULE. SOME TALC FILLED FRACTURES (GREENISH-BLUE). |
| 63 | 133.34 | 135.24 | 1.90 | | 63 | | SANDSTONE | FG.WEL.S-P.GY.MAS.BRKN MG REGIONS, CHERT GRANULES SCATTERED. SOME QTZ VEINING. BDG HARD TO SEE. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 63 | 135.24 | 135.29 | 0.05 | | 61 | | ROCK LOSS | |
| 64 | 135.29 | 137.13 | 1.84 | | *60 | | SANDSTONE | MG.WEL.S-P.GY.MAS.BRKN CHERT GRANULES, QTZ & TALC FILLED FRACTURES. |
| 65 | 137.13 | 138.45 | 1.32 | | *60 | | SANDSTONE | MG.WEL.S-P.GY.MAS.BRKN COALY STRINGERS, SCATTERED CHERT GRANULES, QTZ VEIN (.05 M THICK). |
| 65 | 138.45 | 138.51 | 0.06 | | 59 | | ROCK LOSS | |
| 65 | 138.51 | 139.21 | 0.70 | | 58 | | SANDSTONE | MG.WEL.S-P.MAS.BRKN RUBBLE NEAR END OF BOX. |
| 65 | 139.21 | 139.71 | 0.50 | | 57 | | ROCK LOSS | |
| 66 | 139.71 | 141.61 | 1.90 | | *55 | | SANDSTONE | MG.WEL.S-P.MAS.BRKN MUD CLASTS, PEBBLY NEAR END OF BOX, MODERATE QTZ VEINING (70 DEGREES TO C.A.), SOME TALC FILLED VEINS. |
| 67 | 141.61 | 141.88 | 0.27 | | 56 | | SANDSTONE | MG.WEL.S-P.MAS.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 67 | 141.88 | 143.53 | 1.65 | *57 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN MINOR QTZ VEINING. SOME TALC VEINING. |
| 68 | 143.53 | 144.38 | 0.85 | 41 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN MINOR QTZ & TALC FILLED VEINS. OCCASIONAL MUD CLAST. |
| 68 | 144.38 | 144.46 | 0.08 | 35 | | | ROCK LOSS | |
| 68 | 144.46 | 145.40 | 0.94 | *28 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN MODERATE QTZ & TALC FILLED VEINS. OCCASIONAL MUD CLAST. |
| 69 | 145.40 | 147.40 | 2.00 | *25 | | | SANDSTONE | MG. WEL. S-P. GY. MAS. BRKN OCCASIONAL GRANULE. RIP-UP CLAST ZONE NEAR MIDDLE OF CORE (.17 M THICK). MODERATE QTZ & TALC FILLED VEINS. QTZ VEIN (.06 M THICK). |
| 69 | 147.40 | 147.48 | 0.08 | 29 | | | ROCK LOSS | |
| 70 | 147.48 | 147.68 | 0.20 | *30 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN RIP-UP CLASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 70 | 147.68 | 149.61 | 1.93 | 36 | | | SANDSTONE | MG. WEL. S-P. GY. MAS. BRKN MINOR QTZ VEINING. OCCASIONAL GRANULE (CHERT). |
| 71 | 149.61 | 150.67 | 1.06 | 45 | | | SANDSTONE | MG. WEL. S-P. GY. MAS. BRKN MODERATE QTZ VEINING. OCCASIONAL CHERT GRANULE. |
| 71 | 150.67 | 151.18 | 0.51 | 50 | | | ROCK LOSS | |
| 71 | 151.18 | 151.96 | 0.78 | 53 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN AS ABOVE. |
| 72 | 151.96 | 154.07 | 2.11 | *62 | | | SANDSTONE | MG. WEL. S-P. GY. MAS. BRKN OCCASIONAL CHERT GRANULE. MINOR QTZ VEINING. |
| 72 | 154.07 | 154.14 | 0.07 | 47 | | | SANDSTONE | MG. WEL. S-P. MAS. SLD. |
| 73 | 154.14 | 155.78 | 1.64 | *35 | | | SANDSTONE | MG. WEL. S-P. WH. MAS. BRKN EXTREMELY FRACTURED (QTZ FILLED) 35-45 DEGREES TO CA NEAR 154.53. MUDST. BAND (.1 CM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 73 | 155.78 | 156.19 | 0.41 | 31 | | ROCK LOSS | |
| 74 | 156.19 | 157.19 | 1.00 | 27 | | SANDSTONE | MG. WEL. S-P. MAS. BRKN ABUNDANT QTZ FILLED FRACTURES. |
| 74 | 157.19 | 157.69 | 0.50 | 24 | | SANDSTONE | MG. MOD. S-P. MAS. BRKN BECOMES SLTY NEAR THE END. MOD QTZ FILL ED. FRACTURES. |
| 74 | 157.69 | 158.19 | 0.50 | *22 | | SILTSTONE | SSY. LT-M. GY. LAM. BRKN PYRITE BAND (1.5 CM). |
| 75 | 158.19 | 158.52 | 0.33 | *28 | | SILTSTONE | SSY. DK. GY. LAM. BRKN |
| 75 | 158.52 | 160.20 | 1.68 | 28 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN MUDST. CONTAINING IRREGULAR SLTST. BLEBS. FOSSILIFEROUS (PLANTS). |
| 75 | 160.20 | 160.27 | 0.07 | 28 | | MUDSTONE | DK. GY. MAS. BRKN SAME AS ABOVE. |
| 76 | 160.27 | 162.45 | 2.18 | *28 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN AS ABOVE (POSSIBLE TWIST-OFF). |
| 76 | 162.45 | 162.51 | 0.06 | 25 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 77 | 162.51 | 163.36 | 0.85 | 23 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN AS ABOVE (NO TWIST-OFF). |
| 77 | 163.36 | 163.44 | 0.08 | 22 | | SILTSTONE | LT. GY. MAS. SLD SLTST BLEB. |
| 77 | 163.44 | 164.58 | 1.14 | *20 | | MUDSTONE | CARB. BLK. MAS. BRKN NO SLTST BLEBS. MINOR QTZ & TALC FILLED FRACTURES. VERY FOSSILIFEROUS (PLANTS). SLIGHTLY CARB. |
| 78 | 164.58 | 165.78 | 1.20 | *25 06832 | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT COALY PLANT FRAGS & THIN VITRAI IN BANDS, BCA'S APPROACH 0 IN SOME PLAC ES. |
| 78 | 165.78 | 165.87 | 0.09 | 24 06833 | I OVT | COAL | C-6. SLD PACKED FULL OF CONTORTED QTZ AND VITRAI N. BANDS. |
| 78 | 165.87 | 166.17 | 0.30 | 23 06833 | I OVT | COAL | C-2. PWRD SHEARED & POWDERED. |
| 78 | 166.17 | 166.34 | 0.17 | 23 06833 | I OVT | COAL | C-2. SHRD SHEARED & SOFT (MUDDY). |
| 78 | 166.34 | 166.46 | 0.12 | 23 06833 | I OVT | COAL | C-3. SHRD SHEARED & MUDDY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 79 | 166.46 | 167.56 | 1.10 | 22 | 06833 | I OVT | COAL | C-2.VBRKN VERY BROKEN & SHEARED, POSSIBLY C-1. SIGNS OF CONTORTED FRACTURE IN SHEARED PIECES. |
| 79 | 167.56 | 168.23 | 0.67 | 20 | 06833 | I OVT | COAL | C-1.BRKN GOOD CONCHOIDAL FRACTURE. |
| 80 | 168.23 | 168.78 | 0.55 | 19 | 06833 | I OVT | COAL | C-1.BRKN IN SOME PLACES VERY BROKEN. BCA'S APPEAR VERY SHALLOW. |
| 80 | 168.78 | 169.95 | 1.17 | 17 | 06833 | I OVT | COAL | C-2.BRKN BCA'S NEAR 0 DEGREES. C-1 & C-2 BANDS PARALLELING CORE, COAL APPEARS QUITE COOKED & VERY HARD ESPECIALLY NEAR THE BASE OF THIS UNIT. |
| 81 | 169.95 | 171.45 | 1.50 | *15 | 06833 | I OVT | COAL | C-1.SLD 2 - LAM MUDST BANDS NEARLY PARALLEL UNIT DUE TO LOW BCA'S, VERY HARD. |
| 81 | 171.45 | 171.88 | 0.43 | 15 | 06833 | I OVT | COAL | C-2.BRKN LOW BCA'S (<15 DEGREES), C-1 BANDS WITH IN. |
| 82 | 171.88 | 173.78 | 1.90 | 14 | 06833 | I OVT | COAL | C-1.BRKN SOME C-2 BUT MOSTLY C-1. SOME VERY MINOR THIN MUDDY LENSES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 82 | 173.78 | 175.80 | 2.02 | 14 | 06834 | I OVT | COAL LOSS | |
| 83 | 175.80 | 176.12 | 0.32 | 13 | 06834 | I OVT | COAL | C-2.BRKN ABUNDANT C-1 BANDS WITHIN. |
| 83 | 176.12 | 177.53 | 1.41 | *13 | 06834 | I OVT | COAL | C-2 C-1 BANDS, BONE COAL BANDS (1/2 CM). |
| 84 | 177.53 | 178.96 | 1.43 | 14 | 06834 | I OVT | COAL | C-2.BRKN ONE 2 CM MUDST BAND RUNNING WITHIN C-2 FOR ABOUT 40 CM (50CM INTO UNIT), MINOR BONE COAL THIN BANDS. |
| 84 | 178.96 | 179.19 | 0.23 | 14 | 06834 | I OVT | COAL | C-2.BRKN MINOR BONE COAL BANDS WITHIN. |
| 85 | 179.19 | 179.57 | 0.38 | 14 | 06834 | I OVT | COAL | C-2.BRKN MINOR QTZ VEINLETS. |
| 85 | 179.57 | 179.88 | 0.31 | 15 | 06834 | I OVT | COAL | C-3.BRKN MUDST (2 CM) RUNNING ALONG UNIT. QTZ CARB VEINING. |
| 85 | 179.88 | 180.03 | 0.15 | 15 | 06834 | I OVT | COAL | C-2.SHRD LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-------------------------------------------------------------------------------|
| 85 | 180.03 | 180.74 | 0.71 | 15 | 06834 I OVT | COAL | C-2.VBRKN THIN MUDDY BANDS SLIGHTLY SHEARED IN PLACES. |
| 85 | 180.74 | 180.94 | 0.20 | 15 | 06834 I OVT | COAL | C-3.VBRKN PARTIALLY SHEARED & MUDDY. |
| 86 | 180.94 | 181.35 | 0.41 | 15 | 06834 I OVT | COAL | C-3.SHRD VERY SHEARED & POWDERED, MUDDY MIXTURE. |
| 86 | 181.35 | 182.69 | 1.34 | 16 | 06834 I OVT | COAL | C-2.VBRKN PARTIALLY SHEARED IN PLACES, MINOR MUDDY BANDS WITHIN LOW BCA'S. |
| 87 | 182.69 | 183.91 | 1.22 | 16 | 06834 I OVT | COAL | C-2.VBRKN MINOR MUDDY BANDS WITHIN. QTZ-CARB VEINING IN PLACES. |
| 87 | 183.91 | 184.03 | 0.12 | 17 | 06834 I OVT | COAL | C-3.SLD QUITE BANDED, THIN BONE COAL BANDS. |
| 87 | 184.03 | 184.08 | 0.05 | 17 | 06834 I OVT | COAL | C-2.VBRKN |
| 87 | 184.08 | 184.15 | 0.07 | 17 | 06835 I OVT | ROCK LOSS | |
| 87 | 184.15 | 184.24 | 0.09 | 17 | 06835 I OVT | COAL LOSS | |
| 87 | 184.24 | 184.34 | 0.10 | 17 | 06835 I OVT | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 87 | 184.34 | 185.55 | 1.21 | 17 | 06835 I OVT | COAL LOSS | |
| 87 | 185.55 | 185.76 | 0.21 | 18 | 06835 I OVT | MUDSTONE | CARB.DK.GY.SLD C-2 BOUNDING A 4 CM (TRUE THICKNESS) MUDDY BAND ALONG ENTIRE UNIT. THIN VITRIFIED STRINGERS WITHIN MUDST. |
| 88 | 185.76 | 185.84 | 0.08 | 18 | 06835 I OVT | MUDSTONE | CARB.DK.GY.VBRKN AS ABOVE. |
| 88 | 185.84 | 186.85 | 1.01 | 18 | 06835 I OVT | COAL | C-3.BRKN BANDED, THIN C-1 BANDS AND BONE COAL BANDS, MINOR QTZ-CARB VEINING. |
| 88 | 186.85 | 187.13 | 0.28 | 18 | 06835 I OVT | COAL | C-2.BRKN |
| 88 | 187.13 | 187.50 | 0.37 | 19 | 06835 I OVT | COAL | C-3 MUDDY BANDS. |
| 88 | 187.50 | 187.69 | 0.19 | 19 | 06835 I OVT | COAL LOSS | |
| 88 | 187.69 | 187.79 | 0.10 | 19 | 06835 I OVT | ROCK LOSS | |
| 88 | 187.79 | 187.90 | 0.11 | 19 | 06835 I OVT | MUDSTONE | M-DK.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------|
| 89 | 187.90 | 187.93 | 0.03 | 19 06835 | I OVT | MUDSTONE | M-DK.GY.BRKN SOFT. |
| 89 | 187.93 | 188.70 | 0.77 | 19 06835 | I OVT | COAL | C-2.VBRKN |
| 89 | 188.70 | 189.40 | 0.70 | 19 06835 | I OVT | COAL | C-2.VBRKN MINOR THIN MUD BANDS, CORE LOSS APPARENT. |
| 89 | 189.40 | 190.10 | 0.70 | 20 06835 | I OVT | COAL LOSS | |
| 89 | 190.10 | 190.23 | 0.13 | 20 06835 | I OVT | MUDSTONE | CARB.DK.GY.VBRKN COAL & MUDST BANDED SIDE BY SIDE DUE TO LOW BCAS. |
| 90 | 190.23 | 190.48 | 0.25 | 20 06835 | I OVT | MUDSTONE | CARB.DK.GY.VBRKN |
| 90 | 190.48 | 191.19 | 0.71 | 20 06835 | I OVT | COAL | C-2.BRKN |
| 90 | 191.19 | 191.67 | 0.48 | 21 06835 | I OVT | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 90 | 191.67 | 192.18 | 0.51 | *21 06836 | | MUDSTONE | CARB.DK.GY.SLD COALY-CARB STRINGERS WITHIN. |
| 90 | 192.18 | 192.38 | 0.20 | 22 05984 | | BENTONITE | CLYD.LT.GY.VBRKN POORLY CONSOLIDATED IN PLACES, MINOR PLANT FRAGS NEAR MUDST CONTACT (UPPER). |
| 90 | 192.38 | 192.61 | 0.23 | 22 | | MUDSTONE | CARB.DK.GY.SLD ABUNDANT COALY PLANT FRAGS. |
| 91 | 192.61 | 193.46 | 0.85 | 23 | | MUDSTONE | CARB.BLK.MAS.BRKN TALC FILLED FRACTURES. HIGHLY CARB NEAR THE BEGINNING OF THE BOX. BLK PELLETS. |
| 91 | 193.46 | 194.66 | 1.20 | *25 | | MUDSTONE | CARB.BLK.MAS.BRKN SLIGHTLY CARB. FOSSILIFEROUS (PLANT). MI NOR TALC FILLED FRACTURES. |
| 92 | 194.66 | 196.52 | 1.86 | *10 | | MUDSTONE | DK.GY.MAS.BRKN MUD CRACK (OVERTURNED). AT BEGINNING OF BOX BCA = 0-10 DEGREES. AT END OF UNIT BCA = 20 DEGREES. |
| 92 | 196.52 | 196.72 | 0.20 | 14 | | MUDSTONE | SLTY.DK.GY.MAS.SLD SLTST. LAMS. |
| 93 | 196.72 | 198.12 | 1.40 | 16 | | MUDSTONE | SLTY.M-DK.GY.MAS.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87008

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------|
| 93 | 198.12 | 198.72 | 0.60 | *20 | | SILTSTONE | CLYY, M. GY. LAM. SSD. SLD LOAD CAST? (RIGHT WAY UP). |
| 93 | 198.72 | 198.77 | 0.05 | 15 | | MUDSTONE | SLTY, M. GY. MAS. SLD |
| 93 | 198.77 | 199.50 | 0.73 | *08 | | MUDSTONE | SLTY, M. GY. MAS. BRKN SLTST LAMS. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

SEAM DETAIL

**COAL DIVISION
MOUNT KLAPPAN PROJECT**

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87008 SEAM : 10VT TOTAL INTERVAL(M) : 185.78 - 191.67 ELEVATION(M) : 1484.8
 GEOLOGIST : PARRY SCALE: 1:40 INTERVAL(M) : 190.48 - 191.67 DATE : MAR 04/88 DRAWING NO. :

| SEAM COMP. 1 2 3 4 5 6 | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | |
|---------------------------|-----------------------|---------------|-----------------|--------|--------|-----------|------|-----------------|----------------|---------------------|-----|-----|-----|-----|---------------|-----|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL.YAL MJ/KG | |
| | 190.48 | ↑ | | 0.25 | 89.3 | 8835 | 45 | 2.11 / 0.35 | 7.08 / 0.35 | --- | --- | --- | --- | --- | --- | --- |
| | 191.67 | ↓ | | (0.17) | | | | 2.45 | 7.43 | | | | | | | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87008

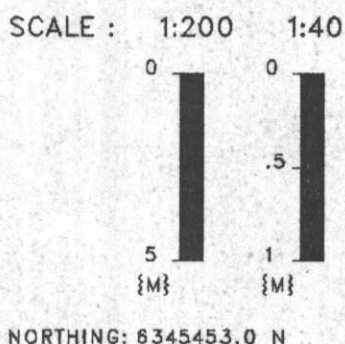
740

GEOLOGIST : PARRY

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

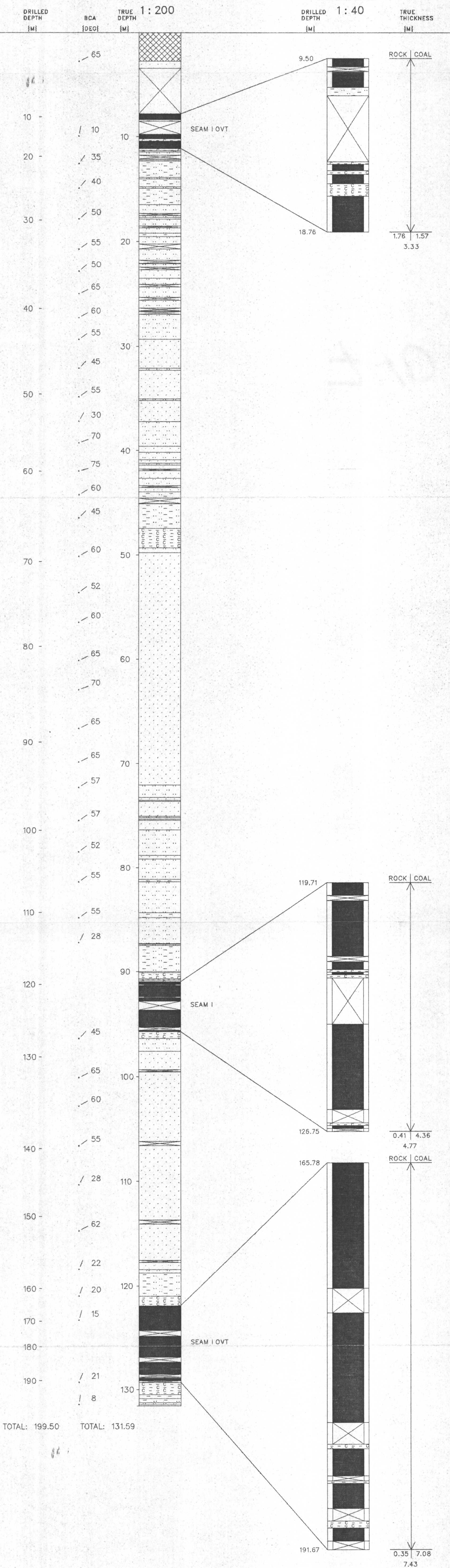


| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

NORTHING: 6345453.0 N
 EASTING: 507877.8 E

INCLINATION: 90.0°

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

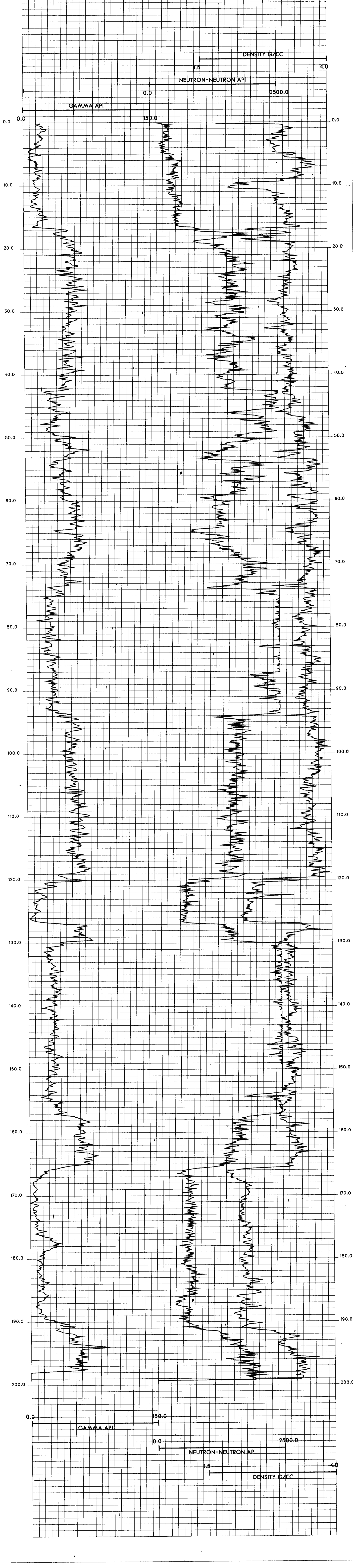
Geophysical Log

| | | |
|----------------------------------|--------------------------------------|-------------------|
| Datasource: KPNLRDDH87008 | Province: BC Northing: 6345450.00 | Lat: 571514 |
| Log Date: 87-09-07 | Zone: 9 Easting: 507878.00 | Long: 1285210 |
| Company: CENTURY | Measuring Point: GROUND LEVEL | Elevation: 1484.7 |
| Geologist: PARRY | | |

Scale: 1 to 200.0
 Depth Range: 0.0 to 204.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



MOUNT KLAPPAN ANTHRACITE PROJECT
LOST - FOX AREA
GEOLOGICAL REPORT
1987

APPENDIX III

DIAMOND DRILL HOLE DATA
VOLUME II

KPNLRDDH 87009
TO
KPNLRDDH 87018



GULF CANADA RESOURCES
COAL DIVISION

740

CONFIDENTIAL

KPNLRDDH87009

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87009

DATE - 03/01/88

- HISTORY -

START DATE - 09/08/87

END DATE - 09/10/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEE

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - UPRIGHT, INTERSECTED I (POOR RECOVERY), H/I, H AND
PH.

- LOCATION -

PROVINCE - BC

ELEVATION - 1454.72

ZONE - 9

NORTHING - 6345828.14

EASTING - 508266.33

LICENCE/LEASE NUMBER -

LATITUDE - 571526

LONGITUDE - 1285147

- ORIENTATION -

LENGTH - 125.78

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 7.62

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 7.62 | 7.62 | 58 | | CASING | CASING DEPTH |
| 1 | 7.62 | 7.73 | 0.11 | 58 | | SANDSTONE | MG.M.GY.VBRKN BRKN. ROUNDED PIECES, TWIST-OFF, FE. STAI MED. |
| 1 | 7.73 | 8.18 | 0.45 | 58 | | ROCK LOSS | |
| 1 | 8.18 | 8.52 | 0.34 | 58 | | SANDSTONE | MG.M.GY.MAS.VBRKN OCCASIONAL BEIGE ANGULAR BLEBS (0.5 MM DIAMETER), OCCASIONAL MM QTZ VEIN, 30% MAFICS. |
| 1 | 8.52 | 8.82 | 0.30 | 58 | | SANDSTONE | MG.M.GY.MAS.VBRKN AS ABOVE, TWIST-OFF AT BASE, PROBABLE C ORE LOSS. |
| 1 | 8.82 | 9.22 | 0.40 | 58 | | ROCK LOSS | |
| 1 | 9.22 | 9.61 | 0.39 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE, 1 CM THICK QTZ VEIN AT TOP. |
| 2 | 9.61 | 9.95 | 0.34 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE, VERY MINOR THIN (MM) QTZ VEIN S. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 2 | 9.95 | 10.12 | 0.17 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.VBRKN TWIST-OFF, PROBABLE CORE LOSS, AS ABOVE |
| 2 | 10.12 | 10.27 | 0.15 | 58 | | ROCK LOSS | |
| 2 | 10.27 | 10.57 | 0.30 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE, VERY OCCASIONAL SLTST LAM. |
| 2 | 10.57 | 10.69 | 0.12 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.VBRKN AS ABOVE. |
| 2 | 10.69 | 10.81 | 0.12 | 58 | | ROCK LOSS | |
| 2 | 10.81 | 11.40 | 0.59 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE, BEIGE BLEBS ARE STILL OCCASIO NAL BUT MORE CONCENTRATED IN BANDS. |
| 3 | 11.40 | 12.36 | 0.96 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN BEIGE BLEBS ARE MORE PLENTIFUL, COMPOSI NG 20% OF BAND. |
| 3 | 12.36 | 12.46 | 0.10 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.SLD AS ABOVE. |
| 3 | 12.46 | 12.56 | 0.10 | 58 | | SANDSTONE | MG.LT-M.GY.MAS.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 3 | 12.56 | 12.75 | 0.19 | | 58 | | ROCK LOSS | |
| 3 | 12.75 | 13.52 | 0.77 | *58 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ RARE MUDST LAM. BANDS OF BEIGE BLEBS (.1 M THICK AND .15 M APART). |
| 4 | 13.52 | 14.17 | 0.65 | | 56 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ BEIGE BLEBS MORE SPREAD THROUGHOUT, RARE 4 MM QTZ VEIN. |
| 4 | 14.17 | 15.18 | 1.01 | | 54 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE, OCCASIONAL QTZ VEINS UP TO 3 MM IN WIDTH. |
| 4 | 15.18 | 15.29 | 0.11 | | 52 | | SANDSTONE | WH.VBRKN QTZ VEIN. W/ FG SS BANDS 1 MM THICK. |
| 4 | 15.29 | 15.39 | 0.10 | | 52 | | ROCK LOSS | |
| 4 | 15.39 | 15.53 | 0.14 | | 51 | | SANDSTONE | MG.LT-M.GY.MAS.VBRKN AS ABOVE, W/ ABUND PYRITE FLECKS IN BAN DS. |
| 5 | 15.53 | 15.72 | 0.19 | | 51 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE, PYRITE IS SPORADIC. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | 15.72 | 16.67 | 0.95 | | 49 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN BEIGE BLEBS ARE LARGER (UP TO 1MM DIAME TER).OCC SLTST LAM, OCC 1/2 CM QTZ VEIN S. |
| 5 | 16.67 | 17.33 | 0.66 | *47 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN OCCASIONAL SLTST LAM. NO BEIGE BLEBS. O CCASIONAL QTZ VEINS, <1 MM THICK, POSSI BLE CORE LOSS .19 FROM BOTTOM. |
| 5 | 17.33 | 17.45 | 0.12 | | 47 | | ROCK LOSS | |
| 6 | 17.45 | 17.52 | 0.07 | | 47 | | SANDSTONE | FG.LT-M.GY.MAS.SLD |
| 6 | 17.52 | 17.72 | 0.20 | | 47 | | SILTSTONE | SSY.M.GY.LAM.VBRKN W/ MUDDY LAM. |
| 6 | 17.72 | 17.87 | 0.15 | | 47 | | ROCK LOSS | |
| 6 | 17.87 | 17.93 | 0.06 | | 47 | | SANDSTONE | FG.M.GY.LAM.SLD W/ <1 MM SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 17.93 | 18.17 | 0.24 | *47 | | | SILTSTONE | M.GY.LAM.SSD.BRKN W/ VFG SS LAM, VERY MINOR TINY PLANT FR AGS. |
| 6 | 18.17 | 18.56 | 0.39 | *62 | | | SILTSTONE | M.GY.LAM.BRKN W/ SSY LAM. |
| 6 | 18.56 | 18.84 | 0.28 | *56 | | | SILTSTONE | M.GY.LAM.BRKN W/ SSY LAM, MUDDY TOWARDS BASE. |
| 6 | 18.84 | 19.13 | 0.29 | *56 | | | SILTSTONE | M.GY.LAM.BRKN W/ SSY LAM. |
| 6 | 19.13 | 19.41 | 0.28 | 57 | | | SILTSTONE | M.GY.LAM.BRKN MUDDY AND SSY ZONES, W/ OCCASIONAL VFG SS LAM. |
| 7 | 19.41 | 19.61 | 0.20 | 57 | | | SILTSTONE | M.GY.LAM.VBRKN FINING UP FROM SSY SLTST TO MUDST WITH W 1 CM BANDS, 1 CM POORLY CONSOLIDATED MUD EXACT POSITION UNKNOWN, PROBABLY CO RE LOSS. |
| 7 | 19.61 | 19.96 | 0.35 | 58 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 7 | 19.96 | 20.90 | 0.94 | *59 | | | SILTSTONE | CLYY.M.GY.BRKN CAN'T SEE MUCH IN THE WAY OF SED STRUCT URES OR BEDDING, OCC SSY LAM. |
| 7 | 20.90 | 21.09 | 0.19 | *60 | | | SILTSTONE | M.GY.BRKN OCCASIONAL SSY LAM, TWIST-OFF AT BASE. |
| 7 | 21.09 | 21.34 | 0.25 | 57 | | | ROCK LOSS | |
| 7 | 21.34 | 21.59 | 0.25 | 54 | | | SILTSTONE | M.GY.SLD W/ SSY LAM INC TO BASE, BECOMING INTERL AM VFG SS AND SLTST. |
| 8 | 21.59 | 22.08 | 0.49 | *49 | | | SILTSTONE | SSY.M.GY.BRKN W/ OCC MUDST BANDS, NOT MUCH IN SED FEA TURES. |
| 8 | 22.08 | 22.83 | 0.75 | *49 | | | SILTSTONE | SSY.M.GY.LAM.BRKN W/ VFG SS LAM INCREASE DOWNWARDS. |
| 8 | 22.83 | 22.91 | 0.08 | 50 | | | SILTSTONE | M.GY.VBRKN POORLY CONSOLIDATED, QTZ VEIN 3 CM THIC K, SLTST BRECCIA. |
| 8 | 22.91 | 23.26 | 0.35 | 51 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 8 | 23.26 | 23.36 | 0.10 | 52 | | MUDSTONE | SLTY. M.GY. SLD <1 MM QTZ VEINING THROUGHOUT, POSSIBLY CORE LOSS AT TOP. |
| 8 | 23.36 | 23.56 | 0.20 | 53 | | SILTSTONE | M.GY. BRKN QTZ 1 CM THICK .02 M DOWN FROM TOP, FEW FEATURES IN CORE. |
| 9 | 23.56 | 24.30 | 0.74 | 54 | | SILTSTONE | M.GY. BRKN SOME THIN QTZ VEINS NEAR TOP, BECOMES M ORE BROKEN DOWNWARDS, FEW FEATURES. |
| 9 | 24.30 | 24.71 | 0.41 | 56 | | SILTSTONE | M.GY. YBRKN AS ABOVE. |
| 9 | 24.71 | 25.18 | 0.47 | *58 | | SILTSTONE | CLYY. M.GY. BRKN AS ABOVE. |
| 10 | 25.18 | 25.25 | 0.07 | 58 | | SILTSTONE | M.GY. YBRKN. |
| 10 | 25.25 | 25.45 | 0.20 | 58 | | ROCK LOSS | |
| 10 | 25.45 | 26.02 | 0.57 | 59 | | SILTSTONE | M.GY. LAM. BRKN INTERLAM. W/ MUDST, OCCASIONAL YFG SS <1 MM LAM, INCREASING TOWARDS BASE, QTZ V EIN AT BASE W/ SOME BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------|
| 10 | 26.02 | 26.15 | 0.13 | 59 | | SILTSTONE | M.GY. YBRKN PROBABLE CORE LOSS. |
| 10 | 26.15 | 26.45 | 0.30 | 59 | | ROCK LOSS | |
| 10 | 26.45 | 26.65 | 0.20 | 59 | | SILTSTONE | M.GY. BRKN |
| 10 | 26.65 | 27.34 | 0.69 | 60 | | SILTSTONE | M.GY. LAM. BRKN INTERLAM. W/ YFG SS WHICH INCREASES TOMA RDS BASE. |
| 11 | 27.34 | 27.45 | 0.11 | 60 | | SILTSTONE | M.GY. YBRKN W/ SSS LAM. |
| 11 | 27.45 | 27.85 | 0.40 | 60 | | ROCK LOSS | |
| 11 | 27.85 | 27.86 | 0.01 | 61 | | MUDSTONE | M.GY. YBRKN POORLY CONSOLIDATED. |
| 11 | 27.86 | 28.14 | 0.28 | 61 | | SILTSTONE | M.GY. YBRKN W/ OCCASIONAL SSS LAM. 2 THIST-OFFS. |
| 11 | 28.14 | 28.55 | 0.41 | 61 | | ROCK LOSS | |
| 11 | 28.55 | 29.13 | 0.58 | 61 | | SILTSTONE | M.GY. BRKN W/ MUDST INTERLAM MORE ABUNDANT AT TOP, TINY MUDST BLEBS IN SILTST .32 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 11 | 29.13 | 29.60 | 0.47 | 62 | | | SILTSTONE | M.GY.LAM INTERLAM W/ MUDST, OCCASIONAL <1 MM SSSY LAM, NOT MUCH IN THE WAY OF SED FEATURES. |
| 12 | 29.60 | 31.75 | 2.15 | *63 | | | SILTSTONE | M.GY.LAM.SSD.BRKN W/ MUDST, OCCASIONAL VFG SSSY LAM, OCCASIONAL SSD - TOPS UP, RARE QTZ VEIN (1 CM THICK 0.77 M DOWN). |
| 13 | 31.75 | 32.15 | 0.40 | 67 | | | SILTSTONE | M.GY.LAM.BRKN W/ OCCASIONAL SSSY LAM. |
| 13 | 32.15 | 33.81 | 1.66 | *71 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM W/ MUDST, OCCASIONAL SSSY LAM AT TOP, FEW FEATURES, 2 QTZ REPLACED BIVALVES 1.61 M DOWN. |
| 14 | 33.81 | 34.54 | 0.73 | *74 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM W/ MUDST, MINOR TINY PLANT FRAGS. |
| 14 | 34.54 | 34.69 | 0.15 | 72 | | | SILTSTONE | M.GY.LAM.VBRKN POSSIBLE CORE LOSS. |
| 14 | 34.69 | 35.04 | 0.35 | 70 | | | ROCK LOSS | |
| 14 | 35.04 | 35.32 | 0.28 | 69 | | | SILTSTONE | M.GY.VBRKN AS ABOVE POSSIBLE CORE LOSS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------|
| 14 | 35.32 | 35.65 | 0.33 | 67 | | | ROCK LOSS | |
| 14 | 35.65 | 36.32 | 0.67 | 65 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM W/ MUDST, BANDS OF SSSY LAM. |
| 15 | 36.32 | 37.46 | 1.14 | *60 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE W/ INC IN SSSY LAM. |
| 15 | 37.46 | 37.78 | 0.32 | 65 | | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |
| 15 | 37.78 | 38.02 | 0.24 | 67 | | | ROCK LOSS | |
| 15 | 38.02 | 38.24 | 0.22 | *69 | | | SILTSTONE | M.GY.LAM.BRKN W/ MUDST INTERLAM AND SSSY LAM. |
| 15 | 38.24 | 38.26 | 0.02 | 69 | | | SILTSTONE | M.GY.SLD W/ <1 MM MUDST BLEBS, OCC SSSY LAM. |
| 15 | 38.26 | 38.37 | 0.11 | 70 | | | SILTSTONE | M.GY.LAM.SLD INTERLAM W/ MUDST, OCC <1 MM SSSY LAM. |
| 16 | 38.37 | 38.70 | 0.33 | 70 | | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |
| 16 | 38.70 | 38.87 | 0.17 | 71 | | | ROCK LOSS | |
| 16 | 38.87 | 40.31 | 1.44 | *74 | | | SILTSTONE | M.GY.LAM AS ABOVE, WOOD FRAGS. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 11

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 17 | 40.31 | 40.98 | 0.67 | 72 | | MUDSTONE | SLTY. M-DK. GY. BRKN GRADES FROM UNIT ABOVE. |
| 17 | 40.98 | 41.07 | 0.09 | 71 | | ROCK LOSS | |
| 17 | 41.07 | 42.22 | 1.15 | *70 | 06856 | MUDSTONE | SLTY. M-DK. GY. BRKN CORE TWIST-OFF AT TOP, BECOMES CARB TOM ARDS BASE. MINOR COALY STRINGERS. LOWER 25 CM SAMPLED. |
| 17 | 42.22 | 42.45 | 0.23 | 69 | 06857 I | COAL LOSS | |
| 17 | 42.45 | 42.57 | 0.12 | 69 | 06857 I | COAL | C-2. BRKN |
| 17 | 42.57 | 42.65 | 0.08 | 68 | 06857 I | MUDSTONE | CARB. DK. GY. BRKN COALY STRINGERS. |
| 18 | 42.65 | 43.42 | 0.77 | 68 | 06857 I | COAL LOSS | |
| 18 | 43.42 | 44.32 | 0.90 | 66 | 06857 I | COAL | C-2. VSHRD VERY SHEARED & POWDERED. |
| 18 | 44.32 | 44.46 | 0.14 | 65 | 06857 I | COAL | C-2. VSHRD |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------|
| 18 | 44.46 | 44.48 | 0.02 | 65 | 06857 I | COAL | C-4. SLD |
| 18 | 44.48 | 44.54 | 0.06 | 65 | 06857 I | ROCK LOSS | |
| 18 | 44.54 | 44.63 | 0.09 | 65 | 06857 I | MUDSTONE | CLYY. H. GY. SLD POORLY CONSOLIDATED. |
| 18 | 44.63 | 44.70 | 0.07 | 65 | 06857 I | COAL | C-3. SLD BANDED WITH C-2. |
| 18 | 44.70 | 44.77 | 0.07 | 65 | 06857 I | COAL LOSS | |
| 18 | 44.77 | 44.85 | 0.08 | 65 | 06857 I | ROCK LOSS | |
| 18 | 44.85 | 44.97 | 0.12 | 65 | 06857 I | MUDSTONE | CARB. DK. GY. BRKN CORE TWIST-OFF, C-2 BANDS WITHIN. |
| 18 | 44.97 | 47.37 | 2.40 | 63 | 06857 I | COAL LOSS | |
| 18 | 47.37 | 47.53 | 0.16 | 60 | 06857 I | COAL | C-1. VBRKN |
| 18 | 47.53 | 47.83 | 0.30 | *60 | 06858 | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT PLANT FRAGS. (SOME COALY). |
| 19 | 47.83 | 48.47 | 0.64 | 61 | | MUDSTONE | M-DK. GY. LAM. SSD. VBRKN INTERLAM W/ SLTST. SSY BEDS. NEAR TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 48.47 | 48.84 | 0.37 | 62 | | | ROCK LOSS | |
| 19 | 48.84 | 49.97 | 1.13 | 64 | | | SILTSTONE | M.GY.LAM.SSD.BRKN W/ FG SS INTERLAM AND OCCASIONAL MUDST LAM, OCCASIONAL <1 MM QTZ VEINS, OCCASIONAL 1.5 CM SS BED NEAR BASE W/ SOME MG BANDS. |
| 20 | 49.97 | 50.28 | 0.31 | 66 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ RIP-UPS, LAM SLTST. & MUDST. |
| 20 | 50.28 | 50.37 | 0.09 | 67 | | | SANDSTONE | MG.LT-M.GY.SLD |
| 20 | 50.37 | 50.54 | 0.17 | *67 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM W/ FG SS AND MUDST. |
| 20 | 50.54 | 51.90 | 1.36 | 68 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ OCC SLTY MUDST LAM, (ESP NEAR TOP). |
| 21 | 51.90 | 52.10 | 0.20 | 69 | | | SANDSTONE | MG.M.GY.MAS.VBRKN OCCASIONAL MUDST LAM NEAR TOP. |
| 21 | 52.10 | 52.52 | 0.42 | 69 | | | ROCK LOSS | |
| 21 | 52.52 | 52.95 | 0.43 | 70 | | | SANDSTONE | MG.M.GY.MAS.BRKN W/ SLTST CLASTS (RIP-UPS?) UPTO 3 CM IN DIAMETER, OCCASIONAL 1.5 CM QTZ VEIN AND LARGE QTZ VEIN AT BOTTOM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------|
| 21 | 52.95 | 53.06 | 0.11 | 70 | | | SANDSTONE | QTZ VEIN, W/ OCC MM SS BANDS. |
| 21 | 53.06 | 53.47 | 0.41 | 70 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ OCC DISCONTINUOUS FG SS LAM, 3 AND 5 CM QTZ VEINS. |
| 21 | 53.47 | 54.04 | 0.57 | 71 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ 1 TO 6 MM QTZ VEINS THROUGHOUT. |
| 21 | 54.04 | 54.11 | 0.07 | 71 | | | SILTSTONE | M.GY.LAM.VBRKN INTERLAM W/ MUDST & FG SS. |
| 21 | 54.11 | 54.44 | 0.33 | 72 | | | ROCK LOSS | |
| 22 | 54.44 | 54.58 | 0.14 | 72 | | | SANDSTONE | FG.M.GY.LAM.VBRKN INTERLAM W/ SLTST & MUDST. |
| 22 | 54.58 | 54.75 | 0.17 | 72 | | | MUDSTONE | M.GY.LAM.VBRKN W/ SLTST & FG SS LAM. |
| 22 | 54.75 | 55.15 | 0.40 | 72 | | | ROCK LOSS | |
| 22 | 55.15 | 55.27 | 0.12 | 73 | | | SANDSTONE | FG.M.GY.LAM.VBRKN W/ SLTST LAM. |
| 22 | 55.27 | 55.46 | 0.19 | *73 | | | SILTSTONE | M.GY.LAM.VBRKN W/ MUDST & FG SS, THIST-OFF AT BASE, PROBABLE CORE LOSS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 22 | 55.46 | 55.86 | 0.40 | 72 | | | ROCK LOSS | |
| 22 | 55.86 | 56.60 | 0.74 | 71 | | | MUDSTONE | M.GY.LAM.BRKN W/ SSSY SLTST LAM DEC DOWNWARDS, MINOR T INY PLANT FRAGS. |
| 23 | 56.60 | 57.00 | 0.40 | 69 | | | MUDSTONE | M-DK.GY.LAM.VBRKN OCCASIONAL SLTST LAM, POSSIBLE CORE LOS S. |
| 23 | 57.00 | 57.28 | 0.28 | 68 | | | ROCK LOSS | |
| 23 | 57.28 | 58.07 | 0.79 | 67 | | | MUDSTONE | M-DK.GY.LAM.BRKN W/ SLTST INTERLAM. PYR BIVALVES, |
| 23 | 58.07 | 58.47 | 0.40 | *65 | | | MUDSTONE | M-DK.GY.BRKN W/ SLTST INTERLAM. SSSY AT BASE, ABUND T INY PLANT FRAGS. |
| 23 | 58.47 | 58.64 | 0.17 | 64 | | | SANDSTONE | FG.M-DK.GY.MAS.BRKN |
| 24 | 58.64 | 58.79 | 0.15 | 64 | | | SANDSTONE | FG.M-DK.GY.MAS.BRKN W/ DISCONTINUOUS SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 24 | 58.79 | 58.83 | 0.04 | 64 | | | SILTSTONE | SSY.M.GY.LAM.SLD W/ MUDDY LAM. |
| 24 | 58.83 | 59.24 | 0.41 | 63 | | | SANDSTONE | FG.M-DK.GY.MAS.BRKN W/ OCC SLTST LAM AND RIP-UPS(?), HAS A GRITTY APPEARANCE, OCC THIN QTZ VEIN, F -MG SS. |
| 24 | 59.24 | 59.35 | 0.11 | 63 | | | SANDSTONE | MG.M.GY.VBRKN PROBABLE CORE LOSS, W/ SLTST PIECE. |
| 24 | 59.35 | 59.65 | 0.30 | 62 | | | ROCK LOSS | |
| 24 | 59.65 | 60.04 | 0.39 | 61 | | | SANDSTONE | MG.LT-M.GY.MAS.WRMBU.BRKN W/ MUDST LAM DEC DOWNWARDS, WRMBURS - T OPS UP, RARE (<1 MM) QTZ SHARD. |
| 24 | 60.04 | 60.57 | 0.53 | 60 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ CG SS BANDS, QTZ VEINS, OCC QTZ AGGR EGATE AT B' ASE (UP TO 3MMLONG). |
| 25 | 60.57 | 60.69 | 0.12 | 59 | | | SANDSTONE | MG.LT-M.GY.MAS.SLD SOME LITRIFIC SURFACES. |
| 25 | 60.69 | 60.83 | 0.14 | 59 | | | SILTSTONE | M-DK.GY.VTHNB.BRKN W/ SS VTHNB AND RIP-UPS. |
| 25 | 60.83 | 61.40 | 0.57 | 58 | | | SANDSTONE | MG.M.GY.MAS.BRKN W/ BANDS OF CG QTZ, OCC SLTY LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 61.40 | 61.70 | 0.30 | 57 | | | SANDSTONE | MG. M. GY. MAS. VBRKN AS ABOVE, ABUNDANT PYRITE FLECKS FORMING A BAND, POSSIBLE CORE LOSS. |
| 25 | 61.70 | 61.93 | 0.23 | 56 | | | ROCK LOSS | |
| 25 | 61.93 | 62.17 | 0.24 | 56 | | | SANDSTONE | MG. M. GY. VTHNB. BRKN INTERBED MG AND FG SS. A 2 CM VFG SS CL AST. OCCASIONAL QTZ. VEIN. OCC. SLTY LAM. |
| 25 | 62.17 | 62.31 | 0.14 | 55 | | | SANDSTONE | FG. M. GY. VTHNB. VBRKN W/ MUDST LAM (.5 CM). |
| 25 | 62.31 | 62.51 | 0.20 | 55 | | | ROCK LOSS | |
| 25 | 62.51 | 62.69 | 0.18 | 55 | | | SANDSTONE | MG. VPR. M. GY. VTHNB. BRKN W/ CG BEDS (APPROX 2 CM THICK), OCC MUD DY LAM. |
| 26 | 62.69 | 63.13 | 0.44 | 54 | | | SANDSTONE | FG. PR. M. GY. VTHNB. BRKN OCC MUDST LAM INCREASES UNTIL THEY REPE AT EVERY 1CM, MG SS BAND AT .13 TO .22 M DOWN, MUDST CLASTS NEAR TOP (RIP-UPS?) . TWIST-OFF AT .36 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 63.13 | 63.19 | 0.06 | 53 | | | ROCK LOSS | |
| 26 | 63.19 | 63.31 | 0.12 | *53 | | | MUDSTONE | DK. GY. VTHNB. BRKN W/ VFG SS LAM AND A CG SS. BED. |
| 26 | 63.31 | 63.46 | 0.15 | 55 | | | SANDSTONE | CG. LT-M. GY. VTHNB. SLD CG. TO GRANULAR SS. W/ MG SS INTERBEDS. |
| 26 | 63.46 | 63.78 | 0.32 | 57 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN W/ MUDST & SLTST LAM. SOME RIP-UPS AND SSD, A 6 CM CG SS BAND NEAR BASE. |
| 26 | 63.78 | 63.88 | 0.10 | 60 | | | SANDSTONE | FG. M. GY. VBRKN POSSIBLE CORE LOSS. |
| 26 | 63.88 | 64.01 | 0.13 | 61 | | | ROCK LOSS | |
| 26 | 64.01 | 64.17 | 0.16 | 63 | | | SANDSTONE | MG. LT-M. GY. BRKN W/ CG SS AT TOP. |
| 26 | 64.17 | 64.61 | 0.44 | *66 | | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN W/ MUDST LAM 1 - 19 CM APART, OCCASIONA L MUDST CLAST (1 CM LONG), SPORADIC 1 M M QTZ GRAINS NEAR TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 26 | 64.61 | 64.77 | 0.16 | 65 | | | SANDSTONE | MG.LT-M.GY.THNB.SLD W/ FG SS INTERBEDS, RARE 4 MM QTZ AGGREGATES. |
| 27 | 64.77 | 65.17 | 0.40 | 64 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN W/ OCC FINE QTZ PEBBLES IN DISCONTINUOUS BANDS. |
| 27 | 65.17 | 65.27 | 0.10 | 62 | | | SANDSTONE | CG.LT-M.GY.VTHNB.SLD W/ MG SS INTERBEDS. |
| 27 | 65.27 | 65.38 | 0.11 | 62 | | | SANDSTONE | MG.BRKN W/ FG SS LAM, PROB CORE LOSS AT BASE. |
| 27 | 65.38 | 65.48 | 0.10 | 62 | | | ROCK LOSS | |
| 27 | 65.48 | 65.52 | 0.04 | 61 | | | SANDSTONE | MG.M.GY.SLD W/ MUDST CLASTS (1 - 20 MM LENGTH), QTZ PEBBLES (FINE). |
| 27 | 65.52 | 65.75 | 0.23 | 61 | | | SANDSTONE | MG.LT-M.GY.BRKN W/ BANDS OF CG SS, LAM TO VTHNB OF MUDST. |
| 27 | 65.75 | 66.17 | 0.42 | 59 | | | SANDSTONE | MG.VPR.LT-M.GY.THNB.BRKN CG INTERBEDS ESP AT BASE WHERE SS BECOMES GRANULAR, MUDST BED (.02 M THICK .22 M DOWN). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|--------------|-----------------------------------------------------------------------------------------------|
| 27 | 66.17 | 66.31 | 0.14 | 58 | | | SANDSTONE | CG.LT-M.GY.VBRKN W/ GRANULAR BEDS, PROB CORE LOSS. |
| 27 | 66.31 | 66.99 | 0.68 | 56 | | | ROCK LOSS | |
| 27 | 66.99 | 67.39 | 0.40 | *54 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN THIST-OFF AT TOP, SLTST & MUDST INTERBEDS & LAMS, ABUNDANT PLANT FRAGS. |
| 27 | 67.39 | 67.47 | 0.08 | 59 | | | SANDSTONE | CG.M.GY.THNB.SLD W/ MUDST LAM. |
| 28 | 67.47 | 67.84 | 0.37 | 64 | | | CONGLOMERATE | PBLY.LT.GY.MAS.SLD COARSENING UPWARD SEQUENCES, GRADES TO SS AT BASE. |
| 28 | 67.84 | 68.17 | 0.33 | *71 | | | SANDSTONE | PBLY.LT-M.GY.MAS.SLD BECOMES MUDDY AT BASE. |
| 28 | 68.17 | 68.66 | 0.49 | 70 | | | MUDSTONE | CARB.OK.GY.SLD ABUNDANT PLANT FOSSILS (MANY COALY), PYR LENS NEAR BASE. |
| 28 | 68.66 | 68.70 | 0.04 | 69 | | | COAL | C-3.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 68.70 | 68.80 | 0.10 | 69 | | | MUDSTONE | CARB. DK. GY. BRKN |
| 28 | 68.80 | 69.45 | 0.65 | 68 | | | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT COALY STRINGERS. |
| 29 | 69.45 | 69.88 | 0.43 | 66 | | | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT COALY STRINGERS. |
| 29 | 69.88 | 69.90 | 0.02 | 65 | H/I | | COAL | C-1. SLD |
| 29 | 69.90 | 70.97 | 1.07 | 64 | H/I | | MUDSTONE | CARB. M-DK. GY. BRKN ABUNDANT COALY STRINGERS & THIN BANDS, BECOMES LIGHTER COLOURED & SILTY TOWARD S. BASE, PLANT FRAGS. |
| 29 | 70.97 | 71.57 | 0.60 | 61 | | | MUDSTONE | CARB. M-DK. GY. BRKN ABUNDANT COALY STRINGERS & THIN BANDS, BECOMES LIGHTER COLOURED & SILTY TOWARD S. BASE, PLANT FRAGS. |
| 30 | 71.57 | 71.84 | 0.27 | 60 | | | SANDSTONE | FG. VTHNB. BRKN W/ SSSY SLTST INTERBEDS, MINOR PLANT FRA GS, COAL STRINGER AT .19 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------|
| 30 | 71.84 | 73.56 | 1.72 | *57 | | | SILTSTONE | M-DK. GY. VTHNB. BRKN INTERBEDDED W/ VFG SS, PLANT FRAGS, COA LIFIED WOOD FRAGS. |
| 31 | 73.56 | 73.99 | 0.43 | 55 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN W/ SLTST LAM, PLANT FRAGS, TWIST-OFF AT BASE. |
| 31 | 73.99 | 74.09 | 0.10 | 54 | | | ROCK LOSS | |
| 31 | 74.09 | 74.88 | 0.79 | 53 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN AS ABOVE, W/ COALIFIED WOOD FRAGS. COAL STRINGER .79 M DOWN. |
| 31 | 74.88 | 75.49 | 0.61 | *52 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN AS ABOVE. |
| 32 | 75.49 | 75.95 | 0.46 | *51 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN INTERBEDDED W/ SLTST, PLANT FRAGS, WOOD FRAGS (COALIFIED). |
| 32 | 75.95 | 76.18 | 0.23 | 59 | | | SANDSTONE | FG. M. GY. VTHNB. SHRD W/ SLTST INTERBEDS. |
| 32 | 76.18 | 76.55 | 0.37 | 66 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 32 | 76.55 | 76.81 | 0.26 | *74 | | | SANDSTONE | VFG. M. GY. LAM. BRKN W/ SLTST LAM, LISTRIC SURFACES PARALLEL BEDDING PLANES. |
| 32 | 76.81 | 76.84 | 0.03 | | 75 | | BRECCIA | QTZ VEIN W/ SLTST BRECCIA. |
| 32 | 76.84 | 77.61 | 0.77 | *76 | | | SANDSTONE | FG. M. GY. LAM. BRKN INTERLAM W/ SLTST. |
| 33 | 77.61 | 77.92 | 0.31 | | 75 | | SANDSTONE | FG. M. GY. BRKN AS ABOVE W/ PLANT FRAGS, LISTRIC SURFACES ON BEDDING PLANES. |
| 33 | 77.92 | 78.53 | 0.61 | *74 | | | SANDSTONE | FG. M. GY. BRKN AS ABOVE, OCCASIONAL FG SS CLASTS (RIP-UPS?), LISTRIC SURFACES. |
| 33 | 78.53 | 78.60 | 0.07 | | 73 | | SILTSTONE | M. GY. SHRD |
| 33 | 78.60 | 78.79 | 0.19 | | 73 | | ROCK LOSS | |
| 33 | 78.79 | 78.87 | 0.08 | | 73 | | BRECCIA | QTZ VEINING, W/ FG SS AND SLTST BREC. |
| 33 | 78.87 | 78.90 | 0.03 | | 73 | | MUDSTONE | DK. GY. SLD POORLY CONSOLIDATED, QTZ VEINS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 78.90 | 79.79 | 0.89 | | 72 | | SANDSTONE | FG. M. GY. VTHNB. BRKN W/ SLTST LAM, <1 MM QTZ VEINS, ABUND PLANT FRAGS, P. NORDENSKIOLDII, C. RIGIDA |
| 34 | 79.79 | 80.97 | 1.18 | *70 | | | SANDSTONE | FG. M. GY. LAM. SSD. BRKN INTERLAM W/ SLTST, SOME LISTRIC SURFACES PARALLEL TO BEDDING PLANES, PLANT FRAGS, P. NORDENSKIOLDII. |
| 34 | 80.97 | 81.83 | 0.86 | | 72 | | SANDSTONE | FG. M. GY. LAM. SSD. BRKN AS ABOVE, PLANT FRAGS, LISTRIC SURFACES SSW DOWNWARDS. |
| 35 | 81.83 | 81.95 | 0.12 | | 73 | | SANDSTONE | FG. M. GY. LAM. BRKN AS ABOVE. |
| 35 | 81.95 | 82.02 | 0.07 | | 74 | | SANDSTONE | FG. M. GY. SLD W/ SLTST RIP-UPS. |
| 35 | 82.02 | 83.18 | 1.16 | *75 | | | SILTSTONE | SSY. M. GY. VTHNB. SSD. BRKN W/ FG SS, MUDDY SLTST & MUDST INTERBEDS AND LAM. SLTST BLOB W/ BEDDING CURVING AROUND ABOVE & BELOW. MINOR TINY PLANT FRAGS, SOME LISTRIC SURFACES ON BEDDING PLANES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 83.18 | 83.48 | 0.30 | | 78 | | SANDSTONE | FG.M.GY.THNB.BRKN W/ DISCON SLTST LAM, COALIFIED WOOD FRAGS. |
| 35 | 83.48 | 83.75 | 0.27 | | 79 | | SILTSTONE | SSY.M.GY.VTHNB.BRKN W/ FG SS LAM, ABUND LISTRIC SURFACES PARALLEL TO BEDDING PLANES. |
| 36 | 83.75 | 83.76 | 0.01 | | 79 | | SILTSTONE | SSY.M.GY.VSHRD AS ABOVE, POSSIBLE CORE LOSS. |
| 36 | 83.76 | 84.03 | 0.27 | | 80 | | ROCK LOSS | |
| 36 | 84.03 | 84.27 | 0.24 | | *81 | | SANDSTONE | FG.BRKN INTERLAM W/ SLTST, SOME DISCONTINUOUS SLTST LAM. |
| 36 | 84.27 | 84.59 | 0.32 | | 81 | | SANDSTONE | FG.M.GY.BRKN GRITTY APPEARANCE, DARK GREY FG SS LAM, SLTST LAM AT TOP, QTZ VEINING NEAR TOP, COAL STRINGERS W/ QTZ AT .1 M DOWN (C -3 COAL, ZONE OF STRINGERS .03 M WIDE). |
| 36 | 84.59 | 84.60 | 0.01 | | 82 | | SILTSTONE | M.GY.VSHRD SLTST W/ FG SS. |
| 36 | 84.60 | 85.00 | 0.40 | | 82 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 85.00 | 85.07 | 0.07 | | 82 | | SILTSTONE | CLY.M-DK.GY.SLD OCCASIONAL QTZ VEIN, .5 CM QTZ VEINS AT BASE W/ SLTST BRECCIA, COAL STRINGER AT BASE. |
| 36 | 85.07 | 85.29 | 0.22 | | 82 | | SANDSTONE | FG.M.GY.BRKN VERY GRITTY TEXTURE, BREAKS EASILY. |
| 36 | 85.29 | 86.25 | 0.96 | | *83 | | SANDSTONE | MG.M.GY W/ SLTST & MUDST LAM AND CLASTS (UP TO 6 CM LONG). |
| 37 | 86.25 | 87.07 | 0.82 | | *55 | | SANDSTONE | MG.LT-M.GY.THNB.BRKN W/ SLTY MUDST LAM & OCCASIONAL CLAST (UP TO 2.5 CM LONG), OCCASIONAL CG SS BED (VTHNB). |
| 37 | 87.07 | 88.11 | 1.04 | | *70 | | SANDSTONE | MG.LT-M.GY.THNB.BRKN W/ OCC SLTY MUDST LAM (LESS THAN LAST UNIT), OCCASIONAL COALIFIED WOOD FRAGMENTS, OCCASIONAL LISTRIC SURFACES ON MUDST BED, QTZ VEIN X-CUTTING & PARALLEL TO BEDDING. |
| 38 | 88.11 | 88.59 | 0.48 | | 65 | | SANDSTONE | MG.LT-M.GY.THNB.SLD W/ CG SS BEDS STARTING .3 M DOWN, QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|---------|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------|
| 38 | 88.59 | 88.64 | 0.05 | | 64 | | SILTSTONE | SLD QTZ VEIN W/ SSS SLTST BANDS. |
| 38 | 88.64 | 89.02 | 0.38 | | 62 | | SANDSTONE | CG.VPR.LT-M.GY.THNB.BRKN W/ GRANULES & MUDST CLASTS (AT TOP) UP TO 4 CM LONG, GRANULE AND MG INTERBEDS FURTHER DOWN. |
| 38 | 89.02 | 89.42 | 0.40 | *60 | | | SANDSTONE | MG.VPR.LT-M.GY.VTHNB.BRKN W/ FG BEDS, SLTY LAM AT BASE. |
| 38 | 89.42 | 89.88 | 0.46 | | 64 | | SANDSTONE | CG.LT-M.GY.VTHNB.BRKN W/ GRAN SS BEDS, QTZ VEINS. |
| 38 | 89.88 | 89.97 | 0.09 | | 67 | | SANDSTONE | VCG.LT-M.GY.THNB.BRKN W/ GRAN INTERBEDS. |
| 38 | 89.97 | 89.99 | 0.02 | | 67 | | COAL | C-3 2 STRINGERS W/ CG SS B/N. |
| 38 | 89.99 | 90.10 | 0.11 | | 68 | | SANDSTONE | VCG.LT-M.GY.THNB.BRKN AS SS ABOVE. |
| 39 | 90.10 | 91.11 | 1.01 | *73 | | | CONGLOMERATE | PBL.M.GY.THNB.BRKN FINE PBL CONGL W/ CG SS INTERBEDS, 2 CO ALY STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|---------|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 39 | 91.11 | 91.61 | 0.50 | | 71 | | CONGLOMERATE | PBL.M.GY.THNB.BRKN FINE PBL CONGL, OCCASIONAL CG SS INTERB EDS, COARSER THAN ABOVE. |
| 39 | 91.61 | 91.69 | 0.08 | | 71 | | CONGLOMERATE | PBL.M.GY.THNB.VBRKN AS ABOVE. |
| 39 | 91.69 | 91.96 | 0.27 | | 70 | | ROCK LOSS | |
| 39 | 91.96 | 92.26 | 0.30 | | 70 | | CONGLOMERATE | PBL.M.GY.THNB.BRKN AS ABOVE. |
| 40 | 92.26 | 92.42 | 0.16 | | 69 | | CONGLOMERATE | PBL.VPR.M.GY.MAS.SLD FINE PBLs, AS ABOVE, SHARP BED CONTACTS |
| 40 | 92.42 | 94.20 | 1.78 | | 67 | | CONGLOMERATE | PBL.VPR.M.GY.THNB.BRKN INTERBEDDED W/ VCG SS, CONGL MATRIX IS CG SS. PBLs AVG 4 MM (60% ARE QTZ). |
| 41 | 94.20 | 95.33 | 1.13 | | 64 | | CONGLOMERATE | PBL.VPR.M.GY.THNB.BRKN AS ABOVE W/ DISCONT QTZ VEINS, COALY BL EBS, POSSIBLY SOME KIND OF REPLACEMENT, SOME GRADED BEDDING, FINING UP. |
| 41 | 95.33 | 96.14 | 0.81 | | 62 | | CONGLOMERATE | PBL.VPR.M.GY.THNB.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|-----------------------------------------------------------------------|
| 42 | 96.14 | 97.61 | 1.47 | 59 | | CONGLOMERATE | PBL, VPR, M.GY, MAS, VBRKN NO SS INTERBEDS, VFG SS LAM AT BASE. |
| 42 | 97.61 | 97.81 | 0.20 | 57 | | ROCK LOSS | |
| 42 | 97.81 | 98.02 | 0.21 | 57 | | SANDSTONE | FG, M.GY, VTHNB, VBRKN OCCASIONAL PBL BAND, COAL STRINGER AT BASE. |
| 43 | 98.02 | 98.57 | 0.55 | *56 | 06859 | MUDSTONE | CARB, DK, GY, BRKN COALY PLANT FRAGS. LOWER 25 CM SAMPLED. |
| 43 | 98.57 | 98.67 | 0.10 | 54 | 06860 H | COAL | C-5, BRKN VITRAIN STRINGERS. |
| 43 | 98.67 | 98.82 | 0.15 | 54 | 06860 H | COAL LOSS | |
| 43 | 98.82 | 98.89 | 0.07 | 53 | 06860 H | ROCK LOSS | |
| 43 | 98.89 | 99.42 | 0.53 | 52 | 06860 H | COAL LOSS | |
| 43 | 99.42 | 99.46 | 0.04 | 50 | 06860 H | MUDSTONE | CARB, DK, GY, BRKN VITRAIN STRINGERS. |
| 43 | 99.46 | 99.51 | 0.05 | 50 | 06860 H | COAL | C-2, BRKN |
| 43 | 99.51 | 99.55 | 0.04 | 50 | 06860 H | MUDSTONE | CARB, DK, GY, SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------|
| 43 | 99.55 | 99.59 | 0.04 | 50 | 06860 H | COAL | C-4, SLD |
| 43 | 99.59 | 99.65 | 0.06 | 49 | 06860 H | COAL | C-2, BRKN |
| 43 | 99.65 | 99.66 | 0.01 | 49 | 06860 H | COAL | C-4, BRKN |
| 43 | 99.66 | 99.83 | 0.17 | 49 | 06860 H | MUDSTONE | CLYY, M.GY, BRKN |
| 43 | 99.83 | 99.87 | 0.04 | 48 | 06860 H | MUDSTONE | CARB, DK, GY, VBRKN |
| 43 | 99.87 | 100.08 | 0.21 | 48 | 06860 H | COAL LOSS | |
| 43 | 100.08 | 100.26 | 0.18 | 47 | 06860 H | COAL | C-2, VBRKN PARTIALLY POWDERED. |
| 43 | 100.26 | 100.33 | 0.07 | 46 | 06860 H | COAL | C-4, SLD VITRAIN & QTZ STRINGERS. |
| 43 | 100.33 | 100.73 | 0.40 | *45 | 06861 H | MUDSTONE | CARB, M-DK, GY, BRKN COALY STRINGERS AND SILTY. |
| 44 | 100.73 | 101.56 | 0.83 | 47 | 06861 H | MUDSTONE | CARB, DK, GY, BRKN ABUNDANT COALY STRINGERS & THIN BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------|
| 44 | 101.56 | 101.61 | 0.05 | 49 | 06861 H | ROCK LOSS | |
| 44 | 101.61 | 101.70 | 0.09 | 49 | 06862 H | COAL | C-3.BRKN PYRITE AT BASE. |
| 44 | 101.70 | 101.81 | 0.11 | 50 | 06862 H | COAL | C-5.BRKN BANDED WITH VITRAIN. |
| 44 | 101.81 | 101.88 | 0.07 | 50 | 06862 H | MUDSTONE | CLYY.M-DK.GY.SLD |
| 44 | 101.88 | 102.05 | 0.17 | 51 | 06862 H | COAL | C-4 BANDED WITH C-2. |
| 44 | 102.05 | 102.11 | 0.06 | 51 | 06862 H | COAL | C-2.VBRKN |
| 44 | 102.11 | 102.19 | 0.08 | 51 | 06862 H | MUDSTONE | CARB.DK.GY COALY PLANT FRAGS. |
| 44 | 102.19 | 102.25 | 0.06 | 52 | 06862 H | COAL | C-4.BRKN |
| 44 | 102.25 | 102.50 | 0.25 | 52 | 06862 H | COAL | C-2.SHRD SHEARED & MIXED WITH MUD. |
| 44 | 102.50 | 102.82 | 0.32 | 53 | 06862 H | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------|
| 44 | 102.82 | 102.86 | 0.04 | 54 | 06862 H | COAL | C-5.SHRD SHEARED & MIXED WITH MUD. |
| 44 | 102.86 | 102.96 | 0.10 | 54 | 06862 H | COAL | C-2.SHRD SHEARED & MIXED WITH MUD. |
| 45 | 102.96 | 103.08 | 0.12 | 55 | 06862 H | COAL | C-2.SHRD SHEARED & MIXED WITH MUD. |
| 45 | 103.08 | 103.20 | 0.12 | 55 | 06862 H | COAL LOSS | |
| 45 | 103.20 | 103.27 | 0.07 | 56 | 06862 H | ROCK LOSS | |
| 45 | 103.27 | 103.40 | 0.13 | 56 | 06862 H | COAL LOSS | |
| 45 | 103.40 | 105.29 | 1.89 | *60 | 06863 | MUDSTONE | CARB.M-DK.GY.SLD COAL STRINGERS AT TOP, GRADES TO SLTST AT BASE. UPPER 25 CM SAMPLED. |
| 46 | 105.29 | 105.38 | 0.09 | 64 | | MUDSTONE | DK.GY.SLD |
| 46 | 105.38 | 105.88 | 0.50 | *65 | | MUDSTONE | DK.GY.LAM.SSD.BRKN W/ S5Y SLTST LAM INCREASE DOWNWARDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 105.88 | 107.08 | 1.20 | 61 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN OCCASIONAL SLTY LAM. QTZ VEINING .2 TO 2.0 CM WIDE, MUDST BAND W/ COALY HOOD F RAG .77 M DOWN, OCCASIONAL LISTRIC SURF ACES. |
| 46 | 107.08 | 107.23 | 0.15 | 58 | | | SANDSTONE | FG.BRKN GRITTY SHEARED SURFACES, 2 CLAYEY BANDS M GY (HIGHLY SHEARED) .5 AND 2 CM THIC K. |
| 47 | 107.23 | 108.13 | 0.90 | 56 | | | SANDSTONE | FG.DK.GY.MAS.BRKN W/ BRECCIATED SLIST CLASTS, ABUND LISTRIC SURFACES, GRITTY APPEARANCE, QTZ VEINING. |
| 47 | 108.13 | 108.23 | 0.10 | 54 | | | SANDSTONE | VFG.M.GY.LAM.SHRD W/ MUDST INTERLAM. |
| 47 | 108.23 | 108.66 | 0.43 | *53 | | | MUDSTONE | DK.GY.LAM.SHRD W/ VFG SS INTERLAM, BREAKS APART EASILY |
| 47 | 108.66 | 108.93 | 0.27 | 54 | | | MUDSTONE | DK.GY.SHRD FEATURELESS, BREAKS EASILY. |
| 48 | 108.93 | 109.67 | 0.74 | 56 | | | MUDSTONE | DK.GY.SHRD AS ABOVE, OCCASIONAL QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 48 | 109.67 | 110.07 | 0.40 | 59 | | | MUDSTONE | DK.GY.SHRD POORLY CONSOLIDATED, WITH AIR POCKETS, COALY BITS. |
| 48 | 110.07 | 110.33 | 0.26 | 60 | | | MUDSTONE | DK.GY.VSHRD W/ COALY BITS, QTZ, MORE CONSOLIDATED DOWNWARDS, POSSIBLE CORE LOSS. |
| 48 | 110.33 | 110.46 | 0.13 | 61 | | | ROCK LOSS | |
| 48 | 110.46 | 110.52 | 0.06 | 61 | | | MUDSTONE | DK.GY.VBRKN SOFT FRIABLE. |
| 48 | 110.52 | 111.03 | 0.51 | 62 | | | MUDSTONE | DK.GY.SHRD FEATURELESS, QTZ VEIN, POORER CONSOLIDATION DOWNWARD. |
| 48 | 111.03 | 111.11 | 0.08 | 63 | | | MUDSTONE | DK.GY.VSHRD W/ SOME COALY BITS. |
| 48 | 111.11 | 111.15 | 0.04 | 64 | | | ROCK LOSS | |
| 48 | 111.15 | 111.21 | 0.06 | 64 | | | MUDSTONE | DK.GY.SHRD FEATURELESS. |
| 49 | 111.21 | 111.54 | 0.33 | 65 | | | MUDSTONE | CARB.DK.GY.SHRD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 49 | 111.54 | 111.78 | 0.24 | 66 | | | COAL | C-3. SHRD SHEARED & MIXED WITH MUD. |
| 49 | 111.78 | 112.65 | 0.87 | 68 | | | MUDSTONE | CARB. DK. GY. SHRD VERY SHEARED. |
| 49 | 112.65 | 112.74 | 0.09 | 70 | | | SANDSTONE | FG. LT-M. GY. SHRD CONTAINS QTZ. |
| 49 | 112.74 | 113.06 | 0.32 | 71 | | | MUDSTONE | SLTY. M-DK. GY. SLD CONTAINS QTZ. |
| 49 | 113.06 | 113.21 | 0.15 | 71 | | | MUDSTONE | CARB. DK. GY. SHRD |
| 50 | 113.21 | 113.29 | 0.08 | 72 | | | MUDSTONE | DK. GY. SHRD EASILY BROKEN. |
| 50 | 113.29 | 113.43 | 0.14 | 72 | | | SANDSTONE | FG. DK. GY. YBRKN LISTRIC SURFACES. |
| 50 | 113.43 | 113.63 | 0.20 | 73 | | | ROCK LOSS | |
| 50 | 113.63 | 113.91 | 0.28 | 74 | | | SANDSTONE | MG. M. GY. MAS. BRKN W/ QTZ VEINING, OCC. SLTY. LAM. MUDST. RIP -UPS AT BASE. |
| 50 | 113.91 | 114.16 | 0.25 | *75 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN OCCASIONAL SSSY LAM, LISTRIC SURFACES. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 50 | 114.16 | 114.47 | 0.31 | 74 | | | MUDSTONE | DK. GY. VSHRD QTZ VEINING, POSSIBLE CORE LOSS. |
| 50 | 114.47 | 115.52 | 1.05 | 73 | | | ROCK LOSS | |
| 50 | 115.52 | 115.73 | 0.21 | 72 | | | MUDSTONE | BLK. SHRD PLANT FRAGS. NEAR TOP. |
| 50 | 115.73 | 115.83 | 0.10 | 72 | | | ROCK LOSS | |
| 50 | 115.83 | 115.88 | 0.05 | 72 | | | SANDSTONE | FG. M. GY. SLD TWIST-OFF AT TOP. |
| 50 | 115.88 | 115.94 | 0.06 | 71 | | | MUDSTONE | M-DK. GY. VBRKN UNCONSOLIDATED MUD & ROCK BITS. |
| 50 | 115.94 | 116.94 | 1.00 | 71 | | | ROCK LOSS | |
| 50 | 116.94 | 117.00 | 0.06 | 70 | | | MUDSTONE | M-DK. GY. VBRKN |
| 51 | 117.00 | 117.67 | 0.67 | 69 | | | MUDSTONE | CARB. DK. GY. BRKN PARTIALLY SHEARED, COALY STRINGERS. |
| 51 | 117.67 | 118.31 | 0.64 | 68.06864 | | | MUDSTONE | CARB. DK. GY. BRKN LOWER 25 CM SAMPLED. PARTIALLY SHEARED, COALY STRINGERS, TWIST-OFF. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------|
| 51 | 118.31 | 118.52 | 0.21 | 67 | 06865 | PH | COAL LOSS | |
| 51 | 118.52 | 118.54 | 0.02 | 67 | 06865 | PH | COAL | C-2.SLD |
| 51 | 118.54 | 118.64 | 0.10 | 66 | 06865 | PH | MUDSTONE | CARB.DK.GY.BRKN COALY STRINGERS. |
| 51 | 118.64 | 118.79 | 0.15 | 66 | 06865 | PH | MUDSTONE | CLYY.M.GY.BRKN |
| 51 | 118.79 | 119.08 | 0.29 | 66 | 06865 | PH | MUDSTONE | CARB.DK.GY.BRKN COALY STRINGERS & LENSES. |
| 51 | 119.08 | 119.23 | 0.15 | 65 | 06866 | PH | COAL LOSS | |
| 51 | 119.23 | 119.33 | 0.10 | 65 | 06866 | PH | COAL | C-4.VBRKN ABUNDANT VITRAIN STRINGERS. |
| 52 | 119.33 | 119.49 | 0.16 | 65 | 06866 | PH | COAL | C-2.VBRKN |
| 52 | 119.49 | 119.51 | 0.02 | 65 | 06866 | PH | COAL | C-4.BRKN |
| 52 | 119.51 | 119.61 | 0.10 | 65 | 06866 | PH | COAL | C-2.BRKN MINOR PYRITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 52 | 119.61 | 119.62 | 0.01 | 65 | 06866 | PH | COAL | C-4.BRKN |
| 52 | 119.62 | 119.65 | 0.03 | 65 | 06866 | PH | COAL | C-3.BRKN |
| 52 | 119.65 | 120.11 | 0.46 | 64 | 06866 | PH | COAL LOSS | |
| 52 | 120.11 | 120.21 | 0.10 | 64 | 06866 | PH | COAL | C-6.SLD BONE COAL. CONTAINS PYRITE NODULES. |
| 52 | 120.21 | 120.62 | 0.41 | 63 | 06866 | PH | COAL | C-2.BRKN C-2 & C-5 BANDS THROUGHOUT. MINOR QTZ VEINING. |
| 52 | 120.62 | 120.70 | 0.08 | 63 | 06866 | PH | COAL | C-6.BRKN C-2 BANDS WITHIN. |
| 52 | 120.70 | 121.67 | 0.97 | 62 | 06867 | | MUDSTONE | SLTY.M-DK.GY.SLD CONTAINS ABUNDANT COALY STRINGERS & PLANT FRAGS. UPPER 25 CM SAMPLED. |
| 53 | 121.67 | 122.46 | 0.79 | *60 | | | SILTSTONE | M-DK.GY.LAM.BRKN W/ MUDDY & SSSY LAM. <1 CM FAULT DISPLACEMENTS. LITRIFIC SURFACES. COALY PLANT FRAGS, QTZ & TALC VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 53 | 122.46 | 122.97 | 0.51 | 70 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN W/ SLTST LAM, SSD, FAULTED BEDS, QTZ VEINING, SOME LISTRIC SURFACES. |
| 53 | 122.97 | 123.19 | 0.22 | 76 | | | SANDSTONE | FG.M.GY.VTHNB.VBRKN AS ABOVE, BECOMES MUDST W/ FG SS LAM AT BASE. |
| 53 | 123.19 | 123.42 | 0.23 | *79 | | | MUDSTONE | DK.GY.VTHNB.SLD W/ VFG SS LAM, MINOR FAULTING, QTZ VEIN S, PLANT FRAGS. |
| 53 | 123.42 | 123.56 | 0.14 | 79 | | | MUDSTONE | DK.GY.VTHNB.VBRKN INTERBEDDED W/ VFG SS, QTZ VEINS. |
| 54 | 123.56 | 123.76 | 0.20 | 79 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN W/ SLTST INTERBEDS, 1 MM MUDST BLEBS .1 M DOWN. |
| 54 | 123.76 | 123.89 | 0.13 | 79 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN W/ SLTST INTERBEDS. |
| 54 | 123.89 | 124.27 | 0.38 | 79 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN W/ OCC SLTST BEDS AND LAM, VERY MINOR P YRITE. |
| 54 | 124.27 | 124.97 | 0.70 | 80 | | | SANDSTONE | FG.LT-M.GY.VBRKN OCCASIONAL SLTST LAM, TWIST-OFF AT .33 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87009

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 55 | 124.97 | 125.09 | 0.12 | *80 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD W/ SLTY LAM. |
| 55 | 125.09 | 125.22 | 0.13 | 80 | | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE. |
| 55 | 125.22 | 125.78 | 0.56 | 80 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN ABUNDANT QTZ VEIN, PYRITE FLECKS, VFG S S LAM, SOME TALC W/ QTZ, END OF HOLE T. D. = 126.80 M. DRILLER'S MARK. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

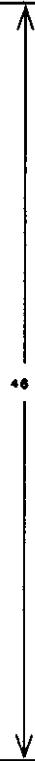
COAL DIVISION MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87009 SEAM : 1 INTERVAL(M) : 42.22 - 47.53 ELEVATION(M) : 1454.7
 GEOLOGIST : LEE SCALE: 1:40 DATE : MAR 04/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | | | |
|-------------|--------------------|---------------|-----------------|------|--------|-----------|------|-----------------|----------------|---------------------|-----|----|----|----|---------------|--|--|--|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL VAL MJ/KG | | | | |
| 1 2 3 4 5 6 | 42.22 | ↑ | | | | | | | | | | | | | | | | | |
| | | (0.22) | | | | | | | | | | | | | | | | | |
| | | 0.11 | | | | | | | | | | | | | | | | | |
| | | 0.87 | | | | | | | | | | | | | | | | | |
| | | (0.71) | | | | | | | | | | | | | | | | | |
| | | 0.97 | | | | | | | | | | | | | | | | | |
| | | 0.08 | | | | | | | | | | | | | | | | | |
| | | 0.87 | | | | | | | | | | | | | | | | | |
| | | 0.11 | | | | | | | | | | | | | | | | | |
| | | (2.13) | | | | | | | | | | | | | | | | | |
| 0.16 | | | | | | | | | | | | | | | | | | | |
| 47.53 | ↓ | | | | | | | | | | | | | | | | | | |



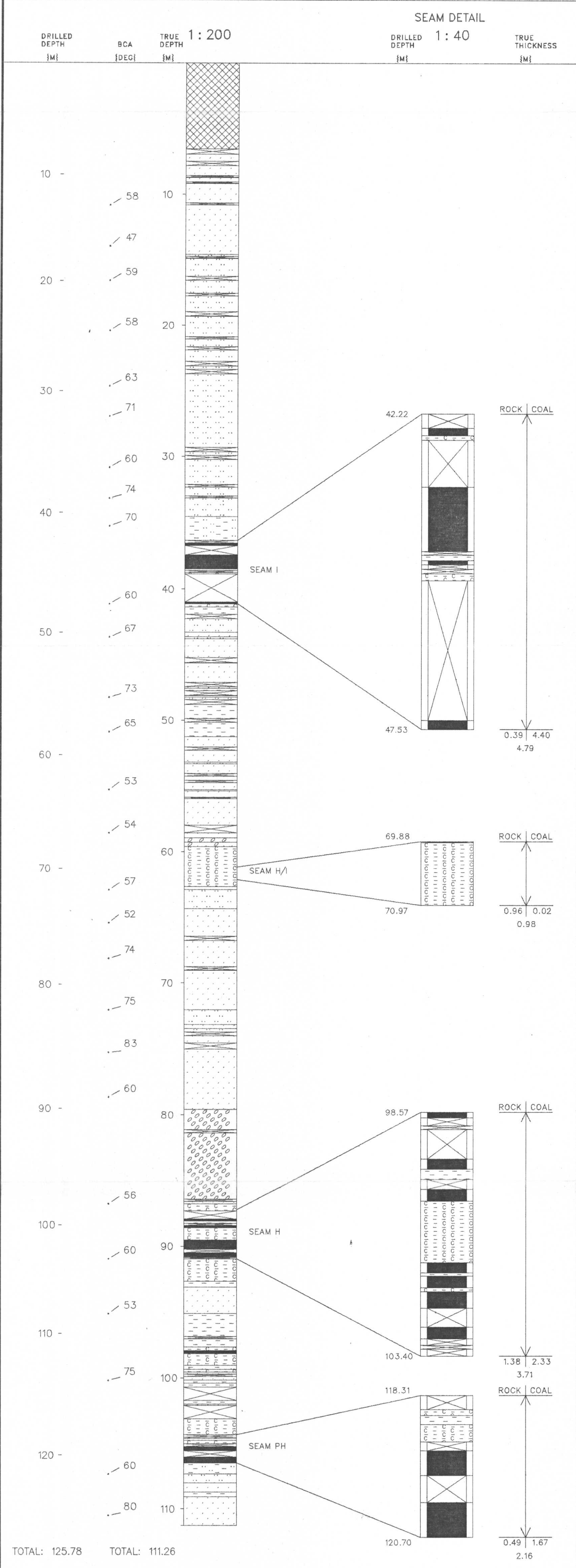
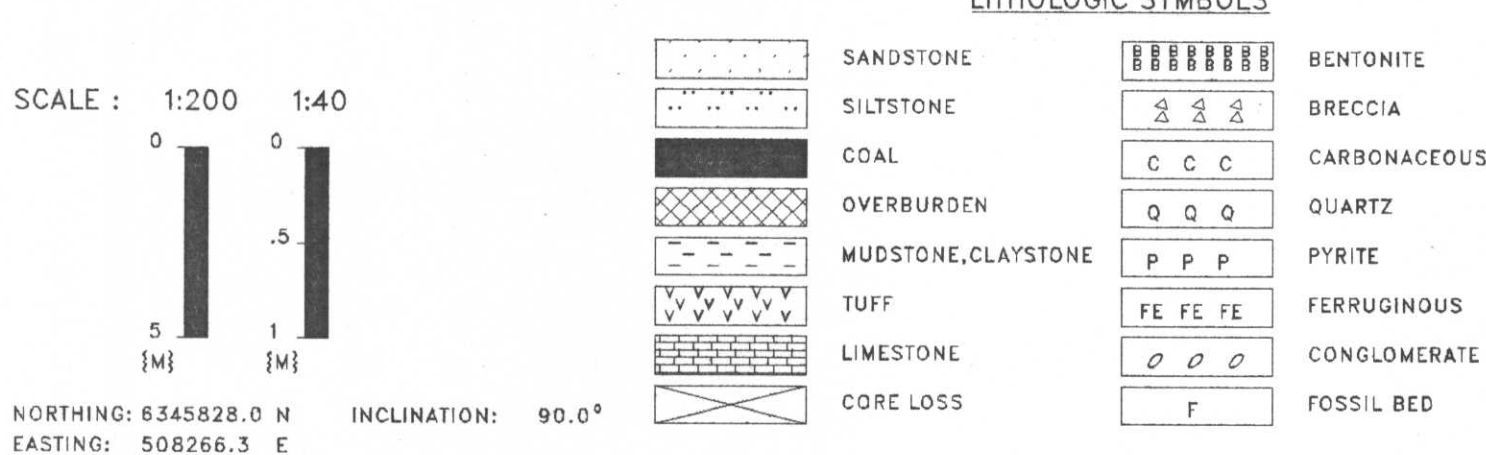
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87009

740

GEOLOGIST : LEE

DATE : MAR 08/88

DRAWING NO. :



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

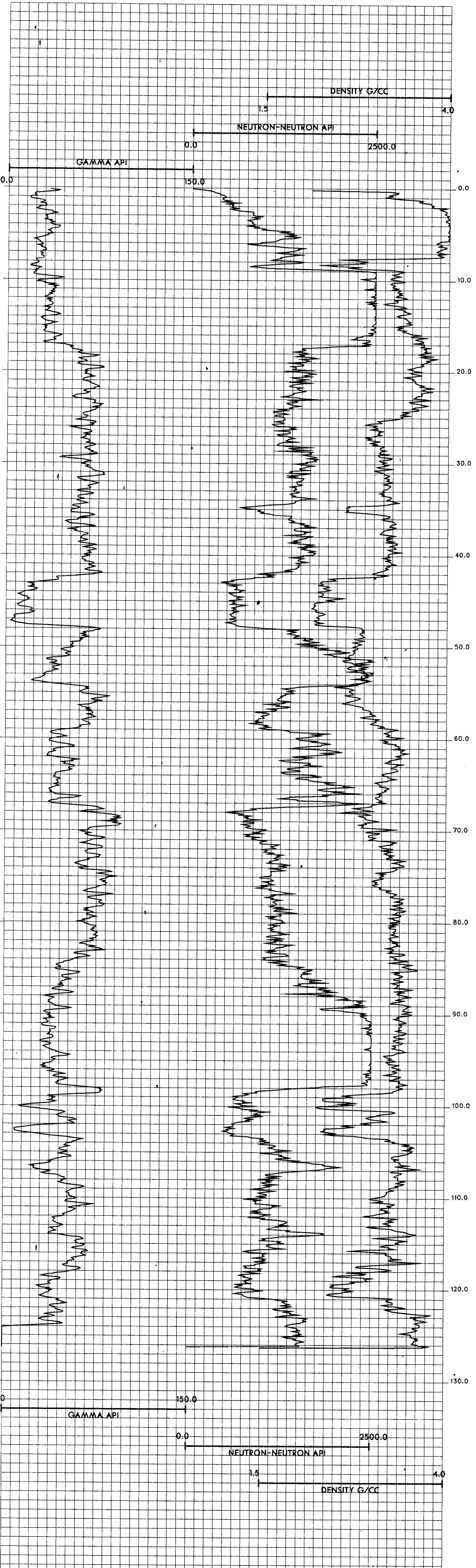
Datasource: **KPNLRDDH87009**
 Log Date: 87-09-10
 Company: CENTURY
 Geologist: LEE

Province: BC Northing: 6345830.00 Lat: 571526
 Zone: 9 Easting: 508266.00 Long: 1285147
 Measuring Point: GROUND LEVEL Elevation: 1454.7

Scale: 1 to 200.0
 Depth Range: 0.0 to 131.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Description | *Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87010

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87010

DATE - 03/01/88

- HISTORY -

START DATE - 09/07/87

END DATE - 09/09/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEDDA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - DRILLING COMPLICATIONS, HOLE WAS REDRILLED AS DDH8
7011. NO GEOPHYSICAL LOGS. SEAM INTERSECTED: H.

- LOCATION -

PROVINCE - BC

ELEVATION - 1705.37

ZONE - 9

NORTHING - 6342981.92

EASTING - 505255.36

LICENCE/LEASE NUMBER -

LATITUDE - 571355

LONGITUDE - 1285447

- ORIENTATION -

LENGTH - 59.74

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 3.66

AQUIFER DEPTHS (M) - 0.00

0.00

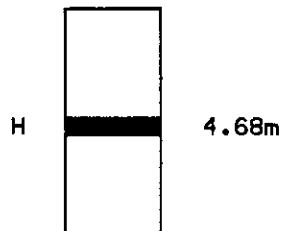
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87010**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:[205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 3.66 | 3.66 | 60 | | CASING | CASING DEPTH |
| 1 | 3.66 | 3.91 | 0.25 | 60 | | SILTSTONE | SSY-DK.GY.LAM.VBRKN SLTST WITH OCCASIONAL VFG SS LAMS (UP TO 0.5 CM THICK). OCCASIONAL BROKEN PLANT FRAGMENTS. WELL CONSOLIDATED. |
| 1 | 3.91 | 3.96 | 0.05 | 60 | | ROCK LOSS | |
| 1 | 3.96 | 4.77 | 0.81 | *60 | | SILTSTONE | SSY-M-DK.GY.LAM.XBDG.VBRKN INTBD & INTLAM VFG SS/SLTST (45/55) USU ALLY WITH SHARP LOWER CONTACTS & GRADAT IONAL UPPER CONTACTS. FINING UPWARD TRE ND IN INDIVIDUAL LAMS. LAMINAE ARE HORI ZONTAL & ONLY OCCASIONALLY WAVY. CORREC T MAY UP (XBDG). |
| 2 | 4.77 | 5.78 | 1.01 | *55 | | SILTSTONE | DK.GY.MAS.VBRKN DDM MASSIVE SLTST WITH RARE VFG SS (SL DISTORTED) LAMS NEAR THE UNIT'S TOP. DI STORTED LAMINAE POSSIBLY DUE TO BIOTRB. OCC PYRITE NODULES UP TO 2 CM AT .80 M PLANT DEBRIS THROUGHOUT & POSS A SMALL PYRITIZED BIVALVE AT .70 M (.5 CM LON G). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 5.78 | 5.91 | 0.13 | 56 | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A BUT LACKING ANY PLANT DEBRIS/P YRITE OR BIVALVES. |
| 2 | 5.91 | 6.45 | 0.54 | 57 | | ROCK LOSS | |
| 3 | 6.45 | 6.50 | 0.05 | 57 | | SANDSTONE | SLTY.VFG.MOD.LT-M.GY.LAM.SLD CLEAN RESISTIVE SS WITH COMMON THIN (<1 MM) SLTST LAMINAE. |
| 3 | 6.50 | 7.50 | 1.00 | 58 | | ROCK LOSS | |
| 3 | 7.50 | 8.14 | 0.64 | *60 | | SILTSTONE | DK.GY.MAS.SHRD DK.GY.MASSIVE SLTST WITH RARE THIN VFG SS LAMINATIONS. OCCASIONAL VERY SMALL P LANT FRAGMENTS. SMALL (.25 CM X .3 CM) THIN PYRITIZED BIVALVE SHELLS PRESENT I N SMALL NUMBERS (COMMONLY BROKEN) (.30M FROM TOP) = "ASTARTE" OR "STAFFINELLA". |
| 3 | 8.14 | 8.64 | 0.50 | 59 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 8.64 | 9.33 | 0.69 | 58 | | SILTSTONE | DK.GY.BRKN POORLY CONSOLIDATED SLTST, A/A BUT LACKING BIVALVES. |
| 3 | 9.33 | 9.53 | 0.20 | 57 | | ROCK LOSS | |
| 4 | 9.53 | 10.17 | 0.64 | 57 | | SILTSTONE | DK.GY.MAS.BRKN POORLY CONSOLIDATED MASSIVE SLTST. |
| 4 | 10.17 | 10.74 | 0.57 | 56 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SL COARSENING UPWARD TREND WITH SLTY MU DST AT TOP OF THE UNIT GRADING DOWN INT O POORLY CONSOL OFTEN CARBY MUDST. RARE SMALL BIVALVES (AS PREVIOUSLY DESCRIBE D BUT NOT PYRITIZED) AT 15 M. LOWER CO NTACT MISSING (= ROCK BREAK). |
| 4 | 10.74 | 10.87 | 0.13 | 55 | | SANDSTONE | FG.DK.GY.MAS.BRKN POORLY CONSOLIDATED SLIGHTLY CARB MUDDY FG SS W/ A SLIGHT INTERNAL FINING UPWA RD TREND. BASE OF UNIT = CORE THIST-OFF |
| 4 | 10.87 | 11.32 | 0.45 | 55 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | 11.32 | 11.80 | 0.48 | 54 | | SANDSTONE | SLTY.FG.M.GY.THNB.BRKN OVERALL COARSENING UPWARD TREND: MAS FG SS (A/A) GRADING DOWN TO INTBD (UP TO 2CM THICK) FG SS/VF SS/SLTST & EVENTUAL LY TO MASSIVE SLTST AT THE UNIT'S BASE. SS/SLTST = 50/50. |
| 5 | 11.80 | 13.28 | 1.48 | 52 | | SILTSTONE | SSY.DK.GY.THNB.SSD.VBRKN OVERALL CONTINUED COARSENING UPWARD TRE ND: SILTY SS AT THE UNIT'S TOP. SS LAMI NAE BECOME LESS FREQUENT TOWARDS THE BA SE WHERE MASSIVE MUDDY SLTST DOMINATES. LAMINAE ARE SUB-HORIZONTAL TO HAVY MIT H SOME BIOTRB OR SSD AT 1.15 M. |
| 5 | 13.28 | 13.66 | 0.38 | 51 | | SILTSTONE | DK.GY.THNB.BRKN DOMINANTLY SLTST WITH OCCASIONAL THIN S OMETIMES DISTORTED VFG SS LAMINAE. LAMI NAE OFTEN HAVE RAPID GRADATIONAL Contac TS AND SOME MIXING. SS/SLTST = 15/85. V ERY RARE SMALL PLANT FRAGS. |
| 6 | 13.66 | 15.38 | 1.72 | *49 | | SILTSTONE | CARB.DK.GY.MAS.BRKN SAME A/A BUT SS ONLY PRESENT AS THIN LA MS NEAR THE TOP OF THE UNIT. VFG SS/SLT ST = 5/95. MODERATELY CARB THROUGHOUT. PLANT DEBRIS COMMON THROUGHOUT BUT TOO SMALL TO I.D., RARE PYRITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 15.38 | 15.81 | 0.43 | *51 | | | SILTSTONE | CARB. DK. GY. VTHNB. SSD. BRKN SAME A/A. VFG SS OCCURS AS VERY RARE TH IN DISCONTINUOUS WISPS. SSD COMMON. SS/ SLTST = 10/90. CORRECT WAY UP (SSD). PY RITE NODULES OCCUR AT .28 M. |
| 7 | 15.81 | 16.51 | 0.70 | 47 | | | ROCK LOSS | |
| 7 | 16.51 | 17.83 | 1.32 | *40 | | | SILTSTONE | CARB. DK. GY. LAM. SSD. YBRKN SAME A/A BUT LACKING ANY PYRITE. POSSIB LE BIOTRB. SSD COMMON. PLANT FRAGS TOO BROKEN TO I.D. |
| 7 | 17.83 | 18.43 | 0.60 | 47 | | | ROCK LOSS | |
| 8 | 18.43 | 19.67 | 1.24 | *54 | | | SILTSTONE | CARB. DK. GY. LAM. SSD. SHRD STRONGLY DOMINATED BY SLTST. RARE THIN VFG SS LAMINATIONS. LAMS ARE COMMONLY B ROKEN OR DISCONTINUOUS & ALWAYS VERY TH IN WITH RAPID GRADATIONAL TO SHARP CONT. ACTS. CARB CONT HAS INCREASED SLIGHTLY FROM PREVIOUS UNIT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 19.67 | 19.83 | 0.16 | 54 | | | SILTSTONE | CARB. DK. GY. LAM. SSD. YBRKN SAME A/A BUT SS IS VERY RARE. |
| 9 | 19.83 | 21.69 | 1.86 | *53 | | | SILTSTONE | CARB. DK. GY. LAM. SSD. BRKN SAME A/A. LAMINATIONS ARE SUB-HORIZONTA L BUT USUALLY DISRUPTED. LAMS HAVE RAPI D GRADATIONAL UPPER & LOWER CONTACTS. P YRITE AT .43 M. CORRECT WAY UP (XBDG). |
| 9 | 21.69 | 22.30 | 0.61 | 56 | | | ROCK LOSS | |
| 10 | 22.30 | 22.67 | 0.37 | 57 | | | SILTSTONE | CARB. DK. GY. LAM. YBRKN SAME A/A BUT BECOMING LESS CARB. |
| 10 | 22.67 | 24.02 | 1.35 | *59 | | | SILTSTONE | CARB. DK. GY. LAM. BRKN SAME A/A. VFG SS/SLTST = 15/85. |
| 10 | 24.02 | 24.16 | 0.14 | 58 | | | ROCK LOSS | |
| 11 | 24.16 | 25.66 | 1.50 | *57 | | | SILTSTONE | CARB. DK. GY. LAM. BRKN SAME A/A. LOWER 5 CM OF UNIT IS VERY BR OKEN TO POWDERED. |
| 11 | 25.66 | 25.85 | 0.19 | 59 | | | SILTSTONE | CARB. DK. GY. VSHRD SAME A/A. VERY POORLY CONSOLIDATED (ESP UPPER HALF). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 25.85 | 26.48 | 0.63 | 59 | | | SILTSTONE | CARB. DK. GY. SHRD POORLY CONSOLIDATED, SLIGHTLY CARB. |
| 12 | 26.48 | 27.74 | 1.26 | *61 | | | SILTSTONE | CARB. DK. GY. BRKN SAME AS PREVIOUS SLTST. WELL CONSOLIDATED WITH ONLY VERY RARE VFG SS LAMS. OCCASIONAL SMALL BROKEN PLANT FRAGMENTS. |
| 13 | 27.74 | 28.36 | 0.62 | 54 | | | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT CARB. PLANT FRAGS. |
| 13 | 28.36 | 28.85 | 0.49 | *50 | 06868 | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT CARB. PLANT FRAGS. LOWER 25 CM SAMPLED. |
| 13 | 28.85 | 30.04 | 1.19 | 52 | 06869 | H | COAL LOSS | |
| 13 | 30.04 | 30.07 | 0.03 | 54 | 06869 | H | COAL | C-2. YBRKN |
| 13 | 30.07 | 30.19 | 0.12 | 54 | 06869 | H | COAL | C-4. VSHRD MUDDY & SOFT. |
| 13 | 30.19 | 30.21 | 0.02 | 54 | 06869 | H | MUDSTONE | CLYY. BLK. BRKN POORLY CONSOLIDATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------|
| 13 | 30.21 | 30.35 | 0.14 | 54 | 06869 | H | COAL | C-2. BRKN |
| 13 | 30.35 | 30.37 | 0.02 | 55 | 06869 | H | MUDSTONE | CLYY. DK. GY. SLD POORLY CONSOLIDATED. |
| 13 | 30.37 | 30.42 | 0.05 | 55 | 06869 | H | SILTSTONE | M. GY. SLD VERY HARD, QTZ WITHIN, RECRYSTALLIZATION (SAME APPEARANCE AS SNOWFLAKE HORIZON). |
| 13 | 30.42 | 30.50 | 0.08 | 55 | 06869 | H | MUDSTONE | CLYY. M. GY. SLD |
| 13 | 30.50 | 30.57 | 0.07 | 55 | 06869 | H | COAL | C-3. SLD C-2 BANDS. |
| 14 | 30.57 | 30.73 | 0.16 | 55 | 06869 | H | COAL | C-3. VSHRD SHEARED, POWDERED & MUDDY. |
| 14 | 30.73 | 31.19 | 0.46 | 56 | 06869 | H | COAL | C-4. BRKN 50% BANDED WITH C-2. |
| 14 | 31.19 | 31.26 | 0.07 | 57 | 06869 | H | MUDSTONE | CARB. DK. GY. BRKN MINOR COAL STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------|
| 14 | 31.26 | 31.36 | 0.10 | 57 | 06869 | H | COAL | C-4 C-2 BANDS. |
| 14 | 31.36 | 31.40 | 0.04 | 57 | 06869 | H | MUDSTONE | CLY. M. GY. SLD UNCONSOLIDATED. |
| 14 | 31.40 | 31.98 | 0.58 | 58 | 06869 | H | COAL LOSS | MINOR MUDST. |
| 14 | 31.98 | 33.03 | 1.05 | 60 | 06870 | H | COAL | C-2. BRKN |
| 15 | 33.03 | 33.78 | 0.75 | 63 | 06870 | H | COAL | C-2. BRKN QIZ. AT. BASE. |
| 15 | 33.78 | 33.83 | 0.05 | 64 | 06870 | H | COAL | C-3. YBRKN MUDDY BANDS WITHIN. |
| 15 | 33.83 | 33.99 | 0.16 | 64 | 06870 | H | MUDSTONE | M-DK. GY. SLD POORLY CONSOLIDATED. |
| 15 | 33.99 | 34.03 | 0.04 | 64 | 06870 | H | COAL | C-5. SLD VITRAIN STRINGERS WITHIN. |
| 15 | 34.03 | 34.31 | 0.28 | 65 | 06870 | H | COAL | C-2. BRKN |
| 15 | 34.31 | 34.39 | 0.08 | *65 | 06870 | H | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 34.39 | 34.83 | 0.44 | 65 | 06871 | | MUDSTONE | CARB. DK. GY. CARB. PLANT FRAGS. MINOR PYRITE ALONG BEDDING. UPPER 25 CM SAMPLED. |
| 15 | 34.83 | 35.80 | 0.97 | 63 | | | ROCK LOSS | |
| 16 | 35.80 | 37.89 | 2.09 | 61 | | | SILTSTONE | CARB. DK. GY. LAM. BIOTR. BRKN WELL CONSOL. CARB. SLTST. W/ COMMON HORIZ. LAM. OF VFG. SS (VFG. SS/SLTST = 25/75). V.C. ARB. AT TOP BECOMING LESS CARB. BY .25M. PYR. NOD. COMMON FROM .85-1.20M. THIN COAL L. L. LAM. UP TO .3CM. COMMON AT .90M. AT THE TOP OF UNIT LAM. ARE HORIZ. WITH SHARP CONTACTS. |
| 17 | 37.89 | 39.77 | 1.88 | *58 | | | SILTSTONE | CARB. DK. GY. LAM. WRMBU. BRKN CARB. SLTST. WITH THIN OCC. VFG. SS. LAMS UP TO .5CM. SS/SLTST = 15/85. BIOTR. COMM. ON AT UNIT'S BASE (WRMBU). THIN COAL L. AMS. NEAR UNIT'S TOP. RARE SMALL PYR. NOD. PLANT DEBRIS & WOOD FRAGS. COMMON THROUGHOUT (ESP. IN THE CENTRAL PORTION OF THE UNIT). |
| 18 | 39.77 | 40.22 | 0.45 | 56 | | | SILTSTONE | DK. GY. MAS. BRKN DOMINANTLY MASSIVE SLTST. WITH ONLY OCCASIONAL VFG. SS. INCREASING SLIGHTLY TOWARDS UNIT'S BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 40.22 | 40.51 | 0.29 | | 56 | | ROCK LOSS | |
| 18 | 40.51 | 41.00 | 0.49 | | 55 | | SANDSTONE | SLTY. VFG. MOD. M. GY. VTHNB. SSD. BRKN INTBD & INTLAM VFG SS/SLTST (65/35) WIT H. SS MORE PREVALENT NEAR THE TOP OF UNIT. COMMON SSD STRUCT THROUGHOUT & SMALL RIP-UPS (1CM X .25CM) AT .40M (PROXIMA L BUT ROUNDED SLTST). LAMS HAVE SHARP CONTACTS & ARE SUB-HORIZ TO WAVY EXCEPT WHERE DISRUPTED. |
| 18 | 41.00 | 41.26 | 0.26 | | 55 | | SANDSTONE | SLTY. VFG. MOD. M. GY. VTHNB. BRKN SAME A/A. RIP-UP HORIZON (1CM) AT .23 M (A/A). SLIGHT FINING UP-WARD TREND WIT H FG SS AT UNIT'S BASE. |
| 18 | 41.26 | 41.87 | 0.61 | | *54 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN MASSIVE CLEAN RESISTIVE SS WITH RARE TH IN CARB LAMS ESP NEAR THE UNIT'S BASE. OCCASIONAL QUARTZ VEINING (.25 CM. & AT HIGH ANGLES TO BEDDING). |
| 19 | 41.87 | 42.81 | 0.94 | | *50 | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN SAME A/A. RARE THIN (UP TO 1 CM) DISCONTINUOUS SLTST LENSES. UNIT GRADES DOWN TO VFG SS AT ITS BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 42.81 | 43.21 | 0.40 | | 49 | | ROCK LOSS | |
| 19 | 43.21 | 43.60 | 0.39 | | 48 | | SANDSTONE | FG. WEL. LT-M. GY. VTHNB. SHRD THINLY INTBD FG SS/SLTST (70/30). VFG S S AT UNIT'S TOP GRADING INTO FG & SLIGHTLY UNCONSOLIDATED SS. SLTST LAMINAE ARE COMMONLY BROKEN & SLIGHTLY DISORIENTED W/IN THE SS. |
| 19 | 43.60 | 44.07 | 0.47 | | 48 | | ROCK LOSS | |
| 19 | 44.07 | 44.11 | 0.04 | | 47 | | SANDSTONE | FG. WEL. LT-M. GY. VSHRD SAME A/A. |
| 19 | 44.11 | 44.61 | 0.50 | | 47 | | ROCK LOSS | |
| 20 | 44.61 | 45.56 | 0.95 | | *46 | | SANDSTONE | MG. MOD. LT. GY. THNB. BRKN THINLY BEDDED FG & MG CLEAN SS WITH THIN OCC CARBY SLTST LAMS. LAMS ARE OFTEN DISCONTINUOUS LENSES OR ARE BROKEN W/IN THE SS HOST. OCCASIONAL SMALL MUDST/SLTST RIP-UPS. ABRUPT LOWER CONTACT. SS/SLTST = 90/10. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | 45.56 | 45.57 | 0.01 | 49 | | | SANDSTONE | CLYY. FG. PR. M. GY. LAM. SLD THIN UNCONSOLIDATED PLIABLE VERY CLAYEY FG SS WITH VERY THIN CARB LAMS W/IN. A BRUPT LOWER CONTACT. |
| 20 | 45.57 | 46.00 | 0.43 | 50 | | | SANDSTONE | MG. MOD. LT. GY. THKB. BRKN CONSOLIDATED FG & MG CLEAN SS WITH OCCA SIONAL THIN CARB LAMS & WISPS. RIP-UP H ORIZON (MUDST CLASTS = 2CM X .3CM) AT 5 CM. W/IN. A. CG. SS. |
| 20 | 46.00 | 46.18 | 0.18 | 52 | | | ROCK LOSS | |
| 21 | 46.18 | 46.21 | 0.03 | 52 | | | SANDSTONE | FG. LT. GY. VBRKN SAME A/A. |
| 21 | 46.21 | 46.35 | 0.14 | 53 | | | ROCK LOSS | |
| 21 | 46.35 | 46.77 | 0.42 | 55 | | | SANDSTONE | SLTY. FG. M-DK. GY. LAM. BRKN INTBD & INTLAM FG SS/SLTST (80/20) COMM ONLY DISRUPTED OR WAVY BUT WITH SHARP C ONTRACTS. SLTST LAMS ARE GENERALLY <1 CM - 1MM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 46.77 | 47.55 | 0.78 | *58 | | | SANDSTONE | SLTY. FG. M-DK. GY. LAM. WRMBU. SLD SAME A/A BUT SS/SLTST = 60/40 & BURROWS ARE VERY COMMON. RIGHT WAY UP. BURROWS ARE UP TO 1CM WIDE & UP TO 15CM LONG. |
| 21 | 47.55 | 48.01 | 0.46 | 61 | | | SANDSTONE | SLTY. FG. M-DK. GY. LAM. BRKN SAME A/A BUT LACKING BURROWS. AT .10 M THIN FINING UP TREND (2 CM THICK) WITH CG SS GRADING UP INTO FG SS. AT .41 M T HIN (.1 CM) UNCONSOL. SS. BED. |
| 21 | 48.01 | 48.17 | 0.16 | 63 | | | ROCK LOSS | |
| 22 | 48.17 | 50.25 | 2.08 | *68 | | | SANDSTONE | SLTY. FG. WEL. M-DK. GY. VTHNB. XBDG. BRKN INTBD FG SS/SLTST (55/45) WITH COMMON S SD & CROSS-BEDDING. BEDS ARE UP TO 5CM THICK BUT USUALLY <2CM & ARE STRAIGHT & HORIZONTAL W/ ABRUPT CONTACTS. OCCASIO NAL PLANT DEBRIS. |
| 23 | 50.25 | 50.35 | 0.10 | 67 | | | SILTSTONE | DK. GY. SLD 'SNOWFLAKE' HORIZON. WELL DEVELOPED REX LLN OF CaCO3 IN SLTST. ABRUPT LOWER CON TACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 50.35 | 50.60 | 0.25 | 66 | | | SANDSTONE | FG.LT.GY.VTHNB.SLD OVERALL FINING UPWARD TREND IN INTBD SS /SLTST (75/25) UNIT. SLTST BEDS ARE THICKER AND MORE COMMON NEAR THE TOP OF THE UNIT. SOME CARB LAMS. |
| 23 | 50.60 | 52.22 | 1.62 | 65 | | | SILTSTONE | SSY.DK.GY.THNB.WRNB.BRKN OVERALL COARSENING UPWARD TREND W/IN THE UNIT. SLTST AT BASE WITH VERY LITTLE SS GRADING UP TO VERY SANDY SLTST. LARGE BURROWS PRESENT THROUGHOUT (UP TO 1.5 CM WIDE). CORRECT WAY UP. RARE BROKEN PLANT DEBRIS. |
| 24 | 52.22 | 53.65 | 1.43 | 63 | | | SILTSTONE | SSY.DK.GY.LAM.BRKN INTLAM VFG SS/SLTST (10/90). LAMINAE ARE SUB-HORIZONTAL BUT OFTEN DISCONTINUOUS WITH GRADATIONAL TO RAPID GRAD CONTACTS & COMMON SHORT FINING UPWARD CYCLES. TWO THIN (1 CM) CaCO3 REXLLN ZONES AT .97M & 1.27M (EACH OF WHICH LIES W/IN THIN MUDST BEDS). |
| 24 | 53.65 | 53.97 | 0.32 | 62 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A BUT LACKING ANY SS LAMINAE. HO MEYER UNIT BEGINS TO BECOME SL SANDY TOWARDS BASE. GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 53.97 | 54.33 | 0.36 | 62 | | | SILTSTONE | SSY.M-DK.GY.MAS.SLD VERY SANDY SLTST BUT MIXED INTERNALLY RATHER THAN INTBD. UNIT'S BASE IS MARKED BY A VERY THIN LAMINAE OF REXLLIZED CaCO3. |
| 25 | 54.33 | 55.01 | 0.68 | 61 | | | SANDSTONE | SLTY.VFG.LT-M.GY.THKB.SSD.BRKN SLTY SS AT TOP GRADING DOWN TO MASSIVE SS WITH ONLY OCCASIONAL THIN SLTY LAMINAE UP TO .5 CM THICK. CENTRAL PORTION OF UNIT IS CHURNED WITH COMMON POORLY DEVELOPED CaCO3 REXLLN. SS/SLTST = 85/15. GRADATIONAL LOWER CONTACT. |
| 25 | 55.01 | 55.69 | 0.68 | *60 | | | SANDSTONE | VFG.M.GY.MAS.VBRKN AT .17 M: THIN WEL ROUNDED RIP-UP CLAST HORIZON (2.5 CM THK). OTHERWISE MAS SS W/RARE VTHN CARB & SLTY LAM. RIP-UPS ARE 2 X 2 CM SS AND 1 X .5 CM MUDST CLASTS. MUDST RIP-UPS PUSH INTO SS ONES SUGGESTING A MORE CONSOLIDATED MUDST DURING DEPOSITION. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 55.69 | 56.39 | 0.70 | 61 | | | ROCK LOSS | |
| 25 | 56.39 | 56.47 | 0.08 | 61 | | | SANDSTONE | VFG. M. GY. MAS. VSHRD SAME A/A BUT LACKING RIP-UPS. |
| 25 | 56.47 | 56.62 | 0.15 | 61 | | | ROCK LOSS | |
| 26 | 56.62 | 56.87 | 0.25 | 61 | | | SILTSTONE | SSY. M-DK. GY. MAS. BIOTR. BRKN CHURNED & MIXED SANDY SLTST. SOME CaCO3 REXLLN (ESP NEAR BASE). V. SMALL RIP-UP S IN A VARIETY OF ORIENTATIONS AT THE U NIT'S BASE. (MARKER #56.69 M AT .10 M). SMALL MUDST. RIP-UPS ARE 1 CM X 1-2 MM. GRADATIONAL LOWER CONTACT. |
| 26 | 56.87 | 57.02 | 0.15 | 61 | | | SANDSTONE | VFG. M. GY. MAS. SLD MASSIVE SS WITH VERY SMALL RIP-UPS (A/A) AT THE TOP. VERY RARE THIN LAM THROUGH HOUT. ABRUPT. LOWER CONTACT. |
| 26 | 57.02 | 57.55 | 0.53 | 62 | | | SILTSTONE | SSY. DK. GY. MAS. SLD BECOMES SLIGHTLY SANDIER TOWARDS BASE. GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87010

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 57.55 | 57.77 | 0.22 | *62 | | | SANDSTONE | VFG. M. GY. LAM. SLD WELL LAMINATED BY VERY THIN SLTST BANDS UP TO 1 MM THICK. RAPID GRADATIONAL UP PER CONTACT. |
| 26 | 57.77 | 58.55 | 0.78 | 62 | | | SILTSTONE | DK. GY. MAS. SSD. SLD PREVIOUSLY BEDDED BUT NOW WELL MIXED SL TST & SS, THEREFORE MASSIVE. SS/SLTST = 20/80. |
| 27 | 58.55 | 59.74 | 1.19 | *61 | | | SILTSTONE | DK. GY. MAS. BRKN SAME A/A. MINOR PLANT DEBRIS BUT TOO BR OKEN TO IDENTIFY. END OF HOLE. ID = 59. 74 M. DRILLER'S MARKER. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87010

740

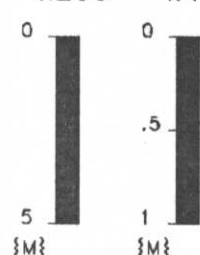
GEOLOGIST : LEDDA

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40



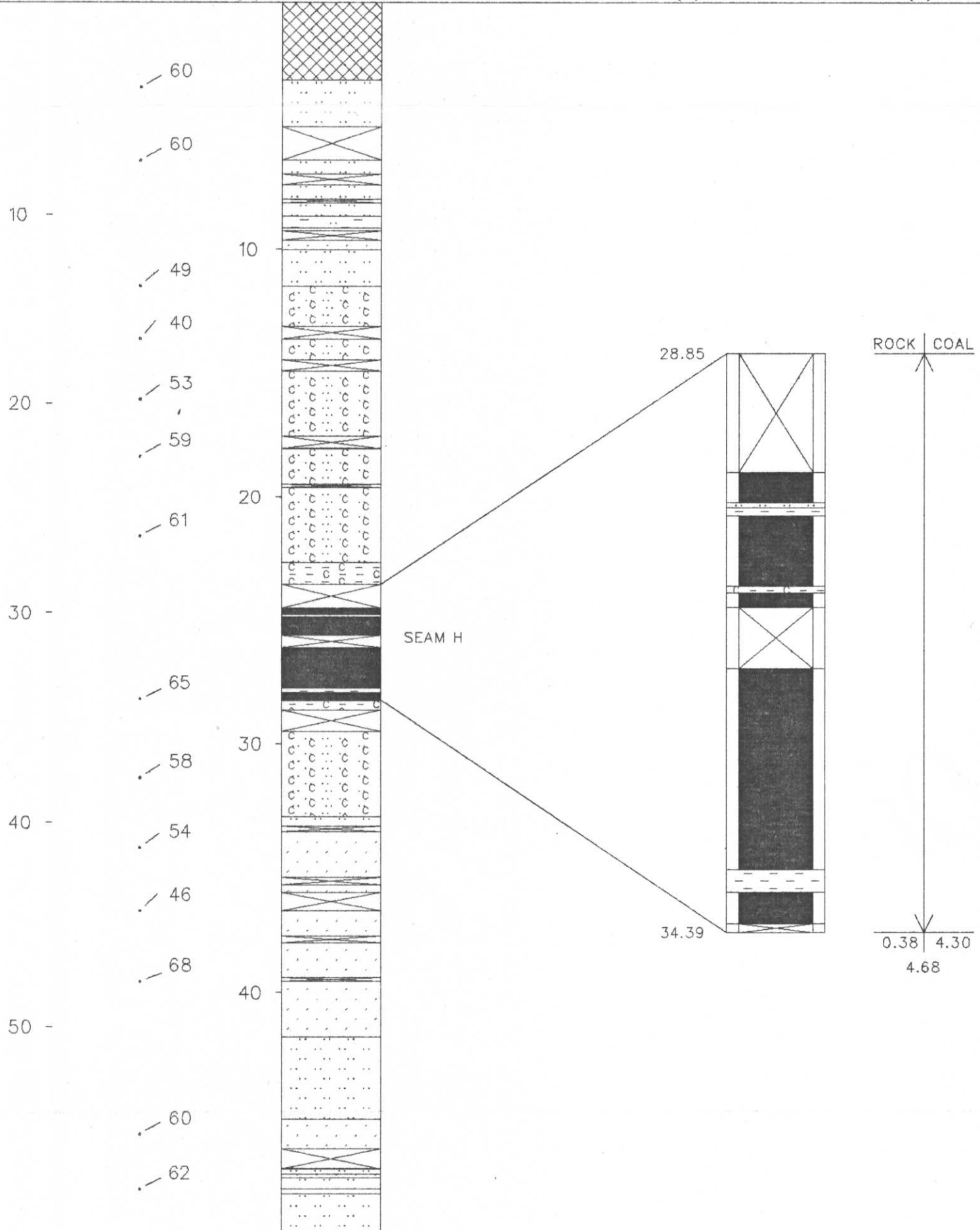
NORTHING: 6342981.0 N
 EASTING: 505255.3 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL

| DRILLED DEPTH {M} | BCA {DEG} | TRUE DEPTH {M} | DRILLED DEPTH {M} | TRUE THICKNESS {M} |
|----------------------|--------------|-------------------|----------------------|-----------------------|
|----------------------|--------------|-------------------|----------------------|-----------------------|



TOTAL: 59.74

TOTAL: 49.88

KPNLRDDH87011

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87011

DATE - 03/01/88

- HISTORY -

START DATE - 09/09/87

END DATE - 09/12/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEDDA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED: H, PH. HOLE STARTED ADJACENT TO
ABANDONED DDH87010.

- LOCATION -

PROVINCE - BC

ELEVATION - 1705.28

ZONE - 9

NORTHING - 6342980.77

EASTING - 505254.96

LICENCE/LEASE NUMBER -

LATITUDE - 571354

LONGITUDE - 1285447

- ORIENTATION -

LENGTH - 93.27

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 4.27

AQUIFER DEPTHS (M) - 0.00

0.00

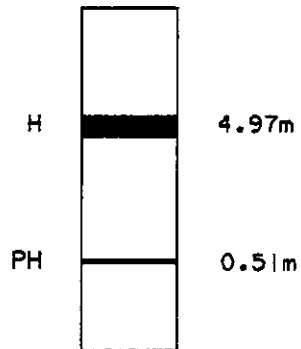
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87011**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:12050571860072012.L6



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 4.27 | 4.27 | 60 | | | CASING | CASING DEPTH |
| 1 | 4.27 | 5.83 | 1.56 | 60 | | | ROCK LOSS | |
| 1 | 5.83 | 6.21 | 0.38 | *60 | | | SILTSTONE | SSY M-DK. GY. VTHNB. SHRD THINLY INTERBEDDED VFG SS/SLTST (40/60) WELL CONSOLIDATED BUT VERY BROKEN. CO NTACTS BETWEEN BEDS ARE VERY ABRUPT & S TRAIGHT HORIZONTAL. |
| 1 | 6.21 | 6.95 | 0.74 | 59 | | | SILTSTONE | SSY M-DK. GY. THNB. VBRKN SAME A/A BUT INDIVIDUAL BEDS ARE THICKE R ALTHOUGH COMMONLY ARE LAMINATED BY OP POSING LITHOLOGIES (SS/SLTST = 45/55). SOME MIXING NEAR BASE. |
| 1 | 6.95 | 7.44 | 0.49 | 59 | | | ROCK LOSS | |
| 2 | 7.44 | 8.72 | 1.28 | *58 | | | SILTSTONE | SSY DK. GY. MAS. VBRKN WELL CONSOLIDATED A/A BUT COMMONLY MIXE D LITHOLOGIES. SS/SLTST = 15/85 & COMMO NLY DISTORTED. VERY RARE PLANT DEBRIS. |
| 2 | 8.72 | 9.32 | 0.60 | 61 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 9.32 | 9.45 | 0.13 | *62 | | | SILTSTONE | DK. GY. MAS. SLD SAME A/A. |
| 3 | 9.45 | 9.95 | 0.50 | 62 | | | ROCK LOSS | |
| 3 | 9.95 | 10.93 | 0.98 | 61 | | | SILTSTONE | SSY DK. GY. LAM. SSD. VBRKN DOM. MAS. SLTST BRKN BY SUB-HORIZ TO MAY Y VFG SS LAMINATIONS. SSD COMMON THROUG HOUT AS WELL AS PYRITE. CORRECT MAY UP (SSD & FINING UP CYCLES W/IN SOME LAM). AT 46 M. SMALL PYRITIZED BIVALVES BUT VERY RARE. BIVALVES ARE THIN SHELLD & .20 X .30 CH. |
| 3 | 10.93 | 11.62 | 0.69 | 60 | | | ROCK LOSS | |
| 3 | 11.62 | 11.87 | 0.25 | 59 | | | SILTSTONE | M-DK. GY. SHRD POORLY CONSOLIDATED VERY MUDDY SLTST. |
| 3 | 11.87 | 12.70 | 0.83 | 58 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | 12.70 | 12.74 | 0.04 | 58 | | | MUDSTONE | SLTY. DK. GY. VSHRD PROBLEMS WITH TOOL... THEREFORE NO CORE FROM 10.97 - 14.02 M. |
| 4 | 12.74 | 13.20 | 0.46 | 57 | | | ROCK LOSS | |
| 4 | 13.20 | 13.79 | 0.59 | 57 | | | MUDSTONE | CARB. DK. GY. PWRD MIXED SILTY MUDST & RARE VERY CARB FG S S. CORE IS VERY BROKEN DUE TO TOOL PROB LEMS. |
| 5 | 13.79 | 14.18 | 0.39 | *56 | | | SILTSTONE | SSY. DK. GY. VSHRD DOMINANTLY SILTST WITH OCCASIONAL VFG SS THIN BEDS & LAMINAE UP TO 4 CM. SS/SILT ST = 30/70. CONTACTS ARE SHARP WITH LAM INAE COMMONLY DISCONTINUOUS. |
| 5 | 14.18 | 15.54 | 1.36 | 57 | | | SILTSTONE | DK. GY. MAS. BRKN MUDDY SILTST. NOT WELL CONSOLIDATED. PLA NT DEBRIS COMMON LOCALLY. |
| 6 | 15.54 | 17.10 | 1.56 | *58 | | | SILTSTONE | DK. GY. MAS. BRKN SAME A/A. OCCASIONAL VFG SS LAM WITH GR ADATIONAL UPPER & LOWER CONTACTS. |
| 6 | 17.10 | 17.58 | 0.48 | 58 | | | SILTSTONE | DK. GY. MAS. BRKN SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 17.58 | 19.59 | 2.01 | *57 | | | SILTSTONE | DK. GY. MAS. SSD. BRKN COMMON VERY THIN VFG SS LAM WITH GRADAT IONAL UPPER & LOWER CONTACTS. SOME SSD & RARE PLANT DEBRIS. |
| 8 | 19.59 | 19.91 | 0.32 | 56 | | | SILTSTONE | DK. GY. MAS. BRKN SAME A/A. |
| 8 | 19.91 | 21.36 | 1.45 | *56 | | | SILTSTONE | DK. GY. MAS. SSD. BRKN SAME A/A BUT LAMINAE SHOW SHARPER CONTA CTS THAN IN PREVIOUS UNITS. LAMINAE STI LL THIN HOWEVER & ARE SOMETIMES DISTORT ED. |
| 8 | 21.36 | 21.76 | 0.40 | 58 | | | ROCK LOSS | |
| 9 | 21.76 | 22.52 | 0.76 | *60 | | | SILTSTONE | DK. GY. MAS. SHRD 95% SILTST WITH COMMON BUT VTHN VFG SS L AMS GRADING INTO SILTST. COMMONLY DISCON TINUOUS. RAPID GRADATIONAL INTERLAM CON TACTS. COMMON CARB & MUDDY ZONES (GRADA TIONAL). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 22.52 | 22.72 | 0.20 | 60 | | | ROCK LOSS | |
| 9 | 22.72 | 23.28 | 0.56 | 60 | | | SILTSTONE | CARB. DK. GY. MAS. VBRKN SAME A/A BUT MORE CARB THROUGHOUT WITH COMMON PLANT DEBRIS. |
| 9 | 23.28 | 23.68 | 0.40 | 60 | | | ROCK LOSS | |
| 10 | 23.68 | 25.37 | 1.69 | *60 | | | SILTSTONE | DK. GY. MAS. VBRKN SAME A/A BUT CARB AT TOP BECOMING LESS CARB TOWARDS BASE. SS LAMINAE STILL VERY THIN (<1 MM). |
| 11 | 25.37 | 25.72 | 0.35 | 56 | | | SILTSTONE | CARB. DK. GY. MAS. BRKN SAME A/A. PLANT FRAGMENTS COMMON. |
| 11 | 25.72 | 27.41 | 1.69 | *53 | | | SILTSTONE | CARB. DK. GY. LAM. BRKN SAME A/A BUT SS BECOMING MORE COMMON (V FG SS/SILTST = 10/90). SS LAMINAE STILL <1 MM USUALLY WITH SHARP OR RAPID GRADA TIONAL CONTACTS & HORIZONTAL NATURE; BU T COMMONLY DISCONTINUOUS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 12 | 27.41 | 28.70 | 1.29 | 56 | 06872 | | MUDSTONE | SLTY. M-DK. GY. BRKN CARB PLANT FRAGS. MORE CONCENTRATED NEAR R BASE. LOWER 10 CM SAMPLED. |
| 12 | 28.70 | 28.85 | 0.15 | 58 | 06872 | | MUDSTONE | CARB. M-DK. GY. SLD CARB PLANT FRAGS. |
| 12 | 28.85 | 29.20 | 0.35 | 58 | 06873 | H | COAL LOSS | |
| 12 | 29.20 | 29.42 | 0.22 | 59 | 06873 | H | COAL | C-2. BRKN CORE LOSS APPARENT. |
| 12 | 29.42 | 29.49 | 0.07 | 59 | 06873 | H | MUDSTONE | SLTY. M-DK. GY. |
| 12 | 29.49 | 29.81 | 0.32 | 60 | 06873 | H | COAL LOSS | |
| 13 | 29.81 | 30.07 | 0.26 | 60 | 06873 | H | COAL | C-2. BRKN |
| 13 | 30.07 | 30.14 | 0.07 | 61 | 06873 | H | COAL | C-1. BRKN |
| 13 | 30.14 | 30.17 | 0.03 | 61 | 06873 | H | COAL | C-2. BRKN |
| 13 | 30.17 | 30.22 | 0.05 | 61 | 06873 | H | COAL | C-4. SLD C-2. BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------|
| 13 | 30.22 | 30.48 | 0.26 | 61 | 06873 H | MUDSTONE | CLYY.M.GY.SLD POORLY CONSOLIDATED. |
| 13 | 30.48 | 30.50 | 0.02 | 61 | 06873 H | MUDSTONE | SLTY.M-DK.GY.BRKN |
| 13 | 30.50 | 30.53 | 0.03 | 61 | 06873 H | COAL | C-4.BRKN |
| 13 | 30.53 | 30.71 | 0.18 | 62 | 06873 H | COAL | C-3.YBRKN SHEARED & BROKEN. |
| 13 | 30.71 | 30.90 | 0.19 | 62 | 06873 H | COAL | C-2.SLD |
| 13 | 30.90 | 31.05 | 0.15 | 62 | 06873 H | COAL | C-3.SLD |
| 13 | 31.05 | 31.45 | 0.40 | 63 | 06873 H | COAL LOSS | |
| 13 | 31.45 | 31.52 | 0.07 | 64 | 06873 H | MUDSTONE | CARB.DK.GY.SLD |
| 13 | 31.52 | 31.58 | 0.06 | 64 | 06873 H | COAL | C-3 C-2 BANDS WITHIN. ALSO SOME QTZ BANDS. |
| 13 | 31.58 | 31.68 | 0.10 | 64 | 06873 H | MUDSTONE | CARB.DK.GY.SLD CLAYEY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------|
| 13 | 31.68 | 32.00 | 0.32 | 64 | 06873 H | COAL LOSS | |
| 13 | 32.00 | 32.65 | 0.65 | 65 | 06874 H | COAL LOSS | |
| 13 | 32.65 | 32.69 | 0.04 | 66 | 06874 H | COAL | C-3.BRKN |
| 13 | 32.69 | 33.05 | 0.36 | 67 | 06874 H | COAL | C-2.BRKN C-3 BANDS WITHIN. |
| 14 | 33.05 | 33.86 | 0.81 | 68 | 06874 H | COAL | C-2.BRKN |
| 14 | 33.86 | 34.01 | 0.15 | 69 | 06874 H | MUDSTONE | CARB.DK.GY.SLD |
| 14 | 34.01 | 34.06 | 0.05 | 69 | 06874 H | COAL | C-5.SLD VITRAIN STRINGERS. |
| 14 | 34.06 | 34.39 | 0.33 | 69 | 06874 H | COAL | C-2.BRKN |
| 14 | 34.39 | 34.54 | 0.15 | *70 | 06875 | MUDSTONE | SLTY.M-DK.GY.BRKN THIN COALY BANDS & STRINGERS. UPPER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 34.54 | 34.92 | 0.38 | *58 | | MUDSTONE | CARB. BLK. LAM. SLD VERY SILTY & CARB MUDST WITH COMMON THIN COAL LAMS & THINNER PYRITE-RICH LAMS THROUGHOUT. WOOD FRAGS & PLANT DEBRIS ALSO COMMON THROUGHOUT. |
| 15 | 34.92 | 36.38 | 1.46 | 59 | | SILTSTONE | SSY, DK. GY. MAS. BIOTR. BRKN OVERALL FINING UPWARD TREND. MUDDY SLTS AT TOP BECOMING SANDIER TOWARDS BASE. CARB. NEAR TOP. VFG SS/SILTST/MUDST = 25/70/5. POORLY LAMINATED NEAR TOP, BECOMING MIXED & MASSIVE NEAR BASE (BIOTRB). |
| 15 | 36.38 | 36.63 | 0.25 | 60 | | ROCK LOSS | |
| 16 | 36.63 | 37.49 | 0.86 | *61 | | SILTSTONE | SSY, M-DK. GY. VTHNB. BRKN COMMON VFG SS. FORMING THIN LAMS & MIXED ZONES ALMOST ALWAYS WITH GRADATIONAL CONTACTS. BASE OF UNIT IS MARKED BY 15 CM PYRITE-RICH & HEAVILY BRECCIATED CARB ZONE. THIN COAL STRINGER AT .75 M. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 37.49 | 37.69 | 0.20 | 60 | | ROCK LOSS | |
| 16 | 37.69 | 37.95 | 0.26 | 59 | | MUDSTONE | CARB. BLK. MAS. YBRKN VERY CARB SLIGHTLY SILTY MUDST WITH COMMON PLANT DEBRIS. |
| 16 | 37.95 | 38.44 | 0.49 | 58 | | SILTSTONE | CARB. BLK. MAS. SLD MUDDY SLTST WITH COMMON BROKEN PLANT DEBRIS. |
| 17 | 38.44 | 38.96 | 0.52 | 57 | | SILTSTONE | CARB. DK. GY. LAM. BRKN COMMON THIN SS LAMS WITH RAPID GRADATIONAL CONTACTS (SUB-HORIZONTAL). OCC COAL LAMS & PLANT DEBRIS. SLIGHT FINING UPWARD TREND WITH SS INCREASING TOWARDS BASE. |
| 17 | 38.96 | 39.58 | 0.62 | *55 | | SANDSTONE | SLTY. VFG. MOD. M-DK. GY. LAM. SSD. BRKN VFG CLEAN SS COMMONLY LAMINATED BY SLTS. LAMS ARE COMMONLY BROKEN & DISRUPTED FORMING ANGULAR RIPUPS & MIXING. SSD THROUGHOUT. CORRECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17 | 39.58 | 39.73 | 0.15 | 55 | | ROCK LOSS | |
| 17 | 39.73 | 40.26 | 0.53 | 56 | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN THINLY LAM VFG SS/SLTST AT TOP (10 CM) RAPIDLY GRADING INTO MASSIVE CLEAN FG S S WITH OCCASIONAL SLTY SS BEDS UP TO 6 CM. BDG CONTACTS HAVE GRADATIONAL BASES & SHARP TOPS. |
| 18 | 40.26 | 40.97 | 0.71 | 57 | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN OCCASIONAL THIN CARB MUDST WAVY LAMS & VERY RARE SMALL (<.5 CM) RIP-UPS. LAMS ARE DISCONTINUOUS & FADE. |
| 18 | 40.97 | 41.27 | 0.30 | 57 | | ROCK LOSS | |
| 18 | 41.27 | 42.03 | 0.76 | *58 | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN SAME A/A BUT RARER LAMS. OCCASIONAL RIP-UP CLASTS (BLK MUDST) UP TO 1.5 CM (MEL. ROUNDED). |
| 18 | 42.03 | 42.33 | 0.30 | 56 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 42.33 | 42.49 | 0.16 | 56 | | SANDSTONE | SLTY FG.MOD.LT-M.GY.LAM.SSD.SLD CHURNED INTBEDD FG SS/SLTST (60/40). RAPID GRADATIONAL LOWER CONTACT. |
| 18 | 42.49 | 42.59 | 0.10 | 55 | | SANDSTONE | FG.WEL.LT.GY.MAS.BRKN MASSIVE CLEAN SLIGHTLY CARB SS. |
| 18 | 42.59 | 43.05 | 0.46 | 54 | | ROCK LOSS | |
| 19 | 43.05 | 43.32 | 0.27 | 53 | | SANDSTONE | FG.WEL.LT.GY.PMRD SS A/A. |
| 19 | 43.32 | 43.62 | 0.30 | 52 | | ROCK LOSS | |
| 19 | 43.62 | 44.15 | 0.53 | 51 | | SANDSTONE | MG.PR.LT.GY.VTHNB.BRKN THINLY INTBEDD POORLY SORTED SS/SLTST (70/30). SS RANGES FROM VFG - MG & GRADE S INTO EACH OTHER. SLTST THIN BEDS & RARE CARB LAMS HAVE WAVY BUT SHARP CONTACTS. |
| 19 | 44.15 | 44.35 | 0.20 | 50 | | ROCK LOSS | |
| 19 | 44.35 | 44.58 | 0.23 | 49 | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN VERY RARE CARB SLTST LAMS (UP TO 2 MM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 44.58 | 44.89 | 0.31 | *48 | | SANDSTONE | CG. PR. LT. GY. MAS. SLD OCCASIONAL CARB SLTST LAMS A/A. RIP-UP CLAST HORIZON (2.5 CM THK) AT .08M. CLA STS ARE SLTST & CARB MUDST. WELL ROUNDE D & UP TO 1.5 CM THICK. |
| 20 | 44.89 | 45.12 | 0.23 | *48 | | SANDSTONE | MG. HEL. LT. GY. MAS. SLD OCCASIONAL SMALL MUDST & LARGER SLTST R IP-UPS A/A. GRADATIONAL LOWER CONTACT. THIN (2 CM) POORLY CONSOLIDATED SLTST. B ED AT .17 M. |
| 20 | 45.12 | 46.40 | 1.28 | 52 | | SILTSTONE | SSY. LT.-M. GY. YTHNB. WRMBU. BRKN THINLY INTBEDD & INTLAM FG SS/SLTST (40 /60) WITH COMMON BIOTRB & WRMBUR. BED C ONTACTS ARE SHARP EXCEPT WHERE MIXING O CCURS. CORRECT WAY UP. BDG BECOMES THIC KER TOWARDS BASE. |
| 21 | 46.40 | 46.46 | 0.06 | 56 | | SANDSTONE | FG. HEL. LT. GY. MAS. SLD POORLY CONSOLIDATED CLEAN SS. SHARP LOW ER CONTACT. |
| 21 | 46.46 | 46.76 | 0.30 | 57 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 46.76 | 46.88 | 0.12 | 59 | | SANDSTONE | SLTY. VFG. HEL. M-DK. GY. LAM. VBRKN INTLAM VFG SS/SLTST (65/35). LAMINAE CO NTACTS ARE HORIZONTAL AND RAPID GRADATI ONAL - SHARP "HELMINTHOPSIS" HORIZON A T BASE OF UNIT (2 CM). |
| 21 | 46.88 | 46.98 | 0.10 | 59 | | ROCK LOSS | |
| 21 | 46.98 | 47.13 | 0.15 | *60 | | SANDSTONE | SLTY. VFG. HEL. M-DK. GY. LAM. SLD SAME A/A. "HELMINTHOPSIS" BEDS ARE USUAL LY W/IN GRADATIONAL SLTST/SS HORIZONS & ARE UP TO 1.5 CM THICK, FORMING TWO DI STINCT BEDS. CORRECT WAY UP. (FINING UP CYCLES). |
| 21 | 47.13 | 48.38 | 1.25 | 61 | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN THINLY INTBEDD & INTLAM VFG SS/SLTST (4 5/55) WITH SHARP SUB-HORIZONTAL CONTACT S. BASAL PORTION SHOWS SOME DISRUPTED B EDDING (SSD) CONTAINING RARE SMALL RIP -UPS & MIXED ZONES. PLANT DEBRIS COMMON THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 48.38 | 49.17 | 0.79 | 62 | | SILTSTONE | SSY, M-DK, GY, THNB, BRKN INTBED FG SS/SLTST (40/60), FORMING BEDS UP TO 20 CM THK, EACH INTERNALLY LAMINATED BY THE OPPOSING LITHOLOGY. PLANT DEBRIS VERY COMMON THROUGHOUT ESP W/IN THE SLTST. BDG CONTACTS = RAPID GRADATIONAL. |
| 22 | 49.17 | 49.30 | 0.13 | 62 | | SILTSTONE | DK, GY, BRKN "SNOWFLAKE" HORIZON - REFLIXED CaCO ₃ , SHARP UPPER & LOWER CONTACTS. |
| 22 | 49.30 | 50.12 | 0.82 | *63 | | SILTSTONE | SSY, M-DK, GY, THNB, SSD, BRKN INTBED & INTLAM VFG SS/SLTST (35/65) WITH AN OVERALL COARSENING UPWARD TREND. CONTACTS ARE SUB-HORIZONTAL TO WAVY WITH SOME SSD TOWARDS THE BASE. CORRECT WAY UP. |
| 22 | 50.12 | 50.37 | 0.25 | 64 | | SANDSTONE | SLTY, VFG, M-DK, GY, THNB, BRKN VFG SS/SLTST (75/25) WITH COMMON LAMINAE W/IN. INTERLAMINAE SOMETIMES SHOW SHARP FINING UPWARD CYCLES. CORRECT WAY UP. SHARP BDG & LAM CONTACTS. |
| 22 | 50.37 | 50.47 | 0.10 | 64 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 50.47 | 52.59 | 2.12 | *65 | | SILTSTONE | SSY, DK, GY, LAM, SSD, SLD INTLAM VFG SS/SLTST (25/75); LAM CONTACTS ARE SHARP - RAPID GRADATIONAL & ARE SUB-HORIZONTAL - WAVY WITH SOME SSD. CORRECT WAY UP. COMMON PLANT DEBRIS THROUGHOUT. AT 1.80 M THIN VERY CARB MUDST BEDS (6 CM THK). |
| 24 | 52.59 | 53.14 | 0.55 | 61 | | SANDSTONE | SLTY, VFG, MOD, M-DK, GY, MAS, BRKN SAME A/A AT TOP BUT GRADING INTO MASSIVE SLTY SS NEAR BASE. BASE OF UNIT IS MARKED BY LARGE WELL ROUNDED RIP-UPS (UP TO 5 CM) CONSISTING OF BIOTRB, SLTST AND SS FROM .3 M BELOW THE UNIT. |
| 24 | 53.14 | 53.45 | 0.31 | 60 | | SANDSTONE | SLTY, VFG, MOD, M-DK, GY, MAS, BIOTR, BRKN A/A BUT LACKING RIP-UPS. MIXING PRESENT DUE TO BIOTRB. RAPID GRADATIONAL LOWER CONTACT. |
| 24 | 53.45 | 53.77 | 0.32 | 59 | | SANDSTONE | SLTY, VFG, MOD, M-DK, GY, MAS, BIOTR, SLD BIOTURBATED SILTY SS. SS/SLTST = 75/25. RAPID GRADATIONAL LOWER CONTACT. |
| 24 | 53.77 | 54.49 | 0.72 | *58 | | SANDSTONE | VFG, HEL, LT-M, GY, LAM, BRKN CARB LAMS AT TOP DECREASING GRADATIONAL TO MASSIVE SS AT BASE. RARE THIN SLTST LAMS AT TOP WITH HORIZONTAL SHARP CONTACTS. RARE CaCO ₃ REFLIX. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 54.49 | 54.59 | 0.10 | 59 | | | ROCK LOSS | |
| 25 | 54.59 | 56.57 | 1.98 | *60 | | | SILTSTONE | SSY.M-DK.GY.MB.BIOTR.BRKN DOMINANTLY SLIGHTLY SANDY SLTST WITH 2 FG. SS BEDS W/IN AT .10 & .95 M. EACH S S BED IS ~15 CM WIDE & HAS A SHARP BASA L CONTACT & GRADATIONAL (FINING UP) UPP ER CONTACT. SLTST IS BIOTRB & HAS THIN MIXED SS LAMS THROUGHOUT. |
| 26 | 56.57 | 58.73 | 2.16 | *59 | | | SILTSTONE | SSY.DK.GY.MAS.SSD.SLD SANDY SLTST WITH RARE VFG SS WISPS & CH URNED LAMS (SSD). OCCASIONAL PLANT DEBR IS NEAR BASE. |
| 27 | 58.73 | 59.22 | 0.49 | *65 | | | SILTSTONE | DK.GY.MAS.SLD SLIGHTLY SSSY SLTST A/A WITH COMMON PYRI TE BLEBS (UP TO 1 CM BY 2 CM). |
| 27 | 59.22 | 60.92 | 1.70 | *67 | | | SILTSTONE | DK.GY.MAS.SLD RARE PYRITE NEAR THE TOP. VERY RARE THI N VFG SS WISPS. |
| 28 | 60.92 | 61.85 | 0.93 | 66 | | | SILTSTONE | DK.GY.MAS.SLD SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 61.85 | 62.18 | 0.33 | 65 | | | SILTSTONE | CARB.DK.GY.MAS.SLD SAME A/A BUT WITH OCCASIONAL THIN COAL LAMS (COALIFIED WOOD FRAGS). |
| 28 | 62.18 | 62.28 | 0.10 | 65 | | | ROCK LOSS | |
| 28 | 62.28 | 62.98 | 0.70 | *65 | | | SILTSTONE | CARB.DK.GY.MAS.BRKN SAME A/A. VERY RARE COAL LAMS. |
| 28 | 62.98 | 63.10 | 0.12 | 64 | | | ROCK LOSS | |
| 29 | 63.10 | 63.92 | 0.82 | 63 | | | SILTSTONE | CARB.DK.GY.MAS.SLD SAME A/A BUT ONLY SLIGHTLY CARB NEAR TO P. GRADUALLY INCREASING IN CARB NEAR BAS E. BASE IS MARKED BY THIN COAL LAMS UP TO .5 CM. COMMON PYRITE NEAR BASE. |
| 29 | 63.92 | 63.95 | 0.03 | *62 | | | COAL | C-5.BLK.SLD OCCASIONAL THIN C-2 LAMS. |
| 29 | 63.95 | 63.96 | 0.01 | 62 | | | COAL | C-2.BLK.SLD THIN MUDST LAMS (<1 MM). |
| 29 | 63.96 | 64.00 | 0.04 | 62 | | | COAL | C-3.BLK.SLD COMMON C-2 LAMS UP TO .5 CM W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 64.00 | 64.04 | 0.04 | 62 | | | MUDSTONE | CARB. BLK. LAM. SLD THIN COAL LAMS (UP TO 1 MM) BUT RARE. S HARP CONTACTS. |
| 29 | 64.04 | 64.06 | 0.02 | 62 | | | COAL | C-2. BLK. LAM. SLD COMMON THIN MUDST LAMS UP TO 1 MM. |
| 29 | 64.06 | 64.08 | 0.02 | 62 | | | COAL | C-2. BLK. SLD |
| 29 | 64.08 | 64.09 | 0.01 | 62 | | | MUDSTONE | CARB. BLK. SLD COMMON C-2 LAMS. |
| 29 | 64.09 | 64.35 | 0.26 | 62 | | | MUDSTONE | CARB. BLK. LAM. SLD VERY CARB WITH COMMON THIN COAL LAMS. |
| 29 | 64.35 | 65.04 | 0.69 | 62 | | | SILTSTONE | CARB. BLK. MAS. BRKN VERY CARB SLIGHTLY SLTY MUDST AT BASE W / COMMON COAL LAMS GRADING DOWN INTO SL IGHTLY CARB SLTST AT BASE. |
| 30 | 65.04 | 65.26 | 0.22 | 62 | | | SILTSTONE | SSY. M-DK. GY. MAS. BRKN MIXED SANDY SLTST (SS/SLYST = 50/50) WI TH POORLY DEFINED WAVY BDG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 65.26 | 66.97 | 1.71 | 62 | | | SILTSTONE | SSY. M-DK. GY. THKB. BIOTR. BRKN BROAD COARSENING UPWARD TREND: SANDIER NEAR TOP OF UNIT GRADING DOWN TO SLTST NEAR THE UNIT'S BASE. BIOTRB THROUGHOUT THEREFORE POORLY DEFINED SUB-HORIZONTAL L BDG WITH COMMONLY GRADATIONAL CONTACT S. SLIGHTLY CARB. RAPID GRADATIONAL LOW ER CONTACTS. |
| 30 | 66.97 | 67.08 | 0.11 | 63 | | | SANDSTONE | SLTY. YFG. LT. GY. MAS. SLD WELL CEMENTED, VERY SLTY VFG SS. |
| 31 | 67.08 | 68.41 | 1.33 | 63 | 06876 | | MUDSTONE | CARB. DK. GY. SLD CARB & COALY PLANT FRAGS THROUGHOUT. LO HER 13 CM. SAMPLED. |
| 31 | 68.41 | 68.53 | 0.12 | 63 | 06876 | | MUDSTONE | CARB. DK. GY. SLD AS ABOVE. |
| 31 | 68.53 | 68.57 | 0.04 | 63 | 06877 PH | | COAL | C-3. BRKN C-2 BANDS. |
| 31 | 68.57 | 68.61 | 0.04 | 63 | 06877 PH | | MUDSTONE | CARB. DK. GY. BRKN VITRAIN STRINGERS. |
| 31 | 68.61 | 68.64 | 0.03 | 63 | 06877 PH | | MUDSTONE | CLYY. M. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 31 | 68.64 | 68.76 | 0.12 | *63 | 06877 | PH | MUDSTONE | CARB. DK. GY. SLD COAL STRINGERS. |
| 31 | 68.76 | 68.96 | 0.20 | 63 | 06877 | PH | COAL | C-4. BRKN C-2 THIN BANDS. |
| 31 | 68.96 | 69.02 | 0.06 | 62 | 06877 | PH | COAL | C-3. PWRD |
| 32 | 69.02 | 69.10 | 0.08 | 62 | 06877 | PH | COAL | C-3. VBRKN SHEARED. |
| 32 | 69.10 | 69.16 | 0.06 | 62 | 06878 | | SILTSTONE | M. GY. SLD |
| 32 | 69.16 | 71.07 | 1.91 | *60 | 06878 | | SANDSTONE | SLTY. FG. GY. SILTSTONE LAMINAE THROUGHOUT. HORIZONTAL L WORM BURROWS INDICATE TOPS UP. UPPER 19 CM SAMPLED. |
| 32 | 71.07 | 71.21 | 0.14 | 57 | | | ROCK LOSS | |
| 33 | 71.21 | 71.39 | 0.18 | 57 | | | SANDSTONE | YFG. MOD. M. GY. MB. VBRKN OCCASIONAL THIN DISCONTINUOUS SLTST & C ARB LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 71.39 | 71.69 | 0.30 | 56 | | | ROCK LOSS | |
| 33 | 71.69 | 72.91 | 1.22 | *54 | | | SANDSTONE | SLTY. VFG. MOD. M-DK. GY. LAM. VBRKN INTLAM VFG SS/SLTST (50/50). SS MORE CO MMON NEAR TOP WITH SLTST INCREASING TOW ARDS BASE. LAM CONTACTS ARE SUB-HORIZON TAL TO WAVY & RAPID GRADATIONAL. |
| 33 | 72.91 | 73.21 | 0.30 | 57 | | | ROCK LOSS | |
| 34 | 73.21 | 73.74 | 0.53 | *59 | | | SANDSTONE | SLTY. VFG. MOD. M-DK. GY. LAM. SSD. BRKN SAME A/A. OCCASIONAL SSD. |
| 34 | 73.74 | 74.71 | 0.97 | 59 | | | SILTSTONE | SSY. M-DK. GY. LAM. VBRKN SAME A/A. (SS/SLTST = 50/50). |
| 34 | 74.71 | 74.91 | 0.20 | 60 | | | ROCK LOSS | |
| 34 | 74.91 | 74.95 | 0.04 | 60 | | | SILTSTONE | SSY. M-DK. GY. LAM. BRKN SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 74.95 | 77.00 | 2.05 | *60 | | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. XBDG. SLD THINLY INTBED & INTLAM VFG SS/SLTST (60/40). LAMINAE ARE WAVY & COMMONLY DEFOR MED (SSD). LOW ANGLE XBDG OCCURS - CORRECT WAY UP. LAM CONTACTS ARE RAPID GRAD & OFTEN DISCONTINUOUS NISPS. SLIGHTLY CARB. |
| 36 | 77.00 | 77.89 | 0.89 | 61 | | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. SSD. SLD SAME A/A BUT LACKING XBDG. OCCASIONAL M RMBUR & COMMON SSD. CORRECT WAY UP. |
| 36 | 77.89 | 79.09 | 1.20 | *61 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. SSD. SLD SAME A/A. OCCASIONAL WRMBUR & XBDG. CORRECT WAY UP. LAMS HAVE SHARP CONTACTS & RANGE FROM <1 MM. - 1 CM. SS/SLTST = 65/35. |
| 37 | 79.09 | 80.90 | 1.81 | *60 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. SSD. BRKN SAME A/A. CORRECT WAY UP (XBDG, SSD). |
| 37 | 80.90 | 81.13 | 0.23 | 60 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. SSD. SLD SAME A/A. MINOR SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 81.13 | 83.20 | 2.07 | *60 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. XBDG. BRKN THINLY INTBED & INTLAM VFG SS/SLTST (65/35). CONTACTS ARE RAPID GRAD-SHARP & SUB-HORIZONTAL. WITH OFTEN DISCONTINUOUS LAMS. CORRECT WAY UP (XBDG). |
| 38 | 83.20 | 83.30 | 0.10 | 56 | | | ROCK LOSS | |
| 39 | 83.30 | 84.02 | 0.72 | 55 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. BRKN SAME A/A. SS/SLTST = 75/25. |
| 39 | 84.02 | 85.24 | 1.22 | *52 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. XBDG. BRKN SAME A/A. MINOR SSD & XBDG. WELL DEFINE D HORIZONTAL THIN LAMINAE. |
| 40 | 85.24 | 86.04 | 0.80 | 57 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. VSHRD SAME A/A. |
| 40 | 86.04 | 86.84 | 0.80 | *61 | | | SANDSTONE | SLTY. VFG. MEL. LT. GY. LAM. SSD. SLD SAME A/A. SLTST LAMS LESS FREQUENT BUT SLIGHTLY THICKER. OCCASIONAL SSD. |
| 41 | 86.84 | 88.05 | 1.21 | *59 | | | SANDSTONE | VFG. MEL. LT. GY. LAM. BRKN VFG SS/SLTST = 80/20. SLTST LAMS THIN & HORIZONTAL WITH SHARP CONTACTS. LOWER CONTACT ABRUPT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 88.05 | 88.15 | 0.10 | 58 | | | ROCK LOSS | |
| 41 | 88.15 | 88.36 | 0.21 | 58 | | | SANDSTONE | VFG.WEL.LT.GY.BRKN SEVERELY BRECCIATED. SMALL QUARTZ XL GR WITH BETWEEN ANGULAR SS BRECCIA. ABRUPT LOWER CONTACT. |
| 41 | 88.36 | 88.76 | 0.40 | 58 | | | SANDSTONE | VFG.WEL.LT.GY.LAM.BRKN INTLAM VFG SS/SLTST (70/30). LAMS ARE THIN, SUB-HORIZONTAL & HAVE RAPID GRAD CONTACTS. |
| 41 | 88.76 | 89.01 | 0.25 | 57 | | | ROCK LOSS | |
| 42 | 89.01 | 91.03 | 2.02 | *56 | | | SANDSTONE | SLTY.VFG.WEL.LT-M.GY.LAM.XBDG.BRKN INTLAM VFG SS/SLTST (55/45). LAMS ARE HORIZONTAL & HAVE RAPID GRAD CONTACTS. LAM SIZE RANGES FROM <1 MM - 1 CM. OCCASIONAL XBDG. |
| 43 | 91.03 | 91.62 | 0.59 | *59 | | | SILTSTONE | SSY.M-DK.GY.LAM.SLD INTLAM VFG SS/SLTST (40/60). LAM ARE HORIZONTAL WITH RAPID GRAD - SHARP CONTACTS. SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87011

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 91.62 | 93.05 | 1.43 | 60 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN SAME A/A, BECOMING LESS SANDY TOWARDS BASE. |
| 44 | 93.05 | 93.27 | 0.22 | *61 | | | SILTSTONE | CARB.DK.GY.MAS.SLD MASSIVE SLTST WITH OCCASIONAL THIN COAL LAMS W/IN UP TO 3 CM THK. NO SS PRESENT. END OF HOLE. T.D. = 93.27 M (DRILLER'S MARK). |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87011 SEAM : PH INTERVAL(M) : 68.53 - 69.10 ELEVATION(M) : 1705.3
 GEOLOGIST : LEDDA SCALE: 1:40 DATE : FEB 23/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | |
|-------------|--------------------|---------------|-----------------|------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|----|----------------|---|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | | |
| 1 2 3 4 5 6 | 68.53 | ↑ | | 0.11 | | | | | | | | | | | | | |
| | 69.10 | ↓ | | 0.30 | 100.0 | 6877 | 58 | 0.34 / 0.17 | 0.34 / 0.17 | 0.91 | 71.99 | 8.25 | 18.85 | — | 7.12 | — | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87011

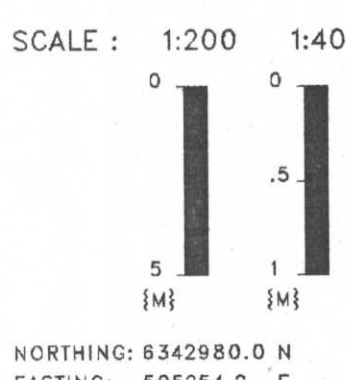
740

GEOLOGIST : LEDDA

DATE : MAR 08/88

DRAWING NO. :

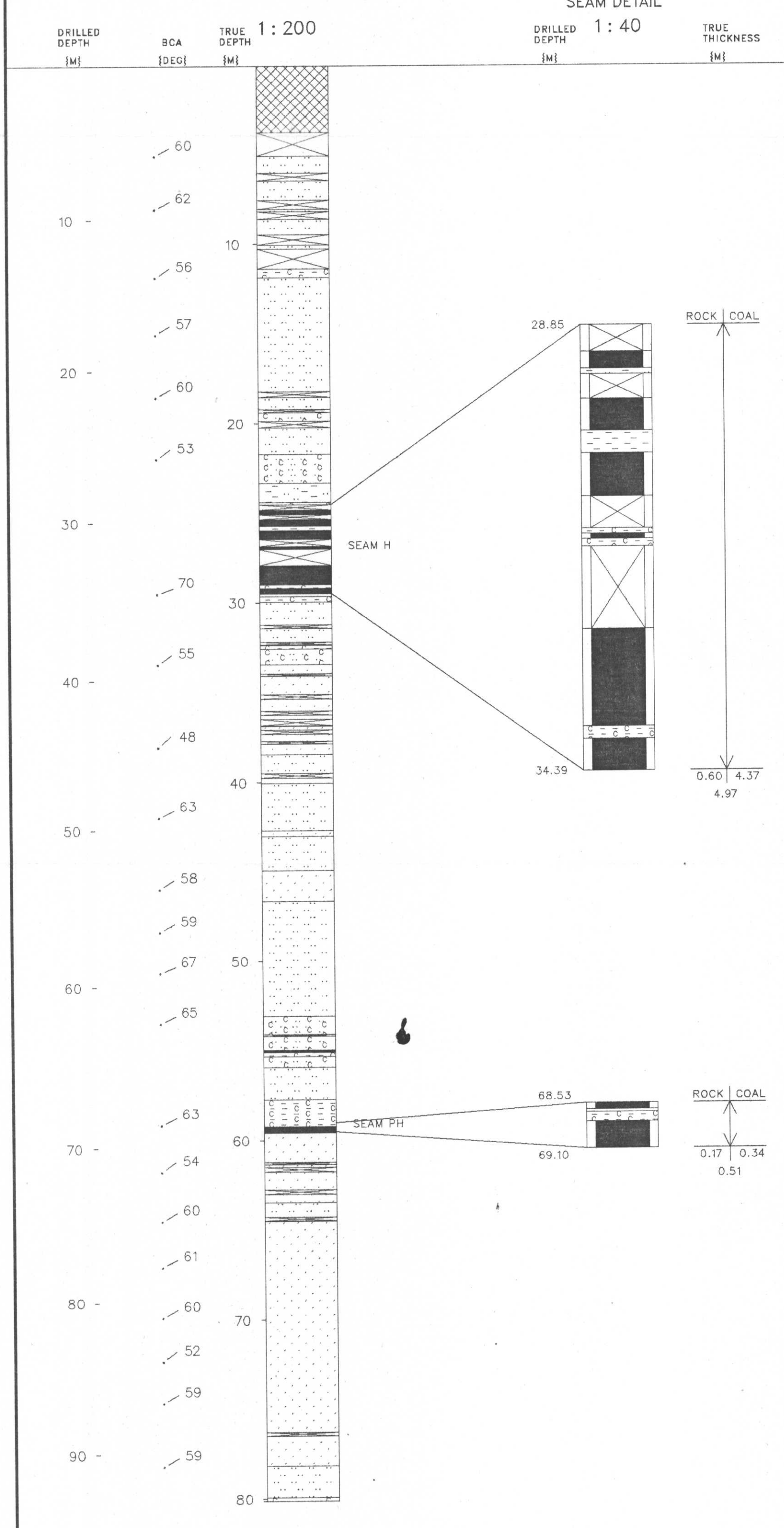
LITHOLOGIC SYMBOLS



| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

NORTHING: 6342980.0 N
 EASTING: 505254.9 E
 INCLINATION: 90.0°

SEAM DETAIL



TOTAL: 93.27 TOTAL: 80.11

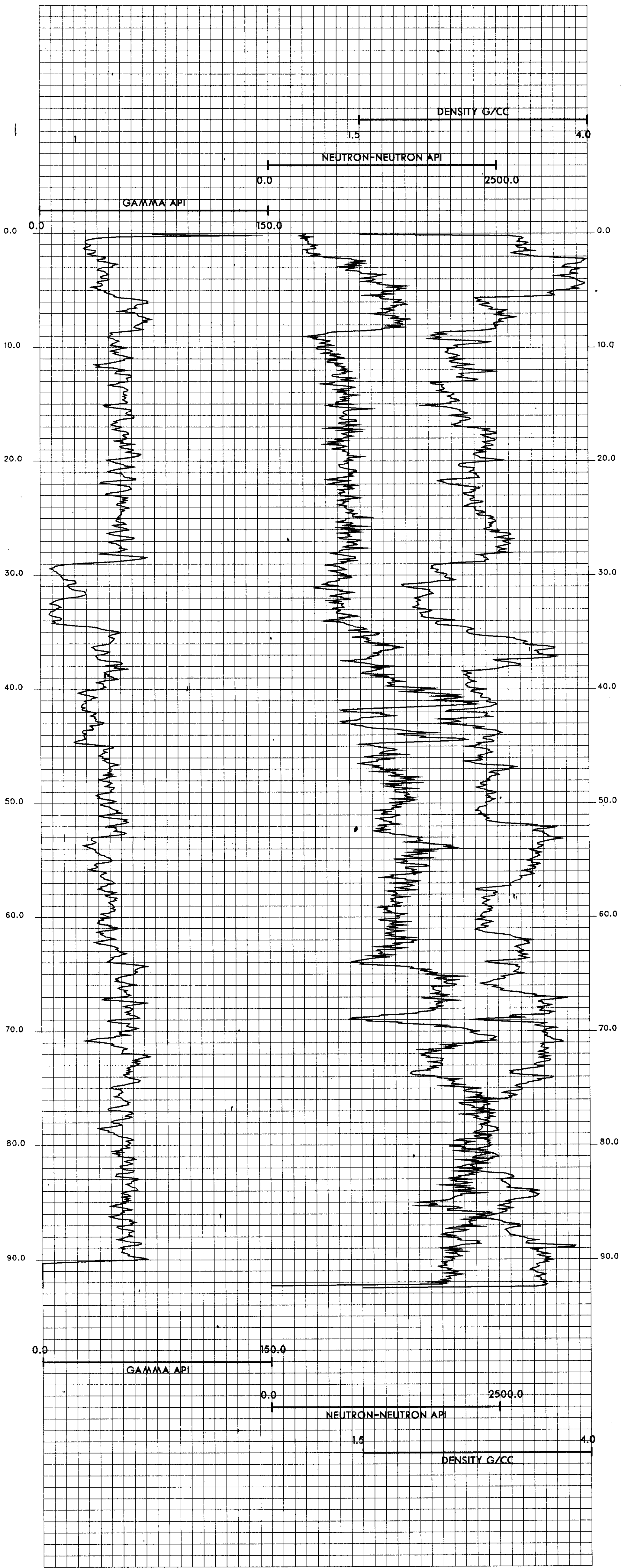
Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

| | | | | | |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|-------|----------|
| Datasource: KPNLRDDH87011 Log Date: 87-09-11 Company: CENTURY Geologist: LEDDA | Province: BC Northing: 6342980.00 Lat: 571354 Zone: 9 Easting: 505255.00 Long: 1285447 Measuring Point: GROUND LEVEL Elevation: 1705.2 | | | | |
| Scale: 1 to 200.0 Depth Range: 0.0 to 97.0 True Thickness: NO | Comments: 1. LOGGED THROUGH RODS. 2. | | | | |
| Logs Plotted: | | | | | |
| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | 1N PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1N PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1N PIPE |



KPNLRDDH87012

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH87012

DATE - 03/01/88

- HISTORY -

START DATE - 09/11/87

END DATE - 09/13/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PARRY

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SEAMS INTERSECTED: J, I, H/I, H. UPRIGHT.

- LOCATION -

PROVINCE - BC

ELEVATION - 1466.40

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6345680.44

EASTING - 507950.35

LATITUDE - 571522

LONGITUDE - 1285206

- ORIENTATION -

LENGTH - 132.06

CORE SIZE - 0.0

INCLINATION - 90.0

AZIMUTH - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 4.57

AQUIFER DEPTHS (M) - 0.00

0.00

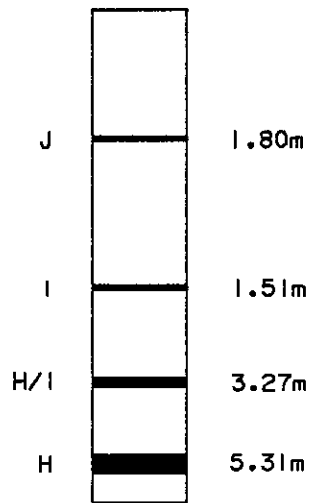
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87012

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:12050571880072012.LG



88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------|
| | 0.00 | 4.57 | 4.57 | 80 | | CASING | CASING DEPTH |
| 1 | 4.57 | 4.98 | 0.41 | 80 | | ROCK LOSS | |
| 1 | 4.98 | 5.23 | 0.25 | 80 | | SANDSTONE | VBRKN SS TILL. SOME FE STAINED PIECES (ORANGE WEATHERING SURFACE). |
| 1 | 5.23 | 6.23 | 1.00 | 80 | | ROCK LOSS | |
| 1 | 6.23 | 6.28 | 0.05 | 80 | | SANDSTONE | VFG. MOD. VBRKN MAY STILL BE TILL. RUBBLED. |
| 1 | 6.28 | 7.28 | 1.00 | 80 | | ROCK LOSS | |
| 1 | 7.28 | 7.48 | 0.20 | 80 | | SILTSTONE | CLYY. M. GY. VBRKN RUBBLED. |
| 1 | 7.48 | 8.48 | 1.00 | 80 | | ROCK LOSS | |
| 1 | 8.48 | 8.54 | 0.06 | 80 | | SILTSTONE | CLYY. M. GY. VBRKN |
| 1 | 8.54 | 8.72 | 0.18 | 80 | | SILTSTONE | LT. GY. MAS. SLD CALCAREOUS. |
| 1 | 8.72 | 8.84 | 0.12 | 80 | | SILTSTONE | SSY. LT-M. GY. LAM. SLD INTERLAM SS & SLTST. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------|
| 1 | 8.84 | 9.44 | 0.60 | *80 | | SILTSTONE | CLYY. M. GY. MAS. VBRKN SOME MUOST LAMS. |
| 1 | 9.44 | 9.68 | 0.24 | 79 | | MUDSTONE | SLTY. M-DK. GY. MAS. VBRKN |
| 1 | 9.68 | 11.18 | 1.50 | 78 | | ROCK LOSS | |
| 2 | 11.18 | 11.31 | 0.13 | 77 | | MUDSTONE | SLTY. M. GY. MAS. VBRKN |
| 2 | 11.31 | 11.48 | 0.17 | 76 | | SILTSTONE | M. GY. MAS. SLD |
| 2 | 11.48 | 11.58 | 0.10 | 76 | | SANDSTONE | FG. M. GY. MAS. VBRKN |
| 2 | 11.58 | 11.88 | 0.30 | 76 | | ROCK LOSS | |
| 2 | 11.88 | 12.08 | 0.20 | 75 | | SILTSTONE | M. GY. MAS. VBRKN RUBBLE. |
| 2 | 12.08 | 12.51 | 0.43 | *75 | | SILTSTONE | M. GY. VTHNB. BRKN SOME MUDDY REGIONS. |
| 2 | 12.51 | 12.96 | 0.45 | 72 | | MUDSTONE | SLTY. M. GY. MAS. BRKN BRECCIATED (FILLED WITH TALC & QTZ). |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 2 | 12.96 | 13.08 | 0.12 | | 71 | | SILTSTONE | LT-M.GY.VTHNB.VBRKN |
| 3 | 13.08 | 13.50 | 0.42 | | 69 | | SILTSTONE | SSY.LT-M.GY.VTHNB.VBRKN |
| 3 | 13.50 | 13.60 | 0.10 | | 67 | | SANDSTONE | SLTY.YFG.MOD.LT-M.GY.MAS.SLD SLTST LAMS. |
| 3 | 13.60 | 13.65 | 0.05 | | 67 | | SILTSTONE | SSY.LT-M.GY.LAM.SLD |
| 3 | 13.65 | 14.21 | 0.56 | * | 65 | | SANDSTONE | SLTY.FG.MOD.LT.GY.MAS.BRKN SLTST LAMS. |
| 3 | 14.21 | 14.24 | 0.03 | | 70 | | SANDSTONE | SLTY.FG.MOD.LT.GY.MAS.SLD AS ABOVE. |
| 3 | 14.24 | 14.48 | 0.24 | * | 73 | | SILTSTONE | SSY.LT-M.GY.VTHNB.SSD.BRKN BRECCIA ZONE NEAR END OF UNIT (TALC & Q TZ FILLED). LOAD CAST (RIGHT WAY UP). |
| 3 | 14.48 | 14.76 | 0.28 | | 73 | | SANDSTONE | CLYY.FG.PR.M.BN.MAS.BRKN POORLY CONSOLIDATED. |
| 4 | 14.76 | 15.01 | 0.25 | | 74 | | MUDSTONE | DK.BN.MAS.BRKN POORLY CONSOLIDATED. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------|
| 4 | 15.01 | 15.15 | 0.14 | | 74 | | MUDSTONE | CARB.BLK.MAS.BRKN POORLY CONSOLIDATED. |
| 4 | 15.15 | 15.29 | 0.14 | | 74 | | MUDSTONE | DK.BN.MAS.BRKN POORLY CONSOLIDATED. |
| 4 | 15.29 | 15.34 | 0.05 | | 74 | | SILTSTONE | M.GY.VBRKN |
| 4 | 15.34 | 15.71 | 0.37 | | 74 | | SANDSTONE | FG.MOD.LT.GY.MAS.BRKN MINOR SLTY WISPS. |
| 4 | 15.71 | 15.88 | 0.17 | | 74 | | MUDSTONE | DK.GY.MAS.BRKN |
| 4 | 15.88 | 15.98 | 0.10 | | 75 | | SILTSTONE | LT.GY.MAS.VBRKN CALCAREOUS. |
| 4 | 15.98 | 16.12 | 0.14 | | 75 | | MUDSTONE | DK.GY.MAS.BRKN |
| 4 | 16.12 | 16.65 | 0.53 | * | 75 | | SILTSTONE | SSY.LT-M.GY.VTHNB.SSD.BRKN INTBED SLTST & SS. LOAD CAST (RIGHT WAY UP). |
| 5 | 16.65 | 16.97 | 0.32 | | 75 | | SANDSTONE | FG.PR.LT.GY.MAS.BRKN |

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 5 | 16.97 | 17.30 | 0.33 | 75 | | | SANDSTONE | SLTY. VFG. MOD. LT. GY. MAS. BRKN INTLAM & INTBED SLTST & SS. |
| 5 | 17.30 | 17.82 | 0.52 | 75 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SLTST LAMS. |
| 5 | 17.82 | 18.05 | 0.23 | 75 | | | SILTSTONE | SSY. LT-M. GY. VTHNB. BRKN FLAZER BEDDING IN SS, INTBD SLTST & SS. |
| 5 | 18.05 | 18.19 | 0.14 | 75 | | | SANDSTONE | VFG. MOD. LT. GY. MAS. YBRKN |
| 6 | 18.19 | 18.51 | 0.32 | 75 | | | SANDSTONE | SLTY. VFG. MOD. LT. GY. MAS. YBRKN |
| 6 | 18.51 | 19.11 | 0.60 | 75 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN CORE TWIST-OFF. |
| 6 | 19.11 | 20.03 | 0.92 | 75 | | | ROCK LOSS | |
| 6 | 20.03 | 20.13 | 0.10 | 75 | | | SILTSTONE | M-DK. GY. MAS. SLD |
| 6 | 20.13 | 20.70 | 0.57 | *75 | | | SILTSTONE | SSY. LT-M. GY. VTHNB. XBDG. BRKN LOAD CAST (RIGHT WAY UP). XBDG. (RIGHT WAY UP). |
| 7 | 20.70 | 20.99 | 0.29 | *78 | | | SILTSTONE | SSY. LT-M. GY. THNB. XBDG. SLD INTBED SS & SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 20.99 | 21.97 | 0.98 | 79 | | | SILTSTONE | M. GY. MAS. BECOMES SANDY NEAR END OF UNIT. |
| 7 | 21.97 | 22.07 | 0.10 | 79 | | | SANDSTONE | SLTY. LT. GY. LAM. SLD INTLAM SS & SLTST. |
| 7 | 22.07 | 22.46 | 0.39 | 79 | | | SANDSTONE | SLTY. FG. LT. GY. LAM. XBDG. BRKN MINOR SLTST LAMS. RIGHT WAY UP. |
| 7 | 22.46 | 22.53 | 0.07 | 80 | | | SILTSTONE | M. GY. MAS. SLD TOP OF FINING UP SEQUENCE (.45 M). |
| 8 | 22.53 | 22.79 | 0.26 | 80 | | | SANDSTONE | SLTY. VFG. MOD. LT. GY. LAM. SLD |
| 8 | 22.79 | 22.91 | 0.12 | *80 | | | SANDSTONE | FG. WEL. LT. GY. MAS. SLD BASE OF FINING UP SEQUENCE (.45 M). |
| 8 | 22.91 | 23.19 | 0.28 | 80 | | | SILTSTONE | M. GY. MAS. CONTAINS A SS BAND (.05 M THICK). |
| 8 | 23.19 | 24.61 | 1.42 | 80 | | | MUDSTONE | M. GY. LAM. BRKN LARGE SLD PIECES. VERY SMOOTH BEDDING SURFACE WHEN BROKEN. POSSIBLE FEEDING TRAILS. 2 CALCAREOUS SLTST BANDS (1 CM & 2 CM). COASTER ZONE. SLTST LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 24.61 | 26.31 | 1.70 | *80 | | | MUDSTONE | DK.GY.LAM.BRKN TWO CALCAREOUS SLTST BANDS (.03 M & .12 M). COASTER ZONE. SLTST LAMS. |
| 9 | 26.31 | 26.58 | 0.27 | | 79 | | MUDSTONE | DK.GY.LAM.VBRKN COASTER ZONE. SLTST LAMS. |
| 10 | 26.58 | 28.38 | 1.80 | | 79 | | MUDSTONE | DK.GY.LAM.BRKN COASTER ZONE. SLTST LAMS. |
| 10 | 28.38 | 28.55 | 0.17 | | 78 | | MUDSTONE | DK.GY.LAM.BRKN COASTER ZONE. SLTST LAMS. |
| 11 | 28.55 | 30.69 | 2.14 | | 77 | | MUDSTONE | DK.GY.LAM.BRKN COASTER ZONE. SLTST LAMS. |
| 12 | 30.69 | 31.44 | 0.75 | | 77 | | MUDSTONE | DK.GY.LAM.BRKN COASTER ZONE. MINOR SLTST LAMS. |
| 12 | 31.44 | 32.66 | 1.22 | *76 | | | MUDSTONE | DK.GY.LAM.BRKN COASTER ZONE. MINOR SLTST LAMS. |
| 12 | 32.66 | 33.78 | 1.12 | | 77 | | MUDSTONE | DK.GY.LAM.BRKN COASTER ZONE. MINOR SLTST LAMS. BECOMES SLIGHTLY CARB NEAR END OF UNIT. CARBON ATE BAND (2 CM) CONTAINING ABUNDANT MUD CLASTS (BASE OF UNIT). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 12 | 33.78 | 33.92 | 0.14 | | 77 | | BENTONITE | TAN SOFT. BECOMES SANDY AT BASE. |
| 13 | 33.92 | 34.05 | 0.13 | | 77 | J | COAL | C-2.BLK.BRKN |
| 13 | 34.05 | 34.60 | 0.55 | | 77 | J | COAL LOSS | |
| 13 | 34.60 | 34.64 | 0.04 | | 78 | J | MUDSTONE | CARB.BLK.MAS.SLD |
| 13 | 34.64 | 34.69 | 0.05 | | 78 | J | COAL | C-3.BLK.SLD |
| 13 | 34.69 | 34.82 | 0.13 | | 78 | J | MUDSTONE | CARB.BLK.MAS.SLD CARBONATE STRINGERS. |
| 13 | 34.82 | 34.86 | 0.04 | | 78 | J | BENTONITE | M.BN.SLD SOFT. |
| 13 | 34.86 | 34.92 | 0.06 | | 78 | J | MUDSTONE | CARB.BLK.MAS.SLD CONTAINS FOUR 4 MM COAL BANDS. |
| 14 | 34.92 | 34.97 | 0.05 | | 78 | J | COAL | C-2.BLK.SLD |
| 14 | 34.97 | 35.76 | 0.79 | *78 | | J | MUDSTONE | CARB.BLK.MAS.BRKN SOME COAL BANDS (<1/2 CM). PLANT FOSSIL S VERY ABUNDANT (COALIFIED) |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 9

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 14 | 35.76 | 36.67 | 0.91 | 76 | | | MUDSTONE | CARB. BLK. MAS. BRKN AS ABOVE. HIGHLY CARB NEAR TOP OF UNIT (.14M THICK). |
| 15 | 36.67 | 37.03 | 0.36 | 75 | | | MUDSTONE | CARB. BLK. MAS. BRKN PLANT FOSSILS VERY ABUNDANT (COALIFIED) |
| 15 | 37.03 | 37.09 | 0.06 | 75 | | | COAL | C-1. BLK. BRKN |
| 15 | 37.09 | 37.83 | 0.74 | *74 | | | MUDSTONE | CARB. BLK. MAS. BRKN ABUNDANT COALIFIED PLANT FOSSILS. BECOM ING SLTY NEAR THE BASE. |
| 15 | 37.83 | 38.11 | 0.28 | 74 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN COALIFIED PLANT FOSSILS - CARB. |
| 16 | 38.11 | 38.23 | 0.12 | 74 | | | MUDSTONE | SLTY. M. GY. MAS. BRKN ABUNDANT PLANT FOSSILS. |
| 16 | 38.23 | 39.09 | 0.86 | 74 | | | SILTSTONE | LT-M. GY. MAS. BRKN |
| 16 | 39.09 | 39.92 | 0.83 | 74 | | | SANDSTONE | FG. MOD. S-P. MAS. BRKN TAN COLOURED CLAY GRAINS (VOLCANIC OR W EATHER FSP). |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 10

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17 | 39.92 | 40.09 | 0.17 | 75 | | | SANDSTONE | FG. MOD. S-P. MAS. VBRKN SAME AS ABOVE. |
| 17 | 40.09 | 41.09 | 1.00 | 75 | | | ROCK LOSS | |
| 17 | 41.09 | 42.47 | 1.38 | *75 | | | SANDSTONE | MG. MOD. VBRKN AS ABOVE. 2 CM FINING UP SEQUENCES - .4 M INTO BOX. RUBBLED. RIP-UP MUD CLASTS -1.0 M FROM BOX TOP. 44.81 MARKER MISPL ACED. |
| 18 | 42.47 | 42.66 | 0.19 | *75 | | | SILTSTONE | SSY. LT. GY. VTHNB. SLD INTERLAM. & BEDDED MG. SS. & SLTST. |
| 18 | 42.66 | 44.01 | 1.35 | 76 | | | SANDSTONE | MG. MOD. S-P. MAS. BRKN LAST .25 M IS RUBBLED. CLAY GRAINS. CAR BONATE FILLED HAIRLINE FRACTURES. RIP-U P MUD CLASTS. |
| 18 | 44.01 | 44.86 | 0.85 | 78 | | | ROCK LOSS | |
| 18 | 44.86 | 45.05 | 0.19 | 79 | | | SANDSTONE | MG. MOD. S-P. MAS. BRKN CLAY GRAINS. |
| 19 | 45.05 | 45.41 | 0.36 | 79 | | | SANDSTONE | MG. MOD. S-P. MAS. VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 45.41 | 46.41 | 1.00 | | 80 | | ROCK LOSS | |
| 19 | 46.41 | 47.61 | 1.20 | | 82 | | SANDSTONE | MG. MOD. S-P. MAS. VBRKN AS ABOVE. |
| 20 | 47.61 | 48.56 | 0.95 | | 84 | | SANDSTONE | MG. MOD. S-P. MAS. BRKN AS ABOVE. |
| 20 | 48.56 | 48.69 | 0.13 | | 84 | | MUDSTONE | SLTY. DK. BN. MAS. VBRKN SOFT. CLAY LIKE. |
| 20 | 48.69 | 49.41 | 0.72 | * | 85 | | SILTSTONE | M. GY. MAS. SSD. BRKN LOAD CASTS (RIGHT WAY UP), TALC. FILLED TUBES (1 CM LONG) IN CORE. |
| 21 | 49.41 | 50.20 | 0.79 | * | 80 | | SILTSTONE | SSY. M. GY. LAM. BRKN BLK PELLETS (FEEDING TRAILS?). SS LAMS. |
| 21 | 50.20 | 51.49 | 1.29 | | 81 | | SILTSTONE | SSY. M. GY. LAM. SSD. SLD LOAD CSTS (RIGHT WAY UP). SLTST WITH LESSER SS LAMS & V THIN BEDS. BLK PELLETS (FEEDING TRAILS?). BIOTURBATION. |
| 22 | 51.49 | 51.74 | 0.25 | | 81 | | SILTSTONE | LT-M. GY. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 51.74 | 53.59 | 1.85 | * | 82 | | SILTSTONE | SSY. LT-M. GY. VTHNB. SSD. BRKN LOAD CASTS (RIGHT WAY UP). SLTST WITH LESSER SS LAMS & V THIN BEDS. BLK PELLET S. (FEEDING TRAILS?). |
| 23 | 53.59 | 54.78 | 1.19 | * | 75 | | SILTSTONE | SSY. LT-M. GY. MAS. SSD. BRKN AS ABOVE. BAND OF ABUNDANT BLK PELLETS .45 M FROM BOX TOP (.05 M THICK). MASSIVE SLTST WITH MINOR VERY THIN SS BEDS. |
| 23 | 54.78 | 55.74 | 0.96 | | 78 | | SILTSTONE | LT-M. GY. MAS. SSD. BRKN SS BAND AT THE END OF THE BOX (.10 M THICK). BLK PELLETS. LOAD CASTS (RIGHT WAY UP). |
| 23 | 55.74 | 56.18 | 0.44 | | 81 | | ROCK LOSS | |
| 24 | 56.18 | 57.28 | 1.10 | * | 83 | | SILTSTONE | LT-M. GY. MAS. VBRKN BLK PELLETS. PLANT FOSSILS. |
| 24 | 57.28 | 57.88 | 0.60 | | 81 | | ROCK LOSS | |
| 24 | 57.88 | 58.03 | 0.15 | | 81 | | MUDSTONE | LT-M. GY. MAS. BRKN VERY ABUNDANT PLANT FOSSILS (COALIFIED) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 58.03 | 58.13 | 0.10 | 80 | | | SANDSTONE | VFG. MOD. LT. GY. LAM. BRKN |
| 24 | 58.13 | 58.18 | 0.05 | 80 | | | SILTSTONE | M. GY. BRKN |
| 25 | 58.18 | 58.23 | 0.05 | 80 | | | SILTSTONE | M. GY. SLD |
| 25 | 58.23 | 60.32 | 2.09 | *78 | | | SILTSTONE | CLYY. M. GY. YTHNB. SSD. BRKN BLK PELLETS. LOAD CASTS (RIGHT WAY UP). |
| 25 | 60.32 | 61.32 | 1.00 | 79 | | | ROCK LOSS | |
| 26 | 61.32 | 63.27 | 1.95 | *80 | | | SILTSTONE | CLYY. M. GY. MAS. SSD. BRKN BLK PELLETS. LOAD CASTS (RIGHT WAY UP). V. THIN MUD & SS BEDS. |
| 27 | 63.27 | 63.61 | 0.34 | *75 | | | SILTSTONE | M. GY. MAS. SSD. SLD LOAD CASTS. |
| 27 | 63.61 | 65.16 | 1.55 | 73 | | | SILTSTONE | CLYY. M. GY. YTHNB. SSD. BRKN LOAD CASTS (RIGHT WAY UP). SLIGHTLY MUD DY. BLK PELLETS VERY ABUNDANT. PLANT FO SSILS ABUNDANT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27 | 65.16 | 65.31 | 0.15 | 71 | | | SILTSTONE | LT. GY. MAS. SLD NUMEROUS BLK PELLETS. CALCAREOUS. |
| 28 | 65.31 | 67.23 | 1.92 | *68 | | | SILTSTONE | CLYY. M. GY. MAS. SSD. BRKN LOAD CASTS (RIGHT WAY UP). CALCAREOUS S LTST BANDS (.03 M & .08 M THICK), CONTA INS. ABUNDANT BLK PELLETS. SLIGHTLY MUDD Y. |
| 28 | 67.23 | 67.73 | 0.50 | 68 | | | ROCK LOSS | |
| 29 | 67.73 | 68.37 | 0.64 | *68 | | | SILTSTONE | CLYY. M. GY. YTHNB. SSD. BRKN SLTST WITH LESS MUD BANDS. CONTAINS A C ALCAREOUS SS BAND (.02 M THICK). ABUNDA NT BLK PELLETS. |
| 29 | 68.37 | 69.77 | 1.40 | 69 | | | SILTSTONE | CLYY. M. GY. CONTAINS 3 CALCAREOUS SLTST BANDS (.09 M THICK) THAT HAVE ABUNDANT BLK PELLETS. PLANT FOSSILS. |
| 30 | 69.77 | 70.08 | 0.31 | *70 | | | SILTSTONE | CLYY. M. GY. MAS. BRKN CONTAINS A CALCAREOUS BAND. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 70.08 | 70.53 | 0.45 | 70 | | | MUDSTONE | SLTY. M. GY. MAS. BRKN CONTAINS A CALCAREOUS SLTST BAND (.04 M). BLK PELLETS. |
| 30 | 70.53 | 70.63 | 0.10 | 71 | | | SILTSTONE | LT. GY. MAS. SLD CALCAREOUS. BLK PELLETS ABUNDANT. |
| 30 | 70.63 | 71.03 | 0.40 | 71 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN SLIGHTLY SLTY. |
| 30 | 71.03 | 71.63 | 0.60 | 72 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN SLTY LAMS. BLK PELLETS AT END OF BOX. |
| 31 | 71.63 | 71.88 | 0.25 | 72 | | | MUDSTONE | SLTY. M-DK. GY. MAS. SLD SLTY LAMS. |
| 31 | 71.88 | 72.33 | 0.45 | 72 | | | SILTSTONE | CLYY. M. GY. LAM. HRMBU. BRKN RIGHT WAY UP. |
| 31 | 72.33 | 72.87 | 0.54 | *73 | | | MUDSTONE | SLTY. DK. GY. LAM. SSD. BRKN CALCAREOUS SLTST BAND (1 CM). LOAD CAST (RIGHT WAY UP). |
| 31 | 72.87 | 73.67 | 0.80 | 72 | | | SILTSTONE | CLYY. M. GY. LAM. XBDG. BRKN RIGHT WAY UP. INTERLAM SLTST & LESSER M UD FROM COAL (BOX 32) TO 41.76 IS A GEN ERAL COARSENING UP SEQUENCE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------|
| 32 | 73.67 | 73.80 | 0.13 | 72 | 06879 | | MUDSTONE | SLTY. M-DK. GY. YBRKN |
| 32 | 73.80 | 74.33 | 0.53 | 71 | 06879 | | ROCK LOSS | |
| 32 | 74.33 | 74.45 | 0.12 | 71 | 06879 | | MUDSTONE | SLTY. M-DK. GY. YBRKN |
| 32 | 74.45 | 74.77 | 0.32 | 71 | 06880 | I | COAL | C-4. VSHRD SHEARED WITH MUD. |
| 32 | 74.77 | 74.87 | 0.10 | 71 | 06880 | I | COAL | C-2. BRKN |
| 32 | 74.87 | 75.16 | 0.29 | 71 | 06880 | I | COAL LOSS | |
| 32 | 75.16 | 75.26 | 0.10 | 70 | 06880 | I | ROCK LOSS | |
| 32 | 75.26 | 75.43 | 0.17 | 70 | 06880 | I | COAL LOSS | |
| 32 | 75.43 | 75.51 | 0.08 | 70 | 06880 | I | ROCK LOSS | |
| 32 | 75.51 | 75.56 | 0.05 | 70 | 06880 | I | MUDSTONE | CARB. DK. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 32 | 75.56 | 76.00 | 0.44 | 70 | 06880 | I | COAL | C-2, VBRKN SOME C-1. |
| 32 | 76.00 | 76.02 | 0.02 | 69 | 06880 | I | MUDSTONE | SLTY. M-DK. GY. SLD |
| 32 | 76.02 | 76.05 | 0.03 | 69 | 06880 | I | COAL | C-3, PHRD |
| 32 | 76.05 | 76.50 | 0.45 | 69 | 06881 | | MUDSTONE | CARB. DK. GY ABUNDANT NILSSONIA TENUCAULIS THROUGHOUT, SLTY TOWARDS BASE. UPPER 25 CM SAMPL ED. |
| 33 | 76.50 | 76.94 | 0.44 | 69 | | | MUDSTONE | DK. GY. MAS. BRKN |
| 33 | 76.94 | 77.21 | 0.27 | 68 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN INTERLAM MUD & SLTST. |
| 33 | 77.21 | 77.69 | 0.48 | *68 | | | SANDSTONE | FG. WEL. LT. GY. MAS. VBRKN |
| 33 | 77.69 | 78.04 | 0.35 | 69 | | | ROCK LOSS | |
| 33 | 78.04 | 78.71 | 0.67 | 71 | | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 78.71 | 80.71 | 2.00 | 75 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN ABUNDANT SMALL CHERT PEBBLES IN LAST ME TER OF CORE. SOME RIPUP MUD CLASTS. BED DING HARD TO SEE. |
| 35 | 80.71 | 81.06 | 0.35 | 79 | | | SANDSTONE | MG. WEL. S-P. MAS. SLD WELL SORTED IF PEBBLES ARE IGNORED. ABU NDANT SMALL CHERT PEBBLES. |
| 35 | 81.06 | 82.66 | 1.60 | *82 | | | SANDSTONE | MG. WEL. S-P. MAS. BRKN VBRKN IN PLACES. 3 DENSE RIPUP CLAST ZO NES (4 MM x 4 MM) TO (2 CM x 2 CM). |
| 36 | 82.66 | 82.73 | 0.07 | 79 | | | SANDSTONE | MG. WEL. S-P. MAS. SLD BASE OF FINING UP SEQUENCE. I SEAM IS T HE TOP OF THE FINING UP SEQUENCE. |
| 36 | 82.73 | 83.67 | 0.94 | 78 | | | SANDSTONE | CLYY. VFG. MOD. LT. GY. LAM. SSD. BRKN INTERLAM MUD & SS (50-50). LOAD CASTS. (R IGHT WAY UP). |
| 36 | 83.67 | 83.87 | 0.20 | 76 | | | MUDSTONE | DK. GY. MAS. VBRKN |
| 36 | 83.87 | 84.22 | 0.35 | 75 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 36 | 84.22 | 84.90 | 0.68 | 73 | | | MUDSTONE | DK.GY.MAS.BRKN |
| 37 | 84.90 | 85.70 | 0.80 | 71 | | | MUDSTONE | DK.GY.MAS.BRKN |
| 37 | 85.70 | 85.81 | 0.11 | 69 | | | MUDSTONE | SSY.DK.GY.MAS.BRKN |
| 37 | 85.81 | 86.91 | 1.10 | *67 | | | SANDSTONE | SLTY.FG.MOD.LT.GY.MAS.BRKN VERY SLTY AT THE TOP. 3 BIVALVES FOSSILS, (-1.5 CM LONG). ARGILLACEOUS. |
| 38 | 86.91 | 87.31 | 0.40 | 68 | | | SANDSTONE | SLTY.VFG.MOD.LT-M.GY.MAS.SSD.BRKN LOAD CAST (RIGHT WAY UP). ARGILLACEOUS. |
| 38 | 87.31 | 87.39 | 0.08 | 68 | | | SANDSTONE | SLTY.VFG.MOD.LT-M.GY.MAS.SLD ARGILLACEOUS. |
| 38 | 87.39 | 87.52 | 0.13 | 69 | | | SANDSTONE | SLTY.MG.PR.M.GY.MAS.BRKN LARGE WHITE COARSE GRAINS - FSP? ARGILLACEOUS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 87.52 | 87.99 | 0.47 | 69 | | | SANDSTONE | MG.PR.LT.GY.MAS.SSD.BRKN ARGILLACEOUS NEAR BASE OF UNIT. LOAD CASTS (RIGHT WAY UP). |
| 38 | 87.99 | 88.96 | 0.97 | *70 | | | SANDSTONE | MG.PR.LT.GY.MAS.BRKN RIP-UP MUD CLASTS. 2 MUD BANDS (1.5 CM THICK). COARSER THAN LAST UNIT. BECOMES FINE AT THE BASE. ABUNDANT WHITE GRAINS. |
| 39 | 88.96 | 89.51 | 0.55 | 75 | | | SANDSTONE | FG.PR.LT.GY.MAS.SSD.SLD RIPUP CLAST ZONE .4 M FROM TOP (3 CM THICK). 2 MUD BANDS (1.5 CM & 2 CM THICK). IN SECOND MUD BAND ARE SOFT WHITE GRAINS. LOAD CASTS (RIGHT WAY UP). |
| 39 | 89.51 | 90.21 | 0.70 | *80 | | | SANDSTONE | CLYY.VFG.MOD.LT-M.GY.LAM.SSD.BRKN LOAD CASTS (RIGHT WAY UP). INTERLAM MUD & SS (CLOSE TO 50-50). |
| 39 | 90.21 | 90.31 | 0.10 | 78 | | | SANDSTONE | SLTY.FG.PR.LT.GY.MAS.SLD RIPUP MUD CLASTS. ABUNDANT. |
| 39 | 90.31 | 91.02 | 0.71 | 77 | | | SANDSTONE | CLYY.FG.MOD.LT.GY.YTHNB.SSD.BRKN LOAD CAST (RIGHT WAY UP). SS WITH LESSE R MUDST BEDS & LAMS. SMALL RIP-UP CLASTS (1 MM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 39 | 91.02 | 91.13 | 0.11 | 75 | | SANDSTONE | MG. PR. LT. GY. MAS. SLD RIP-UP MUD CLASTS (.5 CM - 1.5 CM). LOAD CASTS (RIGHT WAY UP). |
| 40 | 91.13 | 91.80 | 0.67 | 73 | | SANDSTONE | CLYY. MG. PR. LT. GY. MAS. BRKN FRIABLE. RIP-UP CLASTS (1.5-3.0 CM). MIN OR SLTST WISPS. ARGILLACEOUS. TOP OF FINING UP SEQUENCE. |
| 40 | 91.80 | 92.10 | 0.30 | 71 | | SANDSTONE | CLYY. VCG. VPR. S-P. MAS. VBRKN ARGILLACEOUS. FRIABLE. BASE OF FINING UP SEQUENCE. |
| 40 | 92.10 | 92.46 | 0.36 | *70 | | SANDSTONE | CLYY. FG. PR. LT. GY. VTHNB. BRKN FRIABLE. VERY ARGILLACEOUS. INTERBED MUD & SS. TOP OF FINING UP SEQUENCE. |
| 40 | 92.46 | 92.70 | 0.24 | 69 | | SANDSTONE | CLYY. VCG. VPR. S-P. MH. MAS. BRKN SOME GRANULES. ARGILLACEOUS. FRIABLE. BASE OF FINING UP SEQUENCE. |
| 40 | 92.70 | 92.82 | 0.12 | 69 | | SANDSTONE | CLYY. FG. MOD. LT. GY. MAS. SLD TOP OF FINING UP SEQUENCE. ARGILLACEOUS. FRIABLE. |
| 40 | 92.82 | 93.22 | 0.40 | 68 | | SANDSTONE | VCG. VPR. S-P. MAS. BRKN 8 CM LONG MUD CLAST. BECOMES A GRANULAR CONGL. AT THE END OF THE BOX. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|--------------------------------------------------------------------------------------------------------|
| 41 | 93.22 | 93.26 | 0.04 | 68 | | CONGLOMERATE | GRAN. VPR. S-P. MAS. VBRKN BASE OF FINING UP SEQUENCE. 3 FINING UP SEQUENCES TO HERE (~.5 M THICK). |
| 41 | 93.26 | 93.36 | 0.10 | 67 | | SANDSTONE | CLYY. CG. VPR. LT. GY. MAS. BRKN VERY ARGILLACEOUS. FRIABLE. |
| 41 | 93.36 | 93.51 | 0.15 | 67 | | MUDSTONE | SSY. LT. GY. MAS. SLD |
| 41 | 93.51 | 93.81 | 0.30 | 67 | | SANDSTONE | CG. MOD. S-P. MAS. BRKN |
| 41 | 93.81 | 94.71 | 0.90 | *65 | | SANDSTONE | CLYY. FG. M. GY. THNB. VBRKN THINLY BEDDED FINE TO COARSE SS & SANDY MUDST. LARGE MUD CLASTS. |
| 41 | 94.71 | 95.37 | 0.66 | 70 | | ROCK LOSS | |
| 42 | 95.37 | 95.44 | 0.07 | 72 | | MUDSTONE | SSY. M. GY. VBRKN |
| 42 | 95.44 | 95.60 | 0.16 | 72 | | SANDSTONE | VCG. PR. S-P. THNB. SLD 3 MUD BANDS (1 CM THICK). TOP OF COARSE FINING UP SEQUENCE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 95.60 | 95.71 | 0.11 | 73 | | | SANDSTONE | MG. VPR. S-P. MH. SSD 2 MUD BANDS (0.5-1 CM). LOAD CAST (RIGHT WAY UP). COARSENS UP FROM FINE-COARSE. |
| 42 | 95.71 | 96.25 | 0.54 | 75 | | | MUDSTONE | SSY. M-DK. GY. VTHNB. BRKN SOME COARSE WHITE GRAINS (FSP?). |
| 42 | 96.25 | 97.41 | 1.16 | *80 | | | SANDSTONE | CLYY. MG. VPR. LT. GY. MAS. SSD. BRKN FINE-COARSE SS WITH MUD LAMS. ABUNDANT RIP-UP CLASTS (0.5-3 CM). LOAD CAST (RIGHT WAY UP). |
| 43 | 97.41 | 97.51 | 0.10 | 74 | | | SANDSTONE | MG. MOD. LT. GY. SLD. |
| 43 | 97.51 | 97.61 | 0.10 | 72 | | | MUDSTONE | SSY. DK. GY. SLD |
| 43 | 97.61 | 97.99 | 0.38 | *70 | | | SANDSTONE | CLYY. FG. MOD. LT. GY. VTHNB. XBDG. BRKN RIGHT WAY UP. LOAD CASTS (RIGHT WAY UP) SS WITH LESSER MUD LAMS. |
| 43 | 97.99 | 98.52 | 0.53 | 70 | | | MUDSTONE | CARB. BLK. MAS. BRKN SOME PLANT FOSSILS. BECOMES MORE CARB. D OWN SECTION. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 43 | 98.52 | 99.40 | 0.88 | 71 | | H/I | MUDSTONE | CARB. BLK. MAS. BRKN AS ABOVE |
| 43 | 99.40 | 99.48 | 0.08 | 72 | | H/I | MUDSTONE | CARB. BLK. MAS. SLD COAL BAND 2 CM THICK (C-1). PLANT FOSSI LS VERY ABUNDANT. |
| 44 | 99.48 | 100.93 | 1.45 | 72 | | H/I | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT COALY PLANT FRAGS & THIN COAL BANDS. |
| 44 | 100.93 | 100.98 | 0.05 | 73 | | H/I | COAL | C-5. BRKN THIN. VITRAIN STRINGERS. |
| 44 | 100.98 | 101.65 | 0.67 | 73 | | H/I | MUDSTONE | CARB. DK. GY. BRKN COALY PLANT FRAGS & THIN COAL BANDS. |
| 45 | 101.65 | 101.73 | 0.08 | 74 | | H/I | MUDSTONE | CARB. DK. GY. BRKN COALY PLANT FRAGS. |
| 45 | 101.73 | 101.78 | 0.05 | 74 | | H/I | COAL | C-4. SHRD SHEARED & MIXED WITH MUDST. |
| 45 | 101.78 | 101.81 | 0.03 | 74 | | H/I | MUDSTONE | CARB. DK. GY. BRKN COALY PLANT FRAGS. |
| 45 | 101.81 | 101.95 | 0.14 | 74 | | H/I | COAL | C-3. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 45 | 101.95 | 102.20 | 0.25 | 74 | | | MUDSTONE | CARB. DK. GY. BRKN COALY PLANT FRAGS. |
| 45 | 102.20 | 102.80 | 0.60 | 74 | | | SILTSTONE | SSY. M. GY. SLD BECOMES MUDDY AT TOP OF UNIT AND SANDY AT BASE OF UNIT, MOST OF UNIT IS SANDY SILTSTONE. COALY LENSES. |
| 45 | 102.80 | 103.54 | 0.74 | *75 | | | SANDSTONE | SLTY. M. GY. SLD GRADES FROM ABOVE. |
| 46 | 103.54 | 104.27 | 0.73 | *73 | | | SANDSTONE | CLYY. FG. VPR. M. BN. VTHNB. BRKN INTERMIXED. CLAY. & VFG. SS. SOFT. |
| 46 | 104.27 | 104.65 | 0.38 | 73 | | | ROCK LOSS | |
| 46 | 104.65 | 105.95 | 1.30 | 74 | | | MUDSTONE | SLTY. M. BN. VTHNB. BRKN SOFT. |
| 47 | 105.95 | 107.70 | 1.75 | *75 | | | MUDSTONE | SLTY. M. BN. MAS. BRKN SOFT. |
| 47 | 107.70 | 107.84 | 0.14 | 80 | | | MUDSTONE | SLTY. M. BN. MAS. BRKN SOFT. |
| 48 | 107.84 | 109.92 | 2.08 | *85 | | | MUDSTONE | SLTY. M. BN. MAS. BRKN SOFT. PLANT FOSSILS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 49 | 109.92 | 110.28 | 0.36 | *80 | | | SANDSTONE | CLYY. FG. VPR. M. BN. MAS. BRKN SOFT. VERY ARGILLACEOUS. |
| 49 | 110.28 | 110.68 | 0.40 | 79 | | | MUDSTONE | SSY. M. BN. MAS. BRKN SOFT. PLANT FOSSILS. |
| 49 | 110.68 | 111.38 | 0.70 | 78 | | | MUDSTONE | M-DK. GY. MAS. BRKN SOME SLTY LAMS. ABUNDANT PLANT FOSSILS. |
| 49 | 111.38 | 111.82 | 0.44 | 76 | | | MUDSTONE | DK. GY. LAM. BRKN MUDST WITH MINOR SLTST LAMS. ABUNDANT P LANT FOSSILS. SOFT. |
| 50 | 111.82 | 112.43 | 0.61 | *75 | | | MUDSTONE | SLTY. M. BN. MAS. BRKN |
| 50 | 112.43 | 113.95 | 1.52 | 75 | | | MUDSTONE | M-DK. GY. MAS. BRKN SLTY. NEAR THE TOP. |
| 51 | 113.95 | 115.99 | 2.04 | *75 | | | MUDSTONE | M-DK. GY. MAS. BRKN PLANT FOSSILS. |
| 52 | 115.99 | 116.99 | 1.00 | *78 | | | MUDSTONE | M-DK. GY. MAS. BRKN AS ABOVE. |
| 52 | 116.99 | 117.97 | 0.98 | 77 | | | MUDSTONE | M-DK. GY. MAS. BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------|
| 53 | 117.97 | 119.45 | 1.48 | 76 | 06882 | MUDSTONE | CARB. M-DK. GY. SLD SILTY, PLANT FRAGS & COALY STRINGERS. L OWER 25 CM SAMPLED. |
| 53 | 119.45 | 119.63 | 0.18 | 75 | 06883 H | COAL | C-4. BRKN C-2 BANDS WITHIN. |
| 53 | 119.63 | 119.79 | 0.16 | 75 | 06883 H | COAL | C-3.SLD |
| 53 | 119.79 | 120.00 | 0.21 | 75 | 06883 H | COAL LOSS | |
| 53 | 120.00 | 120.05 | 0.05 | 75 | 06883 H | ROCK LOSS | |
| 53 | 120.05 | 120.11 | 0.06 | 75 | 06883 H | MUDSTONE | CARB. DK. GY. SLD VITRAIN STRINGERS. |
| 53 | 120.11 | 120.25 | 0.14 | 75 | 06883 H | COAL | C-3. SHRD |
| 54 | 120.25 | 120.34 | 0.09 | 75 | 06883 H | COAL | C-3. BRKN PARTIALLY SHEARED. |
| 54 | 120.34 | 120.42 | 0.08 | 75 | 06883 H | COAL | C-5.SLD |
| 54 | 120.42 | 120.62 | 0.20 | 74 | 06883 H | COAL | C-3.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------|
| 54 | 120.62 | 120.87 | 0.25 | 74 | 06883 H | COAL LOSS | |
| 54 | 120.87 | 120.93 | 0.06 | 74 | 06883 H | ROCK LOSS | |
| 54 | 120.93 | 121.10 | 0.17 | 74 | 06883 H | MUDSTONE | CLYY. PR. M-DK. GY. SLD |
| 54 | 121.10 | 121.36 | 0.26 | 74 | 06883 H | COAL | C-2. BRKN C-1 BANDS. |
| 54 | 121.36 | 121.40 | 0.04 | 74 | 06883 H | MUDSTONE | SLTY. M. GY. BRKN |
| 54 | 121.40 | 121.43 | 0.03 | 74 | 06883 H | COAL | C-4. SHRD SOFT. |
| 54 | 121.43 | 121.64 | 0.21 | 74 | 06883 H | COAL | C-3. BRKN |
| 54 | 121.64 | 121.67 | 0.03 | 73 | 06883 H | MUDSTONE | SLTY. M. GY. SLD |
| 54 | 121.67 | 121.71 | 0.04 | 73 | 06883 H | COAL | C-4. SLD C-2 BANDS. |
| 54 | 121.71 | 121.84 | 0.13 | 73 | 06883 H | MUDSTONE | CARB. DK. GY. SLD COALY STRINGERS. |
| 54 | 121.84 | 122.05 | 0.21 | 73 | 06883 H | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------|
| 54 | 122.05 | 122.43 | 0.38 | 73 06884 | H | COAL LOSS | |
| 54 | 122.43 | 122.78 | 0.35 | 73 06884 | H | COAL | C-3.VBRKN C-2 BANDS. |
| 55 | 122.78 | 123.52 | 0.74 | 72 06884 | H | COAL | C-2.VBRKN MINOR C-3 WITHIN. |
| 55 | 123.52 | 123.56 | 0.04 | 72 06884 | H | COAL | C-2.BRKN |
| 55 | 123.56 | 123.63 | 0.07 | 72 06884 | H | COAL | C-3.BRKN |
| 55 | 123.63 | 123.75 | 0.12 | 72 06884 | H | MUDSTONE | SSY.PR.M-DK.GY.SLD |
| 55 | 123.75 | 123.82 | 0.07 | 72 06884 | H | ROCK LOSS | |
| 55 | 123.82 | 124.00 | 0.18 | 72 06884 | H | COAL LOSS | |
| 55 | 124.00 | 124.89 | 0.89 | 71 06884 | H | COAL | C-2.BRKN MINOR C-3 WITHIN. |
| 56 | 124.89 | 125.00 | 0.11 | 71 06884 | H | COAL | C-2.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 125.00 | 126.33 | 1.33 | *70 06885 | | MUDSTONE | CARB.M-DK.GY.SSD.BRKN SILTY, CORE LOSS APPARENT, SILTSTONE LAMINAE THROUGHOUT. SSD AND SANDY LAMINAE NEAR BASE. UPPER 25 CM SAMPLED. |
| 56 | 126.33 | 126.40 | 0.07 | 72 | | SANDSTONE | FG.LT-M.GY.SLD SILTY LAMINAE WITHIN. |
| 56 | 126.40 | 126.75 | 0.35 | 72 | | SANDSTONE | FG.LT-M.GY.SLD SILTY LAMINAE WITHIN PYRITE NODULES. |
| 57 | 126.75 | 128.63 | 1.88 | *75 | | SANDSTONE | SLTY.MG.MEL.LT.GY.VTHNB.SSD.BRKN BIVALVE FRAGMENT (~1 CM LONG). ARGILLACEOUS SS INTERLAM & BEDDED WITH LESSER SILTST. RIP-UP CLASTS PRESENT (~1 CM LONG). ONE LARGE CLAST (5 CM LONG). TALC FILLED FRACTURES (POWDERY). LOAD CAST (RIGHT WAY UP). |
| 58 | 128.63 | 129.23 | 0.60 | 67 | | SANDSTONE | SLTY.MG.MEL.LT.GY.VTHNB.SSD.BRKN MED BEDDED AT THE STRATIGRAPHIC TOP (MINOR MUD). LOAD CAST (RIGHT WAY UP). FINING UP INTERVAL OVER 2CM (COARSE SS-MED SS). SS WITH LESSER SILTST LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87012

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 129.23 | 130.11 | 0.88 | *63 | | SANDSTONE | SLTY. MG. WEL. LT. GY. THNB. SSD. BRKN SS WITH LESSER SLTST LAMS. SMALL RIP-UP CLASTS (1-5 MM). COAL RIP-UP CLAST (2 MM). SOFT WHITE GRAINS IN MUD BANDS NEAR THE TOP. SMALL HAIRLINE COAL STRINGERS (WITH QTZ LINING). |
| 58 | 130.11 | 130.61 | 0.50 | 66 | | SILTSTONE | CLYY. DK. GY. MAS. BRKN SMALL WORM TUBES. |
| 59 | 130.61 | 130.73 | 0.12 | 68 | | SILTSTONE | CLYY. M. GY. MAS. BRKN |
| 59 | 130.73 | 131.37 | 0.64 | *70 | | SANDSTONE | CLYY. VFG. PR. LT. GY. MAS. VBRKN VERY ARGILLACEOUS. SMALL BLK PELLETS (FEEDING TRAILS?). |
| 59 | 131.37 | 132.06 | 0.69 | 70 | | SILTSTONE | CLYY. M-DK. GY. LAM. SSD. BRKN INTERLAM MUD & SLTST. SANDY IN PLACES. LOAD CAST (RIGHT WAY UP). END OF HOLE. T.D. = 133.20 M. |

* DENOTES MEASURED BCA
NEWPAGE

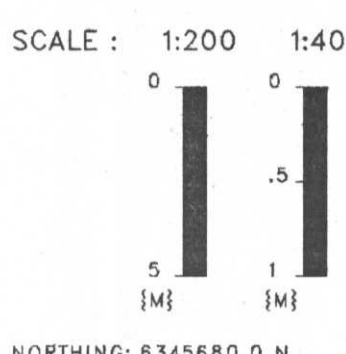
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87012

740

GEOLOGIST : PARRY

DATE : MAR 08/88

DRAWING NO. :



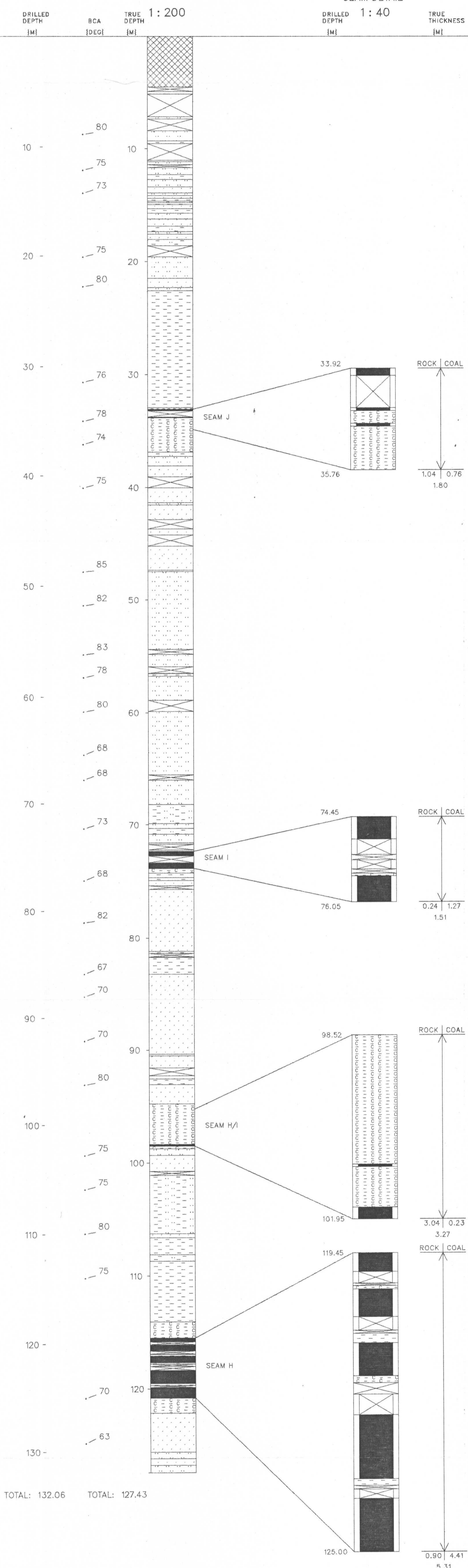
NORTHING: 6345680.0 N
 EASTING: 507950.3 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

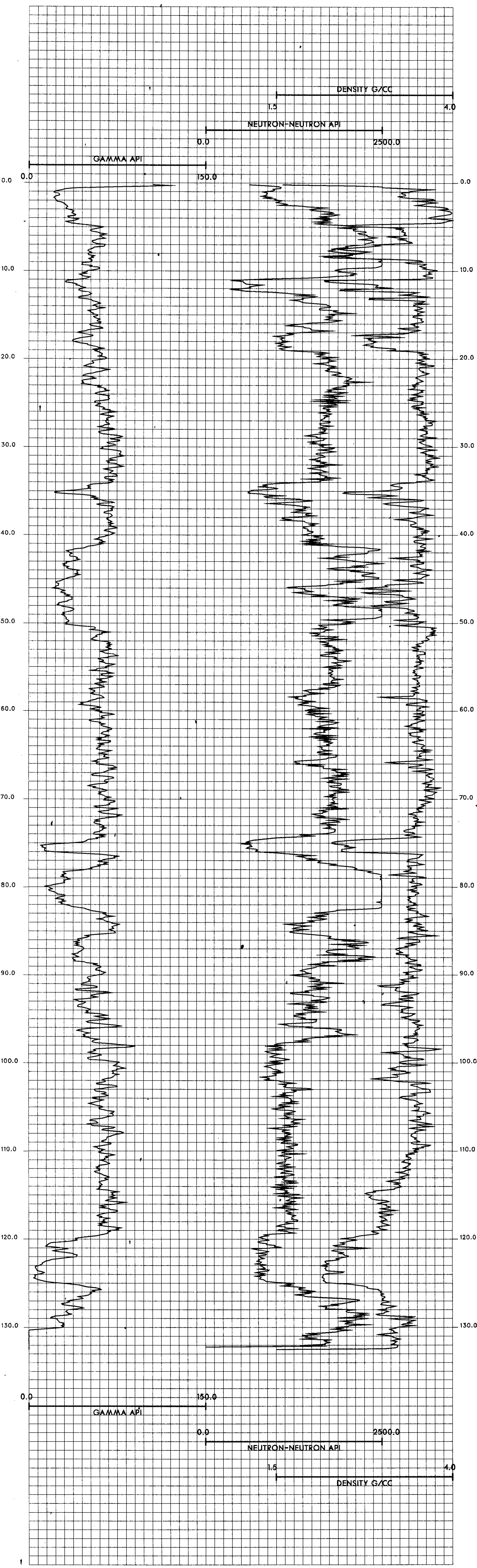
Datasource: **KPNLRDDH87012**
 Log Date: 87-09-12
 Company: CENTURY
 Geologist: PARRY

Province: BC Northing: 6345680.00 Lat: 571522
 Zone: 9 Easting: 507950.00 Long: 1285206
 Measuring Point: GROUND LEVEL Elevation: 1466.4

Scale: 1 to 200.0
 Depth Range: 0.0 to 137.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|-----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | 1 IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1 IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1 IN PIPE |



KPNLRDDH87013

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH87013

DATE - 03/01/88

- HISTORY -

START DATE - 09/12/87

END DATE - 09/14/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PENMAN

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE P. SEAMS J, I, H, PH.

- LOCATION -

PROVINCE - BC

ELEVATION - 1674.21

ZONE - 9

NORTHING - 6342487.49

EASTING - 504339.18

LICENCE/LEASE NUMBER -

LATITUDE - 571339

LONGITUDE - 1285541

- ORIENTATION -

LENGTH - 138.26

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 3.05

AQUIFER DEPTHS (M) - 0.00

0.00

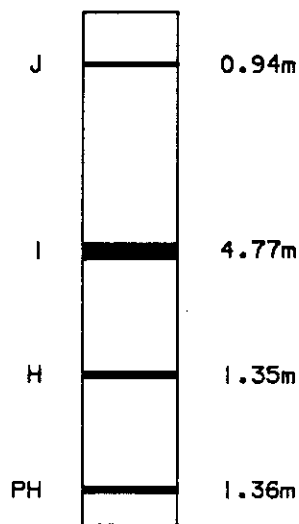
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87013

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| | 0.00 | 3.05 | 3.05 | 64 | | | CASING | CASING DEPTH |
| 1 | 3.05 | 3.16 | 0.11 | 64 | | | SANDSTONE | MG. WEL. LT-M. GY. VBRKN WTH - ORNG TO BN. POSSIBLE TILL. |
| 1 | 3.16 | 3.38 | 0.22 | 64 | | | SANDSTONE | FG. MOD. M-DK. GY. LAM. VBRKN WTH - ORNG TO BN. |
| 1 | 3.38 | 3.69 | 0.31 | 64 | | | SANDSTONE | SLTY. FG. PR. LT. BLK. LAM. BIOTR. VBRKN WTH - ORNG TO BN. BIOTR. MINOR SLTST. W ISPS. |
| 1 | 3.69 | 4.10 | 0.41 | *64 | | | SANDSTONE | FG. MOD. LT-M. GY. LAM. BRKN WTH - ORNG TO BN. SLTST LAMS & WISPS. |
| 1 | 4.10 | 4.20 | 0.10 | 63 | | | SILTSTONE | M. BLK. LAM. SLD MUDST. |
| 1 | 4.20 | 4.48 | 0.28 | 63 | | | SANDSTONE | SLTY. YFG. PR. DK. GY. BRKN NO VISIBLE BEDDING. |
| 1 | 4.48 | 4.67 | 0.19 | 62 | | | SANDSTONE | FG. MOD. M. GY. LAM. BRKN INTBD SLTST & SS LAYERS UP TO 1.0 CH. |
| 1 | 4.67 | 4.85 | 0.18 | 62 | | | SILTSTONE | LT. BLK. LAM. BRKN VFN SS LAM (.1 CH). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 2 | 4.85 | 5.19 | 0.34 | 61 | | | SILTSTONE | M. BLK. LAM. VBRKN VFN SLTST & MUDST LAM. START OF COASTER S. MUDDY. |
| 2 | 5.19 | 5.46 | 0.27 | 60 | | | ROCK LOSS | |
| 2 | 5.46 | 6.10 | 0.64 | 59 | | | SILTSTONE | LT-M. BLK. LAM. BRKN INTLAM SLTST & YFG SS. |
| 2 | 6.10 | 6.57 | 0.47 | 58 | | | MUDSTONE | M. BLK. LAM. BRKN INTLAM MUDST & SLTST. FIS. BREAKS ALONG BEDDING. |
| 2 | 6.57 | 6.95 | 0.38 | 56 | | | MUDSTONE | M. BLK. LAM. BRKN AS ABOVE. |
| 3 | 6.95 | 7.66 | 0.71 | *55 | | | MUDSTONE | M. BLK. LAM. BRKN LAM MUDST & SLTST. FIS. BREAKS ALONG BE DDING, HORIZONTAL CRAWL TRACKS. |
| 3 | 7.66 | 8.17 | 0.51 | *54 | | | MUDSTONE | M. BLK. LAM. VBRKN AS ABOVE. QTZ AT BASE CONTAINING MUDST BREC. |
| 3 | 8.17 | 8.40 | 0.23 | 55 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 3 | 8.40 | 9.02 | 0.62 | 56 | | | MUDSTONE | M.BLK.LAM.BRKN LAM MUDST & SLTST. FIS. BREAKS ALONG BEDDING. |
| 4 | 9.02 | 10.12 | 1.10 | 58 | | | MUDSTONE | M.BLK.LAM.BRKN AS ABOVE. |
| 4 | 10.12 | 10.95 | 0.83 | *60 | | | MUDSTONE | M.BLK.LAM.BRKN AS ABOVE. |
| 5 | 10.95 | 11.81 | 0.86 | 60 | | | MUDSTONE | M.BLK.LAM.VBRKN LAM MUDST & SLTST. FIS. BREAKS ALONG BEDDING. SOM E. SLICKENSIDES WITH MINOR QTZ ON FAC |
| 5 | 11.81 | 11.85 | 0.04 | 60 | | | ROCK LOSS | |
| 5 | 11.85 | 12.49 | 0.64 | *60 | | | MUDSTONE | M.BLK.LAM.BRKN LAM MUDST & SLTST. VERY FIS. BREAKS ALONG BEDDING. |
| 6 | 12.49 | 13.28 | 0.79 | 63 | | | MUDSTONE | M.BLK.LAM.BRKN AS ABOVE. |
| 6 | 13.28 | 14.30 | 1.02 | 66 | 06891 | | MUDSTONE | M.BLK.LAM.BRKN AS ABOVE. 19 CM SAMPLED. END OF COASTER S. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------|
| 6 | 14.30 | 14.36 | 0.06 | 68 | 06891 | | MUDSTONE | CARB.DK.BLK.BRKN VERY CARB MUDST GRADES INTO COAL (C-2 - C-3). |
| 6 | 14.36 | 14.40 | 0.04 | 69 | 06892 | J | COAL | C-2.BRKN |
| 7 | 14.40 | 14.43 | 0.03 | 69 | 06892 | J | COAL | C-2.SLD |
| 7 | 14.43 | 14.45 | 0.02 | 69 | 06892 | J | MUDSTONE | CARB.DK.GY.SLD |
| 7 | 14.45 | 14.60 | 0.15 | 69 | 06892 | J | COAL | C-2.SLD SOME MINOR C-4 BANDS. |
| 7 | 14.60 | 14.62 | 0.02 | 69 | 06892 | J | MUDSTONE | CARB.DK.GY.BRKN |
| 7 | 14.62 | 14.70 | 0.08 | 70 | 06892 | J | COAL | C-2.BRKN |
| 7 | 14.70 | 14.73 | 0.03 | 70 | 06892 | J | MUDSTONE | CLYY.H.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------|
| 7 | 14.73 | 15.22 | 0.49 | 71 | 06892 | J | COAL | C-2. BRKN |
| 7 | 15.22 | 15.24 | 0.02 | 72 | 06892 | J | COAL | C-5. SLD |
| 7 | 15.24 | 15.36 | 0.12 | 72 | 06892 | J | COAL LOSS | |
| 7 | 15.36 | 15.58 | 0.22 | 73 | 06893 | | ROCK LOSS | |
| 7 | 15.58 | 16.52 | 0.94 | *75 | 06893 | | SILTSTONE | CLYY. M. GY. BRKN COALY CARB STRINGERS WITHIN. UPPER 25 C M. SAMPLED. |
| 8 | 16.52 | 16.80 | 0.28 | 72 | | | MUDSTONE | SLTY. M-DK. GY. SLD COALY CARB STRINGERS. |
| 8 | 16.80 | 16.83 | 0.03 | 72 | | | CLAYSTONE | LT-M. GY. SLD UNCONSOLIDATED. |
| 8 | 16.83 | 17.09 | 0.26 | 71 | | | MUDSTONE | CARB. DK. GY. BRKN COALY STRINGERS & BANDS. |
| 8 | 17.09 | 17.48 | 0.39 | 70 | | | MUDSTONE | SLTY. M. GY. BRKN MINOR COALY CARB STRINGERS. |
| 8 | 17.48 | 17.53 | 0.05 | 69 | | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT COALY STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------|
| 8 | 17.53 | 17.78 | 0.25 | 68 | | | MUDSTONE | SLTY. M. GY. BRKN |
| 8 | 17.78 | 17.95 | 0.17 | 67 | | | MUDSTONE | CARB. DK. GY. SLD COAL STRINGERS. |
| 8 | 17.95 | 18.02 | 0.07 | 67 | | | MUDSTONE | SLTY. M. GY. SLD |
| 8 | 18.02 | 18.06 | 0.04 | 67 | | | COAL | C-4. SLD |
| 8 | 18.06 | 18.08 | 0.02 | 66 | | | COAL | C-2. SLD |
| 8 | 18.08 | 18.24 | 0.16 | 66 | | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT COAL STRINGERS. |
| 8 | 18.24 | 18.28 | 0.04 | 66 | | | COAL | C-3. SLD C-5 BANDS WITHIN. |
| 8 | 18.28 | 18.34 | 0.06 | 65 | | | MUDSTONE | CLYY. LT-M. GY. SLD POORLY CONSOLIDATED. |
| 8 | 18.34 | 18.42 | 0.08 | 65 | | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT COALY STRINGERS. |
| 9 | 18.42 | 18.48 | 0.06 | 65 | | | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT COALY STRINGERS & THIN BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------|
| 9 | 18.48 | 18.64 | 0.16 | 64 | | MUDSTONE | SLTY. M. GY. BRKN MINOR COALY STRINGERS. |
| 9 | 18.64 | 18.83 | 0.19 | 64 | | COAL | C-2. BRKN |
| 9 | 18.83 | 18.95 | 0.12 | 63 | | MUDSTONE | CARB. DK. GY. YBRKN |
| 9 | 18.95 | 19.02 | 0.07 | 63 | | COAL | C-2. PHRD |
| 9 | 19.02 | 19.06 | 0.04 | 62 | | MUDSTONE | SLTY. M-DK. GY. SLD |
| 9 | 19.06 | 19.16 | 0.10 | 62 | | COAL | C-2. PHRD |
| 9 | 19.16 | 19.23 | 0.07 | 62 | | COAL LOSS | |
| 9 | 19.23 | 19.40 | 0.17 | 61 | | MUDSTONE | SLTY. M. GY. SLD COALY CARB. ZONE AT TOP OF UNIT. |
| 9 | 19.40 | 20.22 | 0.82 | 59 | | MUDSTONE | SLTY. M. GY. SLD MINOR COALY CARB. STRINGERS NEAR TOP OF UNIT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------|
| 10 | 20.22 | 22.33 | 2.11 | *53 | | SILTSTONE | M-DK. GY. LAM. BIOTR. SLD MINOR MUDST LAM, VERY BIOTRB, MUDST RIP -UP. MUDDY. |
| 11 | 22.33 | 22.46 | 0.13 | 56 | | SILTSTONE | DK. GY. LAM. BIOTR. SLD 40% MUDSTONE, ALMOST NO BEDDING. MINOR BIOTRB, MUDDY. |
| 11 | 22.46 | 22.58 | 0.12 | 56 | | SILTSTONE | DK. GY. LAM. BIOTR. SLD AS ABOVE, MUDDY. |
| 11 | 22.58 | 23.10 | 0.52 | 57 | | SANDSTONE | SLTY. VFG. PR. M. GY. BIOTR. SLD VERY BIOTRB. WITH SLTST. HISPS. NO BEDDING VISIBLE. |
| 11 | 23.10 | 24.36 | 1.26 | *59 | | SILTSTONE | PR. DK. GY. BIOTR. SLD MINOR FG SS & MUDST LAM. FG SS INCREASING DOWN. |
| 12 | 24.36 | 25.57 | 1.21 | 59 | | SANDSTONE | SLTY. VFG. MOD. M-DK. GY. LAM. BIOTR. SLD SLTST HISPS. |
| 12 | 25.57 | 25.59 | 0.02 | 59 | | SILTSTONE | M. BLK. SLD VERY HOMOGENEOUS. NO BIOTRB OR BEDDING. MUDDY. |
| 12 | 25.59 | 25.62 | 0.03 | 59 | | SANDSTONE | FG. MOD. M. GY. LAM. SLD PYRITE PRESENT. VERY FINE SLTST. HISPS, SLTST RIP-UP. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 9

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 12 | 25.62 | 26.46 | 0.84 | 60 | | | SILTSTONE | GY LAM. BIOTR. SLD FINE SLTST & SS LAMS & WISPS. PLANT FRAGMENTS. BLK. |
| 13 | 26.46 | 28.51 | 2.05 | *60 | | | SILTSTONE | GY LAM. BIOTR. SLD FINE SLTST & SS LAM. TOPS UP. SSD LOAD CAST. NORM BURROWS. BLK. |
| 14 | 28.51 | 28.55 | 0.04 | 59 | | | SILTSTONE | DK. GY. LAM. BIOTR. SLD FINE SLTST & SS LAMS & WISPS. |
| 14 | 28.55 | 30.58 | 2.03 | 58 | | | SILTSTONE | M. GY. LAM. BIOTR. SLD NORM BURROWS. SSD (LOAD CAST). INCREASING SS CONTENT DOWN, VERY WISPY LAMS. |
| 15 | 30.58 | 30.73 | 0.15 | 57 | | | SILTSTONE | M. GY. LAM. BIOTR. BRKN AS ABOVE. |
| 15 | 30.73 | 32.02 | 1.29 | 56 | | | ROCK LOSS | |
| 15 | 32.02 | 32.41 | 0.39 | 55 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BIOTR. SLD 60-40 SS-SLTST. HORIZONTAL WRMBUR. LOAD CASTS. |
| 15 | 32.41 | 32.53 | 0.12 | 55 | | | SILTSTONE | M. GY. LAM. SLD INTERBED SLTST & FG SS. |
| 15 | 32.53 | 32.57 | 0.04 | 54 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD VERY FINE SLTST WISPS. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 10

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------|
| 15 | 32.57 | 32.82 | 0.25 | 54 | | | SILTSTONE | M. GY. LAM. BIOTR. SLD VERY BIOTRB. |
| 15 | 32.82 | 33.19 | 0.37 | *54 | | | SILTSTONE | M. GY. LAM. SLD 70-30 SLTST-SS LAM. WRMBUR |
| 15 | 33.19 | 33.27 | 0.08 | 54 | | | SANDSTONE | FG. PR. LT-M. GY. LAM. SLD 60-40 SS-SLTST. MINOR BIOTRB AT BASE. |
| 15 | 33.27 | 33.44 | 0.17 | 54 | | | SILTSTONE | M. GY. LAM. SLD |
| 15 | 33.44 | 33.46 | 0.02 | 54 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD MINOR BIOTRB. |
| 15 | 33.46 | 33.86 | 0.40 | 53 | | | SILTSTONE | LT-M. GY. LAM. BIOTR. SLD HORIZONTAL WRMBUR. 50/50 SS-SLTST. |
| 16 | 33.86 | 34.63 | 0.77 | 53 | | | SILTSTONE | M. GY. LAM. SLD 70-30 SLTST-SS LAM. MINOR BIOTRB. |
| 16 | 34.63 | 34.79 | 0.16 | 52 | | | SANDSTONE | FG. PR. LT-M. GY. LAM. WRMBU. SLD 60-40 SS-SLTST LAM. WRMBUR. |
| 16 | 34.79 | 34.81 | 0.02 | 52 | | | SANDSTONE | FG. MOD. LT. GY. SLD HOMOGENEOUS. WRMBUR OUT OF BOTTOM OF SS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 16 | 34.81 | 34.87 | 0.06 | | 52 | | SILTSTONE | M.GY.LAM.WRMBU.SLD |
| 16 | 34.87 | 34.90 | 0.03 | | 52 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD FINE SLTST WISPS. |
| 16 | 34.90 | 35.52 | 0.62 | | *52 | | SILTSTONE | M.GY.LAM.WRMBU.SLD MINOR BIOTRB. SOME X-BEDDING. TOPS UP. MINOR SS LAM. |
| 16 | 35.52 | 35.56 | 0.04 | | 51 | | SANDSTONE | FG.PR.LT.GY.LAM.SLD FINE SLTST LAM. WRMBUR AT BOTTOM OF UNIT. |
| 16 | 35.56 | 35.69 | 0.13 | | 51 | | SILTSTONE | M.GY.LAM.BIOTR.SLD MINOR SS LAM. |
| 17 | 35.69 | 37.44 | 1.75 | | *48 | | SILTSTONE | LT-M.GY.LAM.WRMBU.SLD VERY FINE SLTST-SS LAM. MINOR BIOTRB. V ERY FINE QTZ STRINGERS. |
| 17 | 37.44 | 37.51 | 0.07 | | 48 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD 75-20 SS-SLTST LAM. |
| 17 | 37.51 | 37.74 | 0.23 | | 49 | | SILTSTONE | M-DK.GY.LAM.SLD VERY FINE SS WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 18 | 37.74 | 38.75 | 1.01 | | 49 | | SILTSTONE | M.GY.LAM.BIOTR.SLD VERY FINE SS WISPS, WRMBUR (1 CM DIA.). |
| 18 | 38.75 | 39.79 | 1.04 | | 49 | | SILTSTONE | M.GY.LAM.BIOTR.SLD AS ABOVE. |
| 19 | 39.79 | 40.29 | 0.50 | | 50 | | SILTSTONE | M.GY.LAM.BIOTR.SLD |
| 19 | 40.29 | 40.33 | 0.04 | | 50 | | SANDSTONE | FG.MOD.LT.GY.SLD MINOR SLTST WISPS. |
| 19 | 40.33 | 41.16 | 0.83 | | *50 | | SILTSTONE | M.GY.LAM.SLD MINOR SS LENSES (.2 TO .5 CM THICK). |
| 19 | 41.16 | 41.18 | 0.02 | | 49 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD SLTST WISPS. |
| 19 | 41.18 | 41.77 | 0.59 | | 48 | | SILTSTONE | M.GY.LAM.SLD VERY MINOR BIOTRB, MINOR QTZ STRINGERS. |
| 20 | 41.77 | 43.85 | 2.08 | | *45 | | SILTSTONE | M.GY.LAM.WRMBU.SLD 80-20 SLTST-SS LAM. INCREASE QTZ STRING ER WITH SLTST BRECCIAATION. |
| 21 | 43.85 | 44.58 | 0.73 | | *58 | | SILTSTONE | DK.GY.LAM.BIOTR.SLD FINE FG SS INTERBEDS. HORIZONTAL WRMBUR S. SSD LOAD CASTS. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 21 | 44.58 | 44.68 | 0.10 | 57 | | | SANDSTONE | FG.LT.GY.LAM.SLD SLTST LAM. |
| 21 | 44.68 | 44.97 | 0.29 | 57 | | | SILTSTONE | DK.GY.LAM.WRMBU.SLD FINE FG SS INTERBEDS. |
| 21 | 44.97 | 45.20 | 0.23 | 56 | | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN FINE FG SS INTERBEDS INCREASING TO BOT OM (UP TO 1CM). ONE FINE QTZ STRINGER |
| 21 | 45.20 | 45.29 | 0.09 | 56 | | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD SLTST MISPS. WRMBUR DESCENDING FROM BOT TQM (1 MM. DIA). |
| 21 | 45.29 | 45.78 | 0.49 | 55 | | | SILTSTONE | DK.GY.LAM.XBDG.SLD TOPS UP. FG SS INTERBEDS. QTZ STRINGER AT BASE (1.2 CM). |
| 22 | 45.78 | 45.87 | 0.09 | 55 | | | SILTSTONE | DK.GY.LAM.SLD SS MISPS. FINE QTZ STRINGERS WITH MINOR SLTST BREC. 2.5 CM QTZ BAND AT BASE WI TH.SLTST BREC. |
| 22 | 45.87 | 46.11 | 0.24 | 54 | | | SILTSTONE | DK.GY.LAM.BIOTR SS INTERBEDS. |
| 22 | 46.11 | 46.13 | 0.02 | *54 | | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD SLTST RIP-UP. MINOR QTZ STRINGER. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 46.13 | 46.82 | 0.69 | 55 | | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN SEVERAL QTZ STRINGERS UP TO .5 CM. SOME SLTST BREC. SSD (LOAD CASTS). |
| 22 | 46.82 | 46.99 | 0.17 | 55 | | | SILTSTONE | DK.GY.LAM.BRKN LARGE SLICKENSIDE (SOME QTZ ON FACE). S S MISPS IN SLTST. |
| 22 | 46.99 | 47.72 | 0.73 | 56 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD SSD LOAD CASTS. SS INTERBEDS & X-BEDS. TOPS UP. |
| 23 | 47.72 | 47.83 | 0.11 | 56 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD SS INTERBEDS. |
| 23 | 47.83 | 49.78 | 1.95 | 58 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD SSD (LOAD CAST). 60-40 SLTST-SS INTERBE DS. |
| 24 | 49.78 | 50.77 | 0.99 | *60 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD WRMBUR. MINOR QTZ STRINGER (2MM). SSD (L OAD CAST).TOPS UP. 60-40 SLTST-SS INTE RBEDS. 2.6 CM QTZ BAND AT BASE CONTAINI NG SLTST BREC (CLAST'S UP TO 2CM). |
| 24 | 50.77 | 51.53 | 0.76 | 60 | | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN WRMBUR. LOAD CAST 2 QTZ STRINGERS 1.5 C M. MINOR BRECCIA. FG SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 25 | 51.53 | 53.54 | 2.01 | *59 | | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN 70-30 SLTST-SS LAM. LOAD CAST. HRMBUR. 1 MINOR QTZ STRINGER AT TOP (2MM). |
| 26 | 53.54 | 55.51 | 1.97 | *57 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD 70-30 SLTST-SS LAM. |
| 27 | 55.51 | 56.53 | 1.02 | *60 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD 70-30 SLTST-SS LAM. X-BEDDING-TOPS UP, LOAD CAST. |
| 27 | 56.53 | 56.72 | 0.19 | 59 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD HRMBUR. |
| 27 | 56.72 | 56.80 | 0.08 | 58 | | | SANDSTONE | LT.GY.SLD SLTST.WISPS, HRMBUR. AT BASE. |
| 27 | 56.80 | 57.43 | 0.63 | 58 | | | SILTSTONE | DK.GY.LAM.SLD 70-30 SLTST-SS LAM. HRMBUR. |
| 28 | 57.43 | 57.47 | 0.04 | 57 | | | SILTSTONE | DK.GY.LAM.SLD |
| 28 | 57.47 | 57.55 | 0.08 | 57 | | | SANDSTONE | FG.PR.LT-M.GY.LAM.XBDG.SLD 60-40 SS-SLTST LAM. TOPS UP. |
| 28 | 57.55 | 58.09 | 0.54 | 56 | | | SILTSTONE | DK.GY.LAM.HRMBU.SLD 80-20 SLTST-SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 28 | 58.09 | 59.53 | 1.44 | *54 | | | SILTSTONE | DK.GY.LAM.SLD SS WISPS. |
| 29 | 59.53 | 61.40 | 1.87 | *55 | | | MUDSTONE | SLTY.M-DK.GY.SLD INCREASING IN COALY STRINGERS AND CARBO NACEOUS CONTENT TOWARDS THE BASE. |
| 30 | 61.40 | 61.83 | 0.43 | 56 | 06894 | | MUDSTONE | CARB.DK.GY.BRKN ABUNDANT COALY BANDS & STRINGERS. LOWER 25CM SAMPLED. |
| 30 | 61.83 | 62.37 | 0.54 | 56 | 06895 | I | COAL | C-3.BRKN MINOR QTZ. MINOR C-4 BANDS. |
| 30 | 62.37 | 62.42 | 0.05 | 57 | 06895 | I | COAL | C-3.SLD |
| 30 | 62.42 | 62.57 | 0.15 | 57 | 06895 | I | MUDSTONE | CARB.M-DK.GY.SLD CLAYEY IN PLACES. |
| 30 | 62.57 | 62.74 | 0.17 | 57 | 06895 | I | COAL LOSS | |
| 30 | 62.74 | 63.14 | 0.40 | 57 | 06895 | I | COAL | C-4.BRKN CONTORTED MUDDY BANDS WITHIN. |
| 30 | 63.14 | 63.22 | 0.08 | 57 | 06895 | I | MUDSTONE | SLTY.M.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------|
| 30 | 63.22 | 63.24 | 0.02 | 57 | 06895 I | COAL | C-4. SLD |
| 30 | 63.24 | 63.27 | 0.03 | 57 | 06895 I | MUDSTONE | CARB. DK. GY. SLD LITRIC SURFACES. |
| 31 | 63.27 | 63.50 | 0.23 | 57 | 06896 I | COAL | C-2. SHRD LITRIC SURFACES. |
| 31 | 63.50 | 64.11 | 0.61 | 58 | 06896 I | COAL | C-3. SHRD SHEARED & POWDERED, PARTIALLY MIXED WIT H MUD. |
| 31 | 64.11 | 64.33 | 0.22 | 58 | 06896 I | COAL | C-2. SHRD |
| 31 | 64.33 | 64.81 | 0.48 | 58 | 06896 I | COAL | C-3. SHRD MINOR MUDDY BANDS. |
| 31 | 64.81 | 65.11 | 0.30 | 59 | 06896 I | COAL | C-2. SLD |
| 31 | 65.11 | 65.51 | 0.40 | 59 | 06896 I | COAL LOSS | |
| 32 | 65.51 | 67.30 | 1.79 | 60 | 06896 I | COAL | C-1. VBRKN PARTIALLY SHEARED, ABUNDANT CONCHOIDAL BREAKS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 33 | 67.30 | 67.43 | 0.13 | 61 | 06896 I | COAL | C-1. BRKN |
| 33 | 67.43 | 68.50 | 1.07 | 61 | 06897 | SILTSTONE | CLYY. M-DK. GY. SLD ABUNDANT CARB PLANT FRAGS NEAR TOP OF U NIT. FINER AT TOP OF UNIT. UPPER 25 CM SAMPLED. |
| 33 | 68.50 | 69.30 | 0.80 | *62 | | SILTSTONE | SSY. M. GY. SLD GRADES FROM ABOVE, INCREASE IN SSY CONT ENT TOWARDS BASE. |
| 34 | 69.30 | 69.37 | 0.07 | *57 | | SILTSTONE | DK. GY. LAM. SLD SSD (LOAD CAST). |
| 34 | 69.37 | 69.91 | 0.54 | 57 | | SANDSTONE | MG. WEL. LT. GY. THKB. SLD SLTST RIP-UPS (1 CM). |
| 34 | 69.91 | 70.07 | 0.16 | 57 | | SILTSTONE | DK. GY. LAM 60-40 SLTST-SS. SSD (LOAD CAST). |
| 34 | 70.07 | 70.28 | 0.21 | 57 | | SANDSTONE | MG. WEL. LT. GY. THKB. BRKN CONTAIN 2 CM QTZ STRINGER, MINOR SS BRE CCIA. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|---------------------------------------------------------------------------------------------------------------------|
| 34 | 70.28 | 70.70 | 0.42 | 57 | | CONGLOMERATE | VTHKB, VBRKN PBL'S (.5 TO 2 CM) IN MG SS MATRIX. MINOR QTZ STRINGERS (.5 CM), SLTST, SS, POSSIBLE CHERT PEBBLES. |
| 34 | 70.70 | 71.55 | 0.85 | 57 | | ROCK LOSS | |
| 35 | 71.55 | 73.26 | 1.71 | 56 | | CONGLOMERATE | VTHKB, BRKN AS ABOVE. |
| 36 | 73.26 | 73.99 | 0.73 | 56 | | CONGLOMERATE | VTHKB, BRKN AS ABOVE. |
| 36 | 73.99 | 74.50 | 0.51 | 56 | | CONGLOMERATE | VTHKB, BRKN NODULES FROM .5 TO 1 CM. 70-30 NODULES TO SS MATRIX. |
| 36 | 74.50 | 75.03 | 0.53 | 56 | | CONGLOMERATE | VTHKB, SLD NODULES FROM .5 TO 1 CM. 60-40 NODULES TO SS MATRIX. |
| 37 | 75.03 | 75.82 | 0.79 | 56 | | CONGLOMERATE | NODULES FROM .5 TO 1 CM. 60-40 NODULES TO SS. POSSIBLE K-FELDSPAR NODULE (1CM). |
| 37 | 75.82 | 76.13 | 0.31 | 56 | | SANDSTONE | PBLY, CG, PR, M, GY, SHRD MINOR QTZ STRINGER (25 CM). |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|-------------------------------------------------------------------------------------------|
| 37 | 76.13 | 76.55 | 0.42 | 56 | | CONGLOMERATE | VTHKB, BRKN NODULES (.25 TO 1.5CM). 70-30 NODULES-S S. SS, SLTST, QTZ, CHERT NODULES. |
| 38 | 76.55 | 76.65 | 0.10 | 56 | | CONGLOMERATE | VTHKB, BRKN AS ABOVE WITH QTZ STRINGERS. |
| 38 | 76.65 | 76.71 | 0.06 | 55 | | SANDSTONE | PBLY, VCG, PR, M, GY, SLD PBL'S UP TO 4MM. |
| 38 | 76.71 | 77.13 | 0.42 | 55 | | CONGLOMERATE | VTHKB, BRKN AS ABOVE. |
| 38 | 77.13 | 77.19 | 0.06 | 55 | | SANDSTONE | VCG, PR, M, GY, BRKN |
| 38 | 77.19 | 78.13 | 0.94 | 55 | | CONGLOMERATE | VTHKB, BRKN NODULES (.25 TO 1.5 CM). 70-30 NODULE-S S. MINOR QTZ YEINING. |
| 38 | 78.13 | 78.20 | 0.07 | 55 | | SANDSTONE | CG, MOD, LT, GY, VBRKN FEW NODULES UP TO 1 CM. |
| 38 | 78.20 | 78.74 | 0.54 | 55 | | ROCK LOSS | |
| 39 | 78.74 | 79.76 | 1.02 | 55 | | SANDSTONE | MG, MOD, LT, GY, BRKN MINOR QTZ STRINGERS & FEW NODULES UP TO 1CM. NO VISIBLE BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|------------------------------------------------------------------------------------------------|
| 39 | 79.76 | 80.15 | 0.39 | 55 | | SANDSTONE | MG.MOD.LT.GY.BRKN AS ABOVE. |
| 39 | 80.15 | 80.50 | 0.35 | 55 | | CONGLOMERATE | 70-30 NODULE TO SS. NODULES UP TO 1CM. |
| 40 | 80.50 | 81.60 | 1.10 | 55 | | CONGLOMERATE | AS ABOVE. |
| 40 | 81.60 | 82.51 | 0.91 | 54 | | SANDSTONE | F-MG.MOD.LT.GY.LAM.BRKN MINOR QTZ STRINGERS. SLTST LAM INCREASE TOWARDS BOTTOM. |
| 41 | 82.51 | 82.98 | 0.47 | 54 | | SANDSTONE | FG.MOD.LT-M.GY.LAM.VBRKN SLTST LAM. 80-20 SS-SLTST. |
| 41 | 82.98 | 83.55 | 0.57 | 54 | | ROCK LOSS | |
| 41 | 83.55 | 83.67 | 0.12 | 54 | | SANDSTONE | FG.MOD.LT-M.GY.LAM.BIOTR.SLD AS ABOVE WITH 5 CM QTZ VEIN CONTAINING SLTST.BRECCIA. |
| 41 | 83.67 | 83.75 | 0.08 | 54 | | SILTSTONE | M-DK.GY.LAM.SLD 60-40 SLTST-SS. |
| 41 | 83.75 | 84.22 | 0.47 | *54 | | SANDSTONE | FG.PR.LT-M.GY.LAM.BIOTR.BRKN SMALL THRUST (.5 CM MOVEMENT), 8 CM QTZ AT BASE W/ SLTST BRECCIA. |
| 41 | 84.22 | 84.62 | 0.40 | 56 | | SILTSTONE | M-DK.GY.LAM.BIOTR.SLD HORIZONTAL WRMBUR. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------|
| 41 | 84.62 | 84.67 | 0.05 | 57 | | SANDSTONE | FG.PR.LT.GY.LAM.BIOTR.SLD |
| 41 | 84.67 | 84.74 | 0.07 | 57 | | SILTSTONE | DK.GY.LAM.BIOTR.SLD 80-20 SLTST-SS. |
| 42 | 84.74 | 85.19 | 0.45 | *58 | | SILTSTONE | DK.GY.LAM.BIOTR.SLD HELMINTHOPSIS PRESENT THROUGHOUT INTERVAL. |
| 42 | 85.19 | 86.53 | 1.34 | 57 | | SANDSTONE | FG.WEL.LT.GY.SLD RARE SLTST BANDS, QUITE HOMOGENEOUS, NO BEDDING VISIBLE. FEM SLTST RIP-UPS. |
| 42 | 86.53 | 86.74 | 0.21 | 57 | | SANDSTONE | FG.WEL.LT.GY.SLD AS ABOVE WITH FINE QTZ STINGERS. |
| 43 | 86.74 | 87.09 | 0.35 | 57 | | SANDSTONE | FG.WEL.LT.GY.BRKN AS ABOVE. |
| 43 | 87.09 | 87.49 | 0.40 | 56 | | SANDSTONE | FG.WEL.LT.GY.BRKN AS ABOVE. |
| 43 | 87.49 | 87.55 | 0.06 | 56 | | SANDSTONE | FG.WEL.LT.GY.BRKN CONTAIN SLTST RIP-UP, QTZ STRINGERS. |
| 43 | 87.55 | 87.59 | 0.04 | 56 | | SILTSTONE | DK.GY.LAM.SLD SS LAM. QTZ STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 43 | 87.59 | 87.70 | 0.11 | 56 | | | SANDSTONE | FG.MEL.LT.GY.SLD QTZ STRINGERS UP TO 3MM. |
| 43 | 87.70 | 87.78 | 0.08 | 56 | | | SILTSTONE | DK.GY.XBDG.SLD TOPS UP. SS LAM. |
| 43 | 87.78 | 88.41 | 0.63 | 56 | | | SANDSTONE | FG.MOD.LT.GY.SLD MINOR SLTST LAM. SLTST RIP-UP CLASTS. |
| 44 | 88.41 | 88.65 | 0.24 | 56 | | | SANDSTONE | FG.MOD.LT.GY.BRKN AS ABOVE. |
| 44 | 88.65 | 88.91 | 0.26 | 56 | | | SANDSTONE | FG.MOD.LT.GY.VBRKN INCREASING SLTST LAM TO BOTTOM. |
| 44 | 88.91 | 89.51 | 0.60 | 55 | | | ROCK LOSS | |
| 44 | 89.51 | 89.56 | 0.05 | 55 | | | SILTSTONE | DK.GY.SLD LOAD CASTS. |
| 44 | 89.56 | 89.95 | 0.39 | 55 | | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD FEW SLTST STRINGERS INCREASING IN FREQU ENCY TO BASE WITH SLTST RIP-UP CLASTS N EAR BASE. |
| 44 | 89.95 | 90.15 | 0.20 | 55 | | | SANDSTONE | FG.MOD.LT-M.GY.LAM.BIOTR.SLD VERTICAL WRMBUR (1CM DIA). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 90.15 | 92.12 | 1.97 | *54 | | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD LOCAL CONCENTRATIONS OF SLTST BANDING W ITH LOAD CASTS & WRMBUR. MINOR QTZ BAND ING. |
| 46 | 92.12 | 93.07 | 0.95 | 52 | | | SANDSTONE | FG.MOD.LT.GY.THNB.VBRKN AS ABOVE. |
| 46 | 93.07 | 93.47 | 0.40 | 51 | | | ROCK LOSS | |
| 46 | 93.47 | 93.59 | 0.12 | 51 | | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN VERTICAL WRMBUR & MINOR STRESS RELIEF F AULTS W/ >5CM MOVEMENT. |
| 46 | 93.59 | 94.13 | 0.54 | 51 | | | SANDSTONE | FG.MOD.LT-M.GY.LAM.WRMBU.BRKN 70-30 SS-SLTST. WRMBUR PRESENT IN THICK ER SLTST LAM CONCENTRATION ALONG WITH H ELMINTHOPSIS. |
| 47 | 94.13 | 94.56 | 0.43 | *50 | | | SANDSTONE | FG.MOD.LT-M.GY.LAM.BIOTR.VBRKN 80-20 SS-SLTST. QTZ AT BASE (1CM) WITH MINOR SLTST CLASTS. |
| 47 | 94.56 | 94.96 | 0.40 | 51 | | | ROCK LOSS | |
| 47 | 94.96 | 96.21 | 1.25 | 52 | | | SANDSTONE | FG.MOD.LT.GY.THKB.BRKN NUMEROUS FINE QTZ STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 48 | 96.21 | 97.42 | 1.21 | 54 | 06898 | SANDSTONE | FG.WEL ABUNDANT QTZ IN LOWER HALF OF UNIT, MIN OR MUD RIP-UPS AT TOP. LOWER 25 CM SAMP LED. |
| 48 | 97.42 | 97.90 | 0.48 | 55 | 06899 H | COAL | C-3.SHRD SHEARED & POWDERED. |
| 48 | 97.90 | 98.21 | 0.31 | 55 | 06899 H | COAL | C-3.SHRD POSSIBLY C-2, SHEARED & POWDERED. |
| 49 | 98.21 | 98.68 | 0.47 | 56 | 06899 H | COAL | C-3.VSHRD VERY SHEARED & POWDERED. |
| 49 | 98.68 | 99.06 | 0.38 | 56 | 06899 H | COAL LOSS | |
| 49 | 99.06 | 100.52 | 1.46 | 58 | 06900 | MUDSTONE | CARB.DK.GY.SLD ABUNDANT COALY CARB STRINGERS THROUGHOUT. SILTY BANDS WITHIN. UPPER 25 CM SAMP LED. |
| 50 | 100.52 | 101.16 | 0.64 | 59 | | SILTSTONE | DK.GY.LAM.BIOTR.SLD 80-20 SLTST-SS. VFG SS LAM. |
| 50 | 101.16 | 102.03 | 0.87 | 60 | | SILTSTONE | DK.GY.LAM.BIOTR.SLD LOAD CASTS. INCREASING SS LAMS TOWARDS BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 50 | 102.03 | 102.29 | 0.26 | 61 | | SANDSTONE | FG.PR.LT.GY.LAM.SLD SOME SLTST RIP-UP. 70-30 SS-SLTST. |
| 50 | 102.29 | 102.51 | 0.22 | 61 | | SANDSTONE | FG.PR.LT.GY.LAM.BIOTR.SLD 60-40 SS-SLTST. HEAVY BIOTRB. |
| 51 | 102.51 | 102.73 | 0.22 | 62 | | SANDSTONE | MOD.LT.GY.YTHNB.SLD SLTST LAM, LOAD CASTS. |
| 51 | 102.73 | 102.78 | 0.05 | *62 | | MUDSTONE | CARB.M.BLK.LAM.SHRD VERY FRIABLE. |
| 51 | 102.78 | 103.54 | 0.76 | 61 | | SANDSTONE | MG.MOD.LT.GY.BRKN SLTST RIP-UPS UP TO 1CM. QTZ STRINGERS (.5CM). NO VISIBLE BEDDING. 4CM QTZ AT BASE. |
| 51 | 103.54 | 103.97 | 0.43 | 60 | | SANDSTONE | MG.WEL.LT.GY SLTST RIP-UP UP TO 1CM. QTZ STRINGERS (.5CM). QUITE HOMOGENEOUS. |
| 52 | 103.97 | 104.41 | 0.44 | 60 | | SANDSTONE | MG.MOD.LT.GY.THKB.BRKN SLTST RIP-UP UP TO 1CM. 1CM QTZ VEIN AT TOP. |
| 52 | 104.41 | 105.81 | 1.40 | 58 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN SLTST LAM UP TO .5CM. ONE BREAK WITH SLICKENSIDES & QTZ INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 52 | 105.81 | 106.07 | 0.26 | 57 | | | SANDSTONE | FG. MOD. LT. GY. VTHNB. SLD MINOR SLTST WISPS. |
| 53 | 106.07 | 106.26 | 0.19 | 57 | | | SANDSTONE | FG. MOD. LT. GY. VTHNB. SLD AS ABOVE. |
| 53 | 106.26 | 106.36 | 0.10 | 57 | | | MUDSTONE | CARB. M. BLK. LAM. VBRKN VERY FRIABLE WITH 5 CM QTZ AT BASE WITH SLTST STRINGERS. |
| 53 | 106.36 | 106.53 | 0.17 | 56 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BIOTR. BRKN MINOR BIOTRB. |
| 53 | 106.53 | 106.91 | 0.38 | 56 | | | SANDSTONE | FG. MOD. LT-M. GY. LAM. BRKN ALTERNATING SS-SLTST LAM UP TO .5CM. 60 -40. SS-SLTST. |
| 53 | 106.91 | 107.79 | 0.88 | *55 | | | SILTSTONE | DK. GY. LAM. BIOTR. BRKN PYRITES & HELMINTHOPSIS PRESENT. HORIZO NTAL WRMBUR. MINOR SS LAM. SOME SLICKEN SIDES. |
| 54 | 107.79 | 108.32 | 0.53 | 54 | | | SILTSTONE | DK. GY. LAM. SLD AS ABOVE. GRADES INTO SS AT BASE. |
| 54 | 108.32 | 108.83 | 0.51 | 54 | | | SANDSTONE | MG. WEL. LT. GY. THKB. SLD QUITE HOMOGENEOUS. MINOR QTZ STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 54 | 108.83 | 109.77 | 0.94 | 53 | | | SANDSTONE | FG. MOD. LT-M. GY. LAM. WRMBU. BRKN MINOR BIOTRB. SS-SLTST LAMINATIONS. GRA DES TO THICK BEDDED SS. |
| 54 | 109.77 | 109.87 | 0.10 | 53 | | | SANDSTONE | MG. MOD. LY. GY. THKB. BRKN HOMOGENEOUS SS. MINOR SLTST WISP. |
| 55 | 109.87 | 110.52 | 0.65 | 53 | | | SANDSTONE | MG. MOD. LY. GY. THKB. BRKN AS ABOVE & CONTAINS 1.5 CM QTZ VEIN. |
| 55 | 110.52 | 111.76 | 1.24 | 52 | | | SANDSTONE | MG. WEL. LY. GY. THKB. SLD CONTAINS QTZ STRINGERS UP TO 2CM & A FE W. SLTST LAMS UP TO .5CM. |
| 56 | 111.76 | 113.59 | 1.83 | 51 | | | SANDSTONE | MG. WEL. LT. GY. THKB. SLD AS ABOVE. |
| 56 | 113.59 | 113.63 | 0.04 | *50 | | | SILTSTONE | DK. GY. SLD NO. VISIBLE BEDDING. |
| 56 | 113.63 | 113.78 | 0.15 | 50 | | | SANDSTONE | VFG. WEL. LT. GY. THKB. SLD ONE SLTST LAM (2MM). |
| 57 | 113.78 | 114.05 | 0.27 | 50 | | | SANDSTONE | FG. MOD. LT. GY. THNB. SLD REGULAR 1 CM SLTST BANDS EVERY 9-10CM. LOAD CASTS (TOPS UP). |
| 57 | 114.05 | 114.47 | 0.42 | *50 | | | SANDSTONE | FG. PR. LT. GY. LAM. SLD SLTST LAM, LOAD CASTS, 70-30 SS-SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 57 | 114.47 | 114.79 | 0.32 | 51 | | SANDSTONE | FG. PR. M. GY. LAM. BIOTR. SLD HEAVY BIOTRB, VERTICAL WRMBUR 1 CM WIDE |
| 57 | 114.79 | 115.36 | 0.57 | 52 | | SANDSTONE | FG. MOD. M. GY. LAM. SLD MINOR SLTST LAMS. ONE CONCENTRATION (3C M. THICK) CONTAINING WRMBURS. |
| 57 | 115.36 | 115.41 | 0.05 | 52 | | SANDSTONE | FG. PR. M. GY. LAM. BIOTR. SLD WRMBUR. 6Q-4Q SS-SLTST. |
| 57 | 115.41 | 115.49 | 0.08 | 52 | | SANDSTONE | FG. PR. M. GY. LAM. SLD SLTST. BANDING UP TO .75 CM THICK. |
| 57 | 115.49 | 115.54 | 0.05 | 53 | | SILTSTONE | DK. GY. LAM. SLD SHEAR BY FAULT. BCA OF 35 DEGREES. |
| 57 | 115.54 | 115.57 | 0.03 | 53 | | SANDSTONE | FG. M. GY. SLD FAULT SCOUR. |
| 57 | 115.57 | 115.66 | 0.09 | 53 | | SANDSTONE | FG. MOD. LT. GY. VBRKN SLICKENSIDES. |
| 58 | 115.66 | 115.74 | 0.08 | 53 | | SANDSTONE | FG. MEL. LT. GY. SLD |
| 58 | 115.74 | 115.89 | 0.15 | 53 | | SILTSTONE | DK. GY. LAM. SLD 75-25 SLTST-SS. SS LAM UP TO .75 CM. GR ADES INTO SS AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 115.89 | 116.40 | 0.51 | 54 | | SANDSTONE | FG. MEL. LT. GY. VTHNB. SLD QUITE HOMOGENEOUS WITH A FEW SLTST LAM. QTZ STRINGERS UP TO 3MM. |
| 58 | 116.40 | 117.02 | 0.62 | *55 | | SANDSTONE | FG. MEL. LT. GY. VTHNB. SLD AS ABOVE. |
| 58 | 117.02 | 117.14 | 0.12 | 55 | | SILTSTONE | DK. GY. LAM. SLD INTERLAM SLTST-SS. |
| 58 | 117.14 | 117.43 | 0.29 | 55 | | SANDSTONE | FG. MOD. M. GY. LAM. BRKN POSSIBLE MUD BALL. 75-25 SS-SLTST LAM. |
| 58 | 117.43 | 117.50 | 0.07 | 55 | | SANDSTONE | FG. MEL. LT. GY. SLD QTZ STRINGER .5 CM THICK. |
| 59 | 117.50 | 118.37 | 0.87 | 55 | | SANDSTONE | FG. PR. M. GY. LAM. BRKN INTERLAM SS-SLTST WITH NUMEROUS QTZ STR INGERS UP TO 3CM W/ SS BRECCIA. |
| 59 | 118.37 | 118.40 | 0.03 | 55 | | MUDSTONE | CARB. BLK. LAM. VBRKN FRIABLE. |
| 59 | 118.40 | 119.12 | 0.72 | 55 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. VBRKN INTLAM SS-SLTST. FRACTURED. QTZ VEINING SMALL FAULTS W/ 1CM MOVEMENT AT 36 DE GREES TO CORE AXIS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------|
| 59 | 119.12 | 119.26 | 0.14 | 55 | | | SANDSTONE | FG. PR. LT-M. GY. LAM. BRKN SS-SLTST LAM. |
| 60 | 119.26 | 119.55 | 0.29 | 54 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD QTZ STRINGERS. |
| 60 | 119.55 | 119.70 | 0.15 | 54 | | | SILTSTONE | SSY. PR. M-DK. GY. SLD FRACTURED WITH QTZ STRINGERS. |
| 60 | 119.70 | 119.83 | 0.13 | 54 | | | SILTSTONE | LT. BLK. VSHRD FAULT SCOUR. |
| 60 | 119.83 | 120.43 | 0.60 | 54 | | | ROCK LOSS | |
| 60 | 120.43 | 121.05 | 0.62 | 54 | | | SILTSTONE | MOD. DK. GY. LAM. BRKN FINE SS. NISPS., PYRITE BLEBS. |
| 60 | 121.05 | 121.14 | 0.09 | 54 | | | SILTSTONE | LT. BLK. VSHRD SCOUR FILL. FAULT ANGLE AT 45 DEGREES T O CORE AXIS. |
| 60 | 121.14 | 121.57 | 0.43 | 54 | | | ROCK LOSS | |
| 60 | 121.57 | 122.08 | 0.51 | *54 | | | SILTSTONE | MOD. DK. GY. LAM. BRKN 80-20 SLTST-SS LAM. POSSIBLE HELMINTHOP SIS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 61 | 122.08 | 122.76 | 0.68 | *58 | | | MUDSTONE | MEL. M. BLK. LAM. SLD NO VISIBLE BEDDING. CRACKING ON BEDDING AT 1 CM INTERVALS. |
| 61 | 122.76 | 124.58 | 1.82 | 58 | | | MUDSTONE | MEL. M. BLK. LAM. SLD AS ABOVE. |
| 62 | 124.58 | 126.13 | 1.55 | 59 | | | MUDSTONE | MEL. M. BLK. LAM. SLD AS ABOVE. |
| 62 | 126.13 | 126.45 | 0.32 | 59 | | | MUDSTONE | SLTY. PR. M. BLK. LAM BECOMING SILTIER TO BASE. PYRITE BLEBS. |
| 62 | 126.45 | 126.58 | 0.13 | 59 | | | MUDSTONE | SLTY. PR. M. BLK. SLD QTZ SAND PARTICALS MIXED IN WITH MUDST. LOOK SIMILAR TO MILKY WAY. |
| 63 | 126.58 | 128.21 | 1.63 | 59 | | | MUDSTONE | MEL. M. BLK. LAM. SLD NO VISIBLE BEDDING BUT CRACKS OCCUR ON BEDDING EVERY 1 CM. 2 MINOR QTZ STRINGE RS (3MM). |
| 63 | 128.21 | 128.61 | 0.40 | 59 | | | MUDSTONE | MEL. M. BLK. LAM. SLD AS ABOVE (NO QTZ). |
| 64 | 128.61 | 128.87 | 0.26 | 59 | 07051 | | MUDSTONE | CARB. DK. GY. BRKN LOWER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------|
| 64 | 128.87 | 129.16 | 0.29 | 59 | 07052 | PH | COAL | C-3. SHRD SHEARED & POWDERED. |
| 64 | 129.16 | 129.21 | 0.05 | 59 | 07052 | PH | MUDSTONE | CARB. DK. GY. BRKN SHEARED, CONTAINS COALY STRINGERS. |
| 64 | 129.21 | 129.24 | 0.03 | 59 | 07052 | PH | COAL | C-5. SLD QTZ WITHIN. |
| 64 | 129.24 | 129.37 | 0.13 | 59 | 07052 | PH | COAL | C-3. YBRKN |
| 64 | 129.37 | 129.56 | 0.19 | 59 | 07052 | PH | COAL | C-3. YBRKN MINOR MUDDY BANDS. |
| 64 | 129.56 | 129.88 | 0.32 | 59 | 07052 | PH | COAL LOSS | |
| 64 | 129.88 | 129.90 | 0.02 | 59 | 07052 | PH | MUDSTONE | SLTY. M. GY. SLD |
| 64 | 129.90 | 130.39 | 0.49 | 60 | 07052 | PH | COAL | C-3. YBRKN MINOR MUDDY BANDS. |
| 64 | 130.39 | 130.45 | 0.06 | 60 | 07052 | PH | COAL | C-5. SLD VITRAIN STRINGERS. |
| 64 | 130.45 | 130.57 | 0.12 | 60 | 07053 | | MUDSTONE | CARB. DK. GY. SLD COAL STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 65 | 130.57 | 130.71 | 0.14 | 60 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD |
| 65 | 130.71 | 131.59 | 0.88 | 60 | | | SANDSTONE | FG. MEL. LT. GY. THNB. SLD LOCAL CONCENTRATION OF SLTST BANDING. SMALL PYRITE BLENDS, LOAD DEPOSITS. |
| 65 | 131.59 | 131.76 | 0.17 | 60 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD SLTST LAM THROUGHOUT. GRADES INTO SLTST AT BASE. |
| 65 | 131.76 | 131.96 | 0.20 | 60 | | | SILTSTONE | SSY. PR. M. GY. LAM. BRKN MINOR QTZ STRINGERS. PYRITE BLENDS. GRAD ES TO MUDST AT BASE. |
| 65 | 131.96 | 131.99 | 0.03 | 60 | | | MUDSTONE | LT. BLK. LAM. SLD 2 MM COAL STRINGER. |
| 65 | 131.99 | 132.39 | 0.40 | 60 | | | MUDSTONE | M. BLK. SLD SLICKENSIDED FACES AT TOP & SMALL FAULT AT BASE (1.5CM MOVEMENT). BCA = 50 DEG REES. |
| 65 | 132.39 | 132.58 | 0.19 | *60 | | | SANDSTONE | SLTY. M. GY. SLD SLTST. LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------|
| 66 | 132.58 | 132.94 | 0.36 | 60 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN MINOR QTZ STRINGERS. SLTST WISPS THROUGH HOUT. |
| 66 | 132.94 | 133.59 | 0.65 | 61 | | SANDSTONE | FG. MOD. LT. GY. VTHNB. BRKN VERY MINOR SLTST LAM. |
| 66 | 133.59 | 134.46 | 0.87 | *62 | | SILTSTONE | SSY. PR. DK. GY. LAM. SLD FG SS LAM. 80-20 SLTST-SS. |
| 66 | 134.46 | 134.67 | 0.21 | 60 | | SANDSTONE | FG. MOD. LT-M. GY. LAM. SLD LOCAL CONCENTRATIONS OF SLTST LAM. |
| 67 | 134.67 | 134.75 | 0.08 | *60 | | SANDSTONE | FG. MOD. LT-M. GY. LAM. SLD AS ABOVE. |
| 67 | 134.75 | 135.09 | 0.34 | 60 | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD MINOR SLTST LAM. QUITE HOMOGENEOUS. QTZ AT BASE. SLICKENSIDES ON TOP OF QTZ. |
| 67 | 135.09 | 135.34 | 0.25 | 60 | | SANDSTONE | FG. MEL. LT. GY. THNB. SLD QTZ. STRINGER WITH SS BRECCIA. |
| 67 | 135.34 | 135.79 | 0.45 | 60 | | SANDSTONE | FG. MOD. LT. GY. LAM MINOR SLTST LAM. |
| 67 | 135.79 | 135.94 | 0.15 | 60 | | SANDSTONE | FG. PR. LT-M. GY. SLD SS FULL OF SLTST RIP-UPS FROM .2CM TO 1 .5CM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87013

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 67 | 135.94 | 136.46 | 0.52 | 60 | | SANDSTONE | FG. MOD. LT-M. GY. THNB. SLD MINOR SLTY BANDS. ONE BREAK WITH SLICKE NSIDES AT 45 DEGREES. |
| 68 | 136.46 | 136.63 | 0.17 | 60 | | SANDSTONE | FG. MEL. LT. GY. SLD MINOR QTZ STRINGER. |
| 68 | 136.63 | 137.25 | 0.62 | 60 | | SANDSTONE | FG. MOD. LT-M. GY. SLD FILLED WITH SLTST RIP-UPS FROM .2CM TO 2CM. NUMEROUS QTZ VEINS. SOME BREC. |
| 68 | 137.25 | 137.53 | 0.28 | 60 | | SANDSTONE | FG. MEL. LT. GY. SLD APPEARS TO BE SHATTERED WITH QTZ INFILL. |
| 68 | 137.53 | 138.26 | 0.73 | 60 | | SANDSTONE | FG. MEL. LT. GY. BRKN INTERMITTENT SLTY BANDS. SLICKENSIDED F AULT FRACTURES AT 55 DEGREES. QTZ VEINS (3 CM). END OF HOLE. T.D. = 138.98 M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87013 SEAM : H INTERVAL(M) : 97.42 - 99.06 ELEVATION(M) : 1674.2
 GEOLOGIST : PENMAN SCALE: 1:40 DATE : MAR 09/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | |
|-------------|--------------------|---------------|-----------------|--------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|------|----------------|---|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | |
| 1 2 3 4 5 6 | 97.42 | ↑ | | 1.04 | 76.8 | 6689 | 63 | 1.35 / 0.00 | 1.35 / 0.00 | 0.66 | 18.88 | 5.74 | 74.70 | 0.47 | 26.35 | — |
| | 99.06 | ↓ | | (0.32) | | | | 1.35 | 1.35 | | | | | | | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87013

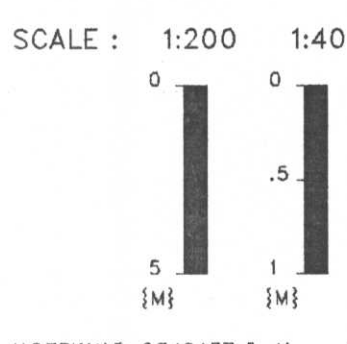
740

GEOLOGIST : PENMAN

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

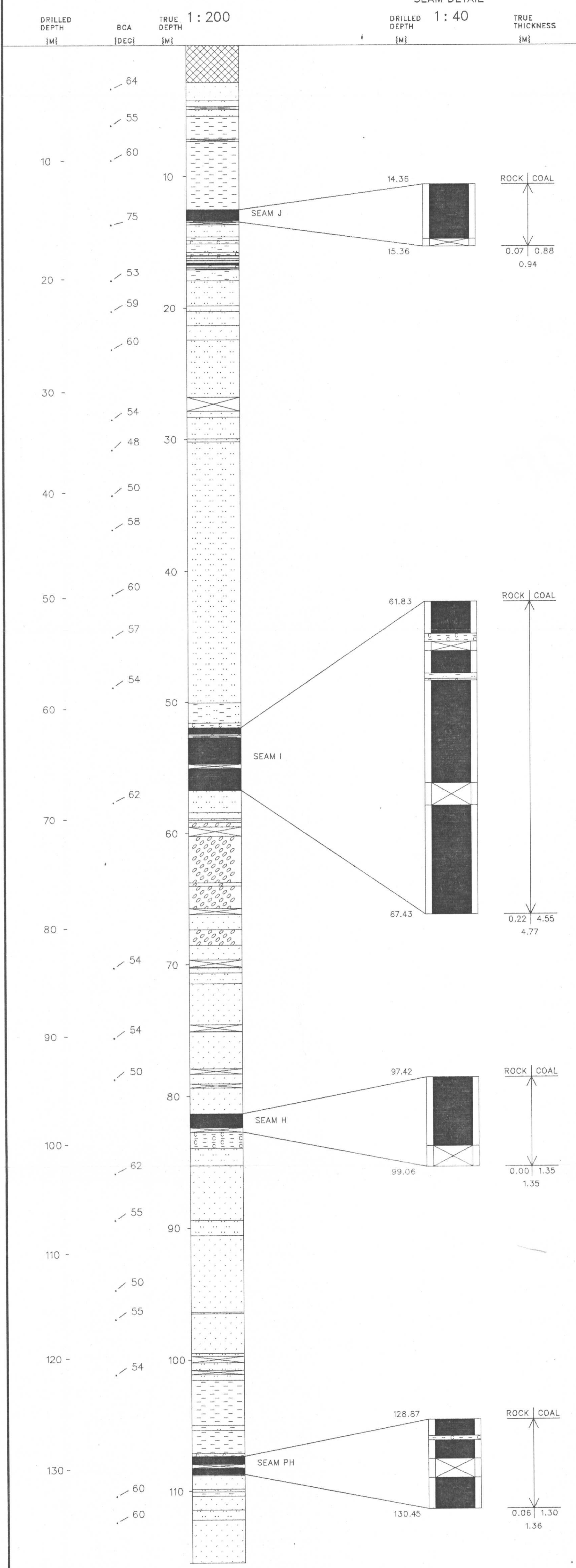


NORTHING: 6342487.0 N
 EASTING: 504339.1 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



TOTAL: 138.26 TOTAL: 115.49

Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

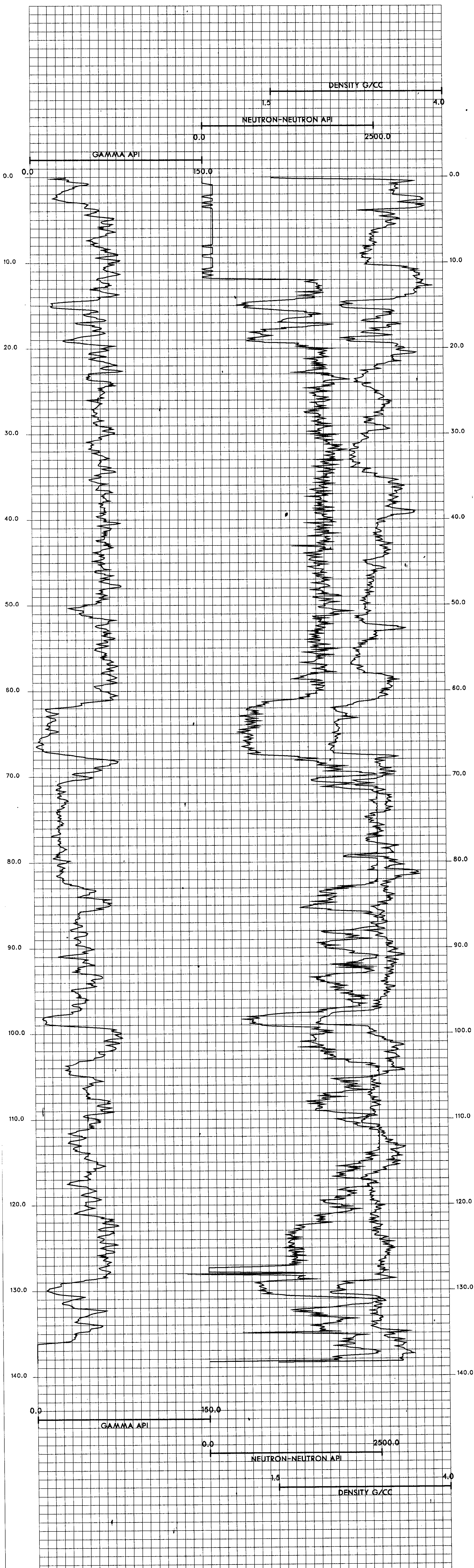
Datasource: **KPNLRDDH87013**
 Log Date: 87-09-13
 Company: CENTURY
 Geologist: PENMAN

Province: BC Northing: 6342490.00 Lat: 571339
 Zone: 9 Easting: 504339.00 Long: 1285541
 Measuring Point: GROUND LEVEL Elevation: 1674.2

Scale: 1 to 200.0
 Depth Range: 0.0 to 143.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87014

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87014

DATE - 03/04/88

- HISTORY -

START DATE - 09/14/87

END DATE - 09/16/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SAVOIE

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - INTERSECTED K, J, I, H/I, H/I (2). COULD NOT DRILL
ANY DEEPER DUE TO DRILL CROWN STUCK IN HOLE.

- LOCATION -

PROVINCE - BC

ELEVATION - 1473.80

ZONE - 9

NORTHING - 6345653.48

EASTING - 507707.30

LICENCE/LEASE NUMBER -

LATITUDE - 571521

LONGITUDE - 1285220

- ORIENTATION -

LENGTH - 104.68

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 7.62

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

88/03/03

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 7.62 | 7.62 | 52 | | CASING | CASING DEPTH |
| 1 | 7.62 | 9.63 | 2.01 | 52 | | ROCK LOSS | |
| 1 | 9.63 | 11.28 | 1.65 | *52 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN CASING DEPTH = 7.62 M. INTERLAMINATED S LTST AND MUDST. SOME <5 CM BANDS OF VPR SORTED, FRIABLE SS. VERY WEATHERED. 50 FT. |
| 1 | 11.28 | 11.42 | 0.14 | 45 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN AS ABOVE. |
| 2 | 11.42 | 13.42 | 2.00 | *36 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN AS ABOVE. |
| 2 | 13.42 | 13.83 | 0.41 | 37 | | ROCK LOSS | |
| 3 | 13.83 | 14.33 | 0.50 | 37 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN AS ABOVE. DIFFICULT TO DETERMINE TOPS. |
| 3 | 14.33 | 15.69 | 1.36 | *38 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN AS ABOVE. MINOR (<.5CM) QTZ VEINING PAR ALLEL TO BDG NEAR BASE OF UNIT. |
| 3 | 15.69 | 15.98 | 0.29 | 34 | | ROCK LOSS | |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 4 | 15.98 | 17.37 | 1.39 | *30 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN AS ABOVE. MINOR 2CM QTZ VEINING PARALLE L TO BDG. |
| 4 | 17.37 | 17.93 | 0.56 | *27 | | SILTSTONE | SSY.VPR.M.GY.LAM.VBRKN INTERLAMINATED MUDST & SLTST. SOME SSS BANDS (<.5CM). TOPS UP? (TRUNCATION OF B EDS). |
| 4 | 17.93 | 18.28 | 0.35 | 19 | | ROCK LOSS | |
| 5 | 18.28 | 18.37 | 0.09 | 15 | | MUDSTONE | SLTY.M.GY.LAM.BRKN INTERLAM SLTST. |
| 5 | 18.37 | 18.68 | 0.31 | *12 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN INTERLAM MUDST. VERY FRIABLE, SOFT, WEA THERED. CORE TWIST-OFF. POSSIBLE CORE L OSS. |
| 5 | 18.68 | 18.96 | 0.28 | *04 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN INTERLAM MUDST. NO QTZ OR BREAKAGE, POS SIBLY A PARASITIC FOLD. |
| 5 | 18.96 | 19.11 | 0.15 | *01 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

FORM 400-1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 5 | 19.11 | 19.61 | 0.50 | *13 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN INTERLAM MUDST. SOME <5 CM SSY BANDS. |
| 5 | 19.61 | 20.22 | 0.61 | *36 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN AS ABOVE. |
| 6 | 20.22 | 20.42 | 0.20 | 44 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN AS ABOVE. |
| 6 | 20.42 | 22.14 | 1.72 | *62 | | SILTSTONE | SSY.VPR.M.GY.LAM.SSD.BRKN AS ABOVE. MINOR BROKEN QTZ VEINING <2 CM. |
| 7 | 22.14 | 23.26 | 1.12 | *64 | | SILTSTONE | SSY.VPR.M.GY.LAM.SSD.BRKN INTERLAM MUDST. TOPS UP (LOAD CAST). A FEW MUD BANDS ARE CARBONACEOUS. |
| 7 | 23.26 | 23.97 | 0.71 | 64 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN AS ABOVE. ONE <5 CM CARBONATE VEIN PAR ALLEL TO BEDDING. |
| 8 | 23.97 | 25.92 | 1.95 | *63 | | SILTSTONE | SSY.VPR.M.GY.LAM.SSD.BRKN AS ABOVE. TOPS UP (TRUNCATED BDG). VERY MINOR CARBONATE VEINING. |
| 9 | 25.92 | 26.10 | 0.18 | 64 | | SILTSTONE | SSY.VPR.M.GY.LAM.BRKN MINOR INTERLAMINATED MUDST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 9 | 26.10 | 27.75 | 1.65 | *64 | | SILTSTONE | SSY.VPR.M.GY.LAM.SSD.BRKN INTERLAM MUDST. MUDDIER TOWARDS BASE. T OPS UP. |
| 10 | 27.75 | 28.90 | 1.15 | 64 | | MUDSTONE | SLTY.VPR.M-DK.GY.LAM.BRKN CRUDELY INTERLAM SSY SLTST. |
| 10 | 28.90 | 28.95 | 0.05 | 64 | | MUDSTONE | M-DK.GY.VTHNB |
| 10 | 28.95 | 29.08 | 0.13 | 64 | | SILTSTONE | M.GY.VTHNB.VBRKN VERY HARD. QTZ VEINING. 1 CM BAND OF BL ACK PELLETS. |
| 10 | 29.08 | 29.32 | 0.24 | 64 | | ROCK LOSS | |
| 10 | 29.32 | 29.88 | 0.56 | 64 | | MUDSTONE | M-DK.GY.BRKN SILTY IN SOME AREAS. VERY SOFT AND FRIA BLE. |
| 11 | 29.88 | 30.60 | 0.72 | 64 07054 | | MUDSTONE | DK.GY.VTHNB.VBRKN VERY SOFT. FRIABLE. MODERATE QTZ VEININ G WITH TWO QTZ LENSES 2 CM WIDE. |
| 11 | 30.60 | 30.92 | 0.32 | 65 07055 K | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------|
| 11 | 30.92 | 30.93 | 0.01 | 65 | 07055 K | COAL | C-4. PHRD LOSS HERE? |
| 11 | 30.93 | 30.97 | 0.04 | 65 | 07055 K | MUDSTONE | CARB. BLK. BRKN SOFT, POORLY CONSOLIDATED LIKE PLASTICE NE. |
| 11 | 30.97 | 30.98 | 0.01 | 65 | 07055 K | COAL | C-5. BRKN |
| 11 | 30.98 | 31.02 | 0.04 | 65 | 07055 K | COAL | C-3. BRKN |
| 11 | 31.02 | 31.16 | 0.14 | 65 | 07055 K | COAL | C-4. YBRKN FRIABLE. |
| 11 | 31.16 | 31.26 | 0.10 | 65 | 07055 K | COAL | C-3. SHRD VERY FRIABLE AND SHEARED. LISTRIC SURFACES. |
| 11 | 31.26 | 31.30 | 0.04 | 65 | 07055 K | MUDSTONE | CARB. PHRD GROUND UP COAL MIXED WITH MUDST. VERY FRIABLE. |
| 11 | 31.30 | 31.35 | 0.05 | 65 | 07055 K | COAL | C-4. VSHRD ALMOST POWDERED, EXTREMELY SHEARED. MODERATE QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------|
| 11 | 31.35 | 31.50 | 0.15 | 65 | 07055 K | COAL | C-3. VSHRD VERY FRIABLE. |
| 11 | 31.50 | 31.53 | 0.03 | 65 | 07055 K | COAL | C-5. BLK. YBRKN VERY FRIABLE. |
| 11 | 31.53 | 31.57 | 0.04 | 65 | 07055 K | COAL | C-4. YBRKN |
| 11 | 31.57 | 31.64 | 0.07 | 65 | 07055 K | COAL | C-3. VSHRD LISTRIC SURFACES ABUNDANT. VERY FRIABLE |
| 11 | 31.64 | 31.72 | 0.08 | 65 | 07055 K | COAL | C-4. VSHRD POWDERED IN PLACES. VERY FRIABLE. |
| 12 | 31.72 | 31.76 | 0.04 | 65 | 07055 K | COAL | C-4. VSHRD VERY FRIABLE. |
| 12 | 31.76 | 32.67 | 0.91 | 65 | 07055 K | COAL LOSS | |
| 12 | 32.67 | 32.77 | 0.10 | 65 | K | ROCK LOSS | |
| 12 | 32.77 | 32.80 | 0.03 | 65 | K | MUDSTONE | CARB. BRKN VERY SOFT, POORLY CONSOLIDATED; LIKE PLASTICENE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 32.80 | 32.83 | 0.03 | 65 | | K | SILTSTONE | SSY.DK.GY.MAS.SLD |
| 12 | 32.83 | 32.84 | 0.01 | 65 | | K | COAL | C-4.BLK.PHRD |
| 12 | 32.84 | 33.43 | 0.59 | 65 | | K | COAL LOSS | |
| 12 | 33.43 | 33.52 | 0.09 | 65 | | K | MUDSTONE | CARB.DK.GY.BRKN VERY SOFT. POORLY CONSOLIDATED; LIKE PL ASTICENE. |
| 12 | 33.52 | 33.64 | 0.12 | 65 | | K | MUDSTONE | CARB.DK.GY.MAS.VBRKN COAL STRINGERS 1-10 MM WIDE. |
| 12 | 33.64 | 34.66 | 1.02 | *65 | | K | MUDSTONE | DK.GY.LAM.BIOTR.VBRKN LIGHTER GREY SILTY BIOTURBATED LAMINAE NEAR TOP. MODERATE QTZ VEINING. CORE TH IST-OFF AT TOP. FAINT REMNANTS OF PLANT HASH. |
| 12 | 34.66 | 35.13 | 0.47 | 64 | | K | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 12 | 35.13 | 35.17 | 0.04 | 64 | | K | COAL | C-4.BLK.VSHRD VERY FRIABLE. RUBBLE. MUD BANDS. LYSTRI C SURFACES. |
| 12 | 35.17 | 35.21 | 0.04 | 64 | | K | COAL | C-5.BLK.VSHRD ABUNDANT LISTRIC SURFACES. |
| 12 | 35.21 | 35.56 | 0.35 | 64 | | K | COAL LOSS | |
| 12 | 35.56 | 35.63 | 0.07 | 63 | | | MUDSTONE | CARB.BLK.VSHRD CRUSHED COAL MIXED IN. FRIABLE. NUMEROU S LISTRIC SURFACES THROUGHOUT. |
| 12 | 35.63 | 36.03 | 0.40 | 63 | | | ROCK LOSS | |
| 12 | 36.03 | 36.27 | 0.24 | 63 | | | MUDSTONE | DK.GY.MAS.SLD HARD. WELL CONSOLIDATED. NO PLANT HASH. HOMOGENEOUS. |
| 13 | 36.27 | 36.51 | 0.24 | 62 | | | SILTSTONE | M.GY.THNB.BRKN VERY HARD. 5 CM ZONE AT BASE OF INTERVA L CONTAINING ABUNDANT PYRITE. IRREGULAR CONTACTS. |
| 13 | 36.51 | 37.05 | 0.54 | *62 | | | SANDSTONE | FG.WEL.LY-M.GY.THKB.SLD MUDST RIP-UP CLASTS (WELL ROUNDED .1 x 1 CM) NEAR BASE. GRADATIONAL LOWER CONT ACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 37.05 | 38.36 | 1.31 | 65 | | | SILTSTONE | SSY.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED MUDST. SOME BDG DISTURBED BY BIOTRB? LISTRIC SURFACES ALONG SOME BDG PLANES. LARGE SILTY BLEBS >6 CM. MINOR CARBONATE VEIN STRINGER. SANDIER TOWARD BASE. |
| 14 | 38.36 | 38.51 | 0.15 | 67 | | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.SLD MINOR MUDST LAM. |
| 14 | 38.51 | 38.72 | 0.21 | *67 | | | SILTSTONE | M.GY.THNB.BRKN HARD. VERY BROKEN AT TOP OF INTERVAL, POSSIBLE CORE LOSS. |
| 14 | 38.72 | 38.79 | 0.07 | 67 | | | SANDSTONE | MG.PR.S-P.GY THO <1 CM MUDST BANDS. SHARP CONTACTS. |
| 14 | 38.79 | 39.47 | 0.68 | 67 | | | SILTSTONE | SSY.LT-M.GY.LAM.SSD.VBRKN INTERLAM MUDST. BROKEN IRREGULAR QTZ VEINING (<.5 CH). |
| 14 | 39.47 | 39.93 | 0.46 | 67 | | | ROCK LOSS | |
| 14 | 39.93 | 40.46 | 0.53 | 66 | | | SANDSTONE | FG.PR.LT-M.GY.MAS.BRKN VERY MINOR WISPS OF MUDST AND SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 15 | 40.46 | 41.10 | 0.64 | 66 | | | SANDSTONE | FG.PR.LT-M.GY.MAS.VBRKN AS ABOVE. FRACTURE SUB-PARALLEL TO CORE. SPARSE QTZ XL GROWTH ALONG FRACTURE. |
| 15 | 41.10 | 41.56 | 0.46 | 66 | | | ROCK LOSS | |
| 15 | 41.56 | 41.82 | 0.26 | *66 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN INTERLAMINATED MUDST. <1 CM DISPLACEMENT ALONG HAIRLINE FRACTURES SUB-PARALLEL TO CORE. |
| 15 | 41.82 | 42.06 | 0.24 | 66 | | | SANDSTONE | FG.LT-M.GY.MAS.VBRKN LISTRIC SURFACE SUB-PARALLEL TO CORE. |
| 15 | 42.06 | 42.49 | 0.43 | 67 | | | ROCK LOSS | |
| 15 | 42.49 | 43.07 | 0.58 | 68 | | | SANDSTONE | FG.LT-M.GY.MAS MINOR INTERLAM MUDST & SLTST. SOME HAIR LINE QTZ FILLED FRACTURES. |
| 16 | 43.07 | 43.38 | 0.31 | *69 | | | SANDSTONE | SLTY.FG.M.GY.LAM.SLD INTERLAMINATED MUDST & SLTST. |
| 16 | 43.38 | 43.40 | 0.02 | 68 | | | BRECCIA | M.GY QTZ ENCASED ANGULAR CLAST OF ABOVE ROCK TYPE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 43.40 | 45.10 | 1.70 | 65 | | SANDSTONE | SLTY. FG. M. GY. LAM. SLD INTERLAM MUDST & SLTST. HAIRLINE FRACTURES RUNNING THE LENGTH OF THE CORE. |
| 17 | 45.10 | 45.40 | 0.30 | 62 | | SILTSTONE | SSY. LT-M. GY. LAM. VBRKN INTERLAMINATED MUDST. IRREGULAR HAIRLINE F. QTZ VEINING. |
| 17 | 45.40 | 46.18 | 0.78 | *60 | | SILTSTONE | M. GY. LAM. BRKN INTERLAMINATED MUDST. MINOR IRREGULAR QTZ VEINING. |
| 17 | 46.18 | 46.62 | 0.44 | 59 | | SILTSTONE | M. GY. LAM. VBRKN RHYTHMITES. BEGINNING OF THE "COASTER Z ONE". 2 CM OF FAULT GOUGE AT 45 DEGREES TO CORE AT TOP OF INTERVAL. |
| 17 | 46.62 | 46.82 | 0.20 | 59 | | MUDSTONE | SLTY. M. GY. SHRD FAULT GOUGE. BASE OF FAULT -45 DEGREES. |
| 17 | 46.82 | 47.59 | 0.77 | 59 | | ROCK LOSS | |
| 18 | 47.59 | 47.85 | 0.26 | 58 | | MUDSTONE | SLTY. M. GY. SHRD FAULT GOUGE. MINOR QTZ FRAGMENTS. |
| 18 | 47.85 | 48.04 | 0.19 | 58 | | MUDSTONE | SLTY. M. GY. LAM. VBRKN RHYTHMITES. INTERLAM SLTST. TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 18 | 48.04 | 48.12 | 0.08 | 58 | | MUDSTONE | SLTY. M. GY. FAULT GOUGE. |
| 18 | 48.12 | 48.44 | 0.32 | 58 | | MUDSTONE | SLTY. M. GY. LAM. VBRKN RHYTHMITES. INTERVAL THICKNESS APPROX. |
| 18 | 48.44 | 48.79 | 0.35 | 57 | | MUDSTONE | SLTY. M. GY. LAM. VBRKN AS ABOVE. |
| 19 | 48.79 | 48.90 | 0.11 | 57 | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN RHYTHMITES AS ABOVE. CORE VERY BROKEN: RUBBLE. PROBABLY CORE LOSS HERE. |
| 19 | 48.90 | 49.39 | 0.49 | 57 | | ROCK LOSS | |
| 19 | 49.39 | 49.53 | 0.14 | 56 | J | MUDSTONE | CARB. DK. GY. VSHRD ABUNDANT LISTRIC SURFACES. GROUND UP CO AL MIXED IN WITH MUDST. |
| 19 | 49.53 | 50.02 | 0.49 | 56 | J | ROCK LOSS | |
| 19 | 50.02 | 50.18 | 0.16 | 56 | J | SANDSTONE | FG. PR. M. GY. MAS. BRKN MODERATE QTZ VEINING. FAULT EMPLACED BL OCK OF SS? |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 50.18 | 50.32 | 0.14 | 56 | | J | MUDSTONE | CARB. DK. GY. MAS. VSHRD NUMEROUS LISTRIC SURFACES. CRUSHED CORE |
| 19 | 50.32 | 51.00 | 0.68 | 55 | | | SANDSTONE | FG. M. GY. MAS. BRKN BRECCIATED. INTENSE QTZ VEINING. HIGHLY FRACTURED BUT CONSOLIDATED CORE. |
| 20 | 51.00 | 51.18 | 0.18 | 55 | | | MUDSTONE | M. GY. SHRD ABUNDANT LISTRIC SURFACES THROUGHOUT. G RADATIONAL CONTACT. |
| 20 | 51.18 | 52.39 | 1.21 | *54 | | | SANDSTONE | FG. LT-M. GY. LAM. SSD. VBRKN ABUNDANT MUDST WISPS. ONE BURROW, VERTI CAL, 1 CM WIDE x 2 CM DEEP. MINOR QTZ V EINING. LISTRIC SURFACES. |
| 21 | 52.39 | 53.39 | 1.00 | *52 | | | SANDSTONE | FG. LT-M. GY. LAM. XBDG. VBRKN TOPS UP. ABUNDANT MUDST WISPS. PLANER X BDG. TRUNCATED XBDG. 1 CM CLIMBING RIPP LES. MINOR QTZ VEINING. LISTRIC SURFACE S. 2 CM ZONE OF SLTST WITH BLACK PELLET S. |
| 21 | 53.39 | 53.59 | 0.20 | 49 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------|
| 21 | 53.59 | 54.05 | 0.46 | 48 | | | SILTSTONE | SSY. LT-M. GY. LAM. SHRD INTERLAM MUDST. ABUNDANT LISTRIC SURFAC ES. |
| 22 | 54.05 | 54.97 | 0.92 | *45 | | | SILTSTONE | LT-M. GY. SHRD AS ABOVE. GRADATIONAL CONTACT. |
| 22 | 54.97 | 55.02 | 0.05 | 45 | | | ROCK LOSS | |
| 22 | 55.02 | 55.70 | 0.68 | 45 | | | MUDSTONE | M. GY. MAS. BRKN MINOR HELMINTHOPYSIS. SOME SLTY ZONES. |
| 23 | 55.70 | 56.38 | 0.68 | 45 | | | MUDSTONE | DK. GY. MAS. BRKN |
| 23 | 56.38 | 57.00 | 0.62 | *45 | | | MUDSTONE | DK. GY. MAS. VBRKN |
| 23 | 57.00 | 57.15 | 0.15 | 45 | 05989 | | BENTONITE | LT. GY. SHRD CONTORTED WITH MUCH QTZ VEINING. LISTRI C SURFACES. |
| 23 | 57.15 | 57.40 | 0.25 | 45 | 07056 | | MUDSTONE | CARB. DK. GY. MAS. VSHRD ABUNDANT LISTRIC SURFACES. |
| 23 | 57.40 | 57.91 | 0.51 | 45 | 07057 | I | COAL LOSS | |
| 24 | 57.91 | 58.21 | 0.30 | 45 | 07057 | I | COAL | C-3. BLK. VSHRD VERY CRUMBLLED. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------|
| 24 | 58.21 | 58.33 | 0.12 | 45 | 07057 | I | MUDSTONE | CARB. YBRKN ABUNDANT COALY STRINGERS. |
| 24 | 58.33 | 58.46 | 0.13 | 46 | 07057 | I | COAL | C-2. BLK. SLD |
| 24 | 58.46 | 58.50 | 0.04 | 46 | 07057 | I | COAL LOSS | |
| 24 | 58.50 | 58.61 | 0.11 | 46 | 07057 | I | ROCK LOSS | |
| 24 | 58.61 | 58.70 | 0.09 | 46 | 07057 | I | MUDSTONE | CARB. BLK. MAS. SLD |
| 24 | 58.70 | 59.02 | 0.32 | 46 | 07057 | I | COAL | C-2. YBRKN CRUSHED IN PLACES. |
| 24 | 59.02 | 59.55 | 0.53 | 46 | 07057 | I | COAL LOSS | |
| 24 | 59.55 | 59.75 | 0.20 | 46 | 07057 | I | COAL | C-3. PHRD ABUNDANT LYSTRIC SURFACES. |
| 25 | 59.75 | 59.89 | 0.14 | 46 | 07057 | I | COAL | C-3. YSHRD ABUNDANT LYSTRIC SURFACES. |
| 25 | 59.89 | 60.06 | 0.17 | 46 | 07057 | I | ROCK LOSS | |
| 25 | 60.06 | 60.10 | 0.04 | 46 | 07057 | I | MUDSTONE | CARB. BLK. MAS. BRKN HARD. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 60.10 | 60.11 | 0.01 | 46 | 07057 | I | COAL | C-6. BRKN |
| 25 | 60.11 | 60.21 | 0.10 | 46 | 07057 | I | COAL | C-3. YSHRD CRUMBLED CORE. |
| 25 | 60.21 | 61.22 | 1.01 | 46 | 07057 | I | COAL | C-2. YBRKN PONDERED IN PLACES. CRUMBLED CORE. |
| 25 | 61.22 | 61.63 | 0.41 | 46 | 07057 | I | COAL LOSS | |
| 25 | 61.63 | 61.75 | 0.12 | 47 | 07058 | | MUDSTONE | CARB. LAM. BRKN FINE FAINT LAMINAE. CONTORTED BEDDING. SSD? |
| 26 | 61.75 | 61.78 | 0.03 | 47 | | | SILTSTONE | LT-M. GY. YTHNB. SLD A FEW MUDST STRINGERS. GRADATIONAL LOWER CONTACT. |
| 26 | 61.78 | 62.50 | 0.72 | 47 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD A FEW ANGULAR SLTST CLASTS NEAR TOP OF INTERVAL. THO QTZ VEINS (<1.5 CM) AT AP PROX 45 DEGREES. |
| 26 | 62.50 | 63.15 | 0.65 | 47 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD AS ABOVE. EROSIONAL LOWER CONTACT. SLIP PAGE SURFACES AT 30 DEGREES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 63.15 | 63.25 | 0.10 | 47 | | SANDSTONE | PBLY. FG. PR. LT. GY. THNB. SLD NUMEROUS CHERT PEBBLES, SUB-ROUNDED, <1 CM IN DIAMETER. GRADATIONAL LOWER CONT ACT. |
| 26 | 63.25 | 63.77 | 0.52 | 47 | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD INTERSECTING QTZ VEINS AT 25 AND 45 DEG REES TO CORE LENGTH. |
| 27 | 63.77 | 65.09 | 1.32 | 47 | | SANDSTONE | PBLY. MG. PR. LT. GY. MAS. SLD SPARSE CHERT PEBBLES, SUB-ROUNDED <1 CM IN DIAMETER, MORE CONCENTRATED NEAR TO P. OF INTERVAL. NUMEROUS THIN QTZ VEINS. |
| 27 | 65.09 | 65.30 | 0.21 | 48 | | SANDSTONE | FG. PR. LT. GY. MAS. BRKN MINOR QTZ VEINING. A FEW FRACTURE SURFA CES COATED WITH A WHITE POWDERY MATERIA L (45 DEGREES). GRADATIONAL UPPER CONTA CT. |
| 28 | 65.30 | 66.12 | 0.82 | 48 | | SANDSTONE | F-MG. PR. LT. GY. MAS. VBRKN A FEW LARGE QTZ VEINS UP TO 4 CM THICK, 10 CM BAND OF LARGE ANGULAR SLTST CLAS TS NEAR BASE. SHARP LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 66.12 | 67.18 | 1.06 | *48 | | SANDSTONE | SLTY. FG. LT-M. GY. LAM. SSD. BRKN INTERLAM MUDST. POORLY DEVELOPED TROUGH X-BDG. TOPS UP. MINOR DISPLACEMENT OF BDG ALONG SMALL FAULT PLANES (<2 CM). A FEW THIN QTZ VEINS AT BASE OF INTERVAL |
| 29 | 67.18 | 67.34 | 0.16 | 49 | | MUDSTONE | SLTY. M. GY. THNB. VSHRD 1.5 CM QTZ VEIN AT BASE OF INTERVAL. SH EARING AT APPROX 45 DEGREES. SHARP CONT ACTS. NOTE: DRILL RODS EVENTUALLY BROKE AT THIS DEPTH. |
| 29 | 67.34 | 67.85 | 0.51 | 50 | | ROCK LOSS | |
| 29 | 67.85 | 68.35 | 0.50 | 51 | | SANDSTONE | FG. LT-M. GY. LAM. SSD. BRKN INTERLAM BANDS AND WISPS OF MUDST. ABUN DANT QTZ VEINING (45 DEGREES). |
| 29 | 68.35 | 68.70 | 0.35 | 52 | | SANDSTONE | MG. PR. LT-M. GY. THKB. BRKN 10 CM BAND OF CG SS. QUICKLY GRADES DOWN N. INTO A MUD BAND. TWO <1 CM BLACK CHER T CLASTS. QTZ VEINING. |
| 29 | 68.70 | 68.78 | 0.08 | *53 | | MUDSTONE | M-DK. GY. YTHNB. BRKN GRADATIONAL CONTACTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 68.78 | 68.94 | 0.16 | 53 | | SANDSTONE | MG. LT-M. GY. THNB. SLD A FEW SUB-ROUNDED SLTY MUDST CLASTS. IR REGULAR QTZ VEINING. EROSIONAL LOWER CO NTACT. TOPS UP. |
| 29 | 68.94 | 68.98 | 0.04 | 52 | | MUDSTONE | SLTY. M-DK. GY. VTHNB. SLD SHARP. LOWER CONTACT. |
| 29 | 68.98 | 69.69 | 0.71 | 51 | | SANDSTONE | CG. PR. LT-M. GY. MAS. SLD A FEW IRREGULAR BANDS OF MUDST. SEVERAL ANGULAR MUDST CLASTS. 1 CM BAND OF MUD ST AT BASE WITH ABUNDANT LISTRIC SURFAC ES. SHARP. LOWER CONTACT. |
| 30 | 69.69 | 70.02 | 0.33 | 50 | | SANDSTONE | FG. PR. LT-M. GY. THKB. BRKN LISTRIC SURFACES. |
| 30 | 70.02 | 70.07 | 0.05 | 50 | | BRECCIA | LT. GY A MIXTURE OF QTZ AND FAULT GOUGE MATERI AL. |
| 30 | 70.07 | 70.57 | 0.50 | 49 | | SANDSTONE | SLTY. FG. VPR. LT-M. GY. THKB. SLD SPARSE MUDST WISPS DISJOINTED BY MINOR FAULT PLANES (DISP <2 CM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 70.57 | 71.18 | 0.61 | 47 | | SANDSTONE | SLTY. FG. VPR. LT-M. GY. LAM. SSD. VBRKN NUMEROUS MUDST BANDS AND LAMINAE WHICH ARE STRUCTURALLY DEFORMED. MINOR <1 CM QTZ VEINING. LISTRIC SURFACES. |
| 30 | 71.18 | 71.28 | 0.10 | 47 | | SILTSTONE | M. GY. THNB. SSD. BRKN LISTRIC SURFACES. STRUCTURALLY DISTURBE D BDG. SPARSE MUDST BANDS. SHARP Contac TS. |
| 30 | 71.28 | 71.34 | 0.06 | 46 | | SANDSTONE | MG. LT-M. GY. THNB ONE IRREGULAR 1 CM SLTST BAND. |
| 31 | 71.34 | 71.40 | 0.06 | 46 | | MUDSTONE | SLTY. M. GY. THNB. BRKN 1 CM QTZ VEIN AT BASE AND TOP OF INTERY AL. LISTRIC SURFACES. |
| 31 | 71.40 | 72.25 | 0.85 | *45 | | SANDSTONE | MG. LT-M. GY. VTHNB. WRMBU. BRKN 50% INTERBEDDED SLTY MUDST. MINOR QTZ V EINING. SHARP EROSIONAL CONTACTS BETWEE N BEDS. TOPS UP. FEW LISTRIC SURFACES S UB-PARALLEL TO CORE. LARGE VERTICAL BUR ROW (12 CM x 2 CM). |
| 31 | 72.25 | 72.88 | 0.63 | *51 | | SILTSTONE | M. GY. VTHNB. SSD. BRKN INTERBEDDED F-MG SS. NUMEROUS LISTRIC S URFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 72.88 | 73.12 | 0.24 | 46 | | | SANDSTONE | VFG. LT-M. GY. BRKN 15 CM ZONE OF INTENSE QTZ VEINING. INTERMIXED MUDST, SLTST AND MG SS. STRUCTURALLY DISTURBED CORE. SMALL ZONE (3 CM ROUND) OF BLACK PELLETS. |
| 32 | 73.12 | 73.27 | 0.15 | 44 | | | SILTSTONE | LT-M. GY. HRMBU. BRKN SIMILAR TO PREVIOUS BURROW. CONTORTED BEDS. LISTRIC SURFACES. STILL WITHIN HEAVILY FAULTED ZONE OR POSSIBLY ANOTHER PARASITIC FOLD WITH MUCH BREAKAGE AND QTZ INFILLING. |
| 32 | 73.27 | 73.63 | 0.36 | 41 | | | ROCK LOSS | |
| 32 | 73.63 | 74.13 | 0.50 | 36 | | | BRECCIA | LT-M. GY. VBRKN A BRECCIATED MIXTURE OF SS, SLTST AND MUDST WITH INTENSE QTZ VEINING AND NUMEROUS LISTRIC SURFACES. |
| 32 | 74.13 | 74.30 | 0.17 | 32 | | | SANDSTONE | SLTY. F-MG. VPR. M. GY. VTHNB. VBRKN WHISPS OF MUDST. 3 CM BAND OF MUDST AT BASE, CONTAINS BLEBS OF SS. TOPS STILL UNSHARP LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 32 | 74.30 | 74.50 | 0.20 | *30 | | | SANDSTONE | FG. LT-M. GY. THNB. SLD GRADATIONAL LOWER CONTACT. VERY HARD. |
| 32 | 74.50 | 74.83 | 0.33 | 33 | | | SANDSTONE | MG. LT-M. GY. THNB. VBRKN WELL DEVELOPED LISTRIC SURFACES PARALLEL AND PERPENDICULAR TO CORE. MINOR QTZ VEINING. |
| 32 | 74.83 | 75.23 | 0.40 | 37 | | | SANDSTONE | SLTY. FG. LT-M. GY. LAM. SSD. BRKN INTERLAMINATED MUDST. IRREGULAR QTZ VEINING. LISTRIC SURFACES. |
| 33 | 75.23 | 76.23 | 1.00 | *44 | | | SANDSTONE | F-MG. PR. LT-M. GY. SSD. BRKN INTERLAM TO THNB SS AND SLTY MUDST. IRREGULAR QTZ VEINING. |
| 33 | 76.23 | 76.45 | 0.22 | 45 | | | SILTSTONE | CLYY. VPR. M. GY. THKB. VBRKN MINOR COALIFIED PLANT FRAGMENTS. |
| 33 | 76.45 | 76.72 | 0.27 | 45 | | | ROCK LOSS | |
| 33 | 76.72 | 77.07 | 0.35 | *45 | | | SANDSTONE | F-MG. PR. LT-M. GY. LAM. SSD. VBRKN INTERLAM SLTY MUDST. |
| 33 | 77.07 | 77.19 | 0.12 | 48 | | | MUDSTONE | SLTY. VPR. M. GY. VBRKN NUMEROUS LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 77.19 | 77.52 | 0.33 | 51 | | MUDSTONE | SLTY. VPR. M. GY. VBRKN AS ABOVE. GRADATIONAL CONTACT. MINOR IR REGULAR QTZ VEINING. |
| 34 | 77.52 | 78.99 | 1.47 | *62 | | MUDSTONE | DK. GY. MAS. BRKN SEVERAL LISTRIC SURFACES. ONE QTZ VEIN (1 CM). MUDST. SEEMS TO BREAK APART AT A 62 DEGREES ANGLE TO CORE. |
| 35 | 78.99 | 79.25 | 0.26 | 62 | | MUDSTONE | DK. GY. MAS. BRKN GRADES INTO SLTST. |
| 35 | 79.25 | 79.67 | 0.42 | *62 | | SILTSTONE | M. GY. LAM. SSD. VBRKN INTERLAM SLTST & FG SS. |
| 35 | 79.67 | 79.92 | 0.25 | 64 | | ROCK LOSS | |
| 35 | 79.92 | 80.24 | 0.32 | *66 | | SILTSTONE | M. GY. LAM. SSD. VBRKN AS ABOVE. NUMEROUS LISTRIC SURFACES NEAR R. BASE. |
| 35 | 80.24 | 80.33 | 0.09 | 66 | | BRECCIA | BRKN ABUNDANT BRECCIA IN THE CONTACT ZONE BE TWEEN THE SLTST AND UNDERLYING SS. ANOT HER MINOR FAULT? QTZ VEINING. |
| 35 | 80.33 | 80.83 | 0.50 | 67 | | SANDSTONE | F-MG. MOD. LT. GY. MAS. VBRKN IRREGULAR PATCHY QTZ VEINING AND VERY T HIN STRINGERS OF QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 35 | 80.83 | 81.13 | 0.30 | 67 | | ROCK LOSS | |
| 36 | 81.13 | 82.00 | 0.87 | 68 | | SANDSTONE | F-MG. MOD. LT. GY. MAS. VBRKN AS ABOVE. ALMOST BRECCIATED NEAR BASE. SHARP LOWER CONTACT. |
| 36 | 82.00 | 82.11 | 0.11 | 68 | | SANDSTONE | SLTY. FG. VPR. LY-M. GY. VBRKN GOOD PLACE FOR CORE LOSS. DISTURBED DIS JOINTED. BDG. |
| 36 | 82.11 | 82.42 | 0.31 | 68 | | SANDSTONE | F-MG. MOD. LT. GY. MAS. VBRKN ABUNDANT QTZ. SHARP LOWER CONTACT. |
| 36 | 82.42 | 82.48 | 0.06 | 69 | | MUDSTONE | SLTY. M-DK. GY. VBRKN LISTRIC SURFACES. |
| 36 | 82.48 | 82.71 | 0.23 | 69 | | MUDSTONE | DK. GY. VBRKN CARBONACEOUS TOWARD BASE. |
| 37 | 82.71 | 83.04 | 0.33 | 69 | | MUDSTONE | CARB. BLK. MAS. VSHRD ABUNDANT LISTRIC SURFACES. GROUND UP CO AL MIXED WITH MUDST. COMPRESSED AND THE N SHEARED? |
| 37 | 83.04 | 83.26 | 0.22 | 69 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 37 | 83.26 | 83.35 | 0.09 | 69 | | | BRECCIA | WH. BRKN MUDST WITH INTENSE QTZ BRECCIATION. |
| 37 | 83.35 | 84.20 | 0.85 | *70 | | | MUDSTONE | DK. GY. LAM. YBRKN APPROX BCA. SLTY LAMINAE AT TOP BECOMIN G MASSIVE & MORE CARBONACEOUS DOWN HARD. COALY STRINGERS 1-2 MM. WIDE. |
| 37 | 84.20 | 84.25 | 0.05 | 63 | | | MUDSTONE | CARB. BLK. PHRD POORLY CONSOLIDATED; SOFT. |
| 37 | 84.25 | 84.29 | 0.04 | 62 | H/I | | COAL | C-3. PHRD |
| 38 | 84.29 | 84.38 | 0.09 | 61 | H/I | | COAL | C-3. PHRD |
| 38 | 84.38 | 86.60 | 2.22 | 42 | H/I | | COAL LOSS | |
| 38 | 86.60 | 86.65 | 0.05 | 23 | | | MUDSTONE | CARB. DK. GY. SLD |
| 38 | 86.65 | 86.75 | 0.10 | 22 | | | SILTSTONE | PBLY. VPR. H. GY. SLD SCOUR FEATURE? ANGULAR QUARTZ, F-MG SS AGGREGATE AND MUDST. CLASTS 3 MM. TO 3 CM IN DIAMETER. |
| 38 | 86.75 | 86.85 | 0.10 | 20 | | | MUDSTONE | DK. GY. YBRKN SOFT; BRECCIATED; GOUGE? |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 86.85 | 86.95 | 0.10 | 19 | | | SANDSTONE | SLTY. FG. PR. M. GY. MAS. SLD |
| 38 | 86.95 | 87.67 | 0.72 | *12 | | | SANDSTONE | SLTY. FG. PR. M. GY. MAS. YBRKN FAIRLY INTENSE QTZ VEINING/BRECCIATION AT TOP OF INTERVAL. RARE FAINT SILT WIS PS. BRECCIATED, HIGHLY FRACTURED BOTTOM CONTACT. FAULTED? |
| 38 | 87.67 | 88.17 | 0.50 | 15 | | | ROCK LOSS | |
| 38 | 88.17 | 88.57 | 0.40 | 16 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN |
| 39 | 88.57 | 89.45 | 0.88 | *19 | | | MUDSTONE | DK. GY. MAS. SLD |
| 39 | 89.45 | 89.55 | 0.10 | *10 | | | BRECCIA | MUDST AND QTZ. FAULT PLANE OR SLIPPAGE SURFACE APPROX 25 DEGREES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39 | 89.55 | 90.00 | 0.45 | *07 | | | MUDSTONE | DK. GY. MAS. BRKN FAINT MUDST WISPS. |
| 39 | 90.00 | 90.48 | 0.48 | *06 | | | MUDSTONE | SLTY. M-DK. GY. LAM. BRKN INTERLAMINATED SLTST. |
| 40 | 90.48 | 91.60 | 1.12 | *07 | | | SILTSTONE | CLY. M. GY. LAM. VBRKN INTERLAMINATED MUDST. LISTRIC SURFACES ALONG SOME BDG PLANES. 3 CM ZONE WITH S OME QTZ VEINING. |
| 40 | 91.60 | 92.05 | 0.45 | 04 | | | ROCK LOSS | |
| 40 | 92.05 | 92.85 | 0.80 | *01 | | | SANDSTONE | SLTY. YFG. PR. LT-M. GY. LAM. VBRKN INTERLAM MUDST. POLISHED LISTRIC SURFAC ES. SENSE OF MOVEMENT APPEARS TO BE PER PENDICULAR TO CORE LENGTH. 3 CM QTZ VEI N, CROSS-CUTTING BEDDING. |
| 41 | 92.85 | 93.29 | 0.44 | *01 | | | SANDSTONE | SLTY. YFG. PR. LT-M. GY. LAM. VBRKN AS ABOVE. |
| 41 | 93.29 | 93.54 | 0.25 | 14 | | | SANDSTONE | SLTY. YFG. PR. LT-M. GY. LAM. VBRKN VERY BROKEN. GREAT PLACE TO ADD CORE LO SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 41 | 93.54 | 93.88 | 0.34 | *26 | | | SANDSTONE | SLTY. FG. PR. LT-M. GY. LAM. VBRKN POSSIBLE CORE LOSS. FOLD AXIS (IF ANY) WAS NOT PRESENT (IE NO CLOSED RINGS OF BDG). |
| 41 | 93.88 | 94.28 | 0.40 | 25 | | | ROCK LOSS | |
| 42 | 94.28 | 94.33 | 0.05 | 25 | | | SANDSTONE | MG. LT. GY. VBRKN RUBBLE. ONE SLTST PIECE OF RUBBLE WITH BLACK PELLETS. CORE LOSS? |
| 42 | 94.33 | 95.58 | 1.25 | 24 | | | SANDSTONE | M-CG. MOD. LT. GY. MAS. VBRKN MINOR QTZ VEINING. 4 CM ZONE CONTAINING SLTY. WISPS. POSSIBLE CORE LOSS. |
| 42 | 95.58 | 96.32 | 0.74 | 22 | | | ROCK LOSS | |
| 43 | 96.32 | 96.45 | 0.13 | 21 | | | SANDSTONE | M-CG. MOD. LT. GY. MAS. VBRKN |
| 43 | 96.45 | 96.95 | 0.50 | 20 | | | SANDSTONE | MG. MOD. LT. GY. MAS. VBRKN NUMEROUS QTZ VEINS (<2 CM THICK). RUBBL E AT BOTTOM OF INTERVAL. DEFINITE CORE LOSS. M-CG. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 96.95 | 97.03 | 0.08 | 19 | | | SANDSTONE | SLTY. FG. VPR. M. GY. THNB. VBRKN SOFT. CRUMBLY. LISTRIC SURFACES. |
| 43 | 97.03 | 98.90 | 1.87 | 17 | | | ROCK LOSS | |
| 43 | 98.90 | 99.00 | 0.10 | 16 | | | SANDSTONE | M-CG. MOD. LT. GY. MAS. VBRKN |
| 44 | 99.00 | 99.20 | 0.20 | 15 | | | SANDSTONE | M-CG. MOD. LT. GY. MAS. BRKN ONE <1 CM. QTZ VEIN. |
| 44 | 99.20 | 99.90 | 0.70 | 14 | | | SANDSTONE | M-CG. MOD. LT. GY. MAS. VBRKN ONE CM. OF FAULT. GOUGE AT 20 DEGREES AT TOP OF INTERVAL. NUMEROUS CRISS CROSSIN G QTZ VEINS. ABRUPT CHANGE IN LITHOLOGY POSSIBLE CORE LOSS. |
| 44 | 99.90 | 100.57 | 0.67 | 13 | | | SILTSTONE | CLYY. M. GY. MAS. VBRKN TALC COATED LISTRIC SURFACES. VERY MINO R QTZ VEINING. |
| 44 | 100.57 | 101.01 | 0.44 | 12 | | | ROCK LOSS | |
| 45 | 101.01 | 102.41 | 1.40 | *10 | | | SILTSTONE | CLYY. M. GY. MAS. BRKN ABUNDANT LISTRIC SURFACES SUB-PARALLEL TO CORE LENGTH. BCA APPROXIMATE. TRACES OF QTZ VEINING. |

* DENOTES MEASURED BCA

88/03/03

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87014

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 102.41 | 102.75 | 0.34 | 17 | | | SILTSTONE | CLYY. M. GY. MAS. BRKN AS ABOVE. |
| 46 | 102.75 | 104.17 | 1.42 | *25 | | | SILTSTONE | SSY. LAM. VBRKN VFG SS MIXED IN. LAMINATED AT TOP; BECO MING MASSIVE AT BASE. MODERATE QTZ VEIN ING. |
| 46 | 104.17 | 104.48 | 0.31 | 25 | 07059 | H/12 | COAL | C-4. BRKN VERY LOW BCA'S. C-3 TO C-4 GROUND UP CO AL. OCCASIONAL QTZ/ANKERITE VEINING (ES P AT TOP CONTACT). |
| 47 | 104.48 | 104.68 | 0.20 | 25 | 07059 | H/12 | COAL | C-3. VBRKN VERY LOW BCA'S. C-3 TO C-4. END OF HOLE T.D. = 105.77 M. DRILLER'S MARK. ENDE D IN COAL BECAUSE CROWN OF BIT STUCK IN HOLE. COULD NOT DRILL FURTHER. |

* DENOTES MEASURED BCA
NENPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87014

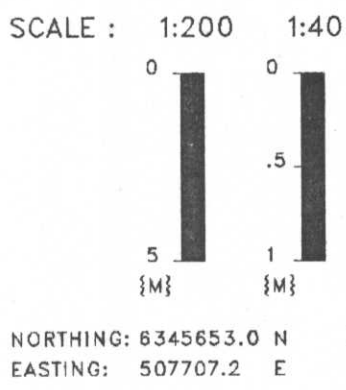
740

GEOLOGIST : SAVOIE

DATE : MAR 08/88

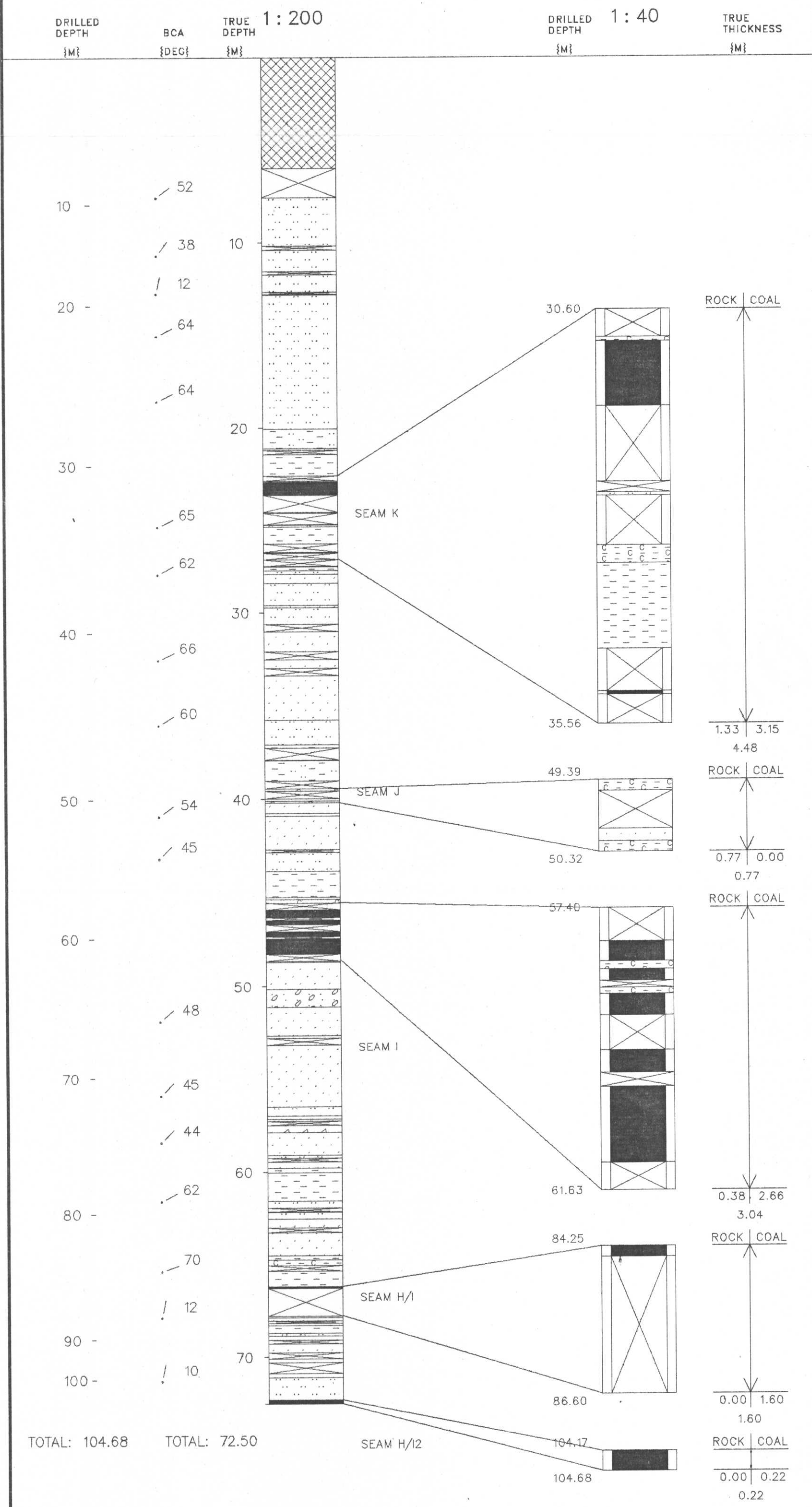
DRAWING NO. :

LITHOLOGIC SYMBOLS



| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



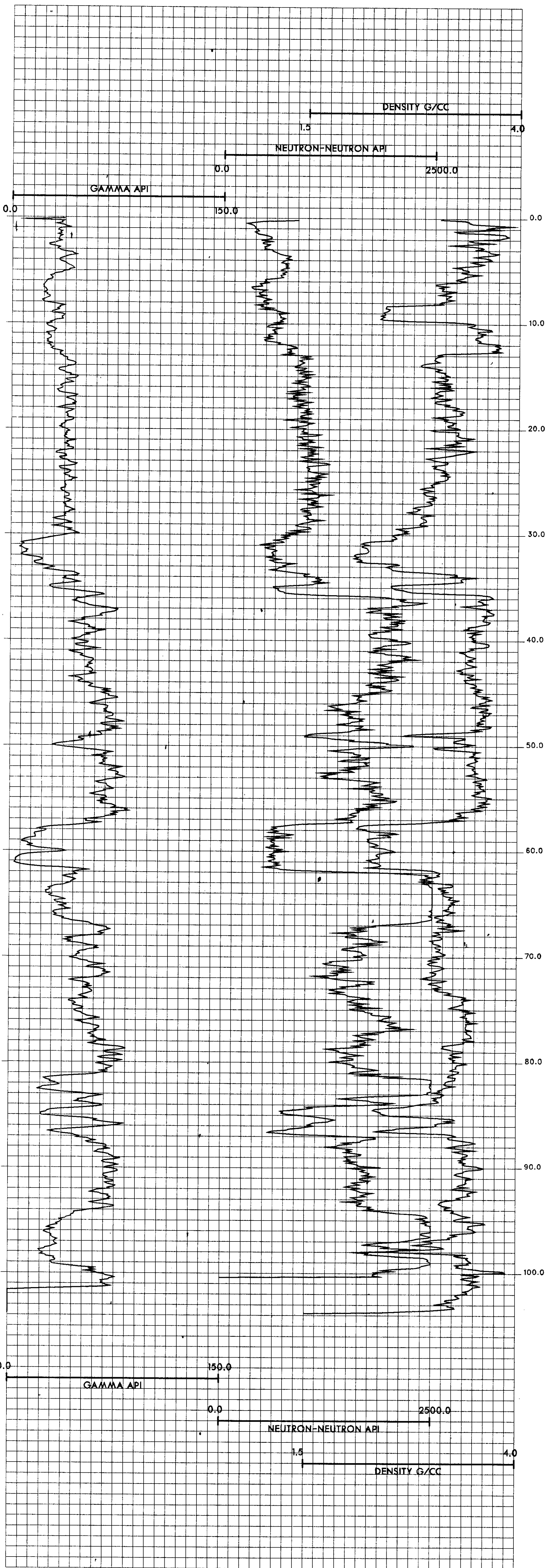
Gulf Canada Resources Limited

Coal Division

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Geophysical Log

| | | | | | |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|-------|----------|
| Datasource: KPNLRDDH87014 Log Date: 87-09-15 Company: CENTURY Geologist: SAVOIE | Province: BC Northing: 6345650.00 Lat: 571521 Zone: 9 Easting: 507707.00 Long: 1285220 Measuring Point: GROUND LEVEL Elevation: 1473.8 | | | | |
| Scale: 1 to 200.0 Depth Range: 0.0 to 108.0 True Thickness: NO | Comments: 1. LOGGED THROUGH RODS. 2. | | | | |
| Logs Plotted: | | | | | |
| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87015

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87015

DATE - 03/01/88

- HISTORY -

START DATE - 09/14/87

END DATE - 09/16/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEE

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - WEST RIDGE HOLE INTERSECTED L, K, J, I, H, PH. SIT
E S.

- LOCATION -

PROVINCE - BC

ELEVATION - 1632.47

ZONE - 9

NORTHING - 6342109.47

EASTING - 504253.22

LICENCE/LEASE NUMBER -

LATITUDE - 571326

LONGITUDE - 1285546

- ORIENTATION -

LENGTH - 122.22

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 3.66

AQUIFER DEPTHS (M) - 0.00

0.00

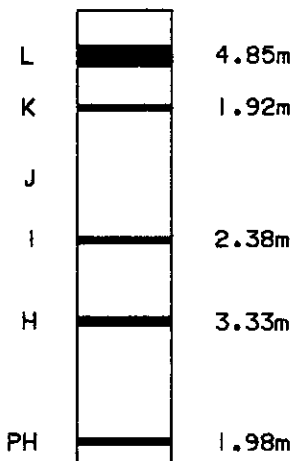
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87015**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 3 | 9.16 | 9.31 | 0.15 | 54 | 07090 | L | COAL LOSS | |
| 3 | 9.31 | 9.35 | 0.04 | 54 | 07090 | L | COAL | C-3.BLK.BRKN |
| 3 | 9.35 | 9.45 | 0.10 | 54 | 07090 | L | COAL | C-2.BLK.SLD THIN (1.5 CM) C-4/C-5 BED W/IN. COMMON C-3. |
| 3 | 9.45 | 9.48 | 0.03 | 54 | 07090 | L | COAL | C-1.BLK.BRKN |
| 3 | 9.48 | 9.57 | 0.09 | 54 | 07090 | L | COAL LOSS | |
| 4 | 9.57 | 9.58 | 0.01 | 54 | 07090 | L | COAL | C-6.BLK.SLD |
| 4 | 9.58 | 9.62 | 0.04 | 54 | 07090 | L | MUDSTONE | CARB.BLK.BRKN COMMON THIN COAL LAMS THROUGHOUT BUT DO MINATED BY MUDST. |
| 4 | 9.62 | 9.68 | 0.06 | 54 | 07090 | L | COAL | C-3.BLK.BRKN OCCASIONAL THIN C-4 LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------|
| 4 | 9.68 | 9.79 | 0.11 | 54 | 07090 | L | COAL | C-3.BLK.BRKN SAME A/A. |
| 4 | 9.79 | 10.02 | 0.23 | 54 | 07090 | L | COAL LOSS | |
| 4 | 10.02 | 10.06 | 0.04 | 54 | 07090 | L | MUDSTONE | CARB.BLK.SLD VERY CARB MUDST WITH COMMON THIN COAL L AMS W/IN. |
| 4 | 10.06 | 10.07 | 0.01 | 54 | 07090 | L | COAL | C-4.BLK.BRKN |
| 4 | 10.07 | 10.14 | 0.07 | 54 | 07090 | L | MUDSTONE | CARB.DK.GY.BRKN BECOMES INCREASINGLY CARB TOWARDS BASE. |
| 4 | 10.14 | 10.28 | 0.14 | 54 | 07090 | L | COAL | C-3.BLK.BRKN SOME C-2, ESP NEAR BASE. |
| 4 | 10.28 | 10.32 | 0.04 | 55 | 07090 | L | COAL | C-6.BLK.SLD |
| 4 | 10.32 | 10.36 | 0.04 | 55 | 07090 | L | MUDSTONE | CARB.BLK.BRKN |
| 4 | 10.36 | 10.39 | 0.03 | 55 | 07090 | L | COAL | C-3.BLK.SLD RARE C-4. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------|
| 4 | 10.39 | 10.44 | 0.05 | 55 07090 | L | MUDSTONE | CARB.BLK.BRKN COMMON THIN COAL LAMS INCLUDING ONE C-5 THIN LAM (1 CM). |
| 4 | 10.44 | 10.70 | 0.26 | 55 07090 | L | COAL | C-3.BLK.VBRKN VERY COMMON C-2 THROUGHOUT. |
| 4 | 10.70 | 10.83 | 0.13 | 55 07090 | L | COAL | C-3.BLK.BRKN SAME A/A - COMMON C-2. VERY RARE THIN M UDST LAMS. ABRUPT LOWER CONTACT. |
| 4 | 10.83 | 10.97 | 0.14 | 55 07090 | L | MUDSTONE | CARB.DK.GY.BRKN COMMON THIN COAL LAMS AT TOP BUT STRONG LY DOMINATED BY SLTY MUDST. |
| 4 | 10.97 | 11.47 | 0.50 | 55 07090 | L | COAL LOSS | |
| 5 | 11.47 | 11.74 | 0.27 | 55 07090 | L | COAL | C-3.BLK.BRKN COMMON C-2 THROUGHOUT. RARE C-4. |
| 5 | 11.74 | 11.82 | 0.08 | 55 07090 | L | MUDSTONE | CARB.BLK.SLD COMMON THIN COALY LAMS. |
| 5 | 11.82 | 11.93 | 0.11 | 55 07090 | L | COAL | C-3.BLK.SLD COMMON C-2 THROUGHOUT. RARE C-4. |
| 5 | 11.93 | 11.94 | 0.01 | 55 07090 | L | COAL | C-5.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------|
| 5 | 11.94 | 12.11 | 0.17 | 55 07090 | L | COAL | C-3.BLK.BRKN OCCASIONAL THIN C-5 HORIZONS & VERY RAR E MUDST LAMS. |
| 5 | 12.11 | 12.14 | 0.03 | 55 07090 | L | COAL | C-2.BLK.SLD RARE THIN MUDST LAMS. |
| 5 | 12.14 | 12.88 | 0.74 | 55 07090 | L | COAL LOSS | |
| 5 | 12.88 | 12.96 | 0.08 | 55 07090 | L | MUDSTONE | CARB.BLK.BRKN COMMON THIN COAL LAMS THROUGHOUT. |
| 5 | 12.96 | 13.05 | 0.09 | 55 07090 | L | ROCK LOSS | |
| 5 | 13.05 | 13.19 | 0.14 | 55 07090 | L | COAL LOSS | |
| 5 | 13.19 | 13.33 | 0.14 | 55 07090 | L | COAL | C-4.BLK.BRKN INTLAM C-3/C-5 BANDS UP TO 1 CM. |
| 5 | 13.33 | 13.43 | 0.10 | 55 07090 | L | MUDSTONE | CARB.BLK.SLD COMMON THIN COAL LAMINAE. |
| 5 | 13.43 | 13.57 | 0.14 | 55 07090 | L | COAL LOSS | |
| 5 | 13.57 | 13.60 | 0.03 | 55 07090 | L | ROCK LOSS | |
| 5 | 13.60 | 13.74 | 0.14 | 56 07090 | L | COAL | C-3.BLK.BRKN COMMON C-2 ESP NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------|
| 5 | 13.74 | 13.78 | 0.04 | 56 | 07090 | L | MUDSTONE | CARB. BLK. SLD COMMON THIN COAL LAMS. |
| 5 | 13.78 | 13.84 | 0.06 | 56 | 07090 | L | COAL | C-3. BLK. SLD |
| 5 | 13.84 | 13.87 | 0.03 | 56 | 07090 | L | MUDSTONE | CARB. BLK. BRKN THIN COAL LAMS UP TO 0.5 CM. |
| 5 | 13.87 | 13.94 | 0.07 | 56 | 07090 | L | COAL LOSS | |
| 5 | 13.94 | 14.00 | 0.06 | 56 | 07090 | L | ROCK LOSS | |
| 5 | 14.00 | 14.06 | 0.06 | 56 | 07090 | L | COAL | C-4. BLK. BRKN COMMON THIN MUDST LAMS. |
| 5 | 14.06 | 14.17 | 0.11 | 56 | 07090 | L | COAL | C-2. BLK. BRKN COMMON C-3 THROUGHOUT. |
| 5 | 14.17 | 14.20 | 0.03 | 56 | 07090 | L | COAL LOSS | |
| 5 | 14.20 | 14.33 | 0.13 | 56 | 07090 | L | MUDSTONE | SLTY. M-DK. GY. BRKN CARB AT TOP BECOMING SILTYER TOWARDS BA SE. |
| 6 | 14.33 | 14.54 | 0.21 | 56 | 07090 | L | COAL | C-4. BLK. BRKN COMMON C-3 BANDS THROUGHOUT & OCCASIONA L C-5 LAMINAE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 14.54 | 14.72 | 0.18 | 56 | 07090 | L | COAL LOSS | |
| 6 | 14.72 | 14.77 | 0.05 | 56 | 07091 | | MUDSTONE | CARB. BLK. BRKN RARE C-5/C-6 LAM UP TO 1 CM. |
| 6 | 14.77 | 14.88 | 0.11 | 56 | 07091 | | MUDSTONE | CARB. DK. GY. BRKN OCCASIONAL THIN COAL LAMS. BECOMING SLT Y TOWARDS BASE. |
| 6 | 14.88 | 15.84 | 0.96 | *56 | 07091 | | SILTSTONE | DK. GY. MAS. BRKN MASSIVE SLTST WITH VERY RARE THIN VFG S S LAMINAE. LAMS HAVE GRADATIONAL Contac TS & ARE <.5 CM. PLANT DEBRIS COMMON TH ROUGHOUT BUT ESP COMMON NEAR TOP. RAPID GRADATIONAL LOWER CONTACT. UPPER 9 CM SAMPLED. |
| 6 | 15.84 | 16.25 | 0.41 | 60 | | | SANDSTONE | SLTY. LT-M. GY. LAM. BRKN INTLAM VFG SS/SLTST (60/40). LAM HAVE S HARP CONTACTS & ARE SUB-HORIZONTAL WITH INDIVIDUAL LAMINAE RARELY EXCEEDING .5 CM IN THICKNESS. |
| 6 | 16.25 | 16.31 | 0.06 | 61 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 16.31 | 16.62 | 0.31 | 63 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH SSS WISPS, ABUNDANT PLANT FRAGS: N . TENUICALIS, C. VIRGINIENSIS FISHERI (WELL PRESERVED), POSSIBLE ATHROTAXITES BERRYI (COALY), SPHENOPTERIS SP., P. N ORDENSKIOLDII (?), SANDIER TOWARDS BASE |
| 7 | 16.62 | 17.45 | 0.83 | *66 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN WITH SSS INTERLAM, MINOR SSD - TOPS UP. |
| 7 | 17.45 | 17.52 | 0.07 | 64 | | | ROCK LOSS | |
| 7 | 17.52 | 18.19 | 0.67 | 63 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDDY INTERLAM, MINOR PLANT FRAGS. |
| 8 | 18.19 | 18.66 | 0.47 | 61 | | | SILTSTONE | M-DK.GY.VTHNB.SLD WITH MUDST WISPS, TINY PLANT FRAGS. |
| 8 | 18.66 | 18.67 | 0.01 | 60 | | | MUDSTONE | CLYY.M.GY.LAM VERY SOFT, CLAY. |
| 8 | 18.67 | 18.96 | 0.29 | 60 | | | SILTSTONE | M-DK.GY.VTHNB.BRKN AS SLTST ABOVE. |
| 8 | 18.96 | 19.04 | 0.08 | 59 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------|
| 8 | 19.04 | 19.74 | 0.70 | *58 | | | SANDSTONE | VFG.M.GY.LAM.BRKN INTERLAM WITH SLTST, OCCASIONAL PLANT FRAGS. |
| 8 | 19.74 | 20.03 | 0.29 | 59 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH SSS WISPS, TINY PLANT FRAGS. |
| 8 | 20.03 | 20.13 | 0.10 | 60 | | | ROCK LOSS | |
| 8 | 20.13 | 20.18 | 0.05 | 60 | | | SILTSTONE | M-DK.GY.LAM.VBRKN AS ABOVE. |
| 8 | 20.18 | 20.31 | 0.13 | 60 | | | SILTSTONE | SSY.M-DK.GY.LAM.SLD FG SS INTERLAM. |
| 9 | 20.31 | 21.32 | 1.01 | *62 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN WITH MUDDY INTERLAM. |
| 9 | 21.32 | 21.40 | 0.08 | 61 | | | ROCK LOSS | |
| 9 | 21.40 | 21.41 | 0.01 | 61 | | | SILTSTONE | VBRKN QIZ YEIN. |
| 9 | 21.41 | 21.58 | 0.17 | 61 | | | SILTSTONE | SSY.M-DK.GY.LAM.SLD DISCONTINUOUS MUDDY BANDS. |
| 9 | 21.58 | 22.35 | 0.77 | 60 | | | SILTSTONE | SSY.M-DK.GY.LAM.BIOTR.BRKN INTERLAM WITH VFG SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | 22.95 | 22.78 | 0.43 | 59 | | SANDSTONE | VFG. M-DK. GY. LAM. BRKN INTERLAM WITH SLTST. |
| 10 | 22.78 | 22.95 | 0.17 | 59 | | SANDSTONE | VFG. M-DK. GY. LAM. SLD AS ABOVE. |
| 10 | 22.95 | 23.96 | 1.01 | *58 | | SILTSTONE | M-DK. GY. LAM. BRKN BDG IS LAM TO VTHNB WITH VFG SS INTERLA M/BEDS, VERY FINE DISCONTINUOUS QTZ VEI N. Q. 27 M. DOWN. |
| 10 | 23.96 | 24.24 | 0.28 | 59 | | SILTSTONE | SSY. M-DK. GY. LAM. SLD WITH MUDDY LAM. ABUNDANT COALIFIED PLANT FRAGS AND WELL PRESERVED PLANTS. N. T. ENUICHAULIS, N. CANADENSIS, COALIFIED NO QD FRAGS. |
| 11 | 24.24 | 24.59 | 0.35 | 59 | | MUDSTONE | SLTY. DK. GY. THNB. BRKN PLANT FRAGS COMMON THROUGHOUT. COAL LAM S OCCUR OCCASIONALLY. |
| 11 | 24.59 | 24.62 | 0.03 | 59 | | COAL | C-4. BLK. SLD BRECCIATED - COMMON QUARTZ FRACTURE FIL L. SHARP CONTACTS. |
| 11 | 24.62 | 24.76 | 0.14 | 60 | | SILTSTONE | SSY. M. GY. VTHNB. SSD. SLD INTBED & INTLAM VFG SS/MUDDY SLTST (35/65). SSD COMMON THEREFORE SS LAMS ARE C ONTORTED. PLANT DEBRIS COMMON. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 11 | 24.76 | 25.00 | 0.24 | 60 | | MUDSTONE | CARB. DK. GY. BRKN COMMON THIN COAL LAMS UP TO .5 CM THICK |
| 11 | 25.00 | 25.02 | 0.02 | 60 | | COAL | C-2. BLK. BRKN SHARP UPPER & LOWER CONTACTS. |
| 11 | 25.02 | 25.30 | 0.28 | 60 | 07092 | MUDSTONE | CARB. LT. BLK. MAS. BRKN SLIGHT CARB MUDST WITH COMMON PLANT DEB RIS THROUGHOUT. LOWER 10CM SAMPLED. |
| 11 | 25.30 | 25.41 | 0.11 | 60 | 07092 | MUDSTONE | CARB. BLK. SLD SEVERELY BRECCIATED & COALY MUDST WITH COMMON COAL LAM & QTZ VEIN FILLING. ABR UPT UPPER & LOWER CONTACTS. |
| 11 | 25.41 | 25.45 | 0.04 | 61 | 07092 | MUDSTONE | CARB. BLK. VBRKN COALY MUDST A/A BUT LACKING BRECCIATION & VEIN-FILLING. |
| 11 | 25.45 | 25.51 | 0.06 | 61 | 07092 | ROCK LOSS | |
| 11 | 25.51 | 25.72 | 0.21 | 61 | 07093 K | COAL | C-3. BLK. VSHRD RARE MUDST LAMS & C-2. BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 11 | 25.72 | 25.90 | 0.18 | 61 | 07093 | K | COAL | C-3. BLK. SHRD COMMON C-2 BANDS & OCCASIONAL C-4/MUDST BANDS (GENERALLY <1 CM THICK). SHARP LOWER CONTACT. |
| 11 | 25.90 | 26.20 | 0.30 | 61 | 07093 | K | COAL LOSS | |
| 11 | 26.20 | 26.32 | 0.12 | 62 | 07093 | K | ROCK LOSS | |
| 11 | 26.32 | 26.38 | 0.06 | 62 | 07093 | K | MUDSTONE | CARB. BLK. BRKN OCCASIONAL VERY THIN COAL LAMS. POORLY CONSOLIDATED. |
| 11 | 26.38 | 26.43 | 0.05 | 62 | 07093 | K | COAL | C-6. BLK. SLD |
| 11 | 26.43 | 26.45 | 0.02 | 62 | 07093 | K | COAL | C-1. BLK. BRKN VERY CLEAN COAL. - STRONG CONCHOIDAL FRACTURE. |
| 12 | 26.45 | 26.62 | 0.17 | 62 | 07093 | K | COAL | C-3. BLK. BRKN COMMON C-2 THROUGHOUT AND VERY RARE THIN DISCONTINUOUS MUDST LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 12 | 26.62 | 26.67 | 0.05 | 62 | 07093 | K | COAL | C-3. BLK. PWRD SAME A/A. |
| 12 | 26.67 | 26.69 | 0.02 | 62 | 07093 | K | MUDSTONE | CARB. DK. GY. BRKN VERY CARB FISSILE MUDSTONE. |
| 12 | 26.69 | 26.84 | 0.15 | 62 | 07093 | K | COAL | C-4. BLK. PWRD COMMON THIN BLACK MUDST LAMS UP TO 0.5 CM THICK. |
| 12 | 26.84 | 26.96 | 0.12 | 62 | 07093 | K | COAL | C-3. BLK. PWRD SOME C-2. |
| 12 | 26.96 | 27.00 | 0.04 | 63 | 07093 | K | COAL | C-5. BLK. BRKN |
| 12 | 27.00 | 27.16 | 0.16 | 63 | 07093 | K | COAL | C-3. BLK. PWRD COMMON C-2 THROUGHOUT & RARE THIN MUDST BANDS (ESP NEAR TOP). |
| 12 | 27.16 | 27.21 | 0.05 | 63 | 07093 | K | COAL | C-2. BLK. PWRD |
| 12 | 27.21 | 27.26 | 0.05 | 63 | 07093 | K | MUDSTONE | CARB. BLK. VBRKN SOFT WITH THIN COAL LAMS W/IN. |
| 12 | 27.26 | 27.44 | 0.18 | 63 | 07093 | K | COAL | C-3. BLK. PWRD OCCASIONAL THIN C-2 BANDS & MUDST LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------|
| 12 | 27.44 | 27.50 | 0.06 | 63 | 07093 | K | COAL | C-2. BLK. VSHRD |
| 12 | 27.50 | 27.51 | 0.01 | 63 | 07093 | K | MUDSTONE | CARB. BLK. SLD |
| 12 | 27.51 | 27.52 | 0.01 | 63 | 07093 | K | COAL | C-2. BLK. SLD SHARP UPPER & LOWER CONTACTS. |
| 12 | 27.52 | 27.54 | 0.02 | 63 | 07093 | K | MUDSTONE | CARB. BLK. SLD ABRUPT LOWER CONTACT. WELL CONSOLIDATED |
| 12 | 27.54 | 27.59 | 0.05 | 63 | 07093 | K | COAL | C-2. BLK. SLD COMMON C-3 THROUGHOUT. ABRUPT LOWER CONTACT. |
| 12 | 27.59 | 27.65 | 0.06 | 63 | 07093 | K | SILTSTONE | CARB. BLK. SLD COMMON COAL LAMS. (DISCONTINUOUS). |
| 12 | 27.65 | 27.68 | 0.03 | 63 | 07093 | K | COAL | C-3. BLK. SLD COMMON C-2 THROUGHOUT AS WELL AS QUARTZ VEIN-FILLING. |
| 12 | 27.68 | 27.87 | 0.19 | 64 | 07094 | | MUDSTONE | CARB. BLK. SLD COALY LAMS THROUGHOUT AS WELL AS QUARTZ VEIN-FILLING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------|
| 12 | 27.87 | 27.95 | 0.08 | 64 | 07094 | | MUDSTONE | CARB. DK. GY. MAS. BRKN MASSIVE CARB MUDST - LACKING QUARTZ & COAL LAMS. |
| 13 | 27.95 | 28.10 | 0.15 | 64 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN ABUNDANT VBRKN PLANT FRAGS; B. FURCATA. |
| 13 | 28.10 | 28.26 | 0.16 | 64 | | | ROCK LOSS | |
| 13 | 28.26 | 28.28 | 0.02 | 64 | | | MUDSTONE | VBRKN |
| 13 | 28.28 | 28.38 | 0.10 | 64 | | | ROCK LOSS | |
| 13 | 28.38 | 29.03 | 0.65 | 65 | | | MUDSTONE | DK. GY. LAM. BRKN WITH ABUNDANT VERY BROKEN PLANT FRAGS. SOME PYRITE. |
| 13 | 29.03 | 29.15 | 0.12 | 65 | | | MUDSTONE | SLTY. M-DK. GY. LAM. BIOTR. SLD |
| 13 | 29.15 | 29.55 | 0.40 | 66 | | | SILTSTONE | M-DK. GY. LAM. BIOTR. BRKN WITH MUDST, RARE PLANT BITS. |
| 13 | 29.55 | 29.69 | 0.14 | *66 | | | SANDSTONE | FG. H. GY. VTHNB. SLD SHARP CONTACT WITH ABOVE, SLTY LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 13 | 29.69 | 29.93 | 0.24 | 63 | | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD OCCASIONAL SLTY LAM, PYRITE FLECKS. |
| 13 | 29.93 | 30.11 | 0.18 | 60 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN SLTY LAM. |
| 14 | 30.11 | 30.65 | 0.54 | 54 | | | SILTSTONE | M.GY.VTHNB.BIOTR.BRKN WITH VFG SS BEDS. TINY PLANT BITS. |
| 14 | 30.65 | 30.69 | 0.04 | 49 | | | ROCK LOSS | |
| 14 | 30.69 | 32.08 | 1.39 | 38 | | | SILTSTONE | M.GY.VTHNB.BIOTR.BRKN AS ABOVE. WITHOUT PLANT FRAGS. VERY BIO TRB. |
| 15 | 32.08 | 33.24 | 1.16 | 18 | | | SILTSTONE | M.GY.BIOTR.BRKN WITH FG SS BEDS AND CLASTS. VERY BIOTRB MUDST BEDS, BLEB OF PYRITE AT .59 M D OMN. SSSY AT BASE. |
| 15 | 33.24 | 33.28 | 0.04 | 09 | | | SILTSTONE | SSY.M.GY.VBRKN |
| 15 | 33.28 | 33.40 | 0.12 | 07 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 15 | 33.40 | 34.07 | 0.67 | *01 | | | SANDSTONE | FG.LT-M.GY.VTHNB.XBDG.BRKN WITH SLTY LAM. |
| 16 | 34.07 | 34.30 | 0.23 | *66 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN INTERBEDDED WITH SLTST (CONTAINING MUDS T WISPS), PYRITE BLEBS, LISTRIC SURFACE ON BDG PLANES. |
| 16 | 34.30 | 34.52 | 0.22 | 67 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN OCCASIONAL THIN QTZ VEIN. |
| 16 | 34.52 | 34.62 | 0.10 | 67 | | | SANDSTONE | FG.LT-M.GY.MAS.VBRKN AS ABOVE WITH RARE MUDST BLEB. |
| 16 | 34.62 | 34.86 | 0.24 | 68 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN QTZ VEINING. |
| 16 | 34.86 | 35.63 | 0.77 | *69 | | | SILTSTONE | M.GY.VTHNB.BRKN INTERBEDDED WITH FG SS. FINING UPWARDS IN SS BEDS, MUDDY LAM IN SLTST BED, QTZ VEINING NEAR TOP. |
| 16 | 35.63 | 35.74 | 0.11 | 69 | | | SILTSTONE | M.GY.VTHNB.SSD.BRKN MUD CLAST AND MUD LAM. |
| 16 | 35.74 | 35.84 | 0.10 | 69 | | | ROCK LOSS | |
| 16 | 35.84 | 35.96 | 0.12 | 69 | | | SILTSTONE | M.GY.LAM.VBRKN INTERLAM WITH MUDST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 16 | 35.96 | 36.04 | 0.08 | 69 | | | ROCK LOSS | |
| 17 | 36.04 | 36.20 | 0.16 | 69 | | | SILTSTONE | M.GY.VTHNB.SSD.BRKN WITH MUDST AND VFG SS BEDS. QTZ VEINING |
| 17 | 36.20 | 37.57 | 1.37 | 69 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTY LAM AT TOP THEN OCCASIONAL DOWNWARD, OCCASIONAL QTZ VEIN. |
| 17 | 37.57 | 37.93 | 0.36 | 69 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |
| 18 | 37.93 | 38.02 | 0.09 | 69 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD F-MG, AS ABOVE. |
| 18 | 38.02 | 38.21 | 0.19 | 69 | | | SILTSTONE | M.GY.VTHNB.BRKN WITH MUDST LAM, QTZ VEINING (DISCONTINUOUS), 0.5 CM THICK POORLY CONSOL MUD .08 M DOWN. |
| 18 | 38.21 | 38.26 | 0.05 | 69 | | | SILTSTONE | M.GY.LAM.VBRKN WITH MUDST INTERLAM. |
| 18 | 38.26 | 39.25 | 0.99 | *69 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST AND FG SS INTERLAM, FINING UPWARD SEQUENCE, RARE QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------|
| 18 | 39.25 | 39.69 | 0.44 | 71 | | | SILTSTONE | M.GY.LAM.BRKN 'COASTER ZONE', RHYTHMIC SLTST AND MUDDST. |
| 19 | 39.69 | 40.14 | 0.45 | 73 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, SILTIER AT BASE. |
| 19 | 40.14 | 40.39 | 0.25 | 74 | | | ROCK LOSS | |
| 19 | 40.39 | 40.47 | 0.08 | 75 | | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE, POSSIBLE CORE LOSS. |
| 19 | 40.47 | 40.61 | 0.14 | 75 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 19 | 40.61 | 40.81 | 0.20 | 76 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, OCCASIONAL QTZ VEIN. |
| 19 | 40.81 | 40.86 | 0.05 | 76 | | | SILTSTONE | M.GY.LAM.SHRD AS ABOVE. |
| 19 | 40.86 | 41.38 | 0.52 | *77 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, QTZ VEIN PARALLEL TO BDG AT 0.38 M DOWN. |
| 19 | 41.38 | 41.46 | 0.08 | 75 | | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------|
| 19 | 41.46 | 41.57 | 0.11 | 75 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 19 | 41.57 | 41.61 | 0.04 | 74 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |
| 20 | 41.61 | 42.24 | 0.63 | *72 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 20 | 42.24 | 42.64 | 0.40 | 67 | | ROCK LOSS | |
| 20 | 42.64 | 43.05 | 0.41 | 64 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS. |
| 20 | 43.05 | 43.40 | 0.35 | *60 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 20 | 43.40 | 43.50 | 0.10 | 61 | | ROCK LOSS | |
| 21 | 43.50 | 43.60 | 0.10 | 61 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |
| 21 | 43.60 | 43.90 | 0.30 | 62 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 21 | 43.90 | 44.00 | 0.10 | 63 | | ROCK LOSS | |
| 21 | 44.00 | 44.05 | 0.05 | 63 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------|
| 21 | 44.05 | 44.27 | 0.22 | *64 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 21 | 44.27 | 44.49 | 0.22 | 62 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE. |
| 21 | 44.49 | 44.62 | 0.13 | 60 | | SILTSTONE | M.GY.LAM.SHRD AS ABOVE. |
| 21 | 44.62 | 45.05 | 0.43 | 56 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, OCCASIONAL QTZ VEIN. |
| 22 | 45.05 | 45.10 | 0.05 | 54 | | SILTSTONE | M.GY.LAM.BRKN THINLY LAMINATED SLTST (1-2 MM LAMS) - HORIZONTAL LAMINAE. SHARP LOWER CONTACT |
| 22 | 45.10 | 45.21 | 0.11 | 53 | | MUDSTONE | CARB. BLK. BRKN COMMON THIN C-6 BANDS. RAPID GRADATION L LOWER CONTACT. |
| 22 | 45.21 | 45.38 | 0.17 | 51 | J | COAL | C-6. BLK. VBRKN COMMON C-5/C-4 ZONES AS WELL AS THIN MU DST BANDS UP TO .5 CM. |
| 22 | 45.38 | 45.40 | 0.02 | 50 | J | COAL | C-4. BLK. BRKN SHARP LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 45.40 | 45.44 | 0.04 | 50 | J | SILTSTONE | CARB. M. GY. SLD VERY RESISTIVE MUDDY & COALY SLTST. |
| 22 | 45.44 | 45.47 | 0.03 | 49 | J | MUDSTONE | CARB. BLK. SLD PLIABLE. SLIGHTLY CARB. |
| 22 | 45.47 | 45.61 | 0.14 | 48 | J | COAL LOSS | |
| 22 | 45.61 | 45.72 | 0.11 | 47 | J | COAL | C-3. BLK. PMRD COMMON C-4 BANDS THROUGHOUT. |
| 22 | 45.72 | 45.93 | 0.21 | 45 | | SILTSTONE | CARB. M-DK. GY. MAS. SLD SLIGHT CARB. RESISTIVE SLTST. ABRUPT LOWER CONTACT. |
| 22 | 45.93 | 46.03 | 0.10 | 43 | | MUDSTONE | CARB. BLK. LAM. SLD SILTY & COALY MUDST. THIN COAL LAMS UP TO 2MM THROUGHOUT (ESP IN UPPER 2/3). RAPID GRADATIONAL LOWER CONTACT. |
| 22 | 46.03 | 46.76 | 0.73 | 39 | | SILTSTONE | M-DK. GY. THNB. BRKN DOMINANTLY MASSIVE SLTST. ESP AT TOP BECOMING SLIGHTLY SANDIER & BRECCIATED NEAR THE BASE. SS OCCURS AS THIN OFTEN DISCONTINUOUS. NAVY LAMINATIONS WITH RAPID GRADATIONAL CONTACTS (VFG SS/SLTST = 5/95). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 22 | 46.76 | 46.84 | 0.08 | 34 | | MUDSTONE | CARB. DK. GY. PMRD COMMON THIN COAL LAMS THROUGHOUT. |
| 22 | 46.84 | 46.89 | 0.05 | 33 | | MUDSTONE | CARB. M. GY. SLD SLIGHT CARB. WELL CONSOLIDATED MUDST. |
| 23 | 46.89 | 47.08 | 0.19 | 32 | | MUDSTONE | DK. GY. LAM. VBRKN OCCASIONAL QTZ VEIN. |
| 23 | 47.08 | 47.26 | 0.18 | 30 | | MUDSTONE | DK. GY. LAM. BRKN WITH DISCONTINUOUS SLTST WISPS. QTZ VEINING, DISCONTINUOUS COAL STRINGERS WITH QTZ. |
| 23 | 47.26 | 47.46 | 0.20 | 28 | | ROCK LOSS | |
| 23 | 47.46 | 47.54 | 0.08 | 26 | | MUDSTONE | DK. GY. SHRD BRECCIATED WITH CLAY (FAULT FILL). POORLY CONSOLIDATED, POSSIBLE SMALL SCALE FAULTING. |
| 23 | 47.54 | 47.68 | 0.14 | 25 | | ROCK LOSS | |
| 23 | 47.68 | 47.88 | 0.20 | 23 | | MUDSTONE | DK. GY. BRKN QTZ VEINING WITH MUDST BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 23 | 47.88 | 48.41 | 0.53 | 19 | | SILTSTONE | M.GY.SSD.BRKN WITH MUDST LAM AT TOP AND FG'SS INTERBEDS. QTZ VEINING, SHALLOW BCA'S. |
| 23 | 48.41 | 48.93 | 0.52 | *13 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTST INTERBEDS, QTZ VEINS CUT BDG. DISCONTINUOUS MUDST WISPS. |
| 24 | 48.93 | 49.05 | 0.12 | 29 | | MUDSTONE | DK.GY WITH COAL STRINGERS, SOME DISCONTINUOUS AND ASSOCIATED QTZ VEINING. |
| 24 | 49.05 | 49.21 | 0.16 | 36 | | SILTSTONE | M.GY.BIOTR.BRKN QTZ VEINING, COAL STRINGERS, OCCASIONAL MUD FRAGS, SMALL QTZ BITS (POSS REPLACED SHELL BITS). |
| 24 | 49.21 | 49.52 | 0.31 | 48 | | BRECCIA | M.GY.BRKN MUDST AND SLTST BRECCIA AND QTZ VEINS. |
| 24 | 49.52 | 49.88 | 0.36 | 65 | | SILTSTONE | M.GY.BRKN WITH SSSY LAM, SMALL BED DISPLACEMENTS, CLAY FILLED FRAC, ROCK IS SOFT & POORLY CONSOLIDATED, LISTRIC SURFACES. |
| 24 | 49.88 | 49.99 | 0.11 | *77 | | SILTSTONE | M.GY.VTHNB.BRKN WITH MUDST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------|
| 24 | 49.99 | 50.16 | 0.17 | 73 | | SANDSTONE | VFG.LT-M.GY.VTHNB.SLD WITH SLTY LAM, QTZ VEINS. |
| 24 | 50.16 | 50.26 | 0.10 | 69 | | SILTSTONE | M.GY.VTHNB.SSD.SLD WITH SSSY LAM CONTAINING 1 MM LT BROWN-GREY BLEBS, QTZ VEINS, SSSY RIP-UPS. |
| 24 | 50.26 | 50.66 | 0.40 | *62 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH BANDS OF SSSY LAM 3 CM THICK AND 7 CM APART. QTZ VEINING. |
| 25 | 50.66 | 50.78 | 0.12 | 64 | | SILTSTONE | M.GY.VTHNB.BRKN WITH MUDST LAM, OCCASIONAL DISCONTINUOUS QTZ VEIN. |
| 25 | 50.78 | 50.88 | 0.10 | 66 | | ROCK LOSS | |
| 25 | 50.88 | 50.94 | 0.06 | 66 | | MUDSTONE | M.GY.SHRD POORLY CONSOLIDATED, FAULT BRECCIA (?) |
| 25 | 50.94 | 51.05 | 0.11 | 67 | | MUDSTONE | DK.GY.LAM.BRKN INTERLAM WITH SLTST, WITH CLAY FRACTURE FILL 0.6 CM THICK, 0.06 M DOWN. |
| 25 | 51.05 | 51.19 | 0.14 | 68 | | BRECCIA | DK.GY MUDST, WITH QTZ VEINS, LISTRIC SURFACES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 51.19 | 51.55 | 0.36 | 71 | | | BRECCIA | LT-M.GY.BRKN FG SS BRECCIA AND QTZ VEINS. |
| 25 | 51.55 | 51.62 | 0.07 | 73 | | | SANDSTONE | FG.LT-M.GY.LAM.BRKN INTERLAM WITH SLTST. |
| 25 | 51.62 | 51.82 | 0.20 | *74 | | | SILTSTONE | SSY.M.GY.VTHNB.SLD WITH MUDDY LAM, MUDDIER AT BASE. |
| 25 | 51.82 | 51.93 | 0.11 | 73 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDDY WISPS, PLANT FRAGS (TINY), L ISTRIC SURFACES. |
| 25 | 51.93 | 51.95 | 0.02 | 73 | | | BENTONITE | LT.GY.SLD SOFT, WITH QTZ AND MUDST. |
| 25 | 51.95 | 52.01 | 0.06 | 73 | | | MUDSTONE | DK.GY.BRKN WITH COAL STRINGERS. |
| 25 | 52.01 | 52.19 | 0.18 | 73 | | | SILTSTONE | SSY.LT-M.GY.BIOTR.BRKN WITH COAL STRINGERS, QTZ FRACTURE INFIL L AND BLEBS WHICH MAYBE VOID FILL OR MA YBE REPLACED SHELL? |
| 25 | 52.19 | 52.82 | 0.63 | 71 | | | MUDSTONE | SLTY WITH SLTY LAM, QTZ VEINS AND COAL STRIN GERS, LISTRIC SURFACES PARALLEL BGD PLA NES, COALIFIED MUD/PLANT FRAGS, PYRITE BLEBS NEAR TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 26 | 52.82 | 52.89 | 0.07 | 70 | | | SILTSTONE | M.GY.LAM.SLD WITH SOME MUDST LAM, BEDS DISTURBED, TI NY PLANT FRAGS. |
| 26 | 52.89 | 53.37 | 0.48 | 69 | | | SILTSTONE | M-DK.GY.LAM.BRKN INTERLAM WITH MUDST, COAL STRINGERS, SO ME SHEAR SURFACES, OCCASIONAL QTZ FRACT URE FILL. |
| 26 | 53.37 | 54.33 | 0.96 | 66 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN WITH MUDDY INTERLAM, BECOMES FG SS AND SLTST FURTHER DOWN, SOME BEDS FINE UPNA RDS. |
| 26 | 54.33 | 54.80 | 0.47 | 63 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAM AT TOP. |
| 26 | 54.80 | 54.90 | 0.10 | 62 | | | ROCK LOSS | |
| 27 | 54.90 | 55.91 | 1.01 | *60 | | | SANDSTONE | MG.LT-M.GY.THNB.WRMBU.BRKN WITH BANDS OF SLTST AND MUDST LAM, WRMB UR - TOPS UP. |
| 27 | 55.91 | 56.21 | 0.30 | 61 | | | SANDSTONE | MG.LT-M.GY.THNB.SLD INTERBEDDED FG AND MG.SS, MUDST RIP-UPS AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------|
| 27 | 56.21 | 56.29 | 0.08 | 61 | | MUDSTONE | M.GY.LAM.VBRKN WITH SLTY INTERLAM, MINOR BED DISPLACEMENTS, QTZ VEINS. |
| 27 | 56.29 | 56.39 | 0.10 | 61 | | ROCK LOSS | |
| 27 | 56.39 | 56.46 | 0.07 | 61 | | SANDSTONE | FG.LT-M.GY.VBRKN |
| 27 | 56.46 | 56.70 | 0.24 | 61 | | SANDSTONE | MG.LT-M.GY.MAS.SLD WITH SLTST RIP-UPS, OCCASIONAL DISCONTINUOUS SLTY LAM, QTZ VEIN. |
| 27 | 56.70 | 56.75 | 0.05 | 61 | | SANDSTONE | MG.M.GY.VBRKN AS ABOVE. |
| 27 | 56.75 | 56.99 | 0.24 | 61 | | SANDSTONE | MG.LT-M.GY.MAS.BRKN AS ABOVE. |
| 28 | 56.99 | 57.09 | 0.10 | 61 | | SANDSTONE | MG.LT-M.GY.VBRKN AS ABOVE. |
| 28 | 57.09 | 57.32 | 0.23 | 62 | | SANDSTONE | FG.LT-M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, MINOR SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 57.32 | 58.29 | 0.97 | 62 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTST AND MUDST RIP-UPS AND DISCONTINUOUS LAM, QTZ FRACTURE FILL. |
| 28 | 58.29 | 58.45 | 0.16 | 63 | | SANDSTONE | MG.LT-M.GY.MAS.SLD WITH QTZ VEINLETS AND GOUGE POCKETS WHERE CARBONATES HAVE DISSOLVED OUT. |
| 28 | 58.45 | 58.72 | 0.27 | 63 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH SLTY LAM, MINOR FAULTING CAUSING 5 MM DISPLACEMENTS. |
| 29 | 58.72 | 59.11 | 0.39 | *63 | | SANDSTONE | FG.WEL.LT-M.GY.THNB.BRKN DOMINANTLY FG SS WITH RARE THIN SLTST LAMS (1 MM) ESP AT TOP OF UNIT. |
| 29 | 59.11 | 59.65 | 0.54 | 61 | | SANDSTONE | FG.WEL.LT-M.GY.THNB.BRKN SAME A/A WITH RARE THIN HORIZONTAL SLTS T.LAMS. |
| 29 | 59.65 | 59.90 | 0.25 | 59 | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.VTHNB.BRKN THINLY INTBED FG SS/SLTST (65/35). BEDS ARE WAVY TO SUB-HORIZONTAL AND HAVE SHARP CONTACTS. THIN BRECCIATED ZONES PRESENT WITH QTZ FRACTURE-FILL. |
| 29 | 59.90 | 60.02 | 0.12 | 58 | | SANDSTONE | FG.WEL.LT-M.GY.MAS.VBRKN SLIGHTLY CARB DIRTY SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 29 | 60.02 | 60.52 | 0.50 | 57 | | MUDSTONE | CARB. DK. GY. MAS. BRKN COMMON LISTRIC SURFACES THROUGHOUT. CARB CONT INCREASES TOWARDS BASE. |
| 29 | 60.52 | 61.00 | 0.48 | 55 | I | COAL LOSS | |
| 29 | 61.00 | 61.07 | 0.07 | 54 | I | COAL | C-4. BLK. VBRKN COMMON THIN MUDST BANDS UP TO 0.5 CM. C COMMON C-3. & RARE C-2. BANDS AS WELL. |
| 30 | 61.07 | 61.13 | 0.06 | 54 | I | COAL | C-5. BLK. VBRKN COMMON C-6 & C-4. |
| 30 | 61.13 | 61.15 | 0.02 | 53 | I | COAL | C-2. BLK. BRKN |
| 30 | 61.15 | 61.18 | 0.03 | 53 | I | COAL | C-4. BLK. VBRKN |
| 30 | 61.18 | 61.38 | 0.20 | 53 | I | COAL LOSS | |
| 30 | 61.38 | 62.46 | 1.08 | *50 | I | SILTSTONE | H. GY. MAS. SSD. BRKN RARE SSD NEAR TOP OF UNIT. COMMON QTZ F RACTURE-FILL. CARB NEAR TOP OF UNIT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 62.46 | 62.98 | 0.52 | 54 | I | SILTSTONE | SSY. M. GY. BRKN DOMINANTLY SLTST WITH SOME WELL MIXED V FG SS W/IN. BASAL PORTION OF UNIT BECOM ES SHEARED SLIGHTLY WITH COMMON LISTRIC SURFACES. |
| 31 | 62.98 | 63.10 | 0.12 | 56 | I | MUDSTONE | SLTY. DK. GY. SLD RAPID COARSENING UPWARD CYCLE WITH VERY CARB MUDST AT BASE & SLIGHTLY CARB MUD DY SLTST AT TOP. |
| 31 | 63.10 | 63.14 | 0.04 | 56 | I | ROCK LOSS | |
| 31 | 63.14 | 63.35 | 0.21 | 57 | I | COAL LOSS | |
| 31 | 63.35 | 63.50 | 0.15 | 57 | I | COAL | C-4. BLK. BRKN OCCASIONAL C-5 & C-6 BANDS. RAPID GRADA TIONAL LOWER CONTACT. COMMON LISTRIC SU RFACES. |
| 31 | 63.50 | 63.80 | 0.30 | 59 | | SANDSTONE | FG. PR. LT-M. GY. MAS. BRKN COMMONLY BRECCIATED THROUGHOUT WITH ANG ULAR SLTST FG SS & MG SS CLASTS W/IN A FG SS HOST WITH QTZ VEIN-FILLING AT BA SE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 63.80 | 63.95 | 0.15 | 60 | | ROCK LOSS | |
| 31 | 63.95 | 64.20 | 0.25 | 61 | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN MASSIVE SS WITH OCCASIONAL BRECCIATION & QTZ VEIN-FILLING. RAPID GRADATIONAL LOWER CONTACT. |
| 31 | 64.20 | 65.29 | 1.09 | *64 | | SANDSTONE | SLTY. VFG. HEL. M. GY. VTHNB. SSD. BRKN THINLY INTBD & INTLAM VFG SS/SLTST (65/35). BDG CONTACTS ARE RAPID. GRAD. TO SHA RP & WAVY - SUB-HORIZONTAL. BEDS & LAM ARE COMMONLY DISRUPTED SLIGHTLY BY SSD. |
| 32 | 65.29 | 65.54 | 0.25 | 71 | | SANDSTONE | VFG. M. GY. LAM. BRKN INTERLAM WITH SLTST. MINOR FAULTING, QTZ VEINING. LISTRIC SURFACES. |
| 32 | 65.54 | 65.68 | 0.14 | 73 | | SANDSTONE | VFG. M. GY. VTHNB. SSD. BRKN ALMOST MOTTLED LOOK. LISTRIC SURFACES. SOME SLTY LAM. |
| 32 | 65.68 | 66.94 | 1.26 | *81 | | SANDSTONE | VFG. M. GY. VTHNB. SSD. BRKN INTERBEDDED WITH SLTST. QTZ FRACTURE FILL, LISTRIC SURFACES, OCCASIONAL MINOR FAULTING. GETS SANDIER DOWNWARDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------|
| 32 | 66.94 | 67.00 | 0.06 | 80 | | ROCK LOSS | |
| 33 | 67.00 | 67.61 | 0.61 | 79 | | SANDSTONE | VFG. M. GY. VTHNB. BRKN WITH SLTY LAM, OCCASIONAL FG SS BED. |
| 33 | 67.61 | 67.68 | 0.07 | 79 | | SILTSTONE | M. GY. LAM. SLD WITH MUDST AND VFG SS LAM. |
| 33 | 67.68 | 67.82 | 0.14 | 78 | | SILTSTONE | M. GY. SLD FEATURELESS. |
| 33 | 67.82 | 68.16 | 0.34 | 78 | | SILTSTONE | M. GY. LAM. BRKN INTERLAM WITH FG SS. |
| 33 | 68.16 | 68.31 | 0.15 | 78 | | ROCK LOSS | |
| 33 | 68.31 | 68.67 | 0.36 | 77 | | SANDSTONE | VFG. M. GY. VTHNB. BRKN WITH OCCASIONAL SLTY LAM. |
| 33 | 68.67 | 68.79 | 0.12 | 77 | | SANDSTONE | VFG. M. GY. VTHNB. SLD AS ABOVE. |
| 33 | 68.79 | 69.19 | 0.40 | 76 | | SANDSTONE | FG. M. GY. LAM. SSD. BRKN INTERLAM WITH SLTST, MORE SSD DOWNWARDS, PLANT FRAGS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 69.19 | 69.90 | 0.71 | 75 | | SILTSTONE | M.GY.LAM.SSD.BRKN INTERLAM W/ FG SS, FINING UPWARD SEQUENCES, LOAD CASTS - TOPS UP. <1 MM BLACK PELLETS IN VFG SS AND SLTST AT .22 M AM D .58 M DOWN, OCCASIONAL MUDST LAM. |
| 34 | 69.90 | 70.45 | 0.55 | *74 | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH MUDST WISPS AND OCCASIONAL FG SS LAM, HELMINTHOPSIS, OCCASIONAL PYR BLEBS |
| 34 | 70.45 | 70.50 | 0.05 | 72 | | SANDSTONE | VFG.LT-M.GY.LAM.SSD.SLD WITH SLTST LAM AND OCCASIONAL MUDST LAM |
| 34 | 70.50 | 70.68 | 0.18 | 72 | | SILTSTONE | M.GY.LAM.SSD.BRKN OCCASIONAL MUDST LAM, HELMINTHOPSIS, QTZ VEIN. |
| 34 | 70.68 | 70.76 | 0.08 | 71 | | SANDSTONE | VFG.M.GY.LAM.SLD WITH SLTST INTERLAM. |
| 34 | 70.76 | 71.28 | 0.52 | 69 | | SILTSTONE | M.GY.LAM.SSD.BRKN OCCASIONAL MUDST WISPS AND VFG SS LAM, HELMINTHOPSIS, PYR BLEBS 0.31 M DOWN, OCCASIONAL LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 71.28 | 71.73 | 0.45 | 67 | | SILTSTONE | M.GY.LAM.BRKN OCCASIONAL MUDDY WISPS AND DISCONTINUOUS VFG SS LAM, HELMINTHOPSIS, SANDIER AT BASE, PYRITE BLEBS 0.06 M DOWN, TINY PLANT FRAGS, QTZ FRACTURE FILL. |
| 35 | 71.73 | 72.04 | 0.31 | 65 | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN GRADED FG SS LAM (SOME DISCONTINUOUS), SANDIER AT BASE, QTZ FRACTURE FILL, BLK PELLETS 0.10 M DOWN. |
| 35 | 72.04 | 72.67 | 0.63 | *62 | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN OCCASIONAL VFG SS LAM, HELMINTHOPSIS, OCCASIONAL PLANT FRAGS, PYRITE BLEBS AT 0.40 M DOWN. |
| 35 | 72.67 | 73.14 | 0.47 | 62 | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN INTERLAM WITH VFG SS, HELMINTHOPSIS, NUMEROUS PYRITE BLEBS AND FEM PYRITIZED SSY LAM, HORIZONTAL WRMBURS, OCCASIONAL PLANT FRAGS. |
| 35 | 73.14 | 73.34 | 0.20 | 63 | | SILTSTONE | SSY.M.GY.LAM.BRKN SSY LAM AT TOP, MUDST WISPS, OCCASIONAL PYRITE BLEBS, TINY PLANT FRAGS, TWIST-OFF 8 CM DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 73.34 | 73.59 | 0.25 | 63 | | | ROCK LOSS | |
| 36 | 73.59 | 74.23 | 0.64 | 63 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN OCCASIONAL SLTY WISP, TINY PLANT HASH. |
| 36 | 74.23 | 74.25 | 0.02 | 63 | 05986 | | BENTONITE | LT-M.GY SOFT CLAY, GREENISH GREY. |
| 36 | 74.25 | 74.78 | 0.53 | 64 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN OCCASIONAL SLTY WISP, SOME PYRITIZED, P LANT HASH, LISTRIC SURFACES, BIVALVE, O CCASIONAL QTZ FRACTURE FILL. |
| 36 | 74.78 | 75.54 | 0.76 | *64 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN OCCASIONAL SLTY WISPS, VERY MINOR PLANT HASH, ROUGH SURFACE TO CORE. |
| 37 | 75.54 | 77.45 | 1.91 | *55 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN SLTST INTERLAM, OCCASIONAL BIVALVES THR OUGHOUT, SOME SHEAR SURFACES. |
| 38 | 77.45 | 77.85 | 0.40 | 59 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTY WISPS, OCCASIONAL BIVALVES. |
| 38 | 77.85 | 78.67 | 0.82 | 61 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN INTERLAM WITH SLTST, ABUNDANT SLICKENSI DED SURFACES WITH QTZ GROWTH. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 78.67 | 79.30 | 0.63 | 63 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST WISPS, OCCASIONAL PLANT HASH , PYRITE BLEBS, LISTRIC SURFACES. |
| 38 | 79.30 | 79.38 | 0.08 | 65 | | | ROCK LOSS | |
| 39 | 79.38 | 80.78 | 1.40 | *67 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN OCCASIONAL SLTY WISP, CORE HAS FRACTURE LINES PARALLEL TO BDG, BIVALVES AT .88 M DOWN, ABUNDANT ORGANIC HASH (PLANT?) LISTRIC SURFACES, OCCASIONAL SLICKENS IDES. |
| 39 | 80.78 | 81.07 | 0.29 | 66 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN ABUNDANT ORGANIC BITS. |
| 39 | 81.07 | 81.17 | 0.10 | 65 | | | SILTSTONE | M.GY.LAM.SLD QTZ VEINING, SHEAR SURFACES. |
| 39 | 81.17 | 81.31 | 0.14 | 65 | | | MUDSTONE | DK.GY.BRKN WITH ABUNDANT WHITE (.5 MM) QTZ GRAINS, SIMILAR TO "MILKY WAY" ZONE BUT GRAINS ARE LARGER. |
| 40 | 81.31 | 81.66 | 0.35 | 65 | 07095 | | SANDSTONE | SLTY.FG.M.GY.MAS.SLD SLTY SS - ABRUPT LOWER CONTACT. LOWER 1 I. CM. SAMPLED. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 40 | 81.66 | 81.80 | 0.14 | 65 | 07095 | SILTSTONE | CARB. DK. GY. MAS. SLD VERY COMMON PYR (ESP. NEAR TOP) FORMING LARGE MASSES. ABRUPT LOWER CONTACT. |
| 40 | 81.80 | 81.88 | 0.08 | 64 | 07096 H | COAL LOSS | |
| 40 | 81.88 | 81.93 | 0.05 | 64 | 07096 H | COAL | C-4. BLK. VBRKN COMMON C-5. |
| 40 | 81.93 | 81.98 | 0.05 | 64 | 07096 H | COAL | C-3. BLK. VBRKN SOME C-2 AS WELL. |
| 40 | 81.98 | 82.01 | 0.03 | 64 | 07096 H | MUDSTONE | CARB. BLK. BRKN RARE THIN COAL LAMS. |
| 40 | 82.01 | 82.03 | 0.02 | 64 | 07096 H | COAL | C-6. BLK. BRKN |
| 40 | 82.03 | 82.10 | 0.07 | 64 | 07096 H | MUDSTONE | CARB. BLK. VBRKN VERY COALY BLACK MUDST. SHARP LOWER CON TACT. |
| 40 | 82.10 | 82.13 | 0.03 | 64 | 07096 H | COAL | C-1. BLK. SLD VERY RARE THIN C-4 LAMS. (<1 MM). |
| 40 | 82.13 | 82.16 | 0.03 | 64 | 07096 H | MUDSTONE | CARB. BLK. BRKN |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | 82.16 | 82.18 | 0.02 | 64 | 07096 H | COAL | C-4. BLK. BRKN |
| 40 | 82.18 | 82.23 | 0.05 | 64 | 07096 H | SILTSTONE | CARB. M. BN. MAS. BRKN DOMINANTLY POORLY CONSOLIDATED CARB SLT ST WITH A THIN CARB MUDST BAND 0.5 CM A T. UNIT'S BASE. ABRUPT LOWER CONTACT. |
| 40 | 82.23 | 82.24 | 0.01 | 64 | 07096 H | COAL | C-2. BLK. SLD |
| 40 | 82.24 | 82.29 | 0.05 | 64 | 07096 H | COAL | C-3. BLK. BRKN COMMON THIN (OFTEN DISCONTINUOUS) MUDST LAMS. |
| 40 | 82.29 | 82.48 | 0.19 | 64 | 07096 H | COAL | C-3. BLK. BRKN COMMON C-2 THROUGHOUT & RARE C-4 (ESP. N EAR BASE). |
| 40 | 82.48 | 82.50 | 0.02 | 63 | 07096 H | MUDSTONE | CARB. BLK. BRKN |
| 40 | 82.50 | 82.58 | 0.08 | 63 | 07096 H | COAL | C-3. BLK. BRKN COMMON C-2. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 40 | 82.58 | 82.59 | 0.01 | 63 | 07096 | H | MUDSTONE | CARB. BLK. SLD RESISTIVE CARB MUDST. |
| 40 | 82.59 | 82.67 | 0.08 | 63 | 07096 | H | COAL | C-5. BLK. BRKN RARE C-2/C-3 BANDS UP TO .5 CM. |
| 40 | 82.67 | 83.14 | 0.47 | 63 | 07096 | H | COAL LOSS | |
| 40 | 83.14 | 83.17 | 0.03 | 62 | 07096 | H | MUDSTONE | CARB. BLK. BRKN |
| 40 | 83.17 | 83.21 | 0.04 | 62 | 07096 | H | COAL | C-3. BLK. BRKN COMMON C-6 & C-2. BANDS. |
| 40 | 83.21 | 83.32 | 0.11 | 62 | 07096 | H | MUDSTONE | CARB. BLK. SLD VERY CARB MUDST WITH COMMON THIN COAL L AMS & RARE C-6 BANDS. |
| 40 | 83.32 | 83.57 | 0.25 | 62 | 07096 | H | MUDSTONE | CARB. DK. GY. SLD MODERATE CONSOLIDATED SLIGHT CARB MUDST . COMMON LISTRIC SURFACES. |
| 41 | 83.57 | 83.61 | 0.04 | 62 | 07096 | H | COAL | C-3. BLK. SLD COMMON C-2 THIN BANDS & RARE C-4 BANDS. |
| 41 | 83.61 | 83.70 | 0.09 | 62 | 07096 | H | COAL | C-2. BLK. BRKN COMMON C-3 BANDS AND RARE C-4. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 41 | 83.70 | 83.81 | 0.11 | 62 | 07096 | H | COAL | C-3. BLK. VBRKN COMMON C-2 & OCCASIONAL C-4 BANDS. RAPID D GRADATIONAL LOWER CONTACT. |
| 41 | 83.81 | 83.94 | 0.13 | 61 | 07096 | H | COAL LOSS | |
| 41 | 83.94 | 83.95 | 0.01 | 61 | 07096 | H | MUDSTONE | CARB. DK. GY. SLD |
| 41 | 83.95 | 83.96 | 0.01 | 61 | 07096 | H | COAL | C-3. BLK. SLD ABRUPT LOWER CONTACT. |
| 41 | 83.96 | 83.99 | 0.03 | 61 | 07096 | H | MUDSTONE | CARB. BLK. SLD RESISTIVE. VERY COALY MUDST. |
| 41 | 83.99 | 84.07 | 0.08 | 61 | 07096 | H | COAL | C-2. BLK. BRKN COMMON C-3. |
| 41 | 84.07 | 84.09 | 0.02 | 61 | 07096 | H | MUDSTONE | CARB. BLK. SLD THIN COAL LAMS W/IN. |
| 41 | 84.09 | 84.14 | 0.05 | 61 | 07096 | H | COAL | C-2. BLK. SLD COMMON C-1. |
| 41 | 84.14 | 84.25 | 0.11 | 61 | 07096 | H | COAL | C-3. BLK. SLD COMMON C-2. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------|
| 41 | 84.25 | 84.37 | 0.12 | 61 | 07096 H | COAL | C-2.BLK.SLD OCCASIONAL C-1. |
| 41 | 84.37 | 84.45 | 0.08 | 61 | 07096 H | COAL LOSS | |
| 41 | 84.45 | 84.48 | 0.03 | 61 | 07096 H | SILTSTONE | CARB.DK.GY.SLD VERY COALY. WELL CONSOLIDATED. |
| 41 | 84.48 | 84.79 | 0.31 | 60 | 07096 H | COAL | C-2.BLK.BRKN COMMON C-1 BANDS & RARE C-3 LAM. |
| 41 | 84.79 | 84.89 | 0.10 | 60 | 07096 H | COAL | C-1.BLK.SLD COMMON C-2. |
| 41 | 84.89 | 85.03 | 0.14 | 60 | 07096 H | COAL LOSS | |
| 41 | 85.03 | 85.05 | 0.02 | 60 | 07096 H | SILTSTONE | CARB.DK.GY.SLD THIN CARB SLTST LAMS SEPARATED BY COAL. |
| 41 | 85.05 | 85.08 | 0.03 | 60 | 07096 H | COAL | C-1.BLK.BRKN |
| 41 | 85.08 | 85.16 | 0.08 | 60 | 07096 H | COAL LOSS | |
| 41 | 85.16 | 85.34 | 0.18 | 59 | 07096 H | MUDSTONE | CARB.LT.BLK.MAS.BRKN CARB. MAS MUDST SLIGHTLY SLTY. |
| 42 | 85.34 | 85.37 | 0.03 | 59 | 07096 H | MUDSTONE | CARB.LT.GY.MAS.VBRKN SAME A/A WITH THIN COAL LAMS W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 85.37 | 85.41 | 0.04 | 59 | 07096 H | COAL | C-2.BLK.BRKN |
| 42 | 85.41 | 85.42 | 0.01 | 59 | 07096 H | MUDSTONE | CARB.BLK.SLD SLIGHTLY SLTY CARB MUDST WITH OCCASIONAL THIN COAL LAMS. |
| 42 | 85.42 | 85.46 | 0.04 | 59 | 07096 H | COAL | C-1.BLK.SLD VERY RARE LAM OF C-6 COAL. |
| 42 | 85.46 | 85.52 | 0.06 | 59 | 07096 H | COAL | C-2.BLK.SLD THIN (.5 CM) QTZ FRACTURE-FILL W/IN. |
| 42 | 85.52 | 85.59 | 0.07 | 59 | 07096 H | COAL | C-4.BLK.SLD VERY COMMON FRACTURE-FILL AMONG COAL. OCCASIONAL MUDST/SLTST LAM. |
| 42 | 85.59 | 85.62 | 0.03 | 59 | 07097 | MUDSTONE | CARB.BLK.SLD SLIGHTLY SANDY NEAR BASE. RAPID GRADATIONAL LOWER CONTACT. |
| 42 | 85.62 | 86.75 | 1.13 | *58 | | SANDSTONE | FG.WEL.LT.GY.MAS.BRKN CARB NEAR TOP. RAPIDLY BECOMING A CLEAN MASSIVE SLIGHTLY CARB FG SS WITH MINOR QTZ VEIN FILLING. VERY RARE THIN DISCONTINUOUS CARB LAMS. UPPER 22 CM SAMPLED |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 42 | 86.75 | 86.91 | 0.16 | 58 | | ROCK LOSS | |
| 42 | 86.91 | 87.21 | 0.30 | 58 | | SANDSTONE | FG.MEL.LT.GY.MAS.SLD SAME A/A BUT WITH COMMON QTZ & CaCO ₃ FRACTURE FILL. |
| 43 | 87.21 | 87.80 | 0.59 | 58 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH DISCONTINUOUS SLTY WISPS, QTZ VEIN S. AT TOP. |
| 43 | 87.80 | 87.82 | 0.02 | 58 | | MUDSTONE | CARB.BLK.LAM.SLD |
| 43 | 87.82 | 88.10 | 0.28 | 58 | | MUDSTONE | DK.GY.LAM.SLD WISPS OF DISSEMINATED PYRITE AND PYRITE BAND AT BASE, QTZ VEINS AT TOP, PLANT FRAGS. |
| 43 | 88.10 | 88.17 | 0.07 | 58 | | MUDSTONE | CARB.BLK.LAM.YBRKN WITH COAL STRINGERS. |
| 43 | 88.17 | 88.38 | 0.21 | *58 | | SANDSTONE | VFG.M.GY.LAM.SLD INTERLAM WITH SLTST, OCCASIONAL SLICKEN SIDED AND LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 43 | 88.38 | 88.77 | 0.39 | 59 | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH MUDDY WISPS, QTZ FRACTURE FILL. |
| 43 | 88.77 | 89.11 | 0.34 | *60 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD AS ABOVE, RARE TINY PLANT FRAGS. |
| 44 | 89.11 | 89.78 | 0.67 | 63 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE, COALY PLANT FRAGS. AT 30 M DOWN, BRK IN SOME OF THE QTZ, SLICKENSI DES. |
| 44 | 89.78 | 90.11 | 0.33 | *65 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD AS ABOVE, SMALL SCALE BED DISPLACEMENT. |
| 44 | 90.11 | 90.19 | 0.08 | 64 | | MUDSTONE | DK.GY.LAM.BRKN WITH COAL STRINGERS AND ASSOCIATED QTZ. |
| 44 | 90.19 | 90.28 | 0.09 | 64 | | SILTSTONE | M.GY.SSD.SLD MUDST.FRAGS. |
| 44 | 90.28 | 90.39 | 0.11 | 63 | | MUDSTONE | DK.GY.LAM.SLD WITH PYRITE FLECKS AND STRINGERS. |
| 44 | 90.39 | 90.63 | 0.24 | 63 | | SILTSTONE | SSY.M.GY.LAM.SSD INTERLAM WITH MUDST. |
| 44 | 90.63 | 91.12 | 0.49 | 61 | | MUDSTONE | SLTY.M-DK.GY.LAM.BRKN OCCASIONAL PLANT FRAGS, RARE PYRITE STRINGERS, QTZ FRACTURE FILL AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 45 | 91.12 | 91.33 | 0.21 | 60 | | | SILTSTONE | M.GY.VTHNB.BRKN DISCONTINUOUS SSS LAM TOWARDS BASE, OCCASIONAL QTZ FRACTURE FILL. |
| 45 | 91.33 | 91.59 | 0.26 | 59 | | | SILTSTONE | M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH FG SS, QTZ VEINS AND FRACTURE FILL. |
| 45 | 91.59 | 91.91 | 0.32 | *58 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST.LAM. |
| 45 | 91.91 | 92.14 | 0.23 | 58 | | | SANDSTONE | FG.LT-M.GY.LAM.SLD INTERLAM WITH SLTST. |
| 45 | 92.14 | 92.65 | 0.51 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH BANDS OF SLTST INTERBEDS AND LAM. |
| 45 | 92.65 | 92.84 | 0.19 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH DISCONTINUOUS SLTST.LAM, RARE 1 MM BLACK GRAINS AND UP TO 1 CM MUDST CLAST. |
| 45 | 92.84 | 93.17 | 0.33 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE, BLACK 1 MM CLASTS (?) ARE MORE ABUNDANT AND MORE CONCENTRATED IN BANDS, RARE >1 CM MUDST CLAST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 93.17 | 94.17 | 1.00 | *56 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE, WITH SCATTERED BLACK GRAINS, OCCASIONAL SLTY WISP, DISCONTINUOUS MUDST LAM NEAR TOP, OCCASIONAL QTZ VEIN. |
| 46 | 94.17 | 94.21 | 0.04 | 59 | | | ROCK LOSS | |
| 46 | 94.21 | 95.22 | 1.01 | 61 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH SLTY WISPS, BLACK GRAINS DECREASE DOWNWARDS, QTZ FRACTURE FILL, RARE MUDST RIP-UP UP TO 3.5 CM LONG. |
| 47 | 95.22 | 95.28 | 0.06 | 64 | | | SANDSTONE | MG.LT-M.GY.SLD AS ABOVE, QTZ VEIN WITH BRECCIA. |
| 47 | 95.28 | 95.32 | 0.04 | 64 | | | SILTSTONE | M.GY.SLD QTZ FILLED FRACTURES, SMALL SCALE FAULT S. |
| 47 | 95.32 | 95.59 | 0.27 | 65 | | | SANDSTONE | MG.M.GY.SLD INTERBED WITH SLTY FG SS, MUDST RIP-UPS, QTZ FRACTURE FILL. |
| 47 | 95.59 | 95.89 | 0.30 | 67 | | | SILTSTONE | M.GY.LAM.WRMBU.BRKN WITH VFG SS LAM, WRMBUR - TOPS UP, HELM INTHOPISS, MUDDY WISPS, BIOTRB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 47 | 95.89 | 96.18 | 0.29 | 68 | | | SILTSTONE | M.GY.VTHNB.BIOTR.SLD WITH MUDST LAM, ABUNDANT WRMBUR - TOPS UP. |
| 47 | 96.18 | 96.26 | 0.08 | *69 | | | SANDSTONE | FG.LT-M.GY.SLD WITH MUDST LAM. |
| 47 | 96.26 | 96.31 | 0.05 | 69 | | | SILTSTONE | M.GY.LAM.SLD INTERLAM WITH FG SS, WITH BANDS OF BLAC K <1 MM.GRAINS. |
| 47 | 96.31 | 96.41 | 0.10 | 69 | | | SANDSTONE | FG.M.GY.VTHNB.SLD WITH SLTY WISPS. |
| 47 | 96.41 | 96.60 | 0.19 | 69 | | | SILTSTONE | M.GY.LAM.BRKN WITH VFG SS INTERLAMS, PLANT FRAGS. DIS CONTINUOUS SS LAM AT BASE. |
| 47 | 96.60 | 97.02 | 0.42 | 69 | | | SILTSTONE | SSY WISPS, VFG SS LAM AT BASE, ABUNDANT PLANT FRAGS ON SOME BEDS:GINKGO NANA, COAL STRINGER AT BASE. |
| 47 | 97.02 | 97.34 | 0.32 | 69 | | | SANDSTONE | THNB.SLD INTERBEDDED WITH SLTST, MUDDY WISPS IN SS SOME RIP-UPS, SSSY RIP-UPS IN SLTST AND OCCASIONAL PLANT FRAGS, BIOTRB NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 48 | 97.34 | 98.24 | 0.90 | 69 | | | SILTSTONE | M.GY.LAM.BRKN BANDS OF SLTST WITH FG SS LAM AND FG SS WITH SLTST WISPS. |
| 48 | 98.24 | 98.32 | 0.08 | 68 | | | ROCK LOSS | |
| 48 | 98.32 | 98.49 | 0.17 | 68 | | | SILTSTONE | LT.GY.BRKN RECRYSTALLIZED QTZ FORMING 'SNOWFLAKE' ZONE. |
| 48 | 98.49 | 98.93 | 0.44 | 68 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST (MUDST WISPS), A BUNDANT WRMBUR CUTTING EACH OTHER (TOPS UP), OCC QTZ VEIN. |
| 48 | 98.93 | 99.43 | 0.50 | 68 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |
| 49 | 99.43 | 99.79 | 0.36 | 68 | | | SILTSTONE | M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH FG SS. |
| 49 | 99.79 | 100.64 | 0.85 | *68 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH VFG SS, OCCASIONAL BED OF ABUNDANT PLANT FRAG: NILSSONIA SP. |
| 49 | 100.64 | 100.76 | 0.12 | 69 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 100.76 | 101.32 | 0.56 | 70 | | | SILTSTONE | M.GY.BRKN FEW FEATURES, OCCASIONAL MUDST WISP, TINY PLANT HASH. |
| 49 | 101.32 | 101.64 | 0.32 | 71 | | | SANDSTONE | VFG.M.GY.LAM.SSD.SLD INTERLAM WITH SLTST, MUDST WISPS. |
| 50 | 101.64 | 101.98 | 0.34 | *72 | | | SILTSTONE | M.GY.LAM.SSD.SLD INTERLAM WITH VFG SS, ABUNDANT SSD. |
| 50 | 101.98 | 103.69 | 1.71 | 71 | | | SILTSTONE | M.GY.LAM.SSD.BRKN AS ABOVE, WRMBUR - TOPS UP, SOME RIP-UP Ss, RECRYSTALIZED QTZ 1.47 M DOWN (.03 M THICK), OCCASIONAL PLANT FRAGS. |
| 51 | 103.69 | 103.91 | 0.22 | 70 | | | SILTSTONE | SSY.M.GY.SLD OCCASIONAL MUDDY LAM, HELMINTHOPSIS? |
| 51 | 103.91 | 103.98 | 0.07 | 70 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN |
| 51 | 103.98 | 104.05 | 0.07 | 70 | | | SILTSTONE | M.GY.SLD HELMINTHOPSIS, PLANT HASH. |
| 51 | 104.05 | 104.33 | 0.28 | 69 | | | SILTSTONE | M.GY.SLD FEATURELESS, PLANT HASH. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 51 | 104.33 | 104.83 | 0.50 | *69 | | | SILTSTONE | M.GY.LAM.SSD.BRKN INTERLAM WITH VFG SS, 1 MM MUDST CLASTS, COALIFIED WOOD FRAG, PLANT FRAGS. |
| 51 | 104.83 | 104.90 | 0.07 | 68 | | | SILTSTONE | SSY.M.GY.SLD HELMINTHOPSIS. |
| 51 | 104.90 | 105.01 | 0.11 | 68 | | | SILTSTONE | SSY.M.GY.SLD |
| 51 | 105.01 | 105.08 | 0.07 | 68 | | | SILTSTONE | SSY.M.GY.LAM.SLD INTERLAM WITH VFG SS. |
| 51 | 105.08 | 105.26 | 0.18 | 68 | | | SANDSTONE | VFG.M.GY.LAM.WRMBU.SLD INTERLAM WITH SLTST, SSD - TOPS UP. |
| 51 | 105.26 | 105.53 | 0.27 | 67 | | | SILTSTONE | SSY.M.GY.LAM.BRKN WITH SSY WISPS. |
| 51 | 105.53 | 105.74 | 0.21 | 67 | | | SILTSTONE | SSY WITH RECRYSTALIZED QTZ 'SNOWFLAKE' ZONE |
| 51 | 105.74 | 105.80 | 0.06 | 67 | | | MUDSTONE | SLTY.DK.GY.SLD WITH PYRITE FLECKS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 52 | 105.80 | 107.07 | 1.27 | 65 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH OCCASIONAL MUDST WISPS, SOME SSSY BANDS, BLACK PELLETS NEAR BASE, OCCASIONAL PLANT HASH. |
| 52 | 107.07 | 107.09 | 0.02 | 64 | | | SILTSTONE | SSY.M-DK.GY.BRKN ETCHED SURFACE DOESN'T REACT WITH HCL. |
| 52 | 107.09 | 107.87 | 0.78 | *63 | | | SILTSTONE | SSY.M-DK.GY.LAM.SSD.BRKN DK GY MUDST IMM BLEBS, OCCASIONAL SSSY OR MUDDY LAM, MINOR PLANT HASH. |
| 53 | 107.87 | 108.12 | 0.25 | 63 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN AS ABOVE. |
| 53 | 108.12 | 109.21 | 1.09 | 62 | | | SILTSTONE | M-DK.GY.LAM.BRKN OCCASIONAL SSSY LAM, BLACK GRAINS, OCCASIONAL QTZ VEIN, BIVALVES?, PLANT HASH. |
| 53 | 109.21 | 109.87 | 0.66 | 62 | | | SILTSTONE | M.GY.BRKN AS ABOVE, OCCASIONAL PYRITE BLEBS. |
| 53 | 109.87 | 109.97 | 0.10 | 62 | | | ROCK LOSS | |
| 54 | 109.97 | 110.91 | 0.94 | 62 | | | MUDSTONE | SLTY.M-DK.GY OCCASIONAL DISSEMINATED PYRITE, OCCASIONAL BIVALVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 54 | 110.91 | 111.17 | 0.26 | 61 | | | MUDSTONE | SLTY.M-DK.GY.BRKN ABUNDANT DISSEMINATED PYRITE (70% OF ROCK). FERGANOCONCHA BIVALVE & SMALL BIVALVE. |
| 54 | 111.17 | 111.57 | 0.40 | 61 | | | MUDSTONE | SLTY.M-DK.GY.BRKN PYRITE AS ABOVE, LESS NEAR BASE, BIVALVES. |
| 54 | 111.57 | 112.02 | 0.45 | *61 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDST LAM. |
| 55 | 112.02 | 112.70 | 0.68 | 62 | | | SILTSTONE | M.GY.LAM.BRKN WITH SSSY LAM, OCCASIONAL PYRITE BLEBS NEAR BASE, ORGANIC HASH (PLANT?). |
| 55 | 112.70 | 112.86 | 0.16 | 63 | | | SILTSTONE | SSY.M.GY.LAM.SLD GRITTY FEELING. |
| 55 | 112.86 | 112.92 | 0.06 | 63 | | | SILTSTONE | WITH ABUNDANT DISSEMINATED PYRITE. |
| 55 | 112.92 | 113.25 | 0.33 | 63 | | | MUDSTONE | DK.GY.LAM.BRKN COALY STRINGERS, ABUNDANT PLANT HASH, COALIFIED WOOD FRAGS, QTZ VEINS. |
| 55 | 113.25 | 113.56 | 0.31 | 64 | | | MUDSTONE | DK.GY.LAM.BRKN LESS COAL STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 55 | 113.56 | 114.03 | 0.47 | 64 | | SILTSTONE | M.GY.LAM.BRKN W/ 1 CM UNCONSOLIDATED MUD AT TOP, SSSY WISPS, ABUNDANT PLANT WASH (SOME COALY) DISCONTINUOUS SSSY WISPS AT TOP, LISTR IC SURFACES. |
| 55 | 114.03 | 114.10 | 0.07 | 65 | | MUDSTONE | DK.GY.LAM.BRKN WITH COAL STRINGERS AND QTZ VEINS. |
| 56 | 114.10 | 114.16 | 0.06 | 65 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 56 | 114.16 | 114.30 | 0.14 | 65 | | MUDSTONE | DK.GY.LAM.BRKN ABUNDANT PLANT FRAGS (SOME COALY). |
| 56 | 114.30 | 114.75 | 0.45 | 65 | | SILTSTONE | CLYY.M-DK.GY.LAM.BRKN WITH MUDST LAM, ABUNDANT PLANT FRAGS. |
| 56 | 114.75 | 114.86 | 0.11 | 66 | | MUDSTONE | DK.GY.LAM.SLD WITH SLTST LAM, ABUNDANT PLANT FRAGS. |
| 56 | 114.86 | 114.92 | 0.06 | 66 | | MUDSTONE | DK.GY.LAM.BRKN WITH COAL STRINGERS, QTZ VEINS, SLTST L AM. |
| 56 | 114.92 | 114.94 | 0.02 | 66 | | COAL | C-2.BLK.SLD WELL CONSOLIDATED, DISCONTINUOUS QTZ BL ERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 114.94 | 115.11 | 0.17 | 66 | | MUDSTONE | DK.GY.LAM.VBRKN WITH COAL STRINGERS, QTZ VEINS. |
| 56 | 115.11 | 115.24 | 0.13 | 67 | | ROCK LOSS | |
| 56 | 115.24 | 115.36 | 0.12 | 67 | PH | ROCK LOSS | |
| 56 | 115.36 | 115.87 | 0.51 | 67 | PH | MUDSTONE | DK.GY.LAM.BRKN OCCASIONAL COAL STRINGERS, ABUNDANT PLA NT FRAGS. |
| 56 | 115.87 | 115.97 | 0.10 | 68 | PH | ROCK LOSS | |
| 56 | 115.97 | 116.34 | 0.37 | 68 | PH | MUDSTONE | SLTY.DK.GY.LAM.BRKN ABUNDANT PLANT FRAGS (SOME COALY) N. TE NUICAULIS, N. SCHAUMBERGENSIS, P. NORDE NSKIOLDII, C. RIGIDA, SLTY TOWARDS BASE |
| 56 | 116.34 | 116.49 | 0.15 | 69 | PH | ROCK LOSS | |
| 57 | 116.49 | 117.24 | 0.75 | 69 | PH | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH MUDST, ABUNDANT PLANT FRA GS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 57 | 117.24 | 117.34 | 0.10 | 70 | | PH | ROCK LOSS | |
| 57 | 117.34 | 117.37 | 0.03 | 70 | | PH | MUDSTONE | |
| 57 | 117.37 | 117.52 | 0.15 | 70 | | | MUDSTONE | M-DK.GY.LAM.BRKN WITH COAL STRINGERS, OCCASIONAL SLTST AND VFG SS LAMS, QTZ VEIN NEAR BASE. |
| 57 | 117.52 | 117.66 | 0.14 | 71 | | | SANDSTONE | VFG.LT-M.GY.SLD OCCASIONAL ~1 CM MUDST CLAST. |
| 57 | 117.66 | 117.79 | 0.13 | 71 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH MUDST BED AND THIN QTZ VEIN. |
| 57 | 117.79 | 117.99 | 0.20 | *71 | | | MUDSTONE | DK.GY.LAM.BRKN INTERLAM WITH SLTST. |
| 57 | 117.99 | 118.16 | 0.17 | 71 | | | ROCK LOSS | |
| 57 | 118.16 | 118.62 | 0.46 | 71 | | | SILTSTONE | M.GY.BRKN DEFORMED FG SS BED AT .07 M DOWN, SSY TOWARDS BASE AND SSD. |
| 58 | 118.62 | 119.10 | 0.48 | 72 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST LAM, SSD MOTTLED APPEARANCE. MUDST WISPS FRACTURE BEDS OF SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 58 | 119.10 | 119.30 | 0.20 | 72 | | | ROCK LOSS | |
| 58 | 119.30 | 119.70 | 0.40 | *72 | | | SILTSTONE | SSY.M.GY.LAM.BRKN WITH MUDST LAM, ABUNDANT PLANT FRAGS, DISCONTINUOUS QTZ FRACTURE FILL. |
| 58 | 119.70 | 120.51 | 0.81 | 71 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTST LAM IN BANDS, QTZ FRACTURE FILL, PLANT FRAGS IN SLTST. |
| 59 | 120.51 | 121.17 | 0.66 | 70 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH REGULAR SLTST LAM. |
| 59 | 121.17 | 121.33 | 0.16 | 70 | | | SILTSTONE | M.GY.VTHNB.BRKN WITH FG SS INTERBEDS, OCCASIONAL MUDST LAM. |
| 59 | 121.33 | 121.63 | 0.30 | 70 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTST LAM. |
| 59 | 121.63 | 121.70 | 0.07 | 69 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN AS ABOVE. POSSIBLE CORE LOSS. |
| 59 | 121.70 | 121.80 | 0.10 | 69 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87015

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 59 | 121.80 | 122.22 | 0.42 | *69 | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN WITH DISCONTINUOUS SLTST WISPS. LESS SLTST AND FINER GRAINED SS TOWARDS BASE. END OF HOLE. T.D. = 122.22 M. DRILLERS MARK. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87015

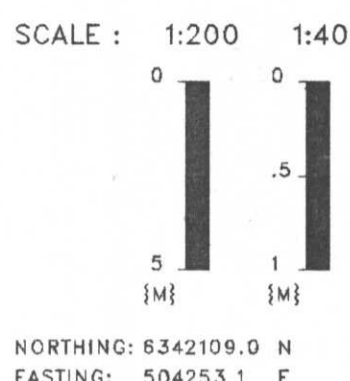
740

GEOLOGIST : LEE

DATE : MAR 08/88

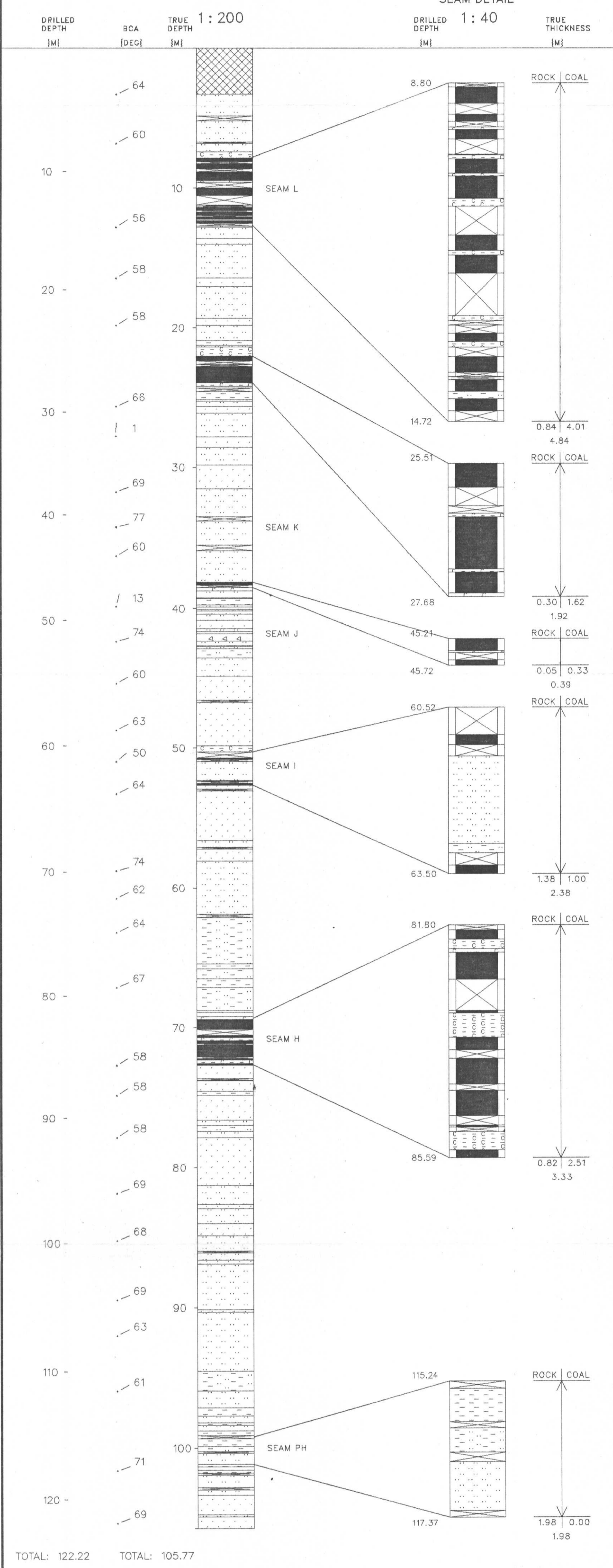
DRAWING NO. :

LITHOLOGIC SYMBOLS



| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

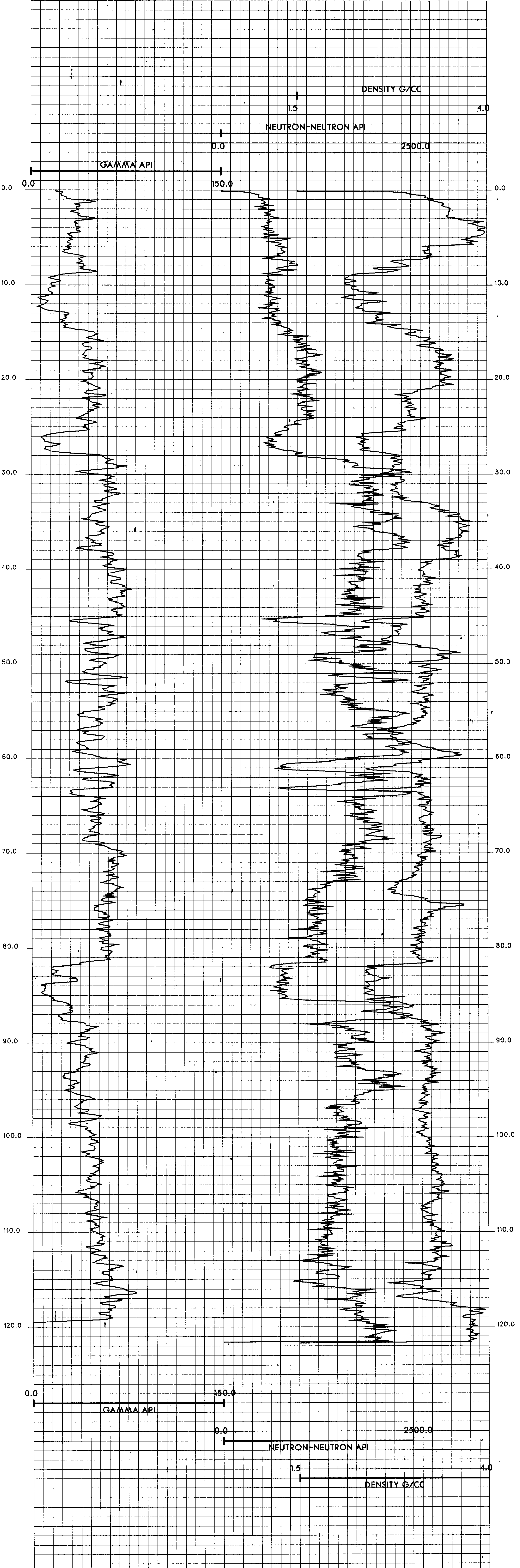
Datasource: **KPNLRDDH87015**
 Log Date: 87-09-15
 Company: CENTURY
 Geologist: LEE

Province: BC Northing: 6342110.00 Lat: 571326
 Zone: 9 Easting: 504253.00 Long: 1285546
 Measuring Point: GROUND LEVEL Elevation: 1632.4

Scale: 1 to 200.0
 Depth Range: 0.0 to 126.0
 True Thickness: NO

Comments:
 1., LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87016

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87016

DATE - 03/01/88

- HISTORY -

START DATE - 09/16/87

END DATE - 09/17/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - SAVOIE

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - TWINNED KPNLRDDH85022. SEAMS J, I.

- LOCATION -

PROVINCE - BC

ELEVATION - 1679.17

ZONE - 9

NORTHING - 6343561.68

EASTING - 506631.20

LICENCE/LEASE NUMBER -

LATITUDE - 571413

LONGITUDE - 1285325

- ORIENTATION -

LENGTH - 66.18

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 3.66

AQUIFER DEPTHS (M) - 0.00

0.00

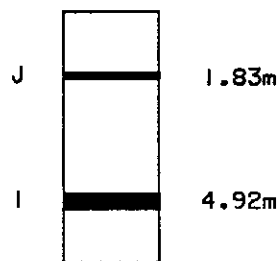
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87016

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:12050571880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 3.66 | 3.66 | 81 | | | CASING | CASING DEPTH |
| 1 | 3.66 | 5.12 | 1.46 | *81 | | | SILTSTONE | SSY.PR.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED MUDST. MINOR BANDS (3-4 CM) OF FG SS. MINOR ORNG-BROWN WEATHERI NG. CASING DEPTH 3.66 M. |
| 1 | 5.12 | 5.33 | 0.21 | 82 | | | SILTSTONE | SSY.PR.LT-M.GY.LAM.XBDG.BRKN AS ABOVE. MINOR PLANAR X-BDG, TOPS UP. |
| 2 | 5.33 | 6.69 | 1.36 | *83 | | | SILTSTONE | SSY.PR.LT-M.GY.LAM.VBRKN AS ABOVE. POSSIBLE CORE LOSS. 3 CM BAND OF HELMINTHOPSIS NEAR TOP OF INTERVAL. |
| 2 | 6.69 | 6.92 | 0.23 | 82 | | | ROCK LOSS | |
| 2 | 6.92 | 7.02 | 0.10 | 82 | | | SILTSTONE | SSY.LT-M.GY.VBRKN RUBBLE. ORANGE-BROWN WEATHERING. |
| 2 | 7.02 | 7.42 | 0.40 | 82 | | | ROCK LOSS | |
| 3 | 7.42 | 9.30 | 1.88 | *81 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN INTERLAMINATED WITH MUDST. VERY BROKEN AT TOP 20 CM OF INTERVAL ORNG-BRWN HEA THERING ALONG BROKEN SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | 9.30 | 9.97 | 0.67 | *81 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.XBDG.BRKN INTERLAMINATED MUDST. BOTTOM 10 CM VERY BROKEN. ORANGE-BROWN WEATHERING ON BRO KEN SURFACES. LOW ANGLE PLANAR X-BDG. |
| 4 | 9.97 | 10.97 | 1.00 | 82 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN AS ABOVE. |
| 5 | 10.97 | 12.49 | 1.52 | *84 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN INTERLAMINATED MUDST. ORNG-BROWN WEATHE RING ON BROKEN SURFACES. RHYTHMITES ("C OASTER ZONE" DEVELOPING). |
| 5 | 12.49 | 12.73 | 0.24 | 84 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN AS ABOVE. |
| 5 | 12.73 | 13.32 | 0.59 | 83 | | | ROCK LOSS | |
| 6 | 13.32 | 14.01 | 0.69 | *83 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN AS ABOVE. |
| 6 | 14.01 | 14.85 | 0.84 | 85 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN AS ABOVE. 10 CM AT BASE IS VERY BROKEN. |
| 6 | 14.85 | 15.04 | 0.19 | 86 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.VBRKN AS ABOVE. |
| 6 | 15.04 | 15.11 | 0.07 | 86 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 7 | 15.11 | 15.15 | 0.04 | 87 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.BRKN |
| 7 | 15.15 | 15.25 | 0.10 | 87 | | | SILTSTONE | CLYY.PR.LT-M.GY.LAM.YBRKN RUBBLE. |
| 7 | 15.25 | 15.35 | 0.10 | 87 | | | MUDSTONE | CLYY.M.GY. VERY SOFT. PIECES OF SLTST IN A MATRIX OF CLYY MUDST (NOT UNLIKE CHUNKY PEANUT BUTTER IN TEXTURE). |
| 7 | 15.35 | 15.52 | 0.17 | 87 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN |
| 7 | 15.52 | 15.99 | 0.47 | *88 | | | MUDSTONE | SLTY.M.GY.LAM.SSD.SLD INTERLAMINATED SLTST. |
| 7 | 15.99 | 16.02 | 0.03 | 87 | 05987 | | CLAYSTONE | LT.GY.VTHNB THIN BED OF CLAY, POSSIBLY A BENTONITIC SAMPLED. |
| 7 | 16.02 | 16.92 | 0.90 | 87 | | J | MUDSTONE | SLTY.M.GY.LAM.SSD.BRKN ABUNDANT COALIFIED PLANT FRAGMENTS. MIN OR COALLY STRINGERS. |
| 8 | 16.92 | 17.47 | 0.55 | *85 | | J | MUDSTONE | SLTY.M-DK.GY.LAM.SSD.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 8 | 17.47 | 17.48 | 0.01 | 85 | | J | COAL | C-3.BLK.VTHNB |
| 8 | 17.48 | 17.85 | 0.37 | 85 | | J | MUDSTONE | CARB.DK.GY.SLD ABUNDANT COALIFIED PLANT FRAGMENTS. SOME COAL STRINGERS. GRADATIONAL CONTACTS. |
| 8 | 17.85 | 18.63 | 0.78 | 85 | | | SILTSTONE | SSY.M.GY.LAM.SSD.SLD INCREASE IN SS CONTENT TOWARD BASE. SOME BIOTRB. TOPS UP. |
| 8 | 18.63 | 19.05 | 0.42 | 86 | | | SILTSTONE | SSY.M.GY.LAM.SSD.SLD INTERLAM.MUDST.AND.FG.SS. |
| 9 | 19.05 | 21.02 | 1.97 | *86 | | | SILTSTONE | CLYY.M.GY.LAM.BIOTR.BRKN AS ABOVE. TOPS UP. CORE FRACTURED LENTGHWISE. SPARSE QTZ PRECIPITATED ALONG FRACTURE SURFACES. |
| 9 | 21.02 | 22.00 | 0.98 | 85 | | | ROCK LOSS | |
| 10 | 22.00 | 22.53 | 0.53 | *85 | | | SILTSTONE | CLYY.M.GY.LAM.BIOTR.BRKN INTERLAM.MUDST.AND.FG.SS. 8 CM ZONE OF BIOTRB CONTAINING SMALL BLACK PELLETS (.5 x .5 CM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | 22.53 | 22.78 | 0.25 | 85 | | | SILTSTONE | CLYY.M.GY.LAM.BIOTR.SLD INTERLAM MUDST AND FG SS. |
| 10 | 22.78 | 22.85 | 0.07 | 85 | | | SANDSTONE | FG.LT.GY.THNB.SLD MINOR WISPS OF MUDST. EROSIONAL LOWER C ONTACT. TRUNCATED BEDS, TOPS UP. |
| 10 | 22.85 | 23.98 | 1.13 | *85 | | | MUDSTONE | SLTY.M.GY.LAM MINOR INTERLAM FG SS. MINOR SSD, TOPS U P. |
| 11 | 23.98 | 25.22 | 1.24 | *88 | | | MUDSTONE | SLTY.M.GY.LAM INDISTINCT SSY. SLTST LAMINATIONS. |
| 11 | 25.22 | 25.27 | 0.05 | 88 | | | SANDSTONE | FG.LT.GY.VTHNB.SLD IRREGULAR SHARP CONTACTS. TOPS UP. |
| 11 | 25.27 | 25.61 | 0.34 | 88 | | | MUDSTONE | SLTY.M.GY.LAM.SLD WISPS OF SLTST (INDISTINCT). |
| 11 | 25.61 | 26.03 | 0.42 | 88 | | | MUDSTONE | SLTY.M.GY.BIOTR.BRKN |
| 12 | 26.03 | 27.01 | 0.98 | 88 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN 3 CM ZONE OF SLTY MUDST CONTAINING BLAC K PELLETS NEAR TOP. 14 CM ZONE OF BIOTR B SLTST NEAR CENTER OF INTERVAL (VERY H ARD. DRNG WEATHERING SLTST?). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 12 | 27.01 | 27.35 | 0.34 | 88 | | | MUDSTONE | M-DK.GY.LAM FAINT INTERLAMINATED SLTST. |
| 12 | 27.35 | 27.75 | 0.40 | 88 | | | MUDSTONE | SLTY.M.GY.LAM.SSD.SLD INTERLAM INDISTINCT SLTST. |
| 12 | 27.75 | 27.76 | 0.01 | 88 | | | MUDSTONE | CLYY.M-DK.GY.VTHNB SOFT. SHARP UPPER AND LOWER CONTACT. |
| 12 | 27.76 | 28.19 | 0.43 | 88 | | | MUDSTONE | SLTY.M.GY.LAM.SSD.SLD INTERLAM SLTST. |
| 13 | 28.19 | 28.71 | 0.52 | 88 | | | MUDSTONE | SLTY.M.GY.LAM.SSD.SLD AS ABOVE. |
| 13 | 28.71 | 29.59 | 0.88 | *88 | | | SILTSTONE | M.GY.LAM.SLD INTERLAM MUDST. SANDIER TOWARDS BASE. |
| 13 | 29.59 | 30.23 | 0.64 | 86 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.SLD INTERBEDDED FG SS AND NUMEROUS MUDST LA MINAE. |
| 14 | 30.23 | 31.43 | 1.20 | 85 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.BIOTR.SLD AS ABOVE. SOME BIOTRB IN A 6 CM ZONE. P OSSIBLY HORIZONTAL WRMBUR OR FEEDING TR AILS. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 31.43 | 31.67 | 0.24 | | 83 | | SILTSTONE | M.GY.LAM.SLD INTERLAM MUDST AND MINOR FG SS LAMINAE. GRADATIONAL CONTACTS. GRADES INTO A SS |
| 14 | 31.67 | 31.72 | 0.05 | | 83 | | SANDSTONE | F-MG.PR.LT.GY.MAS.SLD MINOR DISCONTINUOUS MUDST LAMINAE. |
| 14 | 31.72 | 32.28 | 0.56 | | 82 | | SANDSTONE | F-MG.PR.LT.GY.MAS.SLD AS ABOVE. |
| 15 | 32.28 | 33.79 | 1.51 | | *80 | | SANDSTONE | F-MG.PR.LT.GY.MAS.XBDG.BRKN INCREASE IN THE FREQUENCY OF MUDST BAND S AND LAMINAE TOWARDS BASE. 15 CM ZONE CONTAINING TROUGH X-BDG. ONE FRACTURE P ARALLEL TO CORE. |
| 15 | 33.79 | 34.38 | 0.59 | | 85 | | SANDSTONE | CLYY.FG.VPR.LT-M.GY.LAM.BIOTR.BRKN ABUNDANT MUDST LAMINAE. MINOR BIOTRB. |
| 16 | 34.38 | 34.76 | 0.38 | | 87 | | SANDSTONE | CLYY.VFG.VPR.LT-M.GY.MAS.BIOTR.SLD INDISTINCT BANDS THAT ARE ENRICHED IN M UD. |
| 16 | 34.76 | 35.70 | 0.94 | | *90 | | SANDSTONE | CLYY.VFG.VPR.LT-M.GY.MAS.BRKN MINOR DISCONTINUOUS MUDST LAMINAE. 5 CM BAND OF BIOTRB MUDST & SS. TOPS UP (LO AD CAST). |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 35.70 | 36.29 | 0.59 | | 89 | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN INTERLAMINATED MUDST. GRADATIONAL CONTA CTS. 3 CM ZONE OF BLACK PELLETS. FRACTU RES DEVELOPING SUB-PARALLEL TO CORE. |
| 17 | 36.29 | 37.81 | 1.52 | | 88 | | SILTSTONE | LT-M.GY.LAM.VBRKN INDISTINCT INTERLAMINATED MUDST. SEVERA L 3-4 CM BANDS CONTAINING BLACK PELLETS . WELL DEVELOPED FRACTURES PARALLEL TO CORE. |
| 17 | 37.81 | 38.08 | 0.27 | | 88 | | SILTSTONE | LT-M.GY.LAM.SLD INDISTINCT INTERLAMINATED MUDST. 2 CM B AND CONTAINING BLACK PELLETS. HAIR LINE CARBONATE VEIN SUB-PARALLEL TO CORE. |
| 18 | 38.08 | 39.18 | 1.10 | | 87 | | SILTSTONE | SSY.LT-M.GY.LAM.VBRKN INTERLAM MUDST. INTENSE FRACTURING SUB- PARALLEL TO CORE. HAIRLINE CARBONATE VE INS. GRADATIONAL CONTACTS. |
| 18 | 39.18 | 39.44 | 0.26 | | 86 | | SANDSTONE | CLYY.VFG.LT-M.GY.MAS.SSD.BRKN MINOR MUDST LAMINATIONS. CARBONATE VEIN ING SUB-PARALLEL TO CORE (<.5 CM THICK) . VERY MINOR SSD. |

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 39.44 | 39.91 | 0.47 | 86 | | | SANDSTONE | CLYY.VFG.PR.LT-M.GY.MAS.BIOTR.VBRKN FRACTURES SUB-PARALLEL TO CORE (APPROX 10 DEGREES). MINOR DISCONTINUOUS MUDST LAMINATIONS. CARBONATE PRECIP ALONG FRACTURES. |
| 19 | 39.91 | 40.03 | 0.12 | 86 | | | ROCK LOSS | |
| 19 | 40.03 | 40.85 | 0.82 | 85 | | | SANDSTONE | CLYY.VFG.PR.LT.GY.MAS.XBDG.VBRKN CLAY MIXED IN FROM THE BENTONITE GIVES THE SAND THE LIGHT CREAMY COLOR. 2 CM B AND OF SUB-ROUNDED MUDST RIP-UP CLASTS. LOW ANGLE TROUGH X-BDG IN BOTTOM 25 CM TOPS UP. |
| 19 | 40.85 | 41.38 | 0.53 | 85 | | | SANDSTONE | CLYY.VFG.PR.LT.GY.MAS.VBRKN CLAY ENRICHED. VERTICAL FRACTURES WITH A LIGHT COATING OF CARBONATE PERSISTS. MINOR MUDST LAMINAE AND BANDING. |
| 20 | 41.38 | 42.88 | 1.50 | *84 | | | SANDSTONE | CLYY.VFG.PR.LT.GY.MAS.VBRKN AS ABOVE. MINOR SSD. TOPS UP. |
| 20 | 42.88 | 43.27 | 0.39 | 81 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 21 | 43.27 | 43.90 | 0.63 | 79 | | | SANDSTONE | CLYY.VFG.PR.LT.GY.MAS.VBRKN AS ABOVE. VERY FRACTURED. |
| 21 | 43.90 | 44.25 | 0.35 | 78 | | | SANDSTONE | CLYY.VFG.PR.LT.GY.MAS.BRKN CLAY ENRICHED. VERTICAL FRACTURE. |
| 21 | 44.25 | 44.29 | 0.04 | 77 | Q5988 | | BENTONITE | LT.GY.YTHNB.VBRKN BENTONITE ABOVE I SEAM. |
| 21 | 44.29 | 44.48 | 0.19 | 77 | | | ROCK LOSS | |
| 21 | 44.48 | 44.91 | 0.43 | *76 | | | MUDSTONE | SLTY.LT-M.GY.MAS.BRKN 5 CM ZONE OF BLACK PELLETS. |
| 22 | 44.91 | 46.95 | 2.04 | *88 | | | MUDSTONE | SLTY.LT-M.GY.LAM.SSD.BRKN THIN INTERLAMINATED SLTST. THQ 2 CM BANDS CONTAINING BLACK PELLETS. |
| 23 | 46.95 | 48.08 | 1.13 | *82 | | | SILTSTONE | M.GY.LAM.SLD BECOMES MUDDY TOWARDS BASE. ONE ZONE OF ONE MM WIDE BLACK WORM PELLETS(?). SLICKENSIDES W/ TALC. |
| 23 | 48.08 | 48.60 | 0.52 | 82 | 06886 | | MUDSTONE | CARB.M-DK.GY.VBRKN GRADES FROM ABOVE. LOWER 25 CM SAMPLED. |
| 23 | 48.60 | 48.84 | 0.24 | 82 | 06887 I | | COAL | C-3.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------|
| 23 | 48.84 | 49.20 | 0.36 | 83 06887 | I | COAL LOSS | |
| 23 | 49.20 | 49.23 | 0.03 | 83 06887 | I | MUDSTONE | CARB.DK.GY.SLD |
| 23 | 49.23 | 49.32 | 0.09 | 83 06887 | I | COAL | C-2.BRKN |
| 24 | 49.32 | 49.46 | 0.14 | 83 06887 | I | COAL | C-2.SLD |
| 24 | 49.46 | 49.48 | 0.02 | 83 06887 | I | COAL | C-4.SLD |
| 24 | 49.48 | 50.07 | 0.59 | 83 06887 | I | COAL | C-2.VBRKN |
| 24 | 50.07 | 50.16 | 0.09 | 83 06887 | I | COAL | C-2.BRKN |
| 24 | 50.16 | 50.24 | 0.08 | 83 06888 | I | MUDSTONE | CLYY.M.GY.SLD |
| 24 | 50.24 | 50.29 | 0.05 | 83 06888 | I | ROCK LOSS | |
| 24 | 50.29 | 50.33 | 0.04 | 83 06888 | I | COAL LOSS | |
| 24 | 50.33 | 50.42 | 0.09 | 83 06888 | I | COAL | C-3.BRKN BONE COAL BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------|
| 24 | 50.42 | 50.53 | 0.11 | 83 06888 | I | COAL | C-6.SLD MINOR VITRAIN STRINGERS. |
| 24 | 50.53 | 50.73 | 0.20 | 83 06888 | I | COAL LOSS | |
| 24 | 50.73 | 51.29 | 0.56 | 83 06888 | I | COAL | C-2.BRKN |
| 24 | 51.29 | 51.35 | 0.06 | 84 06888 | I | COAL | C-5.SHRD SHEARED & MUDDY. |
| 24 | 51.35 | 51.43 | 0.08 | 84 06888 | I | COAL | C-1.SLD |
| 25 | 51.43 | 51.65 | 0.22 | 84 06888 | I | COAL | C-1.SLD |
| 25 | 51.65 | 51.68 | 0.03 | 84 06888 | I | COAL | C-3.SLD |
| 25 | 51.68 | 51.80 | 0.12 | 84 06888 | I | COAL | C-2.SLD MINOR MUDDY BANDS. |
| 25 | 51.80 | 52.46 | 0.66 | 84 06889 | I | COAL | C-1.BRKN |
| 25 | 52.46 | 52.62 | 0.16 | 84 06889 | I | COAL | C-2.SHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 52.62 | 53.04 | 0.42 | 84 | 06889 | I | COAL | C-1.YBRKN |
| 25 | 53.04 | 53.32 | 0.28 | 84 | 06889 | I | COAL | C-1.YBRKN |
| 26 | 53.32 | 53.55 | 0.23 | 84 | 06889 | I | COAL | C-1.BRKN |
| 26 | 53.55 | 54.54 | 0.99 | 85 | 06890 | | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT CARB PLANT FRAGS & COALY STRINGS. GRADES TOWARD SLTST AT BASE. UPPER 25 CM SAMPLED. |
| 26 | 54.54 | 55.20 | 0.66 | *85 | | | SILTSTONE | M-DK. GY. LAM. BRKN HORIZONTAL NORM. BURROWS. |
| 27 | 55.20 | 56.14 | 0.94 | *84 | | | SILTSTONE | CLYY. LT-M. GY. LAM. SSD. VBRKN INTERLAMINATED MUDST. TOPS UP. GRADES INTO A SS. BOTTOM 10CM RUBBLEED. FRACTURES BETWEEN 10 TO 40 DEGREES. |
| 27 | 56.14 | 57.00 | 0.86 | 85 | | | SANDSTONE | FG. LT. GY. MAS. BRKN LOCALIZED MUDST BANDS. VERY MINOR CARBONATE VEINING. MINOR MUDST. CLASTS SUB-ROUNDED (<2 CM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 28 | 57.00 | 58.92 | 1.92 | 86 | | | SANDSTONE | MG. LT. GY. MAS. BRKN SEVERAL MUDST RIP-UP CLASTS (UP TO 4 CM)) SUB-WELL ROUNDED AT TOP OF INTERVAL. |
| 28 | 58.92 | 59.20 | 0.28 | 87 | | | SANDSTONE | MG. LT. GY. MAS. BRKN VERTICAL FRACTURE. |
| 29 | 59.20 | 59.90 | 0.70 | 88 | | | SANDSTONE | MG. LT. GY. MAS. BRKN TWO 2 CM MUDST BANDS. SEVERAL MUDST RIP UP CLASTS (SUB-ROUNDED, <4CM) ABOVE THE SECOND MUDST BAND. |
| 29 | 59.90 | 60.06 | 0.16 | 88 | | | SANDSTONE | FG. LT-M. GY. THNB. BRKN ABUNDANT SLTY MUDST BANDS (1-2 CM). |
| 29 | 60.06 | 60.15 | 0.09 | 88 | | | SANDSTONE | FG. LT-M. GY. THNB. BRKN ABUNDANT MUDST RIP-UP CLASTS (ELONGATE, SUB-ROUNDED, 3CM LONG, <1CM WIDE). |
| 29 | 60.15 | 60.54 | 0.39 | 89 | | | SANDSTONE | F-MG. LT-M. GY. MAS. BRKN SUB-VERTICAL FRACTURES. 5 CM ZONE OF MUDST LAMINATIONS NEAR BASE. |
| 29 | 60.54 | 60.60 | 0.06 | 89 | | | SANDSTONE | FG. LT-M. GY. VTHNB. SLD ABUNDANT SMALL MUDST RIP-UP CLASTS (ELONGATE, SUB-ROUNDED, 1 CM LONG). |
| 29 | 60.60 | 60.87 | 0.27 | 89 | | | SILTSTONE | SSY. LT-M. GY. LAM. SLD INTERLAMINATED MUDST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 30 | 60.87 | 61.44 | 0.57 | 89 | | SILTSTONE | SSY.LT-M.GY.LAM.SLD AS ABOVE. GRADATIONAL LOWER CONTACT. |
| 30 | 61.44 | 61.87 | 0.43 | *90 | | SANDSTONE | SLTY.FG.LT-M.GY.THNB.BRKN MINOR MUDST LAMINATIONS. GRADATIONAL CO NTACTS. |
| 30 | 61.87 | 62.18 | 0.31 | 90 | | SILTSTONE | SSY.M.GY.LAM.SLD INTERLAMINATED MUDST WHICH INCREASES IN FREQUENCY TOWARD THE BASE. CUS. |
| 30 | 62.18 | 62.83 | 0.65 | 89 | | MUDSTONE | M-DK.GY.THKB.SLD |
| 31 | 62.83 | 63.93 | 1.10 | 88 | | MUDSTONE | M-DK.GY.THKB.SLD QUICK, GRADATIONAL LOWER CONTACT. |
| 31 | 63.93 | 64.64 | 0.71 | 87 | | SANDSTONE | SLTY.FG.LT-M.GY.MAS.SLD ONE ELONGATE MUDST CLAST (5 CM x .5 CM) SUB-ROUNDED. |
| 31 | 64.64 | 64.79 | 0.15 | 86 | | SANDSTONE | SLTY.FG.LT-M.GY.MAS.SLD BAND CONTAINING APPROX A DOZEN MUDST RI P-UP CLAST AS DESCRIBED IN PREVIOUS INT ERVAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87016

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 64.79 | 64.95 | 0.16 | 86 | | SANDSTONE | SLTY.FG.LT-M.GY.MAS.SLD |
| 32 | 64.95 | 65.15 | 0.20 | 86 | | SANDSTONE | SLTY.VFG.LT-M.GY.MAS.SLD MINOR MUDST BANDS AND LAMINATIONS. |
| 32 | 65.15 | 66.18 | 1.03 | *85 | | SANDSTONE | SLTY.VFG.LT-M.GY.MAS.BIOTR.SLD MISPS AND <1 CM BANDS OF MUDST THROUGH UT. 10 CM INTERVAL NEAR TOP APPEARS BIO TRB. END OF HOLE. T.D. = 66.75 M. |

* DENOTES MEASURED BCA
MENPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87016

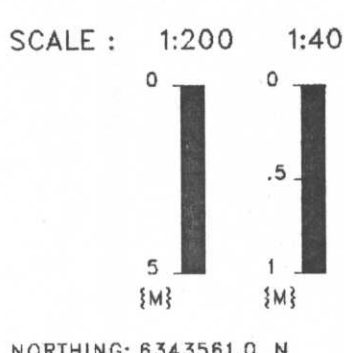
740

GEOLOGIST : SAVOIE

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

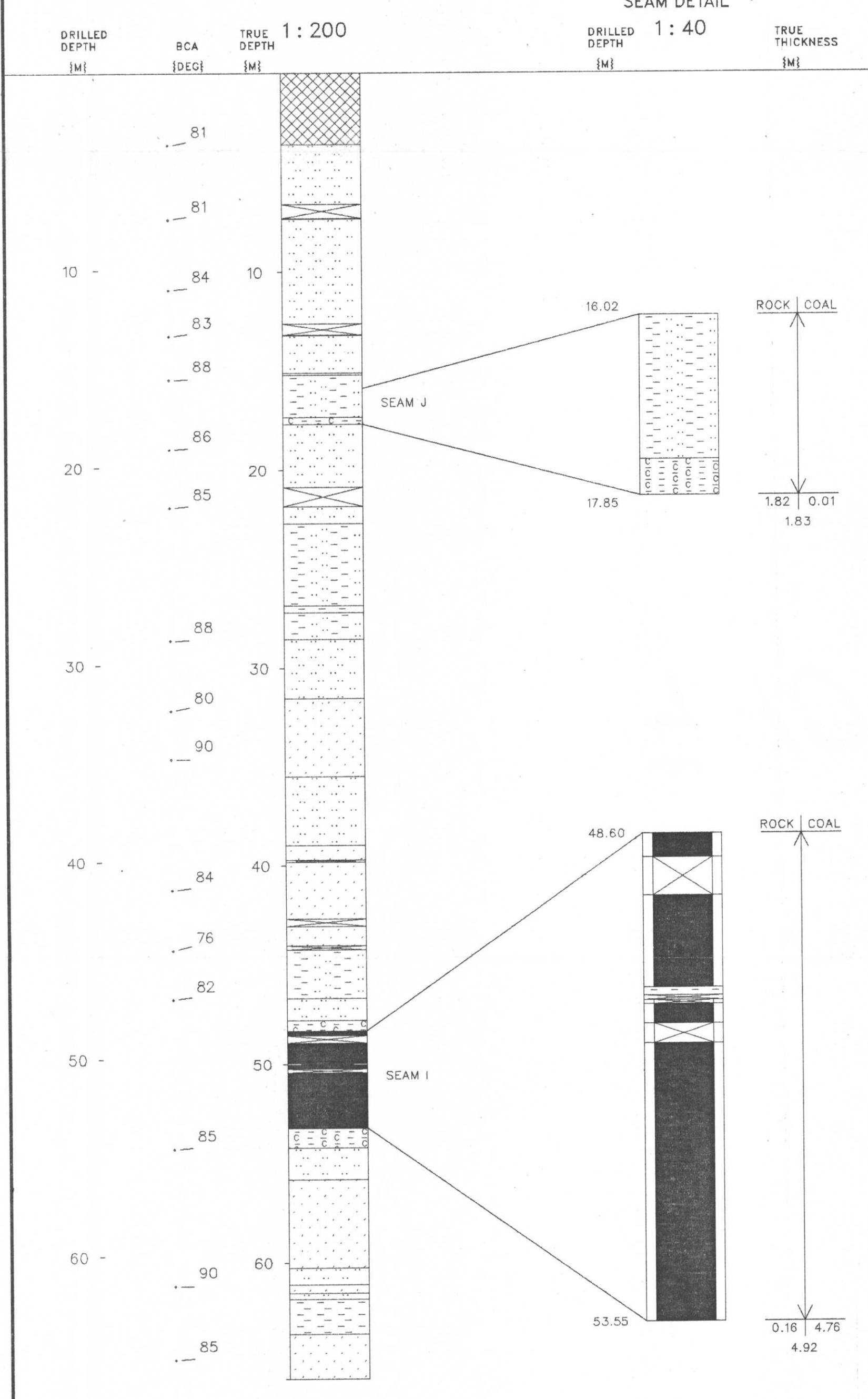


NORTHING: 8343561.0 N
 EASTING: 506631.1 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



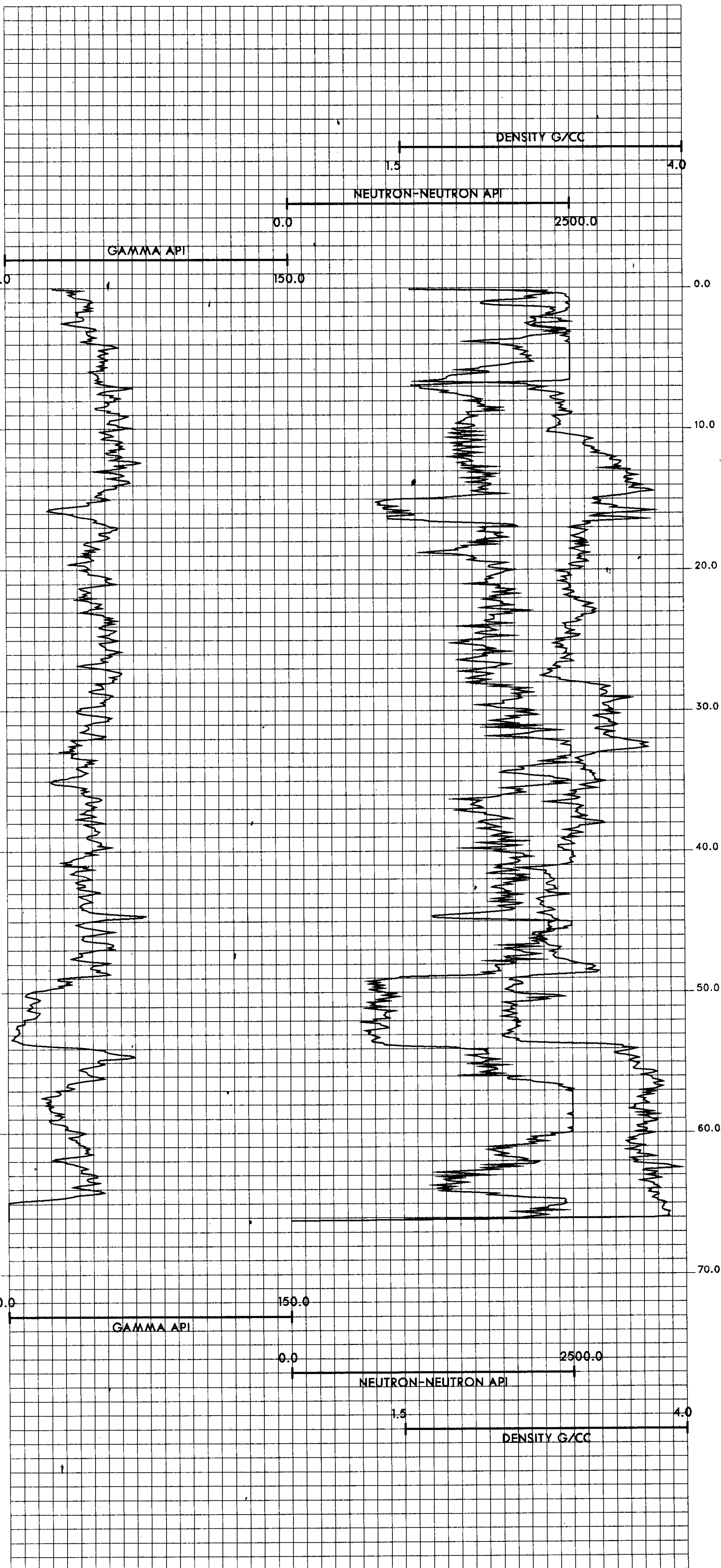
Gulf Canada Resources Limited

Coal Division

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Geophysical Log

| Datasource: KPNLRDDH87016 Log Date: 87-09-16 Company: CENTURY Geologist: SAVOIE | Province: BC Northing: 6343560.00 Lat: 571413 Zone: 9 Easting: 506631.00 Long: 1285325 Measuring Point: GROUND LEVEL Elevation: 1679.1 | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|------------------|----------|----------|--------------|--------------|------|----|-------|---------|------------------------|---------------|------|---|-------|---------|-----------------|------------|------|----|-------|---------|--|
| Scale: 1 to 200.0 Depth Range: 0.0 to 71.0 True Thickness: NO | Comments: 1. LOGGED THROUGH RODS 2. | | | | | | | | | | | | | | | | | | | | | | | | |
| Logs Plotted: | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Description</th> <th style="text-align: left;">Axis Range</th> <th style="text-align: left;">Axis Length</th> <th style="text-align: left;">Smoothing Points</th> <th style="text-align: left;">Tool</th> <th style="text-align: left;">Comments</th> </tr> </thead> <tbody> <tr> <td>1. GAMMA API</td> <td>0.0 to 150.0</td> <td>10.0</td> <td>31</td> <td>9055A</td> <td>1N PIPE</td> </tr> <tr> <td>2. NEUTRON-NEUTRON API</td> <td>0.0 to 2500.0</td> <td>10.0</td> <td>9</td> <td>9055A</td> <td>1N PIPE</td> </tr> <tr> <td>3. DENSITY G/CC</td> <td>1.5 to 4.0</td> <td>10.0</td> <td>15</td> <td>9030A</td> <td>1N PIPE</td> </tr> </tbody> </table> | Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments | 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | 1N PIPE | 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1N PIPE | 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1N PIPE | |
| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments | | | | | | | | | | | | | | | | | | | | |
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | 1N PIPE | | | | | | | | | | | | | | | | | | | | |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1N PIPE | | | | | | | | | | | | | | | | | | | | |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1N PIPE | | | | | | | | | | | | | | | | | | | | |



KPNLRDDH87017

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87017

DATE - 03/04/88

- HISTORY -

START DATE - 09/16/87
END DATE - 09/18/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - LEE

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - SITE E. SEAMS K, J, I, H/I, H/I (2) INTERSECTED.

- LOCATION -

PROVINCE - BC
ELEVATION - 1472.00

ZONE - 9
NORTHING - 6345801.44
EASTING - 507505.26

LICENCE/LEASE NUMBER -

LATITUDE - 571526
LONGITUDE - 1285232

- ORIENTATION -

LENGTH - 118.19
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

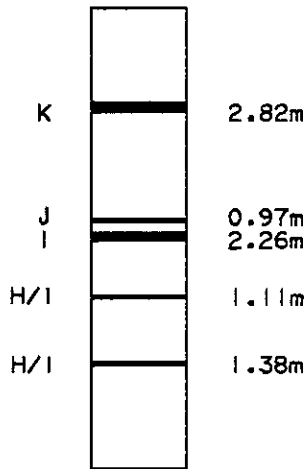
CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87017**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|------------|-----------------------------------------------------------------------|
| | 0.00 | 4.57 | 4.57 | 77 | | | CASING | CASING DEPTH |
| 1 | 4.57 | 4.69 | 0.12 | 77 | | | OVERBURDEN | M. BN. VBRKN SS. RUBBLE. HIGHLY WEATHERED. SOME QTZ. |
| 1 | 4.69 | 5.01 | 0.32 | 77 | | | ROCK LOSS | |
| 1 | 5.01 | 5.18 | 0.17 | 77 | | | SANDSTONE | FER. MG. M. GY. BRKN HIGHLY WEATHERED. |
| 1 | 5.18 | 5.48 | 0.30 | 77 | | | OVERBURDEN | FER. M. BN. VBRKN RUBBLE SS AS ABOVE; HIGHLY WEATHERED. |
| 1 | 5.48 | 5.85 | 0.37 | 77 | | | SANDSTONE | MG. M. GY. BRKN SOME WEATHERING AND QTZ FRACTURE FILL. |
| 1 | 5.85 | 6.45 | 0.60 | 77 | | | SANDSTONE | MG. M. GY. VBRKN WHITE ANGULAR QTZ GRAINS (1 MM); SOME WEATHERING. |
| 1 | 6.45 | 7.32 | 0.87 | 77 | | | ROCK LOSS | |
| 2 | 7.32 | 7.92 | 0.60 | 77 | | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN 1 MM. BIEGE GRAINS CONCENTRATED IN BANDS |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 2 | 7.92 | 8.19 | 0.27 | 77 | | | SANDSTONE | MG. LT-M. GY. VTHNB. SLD |
| 2 | 8.19 | 8.26 | 0.07 | 77 | | | SANDSTONE | MG. LT-M. GY. VTHNB. VBRKN RUBBLE. |
| 2 | 8.26 | 8.63 | 0.37 | 77 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN BANDS OF BIEGE GRAINS. |
| 2 | 8.63 | 9.30 | 0.67 | *77 | | | SANDSTONE | MG. LT-M. GY. MAS. BRKN MORE BIEGE GRAINS. OCCASIONAL QTZ FRACTURE FILL AND OCCASIONAL SILTY NISPS. |
| 3 | 9.30 | 9.49 | 0.19 | 77 | | | SANDSTONE | MG. LT-M. GY. MAS. VBRKN AS ABOVE. |
| 3 | 9.49 | 9.86 | 0.37 | 76 | | | SANDSTONE | MG. LT-M. GY. MAS. SLD AS ABOVE. |
| 3 | 9.86 | 10.10 | 0.24 | 76 | | | SANDSTONE | FG. LT-M. GY. MAS. VBRKN AS ABOVE. |
| 3 | 10.10 | 10.54 | 0.44 | 76 | | | ROCK LOSS | |
| 3 | 10.54 | 10.89 | 0.35 | 75 | | | SANDSTONE | FG. LT-M. GY. MAS. SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 3 | 10.89 | 10.97 | 0.08 | 75 | | | SANDSTONE | FG.LT-M.GY.MAS.VBRKN AS ABOVE. |
| 3 | 10.97 | 11.38 | 0.41 | 75 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN AS ABOVE. SCATTERED BIEGE GRAINS. |
| 4 | 11.38 | 11.69 | 0.31 | 75 | | | SANDSTONE | MG.LT-M.GY.MAS.SLD OCCASIONAL SLTY WISPS. OCCASIONAL SCATTERED BIEGE GRAINS. |
| 4 | 11.69 | 11.92 | 0.23 | 74 | | | SANDSTONE | MG.LT-M.GY.MAS.VBRKN AS ABOVE. |
| 4 | 11.92 | 12.65 | 0.73 | 74 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN MORE SCATTERED BIEGE GRAINS THAN ABOVE. OCCASIONAL QTZ FRACTURE FILL. |
| 4 | 12.65 | 13.08 | 0.43 | 73 | | | SANDSTONE | FG.LT-M.GY.MAS.VBRKN A.FEM BIEGE GRAINS AT TOP. |
| 4 | 13.08 | 13.28 | 0.20 | 73 | | | ROCK LOSS | |
| 5 | 13.28 | 13.54 | 0.26 | 73 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN ABUNDANT QTZ VEINING NEAR TOP. CORE THIS T-OFF AT TOP. NO BIEGE GRAINS. |
| 5 | 13.54 | 13.62 | 0.08 | 73 | | | SANDSTONE | FG.LT-M.GY.MAS.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 5 | 13.62 | 14.33 | 0.71 | 72 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN AS ABOVE, OCCASIONAL QTZ FRACTURE FILL. |
| 5 | 14.33 | 14.70 | 0.37 | 72 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN OCCASIONAL SCATTERED BIEGE GRAINS. |
| 5 | 14.70 | 15.20 | 0.50 | 71 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN SLTY LAM TOWARDS BASE. OCCASIONAL QTZ VEINING BUT NO BIEGE GRAINS. OCCASIONAL DISSEMINATED PYRITE. |
| 6 | 15.20 | 15.42 | 0.22 | 71 | | | SANDSTONE | FG.LT-M.GY.MAS.VBRKN SOME UNCONSOLIDATED MUD (1 CM THICK). |
| 6 | 15.42 | 15.53 | 0.11 | 71 | | | SILTSTONE | M.GY.VBRKN ABUNDANT QTZ FRACTURE FILL. POSSIBLE CORE LOSS. |
| 6 | 15.53 | 16.23 | 0.70 | 71 | | | ROCK LOSS | |
| 6 | 16.23 | 16.28 | 0.05 | 70 | | | SANDSTONE | FG.LT-M.GY.VBRKN RUBBLE... POSSIBLE CORE LOSS OR SLOUGHING FROM UPHOLE. SOME QTZ AND FE-STAINING. |
| 6 | 16.28 | 17.19 | 0.91 | 70 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------|
| 6 | 17.19 | 17.37 | 0.18 | 69 | | SILTSTONE | M.GY.LAM.VBRKN MUDST LAMS PRESENT AND MINOR PYRITE. TALC NEAR BASE. |
| 6 | 17.37 | 17.98 | 0.61 | 69 | | SILTSTONE | M.GY.LAM.VBRKN TALC AND QTZ FRACTURE FILL. HIGHLY FRACTURED. |
| 6 | 17.98 | 18.15 | 0.17 | 69 | | MUDSTONE | DK.GY.LAM.BRKN SLTST LAM. SOME LISTRIC SURFACES. |
| 7 | 18.15 | 18.48 | 0.33 | 68 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 7 | 18.48 | 18.76 | 0.28 | 68 | | SILTSTONE | M.GY.LAM.BRKN SSY LAMS AND QTZ VEINING AT BASE. |
| 7 | 18.76 | 18.85 | 0.09 | 68 | | MUDSTONE | M.GY.VSHRD POORLY CONSOLIDATED; SOFT. |
| 7 | 18.85 | 19.01 | 0.16 | 68 | | MUDSTONE | CARB.BLK.VSHRD UNCONSOLIDATED. COAL FRAGS THROUGHOUT. |
| 7 | 19.01 | 19.08 | 0.07 | 68 | | MUDSTONE | M.GY.SHRD POORLY CONSOLIDATED WITH FG SS BLEBS. |
| 7 | 19.08 | 19.66 | 0.58 | 67 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 7 | 19.66 | 19.92 | 0.26 | 67 | | SILTSTONE | M.GY.SHRD HIGHLY FRACTURED WITH QTZ FILL. SOME FG SS. MODERATE CONSOLIDATED, SOFT. |
| 7 | 19.92 | 20.12 | 0.20 | 67 | | SILTSTONE | M.GY.VBRKN SOME FG SS; RUBBLE. POSSIBLE CORE LOSS. |
| 8 | 20.12 | 21.37 | 1.25 | *66 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL BANDS OF SLTST AVERAGING 8 CM THK & 1 CM APART. SOME QUARTZ FRACTURE FILL. SOME BLACK GRAINS. |
| 8 | 21.37 | 21.47 | 0.10 | 68 | | SILTSTONE | M.GY.LAM.VBRKN POSSIBLE CORE LOSS. MINOR TALC & QTZ. SOME FG SS LAMS. |
| 8 | 21.47 | 21.51 | 0.04 | 68 | | ROCK LOSS | |
| 8 | 21.51 | 21.88 | 0.37 | 69 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS AND WISPS. MINOR SSD. |
| 8 | 21.88 | 21.96 | 0.08 | 69 | | SANDSTONE | VFG.LT.GY.BRKN VERY SOFT, POORLY CONSOLIDATED. |
| 9 | 21.96 | 22.95 | 0.99 | *71 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST BEDS AND WISPS. OCCASIONAL QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 9 | 22.95 | 23.30 | 0.35 | | 71 | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN OCCASIONAL SLTST WISPS AND TALC FRACTURE FILL. |
| 9 | 23.30 | 23.70 | 0.40 | | 72 | | SANDSTONE | FG. LT-M. GY. VTHNB. SSD. BRKN TWIST-OFF AT TOP. LOAD CASTS. . TOPS UP. SLTST RIP-UP CLASTS. . SOME SLTST BEDS AND LAMS. |
| 9 | 23.70 | 23.91 | 0.21 | | 72 | | SANDSTONE | FG. LT-M. GY. VBRKN POORLY CONSOLIDATED & SOFT BUT HIGHLY FRACTURED. COMMON QTZ FRACTURE FILL. |
| 10 | 23.91 | 24.04 | 0.13 | | 72 | | MUDSTONE | M. GY. LAM. SLD HIGHLY FRACTURED, OFTEN BRECCIATED. SOME SLTST. LAMS. |
| 10 | 24.04 | 24.51 | 0.47 | * | 72 | | MUDSTONE | M. GY. LAM. BRKN WITH SLTST. LAM. PLANT FRAGS. ON SOME BEDS. |
| 10 | 24.51 | 24.85 | 0.34 | | 68 | | SILTSTONE | SSY. M. GY. LAM. BRKN MUDST LAMS AND WISPS. QTZ FRACTURE FILL & ABUNDANT PLANT AND COALY WOOD FRAGS IN SOME BEDS. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | 24.85 | 25.17 | 0.32 | * | 65 | 07067 | MUDSTONE | M-DK. GY. LAM. VBRKN SLTST LAMS, COAL STRINGERS, ABUNDANT PLANT FRAGS, AND LISTRIC SURFACES WITH AS SOC. TALC & QTZ. LOWER 8 CM. SAMPLED. |
| 10 | 25.17 | 25.22 | 0.05 | | 64 | 07067 | MUDSTONE | M-DK. GY. VBRKN POORLY CONSOLIDATED. |
| 10 | 25.22 | 25.29 | 0.07 | | 64 | 07067 | MUDSTONE | M-DK. GY. LAM. VBRKN ABUNDANT PLANT FRAGS; P. NORDENSKIOLDII . SLTST LAMS. |
| 10 | 25.29 | 25.31 | 0.02 | | 64 | 05990 | BENTONITE | LT. GY. SLD VERY SOFT. |
| 10 | 25.31 | 25.34 | 0.03 | | 63 | 07067 | MUDSTONE | M-DK. GY. LAM. VBRKN WITH COAL STRINGERS. |
| 10 | 25.34 | 25.41 | 0.07 | | 63 | 07068 K | COAL LOSS | |
| 10 | 25.41 | 25.50 | 0.09 | | 63 | 07068 K | COAL | C-4. BLK. VBRKN WITH C-2 BANDS. CHUNKS AND GROUNDS OF COAL. |
| 11 | 25.50 | 25.53 | 0.03 | | 62 | 07068 K | SILTSTONE | SSY. DK. GY. MAS. SLD VERY CARB SANDY SLTST WITH COMMON MUDDY LAMS. LOWER CONTACT MISSING (ROCK BREAK). |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 25.53 | 25.57 | 0.04 | 62 | 07068 | K | ROCK LOSS | |
| 11 | 25.57 | 25.83 | 0.26 | 62 | 07068 | K | COAL LOSS | |
| 11 | 25.83 | 25.87 | 0.04 | 61 | 07068 | K | COAL | C-5.BLK.LAM.VBRKN COMMON BLK.MUDST.LAMS UP TO 2 MM. MOST COAL LAMS <1 MM WITH OCCASIONAL C-3 LAM S UP TO 1 CM. |
| 11 | 25.87 | 26.06 | 0.19 | 60 | 07068 | K | COAL | C-2.BLK.BRKN DOMINANTLY C-2 COAL WITH OCCASIONAL C-1 ESP. NEAR BASE & RARE C-3 LAMS UP TO 1 CM. VERY RARE SLIGHT FE-STAIN. |
| 11 | 26.06 | 26.08 | 0.02 | 60 | 07068 | K | COAL | C-1.BLK RARE C-2 LAMS. WELL DEVELOPED CONCHOIDA L FRACTURE. |
| 11 | 26.08 | 26.10 | 0.02 | 60 | 07068 | K | COAL | C-5.BLK COMMON VERY THIN (<1 MM) MUDST LAMS. |
| 11 | 26.10 | 26.17 | 0.07 | 59 | 07068 | K | MUDSTONE | CARB.BLK.MAS SLIGHTLY SLTY VERY CARB MUDST. WELL CON SOLIDATED. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------|
| 11 | 26.17 | 26.25 | 0.08 | 59 | 07068 | K | ROCK LOSS | |
| 11 | 26.25 | 27.53 | 1.28 | 56 | 07068 | K | COAL LOSS | |
| 11 | 27.53 | 27.55 | 0.02 | 52 | 07068 | K | COAL | C-1.BLK |
| 11 | 27.55 | 27.66 | 0.11 | 52 | 07068 | K | COAL | C-2.BLK COMMON C-3 & OCCASIONAL C-1 W/IN. |
| 11 | 27.66 | 27.69 | 0.03 | 52 | 07068 | K | COAL | C-3.BLK RARE C-2/C-1 LAMS UP TO 2 MM THICK. |
| 11 | 27.69 | 27.71 | 0.02 | 52 | 07068 | K | COAL | C-4.BLK |
| 11 | 27.71 | 27.75 | 0.04 | 51 | 07068 | K | COAL | C-3.BLK.SLD VERY RARE C-2 LAMS. |
| 11 | 27.75 | 27.83 | 0.08 | 51 | 07068 | K | COAL | C-2.BLK.SLD COMMON C-1 W/IN. |
| 11 | 27.83 | 27.89 | 0.06 | 51 | 07068 | K | COAL | C-3.BLK.BRKN RARE C-2 LAMS & OCCASIONAL THIN (UP TO .5 CM) C-5 LAMS. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 11 | 27.89 | 27.91 | 0.02 | 51 | 07068 | K | COAL | C-4. BLK. PHRD VERY POORLY CONSOLIDATED. |
| 11 | 27.91 | 28.04 | 0.13 | 50 | 07068 | K | COAL | C-4. BLK. BRKN RARE C-3/C-2 ESP NEAR BASE. |
| 11 | 28.04 | 28.09 | 0.05 | 50 | 07068 | K | MUDSTONE | CARB. BLK. BRKN VERY RARE THIN COALY LAMS W/IN. SHARP UPPER & LOWER CONTACTS. |
| 11 | 28.09 | 28.10 | 0.01 | 50 | 07068 | K | COAL | C-3. BLK. BRKN VERY THIN (<1 MM) PYRITE LAMS, COMMON W/IN. MUDST. AND UPPER HALF OF UNIT. |
| 11 | 28.10 | 28.12 | 0.02 | 50 | 07068 | K | MUDSTONE | CARB. BLK. BRKN VERY COMMON THIN COALY LAMS THROUGHOUT. |
| 11 | 28.12 | 28.21 | 0.09 | 49 | 07068 | K | COAL | C-3. BLK. PHRD DOMINANTLY C-3 WITH SOME C-2 & OCCASIONAL CARB MUDST LAMS. |
| 11 | 28.21 | 28.26 | 0.05 | 49 | 07068 | K | MUDSTONE | CARB. BLK. PHRD POORLY CONSOLIDATED, VERY CARB MUDST. PLATY & SOFT. |
| 12 | 28.26 | 28.28 | 0.02 | 49 | 07068 | K | COAL | C-3. BLK. PHRD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 28.28 | 28.32 | 0.04 | 49 | 07068 | K | COAL | C-4. BLK. PHRD |
| 12 | 28.32 | 28.36 | 0.04 | 48 | 07068 | K | COAL | C-3. BLK. VBRKN COMMON C-4. SHARP LOWER CONTACT. |
| 12 | 28.36 | 28.57 | 0.21 | 48 | 07068 | K | MUDSTONE | CARB. DK. GY. BRKN RARE THIN COAL LAMS & VERY THIN BEDS UP TO 1 CM BUT STRONGLY DOMINATED BY MORE RARELY CONSOLIDATED, VERY CARB MUDST. COMMON FRACTURE FILLING. |
| 12 | 28.57 | 28.59 | 0.02 | 47 | 07068 | K | COAL | C-4. BLK. VBRKN COMMON THIN MUDST & C-3 LAMS UP TO 0.5 CM THICK. |
| 12 | 28.59 | 28.63 | 0.04 | 47 | 07068 | K | COAL | C-3. BLK VERY THIN MUDST LAMS W/IN. COMMON C-2. SHARP LOWER CONTACT. |
| 12 | 28.63 | 28.80 | 0.17 | 47 | 07068 | K | COAL | C-3. BLK. BRKN C-2 COAL COMMON THROUGHOUT. WELL CONSOLIDATED. ABRUPT LOWER CONTACT. |
| 12 | 28.80 | 29.27 | 0.47 | *45 | 07069 | K | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN INTLAM VFG SS/SLTST (45/55). LAM HAVE SHARP CONTACTS, SOMETIMES DISRUPTED BY SSD. SLIGHTLY CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 29.27 | 29.77 | 0.50 | 51 | 07069 K | SILTSTONE | DK.GY.MAS.BRKN DOM. SLTST W ONLY V RARE SS NEAR TOP. U NIT BECOMES INCREASINGLY MORE CARB TOMA RDS BASE WITH COMMON THIN COALY LAMS. G RAD LOWER CONTACT. VERY COMMON PLANT DE BRIS THROUGHOUT (ESP NEAR BASE) INCLUDI NG "NILSSONIA SP.", "GINKGC SP" & "CZEK RIGIDA". |
| 12 | 29.77 | 29.99 | 0.22 | 55 | 07069 K | ROCK LOSS | |
| 12 | 29.99 | 30.06 | 0.07 | 57 | 07069 K | COAL LOSS | |
| 12 | 30.06 | 30.13 | 0.07 | 58 | 07069 K | COAL | C-3.BLK.SLD COMMON C-2 THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DOH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 13 | 30.13 | 30.19 | 0.06 | 58 | 07069 K | COAL | C-2.BLK COMMON C-1. |
| 13 | 30.19 | 30.27 | 0.08 | 59 | 07069 K | COAL | C-3.BLK.SLD COMMON THIN MUDST BANDS W/YN UP TO 1 CM . OCCASIONAL C-2. |
| 13 | 30.27 | 30.34 | 0.07 | 60 | 07069 K | COAL | C-3.BLK.BRKN ALMOST ENTIRELY C-3 WITH ONLY VERY RARE C-2 & THIN MUDST LAMS. |
| 13 | 30.34 | 30.41 | 0.07 | 61 | 07069 K | COAL | C-5.BLK.BRKN COMMON MUDST LAMS UP TO 1 MM THICK. |
| 13 | 30.41 | 30.50 | 0.09 | 62 | 07069 K | MUDSTONE | CARB.BLK.SLD VERY CARB MUDST WITH COMMON THIN (UP TO . 5 CM) COAL LAMS. UPPER 1.5 CM VERY C OALY. |
| 13 | 30.50 | 30.53 | 0.03 | 63 | 07069 K | COAL | C-6.BLK.BRKN COMMON THIN MUDST LAMS THROUGHOUT. |
| 13 | 30.53 | 30.54 | 0.01 | 63 | 07069 K | COAL | C-4.BLK.BRKN |
| 13 | 30.54 | 30.55 | 0.01 | 63 | 07069 K | COAL | C-1.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 13 | 30.55 | 30.59 | 0.04 | 63 | 07069 | K | COAL | C-4. BLK. LAM. BRKN VERY COMMON, VERY THIN (<1 MM) MUDST LAMS. |
| 13 | 30.59 | 30.62 | 0.03 | 64 | 07069 | K | MUDSTONE | CARB. BLK COMMON VERY THIN COAL LAMS. |
| 13 | 30.62 | 30.64 | 0.02 | 64 | 07069 | K | COAL | C-3. BLK. BRKN |
| 13 | 30.64 | 30.69 | 0.05 | 64 | 07069 | K | COAL | C-4. BLK. LAM COMMON VERY THIN MUDST LAMS. |
| 13 | 30.69 | 30.70 | 0.01 | 65 | 07069 | K | COAL | C-2. BLK. BRKN |
| 13 | 30.70 | 30.71 | 0.01 | 65 | 07069 | K | COAL | C-4. BLK. LAM. SLD SHARP LOWER CONTACT. |
| 13 | 30.71 | 31.02 | 0.31 | 67 | 07069 | K | COAL LOSS | |
| 13 | 31.02 | 31.26 | 0.24 | 70 | 07070 | | MUDSTONE | SLTY. BLK. BRKN VERY CARB MUDST WITH OCCASIONAL THIN (< 1 MM) COAL LAMS. PLANT DEBRIS COMMON TH ROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------|
| 13 | 31.26 | 31.27 | 0.01 | 71 | 07070 | | MUDSTONE | CLY. M. GY. MAS. BRKN MODERATELY CONSOLIDATED, SLIGHTLY PLIABLE CLAYSTONE. ABRUPT UPPER & LOWER CONTACTS. |
| 13 | 31.27 | 32.03 | 0.76 | *76 | | | SILTSTONE | M-DK. GY. MAS. BRKN MASSIVE, FEATURELESS SLTST WITH VERY RARE THIN CLAY HORIZONS (.5CH) AT .5M. |
| 13 | 32.03 | 32.24 | 0.21 | 75 | | | SILTSTONE | DK. GY. MAS. BRKN SAME A/A. |
| 14 | 32.24 | 32.67 | 0.43 | 74 | | | SILTSTONE | M-DK. GY. LAM. BIOTR. BRKN WITH MUDST LAM. |
| 14 | 32.67 | 32.92 | 0.25 | 73 | | | SANDSTONE | YFG. M. GY. LAM. BRKN WITH SLTST WISPS, PLANT FRAGS. |
| 14 | 32.92 | 33.18 | 0.26 | 73 | | | SANDSTONE | FG. M. GY. MAS. BRKN OCCASIONAL SLTST LAM NEAR BASE. |
| 14 | 33.18 | 33.59 | 0.41 | *72 | | | SILTSTONE | M. GY. LAM. SSD. BRKN WITH MUDST LAMS AND MUD CLASTS (RIP-UPS ?). |
| 14 | 33.59 | 33.92 | 0.33 | 72 | | | SILTSTONE | SSY. M. GY. LAM. SSD. BRKN WITH FG SS LAMS. PYRITE AT TOP. SOME MUD CLASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------|
| 14 | 33.92 | 34.05 | 0.13 | 71 | | | SANDSTONE | FG.M.GY.VTHNB.SLD WITH SLTST LAM. |
| 14 | 34.05 | 34.36 | 0.31 | 71 | | | SILTSTONE | SSY.M.GY.LAM.SSD.SLD WITH MUDST WISPS. |
| 15 | 34.36 | 34.78 | 0.42 | 71 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST INTERBEDS CONTAINING MUDST LAM. OCCASIONAL QTZ FRACTURE FILL. |
| 15 | 34.78 | 34.94 | 0.16 | 70 | | | SILTSTONE | H.GY.LAM.SLD WITH MUDST LAM AND FG SS WISPS. QTZ FRACTURE FILL. |
| 15 | 34.94 | 35.08 | 0.14 | 70 | | | SILTSTONE | H.GY.VTHNB.SLD THIN FG SS & MUDST LAMINAE. WITH OCC TH IN FG SS BEDS. |
| 15 | 35.08 | 35.24 | 0.16 | *70 | | | SANDSTONE | FG.M.GY.VTHNB.SLD WITH BANDS OF SLTST LAM. |
| 15 | 35.24 | 35.45 | 0.21 | 70 | | | SILTSTONE | H.GY.LAM.BRKN WITH FG SS LAM AND MUDST WISPS. |
| 15 | 35.45 | 36.30 | 0.85 | 70 | | | SILTSTONE | H.GY.LAM.BRKN WITH MUDST LAM AND OCCAS FG SS LAM. QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------|
| 15 | 36.30 | 36.34 | 0.04 | 71 | | | SANDSTONE | FG.LT-M.GY.BRKN |
| 16 | 36.34 | 36.88 | 0.54 | *71 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTY WISPS, QTZ FRACTURE FILL. |
| 16 | 36.88 | 37.03 | 0.15 | 71 | | | SILTSTONE | H.GY.LAM.VBRKN WITH MUDST LAM. |
| 16 | 37.03 | 37.35 | 0.32 | 71 | | | ROCK LOSS | |
| 16 | 37.35 | 37.55 | 0.20 | 71 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH SLTY LAMS. QTZ VEINING. |
| 16 | 37.55 | 38.13 | 0.58 | 72 | | | SILTSTONE | H.GY.LAM.VBRKN WITH FG SS AND MUDST. RUBBLE. POSSIBLE CORE LOSS. |
| 16 | 38.13 | 38.36 | 0.23 | 72 | | | SILTSTONE | H.GY.LAM.BRKN WITH FG SS LAM & MUDST WISPS. OCCASIONAL QTZ FRACTURE FILL. |
| 17 | 38.36 | 38.41 | 0.05 | 72 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN WITH MUDST LAM. SMALL SCALE (<1 CM) FAULT DISPLACEMENT. |
| 17 | 38.41 | 38.63 | 0.22 | 72 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 17 | 38.63 | 38.77 | 0.14 | 72 | | SANDSTONE | FG.LT-M.GY.LAM.SLD WITH SLTST INTERLAM. QTZ FRACTURE FILL. |
| 17 | 38.77 | 38.82 | 0.05 | 72 | | SANDSTONE | FG.LT.GY.SLD WITH 1 MM SAND AGGREGATES WHICH ARE SCATTERED IN THE UNITS ABOVE AND BELOW FOR 1 CM. |
| 17 | 38.82 | 39.11 | 0.29 | 72 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH F-MG.BEDS.AND.SLTY.LAM. |
| 17 | 39.11 | 39.43 | 0.32 | 72 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN WITH NUMEROUS.SLTY.LAM. |
| 17 | 39.43 | 39.52 | 0.09 | 73 | | SILTSTONE | M.GY.VTHNB.BRKN FRACTURED WITH MUDDY FILL. |
| 17 | 39.52 | 39.59 | 0.07 | 73 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD SLTY.WISPS. |
| 17 | 39.59 | 39.73 | 0.14 | 73 | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD OCCASIONAL.SLTY.WISPS. |
| 17 | 39.73 | 40.61 | 0.88 | *73 | | SANDSTONE | FG.LT-M.GY.LAM.BRKN SLTST INTERLAM. MUDST WISPS. QTZ VEINING AT 0.67 M DOWN. SILTIER DOWNWARD. |
| 18 | 40.61 | 41.18 | 0.57 | *72 | | SILTSTONE | SSY.M.GY.LAM.BRKN MUDST AND FG SS WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------|
| 18 | 41.18 | 41.38 | 0.20 | 73 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH OCCASIONAL SLTST BEDS AND LAMS. |
| 18 | 41.38 | 41.74 | 0.36 | 73 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH VFG SS INTERBEDS AND DISCONTINUOUS SLTST LAMS. |
| 18 | 41.74 | 41.84 | 0.10 | 74 | | SANDSTONE | FG.LT.GY.BRKN WHITISH GRAINS SCATTERED IN SURROUNDING UNITS FOR 3 CM. |
| 18 | 41.84 | 41.92 | 0.08 | 74 | | SANDSTONE | VFG.M.GY.LAM.SLD WITH FG.SS.LAM. |
| 18 | 41.92 | 42.38 | 0.46 | 75 | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH SLTY.WISPS & QTZ VEINS. |
| 18 | 42.38 | 42.59 | 0.21 | 75 | | SILTSTONE | M.GY.LAM.BRKN WITH FG.SS.LAMS & QTZ VEINS. |
| 19 | 42.59 | 42.85 | 0.26 | 76 | | SILTSTONE | M.GY.LAM.BRKN WITH SSY.LAMS. QTZ FRACTURE FILL. |
| 19 | 42.85 | 43.14 | 0.29 | 77 | | SANDSTONE | FG.M.GY.LAM.SLD INTERLAM WITH SLTST. |
| 19 | 43.14 | 44.15 | 1.01 | *78 | | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH VFG.SS AND OCCASIONAL MUD ST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 19 | 44.15 | 44.18 | 0.03 | 78 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |
| 19 | 44.18 | 44.23 | 0.05 | 78 | | ROCK LOSS | |
| 19 | 44.23 | 44.63 | 0.40 | 78 | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST AND SSS LAM. RHYTHMIC. |
| 20 | 44.63 | 46.74 | 2.11 | *79 | | SILTSTONE | M.GY.LAM.BRKN RHYTHMITES; MUDST AND SLTST. OCC. QTZ VEINING. SLTST BAND 2.5 CM THICK .79 M FROM TOP. |
| 21 | 46.74 | 47.12 | 0.38 | 77 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, FINE FRACTURING NEAR TOP. |
| 21 | 47.12 | 48.85 | 1.73 | *75 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, FINE FRACTURING NEAR TOP. |
| 21 | 48.85 | 48.93 | 0.08 | 76 | | ROCK LOSS | |
| 22 | 48.93 | 50.17 | 1.24 | *76 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, FINE FRACTURING NEAR TOP. |
| 22 | 50.17 | 51.02 | 0.85 | 76 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, FINE FRACTURING NEAR TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------|
| 23 | 51.02 | 51.47 | 0.45 | *76 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, FINE FRACTURING NEAR TOP. SLTST BAND .29 M DOWN 2 CM THICK. |
| 23 | 51.47 | 51.63 | 0.16 | 76 | | SILTSTONE | M.GY.LAM.VBRKN RHYTHMITES OF MUDST & SLTST. |
| 23 | 51.63 | 51.69 | 0.06 | 76 | | ROCK LOSS | |
| 23 | 51.69 | 53.22 | 1.53 | 76 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, SLTST BAND 1.3 CM THICK AT .64 M DOWN. |
| 24 | 53.22 | 55.35 | 2.13 | *77 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, QTZ VEIN AT BASE. OCCASIONAL 2 CM SLTST BANDS. |
| 24 | 55.35 | 55.48 | 0.13 | 79 | | ROCK LOSS | |
| 25 | 55.48 | 56.27 | 0.79 | *80 | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, QTZ VEIN AT TOP. OCCASIONAL 1 CM BN SLTST BAND. |
| 25 | 56.27 | 56.31 | 0.04 | 80 | | BENTONITE | LT.GY GY-BN, SOFT, POORLY CONSOLIDATED. |
| 25 | 56.31 | 56.34 | 0.03 | 81 | | MUDSTONE | DK.GY.LAM.SLD INTERLAM WITH GY-BN CLAY. |

* DENOTES MEASURED BCA

88/03/03

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------|
| 25 | 56.34 | 56.42 | 0.08 | 81 | | | SILTSTONE | CLYY.LT.BN.LAM.BRKN WITH MED GREY SLTY WISPS. |
| 25 | 56.42 | 56.54 | 0.12 | 81 | | | MUDSTONE | DK.GY.LAM.BRKN WITH OCC CLAY BANDS. |
| 25 | 56.54 | 56.67 | 0.13 | 81 | | | MUDSTONE | DK.GY.BRKN POORLY CONSOLIDATED, HIGHLY FRACTURED. |
| 25 | 56.67 | 56.81 | 0.14 | 81 | | | MUDSTONE | GY.LAM.SSD.BRKN WITH SLTST LAM. |
| 25 | 56.81 | 56.86 | 0.05 | 81 | | | BENTONITE | LT.BN GY-BN, SOFT, FRACTURED. |
| 25 | 56.86 | 57.07 | 0.21 | 81 | | J | MUDSTONE | DK.GY.LAM.BRKN WITH ABUNDANT PLANT FRAGS AND COALY HOOD FRAGS. MINOR SLTST. |
| 25 | 57.07 | 57.25 | 0.18 | 81 | | J | SILTSTONE | M.GY.LAM.BIOTR.BRKN |
| 25 | 57.25 | 57.36 | 0.11 | 82 | | J | MUDSTONE | DK.GY.LAM.BRKN SHEARED SURFACES, PLANT FRAGS, & COALY HOOD FRAGS. |

* DENOTES MEASURED BCA

88/03/03

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 25 | 57.36 | 57.84 | 0.48 | 82 | | J | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN WITH SLTST LAM. PLANT AND COALY HOOD FR AGS. FRACTURED. |
| 26 | 57.84 | 57.94 | 0.10 | 82 | | | MUDSTONE | DK.GY.LAM.VBRKN AS ABOVE, SHEAR SURFACES. |
| 26 | 57.94 | 58.03 | 0.09 | 82 | | | MUDSTONE | DK.GY.SHRD HIGHLY FRACTURED. MODERATELY CONSOLIDATED. |
| 26 | 58.03 | 58.18 | 0.15 | 83 | | | ROCK LOSS | |
| 26 | 58.18 | 58.19 | 0.01 | 83 | | | MUDSTONE | DK.GY.VSHRD POORLY CONSOLIDATED. |
| 26 | 58.19 | 58.28 | 0.09 | 83 | | | MUDSTONE | DK.GY.SHRD MODERATELY CONSOLIDATED. |
| 26 | 58.28 | 58.68 | 0.40 | 83 | | | ROCK LOSS | |
| 26 | 58.68 | 58.74 | 0.06 | 83 | | | MUDSTONE | DK.GY.SHRD POORLY CONSOLIDATED. |
| 26 | 58.74 | 59.14 | 0.40 | 84 | | | MUDSTONE | DK.GY.LAM.VBRKN SHEARED SURFACES, ABUNDANT PLANT FRAGS. |

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 59.14 | 59.29 | 0.15 | 84 | | MUDSTONE | DK.GY.LAM.BRKN COAL STRINGERS. ABUNDANT PLANT FRAGS. |
| 26 | 59.29 | 59.32 | 0.03 | 84 | | MUDSTONE | DK.GY.LAM.VBRKN |
| 26 | 59.32 | 59.38 | 0.06 | 84 | | MUDSTONE | DK.GY.LAM.BRKN LISTRIC SURFACES. PLANT FRAGS. |
| 26 | 59.38 | 59.46 | 0.08 | 84 | | BRECCIA | DK.GY.BRKN MUDST BRECCIA UP TO 2 CM LONG. |
| 27 | 59.46 | 60.45 | 0.99 | 85 | 07071 | SILTSTONE | CARB.DK.GY.VBRKN POORLY CONSOLIDATED, SLIGHTLY SHEARED W UDDY SLTST BECOMING MORE CONSOL & SLIGH TLY MORE CARB TOWARDS BASE. LOWER 22 CM SAMPLED. |
| 27 | 60.45 | 60.64 | 0.19 | 85 | 07071 | ROCK LOSS | |
| 27 | 60.64 | 60.67 | 0.03 | 86 | 07071 | MUDSTONE | CLYY.LT-M.GY.MAS.BRKN POORLY CONSOLIDATED. VERY CLYY MUDST. S HARP LOWER CONTACT. |
| 27 | 60.67 | 60.77 | 0.10 | 86 | 07072 I | COAL | C-3.BLK.PHRD RARE C-2. ABRUPT LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 27 | 60.77 | 60.85 | 0.08 | 86 | 07072 I | MUDSTONE | SLTY.DK.GY.VBRKN |
| 27 | 60.85 | 61.02 | 0.17 | 86 | 07072 I | COAL | C-3.BLK.VSHRD DOMINANTLY C-3 WITH COMMON C-4 & ONLY O CCASIONAL C-2. |
| 27 | 61.02 | 61.32 | 0.30 | 86 | 07072 I | COAL | C-4.BLK.VBRKN OCCASIONAL C-3 & VERY RARE C-2. COMMON VERY THIN MUDST LAMS. (OFTEN DISCONTINUO US). |
| 27 | 61.32 | 61.39 | 0.07 | 86 | 07072 I | MUDSTONE | CARB.BLK.VBRKN VERY CARB MUDST WITH COMMON THIN COAL L AMS THROUGHOUT. |
| 27 | 61.39 | 61.52 | 0.13 | 86 | 07072 I | COAL | C-6.BLK.VBRKN |
| 28 | 61.52 | 61.58 | 0.06 | 87 | 07072 I | COAL | C-6.BLK.SHRD SAME A/A. |
| 28 | 61.58 | 62.09 | 0.51 | 87 | 07072 I | COAL LOSS | |
| 28 | 62.09 | 62.81 | 0.72 | 88 | 07072 I | COAL | C-3.BLK.PHRD COMMON C-4 THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 62.81 | 62.93 | 0.12 | 88 | 07072 | 1 | COAL | C-4. BLK. PHRD COMMON C-3. |
| 28 | 62.93 | 63.38 | 0.45 | 88 | 07073 | | MUDSTONE | CARB. DK. GY. MAS. VBRKN MODERATELY CONSOLIDATED. VERY CARB MUDST WITH COMMON PLANT DEBRIS THROUGHOUT. B ECOMES SLIGHTLY LESS CARB. TOWARDS BASE. UPPER 25 CM SAMPLED. |
| 28 | 63.38 | 63.84 | 0.46 | *89 | | | MUDSTONE | SLTY. DK. GY. BRKN SLIGHTLY CARB MUDST, BECOMING INCREASIN GLY SILTIER TOWARDS BASE. VERY THIN CAR B LAM OCCUR THROUGHOUT. OCCASIONAL THIN (< 1 CM) YFG SS LAMS OCCUR AT THE UNIT S BASE. |
| 29 | 63.84 | 64.12 | 0.28 | 87 | | | SILTSTONE | M. GY. LAM. SSD. BRKN MUDST LAMS AND FG SS MISPS. ABUNDANT SH EAR. SUR. FACES. |
| 29 | 64.12 | 64.27 | 0.15 | 86 | | | SANDSTONE | FG. LT-M. GY. LAM. BRKN WITH SLTST. MISPS. LISTRIC SURFACES. |
| 29 | 64.27 | 64.41 | 0.14 | 85 | | | SILTSTONE | M. GY. LAM. BRKN WITH FG. SS. LAM. FRACTURED. |
| 29 | 64.41 | 65.04 | 0.63 | 83 | | | MUDSTONE | DK. GY. LAM. BRKN SLTY MISPS. OCCASIONAL PYRITE BLEBS. OC CASIONAL QTZ VEIN, FRACTURED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 29 | 65.04 | 65.13 | 0.09 | 81 | | | MUDSTONE | DK. GY. VBRKN POORLY CONSOLIDATED MUDST. SOME FG SS. |
| 29 | 65.13 | 65.42 | 0.29 | 80 | | | SANDSTONE | FG. M. GY. VTHNB. SSD. BRKN SLTY LAM. |
| 29 | 65.42 | 65.58 | 0.16 | 79 | | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN OCCASIONAL DISCONTINUOUS SLTY MISPS. |
| 30 | 65.58 | 66.03 | 0.45 | 77 | | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN WITH SLTY MISPS & DISCONTINUOUS LAM. QT Z FRACTURE FILL. |
| 30 | 66.03 | 66.09 | 0.06 | 76 | | | SILTSTONE | M. GY. LAM. SLD SSY LAM AT TOP. MUDST LAM TOWARD BASE. |
| 30 | 66.09 | 66.37 | 0.28 | *75 | | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN MUDST RIP-UPS. DISCONTINUOUS SLTY MISPS & QTZ FRACTURE FILL. MUDST LAM AT BASE. |
| 30 | 66.37 | 66.41 | 0.04 | 74 | | | MUDSTONE | DK. GY. VSHRD POSSIBLE CORE LOSS. |
| 30 | 66.41 | 66.91 | 0.50 | 72 | | | ROCK LOSS | |
| 30 | 66.91 | 67.51 | 0.60 | 68 | | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN OCCASIONAL MUDST RIP-UP, QTZ FRACTURE F ILL. SOME LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 67.51 | 67.54 | 0.03 | 66 | | MUDSTONE | M.GY.SHRD |
| 30 | 67.54 | 67.77 | 0.23 | 65 | | ROCK LOSS | |
| 30 | 67.77 | 67.96 | 0.19 | 64 | | SANDSTONE | MG.LT-M.GY.THNB.SLD MUDST RIP-UPS. |
| 30 | 67.96 | 68.09 | 0.13 | *63 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH MUDST LAM. |
| 30 | 68.09 | 68.21 | 0.12 | 64 | | SANDSTONE | FG.LT-M.GY.LAM.BIOTR.BRKN WITH SLTST LAM, SSD, AND BURROWS. |
| 30 | 68.21 | 68.26 | 0.05 | 65 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD GRITTY SURFACE TO CORE, OCCASIONAL SLTY WISPS. |
| 31 | 68.26 | 68.55 | 0.29 | 67 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN MUDST RIP-UPS AND DISCONTINUOUS LAMS, S OME COARSER GRAINED BANDS WITH 1 MM QTZ GRAINS. OCCASIONA L SHEAR SURFACES. |
| 31 | 68.55 | 68.73 | 0.18 | 70 | | SANDSTONE | FG.LT-M.GY.LAM.SSD.BRKN INTERLAM WITH MUDST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 31 | 68.73 | 69.01 | 0.28 | 73 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH MUDST WISPS AND RIP-UPS. OCCASIONA L QTZ AGGREGATE. |
| 31 | 69.01 | 69.12 | 0.11 | 75 | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH MUDST AND VFG SS LAM. |
| 31 | 69.12 | 69.33 | 0.21 | 77 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL MUDST WISPS. |
| 31 | 69.33 | 69.45 | 0.12 | 78 | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH MUDST & VFG SS LAM. |
| 31 | 69.45 | 69.60 | 0.15 | *80 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN WITH MUDST LAM. OCCASIONAL SHEAR SURFAC ES. AND MINOR SSD. |
| 31 | 69.60 | 70.02 | 0.42 | 79 | | SANDSTONE | FG.LT-M.GY.THNB.BRKN OCCASIONAL F-MG SS BEDS, MUDST WISPS AN D DISCONTINUOUS LAM. |
| 31 | 70.02 | 70.10 | 0.08 | 79 | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD BEDS GRADE FROM CG TO MG SS WITH OCCASI ONAL GRANULES. OCCASIONAL FRACTURES (QT Z FILLED). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 31 | 70.10 | 70.32 | 0.22 | 79 | | | SANDSTONE | VCG.VPR.LT-M.GY.VTHNB.SLD WITH MG SS BANDS AND GRANULES UP TO 6 M. MUDST RIP-UPS AT BASE. QTZ VEINING AND FRACTURE FILL. |
| 32 | 70.32 | 70.97 | 0.65 | 78 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH MUDST LAM, WISPS AND RIP-UPS. HRMB UR - TOPS UP. OCCASIONAL .5 CM QTZ GRAINS NEAR BASE. |
| 32 | 70.97 | 71.24 | 0.27 | *77 | | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH MUDST LAM. |
| 32 | 71.24 | 71.29 | 0.05 | 78 | | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |
| 32 | 71.29 | 71.48 | 0.19 | 78 | | | ROCK LOSS | |
| 32 | 71.48 | 71.58 | 0.10 | 79 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, SSSY LAM TOWARDS BASE. |
| 32 | 71.58 | 71.78 | 0.20 | 80 | | | SANDSTONE | VCG.VPR.LT-M.GY.VTHNB.BRKN BANDS OF GRANULES. FG SS BEDS TOWARDS BASE. MUDST RIP-UPS AT BASE. |
| 32 | 71.78 | 71.95 | 0.17 | 80 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH MUDST WISPS AND LAM, OCCASIONAL GRANULES AT BASE. QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 32 | 71.95 | 72.22 | 0.27 | 81 | | | SANDSTONE | GRAN.VPR.LT-M.GY.THNB WITH MUDST RIP-UPS AND FG SS BANDS, QTZ FRACTURE FILL. |
| 32 | 72.22 | 72.50 | 0.28 | 83 | | | SANDSTONE | MG.LT-M.GY.THNB WITH GRANULAR LAM, ABUNDANT QTZ FRACTURE FILL. |
| 33 | 72.50 | 72.73 | 0.23 | 84 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN INTBD WITH CG SS. ABUNDANT QTZ FRACTURE FILL. |
| 33 | 72.73 | 73.08 | 0.35 | *85 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH MUDST LAM. SSD - TOPS UP. |
| 33 | 73.08 | 73.14 | 0.06 | 84 | | | SANDSTONE | CG.VPR.LT-M.GY.VBRKN WITH MG SS BEDS. |
| 33 | 73.14 | 73.29 | 0.15 | 84 | | | ROCK LOSS | |
| 33 | 73.29 | 73.44 | 0.15 | 83 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN OCCASIONAL GRANULAR BAND, MUDST LAM AND RIP-UPS, OCCASIONAL SHEAR SURFACE. |
| 33 | 73.44 | 73.54 | 0.10 | 82 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD OCCASIONAL MUDST WISP AND RIP-UP, FRACTURED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------|
| 33 | 73.54 | 73.62 | 0.08 | 82 | | | SANDSTONE | GRAN. VPR. LT-M. GY. THNB. SLD QTZ FRACTURE FILL. |
| 33 | 73.62 | 73.77 | 0.15 | 82 | | | SANDSTONE | FG. LT-M. GY. VTHNB. SLD OCCASIONAL MUDST WISP. |
| 33 | 73.77 | 73.95 | 0.18 | 81 | | | SANDSTONE | FG. M. GY. LAM. WRMBU. BRKN ABUNDANT MUDST LAM, SSD, TOPS UP. |
| 33 | 73.95 | 74.16 | 0.21 | *80 | | | SANDSTONE | FG. LT-M. GY. VTHNB. WRMBU. BRKN WITH MUDST LAM AND WISPS, OCCASIONAL LI STRIC SURFACES. |
| 33 | 74.16 | 74.25 | 0.09 | 80 | | | SANDSTONE | FG. LT-M. GY. LAM. WRMBU. SLD WITH MUDST LAM, SSD, HORIZONTAL WRMBUR. |
| 33 | 74.25 | 74.33 | 0.08 | 80 | | | SANDSTONE | FG. LT-M. GY. WITH MUDST LAM AND WISPS, OCCASIONAL 1 MM. QTZ. GRAIN. |
| 33 | 74.33 | 74.65 | 0.32 | 80 | | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN WITH FG. AND CG. BEDS, SILTY WISPS, QTZ. F RACTURE FILL. |
| 34 | 74.65 | 74.69 | 0.04 | 81 | | | SANDSTONE | MG. LT-M. GY. YBRKN SHEARED. |
| 34 | 74.69 | 74.74 | 0.05 | 81 | | | SANDSTONE | MG. LT-M. GY. SLD WITH MUDST RIP-UPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 74.74 | 74.82 | 0.08 | 81 | | | SANDSTONE | FG. LT-M. GY. BIOTR. BRKN WITH MUDST LAM. |
| 34 | 74.82 | 75.17 | 0.35 | 81 | | | SANDSTONE | FG. LT-M. GY. THNB. WRMBU. BRKN OCCASIONAL SLTY WISP, BIOTR. AT TOP. |
| 34 | 75.17 | 75.21 | 0.04 | 81 | | | SANDSTONE | FG. LT-M. GY. YBRKN AS ABOVE. |
| 34 | 75.21 | 76.58 | 1.37 | *82 | | | SANDSTONE | FG. LT-M. GY. BRKN BAND OF BLACK PELLETS AND SMALL CLASTS (3 MM), BANDS OF SLTY LAM, OCCASIONAL WRMBUR, OCCASIONAL QTZ. FRACTURE FILL. |
| 35 | 76.58 | 76.65 | 0.07 | 81 | | | SILTSTONE | M. GY. LAM. BRKN WITH MUDST WISPS. |
| 35 | 76.65 | 77.30 | 0.65 | 80 | | | MUDSTONE | DK. GY. LAM. BRKN SLTY WISPS, PYRITE BLEBS, NUMEROUS PLAN TS: B. FURCATA. |
| 35 | 77.30 | 77.33 | 0.03 | 79 | | H/I | MUDSTONE | DK. GY. LAM. BRKN WITH COAL STRINGERS, QTZ FRACTURE FILL. |
| 35 | 77.33 | 77.38 | 0.05 | 79 | | H/I | COAL | C-3. BLK. YBRKN CRUMBLES. SOME C-2 AND MUDST. |
| 35 | 77.38 | 77.78 | 0.40 | 79 | | H/I | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 35 | 77.78 | 77.85 | 0.07 | 78 | H/I | MUDSTONE | DK.GY.LAM.VBRKN WITH COAL STRINGERS, OCCASIONAL QTZ FRACTURE FILL. |
| 35 | 77.85 | 77.98 | 0.13 | 78 | H/I | MUDSTONE | DK.GY.LAM.VBRKN DISCONTINUOUS PYRITE BANDS, OCCASIONAL COAL STRINGERS, ABUNDANT SHEAR SURFACES. |
| 35 | 77.98 | 78.20 | 0.22 | 78 | H/I | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 35 | 78.20 | 78.22 | 0.02 | 78 | H/I | MUDSTONE | DK.GY.VBRKN FRAGS & PIECES. |
| 35 | 78.22 | 78.43 | 0.21 | 77 | H/I | MUDSTONE | DK.GY.LAM.BRKN COALY WOOD FRAGS, COAL STRINGERS, FRACTURED. |
| 35 | 78.43 | 78.71 | 0.28 | 77 | | SILTSTONE | M.GY.LAM.BRKN WITH MUDDY WISPS, OCCASIONAL PLANT HASH |
| 36 | 78.71 | 78.93 | 0.22 | 76 | | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH MUDST, OCCASIONAL SSS LAM, PLANT FRAGS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------|
| 36 | 78.93 | 79.15 | 0.22 | 76 | | MUDSTONE | DK.GY.LAM.BRKN WITH OCCASIONAL SLTST LAM AT TOP, PLANT FRAGS (P. NORDENSKIOLDII). |
| 36 | 79.15 | 79.17 | 0.02 | 76 | | MUDSTONE | DK.GY.SLD POORLY CONSOLIDATED, SOFT. |
| 36 | 79.17 | 79.20 | 0.03 | 76 | | MUDSTONE | DK.GY.LAM.SLD WITH QTZ VEINS. |
| 36 | 79.20 | 79.22 | 0.02 | 76 | | COAL | C-4.BLK.BRKN POORLY CONSOLIDATED, SOME C-3. |
| 36 | 79.22 | 79.53 | 0.31 | 75 | | MUDSTONE | DK.GY.LAM.BRKN COAL STRINGERS, PLANT FRAGS, SOME LISTR IC SURFACES. |
| 36 | 79.53 | 79.58 | 0.05 | 75 | | MUDSTONE | DK.GY.SHRD WITH THIN COAL STRINGERS, POORLY CONSOLIDATED, QTZ VEINS. |
| 36 | 79.58 | 79.82 | 0.24 | 75 | | MUDSTONE | DK.GY.LAM.BRKN OCCASIONAL COAL STRINGER, WOOD FRAGS. |
| 36 | 79.82 | 80.30 | 0.48 | *74 | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST LAM, WOOD FRAGS. |
| 36 | 80.30 | 80.63 | 0.33 | 75 | | SANDSTONE | YFG.LT-M.GY.LAM.BRKN WITH SLTST LAM AND WISPS, MINOR SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 37 | 80.63 | 81.07 | 0.44 | 75 | | SILTSTONE | M.GY.LAM.SSD.BRKN SSY LAM, MUDST WISPS, OCCASIONAL PLANT FRAGS. |
| 37 | 81.07 | 81.14 | 0.07 | 76 | | SILTSTONE | M.GY.LAM.SSD.VBRKN |
| 37 | 81.14 | 81.34 | 0.20 | 76 | | ROCK LOSS | |
| 37 | 81.34 | 82.86 | 1.52 | *77 | | SILTSTONE | M.GY.LAM.BRKN MUDST LAM, SSY WISPS, ABUNDANT PLANT FRAGS: ABUNDANT P. NORDENSKIOLDII, SPHERO PTERIS SP. |
| 38 | 82.86 | 83.46 | 0.60 | 79 | | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH MUDST, SSY LAM, TALC BAND 1 MM THICK AT 0.07 M DOWN. |
| 38 | 83.46 | 83.52 | 0.06 | 79 | | SILTSTONE | M.GY.LAM.VBRKN WITH MUDST LAM. |
| 38 | 83.52 | 83.89 | 0.37 | 80 | | MUDSTONE | M.GY.LAM.BRKN WITH SLTY LAM, OCCASIONAL PLANT FRAGS. (P. NORDENSKIOLDII). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 38 | 83.89 | 84.94 | 1.05 | *81 | | MUDSTONE | M.GY.LAM.BRKN WITH SLTST LAM, OCCASIONAL SLTST CLAST, OCCASIONAL SSY LAM, OCCASIONAL PLANT FRAG: G. NANA. |
| 39 | 84.94 | 85.39 | 0.45 | 81 | | SILTSTONE | M.GY.LAM.BRKN MUDST LAM AND WISPS, RARE PLANT FRAG: P. NORDENSKIOLDII. |
| 39 | 85.39 | 85.71 | 0.32 | 80 | | SILTSTONE | M.GY.LAM.SSD.BRKN FG SS LAM, MUDST WISPS, OCCASIONAL PLANT FRAG: G. NANA, B. FURCATA. |
| 39 | 85.71 | 85.73 | 0.02 | 80 | | SILTSTONE | M.GY.VBRKN |
| 39 | 85.73 | 86.78 | 1.05 | 80 | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST LAM, QTZ VEINS AT TOP, OCCASIONAL PLANT FRAGS. TWIST-OFF AT .52 M DOWN, SILTIER DOWNWARDS. |
| 39 | 86.78 | 86.94 | 0.16 | 79 | | SILTSTONE | DK.GY.LAM.BRKN WITH MUDST WISPS. |
| 40 | 86.94 | 87.97 | 1.03 | *79 | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN WITH SLTST LAM, LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------|
| 40 | 87.97 | 88.03 | 0.06 | 79 | | | SANDSTONE | FG. M. GY. SHRD HIGHLY FRACTURED. |
| 40 | 88.03 | 88.09 | 0.06 | 79 | | | SANDSTONE | FG. M. GY. LAM. BRKN WITH SLTST LAM. |
| 40 | 88.09 | 88.65 | 0.56 | 79 | | | SILTSTONE | SSY. M. GY. LAM. BRKN WITH MUDST LAM. |
| 40 | 88.65 | 88.73 | 0.08 | 79 | | | MUDSTONE | DK. GY. LAM. YBRKN WITH SLTST LAM. |
| 40 | 88.73 | 89.03 | 0.30 | 79 | | | ROCK LOSS | |
| 41 | 89.03 | 89.41 | 0.38 | 80 | | | SILTSTONE | M. GY. LAM. SSD. BRKN WITH MUDST LAM. PLANT FRAGS: MILSSONIA SP., B. GRACILIS. |
| 41 | 89.41 | 89.56 | 0.15 | 80 | | | SILTSTONE | M. GY. LAM. SLD HIGHLY FRACTURED FORMING BRECCIA, QTZ V EINS, PYRITE BLEBS. |
| 41 | 89.56 | 89.95 | 0.39 | 80 | | | SILTSTONE | M. GY. LAM. BRKN WITH SSY LAM AND MUDST LAM. |
| 41 | 89.95 | 90.94 | 0.99 | *80 | | | SILTSTONE | M. GY. LAM. BRKN MUDST LAM, SSY LAM, RHYTHMIC WITH BREAK S. OF THICKER LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 42 | 90.94 | 91.62 | 0.68 | 78 | | | SILTSTONE | M. GY. LAM. BRKN WITH VFG SS LAM, OCCASIONAL MUDST WISPS , OCCASIONAL PLANT FRAG. |
| 42 | 91.62 | 92.72 | 1.10 | *75 | | | SILTSTONE | M. GY. LAM. BRKN WITH MUDST LAM, ABUNDANT PLANT FRAGS ON SOME BEDS. |
| 42 | 92.72 | 92.92 | 0.20 | 74 | | | SILTSTONE | SSY. M. GY. LAM. BRKN MUDST LAM. |
| 43 | 92.92 | 93.28 | 0.36 | 74 | | | MUDSTONE | M-DK. GY. LAM. BRKN INTERLAM. WITH SLTST. |
| 43 | 93.28 | 93.63 | 0.35 | 74 | | | MUDSTONE | M-DK. GY. LAM. BRKN AS ABOVE WITH PLANT FRAGS: P. NORDENSKI OLDII. |
| 43 | 93.63 | 94.06 | 0.43 | 74 | | | SILTSTONE | M. GY. LAM. BRKN WITH MUDST & SS LAMS, MINOR SSD, ABUNDA NT PLANT FRAGS, COALY WOOD FRAGS. |
| 43 | 94.06 | 94.50 | 0.44 | 73 | | | SILTSTONE | M. GY. LAM. BRKN AS ABOVE, BUT OCCASIONAL PLANT FRAGS, O CCASIONAL COAL STRINGER NEAR BASE. |
| 43 | 94.50 | 94.56 | 0.06 | 73 | | | SILTSTONE | M. GY. LAM. SSD. SLD MUDST. WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 94.56 | 94.82 | 0.26 | 73 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST LAM, ABUNDANT PLANT FRAGS: C VIRGINIENSIS, P. NORDENSKIOLDII, N. C ANADENSIS, COALY HOOD FRAG. SOME LISTRIC SURFACES. |
| 43 | 94.82 | 95.01 | 0.19 | 73 | | | SILTSTONE | M.GY.LAM.BRKN MUDST LAM, OCCASIONAL PLANT FRAGS, SOME LISTRIC SURFACES. |
| 44 | 95.01 | 95.37 | 0.36 | 72 | 07074 | | MUDSTONE | CARB.BLK.BRKN WELL CONSOLIDATED VERY CARB MUDST WITH COMMON PLANT DEBRIS & COALY LAMS THROUGHOUT. GRADATIONAL LOWER CONTACT. LOWER 25 CM SAMPLED. |
| 44 | 95.37 | 95.56 | 0.19 | 72 | 07075 | H/I2 | COAL | C-4.BLK.BRKN COMMON THIN C-3 BANDS & OCCASIONAL C-5/C-6 BANDS & LAM. |
| 44 | 95.56 | 95.75 | 0.19 | *72 | 07075 | H/I2 | COAL | C-3.BLK.BRKN OCCASIONAL THIN C-4/C-5 BANDS & RARE C-2 LAM. |
| 44 | 95.75 | 95.85 | 0.10 | 70 | 07075 | H/I2 | COAL | C-5.BLK.BRKN THIN C-3 LAMS WITH INTERLAM. C-5/C-6/H/DST BANDS UP TO .5 CM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------|
| 44 | 95.85 | 95.86 | 0.01 | 69 | 07075 | H/I2 | COAL | C-1.BLK.SLD ABRUPT LOWER CONTACT. |
| 44 | 95.86 | 95.87 | 0.01 | 69 | 07075 | H/I2 | COAL | C-6.BLK.SLD |
| 44 | 95.87 | 96.31 | 0.44 | 65 | 07075 | H/I2 | COAL LOSS | |
| 44 | 96.31 | 96.36 | 0.05 | 61 | 07075 | H/I2 | ROCK LOSS | |
| 44 | 96.36 | 96.47 | 0.11 | 60 | 07075 | H/I2 | MUDSTONE | CARB.DK.GY.BRKN COMMON THIN COAL LAMS. |
| 44 | 96.47 | 96.60 | 0.13 | 58 | 07075 | H/I2 | COAL | C-3.BLK.SLD COMMON THIN C-2/C-1 LAM. |
| 44 | 96.60 | 96.63 | 0.03 | 57 | 07075 | H/I2 | COAL | C-5.BLK.VBRKN THIN C-2/C-3 LAMS COMMONLY INTERLAM WITH H.CARB.MUDST. |
| 44 | 96.63 | 96.69 | 0.06 | 56 | 07075 | H/I2 | COAL | C-3.BLK.SLD |
| 44 | 96.69 | 96.73 | 0.04 | 56 | 07075 | H/I2 | MUDSTONE | CARB.BLK.BRKN COMMON THIN COAL LAMS THROUGHOUT. |
| 44 | 96.73 | 96.84 | 0.11 | 54 | 07075 | H/I2 | COAL | C-3.BLK.SLD OCCASIONAL THIN C-2 BANDS W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 44 | 96.84 | 96.92 | 0.08 | | 53 07075 | H/12 | COAL LOSS | |
| 44 | 96.92 | 97.19 | 0.27 | | 50 07076 | | SILTSTONE | CARB.DK.GY.BRKN COMMONLY FRACTURED SLIGHT CARB SLTST. |
| 45 | 97.19 | 97.36 | 0.17 | | 47 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN WITH FG SS AND SLTST MISPS, HIGHLY FRACTURED, BDG DISPLACED, QTZ FRACTURE FILL |
| 45 | 97.36 | 97.80 | 0.44 | *42 | | | SANDSTONE | VFG.M.GY.LAM.BIOTR.BRKN INTERLAM WITH SLTST, QTZ VEINING WITH SOME GREEN COLOUR (2.5 CM THICK) Q.I.M.D OWN, SOME BIOTRB ZONES. |
| 45 | 97.80 | 97.97 | 0.17 | *40 | | | SILTSTONE | M.GY.LAM.BRKN WITH SSS MISPS, MUDDY LAM, ABUNDANT SHEAR SURFACES. |
| 45 | 97.97 | 98.17 | 0.20 | *12 | | | SANDSTONE | FG.LT-M.GY.LAM.BRKN WITH SLTST INTERLAM. |
| 45 | 98.17 | 98.35 | 0.18 | 11 | | | SILTSTONE | M.GY.BRKN SSS LAM, QTZ FRACTURE FILL. |
| 45 | 98.35 | 98.48 | 0.13 | 10 | | | SANDSTONE | VFG.M.GY.LAM.VBRKN WITH SLTY MISPS, ABUNDANT QTZ VEINING, POSSIBLE CORE LOSS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------|
| 45 | 98.48 | 98.78 | 0.30 | *09 | | | SILTSTONE | M.GY.LAM.BRKN OCCASIONAL SSS LAM, SLTST CLASTS. |
| 45 | 98.78 | 98.90 | 0.12 | 06 | | | SILTSTONE | M.GY.LAM.SLD WITH SSS LAM. |
| 46 | 98.90 | 99.43 | 0.53 | *01 | | | SILTSTONE | M.GY.LAM.BRKN WITH SSS LAM, OCCASIONAL QTZ VEIN. |
| 46 | 99.43 | 99.45 | 0.02 | 03 | | | SILTSTONE | M.GY.VBRKN AS ABOVE, QTZ VEINING. |
| 46 | 99.45 | 99.53 | 0.08 | 04 | | | SANDSTONE | VFG.M.GY.LAM.SLD WITH SLTST LAM. |
| 46 | 99.53 | 99.55 | 0.02 | 04 | | | SILTSTONE | M.GY.VBRKN |
| 46 | 99.55 | 99.76 | 0.21 | 05 | | | SILTSTONE | M.GY.LAM.BRKN WITH FG SS, HIGHLY FRACTURED (QTZ FILL D). |
| 46 | 99.76 | 100.59 | 0.83 | 09 | | | SILTSTONE | M.GY.BRKN FEW FEATURES, LISTRIC SURFACES, OCCASIONAL SSD. |
| 47 | 100.59 | 101.66 | 1.07 | 17 | | | SILTSTONE | M.GY.BRKN WITH MUDDY MISPS, LISTRIC SURFACES, COAL/QTZ BLEB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 47 | 101.66 | 102.14 | 0.48 | *24 | | | SILTSTONE | M.GY.SSD.BRKN WITH MUDDY LAM, QTZ FRACTURE FILL. |
| 47 | 102.14 | 102.21 | 0.07 | 29 | | | SILTSTONE | M.GY.SLD HIGHLY FRACTURED, BRECCIATED. |
| 47 | 102.21 | 102.59 | 0.38 | 33 | | | SILTSTONE | M-DK.GY.BRKN FRACTURES WITH CLAY FILL AND SOME QTZ F ILL, ABUNDANT LISTRIC SURFACES. |
| 48 | 102.59 | 102.63 | 0.04 | 37 | | | SILTSTONE | M.GY.VBRKN ABUNDANT QTZ VEIN. |
| 48 | 102.63 | 102.74 | 0.11 | 38 | | | CLAYSTONE | M.GY.SHRD POORLY CONSOLIDATED, MUDDY CLAY WITH AB UNDANT PEBBLES, LOOKS LIKE TILL. |
| 48 | 102.74 | 103.09 | 0.35 | 42 | | | MUDSTONE | DK.GY.BRKN LISTRIC SURFACES, ABUNDANT COALY PLANT FRAGS. |
| 48 | 103.09 | 103.15 | 0.06 | 46 | | | MUDSTONE | DK.GY.VBRKN AS ABOVE. |
| 48 | 103.15 | 103.76 | 0.61 | *52 | | | MUDSTONE | SLTY,DK,GY.SHRD OCCASIONAL QTZ FILLED FRACTURE, PLANT F RAGS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 48 | 103.76 | 103.82 | 0.06 | 51 | | | MUDSTONE | DK.GY.VSHRD |
| 48 | 103.82 | 104.03 | 0.21 | 51 | | | SILTSTONE | M.GY.BRKN ABUNDANT QTZ FRACTURE FILL, PYRITE BLEB S (STRINGERS NEAR BASE). |
| 48 | 104.03 | 104.24 | 0.21 | 51 | | | MUDSTONE | DK.GY.BRKN COAL STRINGERS, LISTRIC SURFACES, QTZ W ITH COAL STRINGERS. |
| 48 | 104.24 | 104.33 | 0.09 | 50 | | | SANDSTONE | FG.M.GY.BRKN WITH QTZ FRACTURE FILL, OCCASIONAL MUDS T LAM (SHRD). |
| 49 | 104.33 | 104.35 | 0.02 | 50 | | | SILTSTONE | M.GY.LAM.VBRKN WITH MUDST. |
| 49 | 104.35 | 104.39 | 0.04 | 50 | | | SANDSTONE | FG.M.GY.VBRKN QTZ FRACTURE FILL. |
| 49 | 104.39 | 104.45 | 0.06 | 50 | | | SILTSTONE | M.GY.LAM.SLD WITH MUDST WISPS, QTZ FRACTURE FILL. |
| 49 | 104.45 | 104.52 | 0.07 | 50 | | | SANDSTONE | FG.M.GY.BRKN OCCASIONAL MUDST WISP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 49 | 104.52 | 104.61 | 0.09 | 50 | | SILTSTONE | CLY. LT. GY. LAM. SLD. MUDST WISPS, SMALL SCALE FAULTS. |
| 49 | 104.61 | 104.72 | 0.11 | 50 | | SANDSTONE | VFG. M. GY. LAM. SSD. BRKN WITH MUDDY WISP. |
| 49 | 104.72 | 105.34 | 0.62 | *49 | | SANDSTONE | FG. M. GY. VTHNB. BRKN SLTY WISPS, QTZ FRACTURE FILL, OCCASIONAL MUDST RIP-UP TOWARDS BASE. |
| 49 | 105.34 | 105.43 | 0.09 | 47 | | SANDSTONE | FG. M. GY. LAM. BRKN WITH MUDST LAM AND WISPS, LISTRIC SURFACES. |
| 49 | 105.43 | 105.85 | 0.42 | 45 | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN INTERBEDDED MG AND CG SS. ABUNDANT QTZ VEINING AND FRACTURE FILL, OCC MUDST RIP-UP. |
| 49 | 105.85 | 105.93 | 0.08 | 43 | | SANDSTONE | VFG. M. GY. BRKN WITH MUDST RIP-UPS, QTZ FRACTURE FILL. |
| 49 | 105.93 | 106.13 | 0.20 | 43 | | SANDSTONE | FG. M. GY. BRKN WITH MUDST LAM, ABUNDANT QTZ FRACTURE FILL, BRECCIATED. |
| 50 | 106.13 | 106.16 | 0.03 | 42 | | SILTSTONE | CARB. DK. GY. MAS. BRKN MUDDY SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 50 | 106.16 | 106.27 | 0.11 | 41 | | COAL | C-4. BLK. VSHRD COMMON C-3 & C-5 W/IN. LISTRIC SURFACES THROUGHOUT. ABRUPT LOWER CONTACT. |
| 50 | 106.27 | 106.90 | 0.63 | 39 | | MUDSTONE | CARB. DK. GY. MAS. VBRKN SHEARED. SLIGHTLY SLTY. VERY CARB. LISTRIC SURFACES COMMON. |
| 50 | 106.90 | 107.28 | 0.38 | 36 | | MUDSTONE | CARB. DK. GY. MAS. VBRKN SAME A/A BUT MORE SILTY. COMMONLY BRECCIATED & FRACTURED. |
| 50 | 107.28 | 107.33 | 0.05 | 34 | | COAL | C-4. BLK. VSHRD LISTRIC SURFACES COMMON. |
| 50 | 107.33 | 107.58 | 0.25 | 33 | | MUDSTONE | CARB. DK. GY. MAS. BRKN COMMONLY FRACTURED & SLIGHT BRECCIATED SILTY CARB MUDST. LISTRIC SURFACES COMMON. |
| 51 | 107.58 | 107.94 | 0.36 | 31 | | MUDSTONE | DK. GY. LAM. BRKN WITH SLTST LAM & WISPS, ABUNDANT QTZ. FRACTURE FILL & VEINS, SHEAR SURFACE. |
| 51 | 107.94 | 108.01 | 0.07 | 30 | | SANDSTONE | VFG. LT-M. GY. SLD ABUNDANT QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 51 | 108.01 | 108.55 | 0.54 | *28 | | | SILTSTONE | M.GY. LAM. SSD. BRKN WITH MUDST LAM, HIGHLY FRACTURED (QTZ FILLED). |
| 51 | 108.55 | 108.65 | 0.10 | | 27 | | SANDSTONE | FG. LT-M.GY. BRKN POORLY CONSOLIDATED, HIGHLY FRACTURED, BRECCIA. |
| 51 | 108.65 | 109.41 | 0.76 | | 25 | | SANDSTONE | FG. LT-M.GY. MAS. BRKN HIGHLY FRACTURED (QTZ FILLED). |
| 52 | 109.41 | 109.70 | 0.29 | | 22 | | SANDSTONE | MG. LT-M.GY. MAS. BRKN QTZ FRACTURE FILL. |
| 52 | 109.70 | 110.78 | 1.08 | | 20 | | SANDSTONE | MG. LT-M.GY. MAS. BRKN OCCASIONAL SLTST LAM, SLTST RIP-UPS AT .68 M DOWN, HIGHLY FRACTURED (QTZ FILLED). |
| 52 | 110.78 | 110.88 | 0.10 | | 17 | | SANDSTONE | MG. LT-M.GY. MAS. VBRKN AS ABOVE. |
| 52 | 110.88 | 111.14 | 0.26 | | 16 | | SANDSTONE | MG. LT-M.GY. THNB. BRKN AS ABOVE, OCCASIONAL SLTST CLAST. |
| 53 | 111.14 | 111.33 | 0.19 | | 15 | | SANDSTONE | MG. LT-M.GY. THNB. SLD INTERBEDDED WITH SLTST, RIPPLE MARKS, FINE QTZ FILLED FRACTURES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 53 | 111.33 | 111.41 | 0.08 | | 15 | | SILTSTONE | M.GY. VTHNB. SLD MUDST WISPS, FRACTURED, SSS WISPS, SS BED. |
| 53 | 111.41 | 111.62 | 0.21 | *14 | | | SANDSTONE | FG. LT-M.GY. VTHNB. BRKN MUDDY WISPS, RIPPLE MARKS, QTZ FILLED FRACTURES. |
| 53 | 111.62 | 112.56 | 0.94 | | 21 | | SANDSTONE | FG. LT-M.GY. VTHNB. SSD. BRKN MUDST LAM, HORIZONTAL WRMBUR, SOME SHEAR SURFACES. |
| 53 | 112.56 | 112.99 | 0.43 | | 30 | | SILTSTONE | M.GY. VTHNB. SSD. BRKN INTERBEDDED WITH FG SS, ABUNDANT QTZ FILLED FRACTURES NEAR BASE. |
| 54 | 112.99 | 113.64 | 0.65 | | 37 | | SANDSTONE | FG. LT-M.GY. VTHNB. WRMBUR. BRKN WITH MUDST LAM, WRMBUR, SHALLOW BCA'S (CLOSE TO ONE DEGREE). |
| 54 | 113.64 | 114.98 | 1.34 | *49 | | | SANDSTONE | FG. LT-M.GY. VTHNB. BRKN WITH ABUNDANT SLTST CLASTS, MUDDY WISPS, OCCASIONAL QTZ FRACTURE FILL. |
| 55 | 114.98 | 115.30 | 0.32 | *13 | | | SANDSTONE | VFG. M. GY. LAM. SSD. BRKN WITH SLTST LAM, BAND CONTAINING 3MM AGG REGATES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87017

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 55 | 115.30 | 115.55 | 0.25 | 13 | | SANDSTONE | YFG. M. GY. LAM. SSD. BRKN AS ABOVE, ABUNDANT SHEAR SURFACES. |
| 55 | 115.55 | 115.85 | 0.30 | 13 | | SANDSTONE | YFG. M. GY. LAM. SSD. YBRKN AS ABOVE, ABUNDANT SHEAR SURFACES. |
| 55 | 115.85 | 116.68 | 0.83 | 13 | | SANDSTONE | YFG. M. GY. LAM. SSD. BRKN AS ABOVE, ABUNDANT SHEAR SURFACES, QTZ FRACTURE FILL. |
| 56 | 116.68 | 118.19 | 1.51 | 13 | | SANDSTONE | YFG. M. GY. LAM. SSD. BRKN AS ABOVE, OCCASIONAL SLTST RIP-UP, PYRITE BLENDS AT BASE. RIPPKS. END OF HOLE. T.D. = 124.05 M. |

* DENOTES MEASURED BCA NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87017

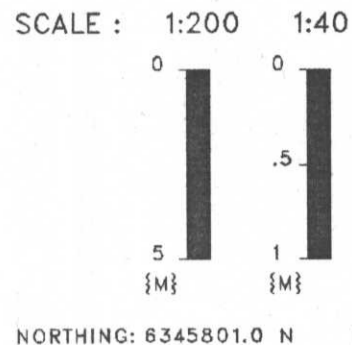
740

GEOLOGIST : LEE

DATE : MAR 08/88

DRAWING NO. :

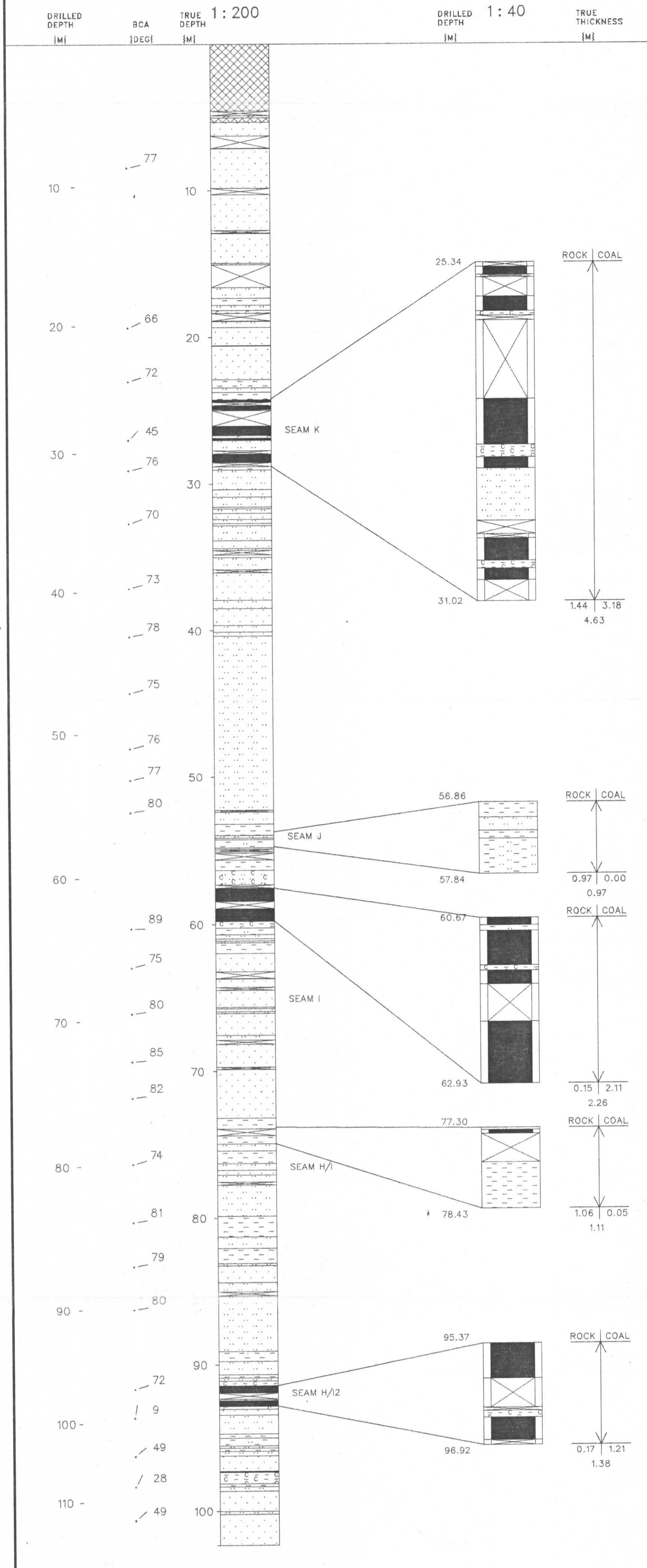
LITHOLOGIC SYMBOLS



NORTHING: 6345801.0 N
 EASTING: 507505.2 E
 INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87017**
 Log Date: 87-09-17
 Company: CENTURY
 Geologist: LEE

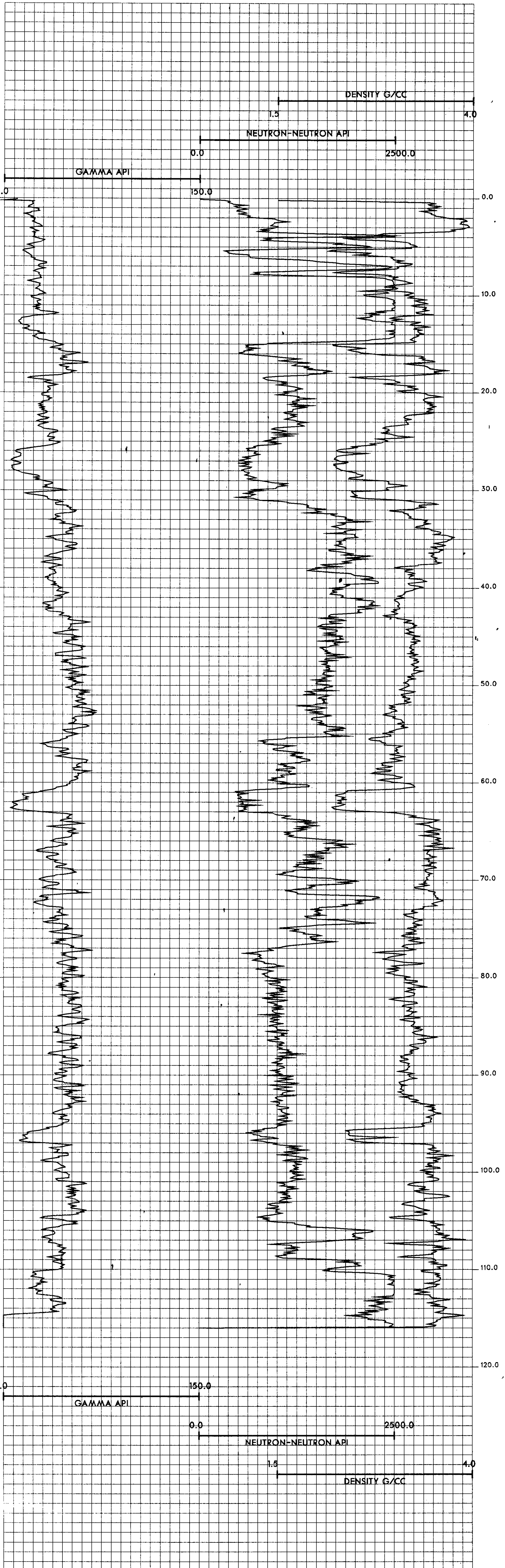
Province: BC Northing: 6345800.00 Lat: 571526
 Zone: 9 Easting: 507505.00 Long: 1285232
 Measuring Point: GROUND LEVEL Elevation: 1472.0

Scale: 1 to 200.0
 Depth Range: 0.0 to 121.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87018

DATE - 03/01/88

- HISTORY -

START DATE - 09/17/87
END DATE - 09/20/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - SAVOIE

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - WASTE DUMP HOLE, SITE B'. PIEZOMETER AND THERMISTE
R. 2 UNIDENTIFIED SEAMS INTERSECTED.

- LOCATION -

PROVINCE - BC
ELEVATION - 1629.34

ZONE - 9
NORTHING - 6342328.11
EASTING - 508842.56

LICENCE/LEASE NUMBER -

LATITUDE - 571333
LONGITUDE - 1285113

- ORIENTATION -

LENGTH - 152.43
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

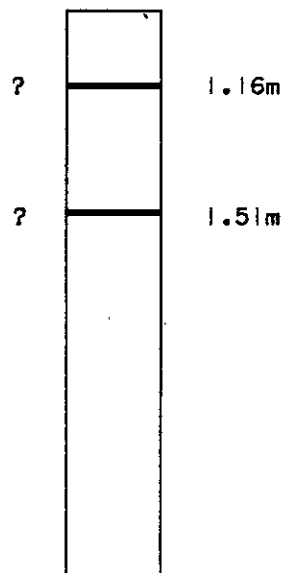
CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 10.67
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87018

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|------------|---------------------------------------------------------------------------------------------------|
| | 0.00 | 10.67 | 10.67 | | | | CASING | CASING DEPTH. |
| 1 | 10.67 | 10.83 | 0.16 | | | | SANDSTONE | MG. MOD. LT. GY. THNB. SLD CASING DEPTH = 10.67 M. POSSIBLY A LARGE BOULDER IN THE OVERBURDEN. |
| 1 | 10.83 | 11.72 | 0.89 | | | | OVERBURDEN | BRKN TILL. |
| 1 | 11.72 | 12.56 | 0.84 | | | | ROCK LOSS | |
| 1 | 12.56 | 12.61 | 0.05 | | | | OVERBURDEN | CARB. VBRKN COAL FRAGMENTS IN A VERY DARK COAL SLURRY. COAL LOSS? |
| 1 | 12.61 | 13.11 | 0.50 | | | | ROCK LOSS | |
| 1 | 13.11 | 13.26 | 0.15 | | | | OVERBURDEN | CARB. VBRKN AS ABOVE. CORE LOSS. |
| 1 | 13.26 | 14.26 | 1.00 | | | | ROCK LOSS | |
| 1 | 14.26 | 14.33 | 0.07 | | | | SANDSTONE | SLTY. VFG. LT-M. GY. SLD TILL? DEFINITE CORE LOSS. |
| 1 | 14.33 | 15.33 | 1.00 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|------------|--------------------------------------------------------------------------------------------------------------|
| 1 | 15.33 | 15.48 | 0.15 | | | | OVERBURDEN | VBRKN RUBBLE. PREDOMINANTLY SUB-ANGULAR SS FRAGMENTS WITHOUT THE MUD HOLDING IT TOGETHER. MORE CORE LOSS. |
| 1 | 15.48 | 16.62 | 1.14 | | | | ROCK LOSS | |
| 2 | 16.62 | 17.07 | 0.45 | | | | OVERBURDEN | VBRKN TILL. CORE LOSS. |
| 2 | 17.07 | 18.07 | 1.00 | | | | OVERBURDEN | VBRKN AS ABOVE. |
| 2 | 18.07 | 19.07 | 1.00 | | | | ROCK LOSS | |
| 3 | 19.07 | 19.21 | 0.14 | | | | SANDSTONE | FG. LT-M. GY. BRKN ABUNDANT QTZ VEINING. |
| 3 | 19.21 | 19.81 | 0.60 | | | | ROCK LOSS | |
| 3 | 19.81 | 19.92 | 0.11 | | | | OVERBURDEN | TILL. |
| 3 | 19.92 | 20.12 | 0.20 | * | | | SANDSTONE | F-MG. LT-M. GY. SLD 8 CM ZONE AT TOP OF INTERVAL CONTAINS A BUNDANT QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|------------|---------------------------------------------------------------------------------------------------------|
| 3 | 20.12 | 20.82 | 0.70 | * | | | SANDSTONE | SLTY. VFG. PR. LT-M. GY. VBRKN A MIXTURE OF RUBBLE AND PIECES OF CORE NO LONGER THAN 10 CM. |
| 3 | 20.82 | 21.82 | 1.00 | | | | ROCK LOSS | |
| 4 | 21.82 | 22.22 | 0.40 | * | | | SANDSTONE | FG. PR. LT-M. GY. SLD MINOR LAMINAE AND MISPS OF SLTY MUDST. 1 CM QTZ. VEIN AT 28 DEGREE TO CORE. |
| 4 | 22.22 | 22.57 | 0.35 | | | | OVERBURDEN | TILL. |
| 4 | 22.57 | 23.17 | 0.60 | | | | ROCK LOSS | |
| 4 | 23.17 | 23.37 | 0.20 | | | | OVERBURDEN | TILL. |
| 4 | 23.37 | 24.37 | 1.00 | | | | ROCK LOSS | |
| 4 | 24.37 | 24.47 | 0.10 | | | | MUDSTONE | DK. GY. BRKN |
| 4 | 24.47 | 24.93 | 0.46 | | | | ROCK LOSS | |
| 4 | 24.93 | 25.21 | 0.28 | | | | COAL | C-5. BLK. VBRKN COAL SLURRY. COAL/ROCK LOSS? |
| 4 | 25.21 | 26.21 | 1.00 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | 26.21 | 26.26 | 0.05 | | | | COAL | C-6. BLK. VBRKN AS ABOVE. |
| 4 | 26.26 | 26.44 | 0.18 | | | | MUDSTONE | CARB. DK. GY. BRKN SOFT. POORLY CONSOLIDATED. |
| 5 | 26.44 | 28.27 | 1.83 | * | | | MUDSTONE | CARB. DK. GY. BRKN SILTY TOWARD THE CENTER OF THE INTERVAL ABUNDANT COALIFIED PLANT FRAGMENT THRO UGHOUT. 2 THIN BANDS OF C-4. COAL (<3 C M). |
| 5 | 28.27 | 28.31 | 0.04 | | | | ROCK LOSS | |
| 6 | 28.31 | 29.00 | 0.69 | | 07060 | | MUDSTONE | DK. GY. LAM. VBRKN FINE SLTY LAMINAE THROUGHOUT. COALY MIS PS & COALIFIED PLANT HASH NEAR BASE. LO WER 7 CM SAMPLED. |
| 6 | 29.00 | 29.18 | 0.18 | | 07060 | | MUDSTONE | DK. GY. MAS. BRKN COALIFIED PLANT HASH AND WOOD IMPRINTS ON BEDDING PLANES. |
| 6 | 29.18 | 29.88 | 0.70 | | 07061 ? | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------|
| 6 | 29.88 | 29.93 | 0.05 | 07061 | ? | COAL | C-1. BLK. VBRKN RUBBLE. |
| 6 | 29.93 | 30.01 | 0.08 | 07061 | ? | COAL | C-2. BLK. VBRKN RUBBLE. OCCASIONAL 3 MM WIDE C-1 BANDS. |
| 6 | 30.01 | 30.03 | 0.02 | 07061 | ? | COAL | C-1. BLK. VBRKN RUBBLE. |
| 6 | 30.03 | 30.05 | 0.02 | 07061 | ? | MUDSTONE | CARB. BLK. VBRKN COALIFIED PLANT HASH. |
| 6 | 30.05 | 30.09 | 0.04 | 07061 | ? | COAL | C-1. BRKN |
| 6 | 30.09 | 30.27 | 0.18 | 07061 | ? | COAL | C-2. VBRKN GROUND UP IN PLACES. |
| 6 | 30.27 | 30.34 | 0.07 | 07061 | ? | COAL | C-1. VBRKN |
| 6 | 30.34 | 30.35 | 0.01 | 07061 | ? | COAL | C-2. SLD SMALL PARTINGS WITH MUCH QTZ/ANKERITE VEINING THROUGHOUT. |
| 6 | 30.35 | 30.47 | 0.12 | 07062 | | MUDSTONE | CARB. VBRKN MUCH QTZ/ANKERITE VEINING. 3 MM WIDE COAL STRINGERS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 6 | 30.47 | 30.77 | 0.30 | 07062 | | ROCK LOSS | |
| 6 | 30.77 | 30.93 | 0.16 | 07062 | | MUDSTONE | CARB. DK. GY. VBRKN RUBBLE. COALIFIED PLANT HASH. UPPER 13 CM SAMPLED. |
| 6 | 30.93 | 31.17 | 0.24 | | | ROCK LOSS | |
| 7 | 31.17 | 31.51 | 0.34 | | | MUDSTONE | CARB. DK. GY. VBRKN ABUNDANT COAL STRINGERS AND COALIFIED PLANT FRAGMENTS. |
| 7 | 31.51 | 31.82 | 0.31 | | | CLAYSTONE | SSY. M. GY. SLD VERY SOFT AND MOIST. MINOR COAL FLECKS. |
| 7 | 31.82 | 32.12 | 0.30 | | | MUDSTONE | SLTY. DK. GY. VBRKN |
| 7 | 32.12 | 32.31 | 0.19 | | | SANDSTONE | F-MG. LT-M. GY. MB. SLD VERY MINOR DISCONTINUOUS MUDST WISPS. IRRREGULAR SHARP UPPER CONTACT. |
| 7 | 32.31 | 32.36 | 0.05 | | | SANDSTONE | F-MG. LT-M. GY. MB. SLD AS ABOVE. EROSIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 32.36 | 32.61 | 0.25 | | | | SILTSTONE | M-DK.GY.MAS.SLD SOME BANDS CONTAINING A HIGHER % OF MUD |
| 8 | 32.61 | 33.50 | 0.89 | | | | MUDSTONE | SLTY.M-DR.GY.MAS.BRKN SOME MOTTLED BANDS THAT MAY HAVE BEEN B IOTRB. |
| 8 | 33.50 | 33.79 | 0.29 | | | | ROCK LOSS | |
| 8 | 33.79 | 33.92 | 0.13 | | | | BRECCIA | M-DK.GY.BRKN QTZ VEINING. SOFT FAULT GOUGE MUD. AT TO P & BOTTOM OF INTERVAL. |
| 8 | 33.92 | 34.84 | 0.92 | * | | | MUDSTONE | SLTY.M.GY.MAS.BIOTR MINOR WISPS OF CLEAN MUDST. CLEAN SMOOT H FRACTURE AT 30 DEGREES. NUMEROUS 2-3 CM BANDS CONTAINING BLACK PELLETS. |
| 9 | 34.84 | 35.36 | 0.52 | | | | MUDSTONE | SLTY.M.GY.MAS.BIOTR.SLD BOTTOM 30 CM HAS ABUNDANT BLACK PELLETS. . GRADUAL CONTACTS. |
| 9 | 35.36 | 36.80 | 1.44 | * | | | SILTSTONE | M.GY.MAS.BRKN MINOR LAMINATIONS AND WISPS OF MUDST. S OME SILTIER BANDS CONTAIN BLACK PELLETS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 36.80 | 36.88 | 0.08 | | | | ROCK LOSS | |
| 10 | 36.88 | 37.23 | 0.35 | | | | SILTSTONE | M.GY.MAS.BRKN SANDY TOWARD BASE. GRADATIONAL CONTACT. |
| 10 | 37.23 | 38.41 | 1.18 | * | | | SANDSTONE | F-MG.PR.LT-M.GY.MAS.SSD.SLD MINOR SLTY MUDST LAMINATIONS NEAR TOP O F INTERVAL. TOPS UP. ABUNDANT BLACK PEL LETS MIXED IN WITH THE SS. |
| 10 | 38.41 | 38.99 | 0.58 | * | | | SANDSTONE | MG.PR.LT-M.GY.MAS.SLD 5 CM BAND OF SLTY SS. ABUNDANT BLACK PE LLETS FORMING SOME DISCONTINUOUS BUT NO TICEABLE LAMINAE OR LAGS. |
| 11 | 38.99 | 40.92 | 1.93 | | | | SANDSTONE | MG.PR.LT-M.GY.MAS.SLD AS ABOVE. FRACTURES BETWEEN 30 TO 45 DE GREES. |
| 12 | 40.92 | 41.31 | 0.39 | | | | SANDSTONE | MG.PR.LT-M.GY.MAS.SLD BLACK PELLET GRAINS FORMING SMALL DISCO NTINUOUS LAG. |
| 12 | 41.31 | 43.01 | 1.70 | | | | SANDSTONE | MG.PR.LT-M.GY.MAS.SLD AS ABOVE. A FEW COAL FRAGMENTS NEAR BAS E OF INTERVAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 13 | 43.01 | 43.46 | 0.45 | * | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD AS ABOVE. |
| 13 | 43.46 | 43.48 | 0.02 | | | | SANDSTONE | FG. PR. M. GY. VTHNB. SLD DISCONTINUOUS MUDST LAMINAE. |
| 13 | 43.48 | 44.34 | 0.86 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD ABUNDANT BLACK PELLETS SOMETIMES FORMING DISCONTINUOUS BANDS. |
| 13 | 44.34 | 44.50 | 0.16 | | | | ROCK LOSS | |
| 13 | 44.50 | 45.14 | 0.64 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN AS ABOVE. |
| 14 | 45.14 | 45.31 | 0.17 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD AS ABOVE. LOWER CONTACT IS A FAULT PLANE AT 30 DEGREES. |
| 14 | 45.31 | 45.72 | 0.41 | | | | BRECCIA | BRKN FAULT BRECCIA, SOME POWDERY CARBONATE MATERIAL ON BROKEN SURFACES. |
| 14 | 45.72 | 45.91 | 0.19 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 14 | 45.91 | 46.23 | 0.32 | | | | SANDSTONE | MG. PR. M. GY. MAS. BRKN THREE CARBONATE COATED FRACTURES AT 30 DEGREES. |
| 14 | 46.23 | 46.43 | 0.20 | | | | ROCK LOSS | |
| 14 | 46.43 | 46.70 | 0.27 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN NUMEROUS <3 CM BANDS THAT CONTAIN ABUNDANT COAL FLECKS MIXED IN WITH SAND. |
| 14 | 46.70 | 47.23 | 0.53 | * | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN ABUNDANT BLACK PELLETS. |
| 15 | 47.23 | 47.43 | 0.20 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN AS ABOVE. |
| 15 | 47.43 | 47.49 | 0.06 | | | | SANDSTONE | MG. VPR. LT-M. GY. THNB. SLD COALY-CARB. MUD. FRAGMENTED STRINGERS. MINOR CARBONATE VEINING. |
| 15 | 47.49 | 47.54 | 0.05 | | | | SANDSTONE | MG. PR. LT-M. GY. THNB. SLD MINOR BLACK PELLETS. |
| 15 | 47.54 | 48.24 | 0.70 | | | | SANDSTONE | MG. PR. LT-M. GY. THNB. SLD AS ABOVE. MINOR MUDST LAMINAE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 48.24 | 48.27 | 0.03 | | | | SANDSTONE | SLTY. FG. VPR. M. GY. VTHNB. SLD |
| 15 | 48.27 | 49.14 | 0.87 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN ABUNDANT BLACK PELLETS. NON LINEAR VERTICAL FRACTURE WITH HORIZONTAL STRIAE. CARBONATE COATED FRACTURE AT 45 DEGREES. |
| 16 | 49.14 | 49.88 | 0.74 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN NON LINEAR FRACTURE AT 30 DEGREES. |
| 16 | 49.88 | 49.97 | 0.09 | * | | | SANDSTONE | MG. VPR. LT-M. GY. VTHNB. SLD THIN STRINGERS OF COALIFIED PLANT FRAGMENTS. |
| 16 | 49.97 | 50.56 | 0.59 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD BLACK PELLETS. |
| 16 | 50.56 | 51.16 | 0.60 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN AS ABOVE. MINOR WISPS OF MUDST. |
| 17 | 51.16 | 52.48 | 1.32 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN AS ABOVE. MINOR MUDST WISPS. SLICKENSIDES AT 45 DEGREES (VERTICAL). FAULT PLANE. ABRUPT CHANGE IN LITHOLOGY. |
| 17 | 52.48 | 52.77 | 0.29 | | | | MUDSTONE | DK. GY. MAS. SHRD SLIPPAGE SURFACES AT APPROX 45 DEGREES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------|
| 17 | 52.77 | 52.78 | 0.01 | | | | CLAYSTONE | LT. GY. LAM NOT ENOUGH TO SAMPLE. |
| 17 | 52.78 | 53.06 | 0.28 | * | | | MUDSTONE | DK. GY. MAS. BRKN VERY MINOR LAMINAE. SMOOTH BREAK AT 45 DEGREES. |
| 18 | 53.06 | 53.44 | 0.38 | | | | MUDSTONE | CARB. DK. GY. MAS. BRKN RARE COALIFIED PLANT HASH. |
| 18 | 53.44 | 53.78 | 0.34 | | 07063 | | MUDSTONE | CARB. DK. GY. MAS. VBRKN COALIFIED PLANT HASH. LOWER 25 CM SAMPLED. |
| 18 | 53.78 | 53.84 | 0.06 | | 07064 ? | | COAL LOSS | |
| 18 | 53.84 | 53.86 | 0.02 | | 07064 ? | | COAL | C-5. BLK. VBRKN |
| 18 | 53.86 | 53.95 | 0.09 | | 07064 ? | | MUDSTONE | CARB. BLK. VBRKN |
| 18 | 53.95 | 53.96 | 0.01 | | 07064 ? | | COAL | C-5. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------|
| 18 | 53.96 | 53.99 | 0.03 | 07064 | ? | | COAL | C-3.VBRKN WITH MUD BANDS 2 MM WIDE. |
| 18 | 53.99 | 54.00 | 0.01 | 07064 | ? | | COAL | C-1.VBRKN |
| 18 | 54.00 | 54.03 | 0.03 | 07064 | ? | | COAL | C-5.BRKN |
| 18 | 54.03 | 54.32 | 0.29 | 07064 | ? | | COAL LOSS | |
| 18 | 54.32 | 54.38 | 0.06 | 07064 | ? | | COAL | C-2.SLD MUD. BANDS. 2-5 MM. WIDE. |
| 18 | 54.38 | 54.58 | 0.20 | 07064 | ? | | COAL | C-2.BRKN NO MUD. GOOD CLEAT. |
| 18 | 54.58 | 54.60 | 0.02 | 07064 | ? | | COAL | C-1.BRKN C-1 TO C-2. |
| 18 | 54.60 | 54.72 | 0.12 | 07064 | ? | | COAL | C-2.BRKN GOOD CLEAT. C-1 TO C-2. |
| 18 | 54.72 | 54.85 | 0.13 | 07064 | ? | | COAL | C-1.VBRKN C-1 TO C-2. |
| 18 | 54.85 | 55.01 | 0.16 | 07064 | ? | | COAL | C-2.VBRKN C-1 TO C-2. GOOD CLEAT. CRUMBLD CORE. POSSIBLE LOSS NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 19 | 55.01 | 55.07 | 0.06 | 07064 | ? | | ROCK LOSS | |
| 19 | 55.07 | 55.11 | 0.04 | 07064 | ? | | MUDSTONE | BLK.SLD POORLY CONSOLIDATED; SOFT, LIKE PLASTIC ENE. |
| 19 | 55.11 | 55.20 | 0.09 | 07064 | ? | | COAL | C-4.BLK.VBRKN LISTRIC SURFACES. |
| 19 | 55.20 | 55.35 | 0.15 | 07064 | ? | | COAL | C-2.BLK.VBRKN |
| 19 | 55.35 | 55.56 | 0.21 | 07065 | ? | | MUDSTONE | CARB.DK.GY.SLD |
| 19 | 55.56 | 55.60 | 0.04 | 07065 | ? | | COAL | C-4.BLK.VBRKN GROUND UP ON FRACTURE SURFACE. |
| 19 | 55.60 | 56.24 | 0.64 | 07065 | ? | | MUDSTONE | SLTY.DK.GY.VTHNB.SSD.BRKN MOTTLED, FAINT BEDDING. SLUMPED? LISTRI C. SURFACES & POLISHED SLIPPAGE SURFACES. |
| 19 | 56.24 | 56.28 | 0.04 | 07065 | ? | | COAL | C-5.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 19 | 56.28 | 56.29 | 0.01 | | 07065 ? | | COAL | C-3.BRKN |
| 19 | 56.29 | 56.64 | 0.35 | | 07065 ? | | MUDSTONE | CARB.BLK.BRKN COALY STRINGERS 1-3 MM WIDE. |
| 19 | 56.64 | 56.87 | 0.23 | | 07065 ? | | COAL LOSS | |
| 19 | 56.87 | 56.93 | 0.06 | | 07065 ? | | COAL | C-3.BLK.SLD POLISHED FRACTURE SURFACES. |
| 20 | 56.93 | 57.19 | 0.26 | | 07065 ? | | MUDSTONE | CARB.BLK.VBRKN ABUNDANT COALY STRINGERS & SHEARED COAL LENSES 1 MM-1 CM WIDE. LISTRIC SURFACE S. |
| 20 | 57.19 | 57.46 | 0.27 | | 07065 ? | | COAL LOSS | |
| 20 | 57.46 | 57.65 | 0.19 | * | 07065 ? | | MUDSTONE | SLTY.DK.GY.MAS.BRKN VERY FAINT OCCASIONAL MUD WISPS, BUT MO STLY MASSIVE. LISTRIC SURFACES. |
| 20 | 57.65 | 57.75 | 0.10 | | 07065 ? | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 20 | 57.75 | 57.77 | 0.02 | | 07065 ? | | COAL | C-4.BLK.PWRD PROBABLE COAL LOSS HERE. |
| 20 | 57.77 | 57.83 | 0.06 | | 07065 ? | | COAL | C-3.BLK.VBRKN |
| 20 | 57.83 | 57.86 | 0.03 | | 07065 ? | | COAL | C-6.BRKN |
| 20 | 57.86 | 58.24 | 0.38 | | 07066 | | MUDSTONE | CARB.BLK.MAS.VBRKN COALY STRINGERS 1-3 MM THROUGHOUT. UPPE R 25 CM SAMPLED. |
| 20 | 58.24 | 58.75 | 0.51 | | | | ROCK LOSS | |
| 20 | 58.75 | 59.20 | 0.45 | | | | MUDSTONE | SLTY.DK.GY.MAS.VBRKN ABUNDANT SLICKENSIDES. COALIFIED WOOD F RAGS & CARB. PLANT WASH. |
| 20 | 59.20 | 59.70 | 0.50 | | | | ROCK LOSS | |
| 21 | 59.70 | 59.74 | 0.04 | | | | MUDSTONE | CARB.DK.GY.MAS.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 21 | 59.74 | 60.31 | 0.57 | | | MUDSTONE | CARB. DK. GY. MAS. VBRKN SILTIER FOR 20 CM IN MIDDLE OF INTERVAL . MINOR DISCONTINUOUS QTZ VEINING. |
| 21 | 60.31 | 60.44 | 0.13 | | | ROCK LOSS | |
| 21 | 60.44 | 60.51 | 0.07 | | | MUDSTONE | DK. GY. VSHRD SOFT. POSSIBLY FAULT MOVEMENT THROUGH T HIS INTERVAL (APPROX. 30 DEGREES). |
| 21 | 60.51 | 60.61 | 0.10 | | | ROCK LOSS | |
| 21 | 60.61 | 60.96 | 0.35 | | | MUDSTONE | CARB. DK. GY. MAS. VBRKN COAL STRINGERS THROUGHOUT. |
| 21 | 60.96 | 61.58 | 0.62 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN AS ABOVE. MINOR QTZ VEINING PARALLEL TO BDG. |
| 21 | 61.58 | 61.78 | 0.20 | | | ROCK LOSS | |
| 22 | 61.78 | 62.69 | 0.91 | | | MUDSTONE | CARB. DK. GY. MAS. VBRKN AS ABOVE. ABUNDANT COALIFIED PLANT FRAG MENTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 62.69 | 62.79 | 0.10 | | | ROCK LOSS | |
| 22 | 62.79 | 63.59 | 0.80 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN ABUNDANT COALIFIED PLANT FRAGMENTS. 2 C M BAND OF C-5 COAL. SEVERAL LISTRIC SUR FACES AT 45 DEGREES. |
| 23 | 63.59 | 63.67 | 0.08 | | | COAL | C-4. BLK. VTHNB. VBRKN |
| 23 | 63.67 | 64.12 | 0.45 | | | ROCK LOSS | |
| 23 | 64.12 | 65.44 | 1.32 | | | MUDSTONE | CARB. DK. GY. MAS. SHRD ABUNDANT PLANT FRAGMENTS. NUMEROUS LIST RIC SURFACES. SEVERAL CRUSHED COAL ZONE S (C-5 TO C-6). CORE/COAL LOSS? |
| 23 | 65.44 | 65.94 | 0.50 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 65.94 | 66.50 | 0.56 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN TOP 20 CM OF INTERVAL IS VSHRD. PLANT FRAGMENTS BECOME MINOR TOWARD BASE. GRADATIONAL CONTACT. |
| 24 | 66.50 | 67.77 | 1.27 | * | | MUDSTONE | SLTY. DK. GY. MAS. SLD MINOR COALIFIED PLANT FRAGMENTS (4 CM x 1 CM). SOME WHITE POWDERED LISTRIC SURFACES (APPROX 30 DEGREES). |
| 25 | 67.77 | 68.78 | 1.01 | | | MUDSTONE | DK. GY. MAS. SLD ONE LISTRIC SURFACE. |
| 25 | 68.78 | 69.74 | 0.96 | | | MUDSTONE | DK. GY. MAS. SLD LISTRIC SURFACE (30 DEGREES). ONE BDG PLANE SLIPPAGE SURFACE. ONE <1CM QTZ VEIN PARALLEL TO BDG. SLTY IN SOME PORTIONS OF INTERVAL. |
| 26 | 69.74 | 70.80 | 1.06 | * | | MUDSTONE | DK. GY. MAS. SLD A FEW BDG PLANE SLIPPAGE SURFACES COATED WITH TALC. GRADATIONAL LOWER CONTACT. |
| 26 | 70.80 | 71.00 | 0.20 | | | ROCK LOSS | |
| 26 | 71.00 | 71.25 | 0.25 | | | SANDSTONE | SLTY. FG. VPR. LT-M. GY. MAS. BRKN MINOR INDISTINCT SLTY. LAMINATIONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 71.25 | 71.30 | 0.05 | | | ROCK LOSS | |
| 26 | 71.30 | 71.42 | 0.12 | | | SANDSTONE | SLTY. M-CG. VPR. M. GY. THNB. SLD ABUNDANT QTZ VEINING. VERY ROUGH TEXTURE. |
| 26 | 71.42 | 71.73 | 0.31 | | | SANDSTONE | SLTY. M-CG. VPR. LT-M. GY. MAS. BRKN VERY ROUGH TEXTURE. GRADATIONAL LOWER CONTACT. |
| 26 | 71.73 | 72.03 | 0.30 | | | SANDSTONE | F-MG. MOD. LT-M. GY. MAS. SLD BLACK PELLETS. |
| 27 | 72.03 | 74.11 | 2.08 | * | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD BLACK PELLETS WHICH SEEM TO FORM INDISTINCT MINOR LAMINAE. |
| 28 | 74.11 | 75.00 | 0.89 | * | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD VERY SPARSE WISPS OF SLTST. SEVERAL ELOGATE SLTST SUB-ROUNDED RIP-UP CLASTS. VERY FEW SMALL CHERT CLASTS <1 CM. MINOR QTZ VEINING. |
| 28 | 75.00 | 76.08 | 1.08 | | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD AS ABOVE. CHERT CLAST <2 CM. SEVERAL TALC COVERED SLIPPAGE SURFACES AT APPROX 60 DEGREES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 76.08 | 76.24 | 0.16 | | | | ROCK LOSS | |
| 29 | 76.24 | 78.13 | 1.89 | * | | | SANDSTONE | MG. MOD. LT-M. GY. MAS. BRKN 3 CM BAND OF CHERT AND SLTST CLASTS. BL ACK PELLETS FORMING DISTINCT WISPS. IN THE LOWER HALF OF THIS INTERVAL IS A 4C M QTZ VEIN PARALLEL TO BEDDING. |
| 29 | 78.13 | 78.24 | 0.11 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD SORTING BECOMES POOR GRADATIONALLY WITH DEPTH. |
| 30 | 78.24 | 79.02 | 0.78 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD |
| 30 | 79.02 | 79.11 | 0.09 | | | | ROCK LOSS | |
| 30 | 79.11 | 79.97 | 0.86 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. VBRKN SUB-VERTICAL FRACTURE. SEVERAL LARGE SU B-ROUNDED SLTST CLASTS <4 CM. ONE <1 CM BAND OF C-5. COAL NEAR BASE. |
| 30 | 79.97 | 80.37 | 0.40 | * | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD LARGE 6 CM BAND OF QTZ MIXED WITH ANGUL AR PIECES OF THE SURROUNDING SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 80.37 | 81.07 | 0.70 | | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. SLD MINOR QTZ VEINING ROUGHLY PARALLEL TO B DG. 3 MINOR SLTY BANDS <1-2 CM CONTAINI NG COALIFIED PLANT FRAGMENTS. |
| 31 | 81.07 | 81.18 | 0.11 | | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. BRKN GRADATIONAL BANDS OF C-VCG SS. |
| 31 | 81.18 | 81.32 | 0.14 | | | | SANDSTONE | VCG. VPR. LT-M. GY. THNB. SLD NUMEROUS SLTST AND COAL CLASTS <2 CM. M INOR QTZ VEINING. |
| 31 | 81.32 | 82.33 | 1.01 | | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. SLD 5-10 CM BANDS OF FG OR VCG SS. GRADATIO NAL CONTACTS. ONE 1 CM BAND OF C-5 COAL |
| 32 | 82.33 | 83.06 | 0.73 | * | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. SLD MINOR QTZ VEINING NEAR THE TOP OF THE S ECTION. |
| 32 | 83.06 | 83.08 | 0.02 | | | | COAL | C-5. BLK. BRKN VERY QUICK GRADATIONAL CONTACT. MINOR Q TZ VEINING. |
| 32 | 83.08 | 83.18 | 0.10 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 32 | 83.18 | 83.62 | 0.44 | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. SSD. BRKN MINOR DISCONTINUOUS MUDDY LAMINAE (POORLY DEVELOPED). SUB-VERTICAL FRACTURE (18 DEGREES) WITH VERTICAL STRIAE. SPARSE QTZ VEINING. |
| 32 | 83.62 | 83.80 | 0.18 | | | ROCK LOSS | |
| 32 | 83.80 | 83.87 | 0.07 | * | | SANDSTONE | CARB. FG. VPR. M. GY. THNB. BRKN SS. MIXED IN WITH COAL STRINGERS AND ABUNDANT QTZ VEINING PARALLEL TO BDG. |
| 32 | 83.87 | 84.22 | 0.35 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. BRKN TWO 1 CM COAL BANDS, C-5. SUB-ROUNDED. ELONGATE COAL CLAST IN THE BOTTOM 3 CM OF UNIT. MINOR DISCONTINUOUS QTZ VEINING. |
| 32 | 84.22 | 84.34 | 0.12 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. SLD COAL CLASTS AND FRAGMENTS. MINOR QTZ VEINING. |
| 33 | 84.34 | 85.54 | 1.20 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. BRKN 6 <1 CM ZONES CONTAINING THIN STRINGERS OF COAL. 12 CM ZONE OF INTENSE QTZ VEINING. SHARP LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 85.54 | 86.28 | 0.74 | * | | SANDSTONE | SLTY. MG. VPR. M. GY. MAS. SSD. VBRKN ABUNDANT THIN MUDST LAMINAE. TOPS UP. COAL CASTS. SEVERAL BEDDING PLANE FRACTURES. SOME COATED IN A GREASY WHITE TALC. VUGGY QTZ VEIN CONTAINING BOTH QTZ AND SIDERITE XLS. |
| 33 | 86.28 | 86.43 | 0.15 | | | ROCK LOSS | |
| 34 | 86.43 | 87.27 | 0.84 | | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD BLACK PELLETS. MINOR MUDST LAMINATIONS AT BASE OF INTERVAL. TWO VERY ANGULAR MUDST CLASTS <2 CM NEAR BASE. MINOR QTZ VEINING. |
| 34 | 87.27 | 87.61 | 0.34 | | | SANDSTONE | MG. MOD. LT-M. GY. MAS. SLD 2 CM BAND OF SLTST. MINOR WISPS OF MUDST. SEVERAL DISCONTINUOUS QTZ VEINS <1 CM. SHARP LOWER CONTACT. |
| 34 | 87.61 | 87.66 | 0.05 | * | | SILTSTONE | M. GY. VTHNB. SLD SHARP CONTACTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 87.66 | 88.44 | 0.78 | | | | SANDSTONE | FG.PR.LT-M.GY.THNB.SSD.SLD INTBD SLTY MUDST. TOPS UP (TRUNCATED BE DS). ONE 2 CM QTZ VEIN AND SOME <1 CM Q TZ VEINS. F-MG. |
| 35 | 88.44 | 89.41 | 0.97 | * | | | SANDSTONE | F-MG.PR.LT-M.GY.THNB.BRKN SEVERAL BANDS OF INTERLAMINATED SLTY MU DST. MINOR COAL STRINGERS IN SOME OF TH ESE BANDS. |
| 35 | 89.41 | 89.56 | 0.15 | | | | ROCK LOSS | |
| 35 | 89.56 | 89.90 | 0.34 | | | | SANDSTONE | FG.PR.LT-M.GY.MAS.SLD MINOR WISPS OF MUDST. ANGULAR TO SUB-RO UNDED SLTY MUDST CLASTS (ELONGATE, <2CM) IN THE BOTTOM BCM OF INTERVAL. MINOR COAL CLASTS SURROUNDED BY CARBONATE. MI NOR WHITE QTZ BLEBS (<.5CM, WELL ROUNDE D). F-MG. |
| 35 | 89.90 | 90.32 | 0.42 | | | | SANDSTONE | MG.PR.LT-M.GY.MAS.SLD MINOR WISPS OF SLTY MUDST. |
| 35 | 90.32 | 90.57 | 0.25 | | | | SANDSTONE | MG.PR.LT-M.GY.MAS.SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 90.57 | 90.81 | 0.24 | | | | SANDSTONE | MG.MOD.LT-M.GY.MAS.VBRKN NUMEROUS DISCONTINUOUS COAL STRINGERS A ND SERPENTINE ENRICHED (GREENISH TINGE) QTZ VEINS. |
| 36 | 90.81 | 90.91 | 0.10 | | | | ROCK LOSS | |
| 36 | 90.91 | 91.99 | 1.08 | | | | SANDSTONE | MG.MOD.LT-M.GY.MAS.VBRKN ABUNDANT BROKEN SURFACES FILLED WITH TA LC. MINOR MUDST WISPS. MINOR QTZ VEININ G. |
| 36 | 91.99 | 92.15 | 0.16 | | | | SANDSTONE | MG.MOD.LT-M.GY.MAS.SLD LARGE WELL ROUNDED SLTST CLASTS, UP TO 5 CM. MINOR WISPS OF MUDST. MINOR QTZ V EINING. |
| 36 | 92.15 | 92.67 | 0.52 | | | | SANDSTONE | MG.MOD.LT.GY.MAS.BRKN MINOR WISPS OF MUDST. SOME BLACK PELLET S. ARRANGED IN LAMS. |
| 37 | 92.67 | 93.37 | 0.70 | | | | SANDSTONE | MG.MOD.LT.GY.MAS.VBRKN LARGE SLTY MUDST RIP-UP CLASTS (UP TO 5 CM). SUB-ROUNDED. A FEW TALC COATED FR ACTURES. MINOR QTZ VEINING. TWO <3 CM S ILTY MUDST BANDS WITH MINOR COAL STRING ERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 93.37 | 94.67 | 1.30 | | | | SANDSTONE | MG. MOD. LT. GY. MAS. VBRKN AS ABOVE EXCEPT NO SLTY MUD BANDS. |
| 38 | 94.67 | 96.35 | 1.68 | | | | SANDSTONE | MG. MOD. LT. GY. MAS. VBRKN AS ABOVE. |
| 38 | 96.35 | 96.67 | 0.32 | | | | SANDSTONE | MG. MOD. LT. GY. MAS. BRKN 3 CM BAND OF SLTY MUDST RIP-UP CLASTS: WELL ROUNDED, UP TO 2CM LONG, AVG LENGT H. 5CM. |
| 39 | 96.67 | 96.73 | 0.06 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. SLD |
| 39 | 96.73 | 96.82 | 0.09 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. BRKN ABUNDANT LARGE MUDST RIP-UP CLASTS: WELL ROUNDED, UP TO 5 CM LONG. |
| 39 | 96.82 | 97.52 | 0.70 | | | | SANDSTONE | MG. PR. LT-M. GY. MAS. VBRKN SEVERAL TALC COATED FRACTURES, SOME <2 CM QTZ VEINING. VERY SPARSE WISPS OF MU D. VERY BROKEN AT BASE OF INTERVAL. |
| 39 | 97.52 | 97.72 | 0.20 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 39 | 97.72 | 98.07 | 0.35 | | | | SANDSTONE | PBLY. VCG. VPR. LT-M. GY. MB. VBRKN COAL STRINGERS PRESENT. |
| 39 | 98.07 | 98.29 | 0.22 | | | | ROCK LOSS | |
| 39 | 98.29 | 98.44 | 0.15 | | | | MUDSTONE | M-DK. GY. VSHRD RUBBLE, OBSCURE CONTACT. |
| 39 | 98.44 | 98.64 | 0.20 | | | | ROCK LOSS | |
| 39 | 98.64 | 98.72 | 0.08 | | | | SANDSTONE | F-MG. M. GY. VBRKN RUBBLE. |
| 39 | 98.72 | 98.92 | 0.20 | | | | ROCK LOSS | |
| 40 | 98.92 | 99.09 | 0.17 | | | | SANDSTONE | F-MG. LT-M. GY. MAS. VBRKN RUBBLE. SOME LISTRIC SURFACES. |
| 40 | 99.09 | 99.39 | 0.30 | | | | ROCK LOSS | |
| 40 | 99.39 | 99.63 | 0.24 | | | | SANDSTONE | F-MG. MOD. LT-M. GY. MAS. VBRKN THIN ELONGATE MUDST RIP-UP CLASTS (1.5 x .3 CM) SHEARED. |
| 40 | 99.63 | 100.95 | 1.32 | | | | SANDSTONE | F-MG. MOD. LT-M. GY. MAS. SHRD ABUNDANT SUB-VERTICAL TALC COVERED FRACTURES. OBLIQUE STRIATIONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 100.95 | 101.67 | 0.72 | | | | SANDSTONE | FG MOD. LT-M. GY. MAS. BRKN SEVERAL TALC COVERED FRACTURES AT 45 DEGREES. A FEW MUDST RIP-UP CLASTS: LARGE ST=3CM, SUB-ROUNDED. MINOR QTZ VEINING AT BASE (<1 CM). SHARP LOWER CONTACT. F-MG. |
| 41 | 101.67 | 101.73 | 0.06 | | | | MUDSTONE | DK. GY. VTHNB. VSHRD |
| 41 | 101.73 | 101.88 | 0.15 | | | | ROCK LOSS | |
| 41 | 101.88 | 102.13 | 0.25 | | | | SILTSTONE | M-DK. GY. MB. VBRKN HOMOGENEOUS? TALC COVERED FRACTURES. |
| 41 | 102.13 | 102.23 | 0.10 | | | | BRECCIA | MUDST & FG SS MIXED WITH QTZ. |
| 41 | 102.23 | 102.34 | 0.11 | | | | SANDSTONE | FG. M. GY. BRKN ABUNDANT QTZ VEINING. ONE TALC COVERED BREAK AT 60 DEGREES. OBSCURE LOWER CONTACT. CORE LOSS? |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 102.34 | 102.44 | 0.10 | | | | ROCK LOSS | |
| 41 | 102.44 | 102.82 | 0.38 | | | | MUDSTONE | M-DK. GY. VSHRD PREDOMINANTLY LISTRIC SURFACES. |
| 41 | 102.82 | 103.02 | 0.20 | | | | ROCK LOSS | |
| 42 | 103.02 | 103.70 | 0.68 | | | | MUDSTONE | CARB. BLK. MAS. VSHRD VERY ABUNDANT LISTRIC SURFACES & SLICKE SIDES. COALIFIED PLANT FRAGS & OCCASIONAL MINOR COALY STRINGERS 1 TO 5 MM. MIDE. |
| 42 | 103.70 | 103.73 | 0.03 | | | | COAL | C-6. BLK. BRKN MINOR QTZ/ANKERITE VEINING. |
| 42 | 103.73 | 103.78 | 0.05 | | | | MUDSTONE | CARB. BLK. VSHRD FAIRLY LIGHT WEIGHT, SO MUST HAVE GROUND UP/COMPRESSED COAL MIXED IN. |
| 42 | 103.78 | 103.97 | 0.19 | | | | ROCK LOSS | |
| 42 | 103.97 | 104.30 | 0.33 | | | | MUDSTONE | CARB. BLK. VSHRD LISTRIC SURFACES THROUGHOUT. GROUND UP COAL MIXED IN WITH MUD. COMPRESSED & SHEARED. AS ABOVE. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------|
| 42 | 104.30 | 104.70 | 0.40 | | | ROCK LOSS | |
| 43 | 104.70 | 105.06 | 0.36 | | | MUDSTONE | DK.GY.VBRKN SHARP LOWER CONTACT. ABUNDANT LISTRIC SURFACES. |
| 43 | 105.06 | 105.19 | 0.13 | | | SILTSTONE | M-DK.GY.THNB.SLD |
| 43 | 105.19 | 105.26 | 0.07 | | | MUDSTONE | DK.GY.VBRKN GRADATIONAL UPPER CONTACT. NUMEROUS LISTRIC SURFACES. |
| 43 | 105.26 | 105.49 | 0.23 | | | ROCK LOSS | |
| 43 | 105.49 | 105.86 | 0.37 | | | MUDSTONE | DK.GY.VBRKN SOFT. LISTRIC SURFACES. |
| 43 | 105.86 | 105.94 | 0.08 | | | SANDSTONE | SLTY.VFG.M.GY.THNB.BRKN ONE CM QTZ VEIN. LISTRIC SURFACES AT BOTH CONTACTS. |
| 43 | 105.94 | 106.02 | 0.08 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------|
| 43 | 106.02 | 106.08 | 0.06 | | | MUDSTONE | DK.GY.SHRD |
| 43 | 106.08 | 106.48 | 0.40 | * | | SANDSTONE | SLTY.FG.LT-M.GY.MB.BRKN VERY MINOR QTZ VEIN. LOWER CONTACT IS SHARP, 60 DEGREES AND LISTRIC. |
| 43 | 106.48 | 106.58 | 0.10 | | | MUDSTONE | M-DK.GY.SHRD |
| 43 | 106.58 | 106.73 | 0.15 | | | ROCK LOSS | |
| 44 | 106.73 | 106.83 | 0.10 | | | MUDSTONE | CARB.DK.GY.SHRD |
| 44 | 106.83 | 106.93 | 0.10 | | | ROCK LOSS | |
| 44 | 106.93 | 107.33 | 0.40 | | | MUDSTONE | M-DK.GY.VBRKN GRADATIONAL LOWER CONTACT. |
| 44 | 107.33 | 107.43 | 0.10 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 44 | 107.43 | 107.72 | 0.29 | | | SILTSTONE | M.GY.VBRKN ABUNDANT TALC COVERED BROKEN SURFACES. SHARP LOWER CONTACT WITH UNDERLYING SS. |
| 44 | 107.72 | 108.54 | 0.82 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN A FEW FRACTURES COVERED WITH SERICITE. TWO BANDS (<1 CM) OF SLTST RIP-UP CLAST S (ELONGATE, <1CM X <.3 CM). F-MG. |
| 44 | 108.54 | 108.62 | 0.08 | | | SANDSTONE | F-MG.MOD.LT-M.GY.MAS.BRKN COAL STRINGER ALONG BROKEN SURFACE. |
| 45 | 108.62 | 110.58 | 1.96 | * | | SANDSTONE | MG.MOD.LT-M.GY.MAS.BRKN SEVERAL TALC COATED FRACTURES BETWEEN 4 5-70 DEGREES. ONE MUDST CLAST: SUB-ROUN DED, <3 CM. 2 CM BAND CONTAINING <.2 CM SLTY LAMINATIONS. F-MG. |
| 45 | 110.58 | 110.66 | 0.08 | | | ROCK LOSS | |
| 46 | 110.66 | 111.59 | 0.93 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.BRKN ONE BAND (2 CM WIDE) OF CHERT PEBBLES; WELL ROUNDED, ELONGATE, BLK, GY, WH CHE RT. VERY SPARSE QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 111.59 | 112.56 | 0.97 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.BRKN NUMEROUS TALC COVERED FRACTURES. |
| 46 | 112.56 | 112.76 | 0.20 | | | ROCK LOSS | |
| 47 | 112.76 | 114.63 | 1.87 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.BRKN AS ABOVE, ONE LARGE SLTST CLAST >6 CM. SOME SMALLER SLTST CLASTS <3 CM SPARSELY DISTRIBUTED IN A 15 CM ZONE (VERY WEL L. ROUNDED). |
| 48 | 114.63 | 115.49 | 0.86 | * | | SANDSTONE | MG.WEL.LT-M.GY.MAS.BRKN ONE TALC COVERED FRACTURE AT 52 DEGREES ONE WELL ROUNDED MUDST RIP-UP CLAST (<2CM AT BASE). SHARP LOWER CONTACT. |
| 48 | 115.49 | 115.54 | 0.05 | | | SANDSTONE | FG.VPR.M.GY.VTHNB.SLD ABUNDANT DISCONTINUOUS MUDST STRINGERS THROUGHOUT. COALIFIED PLANT FRAGMENTS. |
| 48 | 115.54 | 115.62 | 0.08 | | | ROCK LOSS | |
| 48 | 115.62 | 116.75 | 1.13 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.BRKN MINOR QTZ VEINING. |
| 49 | 116.75 | 117.68 | 0.93 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.SLD A ONE CM BAND OF CHERT PEBBLE LAG. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 49 | 117.68 | 118.69 | 1.01 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.SLD VERY MINOR MUDST WISPS. |
| 50 | 118.69 | 120.49 | 1.80 | | | SANDSTONE | MG.WEL.LT-M.GY.MAS.SLD SEVERAL JAGGED FRACTURES AT 30 DEGREES. |
| 50 | 120.49 | 120.73 | 0.24 | | | ROCK LOSS | |
| 51 | 120.73 | 122.59 | 1.86 | | | SANDSTONE | M-CG.MOD.LT-M.GY.MAS.BRKN COARSER GRAINED TOWARD BASE. BOTTOM 10 CM CONTAIN SOME CHERT PEBBLES <2CM. MIN OR QTZ VEINING. |
| 52 | 122.59 | 122.82 | 0.23 | | | SANDSTONE | CG.MOD.LT-M.GY.MAS.BRKN |
| 52 | 122.82 | 122.92 | 0.10 | | | ROCK LOSS | |
| 52 | 122.92 | 123.78 | 0.86 | | | SANDSTONE | PBLY.VCG.VPR.LT-M.GY.BRKN SPORADIC CHANGES IN GRAIN SIZE. NUMEROU S BANDS OF CHERT PEBBLES. ABUNDANT QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 123.78 | 124.52 | 0.74 | | | CONGLOMERATE | M.GY.MAS.SLD BLACK, WHITE, GREY AND GREEN CHERT PEBB LES. PREDOMINANTLY CLAST SUPPORTED. CLE AN. CG SS MATRIX. LARGEST CLAST=3.5-4.0 CM, AVG=1-2 CM. WELL ROUNDED CLASTS. S OME QTZ VEINING. |
| 53 | 124.52 | 126.49 | 1.97 | | | CONGLOMERATE | M.GY.MAS.BRKN AS ABOVE. |
| 53 | 126.49 | 126.58 | 0.09 | | | ROCK LOSS | |
| 54 | 126.58 | 126.83 | 0.25 | | | CONGLOMERATE | M.GY.MAS.BRKN AS ABOVE. |
| 54 | 126.83 | 128.55 | 1.72 | | | CONGLOMERATE | M.GY.MAS.BRKN AS ABOVE. A FEW LARGE QTZ VEINS AT 30 D EGREES. |
| 55 | 128.55 | 129.85 | 1.30 | | | CONGLOMERATE | M.GY.MAS.SLD AS ABOVE. |
| 55 | 129.85 | 130.63 | 0.78 | | | CONGLOMERATE | M.GY.MAS.BRKN THE CONGLOMERATE CONTINUES. |
| 56 | 130.63 | 132.50 | 1.87 | | | CONGLOMERATE | M.GY.MAS.BRKN AS ABOVE. |
| 56 | 132.50 | 132.59 | 0.09 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-------------------------------------------------------------------------------------|-------------|
| 57 | 132.59 | 132.92 | 0.33 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. COAL ON BROKEN SURFACE. | |
| 57 | 132.92 | 133.84 | 0.92 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 57 | 133.84 | 134.22 | 0.38 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 57 | 134.22 | 134.42 | 0.20 | | | | ROCK LOSS | |
| 58 | 134.42 | 135.06 | 0.64 | | | | CONGLOMERATE M.GY.MAS.VBRKN POSSIBLE CORE LOSS. AS ABOVE. | |
| 58 | 135.06 | 136.16 | 1.10 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 58 | 136.16 | 136.28 | 0.12 | | | | ROCK LOSS | |
| 59 | 136.28 | 137.70 | 1.42 | | | | CONGLOMERATE M.GY.MAS.VBRKN AS ABOVE. ONE SUB-VERTICAL TALC COVERED FRACTURE. | |
| 59 | 137.70 | 137.90 | 0.20 | | | | ROCK LOSS | |
| 60 | 137.90 | 138.10 | 0.20 | | | | CONGLOMERATE M.GY.MAS.BRKN SAME CONGLOMERATE. | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 60 | 138.10 | 139.66 | 1.56 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 60 | 139.66 | 139.84 | 0.18 | | | | ROCK LOSS | |
| 61 | 139.84 | 141.15 | 1.31 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 61 | 141.15 | 141.62 | 0.47 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 61 | 141.62 | 141.72 | 0.10 | | | | ROCK LOSS | |
| 62 | 141.72 | 142.99 | 1.27 | | | | CONGLOMERATE M.GY.MAS.BRKN AS ABOVE. | |
| 62 | 142.99 | 143.08 | 0.09 | | | | BRECCIA BRKN COAL AND QTZ. | |
| 62 | 143.08 | 143.19 | 0.11 | | | | ROCK LOSS | |
| 62 | 143.19 | 143.77 | 0.58 | | | | CONGLOMERATE M.GY.MAS.VBRKN CLAST SIZE AS PREVIOUSLY DESCRIBED. MAT RIX SUPPORTED IN SOME AREA. SOME BROKEN SURFACES LINED WITH COAL. | |
| 62 | 143.77 | 143.87 | 0.10 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|--------------|----------------------------------------------------------------------------------------------------|
| 63 | 143.87 | 144.20 | 0.33 | | | | CONGLOMERATE | M.GY.MAS.BRKN AS ABOVE. |
| 63 | 144.20 | 145.48 | 1.28 | | | | CONGLOMERATE | M.GY.MAS.VBRKN AS ABOVE. ONE SERICITE COVERED FRACTURE |
| 63 | 145.48 | 145.65 | 0.17 | | | | ROCK LOSS | |
| 64 | 145.65 | 146.13 | 0.48 | | | | CONGLOMERATE | M.GY.MAS.VBRKN AS ABOVE. POSSIBLE CORE LOSS. |
| 64 | 146.13 | 146.33 | 0.20 | | | | ROCK LOSS | |
| 64 | 146.33 | 147.23 | 0.90 | | | | CONGLOMERATE | M.GY.MAS.VBRKN AS ABOVE. INTERBEDDED CG SS. GRADATIONA L CONTACT. |
| 64 | 147.23 | 147.38 | 0.15 | | | | ROCK LOSS | |
| 65 | 147.38 | 148.38 | 1.00 | | | | SANDSTONE | CG.PR.LY-M.GY.MAS.BRKN NUMEROUS <10 CM BANDS OF CHERT PEBBLE L AG. COAL STRINGERS ON BRKN SURFACE. |
| 65 | 148.38 | 148.60 | 0.22 | | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87018

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 65 | 148.60 | 149.38 | 0.78 | | | | SANDSTONE | MG.MOD.LT-M.GY.MAS.BRKN A FEW <3CM MUOBT RIP-UP CLASTS IN THE T OP 10CM OF INTERVAL. MINOR COAL CLASTS AND COAL MATS. 2 CM BAND OF CHERT PEBBL E LAG. |
| 65 | 149.38 | 149.57 | 0.19 | | | | ROCK LOSS | |
| 66 | 149.57 | 151.35 | 1.78 | | | | SANDSTONE | MG.MOD.LT-M.GY.MAS.BRKN MINOR COAL CLASTS AND MATS. SEVERAL CHE RT PEBBLE LAG (AS THICK AS 20 CM). MING R QTZ VEINING. |
| 66 | 151.35 | 151.53 | 0.18 | | | | ROCK LOSS | |
| 67 | 151.53 | 152.43 | 0.90 | | | | SANDSTONE | MG.MOD.LT-M.GY.MAS.BRKN 20 CM BAND CONTAINING ABUNDANT CHERT PE BBLES. END OF HOLE. T.D. = 152.40 M. DR ILLER'S MARK. NOTE PIEZOMETER AND THERM ISTER INSTALLED. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87018

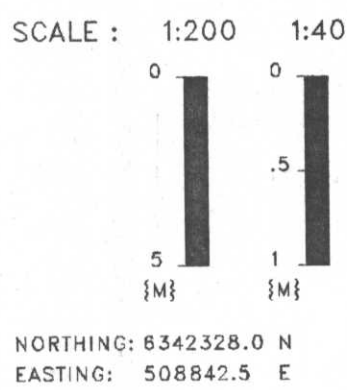
740

GEOLOGIST : SAVOIE

DATE : MAR 11/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

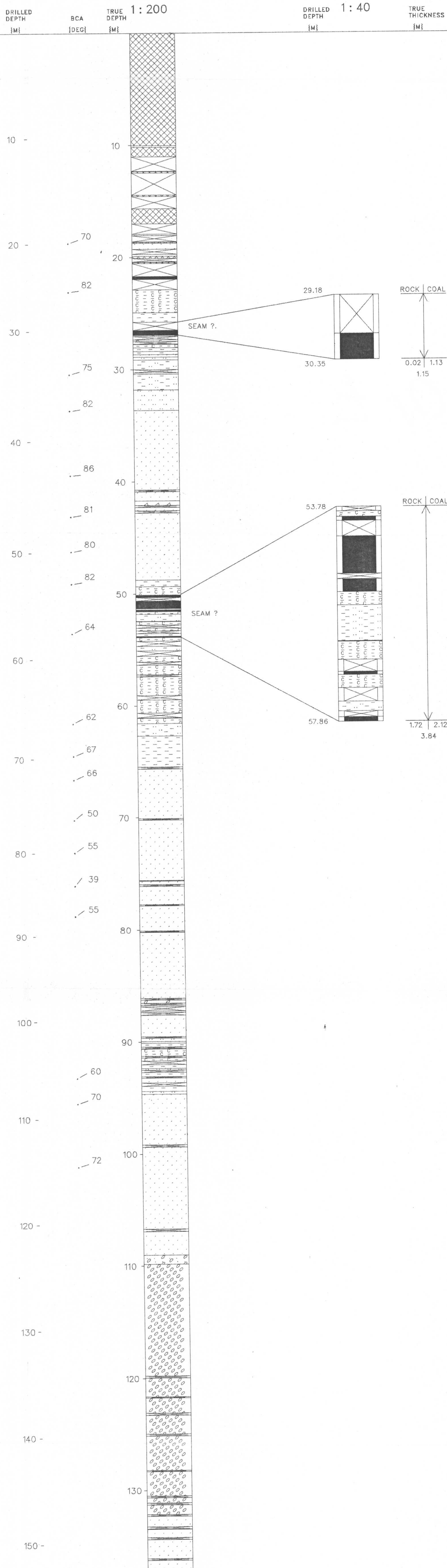


NORTHING: 6342328.0 N
 EASTING: 508842.5 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



TOTAL: 152.43 TOTAL: 137.09

Gulf Canada Resources Limited Coal Division

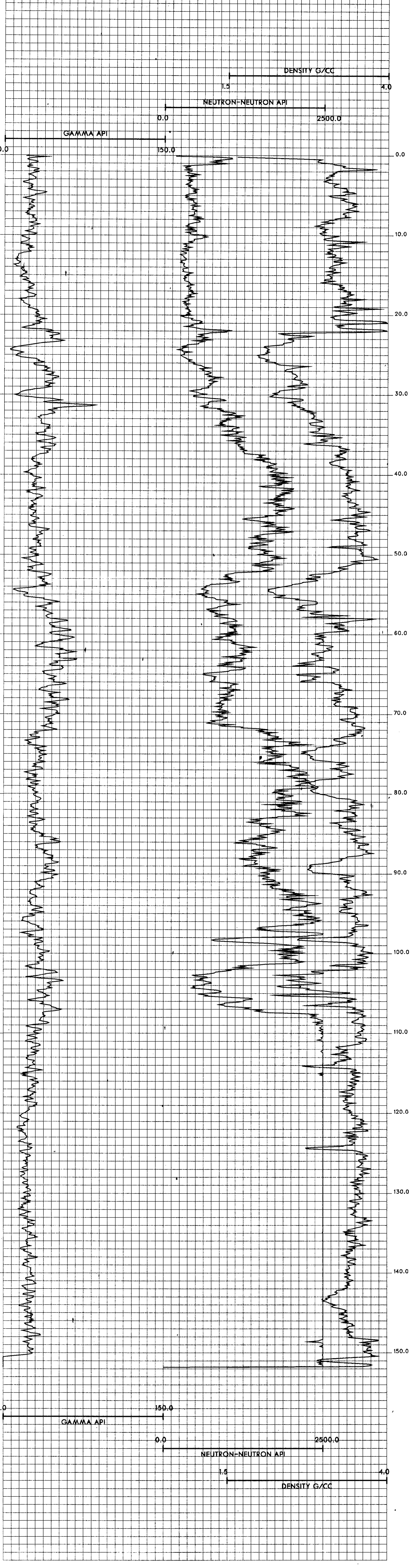
740

Geophysical Log

| | | | |
|----------------------------------|-------------------------------|----------------------|-------------------|
| Datasource: KPNLRDDH87018 | Province: BC | Northing: 6342330.00 | Lat: 571333 |
| Log Date: 87-09-19 | Zone: 9 | Easting: 508843.00 | Long: 1285113 |
| Company: CENTURY | Measuring Point: GROUND LEVEL | | Elevation: 1629.3 |
| Geologist: SAVOIE | | | |

| | |
|---------------------------|--------------------------------------------|
| Scale: 1 to 200.0 | Comments: 1. LOGGED THROUGH RODS. 2. |
| Depth Range: 0.0 to 156.0 | |
| True Thickness: NO | |

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | 1N PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1N PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1N PIPE |



MOUNT KLAPPAN ANTHRACITE PROJECT

LOST - FOX AREA

GEOLOGICAL REPORT

1987

APPENDIX III

DIAMOND DRILL HOLE DATA

VOLUME III

KPNLRDDH 87019

TO

KPNLRDDH 87026



GULF CANADA RESOURCES

COAL DEVELOPMENT

7410

CONFIDENTIAL

KPNLRDDH87019

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87019

DATE - 03/04/88

- HISTORY -

START DATE - 09/19/87

END DATE - 09/22/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEE/BARKER

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE D. SEAMS 1 (FOLDED), H/1, H/1 (2), H (FOLDED).

- LOCATION -

PROVINCE - BC

ELEVATION - 1486.65

ZONE - 9

NORTHING - 6345555.91

EASTING - 507468.12

LICENCE/LEASE NUMBER -

LATITUDE - 571518

LONGITUDE - 1285234

- ORIENTATION -

LENGTH - 210.21

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 12.19

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

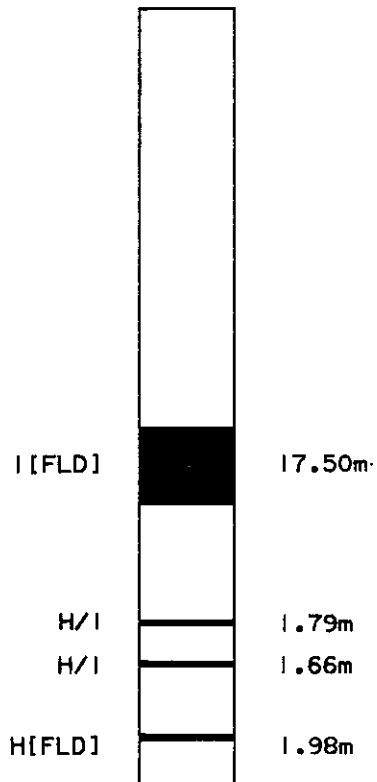
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM

TRUE SEAM THICKNESS
(COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87019

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: (205057)880072012.L6



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 3 | 18.29 | 18.41 | 0.12 | 13 | | | ROCK LOSS | |
| 4 | 18.41 | 20.22 | 1.81 | 12 | | | SANDSTONE | FG.M.GY.BRKN WITH RIP-UP CLASTS OF LAM SLTST/FG SS, HRMBUR, OCCASIONAL QTZ FRACTURE FILL, T WIST-OFF .05 M DOWN. |
| 4 | 20.22 | 20.35 | 0.13 | 12 | | | ROCK LOSS | |
| 5 | 20.35 | 20.68 | 0.33 | 11 | | | SILTSTONE | M.GY.VBRKN WITH FG SS. POSSIBLE CORE LOSS. |
| 5 | 20.68 | 20.78 | 0.10 | 11 | | | ROCK LOSS | |
| 5 | 20.78 | 21.34 | 0.56 | 11 | | | SILTSTONE | SSY.DK.GY.BRKN TWIST-OFF AT TOP, OCCASIONAL SSY WISP, LISTRIC SURFACE, SLICKENSIDES. |
| 5 | 21.34 | 21.93 | 0.59 | 10 | | | SILTSTONE | M-DK.GY.BRKN FRACTURED, LISTRIC SURFACES, ALMOST FEATURELESS. |
| 5 | 21.93 | 21.98 | 0.05 | 10 | | | SILTSTONE | M-DK.GY.VBRKN POORLY CONSOLIDATED, SOFT, FAULT GOUGE (?) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------|
| 5 | 21.98 | 22.10 | 0.12 | 10 | | | ROCK LOSS | |
| 5 | 22.10 | 22.20 | 0.10 | 10 | | | SILTSTONE | M-DK.GY.BRKN AS SLTST ABOVE. |
| 6 | 22.20 | 22.54 | 0.34 | 10 | | | SILTSTONE | M-DK.GY.BRKN ABUNDANT SHEAR SURFACES. |
| 6 | 22.54 | 22.75 | 0.21 | 10 | | | SILTSTONE | M-DK.GY.VBRKN AS ABOVE. |
| 6 | 22.75 | 22.92 | 0.17 | 09 | | | ROCK LOSS | |
| 6 | 22.92 | 23.13 | 0.21 | 09 | | | SILTSTONE | M.GY.VBRKN POORLY CONSOLIDATED, MUDDY, SOFT, POSSIBLE FAULT GOUGE. |
| 6 | 23.13 | 23.46 | 0.33 | 09 | | | SANDSTONE | VFG.M.GY.BRKN OCCASIONAL QTZ FRACTURE FILL, OCCASIONAL SLTY WISPS. |
| 6 | 23.46 | 23.83 | 0.37 | 09 | | | SANDSTONE | VFG.M.GY.VBRKN OCCASIONAL SLTST RIP-UP AND WISPS. |
| 6 | 23.83 | 24.04 | 0.21 | 09 | | | SANDSTONE | FG.M.GY.BRKN NUMEROUS LAM, SLTST/MUDST RIP-UPS, OCCASIONAL QTZ FRACTURE AND VOID FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------|
| 7 | 24.04 | 24.44 | 0.40 | 08 | | SANDSTONE | FG.M.GY.BRKN OCCASIONAL SLTY WISPS, LAM SLTST/MUDST RIP-UPS. |
| 7 | 24.44 | 24.57 | 0.13 | 08 | | SANDSTONE | FG.M.GY.VBRKN AS ABOVE. |
| 7 | 24.57 | 25.12 | 0.55 | 08 | | ROCK LOSS | |
| 7 | 25.12 | 25.21 | 0.09 | 08 | | SILTSTONE | M.GY.VBRKN |
| 7 | 25.21 | 25.36 | 0.15 | 07 | | SANDSTONE | SLTY.FG.M.GY.VBRKN |
| 7 | 25.36 | 25.76 | 0.40 | 07 | | ROCK LOSS | |
| 7 | 25.76 | 25.81 | 0.05 | 07 | | SANDSTONE | VFG.M.GY.SLD OCCASIONAL SSY AND MUDDY WISP, CORE LOS S B/N THIS AND NEXT UNIT? |
| 7 | 25.81 | 25.91 | 0.10 | 07 | | ROCK LOSS | |
| 7 | 25.91 | 26.06 | 0.15 | 07 | | SANDSTONE | VFG.M.GY.SLD AS ABOVE, FRACTURED. |
| 7 | 26.06 | 26.26 | 0.20 | 07 | | SANDSTONE | VFG.M.GY.LAM.SSD.VBRKN INTERLAM WITH SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------|
| 7 | 26.26 | 26.71 | 0.45 | 06 | | ROCK LOSS | |
| 7 | 26.71 | 27.28 | 0.57 | *06 | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, ABUNDANT SSD. |
| 8 | 27.28 | 27.49 | 0.21 | 07 | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN AS ABOVE, OCCASIONAL QTZ FRACTURE FILL. |
| 8 | 27.49 | 27.56 | 0.07 | 07 | | SANDSTONE | VFG.M.GY.LAM.VBRKN |
| 8 | 27.56 | 27.66 | 0.10 | 07 | | ROCK LOSS | |
| 8 | 27.66 | 28.91 | 1.25 | *09 | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN AS ABOVE. |
| 8 | 28.91 | 29.11 | 0.20 | 08 | | SANDSTONE | VFG.M.GY.LAM.SSD.VBRKN AS ABOVE, OCCASIONAL LISTRIC SURFACES. |
| 8 | 29.11 | 29.22 | 0.11 | 07 | | ROCK LOSS | |
| 9 | 29.22 | 29.36 | 0.14 | 07 | | SANDSTONE | VFG.M.GY.LAM.SSD.SLD WITH SLTST INTERLAM. |
| 9 | 29.36 | 30.30 | 0.94 | *06 | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH VFG SS INTERLAM. |
| 9 | 30.30 | 30.32 | 0.02 | 06 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------|
| 14 | 39.57 | 40.05 | 0.48 | *18 | | | SILTSTONE | M-DK.GY.LAM.SSD.BRKN WITH FG SS LAM. |
| 14 | 40.05 | 40.09 | 0.04 | 19 | | | SILTSTONE | YBRKN QTZ VEIN MAKES UP MOST OF UNIT. |
| 14 | 40.09 | 40.17 | 0.08 | 19 | | | ROCK LOSS | |
| 14 | 40.17 | 40.54 | 0.37 | *20 | | | SILTSTONE | M-DK.GY.LAM.SSD.BRKN WITH YFG.SS.LAM. HIGHLY FRACTURED. |
| 14 | 40.54 | 40.79 | 0.25 | 24 | | | SILTSTONE | M-DK.GY.LAM.SSD.BRKN AS ABOVE BUT LESS FRACTURED. |
| 14 | 40.79 | 40.96 | 0.17 | 27 | | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN WITH SLTST.LAM. FRACTURED. |
| 15 | 40.96 | 41.29 | 0.33 | 30 | | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH YFG.SS.LAM. FRACTURED. MRMBUR - TO PS UP. |
| 15 | 41.29 | 41.36 | 0.07 | 32 | | | ROCK LOSS | |
| 15 | 41.36 | 41.39 | 0.03 | 33 | | | SILTSTONE | M.GY.YBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 15 | 41.39 | 41.51 | 0.12 | *34 | | | SILTSTONE | M.GY.LAM.SSD.SLD WITH YFG.SS.LAM. FRACTURED. |
| 15 | 41.51 | 41.56 | 0.05 | 35 | | | MUDSTONE | CLYY.M.GY.SHRD POORLY CONSOLIDATED MUD. |
| 15 | 41.56 | 41.87 | 0.31 | 38 | | | SANDSTONE | YFG.M.GY.SLD BRECCIATED, HIGHLY FRACTURED, ETCHED SURFACE, FAULT GOUGE. |
| 15 | 41.87 | 42.26 | 0.39 | 44 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDST LAM, QTZ FILLED FRACTURES, SOME BRECCIA. |
| 15 | 42.26 | 42.96 | 0.70 | *52 | | | SILTSTONE | M.GY.LAM.SSD.BRKN WITH SSS WISP AND OCCASIONAL LAM. HIGHLY FRACTURED TOWARDS TOP. |
| 16 | 42.96 | 43.08 | 0.12 | 50 | | | BRECCIA | M.GY.SLD SLTST BRECCIA, HIGHLY FRACTURED. |
| 16 | 43.08 | 43.15 | 0.07 | 49 | | | ROCK LOSS | |
| 16 | 43.15 | 44.34 | 1.19 | *46 | | | SILTSTONE | M-DK.GY.LAM.SSD.BRKN WITH FG.SS.LAM. MUDST WISPS. SLTST IS M LODY. ABUNDANT SSD, MRMBUR - TOPS UP, SSSY AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------|
| 16 | 44.34 | 44.47 | 0.13 | 45 | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN WITH SLTST LAM, WRMBUR. |
| 16 | 44.47 | 44.51 | 0.04 | 44 | | SANDSTONE | FG.M.GY.SLD SLTY WISPS. |
| 16 | 44.51 | 44.63 | 0.12 | 44 | | SANDSTONE | CG.M.GY.BRKN WITH GRANULES AND MUDST CLASTS (1 CM). |
| 16 | 44.63 | 44.71 | 0.08 | 44 | | SANDSTONE | YCG.M.GY.SLD WITH ABUNDANT GRANULES. |
| 16 | 44.71 | 44.85 | 0.14 | 44 | | SANDSTONE | CG.M.GY.BRKN W/ BANDS OF GRANULES, OCCASIONAL MUDST CLASTS. |
| 17 | 44.85 | 44.89 | 0.04 | 44 | | SANDSTONE | CG.LT-M.GY.SLD GRANULAR AT TOP, FINER DOWNWARDS. |
| 17 | 44.89 | 44.93 | 0.04 | 43 | | SILTSTONE | SSY.M-DK.GY.BRKN |
| 17 | 44.93 | 44.99 | 0.06 | 43 | | SANDSTONE | FG.M.GY.THNB.BRKN OCCASIONAL DISCONTINUOUS SLTY WISP. |
| 17 | 44.99 | 45.13 | 0.14 | 43 | | SANDSTONE | FG.M.GY.LAM.VBRKN WITH SLTST LAM, WRMBUR. |
| 17 | 45.13 | 45.34 | 0.21 | 43 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 17 | 45.34 | 45.80 | 0.46 | *42 | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN AS ABOVE, WITH WRMBUR. |
| 17 | 45.80 | 46.11 | 0.31 | 46 | | SANDSTONE | FG.M.GY.VTHNB.VBRKN WITH SLTST LAM, POSSIBLE CORE LOSS. |
| 17 | 46.11 | 46.31 | 0.20 | 48 | | ROCK LOSS | |
| 17 | 46.31 | 46.54 | 0.23 | 50 | | SANDSTONE | FG.M.GY.VTHNB.BRKN OCCASIONAL SLTST LAM, QTZ VEINS AND FRACTURE FILL. |
| 18 | 46.54 | 46.93 | 0.39 | *53 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.VBRKN WITH MUDST WISP AT TOP AND OCCASIONAL LAM FURTHER DOWN, QTZ FRACTURE FILL MORE ABUNDANT AT TOP. |
| 18 | 46.93 | 47.12 | 0.19 | 53 | | ROCK LOSS | |
| 18 | 47.12 | 47.34 | 0.22 | 53 | | SANDSTONE | FG.LT-M.GY.LAM.SSD.BRKN WITH MUDST AND OCCASIONAL SLTST LAM AND WISPS, QTZ VEINING AT BASE. |
| 18 | 47.34 | 47.55 | 0.21 | 53 | | SANDSTONE | FG.LT-M.GY.LAM.WRMBU.BRKN WITH MUDST LAM, SLTST WISPS, ABUNDANT W RMBUR. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------|
| 18 | 47.55 | 47.80 | 0.25 | 53 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH SLTST WISPS, OCCASIONAL FRACTURE. |
| 18 | 47.80 | 47.95 | 0.15 | 53 | | SILTSTONE | M.GY.LAM.SLD HIGHLY FRACTURED AT BASE FORMING BRECCIA (SOME QTZ FILLED). |
| 18 | 47.95 | 48.07 | 0.12 | 53 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD FRACTURED TO BRECCIATED (SOME QTZ FILLED). |
| 18 | 48.07 | 48.24 | 0.17 | 53 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH MUDDY SLTST BEDS, LAM.TOWARDS BASE, QTZ FILLED FRACTURES. |
| 18 | 48.24 | 48.48 | 0.24 | 53 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD OCCASIONAL BAND OF CONCENTRATED BLACK GRAINS, OCCASIONAL FRACTURE. |
| 19 | 48.48 | 48.53 | 0.05 | 53 | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST LAM, 1.4 CM QTZ VEIN. |
| 19 | 48.53 | 48.67 | 0.14 | 53 | | SANDSTONE | FG.LT-M.GY.LAM.BRKN WITH SLTST LAM, LISTRIC SURFACES, QTZ FRACTURE FILL. |
| 19 | 48.67 | 48.77 | 0.10 | 53 | | SANDSTONE | MG.LT-M.GY.SLD SOME >1 MM QTZ GRAINS, OCCASIONAL MUDST RIP-UPS (7 MM), FRACTURED. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 19 | 48.77 | 49.17 | 0.40 | 53 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH DISCONTINUOUS MUDST LAM AND WISPS, FRACTURED NEAR TOP. |
| 19 | 49.17 | 49.42 | 0.25 | 54 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH CG SS INTERBEDS, OCCASIONAL SLTY WISPS. |
| 19 | 49.42 | 49.47 | 0.05 | 54 | | SANDSTONE | CG.LT-M.GY.VBRKN |
| 19 | 49.47 | 49.54 | 0.07 | 54 | | ROCK LOSS | |
| 19 | 49.54 | 49.65 | 0.11 | 54 | | SANDSTONE | FG.LT-M.GY.SLD HIGHLY FRACTURED (FORMING BRECCIA). |
| 19 | 49.65 | 49.87 | 0.22 | 54 | | SANDSTONE | FG.LT-M.GY.SLD WITH BANDS OF MUDST RIP-UPS NEAR BASE, OCCASIONAL SLTY WISPS, LISTRIC SURFACE AT BASE. |
| 19 | 49.87 | 49.97 | 0.10 | 54 | | SANDSTONE | YFG.M.GY.LAM.BRKN WITH SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 19 | 49.97 | 50.19 | 0.22 | 54 | | | SANDSTONE | MG. LT-M. GY. YTHNB. BRKN QTZ FRACTURE FILL; OCCASIONAL MUDST LAM NEAR BASE, OCCASIONAL >1 MM QTZ GRAINS |
| 19 | 50.19 | 50.27 | 0.08 | 54 | | | ROCK LOSS | |
| 20 | 50.27 | 50.35 | 0.08 | 54 | | | SANDSTONE | MG. LT-M. GY. YTHNB. VBRKN WITH DISCONTINUOUS MUDST LAM, OCCASIONA L CG QTZ GRAIN, QTZ FRACTURE FILL. |
| 20 | 50.35 | 50.59 | 0.24 | 54 | | | SANDSTONE | FG. LT-M. GY. YTHNB. SLD F-MG SS, OCCASIONAL MUDST WISP OR LAM. |
| 20 | 50.59 | 50.71 | 0.12 | 54 | | | SANDSTONE | CG. LT-M. GY. YTHNB. SLD INTERBEDDED WITH VCG SS. |
| 20 | 50.71 | 50.88 | 0.17 | 54 | | | SANDSTONE | FG. LT-M. GY. YTHNB. VBRKN WITH MUDST BEDS AND LAMS, LISTRIC SURFA CES. |
| 20 | 50.88 | 50.97 | 0.09 | 54 | | | ROCK LOSS | |
| 20 | 50.97 | 51.17 | 0.20 | 54 | | | SANDSTONE | MG. LT-M. GY. THNB. SLD OCCASIONAL SLTY WISP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------|
| 20 | 51.17 | 51.36 | 0.19 | 54 | | | SANDSTONE | FG. LT-M. GY. BIOTR. SLD OCCASIONAL SLTY WISP, SSD. |
| 20 | 51.36 | 52.20 | 0.84 | *54 | | | SANDSTONE | FG. LT-M. GY. YTHNB. BRKN WITH MUDDY WISP TO LAM AT BASE; OCCASIO NAL QTZ FRACTURE FILL. |
| 21 | 52.20 | 52.65 | 0.45 | 49 | | | SANDSTONE | FG. LT-M. GY. YTHNB. BRKN WITH DISCONTINUOUS MUDST LAM AND VERY T HIN. BEDS. |
| 21 | 52.65 | 52.69 | 0.04 | 48 | | | MUDSTONE | SLTY. DK. GY. YTHNB. SLD WITH QTZ VEIN AT BASE. |
| 21 | 52.69 | 53.22 | 0.53 | 46 | | | SANDSTONE | FG. LT-M. GY. THNB. BRKN W/ MUDST LAM AND VERY THIN. BEDS. INCREAS ING NEAR BASE. |
| 21 | 53.22 | 53.45 | 0.23 | 43 | | | SANDSTONE | FG. LT-M. GY. YTHNB. SSD. BRKN WITH MUDST LAM AND RIP-UPS. |
| 21 | 53.45 | 54.07 | 0.62 | *40 | | | SANDSTONE | FG. LT-M. GY. THNB. BRKN OCCASIONAL MUDST WISP AND ONE LAM. |
| 22 | 54.07 | 55.39 | 1.32 | *45 | | | SANDSTONE | FG. LT-M. GY. THNB. BRKN DISCONTINUOUS MUDST LAM & WISPS. RIP-UP S. OCCASIONAL QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------|
| 22 | 55.39 | 55.55 | 0.16 | 45 | | SANDSTONE | FG.M.GY.LAM.SSD.SLD WITH MUDST LAM, SOME COARSE GRAINED QTZ IN THE SS. |
| 22 | 55.55 | 55.68 | 0.13 | 45 | | SANDSTONE | FG.M.GY.SLD MUDST LAMS. |
| 22 | 55.68 | 55.83 | 0.15 | 45 | | MUDSTONE | DK.GY.LAM.BRKN COALY HOOD FRAGS. |
| 22 | 55.83 | 55.85 | 0.02 | 45 | | COAL | C-3.BLK.SLD WELL CONSOLIDATED, SHEARED. |
| 22 | 55.85 | 55.93 | 0.08 | 45 | | MUDSTONE | DK.GY.LAM.VBRKN WITH COAL STRINGERS, SHEARED. |
| 22 | 55.93 | 56.06 | 0.13 | 44 | | ROCK LOSS | |
| 23 | 56.06 | 56.14 | 0.08 | 44 | | SILTSTONE | M.GY.SLD WITH PYRITE BLEBS, FRACTURED. |
| 23 | 56.14 | 56.29 | 0.15 | 44 | | MUDSTONE | DK.GY.VSHRD. |
| 23 | 56.29 | 56.42 | 0.13 | 44 | | ROCK LOSS | |
| 23 | 56.42 | 56.85 | 0.43 | 44 | | MUDSTONE | DK.GY.LAM.BRKN ABUNDANT LISTRIC SURFACES, HIGHLY FRACTURED, ABUNDANT PLANT HASH. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------|
| 23 | 56.85 | 57.76 | 0.91 | 44 | | SILTSTONE | DK.GY.LAM.BRKN MUDDY WISPS, HIGHLY FRACTURED, PLANT FRAGS. |
| 23 | 57.76 | 57.98 | 0.22 | 44 | | SILTSTONE | DK.GY.LAM.BRKN AS ABOVE, WITHOUT PLANT FRAGS. |
| 24 | 57.98 | 58.43 | 0.45 | 44 | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDST WISPS AND LAM, RARE TINY PLANT HASH. |
| 24 | 58.43 | 58.50 | 0.07 | 43 | | SILTSTONE | M-DK.GY.LAM.VBRKN AS ABOVE. |
| 24 | 58.50 | 58.72 | 0.22 | 43 | | ROCK LOSS | |
| 24 | 58.72 | 59.27 | 0.55 | 43 | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDST WISPS, RARE PLANT FRAGS. |
| 24 | 59.27 | 59.78 | 0.51 | 43 | | SILTSTONE | M-DK.GY.LAM.BRKN AS ABOVE, ABUNDANT PLANT FRAGS, OCCASIONAL QTZ FRACTURE FILL. |
| 24 | 59.78 | 59.82 | 0.04 | 43 | | MUDSTONE | DK.GY.LAM.BRKN QTZ VEINING. |
| 24 | 59.82 | 59.88 | 0.06 | 43 | | MUDSTONE | M.GY POORLY CONSOLIDATED, SOFT, CLAYEY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 59.88 | 59.95 | 0.07 | 43 | | | MUDSTONE | DK.GY.LAM.VBRKN ABUNDANT QTZ FRACTURE FILL. |
| 24 | 59.95 | 60.05 | 0.10 | 43 | | | ROCK LOSS | |
| 25 | 60.05 | 60.16 | 0.11 | 43 | | | MUDSTONE | DK.GY.LAM.VBRKN MUDDY, ABUNDANT LISTRIC SURFACES. |
| 25 | 60.16 | 60.27 | 0.11 | 43 | | | ROCK LOSS | |
| 25 | 60.27 | 60.33 | 0.06 | 43 | | | MUDSTONE | DK.GY.VSHRD POORLY CONSOLIDATED. |
| 25 | 60.33 | 60.39 | 0.06 | 43 | | | MUDSTONE | DK.GY.SHRD |
| 25 | 60.39 | 60.43 | 0.04 | 43 | | | MUDSTONE | DK.GY.VSHRD POORLY CONSOLIDATED. |
| 25 | 60.43 | 60.52 | 0.09 | 43 | | | ROCK LOSS | |
| 25 | 60.52 | 60.77 | 0.25 | 43 | | | MUDSTONE | DK.GY.LAM.BRKN LISTRIC SURFACES, ABUNDANT COALY PLANT FRAGS (C. RIGIDA), COALY WOOD FRAGS. |
| 25 | 60.77 | 61.71 | 0.94 | 42 | | | SANDSTONE | VFG.M.GY.LAM.BRKN OCCASIONAL SLTY LAM NEAR TOP, MODERATELY CONSOLIDATED, NUMEROUS LISTRIC SURFAC ES, OCCASIONAL QTZ FILLED FRACTURE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 61.71 | 61.91 | 0.20 | 42 | | | SANDSTONE | VFG.M.GY.VBRKN AS ABOVE. |
| 25 | 61.91 | 62.01 | 0.10 | 42 | | | ROCK LOSS | |
| 26 | 62.01 | 62.25 | 0.24 | 42 | | | SANDSTONE | FG.M.GY.VBRKN HIGHLY FRACTURED (CLAY FILLED), SOME LI STRIC SURFACES. |
| 26 | 62.25 | 62.45 | 0.20 | 42 | | | SANDSTONE | FG.M.GY.VBRKN AS ABOVE. |
| 26 | 62.45 | 62.55 | 0.10 | 42 | | | ROCK LOSS | |
| 26 | 62.55 | 63.39 | 0.84 | 42 | | | SANDSTONE | FG.M.GY.BRKN HIGHLY FRACTURED (CLAY FILLED), SOME BR ECCIA ZONES. |
| 26 | 63.39 | 63.86 | 0.47 | 41 | | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN WITH SLTST BEDS, SLTY WISPS IN SS BEDS. |
| 27 | 63.86 | 65.08 | 1.22 | *41 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN WITH SLTST BEDS, SSD - TOPS UP, SOME BA NDS OF THICK (1.5 CM) SS WITH SLTY WISPS & ZONES OF NUMEROUS FRACTURES. |
| 27 | 65.08 | 65.59 | 0.51 | 49 | | | SILTSTONE | M-DK.GY.LAM.BRKN ABUNDANT FRACTURES, MUDST LAMS, ABUNDAN T PLANT FRAGS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D6H87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 28 | 65.59 | 65.75 | 0.16 | | 53 | | MUDSTONE | DK.GY.LAM.SHRD POORLY CONSOLIDATED, FRACTURED, OCCASIONAL QTZ VEIN. |
| 28 | 65.75 | 65.82 | 0.07 | | 54 | | ROCK LOSS | |
| 28 | 65.82 | 66.04 | 0.22 | | 55 | | MUDSTONE | DK.GY.LAM.BRKN HIGHLY FRACTURED WITH CLAY FILL, SLTST LAM.TOWARDS BASE, THIST-OFF AT BASE. |
| 28 | 66.04 | 66.78 | 0.74 | * | 60 | | SANDSTONE | VFG.M-DK.GY.VTHNB.BRKN SLTY LAM, FRACTURED, ONE DISCONTINUOUS COAL LAMINAE. |
| 28 | 66.78 | 67.62 | 0.84 | * | 53 | | SILTSTONE | M-DK.GY.VTHNB.BRKN WITH MUDST LAM, QTZ VEINING AT 0.74 M'D OMN AND AT BASE, FRACTURED WITH SOME QTZ FILL, ANGULAR COAL CLASTS. |
| 29 | 67.62 | 68.03 | 0.41 | | 52 | | SILTSTONE | M-DK.GY.BRKN OCCASIONAL MUDDY WISPS, LISTRIC SURFACE S, OCCASIONAL QTZ FRACTURE FILL, MODERATELY CONSOLIDATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D6H87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 68.03 | 68.73 | 0.70 | * | 52 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN WITH MUDST/SLTST LAM, OCCASIONAL FRACTURE, MINOR BED DISPLACEMENTS, CLAY FRACTURE FILL AT BASE (4 CM) WITH QTZ, BCA'S VARY. |
| 29 | 68.73 | 68.86 | 0.13 | | 40 | | SILTSTONE | M.GY.VBRKN ABUNDANT QTZ FRACTURE FILL. |
| 29 | 68.86 | 69.21 | 0.35 | | 34 | | SILTSTONE | M.GY.LAM.BRKN WITH DISCONTINUOUS MUDST WISPS, FRACTURED, COALY WOOD FRAGS. |
| 29 | 69.21 | 69.28 | 0.07 | | 28 | | SILTSTONE | M.GY.VBRKN AS ABOVE, LISTRIC SURFACES. |
| 29 | 69.28 | 69.39 | 0.11 | | 25 | | ROCK LOSS | |
| 29 | 69.39 | 69.67 | 0.28 | | 20 | | SILTSTONE | M.GY.VTHNB.SSD.BRKN LISTRIC SURFACES, QTZ FRACTURE FILL, MUDDY INTERBEDS. |
| 30 | 69.67 | 69.94 | 0.27 | * | 12 | | SILTSTONE | SSY.M.GY.VTHNB.BRKN WITH MUDST LAM, LISTRIC SURFACES. |
| 30 | 69.94 | 70.12 | 0.18 | | 15 | | SILTSTONE | M.GY.BRKN NUMEROUS FRACTURES ALMOST FORMING BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 30 | 70.12 | 70.65 | 0.53 | 21 | | | SANDSTONE | VFG.M.GY.LAM.BRKN VTHNB AT TOP BECOMING LAM DOWNWARDS, OC C QTZ FRACTURE FILL, SLTST LAMS. |
| 30 | 70.65 | 70.80 | 0.15 | 26 | | | SANDSTONE | VFG.M.GY.LAM.SCD WITH SLTST LAM, MOTTLED APPEARANCE. |
| 30 | 70.80 | 71.08 | 0.28 | 29 | | | SANDSTONE | VFG.M.GY.LAM.BRKN WITH SLTST LAM, MUDST WISPS, OCCASIONAL QTZ FRACTURE FILL AND VEINS. |
| 30 | 71.08 | 71.31 | 0.23 | *33 | | | SANDSTONE | VFG.M.GY.LAM.BRKN AS ABOVE. |
| 30 | 71.31 | 71.60 | 0.29 | 35 | | | SANDSTONE | VFG.M.GY.LAM.BRKN AS ABOVE WITH ABUNDANT QTZ VEINING FORM ING SOME BRECCIA. |
| 31 | 71.60 | 71.78 | 0.18 | 37 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST WISPS, QTZ VEINING AND FRACT URE FILL. |
| 31 | 71.78 | 71.84 | 0.06 | 38 | | | SILTSTONE | M.GY.VBRKN RUBBLE, AS ABOVE. |
| 31 | 71.84 | 72.32 | 0.48 | 40 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST LAM, FRACTURED WITH CLAY FIL L. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------|
| 31 | 72.32 | 72.68 | 0.36 | *44 | | | SANDSTONE | VFG.M.GY.LAM.BRKN WITH SLTST LAM, FRACTURED, OCCASIONAL S S RIP-UPS. |
| 31 | 72.68 | 72.82 | 0.14 | 43 | | | SILTSTONE | M.GY.LAM.BRKN HIGHLY FRACTURED ALMOST FORMING BRECCIA |
| 31 | 72.82 | 73.51 | 0.69 | 42 | | | SANDSTONE | FG.LT-M.GY.LAM.SSD.BRKN WITH SLTST LAM, OCCASIONAL QTZ FRACTURE FILL, ONE CG SS LAM NEAR TOP. |
| 32 | 73.51 | 73.68 | 0.17 | 40 | | | SANDSTONE | FG.M.GY.LAM.BRKN WITH SLTST WISPS, OCCASIONAL QTZ FRACTU RE FILL. |
| 32 | 73.68 | 73.84 | 0.16 | 40 | | | SILTSTONE | M.GY.LAM.SHRD FG SS LAM, POSSIBLE CORE LOSS. |
| 32 | 73.84 | 73.94 | 0.10 | 39 | | | ROCK LOSS | |
| 32 | 73.94 | 74.07 | 0.13 | 39 | | | SANDSTONE | FG.M.GY.SLD HIGHLY FRACTURED W/ CLAY FILL (ALMOST F ORMING BRECCIA). |
| 32 | 74.07 | 74.15 | 0.08 | 39 | | | SILTSTONE | SSY.M.GY.VBRKN FRACTURED, ABUNDANT QTZ FILL. |
| 32 | 74.15 | 74.33 | 0.18 | 38 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 32 | 74.33 | 74.99 | 0.66 | *37 | | SANDSTONE | FG.M.GY.LAM.BRKN WITH SLTY WISPS, OCCASIONAL QTZ FRACTURE FILL. |
| 32 | 74.99 | 75.30 | 0.31 | *41 | | SANDSTONE | FG.M.GY.LAM.BRKN WITH SLTY WISPS. |
| 32 | 75.30 | 75.42 | 0.12 | 46 | | MUDSTONE | DK.GY.LAM.BRKN DISCONTINUOUS COAL STRINGERS, ABUNDANT PLANT FRAGS., SOME LISTRIC SURFACES. |
| 32 | 75.42 | 75.60 | 0.18 | 49 | | SILTSTONE | M.GY.LAM.BRKN WITH SSY LAM, OCCASIONAL FRACTURE FILL NEAR TOP. |
| 33 | 75.60 | 76.01 | 0.41 | *55 | | SANDSTONE | VFG.M.GY.LAM.BRKN WITH SLTST LAM, FRACTURED, LISTRIC SURFACES. |
| 33 | 76.01 | 76.24 | 0.23 | 51 | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST LAM, LISTRIC SURFACES. |
| 33 | 76.24 | 76.26 | 0.02 | 49 | | SILTSTONE | M.GY.SHRD AS ABOVE. |
| 33 | 76.26 | 76.73 | 0.47 | 46 | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN WITH MUDST WISPS, LISTRIC SURFACES, OCCASIONAL QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|------------------------------------------------------------------------------------------|
| 33 | 76.73 | 76.81 | 0.08 | 42 | | ROCK LOSS | |
| 33 | 76.81 | 77.08 | 0.27 | 40 | | SILTSTONE | M.GY.LAM.VSHRD VBRKN, OCCASIONAL QTZ. |
| 33 | 77.08 | 77.19 | 0.11 | 38 | | SILTSTONE | SSY.M.GY.SLD BRECCIATED BY FRACTURING (MODERATE CONSOLIDATED QTZ FILL), LISTRIC SURFACE. |
| 33 | 77.19 | 77.28 | 0.09 | 36 | | SILTSTONE | SSY.M.GY.VSHRD AS ABOVE. |
| 33 | 77.28 | 77.36 | 0.08 | 35 | | ROCK LOSS | |
| 33 | 77.36 | 77.46 | 0.10 | 34 | | SILTSTONE | M.GY.LAM.SLD WITH MUDST WISPS, LISTRIC SURFACES, OCCASIONAL PLANT FRAGS. |
| 34 | 77.46 | 77.93 | 0.47 | 30 | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST WISPS, LISTRIC SURFACES, OCCASIONAL QTZ FRACTURE FILL. |
| 34 | 77.93 | 78.09 | 0.16 | 26 | | SILTSTONE | M.GY.LAM.VBRKN AS ABOVE, QTZ VOID AND FRACTURE FILL. |
| 34 | 78.09 | 78.76 | 0.67 | *21 | | SILTSTONE | SSY.M.GY.LAM.BRKN WITH VFG SS WISPS, RARE QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 34 | 78.76 | 79.38 | 0.62 | 27 | | SILTSTONE | M-DK.GY.LAM OCCASIONAL SSSY LAM, OCCASIONAL LISTRIC SURFACES. |
| 35 | 79.38 | 79.52 | 0.14 | 30 | | SILTSTONE | M-DK.GY.LAM.BRKN QTZ VEINING WITH BRECCIA. |
| 35 | 79.52 | 79.96 | 0.44 | 32 | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDDY WISPS, LISTRIC SURFACES. |
| 35 | 79.96 | 80.05 | 0.09 | 34 | | SILTSTONE | M-DK.GY.VBRKN AS ABOVE, QTZ FRACTURE FILL. |
| 35 | 80.05 | 80.18 | 0.13 | 35 | | ROCK LOSS | |
| 35 | 80.18 | 80.65 | 0.47 | *38 | | SILTSTONE | SSY, M-DK.GY.LAM.BRKN SSY SILTST. WITH LAM W/ MUDST. OCCASIONA L LISTRIC SURFACES. QTZ FRACTURE FILL T OWARDS BASE. |
| 35 | 80.65 | 80.77 | 0.12 | 39 | | SILTSTONE | M.GY.LAM.VBRKN |
| 35 | 80.77 | 80.89 | 0.12 | 39 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 35 | 80.89 | 81.21 | 0.32 | 39 | | SILTSTONE | M.GY.LAM.BRKN WITH MUDDY WISPS AND OCCASIONAL SSSY WIS PS NEAR TOP, QTZ VEINING NEAR BASE. |
| 35 | 81.21 | 81.52 | 0.31 | 40 | | SILTSTONE | M-DK.GY.LAM.BRKN INTERLAM WITH MUDST, QTZ VEINING TOWARD S TOP, LISTRIC SURFACES. |
| 36 | 81.52 | 81.93 | 0.41 | 41 | | MUDSTONE | DK.GY.LAM.BRKN ABUNDANT PLANT FRAGS, OCCASIONAL QTZ FR ACTURE FILL, LISTRIC SURFACES. |
| 36 | 81.93 | 81.97 | 0.04 | 41 | | SILTSTONE | M.GY.VBRKN ABUNDANT QTZ. |
| 36 | 81.97 | 82.07 | 0.10 | 41 | | ROCK LOSS | |
| 36 | 82.07 | 82.43 | 0.36 | 42 | | SILTSTONE | M.GY.LAM.BRKN OCCASIONAL DISCONTINUOUS MUDDY WISP. LI STRIC SURFACES, RARE QTZ VOID FILL. |
| 36 | 82.43 | 83.26 | 0.83 | 43 | | SILTSTONE | M.GY.LAM.SHRD OCCASIONAL FRACTURED QTZ FILL, LISTRIC SURFACES. |
| 37 | 83.26 | 83.33 | 0.07 | 44 | | MUDSTONE | DK.GY.LAM.SLD ABUNDANT PLANT FRAGS, PYRITE BLEB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 37 | 83.33 | 83.45 | 0.12 | | 44 | | MUDSTONE | DK.GY.LAM.VSHRD WITH COAL STRINGERS, PYRITE BLESS, QTZ VEIN, FG SS TOWARDS BASE. |
| 37 | 83.45 | 83.55 | 0.10 | | 44 | | ROCK LOSS | |
| 37 | 83.55 | 83.71 | 0.16 | | 44 | | SANDSTONE | FG.LT-M.GY.SLD QTZ FRACTURE FILL, LISTRIC SURFACES, OC CASIONAL MUDDY WISPS. |
| 37 | 83.71 | 83.82 | 0.11 | | 44 | | SANDSTONE | FG.LT-M.GY.VBRKN QTZ FRACTURE FILL. |
| 37 | 83.82 | 83.92 | 0.10 | | 45 | | ROCK LOSS | |
| 37 | 83.92 | 84.12 | 0.20 | | 45 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD DISCONTINUOUS MUDST LAM, QTZ FRACTURE FILL. |
| 37 | 84.12 | 84.20 | 0.08 | | 45 | | SANDSTONE | FG.LT-M.GY.SHRD LISTRIC SURFACES. |
| 37 | 84.20 | 84.92 | 0.72 | * | 46 | | SANDSTONE | FG.LT-M.GY.VTHNB MUDDY WISPS, MUDST LAM NEAR BASE, QTZ VEINING, LISTRIC SURFACES IN MUDST. |
| 37 | 84.92 | 84.98 | 0.06 | | 50 | | SANDSTONE | CG.LT-M.GY.VTHNB.SLD OCCASIONAL MUDST RIP-UP 'STORM UNIT'. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 84.98 | 85.10 | 0.12 | | 51 | | SANDSTONE | FG.LT-M.GY.BRKN OCCASIONAL >1 MM QTZ GRAIN. |
| 38 | 85.10 | 85.62 | 0.52 | * | 55 | | SANDSTONE | FG.YPR.LT-M.GY.VTHNB.BRKN MUDDY WISPS, DISCONTINUOUS MUDST LAM AND RIP-UPS TOWARDS BASE, QTZ FRACTURE FILL, COAL STRINGER .29 M DOWN. |
| 38 | 85.62 | 86.22 | 0.60 | | 61 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN NUMEROUS FRACTURES SOME QTZ FILLED, MUDST/SLTST LAM NEAR BASE WITH OCC SS RIP-UP. |
| 38 | 86.22 | 86.25 | 0.03 | | 65 | | MUDSTONE | DK.GY.LAM.SLD FRACTURED. |
| 38 | 86.25 | 86.27 | 0.02 | | 65 | | MUDSTONE | DK.GY.VBRKN AS ABOVE, POORLY CONSOLIDATED. |
| 38 | 86.27 | 86.37 | 0.10 | | 66 | | ROCK LOSS | |
| 38 | 86.37 | 86.58 | 0.21 | | 67 | | SANDSTONE | FG.M.GY.SSD.VBRKN WITH DISCONTINUOUS MUDST LAM AND RIP-UPS, FRACTURED. |
| 38 | 86.58 | 86.83 | 0.25 | * | 70 | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST AND VFG SS LAM, LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 38 | 86.83 | 87.08 | 0.25 | 72 | | | SANDSTONE | FG.M.GY.LAM.SSD.SLD WITH SLTST LAM AND MUDST WISPS, QTZ FRACTURE FILL, FRACTURE DISPLACE BEDS. |
| 39 | 87.08 | 87.62 | 0.54 | *76 | | | SILTSTONE | M-DK.GY.LAM.WRMBU.BRKN WITH VFG SS LAM, MUDST WISPS, ABUNDANT WRMBUR - TOPS DOWN, SSD, LISTRIC SURFACES. |
| 39 | 87.62 | 88.03 | 0.41 | *68 | | | SILTSTONE | LT-M.GY.LAM.WRMBU.BRKN W/ DISCONTINUOUS FG SS LAM, SSD (TOPS DOWN), SANDIER DOWNWARDS. |
| 39 | 88.03 | 88.26 | 0.23 | 67 | | | SANDSTONE | FG.M.GY.THNB.SLD OCCASIONAL FRACTURE. |
| 39 | 88.26 | 88.83 | 0.57 | 66 | | | SILTSTONE | DK.GY.LAM.BRKN MUDDY WISPS, SSSY NEAR TOP. |
| 39 | 88.83 | 88.94 | 0.11 | 65 | | | SILTSTONE | DK.GY.SHRD HIGHLY FRACTURED QTZ & TALC FILL, POORLY CONSOLIDATED. |
| 39 | 88.94 | 89.06 | 0.12 | 65 | | | SILTSTONE | DK.GY.LAM.BRKN MUDST WISPS, LISTRIC SURFACES, OCCASIONAL QTZ. |
| 40 | 89.06 | 89.18 | 0.12 | 64 | | | SILTSTONE | DK.GY.LAM.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 40 | 89.18 | 89.32 | 0.14 | 64 | | | ROCK LOSS | |
| 40 | 89.32 | 89.76 | 0.44 | 63 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN WITH SLTST LAM TOWARDS BASE, PYRITE BLEBS, OCCASIONAL QTZ FRACTURE FILL. |
| 40 | 89.76 | 89.86 | 0.10 | 62 | | | SILTSTONE | M.GY.BRKN NUMEROUS QTZ FILLED FRACTURES FORMING SOME BRECCIA. |
| 40 | 89.86 | 90.11 | 0.25 | *62 | | | SANDSTONE | FG.M.GY.LAM.BRKN WITH SLTST LAM, QTZ FRACTURE FILL. |
| 40 | 90.11 | 90.21 | 0.10 | 62 | | | SILTSTONE | M.GY.LAM.BRKN OCCASIONAL MUDST LAM, QTZ VEIN AT BASE. |
| 40 | 90.21 | 90.42 | 0.21 | 62 | | | BRECCIA | M.GY.BRKN NUMEROUS QTZ VEINS. LAMINATED MUDST/SLTST BRECCIA. |
| 40 | 90.42 | 91.18 | 0.76 | 62 | | | SANDSTONE | FG.LT-M.GY.LAM.BRKN W/ SLTST WISPS, FRACTURED TO BRECCIATED (CLAY FILL-OCCASIONAL QTZ FILL). |
| 41 | 91.18 | 91.82 | 0.64 | 62 | | | BRECCIA | M.GY. ABUNDANT FRACS (CLAY FILLED AT TOP-QTZ FILLED TOWARDS BASE), FG SS AND SLTST BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------|
| 41 | 91.82 | 92.07 | 0.25 | 62 | | BRECCIA | M.GY.YBRKN RUBBLE, AS ABOVE. |
| 41 | 92.07 | 92.19 | 0.12 | 62 | | ROCK LOSS | |
| 41 | 92.19 | 92.36 | 0.17 | 62 | | BRECCIA | M.GY.BRKN AS ABOVE. |
| 41 | 92.36 | 92.40 | 0.04 | 62 | | BRECCIA | M.GY.SLD AS ABOVE. QTZ FILLED. |
| 41 | 92.40 | 92.64 | 0.24 | 62 | | SANDSTONE | FG.M.GY.BRKN F-MG SS, NUMEROUS QTZ FRACTURE FILLS AL MOST FORMING BRECCIA. |
| 41 | 92.64 | 93.30 | 0.66 | 63 | | SANDSTONE | FG.M.GY.BRKN OCCASIONAL QTZ FRACTURE FILL AND VEIN. |
| 42 | 93.30 | 93.70 | 0.40 | 63 | | SANDSTONE | FG.M.GY.BRKN F-MG SS, QTZ VEINING FORMING SOME BRECCIA. |
| 42 | 93.70 | 94.32 | 0.62 | 63 | | SANDSTONE | YFG.M.GY.BRKN HIGHLY FRACTURED (CLAY FILLED, FORMING BRECCIA), MODERATELY CONSOLIDATED. |
| 42 | 94.32 | 94.51 | 0.19 | 63 | | SILTSTONE | M.GY.LAM.SHRD LISTRIC SURFACES, SSSY LAM. OCCASIONAL Q TZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 42 | 94.51 | 94.71 | 0.20 | 63 | | SILTSTONE | M-DK.GY.LAM.SSD.BRKN WITH SSSY LAM. |
| 42 | 94.71 | 94.89 | 0.18 | 63 | | ROCK LOSS | |
| 42 | 94.89 | 95.13 | 0.24 | 63 | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN WITH SLTST LAM. SSD. - TOPS DOWN, TWIST-OFF AT TOP. |
| 42 | 95.13 | 95.24 | 0.11 | 63 | | SANDSTONE | FG.M.GY.LAM.YBRKN AS ABOVE. |
| 42 | 95.24 | 95.42 | 0.18 | 63 | | ROCK LOSS | |
| 43 | 95.42 | 95.59 | 0.17 | 63 | | SANDSTONE | YFG.M.GY.LAM.YBRKN SLTST LAM. OCCASIONAL MUDST. WISPS. |
| 43 | 95.59 | 96.11 | 0.52 | *63 | | SANDSTONE | YFG.M.GY.LAM.BRKN BECOMES VTHNB TOWARDS BASE. SLTST WISPS, OCCASIONAL FRACTURE (CLAY FILLED). |
| 43 | 96.11 | 96.32 | 0.21 | 58 | | SILTSTONE | M-DK.GY.SLD NUMEROUS CLAY FILLED FRACTURES FORMING BRECCIA. |
| 43 | 96.32 | 96.39 | 0.07 | 57 | | SILTSTONE | M-DK.GY.LAM.SLD WITH MUDST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 43 | 96.39 | 96.73 | 0.34 | 54 | | | SILTSTONE | M.GY.BRKN NUMEROUS CLAY FILLED FRACTURES FORMING BRECCIA. |
| 43 | 96.73 | 97.14 | 0.41 | 49 | | | SANDSTONE | FG.M.GY.BRKN NUMEROUS CLAY FILLED FRACTURES FORMING BRECCIA. |
| 44 | 97.14 | 97.25 | 0.11 | 46 | | | SANDSTONE | FG.M.GY.SLD AS ABOVE. |
| 44 | 97.25 | 97.39 | 0.14 | 45 | | | SANDSTONE | VFG.M.GY.BRKN OCCASIONAL SLTY LAM. |
| 44 | 97.39 | 97.49 | 0.10 | 43 | | | SANDSTONE | FG.M.GY.BRKN FRACTURES (CLAY FILLED) FORMING BRECCIA. |
| 44 | 97.49 | 97.59 | 0.10 | 42 | | | ROCK LOSS | |
| 44 | 97.59 | 98.00 | 0.41 | 39 | | | SILTSTONE | SSY.M.GY.BRKN FRACTURES (CLAY FILLED) FORMING BRECCIA. |
| 44 | 98.00 | 98.46 | 0.46 | 33 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTY WISPS AND SLTST BAND, PYRITE BLEBS, OCCASIONAL LISTRIC SURFACE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 44 | 98.46 | 99.13 | 0.67 | *26 | | | SILTSTONE | M.GY.LAM.SSD.BRKN SSY WISPS, QTZ VEINING 0.27' W DOWN, VFG SS LAM TOWARDS BASE, SSD - TOPS DOWN. |
| 45 | 99.13 | 99.78 | 0.65 | *28 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN SOME VTHNBDS OF SS, SLTST LAM, OCCASIONAL QTZ VEIN. |
| 45 | 99.78 | 99.97 | 0.19 | 31 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN WITH MUDST LAM TOWARDS BASE. |
| 45 | 99.97 | 100.28 | 0.31 | 32 | | | ROCK LOSS | |
| 45 | 100.28 | 100.49 | 0.21 | 34 | | | SANDSTONE | VFG.M.GY.LAM.VBRKN WITH SLTST LAM, QTZ VEINING. |
| 45 | 100.49 | 100.85 | 0.36 | 36 | | | SANDSTONE | FG.M.GY.LAM.SLD WITH SLTST WISPS. |
| 45 | 100.85 | 101.44 | 0.59 | *39 | | | SANDSTONE | FG.M.GY.LAM.SSD.SLD W/ SLTST LAM & MUDST WISPS. LAM ARE DISCONTINUOUS BECAUSE OF SSD. OCC DISCONTINUOUS QTZ FRACTURE FILL. |
| 46 | 101.44 | 101.66 | 0.22 | 39 | | | MUDSTONE | DK.GY.LAM.BRKN WITH VFG SS LAM, OCCASIONAL SLTST LAM, DISCONTINUOUS QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 46 | 101.66 | 103.30 | 1.64 | 40 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN OCCASIONAL QTZ VEIN, OCCASIONAL FG WISP |
| 46 | 103.30 | 103.55 | 0.25 | | 41 | | SANDSTONE | MG.LT-M.GY.THNB.SLD OCCASIONAL PEBBLES (0.5 TO 2.5 CM LONG) . OCCASIONAL QTZ VEIN. |
| 47 | 103.55 | 104.01 | 0.46 | *41 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN AS ABOVE. |
| 47 | 104.01 | 104.47 | 0.46 | 40 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN ABUNDANT PEBBLES SIZE (VARIANCE AS ABOVE). |
| 47 | 104.47 | 104.59 | 0.12 | 39 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN OCCASIONAL PEBBLES, OCCASIONAL QTZ VEIN |
| 47 | 104.59 | 104.93 | 0.34 | 38 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN AS ABOVE. |
| 47 | 104.93 | 105.17 | 0.24 | 37 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN ABUNDANT PEBBLES, OCCASIONAL QTZ VEIN. |
| 47 | 105.17 | 105.52 | 0.35 | 36 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN RARE PEBBLES, OCCASIONAL QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------|
| 48 | 105.52 | 107.31 | 1.79 | 33 | | | SANDSTONE | MG.LT-M.GY.THNB.BRKN OCCASIONAL 3 CM BAND OF PEBBLES. |
| 49 | 107.31 | 107.70 | 0.39 | 29 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN |
| 49 | 107.70 | 109.14 | 1.44 | 27 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN RARE QTZ VEIN, RARE FG SS AND SLTST LAM |
| 50 | 109.14 | 110.67 | 1.53 | 22 | | | SANDSTONE | MG.LT-M.GY.MAS.BRKN OCCASIONAL QTZ FRACTURE FILL. |
| 50 | 110.67 | 110.72 | 0.05 | 19 | | | SANDSTONE | MG.LT-M.GY.BRKN WITH DISCONTINUOUS SLTST LAM. |
| 50 | 110.72 | 110.95 | 0.23 | 19 | | | SANDSTONE | MG.M.GY.VTHNB.SSD.SLD WITH SLTST BEDS, RIP-UPS VERY ANGULAR. |
| 51 | 110.95 | 111.38 | 0.43 | *18 | | | SANDSTONE | VFG.M.GY.LAM.SLD WITH SLTST LAM AND MUDST WISPS. |
| 51 | 111.38 | 111.76 | 0.38 | *45 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST WISPS, BANDS OF SSY SLTST AN D MUDDY SLTST. |
| 51 | 111.76 | 111.86 | 0.10 | 45 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 51 | 111.86 | 113.05 | 1.19 | 44 | | SILTSTONE | M-DK.GY.LAM.BRKN INTERLAM WITH MUDST, OCCASIONAL SSV WIS P. |
| 52 | 113.05 | 113.72 | 0.67 | 44 | | SILTSTONE | DK.GY.MAS.SLD RARE PLANT FRAGS. OTHERWISE FEATURELESS |
| 52 | 113.72 | 114.39 | 0.67 | *43 | 06901 | SILTSTONE | DK.GY.MAS.SLD SAME A/A WITH OCCASIONAL THIN COAL LAMS (ESP TOWARDS BASE). LOWER CONTACT MISSING (ROCK BREAK). LOWER 25 CM SAMPLED. |
| 52 | 114.39 | 114.43 | 0.04 | 43 | 06902 I | COAL | C-1.BLK.SLD ONE THIN (.05 CM) CARB MUDST LAM W/IN. |
| 52 | 114.43 | 114.53 | 0.10 | 43 | 06902 I | COAL LOSS | |
| 52 | 114.53 | 114.57 | 0.04 | 43 | 06902 I | MUDSTONE | CARB.BLK.BRKN OCCASIONAL THIN COAL LAMS. QTZ VEIN FILING. |
| 52 | 114.57 | 114.60 | 0.03 | 43 | 06902 I | COAL | C-2.BLK.BRKN |
| 52 | 114.60 | 114.64 | 0.04 | 43 | 06902 I | COAL | C-3.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 52 | 114.64 | 115.10 | 0.46 | 44 | 06902 I | COAL | C-1.BLK.BRKN AT .10 M: THIN (1 CM) C-3 BAND. OTHERWISE VERY CLEAN C-1 COAL WITH STRONG CONCHOIDAL FRACTURE. |
| 53 | 115.10 | 115.81 | 0.71 | 44 | 06902 I | COAL | C-1.BLK.BRKN |
| 53 | 115.81 | 116.02 | 0.21 | 45 | 06902 I | COAL LOSS | |
| 53 | 116.02 | 116.04 | 0.02 | 45 | 06902 I | COAL | C-6.BLK.SLD |
| 53 | 116.04 | 116.09 | 0.05 | 45 | 06902 I | COAL | C-3.BLK.SLD COMMON C-2 & OCCASIONAL C-1 BANDS W/IN. |
| 53 | 116.09 | 116.88 | 0.79 | *45 | 06902 I | COAL | C-1.BLK.BRKN WELL DEVELOPED CONCHOIDAL FRACTURE. |
| 54 | 116.88 | 117.26 | 0.38 | *34 | 06902 I | COAL | C-1.BLK.BRKN SAME A/A. RARE C-2/C-3 BANDS NEAR THE UNIT'S BASE. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|-----------------------------------------------------------------------|
| 54 | 117.26 | 117.59 | 0.33 | 37 | 06902 I FLD | COAL | C-1. BLK. BRKN SAME A/A. SHARP LOWER CONTACT. |
| 54 | 117.59 | 117.87 | 0.28 | 40 | 06902 I FLD | COAL LOSS | |
| 54 | 117.87 | 117.91 | 0.04 | 41 | 06903 I FLD | MUDSTONE | CARB. BLK. SLD VERY THIN COALY LAMS. W/IN. |
| 54 | 117.91 | 117.94 | 0.03 | 41 | 06903 I FLD | COAL | C-3. BLK. SLD SLIGHTLY SHEARED. COMMON LISTRIC SURFACES. |
| 54 | 117.94 | 118.09 | 0.15 | 42 | 06903 I FLD | COAL | C-1. BLK. PHRD |
| 54 | 118.09 | 118.18 | 0.09 | 43 | 06903 I FLD | MUDSTONE | CARB. BLK. BRKN OCCASIONAL COAL LAMS (ESP NEAR BASE). |
| 54 | 118.18 | 118.31 | 0.13 | 44 | 06903 I FLD | COAL | C-5. BLK. BRKN COMMON C-6 & THIN MUDST LAMS. OCCASIONAL C-3 BANDS. |
| 54 | 118.31 | 118.40 | 0.09 | 45 | 06903 I FLD | COAL | C-2. BLK. BRKN COMMON C-1 BANDS. |
| 54 | 118.40 | 118.50 | 0.10 | 46 | 06903 I FLD | COAL | C-5. BLK. SLD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|--------------------------------------------------------------------------------------------------|
| 54 | 118.50 | 118.71 | 0.21 | 47 | 06903 I FLD | COAL | C-1. BLK. BRKN |
| 55 | 118.71 | 119.11 | 0.40 | 49 | 06903 I FLD | COAL | C-1. BLK. BRKN COMMON C-2 BANDS. POSSIBLE FOLD AT .95 M. |
| 55 | 119.11 | 119.54 | 0.43 | 53 | 06903 I FLD | COAL LOSS | |
| 55 | 119.54 | 119.69 | 0.15 | 55 | 06903 I FLD | MUDSTONE | CARB. BLK. VBRKN COMMON COALY ZONES AND LAMS THROUGHOUT (ESP. NEAR BASE). |
| 55 | 119.69 | 119.94 | 0.25 | 57 | 06903 I FLD | COAL | C-5. BLK. PHRD COMMON C-4/C-3 BANDS. AS WELL AS C-6. |
| 55 | 119.94 | 120.11 | 0.17 | 59 | 06903 I FLD | COAL | C-3. BLK. VSHRD COMMON C-2/C-1 BANDS. INTERLAM WITH C-6/ MUDST BANDS, USUALLY <1 CM THICK. |
| 55 | 120.11 | 120.24 | 0.13 | *60 | 06903 I FLD | MUDSTONE | CARB. BLK. MAS. SLD COMMON LISTRIC SURFACES. MODERATELY CONSOLIDATED. |
| 55 | 120.24 | 120.50 | 0.26 | 60 | 06903 I FLD | COAL | C-4. BLK. VSHRD COMMON LISTRIC SURFACES. DIRTY COAL WITH H. RARE C-3/C-2 BANDS. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------|
| 56 | 120.50 | 120.56 | 0.06 | 60 | 06903 | I FLD | SILTSTONE | M.GY.MAS.SLD |
| 56 | 120.56 | 120.61 | 0.05 | 60 | 06903 | I FLD | COAL | C-5.BLK.PHRD COMMON LISTRIC SURFACES. |
| 56 | 120.61 | 120.66 | 0.05 | 60 | 06903 | I FLD | MUDSTONE | CARB.BLK.VBRKN COMMON LISTRIC SURFACES. |
| 56 | 120.66 | 120.81 | 0.15 | 60 | 06903 | I FLD | COAL | C-3.BLK.PHRD COMMON C-2 (ESP NEAR BASE OF UNIT). |
| 56 | 120.81 | 120.88 | 0.07 | 61 | 06903 | I FLD | COAL | C-2.BLK.VBRKN |
| 56 | 120.88 | 121.09 | 0.21 | 61 | 06903 | I FLD | COAL | C-4.BLK.VSHRD DOM INTERLAM VERY CARB MUDST/C-3 COAL. |
| 56 | 121.09 | 121.22 | 0.13 | 61 | 06903 | I FLD | COAL | C-6.BLK.VSHRD COMMON LISTRIC SURFACES. |
| 56 | 121.22 | 121.58 | 0.36 | 61 | 06903 | I FLD | COAL | C-3.BLK.VSHRD VERY COMMON C-4 & OCCASIONAL C-5. |
| 57 | 121.58 | 121.64 | 0.06 | 61 | 06903 | I FLD | COAL | C-3.BLK.VSHRD SOME C-4. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 57 | 121.64 | 121.72 | 0.08 | 61 | 06903 | I FLD | MUDSTONE | CARB.BLK.VBRKN |
| 57 | 121.72 | 121.89 | 0.17 | 61 | 06903 | I FLD | COAL | C-2.BLK.BRKN COMMON C-3 NEAR TOP. |
| 57 | 121.89 | 122.09 | 0.20 | 61 | 06903 | I FLD | COAL | C-3.BLK.PHRD OCCASIONAL C-4 & C-2. |
| 57 | 122.09 | 122.19 | 0.10 | 61 | 06903 | I FLD | COAL | C-2.BLK.PHRD |
| 57 | 122.19 | 122.44 | 0.25 | 62 | 06903 | I FLD | MUDSTONE | CARB.BLK.BRKN COMMON C-5/C-6 COAL BANDS UP TO 1 CM TH ICK THROUGHOUT BUT (ESP TOWARD BASE). |
| 57 | 122.44 | 122.65 | 0.21 | 62 | 06903 | I FLD | COAL | C-4.BLK.VBRKN THINLY INTBD & INTLAM C-2/C-3 COAL UP T O 1.5 CM & COALY MUDST/C-5 UP TO 1 CM. BEDS ARE OFTEN LATERALLY DISCONTINUOUS & MIXED. |
| 57 | 122.65 | 122.71 | 0.06 | 62 | 06903 | I FLD | MUDSTONE | CARB.DK.GY.BRKN WELL CONSOLIDATED. SLIGHT CARB MUDST WI TH.OCCASIONAL THIN.COAL LAMS. |
| 57 | 122.71 | 122.89 | 0.18 | 62 | 06903 | I FLD | COAL | C-2.BLK.PHRD OCCASIONAL THIN MUDST BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------|
| 60 | 133.44 | 133.65 | 0.21 | 70 | 06903 | I FLD | COAL | C-2. BLK. VSHRD COMMON C-1 BANDS NEAR BASE. |
| 61 | 133.65 | 133.79 | 0.14 | 70 | 06903 | I FLD | COAL | C-2. BLK. VSHRD SAME A/A. |
| 61 | 133.79 | 133.91 | 0.12 | 70 | 06903 | I FLD | MUDSTONE | CARB. BLK. YBRKN MOD CONSOLIDATED SLIGHTLY PLIABLE MUDST |
| 61 | 133.91 | 134.09 | 0.18 | 70 | 06903 | I FLD | COAL | C-1. BLK. BRKN |
| 61 | 134.09 | 134.12 | 0.03 | 71 | 06903 | I FLD | COAL | C-4. BLK. BRKN |
| 61 | 134.12 | 134.16 | 0.04 | 71 | 06903 | I FLD | COAL | C-2. BLK. SHRD |
| 61 | 134.16 | 134.19 | 0.03 | 71 | 06903 | I FLD | COAL | C-5. BLK. VSHRD |
| 61 | 134.19 | 134.53 | 0.34 | 71 | 06903 | I FLD | COAL | C-2. BLK. PWRD OCCASIONAL C-4 BANDS. COMMON THIN C-1 B ANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------|
| 61 | 134.53 | 134.59 | 0.06 | 71 | 06903 | I FLD | MUDSTONE | CARB. BLK. YBRKN OCCASIONAL THIN (<1 CM) C-6 BANDS. |
| 61 | 134.59 | 134.78 | 0.19 | 71 | 06903 | I FLD | COAL | C-1. BLK. PWRD |
| 61 | 134.78 | 134.92 | 0.14 | 71 | 06903 | I FLD | COAL | C-3. BLK. PWRD |
| 61 | 134.92 | 135.00 | 0.08 | 71 | 06904 | | MUDSTONE | SLTY. M-DK. GY. SLD. SLIGHTLY CARB SLTY MUDST. |
| 62 | 135.00 | 135.19 | 0.19 | 71 | | | SILTSTONE | M. GY. YTHNB. BIOTR. BRKN WITH MUDST. |
| 62 | 135.19 | 135.39 | 0.20 | 71 | | | SILTSTONE | M. GY. YBRKN AS ABOVE. |
| 62 | 135.39 | 135.57 | 0.18 | 72 | | | ROCK LOSS | |
| 62 | 135.57 | 135.87 | 0.30 | 72 | | | SILTSTONE | M. GY. BRKN AS ABOVE. MOTTLEY LOOK. |
| 62 | 135.87 | 136.11 | 0.24 | *72 | | | SANDSTONE | FG. M. GY. LAM. BRKN WITH SLTST LAM. MORE ABUNDANT DOWNWARDS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 62 | 136.11 | 136.32 | 0.21 | 72 | | | SILTSTONE | M. GY. LAM. VBRKN WITH VFG SS LAM., PYRITE BLEBS, OCCASIONAL QTZ VEINS. |
| 62 | 136.32 | 136.50 | 0.18 | 72 | | | ROCK LOSS | |
| 62 | 136.50 | 136.72 | 0.22 | 72 | | | SANDSTONE | FG. M. GY. LAM. SHRD POORLY CONSOLIDATED, SLTST WISPS AND LA M. HIGHLY FRACTURED. |
| 62 | 136.72 | 137.20 | 0.48 | 71 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN WITH OCCASIONAL SLTST LAM. FRACTURED AT TOP. |
| 63 | 137.20 | 137.81 | 0.61 | 71 | | | SANDSTONE | FG. LT-M. GY. THNB. VBRKN F-MG SS, OCCASIONAL QTZ FRACTURE FILL, OCCASIONAL 2 CM PEBBLE HORIZON. |
| 63 | 137.81 | 137.99 | 0.18 | 71 | | | ROCK LOSS | |
| 63 | 137.99 | 138.64 | 0.65 | 71 | | | SANDSTONE | MG. LT-M. GY. THNB. BRKN AS ABOVE. |
| 63 | 138.64 | 138.91 | 0.27 | 71 | | | SANDSTONE | MG. LT-M. GY. THNB. VBRKN AS ABOVE. |
| 63 | 138.91 | 139.09 | 0.18 | 70 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|--------------|-------------------------------------------------------------------------|
| 63 | 139.09 | 139.41 | 0.32 | 70 | | | SANDSTONE | MG. LT-M. GY. THNB. BRKN RARE PEBBLES, QTZ FRACTURE FILL. |
| 64 | 139.41 | 140.09 | 0.68 | 70 | | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN WITH DISCONTINUOUS SLTY WISPS. |
| 64 | 140.09 | 140.21 | 0.12 | 70 | | | SANDSTONE | MG. LT-M. GY. VBRKN AS ABOVE. |
| 64 | 140.21 | 140.40 | 0.19 | 70 | | | ROCK LOSS | |
| 64 | 140.40 | 140.68 | 0.28 | 70 | | | SANDSTONE | MG. LT-M. GY. BRKN AS ABOVE, OCCASIONAL QTZ VEIN AND FRACTURE FILL. |
| 64 | 140.68 | 140.93 | 0.25 | 69 | | | CONGLOMERATE | LT-M. GY. SLD MG SS MATRIX, WITH .5 TO 3 CM CHERT PEBBLES. |
| 64 | 140.93 | 141.00 | 0.07 | 69 | | | CONGLOMERATE | LT-M. GY. VBRKN AS ABOVE. |
| 64 | 141.00 | 141.19 | 0.19 | 69 | | | ROCK LOSS | |
| 64 | 141.19 | 141.79 | 0.60 | 69 | | | SANDSTONE | MG. LT-M. GY. BRKN OCCASIONAL PEBBLE HORIZON MORE ABUNDANT TOWARDS TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 65 | 141.79 | 142.21 | 0.42 | 69 | | SANDSTONE | MG. LT-M. GY. THNB. BRKN OCCASIONAL PEBBLE, QTZ FRACTURE FILL. |
| 65 | 142.21 | 142.57 | 0.36 | 69 | | SILTSTONE | M. GY. VTHNB. BRKN WITH MUDST BEDS, OCCASIONAL SSS WISPS, O CCASIONAL PLANT FRAG, LAM IN SOME PLACE S. |
| 65 | 142.57 | 142.63 | 0.06 | 68 | | SANDSTONE | FG. M. GY. VTHNB. SLD |
| 65 | 142.63 | 142.90 | 0.27 | 68 | | SILTSTONE | M. GY. LAM. SSD. BRKN WITH MUDST LAM. |
| 65 | 142.90 | 143.26 | 0.36 | 68 | | MUDSTONE | DK. GY. LAM. BRKN HIGHLY FRACTURED (CLAY FILLED), LISTRIC SURFACES. |
| 65 | 143.26 | 143.32 | 0.06 | 68 | | SANDSTONE | VFG. LT-M. GY. SLD POORLY CONSOLIDATED, HIGHLY FRACTURED W ITH CLAY FILL. |
| 65 | 143.32 | 143.54 | 0.22 | *68 | | SANDSTONE | FG. M. GY. LAM. SSD. BRKN WITH SLTST LAM, SSD - TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 65 | 143.54 | 143.65 | 0.11 | 68 | | SANDSTONE | FG. M. GY. LAM. WRMBU. SLD WITH SLTST LAM, WRMBUR - TOPS UP, DISTU RBED BEDS (BIOTRB). |
| 66 | 143.65 | 144.10 | 0.45 | 68 | | SANDSTONE | FG. M. GY. VTHNB. BIOTR. BRKN WITH MUDST LAM AND WISPS, SSD - TOPS UP . RIP-UPS. BIOTRB NEAR TOP. |
| 66 | 144.10 | 144.13 | 0.03 | 68 | | SILTSTONE | M. GY. SLD QTZ FRACTURE FILL. |
| 66 | 144.13 | 144.22 | 0.09 | 68 | | SANDSTONE | MG. LT-M. GY. VTHNB. SLD WITH SLTY WISPS, BAND WITH <1 CM. RIP-UP. S OF MUDST. |
| 66 | 144.22 | 144.39 | 0.17 | 68 | | SANDSTONE | FG. M. GY. LAM. WRMBU. BRKN WITH SLTST LAM, ABUNDANT WRMBUR - TOPS UP. |
| 66 | 144.39 | 144.53 | 0.14 | 68 | | SANDSTONE | FG. M. GY. VTHNB. BRKN OCCASIONAL SLTY LAM. |
| 66 | 144.53 | 144.77 | 0.24 | 68 | | SANDSTONE | FG. M. GY. LAM. WRMBU. BRKN WITH SLTST LAM, WRMBUR - TOPS UP. |
| 66 | 144.77 | 144.93 | 0.16 | 68 | | SANDSTONE | MG. M. GY. F-MG SS, OCCASIONAL MUDST RIP-UP, QTZ F RACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 66 | 144.93 | 144.96 | 0.03 | 68 | | | SANDSTONE | FG. M. GY. LAM. SLD INTERLAM WITH MUDST, LISTRIC SURFACES, QTZ VEINING. |
| 66 | 144.96 | 145.09 | 0.13 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. BRKN OCCASIONAL MUDST RIP-UPS. |
| 66 | 145.09 | 145.25 | 0.16 | 68 | | | SILTSTONE | M. GY. LAM. VBRKN WITH MUDST WISPS. |
| 66 | 145.25 | 145.47 | 0.22 | 68 | | | ROCK LOSS | |
| 66 | 145.47 | 145.65 | 0.18 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. SSD. BRKN MUDST RIP-UPS, BANDS OF BLACK 1 MM CLAS TS. |
| 66 | 145.65 | 145.71 | 0.06 | 68 | | | SANDSTONE | VFG. M. GY. YTHNB. SLD BLACK CLASTS AS ABOVE. |
| 66 | 145.71 | 145.81 | 0.10 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. SSD. VBRKN WITH MUDST LAM. |
| 66 | 145.81 | 146.03 | 0.22 | 68 | | | ROCK LOSS | |
| 67 | 146.03 | 147.38 | 1.35 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. SSD. BRKN WITH OCCASIONAL MUDST LAM AND RIP-UP, R ARE SLTST LAM, SSD - TOPS UP, FAULT AT 0.93 M. DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 67 | 147.38 | 147.87 | 0.49 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. SSD. BRKN OCCASIONAL MUDST LAM, HIGHLY FRACTURED WITH CLAY FILL. |
| 67 | 147.87 | 147.98 | 0.11 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. BIGTR. SLD WITH MUDST LAM. |
| 67 | 147.98 | 148.10 | 0.12 | 68 | | | SANDSTONE | FG. LT-M. GY. YTHNB. SLD OCCASIONAL MUDDY WISP. |
| 67 | 148.10 | 148.14 | 0.04 | 68 | | | MUDSTONE | DK. GY. LAM. SLD WITH FG SS BED. |
| 68 | 148.14 | 148.40 | 0.26 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. SSD. BRKN WITH MUDST LAM AND RIP-UPS. |
| 68 | 148.40 | 148.58 | 0.18 | 68 | | | MUDSTONE | SLTY. DK. GY. WITH FG SS LAM CONTAINING MUDST RIP-UPS & FRACTURING NEAR BASE. |
| 68 | 148.58 | 148.67 | 0.09 | 68 | | | SANDSTONE | FG. M. GY. LAM. BRKN WITH MUDST & SLTST WISPS. |
| 68 | 148.67 | 148.87 | 0.20 | 68 | | | SANDSTONE | FG. M. GY. YTHNB. BRKN RARE MUDST LAM AND RIP-UP. |
| 68 | 148.87 | 148.94 | 0.07 | 68 | | | MUDSTONE | DK. GY. LAM. SSD. SLD WITH FG SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 68 | 148.94 | 149.02 | 0.08 | 68 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN OCCASIONAL SLTY WISP. |
| 68 | 149.02 | 150.06 | 1.04 | *68 | | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN VTHNB IN SOME PLACES, SSD - TOPS UP, SLTST & MUDST LAM, WRMBUR, QTZ FRACT FILL NEAR BASE. |
| 69 | 150.06 | 150.64 | 0.58 | 68 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN DISCONTINUOUS MUDST LAM, OCCASIONAL QTZ FRACTURE FILL, BANDS OF LAM SLTST & MUDST, SOME LISTRIC SURFACES. |
| 69 | 150.64 | 150.83 | 0.19 | 68 | | | SANDSTONE | FG.M.GY.BRKN HIGHLY FRACTURED (ALMOST BRECCIA), OCC DISCONTINUOUS SLTST LAM, POORLY CONSOLIDATED. |
| 69 | 150.83 | 151.71 | 0.88 | 68 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN WITH MUDST LAM AND WISPS, OCCASIONAL MG SS BED, WRMBUR - TOPS UP. |
| 69 | 151.71 | 152.01 | 0.30 | 67 | | | SANDSTONE | FG.M.GY.VTHNB.WRMBU.BRKN WITH MUDST LAM AND WISPS. |
| 69 | 152.01 | 152.13 | 0.12 | 67 | | | SANDSTONE | FG.M.GY.LAM.SLD WITH SLTY LAM, BANDS OF >1 MM BLACK GRAINS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 70 | 152.13 | 153.03 | 0.90 | 67 | | | SANDSTONE | VFG.M.GY.VTHNB.BIOTR.BRKN SLTY LAM, FRACTURED. |
| 70 | 153.03 | 153.87 | 0.84 | *67 | | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN MORE SLTY LAM THAN ABOVE. |
| 70 | 153.87 | 153.97 | 0.10 | 67 | | | SILTSTONE | DK.GY.LAM.BRKN WITH MUDST LAM, LISTRIC SURFACES. |
| 70 | 153.97 | 154.01 | 0.04 | 67 | | | SILTSTONE | M-DK.GY.SLD WITH FG SS AND SMALL MUDST CLASTS (1.5 MM), BEDS DISTURBED - BIOTRB? |
| 70 | 154.01 | 154.12 | 0.11 | 67 | | | SANDSTONE | FG.LT-M.GY.WRMBU.BRKN DISCONTINUOUS SLTST LAM. |
| 70 | 154.12 | 154.24 | 0.12 | 67 | | | MUDSTONE | DK.GY.SLD WITH SLTY WISPS, OCCASIONAL PLANT FRAGS & COALY MOOD FRAG. |
| 71 | 154.24 | 154.73 | 0.49 | 66 | | | MUDSTONE | DK.GY.LAM.BRKN NUMEROUS PYRITE BLENDS AND STRINGERS, OCCASIONAL COAL STRINGERS, ABUNDANT PLANT FRAGS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 71 | 154.73 | 155.25 | 0.52 | 66 | | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. MORE COAL STRINGERS. BANDS OF NUMEROUS PYRITE STRINGERS 0.09 M THICK (0.27 M DOWN), 1.8 CM C-2 COAL 0.35 M DOWN. |
| 71 | 155.25 | 155.47 | 0.22 | 66 | | | SILTSTONE | M.GY.LAM.BRKN MUDDY WISPS, LISTRIC SURFACES, OCCASIONAL PLANT FRAG. |
| 71 | 155.47 | 156.01 | 0.54 | 66 | | | MUDSTONE | DK.GY.LAM.BRKN COAL STRINGERS, PLANT FRAGS. |
| 71 | 156.01 | 156.04 | 0.03 | 66 | | | COAL | C-2.BLK.BRKN MODERATELY CONSOLIDATED |
| 71 | 156.04 | 156.15 | 0.11 | 65 | | | MUDSTONE | DK.GY.LAM.BRKN AS MUDST ABOVE. |
| 72 | 156.15 | 156.72 | 0.57 | 65 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SILTST LAM, PYRITE BLEBS, CLAY FILL ED FRACTURES, QTZ FRACTURE FILL AT BASE, ABUNDANT COALY PLANT AND WOOD FRAGS. |
| 72 | 156.72 | 156.78 | 0.06 | 65 | | | MUDSTONE | M-DK.GY.BRKN HIGHLY FRACTURED WITH CLAY FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 72 | 156.78 | 157.13 | 0.35 | *65 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SILTST LAM, ABUNDANT PLANT FRAGS, LISTRIC SURFACES, HIGHLY FRACTURED ZONES |
| 72 | 157.13 | 157.63 | 0.50 | 66 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDST LAM, ABUNDANT PLANT FRAGS; P. NORDENSKIOLDII, P. LANCEOLATUS, CLADO PHLEBIS SP., LISTRIC SURFACES. |
| 72 | 157.63 | 158.04 | 0.41 | 66 | | | SILTSTONE | M-DK.GY.LAM.BRKN MUDST LAM, SSSY TOWARDS BASE. |
| 73 | 158.04 | 158.40 | 0.36 | 67 | | | SILTSTONE | M-DK.GY.LAM.SHRD WITH MUDST WISPS, OCCASIONAL SSSY WISPS, ABUNDANT LISTRIC SURFACES WITH SOME QTZ. |
| 73 | 158.40 | 158.68 | 0.28 | 68 | | | ROCK LOSS | |
| 73 | 158.68 | 158.83 | 0.15 | 68 | | | SILTSTONE | M-DK.GY.VSHRD AS ABOVE. |
| 73 | 158.83 | 159.39 | 0.56 | 68 | | | SILTSTONE | M-DK.GY.LAM.SHRD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 73 | 159.39 | 160.07 | 0.68 | 69 | | | SILTSTONE | SSY.M.GY.LAM.BRKN WITH VFG SS LAM, QTZ FRACTURE FILL, LISTRIC SURFACES, BAND OF DISTURBED BEDS, BLACK GRAINS IN SS BEDS. |
| 74 | 160.07 | 160.51 | 0.44 | 70 | | | SILTSTONE | VPR.DK.GY.VTHNB.VBRKN MODERATE AMOUNT OF FG-VFG SAND MIXED IN WITH SLTST. BEDDING BECOMING LAMINATED AT BASE OF INTERVAL. |
| 74 | 160.51 | 160.76 | 0.25 | 71 | | | ROCK LOSS | |
| 74 | 160.76 | 161.88 | 1.12 | *72 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.VBRKN INTERBEDDED DK.GY.SLTST AND FG SS WITH SHARP CONTACTS. SSD, LOAD CASTS AND OCCASIONAL SCOURS SHOW TOPS UP. SIMILAR TO "SLTY BANDED SAND" BETWEEN H & I SEAMS. |
| 75 | 161.88 | 162.30 | 0.42 | 72 | | | SANDSTONE | SLTY.FG.VPR.M.GY.LAM.BRKN FINELY LAMINATED AT TOP OF INTERVAL GRADUALLY BECOMING SLIGHTLY COARSER DOWNWARD APPROACHING MG SS AT BASE. SHARP LOWER CONTACT (SCOUR) AT BASE OF INTERVAL. COALIFIED PLANT MASH ON BEDDING PLANES. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 75 | 162.30 | 163.43 | 1.13 | 72 | | | MUDSTONE | SLTY.DK.GY.LAM.VBRKN OCCASIONAL FINE SILT AND FG SAND LAMINAE. |
| 75 | 163.43 | 163.59 | 0.16 | 71 | | | ROCK LOSS | |
| 75 | 163.59 | 163.71 | 0.12 | 71 | | | MUDSTONE | SLTY.DK.GY.MAS.SHRD NUMEROUS SHEARED LISTRIC SURFACES WITH SLICKENSIDES AND TALC. |
| 76 | 163.71 | 165.39 | 1.68 | 71 | | | MUDSTONE | SLTY.DK.GY.VTHNB.BRKN FAINT GRADATIONAL BEDDING THROUGHOUT. LAYERS ARE FAIRLY MONOTONOUS. VERY GRADUAL CHANGE FROM FINE MUD TO SILT OVER 2-3 CM. (COARSENING UP). NO PLANT MASH. |
| 77 | 165.39 | 166.02 | 0.63 | 71 | 07098 | | SILTSTONE | CARB.M.GY.BRKN DOMINANTLY SLTST WITH VERY RARE SLTY MUDST LAMS. COMMON PLANT AND WOOD FRAGS (OFTEN COALIFIED) THROUGHOUT BUT ESP TOWARDS BASE. LOWER 25 CM SAMPLED. |
| 77 | 166.02 | 166.09 | 0.07 | 71 | 07099 | H/I | COAL | C-3.BLK.VSHRD COMMON C-2/C-1 BANDS UP TO .5 CM. OCCASIONAL THIN MUDST LAM. |
| 77 | 166.09 | 167.20 | 1.11 | 71 | 07099 | H/I | COAL LOSS | |

* DENOTES MEASURED BCA

FORM
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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 77 | 167.20 | 167.25 | 0.05 | 70 | 07099 | H/I | MUDSTONE | CARB. BLK. BRKN PLATEY - MODERATELY CONSOLIDATED. |
| 77 | 167.25 | 167.32 | 0.07 | 70 | 07099 | H/I | MUDSTONE | CARB. BLK. BRKN SAME A/A. |
| 77 | 167.32 | 167.48 | 0.16 | 70 | 07099 | H/I | COAL | C-3. BLK. PWRD COMMON C-2 & C-4 BANDS. |
| 77 | 167.48 | 167.55 | 0.07 | 70 | 07099 | H/I | COAL | C-1. BLK. VSHRD |
| 77 | 167.55 | 167.69 | 0.14 | 70 | 07099 | H/I | COAL | C-4. BLK. PWRD |
| 77 | 167.69 | 167.71 | 0.02 | 70 | 07099 | H/I | MUDSTONE | CARB. BLK. VSHRD THIN COAL LAMS THROUGHOUT. |
| 77 | 167.71 | 167.84 | 0.13 | 70 | 07099 | H/I | COAL | C-3. BLK. PWRD |
| 78 | 167.84 | 167.92 | 0.08 | 70 | 07099 | H/I | COAL | C-3. BLK. PWRD SAME A/A. |
| 78 | 167.92 | 168.03 | 0.11 | 70 | 07100 | | MUDSTONE | CARB. M-DK. GY. VBRKN VERY CARB AT TOP GRADING DOWNWARD INTO A SLIGHTLY CARB SLTY MUOST AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 78 | 168.03 | 168.48 | 0.45 | 70 | 07100 | | ROCK LOSS | |
| 78 | 168.48 | 169.55 | 1.07 | *70 | | | SILTSTONE | SSY. M-DK. GY. VTHNB. BIOTR. BRKN THINLY INTBED & INTLAM VFG SS/SLTST (45/55). BEDS ARE DOMINANTLY HAVY AND COMM ONLY DISRUPTED. COMMON THIN "HELMINTHOP SIS" HORIZONS THROUGHOUT. BIOTRB COMMON AS WELL AS SSD. UPPER 14 CM SAMPLED. |
| 78 | 169.55 | 169.87 | 0.32 | 66 | | | SILTSTONE | SSY. M-DK. GY. MAS. SSD. SLD VERY DISRUPTED UNIT, POSSIBLY DUE TO SLUMPING OR SEVERE SSD. |
| 79 | 169.87 | 171.71 | 1.84 | *60 | | | SANDSTONE | SLTY. FG. VPR. M. GY. VTHNB. BRKN MUCH SILT MIXED IN WITH F-MG SAND. OCCASIONAL BLACK SPECKS 1 MM IN DIA (WORM PELLETS?). QZ YEINING & FAULTING WITH C M SCALE DISPLACEMENT. MOSTLY MASSIVE WITH OCCASIONAL DARK ORGANIC RICH LAYERS 2-4 CM WIDE. |
| 80 | 171.71 | 171.95 | 0.24 | 58 | | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. VBRKN MIXED SILT & SAND WITH WORM PELLETS (?) AS ABOVE. NUMERQUS SLICKENSIDES. W/ TAL C. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 80 | 171.95 | 172.18 | 0.23 | | 58 | | ROCK LOSS | |
| 80 | 172.18 | 172.99 | 0.81 | | 57 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. BRKN LITH AS ABOVE WITH ABUNDANT POLISHED LISTRIC SURFACES & SLICKENSIDES. 4CM WIDE LENS OF DIAGENETIC CARBONATE REXLLTN (LOOKS LIKE "SNOWFLAKE" MARKER BUT IS ONLY A DISCONTINUOUS LENS - NOT A DISTINCT LAYER - SEEMS TO FOLLOW OLD FRACTURES). |
| 80 | 172.99 | 173.58 | 0.59 | | 56 | | MUDSTONE | SLTY. DK. GY. LAM. SHRD ABUNDANT POLISHED LISTRIC SURFACES. VERY FINE GRAINED WITH NUMEROUS LIGHTER GRAY SILT LAMINAE THROUGHOUT. MUCH FAULTING. |
| 81 | 173.58 | 174.48 | 0.90 | | *55 | | MUDSTONE | DK. GY. MAS. VBRKN FAIRLY HOMOGENEOUS WITH SMALL ZONES OF DISSEMINATED PYRITE. MINOR HELMINTHOSIS. BIVALVE HASH. SHEARING. LISTRIC SURFACES. BCA TAKEN ON PYRITE ZONE CONTACT. |
| 81 | 174.48 | 174.91 | 0.43 | | 59 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 81 | 174.91 | 175.27 | 0.36 | | 61 | | MUDSTONE | DK. GY. MAS. SLD HOMOGENEOUS MASSIVE MUDST AS ABOVE W/ S TAFFINELLA BIVALVES (1-2 CM LONG). MINOR PLANT HASH (SOME COALIFIED). |
| 82 | 175.27 | 177.13 | 1.86 | | 68 | | MUDSTONE | DK. GY. MAS. BRKN MASSIVE MUDST WITH BIVALVES & DISSEMINATED PYRITE IN WHAT APPEARS TO BE CHEMED UP BIOTURBATED ZONES. |
| 83 | 177.13 | 177.86 | 0.73 | | *75 | | SILTSTONE | SSY. DK. GY. THKB. MRMBU. BRKN OCCASIONAL VFG SS LAM WITHIN SLTST. SS/SLTST = (10/90). PYRITE IS COMMON W/IN THE SLTST. SS LAM HAVE RAPID GRADATIONAL L & SL WAVY CONTACTS. MAIN SS IS LOCATED AT .25 M. CORRECT MAY UP (MRMBUR). |
| 83 | 177.86 | 178.11 | 0.25 | | 72 | | MUDSTONE | CARB. DK. GY. MAS. BRKN WELL CONSOLIDATED. SLIGHTLY SLTY. |
| 83 | 178.11 | 178.15 | 0.04 | | 72 | | SILTSTONE | CARB. DK. GY. LAM. SLD COMMON THIN COAL LAMS THROUGHOUT. |
| 83 | 178.15 | 178.19 | 0.04 | | 71 | H/12 | COAL | C-4. BLK. SLD |
| 83 | 178.19 | 178.22 | 0.03 | | 71 | H/12 | SILTSTONE | CARB. DK. GY. BRKN SAME AS PREVIOUS SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------|
| 83 | 178.22 | 178.38 | 0.16 | 71 | | H/I2 | MUDSTONE | CARB. BLK. VBRKN SLTY NEAR BASE WITH SOME THIN COAL LAMS |
| 83 | 178.38 | 178.51 | 0.13 | 70 | | H/I2 | COAL | C-2. BLK. SLD RAPID GRADATIONAL LOWER CONTACT. |
| 83 | 178.51 | 179.72 | 1.21 | 66 | | H/I2 | COAL LOSS | |
| 83 | 179.72 | 179.75 | 0.03 | 63 | | H/I2 | MUDSTONE | CARB. DK. GY. BRKN MINOR QTZ VEINING W/IN. |
| 83 | 179.75 | 179.79 | 0.04 | 63 | | H/I2 | COAL | C-4. BLK. PWRD |
| 83 | 179.79 | 179.82 | 0.03 | 62 | | H/I2 | SILTSTONE | CARB. M. GY. BRKN |
| 83 | 179.82 | 179.87 | 0.05 | 62 | | H/I2 | COAL | C-5. BLK. SLD INTLAM. COAL/MUDST (60/40). LAMS = HORIZ ONTAL & UP TO 0.5 CM THICK (AVG = 1MM). |
| 84 | 179.87 | 179.97 | 0.10 | 62 | | H/I2 | COAL LOSS | |
| 84 | 179.97 | 180.51 | 0.54 | *60 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN OCCASIONAL COAL WISPS 1-3 MM WIDE. ONE FAINT LAMINAE PRESENT. MINOR QTZ/ANK VE INING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 84 | 180.51 | 180.54 | 0.03 | 59 | | | COAL | C-1. BLK CONTORTED. MUCH QTZ VEINING. POSSIBLY 1 OR 2 CM OF COAL LOSS HERE. |
| 84 | 180.54 | 180.63 | 0.09 | 58 | | | MUDSTONE | PYR. GY. MAS. SLD HUGE BLEBS OF PYRITE 4 CM IN DIA. |
| 84 | 180.63 | 181.79 | 1.16 | *55 | | | SILTSTONE | SSY. W. GY. LAM. VBRKN FINELY LAMINATED. TWO 4MM WIDE COAL STR INGERS AT TOP. BECOMING INCREASINGLY SA NDY DOWNWARD. |
| 84 | 181.79 | 182.29 | 0.50 | 58 | | | ROCK LOSS | |
| 85 | 182.29 | 183.91 | 1.62 | 61 | | | SANDSTONE | SLTY. W. GY. LAM. VBRKN OCCASIONAL FINE SLTY LAMINAE. VERY INTE NSE QTZ & SIDERITE VEINING WITH VEINS A S MUCH AS 7 CM WIDE AND SOME PARALLEL T O CORE AXIS. |
| 86 | 183.91 | 185.14 | 1.23 | *65 | | | SANDSTONE | F-MG. MOD. M. GY. MAS. SLD PREDOMINANTLY MASSIVE WITH MINOR SLTY W ISPS. COARSENING IN PLACES TO MG. MINOR MUDST RIP-UP CLASTS. |
| 86 | 185.14 | 185.48 | 0.34 | 64 | | | SANDSTONE | F-MG. MOD. GY. MAS. SLD LITH AS ABOVE. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 86 | 185.48 | 185.66 | 0.18 | 63 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN SHARP UPPER, FAIRLY GRADATIONAL LOWER C ONFACTS. MODERATE QTZ VEINING. |
| 86 | 185.66 | 185.84 | 0.18 | 63 | | | SANDSTONE | F-MG. MOD. H. GY. MAS. SLD INTENSE QTZ VEINING. |
| 86 | 185.84 | 185.94 | 0.10 | 63 | | | ROCK LOSS | |
| 87 | 185.94 | 186.95 | 1.01 | 62 | | | SANDSTONE | F-MG. MEL. H. GY. MAS. VBRKN INTENSE QTZ VEINING. EXTREMELY BROKEN C ORE. PROBABLE LOSS HERE. |
| 87 | 186.95 | 187.15 | 0.20 | 61 | | | ROCK LOSS | |
| 88 | 187.15 | 187.42 | 0.27 | 61 | | | SANDSTONE | F-MG. MEL. H. GY. MAS. VBRKN LITH AS ABOVE. |
| 88 | 187.42 | 187.47 | 0.05 | 61 | | | SILTSTONE | CARB. DK. GY. VBRKN RUBBLE. CORE TWIST-OFF HERE. COALY LENS ES. THROUGHOUT. |
| 88 | 187.47 | 187.59 | 0.12 | 61 | | | ROCK LOSS | |
| 88 | 187.59 | 187.94 | 0.35 | 60 | | | SANDSTONE | F-MG. MEL. H. GY. MAS. VBRKN INTENSE QTZ VEINING. ONE 5 MM WIDE COAL STRINGER. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 88 | 187.94 | 188.73 | 0.79 | 59 | | | SANDSTONE | F-MG. MOD. H. GY. MAS. VBRKN LITH AS ABOVE WITH ONLY RARE QTZ VEINS 1 MM WIDE. |
| 88 | 188.73 | 189.08 | 0.35 | 59 | | | ROCK LOSS | |
| 89 | 189.08 | 191.11 | 2.03 | 57 | | | SANDSTONE | F-MG. MOD. H. GY. MAS. BRKN LITH AS ABOVE WITH MINOR MUDST RIP-UP C LASTS. ONE 1 CM. WIDE ORGANIC-RICH MUD. B AND. |
| 90 | 191.11 | 192.01 | 0.90 | 55 | | | SANDSTONE | F-MG. MOD. H. GY. MAS. BRKN LITH AS ABOVE. MINOR MUDST RIP-UPS. |
| 90 | 192.01 | 192.19 | 0.18 | 54 | | | SANDSTONE | SLTY. PR. DK. GY. LAM. BRKN INTENSE QTZ VEINING AND ABUNDANT DENSEL Y PACKED 3 MM WIDE MUDST RIP-UPS. MUCH SILT MIXED IN. |
| 90 | 192.19 | 192.73 | 0.54 | 53 | | | SANDSTONE | F-MG. MOD. H. GY. MAS. VBRKN |
| 90 | 192.73 | 193.02 | 0.29 | 53 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 91 | 193.02 | 194.11 | 1.09 | 52 | | SANDSTONE | F-MG. MOD. H. GY. MAS. VBRKN INTENSE QTZ VEINING. BRECCIATED IN PLACES. ONE QTZ VEIN 15 CM WIDE. |
| 91 | 194.11 | 194.81 | 0.70 | 50 | | SANDSTONE | F-MG. MOD. H. GY. MAS. VBRKN LITH AS ABOVE; BRECCIATED IN PLACES WITH H. INTENSE QTZ VEINING. |
| 91 | 194.81 | 195.09 | 0.28 | 50 | | ROCK LOSS | |
| 92 | 195.09 | 196.35 | 1.26 | 48 | | SANDSTONE | SLTY. FG. PR. H. GY. MAS. VBRKN MODERATE QTZ VEINING. MORE SILT MIXED THAN ABOVE. VERY FRACTURED CORE. MINOR MUDST RIP-UP CLASTS. |
| 92 | 196.35 | 196.61 | 0.26 | 47 | | SILTSTONE | DK. GY. MAS. BRKN 6 CM AT TOP OF INTERVAL IS SOFT & POORLY CONSOLIDATED. |
| 93 | 196.61 | 197.08 | 0.47 | 47 | | MUDSTONE | CARB. DK. GY. MAS. BRKN MODERATELY CONSOLIDATED PLATEY MUDST W/ COMMON LISTRIC SURFACES. BRECCIATED ZONE (5 CM) AT .06M WITH ABUNDANT QTZ FRACTURE FILL. |
| 93 | 197.08 | 197.12 | 0.04 | 46 | | MUDSTONE | CARB. DK. GY. MAS. BRKN SAME A/A. LOWER CONTACT SHARP & REPRESENTS UPPER LIMB OF FOLD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 93 | 197.12 | 197.16 | 0.04 | 46 | | COAL | C-2. BLK. SLD AT FOLD HINGE. |
| 93 | 197.16 | 197.64 | 0.48 | 46 06905 | | MUDSTONE | CARB. DK. GY. MAS. VBRKN PLATEY MODERATELY CONSOLIDATED SLIGHTLY CARB MUDST. QTZ VEIN-FILLING OCC OCCURS LISTRIC SURFACES COMMON. LOWER 25 CM SAMPLED. |
| 93 | 197.64 | 197.69 | 0.05 | 46 06906 | H. FLD. | COAL | C-6. BLK. BRKN |
| 93 | 197.69 | 197.73 | 0.04 | 46 06906 | H. FLD. | COAL | C-1. BLK. SLD |
| 93 | 197.73 | 197.78 | 0.05 | 45 06906 | H. FLD. | MUDSTONE | CARB. BLK. VBRKN COMMON THIN COAL LAM & THIN QTZ VEINS. |
| 93 | 197.78 | 197.92 | 0.14 | 45 06906 | H. FLD. | COAL LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 93 | 197.92 | 198.26 | 0.34 | 45 | 06906 H FLD | MUDSTONE | CARB. BLK. VBRKN AT .15 M FOLD AXIS PRESENT. LISTRIC SUR FACES COMMON THROUGHOUT. PYRITE COMMON AT .04 M. UPPER LIMB BCA = 60 DEGREES, LOWER LIMB = 35 DEGREES. SAME A/A. |
| 93 | 198.26 | 198.67 | 0.41 | 44 | 06906 H FLD | COAL LOSS | |
| 93 | 198.67 | 198.68 | 0.01 | 44 | 06906 H FLD | COAL | C-1. BLK. SLD |
| 93 | 198.68 | 198.81 | 0.13 | 44 | 06906 H FLD | MUDSTONE | CARB. BLK. BRKN SAME AS PREVIOUS MUDST. |
| 93 | 198.81 | 198.85 | 0.04 | 44 | 06906 H FLD | COAL | C-2. BLK. BRKN |
| 94 | 198.85 | 198.88 | 0.03 | 44 | 06906 H FLD | MUDSTONE | CARB. BLK. BRKN |
| 94 | 198.88 | 198.99 | 0.11 | 44 | 06906 H FLD | COAL | C-2. BLK. SLD COMMON C-1 & OCCASIONAL C-3 BANDS. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|--------------------------------------------------------------------------------------------------------------|
| 94 | 198.99 | 199.14 | 0.15 | 44 | 06906 H FLD | MUDSTONE | CARB. BLK. SLD COMMON C-5/C-6 THIN BANDS THROUGHOUT. S OME PYRITE. |
| 94 | 199.14 | 199.27 | 0.13 | 43 | 06906 H FLD | COAL | C-5. BLK. SLD |
| 94 | 199.27 | 199.35 | 0.08 | 43 | 06906 H FLD | COAL | C-4. BLK. BRKN COMMON C-3 & THIN C-2 BANDS. |
| 94 | 199.35 | 199.60 | 0.25 | 43 | 06906 H FLD | MUDSTONE | CARB. BLK. BRKN COMMON THIN COAL LAMS UP TO .5 CM THROU GHOUT. SOME QTZ VEIN FILLING & OCC PYRI TE. |
| 94 | 199.60 | 199.83 | 0.23 | 43 | 06906 H FLD | COAL | C-2. BLK. BRKN COMMON C-1 & OCCASIONAL THIN MUDST LAMS (WITH SOME PYRITE) UP TO .5 CM. |
| 94 | 199.83 | 199.96 | 0.13 | 42 | 06906 H FLD | MUDSTONE | SLTY. DK. GY. BRKN VERY CARB. SLTY. MUDST. RESISTIVE. |
| 94 | 199.96 | 200.16 | 0.20 | 42 | 06906 H FLD | COAL LOSS | |
| 94 | 200.16 | 200.35 | 0.19 | 42 | 06906 H FLD | COAL | C-2. BLK. SLD COMMON C-1 THROUGHOUT. OCCASIONAL THIN SLTY. MUDST. LAMS A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 94 | 200.35 | 200.37 | 0.02 | 42 | 06906 | H FLD | MUDSTONE | CARB. DK. GY. BRKN |
| 94 | 200.37 | 200.47 | 0.10 | 41 | 06906 | H FLD | COAL | C-2. BLK. BRKN |
| 95 | 200.47 | 200.52 | 0.05 | 41 | 06906 | H FLD | COAL | C-5. BLK. BRKN |
| 95 | 200.52 | 200.64 | 0.12 | 41 | | H FLD | MUDSTONE | CARB. BLK. BRKN THIN COAL LAMS COMMON. |
| 95 | 200.64 | 201.37 | 0.73 | 41 | | H FLD | SILTSTONE | CARB. M. GY. MAS. BRKN SLIGHT CARB MASSIVE SLTST WITH OCCASIONAL PLANT DEBRIS W/IN. BECOMES MUDDIER TOWARDS BASE. |
| 95 | 201.37 | 201.93 | 0.56 | 40 | | H FLD | MUDSTONE | CARB. DK. GY. MAS. BRKN OCCASIONAL THIN COAL LAMS THROUGHOUT & QTZ VEIN-FILLING. WELL CONSOL. |
| 95 | 201.93 | 202.52 | 0.59 | 39 | | H FLD | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 95 | 202.52 | 202.70 | 0.18 | 38 | | H FLD | MUDSTONE | CARB. DK. GY. MAS. VSHRD COMMON LISTRIC SURFACES. TOP PORTION VERY CARB - DECREASING TOWARDS BASE. |
| 96 | 202.70 | 202.83 | 0.13 | 38 | | H FLD | MUDSTONE | CARB. DK. GY. MAS. VSHRD SAME A/A. |
| 96 | 202.83 | 202.85 | 0.02 | 38 | | H FLD | COAL | C-3. BLK. VSHRD |
| 96 | 202.85 | 202.91 | 0.06 | 38 | | H FLD | MUDSTONE | CARB. BLK. BRKN SLIGHT CARB MODERATE CONSOLIDATED MUDST |
| 96 | 202.91 | 203.12 | 0.21 | 38 | | H FLD | MUDSTONE | CARB. BLK. VSHRD VERY CARB. MUDST. WITH COMMON THIN COAL LAMS UP TO .5 CM. COMMON LISTRIC SURFACES. |
| 96 | 203.12 | 203.49 | 0.37 | 37 | | H FLD | COAL LOSS | |
| 96 | 203.49 | 203.71 | 0.22 | 37 | | H FLD | MUDSTONE | CARB. DK. GY. BRKN WELL CONSOLIDATED WITH OCCASIONAL THIN (<1 MM) COAL LAMS W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 96 | 203.71 | 203.74 | 0.03 | 37 | | H.FLD. | COAL | C-2.BLK.SLD COMMON C-1 - SHARP UPPER & LOWER CONTACTS. |
| 96 | 203.74 | 204.54 | 0.80 | *36 | | | SILTSTONE | M.GY.LAM.SLD THIN COAL LAMS AT TOP ONLY. INTLAM VFG SS/SLTST (S/95). SS LAMS ARE VERY THIN (<1 MM) OFTEN DISCONTINUOUS & WAVY, USU ALLY WITH RAPID GRADATIONAL UPPER & LOW ER CONTACTS. |
| 97 | 204.54 | 205.57 | 1.03 | 34 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN BEDDING FAIRLY FAINT. LOADING & HORIZON TAL WRMBURS-SHOW TOPS DOWN. ILLEDGIBLE FOOT MARKER IN THIS INTERVAL AT 1.03 M FROM TOP. |
| 97 | 205.57 | 206.15 | 0.58 | 32 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN |
| 97 | 206.15 | 206.30 | 0.15 | 31 | | | BENTONITE | LT.GY.MAS.BRKN FAIRLY SOFT, SHARP STRATIGRAPHIC BOTTOM CONTACT, GRADATIONAL UPPER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87019

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 97 | 206.30 | 206.53 | 0.23 | *31 | | | MUDSTONE | SLTY.DK.GY.LAM.WRMBU.SLD HORIZONTAL WRMBURS & LOAD CASTS SHOW TO PS DOWN. |
| 98 | 206.53 | 208.66 | 2.13 | *33 | | | MUDSTONE | SLTY.DK.GY.LAM.WRMBU.SLD LITH AS ABOVE WITH ABUNDANT HORIZONTAL & SHORT (1 CM) VERT WRMBURS. |
| 99 | 208.66 | 210.21 | 1.55 | *30 | | | SILTSTONE | DK.GY.LAM.WRMBU.SLD MUDDY SILTSTONE, HORIZONTAL WRMBURS AND LOAD CASTS SHOW TOPS DOWN. END OF HOLE . T.D. = 213.66 M. DRILLER'S MARK. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87019

740

GEOLOGIST : LEE/BARKER

DATE : MAR 08/88

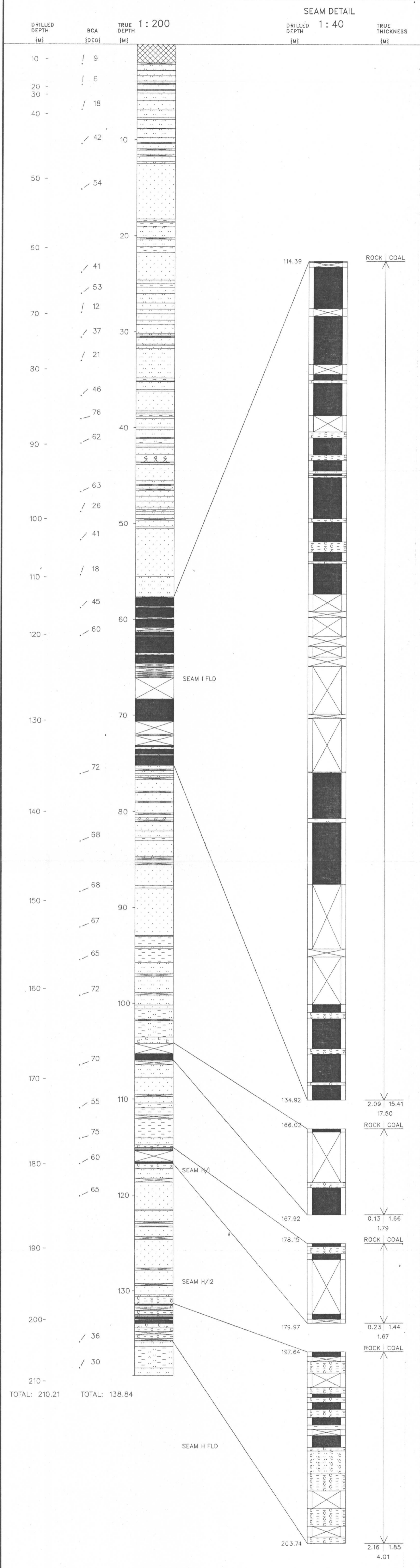
DRAWING NO. :

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SCALE : 1:200 1:40

NORTHING: 634555.0 N
 EASTING: 507468.0 E
 INCLINATION: 90.0°



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

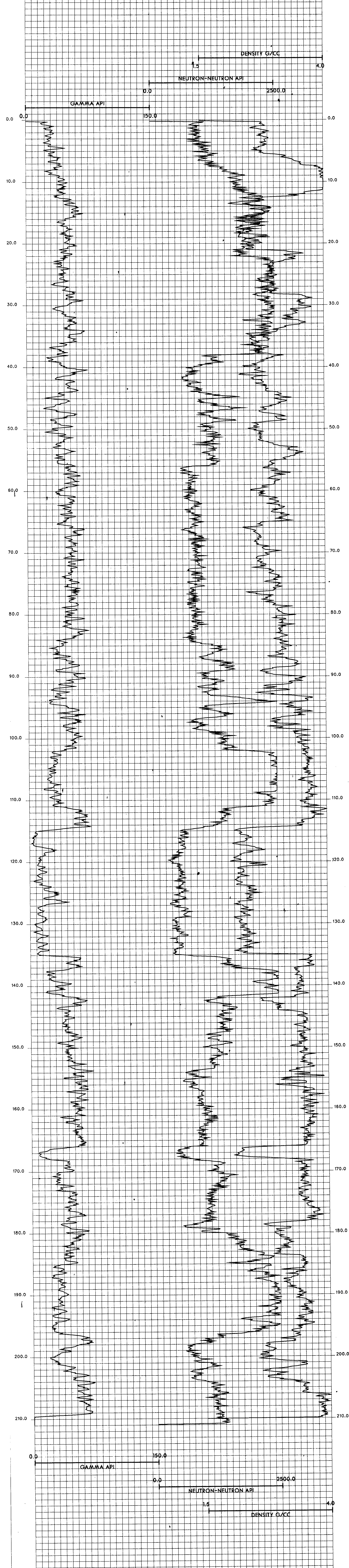
Datasource: **KPNLRDDH87019**
 Log Date: 87-09-21
 Company: CENTURY
 Geologist: LEE/BARKER

Province: BC Northing: 6345560.00 Lat: 571518
 Zone: 9 Easting: 507468.00 Long: 1285234
 Measuring Point: GROUND LEVEL Elevation: 1486.6

Scale: 1 to 200.0
 Depth Range: 0.0 to 215.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87020

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87020

DATE - 03/01/88

- HISTORY -

START DATE - 09/21/87

END DATE - 09/23/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - PENMAN

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - INTERSECTED M/N, ?, M, L, K/L. SITE A'. STAND PIPE
& PNEUMATIC PIEZOMETERS INSTALLED

- LOCATION -

PROVINCE - BC
ELEVATION - 1582.83

ZONE - 9
NORTHING - 6343087.65
EASTING - 508244.57

LICENCE/LEASE NUMBER -

LATITUDE - 571358
LONGITUDE - 1285148

- ORIENTATION -

LENGTH - 163.67

INCLINATION - 90.0

AZIMUTH - 0.0

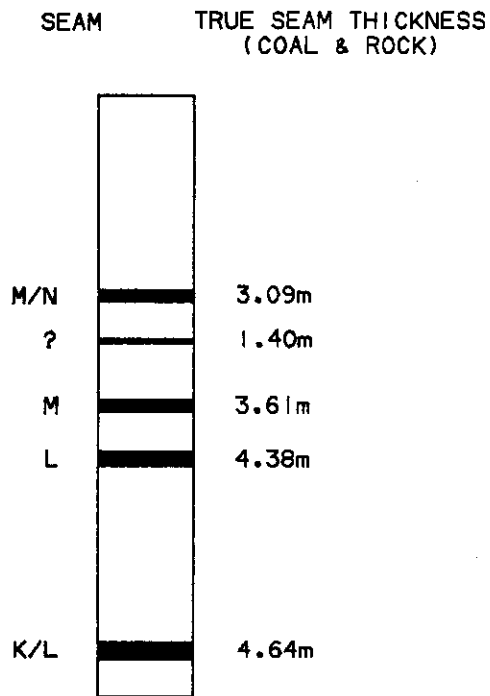
CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ - Y

CASING DEPTH (M) - 6.71
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87020

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:[205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------|
| 4 | 16.78 | 18.79 | 2.01 | 60 | | | MUDSTONE | LT. BLK. BRKN HOMOGENEOUS MUDST. NO BANDS. SOME SLICK ENSIDES. |
| 5 | 18.79 | 20.01 | 1.22 | 60 | | | MUDSTONE | LT. BLK AS ABOVE & SLICKENSIDES AT 55 DEGREES. MINOR COAL STRINGERS (1MM). |
| 5 | 20.01 | 20.11 | 0.10 | 60 | | | SILTSTONE | DK. GY. BRKN NO BEDDING. |
| 5 | 20.11 | 20.73 | 0.62 | 60 | | | SILTSTONE | DK. GY. BRKN SOME SLICKENSIDES. NO BEDDING. |
| 5 | 20.73 | 20.85 | 0.12 | 60 | | | SILTSTONE | SSY. M. GY SLTST. GRADES TO SS. |
| 6 | 20.85 | 21.08 | 0.23 | *60 | | | SANDSTONE | FG. PR. LT-M. GY. LAM. SLD SLTST. WISPS. |
| 6 | 21.08 | 21.26 | 0.18 | 60 | | | SILTSTONE | DK. GY. LAM. SLD LAM. SLTST-SS. 60-40 SLTST-SS. |
| 6 | 21.26 | 21.90 | 0.64 | 59 | | | SANDSTONE | FG. PR. M. GY. LAM. SLD MINOR XBDG-TOPS UP. |
| 6 | 21.90 | 22.11 | 0.21 | 59 | | | MUDSTONE | LT. BLK. THKB. SLD 1.5 CM QTZ STRINGER. SLICKENSIDES BELOW QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 6 | 22.11 | 22.65 | 0.54 | 58 | | | SANDSTONE | FG. PR. M. GY. LAM. SLD MINOR SLTST. BANDING. |
| 6 | 22.65 | 22.93 | 0.28 | 58 | | | MUDSTONE | LT. BLK. THKB. BRKN NO VISIBLE BEDDING. SHARP CONTACT W/ SS ABOVE. |
| 7 | 22.93 | 23.07 | 0.14 | 58 | | | MUDSTONE | CARB. LT. BLK. VBRKN COAL STRINGER TO (.5CM). GRADES TO SLTS T. AT. BASE. |
| 7 | 23.07 | 23.23 | 0.16 | 58 | | | SILTSTONE | DK. GY. SLD NO VISIBLE BEDDING. |
| 7 | 23.23 | 24.69 | 1.46 | 57 | | | SILTSTONE | DK. GY. BRKN NO VISIBLE BEDDING. COALIFIED STRINGERS . SOME SLICKENSIDES (30 TO 45 DEGREES T O CA). GRADES TO SS ATBASE. |
| 7 | 24.69 | 24.79 | 0.10 | 56 | | | ROCK LOSS | |
| 7 | 24.79 | 24.90 | 0.11 | 56 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN SLICKENSIDES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 24.90 | 26.32 | 1.42 | *55 | | SANDSTONE | FG.MOD.LT-M.GY.THNB.SLD ALTERNATING UNITS OF WELL & POOR SORTED FG SS. SOME HRMBURS IN POORLY SORTED U NITS. SOME SLTST WISPS. QTZ STRINGER CO NTAINING COAL FRAG. |
| 8 | 26.32 | 26.51 | 0.19 | 59 | | SANDSTONE | MG.WEL.LT.GY. HOMOGENEOUS. NO VISIBLE BEDDING. |
| 8 | 26.51 | 26.84 | 0.33 | 60 | | SILTSTONE | LT-M.GY.SLD MUDST RIP-UP. BIVALVE. |
| 9 | 26.84 | 27.52 | 0.68 | 63 | | SILTSTONE | M.GY.LAM.BRKN TWO 1.5CM DIA BELEHNITES AT TOP. SS LAM AT TOP. GRADES TO MUDSTONE AT BASE WIT H 2MM COAL STRINGERS. |
| 9 | 27.52 | 27.88 | 0.36 | 66 | | MUDSTONE | CARB.M.BLK.LAM.VBRKN C-4 COAL STRINGERS (1CM). |
| 9 | 27.88 | 27.98 | 0.10 | 67 | | ROCK LOSS | |
| 9 | 27.98 | 28.02 | 0.04 | 67 | | COAL | C-3.VBRKN |
| 9 | 28.02 | 28.12 | 0.10 | 68 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------|
| 9 | 28.12 | 28.41 | 0.29 | 69 | | SILTSTONE | LT.BLK.VBRKN LYSTRIC SURFACES WITH TALC INFILL. MUDD Y. |
| 9 | 28.41 | 28.60 | 0.19 | 70 | | SILTSTONE | DK.GY.BRKN AS ABOVE. MUDDY. |
| 10 | 28.60 | 29.89 | 1.29 | 74 | | MUDSTONE | LY.BLK.BRKN NO VISIBLE BEDDING. |
| 10 | 29.89 | 30.32 | 0.43 | 78 | | SILTSTONE | SSY.M.GY.LAM.BRKN SLTST-SS LAM. 70-30 SLTST-SS. |
| 10 | 30.32 | 30.62 | 0.30 | *80 | | MUDSTONE | SLTY.LT.BLK.LAM.SLD MUDST-SLTST LAM. GRADES TO SS AT BASE. |
| 10 | 30.62 | 30.75 | 0.13 | 74 | | SANDSTONE | SLTY.LT-M.GY.LAM.BRKN SLTST LAM. |
| 11 | 30.75 | 31.54 | 0.79 | *60 | | SANDSTONE | SLTY.M.GY.LAM.BIOTR.SLD INTERBEDDED SS-SLTST. |
| 11 | 31.54 | 31.83 | 0.29 | 63 | | SANDSTONE | SLTY.M.GY.LAM.SLD HRMBUR. GRADES TO MUDST AT BASE. |
| 11 | 31.83 | 32.88 | 1.05 | 68 | | MUDSTONE | M.BLK.SLD NO APPARENT BEDDING. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------|
| 12 | 32.88 | 33.58 | 0.70 | 73 | | | MUDSTONE | M.BLK.LAM.SLD INCREASING SLTST LAM TO BASE MINOR BIOT RB. |
| 12 | 33.58 | 33.76 | 0.18 | 76 | | | SILTSTONE | LT.BLK.LAM.BIOTR.SLD MUDDY. |
| 12 | 33.76 | 33.91 | 0.15 | 77 | | | SANDSTONE | SLTY.VFG.PR.M.GY.SLD |
| 12 | 33.91 | 34.13 | 0.22 | *78 | | | MUDSTONE | M.BLK.LAM.BRKN GRADING TO SLTST AT BASE. |
| 12 | 34.13 | 34.41 | 0.28 | 75 | | | SILTSTONE | LT.BLK.BRKN MINOR BIOTRB. BASE HAS VISIBLE SS LAM. MUDDY. |
| 12 | 34.41 | 34.58 | 0.17 | 72 | | | SANDSTONE | SLTY.VFG.PR.M.GY.LAM.BRKN FINE SLTST LAM. |
| 12 | 34.58 | 34.74 | 0.16 | 70 | | | SILTSTONE | DK.GY.LAM.BRKN FINE SS LAM. |
| 13 | 34.74 | 34.89 | 0.15 | *68 | | | SILTSTONE | M.GY.LAM.SLD 60-40 SLTST TO SS. |
| 13 | 34.89 | 35.20 | 0.31 | 68 | | | SANDSTONE | FG.PR.LT-M.GY.LAM.BRKN MINOR SLTST LAM. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 13 | 35.20 | 35.34 | 0.14 | 68 | | | SILTSTONE | DK.GY.LAM.BRKN MINOR BIOTRB. |
| 13 | 35.34 | 35.85 | 0.51 | 69 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.SLD MINOR BIOTRB IN SLTST BANDS. |
| 13 | 35.85 | 36.31 | 0.46 | 69 | | | SANDSTONE | FG.PR.LT.GY.LAM.SLD MINOR QTZ STRINGERS. |
| 13 | 36.31 | 36.92 | 0.61 | 69 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN SLTST LAM. |
| 14 | 36.92 | 37.54 | 0.62 | *70 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN SLTST LAM. SLICKENSIDES WITH CHLORITE/T ALC INFILL. 1 QTZ STRINGER (1 CM). |
| 14 | 37.54 | 37.73 | 0.19 | 70 | | | SANDSTONE | FG.MOD.LT.GY.BRKN SLICKENSIDES. NO BEDDING. |
| 14 | 37.73 | 37.77 | 0.04 | 71 | | | SILTSTONE | DK.GY.LAM.BRKN MUDDY. |
| 14 | 37.77 | 38.98 | 1.21 | 71 | | | SANDSTONE | F-MG.MOD.LT.GY.BRKN MINOR SLTST. RIP-UP & A FEW SLTST MISPS MINOR QTZ STRINGERS. |
| 15 | 38.98 | 39.39 | 0.41 | 72 | | | SANDSTONE | FG.MOD.LT.GY.BRKN VERT FRACTURED QTZ INFILL (3 CM). SS BR ECCIA. |

* DENOTES MEASURED BCA

FORM
4001

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 15 | 39.39 | 40.04 | 0.65 | 72 | | SANDSTONE | SLTY. FG. PR. LT-M. GY. LAM. BRKN MINOR SLTST WISPS. SOME FAULT FRACTURES |
| 15 | 40.04 | 40.48 | 0.44 | 73 | | SANDSTONE | VFG. MOD. LT. GY. SLD NO VISIBLE BEDDING. SOME QTZ STRINGERS. |
| 15 | 40.48 | 40.83 | 0.35 | 73 | | SANDSTONE | FG. MOD. LT. GY. THNB. SLD FRACTURED QTZ INFILL. MINOR MUDST BANDS INCREASING TO BASE. |
| 15 | 40.83 | 41.01 | 0.18 | 74 | | SANDSTONE | CARB. FG. PR. M-DK. GY. BRKN VERY CARB. SS. FRACTURED WITH QTZ INFILL. |
| 16 | 41.01 | 41.23 | 0.22 | 74 | | SANDSTONE | MG. MOD. M. GY. BRKN FRACTURED WITH QTZ INFILL. 5.5 CM QTZ Y EIN AT BASE. |
| 16 | 41.23 | 41.25 | 0.02 | 74 | | MUDSTONE | CARB. M. BLK. BRKN |
| 16 | 41.25 | 43.17 | 1.92 | *75 | | SANDSTONE | MG. MOD. LT. GY. THNB. BRKN INTERMITTENT VERY CARB BANDS (3 CM). SO ME COAL FRAGMENTS. MINOR QTZ STRINGERS. |
| 17 | 43.17 | 44.04 | 0.87 | 69 | | SANDSTONE | MG. MOD. LT. GY. THNB. BRKN AS ABOVE. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|-----------------------------------------------------------------------------|
| 17 | 44.04 | 45.04 | 1.00 | *65 | | SANDSTONE | CG. MEL. LT. GY. THKB. SLD MINOR FG SS LAM. |
| 17 | 45.04 | 45.10 | 0.06 | 66 | | SANDSTONE | CARB. FG. PR. DK. GY. BRKN VERY CARB. SOME COAL FRAGMENTS. |
| 17 | 45.10 | 45.21 | 0.11 | 66 | | ROCK LOSS | |
| 18 | 45.21 | 45.23 | 0.02 | 66 | | SANDSTONE | CARB. FG. PR. DK. GY. BRKN AS ABOVE. |
| 18 | 45.23 | 45.57 | 0.34 | 66 | | SANDSTONE | MG. MOD. LT-M. GY. THKB. SLD A FEW FINE QTZ STRINGERS. |
| 18 | 45.57 | 45.76 | 0.19 | 66 | | SANDSTONE | CG. MOD. LT. GY. THKB. SLD |
| 18 | 45.76 | 46.36 | 0.60 | 67 | | SANDSTONE | MG. MOD. LT-M. GY. SLD NO VISIBLE BEDDING. |
| 18 | 46.36 | 46.91 | 0.55 | 67 | | CONGLOMERATE | MOD. LT. GY. SLD NO VISIBLE BEDDING. ROUNDED SS/SLTST PE BBLE (4 MM). |
| 18 | 46.91 | 47.25 | 0.34 | 68 | | SANDSTONE | MG. MEL. LT. GY. SLD NO VISIBLE BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|-------------------------------------------------------------------|
| 19 | 47.25 | 47.38 | 0.13 | 68 | | SANDSTONE | MG.PR.LT.GY.SLD CONTAINS SOME PEBBLES (2MM). CARB BAND AT TOP. |
| 19 | 47.38 | 47.52 | 0.14 | 68 | | SANDSTONE | CG.PR.LT.GY.SLD 60-40 CG SS TO PEBBLE CONGLOMERATE. |
| 19 | 47.52 | 47.87 | 0.35 | 69 | | CONGLOMERATE | MOD.LT.GY.SLD CONTAINS TWO CARB ZONES 2 MM THICK. |
| 19 | 47.87 | 48.18 | 0.31 | 69 | | SANDSTONE | VCG.PR.LT.GY.BRKN |
| 19 | 48.18 | 48.20 | 0.02 | 69 | | SILTSTONE | MEL.DK.GY.BRKN |
| 19 | 48.20 | 48.22 | 0.02 | 69 | | SANDSTONE | VCG.PR.LT.GY.SLD |
| 19 | 48.22 | 48.26 | 0.04 | 69 | | SANDSTONE | CARB.FG.PR.H.GY.LAM.BRKN |
| 19 | 48.26 | 48.29 | 0.03 | 69 | | SANDSTONE | VCG.PR.LT.GY.SLD MATRIX SUPPORTED PEBBLES. |
| 19 | 48.29 | 48.49 | 0.20 | 69 | | SILTSTONE | CARB.PR.DK.GY.LAM.BRKN FINE SS INTERBEDS INCREASING TO BOTTOM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 48.49 | 49.33 | 0.84 | *70 | | SANDSTONE | SLTY.FG.PR.H.GY.LAM.BRKN SLTST LAMS. ONE FRACTURE WITH CHLDRITE TALC FILL. |
| 19 | 49.33 | 49.40 | 0.07 | 73 | | SANDSTONE | MG.PR.LT.GY.SLD VERY PEBBLY. |
| 20 | 49.40 | 49.91 | 0.51 | 75 | | SANDSTONE | MG.PR.LT.GY.SLD CONTAINS MANY PEBBLES & SLTST RIP-UPS. ONE FRACTURE FULL OF COAL FRAGS. |
| 20 | 49.91 | 50.08 | 0.17 | 77 | | SILTSTONE | MOD.H.GY.BRKN HRMBUR. SS LAM. GRADING TO SS AT BASE. |
| 20 | 50.08 | 50.18 | 0.10 | 78 | | SANDSTONE | SLTY.FG.PR.H.GY.LAM.SLD SLTST LAM. |
| 20 | 50.18 | 50.75 | 0.57 | *80 | | SANDSTONE | SLTY.FG.PR.H.GY.LAM.BRKN MINOR BIOTRB. 60-40 SS-SLTST. |
| 20 | 50.75 | 51.28 | 0.53 | 79 | | SILTSTONE | LT.BLK.LAM.BRKN CONTAINS TWO FRACTURES; ONE QTZ FILLED WITH BRECCIA; THE OTHER FRACTURE FILL AS TALC WITHIN IT. GRADES TO MUDST AT BASE. |
| 21 | 51.28 | 51.49 | 0.21 | 79 | | MUDSTONE | CARB.M.BLK.LAM.VBRKN CONTINUOUS COAL STRINGERS & TWO QTZ STRINGERS (3MM). |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 51.49 | 52.98 | 1.49 | 78 | | | SILTSTONE | M.GY.LAM.BRKN FG SS LAM. MINOR BIOTRB & WRMBUR. |
| 21 | 52.98 | 53.07 | 0.09 | 77 | | | MUDSTONE | MEL.M.BLK.LAM.SLD |
| 21 | 53.07 | 53.24 | 0.17 | 76 | | | MUDSTONE | CARB.M.BLK.LAM.BRKN CONTAINS QTZ & COAL STRINGERS. |
| 22 | 53.24 | 53.34 | 0.10 | 76 | | | MUDSTONE | CARB.BLK.BRKN COALY STRINGERS 1 MM WIDE INCREASING IN ABUNDANCE DOWNWARD. |
| 22 | 53.34 | 53.38 | 0.04 | 76 | | M/N | COAL | C-5.BLK.VSHRD DISSEMINATED PYRITE IN FINE CRACKS. ABU NDANT LISTRIC SURFACES. POSSIBLE LOSS H ERE. |
| 22 | 53.38 | 53.60 | 0.22 | 76 | | M/N | COAL | C-5.BLK.VBRKN MODERATE FINE QTZ/ANKERITE VEINLETS THR OUGHOUT. LARGER PIECES OF COMTORTED COA L & QTZ MIXED. CORE TWIST-OFF HERE. |
| 22 | 53.60 | 53.68 | 0.08 | 76 | | M/N | COAL | C-6.BLK.SLD |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 14

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 22 | 53.68 | 53.82 | 0.14 | 76 | | M/N | COAL LOSS | |
| 22 | 53.82 | 54.20 | 0.38 | 75 | | M/N | MUDSTONE | CLYY.DK.BN.MAS.VSHRD VERY SOFT, MODERATELY CONSOLIDATED. ABU NDANT LISTRIC SURFACES THROUGHOUT. |
| 22 | 54.20 | 54.67 | 0.47 | 75 | | M/N | COAL LOSS | |
| 22 | 54.67 | 54.70 | 0.03 | 74 | | M/N | COAL | C-6.BLK.VBRKN 1-4 MM WIDE C-4 STRINGERS. |
| 22 | 54.70 | 54.74 | 0.04 | 74 | | M/N | COAL | C-4.BLK.PHRD POSSIBLY CONTAINING SMALL BANDS OF C-3 TOO CRUMBLED TO TELL FOR SURE. |
| 22 | 54.74 | 54.90 | 0.16 | 74 | | M/N | ROCK LOSS | |
| 22 | 54.90 | 55.14 | 0.24 | 74 | | M/N | MUDSTONE | CLYY.DK.BN.MAS.VBRKN MODERATELY CONSOLIDATED. V SOFT. ABUNDA NT LISTRIC SURFACES. PLANT HASH. |
| 22 | 55.14 | 55.18 | 0.04 | 74 | | M/N | COAL | C-6.BLK.BRKN POLISHED SLIPPAGE SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 22 | 55.18 | 55.22 | 0.04 | 74 | | M/N | MUDSTONE | CARB. BLK. BRKN PLANT HASH. OCCASIONAL COALY STRINGERS 1MM WIDE. |
| 22 | 55.22 | 55.39 | 0.17 | 74 | | M/N | MUDSTONE | CLYY. DK. BN. BRKN MODERATELY CONSOLIDATED. VERY SOFT. PLA NT HASH. OCCASIONAL LITRIC SURFACE. |
| 23 | 55.39 | 55.59 | 0.20 | 73 | | M/N | MUDSTONE | DK. GY. VBRKN STILL VERY SOFT & MODERATELY CONSOLIDAT ED BUT NOT AS BROWN AS ABOVE. |
| 23 | 55.59 | 55.65 | 0.06 | 73 | | M/N | MUDSTONE | CARB. BLK. PWRD PROBABLY CRUSHED COAL MIXED IN. LOSS HE RE? |
| 23 | 55.65 | 56.55 | 0.90 | 72 | | M/N | COAL LOSS | |
| 23 | 56.55 | 56.56 | 0.01 | 72 | | M/N | COAL | C-5. BLK. PWRD |
| 23 | 56.56 | 56.82 | 0.26 | 72 | | | MUDSTONE | CARB. DK. GY. VBRKN INTENSELY CONTORTED & QTZ. VEINED. ALMOS T BRECCIATED. VERY HARD. |
| 23 | 56.82 | 56.97 | 0.15 | 71 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 23 | 56.97 | 57.51 | 0.54 | 71 | | | MUDSTONE | DK. GY. MAS. VBRKN ABUNDANT LITRIC SURFACES. SOFT-SCRATCH ES EASILY. HOMOGENEOUS. NO BEDDING VISI BLE. |
| 23 | 57.51 | 57.61 | 0.10 | 71 | | | ROCK LOSS | |
| 23 | 57.61 | 57.76 | 0.15 | 70 | | | SILTSTONE | M. GY. MAS. BIOTR. BRKN APPEARS FAINTLY BIOTURBATED. |
| 23 | 57.76 | 58.16 | 0.40 | *70 | | | SANDSTONE | SLTY. FG. M. GY. YTHNB. BRKN INTERBEDDED VFG-FG SS AND FINE DARK MUD ST. FAIRLY SOFT; SCRATCHES EASILY. |
| 24 | 58.16 | 59.72 | 1.56 | 69 | | | SANDSTONE | FG. MOD. LT. GY. LAM. XBDG. BRKN SLTST WISPS THROUGHOUT (UP TO .5CM). |
| 24 | 59.72 | 59.77 | 0.05 | 69 | | | ROCK LOSS | |
| 24 | 59.77 | 60.18 | 0.41 | 68 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE. |
| 25 | 60.18 | 60.90 | 0.72 | *68 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE. |
| 25 | 60.90 | 61.25 | 0.35 | 69 | | | SILTSTONE | M-DK. GY. LAM. BIOTR. BRKN MUDST WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 25 | 61.25 | 61.83 | 0.58 | 69 | | MUDSTONE | M. BLK. LAM. BRKN 2 FRACTURE SURFACES ONE AT 45 DEGREES & ONE AT 85 DEGREES. FINE COAL STRINGERS |
| 25 | 61.83 | 61.98 | 0.15 | 70 | | ROCK LOSS | |
| 25 | 61.98 | 62.00 | 0.02 | 70 | | COAL | DK. BLK. YBRKN |
| 25 | 62.00 | 62.14 | 0.14 | 70 | | ROCK LOSS | |
| 25 | 62.14 | 62.58 | 0.44 | 70 | | MUDSTONE | M. BLK. LAM. BRKN MANY FINE COAL STRINGERS, SOME QTZ INFI LL, SOME SLICKENSIDES. |
| 26 | 62.58 | 62.77 | 0.19 | 71 | | MUDSTONE | M. BLK. BRKN NO VISIBLE BEDDING. |
| 26 | 62.77 | 64.40 | 1.63 | 72 | | MUDSTONE | CARB. M. BLK. BRKN FRIABLE & SOFT. SLICKENSIDES WITH TALC INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------|
| 27 | 64.40 | 65.77 | 1.37 | 74 | | MUDSTONE | CARB. M. BLK. BRKN AS ABOVE & PLANT FRAG. |
| 27 | 65.77 | 66.02 | 0.25 | 75 | | MUDSTONE | CARB. M. BLK. BRKN AS ABOVE & PLANT FRAG. |
| 28 | 66.02 | 66.57 | 0.55 | *75 07077 | | MUDSTONE | SILTY. DK. GY. LAM. BRKN ABUNDANT FINE SILT LAMINAE THROUGHOUT. LOWER 25 CM SAMPLED. |
| 28 | 66.57 | 66.75 | 0.18 | 73 07078 ? | | COAL | C-4. BLK. VBRKN FINE QTZ VEINLETS THROUGHOUT. OCCASIONA L. PYRITE STRINGERS. |
| 28 | 66.75 | 66.88 | 0.13 | 73 07078 ? | | COAL LOSS | |
| 28 | 66.88 | 66.94 | 0.06 | 72 07078 ? | | COAL | C-5. BLK. PWRD EXTREMELY SHEARED. ALL LISTRIC SURFACES . LOSS? 1 CM WIDE QTZ VEIN. |
| 28 | 66.94 | 66.96 | 0.02 | 72 07078 ? | | COAL | C-6. BLK. VSHRD |
| 28 | 66.96 | 67.16 | 0.20 | 71 07078 ? | | MUDSTONE | CARB. BLK. VSHRD MINOR FINE BRIGHT WISPS. |
| 28 | 67.16 | 67.28 | 0.12 | 71 07078 ? | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 28 | 67.28 | 67.33 | 0.05 | 70 | 07078 | ? | COAL | C-4.BLK.PHRD VERY SHEARED. MINOR QTZ VEINLETS. |
| 28 | 67.33 | 67.39 | 0.06 | 70 | 07078 | ? | COAL | C-5.BLK.VSHRD |
| 28 | 67.39 | 67.42 | 0.03 | 70 | 07078 | ? | COAL | C-4.BLK.PHRD |
| 28 | 67.42 | 67.55 | 0.13 | 70 | 07078 | ? | COAL | C-5.BLK.VSHRD EXTREMELY SHEARED. POORLY CONSOLIDATED - ALMOST PHDRD. MUD LAYERS 3 MM WIDE. |
| 28 | 67.55 | 67.62 | 0.07 | 69 | 07078 | ? | MUDSTONE | CARB.BLK.VSHRD MUCH ASSOCIATED TALC NEAR BASE. FALLS A PART EASILY INTO SHEARED LISTRIC PIECES |
| 29 | 67.62 | 67.74 | 0.12 | 69 | 07078 | ? | COAL LOSS | |
| 29 | 67.74 | 67.76 | 0.02 | 68 | 07078 | ? | CLAYSTONE | CARB.DK.GY.VSHRD V SOFT, EXTREMELY SHRD, POORLY CONSOLIDATED CLAYST. LIKE LISTRIC/SHEARED PLASTICENE. |
| 29 | 67.76 | 67.83 | 0.07 | 68 | 07078 | ? | MUDSTONE | CARB.BLK.PHRD GROUND UP COAL MIXED IN. LOSS HERE? |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 29 | 67.83 | 67.91 | 0.08 | 68 | 07078 | ? | COAL | C-5.BLK.PHRD |
| 29 | 67.91 | 68.06 | 0.15 | 67 | 07078 | ? | COAL LOSS | |
| 29 | 68.06 | 68.07 | 0.01 | 67 | 07079 | | MUDSTONE | CARB.VSHRD VERY SOFT. POORLY CONSOLIDATED. |
| 29 | 68.07 | 68.65 | 0.58 | 65 | 07079 | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN MINOR VEG SAND LAMINAE. ALL BEDDING DISRUPTED FROM BIOTURBATION. UPPER 24 CM SAMPLED. |
| 29 | 68.65 | 69.35 | 0.70 | 63 | | | SILTSTONE | M.GY.LAM.BIOTR.BRKN BIOTURBATED SLTST AS ABOVE. |
| 30 | 69.35 | 69.76 | 0.41 | *60 | | | SANDSTONE | FG.MOD.M.GY.LAM.VBRKN VERY FRACTURED WITH TALC INFILL. 2 CM S COUR FILL AT BASE. |
| 30 | 69.76 | 70.33 | 0.57 | 60 | | | ROCK LOSS | |
| 30 | 70.33 | 70.79 | 0.46 | 61 | | | SANDSTONE | FG.MOD.M.GY.LAM.BRKN MINOR BIOTRB SHEAR ZONE WITH SCOUR FILL . 2 CM QTZ BAND AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 30 | 70.79 | 71.16 | 0.37 | 61 | | | SANDSTONE | FG. MOD. LT. GY. VSHRD |
| 30 | 71.16 | 71.66 | 0.50 | 61 | | | ROCK LOSS | |
| 30 | 71.66 | 72.04 | 0.38 | 61 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD SLTST LAM. QTZ STRINGERS. |
| 31 | 72.04 | 72.32 | 0.28 | 61 | | | SANDSTONE | FG. PR. LT. GY. LAM. VBRKN LOAD STRUCTURE. SLTST LAM. 1 CM TALC FR ACTURE. FILL AT TOP OF INTERVAL. |
| 31 | 72.32 | 72.92 | 0.60 | 62 | | | ROCK LOSS | |
| 31 | 72.92 | 73.55 | 0.63 | *62 | | | SANDSTONE | FG. MOD. LT. GY. LAM. VSHRD ABUNDANT SLICKENSIDES WITH TALC INFILL, SLTST LAM. |
| 31 | 73.55 | 73.91 | 0.36 | 60 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN MANY QTZ STRINGER & SLTST WISPS. |
| 32 | 73.91 | 75.75 | 1.84 | *54 | | | SANDSTONE | FG. MOD. LT. GY. LAM. VBRKN SLTST LAM. MANY FRACTURES WITH QTZ OR T ALC INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 32 | 75.75 | 76.25 | 0.50 | 57 | | | ROCK LOSS | |
| 32 | 76.25 | 76.52 | 0.27 | 58 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE. |
| 33 | 76.52 | 77.03 | 0.51 | 59 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN FRACTURES WITH TALC INFILL. |
| 33 | 77.03 | 77.17 | 0.14 | 60 | | | SANDSTONE | FG. LT. GY. SLD SS APPEARS TO BE SHATTERED ALMOST SCOUR FILL. |
| 33 | 77.17 | 78.31 | 1.14 | 62 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN SLTY LAM. FRACTURES W/ QTZ OR TALC INFI LL. INCREASING SLTST TO BOTTOM. |
| 34 | 78.31 | 79.02 | 0.71 | 64 | | | SILTSTONE | DK. GY. LAM. BRKN 60-40 SLTST TO SS LAM. LAM UP TO 2 CM. |
| 34 | 79.02 | 80.10 | 1.08 | 66 | | | SILTSTONE | DK. GY. LAM. BRKN AS ABOVE. ALSO CONTAINS 2 CM QTZ BAND & LOAD STRUCTURES. |
| 35 | 80.10 | 81.71 | 1.61 | *70 | | | SILTSTONE | DK. GY. LAM. BRKN SS LAM. SOME X-BEDDING (TOPS UP) & BIOT RB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 35 | 81.71 | 82.02 | 0.31 | 70 | | SILTSTONE | DK. GY. LAM. BRKN AS ABOVE. |
| 36 | 82.02 | 82.42 | 0.40 | 70 | 07080 | MUDSTONE | DK. GY. LAM. BRKN VERY FINE LIGHTER GREY SILTY LAMINAE. W ILSSONIA CANADENSIS. LOWER 21 CM SAMPLE D. |
| 36 | 82.42 | 82.46 | 0.04 | 70 | 07080 | MUDSTONE | CARB. BLK. MAS. BRKN PLANT WASH. FINE COAL STRINGERS INCREASING IN ABUNDANCE DOWNWARDS. |
| 36 | 82.46 | 82.51 | 0.05 | 70 | 07081 M | COAL | C-6. BLK. SLD. 3 MM QTZ VEIN AT BASE. |
| 36 | 82.51 | 82.55 | 0.04 | 70 | 07081 M | COAL | C-4. BLK. BRKN |
| 36 | 82.55 | 82.57 | 0.02 | 70 | 07081 M | COAL | C-5. BLK. BRKN |
| 36 | 82.57 | 82.58 | 0.01 | 70 | 07081 M | COAL | C-6. BLK. BRKN |
| 36 | 82.58 | 82.64 | 0.06 | 70 | 07081 M | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 82.64 | 83.14 | 0.50 | 70 | 07081 M | MUDSTONE | CARB. BLK. VSHRD VERY SHEARED & CONTORTED WITH MUCH WHITE CLAY FRACTURE FILL AND SOME GROUND UP COAL ON FRACTURE SURFACES. ABUNDANT LITESTRIC SURFACES. |
| 36 | 83.14 | 83.31 | 0.17 | 69 | 07081 M | MUDSTONE | CARB. BLK. VSHRD MUCH MORE GROUND UP COAL MIXED IN THAN ABOVE. HIGHLY CONTORTED. |
| 36 | 83.31 | 83.62 | 0.31 | 69 | 07081 M | COAL LOSS | |
| 36 | 83.62 | 83.66 | 0.04 | 69 | 07081 M | COAL | C-3. PHRD LOSS HERE? POWDER. HIGHLY SHEARED. |
| 37 | 83.66 | 83.67 | 0.01 | 69 | 07081 M | MUDSTONE | BLK. VSHRD VERY SOFT. POORLY CONSOLIDATED. |
| 37 | 83.67 | 83.74 | 0.07 | 69 | 07081 M | COAL | C-6. BLK. VSHRD |
| 37 | 83.74 | 83.77 | 0.03 | 69 | 07081 M | COAL | C-5. BLK. SHRD |
| 37 | 83.77 | 83.82 | 0.05 | 69 | 07081 M | MUDSTONE | CARB. BLK. VSHRD |
| 37 | 83.82 | 83.93 | 0.11 | 69 | 07081 M | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------|
| 37 | 83.93 | 83.97 | 0.04 | 69 07081 | M | COAL | C-6 SHRD OCCASIONAL MUD BANDS. |
| 37 | 83.97 | 84.00 | 0.03 | 69 07081 | M | MUDSTONE | CARB. YSHRD MINOR BRIGHT STRINGERS. |
| 37 | 84.00 | 84.04 | 0.04 | 69 07081 | M | COAL | C-4. YSHRD |
| 37 | 84.04 | 84.05 | 0.01 | 69 07081 | M | MUDSTONE | CARB. YSHRD |
| 37 | 84.05 | 84.06 | 0.01 | 69 07081 | M | COAL | C-4. PMRD |
| 37 | 84.06 | 84.15 | 0.09 | 69 07081 | M | MUDSTONE | CARB. DK. GY. YSHRD LITRIC SURFACES THROUGHOUT. |
| 37 | 84.15 | 84.80 | 0.65 | 69 07081 | M | MUDSTONE | CARB. DK. GY. BRKN MINOR COALY WISPS. ONE 1 CM WIDE QTZ VE IN. SLICKENSIDES W/ TALC. |
| 37 | 84.80 | 85.18 | 0.38 | 69 07081 | M | COAL LOSS | |
| 37 | 85.18 | 85.48 | 0.30 | 69 07081 | M | COAL | C-4. VBRKN CONTORTED COAL. |
| 38 | 85.48 | 85.59 | 0.11 | 69 07081 | M | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------|
| 38 | 85.59 | 85.65 | 0.06 | 69 07081 | M | MUDSTONE | CARB. BLK. PMRD MUCH COAL MIXED IN. NUMEROUS BRIGHT SPE CKS. |
| 38 | 85.65 | 85.69 | 0.04 | 69 07081 | M | MUDSTONE | CARB. VBRKN LESS COAL THAN ABOVE. |
| 38 | 85.69 | 85.77 | 0.08 | 69 07081 | M | COAL | C-4. PMRD |
| 38 | 85.77 | 86.14 | 0.37 | 69 07081 | M | COAL | C-3. VBRKN |
| 38 | 86.14 | 86.32 | 0.18 | 69 07081 | M | COAL LOSS | |
| 38 | 86.32 | 86.71 | 0.39 | 69 07082 | | MUDSTONE | SLTY. DK. BN. MAS. BIOTR. VBRKN BIOTURBATION MOTTLES. UPPER 25 CM SAMPL ED. |
| 38 | 86.71 | 87.03 | 0.32 | 69 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN HOMOGENEOUS. NO PLANTS. |
| 39 | 87.03 | 88.08 | 1.05 | 68 | | SILTSTONE | PR. DK. GY. LAM. BRKN SS LAM THROUGHOUT. MUDDY. |
| 39 | 88.08 | 88.17 | 0.09 | 68 | | ROCK LOSS | |
| 39 | 88.17 | 88.20 | 0.03 | 68 | | MUDSTONE | DK. GY. YSHRD VERY FRIABLE. JUST FLAKES IN CORE BOX. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------|
| 39 | 88.20 | 88.40 | 0.20 | 68 | | | SILTSTONE | M. GY. LAM. SLD SS LAM INCREASING TO BOTTOM. |
| 39 | 88.40 | 88.99 | 0.59 | 68 | | | SANDSTONE | FG. MEL. LT. GY. THKB. BRKN SOME SILTY SS BANDS. |
| 39 | 88.99 | 89.10 | 0.11 | 68 | | | SANDSTONE | FG. MEL. LT. GY. VSHRD VERY FRACTURED TALC INFILL. |
| 40 | 89.10 | 89.31 | 0.21 | 68 | | | SANDSTONE | FG. MEL. LT. GY. VSHRD AS ABOVE. |
| 40 | 89.31 | 89.43 | 0.12 | 68 | | | SANDSTONE | FG. MEL. LT. GY. SLD NO VISIBLE BEDDING. |
| 40 | 89.43 | 89.74 | 0.31 | 68 | | | SILTSTONE | DK. GY. LAM. BIOTR. SLD HRMBUR. SS LAM INCREASING DOWN. |
| 40 | 89.74 | 90.83 | 1.09 | 68 | | | SANDSTONE | FG. MOD. M. GY. LAM. BRKN SLTST LAM. |
| 40 | 90.83 | 91.14 | 0.31 | 68 | | | SANDSTONE | FG. MEL. LT. GY. LAM. SLD FEW SLTST LAM. |
| 41 | 91.14 | 91.46 | 0.32 | 68 | | | SANDSTONE | FG. MEL. LT. GY. LAM. SLD AS ABOVE. FRACTURE FILLED WITH TALC. |
| 41 | 91.46 | 91.72 | 0.26 | 68 | | | SANDSTONE | FG. MEL. LT. GY. LAM. SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 91.72 | 93.09 | 1.37 | 67 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD SLTST RIP-UP & SOME SLTST LAM. |
| 42 | 93.09 | 93.23 | 0.14 | 67 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD AS ABOVE. |
| 42 | 93.23 | 95.22 | 1.99 | 67 | | | SANDSTONE | FG. MEL. LT. GY. BRKN HOMOGENEOUS SS WITH FEW SLTST LAM. VERY FRACTURED (QTZ, TALC & CHLORITE INFIL L). PYRITE. |
| 43 | 95.22 | 95.79 | 0.57 | 67 | 07083 | | SANDSTONE | CLYY. FG. VPR. M. GY. MAS. BRKN OCCASIONAL ELONGATED MUDST RIP-UP CLAST S. FRACTURES W/ THICK TALC FILL. SOLUBL E CLAY MIXED IN WITH SAND. LOWER 14 CM SAMPLED. |
| 43 | 95.79 | 95.81 | 0.02 | 67 | 07083 | | CLAYSTONE | SLTY. M. GY. SLD GRADATIONAL FROM ABOVE. SOFT - POORLY C ONSOLIDATED. |
| 43 | 95.81 | 95.90 | 0.09 | 67 | 07083 | | MUDSTONE | CARB. DK. GY. SHRD MINOR BRIGHT BANDS 1-3 MM WIDE OF C-5 C OAL. |
| 43 | 95.90 | 95.92 | 0.02 | 67 | 07084 L | | COAL | C-5. BLK. VSHRD MODERATE QTZ VEINING THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------|
| 43 | 95.92 | 95.99 | 0.07 | 67 | 07084 | L | COAL | C-6.BLK.VSHRD |
| 43 | 95.99 | 96.05 | 0.06 | 67 | 07084 | L | MUDSTONE | CARB.BLK.VSHRD MINOR C-6 STRINGERS. |
| 43 | 96.05 | 96.33 | 0.28 | 66 | 07084 | L | COAL LOSS | |
| 43 | 96.33 | 96.39 | 0.06 | 66 | 07084 | L | COAL | C-6.BLK.SLD MINOR QTZ VEINLETS. |
| 43 | 96.39 | 96.44 | 0.05 | 66 | 07084 | L | COAL | C-5.BLK.SLD |
| 43 | 96.44 | 96.48 | 0.04 | 66 | 07084 | L | COAL | C-6.BLK.SHRD |
| 43 | 96.48 | 96.53 | 0.05 | 66 | 07084 | L | COAL | C-5.BLK.VSHRD |
| 43 | 96.53 | 96.73 | 0.20 | 66 | 07084 | L | MUDSTONE | CARB.BLK.VBRKN SLICKENSIDES. |
| 43 | 96.73 | 96.91 | 0.18 | 66 | 07084 | L | COAL | C-5.BLK.VBRKN |
| 43 | 96.91 | 96.95 | 0.04 | 66 | 07084 | L | COAL | C-4.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------|
| 43 | 96.95 | 96.98 | 0.03 | 66 | 07084 | L | MUDSTONE | CARB.BLK.VBRKN |
| 43 | 96.98 | 97.00 | 0.02 | 66 | 07084 | L | COAL | C-6.BRKN |
| 43 | 97.00 | 97.02 | 0.02 | 66 | 07084 | L | COAL | C-5.BLK.SLD |
| 43 | 97.02 | 97.10 | 0.08 | 66 | 07084 | L | COAL | C-6.BLK.BRKN OCCASIONAL 1 TO 5 CM WIDE BANDS OF C-5 AND C-4. |
| 43 | 97.10 | 97.11 | 0.01 | 66 | 07084 | L | COAL | C-4.BLK.VBRKN |
| 43 | 97.11 | 97.14 | 0.03 | 66 | 07084 | L | COAL | C-6.BLK.VBRKN |
| 43 | 97.14 | 97.15 | 0.01 | 66 | 07084 | L | MUDSTONE | CARB.BLK.VBRKN C-6 STRINGERS. |
| 44 | 97.15 | 97.17 | 0.02 | 66 | 07084 | L | COAL | C-5.BLK.VBRKN |
| 44 | 97.17 | 97.19 | 0.02 | 66 | 07084 | L | MUDSTONE | CARB.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------|
| 44 | 97.19 | 97.20 | 0.01 | 66 07084 | L | COAL | C-4.BLK.PWRD |
| 44 | 97.20 | 97.24 | 0.04 | 66 07084 | L | MUDSTONE | CARB.BLK.SHRD |
| 44 | 97.24 | 97.30 | 0.06 | 66 07084 | L | MUDSTONE | CARB.BLK.PWRD EXTREMELY SHEARED WITH ABUNDANT TALC MIXED IN. |
| 44 | 97.30 | 97.37 | 0.07 | 66 07084 | L | COAL | C-5.BLK.PWRD EXTREMELY SHEARED. ALL LISTRIC SURFACES |
| 44 | 97.37 | 97.41 | 0.04 | 66 07084 | L | COAL | C-6.BLK.VSHRD |
| 44 | 97.41 | 97.50 | 0.09 | 66 07084 | L | COAL | C-5.BLK.PWRD WITH ABUNDANT C-4 BANDS. |
| 44 | 97.50 | 97.65 | 0.15 | 66 07084 | L | COAL | C-4.BLK.VSHRD ALL LISTRIC SURFACES. |
| 44 | 97.65 | 97.75 | 0.10 | 66 07084 | L | COAL | C-6.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------|
| 44 | 97.75 | 97.87 | 0.12 | 66 07084 | L | COAL | C-5.BLK.PWRD EXTREMELY SHEARED. ALL LISTRIC SURFACES |
| 44 | 97.87 | 97.88 | 0.01 | 66 07084 | L | COAL | C-4.BLK.BRKN |
| 44 | 97.88 | 97.90 | 0.02 | 66 07084 | L | MUDSTONE | CARB.BLK.VBRKN |
| 44 | 97.90 | 98.09 | 0.19 | 66 07084 | L | COAL | C-4.BLK.VBRKN |
| 44 | 98.09 | 98.32 | 0.23 | 66 07084 | L | COAL | C-3.BLK.VBRKN |
| 44 | 98.32 | 98.35 | 0.03 | 66 07084 | L | MUDSTONE | CARB.BLK.VBRKN HARD. WELL CONSOLIDATED. |
| 45 | 98.35 | 98.47 | 0.12 | 66 07084 | L | COAL LOSS | |
| 45 | 98.47 | 98.53 | 0.06 | 66 07084 | L | COAL | C-2.BLK.VBRKN RUBBLE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------|
| 45 | 98.53 | 98.57 | 0.04 | 66 07084 | L | COAL | C-1.BLK.SLD MINOR QTZ/ANKERITE ON CLEAT. |
| 45 | 98.57 | 98.64 | 0.07 | 66 07084 | L | COAL | C-2.BLK.BRKN |
| 45 | 98.64 | 98.68 | 0.04 | 66 07084 | L | COAL | C-3.BLK.VSHRD ALL LISTRIC SURFACES. ALMOST POWDERED. |
| 45 | 98.68 | 98.77 | 0.09 | 66 07084 | L | COAL | C-3,DK,GY.SLD VERY HARD. INTENSE QTZ VEINING THROUGHOUT. |
| 45 | 98.77 | 99.48 | 0.71 | 66 07084 | L | COAL LOSS | |
| 45 | 99.48 | 99.58 | 0.10 | 66 07084 | L | ROCK LOSS | |
| 45 | 99.58 | 99.60 | 0.02 | 66 07084 | L | MUDSTONE | CARB.BLK.VBRKN C-6 STRINGERS. |
| 45 | 99.60 | 99.84 | 0.24 | 66 07084 | L | MUDSTONE | DK.GY.BRKN INTENSE QTZ VEINING. LISTRIC SURFACES. WHITE CLAY FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 99.84 | 99.93 | 0.09 | 66 07084 | L | MUDSTONE | CARB.BLK.VSHRD ALL LISTRIC SURFACES. SOFT. POORLY CONSOLIDATED; COAL MIXED IN; BRIGHT SPECKS THROUGHOUT. INTENSE QTZ VEINING AT BASE |
| 45 | 99.93 | 100.07 | 0.14 | 66 07084 | L | COAL LOSS | |
| 45 | 100.07 | 100.14 | 0.07 | 66 07084 | L | COAL | C-5.VBRKN CRUMBLY. |
| 45 | 100.14 | 100.32 | 0.18 | 66 07084 | L | COAL | C-3.VBRKN MINOR PYRITE MISPS. |
| 45 | 100.32 | 100.46 | 0.14 | 66 07084 | L | COAL | C-4.VSHRD |
| 45 | 100.46 | 100.59 | 0.13 | 66 07084 | L | COAL | C-4.BLK.VBRKN INTENSE QTZ VEINING AT BASE. POWDERED IN PLACES. |
| 45 | 100.59 | 100.61 | 0.02 | 65 07084 | L | COAL | C-6.BLK.SLD HARD. QTZ VEINS THROUGHOUT. |
| 45 | 100.61 | 100.70 | 0.09 | 65 07084 | L | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 100.70 | 101.17 | 0.47 | 65 | 07085 | MUDSTONE | CARB. DK. GY. BIOTR. BRKN BECOMING LESS CARB & MORE BIOTURBATED DOWNWARD. BEDDING NOT VISIBLE - TOO CHEWED UP. UPPER 25 CM SAMPLED. |
| 45 | 101.17 | 101.29 | 0.12 | 65 | | ROCK LOSS | |
| 46 | 101.29 | 101.57 | 0.28 | 65 | | MUDSTONE | M. BLK. LAM. SLD GRADE TO SS AT BASE. |
| 46 | 101.57 | 101.80 | 0.23 | 65 | | SANDSTONE | FG. MOD. M. GY. LAM. BIOTR. SLD SLTST LAM. |
| 46 | 101.80 | 102.00 | 0.20 | 65 | | ROCK LOSS | |
| 46 | 102.00 | 102.18 | 0.18 | 65 | | SILTSTONE | M. GY. VBRKN SEVERAL FRACTURE FACES WITH TALC INFILL . 6 CM TALC INFILL AT TOP OF INTERVAL. |
| 46 | 102.18 | 102.58 | 0.40 | 65 | | ROCK LOSS | |
| 46 | 102.58 | 102.83 | 0.25 | *65 | | SILTSTONE | DK. GY. LAM. MUDDY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 46 | 102.83 | 103.14 | 0.31 | 65 | | SANDSTONE | SLTY. VFG. PR. M. GY. LAM. BIOTR. BRKN SLTST LAM THROUGHOUT. GRADES TO SLTST AT BASE. |
| 46 | 103.14 | 103.29 | 0.15 | 66 | | SILTSTONE | SSY. PR. M. GY. LAM. SLD VERY SMALL MUD RIP-UP. |
| 46 | 103.29 | 103.35 | 0.06 | 66 | | SANDSTONE | FG. MOD. LT. GY. SLD HOMOGENEOUS NO VISIBLE BEDDING. |
| 46 | 103.35 | 103.39 | 0.04 | 66 | | SILTSTONE | M. GY. LAM. SLD |
| 46 | 103.39 | 103.42 | 0.03 | 66 | | SANDSTONE | FG. MOD. LT. GY. SLD NO BEDDING. |
| 46 | 103.42 | 103.83 | 0.41 | 67 | | SILTSTONE | M. GY. LAM. BRKN SS LAM. SHEAR ZONE AT BASE FILLED WITH TALC. 2 CM QTZ VEIN BELOW TALC WITH SLTST BRECCIA. |
| 47 | 103.83 | 104.31 | 0.48 | 67 | | SILTSTONE | M. GY. BRKN VERY FRACTURED QTZ INFILL WITH SLTST BR ECCIA. |
| 47 | 104.31 | 104.60 | 0.29 | 68 | | MUDSTONE | LT. BLK. LAM. BRKN SLICKENSIDE WITH TALC INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 47 | 104.60 | 105.46 | 0.86 | 69 | | | SILTSTONE | M.GY.LAM.WRMBU.SLD SS LAM. |
| 47 | 105.46 | 105.79 | 0.33 | *70 | | | SANDSTONE | VFG.MOD.M.GY.LAM.BIOTR.SLD SLTST RIP-UP. TALC FILL ON FRACTURE FAC E. |
| 48 | 105.79 | 107.10 | 1.31 | 68 | | | SANDSTONE | VFG.MOD.LT.GY.LAM.BRKN TALC ON FRACTURE FACES. SOME SLTST RIP- UPS. MINOR BIOTRB. SOME SLTY BANDS. |
| 48 | 107.10 | 107.74 | 0.64 | 65 | | | SILTSTONE | DK.GY.LAM MINOR SS LAM. FRACTURE AT BASE WITH TAL C INFILL. MUDDY. |
| 49 | 107.74 | 107.85 | 0.11 | 64 | | | SILTSTONE | M.GY.LAM.BRKN |
| 49 | 107.85 | 108.13 | 0.28 | 63 | | | SANDSTONE | FG.MOD.M.GY.LAM.VBRKN TALC INFILL. |
| 49 | 108.13 | 108.55 | 0.42 | 62 | | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD VERY MINOR SLTST RIP-UPS & LAMS. |
| 49 | 108.55 | 108.99 | 0.44 | 61 | | | SANDSTONE | FG.WEL.LT.GY.LAM.SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 49 | 108.99 | 109.62 | 0.63 | 59 | | | SANDSTONE | FG.WEL.LT.GY.LAM.BRKN VERY FRACTURED WITH TALC INFILL. |
| 50 | 109.62 | 110.70 | 1.08 | 57 | | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD MINOR SLTST LAM & RIP-UPS. |
| 50 | 110.70 | 111.34 | 0.64 | 54 | | | SANDSTONE | FG.WEL.LT.GY.LAM.VBRKN FRACTURED W/ TALC INFILL. MINOR SLTST L AMS. |
| 50 | 111.34 | 111.52 | 0.18 | 53 | | | SANDSTONE | FG.WEL.LT.GY.SLD NO BEDDING VISIBLE. |
| 51 | 111.52 | 113.58 | 2.06 | *50 | | | SANDSTONE | FG.WEL.LT.GY.LAM.BRKN MINOR SLTST RIP-UP & SLTST WISPS. NUMER OUS FRACTURES WITH QTZ & TALC INFILL. S OME SS BRECCIA. |
| 52 | 113.58 | 114.23 | 0.65 | 51 | | | SANDSTONE | FG.WEL.LT.GY.LAM.BRKN AS ABOVE. |
| 52 | 114.23 | 114.60 | 0.37 | 51 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BIOTR.BRKN ABUNDANT SLTST RIP-UP. TALC INFILL ON F RACTURES. |
| 52 | 114.60 | 114.69 | 0.09 | 51 | | | SANDSTONE | FG.MOD.LT-M.GY.LAM.WRMBU.BRKN SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------|
| 52 | 114.69 | 114.77 | 0.08 | | 52 | | MUDSTONE | DK.GY.BRKN VERY FISSILE. POSSIBLE SCOUR FILL. |
| 52 | 114.77 | 115.12 | 0.35 | | 52 | | SANDSTONE | FG.MOD.M.GY.LAM.BRKN SLTST RIP-UP & LAM. NUMEROUS FRACTURES. TALC INFILL. |
| 52 | 115.12 | 115.57 | 0.45 | * | 52 | | SANDSTONE | FG.WEL.LT.GY.LAM.SLD VERY MINOR SLTST WISPS & RIP-UPS. |
| 53 | 115.57 | 115.79 | 0.22 | | 52 | | SANDSTONE | FG.WEL.LT.GY.LAM.SLD AS ABOVE. |
| 53 | 115.79 | 115.87 | 0.08 | | 51 | | SILTSTONE | SSY.PR.DK.GY.LAM.SLD |
| 53 | 115.87 | 116.01 | 0.14 | | 51 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN SLTST RIP-UPS AT BASE. TALC FILLED FRACTURES. |
| 53 | 116.01 | 116.05 | 0.04 | | 51 | | ROCK LOSS | |
| 53 | 116.05 | 117.65 | 1.60 | | 50 | | SANDSTONE | FG.WEL.LT.GY.LAM.BRKN TALC FILLED FRACTURE. SOME SS BRECCIA. |
| 54 | 117.65 | 117.96 | 0.31 | | 48 | | SANDSTONE | FG.WEL.LT.GY.LAM.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 54 | 117.96 | 118.10 | 0.14 | | 48 | | SANDSTONE | FG.MOD.LT.GY.BRKN POSSIBLE SHEAR ZONE. TALC INFILL. BRECCIATED SS CONTAINS NUMEROUS SLTST RIP-UPS. |
| 54 | 118.10 | 119.52 | 1.42 | | 47 | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN SLTST RIP-UP. QTZ & TALC FILLED FRACTURES. SOME FRACTURES APPEAR TO BE SLTST INJECTED WITH QTZ. TWO CASTS AT BASE SEPARATED BY A FLAME STRUCTURE. |
| 54 | 119.52 | 119.61 | 0.09 | | 46 | | SANDSTONE | FG.WEL.LT.GY.LAM.SLD MINOR SLTST RIP-UPS & WISPS. |
| 55 | 119.61 | 120.58 | 0.97 | * | 45 | | SANDSTONE | FG.WEL.LT.GY.LAM.BRKN AS ABOVE W/ QTZ FILLED FRACTURES W/ SS BRECCIA AT BASE. |
| 55 | 120.58 | 121.01 | 0.43 | | 45 | | SANDSTONE | FG.WEL.LT.GY.LAM QTZ & TALC FILL FRACTURES. |
| 55 | 121.01 | 121.65 | 0.64 | | 45 | | SANDSTONE | SLTY.FG.PR.M-DK.GY.LAM.VBRKN SS BRECCIA IN QTZ FILLED FRACTURES. NUMEROUS MUDST BANDS WITH COAL FRAGS WITHIN. |
| 56 | 121.65 | 121.86 | 0.21 | | 45 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.SLD MUDST BANDS WITH COAL FRAGMENTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 56 | 121.86 | 123.74 | 1.88 | 45 | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN NUMEROUS FRACTURES. QTZ INFILL & SLTST RIP-UPS. |
| 57 | 123.74 | 124.44 | 0.70 | *45 | | SANDSTONE | MG. WEL. LT. GY. THNB. BRKN VERY MINOR SLTST LAM. SOME FRACTURES WI TH. QTZ & TALC. INFILL. |
| 57 | 124.44 | 125.78 | 1.34 | 46 | | SANDSTONE | MG. WEL. LT. GY. THNB. BRKN AS ABOVE. |
| 58 | 125.78 | 126.87 | 1.09 | 47 | | SANDSTONE | MG. WEL. LT. GY. THNB. BRKN AS ABOVE. |
| 58 | 126.87 | 127.75 | 0.88 | 48 | | SANDSTONE | MG. WEL. LT. GY. THNB. BRKN AS ABOVE. |
| 59 | 127.75 | 128.09 | 0.34 | 48 | | SANDSTONE | MG. WEL. LT. GY. THNB. BRKN AS ABOVE. |
| 59 | 128.09 | 128.17 | 0.08 | 49 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN SLTST LAM. |
| 59 | 128.17 | 128.68 | 0.51 | 49 | | SANDSTONE | FG. WEL. M. GY. BRKN BOTTOM 30 CM HAS MANY QTZ FILL FRACTURE S (2 CM). SOME BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------|
| 59 | 128.68 | 129.43 | 0.75 | 49 | | SANDSTONE | FG. DK. GY. BRKN POSSIBLE SHEAR ZONES SS. VERY SHATTERED WITH SOFT SANDY MUD INFILL. |
| 59 | 129.43 | 129.83 | 0.40 | *50 | | SANDSTONE | FG. WEL. LT. GY. THNB. BRKN VERY MINOR SLTST HISP. |
| 60 | 129.83 | 131.03 | 1.20 | 51 | | SANDSTONE | FG. WEL. LT. GY. THNB. BRKN V MINOR SLTST RIP-UPS & QTZ STRINGERS. |
| 60 | 131.03 | 131.07 | 0.04 | 51 | | SANDSTONE | SLTY. FG. PR. DK. GY. LAM. SLD |
| 60 | 131.07 | 131.66 | 0.59 | 51 | | SANDSTONE | FG. WEL. LT. GY. MAS. SLD NO VISIBLE BEDDING. |
| 60 | 131.66 | 131.89 | 0.23 | 52 | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD NUMEROUS SLTST RIP-UPS. |
| 61 | 131.89 | 131.95 | 0.06 | 52 | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE. |
| 61 | 131.95 | 131.98 | 0.03 | 52 | | ROCK LOSS | |
| 61 | 131.98 | 132.15 | 0.17 | 52 | | SANDSTONE | FG. WEL. LT. GY. BRKN MINOR SLTST RIP-UP. |
| 61 | 132.15 | 132.89 | 0.74 | 52 | | SANDSTONE | FG. WEL. LT. GY. BRKN NO BEDDING. NUMEROUS QTZ STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------|
| 61 | 132.89 | 133.01 | 0.12 | 53 | | | SANDSTONE | FG.HEL.LT.GY.BRKN FRACTURED W/ QTZ, MUDST & COAL INFILL. |
| 61 | 133.01 | 133.07 | 0.06 | 53 | | | ROCK LOSS | |
| 61 | 133.07 | 133.85 | 0.78 | 53 | | | SANDSTONE | FG.HEL.LT.GY.THKB.BRKN QTZ.STRINGERS THROUGHOUT. SOME SLTST BR EC. MINOR SLTST LAM. |
| 62 | 133.85 | 135.94 | 2.09 | *54 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD MINOR QTZ STRINGERS. LOCAL CONCENTRATIO NS OF SLTST BANDING. |
| 63 | 135.94 | 138.02 | 2.08 | 60 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD AS ABOVE. |
| 64 | 138.02 | 138.98 | 0.96 | *64 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD AS ABOVE. |
| 64 | 138.98 | 139.68 | 0.70 | 65 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD AS ABOVE. |
| 64 | 139.68 | 140.00 | 0.32 | 65 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD QUITE FRACTURED WITH QTZ INFILL. |
| 65 | 140.00 | 140.32 | 0.32 | 66 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 65 | 140.32 | 140.67 | 0.35 | 66 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD VERY MINOR SLTST LAM. |
| 65 | 140.67 | 140.88 | 0.21 | 66 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD VERY FRACTURED WITH TALC INFILL. |
| 65 | 140.88 | 141.22 | 0.34 | 67 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD QTZ & TALC FILLED FRACTURES. ALSO CONTA INS 7 STRESS RELEASE FAULTS WITH .5 CM OF MOVEMENT. |
| 65 | 141.22 | 141.24 | 0.02 | 67 | | | MUDSTONE | M.BLK.LAM.SLD SS.NISPS.THROUGHOUT. |
| 65 | 141.24 | 141.77 | 0.53 | 67 | | | SANDSTONE | FG.HEL.LT.GY.THKB.SLD NO VISIBLE BEDDING. |
| 65 | 141.77 | 141.81 | 0.04 | 68 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.SLD VERY SOFT & FRIABLE. |
| 65 | 141.81 | 142.02 | 0.21 | 68 | | | SANDSTONE | MG.HEL.LT.GY.THKB.SLD 1 CM SHEAR ZONE WITH SANDY TALC INFILL. 4 CM QTZ AT BASE. |
| 66 | 142.02 | 142.50 | 0.48 | 68 | | | SANDSTONE | FG.HEL.LT.GY.THNB.SLD MINOR SLTY BANDS & SLTST LAMS. QTZ FILL ED FRACTURE AT TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA TO | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------|
| 66 | 142.50 | 142.63 | 0.13 | 68 | | | SANDSTONE | FG.WEL.LT.GY.BRKN TOP 8CM: QTZ FRACTURE FILL WITH SS CLAS TS. BOTTOM 5 CM PULVERIZED SS. |
| 66 | 142.63 | 142.71 | 0.08 | 68 | | | ROCK LOSS | |
| 66 | 142.71 | 143.15 | 0.44 | 69 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD NO VISIBLE BEDDING. |
| 66 | 143.15 | 143.34 | 0.19 | 69 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN |
| 66 | 143.34 | 143.89 | 0.55 | 69 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD NO VISIBLE BEDDING. |
| 66 | 143.89 | 144.30 | 0.41 | *70 | | | SANDSTONE | FG.MOD.M.GY.LAM.BRKN SLTST LAMS. MINOR RIP-UPS AT TOP (1 CM) SS COARSENING TO BOTTOM. |
| 66 | 144.30 | 144.40 | 0.10 | 69 | | | ROCK LOSS | |
| 67 | 144.40 | 145.04 | 0.64 | 68 | | | SANDSTONE | MG.WEL.LT.GY.THKB.BRKN VERY MINOR SLTST LAMS. |
| 67 | 145.04 | 145.08 | 0.04 | 67 | | | SANDSTONE | SLTY.MG.PR.M.GY.SLD NUMEROUS SLTST RIP-UPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA TO | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 67 | 145.08 | 145.33 | 0.25 | 67 | | | SANDSTONE | MG.WEL.LT.GY.VTHNB.BRKN MINOR SLTY LAM. |
| 67 | 145.33 | 145.38 | 0.05 | 66 | | | SANDSTONE | SLTY.MG.PR.M.GY.LAM.SLD 30% SLTST RIP-UPS. |
| 67 | 145.38 | 145.52 | 0.14 | 66 | | | SANDSTONE | SLTY.MG.PR.M.GY.LAM.SLD 60-40 SS-SLTST LAM. |
| 67 | 145.52 | 146.07 | 0.55 | 65 | | | SANDSTONE | SLTY.MG.PR.M.GY.VTHNB.SLD SLTST LAM & RIP-UPS. CG SS BANDS UP TO 5CM. |
| 67 | 146.07 | 146.23 | 0.16 | 64 | | | SANDSTONE | VCG.PR.M.GY.SLD NUMEROUS SLTST RIP-UP. |
| 67 | 146.23 | 146.42 | 0.19 | *63 | | | SANDSTONE | SLTY.MG.PR.M.GY.LAM.SLD SLTST LAM. |
| 67 | 146.42 | 146.52 | 0.10 | 63 | | | SILTSTONE | WEL.DK.GY.BRKN NO VISIBLE BEDDING. |
| 67 | 146.52 | 146.96 | 0.44 | 62 | | | ROCK LOSS | |
| 68 | 146.96 | 147.85 | 0.89 | 61.07Q86 | | | MUDSTONE | CARB.DK.GY.BIOTR.BRKN NO DISTINCT BEDDING. BIOTR MOTTLES. TH ICK TALC ON SOME FRACTURE SURFACES. LOW ER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------|
| 68 | 147.85 | 147.86 | 0.01 | 60 | 07087 | K/L | COAL | C-2. BLK. BRKN |
| 68 | 147.86 | 147.89 | 0.03 | 59 | 07087 | K/L | MUDSTONE | CARB. BLK. SLD CONTORTED WITH COAL MIXED IN. |
| 68 | 147.89 | 147.94 | 0.05 | 59 | 07087 | K/L | COAL | C-2. BLK. BRKN |
| 68 | 147.94 | 148.03 | 0.09 | 59 | 07087 | K/L | COAL LOSS | |
| 68 | 148.03 | 148.43 | 0.40 | 59 | 07087 | K/L | MUDSTONE | CARB. BLK. BRKN COALY WISPS UP TO 2 MM WIDE THROUGHOUT. APPROACHES C-6 AT BASE. |
| 68 | 148.43 | 148.63 | 0.20 | 58 | 07087 | K/L | COAL LOSS | |
| 68 | 148.63 | 148.71 | 0.08 | 58 | 07087 | K/L | COAL | C-4. BLK. PWRD NUMEROUS BANDS OF C-3 THROUGHOUT. LOSS HERE? |
| 68 | 148.71 | 148.74 | 0.03 | 58 | 07087 | K/L | COAL | C-3. BLK. PWRD |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 48

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------|
| 68 | 148.74 | 148.79 | 0.05 | 57 | 07087 | K/L | MUDSTONE | CARB. DK. GY. VBRKN SOFT, POORLY CONSOLIDATED LIKE PLASTICE NE. |
| 68 | 148.79 | 149.04 | 0.25 | 57 | 07087 | K/L | COAL | C-4. BLK. PWRD ONLY A FEW LARGE SLD CHUNKS. |
| 69 | 149.04 | 149.14 | 0.10 | 57 | 07087 | K/L | COAL | C-4. BLK. VBRKN WITH MANY BANDS OF C-3 5 MM WIDE. ALMOS T. PWRD. |
| 69 | 149.14 | 149.17 | 0.03 | 57 | 07087 | K/L | MUDSTONE | CARB. SLD |
| 69 | 149.17 | 149.43 | 0.26 | 56 | 07087 | K/L | COAL LOSS | |
| 69 | 149.43 | 149.55 | 0.12 | 56 | 07087 | K/L | COAL | C-3. BLK. PWRD MUCH FOAM. LOSS HERE? |
| 69 | 149.55 | 149.59 | 0.04 | 56 | 07087 | K/L | MUDSTONE | CARB. BLK. VSHRD MUCH QTZ VEINING PERPENDICULAR TO CORE AT TOP OF INTERVAL. |
| 69 | 149.59 | 149.61 | 0.02 | 56 | 07087 | K/L | COAL | C-3. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|-----------|-----------|------------------------------------------------------------------------------------------------|
| 69 | 149.61 | 149.71 | 0.10 | 55 | 07087 K/L | COAL | C-4.BLK.VBRKN PWRD & FOAMY IN PLACES. NUMEROUS BANDS OF C-3. |
| 69 | 149.71 | 149.86 | 0.15 | 55 | 07087 K/L | COAL | C-4.BLK.PWRD FOAM. POSSIBLE LOSS HERE. |
| 69 | 149.86 | 149.90 | 0.04 | 55 | 07087 K/L | MUDSTONE | CARB.BLK.PWRD VERY SHEARED. ALL LISTRIC SURFACES. CONTORTED WITH COAL MIXED IN. ALMOST C-6. |
| 69 | 149.90 | 150.60 | 0.70 | 54 | 07087 K/L | COAL LOSS | |
| 69 | 150.60 | 150.74 | 0.14 | 53 | 07087 K/L | COAL | C-4.PWRD |
| 69 | 150.74 | 150.90 | 0.16 | 53 | 07087 K/L | COAL | C-3.PWRD OCCASIONAL LARGER PIECES WITH GOOD CLEAT. |
| 70 | 150.90 | 150.97 | 0.07 | 52 | 07087 K/L | COAL | C-5.BLK.PWRD EXTREMELY SHEARED. BANDS OF C-4. |
| 70 | 150.97 | 151.14 | 0.17 | 52 | 07087 K/L | COAL | C-4.BLK.PWRD OCCASIONAL BANDS OF C-3. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|-----------|-----------|---------------------------------------------------------------------------------------|
| 70 | 151.14 | 151.25 | 0.11 | 52 | 07087 K/L | COAL | C-4.BLK.VSHRD VERY CONTORTED COAL. BANDS OF C-3. |
| 70 | 151.25 | 151.32 | 0.07 | 52 | 07087 K/L | COAL | C-4.BLK.VSHRD PONDERED IN PLACES. BANDS OF C-3. |
| 70 | 151.32 | 151.37 | 0.05 | 52 | 07087 K/L | COAL | C-3.BLK.PWRD BANDS OF C-4. |
| 70 | 151.37 | 151.44 | 0.07 | 51 | 07087 K/L | COAL | C-4.BLK.VBRKN CONTORTED COAL. VERY SHEARED. |
| 70 | 151.44 | 151.48 | 0.04 | 51 | 07087 K/L | COAL | C-5.BLK.VBRKN GROUND UP CONTORTED COAL AND MUD BANDS. |
| 70 | 151.48 | 151.61 | 0.13 | 51 | 07087 K/L | MUDSTONE | CARB.DK.GY.BRKN INTENSE QTZ VEINING THROUGHOUT. |
| 70 | 151.61 | 151.87 | 0.26 | 51 | 07087 K/L | MUDSTONE | CARB.VSHRD ALL LISTRIC SURFACES. CRUSHED COAL MIXED IN. VERY CARB. SOME C-6 BANDS. |
| 70 | 151.87 | 151.89 | 0.02 | 50 | 07087 K/L | COAL | C-6.VSHRD |
| 70 | 151.89 | 151.93 | 0.04 | 50 | 07087 K/L | MUDSTONE | CARB.BRKN MINOR QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87020

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 76 | 162.07 | 162.51 | 0.44 | *57 | | SILTSTONE | DK. GY. LAM. VBRKN FINE PLANAR LAMINAE. TALC & CLAY FRACTURE FILL. |
| 76 | 162.51 | 162.71 | 0.20 | 57 | | ROCK LOSS | |
| 76 | 162.71 | 162.82 | 0.11 | 57 | | MUDSTONE | CARB. BLK. VSHRD ALL LISTRIC SURFACES. BRIGHT SPECKS - SOME COAL MIXED IN. |
| 76 | 162.82 | 162.99 | 0.17 | 57 | | ROCK LOSS | |
| 76 | 162.99 | 163.06 | 0.07 | 57 | | COAL | C-5. BLK. SLD QTZ. VEINLETS THROUGHOUT. |
| 76 | 163.06 | 163.12 | 0.06 | 57 | | COAL | C-4. BLK. SLD QTZ. VEINLETS THROUGHOUT. |
| 76 | 163.12 | 163.67 | 0.55 | 57 | | MUDSTONE | CARB. DK. GY. LAM. SHRD ABUNDANT LISTRIC SURFACES & SLICKENSIDE S W/ TALC. FAINT VERY CONTORTED BEDDING VISIBLE. END OF HOLE. T.D. = 163.67 M. DRILLER'S MARK. |

* DENOTES MEASURED BCA
NEW PAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87020

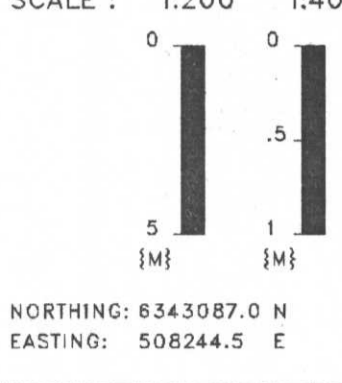
740

GEOLOGIST : PENMAN

DATE : MAR 08/88

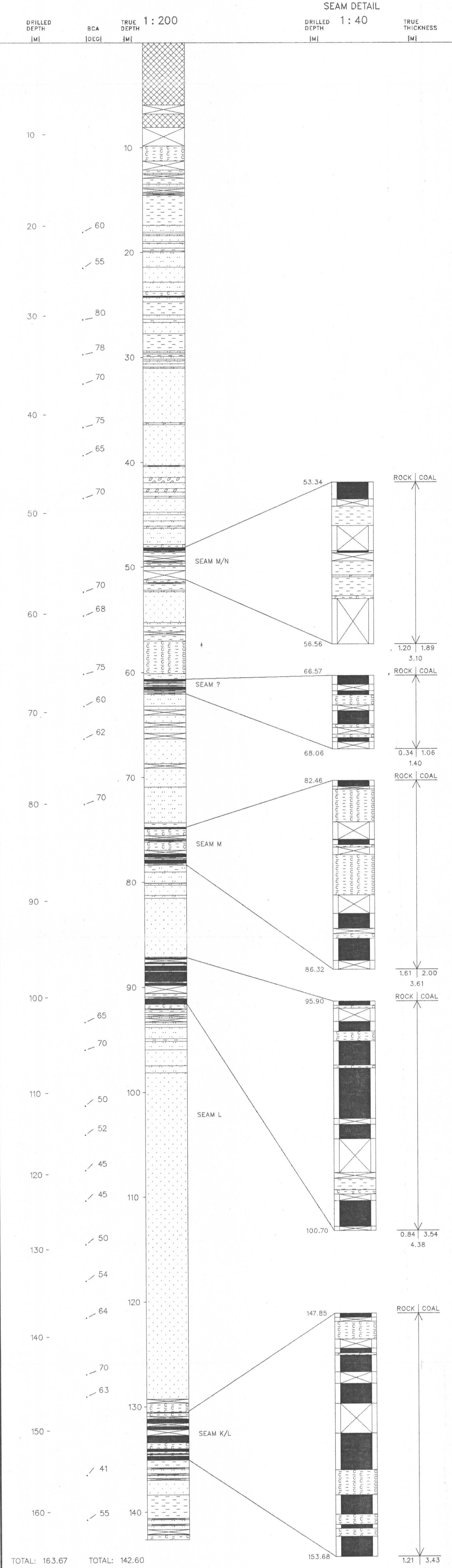
DRAWING NO. :

LITHOLOGIC SYMBOLS



| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

NORTHING: 6343087.0 N INCLINATION: 90.0°
 EASTING: 508244.5 E



Gulf Canada Resources Limited

Coal Division

740

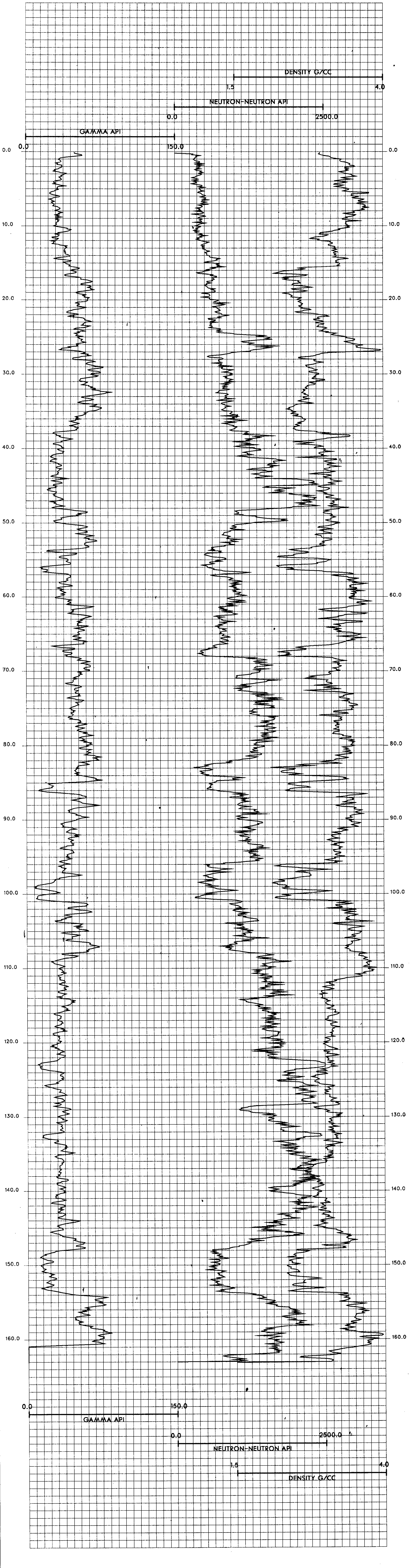
Geophysical Log

| | | |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Datasource: KPNLRDDH87020 Log Date: 87-09-22 Company: CENTURY Geologist: PENMAN | Province: BC Northing: 6343090.00 Lat: 571358 Zone: 9 Easting: 508245.00 Long: 1285148 Measuring Point: GROUND LEVEL Elevation: 1582.8 | |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

Scale: 1. to 200.0
 Depth Range: 0.0 to 168.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|-----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | 1 IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1 IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1 IN PIPE |



KPNLRDDH87021

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87021

DATE - 03/01/88

- HISTORY -

START DATE - 09/22/87

END DATE - 09/25/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - PARRY

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - SITE C. SEAMS INTERSECTED I, H.

- LOCATION -

PROVINCE - BC
ELEVATION - 1501.42

ZONE - 9
NORTHING - 6345236.49
EASTING - 507990.43

LICENCE/LEASE NUMBER -

LATITUDE - 571507
LONGITUDE - 1285203

- ORIENTATION -

LENGTH - 96.15

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

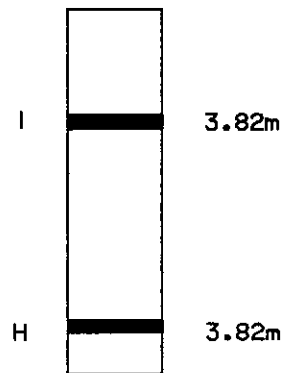
CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 4.57
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87021**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:12050571860072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 15.00 | 15.20 | 0.20 | *67 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN BLACK PELLETS. LOAD CAST (RIGHT WAY UP) |
| 6 | 15.20 | 15.45 | 0.25 | 69 | | | SILTSTONE | M-DK. GY. MAS. VBRKN |
| 7 | 15.45 | 16.40 | 0.95 | *73 | | | SILTSTONE | M. GY. MAS. SSD. VBRKN LOAD CASTS (RIGHT WAY UP). LAM. REGIONS. |
| 7 | 16.40 | 17.08 | 0.68 | 76 | | | SILTSTONE | M. GY. MAS. VBRKN BLACK PELLETS. ABUNDANT. MINOR LAM. AREAS |
| 7 | 17.08 | 17.33 | 0.25 | 77 | | | ROCK LOSS | |
| 8 | 17.33 | 18.88 | 1.55 | *80 | | | SILTSTONE | M. GY. LAM. HRMBU. BRKN LOAD CASTS & HRMBUR (RIGHT WAY UP). BIO TRB .25 FROM TOP. SANDY. BLACK PELLETS ABUNDANT. VBRKN NEAR TOP. |
| 8 | 18.88 | 19.01 | 0.13 | 71 | | | MUDSTONE | DK. GY. MAS. BRKN BLACK PELLETS. |
| 8 | 19.01 | 19.19 | 0.18 | 69 | | | SILTSTONE | M. GY. MAS. SSD. SLD BLACK PELLETS. LOAD CAST (RIGHT WAY UP) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 19.19 | 19.70 | 0.51 | *65 | | | SILTSTONE | SSY. M. GY. LAM. BRKN VBRKN AT THE TOP. SSY AT MIDDLE OF UNIT . CARBONATE FRACTURE FILL PARALLEL TO BEDDING. |
| 9 | 19.70 | 21.08 | 1.38 | 65 | | | SILTSTONE | M. GY. LAM. SSD. BRKN SAND CLASTS .48 M FROM BOX TOP. MINOR Q TZ & CARBONATE FILLED FRACTURES. ABUNDA NT BLACK PELLETS. MINOR SS LAMS. LOAD C AST (RIGHT WAY UP). |
| 10 | 21.08 | 21.21 | 0.13 | 65 | | | SILTSTONE | LT-M. GY. MAS. SLD BLACK PELLETS. |
| 10 | 21.21 | 22.71 | 1.50 | *65 | | | MUDSTONE | SLTY. M-DK. GY. MAS SLTST LAMS. MODERATE QTZ & CARBONATE FI LLED FRACTURES. BLACK PELLETS. |
| 10 | 22.71 | 23.01 | 0.30 | 70 | | | MUDSTONE | SLTY. M-DK. GY. MAS BLACK PELLETS. |
| 11 | 23.01 | 23.22 | 0.21 | 72 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN SLTST LAMS. BLACK PELLETS. |
| 11 | 23.22 | 23.35 | 0.13 | *73 | | | SILTSTONE | M. GY. MAS. BRKN BLACK PELLETS. |
| 11 | 23.35 | 24.35 | 1.00 | 73 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN HAS WITH SLTST LAMS. BLACK PELLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 24.35 | 24.42 | 0.07 | 72 | | SILTSTONE | LT-M.GY.MAS.SLD BLACK PELLETS. |
| 11 | 24.42 | 24.84 | 0.42 | 72 | | MUDSTONE | SLTY.M-DK.GY.MAS.BRKN MAS SLTY MUDST WITH VTHNB SLTST BANDS. BLACK PELLETS & IRREGULAR BLACK TUBES. |
| 12 | 24.84 | 25.72 | 0.88 | *72 | | MUDSTONE | SLTY.M-DK.GY.MAS.BRKN VBRKN IN THE MIDDLE. SLTY MUDST WITH VT HNB CALCAREOUS SLTST BANDS. BLACK PELLE TS IN SLTST BANDS. |
| 12 | 25.72 | 26.57 | 0.85 | 72 | | MUDSTONE | SLTY.M-DK.GY.MAS.BRKN SLTY MUDST WITH VTHNB CALCAREOUS SLTST BANDS. BLACK PELLETS IN SLTST BAND. |
| 13 | 26.57 | 28.12 | 1.55 | *73 | | MUDSTONE | CLYY.LT-H.GY.VTHNB.BRKN MINOR CALCAREOUS SLTST BANDS NEAR TOP (BLK PELLETS). BECOMES VERY CLYY NEAR BA SE DUE TO BENTONITE. MINOR QTZ & TALC F ILLED FRACTURES. |
| 13 | 28.12 | 28.20 | 0.08 | 73 | | BENTONITE | TAN.MAS.SLD SOFT. |
| 13 | 28.20 | 28.55 | 0.35 | 73 | | MUDSTONE | LT-M.GY.MAS.SLD COALIFIED PLANT FOSSILS (COAL STRINGERS) . HIGHLY FRACTURED (QTZ FILLED). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------|
| 14 | 28.55 | 28.77 | 0.22 | 73 06951 | | MUDSTONE | CARB.BLK.MAS.SLD OCCASIONAL SMALL PLANT FRAGS. LOWER 9' C M SAMPLED. |
| 14 | 28.77 | 28.93 | 0.16 | 72 06951 | | MUDSTONE | CARB.BLK.MAS.BRKN SAME A/A WITH COMMON BROKEN PLANT DEBRI S. & OCCASIONAL QTZ VEINING. |
| 14 | 28.93 | 29.04 | 0.11 | 72 06952 I | | COAL LOSS | |
| 14 | 29.04 | 29.11 | 0.07 | 72 06952 I | | COAL | C-2.BLK.SLD |
| 14 | 29.11 | 29.13 | 0.02 | 72 06952 I | | COAL | C-3.BLK.SLD |
| 14 | 29.13 | 29.17 | 0.04 | 72 06952 I | | MUDSTONE | CARB.DK.GY.SLD OCCASIONAL THIN COAL LAMS IN UPPER 1.5 CM. |
| 14 | 29.17 | 29.23 | 0.06 | 72 06952 I | | MUDSTONE | CARB.BLK.VBRKN VERY RARE COAL LAMS. |
| 14 | 29.23 | 29.38 | 0.15 | 72 06952 I | | COAL LOSS | |
| 14 | 29.38 | 29.43 | 0.05 | 72 06952 I | | COAL | C-4.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------|
| 14 | 29.43 | 29.51 | 0.08 | 72 | 06952 | I | COAL | C-2.BLK.SLD OCCASIONAL C-3 (ESP NEAR TOP). |
| 14 | 29.51 | 29.53 | 0.02 | 72 | 06952 | I | COAL | C-4.BLK.SLD |
| 14 | 29.53 | 29.63 | 0.10 | 72 | 06952 | I | MUDSTONE | CARB.DK.GY.SLD SLIGHTLY SLTY WITH OCCASIONAL VERY THIN COAL LAMS. |
| 14 | 29.63 | 29.64 | 0.01 | 72 | 06952 | I | COAL | C-3.BLK.BRKN |
| 14 | 29.64 | 29.69 | 0.05 | 72 | 06952 | I | COAL | C-2.BLK.BRKN |
| 14 | 29.69 | 29.73 | 0.04 | 72 | 06952 | I | COAL | C-3.BLK.BRKN |
| 14 | 29.73 | 29.79 | 0.06 | 72 | 06952 | I | COAL | C-2.BLK.BRKN |
| 14 | 29.79 | 29.85 | 0.06 | 72 | 06952 | I | COAL | C-3.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------|
| 14 | 29.85 | 29.86 | 0.01 | 72 | 06952 | I | COAL | C-6.BLK.SLD |
| 14 | 29.86 | 29.88 | 0.02 | 72 | 06952 | I | COAL | C-2.BLK.SLD |
| 14 | 29.88 | 29.94 | 0.06 | 72 | 06952 | I | COAL | C-3.BLK.BRKN COMMON THIN C-2. ZONES. |
| 14 | 29.94 | 30.00 | 0.06 | 72 | 06952 | I | COAL | C-5.BLK.VSHRD |
| 14 | 30.00 | 30.03 | 0.03 | 72 | 06952 | I | COAL | C-2.BLK.BRKN |
| 14 | 30.03 | 30.07 | 0.04 | 72 | 06952 | I | COAL | C-5.BLK.VBRKN |
| 14 | 30.07 | 30.11 | 0.04 | 72 | 06952 | I | COAL | C-3.BLK.SLD |
| 14 | 30.11 | 30.17 | 0.06 | 72 | 06952 | I | COAL | C-5.BLK.BRKN |
| 14 | 30.17 | 30.22 | 0.05 | 72 | 06952 | I | COAL | C-4.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------|
| 14 | 30.22 | 30.31 | 0.09 | 72 06952 | I | COAL | C-3.BLK.SHRD |
| 14 | 30.31 | 30.72 | 0.41 | 72 06952 | I | COAL LOSS | |
| 14 | 30.72 | 30.76 | 0.04 | 72 06952 | I | MUDSTONE | CARB.BLK.SHRD COMMON LISTRIC SURFACES. |
| 14 | 30.76 | 30.80 | 0.04 | 72 06952 | I | COAL | C-2.BLK.BRKN COMMON THIN C-1 BANDS UP TO .5 CM. |
| 14 | 30.80 | 30.85 | 0.05 | 72 06952 | I | COAL | C-3.BLK.SHRD SOME C-4 NEAR TOP. |
| 15 | 30.85 | 30.88 | 0.03 | 72 06952 | I | COAL | C-1.BLK.BRKN |
| 15 | 30.88 | 30.91 | 0.03 | 72 06952 | I | MUDSTONE | CARB.BLK.LAM.BRKN COMMON VERY THIN COAL LAMS. SOFT & PLIA BLE. |
| 15 | 30.91 | 30.93 | 0.02 | 72 06952 | I | MUDSTONE | CARB.BLK.MAS.SLD WELL CONSOLIDATED BLACK MUDST. SLIGHTLY SLTY. |
| 15 | 30.93 | 30.97 | 0.04 | 72 06952 | I | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------|
| 15 | 30.97 | 30.99 | 0.02 | 72 06952 | I | COAL | C-1.BLK.BRKN ABRUPT LOWER CONTACT. |
| 15 | 30.99 | 31.01 | 0.02 | 72 06952 | I | MUDSTONE | CARB.BLK.SLD .5 CM C-6 COAL AT UNIT'S TOP. |
| 15 | 31.01 | 31.02 | 0.01 | 72 06952 | I | COAL | C-4.BLK.VBRKN |
| 15 | 31.02 | 31.04 | 0.02 | 72 06952 | I | COAL | C-4.BLK.VBRKN |
| 15 | 31.04 | 31.05 | 0.01 | 72 06952 | I | MUDSTONE | CARB.BLK.VBRKN OCCASIONAL SMALL COAL BLEB. |
| 15 | 31.05 | 31.11 | 0.06 | 72 06952 | I | MUDSTONE | CARB.BLK.SLD VERY CARB WITH COMMON THIN COAL LAMS. |
| 15 | 31.11 | 31.14 | 0.03 | 72 06952 | I | COAL | C-3.BLK.VBRKN |
| 15 | 31.14 | 31.19 | 0.05 | 72 06952 | I | MUDSTONE | CARB.BLK.VBRKN THIN COAL LAMS AT UNIT'S BASE. |
| 15 | 31.19 | 31.60 | 0.41 | 71 06952 | I | COAL LOSS | |
| 15 | 31.60 | 31.65 | 0.05 | 71 06953 | I | COAL | C-1.BLK.VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | 40.79 | 41.75 | 0.96 | *87 | | | SILTSTONE | M. GY. LAM. SSD. BRKN LOAD CASTS (RIGHT WAY UP). MINOR SS & C LAY LAMS. |
| 20 | 41.75 | 42.43 | 0.68 | 83 | | | MUDSTONE | M-DK. GY. MAS. SSD. BRKN SLTST LOAD CAST (RIGHT WAY UP). SOME BL ACK PELLETS. |
| 21 | 42.43 | 43.17 | 0.74 | 80 | | | MUDSTONE | DK. GY. MAS. BRKN SOME BLACK PELLETS. |
| 21 | 43.17 | 43.77 | 0.60 | 78 | | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE. |
| 21 | 43.77 | 44.34 | 0.57 | *75 | | | SANDSTONE | SLTY. FG. PR. LT. GY. MAS. SSD. BRKN LOAD CAST (RIGHT WAY UP). WRMBUR OR BIV ALVE ESCAPE. BLK PELLETS. ABUND SMALL B IVALVES (ROUND W/ GROWTH LINES & RIBS). |
| 22 | 44.34 | 45.69 | 1.35 | 76 | | | SILTSTONE | SSY. LT-M. GY. LAM. SSD. BRKN VBRKN IN LOWER SECTION. VERY SANDY IN U PPER 1/2 AND LESS SANDY NEAR BASE. MODE RATELY HARD WHITE GRAINS NEAR BASE OF U NIT (FELDSPAR?) |
| 22 | 45.69 | 46.14 | 0.45 | 77 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 46.14 | 46.69 | 0.55 | 78 | | | SANDSTONE | CLYY. FG. PR. LT. GY. THNB. SSD. BRKN .24 M OF CLEAN SS OVERLYING .31 M OF VE RY MUDDY SS. BIVALVE HORIZON (.14 M THI CK) AT STRAT TOP. |
| 23 | 46.69 | 46.98 | 0.29 | 78 | | | SANDSTONE | CLYY. FG. PR. LT. GY. THNB. SSD. SLD WHITE GRAINS (FSP?). INTERBEDDED MUDDY SS & CLEAN SS. LOAD CAST (RIGHT WAY UP) |
| 23 | 46.98 | 48.03 | 1.05 | 79 | | | SANDSTONE | CLYY. FG. PR. LT. GY. THNB. SSD. BRKN AS ABOVE. BIOTRB. LOAD CAST (RIGHT WAY UP). |
| 23 | 48.03 | 48.53 | 0.50 | *80 | | | SILTSTONE | CLYY. M. GY. LAM. BRKN VBRKN NEAR THE END. |
| 23 | 48.53 | 49.03 | 0.50 | 80 | | | ROCK LOSS | |
| 23 | 49.03 | 49.17 | 0.14 | 80 | | | SANDSTONE | CLYY. LT. GY. MAS. BIOTR. SLD |
| 24 | 49.17 | 49.83 | 0.66 | 79 | | | SANDSTONE | CG. VPR. S-P. MAS. SSD. BRKN MUD RIP-UP CLASTS. MINOR MUD LAMS. LOAD CASTS (RIGHT WAY UP). 3CM FINING UP IN TERVALS (VCG-MG SS). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 27 | 55.55 | 56.20 | 0.65 | | 80 | | SANDSTONE | MG. MOD. S-P. MAS. BRKN POORLY SORTED IN UPPER 40 CM AND WELL SORTED IN LOWER 25 CM. SOME RIP-UP SLTST CLASTS (0.5-2.0 CM). |
| 27 | 56.20 | 56.89 | 0.69 | * | 78 | | SANDSTONE | CLYY. FG. PR. LT. GY. MAS. BRKN ARGILLACEOUS SS WITH MINOR SLTST WISPS, RIP-UP SLTST CLASTS NEAR END OF UNIT (0.5-1.0 CM). |
| 28 | 56.89 | 57.21 | 0.32 | | 85 | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. BRKN LESS ARGILLACEOUS THAN ABOVE. LARGE SLTST RIP-UP CLAST (5 CM LONG). |
| 28 | 57.21 | 57.43 | 0.22 | * | 88 | | MUDSTONE | SSY. LT-M. GY. LAM. SSD. BRKN INTERLAM. MUD & VFG SS (50/50). LOAD CASTS (RIGHT WAY UP). |
| 28 | 57.43 | 57.63 | 0.20 | | 87 | | SANDSTONE | FG SLIGHTLY ARGILLACEOUS. RIP-UP CLAST ZONE (3 CM THICK) - (CLASTS ARE 1-5 MM LONG). |
| 28 | 57.63 | 58.56 | 0.93 | | 83 | | MUDSTONE | CARB. BLK. MAS. BRKN SLIGHTLY CARB. ABUNDANT COALIFIED PLANT FOSSILS. SHEARED NEAR MIDDLE. |
| 28 | 58.56 | 59.15 | 0.59 | | 78 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 59.15 | 59.28 | 0.13 | | 76 | | MUDSTONE | CARB. BLK. MAS. SLD AS ABOVE. |
| 29 | 59.28 | 61.12 | 1.84 | * | 70 | | MUDSTONE | CARB. BLK. MAS. BRKN CONTAINS CALCAREOUS SLTST BANDS & BLEBS (BLK PELLETS IN SLTST) SHEARED AT 1.3 M FROM STRAT. TOP. MORE CARB. THAN ABOVE UNIT. |
| 30 | 61.12 | 61.80 | 0.68 | | 79 | | MUDSTONE | DK. GY. MAS. BRKN PYRITE BLEBS. ABUNDANT COALIFIED PLANT. TALC FILLED FRACTURE. |
| 30 | 61.80 | 61.97 | 0.17 | | 82 | | MUDSTONE | DK. GY. MAS. VBRKN ABUNDANT COALIFIED PLANTS. |
| 30 | 61.97 | 62.47 | 0.50 | | 84 | | ROCK LOSS | |
| 30 | 62.47 | 63.52 | 1.05 | * | 90 | | MUDSTONE | SLTY. M. GY. MAS. BRKN RANGES FROM A CLYY SLTST TO A SLTY MUDST. PLANT FOSSILS ABUNDANT. |
| 31 | 63.52 | 65.29 | 1.77 | | 85 | | SILTSTONE | SSY. LT-M. GY. LAM. BRKN MUDDY SLTST WITH LESSER VFG SS LAMS. |
| 31 | 65.29 | 65.45 | 0.16 | * | 82 | | SANDSTONE | CLYY. FG. PR. LT. GY. MAS. SLD ARGILLACEOUS SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24 | 49.83 | 50.66 | 0.83 | 79 | | SANDSTONE | SLTY. FG. PR. LT. GY. THNB. SSD. BRKN ARGILLACEOUS SS WITH LOAD CAST (RIGHT WAY UP). |
| 24 | 50.66 | 51.10 | 0.44 | 79 | | SANDSTONE | SLTY. VFG. PR. LY. GY. THNB. BRKN RIP-UP CLASTS. MUD BAND .18 M FROM 50.90. |
| 25 | 51.10 | 51.40 | 0.30 | 79 | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD |
| 25 | 51.40 | 51.56 | 0.16 | 79 | | SANDSTONE | FG. YPR. LT. GY. MAS. BRKN SLTST RIP-UP CLASTS. VERY COARSE-FINE S S (FINING UP SEQUENCE). |
| 25 | 51.56 | 52.33 | 0.77 | 78 | | SANDSTONE | SLTY. VFG. PR. LT-M. GY. LAM. BIOTR. BRKN SOME FG SS BANDS. SOME LAMS SHOW COARSENING UP TRENDS OVER 1-1.5 CM. BIVALVE ESCAPE TUBE (RIGHT WAY UP). LOAD CAST (RIGHT WAY UP). LARGE COAL CLAST (~3.5 CM LONG). |
| 25 | 52.33 | 53.11 | 0.78 | *78 | | SANDSTONE | SLTY. MG. PR. S-P. GY. MAS. SSD. BRKN MAS MG-VCG SS W/ LESSER SLTST LAMS. LOAD CAST (RIGHT WAY UP). SLTST RIP-UP CLASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 53.11 | 53.31 | 0.20 | 81 | | SANDSTONE | MG. PR. S-P. MAS. SLD SMALL SLTST RIP-UP CLAST. M-VCG SS. |
| 26 | 53.31 | 53.46 | 0.15 | 83 | | SANDSTONE | SLTY. MG. PR. S-P. MAS. BRKN MAS M-VCG SS WITH MINOR SLTST LAMS. SLTST RIP-UP CLASTS. COAL CLASTS. |
| 26 | 53.46 | 53.96 | 0.50 | *85 | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. SSD. BRKN MAS SS WITH LESSER SLTST LAMS. NEAR BAS F. BECOMES INTERLAM. SS/SLTST. LOAD CAST (RIGHT WAY UP). |
| 26 | 53.96 | 55.06 | 1.10 | 83 | | SANDSTONE | SLTY. MG. PR. S-P. MAS. BRKN F-CG SS (SOME VCG GRAINS) WITH LESSER SLTST VTHNBS. INTERBEDDED FG, MG & CG SS F. FEW LARGE SLTST RIP-UP CLASTS (UP TO 6 CM). |
| 27 | 55.06 | 55.22 | 0.16 | 81 | | SANDSTONE | MG. PR. S-P. MAS. BRKN LARGE SLTST RIP-UP CLAST. SOME C-VC GRAINS. |
| 27 | 55.22 | 55.55 | 0.33 | 81 | | CONGLOMERATE | GRAN. YPR. S-P. MAS. BRKN LARGER SLTST RIP-UP CLAST. BORDERLINE VCG SS/GRAN CONGLOMERATE. MG. MATRIX. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 65.45 | 65.54 | 0.09 | 82 | | | SANDSTONE | CLY. FG. PR. LT. GY. MAS. SLD AS ABOVE. SOME RIP-UP CLASTS. |
| 32 | 65.54 | 67.14 | 1.60 | 82 | | | SANDSTONE | SLTY. FG. PR. LT. GY. THNB. BRKN RIP-UP CLASTS. INTERBEDDED ARGILLACEOUS SS WITH LESSER SLTST. |
| 32 | 67.14 | 67.68 | 0.54 | *83 | | | SILTSTONE | SSY. LT-M. GY. VTHNB. SSD. BRKN INTERBEDDED SLTST AND ARGILLACEOUS FG S S. LOAD CAST (RIGHT WAY UP). |
| 33 | 67.68 | 68.52 | 0.84 | 84 | | | SILTSTONE | SSY. LT-M. GY. THNB. SSD. BRKN VERY THINLY - THINLY INTBD SLTST/MUD. AM D M-CG SS. LOAD CASTS (RIGHT WAY UP). |
| 33 | 68.52 | 68.67 | 0.15 | 85 | | | ROCK LOSS | |
| 33 | 68.67 | 69.20 | 0.53 | 85 | | | SILTSTONE | SSY. LT-M. GY. VTHNB. BRKN VERY THINLY - THINLY INTBD MUD/SLTST & M-CG SS (50/50). RIP-UP CLASTS IN SS. |
| 33 | 69.20 | 69.85 | 0.65 | *86 | | | SILTSTONE | SSY. LT-M. GY. LAM. SSD. SLD INTLAM SLTST & F-VFG SS. ONE 8 CM SS BAND. SS PILLOW (RIGHT WAY UP). SLTST RIP-UP CLASTS IN SS BAND .32 M FROM STRAT TOP. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 69.85 | 71.63 | 1.78 | *86 | | | SILTSTONE | SSY. LT-M. GY. LAM. SSD. BRKN COARSENING UP SEQUENCE (1.5 CM). LOAD CASTS (RIGHT WAY UP). SOME MUD BANDS. IN TLAM & VTHNB. SLTST & SS (MINOR MUD BAND S). |
| 34 | 71.63 | 71.87 | 0.24 | 86 | | | SILTSTONE | SSY. LT-M. GY. LAM. SLD |
| 35 | 71.87 | 72.37 | 0.50 | 85 | | | SILTSTONE | SSY. LT-M. GY. THNB. BRKN COARSENING UP SEQUENCES IN SLTST (2 CM) . INTERBEDDED SLTST & SS. |
| 35 | 72.37 | 73.81 | 1.44 | *85 | | | SANDSTONE | SLTY. LT-M. GY. THNB. SSD. BRKN INTERBEDDED ARGILLACEOUS SS & SLTST. RIP-UP CLASTS NEAR STRAT. BASE. LOAD CAST (RIGHT WAY UP). |
| 36 | 73.81 | 74.68 | 0.87 | *87 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. BRKN MAS F-VFG ARGILLACEOUS SS WITH SLTST LAMS. SOME FLAZER BEDDING. |
| 36 | 74.68 | 75.98 | 1.30 | *87 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. THNB. XBDG. BRKN VF-FG SS WITH SLTST LAMS. RIGHT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 75.98 | 77.68 | 1.70 | 86 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. SSD. BRKN F-YFG ARGILLACEOUS SS WITH SLTST LAMS & YTHNBS. LOAD CAST (RIGHT WAY UP). SLIC KENSIDED FRACTURE (TALC FILLED) SHOWING OBLIQUE DEXTRAL STRIKE SLIP MOVEMENT. MAS WITH SLTST LAMS (LAM BEDDING NEAR S TRAT. TOP). BLACK MUD PELLETS. |
| 37 | 77.68 | 78.06 | 0.38 | *85 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. BRKN MAS. ARGILLACEOUS SS WITH SLTST LAMS. |
| 38 | 78.06 | 80.16 | 2.10 | *80 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. LAM. BRKN MAS. IN PLACES (NEAR BASE). F-YFG ARGILLACEOUS SS WITH SLTST LAMS. BLK MUD PELLETS. |
| 39 | 80.16 | 80.38 | 0.22 | 76 | | | SANDSTONE | SLTY. VFG. MOD. LT. GY. MAS. BRKN ARGILLACEOUS SS. |
| 39 | 80.38 | 80.73 | 0.35 | *75 | | | SILTSTONE | SSY. LT-M. GY. LAM. SSD. BRKN IRREGULAR BEDDING DUE TO SSD. INTERMIXE D. SS & SLTST. |
| 39 | 80.73 | 81.46 | 0.73 | *65 | | | SILTSTONE | SSY. LT-M. GY. LAM. SSD. BRKN SAME AS ABOVE. LOAD CASTS (RIGHT WAY UP). RIP-UP CLAST ZONE (2 CM THICK) IN SS. BECOMES MUDDIER TOWARDS STRAT. BASE. L ARGE. QTZ VEIN (10 CM THICK). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39 | 81.46 | 82.07 | 0.61 | 62 | | | MUDSTONE | DK. GY. MAS. BRKN 3 MINOR TALC, QTZ & CARBONATE FRACTURES |
| 40 | 82.07 | 83.57 | 1.50 | 58 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN MUDST WITH 2 SLTST BANDS. INTACT BUT SHEARED NEAR LOWER PORTION. CARB LAMS IN PLACES. MINOR QTZ & CARBONATE FILLED FRACTURES. |
| 40 | 83.57 | 83.97 | 0.40 | 54 | | | MUDSTONE | DK. GY. MAS. BRKN INTACT BUT SHEARED. CARBONATE AND QTZ FILLED HAIRLINE FRACTURES. |
| 41 | 83.97 | 84.27 | 0.30 | 53 | 06955 | | MUDSTONE | BLK. MAS. BRKN SLIGHT CARB (ESP TOWARDS. BASE). LOWER 2 5CM SAMPLED. |
| 41 | 84.27 | 84.31 | 0.04 | 52 | 06956 H | | COAL | C-6. BLK. SLD GRADATIONAL CONTACTS. |
| 41 | 84.31 | 84.35 | 0.04 | 52 | 06956 H | | COAL | C-4. BLK. SLD GRADATIONAL CONTACTS. |
| 41 | 84.35 | 84.42 | 0.07 | 52 | 06956 H | | COAL | C-3. BLK. BRKN COMMON THIN C-2/C-1 BANDS. |
| 41 | 84.42 | 84.44 | 0.02 | 51 | 06956 H | | COAL | C-5. BLK. SHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------|
| 41 | 84.44 | 84.60 | 0.16 | 51 06956 | H | COAL LOSS | |
| 41 | 84.60 | 84.64 | 0.04 | 51 06956 | H | MUDSTONE | CARB. BLK. BRKN SHEARED IN ONE PLACE. |
| 41 | 84.64 | 84.80 | 0.16 | 50 06956 | H | MUDSTONE | CARB. BLK. SLD OCCASIONAL THIN (<1 MM) COAL LAMS. |
| 41 | 84.80 | 84.82 | 0.02 | 50 06956 | H | COAL | C-3. BLK. BRKN |
| 41 | 84.82 | 84.90 | 0.08 | 50 06956 | H | COAL | C-2. BLK. BRKN |
| 41 | 84.90 | 84.94 | 0.04 | 49 06956 | H | COAL | C-4. BLK. VBRKN |
| 41 | 84.94 | 84.96 | 0.02 | 49 06956 | H | MUDSTONE | CARB. BLK. VSHRD VERY CARB. MUDST. |
| 41 | 84.96 | 84.97 | 0.01 | 49 06956 | H | COAL | C-3. BLK. VSHRD |
| 41 | 84.97 | 84.98 | 0.01 | 49 06956 | H | MUDSTONE | CARB. BLK. SHRD |
| 41 | 84.98 | 85.09 | 0.11 | 49 06956 | H | COAL | C-3. BLK. BRKN OCCASIONAL C-2 & C-4 BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------|
| 41 | 85.09 | 85.19 | 0.10 | 48 06956 | H | COAL | C-2. BLK. VBRKN |
| 41 | 85.19 | 85.26 | 0.07 | 48 06956 | H | COAL | C-4. BLK. VBRKN |
| 41 | 85.26 | 85.27 | 0.01 | 48 06956 | H | MUDSTONE | CARB. BLK. BRKN |
| 41 | 85.27 | 85.31 | 0.04 | 48 06956 | H | COAL | C-2. BLK. SLD |
| 41 | 85.31 | 85.34 | 0.03 | 48 06956 | H | COAL | C-6. BLK. BRKN COMMON MUDST LAMS. |
| 41 | 85.34 | 85.37 | 0.03 | 48 06956 | H | COAL | C-2. BLK. SLD COMMON C-1. |
| 41 | 85.37 | 85.39 | 0.02 | 48 06956 | H | MUDSTONE | CARB. BLK. SLD |
| 41 | 85.39 | 85.43 | 0.04 | 47 06956 | H | COAL | C-3. BLK. BRKN |
| 41 | 85.43 | 85.45 | 0.02 | 47 06956 | H | COAL | C-2. BLK. SHRD |
| 41 | 85.45 | 85.46 | 0.01 | 47 06956 | H | MUDSTONE | CARB. BLK. PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BGA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------|
| 41 | 85.46 | 85.59 | 0.13 | 47 | 06956 H | COAL | C-5.BLK.PHRD |
| 42 | 85.59 | 85.61 | 0.02 | 47 | 06956 H | COAL | C-4.BLK.YSHRD |
| 42 | 85.61 | 86.50 | 0.89 | 45 | 06956 H | COAL LOSS | |
| 42 | 86.50 | 86.52 | 0.02 | 43 | 06956 H | MUDSTONE | CARB.BLK.YSHRD COMMON VERY THIN COAL LAMS. |
| 42 | 86.52 | 86.55 | 0.03 | 43 | 06956 H | COAL | C-3.BLK.PHRD |
| 42 | 86.55 | 86.56 | 0.01 | 43 | 06956 H | MUDSTONE | CARB.BLK.BRKN COMMON SLTY LAMS. |
| 42 | 86.56 | 86.63 | 0.07 | 43 | 06956 H | MUDSTONE | CARB.BLK.VBRKN SOFT & FISSILE, ABRUPT LOWER CONTACT. |
| 42 | 86.63 | 86.65 | 0.02 | 42 | 06956 H | COAL | C-2.BLK.BRKN COMMON C-1 BANDS. |
| 42 | 86.65 | 86.67 | 0.02 | 42 | 06956 H | COAL | C-6.BLK.BRKN INTLAM C-2/MUDST. BANDS. |
| 42 | 86.67 | 86.71 | 0.04 | 42 | 06956 H | COAL | C-3.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BGA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------|
| 42 | 86.71 | 86.73 | 0.02 | 42 | 06956 H | MUDSTONE | CARB.BLK.BRKN SOFT & PLATY. |
| 42 | 86.73 | 86.76 | 0.03 | 42 | 06956 H | COAL | C-1.BLK.BRKN |
| 42 | 86.76 | 86.82 | 0.06 | 42 | 06956 H | COAL | C-2.BLK.YSHRD |
| 42 | 86.82 | 86.88 | 0.06 | 42 | 06956 H | MUDSTONE | CARB.DK.GY.SLD WELL CONSOLIDATED & SLIGHTLY CARB. |
| 42 | 86.88 | 86.90 | 0.02 | 41 | 06956 H | COAL | C-6.BLK.VBRKN COMMON MUDST. |
| 42 | 86.90 | 86.92 | 0.02 | 41 | 06956 H | COAL | C-4.BLK.BRKN |
| 42 | 86.92 | 86.93 | 0.01 | 41 | 06956 H | COAL | C-1.BLK.SLD |
| 42 | 86.93 | 86.98 | 0.05 | 41 | 06956 H | COAL | C-5.BLK.SLD COMMON THIN MUDST LAMS. |
| 42 | 86.98 | 86.99 | 0.01 | 41 | 06956 H | COAL | C-2.BLK.SLD |
| 42 | 86.99 | 87.05 | 0.06 | 41 | 06956 H | COAL | C-4.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------|
| 42 | 87.05 | 87.09 | 0.04 | 41 | 06956 H | MUDSTONE | CARB. BLK. VBRKN COMMON THIN COAL LAMS (ESP NEAR BASE). |
| 42 | 87.09 | 87.17 | 0.08 | 40 | 06956 H | MUDSTONE | CARB. BLK. VBRKN |
| 42 | 87.17 | 87.19 | 0.02 | 40 | 06956 H | COAL | C-6. BLK. SHRD |
| 42 | 87.19 | 87.27 | 0.08 | 40 | 06956 H | COAL | C-4. BLK. VSHRD |
| 42 | 87.27 | 87.35 | 0.08 | 40 | 06956 H | SILTSTONE | CARB. M. GY. SLD COMMON QTZ VEIN-FILLING W/IN THE SLTST LENS. |
| 42 | 87.35 | 87.39 | 0.04 | 39 | 06956 H | COAL | C-3. BLK. VBRKN |
| 42 | 87.39 | 87.48 | 0.09 | 39 | 06956 H | MUDSTONE | CARB. BLK. VBRKN |
| 42 | 87.48 | 87.55 | 0.07 | 39 | 06956 H | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 42 | 87.55 | 87.93 | 0.38 | 38 | 06956 H | COAL LOSS | |
| 42 | 87.93 | 88.00 | 0.07 | 37 | 06956 H | MUDSTONE | CARB. BLK. VBRKN SAME MUDST AS PREVIOUS MUDST UNIT BUT R EPEATED DUE TO DISTORTED BEDDING. |
| 42 | 88.00 | 88.14 | 0.14 | 37 | 06956 H | ROCK LOSS | |
| 42 | 88.14 | 88.62 | 0.48 | 35 | 06956 H | COAL LOSS | |
| 43 | 88.62 | 88.65 | 0.03 | 34 | 06956 H | COAL | C-6. BLK. PWRD |
| 43 | 88.65 | 88.74 | 0.09 | 34 | 06957 H | MUDSTONE | CARB. BLK. BRKN VERY SOFT & PLIABLE. |
| 43 | 88.74 | 88.79 | 0.05 | 34 | 06957 H | MUDSTONE | CARB. BLK. SLD WELL CONSOLIDATED WITH COMMON LITRIC S URFACES. |
| 43 | 88.79 | 88.82 | 0.03 | 34 | 06957 H | MUDSTONE | DK. GY. VBRKN MODERATE CONSOLIDATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 88.82 | 89.98 | 1.16 | 31 | 06957 | H | MUDSTONE | DK.GY.MAS.BRKN WELL CONSOLIDATED MAS MUDST UNIT WITH R ARE THIN DISCONTINUOUS COAL LAMS THROUGH HOUT. SOME SLTY ZONES (ESP TOWARDS BASE). |
| 43 | 89.98 | 90.34 | 0.36 | 28 | 06957 | H | MUDSTONE | CARB.DK.GY.MAS.BRKN SAME A/A BUT MORE CARB WITH COMMON THIN COAL LAMS ESP AT TOP & BASE OF UNIT. |
| 43 | 90.34 | 90.53 | 0.19 | 27 | 06957 | H | MUDSTONE | CARB.DK.GY.MAS.BRKN VERY CARB BUT SAME A/A. COALY AT BASE. |
| 44 | 90.53 | 90.65 | 0.12 | 26 | 06958 | H | COAL LOSS | |
| 44 | 90.65 | 90.83 | 0.18 | 26 | 06958 | H | COAL | C-2.BLK.BRKN OCCASIONAL THIN MUDST LAMS UP TO .5 CM. COMMON THIN C-1 BANDS. |
| 44 | 90.83 | 90.84 | 0.01 | 25 | 06958 | H | COAL | C-4.BLK.BRKN |
| 44 | 90.84 | 90.91 | 0.07 | 25 | 06958 | H | COAL | C-2.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------|
| 44 | 90.91 | 90.94 | 0.03 | 25 | 06958 | H | COAL | C-4.BRKN |
| 44 | 90.94 | 90.96 | 0.02 | 25 | 06958 | H | COAL | C-2.BRKN |
| 44 | 90.96 | 91.03 | 0.07 | 25 | 06958 | H | ROCK LOSS | |
| 44 | 91.03 | 91.05 | 0.02 | 24 | 06958 | H | MUDSTONE | BLK.BRKN |
| 44 | 91.05 | 91.09 | 0.04 | 24 | 06958 | H | COAL | C-4.BLK.YSHRD |
| 44 | 91.09 | 91.11 | 0.02 | 24 | 06958 | H | COAL | C-6.BLK.BRKN |
| 44 | 91.11 | 91.20 | 0.09 | 24 | 06958 | H | COAL | C-2.BLK.SLD |
| 44 | 91.20 | 91.27 | 0.07 | 24 | 06958 | H | COAL | C-1.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------|
| 44 | 91.27 | 91.33 | 0.06 | 23 | 06958 | H | COAL | C-3.BLK.PWRD |
| 44 | 91.33 | 91.39 | 0.06 | 23 | 06958 | H | ROCK LOSS | |
| 44 | 91.39 | 91.41 | 0.02 | 23 | 06958 | H | MUDSTONE | CARB.BLK.VSHRD |
| 44 | 91.41 | 91.45 | 0.04 | 23 | 06958 | H | COAL | C-5.BLK.VSHRD COMMON LISTRIC SURFACES. |
| 44 | 91.45 | 91.52 | 0.07 | 23 | 06958 | H | COAL | C-6.BLK.PWRD |
| 44 | 91.52 | 92.78 | 1.26 | 20 | 06958 | H | COAL LOSS | |
| 44 | 92.78 | 92.80 | 0.02 | 17 | 06959 | | MUDSTONE | CARB.DK.GY.VBRKN |
| 44 | 92.80 | 92.99 | 0.19 | 17 | 06959 | | MUDSTONE | CARB.DK.GY.MAS.SLD MASSIVE MUDST (SLIGHT CARB) GRADING SLO HLY INTO SLTST. |
| 44 | 92.99 | 93.69 | 0.70 | *15 | 06959 | | SILTSTONE | M-DK.GY.MAS.SLD UPPER 4 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87021

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 45 | 93.69 | 94.75 | 1.06 | 13 | | | SILTSTONE | SSY.LT-M.GY.LAM.BRKN SLTST WITH SS LAMS. |
| 45 | 94.75 | 95.82 | 1.07 | 11 | | | SANDSTONE | SLTY.FG.MOD.LT.GY.MAS.BRKN MAS ARGILLACEOUS SS WITH SLTST LAMS. RI P-UP CLASTS NEAR END OF BOX. |
| 46 | 95.82 | 96.15 | 0.33 | *10 | | | SANDSTONE | SLTY.FG.MOD.LT.GY.MAS.SLD MAS ARGILLACEOUS WITH SLTST LAMS. RIP-U P CLASTS. END OF HOLE. T.D. = 99.67 M. DRILLER'S MARK. |

* DENOTES MEASURED BCA
NEWPAGE

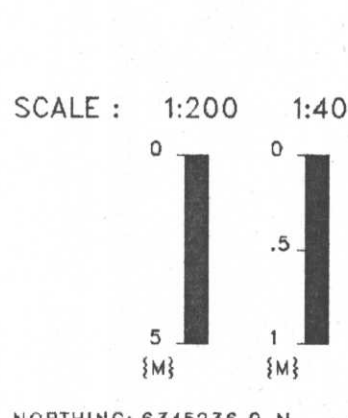
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87021

740

GEOLOGIST : PARRY

DATE : MAR 08/88

DRAWING NO. :

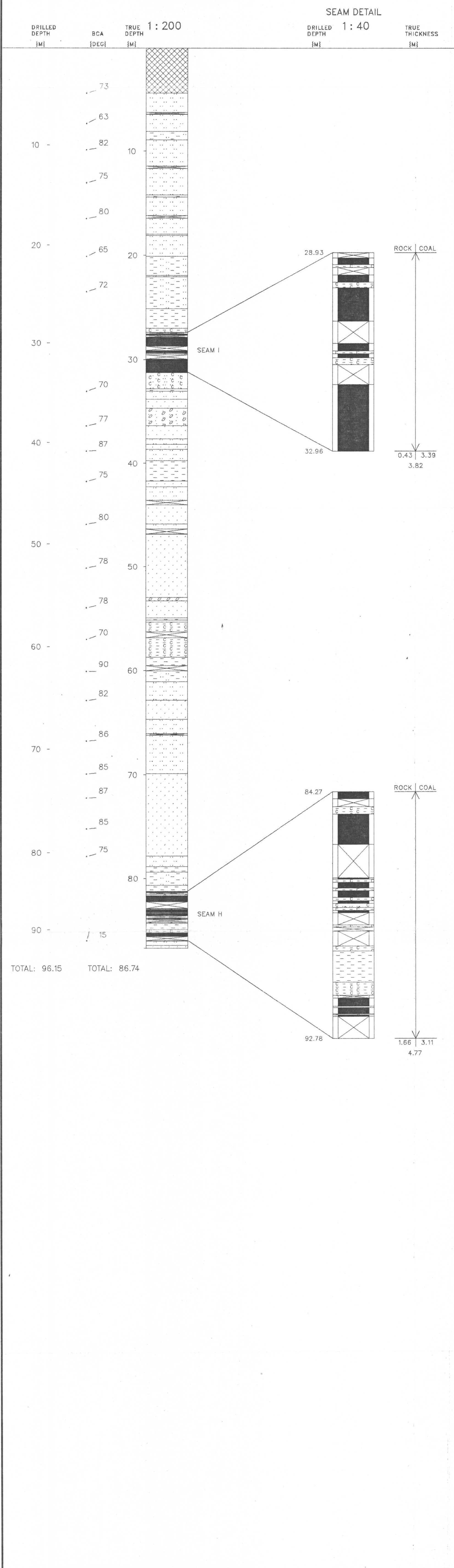


NORTHING: 6345236.0 N
 EASTING: 507990.3 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |



Gulf Canada Resources Limited Coal Division

740

Geophysical Log

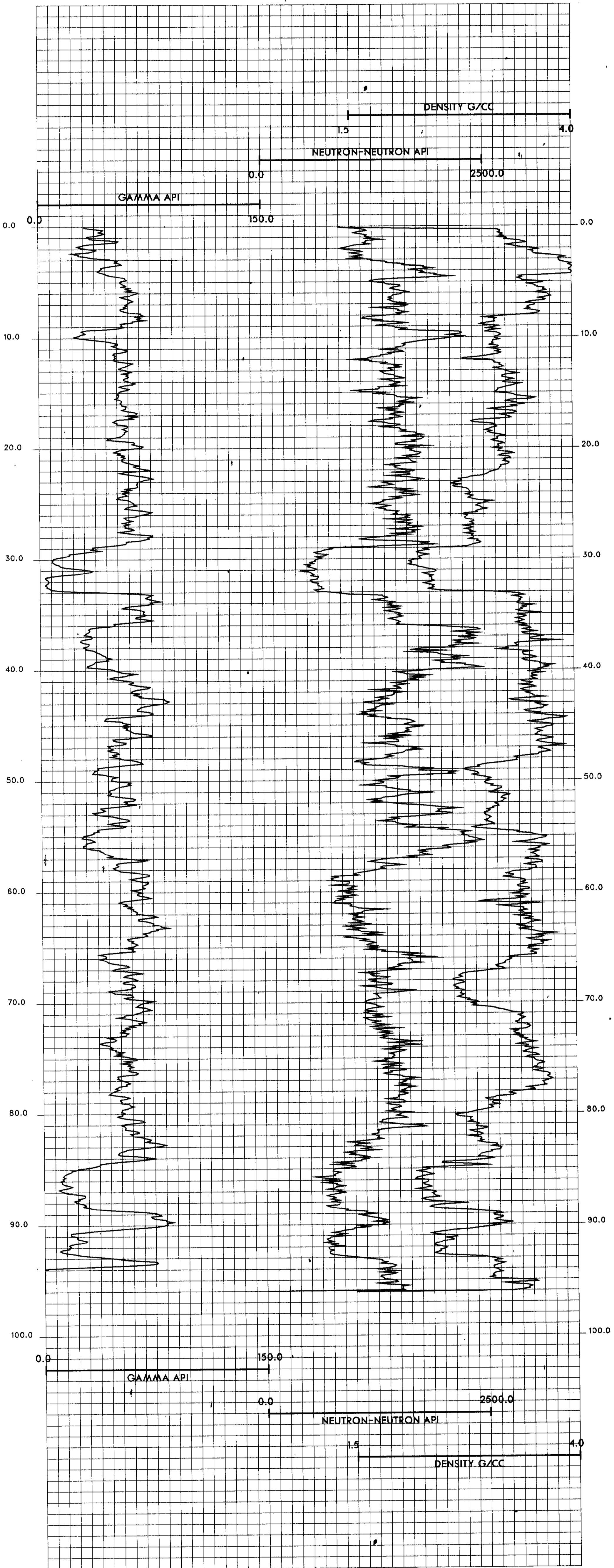
Datasource: **KPNLRDDH87021**
 Log Date: 87-09-24
 Company: CENTURY
 Geologist: PARRY

Province: BC Northing: 6345240.00 Lat: 571507
 Zone: 9 Easting: 507990.00 Long: 1285203
 Measuring Point: GROUND LEVEL Elevation: 1501.4

Scale: 1 to 200.0
 Depth Range: 0.0 to 101.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | 1N PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1N PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1N PIPE |



KPNLRDDH87022

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH87022

DATE - 03/01/88

- HISTORY -

START DATE - 09/23/87

END DATE - 09/25/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PENMAN

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE C. INTERSECTED SEAMS P, O, N, M/N, ?. THERMIS
TOR INSTALLED

- LOCATION -

PROVINCE - BC

ELEVATION - 1554.94

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6343789.84

EASTING - 508630.40

LATITUDE - 57.00

LONGITUDE - 1285125

- ORIENTATION -

LENGTH - 146.85

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 6.10

AQUIFER DEPTHS (M) - 0.00

0.00

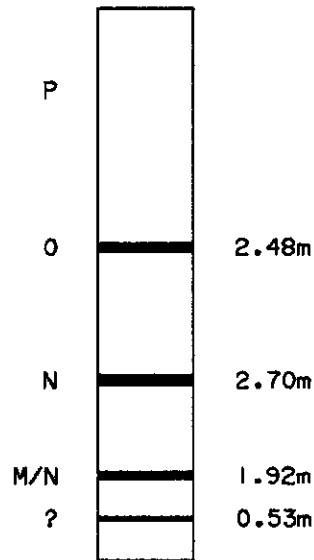
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87022**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:12050571880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------|
| | 0.00 | 6.10 | 6.10 | 45 | | CASING | CASING DEPTH |
| 1 | 6.10 | 6.13 | 0.03 | 45 | | SANDSTONE | FG.LT.GY.VBRKN WEATHERED.ORG-BRN. TILL. |
| 1 | 6.13 | 6.70 | 0.57 | *45 | | SILTSTONE | M.GY.LAM.BRKN 60-40 SLTST TO SS. SS INCREASING DOWN. |
| 1 | 6.70 | 7.19 | 0.49 | 45 | | SANDSTONE | FG.WEL.LT.GY.SLD NO VISIBLE BEDDING. LARGE PYRITE BLEB AT TOP. |
| 1 | 7.19 | 7.57 | 0.38 | 45 | | SILTSTONE | M.GY.LAM.BRKN SS LAM. MINOR BIOTRB. |
| 1 | 7.57 | 7.64 | 0.07 | 46 | | SANDSTONE | FG.WEL.LT.GY.YTHNB.BRKN |
| 1 | 7.64 | 7.76 | 0.12 | 46 | | SILTSTONE | M.GY.LAM.BRKN SS LAM. |
| 2 | 7.76 | 8.06 | 0.30 | 46 | | SILTSTONE | MOD.DK.GY.WRMBU.BRKN SLICKENSIDES. |
| 2 | 8.06 | 8.58 | 0.52 | 46 | | SILTSTONE | DK.GY.WRMBU.BRKN SS LAMS (INCREASING TO BOTTOM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 2 | 8.58 | 8.76 | 0.18 | 46 | | SANDSTONE | FG.MOD.LT.GY.VSHRD MINOR SLTST LAM. SLICKENSIDES WITH QYZ INFILL. |
| 3 | 8.76 | 10.66 | 1.90 | 47 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN 70-30 SS-SLTST LAM. MINOR X-BEDDING-TOP S UP. |
| 4 | 10.66 | 11.20 | 0.54 | 47 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN 70-30 SS-SLTST LAM. |
| 4 | 11.20 | 11.87 | 0.67 | 48 | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN NUMEROUS SLTST WISPS. |
| 4 | 11.87 | 12.68 | 0.81 | *48 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN MINOR X-BEDDING-TOPS UP. ABUNDANT SLTST LAM. GRADING TO SLTST AT BASE. |
| 5 | 12.68 | 12.95 | 0.27 | 49 | | SILTSTONE | M.GY.LAM.BIOTR.SLD |
| 5 | 12.95 | 13.51 | 0.56 | 49 | | SILTSTONE | M.GY.LAM.BRKN SS LAM. MINOR BIOTRB. |
| 5 | 13.51 | 14.73 | 1.22 | 50 | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN MUDDY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------|
| 6 | 14.73 | 15.23 | 0.50 | 51 | 06937 | | SILTSTONE | CLY. M. GY. BRKN CARB. PLANT FRAGS WITHIN. LOWER 25 CM SAMPLED. |
| 6 | 15.23 | 15.59 | 0.36 | 51 | 06938 | P | COAL | C-3. SHRD VERY SHEARED & POWDERED. |
| 6 | 15.59 | 15.65 | 0.06 | 52 | 06938 | P | COAL LOSS | |
| 6 | 15.65 | 16.08 | 0.43 | 52 | 06939 | | MUDSTONE | SLTY. M-DK. GY. SLD BRECCIATED, UPPER 25 CM SAMPLED. |
| 6 | 16.08 | 16.46 | 0.38 | 52 | | | SILTSTONE | M. GY. SLD |
| 6 | 16.46 | 16.63 | 0.17 | 53 | | | SILTSTONE | M. GY. BRKN |
| 7 | 16.63 | 16.90 | 0.27 | 53 | | | MUDSTONE | LT. BLK. LAM. BRKN SLTST LAM. |
| 7 | 16.90 | 17.18 | 0.28 | 53 | | | MUDSTONE | LT. BLK. SLD PULVERIZED SCOUR FILL. |
| 7 | 17.18 | 18.53 | 1.35 | 54 | | | SANDSTONE | FG. MEL. LT. GY. BRKN NO VISIBLE BEDDING. MINOR MUDST RIP-UP & SWIRLS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------|
| 7 | 18.53 | 18.73 | 0.20 | 55 | | | ROCK LOSS | |
| 8 | 18.73 | 19.44 | 0.71 | 55 | | | SANDSTONE | FG. MEL. LT. GY. VSHRD |
| 8 | 19.44 | 19.64 | 0.20 | 56 | | | ROCK LOSS | |
| 8 | 19.64 | 19.88 | 0.24 | 56 | | | SANDSTONE | MEL. LT. GY. VSHRD SCOUR FILL WITH SAND/MUD AROUND SS RUBB LE. |
| 8 | 19.88 | 20.09 | 0.21 | 56 | | | ROCK LOSS | |
| 8 | 20.09 | 20.46 | 0.37 | 57 | | | SILTSTONE | M. GY. BRKN SCOUR FILL GRADES INTO SLTST CLASTS. |
| 8 | 20.46 | 20.62 | 0.16 | 57 | | | SILTSTONE | M. GY. LAM. SLD PYRITE BLEB. 3 MM. SS LAM. |
| 9 | 20.62 | 22.70 | 2.08 | *58 | | | SILTSTONE | M. GY. LAM. BIOTR. BRKN PLANT FRAGMENTS. |
| 10 | 22.70 | 24.83 | 2.13 | *60 | | | SILTSTONE | M. GY. LAM. BIOTR. SLD LOAD CAST. MINOR SS LAM DISTORTED BY BI OTRB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTYON |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------|
| 11 | 24.83 | 25.74 | 0.91 | 60 | | | SILTSTONE | M.GY.LAM.BIOTR.SLD AS ABOVE W/ WRMBUR. |
| 11 | 25.74 | 26.83 | 1.09 | 59 | | | SILTSTONE | M.GY.LAM.BIOTR.SLD WRMBUR. |
| 11 | 26.83 | 26.85 | 0.02 | 59 | | | ROCK LOSS | |
| 12 | 26.85 | 28.34 | 1.49 | *59 | | | SILTSTONE | M.GY.LAM.SLD MINOR BIOTRB. |
| 12 | 28.34 | 28.48 | 0.14 | 64 | | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.LAM.SLD MINOR BIOTRB. |
| 12 | 28.48 | 28.79 | 0.31 | 66 | | | SILTSTONE | SSY.M.GY.LAM.SLD MINOR BIOTRB. |
| 12 | 28.79 | 28.87 | 0.08 | 67 | | | SILTSTONE | SSY.M.GY.LAM.SLD MINOR BIOTRB. |
| 13 | 28.87 | 29.18 | 0.31 | 68 | | | SILTSTONE | SSY.M.GY.LAM.SLD MINOR BIOTRB. LOAD CASTS. GRADES TO SS AT BASE. |
| 13 | 29.18 | 29.27 | 0.09 | 69 | | | SANDSTONE | FG.WEL.LT.GY.SLD NO VISIBLE BEDDING. |
| 13 | 29.27 | 29.39 | 0.12 | *70 | | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN SLTST LAM & RIP-UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTYON |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------|
| 13 | 29.39 | 30.11 | 0.72 | 69 | | | SANDSTONE | FG.WEL.LT.GY.BRKN NO VISIBLE BEDDING. |
| 13 | 30.11 | 30.74 | 0.63 | 68 | | | SANDSTONE | MG.WEL.LT.GY.BRKN NO VISIBLE BEDDING. QZ STRINGERS. |
| 14 | 30.74 | 31.92 | 1.18 | 66 | | | SANDSTONE | VFG.WEL.LT.GY.BRKN AS ABOVE. |
| 14 | 31.92 | 32.57 | 0.65 | 65 | | | SANDSTONE | VFG.WEL.LT.GY.SLD AS ABOVE. |
| 15 | 32.57 | 33.02 | 0.45 | 64 | | | SANDSTONE | FG.WEL.LT.GY.SLD SLTST RIP-UP AT BASE (.5 CM). |
| 15 | 33.02 | 33.16 | 0.14 | 63 | | | SANDSTONE | MG.WEL.LT.GY.SLD SLTST RIP-UP (1 CM). |
| 15 | 33.16 | 34.56 | 1.40 | *62 | | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD INTERMITTENT SLTST BANDS. |
| 16 | 34.56 | 34.76 | 0.20 | 64 | | | SANDSTONE | VFG.WEL.LT.GY.THNB.SLD VERY MINOR SLTST WISPS. |
| 16 | 34.76 | 36.31 | 1.55 | 65 | | | SANDSTONE | VFG.WEL.LT.GY.THNB.SLD AS ABOVE. |
| 17 | 36.31 | 36.63 | 0.32 | 67 | | | SANDSTONE | FG.WEL.LT.GY.SLD NO VISIBLE BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 17 | 36.63 | 36.67 | 0.04 | 68 | | SILTSTONE | MEL.M.GY.THMB.SLD |
| 17 | 36.67 | 37.11 | 0.44 | 68 | | SANDSTONE | FG.MEL.LT.GY.THMB.SLD MINOR SLTST LAM & RIP-UPS. |
| 17 | 37.11 | 37.52 | 0.41 | 69 | | SANDSTONE | FG.MEL.LT.GY.BRKN NUMEROUS SLTST RIP-UPS (3 CM). |
| 17 | 37.52 | 37.62 | 0.10 | 70 | | SANDSTONE | FG.MEL.LT.GY.SLD |
| 17 | 37.62 | 37.89 | 0.27 | *70 | | SANDSTONE | FG.MEL.LT.GY.BRKN VERY MINOR SLTST LAM & RIP-UPS. |
| 17 | 37.89 | 37.93 | 0.04 | 70 | | SILTSTONE | M.GY.LAM.SLD |
| 17 | 37.93 | 38.26 | 0.33 | 70 | | SANDSTONE | FG.MEL.LT.GY.SLD NO VISIBLE BEDDING. |
| 18 | 38.26 | 39.32 | 1.06 | 70 | | SANDSTONE | FG.MEL.LT.GY.THKB.BRKN MINOR SLTST LAM. SLTST RIP-UPS (.5 CM) AT BASE. |
| 18 | 39.32 | 40.25 | 0.93 | *70 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN NUMEROUS SLTST LAM. MINOR BIOTRB & WRMB UR. ONE .5 CM QTZ STRINGER AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 19 | 40.25 | 40.80 | 0.55 | 69 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN NUMEROUS SLTST BANDS WITH SOME LOCAL CO NCENTRATION WITH WRMBUR OR BIOTRB. |
| 19 | 40.80 | 41.90 | 1.10 | 69 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN AS ABOVE. |
| 19 | 41.90 | 42.22 | 0.32 | 68 | | SANDSTONE | FG.MEL.LT.GY.LAM.SLD MINOR SLTST LAM. |
| 20 | 42.22 | 43.59 | 1.37 | 68 | | SANDSTONE | FG.MEL.LT.GY.SLD NO VISIBLE BEDDING. MINOR SLTST RIP-UPS AT BASE. |
| 20 | 43.59 | 43.92 | 0.33 | *67 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN NUMEROUS SLTST BANDS. |
| 20 | 43.92 | 44.22 | 0.30 | 67 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN AS ABOVE W/ HORIZONTAL WRMBUR. |
| 21 | 44.22 | 46.20 | 1.98 | 67 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.WRMBU.BRKN 55-45 SS-SLTST. HELMINTHOPSIS. HORIZONT AL & VERTICAL WRMBUR. |
| 22 | 46.20 | 46.86 | 0.66 | 68 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.WRMBU.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------|
| 22 | 46.86 | 47.02 | 0.16 | 68 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. WRMBU. SLD AS ABOVE. GRADES TO SLTST AT BASE. |
| 22 | 47.02 | 48.22 | 1.20 | 68 | | | SILTSTONE | SSY. M-DK. GY. LAM. WRMBU. BRKN HELMINTHOPSIS & MINOR WRMBUR. |
| 22 | 48.22 | 48.29 | 0.07 | 68 | | | ROCK LOSS | |
| 23 | 48.29 | 49.76 | 1.47 | 68 | | | SILTSTONE | MEL. DK. GY. LAM. BRKN PYRITE BLEBS. VERY MINOR SS. LAM. |
| 23 | 49.76 | 50.23 | 0.47 | 69 | | | SILTSTONE | MEL. DK. GY. LAM. BRKN VERY MINOR SS. LAM. |
| 24 | 50.23 | 51.34 | 1.11 | 69 | | | SILTSTONE | MEL. DK. GY. LAM. BRKN VERY MINOR SS. LAM. |
| 24 | 51.34 | 51.48 | 0.14 | 69 | | | SANDSTONE | FG. MEL. LT. GY. SLD NO. VISIBLE BEDDING. |
| 24 | 51.48 | 51.72 | 0.24 | 69 | | | SANDSTONE | SLTY. FG. PR. LT. GY. LAM. WRMBU. SLD SLTST LAM. |
| 24 | 51.72 | 52.12 | 0.40 | 69 | | | SILTSTONE | DK. GY. LAM. WRMBU. SLD |
| 24 | 52.12 | 52.18 | 0.06 | 69 | | | SANDSTONE | FG. MOD. LT. GY. LAM. XBDG. SLD TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------|
| 25 | 52.18 | 52.72 | 0.54 | 69 | | | SILTSTONE | DK. GY. LAM. BRKN FINE SS LAM. |
| 25 | 52.72 | 53.54 | 0.82 | 69 | | | SILTSTONE | DK. GY. LAM. BRKN 1 CM SCOUR FILL IN SHEAR ZONE. BOTTOM IS QUITE FRACTURED. |
| 25 | 53.54 | 53.74 | 0.20 | 69 | | | ROCK LOSS | |
| 25 | 53.74 | 54.24 | 0.50 | 70 | | | SILTSTONE | DK. GY. LAM. VBRKN SLICKENSIDES WITH QTZ INFILL. 3 CM QTZ BAND WITH SLTST BRECCIA. |
| 25 | 54.24 | 54.44 | 0.20 | 70 | | | ROCK LOSS | |
| 26 | 54.44 | 54.79 | 0.35 | 70 | | | SILTSTONE | DK. GY. LAM. VSHRD FINE SS LAM. |
| 26 | 54.79 | 54.99 | 0.20 | 70 | | | ROCK LOSS | |
| 26 | 54.99 | 56.42 | 1.43 | *70 | | | SILTSTONE | DK. GY. LAM. BRKN PYRITE BLEBS. |
| 26 | 56.42 | 56.56 | 0.14 | 70 | | | SILTSTONE | DK. GY. LAM. BRKN PYRITE BLEBS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 27 | 56.56 | 58.65 | 2.09 | 70 | | SILTSTONE | DK.GY.LAM.BRKN PYRITE BLEBS. |
| 28 | 58.65 | 59.40 | 0.75 | 70 | | SILTSTONE | DK.GY.LAM.SLD MINOR PYRITE BLEBS. |
| 28 | 59.40 | 60.81 | 1.41 | 69 | | SILTSTONE | DK.GY.LAM.SLD AS ABOVE. |
| 29 | 60.81 | 61.59 | 0.78 | 69 | | SILTSTONE | SSY,DK.GY.LAM.BRKN 6 CM SHEAR ZONE-SLICKENSIDES (CORE SHAY TERED). SS CONTENT INCREASING TO BOTTOM |
| 29 | 61.59 | 62.36 | 0.77 | 69 | | SANDSTONE | FG.MOD.M.GY.LAM.BRKN SLTST.LAM. |
| 29 | 62.36 | 62.50 | 0.14 | 69 | | SANDSTONE | FG.MOD.M.GY.LAM.SLD SLTST.LAM. |
| 30 | 62.50 | 62.82 | 0.32 | 69 | 06940 | SANDSTONE | FG.M.GY.SLD ABUNDANT QTZ AT BASE. LOWER 20 CM SAMPL ED. |
| 30 | 62.82 | 62.87 | 0.05 | 69 | 06940 | SILTSTONE | M-DK.GY.SLD ABUNDANT QTZ. |
| 30 | 62.87 | 63.04 | 0.17 | 69 | 06941 0 | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------|
| 30 | 63.04 | 63.37 | 0.33 | 69 | 06941 0 | COAL | C-4.BRKN C-2 BANDS WITHIN. |
| 30 | 63.37 | 63.60 | 0.23 | 69 | 06941 0 | SILTSTONE | M.GY.BRKN COAL STRINGERS & QTZ WITHIN. |
| 30 | 63.60 | 63.76 | 0.16 | 69 | 06941 0 | SILTSTONE | M.GY.BRKN COAL STRINGER & QTZ WITHIN. |
| 30 | 63.76 | 63.79 | 0.03 | 69 | 06941 0 | COAL | C-5.SLD |
| 30 | 63.79 | 64.00 | 0.21 | 69 | 06941 0 | COAL | C-2.BRKN |
| 30 | 64.00 | 64.33 | 0.33 | 69 | 06941 0 | COAL | C-3.BRKN |
| 30 | 64.33 | 64.47 | 0.14 | 69 | 06941 0 | SILTSTONE | M.GY.SLD COALY STRINGERS WITHIN. |
| 30 | 64.47 | 64.52 | 0.05 | 69 | 06941 0 | ROCK LOSS | |
| 30 | 64.52 | 64.69 | 0.17 | 69 | 06941 0 | COAL LOSS | |
| 31 | 64.69 | 64.95 | 0.26 | 69 | 06941 0 | COAL | C-3.VBRKN |
| 31 | 64.95 | 65.34 | 0.39 | 69 | 06941 0 | COAL | C-4.BRKN |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 31 | 65.34 | 65.44 | 0.10 | 69 | 06941 0 | COAL | C-3.SLD |
| 31 | 65.44 | 65.53 | 0.09 | 69 | 06941 0 | COAL | C-5.SLD |
| 31 | 65.53 | 65.66 | 0.13 | 69 | 06942 | MUDSTONE | CARB, DK, GY, SLD COALY-CARB STRINGERS THROUGHOUT. |
| 31 | 65.66 | 66.50 | 0.84 | 68 | 06942 | MUDSTONE | CARB, M-DK, GY, SLD CARB NEAR TOP; BECOMES SLTY TOWARDS BAS E. UPPER 12 CM SAMPLED. |
| 32 | 66.50 | 68.42 | 1.92 | 68 | | SILTSTONE | DK, GY, LAM, BRKN FRACTURE SURFACES WITH TALC. 1.5 CM COA L. & QTZ FRACTURE FILL IN MIDDLE. |
| 32 | 68.42 | 68.48 | 0.06 | 68 | | ROCK LOSS | |
| 33 | 68.48 | 68.70 | 0.22 | 68 | | SILTSTONE | DK, GY, LAM, BRKN |
| 33 | 68.70 | 69.16 | 0.46 | 68 | | SILTSTONE | DK, GY, LAM, SLD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------|
| 33 | 69.16 | 69.49 | 0.33 | *68 | | SILTSTONE | DK, GY, LAM, SLD SS LAM INCREASING TO BOTTOM. WRMBUR. |
| 33 | 69.49 | 70.47 | 0.98 | 68 | | SANDSTONE | FG, MOD, LT, GY, LAM, WRMBU, SLD SLTST LAM ABUNDANT (DECREASING TO BOTTO M). |
| 34 | 70.47 | 70.70 | 0.23 | 68 | | SANDSTONE | SLTY, FG, PR, M, GY, LAM, WRMBU, SLD LOAD CASTS-TOPS UP. |
| 34 | 70.70 | 70.81 | 0.11 | 68 | | SANDSTONE | SLTY, FG, PR, M, GY, LAM, VSHRD |
| 34 | 70.81 | 71.44 | 0.63 | 68 | | ROCK LOSS | |
| 34 | 71.44 | 71.75 | 0.31 | 68 | | SANDSTONE | SLTY, FG, PR, M, GY, LAM, BIOTR, BRKN |
| 34 | 71.75 | 72.46 | 0.71 | 68 | | SANDSTONE | FG, MOD, LT, GY, LAM, BRKN WRMBUR IN SLTST LAM. |
| 34 | 72.46 | 72.88 | 0.42 | *68 | | SILTSTONE | DK, GY, LAM, SLD SS LAM. |
| 35 | 72.88 | 73.65 | 0.77 | 68 | | SANDSTONE | SLTY, FG, PR, M, GY, LAM, BIOTR, SLD NUMEROUS SLTST LAM. 55-45 SS-SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 35 | 73.65 | 74.65 | 1.00 | 69 | | | SILTSTONE | DK.GY.LAM.SLD VERY FINE SS LAM. OCCASIONAL SS BAND WITH TH SSD. HELMINTHOPSIS AT BASE. |
| 35 | 74.65 | 74.78 | 0.13 | 69 | | | SILTSTONE | LT.GY.LAM.BRKN BENTONITE LAM. |
| 35 | 74.78 | 74.80 | 0.02 | 69 | 05991 | | BENTONITE | LT.GY.SLD |
| 35 | 74.80 | 74.87 | 0.07 | 69 | | | SANDSTONE | FG.PR.LT.GY.LAM.BIOTR.SLD |
| 36 | 74.87 | 75.01 | 0.14 | 69 | | | SILTSTONE | DK.GY.LAM.HRMBU.SLD SS LAM. |
| 36 | 75.01 | 75.11 | 0.10 | 69 | | | ROCK LOSS | |
| 36 | 75.11 | 75.30 | 0.19 | 69 | | | SANDSTONE | SLTY.FG.PR.LT.GY.LAM.BIOTR.SLD |
| 36 | 75.30 | 75.48 | 0.18 | 69 | | | SILTSTONE | DK.GY.LAM.SLD LOAD CAST. |
| 36 | 75.48 | 75.64 | 0.16 | 70 | | | SANDSTONE | FG.MOD.LT.GY.LAM.BIOTR.SLD |
| 36 | 75.64 | 77.09 | 1.45 | *70 | | | SILTSTONE | DK.GY.LAM.SLD SS LAM WITH HELMINTHOPSIS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------|
| 37 | 77.09 | 77.85 | 0.76 | 70 | | | SILTSTONE | FG.MOD.DK.GY.LAM.SLD AS ABOVE. |
| 37 | 77.85 | 78.18 | 0.33 | 70 | | | SILTSTONE | FG.MOD.DK.GY.LAM.SLD AS ABOVE. |
| 37 | 78.18 | 78.82 | 0.64 | 70 | | | SANDSTONE | SLTY.FG.PR.M.GY.THNB.SLD VERY SILTY SS. |
| 37 | 78.82 | 79.15 | 0.33 | 70 | | | SILTSTONE | SSY.DK.GY.LAM.SLD |
| 38 | 79.15 | 80.90 | 1.75 | 70 | | | SILTSTONE | DK.GY.THKB.SLD VERY MINOR SS LAM. LITTLE OR NO VISIBLE BEDDING. |
| 38 | 80.90 | 81.15 | 0.25 | 70 | | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. |
| 38 | 81.15 | 81.20 | 0.05 | 70 | | | ROCK LOSS | |
| 39 | 81.20 | 83.26 | 2.06 | 70 | | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. |
| 40 | 83.26 | 83.94 | 0.68 | 70 | | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. |
| 40 | 83.94 | 85.33 | 1.39 | 70 | | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------|
| 41 | 85.33 | 85.60 | 0.27 | *70 | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. |
| 41 | 85.60 | 85.81 | 0.21 | 70 | | BENTONITE | LT.GY.THKB.SLD CREST ZONE. |
| 41 | 85.81 | 85.83 | 0.02 | 70 | | ROCK LOSS | |
| 41 | 85.83 | 86.99 | 1.16 | 69 | | SILTSTONE | DK.GY.THKB.SLD VERY MINOR SS.LAM. LITTLE OR NO VISIBLE BEDDING. |
| 41 | 86.99 | 87.39 | 0.40 | 68 | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. |
| 42 | 87.39 | 89.46 | 2.07 | 66 | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE. SLICKENSIDE FRACTURE AT 30 DEGREES. |
| 42 | 89.46 | 89.65 | 0.19 | 64 | | ROCK LOSS | |
| 43 | 89.65 | 90.01 | 0.36 | 64 | | SILTSTONE | DK.GY.THKB.SLD AS ABOVE (NO FRACTURE). |
| 43 | 90.01 | 91.86 | 1.85 | 62 | | SILTSTONE | SSY.DK.GY.LAM.SLD VERY SANDY SLTST. ONE SLICKENSIDED FRACTURE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------|
| 44 | 91.86 | 93.35 | 1.49 | *60 | | SILTSTONE | SSY.DK.GY.LAM.SLD VERY SANDY SLTST. |
| 44 | 93.35 | 93.83 | 0.48 | 59 | | SILTSTONE | SSY.DK.GY.LAM.SLD AS ABOVE. |
| 45 | 93.83 | 94.12 | 0.29 | 59 | | SILTSTONE | SSY.DK.GY.LAM.SLD |
| 45 | 94.12 | 95.61 | 1.49 | 58 | | SILTSTONE | DK.GY.SLD NO VISIBLE BEDDING. |
| 46 | 95.61 | 96.11 | 0.50 | 58 | | SILTSTONE | DK.GY.SLD AS ABOVE. |
| 46 | 96.11 | 97.62 | 1.51 | 57 | | SILTSTONE | DK.GY.SLD AS ABOVE & POSSIBLE BIVALVES. |
| 47 | 97.62 | 98.16 | 0.54 | 56 06943 | | SANDSTONE | SLTY.FG.M.GY.SLD LOWER 10 CM CONTAINS ABUNDANT PYRITE & QTZ, LOWER 25 CM SAMPLED. |
| 47 | 98.16 | 98.86 | 0.70 | 56 06944 N | | COAL | C-2.SLD MINOR BONE COAL BANDS. |
| 47 | 98.86 | 98.99 | 0.13 | 56 06944 N | | COAL | C-3.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------|
| 47 | 98.99 | 99.03 | 0.04 | 56 | 06944 | N | MUDSTONE | SLTY.M.GY.SLD |
| 47 | 99.03 | 99.14 | 0.11 | 56 | 06944 | N | MUDSTONE | SLTY.M.GY.BRKN |
| 47 | 99.14 | 99.30 | 0.16 | 56 | 06944 | N | COAL | C-6.SLD ABUNDANT VITRAIN STRINGERS. |
| 47 | 99.30 | 99.41 | 0.11 | 56 | 06944 | N | COAL | C-4.BRKN |
| 47 | 99.41 | 99.48 | 0.07 | 55 | 06944 | N | COAL | C-3.SLD |
| 48 | 99.48 | 100.45 | 0.97 | 55 | 06944 | N | COAL | C-3.YBRKN SHEARED. |
| 48 | 100.45 | 100.60 | 0.15 | 55 | 06944 | N | COAL LOSS | |
| 48 | 100.60 | 100.61 | 0.01 | 55 | 06944 | N | MUDSTONE | CARB.DK.GY.SLD |
| 48 | 100.61 | 100.76 | 0.15 | 55 | 06944 | N | COAL | C-3.BRKN |
| 48 | 100.76 | 100.82 | 0.06 | 55 | 06944 | N | COAL | C-5.BRKN VITRAIN STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 48 | 100.82 | 100.87 | 0.05 | 55 | 06944 | N | MUDSTONE | CARB.DK.GY.BRKN VITRAIN STRINGERS. |
| 48 | 100.87 | 101.45 | 0.58 | 54 | 06944 | N | COAL | C-2.BRKN MINOR SLTST NODULES. |
| 48 | 101.45 | 101.50 | 0.05 | 54 | 06945 | | MUDSTONE | CARB.DK.GY.SLD VITRAIN STRINGERS. |
| 49 | 101.50 | 102.12 | 0.62 | 54 | | | MUDSTONE | MEL.M.BLK.BRKN NO VISIBLE BEDDING. |
| 49 | 102.12 | 102.16 | 0.04 | 54 | | | MUDSTONE | MEL.M.BLK.VSHRD SLICKENSIDES. |
| 49 | 102.16 | 102.28 | 0.12 | 54 | | | MUDSTONE | MEL.M.BLK.VSHRD SCOUR FILL MUDST & TALC. |
| 49 | 102.28 | 102.33 | 0.05 | 54 | | | ROCK LOSS | |
| 49 | 102.33 | 103.06 | 0.73 | 53 | | | MUDSTONE | CARB.M.BLK.BRKN COAL STRINGER WITH QTZ FILL. |
| 49 | 103.06 | 103.58 | 0.52 | 53 | | | SILTSTONE | DK.GY.BRKN MINOR BIOTRB. |
| 50 | 103.58 | 104.01 | 0.43 | 53 | | | SILTSTONE | DK.GY.BRKN NO VISIBLE BEDDING. ABUNDANT HAIRLINE C RACKS WITH QTZ INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 50 | 104.01 | 104.15 | 0.14 | 52 | | | SILTSTONE | CARB. M. BLK. LAM. BRKN COAL STRINGER TO 1 CM. |
| 50 | 104.15 | 104.18 | 0.03 | 52 | | | COAL | DK. BLK. VSHRD C-3. |
| 50 | 104.18 | 104.46 | 0.28 | 52 | | | SILTSTONE | CARB. M. BLK. BRKN NUMEROUS FINE COAL STRINGERS. QTZ BANDS WITH SLTST BRECCIA. |
| 50 | 104.46 | 105.15 | 0.69 | 52 | | | SILTSTONE | SSY. M. GY. LAM. VBRKN SS LAM WITH MINOR BIOTRB. SS INCREASING DOWN. |
| 50 | 105.15 | 105.39 | 0.24 | 52 | | | SANDSTONE | SLTY. M. GY. LAM. BIOTR. SLD 60-40 SS-SLTST. |
| 51 | 105.39 | 105.49 | 0.10 | 51 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD MINOR BIOTRB. |
| 51 | 105.49 | 106.03 | 0.54 | 51 | | | SILTSTONE | DK. GY. LAM. BIOTR. SLD SS LAM. |
| 51 | 106.03 | 107.38 | 1.35 | 51 | | | SANDSTONE | MOD. LT. GY. LAM. HRMBU. SLD 60-40 SS-SLTST LAM. HRMBUR & MINOR BIOT. RB IN SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------|
| 52 | 107.38 | 107.92 | 0.54 | *50 | | | SILTSTONE | DK. GY. LAM. BRKN |
| 52 | 107.92 | 107.98 | 0.06 | 50 | | | SILTSTONE | DK. GY. LAM. VSHRD SLICKENSIDES. SHEAR ZONE. |
| 52 | 107.98 | 108.10 | 0.12 | 50 | | | ROCK LOSS | |
| 52 | 108.10 | 108.20 | 0.10 | 49 | | | SILTSTONE | DK. GY. LAM. SLD QUITE FRACTURED WITH QTZ INFILL. |
| 52 | 108.20 | 109.37 | 1.17 | 49 | | | SILTSTONE | DK. GY. LAM. VBRKN NUMEROUS FRACTURE FACES WITH QTZ INFILL |
| 53 | 109.37 | 109.55 | 0.18 | 48 | | | SILTSTONE | DK. GY. LAM. VBRKN AS ABOVE. |
| 53 | 109.55 | 109.70 | 0.15 | 48 | | | ROCK LOSS | |
| 53 | 109.70 | 109.85 | 0.15 | 48 | | | SILTSTONE | M. GY. SLD SCOUR FILL WITH QTZ FRAGMENTS IN IT. |
| 53 | 109.85 | 110.10 | 0.25 | 47 | | | SILTSTONE | DK. GY. BRKN QUITE FRACTURED WITH QTZ STRINGERS THRO UGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------|
| 53 | 110.10 | 111.24 | 1.14 | 47 | | | SILTSTONE | DK.GY.BRKN NO VISIBLE BEDDING. |
| 53 | 111.24 | 111.41 | 0.17 | 46 | | | SILTSTONE | DK.GY.BRKN AS ABOVE. |
| 54 | 111.41 | 112.55 | 1.14 | 45 | | | SILTSTONE | DK.GY.LAM.BRKN MINOR BIOTRB. |
| 54 | 112.55 | 112.70 | 0.15 | 45 | | | SILTSTONE | DK.GY.BRKN SCOUR FILL WITH QTZ. |
| 54 | 112.70 | 112.74 | 0.04 | 44 | | | ROCK LOSS | |
| 54 | 112.74 | 113.42 | 0.68 | 44 | | | SILTSTONE | DK.GY.LAM.BRKN SSD MINOR BIOTRB. SOME SLICKENSIDES. |
| 55 | 113.42 | 113.84 | 0.42 | 43 | | | SILTSTONE | DK.GY.LAM.SLD |
| 55 | 113.84 | 114.13 | 0.29 | *43 | | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN ABUNDANT SLTST. WISPS. & RIP-UPS NEAR BAS E. |
| 55 | 114.13 | 114.29 | 0.16 | 44 | | | SILTSTONE | DK.GY.BRKN NO BEDDING. |
| 55 | 114.29 | 115.45 | 1.16 | 45 | | | SILTSTONE | DK.GY.LAM.SLD SLTST & SANDY SLTST BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 56 | 115.45 | 116.46 | 1.01 | 48 | | | SILTSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 56 | 116.46 | 116.56 | 0.10 | 49 | | | ROCK LOSS | |
| 56 | 116.56 | 117.34 | 0.78 | 50 | | | SANDSTONE | FG.PR.M.GY.LAM.BRKN VERY SILTY SAND. SLTST. LAMS. |
| 56 | 117.34 | 117.60 | 0.26 | 52 | | | SANDSTONE | FG.PR.M.GY.LAM.SLD AS ABOVE. & SSD. |
| 57 | 117.60 | 119.74 | 2.14 | 54 | | | SANDSTONE | FG.PR.M.GY.LAM.BRKN ABUNDANT SSD. 60-40 SS-SLTST. |
| 57 | 119.74 | 119.87 | 0.13 | 57 | | | ROCK LOSS | |
| 58 | 119.87 | 120.39 | 0.52 | *58 | | | SANDSTONE | FG.PR.M.GY.LAM.BRKN |
| 58 | 120.39 | 121.71 | 1.32 | 59 | | | SANDSTONE | FG.PR.M.GY.LAM.VBRKN VERY FRACTURED, SLICKENSIDES EVERY 2-3 CM. QTZ & TALC INFILL. GRADES TO SLTST AT BASE. |
| 58 | 121.71 | 121.75 | 0.04 | 59 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------|
| 59 | 121.75 | 123.50 | 1.75 | 60 | | | SILTSTONE | LT. BLK. LAM. VBRKN LOCAL CONCENTRATION OF QZ STRINGERS. F G SS & MUDST LAM. |
| 59 | 123.50 | 123.71 | 0.21 | 61 | | | SILTSTONE | LT. BLK. LAM. BRKN MUDST LAM. |
| 60 | 123.71 | 124.93 | 1.22 | 61 | 06946 | | MUDSTONE | SLTY. M-DK. GY. BRKN MINOR COALY LENSES. LOWER 25 CM SAMPLED |
| 60 | 124.93 | 125.06 | 0.13 | 62 | 06947 | M/N | COAL | C-3. VSHRD |
| 60 | 125.06 | 125.12 | 0.06 | 62 | 06947 | M/N | COAL | C-5. VSHRD MINOR BONE COAL BANDS. |
| 60 | 125.12 | 125.27 | 0.15 | 62 | 06947 | M/N | COAL | C-4. VSHRD |
| 60 | 125.27 | 125.38 | 0.11 | 62 | 06947 | M/N | COAL | C-4. SHRD ABUNDANT C-6 BANDING. |
| 60 | 125.38 | 125.64 | 0.26 | 62 | 06947 | M/N | COAL | C-3. SHRD |
| 61 | 125.64 | 125.72 | 0.08 | 62 | 06947 | M/N | COAL | C-3. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------|
| 61 | 125.72 | 125.77 | 0.05 | 62 | 06947 | M/N | COAL | C-5. SLD |
| 61 | 125.77 | 125.89 | 0.12 | 63 | 06947 | M/N | MUDSTONE | CARB. DK. GY. BRKN |
| 61 | 125.89 | 125.97 | 0.08 | 63 | 06947 | M/N | ROCK LOSS | |
| 61 | 125.97 | 126.05 | 0.08 | 63 | 06947 | M/N | COAL LOSS | |
| 61 | 126.05 | 126.25 | 0.20 | 63 | 06947 | M/N | COAL | C-4. BRKN ABUNDANT C-2 BANDS. |
| 61 | 126.25 | 126.38 | 0.13 | 63 | 06947 | M/N | COAL | C-5. BRKN |
| 61 | 126.38 | 126.56 | 0.18 | 63 | 06947 | M/N | MUDSTONE | CARB. DK. GY. BRKN COALY BANDS & STRINGERS. |
| 61 | 126.56 | 126.82 | 0.26 | 63 | 06947 | M/N | COAL | C-5. VSHRD |
| 61 | 126.82 | 127.09 | 0.27 | 63 | 06947 | M/N | COAL LOSS | |
| 61 | 127.09 | 127.19 | 0.10 | 64 | 06948 | | MUDSTONE | CLY. LT-M. GY. SLD |
| 61 | 127.19 | 127.52 | 0.33 | 64 | 06948 | | SANDSTONE | SLTY. FG. PR. LT-M. GY. SLD DIRTY SS, UPPER 15 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 61 | 127.52 | 127.67 | 0.15 | 64 | | | SANDSTONE | SLTY. FG. PR. M. GY. SLD MORE MUD THAN ABOVE. |
| 62 | 127.67 | 127.78 | 0.11 | 64 | | | MUDSTONE | M. BLK. LAM. YBRKN SLTST LAM. |
| 62 | 127.78 | 127.86 | 0.08 | 64 | | | SILTSTONE | M. GY. YSHRD ABUNDANT SLICKENSIDES. |
| 62 | 127.86 | 128.07 | 0.21 | 64 | | | ROCK LOSS | |
| 62 | 128.07 | 129.79 | 1.72 | *65 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN LOCAL CONCENTRATIONS OF SLTST LAMS & RI P-UPS. |
| 63 | 129.79 | 129.88 | 0.09 | 56 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE W/ QTZ STRINGERS & SLICKENSIDE S AT BASE. |
| 63 | 129.88 | 130.13 | 0.25 | 55 | | | SANDSTONE | FG. PR. M. GY. LAM. SLD 40% SLTST RIP-UP. QTZ STRINGERS. |
| 63 | 130.13 | 130.90 | 0.77 | *50 | | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD FINE QTZ STRINGERS, SLTST BANDING. |
| 63 | 130.90 | 130.96 | 0.06 | 51 | | | SILTSTONE | M. GY. LAM. BRKN VERY FRACTURED WITH QTZ STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------|
| 63 | 130.96 | 131.72 | 0.76 | 52 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN SLTST LAM & BANDS, MINOR QTZ STRINGER. |
| 64 | 131.72 | 132.81 | 1.09 | *55 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE. |
| 64 | 132.81 | 133.32 | 0.51 | 53 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE W/ SLTST CONTENT INCREASING DO WNWARDS. |
| 64 | 133.32 | 133.73 | 0.41 | 52 | | | SILTSTONE | DK. GY. LAM. BRKN MINOR BIOTRB. |
| 65 | 133.73 | 135.62 | 1.89 | *50 | | | SILTSTONE | DK. GY. LAM. BRKN SS LAM. |
| 66 | 135.62 | 135.79 | 0.17 | 51 | | | SILTSTONE | SSY. LT. M. GY. LAM. SLD |
| 66 | 135.79 | 137.35 | 1.56 | *52 | 07008 | | SILTSTONE | SSY. LT. M. GY. LAM. SLD COALY BANDS NEAR BASE, LOWER 25 CM SAMP LED. |
| 66 | 137.35 | 137.68 | 0.33 | 45 | 07009 ? | | COAL LOSS | |
| 66 | 137.68 | 137.89 | 0.21 | 43 | 07009 ? | | COAL | C-3. VBRKN MINOR CENTIMETER SCALE BONE COAL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------|
| 67 | 137.89 | 137.95 | 0.06 | 42 | 07009 | ? | COAL | C-4, BLK, SHRD |
| 67 | 137.95 | 138.00 | 0.05 | 41 | 07009 | ? | MUDSTONE | CARB. DK. GY. SLD |
| 67 | 138.00 | 138.13 | 0.13 | 40 | 07009 | ? | COAL | C-4, BRKN |
| 67 | 138.13 | 138.27 | 0.14 | 39 | 07010 | | MUDSTONE | CARB. DK. GY. BRKN LISTRIC SURFACES. |
| 67 | 138.27 | 138.46 | 0.19 | 38 | 07010 | | SILTSTONE | CLYY. M-DK. GY. SLD |
| 67 | 138.46 | 138.64 | 0.18 | 37 | | | SANDSTONE | MG. LT-M. GY. SLD SHARP CONTACTS. |
| 67 | 138.64 | 138.82 | 0.18 | 35 | | | SILTSTONE | SSY |
| 67 | 138.82 | 139.32 | 0.50 | 33 | | | SILTSTONE | SSY. LT-M. GY. LAM. SLD INTERBEDDED SLTST AND SS. |
| 67 | 139.32 | 139.52 | 0.20 | *30 | | | SANDSTONE | MG. LT-M. GY. SLD |
| 68 | 139.52 | 139.58 | 0.06 | 30 | | | SANDSTONE | FG. MOD. M. GY. SLD FRACTURE (QTZ INFILL) W/ SS BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------|
| 68 | 139.58 | 139.74 | 0.16 | 30 | | | SILTSTONE | LT. GY. LAM. SLD |
| 68 | 139.74 | 141.53 | 1.79 | 30 | | | SANDSTONE | FG. WEL. LT. GY. THKB. BRKN QTZ STRINGER THROUGHOUT. MINOR SLTY BAN DS. |
| 69 | 141.53 | 141.80 | 0.27 | 30 | | | SANDSTONE | FG. WEL. LT. GY. THKB. BRKN AS ABOVE. |
| 69 | 141.80 | 142.15 | 0.35 | 30 | | | SANDSTONE | FG. WEL. LT. GY. THKB. SLD QTZ THROUGHOUT, MINOR BRECCIA. |
| 69 | 142.15 | 142.40 | 0.25 | 30 | | | SANDSTONE | FG. LT. GY. BRKN |
| 69 | 142.40 | 143.38 | 0.98 | 30 | | | SANDSTONE | FG. WEL. LT. GY. BRKN NUMEROUS QTZ STRINGERS, FRACTURE SURFAC ES. WITH TALC. |
| 70 | 143.38 | 144.79 | 1.41 | 30 | | | SANDSTONE | FG. MOD. LT. GY. BRKN QTZ STRINGERS THROUGHOUT. W/ SS BRECCIA & SOME COAL BRECCIA. |
| 70 | 144.79 | 145.35 | 0.56 | 30 | | | SANDSTONE | FG. PR. M. GY. BRKN AS ABOVE. |
| 71 | 145.35 | 145.50 | 0.15 | 30 | | | SANDSTONE | SLTY. FG. PR. M. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87022

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|--------------|---------------------------------------------------------------------------------------|
| 71 | 145.50 | 145.76 | 0.26 | 30 | | | CONGLOMERATE | SSY. PR. LT. GY. SLD QTZ STRINGER. |
| 71 | 145.76 | 146.01 | 0.25 | 30 | | | SANDSTONE | SLTY. MG. PR. M. GY. BRKN AS ABOVE. |
| 71 | 146.01 | 146.21 | 0.20 | 30 | | | CONGLOMERATE | MOD. LT. GY. BRKN |
| 71 | 146.21 | 146.29 | 0.08 | 30 | | | SANDSTONE | PRLY. YCG. MOD. M. GY. SLD |
| 71 | 146.29 | 146.85 | 0.56 | 30 | | | SANDSTONE | MG. MOD. LT-M. GY. BRKN QTZ STRINGERS. END OF HOLE. DRILLER'S T .D. = 148.13 M. |

* DENOTES MEASURED BCA
NEWPAGE

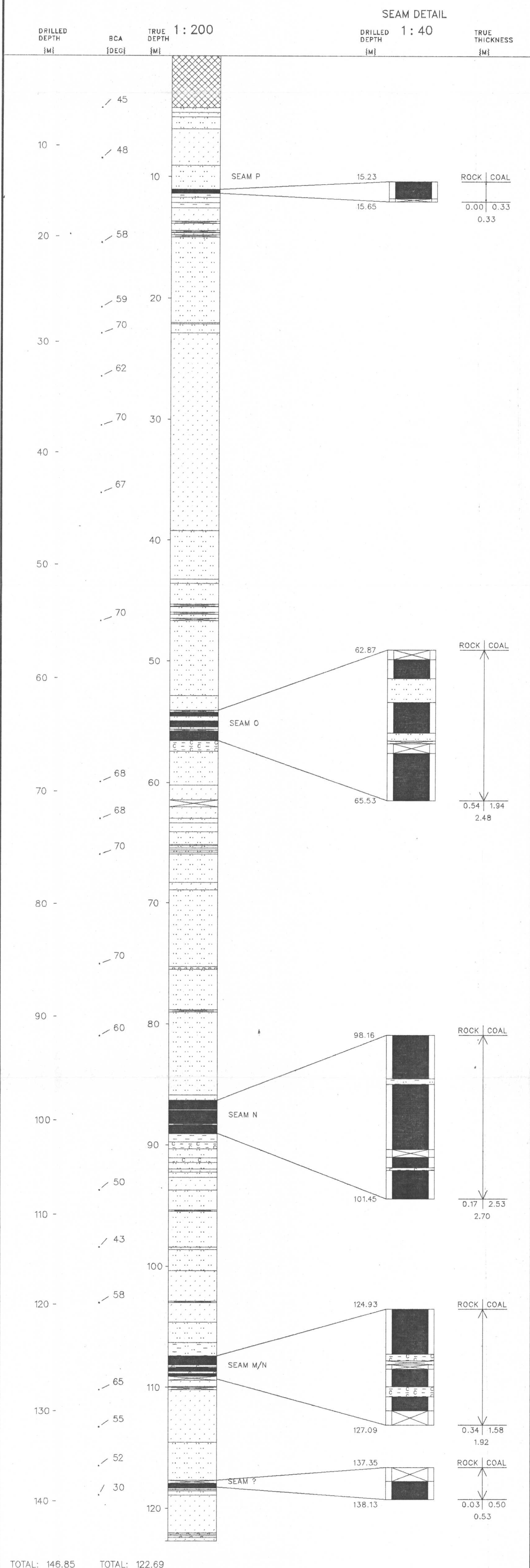
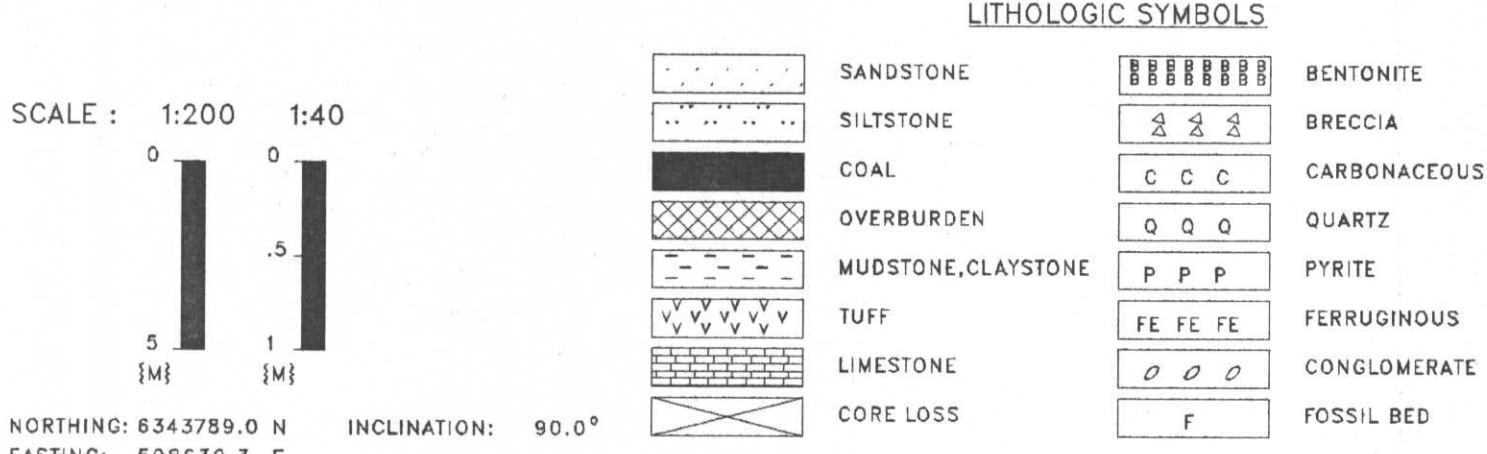
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87022

740

GEOLOGIST : PENMAN

DATE : MAR 08/88

DRAWING NO. :



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87022**

Province: BC Northing: 6343790.00 Lat: 571420

Log Date: 87-09-24

Zone: 9 Easting: 508630.00 Long: 1285125

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1554.9

Geologist: PENMAN

Scale: 1 to 200.0

Comments:

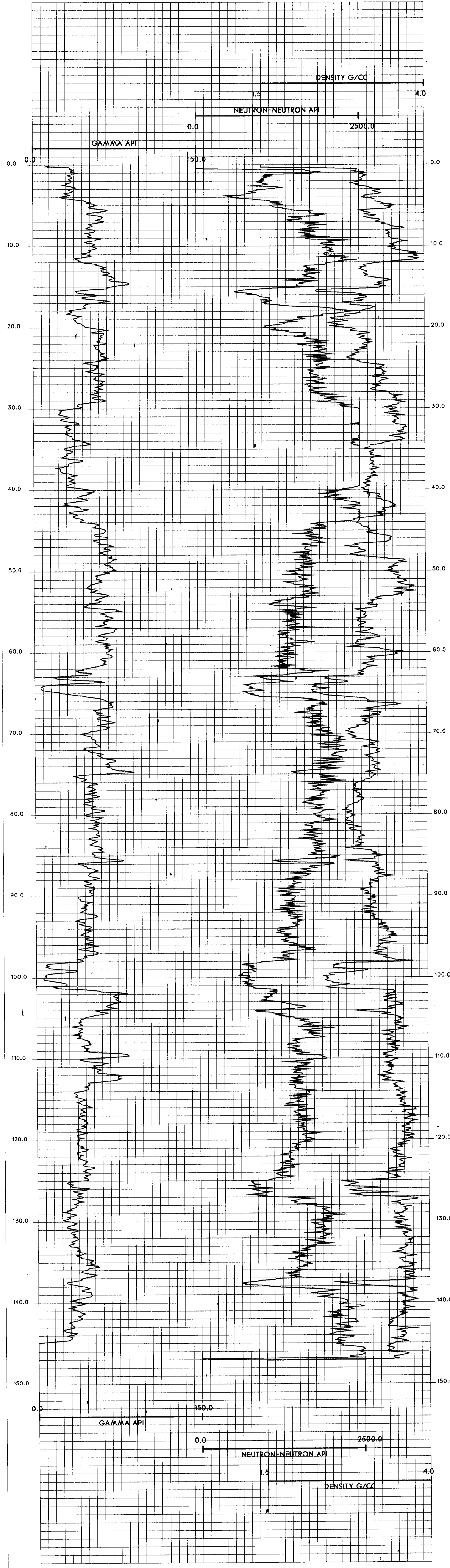
1. LOGGED THROUGH RODS
- 2.

Depth Range: 0.0 to 152.0

True Thickness: NO

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87023

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87023

DATE - 03/01/88

- HISTORY -

START DATE - 09/29/87

END DATE - 10/01/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEDDA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE N, SEAMS K/L, K (PART), K/L (OVT). TOP IS UPR
IGHT, BASAL HALF OVERTURNED. MINOR FAULTING.

- LOCATION -

PROVINCE - BC
ELEVATION - 1460.79

ZONE - 9
NORTHING - 6345709.44
EASTING - 508573.13

LICENCE/LEASE NUMBER -

LATITUDE - 571523
LONGITUDE - 1285128

- ORIENTATION -

LENGTH - 188.06
CORE SIZE - 0.0

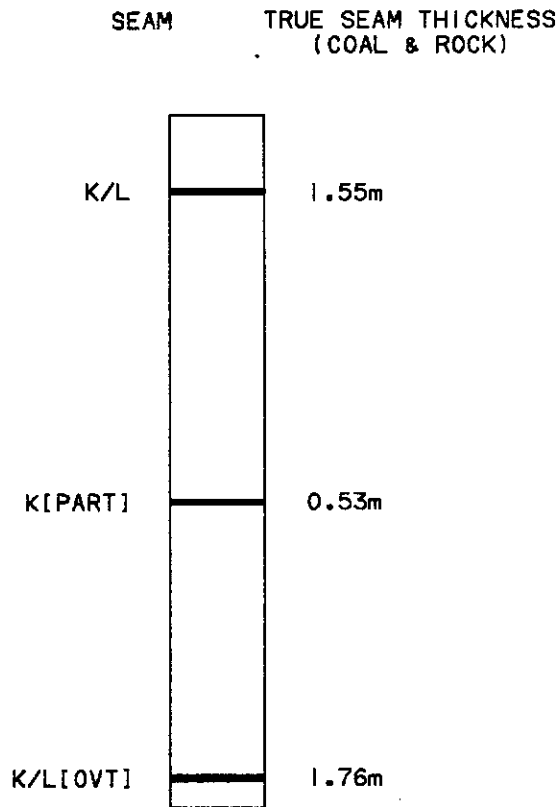
INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 18.29
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87023**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: {2050571880072012.LG



88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 3 | 20.47 | 20.53 | 0.06 | 52 | 07006 | K/L | COAL | C-4.BLK.VBRKN |
| 3 | 20.53 | 20.57 | 0.04 | 52 | 07006 | K/L | MUDSTONE | CARB.BLK.VBRKN |
| 4 | 20.57 | 20.72 | 0.15 | 53 | 07006 | K/L | COAL | C-3.BLK.PHRD OCC THIN MUDST BANDS AND RARE C-2 BANDS |
| 4 | 20.72 | 21.05 | 0.33 | 56 | 07006 | K/L | COAL | C-5.BLK.PHRD |
| 4 | 21.05 | 21.10 | 0.05 | 58 | 07006 | K/L | COAL LOSS | |
| 4 | 21.10 | 21.27 | 0.17 | 59 | 07006 | K/L | SILTSTONE | CARB.DK.GY.SLD VERY CARB AT BASE. OCC VERY THIN COAL L AMINATIONS UP TO 2 MM. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 4 | 21.27 | 21.31 | 0.04 | 60 | 07006 | K/L | COAL | C-2.BLK.VBRKN OCC THIN C-1 BANDS AND COMMON C-3 BANDS |
| 4 | 21.31 | 21.37 | 0.06 | 61 | 07006 | K/L | SILTSTONE | CARB.DK.GY.SLD OCC VERY THIN COAL LAMINATIONS. |
| 4 | 21.37 | 21.40 | 0.03 | 61 | 07006 | K/L | COAL | C-4.BLK.SLD |
| 4 | 21.40 | 21.48 | 0.08 | 62 | 07006 | K/L | COAL | C-2.BLK.BRKN COMMON C-1 BANDS. |
| 4 | 21.48 | 21.51 | 0.03 | 63 | 07006 | K/L | MUDSTONE | CARB.DK.GY.MAS.SLD WELL CONSOLIDATED WITH ABRUPT UPPER AND LOWER CONTACTS. |
| 4 | 21.51 | 21.57 | 0.06 | 63 | 07006 | K/L | COAL | C-1.BLK.BRKN COMMON C-2. |
| 4 | 21.57 | 21.63 | 0.06 | 64 | 07006 | K/L | COAL LOSS | |
| 4 | 21.63 | 21.72 | 0.09 | 65 | 07006 | K/L | ROCK LOSS | |
| 4 | 21.72 | 22.07 | 0.35 | 67 | 07006 | K/L | COAL LOSS | |
| 4 | 22.07 | 22.10 | 0.03 | 69 | 07006 | K/L | COAL | C-5.BLK.BRKN OCC CARB SLTST LAMINATIONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 4 | 22.10 | 22.18 | 0.08 | 70 | 07006 | K/L | MUDSTONE | CARB. BLK. SLD |
| 4 | 22.18 | 22.21 | 0.03 | 70 | 07006 | K/L | COAL | C-5. BLK. BRKN |
| 4 | 22.21 | 22.25 | 0.04 | 71 | 07006 | K/L | COAL | C-3. BLK. SLD INTERBEDDED C-1 AND MUDST LAMINAE. |
| 4 | 22.25 | 22.64 | 0.39 | *73 | 07007 | | MUDSTONE | CARB. BLK. BRKN. OCC THIN COAL LAMS UP TO .5CM (ESP NEAR TOP). BECOMES LESS CARB TOWARDS BASE. UPPER 25CM SAMPLED. |
| 4 | 22.64 | 23.64 | 1.00 | 72 | | | ROCK LOSS | |
| 5 | 23.64 | 24.08 | 0.44 | 70 | | | MUDSTONE | CARB. DK. GY. VBRKN SAME AS ABOVE WITH LESS COAL LAMS. BECOMES SLIGHTLY SLTY TOWARD BASE. |
| 5 | 24.08 | 25.48 | 1.40 | 68 | | | ROCK LOSS | |
| 5 | 25.48 | 25.76 | 0.28 | 67 | | | SILTSTONE | M. GY. MAS. VBRKN FINING UPWARD TREND: MUDDY NEAR TOP AND SANDY NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | 25.76 | 26.36 | 0.60 | 66 | | | ROCK LOSS | |
| 5 | 26.36 | 26.59 | 0.23 | 65 | | | SANDSTONE | FG. LT-M. GY. MAS. BRKN SL BRECCIATED W/ ASSOC QTZ VEINING. |
| 5 | 26.59 | 27.29 | 0.70 | 64 | | | ROCK LOSS | |
| 5 | 27.29 | 27.61 | 0.32 | *63 | | | SANDSTONE | SLTY. FG. M-DK. GY. LAM. BRKN INTLAM FG SS/SILTST (65/35) (UP TO 1CM). CONTACTS ARE SHARP - RAPID GRAD & SUB-HORIZ - MANY. INDIVIDUAL LAMS SOMETIMES SHOW SMALL-SCALE FINING UPWARD CYCLES. |
| 5 | 27.61 | 28.61 | 1.00 | 63 | | | ROCK LOSS | |
| 6 | 28.61 | 29.17 | 0.56 | 64 | | | SANDSTONE | FG. MOD. LT-M. GY. MAS. BRKN FG, SL CARB, WELL-CEMENTED SS. |
| 6 | 29.17 | 31.32 | 2.15 | 64 | | | ROCK LOSS | |
| 6 | 31.32 | 31.55 | 0.23 | 65 | | | SILTSTONE | SSY. M. GY. MAS. SHRD V WELL-CEMENTED. INTERMIXED SS & SILTST. |
| 6 | 31.55 | 32.85 | 1.30 | 66 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 32.85 | 33.34 | 0.49 | *66 | | | SANDSTONE | FG. MOD. LT-M. GY. MAS. BRKN SAME AS PREVIOUS SS. FAINT HORIZONTAL L AMINAE DEFINED BY SLIGHT GRAIN-SIZE VAR IATIONS. |
| 6 | 33.34 | 33.39 | 0.05 | 68 | | | SILTSTONE | DK. GY. MAS. SLD |
| 6 | 33.39 | 33.44 | 0.05 | 68 | | | ROCK LOSS | |
| 7 | 33.44 | 33.83 | 0.39 | 70 | | | SANDSTONE | FG. MEL. LT-M. GY. MAS. SHRD CLEAN, WELL CEMENTED, SL. CARB. SS. W/ RAR E THIN QTZ FRACTURE FILL. |
| 7 | 33.83 | 33.88 | 0.05 | 71 | | | SANDSTONE | VFG. MEL. M. GY. MAS. SLD RAPID GRADATIONAL LOWER CONTACT. |
| 7 | 33.88 | 34.02 | 0.14 | 72 | | | SANDSTONE | FG. MOD. LT-M. GY. MAS. SLD COMMON ELONGATED SMALL (1 CM x .25 CM) SUB-ROUNDED SLTST RIP-UP CLASTS ALIGNED PARALLEL TO BDG. OTHERWISE MASSIVE. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 34.02 | 34.25 | 0.23 | *73 | | | SANDSTONE | SLTY. FG. MEL. M. GY. VTHNB, SSD. BRKN INTBD & INTLAM FG SS/SLTST (80/20) W/ S HARP HORIZ - WAVY CONTACTS. INDIV SLTST BEDS W/IN THE MASSIVE SS RANGE UP TO 2 CM IN THICKNESS. CORRECT WAY UP (SSD). |
| 7 | 34.25 | 34.40 | 0.15 | 71 | | | ROCK LOSS | |
| 7 | 34.40 | 35.03 | 0.63 | 68 | | | SANDSTONE | FG. MEL. LT-M. GY. MAS. BRKN CLEAN, WELL CEMENTED, SL. CARB. M/ RARE T HIN QTZ VEINS PERP TO BDG. |
| 8 | 35.03 | 35.15 | 0.12 | 64 | | | SANDSTONE | FG. MEL. LT-M. GY. MAS. SLD SAME A/A - LACKING QTZ. |
| 8 | 35.15 | 35.36 | 0.21 | 63 | | | ROCK LOSS | |
| 8 | 35.36 | 35.72 | 0.36 | 60 | | | SANDSTONE | FG. MOD. M-DK. GY. MB. VBRKN OCC THIN SLTST LAMS W/IN THE VFG-FG. SL. DIRTY SS. CORE TWIST OFF AT BASE |
| 8 | 35.72 | 36.84 | 1.12 | 54 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 36.84 | 36.96 | 0.12 | *48 | | SANDSTONE | VFG. MEL. M-DK. GY. VTHNB. SLD OCCASIONAL SLTST BEDS UP TO 1 CM WITH SHARP SUB-HORIZONTAL CONTACTS. CORE THIS T-OFF AT BASE. |
| 8 | 36.96 | 37.96 | 1.00 | 51 | | ROCK LOSS | |
| 8 | 37.96 | 38.40 | 0.44 | 55 | | SANDSTONE | FG. MOD. M-DK. GY. THNB. YBRKN RARE THIN VFG SS BEDS & V RARE SLTST BEDS A/A. |
| 9 | 38.40 | 38.73 | 0.33 | 57 | | SANDSTONE | VFG. MOD. M. GY. THNB. VSHRD INTLBD AND INTLAM FG SS/VFG SS/SLTST (25/35/40). INDIVIDUAL CONTACTS ARE DOMINANTLY SUB-HORIZONTAL AND RAPID GRADATION AL - SHARP. |
| 9 | 38.73 | 39.32 | 0.59 | 59 | | ROCK LOSS | |
| 9 | 39.32 | 40.08 | 0.76 | 63 | | SANDSTONE | VFG. MOD. M. GY. MAS. SSD. SHRD WELL CEMENTED, SLIGHTLY CARB. VFG-FG SS RARE SSD NEAR TOP OF UNIT-POSSIBLY H2 O ESCAPE FEATURES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 40.08 | 40.45 | 0.37 | 66 | | ROCK LOSS | |
| 10 | 40.45 | 41.76 | 1.31 | 70 | | SANDSTONE | VFG. MOD. M. GY. MAS. BRKN SAME A/A W/ A SLIGHT FINING UPWARD TREND. FG SS NEAR BASE. ALSO LESS CARB NEAR BASE. VERY RARE THIN SLTST LAMS AT .65 M. |
| 10 | 41.76 | 42.32 | 0.56 | *75 | | SANDSTONE | VFG. MEL. M. GY. MB. SLD SLIGHT FINING UPWARD TREND (A/A) W/IN THE SAND. AT .29M: SLIGHTLY SLTY. & CARB HORIZON. |
| 11 | 42.32 | 43.56 | 1.24 | 74 | | SANDSTONE | FG. MEL. LT-M. GY. MAS. BRKN WELL CEMENTED CLEAN MASSIVE SS. GRADATIONAL LOWER CONTACT. |
| 11 | 43.56 | 43.66 | 0.10 | 73 | | SANDSTONE | SLTY. FG. MEL. LT-M. GY. LAM. SSD. SLD INTLAM FG SS/SLTST (65/35). CONTACTS ARE WAVY AND SHARP. WITH COMMON SSD. CORRECT MAY UP. |
| 11 | 43.66 | 43.81 | 0.15 | 72 | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD OCC SMALL SUB-ROUNDED RIP-UP CLASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 43.81 | 44.05 | 0.24 | *72 | | SANDSTONE | SLTY FG. MEL. M. GY. VTHNB. SLD INTBD AND INTLAM FG SS/SLTST (60/40). CONTACTS ARE HORIZONTAL AND SHARP WITH SOME INTERNAL SHORT (2 CM) FINING UPWARD CYCLES. AT .17M: THIN RIP-UP CLAST HORIZON W/ SUB-ROUNDED LENS-SHAPED SLTST RIP-UPS ORIENTED PARALLEL TO BDG (.5 CM X 2 CM). |
| 11 | 44.05 | 44.46 | 0.41 | 71 | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD CLEAN AND WELL CEMENTED. OCCASIONAL LAMS VISIBLE DUE TO SLIGHT GRAIN SIZE VARIATIONS. |
| 12 | 44.46 | 44.92 | 0.46 | 71 | | SANDSTONE | FG. MEL. LT. GY. MAS. VBRKN SAME A/A. |
| 12 | 44.92 | 45.11 | 0.19 | 70 | | ROCK LOSS | |
| 12 | 45.11 | 45.25 | 0.14 | 70 | | SILTSTONE | M. GY. MAS. SHRD SLIGHT CARB WITH SOME MINOR QTZ VEINING GRADATIONAL LOWER CONTACT. |
| 12 | 45.25 | 46.31 | 1.06 | *69 | | SANDSTONE | VFG. M. GY. THNB. SLD DOMINANTLY VFG-FG SS WITH SLIGHT GRAIN SIZE VARIATIONS VISIBLE RANGING FROM SLTST - FG SS. GRADATIONAL UPPER & LOWER CONTACTS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 46.31 | 47.77 | 1.46 | 70 | | SANDSTONE | SLTY. VFG. M. GY. LAM. SSD. BRKN SAME A/A BUT CONTACTS BETWEEN SLTST LAMS ARE RAPID GRAD - SHARP INSTEAD OF GRADATIONAL. SS/SLTST = 80/20. MANY SLTST LAMS ARE VTHN AND DISCONTINUOUS. MINOR SSD. |
| 13 | 47.77 | 48.09 | 0.32 | *71 | | SANDSTONE | SLTY. VFG. M. GY. LAM. BRKN SAME A/A. |
| 14 | 48.09 | 48.45 | 0.36 | 71 | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. LAM. SSD. SLD DOM VFG SS W/ COMMON THIN SLTST LAMS (U P. TO 1CM). THROUGHOUT. W/IN THE SAND FINING UPWARD CYCLES ARE PRESENT. FG SS-VFG SS. SS/SLTST = 70/30. CONTACTS ARE SHARP AND SUB-HORIZONTAL WITH RARE SSD. A BRUPT LOWER CONTACT. |
| 14 | 48.45 | 48.51 | 0.06 | 70 | | SILTSTONE | SSY. M-DK. GY. MAS. VBRKN SHORT FINING UPWARD TREND WITH VFG SS AT BASE GRADING UP INTO MUDDY AND CARB SLTST AT TOP. MODERATELY CONSOLIDATED. |
| 14 | 48.51 | 48.60 | 0.09 | 70 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 48.60 | 49.07 | 0.47 | *70 | | SANDSTONE | SLTY. VFG. MOD. M. GY. VTHNB. BRKN COMMON SLTST LAM AS WELL AS MIXED SLTST /SS ZONES BUT STRONGLY DOM BY VFG SS. RAPID GRADATIONAL LOWER CONTACT. |
| 14 | 49.07 | 49.26 | 0.19 | 70 | | SILTSTONE | M-DK. GY. MAS. SLD SHARP LOWER CONTACT. |
| 14 | 49.26 | 49.88 | 0.62 | 70 | | SILTSTONE | SSY. M-DK. GY. LAM. VBRKN COMMON VFG SS LAMS H/IN SLTST MATRIX. S S/SLTST = 90/70. CONTACTS ARE SUB-HORIZ ONTAL AND SHARP. |
| 14 | 49.88 | 49.95 | 0.07 | 70 | | SANDSTONE | VFG. M. GY. LAM. SLD OCCASIONAL VERY THIN (.2 CM) SLTST LAMS |
| 15 | 49.95 | 50.29 | 0.34 | 70 | | SANDSTONE | VFG. M. GY. MAS. SSD. SLD SAME A/A BUT LACKING LAMS. INSTEAD: SOME SLTY SS BANDS. MINOR SSD. |
| 15 | 50.29 | 50.88 | 0.59 | 70 | | SILTSTONE | SSY. M. GY. MAS. SSD. BRKN SANDY AT TOP GRADING SLOWLY DOWN TO SLT ST WITH COMMON MIXED SANDY ZONES. COMMON N. SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 50.88 | 51.38 | 0.50 | 70 | | SANDSTONE | SLTY. VFG. MOD. M. GY. THNB. BRKN COMMONLY MIXED AND INTBD VFG SS/SLTST (65/35). |
| 15 | 51.38 | 51.59 | 0.21 | 70 | | ROCK LOSS | |
| 15 | 51.59 | 51.81 | 0.22 | 70 | | SILTSTONE | M-DK. GY. MB. BRKN MUDDY SLTST W/ SOME SSY ZONES (ESP NEAR BASE). |
| 15 | 51.81 | 51.96 | 0.15 | 70 | | ROCK LOSS | |
| 16 | 51.96 | 53.95 | 1.99 | *70 | | SILTSTONE | DK. GY. THKB. SSD. BRKN OCCASIONAL THIN VFG SS LAMS THROUGHOUT. SS/SLTST = (10/90). CORRECT WAY UP (SS D AND FINING UP). RARE THIN PYRITE ZONE S. |
| 17 | 53.95 | 56.00 | 2.05 | *62 | | SILTSTONE | DK. GY. MAS. SSD. BRKN SAME A/A. THIN PYRITE ZONES COMMON THROUGHOUT. CORRECT WAY UP. SS/SLTST = (5/95). |
| 18 | 56.00 | 56.93 | 0.93 | *69 | | SILTSTONE | DK. GY. MAS. SSD. BRKN SAME A/A. |
| 18 | 56.93 | 57.03 | 0.10 | 69 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 57.03 | 57.17 | 0.14 | 69 | | | MUDSTONE | CARB. DK. GY. MAS. VBRKN CARB MUDST AT TOP WITH OCC LISTRIC SURF ACES GRADING DOWN INTO SLTST AT BASE. |
| 18 | 57.17 | 57.95 | 0.78 | 70 | | | SILTSTONE | DK. GY. MAS. SSD. SLD SL CARB SLTST WITH VERY RARE VFG SS LEN SES. AND THIN LAMS. SS/SLTST = 5/95. |
| 19 | 57.95 | 59.29 | 1.34 | 70 | | | SILTSTONE | DK. GY. MAS. SSD. BRKN SAME A/A. OCCASIONAL PYRITE. CORRECT WA Y UP (FINING UP CYCLES). |
| 19 | 59.29 | 59.61 | 0.32 | 71 | | | ROCK LOSS | |
| 19 | 59.61 | 60.05 | 0.44 | *71 | | | SILTSTONE | CLY. DK. GY. MAS. SSD. VBRKN SAME A/A BUT MUDDY SLTST. UPPER .06 M = ALMOST ENTIRELY THIN QTZ CEMENT GROWTH LAMS. PARALLEL TO BDG. MOD. CONSOL. BASE GRADES INTO SLTY MUDST. |
| 20 | 60.05 | 60.12 | 0.07 | 66 | | | SANDSTONE | CARB. FG. MEL. LT-M. GY. MAS. BRKN SLIGHTLY CARB THROUGHOUT. LOWER CONTACT MISSING (ROCK BREAK). |
| 20 | 60.12 | 60.20 | 0.08 | 64 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN FISSILE. SLIGHTLY SLTY. SLIGHTLY CARB. |
| 20 | 60.20 | 60.43 | 0.23 | 61 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 20 | 60.43 | 60.96 | 0.53 | 53 | | | SILTSTONE | DK. GY. MAS. VBRKN SLIGHTLY MUDDY AND CARB SLTST. OCC LIST RIC SURFACES. |
| 20 | 60.96 | 61.26 | 0.30 | 45 | | | ROCK LOSS | |
| 20 | 61.26 | 61.79 | 0.53 | 36 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN DOMINANTLY MUDST AT TOP GRADING DOWN TO MUDDY SLTST AT BASE. |
| 20 | 61.79 | 62.09 | 0.30 | *28 | | | SILTSTONE | DK. GY. MAS. VBRKN SLIGHTLY MUDDY SLTST. |
| 20 | 62.09 | 62.26 | 0.17 | 27 | | | ROCK LOSS | |
| 21 | 62.26 | 62.64 | 0.38 | 25 | | | SILTSTONE | DK. GY. MAS. VBRKN MUDDY SLTST THROUGHOUT (ESP IN LOWER .0 8M). RARE PYRITE. |
| 21 | 62.64 | 62.79 | 0.15 | 24 | | | ROCK LOSS | |
| 21 | 62.79 | 63.05 | 0.26 | 22 | | | SILTSTONE | DK. GY. MAS. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 63.05 | 63.61 | 0.56 | *20 | | | MUDSTONE | CARB. DK. GY. LAM. SLD POORLY CONSOLIDATED WITH OCCASIONAL THIN CONTORTED SLTST LAMS W/IN. RAPID GRAD ATIONAL LOWER CONTACT. |
| 21 | 63.61 | 64.23 | 0.62 | 30 | | | SILTSTONE | DK. GY. MAS. BRKN MUDDY SLTST. |
| 22 | 64.23 | 65.64 | 1.41 | *47 | | | SILTSTONE | DK. GY. MAS. BRKN MUDDY SLTST A/A. ABRUPT LOWER CONTACT. |
| 22 | 65.64 | 65.74 | 0.10 | 47 | | | ROCK LOSS | |
| 22 | 65.74 | 65.79 | 0.05 | 47 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN SLIGHTLY SLTY MUDST W/ RARE LISTRIC SUR FACES. |
| 22 | 65.79 | 65.99 | 0.20 | 48 | | | ROCK LOSS | |
| 23 | 65.99 | 66.33 | 0.34 | 48 | | | SILTSTONE | DK. GY. MAS. SHRD SLIGHTLY MUDDY ZONES COMMON. OCC VFG SS MIXED ZONES (ESP NEAR BASE). CONTACT M ISSING (ROCK BREAK). |
| 23 | 66.33 | 66.39 | 0.06 | 48 | | | MUDSTONE | CARB. DK. GY. MAS. SHRD FISSILE CARB MUDST. |
| 23 | 66.39 | 66.53 | 0.14 | 48 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 66.53 | 67.80 | 1.27 | 48 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN VERY SLTY MUDST WITH OCCASIONAL PYRITE BLEBS UP TO 2 CM. |
| 24 | 67.80 | 67.95 | 0.15 | 49 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN SAME A/A. |
| 24 | 67.95 | 68.11 | 0.16 | 49 | | | ROCK LOSS | |
| 24 | 68.11 | 69.17 | 1.06 | *49 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SAME A/A. OCCASIONAL PYRITE. RARE SLTST LAMS WITH SHARP LOWER CONTACTS & SHORT FINING UPWARD CYCLES. |
| 24 | 69.17 | 69.82 | 0.65 | 55 | | | MUDSTONE | SLTY. DK. GY. LAM. SSD. SLD CORRECT MAY UP (SSD). INTLAM. SLTY MUDST /SLTST (75/25). LAMS & THIN BEDS COMMON LY DISRUPTED BY SSD. |
| 25 | 69.82 | 71.72 | 1.90 | *65 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. SLD SLTY MUDST W/ COMMON SLTST-VFG SS LAMS. LAMS COMMONLY FINE UPWARDS AND BLEND I NTO DOMINANT LITHOLOGY. THEREFORE SHARP LOWER CONTACTS AND GRAD UPPER. CORRECT MAY UP. |
| 26 | 71.72 | 72.14 | 0.42 | 63 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD SAME A/A - MINOR LAMINAE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 72.14 | 72.21 | 0.07 | 63 | | | ROCK LOSS | |
| 26 | 72.21 | 73.67 | 1.46 | 61 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN COMMON INTBD SLTST W/IN THE DOMINANTLY SLTY MUDST UNIT. SLTST/MUDST=15/85. COM MON FINING UPWARD CYCLES AS PREVIOUSLY DESCRIBED. OCC PYRITE. CORRECT WAY UP. |
| 27 | 73.67 | 75.27 | 1.60 | *59 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. SLD SAME SLIGHTLY SLTY MUDST. A/A (10/90). C OMMON PYR (ESP FROM .36 TO .62M). |
| 27 | 75.27 | 75.33 | 0.06 | 59 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD SAME A/A. |
| 27 | 75.33 | 75.37 | 0.04 | 59 | | | SANDSTONE | FG. HEL. M. GY. MAS. SLD UPPER AND LOWER CONTACTS MISSING (ROCK BREAKS). |
| 27 | 75.37 | 75.73 | 0.36 | 60 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD OCCASIONAL SLTST LAM WITH SHARP LOWER A ND GRADATIONAL UPPER CONTACTS. |
| 28 | 75.73 | 77.14 | 1.41 | *60 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN DOMINANTLY SLTY MUDST W/ COMMON SLTST L AMS AND VERY THIN BEDS UP TO 2 CM (15/8 5). LAMS ARE COMMONLY DISRUPTED BY SSD. OCCASIONAL PYR LENSES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 77.14 | 77.48 | 0.34 | 60 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. SLD SAME A/A EXCEPT 10/90. SHORT FINING UPW ARD CYCLES W/IN SLTST. |
| 29 | 77.48 | 78.17 | 0.69 | *60 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD SAME A/A. |
| 29 | 78.17 | 79.48 | 1.31 | 58 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. SLD SAME A/A. |
| 29 | 79.48 | 79.62 | 0.14 | 57 | | | ROCK LOSS | |
| 30 | 79.62 | 81.22 | 1.60 | 55 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN WELL MIXED SLTY MUDST AS BEFORE BUT WIT H FEWER SLTST LAMS PRESENT. (5/95). RAR E PYRITE. |
| 30 | 81.22 | 81.56 | 0.34 | 54 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD SAME A/A BUT LACKING SLTST LAM. |
| 31 | 81.56 | 82.88 | 1.32 | *52 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN WELL MIXED MUDST WITH COMMON THIN SLTST LAMS W/IN. LAMS ARE COMMONLY WAVY & DIS RUPTED BY SSD. WELL DEVELOPED BALL/PILL OW STRUCTURES - CORRECT WAY UP. OCC PYR ITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 82.88 | 83.03 | 0.15 | 51 | | ROCK LOSS | |
| 31 | 83.03 | 83.14 | 0.11 | 51 | | MUDSTONE | DK.GY.MAS.VBRKN FISSILE, SLIGHT CARB. MOD CONSOLIDATED MUDST (NOT AS SLTY AS PREVIOUS UNIT). |
| 31 | 83.14 | 83.72 | 0.58 | 51 | | MUDSTONE | SLTY.DK.GY.MAS.VBRKN MASSIVE SLTY MUDST. |
| 31 | 83.72 | 83.80 | 0.08 | 50 | | ROCK LOSS | |
| 32 | 83.80 | 84.43 | 0.63 | 50 | | MUDSTONE | SLTY.DK.GY.MAS.SSD.VBRKN SAME A/A WITH OCC PYRITE AND SLTST LAMS LAMS HAVE ABRUPT LOWER CONTACTS AND G RADATIONAL UPPER CONTACTS (THEREFORE FI NE UPWARDS). CORRECT WAY UP. |
| 32 | 84.43 | 84.68 | 0.25 | 50 | | ROCK LOSS | |
| 32 | 84.68 | 85.61 | 0.93 | 49 | | MUDSTONE | SLTY.DK.GY.MAS.SSD.BRKN SAME A/A BUT RARE SLTST LAM (5/95). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 85.61 | 86.47 | 0.86 | 48 | | MUDSTONE | SLTY.DK.GY.MAS.SLD SAME A/A. OCC CONCRETIONARY PYRITE AT 80 M. |
| 33 | 86.47 | 87.02 | 0.55 | 47 | | MUDSTONE | CARB.DK.GY.MAS.VBRKN FISSILE, SLIGHTLY CARB. MOD CONSOLIDATE D MUDST. W/ RARE SLTY ZONES. CONCRETIONA RY PYR A/A AT .40M. |
| 33 | 87.02 | 87.48 | 0.46 | 47 | | ROCK LOSS | |
| 33 | 87.48 | 87.80 | 0.32 | 46 | | MUDSTONE | CARB.DK.GY.MAS.BRKN SL SLTY AND SL CARB. PLATEY AND FISSILE MUDST. |
| 34 | 87.80 | 88.15 | 0.35 | 46 | | MUDSTONE | DK.GY.VTHNB.SLD PLATEY & FISSILE MUDST A/A BUT W/ THIN LAMS OF VERY CARB BLACK MUDST (UP TO 1 CM). SHARP LOWER CONTACT. |
| 34 | 88.15 | 88.32 | 0.17 | 46 | | SILTSTONE | DK.GY.MAS.SLD COMMON PYRITE. LARGE SOLITARY RIP-UPS W /IN (4. X 1.5CM) - PROXIMAL SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 88.32 | 89.56 | 1.24 | *45 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN SLIGHTLY CARB MAS MUDST. AT 22 M SMALL (UP TO 1 CM) WELL ROUNDED CONCRETIONAR Y PYRITE NODULES. AT 56 M RARE SLIGHTL Y PYRITIZED BIVALVES (2.0 X 1.5 CM). UNIT T BECOMES SLIGHTLY SILTIER TOWARDS BASE |
| 34 | 89.56 | 90.10 | 0.54 | 45 | | | ROCK LOSS | |
| 35 | 90.10 | 90.53 | 0.43 | 45 | | | MUDSTONE | DK. GY. MAS. YBRKN SL CARB MASSIVE MUDST UNIT. |
| 35 | 90.53 | 91.63 | 1.10 | 45 | | | MUDSTONE | DK. GY. MAS. SLD SL SLTY MASSIVE MUDST. |
| 36 | 91.63 | 93.52 | 1.89 | *45 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD VERY SLTY MUDST W/ RARE WIDELY DISPERSE D BIVALVES W/IN (2 CM X 1.3 CM X .75 CM) |
| 37 | 93.52 | 93.64 | 0.12 | 43 | | | MUDSTONE | DK. GY. MAS. YBRKN MODERATELY CONSOLIDATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 93.64 | 93.80 | 0.16 | 43 | | | ROCK LOSS | |
| 37 | 93.80 | 95.34 | 1.54 | 41 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN RARE SOLITARY BIVALVES AS PREVIOUSLY DE SCRIBED THROUGHOUT. |
| 38 | 95.34 | 96.58 | 1.24 | 38 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN VERY SLTY MUDST BECOMING SL LESS SLTY T OWARDS BASE. |
| 38 | 96.58 | 97.31 | 0.73 | *36 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN SAME A/A. BIVALVES OCCUR THROUGHOUT (2. 0 X 1.5 X .75 CM): "HERZOGINA" OR "ASTA RTE". |
| 39 | 97.31 | 97.39 | 0.08 | 38 | | | MUDSTONE | SLTY. M-DK. GY. MAS. SLD MUDDY SLTST AT TOP RAPIDLY GRADING DOWN TO SANDY SLTST AT BASE. VERY PYRITE RI CH. AT TOP OF UNIT. |
| 39 | 97.39 | 97.44 | 0.05 | 39 | | | SANDSTONE | SLTY. VFG. WEL. LT-M. GY. MAS. SLD SHARP LOWER CONTACT. |
| 39 | 97.44 | 99.21 | 1.77 | 44 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN WELL MIXED SLTY MUDST BECOMING LESS SIL TY AT TIMES. |
| 40 | 99.21 | 99.51 | 0.30 | 50 | | | SILTSTONE | DK. GY. MAS. SLD SLIGHT MUDDY SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | 99.51 | 100.40 | 0.89 | *53 | | MUDSTONE | SLTY DK. GY. MAS. SLD MUDDY SLTST AT TOP GRADING SLOWLY DOWN TO SLTY MUDST. ABRUPT LOWER CONTACT. OC C PYRITE. |
| 40 | 100.40 | 100.59 | 0.19 | 52 | | MUDSTONE | DK. GY. VTHNB. BRKN WELL CONSOL MUDST W/ THIN SLTY MUDST. LA MS A/A (ESP NEAR BASE). |
| 40 | 100.59 | 101.01 | 0.42 | 52 | | MUDSTONE | SLTY DK. GY. MAS. SLD OCCASIONAL SOLITARY BIVALVES AS PREVIOUSLY DESCRIBED (SOMETIMES PARTIALLY PYRITIZED). |
| 41 | 101.01 | 102.25 | 1.24 | *51 | | MUDSTONE | SLTY DK. GY. MAS. BRKN SLTY MUDST (A/A) AT TOP GRADING SLOWLY DOWN INTO MUDST TOWARDS BASE. BIVALVES & PYR (ESP IN LOWER HALF). |
| 41 | 102.25 | 102.40 | 0.15 | 52 | | MUDSTONE | CARB. DK. GY. MAS. VBRKN FISSILE AND PLATEY CARB MUDST W/ OCCASIONAL LITSTRIC SURFACES. |
| 41 | 102.40 | 102.70 | 0.30 | 53 | | MUDSTONE | SLTY DK. GY. MAS. BRKN SAME AS PREVIOUS SLTY MUDST. OCC BIVALVES, COMMONLY PARTIALLY PYRITIZED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 102.70 | 104.39 | 1.69 | *55 06949 | | MUDSTONE | SLTY DK. GY. MAS. BRKN SILTY NEAR TOP, SLOWLY BECOMING LESS SILTY & MORE CARB TOWARDS BASE OF UNIT. PARTIALLY PYRITIZED BIVALVES (ESP IN THE UNIT'S UPPER 1/2). LITSTRIC SURFACES OCCASIONALLY OCCUR NEAR THE UNIT'S BASE. LOWER 22 CM SAMPLED. |
| 43 | 104.39 | 104.42 | 0.03 | 52 06949 | | MUDSTONE | CARB. BLK. LAM. BRKN VERY CARB. BLK MUDST WITH OCCASIONAL VERY THIN (LESS THAN 1 MM) COAL LAMS (ESP AT BASE). |
| 43 | 104.42 | 104.43 | 0.01 | 52 06950 K PART | | COAL | C-2. BLK. SLD |
| 43 | 104.43 | 104.54 | 0.11 | 51 06950 K PART | | COAL LOSS | |
| 43 | 104.54 | 104.55 | 0.01 | 51 06950 K PART | | MUDSTONE | SLTY DK. GY. SLD |
| 43 | 104.55 | 104.56 | 0.01 | 51 06950 K PART | | COAL | C-6. GY. LAM. SLD THIN INTLAM C-1 AND SLTY MUDST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------|
| 43 | 104.56 | 104.60 | 0.04 | 51 | 06950 | K PART | MUDSTONE | CARB.BLK.VBRKN COMMON LISTRIC SURFACES THROUGHOUT. COMMON VERY THIN COAL LAMS. |
| 43 | 104.60 | 104.69 | 0.09 | 51 | 06950 | K PART | COAL LOSS | |
| 43 | 104.69 | 104.73 | 0.04 | 51 | 06950 | K PART | COAL | C-2.BLK.BRKN |
| 43 | 104.73 | 104.80 | 0.07 | 50 | 06950 | K PART | MUDSTONE | CARB.BN.SLD PYRITE VERY COMMON THROUGHOUT. ABRUPT LOWER AND UPPER CONTACTS. |
| 43 | 104.80 | 104.91 | 0.11 | 50 | 06950 | K PART | COAL LOSS | |
| 43 | 104.91 | 104.92 | 0.01 | 50 | 06950 | K PART | MUDSTONE | CARB.BLK.PWRD |
| 43 | 104.92 | 104.93 | 0.01 | 50 | 06950 | K PART | COAL | C-6.BLK.PWRD |
| 43 | 104.93 | 104.94 | 0.01 | 50 | 06950 | K PART | COAL | C-3.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------|
| 43 | 104.94 | 104.96 | 0.02 | 50 | 06950 | K PART | COAL | C-6.BLK.VBRKN |
| 43 | 104.96 | 104.97 | 0.01 | 50 | 06950 | K PART | COAL | C-3.BLK.VBRKN |
| 43 | 104.97 | 104.99 | 0.02 | 50 | 06950 | K PART | MUDSTONE | DK.GY.MAS.BRKN SLIGHTLY CARB.MAS.MUDST. |
| 43 | 104.99 | 105.02 | 0.03 | 50 | 06950 | K PART | COAL | C-2.BLK.SLD COMMON C-1 W/IN. |
| 43 | 105.02 | 105.04 | 0.02 | 49 | 06950 | K PART | COAL | C-4.BLK.SHRD |
| 43 | 105.04 | 105.07 | 0.03 | 49 | 06950 | K PART | COAL | C-5.BLK.PWRD |
| 43 | 105.07 | 105.08 | 0.01 | 49 | 06950 | K PART | COAL | C-2.BLK.BRKN |
| 43 | 105.08 | 105.10 | 0.02 | 49 | 06950 | K PART | COAL | C-6.SHRD LOWER CONTACT MISSING-ROCK BREAK. |
| 43 | 105.10 | 105.12 | 0.02 | 49 | 07001 | | MUDSTONE | CARB.BLK.VBRKN COMMON LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 105.12 | 105.57 | 0.45 | 48 | 07001 | | ROCK LOSS | |
| 43 | 105.57 | 106.88 | 1.31 | *45 | 07001 | | SILTSTONE | CARB. DK. GY. MAS. BRKN SLIGHTLY CARB MUDDY SLTST W/ COMMON QTZ FRACTURE FILL & VERY RARE THIN VFG SS LAMS (AT BASE). UPPER 23 CM SAMPLED. |
| 43 | 106.88 | 107.06 | 0.18 | 37 | | | ROCK LOSS | |
| 44 | 107.06 | 108.72 | 1.66 | *28 | | | SILTSTONE | DK. GY. MAS. SSD. BRKN SLIGHTLY MUDDY SLTST W/ V. RARE SSS SLTS LAMS W/IN. CONTACTS HAVE SHARP LOWER CONTACTS AND GRAD UPPER. SSD AND POSSIB LY BIOTRB. CORRECT WAY UP. |
| 44 | 108.72 | 108.98 | 0.26 | 31 | | | SILTSTONE | DK. GY. MAS. SSD. SLD SAME A/A. |
| 45 | 108.98 | 110.33 | 1.35 | 33 | | | SILTSTONE | DK. GY. MAS. SSD. BRKN VERY MUDDY SLTST. AT .57 M PYRITE COMMO N. OCCASIONAL QTZ VEIN FILLING AND MICR O FAULTING. |
| 45 | 110.33 | 110.43 | 0.10 | 36 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 110.43 | 110.52 | 0.09 | 36 | | | MUDSTONE | DK. GY. BRKN BRECCIATED W/ COMMON QTZ VEIN FILLING. |
| 45 | 110.52 | 110.99 | 0.47 | 37 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SL SLTY MUDST WITH OCC PYRITE AND RARE BIVALVES (1.5 CM x 1.2 CM x .5 CM) AS P REVIUOUSLY DESCRIBED. |
| 45 | 110.99 | 111.09 | 0.10 | 38 | | | ROCK LOSS | |
| 46 | 111.09 | 111.76 | 0.67 | 39 | | | MUDSTONE | DK. GY. YBRKN SL CARB AND SL SLTY MUDST. VERY RARE SO LITARY BIVALVES, COMMONLY BROKEN. |
| 46 | 111.76 | 111.84 | 0.08 | 40 | | | ROCK LOSS | |
| 46 | 111.84 | 113.06 | 1.22 | *42 | | | MUDSTONE | DK. GY. BRKN SAME A/A BUT COMMON QTZ VEINING THROUGH OUT (ESP NEAR BASE). |
| 47 | 113.06 | 113.71 | 0.65 | 22 | | | MUDSTONE | SLTY. DK. GY. MAS. BIOTR. BRKN SLTY MUDST WITH OCCASIONAL THIN SLTST W ISPS AND THIN DISORIENTED LAMINAE NEAR TOP. COMMON BIOTRB AND WRMBUR. COMMON Q TZ VEINING AND MINOR BRECCIATION. COMMO N PYRITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 47 | 113.71 | 113.80 | 0.09 | 14 | | | ROCK LOSS | |
| 47 | 113.80 | 114.92 | 1.12 | *01 | | | MUDSTONE | SLTY. DK. GY. MAS. BIOTR. BRKN SAME A/A BUT WITH FEWER LAMS AND QTZ VEINING. POSSIBLE FOLD AXIS AT .79 M. UPPER LIMB. BCA = 50 DEGREES AND LOWER LIMB BCA = 22 DEGREES. SOME BIOTRB. |
| 47 | 114.92 | 115.15 | 0.23 | *22 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD. SAME A/A. |
| 48 | 115.15 | 117.25 | 2.10 | 21 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. OCC QTZ VEINING. OCC SLTST LAM. VERY CONTORTED AND BROKEN DUE TO SSD AND SOME BIOTRB. |
| 49 | 117.25 | 117.94 | 0.69 | 19 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. SLD WELL MIXED. SLTY MUDST WITH RARE SSSY SLTST LAMS W/IN. LAMS ARE DISTORTED & BROKEN & LIE IN A VARIETY OF ORIENTATIONS. |
| 49 | 117.94 | 119.15 | 1.21 | *18 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. OVERTURNED BDG (SSD). OCCASIONAL PYRITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 119.15 | 119.26 | 0.11 | 23 | | | ROCK LOSS | |
| 50 | 119.26 | 120.99 | 1.73 | *29 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. RARE SLIGHTLY DISTORTED SLTST LAM WITH INTERNAL FINING UPWARD CYCLES AND SOME SSD. OVERTURNED. RARE PYRITE. |
| 50 | 120.99 | 121.27 | 0.28 | 30 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. O/T BDG (SSD). |
| 51 | 121.27 | 123.22 | 1.95 | 32 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A BUT SLTST LAMS & BEDS BEGIN TO BECOME MORE COMMON (ESP TOWARDS BASE) BUT REMAIN VERY CONTORTED & DISRUPTED. OVERTURNED (INTERNAL FINING UP TREND W/IN LAMS). OCC PYRITE (ESP NEAR TOP OF UNIT). |
| 51 | 123.22 | 123.28 | 0.06 | 33 | | | ROCK LOSS | |
| 52 | 123.28 | 124.03 | 0.75 | *34 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 124.03 | 124.92 | 0.89 | *33 | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. |
| 53 | 124.92 | 126.97 | 2.05 | *37 | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME SLTY MUDST A/A WITH OCCASIONAL PYR ITE & COMMON SLTST LAMS W/IN. SLTST/MUD ST = 15/85. COMMON SSD INCLUDING DEFN. LOAD CASTS & BALL/PILLOW STRUCTURES. OV ERTURNED BDG. SHORT FINING UPWARD CYCLE S. M/IN. LAMINAE. |
| 54 | 126.97 | 127.08 | 0.11 | 38 | | MUDSTONE | SLTY. DK. GY. MAS. SLD SAME A/A. |
| 54 | 127.08 | 128.94 | 1.86 | *38 | | MUDSTONE | SLTY. DK. GY. MAS. SLD SAME A/A WITH FEWER SLTST LAMS (5/95). MINOR QTZ VEIN-FILLING. |
| 55 | 128.94 | 130.02 | 1.08 | *47 | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A (10/90). OVERTURNED BDG. INTER NAL FINING UPWARD TREND W/IN SLTST. |
| 55 | 130.02 | 130.06 | 0.04 | 47 | | ROCK LOSS | |
| 55 | 130.06 | 130.96 | 0.90 | 47 | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. MINOR QTZ-VEINING NEAR TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 130.96 | 132.98 | 2.02 | *48 | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. COMMON QTZ-VEIN FILLING FROM 1.5 M-1.6 M. MODERATELY CONSOLIDATED MU DST. AT 1.45 M. OCC. LISTRIC SURFACES. |
| 57 | 132.98 | 133.18 | 0.20 | 46 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SLTY MUDST AT TOP BECOMING LESS SLTY TO WARDS BASE (THEREFORE FINING UP DUE TO O/T BDG). |
| 57 | 133.18 | 134.85 | 1.67 | *44 | | MUDSTONE | CARB. DK. GY. MAS. BRKN CARB MUDST WITH VERY RARE THIN COAL LAM S. (DISCONTINUOUS). VERY RARE BROKEN PLA NT DEBRIS W/IN AS WELL. QTZ VEINING COM MON ESP IN UPPER 30 CM OF UNIT. |
| 57 | 134.85 | 134.95 | 0.10 | 39 | | ROCK LOSS | |
| 58 | 134.95 | 136.23 | 1.28 | *35 | | MUDSTONE | DK. GY. MAS. SSD. BRKN SAME A/A BUT NOT CARB & UNIT BECOMES SL IGHTLY SLTY TOWARDS BASE. MINOR SSD AT BASE W/IN THIN SLTST LAMS AT BASE. O/T. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 136.23 | 136.91 | 0.68 | 38 | | | MUDSTONE | SLTY, DK, GY, MAS, SSD, BRKN VERY SLTY MUDST WITH VERY RARE THIN SLT ST LAMS W/IN. LAMS HAVE GRADATIONAL CON TACTS & ARE DISTORTED. |
| 58 | 136.91 | 137.01 | 0.10 | 39 | | | ROCK LOSS | |
| 59 | 137.01 | 138.95 | 1.94 | *42 | | | MUDSTONE | SLTY, DK, GY, MAS, SSD, BRKN SAME A/A. OCCASIONAL SLIGHTLY BRECCIATE D ZONES AT 1.34 & 1.56 M (~5 CM EACH). |
| 60 | 138.95 | 139.27 | 0.32 | *39 | | | MUDSTONE | SLTY, DK, GY, LAM, SSD, SLD DOMINANTLY MUDDY SLTST WITH COMMON VERY THIN (< 5 CM) SLTST LAMS. LAMS COMMONLY HAVE GRADATIONAL CONTACTS & ARE SUB-H ORIZONTAL TO WAVY & SOMETIMES DISTORTED SLTST/MUDST = 15/85. |
| 60 | 139.27 | 140.72 | 1.45 | *35 | | | MUDSTONE | SLTY, DK, GY, VTHNB, BIOTR, BRKN SAME AS ABOVE BUT COMMON BIOTRB & WRMBU RS AS WELL AS SSD. RARE PYRITE. |
| 60 | 140.72 | 140.87 | 0.15 | 39 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 61 | 140.87 | 142.32 | 1.45 | 42 | | | MUDSTONE | SLTY, DK, GY, MAS, SSD, BRKN SAME A/A BUT W/OUT BIOTRB. OCCASIONAL S SD - DISRUPTED FAINT SLTST LAMINAE. SLT ST/MUDST = 5/95. |
| 61 | 142.32 | 142.69 | 0.37 | *46 | | | MUDSTONE | SLTY, DK, GY, MAS, SSD, SLD SAME A/A. |
| 62 | 142.69 | 144.44 | 1.75 | *37 | | | MUDSTONE | SLTY, DK, GY, MAS, SSD, BRKN DOMINANTLY SLTY MUDST WITH FAINT RARE D ISRUPTED SLTST LAM THROUGHOUT. LAM ARE COMMONLY PARTIALLY MIXED, BROKEN & DISC ONTINUOUS & RARELY HORIZONTAL. PYRITE I S COMMON & OCCURS AS SMALL BLEBS UP TO 1.5 CM & THIN DISRUPTED LAMINAE. |
| 62 | 144.44 | 144.60 | 0.16 | 36 | | | ROCK LOSS | |
| 63 | 144.60 | 145.37 | 0.77 | *36 | | | MUDSTONE | SLTY, DK, GY, MAS, SSD, BRKN DOMINANTLY VERY SLTY MUDST WITH FAINT O CCASIONAL THIN SLTST LAMS W/IN. LAMS AR E DISRUPTED & PARTIALLY MIXED BY SSD & POSSIBLY BIOTRB. RARE PYR. CORRECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 63 | 145.37 | 146.46 | 1.09 | *43 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. |
| 63 | 146.46 | 146.54 | 0.08 | 42 | | | ROCK LOSS | |
| 64 | 146.54 | 148.42 | 1.88 | *41 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. |
| 64 | 148.42 | 148.67 | 0.25 | *30 | | | MUDSTONE | SLTY. DK. GY. MAS. SSD. BRKN SAME A/A. |
| 65 | 148.67 | 148.84 | 0.17 | 30 | | | MUDSTONE | DK. GY. MAS. YBRKN SLIGHTLY SLTY. HELL. CONSOLIDATED. MUDST. |
| 65 | 148.84 | 150.51 | 1.67 | *28 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN DOMINANTLY VERY SLTY MUDST WITH COMMON MUDDY SLTST ZONES THROUGHOUT. OCCASIONA L CLEAN SLTST BEDS & LAM (ESP AT 1.04M) |
| 66 | 150.51 | 150.98 | 0.47 | 31 | | | SILTSTONE | DK. GY. MAS. YBRKN MUDDY AT TOP. GRADING RAPIDLY DOWN TO SL TST. ABRUPT LOWER CONTACT. |
| 66 | 150.98 | 151.16 | 0.18 | 32 | | | ROCK LOSS | |
| 66 | 151.16 | 151.19 | 0.03 | 33 | | | MUDSTONE | DK. GY. MAS. SHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 66 | 151.19 | 151.29 | 0.10 | 33 | | | ROCK LOSS | |
| 66 | 151.29 | 151.37 | 0.08 | 33 | | | SILTSTONE | M-DK. GY. MAS. YBRKN SAME AS PREVIOUS SLTST. |
| 66 | 151.37 | 151.47 | 0.10 | 33 | | | ROCK LOSS | |
| 66 | 151.47 | 152.39 | 0.92 | 35 | | | SILTSTONE | DK. GY. MAS. SHRD DOMINANTLY A SLIGHTLY MUDDY SLTST WITH OCC SLTY MUDST ZONES INTERMIXED. |
| 67 | 152.39 | 152.83 | 0.44 | 37 | | | SILTSTONE | M-DK. GY. MAS. YBRKN OVERALL FINING UPWARD TREND IN UNIT. MU DDY SLTST AT TOP SLOWLY GRADING INTO SL TST & INTO VFG SS LAMS AT BASE. (UNIT I S O/T THEREFORE COARSENING UPWARD TREND STRATIGRAPHICALLY). |
| 67 | 152.83 | 152.95 | 0.12 | 38 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 67 | 152.95 | 154.36 | 1.41 | *40 | | SILTSTONE | SSY M.GY. LAM. BIOTR. BRKN INTBD & INTLAM VFG SS/SLTST (45/55). LAMINAE ARE COMMONLY SUB-HORIZONTAL TO WAVY WITH SHARP CONTACTS COMMONLY DISRUPTED BY SSD, BIOTRB & WRMBURS. SS IS ESP COMMON NEAR TOP & BASE OF UNIT. GRADATIONAL LOWER CONTACT. |
| 67 | 154.36 | 154.46 | 0.10 | 35 | | ROCK LOSS | |
| 67 | 154.46 | 154.61 | 0.15 | 34 | | SANDSTONE | VFG. LT-M. GY. MAS. SLD RARE THIN SLTST LAM NEAR BASE. |
| 68 | 154.61 | 155.16 | 0.55 | *32 | | SANDSTONE | SLTY. VFG. M. GY. LAM. SSD. SLD INTLAM VFG SS/SLTST (65/35). DOMINANTLY SUB-HORIZONTAL - WAVY, RAPID GRAD CONTACTS. COMMON SSD. |
| 68 | 155.16 | 155.67 | 0.51 | 33 | | SILTSTONE | SSY M-DK. GY. LAM. BIOTR. BRKN SAME A/A BUT (45/55) & COMMON BIOTRB & SSD. RAPID GRADATIONAL LOWER CONTACTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 68 | 155.67 | 156.57 | 0.90 | *35 | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. MAS. BRKN PARTIALLY MIXED SLTY SS. DOMINANTLY FG CLEAN SSWI TH COMMON SLTST WISPS & MIXED SLTST LAM W/IN. SS/SLTST = 90/10. |
| 69 | 156.57 | 157.23 | 0.66 | *41 | | SANDSTONE | FG. MOD. LT-M. GY. LAM. VBRKN DOMINANTLY VFG-FG SS WITH RARE THIN (<2 MM) SLTST LAMS WITH GRADATIONAL HORIZONTAL CONTACTS. |
| 69 | 157.23 | 158.38 | 1.15 | *44 | | SILTSTONE | SSY M-DK. GY. LAM. BIOTR. BRKN OVERALL COARSENING UPWARD TREND OF UNIT (STRATIGRAPHICALLY FINING UP). SS A/A AT TOP OF UNIT SLOWLY GRADING INTO VFG SS & INTO SSY SLTST AT BASE OF THE UNIT OVERALL SS/SLTST = 45/55. BIOTRB NEAR UNIT'S BASE. 0/1. |
| 70 | 158.38 | 158.98 | 0.60 | 44 | | SANDSTONE | SLTY. VFG. MOD. M. GY. MAS. SLD WELL MIXED SLTY SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 158.98 | 160.28 | 1.30 | 45 | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. BIOTR. BRKN INTLAM VFG SS/SLTST (50/50). LAM CONTACTS ARE SUB-HORIZONTAL - WAVY AND RAPID GRADATIONAL - SHARP. SS DOMINATES AT TOP OF UNIT WHILE SLTST IS DOM NEAR THE BASE. SS LAM COMMONLY DISPLAY SHORT FINING UPWARD CYCLES. Q/T. BIOTRB ZONES COMMON. |
| 70 | 160.28 | 160.39 | 0.11 | 45 | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. MAS. BIOTR. SLD SAME A/A. |
| 71 | 160.39 | 162.44 | 2.05 | *45 | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. BIOTR. BRKN INTLAM VFG SS/SLTST (60/40). LAM ARE COMMONLY WAVY & DISRUPTED BY SSD & BIOTR. AT 1.0 M COMMON SMALL SCALE FOLDING. LAM CONTACTS ARE RAPID GRAD TO SHARP. |
| 72 | 162.44 | 163.35 | 0.91 | *41 | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. SSD. SLD SAME A/A (60/40). |
| 72 | 163.35 | 164.39 | 1.04 | 43 | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. SSD. BRKN SAME A/A BUT 65/35 AND COMMON QTZ VEIN-FILLING THROUGHOUT. |
| 73 | 164.39 | 164.71 | 0.32 | 44 | | SILTSTONE | SSY. M-DK. GY. MAS. VBRKN DIRTY SLTST WITH OCCASIONAL FAINT VFG S S LAMINAE W/IN. GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 73 | 164.71 | 165.98 | 1.27 | *46 | | SANDSTONE | SLTY. VFG. LT-M. GY. MB. BRKN DOMINANTLY VFG-FG CLEAN SS WITH OCCASIONAL SLTST LAM. SS/SLTST = 90/10. LAMINAE HAVE GRADATIONAL UPPER & LOWER CONTACTS. |
| 74 | 165.98 | 166.24 | 0.26 | 51 | | SANDSTONE | SLTY. VFG. LT-M. GY. MB. SLD SAME A/A BUT 95/5. |
| 74 | 166.24 | 167.85 | 1.61 | *57 | | SANDSTONE | SLTY. VFG. MOD. M. GY. VTHMB. SSD. BRKN THINLY INTBD & INTLAM FG SS/VFG SS/SLTST (5/60/35). COMMON SSD & OCC BIOTR. |
| 75 | 167.85 | 168.53 | 0.68 | 63 | | SANDSTONE | SLTY. VFG. MOD. M. GY. VTHNB. SSD. BRKN SAME A/A. |
| 75 | 168.53 | 168.99 | 0.46 | 67 | | SANDSTONE | FG. MEL. LT. GY. MAS. SLD MASSIVE CLEAN WELL CEMENTED SS. RAPID GRADATIONAL LOWER CONTACT. |
| 75 | 168.99 | 169.22 | 0.23 | 68 | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. LAM. SSD. SLD VERY DISTORTED INTLAM VFG SS/SLTST (50/50). OVERTURNED (SSD). INTERNAL FINING UPWARDS CYCLES W/IN SOME LAM. SHARP LAM CONTACTS EXCEPT WHERE MIXING OCCURS. |
| 75 | 169.22 | 169.35 | 0.13 | 69 | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. LAM. BIOTR. SLD SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 75 | 169.35 | 169.78 | 0.43 | *71 | | SANDSTONE | VFG.WEL.LT.GY.MAS.SLD CLEAN MASSIVE SS WITH VERY RARE THIN (< 2 MM) SLTST LAMINAE. |
| 76 | 169.78 | 170.25 | 0.47 | 73 | | SANDSTONE | VFG.WEL.LT.GY.MAS.SLD SAME A/A WITH RARE THIN QTZ VEINING. |
| 76 | 170.25 | 170.49 | 0.24 | 74 | | SANDSTONE | VFG.WEL.LT.GY.MAS.SLD SEVERELY BRECCIATED ZONE WITH COMMON ANGULAR SS CLASTS W/IN A QTZ MATRIX. |
| 76 | 170.49 | 171.71 | 1.22 | 77 | | SANDSTONE | VFG.WEL.LT.GY.MAS.SLD DOMINANTLY VFG SS WITH RARE THIN (1-2 M M) SLTST LAM. (SS/SLTST = 95/5). LAM ARE HORIZONTAL & HAVE RAPID GRADATIONAL UPPER & LOWER CONTACTS. |
| 77 | 171.71 | 172.28 | 0.57 | *80 | | SANDSTONE | VFG.WEL.LT.GY.MAS.BRKN SAME A/A WITH COMMON QTZ VEINING. |
| 77 | 172.28 | 172.86 | 0.58 | 73 | | SANDSTONE | VFG.WEL.LT.GY.MAS.SSD.BRKN SAME A/A. SS/SLTST = 90/10. OVERTURNED (SSD). LAM ARE SUB-HORIZONTAL TO WAVY & COMMONLY SLIGHTLY DISRUPTED. SHARP LOWER CONTACT. |
| 77 | 172.86 | 172.99 | 0.13 | 68 | | SILTSTONE | DK.GY.BRKN BRECCIATED UNIT WITH MUDST, SLTST & SS BRECCIA W/IN QTZ VEIN-FILLING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 77 | 172.99 | 173.31 | 0.32 | 65 | | SANDSTONE | LT.GY.MAS.SLD BRECCIATED SS WITH COMMON SS & QTZ BRECCIA. GRADATIONAL LOWER CONTACT. |
| 77 | 173.31 | 173.67 | 0.36 | 61 | | SANDSTONE | FG.WEL.LT.GY.MAS.BRKN MASSIVE CLEAN WELL CEMENTED SS WITH OCCASIONAL QTZ VEINING. |
| 78 | 173.67 | 175.35 | 1.68 | *48 | | SANDSTONE | FG.MOD.LT.GY.MAS.BRKN SAME A/A WITH MORE COMMON QTZ VEINING & OCCASIONAL SMALL SUB-ROUNDED QTZ & SLTST RIP-UP CLASTS UP TO 1 CM. |
| 78 | 175.35 | 175.54 | 0.19 | 41 | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD SAME A/A. SLIGHTLY BRECCIATED. |
| 79 | 175.54 | 175.73 | 0.19 | 40 | | SANDSTONE | FG.MOD.LT.GY.MAS.VBRKN SAME A/A BUT SEVERELY BRECCIATED WITH COMMON QTZ VEINING. |
| 79 | 175.73 | 176.95 | 1.22 | 35 | | SANDSTONE | FG.WEL.LT.GY.MAS.BRKN CLEAN WELL CEMENTED FG SS - BECOMES GRADUALLY VFG TOWARDS BASE. |
| 79 | 176.95 | 177.17 | 0.22 | *30 | | SILTSTONE | SSY.M-DK.GY.LAM.VBRKN THINLY INTLAM VFG SS/SLTST (30/70). LAM CONTACTS ARE SUB-HORIZONTAL - WAVY & REL SHARP. OCCASIONAL PYRITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 80 | 177.17 | 177.82 | 0.65 | 34 | 07002 | | SILTSTONE | DK. GY. MAS. VBRKN MUDDY SLTST BECOMING SLIGHT CARB TOWARD S BASE OF UNIT. AT BASE, THIN (2CM) QTZ VEIN. LOWER 12 CM SAMPLED. |
| 80 | 177.82 | 177.95 | 0.13 | 38 | 07002 | | MUDSTONE | CARB. BLK. MAS. VBRKN COMMON VERY THIN (<1 MM) COAL LAMS. COM MON LISTRIC SURFACES. |
| 80 | 177.95 | 177.98 | 0.03 | 38 | 07003 | K/L OVT | COAL | C-3. BLK. SLD OCCASIONAL C-2 BANDS. |
| 80 | 177.98 | 178.10 | 0.12 | 39 | 07003 | K/L OVT | COAL LOSS | |
| 80 | 178.10 | 178.28 | 0.18 | 40 | 07003 | K/L OVT | MUDSTONE | CARB. BLK. BRKN SLIGHTLY CARB. |
| 80 | 178.28 | 178.41 | 0.13 | 42 | 07003 | K/L OVT | COAL LOSS | |
| 80 | 178.41 | 178.58 | 0.17 | 43 | 07003 | K/L OVT | MUDSTONE | CARB. BLK. BRKN SAME A/A. ABRUPT LOWER CONTACT. |
| 80 | 178.58 | 178.63 | 0.05 | 44 | 07003 | K/L OVT | COAL | C-3. BLK. VSHRD COMMON C-2 BANDS W/IN. |
| 80 | 178.63 | 178.82 | 0.19 | 45 | 07003 | K/L OVT | COAL LOSS | |
| 80 | 178.82 | 178.89 | 0.07 | 47 | 07003 | K/L OVT | COAL | C-6. BLK. PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------|
| 80 | 178.89 | 178.90 | 0.01 | 47 | 07003 | K/L OVT | COAL | C-4. BLK. BRKN |
| 80 | 178.90 | 178.92 | 0.02 | 47 | 07003 | K/L OVT | SILTSTONE | CARB. DK. GY. BRKN RARE THIN COAL LAMS W/IN. |
| 80 | 178.92 | 179.05 | 0.13 | 48 | 07003 | K/L OVT | COAL | C-6. BLK. VBRKN |
| 80 | 179.05 | 179.06 | 0.01 | 48 | 07003 | K/L OVT | COAL | C-2. BLK. SLD |
| 80 | 179.06 | 179.08 | 0.02 | 48 | 07003 | K/L OVT | COAL | C-4. BLK. SLD |
| 80 | 179.08 | 179.12 | 0.04 | 49 | 07003 | K/L OVT | COAL | C-2. BLK. SLD |
| 81 | 179.12 | 179.19 | 0.07 | 49 | 07003 | K/L OVT | COAL | C-2. BLK. BRKN |
| 81 | 179.19 | 179.22 | 0.03 | 50 | 07003 | K/L OVT | COAL | C-4. BLK. BRKN |
| 81 | 179.22 | 179.23 | 0.01 | 50 | 07003 | K/L OVT | COAL | C-5. BLK. BRKN |
| 81 | 179.23 | 179.25 | 0.02 | 50 | 07003 | K/L OVT | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------------|-----------|-----------------------------------------------------------------------------|
| 81 | 179.25 | 179.27 | 0.02 | 50 | 07003 K/L OVT | COAL | C-2.BLK.VBRKN |
| 81 | 179.27 | 179.33 | 0.06 | 51 | 07003 K/L OVT | MUDSTONE | CARB.BLK.SHRD |
| 81 | 179.33 | 179.37 | 0.04 | 51 | 07003 K/L OVT | COAL | C-3.BLK.BRKN |
| 81 | 179.37 | 179.57 | 0.20 | 52 | 07003 K/L OVT | COAL LOSS | |
| 81 | 179.57 | 179.58 | 0.01 | 53 | 07003 K/L OVT | COAL | C-4.BLK.VBRKN |
| 81 | 179.58 | 179.60 | 0.02 | 53 | 07003 K/L OVT | COAL | C-3.BLK.VBRKN |
| 81 | 179.60 | 179.64 | 0.04 | 54 | 07003 K/L OVT | MUDSTONE | CARB.BLK.BRKN VERY RARE COAL LAMS W/IN. |
| 81 | 179.64 | 180.26 | 0.62 | 57 | 07003 K/L OVT | COAL LOSS | |
| 81 | 180.26 | 180.29 | 0.03 | 60 | 07003 K/L OVT | COAL | C-3.BLK.SLD COMMON QTZITE W/IN & RARE PYRITE. ABRUP T. LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 81 | 180.29 | 181.22 | 0.93 | *64 | 07004 | SILTSTONE | CARB.DK.GY.SLD PYRITE VERY COMMON W/IN UPPER .15' M. CO MMON THIN COAL LAMS & BLEBS THROUGH OUT . UPPER 25 CM SAMPLED. |
| 81 | 181.22 | 181.97 | 0.75 | 62 | | ROCK LOSS | |
| 81 | 181.97 | 182.53 | 0.56 | 61 | | SILTSTONE | DK.GY.MAS.BRKN COMMON SMALL BIVALVES (1.5 CM) THROUGHOUT UT BUT ESP AT .45 M WHERE THEY FORM A T HIN (.04 M) BED. |
| 82 | 182.53 | 184.57 | 2.04 | *58 | | SILTSTONE | DK.GY.MAS.BRKN SAME AS ABOVE. BIVALVES ARE SPREAD THRO UGHOUT UNIT & ARE GENERALLY UP TO 2 CM LONG X 1.5 CM WIDE X .75 CM HIGH. RARE PYRITE. BIVALVES = "HERZOGINA" OR "ASTA RTE". |
| 82 | 184.57 | 184.64 | 0.07 | 57 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87023

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------|
| 83 | 184.64 | 185.01 | 0.37 | *57 | | SILTSTONE | DK.GY.MAS.SLD RARE VERY THIN SLIGHTLY SSS LAMS THROUGHOUT W/ GRADATIONAL CONTACTS OTHER WISE AS ABOVE. |
| 83 | 185.01 | 186.57 | 1.56 | *56 | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A. COMMON BIYALVES THROUGHOUT. |
| 83 | 186.57 | 186.69 | 0.12 | 53 | | ROCK LOSS | |
| 84 | 186.69 | 188.06 | 1.37 | *50 | | SILTSTONE | DK.GY.MAS.SLD SAME A/A WITH SLIGHTLY FEWER SSS SLTST LAMS & FEWER BIYALVES. END OF HOLE. DRILLER'S T.D. = 188.06 M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87023

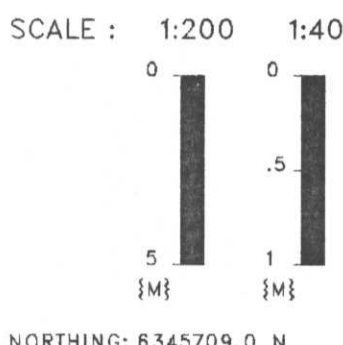
740

GEOLOGIST : LEDDA

DATE : MAR 08/88

DRAWING NO. :

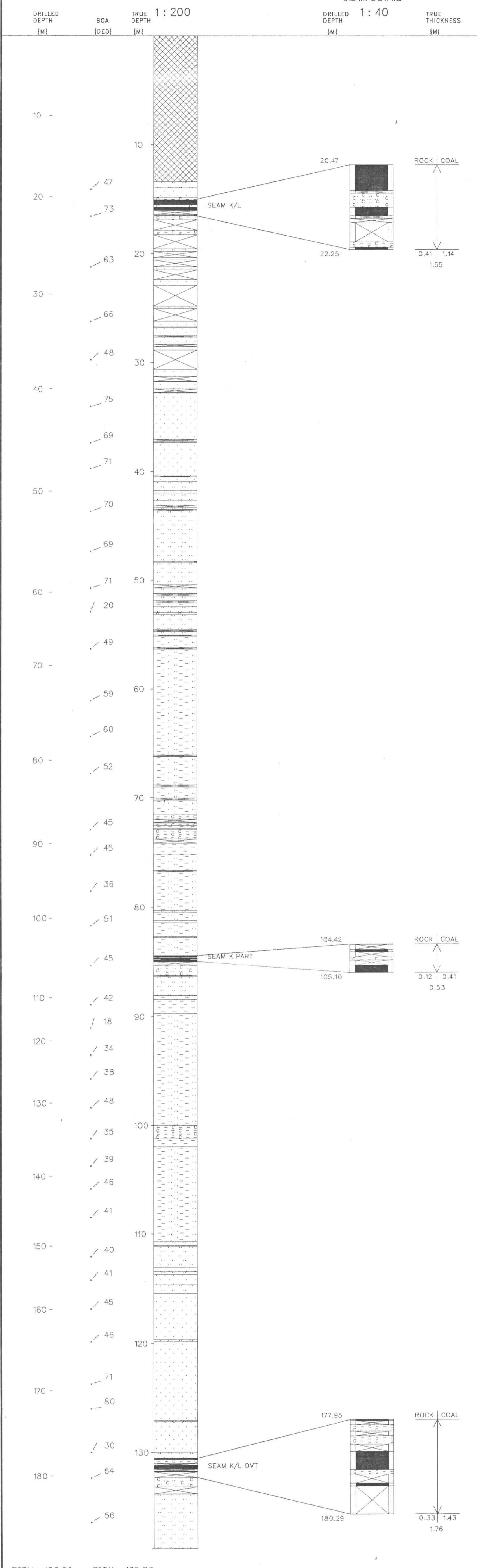
LITHOLOGIC SYMBOLS



| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

NORTHING: 6345709.0 N
 EASTING: 508573.1 E
 INCLINATION: 90.0°

SEAM DETAIL



TOTAL: 188.06 TOTAL: 138.83

Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

| | | | |
|-------------------------------|-------------------------------|----------------------|-------------------|
| Dataseq: KPNLRDDH87023 | Province: BC | Northing: 6345710.00 | Lat: 571523 |
| Log Date: 87-09-28 | Zone: 9 | Easting: 508573.00 | Long: 1285128 |
| Company: CENTURY | Measuring Point: GROUND LEVEL | | Elevation: 1460.7 |
| Geologist: LEDDA | | | |

Scale: 1 to 200.0

Depth Range: 0.0 to 192.0

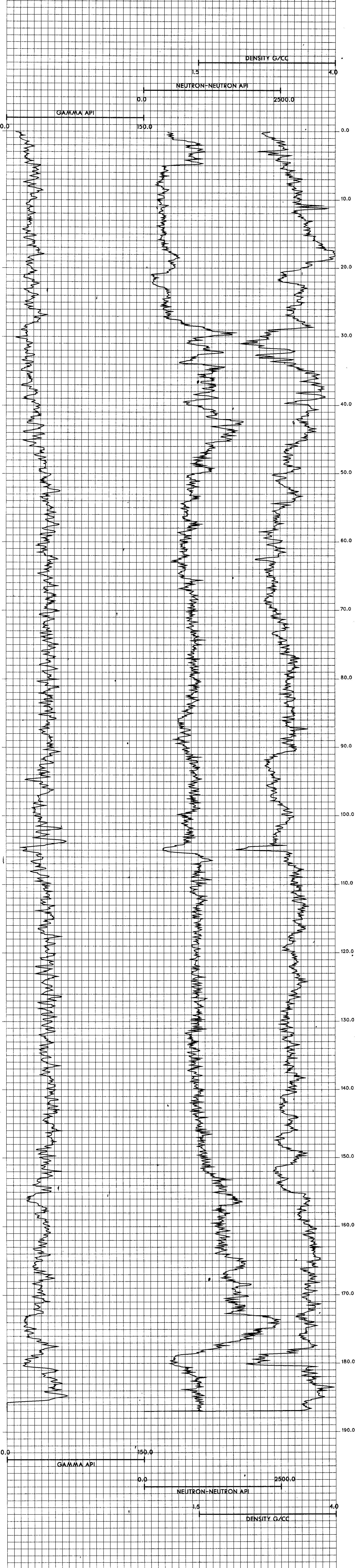
True Thickness: NO

Comments:

1. LOGGED THROUGH RODS
- 2.

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|-----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | 1 IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1 IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1 IN PIPE |



KPNLRDDH87024

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87024

DATE - 03/01/88

- HISTORY -

START DATE - 09/26/87

END DATE - 09/28/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PARRY

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE N. SEAMS INTERSECTED O, N, M/N, ?, M, L, ?, K
/L. STAND PIPE & NEUMATIC PIEZOMETERS INSTALLED

- LOCATION -

PROVINCE - BC

ELEVATION - 1536.18

ZONE - 9

NORTHING - 6344342.82

EASTING - 509312.57

LICENCE/LEASE NUMBER -

LATITUDE - 571438

LONGITUDE - 1285045

- ORIENTATION -

LENGTH - 161.60

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - Y

CASING DEPTH (M) - 12.80

AQUIFER DEPTHS (M) - 0.00

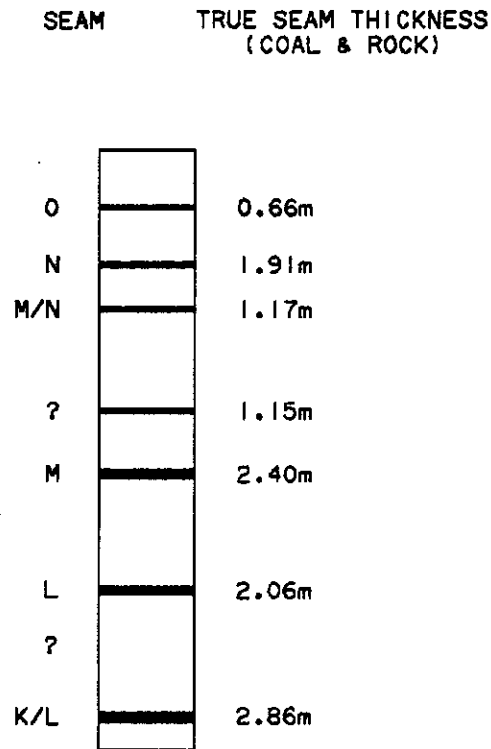
. 0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
 NO THICKNESSES SHOWN
 FOR SEAMS CONTAINING
 LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
 DDH87024

GULF CANADA RESOURCES LTD.
 19/04/88
 KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------|
| | 0.00 | 12.80 | 12.80 | 40 | | | CASING | CASING DEPTH |
| 1 | 12.80 | 12.90 | 0.10 | 40 | | | SANDSTONE | YFG. WEL. LT. GY. BRKN OVERBURDEN? |
| 1 | 12.90 | 13.10 | 0.20 | 40 | | | MUDSTONE | DK. BN. VBRKN RUBBLED. & POWDERED. OVERBURDEN? |
| 1 | 13.10 | 14.58 | 1.48 | 40 | | | ROCK LOSS | |
| 1 | 14.58 | 14.60 | 0.02 | 40 | | | SANDSTONE | YFG. WEL. LT. GY. BRKN OVERBURDEN? |
| 1 | 14.60 | 14.63 | 0.03 | 40 | | | MUDSTONE | SSY. DK. BN. VBRKN RUBBLE. ROUNDED. |
| 1 | 14.63 | 14.83 | 0.20 | 40 | | | MUDSTONE | CARB. BLK. MAS. BRKN |
| 1 | 14.83 | 15.03 | 0.20 | 40 | | | MUDSTONE | CLYY. LT. BN. MAS. SLD SLD BUT POORLY CONSOLIDATED (PASTY). |
| 1 | 15.03 | 15.17 | 0.14 | 40 | 06907 | | MUDSTONE | CARB. BLK. VBRKN RUBBLE. |
| 1 | 15.17 | 15.47 | 0.30 | 40 | 06908 | 0 | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------|
| 2 | 15.47 | 15.62 | 0.15 | 40 | 06908 | 0 | COAL | C-3. BLK. PMRD |
| 2 | 15.62 | 16.19 | 0.57 | 40 | 06908 | 0 | COAL LOSS | |
| 2 | 16.19 | 16.24 | 0.05 | 40 | 06909 | | MUDSTONE | CARB. BLK. SLD |
| 2 | 16.24 | 16.38 | 0.14 | 40 | 06909 | | MUDSTONE | CARB. BLK. BRKN |
| 2 | 16.38 | 16.52 | 0.14 | 40 | | | MUDSTONE | M. BN. BRKN |
| 2 | 16.52 | 16.62 | 0.10 | *40 | | | SILTSTONE | M. GY |
| 2 | 16.62 | 16.97 | 0.35 | 40 | | | ROCK LOSS | |
| 2 | 16.97 | 17.33 | 0.36 | 39 | | | MUDSTONE | SLTY. MAS. BRKN |
| 2 | 17.33 | 17.43 | 0.10 | 39 | | | SILTSTONE | MAS. BRKN |
| 2 | 17.43 | 18.10 | 0.67 | 39 | | | MUDSTONE | SLTY. MAS. BRKN |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 3

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------|
| 3 | 18.10 | 19.40 | 1.30 | 38 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SLTY MUDST WITH SLTST BLEBS. |
| 3 | 19.40 | 19.80 | 0.40 | *37 | | SILTSTONE | M-DK. GY. LAM. BRKN |
| 4 | 19.80 | 20.35 | 0.55 | 38 | | SILTSTONE | M. GY. SSD. BRKN LOAD CASTS (RIGHT WAY UP). |
| 4 | 20.35 | 21.35 | 1.00 | 41 | | SANDSTONE | SLTY. YFG. MOD. LT-M. GY. SSD. BRKN ABUNDANT LOAD CASTS & SS PILLOWS (RIGHT WAY UP). |
| 4 | 21.35 | 21.55 | 0.20 | 43 | | MUDSTONE | SLTY. DK. BN. MAS. VBRKN |
| 4 | 21.55 | 22.05 | 0.50 | 44 | | ROCK LOSS | |
| 5 | 22.05 | 22.45 | 0.40 | *45 | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN SLTY. LAMS. |
| 5 | 22.45 | 23.35 | 0.90 | 50 | | SILTSTONE | M. BN. THNB. VBRKN SOME SANDY REGIONS, INTERBEDDED SLTST & MUD. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 4

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------|
| 5 | 23.35 | 23.57 | 0.22 | 55 | | SILTSTONE | M. GY. MAS. BRKN |
| 5 | 23.57 | 23.65 | 0.08 | 57 | | MUDSTONE | M. BN. VBRKN SHEARED. |
| 5 | 23.65 | 23.76 | 0.11 | 57 | | ROCK LOSS | |
| 6 | 23.76 | 24.76 | 1.00 | *62 | | MUDSTONE | M. BN. MAS. BRKN PYRITE BLEBS. INTACT BUT SHEARED. |
| 6 | 24.76 | 24.93 | 0.17 | 62 | | BENTONITE | MH. MAS. SLD CREST ZONE. |
| 6 | 24.93 | 25.55 | 0.62 | 61 | | MUDSTONE | M. BN. MAS. BRKN SLTY IN PLACES. |
| 7 | 25.55 | 25.80 | 0.25 | 61 | | MUDSTONE | DK. BN. MAS. BRKN |
| 7 | 25.80 | 27.42 | 1.62 | 60 | | MUDSTONE | DK. BN. MAS. BRKN INTACT BUT SHEARED. |
| 8 | 27.42 | 28.42 | 1.00 | 59 | | MUDSTONE | DK. BN. MAS. VBRKN SHEARED IN PLACES. |
| 8 | 28.42 | 29.15 | 0.73 | 58 | | MUDSTONE | DK. BN. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------|
| 9 | 29.15 | 29.95 | 0.80 | 58 | | | MUDSTONE | DK. BN. MAS. BRKN TWO PYRITE BELBS. SHEARED NEAR STRAT BA SE. |
| 9 | 29.95 | 30.13 | 0.18 | 57 | N | | COAL | C-5. BLK. VSHRD |
| 9 | 30.13 | 30.48 | 0.35 | 57 | N | | SANDSTONE | SLTY. FG. PR. LT. GY. MAS. VBRKN FRACTURED. |
| 9 | 30.48 | 30.53 | 0.05 | 57 | N | | COAL | C-5. BLK. VSHRD |
| 9 | 30.53 | 30.59 | 0.06 | 57 | N | | MUDSTONE | SLTY. DK. BN. MAS. SHRD |
| 9 | 30.59 | 30.64 | 0.05 | 57 | N | | SILTSTONE | DK. BN. MAS. SLD |
| 9 | 30.64 | 30.77 | 0.13 | 57 | N | | COAL | C-6. BLK. VSHRD |
| 9 | 30.77 | 30.91 | 0.14 | 57 | N | | COAL LOSS | |
| 9 | 30.91 | 30.94 | 0.03 | 57 | N | | SILTSTONE | GY. MAS. SLD |
| 9 | 30.94 | 31.07 | 0.13 | 57 | N | | MUDSTONE | CARB. DK. BN. MAS. VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------|
| 10 | 31.07 | 31.22 | 0.15 | 57 | N | | MUDSTONE | CARB. DK. BN. MAS. VSHRD SLIGHTLY CARB. |
| 10 | 31.22 | 31.27 | 0.05 | 56 | N | | COAL | C-6. BLK. VSHRD |
| 10 | 31.27 | 31.58 | 0.31 | 56 | N | | COAL LOSS | |
| 10 | 31.58 | 31.68 | 0.10 | 56 | N | | MUDSTONE | DK. BN. MAS. SLD |
| 10 | 31.68 | 31.74 | 0.06 | 56 | N | | SANDSTONE | CLYY. FG. PR. LT. BN. SLD ARGILLACEOUS SS. |
| 10 | 31.74 | 31.87 | 0.13 | 56 | N | | COAL | C-5. BLK. SLD SLD BUT SHEARED. |
| 10 | 31.87 | 31.94 | 0.07 | 56 | N | | COAL LOSS | |
| 10 | 31.94 | 32.10 | 0.16 | 56 | N | | ROCK LOSS | |
| 10 | 32.10 | 32.24 | 0.14 | 56 | N | | COAL LOSS | |
| 10 | 32.24 | 32.69 | 0.45 | 55 | | | MUDSTONE | CARB. BLK. MAS. BRKN ABUNDANT HAIRLINE FRACTURES. |
| 10 | 32.69 | 33.46 | 0.77 | *55 | | | SILTSTONE | M. GY. MAS PYRITE SPECKLES. MINOR BLK PELLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 33.46 | 33.99 | 0.53 | 55 | | | SILTSTONE | SSY, LT-M, GY, LAM, SLD INTLAM SLTST & SS. |
| 11 | 33.99 | 34.63 | 0.64 | *55 | | | SANDSTONE | SLTY, FG, MOD, LT, GY, LAM, SSD, SLD MODERATE-POORLY SORTED SS WITH SLTST LAMS. MS. LOAD CASTS (RIGHT WAY UP). RIP-UP CLASTS. |
| 11 | 34.63 | 34.75 | 0.12 | 55 | | | SANDSTONE | FG, LT, GY, MAS, SLD |
| 11 | 34.75 | 35.39 | 0.64 | 54 | | | SANDSTONE | FG, MOD, LT, GY, MAS, SSD, SLD MAS SS WITH MINOR SLTST WISPS. RIP-UP SLTST CLASTS. |
| 12 | 35.39 | 36.65 | 1.26 | 53 | | | SANDSTONE | FG, MOD, LT, GY, MAS, SSD, BRKN SLTST LAMS & WISPS, BLACK PELLETS, LOAD CAST (RIGHT WAY UP). MINOR RIP-UP. |
| 12 | 36.65 | 37.40 | 0.75 | *52 | | | SANDSTONE | SLTY, VFG, MOD, LT, GY, VTHNB, BRKN SS INTERBEDDED WITH LESSER SLTST. LAMINATED IN REGIONS. |
| 13 | 37.40 | 37.66 | 0.26 | 57 | | | SANDSTONE | FG, MOD, LT, GY, MAS, SSD, BRKN LOAD CAST (RIGHT WAY UP). BLACK PELLETS NEAR STRAT TOP. MINOR SLTST WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 37.66 | 38.03 | 0.37 | 61 | | | SANDSTONE | FG, MOD, LT, GY, MAS, SLD |
| 13 | 38.03 | 38.31 | 0.28 | 64 | | | SANDSTONE | SLTY, VFG, PR, LT, GY, MAS, BRKN ARGILLACEOUS SS. |
| 13 | 38.31 | 38.54 | 0.23 | 67 | | | ROCK LOSS | |
| 13 | 38.54 | 39.34 | 0.80 | *72 | | | SILTSTONE | M, GY, LAM, SSD, BRKN LOAD CASTS (RIGHT WAY UP). TWO SMALL NORMAL FAULTED FRACTURES. LAMINATED (GRADING FROM MUD TO VERY FINE SAND). |
| 14 | 39.34 | 40.71 | 1.37 | *60 | | | SILTSTONE | M, GY, LAM, SSD, BRKN LAMINATED (GRADING FROM MUD TO VFG SAND). LOAD CASTS (RIGHT WAY UP). |
| 14 | 40.71 | 41.19 | 0.48 | 65 | | | MUDSTONE | SLTY, M-DK, GY, LAM, BRKN INTLAM MUDST & SLTST. |
| 15 | 41.19 | 41.62 | 0.43 | 67 | 06910 | | SILTSTONE | M-DK, GY, MAS, VBRKN |
| 15 | 41.62 | 41.87 | 0.25 | 69 | 06910 | | ROCK LOSS | |
| 15 | 41.87 | 42.02 | 0.15 | 70 | 06911 | M/N | COAL LOSS | |
| 15 | 42.02 | 42.09 | 0.07 | 70 | 06911 | M/N | COAL | C-3, BLK, VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------|
| 15 | 42.09 | 42.11 | 0.02 | 71 | 06911 | M/N | COAL | C-2.BLK.SLD |
| 15 | 42.11 | 42.15 | 0.04 | 71 | 06911 | M/N | COAL | C-5.BLK.VBRKN |
| 15 | 42.15 | 42.23 | 0.08 | 71 | 06911 | M/N | COAL | C-2.BLK.VBRKN |
| 15 | 42.23 | 42.28 | 0.05 | 71 | 06911 | M/N | COAL | C-6.BLK.VBRKN |
| 15 | 42.28 | 42.31 | 0.03 | 71 | 06911 | M/N | COAL | C-2.BLK.VBRKN |
| 15 | 42.31 | 42.38 | 0.07 | 72 | 06911 | M/N | COAL | C-3.BLK.PWRD |
| 15 | 42.38 | 42.46 | 0.08 | 72 | 06911 | M/N | COAL | C-6.BLK.VBRKN |
| 15 | 42.46 | 42.49 | 0.03 | 72 | 06911 | M/N | COAL | C-5.BLK.VBRKN |
| 15 | 42.49 | 42.64 | 0.15 | 73 | 06911 | M/N | COAL | C-5.BLK.PWRD |
| 15 | 42.64 | 42.74 | 0.10 | 73 | 06911 | M/N | COAL | C-5.BLK.PWRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 15 | 42.74 | 42.87 | 0.13 | 74 | 06911 | M/N | MUDSTONE | BLK.VBRKN |
| 15 | 42.87 | 42.91 | 0.04 | 75 | 06911 | M/N | COAL | C-3.BLK.BRKN |
| 15 | 42.91 | 42.94 | 0.03 | 75 | 06911 | M/N | COAL | C-2.BLK.BRKN |
| 15 | 42.94 | 42.95 | 0.01 | 75 | 06911 | M/N | COAL | C-3.BLK.SLD |
| 15 | 42.95 | 43.10 | 0.15 | 75 | 06911 | M/N | COAL LOSS | |
| 15 | 43.10 | 43.20 | 0.10 | 76 | 06912 | | MUDSTONE | CARB.BLK.BRKN |
| 15 | 43.20 | 43.33 | 0.13 | 76 | 06912 | | MUDSTONE | SLTY.DK.GY.BRKN |
| 16 | 43.33 | 43.83 | 0.50 | *78 | | | SILTSTONE | CG.M.GY.MAS.BRKN SMALL ROUND PELLETS, 1 MM ACROSS (WRMBU R OR RIP-UPS?). RIP-UP CLASTS (3-6 MM). SANDY IN LOWER HALF. |
| 16 | 43.83 | 44.88 | 1.05 | 76 | | | SILTSTONE | M.GY.MAS.BRKN SS LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 44.88 | 45.37 | 0.49 | 73 | | | SANDSTONE | SLTY. YFG. PR. LT-M. GY. MAS. BRKN LAMS NEAR BASE. VERY ARGILLACEOUS SS. |
| 16 | 45.37 | 45.39 | 0.02 | 73 | | | ROCK LOSS | |
| 17 | 45.39 | 45.46 | 0.07 | 72 | | | SILTSTONE | LT. GY. LAM. SLD CALCAREOUS. |
| 17 | 45.46 | 45.73 | 0.27 | 72 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SSD. SLD MINOR SLTST. LAMS. |
| 17 | 45.73 | 46.03 | 0.30 | 71 | | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. VTHNB. WRMBU. SLD RIGHT WAY UP. INTERBEDDED SAND & SLTST. LOAD CAST (RIGHT WAY UP). |
| 17 | 46.03 | 46.88 | 0.85 | 69 | | | SILTSTONE | M. GY. MAS. BIOTR. BRKN BIVALVES (STAFFINELLA). SOME FINING UP LAMS OCCURRING OVER A LAM INTERVAL. BIVALVE ESCAPE TUBE (RIGHT WAY UP). SOME SS LAMS. |
| 17 | 46.88 | 47.08 | 0.20 | 68 | | | SILTSTONE | M. GY. LAM. SLD MINOR SS LAMS. |
| 17 | 47.08 | 47.42 | 0.34 | 67 | | | SILTSTONE | SSY. M. GY. LAM. BIOTR. INTERMIXED SAND & SLTST. |
| 18 | 47.42 | 47.66 | 0.24 | 66 | | | SILTSTONE | M. GY. LAM. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 47.66 | 49.39 | 1.73 | *63 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. VTHNB. WRMBU. BRKN SS INTERBEDDED & LAMINATED WITH SLTST. LAM - THNB. RIGHT WAY UP. BIOTR. LISTR IC FRACTURE (4 CM OF MOVEMENT) CHANGES FROM REVERSE TO NORMAL MOVEMENT. CARBONATE XLLN ZONE (8 CM THICK) 1 M FROM STR AT TOP. |
| 18 | 49.39 | 49.48 | 0.09 | 74 | | | ROCK LOSS | |
| 19 | 49.48 | 49.93 | 0.45 | *77 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. VTHNB. BRKN INTERLAM & INTERBEDDED SS WITH LESSER'S LTST. |
| 19 | 49.93 | 50.55 | 0.62 | 76 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. LAM INTERLAM & INTERBEDDED (VTHNB) SS & SLTST. BLACK PELLETS. |
| 19 | 50.55 | 51.50 | 0.95 | 74 | | | SILTSTONE | SSY. M. GY. VTHNB. SSD. BRKN LOAD CAST (RIGHT WAY UP). LAM-VTHNB. 1-2 CM COARSENING UP SEQUENCES (SLTST TO VERY FINE SS). YFG SS LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | 51.50 | 53.55 | 2.05 | *70 | | | SILTSTONE | SSY. M. GY. LAM. MRMBU. BRKN VFG SS LAMS. LAM-VTHNB COARSENING UP SE QUENCES (SLTST TO VFG SS). AFTER .80 M FROM STRAT TOP HELMINTHOPSIS IS COMMON (MOST ABUNDANT IN LOWER 35 CM). |
| 21 | 53.55 | 55.53 | 1.98 | *67 | | | SILTSTONE | M. GY. MAS. BRKN OCCASIONAL MUD BAND. HELMINTHOPSIS THRO UGHOUT. CALCAREOUS XLLN ZONE 43 M FROM STRAT TOP (.13 M THICK). CARBONATE FILL ED FRACTURE ZONE. |
| 21 | 55.53 | 56.25 | 0.72 | 68 | | | ROCK LOSS | |
| 22 | 56.25 | 56.48 | 0.23 | 68 | | | SILTSTONE | M. GY. MAS. SLD |
| 22 | 56.48 | 58.11 | 1.63 | 69 | | | MUDSTONE | DK. GY. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 23 | 58.11 | 59.36 | 1.25 | *70 | | | MUDSTONE | DK. GY. MAS. BRKN PYRITE BLEBS. |
| 23 | 59.36 | 59.97 | 0.61 | 69 | | | MUDSTONE | DK. GY. MAS. BRKN |
| 24 | 59.97 | 61.07 | 1.10 | 68 | | | MUDSTONE | SSY. DK. GY. MAS. BRKN GRADES FROM A MUDST AT STRAT TOP TO A S SY MUDST AT STRAT BASE |
| 24 | 61.07 | 61.42 | 0.35 | *67 | | | SANDSTONE | MG. VPR. LT. GY. MAS. BRKN RIP-UP CLASTS. MG-VCG SS. |
| 24 | 61.42 | 61.76 | 0.34 | 67 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. BRKN SLTST LAMS AT STRAT TOP AND A 5 CM SLTS T. BAND AT THE BASE. |
| 24 | 61.76 | 62.02 | 0.26 | 67 | | | SANDSTONE | MG. PR. LT. GY. MAS. BRKN SOME VERY COARSE GRAINS. |
| 25 | 62.02 | 62.42 | 0.40 | 68 | | | SANDSTONE | MG. VPR. LT. GY. MAS. VBRKN MODERATE QTZ FILLED FRACTURES. |
| 25 | 62.42 | 62.80 | 0.38 | 68 | | | SANDSTONE | MG. VPR. LT. GY. MAS. SSD. BRKN LOAD CAST (RIGHT WAY UP). VCG SS. AT STR AT BASE (5 CM THICK). MG-VCG SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------|
| 25 | 62.80 | 63.52 | 0.72 | *68 | | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.THNB.BIOTR.BRKN VFG-FG SS. INTERBEDDED & LAMINATED SLTST & SS. |
| 25 | 63.52 | 63.80 | 0.28 | 74 | | | SANDSTONE | MG.MOD.LT.GY.MAS.BRKN MODERATE QTZ FILLED FRACTURES. COARSENS UP (FG-MG SS). |
| 26 | 63.80 | 63.96 | 0.16 | *77 | | | SANDSTONE | FG.MOD.LT.GY.MAS.BRKN THQ.SLTST.LAMS. |
| 26 | 63.96 | 64.13 | 0.17 | 77 | | | SANDSTONE | MG.PR.LT.GY.MAS.SLD |
| 26 | 64.13 | 64.61 | 0.48 | 76 | | | SANDSTONE | SLTY.FG.PR.LT-M.GY.MAS.BRKN MAS.WITH.SLTST.LAMS.&WISPS. |
| 26 | 64.61 | 64.83 | 0.22 | 76 | | | ROCK LOSS | |
| 26 | 64.83 | 65.01 | 0.18 | 75 | | | SANDSTONE | MG.PR.LT.GY.MAS.SLD COARSENS UP (FG-CG SS). |
| 26 | 65.01 | 65.47 | 0.46 | 75 | | | SANDSTONE | CLYY.FG.PR.LT.GY.MAS.BRKN ARGILLACEOUS SS. SSSY MUDST BAND NEAR ST RAT TOP. |
| 26 | 65.47 | 65.64 | 0.17 | 74 | | | SANDSTONE | CLYY.FG.PR.LT.GY.MAS.SLD ARGILLACEOUS SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 65.64 | 65.96 | 0.32 | 74 | | | SANDSTONE | SLTY.FG.PR.LT.GY.VTHNB.SSD.BRKN INTLAM & INTBEDDED SS WITH LESSER SLTST LOAD CAST (RIGHT WAY UP). BIVALVE ESC APE TUBE (RIGHT WAY UP). |
| 27 | 65.96 | 66.10 | 0.14 | 74 | | | SANDSTONE | FG.PR.LT.GY.MAS.BRKN |
| 27 | 66.10 | 66.68 | 0.58 | 73 | | | SANDSTONE | CG.S-P.MAS.SLD COARSENS UP (MG TO CG SS). |
| 27 | 66.68 | 66.81 | 0.13 | 72 | | | ROCK LOSS | |
| 27 | 66.81 | 67.30 | 0.49 | *72 | | | SANDSTONE | SLTY.FG.PR.LT.GY.THNB.SSD.BRKN THIN SS BEDS WITH VTHNB & LAM SLTST. LO AD CAST (RIGHT WAY UP). VERY COARSE SS GRAINS APPEAR IN LOWER 14 CM OF UNIT (V ERY POORLY SORTED). MODERATE QTZ VEININ G. |
| 27 | 67.30 | 67.52 | 0.22 | 71 | | | SANDSTONE | VCG.VPR.S-P.MAS.SLD UNIT IS LOCALLY A GRANULAR CONGLOMERATE |
| 27 | 67.52 | 68.26 | 0.74 | 70 | | | SANDSTONE | MG.VPR.LT.GY.MAS.BRKN FG-CG SS. RIP-UP CLASTS. MINOR SLTST LA MS. MODERATE QTZ VEINING AT STRAT TOP. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------|
| 28 | 68.26 | 68.51 | 0.25 | 70 | | | SANDSTONE | MG. S-P. THNB. BRKN THNB VCG SS & FG SS. |
| 28 | 68.51 | 69.91 | 1.40 | 68 | 06913 | | SANDSTONE | MG. S-P. THNB. BRKN THNB VCG SS & FG SS. |
| 28 | 69.91 | 70.03 | 0.12 | 67 | 06913 | | MUDSTONE | DK. GY. MAS. BRKN |
| 28 | 70.03 | 70.09 | 0.06 | 67 | 06913 | | MUDSTONE | CARB. BLK. MAS. SLD |
| 28 | 70.09 | 70.15 | 0.06 | 66 | 06914 ? | | COAL | C-4. BLK. PHRD |
| 28 | 70.15 | 70.22 | 0.07 | 66 | 06914 ? | | COAL | C-2. BLK. YBRKN |
| 29 | 70.22 | 70.34 | 0.12 | 66 | 06914 ? | | COAL | C-4. BLK. SHRD |
| 29 | 70.34 | 70.88 | 0.54 | 66 | 06914 ? | | COAL | C-4. SHRD |
| 29 | 70.88 | 70.98 | 0.10 | 65 | 06914 ? | | COAL | C-6. BLK. SHRD |
| 29 | 70.98 | 71.13 | 0.15 | 65 | 06914 ? | | COAL | C-6. BLK. SHRD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 29 | 71.13 | 71.35 | 0.22 | 64 | 06914 ? | | COAL LOSS | |
| 29 | 71.35 | 71.43 | 0.08 | 64 | 06915 | | MUDSTONE | CARB. BLK. BRKN |
| 29 | 71.43 | 71.45 | 0.02 | 64 | 06915 | | MUDSTONE | BLK. SHRD |
| 29 | 71.45 | 72.55 | 1.10 | 63 | 06915 | | ROCK LOSS | |
| 29 | 72.55 | 72.72 | 0.17 | 62 | 06915 | | MUDSTONE | DK. GY. MAS. SLD HAIRLINE FRACTURES. |
| 29 | 72.72 | 73.15 | 0.43 | 61 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN |
| 29 | 73.15 | 73.31 | 0.16 | 61 | | | SILTSTONE | DK. GY. MAS. BRKN |
| 30 | 73.31 | 73.96 | 0.65 | #60 | | | SANDSTONE | SLTY. M. GY. LAM. SLD INTLAM SS & SLTST (~50% OF EACH). |
| 30 | 73.96 | 74.86 | 0.90 | 59 | | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. THNB. BIOTR. BRKN INTBEDDED WEL. SORTED SS & SLTST. |
| 30 | 74.86 | 74.97 | 0.11 | 59 | | | ROCK LOSS | |
| 30 | 74.97 | 75.42 | 0.45 | 59 | | | SANDSTONE | FG. WEL. S-P. MAS. BRKN |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 75.42 | 75.50 | 0.08 | 59 | | | SILTSTONE | SSY.LT-M.GY.LAM.SLD INTLAM SS/SLTST. |
| 31 | 75.50 | 75.54 | 0.04 | 59 | | | SILTSTONE | M.GY.MAS.SLD |
| 31 | 75.54 | 75.64 | 0.10 | 59 | | | SANDSTONE | MG.MOD.S-P.MAS.SLD |
| 31 | 75.64 | 75.77 | 0.13 | 59 | | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.LAM.SLD INTLAM VFG-MG SS & SLTST. |
| 31 | 75.77 | 77.49 | 1.72 | *58 | | | SANDSTONE | MG.WEL.S-P.MAS.BRKN CARBONATE XLN ZONE (27 CM THICK) 106 M FROM STRAT TOP. ZONE ALSO CONTAINS LAR GE SLTST RIP-UP CLASTS (3-4 CM LONG). R IP-UP CLASTS NEAR BASE OF CORE. MM SIZE SLTST CLASTS (WORM PELLETS?). |
| 31 | 77.49 | 77.62 | 0.13 | 66 | | | ROCK LOSS | |
| 32 | 77.62 | 78.82 | 1.20 | *72 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD MM SIZE SLTST CLASTS (WORM PELLETS, IE. BLACK PELLETS). |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------|
| 32 | 78.82 | 79.51 | 0.69 | 71 | | | SILTSTONE | M.GY.VTHNB.BRKN ABUNDANT BIVALVES (< 5 CM TO 3 CM LONG) . HELMINTHOPSIS THROUGHOUT. |
| 33 | 79.51 | 80.18 | 0.67 | 71 | | | SILTSTONE | M.GY.VTHNB.BRKN SAME AS ABOVE. |
| 33 | 80.18 | 81.62 | 1.44 | *70 | | | SANDSTONE | VFG.MOD.LT.GY.MAS.SSD.SLD BLACK WORM PELLETS. |
| 34 | 81.62 | 81.74 | 0.12 | 68 | | | SILTSTONE | M.GY.LAM.SLD |
| 34 | 81.74 | 81.87 | 0.13 | 67 | | | SANDSTONE | SLTY.VFG.MOD.LT.GY.MAS.SLD INTERMIXED SLTST/SAND. ABUNDANT BIVALVE S. AT STRAT BASE (ZONE = 6 CM THK). |
| 34 | 81.87 | 81.96 | 0.09 | 67 | | | SILTSTONE | SSY.M.GY.MAS.SLD INTERMIXED SLTST/SAND. |
| 34 | 81.96 | 83.60 | 1.64 | 64 | | | SANDSTONE | VFG.MOD.LT.GY.MAS.XBDG.BRKN BIOTRB SLTY REGIONS. SSD. |
| 35 | 83.60 | 84.72 | 1.12 | *60 | | | SANDSTONE | VFG.MOD.LT.GY.MAS.BRKN WORM PELLETS. |
| 36 | 84.72 | 84.96 | 0.24 | 64 | | | SANDSTONE | VFG.PR.LT-M.GY.MAS.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------|
| 36 | 84.96 | 85.10 | 0.14 | 65 | | SILTSTONE | M.BN.MAS.BRKN |
| 36 | 85.10 | 86.45 | 1.35 | *70 | 06916 | MUDSTONE | CARB.DK.BN.MAS.BRKN SLTY. VERY CARB IN PLACES (BECOMES C-6 LOCALLY). PYRITE LAMS. |
| 36 | 86.45 | 86.58 | 0.13 | 70 | 06917 M | COAL LOSS | |
| 36 | 86.58 | 86.63 | 0.05 | 70 | 06917 M | COAL | C-3.BLK.BRKN |
| 37 | 86.63 | 86.67 | 0.04 | 70 | 06917 M | MUDSTONE | CARB.BLK.BRKN SLIGHTLY CARB. |
| 37 | 86.67 | 86.74 | 0.07 | 70 | 06917 M | ROCK LOSS | |
| 37 | 86.74 | 86.80 | 0.06 | 70 | 06917 M | COAL LOSS | |
| 37 | 86.80 | 87.04 | 0.24 | 69 | 06917 M | COAL | C-3.BLK.BRKN PYRITE STRINGERS. |
| 37 | 87.04 | 87.07 | 0.03 | 69 | 06917 M | COAL | C-1.BLK.SLD |
| 37 | 87.07 | 87.08 | 0.01 | 69 | 06917 M | COAL | C-2.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------|
| 37 | 87.08 | 87.10 | 0.02 | 69 | 06917 M | COAL | C-6.BLK.SLD |
| 37 | 87.10 | 87.12 | 0.02 | 69 | 06917 M | COAL | C-2.BLK.BRKN |
| 37 | 87.12 | 87.17 | 0.05 | 69 | 06917 M | COAL | C-3.BLK.BRKN |
| 37 | 87.17 | 87.19 | 0.02 | 69 | 06917 M | MUDSTONE | CARB.BLK.SLD |
| 37 | 87.19 | 87.31 | 0.12 | 69 | 06917 M | COAL LOSS | |
| 37 | 87.31 | 87.34 | 0.03 | 69 | 06917 M | COAL | C-6.BLK.SHRD |
| 37 | 87.34 | 87.39 | 0.05 | 69 | 06917 M | COAL | C-3.BLK.BRKN |
| 37 | 87.39 | 87.42 | 0.03 | 69 | 06917 M | COAL | C-6.BLK.VBRKN |
| 37 | 87.42 | 87.51 | 0.09 | 69 | 06917 M | COAL | C-4.BLK.VSHRD |
| 37 | 87.51 | 87.53 | 0.02 | 69 | 06917 M | COAL | C-4.BLK.VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------|
| 37 | 87.53 | 87.55 | 0.02 | 69 06917 | M | COAL | C-6, BLK, VSHRD |
| 37 | 87.55 | 87.58 | 0.03 | 69 06917 | M | COAL | C-5, BLK, VSHRD |
| 37 | 87.58 | 87.62 | 0.04 | 69 06917 | M | COAL | C-3, BLK, VSHRD |
| 37 | 87.62 | 87.68 | 0.06 | 69 06917 | M | COAL | C-4, BLK, VSHRD |
| 37 | 87.68 | 87.69 | 0.01 | 69 06917 | M | MUDSTONE | CARB, BLK, SHRD |
| 37 | 87.69 | 87.75 | 0.06 | 69 06917 | M | COAL | C-4, BLK, BRKN |
| 37 | 87.75 | 87.80 | 0.05 | 69 06917 | M | COAL | C-2, BLK, BRKN |
| 37 | 87.80 | 87.84 | 0.04 | 69 06917 | M | COAL | C-3, BLK, BRKN |
| 37 | 87.84 | 87.94 | 0.10 | 69 06917 | M | COAL | C-2, BLK, VBRKN WELL CLEATED. |
| 37 | 87.94 | 88.11 | 0.17 | 69 06917 | M | COAL | C-1, BLK, VBRKN WELL CLEATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------|
| 37 | 88.11 | 88.13 | 0.02 | 69 06917 | M | COAL | C-2, BLK, BRKN WELL CLEATED. |
| 37 | 88.13 | 88.14 | 0.01 | 69 06917 | M | COAL | C-4, BLK, BRKN |
| 37 | 88.14 | 88.16 | 0.02 | 69 06917 | M | COAL | C-1, BLK, BRKN WELL CLEATED. |
| 37 | 88.16 | 88.28 | 0.12 | 69 06917 | M | COAL | C-2, BLK, BRKN WELL CLEATED. |
| 37 | 88.28 | 88.34 | 0.06 | 69 06917 | M | COAL | C-1, BLK, BRKN WELL CLEATED. |
| 38 | 88.34 | 88.37 | 0.03 | 69 06917 | M | COAL | C-2, BLK, BRKN C-1 WITH MUD LAMS. |
| 38 | 88.37 | 88.40 | 0.03 | 69 06917 | M | COAL | C-1, BLK, BRKN |
| 38 | 88.40 | 88.47 | 0.07 | 69 06917 | M | COAL | C-3, BLK, VBRKN |
| 38 | 88.47 | 88.50 | 0.03 | 69 06917 | M | COAL | C-2, BLK, SLD |
| 38 | 88.50 | 88.53 | 0.03 | 69 06917 | M | COAL | C-4, BLK, BRKN |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------|
| 38 | 88.53 | 88.60 | 0.07 | 69 | 06917 | M | COAL | C-1.BLK.SLD |
| 38 | 88.60 | 88.73 | 0.13 | 69 | 06917 | M | COAL | C-4.BLK.BRKN |
| 38 | 88.73 | 89.02 | 0.29 | 69 | 06917 | M | COAL LOSS | |
| 38 | 89.02 | 89.66 | 0.64 | 68 | 06918 | | MUDSTONE | CARB.BLK.MAS.BRKN BECOMES SLTY & LESS CARB NEAR STRAT BAS E. |
| 38 | 89.66 | 90.53 | 0.87 | *68 | | | SILTSTONE | M.GY.MAS.BRKN |
| 39 | 90.53 | 90.63 | 0.10 | 66 | | | SILTSTONE | M.GY.LAM.SLD |
| 39 | 90.63 | 90.69 | 0.06 | 65 | | | BENTONITE | LT.GY.MAS.VBRKN |
| 39 | 90.69 | 90.89 | 0.20 | 65 | | | SILTSTONE | M.GY.MAS.SLD CONTAINS CALCAREOUS SLTST BLEBS. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 39 | 90.89 | 91.17 | 0.28 | 64 | | | SILTSTONE | LT.GY.MAS.SLD CALCAREOUS. SANDY IN PLACES. ABUNDANT WORM PELLETS. |
| 39 | 91.17 | 92.53 | 1.36 | *60 | | | SILTSTONE | SSY.M.GY.VYHNB.SSD.BRKN CALCAREOUS BANDS. INTLAM & INTBEDDED SLTST & LESSER SS. LOAD CAST (RIGHT WAY UP). WORM PELLETS. |
| 40 | 92.53 | 92.79 | 0.26 | 57 | | | SILTSTONE | M.GY.MAS.SLD |
| 40 | 92.79 | 93.19 | 0.40 | 55 | | | SILTSTONE | M.GY.MAS.SLD |
| 40 | 93.19 | 93.86 | 0.67 | *53 | | | SILTSTONE | SSY.M.GY.LAM.WRMBU.BRKN INTLAM SLTST/SAND. WORM PELLETS .64 M & 1.24 M FROM STRAT TOP (FILL IN HOLLOW). RIGHT WAY UP. |
| 40 | 93.86 | 94.16 | 0.30 | 54 | | | SILTSTONE | LT.GY.MAS.BRKN CALCAREOUS. SANDY AT STRAT TOP. WORM PELLETS AT STRAT TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | 94.16 | 94.66 | 0.50 | 55 | | | SILTSTONE | SSY. M. GY. VTHNB. BRKN SLTST W/ LESSER SS INTLAMS & INTBEDS. W ORM PELLETS. |
| 41 | 94.66 | 96.31 | 1.65 | *58 | | | SILTSTONE | SSY. M. GY. LAM. XBDG. BRKN INTLAM SLTST/SAND. VERY SSY .26 M FROM STRAT TOP (.30 M THICK). RIGHT WAY UP. WORM PELLETS. ABUNDANT FRACTURES SHOWIN G NORMAL MOVEMENT. |
| 41 | 96.31 | 96.45 | 0.14 | 58 | | | SILTSTONE | SSY. M. GY. LAM. BRKN WORM PELLETS. |
| 42 | 96.45 | 98.43 | 1.98 | *58 | | | SILTSTONE | SSY. M. GY. MAS. BRKN SOME SS LAMS AND INTERMIXED SAND WITH S LTST - ONE CALCAREOUS SLTST. BED. RIP-UP CLASTS IN SS. |
| 43 | 98.43 | 100.84 | 2.41 | 61 | | | SILTSTONE | SSY. M. GY. THNB. BRKN SANDY SLTST INTERBEDDED WITH SAND. RIP- UP CLASTS IN SAND (RIGHT WAY UP). IRREG ULAR BEDDING. |
| 43 | 100.84 | 101.15 | 0.31 | *63 | | | SILTSTONE | SSY. M. GY. SSD. SLD CHAOTIC BEDDING DUE TO SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 43 | 101.15 | 101.79 | 0.64 | 62 | | | SILTSTONE | SSY. M. GY. THNB. SSD. BRKN VTHNB FINING UP SEQUENCES (VFG SS TO SL TST). LOAD CASTS OCCUR AT BASE OF EACH SEQUENCE (RIGHT WAY UP). |
| 43 | 101.79 | 102.62 | 0.83 | 59 | | | SILTSTONE | M. GY. MAS. BRKN |
| 44 | 102.62 | 102.82 | 0.20 | 58 | | | SILTSTONE | M. GY. MAS. SLD |
| 44 | 102.82 | 104.67 | 1.85 | 55 | | | SILTSTONE | M. GY. MAS. BRKN WORM PELLETS. |
| 45 | 104.67 | 105.67 | 1.00 | 51 | | | SILTSTONE | M. GY. MAS. BRKN WORM PELLETS. |
| 45 | 105.67 | 105.99 | 0.32 | 49 | | | SILTSTONE | M. GY. MAS. SSD. BRKN WORM PELLETS. |
| 46 | 105.99 | 107.73 | 1.74 | 45 | | | SILTSTONE | M. GY. MAS. BRKN WORM PELLETS. OCCASIONAL CALCAREOUS SLT ST BAND. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 107.73 | 107.99 | 0.26 | 42 | | | SILTSTONE | SSY.M.GY.MAS.SLD WORM PELLETS. SAND INTERMIX WITH SLTST. |
| 47 | 107.99 | 109.39 | 1.40 | *40 | | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.MAS.SSD.BRKN VBRKN IN PLACES. INTERMIXED SLTST & SAND (60% SS/40% SLTST). LOAD CAST (RIGHT WAY UP). WORM PELLETS. CALCAREOUS AT STRAT BASE. |
| 47 | 109.39 | 109.75 | 0.36 | 45 | | | SANDSTONE | SLTY.FG.PR.LT.GY.MAS.BRKN ARGILLACEOUS SS. |
| 48 | 109.75 | 110.95 | 1.20 | 50 | | | SANDSTONE | SLTY.FG.PR.LT-M.GY.MAS.SSD.BRKN WORM PELLETS. LOAD CASTS (RIGHT WAY UP) . FG-VFG SS. |
| 48 | 110.95 | 111.64 | 0.69 | *55 | | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.LAM.WRMBU.BRKN RIGHT WAY UP. WORM PELLETS. INTLAM SLTS & SAND. 60% SS/40% SLTST. |
| 49 | 111.64 | 113.00 | 1.36 | 50 | | | SANDSTONE | SLTY.VFG.PR.M.GY.MAS.BRKN LAM REGIONS. INTERMIXED & LAMINATED. SLT ST/SS (50% OF EACH). |
| 49 | 113.00 | 113.64 | 0.64 | *45 | | | SILTSTONE | SSY.M.GY.LAM.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------|
| 50 | 113.64 | 114.00 | 0.36 | *58 | | | SILTSTONE | SSY.M.GY.LAM.BRKN INTLAM SS/SLTST. |
| 50 | 114.00 | 115.50 | 1.50 | 59 | | | SILTSTONE | M.GY.MAS.BRKN VERY UNIFORM. |
| 51 | 115.50 | 117.00 | 1.50 | *60 | | | SILTSTONE | LT-M.GY.MAS.SLD VERY UNIFORM. FAINT VERY THIN BEDS SHOW ING COARSENING UP PATTERNS. |
| 52 | 117.00 | 117.50 | 0.50 | 61 | 06919 | | SILTSTONE | M.GY.MAS.BRKN ABUNDANT CARBONATE COATED COAL STRINGER S. |
| 52 | 117.50 | 117.63 | 0.13 | 62 | 06920 L | | COAL | C-3.BLK.VBRKN |
| 52 | 117.63 | 117.66 | 0.03 | 62 | 06920 L | | COAL | C-2.BLK.BRKN |
| 52 | 117.66 | 117.68 | 0.02 | 62 | 06920 L | | COAL | C-3.BLK.VSHRD |
| 52 | 117.68 | 117.73 | 0.05 | 62 | 06920 L | | MUDSTONE | CARB.BLK.VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------|
| 52 | 117.73 | 117.77 | 0.04 | 62 | 06920 | L | COAL | C-4.BLK.VBRKN |
| 52 | 117.77 | 117.84 | 0.07 | 62 | 06920 | L | COAL | C-2.BLK.PWRD |
| 52 | 117.84 | 118.05 | 0.21 | 62 | 06920 | L | COAL | C-1.BLK.BRKN |
| 52 | 118.05 | 118.20 | 0.15 | 63 | 06920 | L | COAL | C-2.BLK.YBRKN |
| 52 | 118.20 | 118.21 | 0.01 | 63 | 06920 | L | COAL | C-6.BLK.SLD |
| 52 | 118.21 | 118.27 | 0.06 | 63 | 06920 | L | COAL | C-3.BLK.BRKN |
| 52 | 118.27 | 118.66 | 0.39 | 63 | 06920 | L | COAL LOSS | |
| 52 | 118.66 | 118.71 | 0.05 | 64 | 06920 | L | COAL | C-1.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------|
| 52 | 118.71 | 118.73 | 0.02 | 64 | 06920 | L | COAL | C-3.BLK.SLD |
| 52 | 118.73 | 118.78 | 0.05 | 64 | 06920 | L | COAL | C-2.BLK.BRKN |
| 52 | 118.78 | 119.07 | 0.29 | 64 | 06920 | L | COAL | C-2.BLK.VBRKN |
| 53 | 119.07 | 119.24 | 0.17 | 64 | 06920 | L | COAL | C-2.BLK.YBRKN |
| 53 | 119.24 | 119.36 | 0.12 | 64 | 06920 | L | COAL | C-2.BLK.PWRD |
| 53 | 119.36 | 119.37 | 0.01 | 65 | 06920 | L | COAL | C-3.BLK.BRKN |
| 53 | 119.37 | 119.44 | 0.07 | 65 | 06920 | L | COAL | C-4.BLK.YSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------|
| 53 | 119.44 | 119.48 | 0.04 | 65 | 06920 | L | COAL | C-6.BLK.VBRKN |
| 53 | 119.48 | 119.55 | 0.07 | 65 | 06920 | L | COAL | C-1.BLK.VBRKN |
| 53 | 119.55 | 119.80 | 0.25 | 65 | 06920 | L | COAL LOSS | |
| 53 | 119.80 | 120.60 | 0.80 | 66 | 06921 | | MUDSTONE | DK.BN.MAS.BRKN SLIGHTLY CARB. |
| 53 | 120.60 | 120.84 | 0.24 | 67 | | | SILTSTONE | DK.BN.MAS.SLD |
| 53 | 120.84 | 121.07 | 0.23 | 67 | | | SANDSTONE | SLTY.LT.GY.MAS.SSD.SLD INTERMIXED & LAMINATED SLTST/SS. |
| 53 | 121.07 | 121.66 | 0.59 | 67 | | | SILTSTONE | LT-M.GY.MAS.SLD AS ABOVE. |
| 54 | 121.66 | 121.93 | 0.27 | 68 | | | SILTSTONE | M.GY.MAS.BRKN REPRESENTS A FINING UP SEQUENCE FROM VF G SS (5 CM THICK) TO SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 54 | 121.93 | 122.92 | 0.99 | 69 | | | SILTSTONE | SSY.M.GY.LAM.BIOTR.BRKN INTLAM SLTST/SS. UPPER HALF - 65% SLTST /35% SS. LOWER HALF - 50% OF EACH. WORM PELLETS & SLTST CLASTS. |
| 54 | 122.92 | 123.23 | 0.31 | *70 | | | SANDSTONE | SLTY.FG.MOD.LT.GY.VTHNB.WRMBU.SLD VTHNB SS WITH SLTST INTLAM. YFG-FG SS. |
| 54 | 123.23 | 123.47 | 0.24 | 70 | | | SANDSTONE | MG.MOD.S-P.MAS.SLD ABUNDANT SLTST RIP-UP CLASTS. (1-2 CM). |
| 55 | 123.47 | 123.84 | 0.37 | 69 | | | SANDSTONE | MG.MOD.S-P.MH.MAS.BRKN RIP-UP CLASTS THROUGHOUT. (0.1-2.0 CM). |
| 55 | 123.84 | 124.00 | 0.16 | 69 | | | SANDSTONE | MG.MOD.S-P.MAS.WRMBU.SLD RIGHT MAY UP. |
| 55 | 124.00 | 124.30 | 0.30 | 68 | | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.LAM.WRMBU.BRKN INTLAM SAND (60%) & SLTST (40%). |
| 55 | 124.30 | 125.50 | 1.20 | *67 | | | SILTSTONE | SSY.LT-M.GY.LAM.WRMBU.BRKN RIGHT MAY UP. INTLAM & VERY THINLY INTB EDDED SLTST (60%) & SS (40%). |
| 56 | 125.50 | 125.85 | 0.35 | 68 | | | SILTSTONE | SSY.LT-M.GY.LAM.WRMBU.SLD AS ABOVE. TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------|
| 56 | 125.85 | 126.09 | 0.24 | 68 | | SANDSTONE | SLTY.FG.LT.GY.MAS.WRMBU.SLD ARGILLACEOUS SS. BECOMES MORE SLTY UP'S SECTION. |
| 56 | 126.09 | 126.52 | 0.43 | 69 | | SILTSTONE | SSY.M.GY.MAS.BIOYR.SLD INTERMIX SS/SLTST (~50%). |
| 56 | 126.52 | 126.77 | 0.25 | 69 | | SANDSTONE | MG.MOD.S-P.MAS.WRMBU.SLD MINOR SLTST LAMS. |
| 56 | 126.77 | 126.85 | 0.08 | 69 | | SANDSTONE | SLTY.MG.PR.LT.GY.MAS.WRMBU |
| 56 | 126.85 | 127.00 | 0.15 | 70 | | SANDSTONE | CG.MOD.S-P.MAS.SLD FINES UP FROM CG-MG SS. MINOR SLTST LAM S. RIP-UP CLASTS. |
| 56 | 127.00 | 127.55 | 0.55 | *70 | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.VTHNB.BRKN INTERBEDDED SAND & SLTST (50% EACH). SOME RIP-UPS IN SS. |
| 57 | 127.55 | 128.01 | 0.46 | 71 | | SILTSTONE | SSY.M.GY.VTHNB.SLD |
| 57 | 128.01 | 128.26 | 0.25 | 71 | | SANDSTONE | VTHNB FINING UP SEQUENCES (SLTST TO VFG SS). SLTST (60%). SS (40%). VFG.LT.GY.VTHNB.SLD WORM PELLETS. SLTY NEAR STRAT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------|
| 57 | 128.26 | 129.45 | 1.19 | *72 | | SILTSTONE | SSY.LT-M.GY.VTHNB.SLD VTHNB FINING UP SEQUENCES (SLTST TO VFG SS). HELMINTHOPSIS. |
| 57 | 129.45 | 129.57 | 0.12 | 72 | | SILTSTONE | LT.GY.MAS.SLD CALCAREOUS. VERY ABUNDANT WORM PELLETS. |
| 58 | 129.57 | 130.00 | 0.43 | 72 | | SANDSTONE | VFG.MOD.LT-M.GY.MAS.SSD.SLD LOAD CASTS (RIGHT WAY UP). |
| 58 | 130.00 | 131.53 | 1.53 | *72 | | SILTSTONE | SSY.M.GY.VTHNB.WRMBU.BRKN VTHNB FINING UP SEQUENCES (MUD TO VFG S). HELMINTHOPSIS. |
| 59 | 131.53 | 132.48 | 0.95 | *70 | | MUDSTONE | SLTY.DK.GY.VTHNB.BRKN SLTY LAMS. HELMINTHOPSIS. |
| 59 | 132.48 | 133.60 | 1.12 | 69 | | MUDSTONE | DK.GY.MAS.BRKN FAINT SLTST LAMS & VTHNBS. |
| 60 | 133.60 | 134.50 | 0.90 | *68 06922 | | MUDSTONE | DK.GY.MAS.BRKN SLTY NEAR STRAT TOP. CLYY NEAR STRAT. BA SE. |
| 60 | 134.50 | 134.58 | 0.08 | 69 06923 ? | | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------|
| 60 | 134.58 | 134.66 | 0.08 | 69 | 06923 | ? | COAL | C-2.BLK.PHRD |
| 60 | 134.66 | 134.72 | 0.06 | 69 | 06923 | ? | COAL | C-2.BLK.SLD |
| 60 | 134.72 | 134.90 | 0.18 | 69 | 06923 | ? | COAL LOSS | |
| 60 | 134.90 | 135.06 | 0.16 | 69 | 06924 | | SILTSTONE | CARB.DK.GY.MAS.SLD COALIFIED PLANTS. |
| 60 | 135.06 | 135.60 | 0.54 | 69 | 06924 | | SANDSTONE | SLTY.VFG.PR.M-DK.GY.MAS.BRKN VERY ARGILLACEOUS SS. SLTST BAND NEAR S TRAT BASE. |
| 61 | 135.60 | 136.33 | 0.73 | *70 | | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.MAS.SLD VFG-FG ARGILLACEOUS SS. |
| 61 | 136.33 | 136.54 | 0.21 | 69 | | | SILTSTONE | SSY.CG.M.GY.MAS.SLD SOME INTERMIXED SS. |
| 61 | 136.54 | 136.92 | 0.38 | 69 | | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.MAS.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 61 | 136.92 | 137.81 | 0.89 | 68 | | | SANDSTONE | FG.MOD.LT.GY.MAS.XBDG.BRKN MINOR SLTST MISPS. RIP-UP CLASTS (0.4-3 CM). WORM PELLETS. |
| 62 | 137.81 | 138.65 | 0.84 | 66 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SSD.BRKN SLTY NEAR STRAT BASE. S-P COLOUR NEAR S TRAT TOP. RIP-UP CLASTS NEAR STRAT BASE . LOAD CAST (RIGHT WAY UP). FG-VFG SS. |
| 62 | 138.65 | 138.69 | 0.04 | 65 | | | SILTSTONE | M.GY.MAS.SLD |
| 62 | 138.69 | 139.36 | 0.67 | 65 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.SLD INTLAM & INTBEDDED SLTST & SAND. |
| 62 | 139.36 | 139.90 | 0.54 | 64 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN WORM PELLETS. MINOR SLTST MISPS. RIP-UP CLAST. |
| 63 | 139.90 | 141.82 | 1.92 | 62 | | | SANDSTONE | FG.MEL.S-P.MAS.BRKN RIP-UP CLASTS. WORM PELLETS. |
| 63 | 141.82 | 142.00 | 0.18 | *60 | | | SANDSTONE | FG.MEL.S-P.MAS.SLD MINOR SLTST LAMS. WORM PELLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 64 | 142.00 | 144.16 | 2.16 | *73 | | SANDSTONE | FG.WEL.S-P.MAS.BRKN FG-MG.SS. ARGILLACEOUS AT STRAT TOP. WO RM PELLETS. |
| 65 | 144.16 | 144.86 | 0.70 | 65 | | SANDSTONE | FG.WEL.S-P.MAS.BRKN SLTST LAMS .5 M FROM STRAT TOP. |
| 65 | 144.86 | 146.15 | 1.29 | *60 | | SANDSTONE | FG.WEL.S-P.MAS.BRKN MINOR SLTST LAMS. WORM PELLETS. |
| 66 | 146.15 | 147.34 | 1.19 | 64 | | SANDSTONE | MG.WEL.S-P.MAS.BRKN RIP-UP CLAST AT STRAT TOP. |
| 66 | 147.34 | 147.91 | 0.57 | *67 | | SANDSTONE | FG.PR.S-P.WH.MAS.BRKN SLTY IN UPPER HALF. SLTST RIP-UPS & COA L CLASTS ABUNDANT IN UPPER HALF (COAL C LASTS ARE COATED W/ CARBONATE). FG-MG S S. |
| 66 | 147.91 | 148.06 | 0.15 | 65 | | SANDSTONE | MG.MOD.S-P.MAS.VBRKN |
| 66 | 148.06 | 148.99 | 0.93 | 63 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| 67 | 148.99 | 150.09 | 1.10 | *58 | | SANDSTONE | FG.PR.S-P.MAS.BRKN RIP-UPS. RIP-UP ZONE NEAR SS-SLTST CONT ACT (RIGHT WAY UP). COAL CLASTS COATED WITH CARBONATE. |
| 67 | 150.09 | 150.29 | 0.20 | 59 | | SILTSTONE | DK.GY.MAS LISTRIC SLICKENSIDED SURFACES. |
| 67 | 150.29 | 150.84 | 0.55 | 59 | | MUDSTONE | DK.GY.MAS.BRKN SLIGHTLY CARB. LISTRIC SURFACES SLICKEN SIDED. |
| 68 | 150.84 | 150.95 | 0.11 | 60 | | MUDSTONE | DK.GY.MAS.SLD SLIGHTLY CARB. |
| 68 | 150.95 | 151.55 | 0.60 | 60 | | MUDSTONE | DK.GY.MAS.SLD AS ABOVE. |
| 68 | 151.55 | 151.71 | 0.16 | 61 | | SILTSTONE | M.GY.BRKN WORM PELLETS. CONSISTS OF INTERLOCKING SLTST BLEBS & BALLS. |
| 68 | 151.71 | 152.00 | 0.29 | 61 06925 | | MUDSTONE | CARB.BLK.MAS.BRKN COAL BANDS & STRINGERS. |
| 68 | 152.00 | 152.05 | 0.05 | 61 06926 | K/L | COAL | C-2.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------|
| 68 | 152.05 | 152.11 | 0.06 | 61 | 06926 | K/L | COAL | C-1.BLK.SLD |
| 68 | 152.11 | 152.21 | 0.10 | 61 | 06926 | K/L | COAL | C-2.BLK.VBRKN |
| 68 | 152.21 | 152.28 | 0.07 | 61 | 06926 | K/L | ROCK LOSS | |
| 68 | 152.28 | 152.32 | 0.04 | 62 | 06926 | K/L | MUDSTONE | BLK.BRKN |
| 68 | 152.32 | 152.35 | 0.03 | 62 | 06926 | K/L | COAL | C-2.BLK.SLD |
| 68 | 152.35 | 152.37 | 0.02 | 62 | 06926 | K/L | SILTSTONE | DK.GY.SLD |
| 68 | 152.37 | 152.41 | 0.04 | 62 | 06926 | K/L | COAL | C-2.BLK.SLD |
| 68 | 152.41 | 152.44 | 0.03 | 62 | 06926 | K/L | COAL | C-1.BLK.SLD |
| 68 | 152.44 | 152.46 | 0.02 | 62 | 06926 | K/L | COAL | C-4.BLK.SLD |
| 68 | 152.46 | 152.50 | 0.04 | 62 | 06926 | K/L | COAL | C-2.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------|
| 68 | 152.50 | 152.52 | 0.02 | 62 | 06926 | K/L | COAL | C-3.BLK.SLD |
| 68 | 152.52 | 152.63 | 0.11 | 62 | 06926 | K/L | COAL | C-2.BLK.SLD |
| 69 | 152.63 | 152.69 | 0.06 | 62 | 06926 | K/L | COAL | C-3.BLK.SLD |
| 69 | 152.69 | 152.73 | 0.04 | 62 | 06926 | K/L | MUDSTONE | CARB.DK.GY.SLD |
| 69 | 152.73 | 152.87 | 0.14 | 62 | 06926 | K/L | ROCK LOSS | |
| 69 | 152.87 | 152.91 | 0.04 | 62 | 06926 | K/L | COAL | C-6.BLK.SLD |
| 69 | 152.91 | 153.09 | 0.18 | 62 | 06926 | K/L | COAL | C-3.BLK.VBRKN |
| 69 | 153.09 | 153.25 | 0.16 | 63 | 06926 | K/L | COAL | C-2.BLK.VBRKN |
| 69 | 153.25 | 153.29 | 0.04 | 63 | 06926 | K/L | COAL | C-1.BLK.BRKN |
| 69 | 153.29 | 153.36 | 0.07 | 63 | 06926 | K/L | COAL | C-3.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------|
| 69 | 153.36 | 153.40 | 0.04 | 63 | 06926 | K/L | COAL | C-2.BLK.SLD |
| 69 | 153.40 | 153.59 | 0.19 | 63 | 06927 | K/L | MUDSTONE | CARB.BLK.SLD |
| 69 | 153.59 | 153.68 | 0.09 | 63 | 06927 | K/L | SILTSTONE | M.BN.BRKN |
| 69 | 153.68 | 153.76 | 0.08 | 63 | 06927 | K/L | COAL | C-5.BLK.BRKN |
| 69 | 153.76 | 153.81 | 0.05 | 63 | 06927 | K/L | COAL | C-3.BLK.VBRKN |
| 69 | 153.81 | 153.86 | 0.05 | 64 | 06927 | K/L | COAL | C-2.BLK.SLD |
| 69 | 153.86 | 153.89 | 0.03 | 64 | 06927 | K/L | COAL | C-4.BLK.BRKN |
| 69 | 153.89 | 154.10 | 0.21 | 64 | 06927 | K/L | ROCK LOSS | |
| 69 | 154.10 | 154.12 | 0.02 | 64 | 06927 | K/L | MUDSTONE | CARB.BLK.BRKN |
| 69 | 154.12 | 154.20 | 0.08 | 64 | 06927 | K/L | MUDSTONE | DK.BN.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------|
| 69 | 154.20 | 154.35 | 0.15 | 64 | 06927 | K/L | COAL | C-3.BLK.BRKN |
| 69 | 154.35 | 154.40 | 0.05 | 64 | 06927 | K/L | COAL | C-6.BLK.SLD |
| 69 | 154.40 | 154.65 | 0.25 | 64 | 06927 | K/L | ROCK LOSS | |
| 69 | 154.65 | 154.68 | 0.03 | 65 | 06927 | K/L | MUDSTONE | CARB.BLK.SLD |
| 69 | 154.68 | 154.73 | 0.05 | 65 | 06927 | K/L | COAL | C-1.BLK.BRKN |
| 69 | 154.73 | 154.78 | 0.05 | 65 | 06927 | K/L | COAL | C-5.BLK.BRKN |
| 69 | 154.78 | 154.94 | 0.16 | 65 | 06927 | K/L | COAL | C-3.BLK.BRKN |
| 70 | 154.94 | 155.01 | 0.07 | 65 | 06927 | K/L | COAL | C-6.BLK.BRKN |
| 70 | 155.01 | 155.06 | 0.05 | 65 | 06927 | K/L | COAL | C-4.BLK.BRKN |
| 70 | 155.06 | 155.11 | 0.05 | 65 | 06927 | K/L | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 70 | 155.11 | 155.21 | 0.10 | 65 | 06927 | K/L | COAL | C-3. BLK. BRKN ALMOST C-2. |
| 70 | 155.21 | 155.51 | 0.30 | 65 | 06928 | | SILTSTONE | CARB. M-DK. GY. BRKN ABUNDANT HAIRLINE FRACTURES. |
| 70 | 155.51 | 156.38 | 0.87 | 66 | | | SILTSTONE | M. GY. MAS. BRKN ABUNDANT HAIRLINE FRACTURE IN UPPER HAL F. |
| 70 | 156.38 | 156.70 | 0.32 | *67 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. VTHNB. SSD. SLD SLTY LAMS. LOAD CASTS (RIGHT WAY UP). |
| 70 | 156.70 | 156.96 | 0.26 | 67 | | | SILTSTONE | SSY. M. GY. LAM. SSD. BRKN INTLAM SS (40%) & SLTST (60%). LOAD CAS TS (RIGHT WAY UP). |
| 71 | 156.96 | 157.08 | 0.12 | 68 | | | SILTSTONE | M. GY. LAM. SLD |
| 71 | 157.08 | 157.20 | 0.12 | 68 | | | SILTSTONE | M. GY. MAS. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87024

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 71 | 157.20 | 157.59 | 0.39 | 68 | | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. LAM. SSD. SLD LOAD CASTS (RIGHT WAY UP). INTLAM SS (7 0%) & SLTST (30%). NO SLTST LAMS IN UPP ER 1/3RD. |
| 71 | 157.59 | 157.78 | 0.19 | 69 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD WORM PELLETS. RIP-UP CLASTS. |
| 71 | 157.78 | 158.25 | 0.47 | *69 | | | SILTSTONE | M. GY. LAM. SSD. BRKN LOAD CASTS (RIGHT WAY UP). INTLAM & VER Y THINLY IMBEDDED SLTST (65%) AND SS (3 5%). CALCAREOUS SLTST BANDS AT STRAT BA SE. |
| 71 | 158.25 | 158.91 | 0.66 | 70 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN MINOR SLTST LAMS. RIP-UP CLASTS NEAR ST RAT BASE. WORM PELLETS. |
| 72 | 158.91 | 160.11 | 1.20 | 71 | | | SANDSTONE | MG. MEL. S-P. MAS. BRKN RIP-UPS AT STRAT BASE. MINOR SLTST WISP S. |
| 72 | 160.11 | 160.83 | 0.72 | *73 | | | SANDSTONE | FG. MOD. S-P. MAS. WRMBU. BRKN RIP-UPS AT STRAT TOP. WORM PELLETS. |
| 73 | 160.83 | 161.60 | 0.77 | 73 | | | SANDSTONE | FG. MOD. S-P. MAS. BRKN MINOR SLTST WISPS AND LAMS. WORM PELLET S. END OF HOLE. T.D. = 161.83 M. DRILLE R'S MARKER. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

COAL DIVISION MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87024 SEAM : ? INTERVAL(M) : 70.09 - 71.35 ELEVATION(M) : 1536.2
 GEOLOGIST : PARRY SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. 1 2 3 4 5 6 | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | |
|---------------------------|-----------------------|---------------|-----------------|--------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|------|----------------|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | |
| | 70.09 | ↑ | | 0.95 | 82.7 | 6914 | 103 | 1.15 / 0.00 | 1.15 / 0.00 | 0.91 | 38.08 | 8.78 | 56.23 | 2.85 | 19.88 | |
| | 71.35 | ↓ | | (0.20) | | | | 1.15 | 1.15 | | | | | | | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87024

740

GEOLOGIST : PARRY

DATE : MAR 08/88

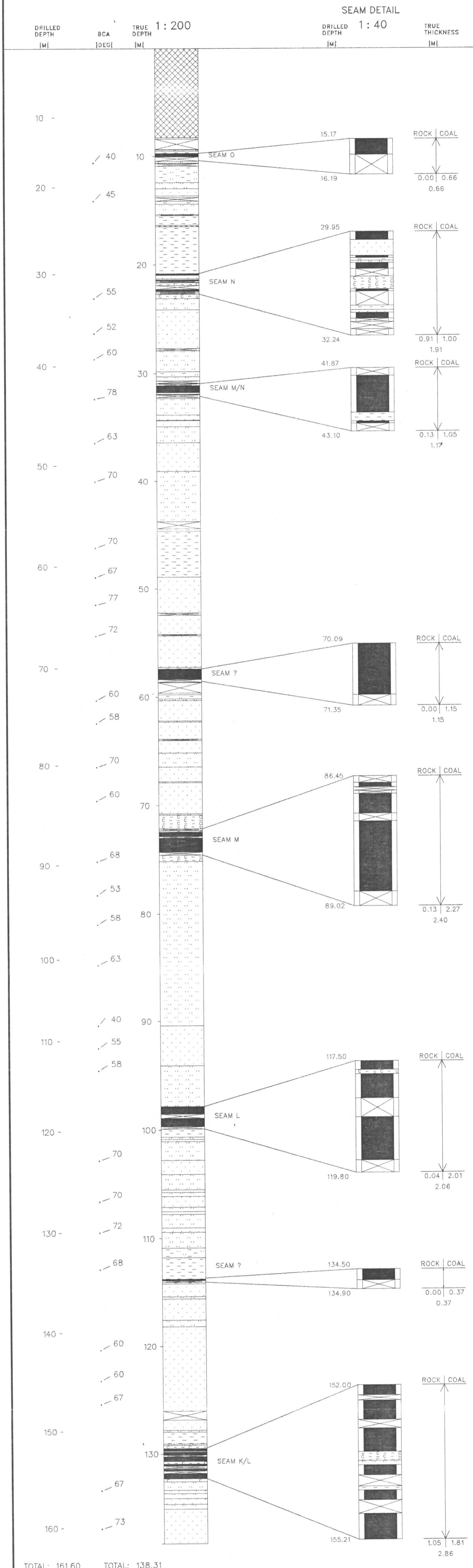
DRAWING NO. :

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SCALE : 1:200 1:40

NORTHING: 6344342.0 N
 EASTING: 509312.5 E
 INCLINATION: 90.0°



Gulf Canada Resources Limited

Coal Division

740

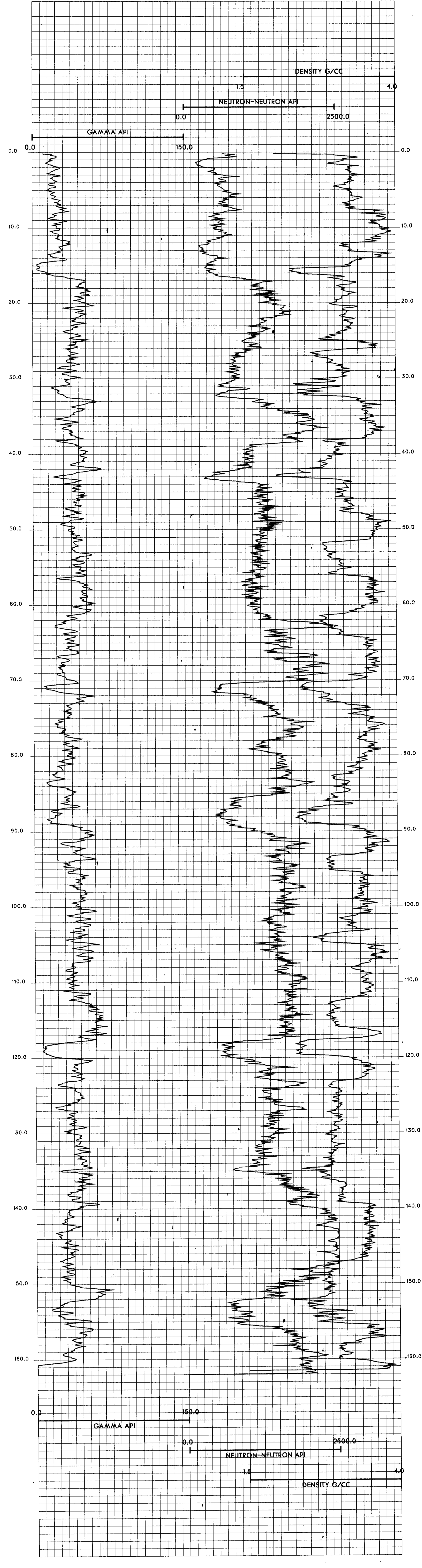
Geophysical Log

| | | | |
|----------------------------------|-------------------------------|----------------------|-------------------|
| Datasource: KPNLRDDH87024 | Province: BC | Northing: 6344340.00 | Lat: 571438 |
| Log Date: 87-09-27 | Zone: 9 | Easting: 509313.00 | Long: 1285045 |
| Company: CENTURY | Measuring Point: GROUND LEVEL | | Elevation: 1536.1 |
| Geologist: PARRY | | | |

Scale: 1 to 200.0
 Depth Range: 0.0 to 166.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87025

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87025

DATE - 03/01/88

- HISTORY -

START DATE - 09/29/87

END DATE - 10/01/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PENMAN

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - 85011 TWIN HOLE. SEAMS INTERSECTED K, J, I.

- LOCATION -

PROVINCE - BC

ELEVATION - 1525.32

ZONE - 9

NORTHING - 6344833.23

EASTING - 507123.79

LICENCE/LEASE NUMBER -

LATITUDE - 571454

LONGITUDE - 1285255

- ORIENTATION -

LENGTH - 112.59

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 18.90

AQUIFER DEPTHS (M) - 0.00

0.00

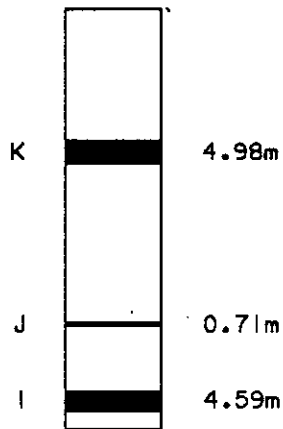
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87025**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: (205057)880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------|
| | 0.00 | 18.90 | 18.90 | 60 | | CASING | CASING DEPTH |
| 1 | 18.90 | 18.96 | 0.06 | 60 | | SILTSTONE | DK.GY TILL. |
| 1 | 18.96 | 19.06 | 0.10 | 60 | | ROCK LOSS | |
| 1 | 19.06 | 19.60 | 0.54 | 60 | | SILTSTONE | DK.GY.VBRKN MUDDY SLTST. GRAVEL AND MUD TILL. |
| 1 | 19.60 | 20.82 | 1.22 | *60 | | SILTSTONE | DK.GY.LAM.BRKN SS LAM. |
| 1 | 20.82 | 20.98 | 0.16 | 61 | | SILTSTONE | DK.GY.LAM.BRKN SS LAM. |
| 2 | 20.98 | 21.28 | 0.30 | 61 | | SILTSTONE | DK.GY.LAM.SLD SS LAM. 60-40 SLTST-SS. |
| 2 | 21.28 | 21.57 | 0.29 | 61 | | SILTSTONE | DK.GY.LAM.VSHRD AS ABOVE. |
| 2 | 21.57 | 21.60 | 0.03 | 61 | | ROCK LOSS | |
| 2 | 21.60 | 21.81 | 0.21 | 61 | | SILTSTONE | DK.GY.LAM.BRKN MUDDY BANDING. GRADES TO MUDDY AT BASE. |
| 2 | 21.81 | 22.77 | 0.96 | 62 | | MUDSTONE | M.BLK.LAM.VBRKN SLTST LAM. QUITE FRACTURED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 2 | 22.77 | 22.80 | 0.03 | 62 | | ROCK LOSS | |
| 3 | 22.80 | 23.39 | 0.59 | 63 | | MUDSTONE | M.BLK.LAM.SLD SLTST LAM. |
| 3 | 23.39 | 23.66 | 0.27 | 63 | | MUDSTONE | LT.BLK.BRKN QUITE SOFT. |
| 3 | 23.66 | 23.96 | 0.30 | 63 | | MUDSTONE | LT.BLK.BRKN QUITE SOFT. |
| 3 | 23.96 | 24.73 | 0.77 | *64 | | MUDSTONE | M.BLK.LAM.SLD SLTST LAM. WITH INCREASING TUFFITE CONTENT. |
| 4 | 24.73 | 26.65 | 1.92 | *66 | | MUDSTONE | M.GY.LAM.BRKN SILTY TUFFITE LAM. |
| 5 | 26.65 | 27.12 | 0.47 | 65 | | SILTSTONE | LT.GY.LAM.VBRKN MUDDY BANDS. MINOR VERY SOFT MUDDY BANDS. POSSIBLE SLIP FACES. PORCELANEOUS TUFFITE. |
| 5 | 27.12 | 27.17 | 0.05 | 65 | | ROCK LOSS | |
| 5 | 27.17 | 27.25 | 0.08 | 65 | | SILTSTONE | LT.GY.VSHRD BENTONITIC WITH MUDDY BREC. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------|
| 5 | 27.25 | 28.62 | 1.37 | 64 | | | SILTSTONE | LT. GY. BRKN VERY HOMOGENEOUS. NO BEDDING. BENTONITIC. |
| 6 | 28.62 | 29.30 | 0.68 | 63 | | | SILTSTONE | LT. GY. BRKN AS ABOVE. |
| 6 | 29.30 | 29.71 | 0.41 | 63 | | | SILTSTONE | M. GY. VSHRD AS ABOVE. |
| 6 | 29.71 | 29.75 | 0.04 | 63 | | | ROCK LOSS | |
| 6 | 29.75 | 29.88 | 0.13 | 62 | | | SILTSTONE | M. GY. VSHRD BENTONITIC WITH MUDDY BREC. |
| 6 | 29.88 | 30.61 | 0.73 | 62 | | | SILTSTONE | LT. GY. SLD NO BEDDING. BENTONITIC. |
| 7 | 30.61 | 31.53 | 0.92 | 61 | | | SILTSTONE | LT. GY. SLD NO BEDDING. BENTONITIC |
| 7 | 31.53 | 32.60 | 1.07 | 61 | | | MUDSTONE | M. BLK. LAM. BRKN SLTST LAM. |
| 8 | 32.60 | 32.70 | 0.10 | *60 | | | MUDSTONE | M. BLK. LAM. SLD SLTST LAM. |
| 8 | 32.70 | 32.87 | 0.17 | 60 | | | MUDSTONE | DK. BLK. LAM. BRKN SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------|
| 8 | 32.87 | 32.97 | 0.10 | 60 | | | MUDSTONE | LT. BLK. VSHRD QTZ & MUDST PEBBLES. POSSIBLE SHEAR ZONE. |
| 8 | 32.97 | 33.00 | 0.03 | 60 | | | ROCK LOSS | |
| 8 | 33.00 | 33.34 | 0.34 | 60 | | | MUDSTONE | M. BLK. LAM |
| 8 | 33.34 | 34.50 | 1.16 | 60 | | | MUDSTONE | M. BLK. LAM. SLD SLTST LAM. |
| 9 | 34.50 | 35.58 | 1.08 | 60 | 06929 | | MUDSTONE | CARB. DK. GY. SLD LOWER 14 CM. SAMPLED. |
| 9 | 35.58 | 35.69 | 0.11 | 60 | 06929 | | MUDSTONE | CARB. DK. GY. BRKN SAMPLED. |
| 9 | 35.69 | 35.73 | 0.04 | 60 | 06930 K | | COAL | C-3. BRKN |
| 9 | 35.73 | 35.99 | 0.26 | 60 | 06930 K | | MUDSTONE | CARB. DK. GY. BRKN |
| 9 | 35.99 | 36.08 | 0.09 | 60 | 06930 K | | COAL | C-3. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------|
| 9 | 36.08 | 36.23 | 0.15 | 60 06930 | K | MUDSTONE | CARB. DK. GY. SLD UNCONSOLIDATED. |
| 9 | 36.23 | 36.38 | 0.15 | 60 06930 | K | COAL | C-3. BRKN BONE COAL BANDS WITHIN. |
| 10 | 36.38 | 36.42 | 0.04 | 60 06930 | K | COAL | C-3. BRKN |
| 10 | 36.42 | 36.55 | 0.13 | 60 06930 | K | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 10 | 36.55 | 36.65 | 0.10 | 60 06930 | K | COAL | C-4. SLD |
| 10 | 36.65 | 36.89 | 0.24 | 60 06930 | K | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 10 | 36.89 | 36.95 | 0.06 | 60 06931 | K | COAL | C-4. SLD |
| 10 | 36.95 | 37.53 | 0.58 | 60 06931 | K | COAL | C-2. VBRKN |
| 10 | 37.53 | 37.69 | 0.16 | 60 06931 | K | COAL | C-3. BRKN |
| 10 | 37.69 | 37.70 | 0.01 | 60 06931 | K | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------|
| 10 | 37.70 | 37.77 | 0.07 | 60 06931 | K | ROCK LOSS | |
| 10 | 37.77 | 38.03 | 0.26 | 60 06931 | K | COAL | C-2. VBRKN |
| 10 | 38.03 | 38.12 | 0.09 | 60 06931 | K | ROCK LOSS | |
| 10 | 38.12 | 38.33 | 0.21 | 60 06931 | K | COAL LOSS | |
| 10 | 38.33 | 38.62 | 0.29 | 60 06931 | K | COAL | C-3. VBRKN |
| 11 | 38.62 | 38.71 | 0.09 | 60 06931 | K | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 11 | 38.71 | 38.90 | 0.19 | 60 06931 | K | COAL | C-3. BRKN |
| 11 | 38.90 | 39.08 | 0.18 | 60 06931 | K | MUDSTONE | CARB. DK. GY. SLD |
| 11 | 39.08 | 39.17 | 0.09 | 60 06931 | K | COAL | C-3. VBRKN |
| 11 | 39.17 | 39.73 | 0.56 | 60 06931 | K | COAL | C-2. BRKN C-6 BANDS WITHIN. |
| 11 | 39.73 | 39.84 | 0.11 | 60 06931 | K | COAL | C-5. SLD C-2 BANDS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------|
| 11 | 39.84 | 40.00 | 0.16 | 60 | 06931 K | COAL | C-3.SLD |
| 11 | 40.00 | 40.31 | 0.31 | 60 | 06931 K | COAL | C-2.BRKN |
| 12 | 40.31 | 40.41 | 0.10 | 60 | 06931 K | COAL | C-3.SLD |
| 12 | 40.41 | 40.54 | 0.13 | 60 | 06931 K | MUDSTONE | CARB.DK.GY.SLD. CLAYEY. |
| 12 | 40.54 | 40.56 | 0.02 | 60 | 06931 K | COAL LOSS | |
| 12 | 40.56 | 41.44 | 0.88 | 60 | 06931 K | COAL | C-4.BRKN BANDED C-2 & MUDST BANDS. |
| 12 | 41.44 | 42.00 | 0.56 | 60 | 06932 | SILTSTONE | SSY.M-DK.GY.LAM.BRKN APPARENT CORE LOSS. UPPER 25 CM SAMPLED |
| 13 | 42.00 | 42.11 | 0.11 | 60 | | MUDSTONE | M.BLK.LAM.SLD |
| 13 | 42.11 | 42.26 | 0.15 | 60 | | MUDSTONE | M.BLK.VSHRD POSSIBLE FAULT CORE SHATTERED WITH TALC INFILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 13 | 42.26 | 43.26 | 1.00 | 60 | | ROCK LOSS | |
| 13 | 43.26 | 44.33 | 1.07 | *60 | | MUDSTONE | M.BLK.LAM.VBRKN SLTST LAM. SHATTERED INTERLAM. CONTAINS COAL STRINGER (UP TO 1 CM). SSD (TOPS UP). |
| 13 | 44.33 | 44.83 | 0.50 | 60 | | ROCK LOSS | |
| 13 | 44.83 | 45.09 | 0.26 | 60 | | MUDSTONE | M.BLK.LAM.VBRKN GRADES TO SLTST AT BASE. |
| 14 | 45.09 | 45.74 | 0.65 | 60 | | SILTSTONE | LT.BLK.LAM.BRKN FINE SS LAM, MINOR BIOTRB. |
| 14 | 45.74 | 46.24 | 0.50 | 60 | | ROCK LOSS | |
| 14 | 46.24 | 46.84 | 0.60 | 60 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.VBRKN |
| 14 | 46.84 | 47.26 | 0.42 | 60 | | ROCK LOSS | |
| 14 | 47.26 | 48.00 | 0.74 | 60 | | SANDSTONE | FG.MOD.LY.GY.THNB.SLD SLTST LAM. VERY MINOR QTZ STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------|
| 15 | 48.00 | 49.27 | 1.27 | 60 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN V.HOMOGENEOUS. NO BEDDING. QTZ STRINGER (UP TO 2 MM). |
| 15 | 49.27 | 49.76 | 0.49 | 60 | | | SANDSTONE | FG.WEL.LT.GY.THKB NO BEDDING. |
| 16 | 49.76 | 51.77 | 2.01 | 61 | | | SANDSTONE | FG.WEL.LT.GY.THKB.VBRKN NUMEROUS FRACTURE SURFACES WITH TALC IN FILL. NO BEDDING. |
| 16 | 51.77 | 52.17 | 0.40 | 61 | | | ROCK LOSS | |
| 17 | 52.17 | 52.70 | 0.53 | 61 | | | SANDSTONE | FG.WEL.LT.GY.THKB.VBRKN NO BEDDING. |
| 17 | 52.70 | 53.98 | 1.28 | 61 | | | SANDSTONE | FG.WEL.LT.GY.THKB.VBRKN NO BEDDING. |
| 18 | 53.98 | 55.73 | 1.75 | 61 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN NO BEDDING. QTZ STRINGERS (UP TO 2 MM). |
| 19 | 55.73 | 56.32 | 0.59 | 61 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN NO BEDDING. SS BREC IN 5 CM QTZ STRINGE R. |
| 19 | 56.32 | 57.03 | 0.71 | 61 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN NO BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------|
| 19 | 57.03 | 57.75 | 0.72 | *61 | | | SANDSTONE | FG.WEL.LT.GY.VTHNB.BRKN SLTST LAM. 3 MM QTZ STRINGERS. |
| 20 | 57.75 | 58.57 | 0.82 | 61 | | | SANDSTONE | FG.WEL.LT.GY.VTHNB.BRKN |
| 20 | 58.57 | 58.90 | 0.33 | 62 | | | SANDSTONE | SLTY.FG.PR.M.GY.VBRKN |
| 20 | 58.90 | 59.12 | 0.22 | 62 | | | ROCK LOSS | |
| 20 | 59.12 | 59.17 | 0.05 | 62 | | | MUDSTONE | SLTY.M.GY POSSIBLE SCOUR FILL. |
| 20 | 59.17 | 59.36 | 0.19 | *62 | | | SILTSTONE | DK.GY.LAM.BRKN SS LAM. |
| 20 | 59.36 | 59.68 | 0.32 | 62 | | | SILTSTONE | SSY.DK.GY.LAM.VBRKN SS LAM. GRADES TO SLTY.SS. AT BASE. |
| 20 | 59.68 | 59.87 | 0.19 | 62 | | | ROCK LOSS | |
| 21 | 59.87 | 61.20 | 1.33 | *63 | | | MUDSTONE | SLTY.M.BLK.LAM.VBRKN SLTST LAM. COASTERS. |
| 22 | 61.20 | 62.31 | 1.11 | 62 | | | MUDSTONE | SLTY.LT.BLK.LAM.VBRKN SLTST LAM. |
| 22 | 62.31 | 62.51 | 0.20 | 62 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------|
| 22 | 62.51 | 62.71 | 0.20 | 61 | | | MUDSTONE | M.BLK.VSHRD BREC MUDST SCOUR FILL. |
| 22 | 62.71 | 62.91 | 0.20 | 61 | | | ROCK LOSS | |
| 23 | 62.91 | 63.12 | 0.21 | 61 | | | MUDSTONE | M.BLK.VSHRD AS ABOVE. |
| 23 | 63.12 | 63.19 | 0.07 | 61 | | | MUDSTONE | M.BLK.SLD VERY FRACTURED WITH QTZ INFILL. |
| 23 | 63.19 | 64.10 | 0.91 | 61 | | | MUDSTONE | M.BLK.LAM.VBRKN |
| 23 | 64.10 | 64.77 | 0.67 | *60 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |
| 24 | 64.77 | 65.46 | 0.69 | 60 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |
| 24 | 65.46 | 66.89 | 1.43 | 61 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |
| 25 | 66.89 | 67.76 | 0.87 | 61 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |
| 25 | 67.76 | 68.72 | 0.96 | 61 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------|
| 26 | 68.72 | 69.34 | 0.62 | 61 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |
| 26 | 69.34 | 70.33 | 0.99 | 62 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. 4 CM SCOUR FILL AT 90 DEGREE S. |
| 27 | 70.33 | 71.34 | 1.01 | *62 | | | MUDSTONE | M.BLK.LAM.BRKN SLTST LAM. |
| 27 | 71.34 | 72.26 | 0.92 | 63 | | | MUDSTONE | M.BLK.LAM.VBRKN SLTST LAM. |
| 27 | 72.26 | 72.56 | 0.30 | 64 | | | ROCK LOSS | |
| 28 | 72.56 | 74.15 | 1.59 | 66 | | | MUDSTONE | M.BLK.LAM.VBRKN SLTST LAM. |
| 29 | 74.15 | 74.42 | 0.27 | 67 | | | MUDSTONE | M.BLK.LAM.VBRKN SLTST LAM. |
| 29 | 74.42 | 74.62 | 0.20 | 67 | | | ROCK LOSS | |
| 29 | 74.62 | 74.78 | 0.16 | 68 | | J | MUDSTONE | CARB.DK.BLK.LAM.VBRKN SLTST LAM. MUDST BREC IN QTZ WITH PYRIT E BLEBS. |
| 29 | 74.78 | 74.82 | 0.04 | 68 | | J | COAL | C-6.DK.BLK.VSHRD POSSIBLE "J" SEAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 29 | 74.82 | 74.83 | 0.01 | 68 | J | ROCK LOSS | |
| 29 | 74.83 | 75.38 | 0.55 | 68 | J | MUDSTONE | CARB. DK. BLK. VBRKN VERY CARB BANDS. |
| 29 | 75.38 | 75.97 | 0.59 | 69 | | SILTSTONE | LT. BLK. LAM. BRKN SS. LAM. INCREASING TO BOTTOM. MUDDY. |
| 29 | 75.97 | 76.19 | 0.22 | 70 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN SLTST LAM. |
| 29 | 76.19 | 76.33 | 0.14 | *70 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN SLTST LAM. |
| 30 | 76.33 | 77.11 | 0.78 | 64 | | SANDSTONE | FG. WEL. LT. GY. VTHNB. BRKN INTERMITTENT SLTST LAM. WITH BIOTRR. & SS D. |
| 30 | 77.11 | 77.53 | 0.42 | 57 | | MUDSTONE | M. BLK. LAM. BRKN SLTST LAM. |
| 30 | 77.53 | 78.25 | 0.72 | *50 | | MUDSTONE | M. BLK. LAM. BRKN SLTST LAM. QTZ STRINGERS. 3CM SHEAR ZONE WITH SCOUR FILL. |
| 31 | 78.25 | 79.55 | 1.30 | 51 | | MUDSTONE | SLTY. M. BLK. LAM. BRKN HIGHLY FRACTURED INTERVALS (UP TO 6 CM) & 2 CM QTZ BAND AT TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 31 | 79.55 | 80.26 | 0.71 | 53 | | MUDSTONE | M. BLK. SLD NO BEDDING. |
| 32 | 80.26 | 80.56 | 0.30 | 53 | | MUDSTONE | M. BLK. SLD NO BEDDING. |
| 32 | 80.56 | 81.33 | 0.77 | 54 | | MUDSTONE | M. BLK. SLD NO BEDDING. QTZ STRINGERS (UP TO 1 CM). SOME BREC. |
| 32 | 81.33 | 81.53 | 0.20 | 55 | | MUDSTONE | M. BLK. VSHRD MUDST BRECCIA. |
| 32 | 81.53 | 81.94 | 0.41 | 55 | | SANDSTONE | FG. MOD. LT. GY. VSHRD SS BRECCIA. |
| 32 | 81.94 | 82.14 | 0.20 | 55 | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD SLTST WISPS. |
| 33 | 82.14 | 83.42 | 1.28 | 56 | | SANDSTONE | FG. MOD. LT. GY. VSHRD GRADES TO SLTST AT BASE. |
| 33 | 83.42 | 83.53 | 0.11 | 57 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. VBRKN |
| 34 | 83.53 | 85.43 | 1.90 | 59 | | SANDSTONE | FG. MOD. LT. GY. LAM. VBRKN SS SHATTERED WITH QTZ & TALC INFILL. SS CONTAINS MINOR SLTST WISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------|
| 34 | 85.43 | 85.64 | 0.21 | 60 | | | SANDSTONE | FG. M. GY. SCOUR FILL. |
| 35 | 85.64 | 86.26 | 0.62 | 61 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. VBRKN SLTST LAMS. SLTST CONTENT INCREASING TO BASE. |
| 35 | 86.26 | 86.36 | 0.10 | 61 | | | SILTSTONE | LT. BLK. LAM. VSHRD BRECCIA. |
| 35 | 86.36 | 86.41 | 0.05 | 61 | | | ROCK LOSS | |
| 35 | 86.41 | 87.52 | 1.11 | *62 | | | SILTSTONE | LI. BLK. LAM. BRKN |
| 36 | 87.52 | 89.42 | 1.90 | *65 | | | SILTSTONE | LT. BLK. LAM. SLD SS LAM. VERY MINOR WRMBUR & SSD. |
| 36 | 89.42 | 89.63 | 0.21 | 63 | | | SILTSTONE | DK. GY. LAM. SLD SS LAM. |
| 37 | 89.63 | 91.55 | 1.92 | 61 | | | SILTSTONE | DK. GY. LAM. SLD SS LAM. VERY MINOR WRMBUR & BIOTRB. |
| 38 | 91.55 | 92.45 | 0.90 | *59 | | | SILTSTONE | DK. GY. LAM. SLD SS LAM. VERY MINOR WRMBUR. |
| 38 | 92.45 | 92.66 | 0.21 | 60 | | | SILTSTONE | DK. GY. LAM. BRKN SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 38 | 92.66 | 92.98 | 0.32 | 60 | | | SANDSTONE | FG. MOD. M. GY. LAM. SLD SLTST WISPS & LAM. |
| 38 | 92.98 | 93.47 | 0.49 | 60 | | | SILTSTONE | DK. GY. LAM. SLD SS LAM. |
| 39 | 93.47 | 95.44 | 1.97 | *62 | | | SILTSTONE | DK. GY. LAM. SLD SS LAM. LOCAL CONCENTRATIONS OF BIOTRB (UP TO 3CM THICK). |
| 39 | 95.44 | 96.24 | 0.80 | 62 | | | SILTSTONE | DK. GY. LAM. SLD |
| 40 | 96.24 | 96.36 | 0.12 | 61 | | | SILTSTONE | DK. GY. LAM. SLD |
| 40 | 96.36 | 98.25 | 1.89 | 61 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN SLTST LAM & SLTY SS BANDS. |
| 41 | 98.25 | 99.32 | 1.07 | 61 | | | SILTSTONE | SSY. DK. GY. LAM. VBRKN 60-40 SLTST-SS. |
| 41 | 99.32 | 99.43 | 0.11 | 61 | | | SILTSTONE | SSY. DK. GY. LAM. SLD SS LAM. |
| 41 | 99.43 | 99.49 | 0.06 | 61 | | | SILTSTONE | M. GY. PHRD SCOUR FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------|
| 41 | 99.49 | 99.87 | 0.38 | 60 | | | SANDSTONE | FG. PR. M. GY. LAM. BRKN SLTST LAM. |
| 41 | 99.87 | 100.03 | 0.16 | 60 | | | SILTSTONE | M. GY. LAM. SLD TUFFITE BANDING. |
| 42 | 100.03 | 100.21 | 0.18 | 60 | | | SILTSTONE | M. GY. LAM. YBRKN TUFFITE LAM FRACTURE SURFACES WITH QTZ INFILL. |
| 42 | 100.21 | 100.24 | 0.03 | 60 | | | ROCK LOSS | |
| 42 | 100.24 | 100.57 | 0.33 | 60 | | | SILTSTONE | LT. GY. THNB. BRKN TUFFACEOUS SLTST. |
| 42 | 100.57 | 100.68 | 0.11 | 60 | | | BENTONITE | LT. GY. VSHRD TUFFITE. |
| 42 | 100.68 | 100.73 | 0.05 | 60 | | | ROCK LOSS | |
| 42 | 100.73 | 101.83 | 1.10 | *60 | | | MUDSTONE | SLTY. DK. GY. SLTST LAM. MUDST BRECCIA IN QTZ STRINGE R. VERY FRACTURED AT BASE. |
| 43 | 101.83 | 102.33 | 0.50 | 60 | | | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT PLANT HASH. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------|
| 43 | 102.33 | 102.67 | 0.34 | 60 | 06933 | | MUDSTONE | CARB. DK. GY. BRKN COALY QTZ BANDS WITHIN. QTZ BAND AT LOW ER 2 CM. LOWER 25 CM SAMPLED. |
| 43 | 102.67 | 102.72 | 0.05 | 60 | 06934 | I | COAL | C-3. SLD |
| 43 | 102.72 | 103.06 | 0.34 | 60 | 06934 | I | COAL | C-2. BRKN |
| 43 | 103.06 | 103.09 | 0.03 | 60 | 06934 | I | MUDSTONE | CARB. DK. GY. SLD |
| 43 | 103.09 | 103.64 | 0.55 | 60 | 06934 | I | COAL | C-2. YBRKN |
| 44 | 103.64 | 103.68 | 0.04 | 60 | 06934 | I | COAL | C-2. BRKN |
| 44 | 103.68 | 103.75 | 0.07 | 60 | 06934 | I | MUDSTONE | CARB. DK. GY. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------|
| 44 | 103.75 | 104.00 | 0.25 | 60 06934 | I | COAL | C-3, SLD BANDED. |
| 44 | 104.00 | 104.16 | 0.16 | 60 06934 | I | MUDSTONE | CARB. DK. GY. SLD COAL STRINGERS. |
| 44 | 104.16 | 104.28 | 0.12 | 60 06934 | I | COAL | C-2, SHRD |
| 44 | 104.28 | 104.29 | 0.01 | 60 06934 | I | MUDSTONE | CARB. DK. GY. SLD |
| 44 | 104.29 | 105.09 | 0.80 | 60 06934 | I | COAL | C-2, YSHRD SHEARED & VERY BROKEN. |
| 44 | 105.09 | 105.19 | 0.10 | 60 06934 | I | COAL | C-3, BRKN BANDED. |
| 44 | 105.19 | 105.33 | 0.14 | 60 06934 | I | COAL | C-4, SLD VITRAIN FLECKS WITHIN. |
| 44 | 105.33 | 105.40 | 0.07 | 60 06934 | I | COAL LOSS | |
| 44 | 105.40 | 105.43 | 0.03 | 60 06934 | I | MUDSTONE | SLTY. DK. GY. SLD |
| 45 | 105.43 | 105.71 | 0.28 | 60 06934 | I | COAL | C-2, SLD BONE COAL BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 45 | 105.71 | 105.91 | 0.20 | 60 06935 | I | COAL LOSS | |
| 45 | 105.91 | 107.59 | 1.68 | 60 06935 | I | COAL | C-1, BRKN |
| 46 | 107.59 | 107.97 | 0.38 | 60 06935 | I | COAL | C-1, SHRD SHEARED & POWDERED, HARD TO TELL GRADE. |
| 46 | 107.97 | 108.34 | 0.37 | 60 06936 | | MUDSTONE | SLTY. M-DK. GY. SLD ABUNDANT COALY PLANT FRAGS. UPPER 25 CM SAMPLED. |
| 46 | 108.34 | 108.95 | 0.61 | 60 | | SILTSTONE | M. GY. LAM. SLD GRADES FROM MUDDY AT TOP TO SANDY AT BASE. |
| 46 | 108.95 | 109.51 | 0.56 | 60 | | SANDSTONE | HG. LT-M. GY SHARP UPPER CONTACT, MINOR PEBBLE CLAST S. (ESPECIALLY NEAR TOP OF UNIT). |
| 47 | 109.51 | 111.13 | 1.62 | *60 | | SANDSTONE | FG. MOD. LT. GY. THNB. BRKN MINOR SLTST LAM & RIP-UP, ONE SET OF SL ICKENSIDES WITH TALC INFILL. |
| 47 | 111.13 | 111.34 | 0.21 | 60 | | SANDSTONE | HG. MEL. LT. GY. THKB |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87025

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 111.34 | 111.49 | 0.15 | 60 | | | SANDSTONE | MG. WEL. LT. GY. BRKN SLTST LAM AT BASE. |
| 48 | 111.49 | 111.53 | 0.04 | 60 | | | CONGLOMERATE | SLD PEBBLES = .5 CM. |
| 48 | 111.53 | 112.59 | 1.06 | 60 | | | SANDSTONE | MG. WEL. LT. GY. THKB. SLD QTZ STRINGERS THROUGHOUT WITH MINOR BRE C. 1 CM CONGLOMERATE BAND NEAR TOP, END OF HOLE. T.D. = 113.39 M. DRILLER'S MARKER. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87025

740

GEOLOGIST : PENMAN

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

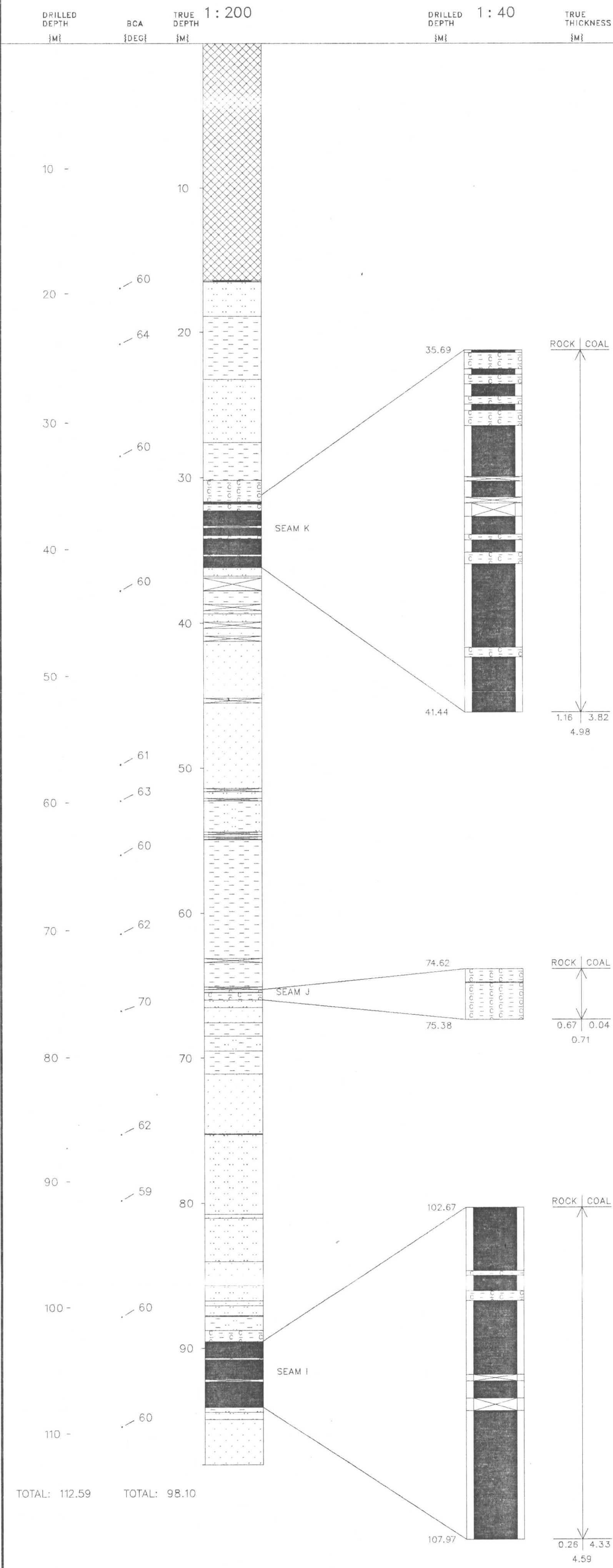


NORTHING: 6344833.0 N
 EASTING: 507123.7 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



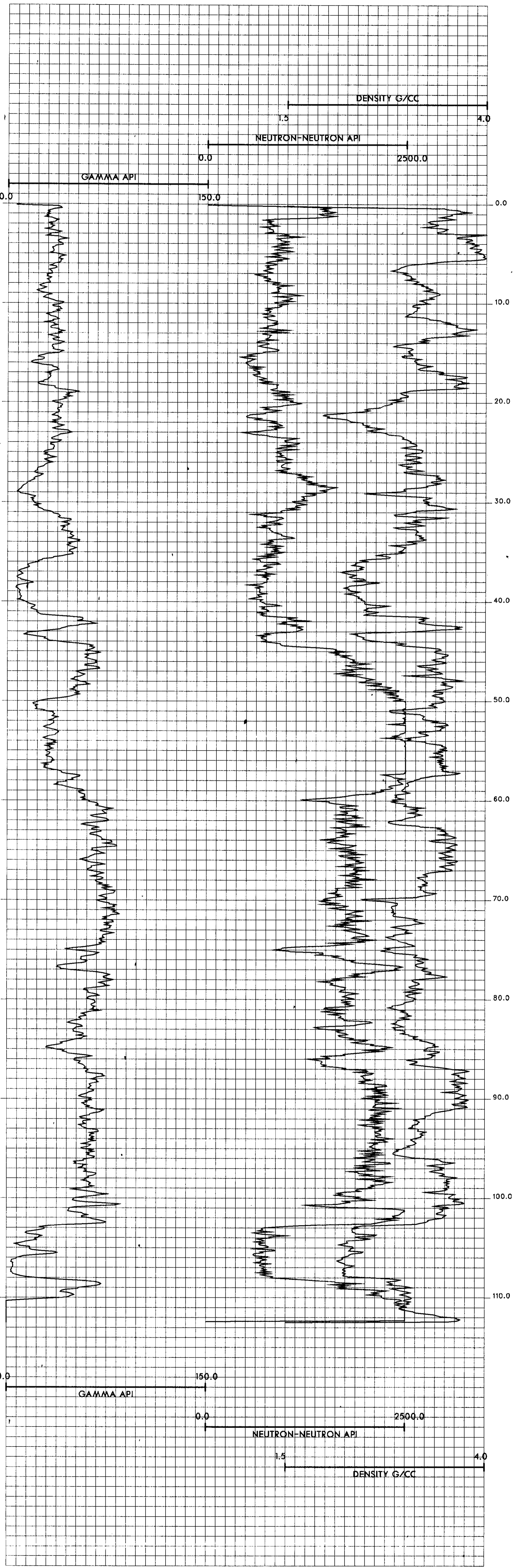
Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

| | |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Datasource: KPNLRDDH87025 Log Date: 08-08-29 Company: CENTURY Geologist: PENMAN | Province: BC Northing: 6344830.00 Lat: 571454 Zone: 9 Easting: 507124.00 Long: 1285255 Measuring Point: GROUND LEVEL Elevation: 1525.3 |
| Scale: 1 to 200.0 Depth Range: 0.0 to 117.0 True Thickness: NO | Comments: 1. LOGGED THROUGH RODS. 2. |
| Logs Plotted: | |
| Description | Axis Range Axis Length Smoothing Points Tool Comments |
| 1. GAMMA API | 0.0 to 150.0 10.0 31 9030A 1 IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 10.0 9 9055A 1 IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 10.0 15 9030A 1 IN PIPE |



KPNLRDDH87026

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87026

DATE - 03/01/88

- HISTORY -

START DATE - 09/30/87

END DATE - 10/02/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - LEE

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - INTERSECTED H (OVT), H/I (OVT), I (PART), I (PART)
 , H/I, H, PH

- LOCATION -

PROVINCE - BC
ELEVATION - 1444.09

ZONE - 9
NORTHING - 6346044.95
EASTING - 508677.41

LICENCE/LEASE NUMBER -

LATITUDE - 571533
LONGITUDE - 1285122

- ORIENTATION -

LENGTH - 181.45

INCLINATION - 90.0
AZIMUTH - 0.0

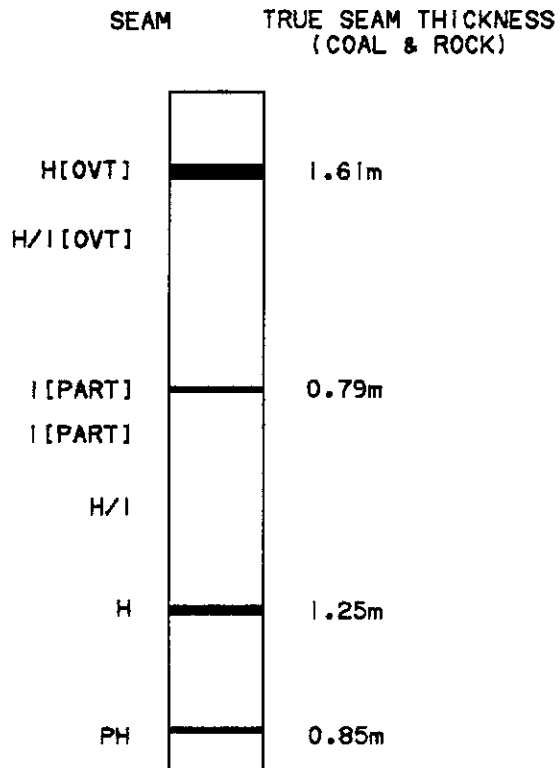
CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 7.62
AQUIFER DEPTHS (M) - 0.00
 0.00
LOST CIRC. DEPTHS (M) - 0.00
 0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87026**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:(205057)880072012.L0



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 7.62 | 7.62 | 39 | | CASING | CASING DEPTH |
| 1 | 7.62 | 7.73 | 0.11 | 39 | | SANDSTONE | MG.M.GY.VBRKN HIGHLY WEATHERED MED YELL-BN, FE STAINED, TWIST-OFFS. |
| 1 | 7.73 | 7.87 | 0.14 | 39 | | SILTSTONE | M.GY.LAM.VBRKN OCCASIONAL MUDST LAM. |
| 1 | 7.87 | 8.06 | 0.19 | 39 | | SILTSTONE | M.GY.LAM.SSD.BRKN LOAD CASTS - TOPS DOWN, SLTST RIP-UPS, POSSIBLE WRMBUR, OCCASIONAL MUDST LAM. |
| 1 | 8.06 | 8.22 | 0.16 | 39 | | SILTSTONE | LT.GY.SLD OCCASIONAL MUDST LAM & DISCONTINUOUS MI SPS, OCCASIONAL LISTRIC SURFACE. |
| 1 | 8.22 | 8.49 | 0.27 | *39 | | SANDSTONE | FG.LT.GY.VTHNB.BRKN OCCASIONAL SLTST & DISCONTINUOUS MISP. |
| 1 | 8.49 | 9.39 | 0.90 | 39 | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN WITH SLTST LAM BANDS, WRMBUR VERT AND H ORIZONTAL, OCCASIONAL RIPUP CLAST. |
| 2 | 9.39 | 10.56 | 1.17 | *38 | | SANDSTONE | FG.M.GY.VTHNB.BRKN BANDS OF SLTST LAM, SOME DISCONTINUOUS OCCASIONAL SS RIP-UPS, OCCASIONAL QTZ F RACTURE FILL, POSSIBLE WRMBUR. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 10.56 | 10.65 | 0.09 | 37 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD SLTST LAM. |
| 2 | 10.65 | 10.92 | 0.27 | 37 | | SANDSTONE | FG.LT.GY.VTHNB.BRKN WITH ABUNDANT 1/2 MM BLACK GRAINS. |
| 2 | 10.92 | 11.20 | 0.28 | 37 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN WITH SLTST LAM, BED OF FG SS WITH BLACK GRAINS NEAR TOP, OCCASIONAL SS RIP-UPS |
| 3 | 11.20 | 13.12 | 1.92 | *35 | | SANDSTONE | VFG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST LAM, QTZ FRACTURE FILL, OCCA SIONAL DISCONTINUOUS QTZ FRACTURE FILL, FG SS AT BASE. |
| 4 | 13.12 | 13.55 | 0.43 | 32 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN DISCONTINUOUS SLTST LAM. |
| 4 | 13.55 | 13.85 | 0.30 | *31 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |
| 4 | 13.85 | 14.99 | 1.14 | 32 | | SANDSTONE | VFG.LT-M.GY.VTHNB.WRMBU.BRKN SLTST LAM, OCCASIONAL FG SS BED, MINOR SSD. |
| 5 | 14.99 | 16.32 | 1.33 | *34 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN WITH SLTST LAM, OCCASIONAL QTZ FRACTURE FILL, SMALL SCALE FRACTURING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------|
| 5 | 16.32 | 16.54 | 0.22 | 28 | | | SILTSTONE | M-DK.GY.LAM.VBRKN WITH COAL STRINGERS, RIPPLE MARKS, POSSIBLE CORE LOSS. |
| 5 | 16.54 | 16.62 | 0.08 | 27 | | | SILTSTONE | M-DK.GY.LAM.VBRKN POSSIBLE CORE LOSS. |
| 5 | 16.62 | 16.95 | 0.33 | 25 | | | SILTSTONE | DK.GY.LAM.BRKN INTERLAM WITH MUDST, ABUNDANT PLANT FRAGS. |
| 5 | 16.95 | 17.04 | 0.09 | 24 | | | MUDSTONE | DK.GY.LAM.BRKN WITH COAL STRINGERS, 1 CM LT. GY. CLAY. BAND AT BASE. |
| 6 | 17.04 | 17.15 | 0.11 | 23 | | | SILTSTONE | M-DK.GY.LAM.BRKN WITH MUDST LAM, COAL STRINGERS. |
| 6 | 17.15 | 18.55 | 1.40 | *17 | | | SANDSTONE | YFG.M.GY.VTHNB.BRKN WITH SLTST AND MUDST LAM, OCCASIONAL DISCONTINUOUS COAL STRINGERS, RARE COALY PLANT FRAG. |
| 6 | 18.55 | 18.93 | 0.38 | 19 | 06960 | | MUDSTONE | DK.GY.LAM.SLD WITH NUMEROUS COAL STRINGERS, QZ VENS CROSS CUT BEDDING, NUMEROUS LISTRIC SURFACES. LOWER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------|
| 7 | 18.93 | 19.27 | 0.34 | 19 | 06961 | H OVT | COAL LOSS | |
| 7 | 19.27 | 19.32 | 0.05 | 20 | 06961 | H OVT | COAL | C-3.BLK.LAM.SLD |
| 7 | 19.32 | 19.40 | 0.08 | 20 | 06961 | H OVT | COAL | C-4.BLK.LAM.SLD |
| 7 | 19.40 | 19.63 | 0.23 | 20 | 06961 | H OVT | COAL | C-5.BLK.LAM.BRKN |
| 7 | 19.63 | 19.64 | 0.01 | 20 | 06961 | H OVT | COAL | C-1.BLK.SLD SHARP UPPER CONTACTS (THEREFORE LOWER STRAT. CONTACT). |
| 7 | 19.64 | 20.18 | 0.54 | 21 | 06961 | H OVT | COAL | C-1.BLK.BRKN RARE C-2 AT BASE. GRADATIONAL LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------|
| 7 | 20.18 | 20.20 | 0.02 | 22 06961 | H OVT | COAL | C-2.BLK.BRKN |
| 7 | 20.20 | 20.45 | 0.25 | 22 06961 | H OVT | COAL LOSS | |
| 7 | 20.45 | 20.81 | 0.36 | 22 06961 | H OVT | ROCK LOSS | |
| 7 | 20.81 | 21.15 | 0.34 | 23 06961 | H OVT | COAL | C-4.BLK.VBRKN COMMON THIN MUDST LAMS (ESP NEAR BASE). |
| 7 | 21.15 | 21.33 | 0.18 | 24 06961 | H OVT | COAL | C-3.BLK.VSHRD |
| 7 | 21.33 | 21.74 | 0.41 | 24 06961 | H OVT | COAL LOSS | |
| 7 | 21.74 | 21.78 | 0.04 | 25 06961 | H OVT | MUDSTONE | CARB.BLK.VBRKN |
| 7 | 21.78 | 21.82 | 0.04 | 25 06961 | H OVT | COAL | C-1.BLK.BRKN ABRUPT UPPER & LOWER CONTACTS. |
| 7 | 21.82 | 21.87 | 0.05 | 25 06961 | H OVT | MUDSTONE | CARB.BLK.BRKN |
| 7 | 21.87 | 22.13 | 0.26 | 25 06961 | H OVT | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------|
| 7 | 22.13 | 22.18 | 0.05 | 25 06961 | H OVT | COAL | C-6.BLK.VBRKN INTERLAMINATED MUDST A/A & C-1/C-2 COAL (UP TO .5 CM THICK). |
| 8 | 22.18 | 22.25 | 0.07 | 25 06961 | H OVT | MUDSTONE | CARB.BLK.SHRD OCCASIONAL THIN C-6 ZONES. |
| 8 | 22.25 | 22.32 | 0.07 | 26 06961 | H OVT | COAL LOSS | |
| 8 | 22.32 | 22.38 | 0.06 | 26 06961 | H OVT | COAL | C-1.BLK.PHRD |
| 8 | 22.38 | 22.43 | 0.05 | 26 06961 | H OVT | COAL | C-3.BLK.PHRD |
| 8 | 22.43 | 22.49 | 0.06 | 26 06961 | H OVT | COAL | C-2.BLK.SLD |
| 8 | 22.49 | 22.52 | 0.03 | 26 06961 | H OVT | COAL | C-4.BLK.PHRD |
| 8 | 22.52 | 22.54 | 0.02 | 26 06961 | H OVT | COAL | C-1.BLK.VBRKN |
| 8 | 22.54 | 22.83 | 0.29 | 26 06961 | H OVT | COAL | C-2.BLK.SLD VERY COMMON C-1 THROUGHOUT. |
| 8 | 22.83 | 22.85 | 0.02 | 27 06961 | H OVT | COAL | C-1.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 22.85 | 22.86 | 0.01 | 27 | 06961 H OVT | COAL | C-4.BLK.VBRKN |
| 8 | 22.86 | 22.90 | 0.04 | 27 | 06961 H OVT | MUDSTONE | CARB.BLK.SLD ABRUPT LOWER CONTACT. |
| 8 | 22.90 | 22.91 | 0.01 | 27 | 06961 H OVT | COAL | C-5.BLK.SLD |
| 8 | 22.91 | 23.05 | 0.14 | 27 | 06961 H OVT | COAL | C-1.BLK.BRKN OCCASIONAL QTZ VEINING IN LOWER 6 CM. |
| 8 | 23.05 | 23.28 | 0.23 | 27 | 06962 | MUDSTONE | CARB.BLK.SLD SLIGHT SLTY CARB MUDST WITH OCCASIONAL THIN COAL LAMS W/IN. |
| 8 | 23.28 | 23.73 | 0.45 | *28 | 06962 | SILTSTONE | SSY.M.GY.LAM.BRKN INTLAM VFG SS/SLTST (50/50). LAMS ARE T HIN (<2 MM) & HAVE SHARP HORIZONTAL CON TACTS. UPPER 2 CM SAMPLED. |
| 9 | 23.73 | 23.79 | 0.06 | 29 | | COAL | C-4.BLK.VBRKN |
| 9 | 23.79 | 23.82 | 0.03 | 30 | | SILTSTONE | DK.GY.VBRKN SHEARED, QTZ VEINS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 9 | 23.82 | 23.99 | 0.17 | 30 | | SANDSTONE | VFG.M.GY.VTHNB.SLD QTZ VEINING WITH BRECCIA, SLTST BEDS. |
| 9 | 23.99 | 24.39 | 0.40 | *32 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SLTST LAM, OCCASIONAL TROUGH X-BDG, CLA Y FILLED FRACTURES AT BASE, OCC BLK GRA INS. |
| 9 | 24.39 | 24.59 | 0.20 | 32 | | SANDSTONE | VFG.M.GY.VTHNB.VBRKN AS ABOVE. |
| 9 | 24.59 | 24.74 | 0.15 | 31 | | ROCK LOSS | |
| 9 | 24.74 | 25.81 | 1.07 | 30 | | SANDSTONE | VFG.M.GY.VTHNB.XBDG.BRKN WITH SLTY LAM, OCCASIONAL TROUGH X-BDG, BDG IS VTHNB TO LAM. |
| 10 | 25.81 | 26.75 | 0.94 | 29 | | SANDSTONE | VFG.M.GY.LAM.XBDG.SLD WITH SLTY LAM, TROUGH X-BDG - TOPS DOWN |
| 10 | 26.75 | 27.06 | 0.31 | 28 | | SANDSTONE | VFG.M.GY.LAM.XBDG.SLD AS ABOVE WITH SSD RIP-UP CLASTS AND LOA D CASTS - TOPS DOWN. |
| 10 | 27.06 | 27.74 | 0.68 | 27 | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN AS ABOVE WITHOUT SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------|
| 11 | 27.74 | 28.75 | 1.01 | 26 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN WITH SLTY LAMS, TROUGH X-BDG - TOPS DOWN. |
| 11 | 28.75 | 29.68 | 0.93 | *24 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN AS ABOVE. |
| 12 | 29.68 | 31.47 | 1.79 | *34 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN AS ABOVE. |
| 13 | 31.47 | 31.66 | 0.19 | 33 | | | SANDSTONE | VFG.M.GY.LAM.VBRKN AS ABOVE, TWIST-OFF AT BASE. |
| 13 | 31.66 | 31.81 | 0.15 | 33 | | | ROCK LOSS | |
| 13 | 31.81 | 33.10 | 1.29 | *33 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN AS ABOVE, X-BDG - TOPS DOWN, SMALL FAULT WITH <1 CM AT .70 M DOWN. |
| 13 | 33.10 | 33.37 | 0.27 | 33 | | | SANDSTONE | VFG.M.GY.LAM.VBRKN AS ABOVE. |
| 14 | 33.37 | 34.57 | 1.20 | *33 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN AS ABOVE, DISTURBED MUDST LAM WITH RIP-UPS AT 0.81 M DOWN. |
| 14 | 34.57 | 34.79 | 0.22 | 33 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 34.79 | 34.88 | 0.09 | 32 | | | ROCK LOSS | |
| 14 | 34.88 | 35.33 | 0.45 | 32 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN AS ABOVE. |
| 15 | 35.33 | 35.94 | 0.61 | *32 | | | SANDSTONE | VFG.M.GY.VTHNB.XBDG.BRKN WITH SLTY LAM, OCCASIONAL X-BDG, BDG.BE COMES LAM AT BASE. |
| 15 | 35.94 | 36.48 | 0.54 | 32 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.VBRKN AS ABOVE. |
| 15 | 36.48 | 36.58 | 0.10 | 33 | | | ROCK LOSS | |
| 15 | 36.58 | 36.63 | 0.05 | 33 | | | BRECCIA | M.GY.VBRKN QTZ VEIN WITH VFG.SS.BRECCIA. |
| 15 | 36.63 | 37.37 | 0.74 | 33 | | | SANDSTONE | VFG.M.GY.LAM.XBDG.BRKN WITH SLTY LAM, OCCASIONAL BLACK GRAINS, SLTY BAND AT 0.25 M DOWN WITH VFG.SS RIP-UP, OCCASIONAL X-BDG, QTZ VEINING AT BASE. |
| 16 | 37.37 | 37.58 | 0.21 | 34 | | | SANDSTONE | VFG.M.GY.LAM.VBRKN WITH SLTY LAM, FRACTURED WITH CLAY FILL. |
| 16 | 37.58 | 37.67 | 0.09 | 34 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 16 | 37.67 | 38.87 | 1.20 | 34 | | | SANDSTONE | YFG.M.GY.LAM.XBDG.BRKN AS ABOVE WITH ABUNDANT TROUGH X-BDG - T OPS DOWN. |
| 16 | 38.87 | 39.40 | 0.53 | *35 | | | SANDSTONE | YFG.M.GY.LAM.XBDG.SLD AS ABOVE, OCCASIONAL WRMBUR NEAR BASE. |
| 17 | 39.40 | 39.74 | 0.34 | 34 | | | SANDSTONE | YFG.M.GY.VTHNB.BRKN OCCASIONAL SLTY LAM, BAND OF 1 MM BLACK GRAINS NEAR BASE. |
| 17 | 39.74 | 40.24 | 0.50 | *33 | | | SANDSTONE | YFG.M.GY.LAM.BRKN INTERLAM WITH SLTST, OCCASIONAL LOAD CA ST AND RIP-UP. |
| 17 | 40.24 | 40.77 | 0.53 | *35 | | | SANDSTONE | YFG.M.GY.LAM.SSD.BRKN BDG IS LAM TO VTHNB, SLTST LAMS, OCCASI ONAL 1-5 MM MUDST CLASTS. OCC X-BDG. |
| 17 | 40.77 | 40.84 | 0.07 | 40 | | | SANDSTONE | YFG.M.GY.LAM.BRKN MODERATELY CONSOLIDATED, HIGHLY FRACTUR ED, SLTST LAM. |
| 17 | 40.84 | 41.18 | 0.34 | *43 | | | SANDSTONE | YFG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, OCCASIONAL QTZ VEI N, ABUNDANT SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 17 | 41.18 | 41.40 | 0.22 | 41 | | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD PROBABLE CORE LOSS, MUDST RIP-UPS ~3 CM , QTZ FRACTURE FILL, SHARP CONTACT WITH ABOVE. |
| 18 | 41.40 | 41.62 | 0.22 | 40 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN OCCASIONAL SLTST LAM, QTZ VEINING, FRAC TURING. |
| 18 | 41.62 | 41.73 | 0.11 | *39 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH SLTST LAM. |
| 18 | 41.73 | 41.85 | 0.12 | 39 | | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD ABUNDANT BLACK PELLETS 1.5 MM. |
| 18 | 41.85 | 42.55 | 0.70 | *39 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN FINER GRAINED LAM, OCCASIONAL BLACK PEL LETS, OCCASIONAL BAND OF QTZ VEINING. |
| 18 | 42.55 | 42.76 | 0.21 | 40 | | | SANDSTONE | MG.LT-M.GY.VTHNB.YBRKN NUMEROUS QTZ VEINS WITH SOME BRECCIA. |
| 18 | 42.76 | 42.87 | 0.11 | 41 | | | ROCK LOSS | |
| 18 | 42.87 | 43.48 | 0.61 | 42 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN FINER GRAINED LAM, OCCASIONAL MUDST RIP -UP UP TO 3 x 3 CM, QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 19 | 43.48 | 43.52 | 0.04 | 43 | | SANDSTONE | MG.LT-M.GY.BRKN POORLY CONSOLIDATED, SOFT. |
| 19 | 43.52 | 44.03 | 0.51 | 43 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN OCCASIONAL FINER GRAINED BED, SLTST AND MUDST LAM, OCCASIONAL CG SS BEDS, QTZ FRACTURE FILL. |
| 19 | 44.03 | 44.12 | 0.09 | 44 | | ROCK LOSS | |
| 19 | 44.12 | 44.27 | 0.15 | 45 | | SILTSTONE | M.GY.VTHNB.YBRKN WITH FG SS LAM, MUDST LAM AT BASE. |
| 19 | 44.27 | 44.37 | 0.10 | *45 | | SANDSTONE | FG.LT-M.GY.SLD WITH SLTY WISPS. |
| 19 | 44.37 | 44.58 | 0.21 | 45 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH DISCONTINUOUS SLTST LAM. |
| 19 | 44.58 | 45.13 | 0.55 | 45 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH FINER GRAINED WISPS, OCCASIONAL QT Z FRACTURE FILL. |
| 19 | 45.13 | 45.30 | 0.17 | 46 | | SILTSTONE | LT-M.GY.VTHNB.BRKN WITH FG SS LAM, QTZ VEINS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 45.30 | 45.41 | 0.11 | 46 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN |
| 20 | 45.41 | 46.02 | 0.61 | *46 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH OCCASIONAL SLTST LAM, SLTY WISPS. |
| 20 | 46.02 | 46.71 | 0.69 | 42 | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN INTERBED WITH SLTST, SSD - TOPS DOWN. |
| 20 | 46.71 | 46.83 | 0.12 | 40 | | SANDSTONE | FG.M.GY.VTHNB.SLD OCCASIONAL SLTY WISP. |
| 20 | 46.83 | 47.24 | 0.41 | 38 | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH SLTST, ABUNDANT SSD - TOPS DOWN. |
| 21 | 47.24 | 47.40 | 0.16 | 36 | | SILTSTONE | M.GY.MAS.BRKN SLIGHTLY MUDDY. |
| 21 | 47.40 | 48.69 | 1.29 | *32 | 06963 | MUDSTONE | CARB.M-DK.GY.MAS.BRKN SILTY AT TOP GRADING DOWN TO SLIGHTLY C ARB. MUDST. TOWARDS MIDDLE OF UNIT WITH RARE THIN COAL LAMS. LOWER CONTACT = RO CK BREAK. LOWER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------|
| 21 | 48.69 | 48.79 | 0.10 | 34 | 06964 | H/I OVT | COAL | C-3.BLK.PHRD |
| 21 | 48.79 | 48.96 | 0.17 | 35 | 06964 | H/I OVT | COAL LOSS | |
| 21 | 48.96 | 49.20 | 0.24 | 36 | 06964 | H/I OVT | COAL | C-3.BLK.PHRD COMMON C=2 M/IN. |
| 21 | 49.20 | 49.23 | 0.03 | 36 | 06964 | H/I OVT | COAL | C-4.BLK.PHRD |
| 21 | 49.23 | 49.26 | 0.03 | 36 | 06964 | H/I OVT | COAL | C-3.BLK.PHRD |
| 22 | 49.26 | 49.35 | 0.09 | 36 | 06964 | H/I OVT | COAL | C-3.BLK.SHRD POORLY CONSOLIDATED, SOFT, HIGHLY SHEARED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 49.35 | 49.72 | 0.37 | 37 | 06965 | | MUDSTONE | DK.GY.LAM.BRKN COAL STRINGERS NEAR TOP, OCCASIONAL SLT ST LAM, NUMEROUS BIVALVES, OCCASIONAL L ISTRIC SURFACES, SLTY TOWARDS BASE, QTZ FRACTURE FILL AT TOP. UPPER 25 CM SAMP LED. |
| 22 | 49.72 | 49.84 | 0.12 | *38 | | | SANDSTONE | LT-M.GY.VTHNB.BRKN WITH MUDST LAM. |
| 22 | 49.84 | 50.04 | 0.20 | 38 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST LAM, LISTRIC SURFACES. |
| 22 | 50.04 | 50.09 | 0.05 | 37 | | | SILTSTONE | SSY.M.GY.LAM.SLD WITH MUDST LAM, QTZ FRACTURE FILL AT BA SE. |
| 22 | 50.09 | 50.16 | 0.07 | 37 | | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD |
| 22 | 50.16 | 50.25 | 0.09 | 37 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL MUDST LAM. |
| 22 | 50.25 | 50.34 | 0.09 | 37 | | | SILTSTONE | SSY.DK.GY.LAM.SSD.SLD WITH FG SS RIP-UPS AND WISPS. |
| 22 | 50.34 | 50.50 | 0.16 | 37 | | | SANDSTONE | MG.LT-M.GY.BRKN WITH SOME FG BEDS, FRACTURED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 22 | 50.50 | 51.17 | 0.67 | *36 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST & MUDST LAM, BANDS OF BLACK PELLETS, SSD - TOPS DOWN. |
| 23 | 51.17 | 51.57 | 0.40 | 37 | | SANDSTONE | VFG.M.GY.VTHNB.SSD.SLD WITH SLTST WISPS AND LAM, SOME BIOTRB. |
| 23 | 51.57 | 51.67 | 0.10 | 38 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD OCCASIONAL SLTY WISP. |
| 23 | 51.67 | 51.75 | 0.08 | *38 | | SANDSTONE | VFG.M.GY.LAM.SSD.SLD WITH SLTST LAM, OCCASIONAL MUDST LAM. |
| 23 | 51.75 | 51.85 | 0.10 | 38 | | SANDSTONE | FG.M.GY.VTHNB.BRKN OCCASIONAL DISCONTINUOUS SLTST LAM. |
| 23 | 51.85 | 52.03 | 0.18 | 39 | | SANDSTONE | VFG.M.GY.VTHNB.WRMBU.BRKN WITH SLTST LAM, WRMBUR - TOPS DOWN. |
| 23 | 52.03 | 52.14 | 0.11 | 40 | | SANDSTONE | VFG.M.GY.VTHNB.SLD OCCASIONAL DISCONTINUOUS MUDST LAM. |
| 23 | 52.14 | 53.01 | 0.87 | 42 | | SANDSTONE | FG.LT-M.GY.BRKN OCCASIONAL SLTY LAM, OCCASIONAL QTZ & SIDERITE VEIN, OCCASIONAL COARSER GRAINED BEDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 23 | 53.01 | 53.17 | 0.16 | 45 | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN WITH MUDST LAM CONTAINING SS CLASTS. SOME COARSE GRAINS. |
| 24 | 53.17 | 53.57 | 0.40 | 46 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN OCCASIONAL MUDST RIP-UP, DISCONTINUOUS MUDST WISPS AT BASE. |
| 24 | 53.57 | 53.66 | 0.09 | 47 | | MUDSTONE | DK.GY.LAM.BRKN WITH FG SS LAM. |
| 24 | 53.66 | 53.97 | 0.31 | *48 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN MUDST WISPS AND RIP-UPS. |
| 24 | 53.97 | 54.63 | 0.66 | 44 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH FG SS BEDS, BANDS OF >1 MM QTZ GRAINS, MUDST CLASTS, OCCASIONAL QTZ VEIN. |
| 24 | 54.63 | 54.87 | 0.24 | 41 | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN WITH BANDS (1 CM) OF VCG SS, MUDST RIP-UPS UP TO 3 CM LONG. |
| 24 | 54.87 | 55.06 | 0.19 | 39 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH OCCASIONAL MUDST BED AND MM RIP-UP S. SOME CONCENTRATED IN BANDS, QTZ VEIN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 55.06 | 55.88 | 0.82 | *35 | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN WITH BEDS OF VCG SS AND MUDST LAM AND R IP-UPS (3 CM), QTZ VEINING. |
| 25 | 55.88 | 56.17 | 0.29 | 34 | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN WITH FG BEDS, SCATTERED GRANULES, MM MU DST CLASTS. |
| 25 | 56.17 | 56.23 | 0.06 | 34 | | SANDSTONE | MG. LT-M. GY. VTHNB. SLD AS ABOVE. |
| 25 | 56.23 | 56.87 | 0.64 | *33 | | MUDSTONE | SLTY. DK. GY. LAM. SSD. BRKN WITH GRADED MG SS TO SSY SLTST BEDS. TO PS DOWN, OCC SS RIP-UP, BANDS OF MG SS (VTHNB WITH OCCASION AL MUDST WISP-9 CM THICK 14 CM APART). |
| 26 | 56.87 | 57.17 | 0.30 | 34 | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN WITH BANDS OF LAM SS AND MUDST. |
| 26 | 57.17 | 58.00 | 0.83 | 35 | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN WITH MUDST WISPS AND RIP-UPS. |
| 26 | 58.00 | 58.21 | 0.21 | 36 | | SANDSTONE | FG. LT-M. GY. LAM. SSD. BRKN WITH MUDST LAM, ABUNDANT SSD - TOPS DOM N. |
| 26 | 58.21 | 58.69 | 0.48 | 36 | | SANDSTONE | FG. LT-M. GY. VTHNB. SSD. SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 26 | 58.69 | 58.89 | 0.20 | 37 | | SANDSTONE | FG. LT-M. GY. LAM. SSD. SLD AS ABOVE. |
| 27 | 58.89 | 59.05 | 0.16 | *37 | | SANDSTONE | SLTY. YFG. M. GY. LAM. SLD INTERLAM WITH MUDST. |
| 27 | 59.05 | 59.17 | 0.12 | 37 | | SANDSTONE | FG. LT-M. GY. SLD OCCASIONAL QTZ FILLED FRACTURE, DISCONTINUOUS SLTST LAM. |
| 27 | 59.17 | 59.28 | 0.11 | 37 | | SILTSTONE | M. GY. LAM. SLD WITH MUDST LAM. |
| 27 | 59.28 | 59.55 | 0.27 | 37 | | SANDSTONE | FG. LT-M. GY. VTHNB. BRKN WITH SLTST AND MUDST LAM, POSSIBLE BIVALVES, PYRITE BLEBS AT TOP. |
| 27 | 59.55 | 60.21 | 0.66 | 36 | | SANDSTONE | MG. M. GY. VTHNB. BRKN WITH DISCONTINUOUS FINER GRAINED LAM GIVING ALMOST MOTTLED APPEARANCE, BECOMES MUDDY AT BASE. |
| 27 | 60.21 | 60.66 | 0.45 | 36 | | MUDSTONE | DK. GY. SLD WITH FINE QTZ GRAINS DECREASE DOWNWARDS GIVING SPECKLED LOOK. |
| 28 | 60.66 | 60.91 | 0.25 | 35 | | MUDSTONE | SLTY. DK. GY. LAM. BRKN NUMEROUS FRACTURES WITH FERGANOCHONCHA BIVALVES AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 28 | 60.91 | 62.12 | 1.21 | 35 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN AS ABOVE WITHOUT BIVALVES. |
| 28 | 62.12 | 62.70 | 0.58 | *34 | | | SILTSTONE | DK. GY. LAM. BRKN BECOMES SANDY DOWNWARDS. |
| 29 | 62.70 | 63.23 | 0.53 | 34 | | | SANDSTONE | SLTY. VFG. M-DK. GY. LAM. BRKN WITH SSSY LAM AND RIP-UPS. |
| 29 | 63.23 | 63.28 | 0.05 | 35 | | | SILTSTONE | M. GY. LAM. SHRD HIGHLY FRACTURED WITH CLAY & QTZ FILL, POORLY CONSOLIDATED. |
| 29 | 63.28 | 64.75 | 1.47 | *35 | | | SANDSTONE | SLTY. VFG. M. GY. LAM. BRKN W/ SSSY LAM (ESPECIALLY TOWARDS BASE). SOME SSSY LAMS ARE DISCONTINUOUS. |
| 30 | 64.75 | 65.12 | 0.37 | 37 | | | SANDSTONE | SLTY. VFG. M. GY. LAM. BRKN AS ABOVE. |
| 30 | 65.12 | 65.89 | 0.77 | *38 | | | SANDSTONE | SLTY. VFG. M. GY. LAM. SSD. BRKN AS ABOVE. OCCASIONAL TALC. FILLED FRACTURES. |
| 30 | 65.89 | 66.05 | 0.16 | 35 | | | SILTSTONE | M. GY. VTHNB. SLD WITH SSSY BED. |
| 30 | 66.05 | 66.32 | 0.27 | 34 | | | SILTSTONE | SSY. M. GY. VTHNB. BRKN WITH SSSY LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------|
| 30 | 66.32 | 66.73 | 0.41 | 32 | | | SANDSTONE | FG. M. GY. LAM. SLD WITH SLTY INTERLAM, WRMBUR - TOPS DOWN. |
| 31 | 66.73 | 66.78 | 0.05 | 30 | | | BRECCIA | M-DK. GY. BRKN CLAY FILLED FRACTURES WITH SLTY SS BRECCIA. |
| 31 | 66.78 | 66.90 | 0.12 | 30 | | | SANDSTONE | VFG. M. GY. LAM. BRKN INTERLAM WITH FG SS, CLAY FILLED FRACTURES. |
| 31 | 66.90 | 67.43 | 0.53 | 27 | | | SANDSTONE | FG. M. GY. VTHNB. SSD. BRKN WITH VFG. SS BEDS. |
| 31 | 67.43 | 67.69 | 0.26 | *25 | | | SANDSTONE | FG. M. GY. LAM. SLD AS ABOVE. |
| 31 | 67.69 | 67.92 | 0.23 | 26 | | | SANDSTONE | FG. M. GY. VTHNB. BRKN AS ABOVE. |
| 31 | 67.92 | 68.13 | 0.21 | 27 | | | SILTSTONE | M. GY. LAM. SLD WITH FG. SS LAM, OCCASIONAL QTZ VEIN. |
| 31 | 68.13 | 68.52 | 0.39 | 29 | | | SILTSTONE | M. GY. LAM. BRKN AS ABOVE. OCCASIONAL MUDST. LAM. |
| 31 | 68.52 | 68.81 | 0.29 | 30 | | | SANDSTONE | VFG. M. GY. VTHNB. SSD. BRKN WITH FG. SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 32 | 68.81 | 69.05 | 0.24 | 32 | | SANDSTONE | FG.M.GY.LAM.BRKN INTERLAM WITH SLTST. |
| 32 | 69.05 | 69.45 | 0.40 | 33 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN WITH SLTST BEDS, OCCASIONAL TALC FRACTURE FILL. |
| 32 | 69.45 | 69.54 | 0.09 | 35 | | SANDSTONE | FG.M.GY.LAM.SLD WITH SLTST LAM. |
| 32 | 69.54 | 70.82 | 1.28 | *38 | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH SLTST INTERBEDS AND LAM, OCCASIONAL L. QZ VEIN & FRACTURE FILL. |
| 33 | 70.82 | 71.08 | 0.26 | 40 | | SANDSTONE | FG.M.GY.VTHNB.BIOTR.BRKN WITH SLTST BEDS, MINOR SSD. |
| 33 | 71.08 | 71.25 | 0.17 | 41 | | SANDSTONE | FG.M.GY.LAM.SLD WITH SLTST LAM. |
| 33 | 71.25 | 71.28 | 0.03 | 41 | | SANDSTONE | FG.M.GY.LAM.SLD |
| 33 | 71.28 | 71.42 | 0.14 | 41 | | SANDSTONE | MG.M.GY.WRMBU.SLD WRMBUR - TOPS DOWN. |
| 33 | 71.42 | 71.72 | 0.30 | 42 | | SANDSTONE | FG.M.GY.BRKN MUDDY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------|
| 33 | 71.72 | 72.16 | 0.44 | 43 | | SILTSTONE | M-DK.GY.LAM.WRMBU.BRKN WITH SSSY LAM, NUMEROUS WRMBUR - TOPS DOWN. |
| 33 | 72.16 | 72.35 | 0.19 | 43 | | BRECCIA | BRKN QZ VEIN WITH SLTST BRECCIA, SOME YELLO M. STAINING. |
| 33 | 72.35 | 72.56 | 0.21 | *44 | | SILTSTONE | M.GY.LAM.SSD.SLD WITH VFG SS LAM. |
| 33 | 72.56 | 72.82 | 0.26 | 47 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL SLTST BEDS & LAM. |
| 34 | 72.82 | 72.95 | 0.13 | *49 | | SANDSTONE | FG.M.GY.VTHNB.SLD OCCASIONAL DISCONTINUOUS MUDST LAM. |
| 34 | 72.95 | 73.02 | 0.07 | 49 | | SANDSTONE | FG.M.GY.LAM.BRKN WITH MUDST LAM. |
| 34 | 73.02 | 73.12 | 0.10 | 49 | | ROCK LOSS | |
| 34 | 73.12 | 73.22 | 0.10 | 49 | | SILTSTONE | M.GY.LAM.VBRKN |
| 34 | 73.22 | 73.31 | 0.09 | 50 | | SILTSTONE | LT.GY.LAM.SLD RECRYSTALLIZED CaCO3 (?) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 34 | 73.31 | 73.51 | 0.20 | 50 | | | SILTSTONE | M.GY.LAM.BRKN WITH FG SS LAM, OCCASIONAL QTZ VEIN. |
| 34 | 73.51 | 74.10 | 0.59 | 50 | | | SANDSTONE | MG.LT-M.GY.VTHNB.BRKN OCCASIONAL BED AND DISCONTINUOUS LAM. |
| 34 | 74.10 | 74.40 | 0.30 | *51 | | | SILTSTONE | M.GY.LAM.SLD WITH SSS WISPS. |
| 34 | 74.40 | 74.57 | 0.17 | *51 | | | SANDSTONE | FG.M.GY.LAM.SLD INTERLAM WITH SLTST. |
| 34 | 74.57 | 74.72 | 0.15 | 50 | | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN AS ABOVE WITH ABUNDANT SSD - TOPS DOWN, QTZ FRACTURE FILL. |
| 34 | 74.72 | 74.95 | 0.23 | 49 | | | SILTSTONE | LT.GY.BIOTR.BRKN WITH MUDST LAM, RECRYSTALLIZED, OCCASIONAL QTZ VEIN. |
| 35 | 74.95 | 75.62 | 0.67 | 47 | | | SANDSTONE | FG.M.GY.VTHNB W/ SLTST LAM. BIVALVES (X-SECTION = 1.5 CM), WRMBUR - TOPS DOWN. |
| 35 | 75.62 | 76.92 | 1.30 | *42 | | | SANDSTONE | FG.M.GY.LAM.BIOTR.BRKN WITH SLTST LAM, OCCASIONAL QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------|
| 36 | 76.92 | 77.21 | 0.29 | *47 | | | SILTSTONE | M.GY.LAM.SLD INTERLAM WITH VFG SS, QTZ FRACTURE FILL |
| 36 | 77.21 | 77.33 | 0.12 | 55 | | | SILTSTONE | SSY.LT.GY.VTHNB.SLD OCCASIONAL SLTY WISP. |
| 36 | 77.33 | 77.59 | 0.26 | *63 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH VFG SS. |
| 36 | 77.59 | 77.81 | 0.22 | 61 | | | SILTSTONE | M.GY.LAM.BRKN WITH SSS LAM, 4 CM QTZ VEIN AT BASE. |
| 36 | 77.81 | 78.20 | 0.39 | 59 | | | SANDSTONE | VFG.M.GY.LAM.BRKN INTERLAM WITH SLTST, HIGHLY FRACTURED, OCCASIONAL QTZ FILLED, QTZ VEINS AT BASE. |
| 36 | 78.20 | 78.39 | 0.19 | 56 | | | SILTSTONE | M.GY.LAM.BRKN INTERLAM WITH VFG SS, FRACTURES. |
| 36 | 78.39 | 78.87 | 0.48 | 53 06966 | | | SILTSTONE | DK.GY.LAM.SHRD MODERATELY CONSOLIDATED, HIGHLY FRACTURED, PYR BLEBS, QTZ FRACTURE FILL, LOWER 9' CM SAMPLED. |
| 36 | 78.87 | 78.90 | 0.03 | 51 06966 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------------|-----------|-----------------------------------------------|
| 36 | 78.90 | 79.00 | 0.10 | 51 | 06966 | MUDSTONE | DK.GY.LAM.VSHRD POORLY CONSOLIDATED, SOFT. |
| 36 | 79.00 | 79.06 | 0.06 | 50 | 06966 | MUDSTONE | DK.GY.LAM.SHRD ABUNDANT COAL STRINGERS. |
| 36 | 79.06 | 79.10 | 0.04 | 50 | 06967 I PART. | COAL | C-3.BLK.SHRD WITH QTZ VEINS. |
| 37 | 79.10 | 79.22 | 0.12 | 49 | 06967 I PART. | COAL | C-2.BLK.BRKN |
| 37 | 79.22 | 79.30 | 0.08 | 48 | 06967 I PART. | COAL | C-3.BLK.YBRKN |
| 37 | 79.30 | 79.32 | 0.02 | 48 | 06967 I PART. | MUDSTONE | CARB.BLK.VSHRD COMMON THIN COAL LAMINAE. |
| 37 | 79.32 | 79.34 | 0.02 | 48 | 06967 I PART. | COAL LOSS | |
| 37 | 79.34 | 79.57 | 0.23 | 47 | 06967 I PART. | COAL | C-2.BLK.BRKN COMMON C-1 BANDS. |
| 37 | 79.57 | 79.77 | 0.20 | 45 | 06967 I PART. | COAL | C-1.BLK.BRKN |
| 37 | 79.77 | 79.78 | 0.01 | 44 | 06967 I PART. | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------------|-----------|--------------|
| 37 | 79.78 | 79.89 | 0.11 | 44 | 06967 I PART. | COAL LOSS | |
| 37 | 79.89 | 80.02 | 0.13 | 43 | 06967 I PART. | COAL | C-1.BLK.SLD |
| 37 | 80.02 | 80.03 | 0.01 | 42 | 06967 I PART. | COAL | C-3.BLK.SLD |
| 37 | 80.03 | 80.05 | 0.02 | 42 | 06967 I PART. | COAL | C-1.BLK.BRKN |
| 37 | 80.05 | 80.08 | 0.03 | 42 | 06967 I PART. | COAL | C-4.BLK.BRKN |
| 37 | 80.08 | 80.09 | 0.01 | 42 | 06967 I PART. | COAL | C-5.BLK.BRKN |
| 37 | 80.09 | 80.10 | 0.01 | 42 | 06967 I PART. | COAL | C-3.BLK.SLD |
| 37 | 80.10 | 80.11 | 0.01 | 41 | 06967 I PART. | COAL | C-1.BLK.SLD |
| 37 | 80.11 | 80.14 | 0.03 | 41 | 06967 I PART. | COAL | C-4.BLK.SLD |
| 37 | 80.14 | 80.17 | 0.03 | 41 | 06967 I PART. | COAL | C-5.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 80.17 | 80.40 | 0.23 | 40 | 06968 | | MUDSTONE | CARB. LT. BLK. BRKN RARE VERY THIN COAL LAMS AT TOP GRADING SLOWLY DOWN TO SLTY SLIGHTLY CARB MUDS T. H. COMMON PLANT DEBRIS. |
| 37 | 80.40 | 80.67 | 0.27 | *38 | 06968 | | MUDSTONE | CARB. LT. BLK. SLD SLIGHTLY SLTY BLACK CARB MUDST W/ VERY RARE THIN COAL LAMS (<1 MM). ABRUPT LOW ER CONTACT. UPPER 2 CM SAMPLED. |
| 37 | 80.67 | 80.69 | 0.02 | 38 | | | COAL | C-1. BLK. SLD OCCASIONAL QTZ VEIN-FILLING. |
| 37 | 80.69 | 80.79 | 0.10 | 37 | | | MUDSTONE | CARB. BLK. SLD COMMON THIN COAL LAMS UP TO 0.5 CM THIC K. COMMON PLANT DEBRIS & FOSSILS THROUGH OUT INCLUDING "GINKGO NANA" & "NILSSON IA SP". |
| 37 | 80.79 | 80.80 | 0.01 | 37 | | | COAL | C-2. BLK. SLD RARE QTZ VEINING. |
| 37 | 80.80 | 80.87 | 0.07 | 37 | | | MUDSTONE | CARB. BLK. SLD SLIGHTLY BRECCIATED. |
| 37 | 80.87 | 80.89 | 0.02 | 37 | | | COAL | C-1. BLK. BRKN |
| 37 | 80.89 | 80.96 | 0.07 | 37 | | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------|
| 37 | 80.96 | 80.98 | 0.02 | 37 | | | COAL | C-3. BLK. BRKN COMMON THIN C-1 BANDS W/IN AS WELL AS R ARE THIN (<1 MM) MUDST LAMS. |
| 37 | 80.98 | 81.01 | 0.03 | 37 | | | COAL | C-1. BLK. SLD |
| 37 | 81.01 | 81.07 | 0.06 | 36 | | | MUDSTONE | CARB. BLK. SLD BECOMES LESS CARB. TOWARDS BASE. |
| 38 | 81.07 | 81.64 | 0.57 | 36 | | | MUDSTONE | DK. GY. LAM. BRKN ABUNDANT PLANT FRAGS. |
| 38 | 81.64 | 81.69 | 0.05 | 35 | | | MUDSTONE | DK. GY. LAM. VBRKN AS ABOVE. |
| 38 | 81.69 | 81.90 | 0.21 | 34 | | | MUDSTONE | DK. GY. LAM. BRKN MODERATELY CONSOLIDATED, PLANT FRAGS. |
| 38 | 81.90 | 82.48 | 0.58 | *33 | | | MUDSTONE | DK. GY. LAM. BRKN ABUNDANT PLANT FRAGS. P. NORDENSKIOLDII |
| 38 | 82.48 | 82.56 | 0.08 | 33 | | | MUDSTONE | DK. GY. LAM. VBRKN HIGHLY FRACTURED, SOME SHEARED SURFACES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------|
| 38 | 82.56 | 82.97 | 0.41 | 32 | | | MUDSTONE | DK.GY.LAM.BRKN WITH SLTST LAM, FRACTURED, PLANT FRAGS. |
| 39 | 82.97 | 83.13 | 0.16 | 32 | | | MUDSTONE | CARB.DK.GY.MAS.SLD SLIGHTLY CARB. WITH OCCASIONAL LISTRIC SURFACES. |
| 39 | 83.13 | 83.15 | 0.02 | 32 | I PART | | COAL | C-2.BLK.BRKN ABRUPT LOWER CONTACT. |
| 39 | 83.15 | 83.19 | 0.04 | 32 | I PART | | MUDSTONE | CARB.BLK.BRKN COMMON THIN COAL LAMS UP TO 0.5 CM. |
| 39 | 83.19 | 83.28 | 0.09 | 32 | I PART | | COAL | C-2.BLK.BRKN COMMON C-1 H/IN. |
| 39 | 83.28 | 83.50 | 0.22 | 32 | I PART | | MUDSTONE | CARB.M-DK.GY.MAS.BRKN SLIGHTLY CARB. |
| 39 | 83.50 | 83.53 | 0.03 | 31 | I PART | | MUDSTONE | CARB.BLK.BRKN VERY CARB. |
| 39 | 83.53 | 83.67 | 0.14 | 31 | I PART | | ROCK LOSS | |
| 39 | 83.67 | 83.83 | 0.16 | 31 | I PART | | COAL LOSS | |
| 39 | 83.83 | 83.87 | 0.04 | 31 | I PART | | COAL | C-1.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------|
| 39 | 83.87 | 83.88 | 0.01 | 31 | I PART | | COAL | C-5.BLK.VBRKN |
| 39 | 83.88 | 83.91 | 0.03 | 31 | I PART | | MUDSTONE | CARB.BLK.YSHRD COMMON LISTRIC SURFACES. |
| 39 | 83.91 | 83.92 | 0.01 | 31 | I PART | | COAL | C-2.BLK.VBRKN |
| 39 | 83.92 | 84.09 | 0.17 | 31 | | | MUDSTONE | CARB.DK.GY.BRKN SLIGHTLY CARB MUDST WITH OCCASIONAL QTZ VEIN-FILLING. |
| 39 | 84.09 | 84.97 | 0.88 | 30 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN |
| 40 | 84.97 | 85.13 | 0.16 | 30 | | | MUDSTONE | DK.GY.LAM.VBRKN INTERLAM WITH SLTST. OCCASIONAL QTZ FRACTURE FILL. |
| 40 | 85.13 | 85.18 | 0.05 | 29 | | | ROCK LOSS | |
| 40 | 85.18 | 85.75 | 0.57 | *29 | | | MUDSTONE | DK.GY.LAM.BRKN INTERLAM WITH SLTST. LT GREY CLAY BAND & QTZ AT 0.55 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------|
| 40 | 85.75 | 86.19 | 0.44 | *33 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 40 | 86.19 | 86.80 | 0.61 | *39 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 40 | 86.80 | 86.99 | 0.19 | 36 | | MUDSTONE | DK.GY.LAM.SLD AS ABOVE. |
| 41 | 86.99 | 89.01 | 2.02 | *26 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 42 | 89.01 | 89.70 | 0.69 | *38 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 42 | 89.70 | 89.72 | 0.02 | 36 | | MUDSTONE | DK.GY.LAM.VBRKN AS ABOVE. |
| 42 | 89.72 | 89.78 | 0.06 | 35 | | ROCK LOSS | |
| 42 | 89.78 | 91.09 | 1.31 | *31 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. SOME ZONE OF ETCHED CORE SURF ACE. |
| 43 | 91.09 | 91.32 | 0.23 | 27 | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 43 | 91.32 | 91.35 | 0.03 | 26 | | MUDSTONE | DK.GY.LAM.VBRKN QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------|
| 43 | 91.35 | 91.42 | 0.07 | 26 | | ROCK LOSS | |
| 43 | 91.42 | 92.75 | 1.33 | *22 | | SILTSTONE | DK.GY.LAM.BRKN WITH MUDST LAM. |
| 43 | 92.75 | 92.98 | 0.23 | 23 | | SILTSTONE | DK.GY.LAM.VBRKN AS ABOVE. |
| 43 | 92.98 | 93.11 | 0.13 | 23 | | ROCK LOSS | |
| 43 | 93.11 | 93.33 | 0.22 | 24 | | SILTSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 44 | 93.33 | 94.75 | 1.42 | *25 | | SILTSTONE | SSY.DK.GY.LAM.BRKN WITH MUDST LAM. |
| 44 | 94.75 | 95.47 | 0.72 | *21 | | SILTSTONE | SSY.DK.GY.LAM.BRKN OCCASIONAL VFG SS LAM INCREASING DOWNWA RD. LESS MUDST THAN ABOVE. |
| 45 | 95.47 | 96.10 | 0.63 | *20 | | SILTSTONE | SSY.DK.GY.LAM.SSD.BRKN WITH DISCONTINUOUS VFG SS LAM. SSD - TO PS DOWN. |
| 45 | 96.10 | 96.84 | 0.74 | *17 | | SILTSTONE | SSY.DK.GY.LAM.SSD.BRKN AS ABOVE. |
| 45 | 96.84 | 96.97 | 0.13 | *13 | | SILTSTONE | SSY.DK.GY.LAM.SSD.SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 96.97 | 97.33 | 0.36 | *01 | | | SILTSTONE | SSY, DK, GY, LAM, SSD, BRKN FRACTURED NEAR BASE WITH CLAY FILL. |
| 45 | 97.33 | 97.48 | 0.15 | 01 | | | ROCK LOSS | |
| 45 | 97.48 | 97.57 | 0.09 | 01 | | | SANDSTONE | FG, LT-M, GY, VBRKN WITH SLTST LAM, NUMEROUS QTZ VEINS. |
| 46 | 97.57 | 97.77 | 0.20 | *01 | | | SANDSTONE | FG, LT-M, GY, VTHNB, SSD, SLD WITH SLTST LAM. |
| 46 | 97.77 | 98.75 | 0.98 | *21 | | | SANDSTONE | FG, LT-M, GY, VTHNB, SSD, BRKN WITH SLTST LAM, OCCASIONAL CLAY FILLED FRACTURES, OCCASIONAL QTZ FILLED FRACTU RES, TOPS DOWN. |
| 46 | 98.75 | 98.99 | 0.24 | 19 | | | SANDSTONE | FG, LT-M, GY, VTHNB, SSD, BRKN WITH SLTST LAM, NUMEROUS CLAY FILLED FR ACTURES FORMING BRECCIA. |
| 46 | 98.99 | 99.20 | 0.21 | 19 | | | SANDSTONE | MG, LT-M, GY, SLD QTZ FILLED FRACTURE FORMING BRECCIA, VC G SS AT BASE. |
| 46 | 99.20 | 99.28 | 0.08 | 18 | | | SANDSTONE | VCG, LT-M, GY, SLD WITH NUMEROUS QTZ FRACTURE FILL FORMING BRECCIA, CG TOWARDS BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 99.28 | 99.65 | 0.37 | 18 | | | SANDSTONE | CG, LT-M, GY, BRKN OCCASIONAL FINER GRAINED LAM, CLAY FILL ED FRACTURES, OCCASIONAL LISTRIC SURFAC ES. |
| 47 | 99.65 | 99.82 | 0.17 | 17 | | | SANDSTONE | FG, LT-M, GY, VTHNB, SSD, SLD WITH SLTST BED, SSD - TOPS UP? |
| 47 | 99.82 | 100.09 | 0.27 | 17 | | | SANDSTONE | FG, LT-M, GY, BIOTR, SLD WITH SLTST, MOTTLED APPEARANCE. |
| 47 | 100.09 | 100.39 | 0.30 | 16 | | | SANDSTONE | MG, LT-M, GY, BRKN |
| 47 | 100.39 | 100.50 | 0.11 | 15 | | | SANDSTONE | MG, LT-M, GY, VBRKN |
| 47 | 100.50 | 100.59 | 0.09 | 15 | | | ROCK LOSS | |
| 47 | 100.59 | 101.75 | 1.16 | 13 | | | SANDSTONE | MG, VPR, LT-M, GY, BRKN SOME BANDS WITH SPORADIC VCG, IRREGULAR SHAPED MUDST RIP-UPS. |
| 48 | 101.75 | 102.44 | 0.69 | *11 | | | SANDSTONE | MG, VPR, LT-M, GY, BRKN OCCASIONAL DISCONTINUOUS MUDST LAM AND RIP-UP, QTZ FRACTURE FILL AT BASE, GRAN ULES SCATTERED THROUGHOUT AND IN BANDS, ONE COALY WOOD FRAGMENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------|
| 48 | 102.44 | 102.78 | 0.34 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. BRKN NUMEROUS QTZ FILLED FRACTURES, GRANULES SCATTERED THROUGHOUT, DISCONT MUDST LA M. |
| 48 | 102.78 | 103.38 | 0.60 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. BRKN MUDST RIP-UPS, ABUNDANT GRANULES. |
| 48 | 103.38 | 103.71 | 0.33 | 11 | | | SANDSTONE | VCG. VPR. LT-M. GY. SLD OCCASIONAL <1 CM MUDST RIP-UP. |
| 49 | 103.71 | 103.99 | 0.28 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. BRKN WITH VCG. THROUGHOUT. |
| 49 | 103.99 | 104.77 | 0.78 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. BRKN AS ABOVE. |
| 49 | 104.77 | 104.82 | 0.05 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. VBRKN AS ABOVE. |
| 49 | 104.82 | 104.87 | 0.05 | 11 | | | ROCK LOSS | |
| 49 | 104.87 | 105.47 | 0.60 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. BRKN AS ABOVE. |
| 49 | 105.47 | 105.58 | 0.11 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. SLD W/ NUMEROUS QTZ GRAINS (UP TO 3 MM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 105.58 | 105.78 | 0.20 | 11 | | | SANDSTONE | CG. VPR. LT-M. GY. MAS. SLD |
| 50 | 105.78 | 106.41 | 0.63 | 10 | | | SANDSTONE | MG. VPR. LT-M. GY. BRKN W/ BANDS OF SCATTERED QTZ AGGREGATES, D ISCONTINUOUS MUDST LAM, POSSIBLE BIOTRB & LOW ANGLE BCA'S. |
| 50 | 106.41 | 107.81 | 1.40 | 10 | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. BRKN SCATTERED GRANULES, OCCASIONAL DISCONTI NUOUS MUDST LAM. |
| 51 | 107.81 | 108.53 | 0.72 | 10 | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. BRKN FG TO MG SS, OCCASIONAL GRANULES, OCCAS IONAL MUDST RIP-UP & DISCONTINUOUS LAMS & FRACTURED (ESPECIALLY AT BASE). |
| 51 | 108.53 | 108.89 | 0.36 | 10 | | | SANDSTONE | MG. VPR. LT-M. GY. MAS. SLD OCCASIONAL GRANULES. |
| 51 | 108.89 | 109.14 | 0.25 | 10 | | | SANDSTONE | MG. VPR. LT-M. GY. BRKN HIGHLY FRACTURED WITH CLAY FILL. |
| 51 | 109.14 | 109.29 | 0.15 | 10 | | | SANDSTONE | MG. LT-M. GY. VBRKN WITH DISCONTINUOUS MUDST LAM. |
| 51 | 109.29 | 109.33 | 0.04 | 10 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------|
| 51 | 109.33 | 109.85 | 0.52 | *10 | | SANDSTONE | MG.LT-M.GY.BRKN WITH DISCONTINUOUS MUDST LAM, QTZ & CLAY FRACTURE FILL, LISTRIC SURFACES. |
| 52 | 109.85 | 110.07 | 0.22 | 24 | | SANDSTONE | MG.LY-M.GY.BRKN NUMEROUS QTZ VEINS (SOME YELLOW COLOURED). |
| 52 | 110.07 | 110.14 | 0.07 | 29 | | SANDSTONE | FG.M.GY.SLD INTERLAM WITH SLTST. NUMEROUS QTZ. FILLED FRACTURES. |
| 52 | 110.14 | 110.16 | 0.02 | 31 | | SANDSTONE | FG.M.GY.YBRKN AS ABOVE. |
| 52 | 110.16 | 110.20 | 0.04 | 32 | | ROCK LOSS | |
| 52 | 110.20 | 110.50 | 0.30 | *38 | | SILTSTONE | DK.GY.LAM.SSD.BRKN INTERLAM WITH YFG SS, OCCASIONAL QTZ FRACTURE FILL, SSD - TOPS DOWN. |
| 52 | 110.50 | 110.72 | 0.22 | 30 | | SILTSTONE | DK.GY.LAM.SSD.YBRKN AS ABOVE. |
| 52 | 110.72 | 110.77 | 0.05 | 26 | | ROCK LOSS | |
| 52 | 110.77 | 111.63 | 0.86 | *13 | | SILTSTONE | DK.GY.VTHNB.SSD.BRKN AS ABOVE, OCCASIONAL QTZ VEIN, 3 CM QTZ VEIN AT 0.47 M DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------|
| 52 | 111.63 | 111.80 | 0.17 | 19 | | SILTSTONE | M-DK.GY.VTHNB.SSD.SLD WITH VFG SS INTERBEDS, PYRITE BLEBS. |
| 53 | 111.80 | 111.92 | 0.12 | 21 | | SILTSTONE | M-DK.GY.VTHNB.SLD WITH MUDST LAM, DISCONTINUOUS COAL STRINGER. |
| 53 | 111.92 | 112.09 | 0.17 | 23 | | SILTSTONE | M.GY.SLD MOTTLED. |
| 53 | 112.09 | 112.28 | 0.19 | *25 | | SILTSTONE | M-DK.GY.LAM.SLD WITH VFG SS LAM. |
| 53 | 112.28 | 112.83 | 0.55 | 25 | | SILTSTONE | M-DK.GY.LAM.BRKN INTERLAM WITH MUDST, OCCASIONAL QTZ FRACTURE FILL, ABUNDANT PLANT FRAGS. |
| 53 | 112.83 | 113.00 | 0.17 | 24 | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH SLTST LAM. |
| 53 | 113.00 | 113.19 | 0.19 | 24 | | SANDSTONE | YFG.M.GY.LAM.BRKN WITH SLTST LAM AND MISPS. |
| 53 | 113.19 | 113.69 | 0.50 | *24 | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH SLTY MISPS, QTZ FRACTURE FILL, OCCASIONAL COALY PLANT FRAG. |
| 53 | 113.69 | 113.90 | 0.21 | 23 | | SANDSTONE | FG.M.GY.VTHNB.SLD OCCASIONAL SLTY MISPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 54 | 113.90 | 114.12 | 0.22 | 22 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN WITH VFG SS BEDS AND SLTST WISPS, QTZ FRACTURE FILL. |
| 54 | 114.12 | 114.50 | 0.38 | 21 | | | SILTSTONE | DK.GY.LAM.BRKN WITH COAL STRINGERS, ABUNDANT PLANT FRAGS, QTZ VEINING, TWIST-OFF AT TOP. |
| 54 | 114.50 | 114.70 | 0.20 | 20 | | | SILTSTONE | SSY.M.GY.LAM.BRKN WITH SLTST LAM, MOTTLED LOOK, PLANT FRAGS, LISTRIC SURFACES. |
| 54 | 114.70 | 115.00 | 0.30 | 19 | | | SILTSTONE | SSY.M.GY.LAM.BRKN WITH MUDDY LAM, ABUNDANT SHELLS (?) FRAGS, LISTRIC SURFACES, COALY HOOD FRAG. |
| 54 | 115.00 | 115.04 | 0.04 | 19 | | H/I | MUDSTONE | DK.GY.VSHRD WITH COAL STRINGERS, CRUMBLES. |
| 54 | 115.04 | 115.39 | 0.35 | 18 | | H/I | ROCK LOSS | |
| 54 | 115.39 | 115.51 | 0.12 | 17 | | | SILTSTONE | M-DK.GY.SHRD WITH SSY LAM. |
| 54 | 115.51 | 115.89 | 0.38 | 16 | | | SANDSTONE | FG.M.GY.VBRKN FG-MG SS, NUMEROUS QTZ FILLED FRACTURES FORMING BRECCIA. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------|
| 54 | 115.89 | 116.14 | 0.25 | 15 | | | ROCK LOSS | |
| 54 | 116.14 | 116.29 | 0.15 | 15 | | | SANDSTONE | FG.M.GY.VBRKN RUBBLE, POSSIBLE CORE LOSS, QTZ FRACTURE FILL. |
| 55 | 116.29 | 116.50 | 0.21 | 14 | | | SANDSTONE | FG.M.GY.VTHNB.VBRKN WITH TWIST-OFF AT TOP AND BASE, OCCASIONAL SLTST LAM. |
| 55 | 116.50 | 116.54 | 0.04 | 14 | | | SANDSTONE | FG.M.GY.SLD AS ABOVE. |
| 55 | 116.54 | 116.60 | 0.06 | 14 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN WITH MUDDY LAM, PYRITE BLEBS. |
| 55 | 116.60 | 116.80 | 0.20 | 13 | | | ROCK LOSS | |
| 55 | 116.80 | 116.97 | 0.17 | 13 | | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN WITH SLTST LAM, TWIST-OFF AT TOP. |
| 55 | 116.97 | 117.13 | 0.16 | 12 | | | SANDSTONE | VFG.M.GY.VBRKN AS ABOVE, QTZ FRACTURE FILL, LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 55 | 117.13 | 117.28 | 0.15 | 11 | | | SANDSTONE | FG. M. GY. SLD HIGHLY FRACTURED WITH CLAY FILL FORMING BRECCIA, QTZ FRACTURE FILL AT TOP, MOD- ERATELY CONSOLIDATED, AXIS OF FOLD IN N EXT FEW BOXES. |
| 55 | 117.28 | 118.02 | 0.74 | *10 | | | SANDSTONE | SLTY. VFG. M. GY. LAM. SSD. BRKN WITH MUDST WISPS, OCCASIONAL TALC FRACT- URE FILL, LISTRIC SURFACES, QTZ VEIN AT BASE. |
| 55 | 118.02 | 118.22 | 0.20 | 14 | | | ROCK LOSS | |
| 55 | 118.22 | 118.32 | 0.10 | 15 | | | SANDSTONE | FG. LT-M. GY. YBRKN HIGHLY FRACTURED. |
| 55 | 118.32 | 118.50 | 0.18 | 16 | | | SANDSTONE | FG. LT-M. GY. YTHNB. SLD DISCONTINUOUS SLTST LAM, QTZ FRACTURE F- ILL. |
| 55 | 118.50 | 118.56 | 0.06 | 17 | | | SANDSTONE | FG. LT-M. GY. SHRD DISCONTINUOUS SLTST LAM. |
| 56 | 118.56 | 118.80 | 0.24 | 18 | | | SANDSTONE | FG. LT-M. GY. BRKN DISCONTINUOUS SLTY WISP & IRREGULAR SHA- PED MUDST RIP-UP, QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 118.80 | 118.93 | 0.13 | 19 | | | SANDSTONE | FG. LT-M. GY. SLD HIGHLY FRACTURED WITH CLAY FILL, 2 CM Q- TZ VEIN WITH BRECCIA AT TOP, QTZ FRACTU- RE FILL, MUDST. RIP-UP. |
| 56 | 118.93 | 119.12 | 0.19 | 20 | | | SILTSTONE | SSY. M. GY. VSHRD CRUMBLES, SOME QTZ. |
| 56 | 119.12 | 119.42 | 0.30 | 22 | | | ROCK LOSS | |
| 56 | 119.42 | 119.50 | 0.08 | 23 | | | SILTSTONE | M. GY. SHRD QTZ FRACTURE FILL. |
| 56 | 119.50 | 119.69 | 0.19 | 24 | | | SILTSTONE | M. GY. VSHRD CRUMBLED, QTZ. |
| 56 | 119.69 | 119.87 | 0.18 | 26 | | | ROCK LOSS | |
| 56 | 119.87 | 120.00 | 0.13 | 27 | | | SILTSTONE | M. GY. SHRD QTZ FRACTURE FILL. |
| 56 | 120.00 | 120.13 | 0.13 | 28 | | | SILTSTONE | M. GY. SHRD AS ABOVE. |
| 56 | 120.13 | 120.56 | 0.43 | 30 | | | SILTSTONE | M. GY. LAM. BRKN WITH DISCONTINUOUS MUDST WISPS, QTZ FRA- CTURE FILL, LISTRIC SURFACES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 56 | 120.56 | 120.77 | 0.21 | 32 | | SILTSTONE | M.GY.LAM.VBRKN |
| 56 | 120.77 | 120.97 | 0.20 | 34 | | ROCK LOSS | |
| 57 | 120.97 | 121.07 | 0.10 | 35 | | SILTSTONE | M.GY.VBRKN HIGHLY FRACTURED WITH CLAY & SOME QTZ FILL. |
| 57 | 121.07 | 121.48 | 0.41 | *37 | | SILTSTONE | M-DK.GY.LAM.BRKN INTERLAM WITH MUOYST, PLANT FRAGS. |
| 57 | 121.48 | 121.69 | 0.21 | 38 | | SILTSTONE | SSY.M.GY.LAM.SLD NUMEROUS QTZ FRACTURE FILLS. |
| 57 | 121.69 | 122.34 | 0.65 | 40 | | SILTSTONE | M-DK.GY.LAM.BRKN MUDDY LAM AT TOP, SSY LAM AT BASE, QTZ FRACTURE FILL, PLANT FRAGS, PYRITE BLEBS NEAR BASE. |
| 57 | 122.34 | 122.90 | 0.56 | 42 | | SANDSTONE | FG.M-DK.GY.VTHNB.VBRKN WITH SLTST LAM, LAM AT TOP BECOMES VTHNB DOWNWARDS. |
| 57 | 122.90 | 122.95 | 0.05 | 43 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------|
| 58 | 122.95 | 123.16 | 0.21 | 44 | | SANDSTONE | FG.LT-M.GY.VBRKN OCCASIONAL QTZ FRACTURE FILL. |
| 58 | 123.16 | 123.75 | 0.59 | *45 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN M/ SLTST LAM. SOME DISCONTINUOUS CLAY FRACTURE FILL NEAR TOP. THIST-OFF AT TOP |
| 58 | 123.75 | 123.80 | 0.05 | 42 | | ROCK LOSS | |
| 58 | 123.80 | 124.15 | 0.35 | 40 | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN OCCASIONAL SLTY LAM, OCCASIONAL QTZ FRACTURE FILL. |
| 58 | 124.15 | 124.84 | 0.69 | 36 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN FG TO MG SS, DISCONTINUOUS SLTST LAM, QTZ FRACTURE FILL. |
| 59 | 124.84 | 125.41 | 0.57 | *30 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN DISCONTINUOUS SLTST LAM, QTZ FRACTURE FILL. |
| 59 | 125.41 | 125.84 | 0.43 | 40 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE, WITH NUMEROUS QTZ VEINS. |
| 59 | 125.84 | 125.94 | 0.10 | 45 | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------|
| 59 | 125.94 | 125.99 | 0.05 | 46 | | | ROCK LOSS | |
| 59 | 125.99 | 126.20 | 0.21 | 49 | | | SANDSTONE | FG.LT-M.GY.BRKN WITH SLTST LAM, OCCASIONAL QTZ FRACTURE FILL. |
| 59 | 126.20 | 126.30 | 0.10 | 52 | | | SANDSTONE | FG.LT-M.GY.VBRKN |
| 59 | 126.30 | 126.35 | 0.05 | 53 | | | ROCK LOSS | |
| 59 | 126.35 | 126.72 | 0.37 | *57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |
| 59 | 126.72 | 126.80 | 0.08 | 55 | | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE. |
| 59 | 126.80 | 126.85 | 0.05 | 55 | | | ROCK LOSS | |
| 60 | 126.85 | 126.96 | 0.11 | 54 | | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE. |
| 60 | 126.96 | 127.58 | 0.62 | *52 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTST LAM AND RIP-UPS, OCCASIONAL QTZ FRACTURE FILL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------|
| 60 | 127.58 | 127.83 | 0.25 | 49 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN |
| 60 | 127.83 | 127.88 | 0.05 | 48 | | | ROCK LOSS | |
| 60 | 127.88 | 128.43 | 0.55 | 46 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |
| 60 | 128.43 | 128.52 | 0.09 | 44 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN AS ABOVE. |
| 60 | 128.52 | 128.57 | 0.05 | 44 | | | ROCK LOSS | |
| 60 | 128.57 | 128.91 | 0.34 | 43 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN NUMEROUS SLTST LAM. |
| 61 | 128.91 | 129.41 | 0.50 | 40 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL DISCONTINUOUS SLTST LAM. |
| 61 | 129.41 | 129.58 | 0.17 | *38 | | | SANDSTONE | FG.LT-M.GY.LAM.BRKN INTERLAM WITH SLTST. |
| 61 | 129.58 | 129.70 | 0.12 | 39 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL DISCONTINUOUS SLTST LAM. |
| 61 | 129.70 | 130.92 | 1.22 | *45 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------|
| 62 | 130.92 | 131.16 | 0.24 | 44 | | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN AS ABOVE, NUMEROUS QTZ VEINS. |
| 62 | 131.16 | 131.87 | 0.71 | 44 | | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN AS ABOVE WITHOUT QTZ VEINS. |
| 62 | 131.87 | 132.17 | 0.30 | 43 | | | SANDSTONE | MG-LT-M.GY.VTHNB.BRKN DISCONTINUOUS SLTST LAM, QTZ FRACTURE FILL AND VEINS. |
| 62 | 132.17 | 132.37 | 0.20 | 43 | | | SANDSTONE | MG-LT-M.GY.VTHNB.BIOTR.BRKN MOTTLED. |
| 62 | 132.37 | 132.64 | 0.27 | 42 | | | SANDSTONE | FG-M.GY.VTHNB.BRKN WITH DISCONTINUOUS MUDST LAM AND RIP-UP S. |
| 62 | 132.64 | 132.75 | 0.11 | 42 | | | SANDSTONE | FG-LT-M.GY.VTHNB.SLD AS ABOVE. |
| 62 | 132.75 | 132.91 | 0.16 | *42 | | | SANDSTONE | FG-M.GY.LAM.SSD.SLD WITH MUDST LAM. |
| 63 | 132.91 | 133.22 | 0.31 | *49 | | | SANDSTONE | FG-LT-M.GY.VTHNB.SSD.SLD WITH SLTST & MUDST LAM AND MISPS, SSD - TOPS UP. |
| 63 | 133.22 | 133.61 | 0.39 | 47 | | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN WITH RARE DISCONTINUOUS SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 63 | 133.61 | 134.84 | 1.23 | 43 | | | SANDSTONE | FG-LT-M.GY.VTHNB.SSD.BRKN WITH SLTST LAM, ABUNDANT SSD - TOPS UP. |
| 64 | 134.84 | 135.00 | 0.16 | 40 | | | SANDSTONE | FG-LT-M.GY.VTHNB.BIOTR.SLD WITH SLTST LAM. |
| 64 | 135.00 | 135.25 | 0.25 | *39 | | | SANDSTONE | FG-LT-M.GY.LAM.SLD WITH SLTST LAM. |
| 64 | 135.25 | 135.63 | 0.38 | 41 | | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN DISCONTINUOUS SLTST LAM. |
| 64 | 135.63 | 135.99 | 0.36 | 44 | | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN SLTST LAM, POSSIBLE BIOTRB. |
| 64 | 135.99 | 136.81 | 0.82 | *48 | | | SANDSTONE | FG-LT-M.GY.LAM.SSD.BRKN WITH SLTST LAM, HORIZONTAL WRMBUR, PYRITE BLEBS NEAR BASE. |
| 65 | 136.81 | 138.22 | 1.41 | *49 | 06969 | | SILTSTONE | SSY-M-DK.GY.LAM.BIOTR.SLD THINLY INTLAM YFG SS/SLTST (45/55). LAM INAE GENERALLY HAVE RAPID GRAD TO SHARP SUB-HORIZONTAL CONTACTS EXCEPT IN SOME ZONES WHERE LAM HAVE BEEN DISRUPTED BY BIOTRB. LOWER 21 CM SAMPLED. |
| 65 | 138.22 | 138.24 | 0.02 | 48 | 06969 | | SILTSTONE | CARB.DK.GY.SLD ABRUPT LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------|
| 65 | 138.24 | 138.26 | 0.02 | 48 | 06969 | | MUDSTONE | CARB. BLK. SLD VERY COALY BLACK MUDST WITH COMMON PYRITE. |
| 65 | 138.26 | 138.28 | 0.02 | 48 | 06970 | H | COAL | C-6. BLK. VBRKN |
| 65 | 138.28 | 138.43 | 0.15 | 48 | 06970 | H | COAL LOSS | |
| 65 | 138.43 | 138.59 | 0.16 | 48 | 06970 | H | COAL | C-4. BLK. VSHRD |
| 65 | 138.59 | 138.60 | 0.01 | 48 | 06970 | H | COAL | C-2. BLK. BRKN |
| 65 | 138.60 | 138.66 | 0.06 | 48 | 06970 | H | MUDSTONE | CARB. BLK. BRKN VERY THIN COAL LAMS AT TOP OF UNIT. |
| 65 | 138.66 | 138.68 | 0.02 | 48 | 06970 | H | COAL | C-2. BLK. VBRKN |
| 65 | 138.68 | 138.73 | 0.05 | 48 | 06970 | H | MUDSTONE | CARB. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------|
| 65 | 138.73 | 138.76 | 0.03 | 47 | 06970 | H | COAL | C-4. BLK. VBRKN |
| 65 | 138.76 | 138.77 | 0.01 | 47 | 06970 | H | COAL | C-3. BLK. VBRKN |
| 65 | 138.77 | 138.79 | 0.02 | 47 | 06970 | H | COAL | C-1. BLK. SLD |
| 65 | 138.79 | 138.84 | 0.05 | 47 | 06970 | H | COAL | C-2. BLK. BRKN |
| 65 | 138.84 | 138.90 | 0.06 | 47 | 06970 | H | COAL | C-3. BLK. SHRD |
| 66 | 138.90 | 138.96 | 0.06 | 47 | 06970 | H | MUDSTONE | CARB. BLK. MAS. SLD VERY COALY ESP AT BASE. |
| 66 | 138.96 | 138.97 | 0.01 | 47 | 06970 | H | COAL | C-6. BLK. SLD |
| 66 | 138.97 | 138.99 | 0.02 | 47 | 06970 | H | COAL | C-4. BLK. SLD |
| 66 | 138.99 | 139.00 | 0.01 | 47 | 06970 | H | COAL | C-3. BLK. SLD |
| 66 | 139.00 | 139.03 | 0.03 | 47 | 06970 | H | COAL | C-2. BLK. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------|
| 66 | 139.03 | 139.08 | 0.05 | 47 | 06970 H | COAL | C-1. BLK. BRKN |
| 66 | 139.08 | 139.11 | 0.03 | 47 | 06970 H | COAL | C-4. BLK. BRKN |
| 66 | 139.11 | 139.22 | 0.11 | 47 | 06970 H | COAL LOSS | |
| 66 | 139.22 | 139.27 | 0.05 | 47 | 06970 H | MUDSTONE | CARB. BLK. VBRKN |
| 66 | 139.27 | 139.28 | 0.01 | 47 | 06970 H | COAL | C-3. BLK. SLD |
| 66 | 139.28 | 139.44 | 0.16 | 47 | 06970 H | MUDSTONE | CARB. BLK. SLD VERY COMMON THIN COAL LAMS. |
| 66 | 139.44 | 139.45 | 0.01 | 47 | 06970 H | COAL | C-3. BLK. BRKN DOMINANTLY C-2/C-1 COAL WITH THIN MUDST LAMS BETWEEN BANDS. |
| 66 | 139.45 | 139.59 | 0.14 | 47 | 06970 H | MUDSTONE | CARB. BLK. SLD COMMON VERY THIN COAL LAMS THROUGHOUT. |
| 66 | 139.59 | 139.60 | 0.01 | 46 | 06970 H | COAL | C-5. BLK. SLD |
| 66 | 139.60 | 139.65 | 0.05 | 46 | 06970 H | COAL | C-4. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------|
| 66 | 139.65 | 139.68 | 0.03 | 46 | 06970 H | COAL | C-5. BLK. VBRKN |
| 66 | 139.68 | 139.70 | 0.02 | 46 | 06970 H | COAL | C-1. BLK. SLD |
| 66 | 139.70 | 139.72 | 0.02 | 46 | 06970 H | COAL | C-5. BLK. SLD |
| 66 | 139.72 | 139.74 | 0.02 | 46 | 06970 H | COAL | C-2. BLK. SLD |
| 66 | 139.74 | 139.76 | 0.02 | 46 | 06970 H | MUDSTONE | CARB. BLK. BRKN |
| 66 | 139.76 | 139.78 | 0.02 | 46 | 06970 H | COAL | C-3. BLK. BRKN |
| 66 | 139.78 | 139.97 | 0.19 | 46 | 06970 H | COAL LOSS | |
| 66 | 139.97 | 140.01 | 0.04 | 46 | 06971 | MUDSTONE | CARB. BLK. SLD VERY CARB. BLACK COALY MUDST. |
| 66 | 140.01 | 140.55 | 0.54 | 46 | 06971 | MUDSTONE | SLTY. DK. GY. MAS. SLD SLIGHT CARB. WELL MIXED SLTY MUDST. UPPE R 21 CM SAMPLED. |
| 66 | 140.55 | 140.57 | 0.02 | 45 | | SILTSTONE | CARB. BLK. BRKN VERY COALY MUDDY SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------|
| 66 | 140.57 | 140.96 | 0.39 | *45 | | | SILTSTONE | M-DK.GY.MAS.BRKN UNIT BECOMES SLIGHTLY SSY TOWARDS BASE. SS/SLTST = 20/80. |
| 67 | 140.96 | 141.73 | 0.77 | *44 | | | SANDSTONE | VFG.M.GY.VTHNB.SLD WITH SLTST LAM, COALY STRINGERS 0.12 M DOWN. |
| 67 | 141.73 | 142.86 | 1.13 | *45 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN AS ABOVE. MINOR SSD. |
| 68 | 142.86 | 143.70 | 0.84 | *46 | | | SANDSTONE | VFG.M.GY.LAM.BIOTR.BRKN WITH SLTST LAM. |
| 68 | 143.70 | 143.86 | 0.16 | 43 | | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN WITH OCCASIONAL SLTST LAM. |
| 68 | 143.86 | 144.03 | 0.17 | 41 | | | SANDSTONE | VFG.M.GY.LAM.BRKN WITH SLTST LAM. |
| 68 | 144.03 | 144.23 | 0.20 | 40 | | | BRECCIA | M.GY.BRKN QTZ VEINING WITH VFG.SS/SLTST.BRECCIA. |
| 68 | 144.23 | 144.66 | 0.43 | 38 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN WITH FG.SS.BEDS. NUMEROUS QTZ FILLED FR ACTURES. |
| 68 | 144.66 | 144.70 | 0.04 | 36 | | | SANDSTONE | VFG.M.GY.VTHNB.SLD AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------|
| 69 | 144.70 | 145.67 | 0.97 | *33 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN WITH SLTST LAM, QTZ FRACTURE FILL. |
| 69 | 145.67 | 145.89 | 0.22 | 36 | | | SANDSTONE | VFG.M.GY.VTHNB.VBRKN AS ABOVE. |
| 69 | 145.89 | 146.05 | 0.16 | 37 | | | ROCK LOSS | |
| 69 | 146.05 | 146.18 | 0.13 | 37 | | | SANDSTONE | SLTY.VFG.M.GY.VTHNB.VBRKN AS ABOVE. TALC FRACTURE FILL. |
| 69 | 146.18 | 146.61 | 0.43 | 39 | | | SANDSTONE | SLTY.VFG.M-DK.GY.LAM.BRKN COAL STRINGER NEAR TOP. |
| 69 | 146.61 | 146.73 | 0.12 | 40 | | | ROCK LOSS | |
| 70 | 146.73 | 146.83 | 0.10 | 40 | | | SANDSTONE | VFG.M-DK.GY.LAM.VBRKN WITH SSY SLTST LAM. |
| 70 | 146.83 | 146.97 | 0.14 | 41 | | | SILTSTONE | SSY.M.GY.SLD DISCONTINUOUS MUDDY WISPS. |
| 70 | 146.97 | 147.15 | 0.18 | 42 | | | SILTSTONE | SSY.M.GY.SLD HIGHLY FRACTURED WITH QTZ FILL. |
| 70 | 147.15 | 147.28 | 0.13 | 42 | | | SILTSTONE | M-DK.GY.LAM.VBRKN WITH SSY LAM. |
| 70 | 147.28 | 147.40 | 0.12 | 43 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------|
| 70 | 147.40 | 147.80 | 0.40 | *44 | | | SANDSTONE | VFG.M.GY.LAM.WRMBU.SLD WITH SLTST LAM, WRMBUR - TOPS UP. |
| 70 | 147.80 | 148.12 | 0.32 | 44 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN AS ABOVE. |
| 70 | 148.12 | 148.24 | 0.12 | 44 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.SLD |
| 70 | 148.24 | 148.52 | 0.28 | 45 | | | SANDSTONE | VFG.M.GY.BIOTR.BRKN WITH SLTST, MOTTLED. |
| 70 | 148.52 | 148.75 | 0.23 | 45 | | | SANDSTONE | VFG.M.GY.LAM.WRMBU.BRKN WITH SLTST INTERLAM, WRMBUR - TOPS UP, SSD. |
| 70 | 148.75 | 148.87 | 0.12 | 45 | | | ROCK LOSS | |
| 71 | 148.87 | 149.41 | 0.54 | 45 | | | SANDSTONE | FG.M.GY.LAM.VBRKN WITH SLTST INTERLAM, MINOR SSD. |
| 71 | 149.41 | 150.44 | 1.03 | *46 | | | SANDSTONE | FG.M.GY.LAM.BIOTR.BRKN AS ABOVE, OCCASIONAL FAULT WITH <1 CM D ISPLACEMENT, WRMBUR, SSD - TOPS UP. |
| 71 | 150.44 | 150.56 | 0.12 | 49 | | | SILTSTONE | M.GY.VTHNB.WRMBU.SLD OCCASIONAL SSY HISP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------|
| 71 | 150.56 | 150.80 | 0.24 | 50 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN WITH SLTST INTERLAM, WRMBUR. |
| 72 | 150.80 | 150.98 | 0.18 | *51 | | | SANDSTONE | VFG.M.GY.LAM.SSD.SLD AS ABOVE, WRMBUR, SSD - TOPS UP. |
| 72 | 150.98 | 151.29 | 0.31 | 51 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN AS ABOVE. |
| 72 | 151.29 | 151.41 | 0.12 | 51 | | | ROCK LOSS | |
| 72 | 151.41 | 151.62 | 0.21 | 52 | | | SANDSTONE | VFG.M.GY.LAM.SSD.VBRKN AS ABOVE. |
| 72 | 151.62 | 151.90 | 0.28 | 52 | | | SANDSTONE | VFG.M.GY.LAM.SSD.SLD AS ABOVE. |
| 72 | 151.90 | 151.96 | 0.06 | 52 | | | SANDSTONE | VFG.M.GY.VTHNB.SLD |
| 72 | 151.96 | 152.06 | 0.10 | 52 | | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST. |
| 72 | 152.06 | 152.32 | 0.26 | 52 | | | SILTSTONE | SSY.M.GY.VTHNB.SLD WITH VFG.SS.LAM.AND.RIP-UPS. |
| 72 | 152.32 | 152.46 | 0.14 | 52 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BIOTR.SLD WITH DISCONTINUOUS SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 72 | 152.46 | 152.67 | 0.21 | 53 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST WISPS & LAM, SSD - TOPS UP. |
| 73 | 152.67 | 153.49 | 0.82 | 53 | | | SANDSTONE | VCG.VPR.LT-M.GY.VTHNB.BRKN INTERBEDDED WITH GRANULAR GRAVEL, OCCASIONAL QTZ FRACTURE FILL, OCCASIONAL MUD ST.LAM. |
| 73 | 153.49 | 153.62 | 0.13 | 54 | | | SANDSTONE | MG.LT-M.GY.VTHNB.VBRKN WITH QTZ FRACTURE FILL. |
| 73 | 153.62 | 153.74 | 0.12 | 54 | | | ROCK LOSS | |
| 73 | 153.74 | 154.53 | 0.79 | 54 | | | SANDSTONE | FG.VPR.LT-M.GY.BRKN FG-MG SS, OCCASIONAL SLTY WISP AND MUDS T.RIP-UP, QTZ FRACTURE FILL. |
| 74 | 154.53 | 155.51 | 0.98 | *55 | | | SANDSTONE | FG.VPR.LT-M.GY.VTHNB.BRKN FG-MG SS WITH OCCASIONAL SLTY WISP, OCCASIONAL MUDST & SLTST DISCONTINUOUS LAM AND RIP-UP. |
| 74 | 155.51 | 155.77 | 0.26 | 56 | | | SANDSTONE | FG.VPR.LT-M.GY.VTHNB.BRKN AS ABOVE, QTZ VEIN AT TOP. |
| 74 | 155.77 | 155.82 | 0.05 | 56 | | | SILTSTONE | M-DK.GY.LAM.SLD WITH FG SS LAM AND RIP-UPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------|
| 74 | 155.82 | 156.58 | 0.76 | 56 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH OCCASIONAL SLTST LAM AND WISP, SSD - TOPS UP, OCCASIONAL BLK GRAINS. |
| 75 | 156.58 | 157.17 | 0.59 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE. |
| 75 | 157.17 | 157.20 | 0.03 | 57 | | | SILTSTONE | LT.GY.SLD RECRYSTALLIZED CaCO3. |
| 75 | 157.20 | 157.28 | 0.08 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.SLD AS SS ABOVE. |
| 75 | 157.28 | 158.60 | 1.32 | *58 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE, REGULAR SLTST LAM PATTERN. |
| 76 | 158.60 | 159.02 | 0.42 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN OCCASIONAL SLTST WISP, OCCASIONAL QTZ FRACTURE FILL. |
| 76 | 159.02 | 159.25 | 0.23 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE, WITH NUMEROUS CLAY AND QTZ FILLED FRACTURES. |
| 76 | 159.25 | 160.13 | 0.88 | *56 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST LAM, SSD - TOPS UP. |
| 76 | 160.13 | 160.68 | 0.55 | 57 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 77 | 160.68 | 162.76 | 2.08 | *59 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN SLTST LAM (SOME DISCONTINUOUS), SSD - T OPS UP. |
| 78 | 162.76 | 163.18 | 0.42 | *56 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN WITH FG SS INTERBEDS, SSD - TOPS UP. |
| 78 | 163.18 | 164.90 | 1.72 | *59 | | | SILTSTONE | M.GY.VTHNB.SSD.BRKN WITH FG SS BEDS & LAM, PLANT WASH. |
| 79 | 164.90 | 165.75 | 0.85 | *65 | | | SILTSTONE | SSY.M-DK.GY.LAM.SSD.BRKN WITH SSY SLTST, MUDDY LAM SEQUENCE, MIN OR.SSD, RARE PLANT FRAG NEAR TOP. |
| 79 | 165.75 | 167.00 | 1.25 | *66 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN AS ABOVE, OCCASIONAL PLANT FRAG. |
| 80 | 167.00 | 167.68 | 0.68 | 66 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN WITH MUDST LAM, 18 CM QTZ VEIN AT BASE. |
| 80 | 167.68 | 167.82 | 0.14 | 66 | | | BRECCIA | M.GY.BRKN 3.5 CM CLAY BAND AT TOP WITH QTZ GRAINS , QTZ VEINS WITH SLTST BREC. |
| 80 | 167.82 | 167.91 | 0.09 | 66 | | | SILTSTONE | M.GY.LAM.VBRKN RUBBLE. |
| 80 | 167.91 | 168.01 | 0.10 | 66 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 80 | 168.01 | 169.00 | 0.99 | *66 | | | SILTSTONE | M.GY.LAM.BRKN WITH MUDST LAM. |
| 80 | 169.00 | 169.19 | 0.19 | 67 | | | SILTSTONE | M.GY.LAM.BRKN AS ABOVE, RARE PLANT FRAG. |
| 81 | 169.19 | 170.18 | 0.99 | *69 | | | SILTSTONE | CARB.DK.GY.MAS.BRKN DOMINANTLY MASSIVE SLIGHT MUDDY SLTST W ITH VERY RARE FAINT HORIZONTAL LAMINAE DUE TO SLIGHT GRAIN SIZE VARIATIONS. |
| 81 | 170.18 | 170.31 | 0.13 | 68 | | | SILTSTONE | CARB.DK.GY.LAM.SLD INTLAM SLTST/MUCST (60/40) WITH OCCASIO NAL QTZ VEINING. LAM HAVE RAPID GRADATI ONAL - SHARP SUB-HORIZONTAL CONTACTS. |
| 81 | 170.31 | 170.41 | 0.10 | 68 | | | MUDSTONE | CARB.DK.GY.MAS.BRKN COMMON PLANT DEBRIS & OCCASIONAL VERY T HIN COAL LAMS. SLTY AT TOP BECOMING NON -SLTY & MORE CARB TOWARDS BASE. ABRUPT LOWER CONTACTS. |
| 81 | 170.41 | 170.42 | 0.01 | 68 | | PH | COAL | C-3.BLK.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------|
| 81 | 170.42 | 170.43 | 0.01 | 68 | | PH | COAL | C-4.BLK.VBRKN |
| 81 | 170.43 | 170.45 | 0.02 | 68 | | PH | COAL | C-2.BLK.SHRD |
| 81 | 170.45 | 170.51 | 0.06 | 68 | | PH | COAL | C-3.BLK.SHRD |
| 81 | 170.51 | 170.53 | 0.02 | 68 | | PH | COAL | C-4.BLK.SHRD OCCASIONAL THIN MUDST LAMS. |
| 81 | 170.53 | 170.55 | 0.02 | 68 | | PH | COAL | C-2.BLK.SLD |
| 81 | 170.55 | 170.57 | 0.02 | 68 | | PH | COAL | C-5.BLK.SLD |
| 81 | 170.57 | 170.60 | 0.03 | 68 | | PH | COAL | C-2.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 81 | 170.60 | 170.62 | 0.02 | 68 | | PH | MUDSTONE | CARB.BLK.SLD COMMON LITRIC SURFACES. OCCASIONAL COAL LAMS UP TO 0.5 CM. |
| 81 | 170.62 | 170.78 | 0.16 | 67 | | PH | MUDSTONE | CARB.DK.GY.BRKN COMMON PLANT DEBRIS W/IN. OCCASIONAL THIN COAL LAMS. SHARP LOWER CONTACT. |
| 81 | 170.78 | 170.84 | 0.06 | 67 | | PH | COAL LOSS | |
| 81 | 170.84 | 170.89 | 0.05 | 67 | | PH | COAL | C-3.BLK.SLD COMMON THIN C-1 BANDS UP TO .3 CM THK. SOME MINOR FE-STAINING. GRADATIONAL LOWER CONTACT. |
| 81 | 170.89 | 170.90 | 0.01 | 67 | | PH | COAL | C-6.BLK.SLD |
| 81 | 170.90 | 171.20 | 0.30 | 67 | | PH | MUDSTONE | CARB.DK.GY.MAS.SLD COMMON BROKEN PLANT DEBRIS (ESP NEAR TOP). UNIT BECOMES SLIGHTLY SILTIER TOWARDS BASE. RARE V THIN COAL LAMS THROUGHOUT (ESP NEAR TOP). |
| 81 | 171.20 | 171.29 | 0.09 | 67 | | PH | SILTSTONE | M-DK.GY.MAS.SLD MUDDY SLTST - SLIGHTLY CARB. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 82 | 171.29 | 171.87 | 0.58 | *66 | PH | SILTSTONE | SSY. M-DK. GY. LAM. BIOTR. SLD INTLAM BUT CHURNED (BIOTRB) VFG SS/SLYS T (45/55). CONTACTS ARE COMMONLY PARTIAL LY MIXED TO RAPID GRADATIONAL. SHARP LO WER CONTACT. |
| 82 | 171.87 | 171.98 | 0.11 | 66 06972 | PH | MUDSTONE | CARB. BLK. LAM. SLD THIN COAL LAMS UP TO 2 MM COMMON THROUG HOUT UNIT. ABRUPT LOWER CONTACT. |
| 82 | 171.98 | 172.05 | 0.07 | 66 06972 | PH | MUDSTONE | SLTY. DK. GY. MAS. BRKN |
| 82 | 172.05 | 172.24 | 0.19 | 66 06972 | PH | MUDSTONE | CARB. DK. GY. MAS. SLD FOSSILIFEROUS MUDST. PLANT FOSSILS COMM ON THROUGHOUT INCLUDING "NILSSONIA CANA DENSIS" & POSSIBLY "PTEROPHYLLUM RECTAN GULARE" & "NILSSONIA SP". RAPID GRADATI ONAL LOWER CONTACT. |
| 82 | 172.24 | 172.26 | 0.02 | 66 06972 | PH | COAL | C-3. BLK. BRKN COMMON C-2/C-1 BANDS. |
| 82 | 172.26 | 172.33 | 0.07 | 66 06972 | PH | COAL | C-1. BLK. SLD SOME MINOR QTZ VEINING W/IN. |
| 82 | 172.33 | 172.35 | 0.02 | 66 06972 | PH | COAL | C-4. BLK. LAM. SLD INTLAM C-1/MUDST (55/45). |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------|
| 82 | 172.35 | 172.39 | 0.04 | 66 06972 | PH | COAL | C-2. BLK. SLD COMMON C-1 BANDS. |
| 82 | 172.39 | 172.50 | 0.11 | 65 06972 | PH | MUDSTONE | CARB. BLK. LAM. BRKN PLANT DEBRIS COMMON AS WELL AS THIN COA L LAMS UP TO .5 CM. |
| 82 | 172.50 | 172.84 | 0.34 | 65 06972 | PH | MUDSTONE | CARB. DK. GY. MAS. BRKN OCCASIONAL PLANT DEBRIS & VERY RARE COA L LAMS. |
| 82 | 172.84 | 172.86 | 0.02 | 65 06973 | PH | COAL | C-3. BLK. SLD |
| 82 | 172.86 | 172.88 | 0.02 | 65 06973 | PH | COAL | C-5. BLK. BRKN |
| 82 | 172.88 | 172.93 | 0.05 | 65 06973 | PH | COAL | C-2. BLK. SLD |
| 82 | 172.93 | 172.94 | 0.01 | 65 06973 | PH | MUDSTONE | CARB. BLK. SLD SOME QTZ VEINING. |
| 82 | 172.94 | 172.97 | 0.03 | 65 06973 | PH | COAL | C-1. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------|
| 82 | 172.97 | 173.00 | 0.03 | 65 06973 | PH | COAL | C-3.BLK.BRKN |
| 82 | 173.00 | 173.01 | 0.01 | 65 06973 | PH | COAL | C-1.BLK.BRKN |
| 82 | 173.01 | 173.05 | 0.04 | 65 06973 | PH | COAL | C-2.BLK.BRKN |
| 82 | 173.05 | 173.07 | 0.02 | 65 06973 | PH | COAL | C-3.BLK.SLD COMMON C-2 BANDS. |
| 82 | 173.07 | 173.08 | 0.01 | 65 06973 | PH | COAL | C-1.BLK.SLD |
| 82 | 173.08 | 173.19 | 0.11 | 65 06973 | PH | COAL | C-2.BLK.VSHRD COMMON C-3 ZONES. |
| 83 | 173.19 | 173.26 | 0.07 | 65 06973 | PH | COAL | C-3.BLK.VSHRD |
| 83 | 173.26 | 173.27 | 0.01 | 65 06973 | PH | MUDSTONE | CARB.BLK.BRKN |
| 83 | 173.27 | 173.29 | 0.02 | 65 06973 | PH | COAL | C-1.BLK.VBRKN |
| 83 | 173.29 | 173.31 | 0.02 | 65 06973 | PH | COAL | C-3.BLK.PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83 | 173.31 | 173.34 | 0.03 | 65 06973 | PH | COAL | C-5.BLK.SHRD |
| 83 | 173.34 | 173.38 | 0.04 | 65 06973 | PH | COAL | C-1.BLK.SLD |
| 83 | 173.38 | 173.53 | 0.15 | 65 06973 | PH | ROCK LOSS | |
| 83 | 173.53 | 173.61 | 0.08 | 65 06973 | PH | MUDSTONE | CARB.DK.GY.BRKN MODERATELY CONSOLIDATED - SLIGHTLY SLTY |
| 83 | 173.61 | 173.78 | 0.17 | 65 06973 | PH | COAL | C-2.BLK.VSHRD COMMON C-3 NEAR TOP. ABRUPT LOWER CONTACT. |
| 83 | 173.78 | 174.21 | 0.43 | 65 06974 | | MUDSTONE | DK.GY.MAS.BRKN CARB AT TOP BECOMING SILTIER TOWARDS BASE. COMMON PLANT DEBRIS (ESP NEAR TOP). SLOW GRADATIONAL LOWER CONTACT. UPPER 25 CM SAMPLED. |
| 83 | 174.21 | 174.40 | 0.19 | 64 | | SILTSTONE | M-DK.GY.MAS.SLD CONTINUED GRADATION FROM PREVIOUS UNIT. MUDDY SILTST AT TOP GRADING INTO SSSY SILTST AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83 | 174.40 | 175.21 | 0.81 | *64 | | SANDSTONE | SLTY LT-M.GY.LAM.SSD.SLD INTLAM VFG SS/SLTST (80/20). SLTST COMM ON AT TOP GRADING IN TO DOMINANTLY SS W ITH COMMON THIN SLTST LAMS. LAM CONTACT S ARE MOD GRADATIONAL & SUB HORIZONTAL EXCEPT WHERE DISRUPTED BY SSD & POSSIBL Y BIOTRB. |
| 84 | 175.21 | 175.47 | 0.26 | *65 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN WITH SLTST LAM BECOMING DISCONTINUOUS A T BASE, SSD - TOPS UP. |
| 84 | 175.47 | 175.63 | 0.16 | 65 | | SANDSTONE | FG.LT-M.GY.LAM.SSD.BRKN WITH SLTST INTERLAM, CLAY FILLED FRACTU RES. |
| 84 | 175.63 | 175.79 | 0.16 | 65 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN FRACTURED, DISCONTINUOUS SLTY WISPS. |
| 84 | 175.79 | 176.48 | 0.69 | 66 | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN WITH VFG SS LAM, HRMBUR - TOPS UP. |
| 84 | 176.48 | 176.68 | 0.20 | *66 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN WITH SLTST LAM, FRACTURED. |
| 84 | 176.68 | 176.81 | 0.13 | 66 | | SANDSTONE | MG.LT-M.GY.VTHNB.VBRKN WITH SLTST LAM, ABUNDANT BIVALVES, STAF FINELLA CONCENTRATED IN BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------|
| 84 | 176.81 | 176.86 | 0.05 | 65 | | SANDSTONE | MG.LT-M.GY.VTHNB.SLD ABUNDANT BIVALVES, HIGHLY FRACTURED. |
| 84 | 176.86 | 176.99 | 0.13 | 65 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH SLTST LAM, OCCASIONAL BIVALVE NEAR TOP, HIGHLY FRACTURED. |
| 85 | 176.99 | 177.68 | 0.69 | 64 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN MUDDY BANDS OF BIVALVES, FRACTURED. |
| 85 | 177.68 | 177.84 | 0.16 | 63 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN CLEAN SS. |
| 85 | 177.84 | 178.05 | 0.21 | 62 | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN WITH FG SS LAM, FRACTURED, OCCASIONAL B IVALVE AT BASE. |
| 85 | 178.05 | 178.18 | 0.13 | 62 | | SILTSTONE | SSY.M.GY.VBRKN AS ABOVE, OCCASIONAL BIVALVE. |
| 85 | 178.18 | 178.32 | 0.14 | 61 | | SANDSTONE | FG.LT-M.GY.VTHNB.BIOTR.SLD MOTTLED LOOK, BIVALVES. |
| 85 | 178.32 | 178.62 | 0.30 | 61 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD WITH DISCONTINUOUS SLTST LAM. |
| 85 | 178.62 | 178.86 | 0.24 | *60 | | SANDSTONE | FG.LT-M.GY.LAM.SSD.SLD WITH SLTST LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87026

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 86 | 178.86 | 178.98 | 0.12 | 61 | | | SANDSTONE | FG LT-M.GY LAM BRKN SLTST INTERLAM, FRACTURED WITH CLAY FIL L. |
| 86 | 178.98 | 180.44 | 1.46 | *63 | | | SILTSTONE | SSY.M.GY.LAM.SSD.BRKN WITH FG SS LAM, PLANT FRAGS, DECREASING IN ABUNDANCE DOWNWARDS, OCCASIONAL MOO D FRAG (COALY). |
| 86 | 180.44 | 180.67 | 0.23 | 62 | | | SILTSTONE | SSY.M.GY.LAM.VBRKN AS ABOVE, NO PLANTS SEEN. |
| 86 | 180.67 | 180.83 | 0.16 | 62 | | | SILTSTONE | SSY.M.GY.LAM.BRKN AS ABOVE, WITH PLANT FRAGS. |
| 87 | 180.83 | 181.45 | 0.62 | *61 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN W/ VFG SS LAM (SOME DISCONTINUOUS), OCC ASIONAL PLANT MASH, END OF HOLE. T.D. = 181.97 M. DRILLER'S MARKER. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87026

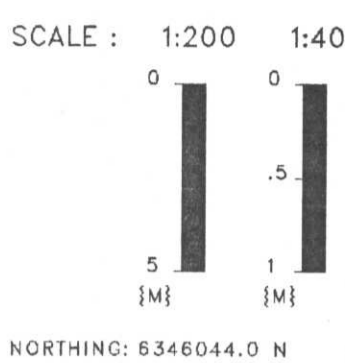
740

GEOLOGIST : LEE

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

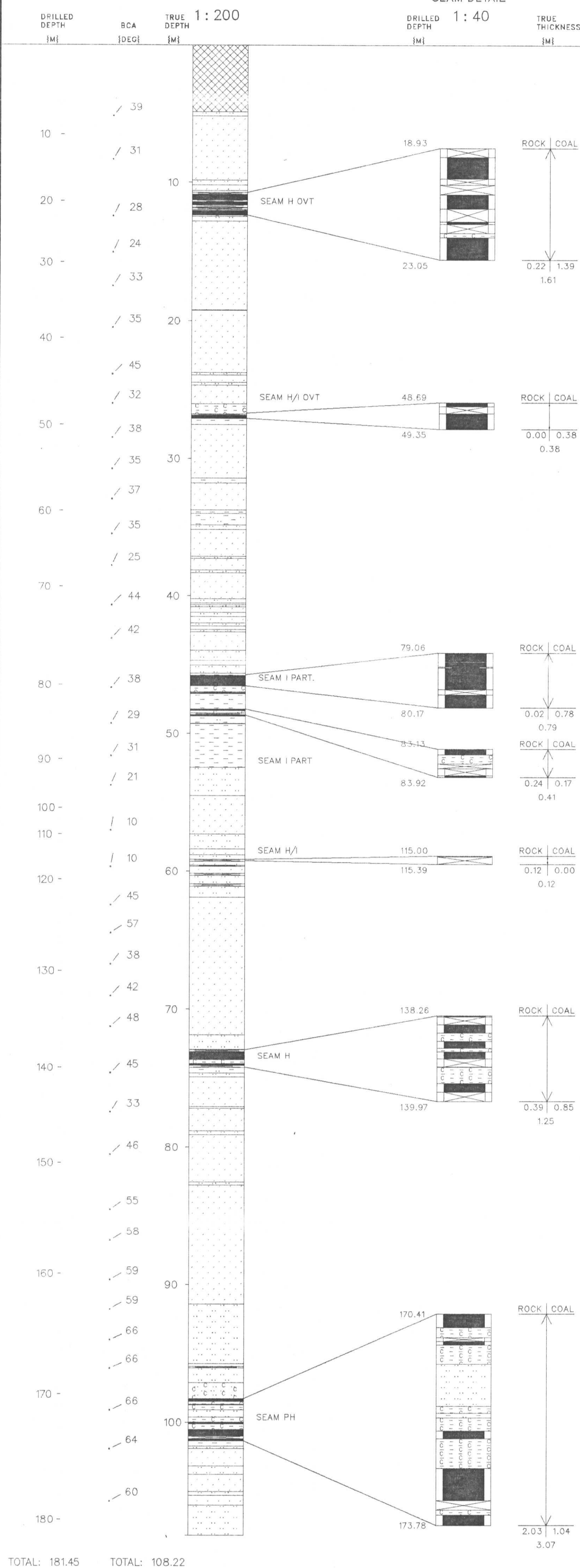


| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

NORTHING: 6346044.0 N
 EASTING: 508677.3 E

INCLINATION: 90.0°

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

740

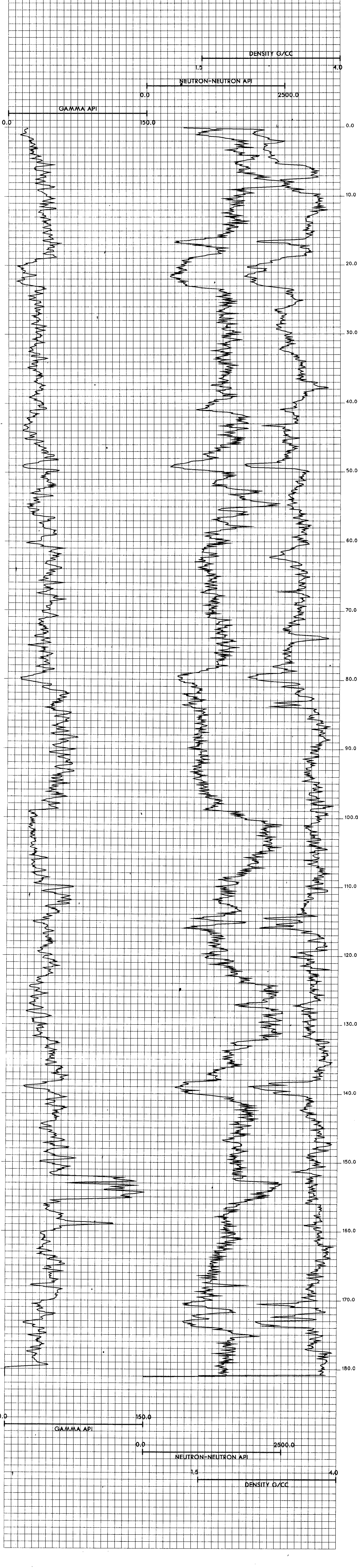
Geophysical Log

| | | | |
|----------------------------------|-------------------------------|----------------------|-------------------|
| Datasource: KPNLRDDH87026 | Province: BC | Northing: 6346050.00 | Lat: 571533 |
| Log Date: 86-01-23 | Zone: 9 | Easting: 508677.00 | Long: 1285122 |
| Company: CENTURY | Measuring Point: GROUND LEVEL | | Elevation: 1444.0 |
| Geologist: LEE | | | |

Scale: 1 to 200.0
 Depth Range: 0.0 to 186.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|-----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | 1 IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1 IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1 IN PIPE |



MOUNT KLAPPAN ANTHRACITE PROJECT

LOST - FOX AREA

GEOLOGICAL REPORT

1987

APPENDIX III

DIAMOND DRILL HOLE DATA

VOLUME IV

KPNLRDDH 87027

TO

KPNLRDDH 87034



GULF CANADA RESOURCES LTD.
COAL DIVISION

740

CONFIDENTIAL

KPNLRDDH87027

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87027

DATE - 03/01/88

- HISTORY -

START DATE - 10/02/87

END DATE - 10/05/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PARRY

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE W. INTERSECTED H, H-1, PH, G, G (OVT).

- LOCATION -

PROVINCE - BC

ELEVATION - 1441.03

ZONE - 9

NORTHING - 6346025.03

EASTING - 508322.85

LICENCE/LEASE NUMBER -

LATITUDE - 571533

LONGITUDE - 1285143

- ORIENTATION -

LENGTH - 127.07

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 21.34

AQUIFER DEPTHS (M) - 0.00

0.00

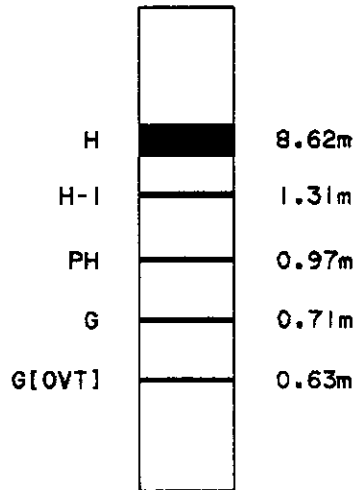
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87027**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [2050571880072012.L9



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 21.34 | 21.34 | 70 | | CASING | CASING DEPTH |
| 1 | 21.34 | 21.88 | 0.54 | 70 | | ROCK LOSS | |
| 1 | 21.88 | 22.02 | 0.14 | 70 | | OVERBURDEN | VBRKN SMALL-LARGE SIZED PEBBLES. |
| 1 | 22.02 | 22.32 | 0.30 | 70 | | ROCK LOSS | |
| 1 | 22.32 | 22.42 | 0.10 | 70 | | SANDSTONE | FG. MOD. S-P. VBRKN SLIGHT FE-STAINING (OVBDN?). |
| 1 | 22.42 | 23.58 | 1.16 | *70 | | SANDSTONE | MG. VPR. S-P. MAS. BRKN MG-VCG SS. SOME GRANULAR SIZED GRAINS. COAL CLASTS & SMALL RIP-UPS. |
| 1 | 23.58 | 24.06 | 0.48 | 72 | | SANDSTONE | VCG. PR. S-P. GY. THNB. VBRKN MG-VCG SS. BECOMES A GRAN. CONGLOMERATE AT STRAT TOP, THINLY INT. BEDDED CG & VCG SS. SMALL COAL CLASTS & RIP-UPS. |
| 1 | 24.06 | 24.16 | 0.10 | 73 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 24.16 | 25.45 | 1.29 | 75 | | SANDSTONE | PBLY. CG. PR. S-P. GY. THNB. VBRKN INT. BEDDED MG - CG SS & VCG SS - GRANULAR CONGLOMERATE. .10 M THICK QTZ VEIN. SMALL COAL CLASTS & RIP-UPS. |
| 2 | 25.45 | 25.95 | 0.50 | 77 | | SANDSTONE | VCG. PR. S-P. GY. VTHNB. SLD INTERBEDDED & MIXED CG-VCG SS. GRANULAR CONGLOMERATE. NEAR STRAT TOP (6 CM THICK). SMALL COAL CLASTS & RIP-UPS. |
| 3 | 25.95 | 27.89 | 1.94 | *80 | | SANDSTONE | PBLY. VCG. PR. S-P. MAS. BRKN CG-VCG SS WITH SOME GRANULARS. COAL CLASTS & RIP-UPS. |
| 3 | 27.89 | 28.06 | 0.17 | 79 | | MUDSTONE | DK. BN. MAS. BRKN QTZ VEIN 2 CM THICK AT STRAT. BASE. |
| 4 | 28.06 | 28.61 | 0.55 | 79 | | SANDSTONE | MG. PR. S-P. MAS. BRKN LARGE RIP-UP CLASTS & SMALL COAL CLASTS . MG-VCG SS. |
| 4 | 28.61 | 29.22 | 0.61 | 79 | | ROCK LOSS | |
| 4 | 29.22 | 29.51 | 0.29 | 78 | | SANDSTONE | PBLY. VCG. PR. S-P. MAS. SLD GRAN SS. |
| 4 | 29.51 | 29.69 | 0.18 | 78 | | CONGLOMERATE | GRAN. PR. S-P. MAS. SLD SMALL COAL CLASTS & RIP-UP CLASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------|
| 4 | 29.69 | 29.80 | 0.11 | 78 | | SANDSTONE | PBLY. VCG. PR. S-P. MAS. SLD GRAN SS (CG-VCG SS). |
| 4 | 29.80 | 29.96 | 0.16 | 78 | | SANDSTONE | PBLY. FG. VPR. LT. GY. MAS. BRKN GRAN FG SS WITH LARGE RIP-UP CLASTS. |
| 4 | 29.96 | 30.20 | 0.24 | 78 | | MUDSTONE | CARB. BLK. MAS. BRKN PYRITE STRINGER. SLTY IN PLACES. COALY STRINGERS. |
| 4 | 30.20 | 30.23 | 0.03 | 78 | | BENTONITE | TAN. VBRKN |
| 4 | 30.23 | 30.54 | 0.31 | 78 | | MUDSTONE | CARB. BLK. MAS. BRKN SLTY IN PLACES. COALY STRINGERS. |
| 5 | 30.54 | 31.27 | 0.73 | 77 | 07044 | MUDSTONE | CARB. BLK. MAS. BRKN VERY CARB. PLANT FOSSILS VERY ABUNDANT. LOWER 19 CM SAMPLED. |
| 5 | 31.27 | 31.33 | 0.06 | 77 | 07044 | MUDSTONE | DK. BN. MAS. SLD POORLY CONSOLIDATED (PUDDY LIKE). |
| 5 | 31.33 | 32.25 | 0.92 | 76 | 07045 H | COAL LOSS | |
| 5 | 32.25 | 32.35 | 0.10 | 76 | 07045 H | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------|
| 5 | 32.35 | 32.38 | 0.03 | 76 | 07045 H | COAL | C-6. BLK. VBRKN |
| 5 | 32.38 | 32.41 | 0.03 | 76 | 07045 H | COAL | C-3. BLK. VBRKN |
| 5 | 32.41 | 32.48 | 0.07 | 76 | 07045 H | MUDSTONE | CARB. BLK. MAS. BRKN |
| 5 | 32.48 | 32.50 | 0.02 | 76 | 07045 H | COAL | C-4. BLK. SLD |
| 5 | 32.50 | 32.54 | 0.04 | 76 | 07045 H | MUDSTONE | CARB. BLK. SLD |
| 5 | 32.54 | 32.56 | 0.02 | 76 | 07045 H | COAL | C-3. BLK. SLD |
| 5 | 32.56 | 32.60 | 0.04 | 76 | 07045 H | MUDSTONE | SLTY. LT. BN. MAS. SLD |
| 5 | 32.60 | 32.66 | 0.06 | 76 | 07045 H | COAL | C-3. BLK. SLD |
| 5 | 32.66 | 32.78 | 0.12 | 76 | 07045 H | MUDSTONE | SLTY. LT. BN. MAS. BRKN |
| 5 | 32.78 | 32.87 | 0.09 | 76 | 07045 H | COAL | C-3. BLK. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------|
| 5 | 32.87 | 32.89 | 0.02 | 76 | 07045 H | COAL | C-2.BLK.VBRKN |
| 5 | 32.89 | 32.99 | 0.10 | 76 | 07045 H | COAL | C-3.BLK.PWRD |
| 5 | 32.99 | 33.09 | 0.10 | 76 | 07045 H | COAL | C-5.BLK.SLD VERY POORLY CONSOLIDATED. |
| 6 | 33.09 | 33.17 | 0.08 | 76 | 07045 H | COAL | C-3.BLK.VBRKN |
| 6 | 33.17 | 33.55 | 0.38 | 75 | 07045 H | COAL LOSS | |
| 6 | 33.55 | 34.55 | 1.00 | 75 | 07046 H | MUDSTONE | CARB.BLK.MAS.VBRKN ENTIRE CORE IS PULVERIZED. |
| 7 | 34.55 | 34.77 | 0.22 | 74 | 07046 H | MUDSTONE | CARB.DK.GY.MAS.VBRKN RARE THIN COAL LAMS. DOMINANTLY WELL CONSOLIDATED WITH OCCASIONAL MODERATE TO POORLY CONSOLIDATED ZONES. |
| 7 | 34.77 | 34.78 | 0.01 | 74 | 07046 H | COAL | C-3.BLK.PWRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 7 | 34.78 | 34.81 | 0.03 | 74 | 07046 H | MUDSTONE | CARB.DK.GY.SHRD |
| 7 | 34.81 | 34.84 | 0.03 | 74 | 07046 H | COAL | C-3.BLK.SHRD SOME THIN C-2 BANDS W/IN. |
| 7 | 34.84 | 34.94 | 0.10 | 74 | 07046 H | MUDSTONE | CARB.DK.GY.VBRKN OCCASIONAL VERY THIN COAL LAMS (<1 MM) AT UNIT'S BASE. |
| 7 | 34.94 | 34.95 | 0.01 | 74 | 07046 H | COAL | C-5.BLK.VBRKN |
| 7 | 34.95 | 34.97 | 0.02 | 74 | 07046 H | MUDSTONE | CARB.BLK.VBRKN |
| 7 | 34.97 | 34.99 | 0.02 | 74 | 07046 H | COAL | C-3.BLK.VBRKN SOME C-2. |
| 7 | 34.99 | 35.01 | 0.02 | 74 | 07046 H | MUDSTONE | CARB.BLK.VBRKN |
| 7 | 35.01 | 35.02 | 0.01 | 74 | 07046 H | COAL | C-3.BLK.VBRKN SOME C-2. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------|
| 7 | 35.02 | 35.11 | 0.09 | 74 | 07046 | H | MUDSTONE | CARB. BLK. SHRD COMMON THIN COAL LAMS (<1 MM). |
| 7 | 35.11 | 35.12 | 0.01 | 74 | 07046 | H | COAL | C-4. BLK. SHRD |
| 7 | 35.12 | 35.19 | 0.07 | 74 | 07046 | H | MUDSTONE | CARB. DK. GY. VBRKN AT END OF UNIT: 35.66 M. |
| 7 | 35.19 | 35.36 | 0.17 | 74 | 07046 | H | MUDSTONE | CARB. DK. GY. MAS. BRKN WELL CONSOLIDATED ESP NEAR BASE. |
| 7 | 35.36 | 35.38 | 0.02 | 74 | 07046 | H | COAL | C-5. BLK. LAM. SLD INTLAM C-1 COAL & MUDST. LAMS UP TO .60 CM. |
| 7 | 35.38 | 35.42 | 0.04 | 74 | 07046 | H | COAL | C-3. BLK. PHRD COMMON PYRITE. |
| 7 | 35.42 | 35.64 | 0.22 | 74 | 07046 | H | MUDSTONE | CARB. DK. GY. MAS. VBRKN |
| 7 | 35.64 | 35.67 | 0.03 | 74 | 07046 | H | COAL | C-2. BLK. VSHRD |
| 7 | 35.67 | 35.70 | 0.03 | 74 | 07046 | H | MUDSTONE | CARB. DK. GY. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------|
| 7 | 35.70 | 35.72 | 0.02 | 74 | 07046 | H | COAL | C-2. BLK. SHRD |
| 7 | 35.72 | 35.90 | 0.18 | 74 | 07046 | H | COAL | C-4. BLK. PHRD COMMON C-3. |
| 7 | 35.90 | 35.92 | 0.02 | 74 | 07046 | H | MUDSTONE | DK. GY. SHRD POORLY CONSOLIDATED SOFT & PLIABLE. |
| 7 | 35.92 | 35.97 | 0.05 | 73 | 07046 | H | COAL | C-4. BLK. PHRD |
| 7 | 35.97 | 36.03 | 0.06 | 73 | 07046 | H | MUDSTONE | CARB. BLK. BRKN SOFT & PLIABLE. |
| 8 | 36.03 | 36.12 | 0.09 | 73 | 07046 | H | MUDSTONE | CARB. BLK. BRKN COMMON LITRICK SURFACES. |
| 8 | 36.12 | 36.19 | 0.07 | 73 | 07046 | H | COAL | C-5. BLK. PHRD |
| 8 | 36.19 | 36.25 | 0.06 | 73 | 07046 | H | MUDSTONE | CARB. BLK. SHRD |
| 8 | 36.25 | 36.35 | 0.10 | 73 | 07046 | H | COAL | C-6. BLK. VSHRD |
| 8 | 36.35 | 36.44 | 0.09 | 73 | 07046 | H | MUDSTONE | CARB. DK. GY. MAS. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------|
| 8 | 36.44 | 36.47 | 0.03 | 73 | 07046 | H | MUDSTONE | CARB. BLK. VBRKN VERY CARB WITH COMMON THIN <2.5 CM COAL LAMS. |
| 8 | 36.47 | 37.01 | 0.54 | 73 | 07046 | H | COAL LOSS | |
| 8 | 37.01 | 37.37 | 0.36 | 73 | 07046 | H | ROCK LOSS | |
| 8 | 37.37 | 37.39 | 0.02 | 72 | 07047 | H | COAL | C-2. BLK. VSHRD |
| 8 | 37.39 | 37.42 | 0.03 | 72 | 07047 | H | COAL | C-5. BLK. SHRD COMMON THIN MUDST BANDS. |
| 8 | 37.42 | 37.44 | 0.02 | 72 | 07047 | H | MUDSTONE | CARB. BLK. SHRD |
| 8 | 37.44 | 37.47 | 0.03 | 72 | 07047 | H | COAL | C-3. BLK. VBRKN |
| 8 | 37.47 | 37.52 | 0.05 | 72 | 07047 | H | COAL | C-2. BLK. VBRKN |
| 8 | 37.52 | 37.64 | 0.12 | 72 | 07047 | H | COAL | C-2. BLK. BRKN SOME C-3 TOWARDS UNIT'S BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------|
| 8 | 37.64 | 37.66 | 0.02 | 72 | 07047 | H | COAL | C-6. BLK. BRKN |
| 8 | 37.66 | 37.69 | 0.03 | 72 | 07047 | H | COAL | C-1. BLK. BRKN |
| 8 | 37.69 | 37.81 | 0.12 | 72 | 07047 | H | MUDSTONE | CARB. BLK. VSHRD COMMON THIN C-6 LAMS. |
| 8 | 37.81 | 37.90 | 0.09 | 72 | 07047 | H | ROCK LOSS | |
| 8 | 37.90 | 38.63 | 0.73 | 72 | 07047 | H | COAL LOSS | |
| 8 | 38.63 | 38.76 | 0.13 | 72 | 07047 | H | COAL | C-2. BLK. VBRKN |
| 8 | 38.76 | 38.91 | 0.15 | 71 | 07047 | H | COAL | C-1. BLK. BRKN ABRUPT LOWER CONTACT. |
| 8 | 38.91 | 38.93 | 0.02 | 71 | 07047 | H | MUDSTONE | CARB. DK. GY. BRKN |
| 8 | 38.93 | 38.94 | 0.01 | 71 | 07047 | H | COAL | C-2. BLK. SLD |
| 8 | 38.94 | 38.97 | 0.03 | 71 | 07047 | H | MUDSTONE | CARB. DK. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------|
| 8 | 38.97 | 39.02 | 0.05 | 71 | 07047 H | COAL | C-2.BLK.VBRKN |
| 9 | 39.02 | 39.04 | 0.02 | 71 | 07047 H | MUDSTONE | CARB.BLK.SLD VERY COALY. |
| 9 | 39.04 | 39.15 | 0.11 | 71 | 07047 H | COAL | C-2.BLK.BRKN |
| 9 | 39.15 | 39.24 | 0.09 | 71 | 07047 H | COAL | C-6.BLK.SLD |
| 9 | 39.24 | 39.26 | 0.02 | 71 | 07047 H | MUDSTONE | CARB.BLK.SLD |
| 9 | 39.26 | 39.34 | 0.08 | 71 | 07047 H | COAL | C-3.BLK.BRKN |
| 9 | 39.34 | 39.38 | 0.04 | 71 | 07047 H | COAL | C-5.BLK.VBRKN |
| 9 | 39.38 | 39.41 | 0.03 | 71 | 07047 H | MUDSTONE | CARB.BLK.VBRKN |
| 9 | 39.41 | 39.51 | 0.10 | 71 | 07047 H | COAL | C-3.BLK.BRKN |
| 9 | 39.51 | 39.54 | 0.03 | 71 | 07047 H | COAL | C-6.BLK.SHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------|
| 9 | 39.54 | 39.61 | 0.07 | 71 | 07047 H | COAL | C-3.BLK.SHRD |
| 9 | 39.61 | 39.73 | 0.12 | 71 | 07047 H | COAL | C-4.BLK.VSHRD |
| 9 | 39.73 | 39.77 | 0.04 | 71 | 07047 H | COAL | C-3.BLK.BRKN |
| 9 | 39.77 | 39.88 | 0.11 | 71 | 07047 H | COAL | C-1.BLK.BRKN |
| 9 | 39.88 | 39.89 | 0.01 | 71 | 07047 H | COAL | C-4.BLK.BRKN |
| 9 | 39.89 | 39.91 | 0.02 | 71 | 07047 H | COAL | C-1.BLK.BRKN |
| 9 | 39.91 | 39.94 | 0.03 | 71 | 07047 H | MUDSTONE | CARB.BLK.BRKN COMMON THIN COAL LAMS THROUGHOUT. |
| 9 | 39.94 | 40.03 | 0.09 | 71 | 07047 H | COAL | C-2.BLK.BRKN OCCASIONAL C-1 & COMMON C-3. |
| 9 | 40.03 | 40.06 | 0.03 | 71 | 07047 H | MUDSTONE | CARB.BLK.VBRKN |
| 9 | 40.06 | 40.14 | 0.08 | 70 | 07047 H | COAL | C-3.BLK.VBRKN COMMON C-2. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------|
| 9 | 40.14 | 40.16 | 0.02 | 70 | 07047 H | MUDSTONE | CARB. BLK. SHRD |
| 9 | 40.16 | 40.27 | 0.11 | 70 | 07047 H | COAL | C-3. BLK. VSHRD |
| 9 | 40.27 | 40.32 | 0.05 | 70 | 07047 H | COAL | C-5. BLK. BRKN ABRUPT LOWER CONTACT. |
| 9 | 40.32 | 40.54 | 0.22 | 70 | 07048 | MUDSTONE | M-DK. GY. BRKN SLIGHT CARB AT TOP. CORE TWIST-OFF AT B ASE. |
| 9 | 40.54 | 40.71 | 0.17 | 70 | | MUDSTONE | CARB. M-DK. GY. SLD SLIGHT CARB WITH OCCASIONAL LSITRIC SUR FACES. |
| 10 | 40.71 | 41.20 | 0.49 | 70 | | SILTSTONE | DK. GY. SHRD INTACT BUT SHEARED. BRECCIATED. |
| 10 | 41.20 | 42.57 | 1.37 | 69 | | SANDSTONE | CLYY. FG. PR. LT. GY. MAS. BIOTR. BRKN VERY ARGILLACEOUS SS WITH MUD & SLTST L AMS. |
| 11 | 42.57 | 43.22 | 0.65 | 68 | | SANDSTONE | CLYY. FG. PR. LT. GY. MAS. BRKN AS ABOVE. QTZ & TALC FILLED STRINGERS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 43.22 | 44.44 | 1.22 | 68 | | SANDSTONE | CG. MOD. S-P. MAS. BRKN RIP-UP CLAST. MINOR TALC & QTZ FILLED S TRINGERS. BECOMING FINER DOWN SECTION. |
| 12 | 44.44 | 44.58 | 0.14 | 67 | | SANDSTONE | CG. MOD. S-P. MAS. BRKN |
| 12 | 44.58 | 45.33 | 0.75 | *67 | | SANDSTONE | MG. MOD. S-P. MAS. BRKN |
| 12 | 45.33 | 45.65 | 0.32 | 65 | | SANDSTONE | CLYY. VFG. PR. LT. GY. BRKN VERY ARGILLACEOUS SS. |
| 12 | 45.65 | 46.29 | 0.64 | 63 | | SANDSTONE | SLTY. VFG. PR. LT. GY. MAS. SSD. BRKN MAS VERY ARGILLACEOUS SS WITH SLTST LAM . LOAD CASTS (RIGHT WAY UP). |
| 13 | 46.29 | 47.27 | 0.98 | *60 | | SANDSTONE | SLTY. VFG. PR. LT. M. GY. VTHNB. SSD. BRKN MAS NEAR STRAT TOP. VFG VERY ARGILLACEO US SS WITH SLTST LAMS. LOAD CASTS (RIGH T WAY UP). |
| 13 | 47.27 | 47.81 | 0.54 | 60 | | SILTSTONE | M. GY. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 13 | 47.81 | 47.90 | 0.09 | 60 | | | MUDSTONE | CLYY.DK.BN.MAS.SLD SLD BUT VERY POORLY CONSOLIDATED. |
| 13 | 47.90 | 48.22 | 0.32 | 60 | | | ROCK LOSS | |
| 13 | 48.22 | 48.68 | 0.46 | 60 | | | MUDSTONE | DK.GY.MAS.VBRKN |
| 13 | 48.68 | 49.00 | 0.32 | 60 | | | ROCK LOSS | |
| 14 | 49.00 | 49.47 | 0.47 | 60 | 06997 | | MUDSTONE | DK.GY.VBRKN CARB TOWARDS BASE WITH OCCASIONAL THIN COALY LAMINAE (<.3 CM). |
| 14 | 49.47 | 49.79 | 0.32 | 60 | 06997 | | ROCK LOSS | |
| 14 | 49.79 | 49.87 | 0.08 | 60 | 06998 | H-1 | COAL | C-2.VSHRD |
| 14 | 49.87 | 49.91 | 0.04 | 60 | 06998 | H-1 | MUDSTONE | CARB.DK.GY.SLD |
| 14 | 49.91 | 50.06 | 0.15 | 60 | 06998 | H-1 | COAL | C-5.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------|
| 14 | 50.06 | 50.15 | 0.09 | 60 | 06998 | H-1 | COAL | C-3.VBRKN |
| 14 | 50.15 | 50.39 | 0.24 | 60 | 06998 | H-1 | MUDSTONE | CARB.DK.GY.BRKN |
| 14 | 50.39 | 50.52 | 0.13 | 60 | 06998 | H-1 | COAL | C-3.VBRKN |
| 14 | 50.52 | 50.57 | 0.05 | 60 | 06998 | H-1 | COAL | C-4.VBRKN |
| 14 | 50.57 | 50.77 | 0.20 | 60 | 06998 | H-1 | COAL | C-3.VSHRD |
| 14 | 50.77 | 51.30 | 0.53 | 60 | 06998 | H-1 | COAL LOSS | |
| 14 | 51.30 | 51.53 | 0.23 | 60 | 06999 | | MUDSTONE | SLTY.DK.GY.BRKN SAMPLED. |
| 14 | 51.53 | 51.55 | 0.02 | 60 | 06999 | | COAL | C-2.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 14 | 51.55 | 51.72 | 0.17 | 60 | | | MUDSTONE | CARB. BLK. MAS. VBRKN COALY MUDST WITH COMMON LISTRIC SURFACE S ESP AT TOP. GRADATIONAL LOWER CONTACT |
| 14 | 51.72 | 51.89 | 0.17 | 60 | | | ROCK LOSS | |
| 14 | 51.89 | 52.03 | 0.14 | 60 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN SLIGHT CARB MUDST. WELL CONSOLIDATED WITH TH RARE LISTRIC SURFACES. |
| 15 | 52.03 | 52.06 | 0.03 | 60 | | | MUDSTONE | CARB. BLK. MAS. SLD SLD BUT POORLY CONSOLIDATED. |
| 15 | 52.06 | 52.09 | 0.03 | 60 | | | MUDSTONE | DK. GY. MAS. SHRD INTACT BUT SHEARED. |
| 15 | 52.09 | 52.34 | 0.25 | 60 | | | SILTSTONE | M-DK. GY. LAM. BRKN |
| 15 | 52.34 | 52.65 | 0.31 | 60 | | | SANDSTONE | MG. LT. GY. MAS. BRKN SLTST LAMS AT STRAT TOP. FRACTURE SHOWING NORMAL MOVEMENT. RIP-UP CLASTS (1-2 CM). |
| 15 | 52.65 | 53.86 | 1.21 | *60 | | | SILTSTONE | SSY. M-DK. GY. LAM. BRKN INTLAM SLTST (80%) & SS (20%). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 16 | 53.86 | 54.00 | 0.14 | 62 | | | SILTSTONE | M-DK. GY. MAS. BRKN |
| 16 | 54.00 | 54.49 | 0.49 | *63 | | | SILTSTONE | M-DK. GY. MAS. BRKN MAS WITH LAM REGIONS. FRACTURE SHOWING NORMAL MOVEMENT. |
| 16 | 54.49 | 54.56 | 0.07 | 63 | | | MUDSTONE | DK. BN. MAS. SHRD INTACT BUT SHEARED. |
| 16 | 54.56 | 54.68 | 0.12 | 63 | | | MUDSTONE | DK. GY. MAS. SLD |
| 17 | 54.68 | 55.64 | 0.96 | 62 | | | MUDSTONE | DK. GY. MAS. VBRKN SANDY REGION (14 CM THICK). SHEARED (LISTRIC SURFACE COMMON). |
| 17 | 55.64 | 55.94 | 0.30 | 62 | | | ROCK LOSS | |
| 17 | 55.94 | 56.15 | 0.21 | 62 | | | MUDSTONE | DK. GY. MAS. BRKN TOP OF FINING UP SEQUENCE. |
| 17 | 56.15 | 56.49 | 0.34 | 61 | | | MUDSTONE | SSY. DK. GY. MAS. BRKN BECOMES INCREASINGLY SANDY DOWN SECTION . SS GRAINS ARE COARSE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 17 | 56.49 | 56.59 | 0.10 | 61 | | | SANDSTONE | CLYY, FG, LT, GY, MAS, SLD VERY MUDDY SS. BASE OF FINING UP SEQUENCE (RIGHT WAY UP). |
| 17 | 56.59 | 56.63 | 0.04 | 61 | | | SILTSTONE | M-DK, GY, MAS, SLD |
| 18 | 56.63 | 56.99 | 0.36 | 61 | | | SILTSTONE | M-DK, GY, MAS, BRKN LITRIG. SURFACES. COMMON. |
| 18 | 56.99 | 57.15 | 0.16 | 61 | | | SANDSTONE | SLTY, VFG, PR, LT-M, GY, LAM, SLD VERY ARGILLACEOUS SS WITH SLTST LAMS. |
| 18 | 57.15 | 57.25 | 0.10 | 61 | | | SILTSTONE | M-DK, GY, MAS, SLD |
| 18 | 57.25 | 58.46 | 1.21 | *60 | | | SANDSTONE | FG, PR, LT-M, GY, MAS, BRKN SOME YCG, MINOR SLTST LAMS. FG-MG SS (M G NEAR BASE). |
| 19 | 58.46 | 58.84 | 0.38 | 59 | | | SANDSTONE | FG, PR, LT-M, GY, MAS, BRKN SOME VCG SAND. FG-MG SS. |
| 19 | 58.84 | 60.08 | 1.24 | *58 | | | SANDSTONE | FG, PR, LT-M, GY, MAS, BRKN 1 CM SIZED RIP-UP CLASTS. ONE LARGE (6 CM) RIP-UP CLAST. FG-MG SS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------|
| 20 | 60.08 | 60.32 | 0.24 | 55 | | | SANDSTONE | FG, PR, LT-M, GY, MAS, SLD |
| 20 | 60.32 | 60.53 | 0.21 | 55 | | | SANDSTONE | MG, PR, LT-M, GY, MAS, SLD SLTST RIP-UP CLAST. |
| 20 | 60.53 | 60.56 | 0.03 | 54 | | | MUDSTONE | CARB, BLK, BRKN PYRITE STREAKS. |
| 20 | 60.56 | 60.59 | 0.03 | 54 | | | COAL | C-3, BLK, VBRKN |
| 20 | 60.59 | 61.00 | 0.41 | 53 | | | MUDSTONE | CARB, BLK, MAS, SHRD INTACT BUT SHEARED. SOFT. |
| 20 | 61.00 | 61.21 | 0.21 | 52 | | | ROCK LOSS | |
| 20 | 61.21 | 61.27 | 0.06 | 52 | | | MUDSTONE | CARB, BLK, MAS, BRKN HARD. |
| 20 | 61.27 | 61.34 | 0.07 | 52 | | | COAL | C-4, BLK, VBRKN |
| 20 | 61.34 | 61.64 | 0.30 | 51 | | | ROCK LOSS | |
| 20 | 61.64 | 61.70 | 0.06 | 50 | | | MUDSTONE | BLK, MAS, VBRKN SLIGHTLY CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------|
| 20 | 61.70 | 61.78 | 0.08 | 50 | | | SANDSTONE | VFG. MOD. LT. GY. MAS. BRKN FRACTURE SHOWING NORMAL MOVEMENT. |
| 20 | 61.78 | 61.98 | 0.20 | 50 | | | ROCK LOSS | |
| 20 | 61.98 | 62.03 | 0.05 | 49 | | | MUDSTONE | DK. BN. SHRD SLIGHTLY CARB. |
| 20 | 62.03 | 62.33 | 0.30 | 49 | | | ROCK LOSS | |
| 20 | 62.33 | 62.40 | 0.07 | 48 | | | SANDSTONE | VFG. MOD. LT. GY. VBRKN |
| 20 | 62.40 | 62.70 | 0.30 | 47 | | | ROCK LOSS | |
| 20 | 62.70 | 62.73 | 0.03 | 47 | | | MUDSTONE | DK. BN. SHRD |
| 20 | 62.73 | 62.90 | 0.17 | 46 | | | SANDSTONE | VFG. MOD. LT. GY. MAS. SLD |
| 21 | 62.90 | 63.11 | 0.21 | 46 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD RIP-UP CLASTS & SLTST STREAKS. |
| 21 | 63.11 | 63.28 | 0.17 | *45 | | | SANDSTONE | FG. MOD. LT. GY. YTHNB. VBRKN MINOR SLTST LAMS. CALCAREOUS (CEMENT?). |
| 21 | 63.28 | 63.58 | 0.30 | 46 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 63.58 | 65.10 | 1.52 | 51 | | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. THNB. BRKN VTHIN-THINLY INTERBEDDED SS (75%)/SLTST (25%). TWO FRACTURES A) THRUST MOVEMENT B) NORMAL MOVEMENT. BRECCIATION ZONE .27 M BELOW STRAT TOP (30 CM THICK). BR ECCICIATED SLTST WITH SAND INFILLING. |
| 22 | 65.10 | 66.97 | 1.87 | *60 | | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. THNB. BRKN VTHIN-THINLY INTBEDDED SS (80%)/SLTST (20%). BCA BECOMES 72 DEGREES NEAR STRAT BASE. BRECCIATED ZONE (10 CM THICK) AT STRAT BASE. |
| 23 | 66.97 | 67.65 | 0.68 | *45 | 07049 | | SANDSTONE | SLTY. VFG. LT-M. GY. THNB. BRKN INTBEDDED SS/SLTST. LOWER 25 CM SAMPLED |
| 23 | 67.65 | 67.67 | 0.02 | 48 | 07050 | PH | COAL | C-2. BLK. VBRKN |
| 23 | 67.67 | 67.73 | 0.06 | 48 | 07050 | PH | COAL | C-5. BLK. VBRKN |
| 23 | 67.73 | 68.13 | 0.40 | 50 | 07050 | PH | COAL | C-2. BLK. PWRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 68.13 | 68.28 | 0.15 | 52 | 07050 | PH | COAL | C-3, BLK, PHRD |
| 23 | 68.28 | 68.87 | 0.59 | 55 | 07050 | PH | COAL LOSS | |
| 23 | 68.87 | 69.10 | 0.23 | 59 | 06996 | | MUDSTONE | CARB. BLK. VBRKN |
| 23 | 69.10 | 69.50 | 0.40 | 61 | | | ROCK LOSS | |
| 23 | 69.50 | 69.55 | 0.05 | 63 | | | SILTSTONE | M. GY. VBRKN |
| 24 | 69.55 | 69.69 | 0.14 | 64 | | | MUDSTONE | CARB. BLK. MAS. BRKN ABUNDANT QTZ FILLED FRACTURES. |
| 24 | 69.69 | 70.69 | 1.00 | 68 | | | SILTSTONE | M. GY. MAS. SSD. BRKN LOAD CAST (RIGHT WAY UP). |
| 24 | 70.69 | 71.59 | 0.90 | *76 | | | SANDSTONE | FG. MOD. LT. GY. VTHNB. BRKN VTHINLY BEDDED SS (VFG-FG) WITH MINOR S LTST LAMS & WISP. ABUNDANT HIRLINE FRA CTURES AT STRAT BASE (QTZ FILLED). FRA TURE SHOWING NORMAL MOVEMENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 25 | 71.59 | 72.30 | 0.71 | 73 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. VTHNB. BRKN VBRKN AT STRAT TOP. INTBEDDED SS (75%) SLTST (25%). |
| 25 | 72.30 | 73.44 | 1.14 | *70 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. VTHNB. BRKN VERY THNB-THNB SS (80%) WITH SLTST LAMS (20%). BLACK PELLETS. |
| 26 | 73.44 | 73.84 | 0.40 | 66 | | | SANDSTONE | FG. MEL. LT. GY. MAS. VBRKN TWO LARGE QTZ VEINS (1&2 CM THICK). UPP ER FG SS. |
| 26 | 73.84 | 74.24 | 0.40 | 63 | | | ROCK LOSS | |
| 26 | 74.24 | 74.44 | 0.20 | 62 | | | SILTSTONE | SSY. LT-M. GY. VTHNB. VBRKN INTBEDDED SS/SLTST. |
| 26 | 74.44 | 74.84 | 0.40 | *60 | | | SILTSTONE | M. GY. LAM. BRKN MINOR SS LAMS. |
| 26 | 74.84 | 75.14 | 0.30 | 57 | | | SANDSTONE | FG. MOD. LT. GY. MAS. XBDG. BRKN CALCAREOUS NEAR STRAT BASE. RIGHT WAY U P. |
| 26 | 75.14 | 75.54 | 0.40 | 53 | | | SILTSTONE | SSY. LT. GY. MAS. BRKN CALCAREOUS. SSY NEAR STRAT BASE. HIGHLY FRACTURED (QTZ FILLED). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 75.54 | 75.89 | 0.35 | 50 | | | ROCK LOSS | |
| 27 | 75.89 | 76.09 | 0.20 | 47 | | | SANDSTONE | SLTY. MG. LT-M. GY. VTHNB. XBDG. YBRKN INTERDEDED SLTST/SS. RIP-UP SLTST CLAS TS. RIGHT WAY UP. |
| 27 | 76.09 | 76.39 | 0.30 | *45 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD |
| 27 | 76.39 | 76.69 | 0.30 | 47 | | | SANDSTONE | SLTY.FG.MOD.LT.GY.LAM.BRKN SS.(85%) WITH SLTST (15%) LAMS. |
| 27 | 76.69 | 77.04 | 0.35 | 50 | | | SANDSTONE | FG.WEL.LT.GY.MAS.BRKN |
| 27 | 77.04 | 77.54 | 0.50 | 53 | | | SANDSTONE | MG.WEL.S-P.MAS.BRKN FG-MG SS. SLTY BAND 5 CM THICK. 12 M FR OM STRAT TOP. SMALL RIP-UP CLASTS NEAR STRAT BASE. |
| 28 | 77.54 | 78.04 | 0.50 | 57 | | | SANDSTONE | SLTY.FG.PR.LT-M.GY.LAM.BRKN FG-VFG SS. INTLAM & INTERMIXED SLTST (2 5%)/SS (75%). SS BECOMES CLEANER IN LOW ER SECTION. SMALL (3 MM) RIP-UP CLASTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 78.04 | 79.40 | 1.36 | *65 | | | SILTSTONE | SSY.M.GY.LAM.BRKN INTLAM SLTST (70%) & SS (30%). FRACTURE SHOWING NORMAL MOVEMENT. BECOMES A SLT Y.SS. LOCALLY. TWO BRECCIATED ZONES A). 14 M THICK (.95 FROM STRAT TOP) B). 12 M THICK (STRAT BASE). |
| 28 | 79.40 | 79.50 | 0.10 | 62 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD |
| 29 | 79.50 | 79.59 | 0.09 | 62 | | | SILTSTONE | M.GY.MAS.BRKN |
| 29 | 79.59 | 79.83 | 0.24 | 61 | | | SANDSTONE | SLTY.FG.LT.GY.LAM.MRMBU.BRKN LOAD CASTS (RIGHT WAY UP). 85% SS WITH 15% SLTST LAMS. |
| 29 | 79.83 | 80.51 | 0.68 | 59 | | | SILTSTONE | M.GY.MAS.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 | 80.51 | 80.73 | 0.22 | 58 | | | SANDSTONE | LT. GY. MAS. BRKN MINOR SLTST LAMS. |
| 29 | 80.73 | 80.88 | 0.15 | 57 | | | SILTSTONE | M. GY. MAS. BRKN SSY AT STRAT BASE. |
| 29 | 80.88 | 81.03 | 0.15 | 56 | | | SILTSTONE | M. GY. MAS. VBRKN |
| 29 | 81.03 | 81.38 | 0.35 | 55 | | | ROCK LOSS | |
| 30 | 81.38 | 81.63 | 0.25 | 54 | | | SILTSTONE | LT. GY. MAS. BRKN CALCAREOUS. HIGHLY FRACTURES (QTZ FILL D). |
| 30 | 81.63 | 83.45 | 1.82 | *50 | | | SILTSTONE | SSY. M. GY. THNB. SSD. BRKN THINLY INTBEDDED SS (30%)/SLTST (70%). SS IS FG. LOAD CAST (RIGHT WAY UP). WRM BUR (RIGHT WAY UP). FRACTURE (NORMAL NO VEMENT). SOME QTZ FILLED FRACTURES. |
| 31 | 83.45 | 83.70 | 0.25 | 49 | | | SILTSTONE | SSY. M. GY. MAS. BRKN MAS SLTST WITH A VTHIN (5 CM THICK) SS BAND. ABUNDANT HAIRLINE FRACTURES. |
| 31 | 83.70 | 83.90 | 0.20 | 49 | | | SILTSTONE | M. GY. MAS. VBRKN BRECCIATED. |
| 31 | 83.90 | 84.20 | 0.30 | 48 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------|
| 31 | 84.20 | 84.23 | 0.03 | 48 | G | | COAL | C-3. BLK. SHRD |
| 31 | 84.23 | 84.37 | 0.14 | 48 | G | | COAL | C-4. BLK. VSHRD |
| 31 | 84.37 | 84.41 | 0.04 | 48 | G | | MUDSTONE | CARB. BLK. VBRKN |
| 31 | 84.41 | 84.47 | 0.06 | 48 | G | | ROCK LOSS | |
| 31 | 84.47 | 84.88 | 0.41 | 48 | G | | COAL LOSS | |
| 31 | 84.88 | 84.92 | 0.04 | 47 | G | | COAL | C-4. BLK. BRKN |
| 31 | 84.92 | 85.17 | 0.25 | 47 | G | | COAL | C-6. BLK. VSHRD INTERMIXED MUD & COAL. |
| 31 | 85.17 | 85.37 | 0.20 | 47 | | | ROCK LOSS | |
| 31 | 85.37 | 85.46 | 0.09 | 47 | | | MUDSTONE | M. GY. VBRKN |
| 31 | 85.46 | 85.66 | 0.20 | 47 | | | ROCK LOSS | |
| 31 | 85.66 | 85.91 | 0.25 | 47 | | | MUDSTONE | SLTY. M. GY. VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------|
| 31 | 85.91 | 86.11 | 0.20 | 46 | | ROCK LOSS | |
| 31 | 86.11 | 86.19 | 0.08 | 46 | | COAL | C-5.BLK.VSHRD MIXED IN MUD & COAL. |
| 31 | 86.19 | 86.29 | 0.10 | 46 | | ROCK LOSS | |
| 31 | 86.29 | 86.35 | 0.06 | 46 | | BENTONITE | M.BN.VSHRD |
| 31 | 86.35 | 86.41 | 0.06 | 46 | | MUDSTONE | M.GY.MAS.SHRD |
| 32 | 86.41 | 86.91 | 0.50 | 46 | | MUDSTONE | DK.GY.MAS.VBRKN LITRIC SURFACES COMMON. MINOR SLTY REG IONS. |
| 32 | 86.91 | 87.21 | 0.30 | 45 | | ROCK LOSS | |
| 32 | 87.21 | 88.02 | 0.81 | 45 | | MUDSTONE | M-DK.GY.MAS.VBRKN LITRIC SURFACES COMMON. BECOMES SLTY I N LOWER HALF. BRECCAIATED REGIONS. |
| 32 | 88.02 | 88.22 | 0.20 | 44 | | ROCK LOSS | |
| 33 | 88.22 | 88.30 | 0.08 | 44 | | MUDSTONE | SLTY.DK.GY.MAS.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------|
| 33 | 88.30 | 88.42 | 0.12 | 44 | | SILTSTONE | M.GY.SHRD SAND LENSES PRESENT. |
| 33 | 88.42 | 88.57 | 0.15 | 44 | | MUDSTONE | SLTY.DK.GY.MAS.VBRKN |
| 33 | 88.57 | 88.77 | 0.20 | 43 | | ROCK LOSS | |
| 33 | 88.77 | 90.12 | 1.35 | 43 | | MUDSTONE | DK.GY.MAS.VBRKN BRECCIATED REGIONS IN LOWER HALF. BRECC IATED AT STRAT TOP. |
| 33 | 90.12 | 90.32 | 0.20 | 42 | | ROCK LOSS | |
| 34 | 90.32 | 90.52 | 0.20 | 42 | | MUDSTONE | DK.GY.MAS.VBRKN |
| 34 | 90.52 | 91.44 | 0.92 | 41 | | MUDSTONE | DK.GY.MAS.BRKN BRECCIATED AT STRAT BASE OF UNIT. PYRIT E.BLER IN BRECCIATED ZONE. |
| 34 | 91.44 | 91.64 | 0.20 | 40 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 91.64 | 92.05 | 0.41 | *40 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.SSD.VBRKN BLACK WORM PELLETS. INTBEDDED SLTST/SAN D. LOAD CAST (RIGHT WAY UP). FRACTURE (NORMAL). |
| 35 | 92.05 | 93.30 | 1.25 | 38 | | | SILTSTONE | M.GY.MAS.VBRKN BRKN IN LOWER HALF. |
| 35 | 93.30 | 93.50 | 0.20 | 37 | | | ROCK LOSS | |
| 35 | 93.50 | 93.75 | 0.25 | 37 | | | SILTSTONE | SSY.M.GY.THNB.VBRKN THIN SS BED IN MIDDLE OF UNIT. |
| 36 | 93.75 | 95.30 | 1.55 | *35 | | | SANDSTONE | SLTY.VFG.MOD.LT-M.GY.THNB.SSD.BRKN INTBEDDED SS (60%)/SLTST (40%). VBRKN IN PLACES. VTHNB-THNB. BIVALVE ESCAPE IN BES & LOAD CAST (OVT). BLACK WORM PELLE TS. FRACTURE (NORMAL). BIOTRB. |
| 36 | 95.30 | 95.46 | 0.16 | 30 | | | SANDSTONE | FG.PR.LT.GY.MAS.BRKN |
| 37 | 95.46 | 96.63 | 1.17 | *26 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN UPPER FG SS. 16 CM THICK QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 37 | 96.63 | 97.33 | 0.70 | 26 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN UPPER FG SS. 6 CM QTZ VEIN. |
| 38 | 97.33 | 98.08 | 0.75 | 25 | | | SANDSTONE | FG.MOD.S-P.MAS.BRKN 1 CM & 2 CM QTZ VEIN. MUDDY SS BAND (3 CM) BETWEEN QTZ VEINS. |
| 38 | 98.08 | 98.62 | 0.54 | 25 | | | SANDSTONE | VFG.MOD.LT.GY.MAS.BRKN FG-VFG SS. |
| 38 | 98.62 | 98.78 | 0.16 | *25 | | | SANDSTONE | SLTY.LT-M.GY.VTHNB.BRKN FG-VFG SS INTBEDDED WITH SLTST. |
| 39 | 98.78 | 99.13 | 0.35 | 27 | | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.LAM.BRKN VFG-FG SS (85%) WITH SLTST LAMS (15%). MG.SS AT BASE OF UNIT (STRAT TOP?). |
| 39 | 99.13 | 99.19 | 0.06 | 28 | | | SILTSTONE | SSY.M.GY.SHRD INTACT BUT SHEARED. |
| 39 | 99.19 | 99.84 | 0.65 | *30 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN FG-VFG SS. MG.SS AT TOP OF UNIT (STRAT BASE?). SLTY LAMS & WISPS. |
| 39 | 99.84 | 99.90 | 0.06 | 30 | | | SANDSTONE | SLTY.FG.VPR.LT-M.GY.SLD CONTAINS QTZ GRANUALS. |
| 39 | 99.90 | 100.12 | 0.22 | 30 | | | SILTSTONE | DK.GY.BRKN PYRITE BLEBS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------|
| 39 | 100.12 | 100.16 | 0.04 | 30 | | | MUDSTONE | CARB. BLK. VSHRD |
| 39 | 100.16 | 100.27 | 0.11 | 30 | | | ROCK LOSS | |
| 39 | 100.27 | 100.45 | 0.18 | 30 | G | OVT | COAL LOSS | |
| 39 | 100.45 | 100.51 | 0.06 | 30 | G | OVT | COAL | C-5. BLK. VSHRD |
| 39 | 100.51 | 100.58 | 0.07 | 30 | G | OVT | MUDSTONE | CARB. BLK. VSHRD PYRITE BLEBS. |
| 39 | 100.58 | 100.71 | 0.13 | 30 | G | OVT | SANDSTONE | SLTY. CG. VPR. M. GY. MAS. BRKN ARGILLACEOUS SS. |
| 40 | 100.71 | 100.83 | 0.12 | 30 | G | OVT | MUDSTONE | CARB. BLK. VSHRD COAL MIXED IN. |
| 40 | 100.83 | 100.98 | 0.15 | 30 | G | OVT | SANDSTONE | CG. PR. LT. GY. MAS. SHRD COALY LISTRIC SURFACES. |
| 40 | 100.98 | 101.01 | 0.03 | 30 | G | OVT | MUDSTONE | CARB. BLK. VSHRD COAL MIXED IN. PYRITE BLEBS. |
| 40 | 101.01 | 101.04 | 0.03 | 30 | G | OVT | COAL LOSS | |
| 40 | 101.04 | 101.12 | 0.08 | 30 | G | OVT | COAL | C-4. BLK. VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------|
| 40 | 101.12 | 101.19 | 0.07 | 30 | G | OVT | COAL | C-3. BLK. PMRD |
| 40 | 101.19 | 101.28 | 0.09 | 30 | G | OVT | COAL | C-6. BLK. VSHRD |
| 40 | 101.28 | 101.32 | 0.04 | 30 | G | OVT | MUDSTONE | CARB. BLK. VSHRD |
| 40 | 101.32 | 101.34 | 0.02 | 30 | G | OVT | SANDSTONE | CARB. CG. PR. BLK. SHRD |
| 40 | 101.34 | 101.49 | 0.15 | 30 | G | OVT | COAL | C-6. BLK. VSHRD PYRITE NODULE. |
| 40 | 101.49 | 101.53 | 0.04 | 30 | G | OVT | COAL | C-5. BLK. SHRD |
| 40 | 101.53 | 101.63 | 0.10 | 30 | | | SANDSTONE | CARB. FG. PR. BLK. MAS. SLD VERY CARB. |
| 40 | 101.63 | 102.14 | 0.51 | 30 | | | SANDSTONE | CG. PR. S-P. MAS. BRKN QTZ VEINING (ONE VEIN 2.5 CM THICK). |
| 40 | 102.14 | 102.34 | 0.20 | 30 | | | SANDSTONE | CG. PR. S-P. MAS. BRKN |
| 41 | 102.34 | 102.51 | 0.17 | 30 | | | SANDSTONE | CG. PR. S-P. MAS. SLD 3 CM QTZ VEIN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 41 | 102.51 | 102.59 | 0.08 | 30 | | | SILTSTONE | DK.GY.MAS.BRKN CORE LOSS? |
| 41 | 102.59 | 103.75 | 1.16 | 30 | | | SANDSTONE | CG.PR.S-P.MAS.VBRKN MG-VCG SS. SMALL RIP-UP CLASTS (3-5 MM) |
| 42 | 103.75 | 104.15 | 0.40 | 30 | | | SANDSTONE | CG.PR.S-P.MAS.BRKN SMALL RIP-UP CLASTS (SAME SIZE AS GRAIN S). |
| 42 | 104.15 | 104.23 | 0.08 | 30 | | | SANDSTONE | SLTY.VFG.PR.M.GY.MAS.VBRKN CARB.LAMS. ARGILLACEOUS SS. |
| 42 | 104.23 | 104.53 | 0.30 | *30 | | | SANDSTONE | SLTY.VFG.PR.LT.GY.MAS.SSD.BRKN ARGILLACEOUS SS. LOAD CAST (OYT). |
| 42 | 104.53 | 104.73 | 0.20 | 28 | | | SILTSTONE | SSY.M.GY.VTMNB.BRKN INTERBEDDED & MIXED SS (40%)/SLTST (60%) |
| 42 | 104.73 | 105.29 | 0.56 | 25 | | | SANDSTONE | SLTY.VFG.PR.LT.GY.MAS.BRKN ARGILLACEOUS SS. 6 CM BAND OF SS WITH V ERY COARSE GRAINS. |
| 42 | 105.29 | 105.31 | 0.02 | 22 | | | MUDSTONE | CARB.BLK.PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------|
| 42 | 105.31 | 105.39 | 0.08 | 22 | | | SANDSTONE | PBLY.VCG.VPR.S-P.MAS.BRKN GRANULAR SS. |
| 43 | 105.39 | 105.63 | 0.24 | 21 | | | SANDSTONE | CG.PR.S-P.MAS.BRKN MINOR SLTY WISPS. |
| 43 | 105.63 | 105.93 | 0.30 | 18 | | | SANDSTONE | CLYY.FG.PR.M.GY.MAS.BRKN VERY ARGILLACEOUS SS. |
| 43 | 105.93 | 106.46 | 0.53 | *15 | | | SANDSTONE | CG.MOD.S-P.MAS.BRKN |
| 43 | 106.46 | 106.66 | 0.20 | 34 | | | SILTSTONE | M-DK.GY.LAM.BRKN SMALL SCALE FOLD (HINGE VISIBLE). LISTR IC SURFACES COMMON. |
| 43 | 106.66 | 107.11 | 0.45 | *50 | | | MUDSTONE | SLTY.DK.GY.MAS.VBRKN |
| 44 | 107.11 | 107.71 | 0.60 | 44 | | | MUDSTONE | DK.GY.MAS.BRKN LISTRIC SURFACES. PYRITE BLEBS. |
| 44 | 107.71 | 108.69 | 0.98 | *35 | | | SILTSTONE | CLYY.M-DK.GY.LAM.WRMBU.BRKN INTLAM SLTST & MUD. WORM PELLETS. OYT. |
| 44 | 108.69 | 109.02 | 0.33 | 39 | | | SANDSTONE | CLYY.MG.PR.LT.GY.MAS.BRKN ARGILLACEOUS SS. MINOR SLTST LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 109.02 | 110.06 | 1.04 | 43 | | | SANDSTONE | MG. MOD. LT. GY. MAS. BRKN NORM PELLETS. ARGILLACEOUS IN PLACES. F G-MG. |
| 45 | 110.06 | 110.21 | 0.15 | 46 | | | SANDSTONE | MG. MOD. LT. GY. MAS. BRKN QTZ & TALC FILLED FRACTURE. ARGILLACEOU S. REGION. |
| 45 | 110.21 | 110.51 | 0.30 | 47 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN |
| 45 | 110.51 | 110.88 | 0.37 | 49 | | | SANDSTONE | MG. MOD. LT. GY. MAS. BRKN MINOR SLTST LAMS. SMALL RIP-UP CLASTS T HROUGHOUT. LARGE RIP-UP CLASTS AT BASE OF UNIT (STRAT. TOP). 1-4 CM LONG. |
| 46 | 110.88 | 111.72 | 0.84 | 53 | | | SANDSTONE | FG. MOD. LT. GY. THNB. VBRKN TWO BANDS ~6 CM THICK OF CG. SS. ARGILLA CEOUS BAND 5 CM THICK. ABUNDANT RIP-UP CLASTS (1-4 CM). |
| 46 | 111.72 | 112.35 | 0.63 | 57 | | | SANDSTONE | CG. MOD. LT. GY. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 112.35 | 112.79 | 0.44 | *60 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN |
| 47 | 112.79 | 112.90 | 0.11 | 61 | | | SANDSTONE | FG. PR. LT. GY. MAS. SLD FG-MG. SS. |
| 47 | 112.90 | 113.50 | 0.60 | 63 | | | SANDSTONE | MG. PR. LT. GY. MAS. BRKN FG-MG. SS. |
| 47 | 113.50 | 113.88 | 0.38 | 65 | | | SANDSTONE | SLTY. FG. PR. LT. GY. MAS. BRKN MAS. SS. WITH SLTST. HISPS. & LAMS. |
| 47 | 113.88 | 113.98 | 0.10 | 67 | | | SANDSTONE | MG. PR. LT. GY. MAS. BRKN |
| 47 | 113.98 | 114.45 | 0.47 | *68 | | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. THNB. SSD. VBRKN THNB. SS. WITH YTHNB. & LAM. SLTST. BANDS. B RECCIATED NEAR BASE OF UNIT (STRAT. TOP) . LOAD CAST (OVT). |
| 48 | 114.45 | 114.69 | 0.24 | 55 | | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. SSD. BRKN SMALL FOLD? LOAD CAST (OVT). |
| 48 | 114.69 | 115.81 | 1.12 | *30 | | | SILTSTONE | DK. GY. MAS. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------|
| 48 | 115.81 | 115.87 | 0.06 | 34 | | | SILTSTONE | DK.GY.MAS.BRKN SLICKENSIDED LISTRIC SURFACE. |
| 48 | 115.87 | 115.89 | 0.02 | 35 | | | MUDSTONE | CARB.BLK.SHRD |
| 48 | 115.89 | 116.04 | 0.15 | 35 | | | COAL | C-4.BLK.PHRD |
| 48 | 116.04 | 116.08 | 0.04 | 36 | | | MUDSTONE | CARB.BLK.SHRD |
| 48 | 116.08 | 116.25 | 0.17 | 37 | | | MUDSTONE | DK.GY.MAS.SHRD SLIGHTLY CARB. ABUNDANT LISTRIC SURFACE S. |
| 49 | 116.25 | 116.68 | 0.43 | 39 | | | MUDSTONE | DK.GY.MAS.SHRD INTACT BUT SHEARED. PYRITE SPECKS NEAR BASE OF UNIT. PETRIFIED STICKS? |
| 49 | 116.68 | 116.74 | 0.06 | 41 | | | MUDSTONE | CARB.BLK.SHRD |
| 49 | 116.74 | 116.76 | 0.02 | 41 | | | COAL | C-5.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 116.76 | 116.80 | 0.04 | 41 | | | COAL | C-3.BLK.SLD |
| 49 | 116.80 | 116.82 | 0.02 | 42 | | | COAL | C-2.BLK.SLD |
| 49 | 116.82 | 118.22 | 1.40 | *47 | | | SILTSTONE | M-DK.GY.BRKN CARB NEAR TOP OF UNIT (STRAT BASE). QTZ COATED COAL STRINGER. PYRITE LAM AT TO P OF UNIT. |
| 50 | 118.22 | 118.60 | 0.38 | 54 | | | SILTSTONE | M.GY.BRKN PYRITE SPECKLED LAMS. |
| 50 | 118.60 | 120.10 | 1.50 | *62 | | | SILTSTONE | M-DK.GY.MAS.BRKN PYRITE SPECKLED LAMS. BIVALVES SCATTERED THROUGHOUT LOWER HALF (BUCHIA & HYP). .98 M FROM TOP OF UNIT (STRAT BASE) IS A GASTROPOD ZONE (7 CM THK). |
| 51 | 120.10 | 120.99 | 0.89 | *45 | | | SILTSTONE | M-DK.GY.MAS.BRKN BIVALVES. |
| 51 | 120.99 | 122.09 | 1.10 | 42 | | | MUDSTONE | SLTY.M-DK.GY.MAS.BRKN BIVALVE ZONE .23 M FROM TOP OF UNIT (STRAT BASE). SHEARED ZONE NEAR BASE OF UNIT (SOFT). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 122.09 | 122.69 | 0.60 | 40 | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN BRECCIATED IN MIDDLE OF UNIT. |
| 52 | 122.69 | 123.85 | 1.16 | *37 | | SILTSTONE | M-DK. GY. MAS. VBRKN BRECCIATED MUD BAND (5' CM THICK). |
| 53 | 123.85 | 124.15 | 0.30 | 31 | | SILTSTONE | M-DK. GY. MAS. BRKN |
| 53 | 124.15 | 124.21 | 0.06 | 29 | | SILTSTONE | DK. BN. SHRD BRECCIATED. |
| 53 | 124.21 | 124.41 | 0.20 | 28 | | SILTSTONE | SSY. M. GY. LAM. HRMBU. BRKN (OVT). |
| 53 | 124.41 | 125.01 | 0.60 | *25 | | SANDSTONE | SLTY. YFG. MOD. LT-M. GY. LAM. HRMBU. BRKN INTLAM SLTST (65%) / SS (35%). FOLD CAUSE S' SLTST & SS CONTACT TO HANDED BACK AND FORTH. BCA = 0-25 DEGREES. |
| 53 | 125.01 | 125.41 | 0.40 | 25 | | SILTSTONE | SSY. M. GY. BRKN BRECCIATED. QZ. VEIN 3 CM THICK. |
| 53 | 125.41 | 125.66 | 0.25 | 25 | | SILTSTONE | DK. BN. SHRD BRECCIATED. MIXED IN MUD & SAND. |
| 54 | 125.66 | 126.74 | 1.08 | 25 | | SILTSTONE | SSY. M-DK. GY. MAS. BRKN VERY BRECCIATED. VTHNB. SS. BANDS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87027

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------|
| 54 | 126.74 | 126.94 | 0.20 | 25 | | SANDSTONE | YFG. MOD. LT. GY. MAS. SLD BRECCIATED. |
| 54 | 126.94 | 127.07 | 0.13 | 25 | | MUDSTONE | DK. BN. MAS. SHRD BRECCIATED. LISTRIC SURFACES. END OF HO LE. |

* DENOTES MEASURED BCA
NEWPAGE

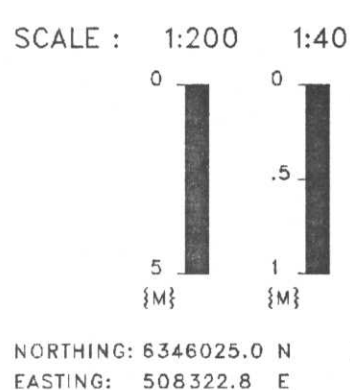
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87027

740

GEOLOGIST : PARRY

DATE : MAR 08/88

DRAWING NO. :



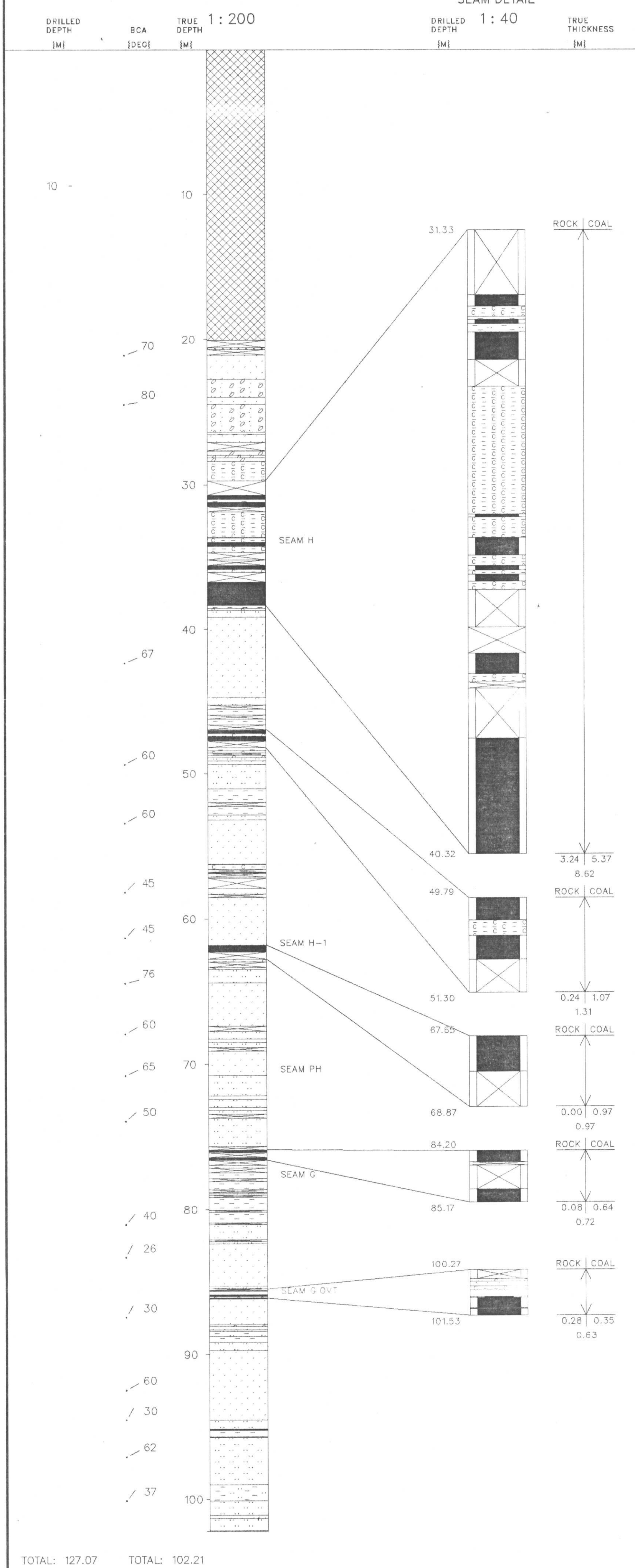
NORTHING: 6346025.0 N
 EASTING: 508322.8 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



TOTAL: 127.07

TOTAL: 102.21

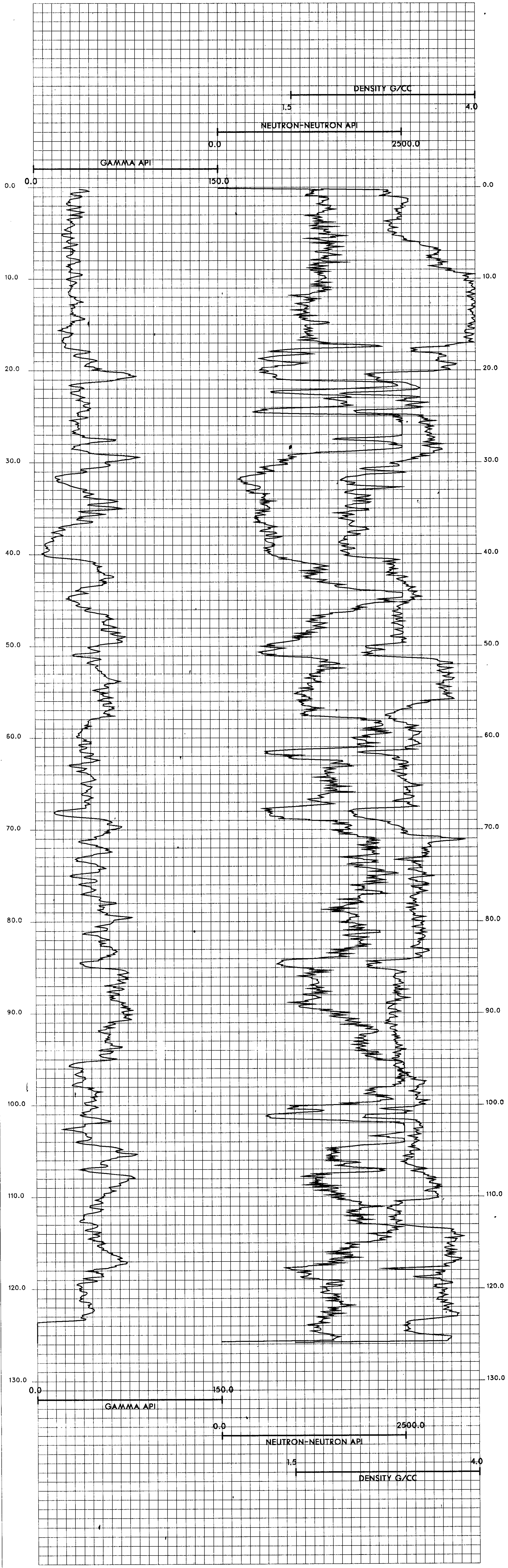
Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

| | |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Datasource: KPNLRDDH87027 Log Date: 79-03-12 Company: CENTURY Geologist: PARRY | Province: BC Northing: 6346030.00 Lat: 571533 Zone: 9 Easting: 508323.00 Long: 1285143 Measuring Point: GROUND LEVEL Elevation: 1441.0 |
| Scale: 1 to 200.0 Depth Range: 0.0 to 130.0 True Thickness: NO | Comments: 1. LOGGED THROUGH RODS. 2. |
| Logs Plotted: | |
| Description | Axis Range Axis Length Smoothing Points Tool Comments |
| 1. GAMMA API | 0.0 to 150.0 10.0 31 9030A IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 10.0 9 9055A IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 10.0 15 9030A IN PIPE |



KPNLRDDH87028

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87028

DATE - 03/04/88

- HISTORY -

START DATE - 10/07/87

END DATE - 10/09/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - LEDDA

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - SITE M. INTERSECTED O, N, M/N, ?, M, L, ?, K/L, ?,
K, ?, ?.

- LOCATION -

PROVINCE - BC
ELEVATION - 1418.86

ZONE - 9
NORTHING - 6346510.17
EASTING - 508643.92

LICENCE/LEASE NUMBER -

LATITUDE - 571548
LONGITUDE - 1285124

- ORIENTATION -

LENGTH - 224.58

INCLINATION - 90.0
AZIMUTH - 0.0

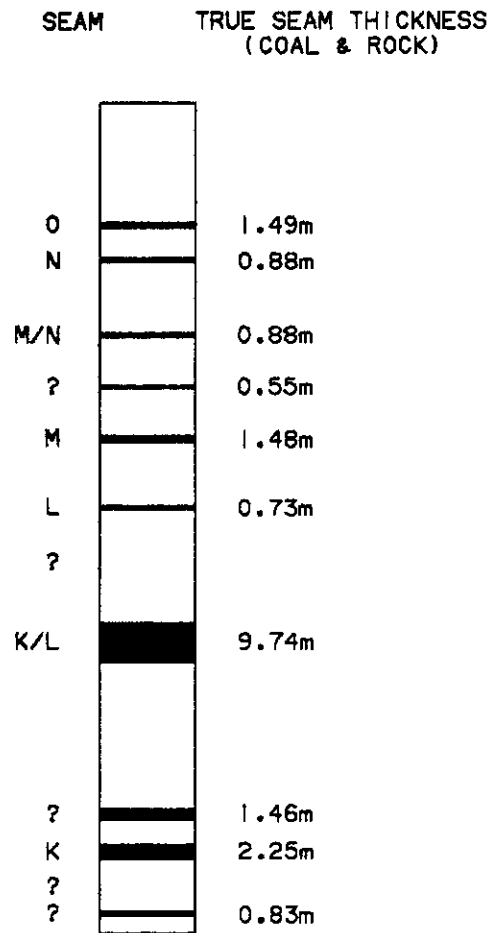
CORE SIZE - 0.0

CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 18.90
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87028

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:[205057]880072012.L0



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 18.90 | 18.90 | 72 | | CASING | CASING DEPTH. |
| 1 | 18.90 | 19.04 | 0.14 | 72 | | SANDSTONE | FG.WEL.M.GY.MAS.VBRKN LOWER CONTACT MISSING - ROCK BREAK. |
| 1 | 19.04 | 19.09 | 0.05 | 72 | | ROCK LOSS | |
| 1 | 19.09 | 19.23 | 0.14 | 72 | | SILTSTONE | M-DK.GY.MAS.BRKN GRADATIONAL LOWER CONTACT. |
| 1 | 19.23 | 19.50 | 0.27 | 72 | | MUDSTONE | DK.GY.MAS.VBRKN GRADATIONAL LOWER CONTACT. |
| 1 | 19.50 | 19.52 | 0.02 | 72 | | ROCK LOSS | |
| 1 | 19.52 | 20.41 | 0.89 | 72 | | SILTSTONE | M-DK.GY.MAS.BRKN COMMON MODERATE - POORLY CONSOLIDATED ZONES. |
| 1 | 20.41 | 20.77 | 0.36 | 72 | | SILTSTONE | DK.GY.MAS.BRKN MODERATELY CONSOLIDATED. SLIGHTLY CARB. |
| 2 | 20.77 | 21.34 | 0.57 | 72 | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A BUT BECOMING MORE CONSOLIDATED FAINT LAMINAE PRESENT (<1 MM). SLIGHTLY SSSY IN SOME ZONES. UNIT BECOMES SLIGHTLY MUDDY TOWARDS BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 21.34 | 21.43 | 0.09 | 72 | | MUDSTONE | DK.GY.MAS.VBRKN SLIGHTLY CARB. |
| 2 | 21.43 | 21.45 | 0.02 | 72 | | ROCK LOSS | |
| 2 | 21.45 | 21.99 | 0.54 | 72 | | SILTSTONE | M-DK.GY.LAM.BIOTR.BRKN DOMINANTLY SLTST WITH RARE THIN VFG SS LAM (ESP NEAR UNIT'S BASE). SS/SLTST = 30/70. BIOTRB (POSSIBLE WRMBUR) PRESENT NEAR BASE (CORRECT MAY UP). |
| 2 | 21.99 | 22.16 | 0.17 | *72 | | SANDSTONE | FG.M.GY.MAS.SSD.BRKN SLIGHTLY CARB.FG.SS.W/COMMON DISRUPTED SLTST & MUDST ZONES FORMING RIP-UP CLASTS & CHURNED ZONES. POSSIBLE WRMBURS. |
| 2 | 22.16 | 22.90 | 0.74 | 76 | | SANDSTONE | SLTY.VFG.MOD.M.GY.THNB.BRKN MOD CONSOLIDATED. MIXED SILT & SAND. TH IN SLTST LAM APPEAR MIDWAY THROUGH THE UNIT & INCREASE TOWARDS BASE. LAMINAE HAVE RAPID GRADATIONAL SUB-HORIZ CONTACT S. & LAMS ARE GENERALLY <.3 CM. SS/SLTST = 75/25. |
| 3 | 22.90 | 23.37 | 0.47 | *82 | | SILTSTONE | SSY.M-DK.GY.VTHNB.BRKN SAME A/A WITH SS DOMINANTLY AT TOP & SLTST AT BASE. SS/SLTST = 50/50. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 23.37 | 24.87 | 1.50 | *83 | | | SILTSTONE | DK.GY.MAS.BRKN DOMINANTLY MASSIVE SLTST W/ RARE THIN S S LAMS (ESP IN UPPER HALF OF UNIT). SS/ SLTST = 2/98. |
| 4 | 24.87 | 25.44 | 0.57 | 84 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A WITHOUT SS LAM. |
| 4 | 25.44 | 26.64 | 1.20 | *85 | | | SILTSTONE | DK.GY.LAM.BIOTR.BRKN SAME A/A WITH COMMON THIN (<1CM) DISRUP TED SS LAMS (ESP W/IN UPPER HALF OF UNI T). "HELMINTHOPSIS" COMMON FROM .39-.59 M. SS/SLTST = 15/85. |
| 5 | 26.64 | 28.56 | 1.92 | *88 | | | SILTSTONE | DK.GY.MAS.BRKN MASSIVE SLIGHTLY MUDDY SLTST W/ COMMON WELL DISTRIBUTED BIVALVES: DOM BY LARGE BIVALVES = UP TO 4.0 X 2 X .75 CM = "FE RGAMOCONCHA." ALSO: "STAFFINELLA" & RAR E SMALL (UP TO 1.0 X .3CM) ELONGATED BI VALVES W/ NO APPARENT SHELL MARKINGS. S P. UNKNOWN. |
| 6 | 28.56 | 28.72 | 0.16 | 86 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN NO APPARENT BIVALVES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 28.72 | 30.31 | 1.59 | 84 | | | SILTSTONE | DK.GY.MAS.BRKN SMALL BIVALVES COMMON THROUGHOUT USUALL Y CONCENTRATED ON BEDDING PLANES (UP TO 1.2 CM X 1 CM X .7 CM - COMMONLY PYRITIZ ED). BIVALVES = POSSIBLY "HERZONIA" OR "STAFFINELLA". |
| 6 | 30.31 | 30.41 | 0.10 | *82 | | | SILTSTONE | M-DK.GY.VTHNB.BIOTR.SLD MUDDY SLTST WITH VERY DENSE "HELMINTHOP SIS" THROUGHOUT. |
| 7 | 30.41 | 31.53 | 1.12 | *86 | | | SILTSTONE | SSY.M.GY.LAM.BIOTR.BRKN INTLAM. SLIGHTLY MUDDY SLTST & Y FINE GR AIN SS COMMONLY DISRUPTED BY BIOTRB. SS /SLTST = 20/80. COMMON "HELMINTHOPSIS" IN UPPER HALF. UNIT BECOMES SLIGHTLY CA RB TOWARD BASE. RARE BIVALVES OCCUR (ES P NEAR TOP OF UNIT). CORRECT MAY UP. |
| 7 | 31.53 | 31.56 | 0.03 | 83 | | | MUDSTONE | LT.BLK.MAS.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------|
| 7 | 31.56 | 31.58 | 0.02 | 83 | | ROCK LOSS | |
| 7 | 31.58 | 31.59 | 0.01 | 83 | 0 | COAL | C-6.BLK.SLD |
| 7 | 31.59 | 31.63 | 0.04 | 82 | 0 | COAL | C-3.BLK.BRKN |
| 7 | 31.63 | 31.66 | 0.03 | 82 | 0 | COAL | C-4.BLK.SHRD ABRUPT LOWER CONTACT. |
| 7 | 31.66 | 32.02 | 0.36 | 81 | 0 | MUDSTONE | CARB.M-DK.GY.MAS.BRKN POORLY CONSOLIDATED. SOFT & PLIABLE. SLIGHTLY CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------|
| 7 | 32.02 | 32.03 | 0.01 | 80 | 0 | COAL | C-3.BLK.PWRD |
| 7 | 32.03 | 32.05 | 0.02 | 80 | 0 | MUDSTONE | CARB.DK.GY.VBRKN |
| 7 | 32.05 | 32.06 | 0.01 | 80 | 0 | COAL | C-3.BLK.PWRD |
| 7 | 32.06 | 32.21 | 0.15 | 79 | 0 | MUDSTONE | CARB.M-DK.GY.MAS.BRKN SLIGHTLY CARB MOD CONSOLIDATED MUDST. |
| 8 | 32.21 | 32.23 | 0.02 | 79 | 0 | COAL | C-3.BLK.VBRKN |
| 8 | 32.23 | 32.24 | 0.01 | 79 | 0 | MUDSTONE | CARB.DK.BN.VBRKN |
| 8 | 32.24 | 32.28 | 0.04 | 79 | 0 | COAL | C-3.BLK.VBRKN |
| 8 | 32.28 | 32.34 | 0.06 | 78 | 0 | MUDSTONE | CARB.BLK.VBRKN COALY WITH OCCASIONAL THIN C-6 LAMS. |
| 8 | 32.34 | 32.38 | 0.04 | 78 | 0 | COAL | C-6.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 32.38 | 32.39 | 0.01 | 78 | 0 | | MUDSTONE | BLK. VBRKN ABRUPT LOWER CONTACT. |
| 8 | 32.39 | 32.40 | 0.01 | 78 | 0 | | COAL | C-3. BLK. VBRKN ABRUPT LOWER CONTACT. |
| 8 | 32.40 | 32.50 | 0.10 | 78 | 0 | | ROCK LOSS | |
| 8 | 32.50 | 33.10 | 0.60 | 76 | 0 | | COAL LOSS | |
| 8 | 33.10 | 33.29 | 0.19 | 73 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN SLIGHTLY CARB. GRADATIONAL LOMER CONTACT. |
| 8 | 33.29 | 33.45 | 0.16 | 72 | | | SILTSTONE | DK. GY. MAS. SLD GRADATIONAL LOMER CONTACT. |
| 8 | 33.45 | 34.17 | 0.72 | *70 | | | SANDSTONE | SLTY. VFG. M-DK. GY. LAM. SSD. BRKN INTLAM. VFG. SS/SLTST (55/45). LAM ARE GENERALLY <1 CM W/ WAVY - SUB-HORIZ SHARP CONTACTS OCCASIONALLY DISRUPTED BY SSD & POSSIBLY BIOTRB. |
| 8 | 34.17 | 34.33 | 0.16 | 72 | | | SILTSTONE | DK. GY. YTHNB. BRKN DOMINANTLY SLTST W/ OCCASIONAL SS. LAMS. W/IN (A/A). SS/SLTST = 15/85. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 34.33 | 34.79 | 0.46 | *73 | | | SANDSTONE | VFG. M. GY. LAM. SSD. SLD DOMINANTLY VFG. SS WITH OCCASIONAL THIN SLTST LAM THROUGHOUT WITH SHARP SUB-HORIZONTAL CONTACTS. MINOR SSD (CORRECT WAY UP) & MINOR SMALL SCALE X-BDG. SS/SLTST = 85/15. |
| 8 | 34.79 | 34.95 | 0.16 | 73 | | | SANDSTONE | VFG. VVEL. M. GY. MAS. SLD SAME A/A WITHOUT SLTST. |
| 9 | 34.95 | 36.78 | 1.83 | *72 | | | SANDSTONE | FG. VVEL. LT-M. GY. MAS. VBRKN DOMINANTLY CLEAN RESISTIVE FG-VFG SS WITH RARE THIN SLTST LAMS (UP TO 1CM) AT .90 M & 1.62 M. WELL-ROUNDED RIP-UP CLAST UP TO 1.5 CM AT 1.69 M (SLTST). |
| 9 | 36.78 | 37.04 | 0.26 | 74 | | | ROCK LOSS | |
| 10 | 37.04 | 37.64 | 0.60 | 75 | | | SANDSTONE | FG. VVEL. LT-M. GY. MAS. VBRKN THIN WELL-ROUNDED RIP-UP CLAST HORIZON AT .10M. SAME A/A. SOME QTZ VEINING AT BASE. |
| 10 | 37.64 | 37.74 | 0.10 | 75 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | 37.74 | 38.54 | 0.80 | *76 | | SANDSTONE | SLTY. VFG. PR. M. GY. MAS. SHRD DOMINANTLY VFG SS WITH OCCASIONAL FG SS & COMMON SLTST (ESP TOWARDS THE UNIT'S BASE). GRADATIONAL LOWER CONTACT. |
| 11 | 38.54 | 40.65 | 2.11 | *82 | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. LAM. SSD. BRKN DOMINANTLY SLIGHTLY CARB VFG SS W/ COMM ON SLTST LAM & OCCASIONAL MUDST LAM W/I N. (SS/SLTST/MUDST = (85/10/5); MUDST B ECOMES MORE COMMON TOWARD UNIT'S BASE. LAMs ARE SUB-HORIZONTAL W/ SHARP CONTACTS & COMMON SSD. CORRECT MAY UP. |
| 12 | 40.65 | 40.83 | 0.18 | *75 | 07011 | SANDSTONE | SLTY. M. GY. THNB. SLD SLTST & SS BAND. |
| 12 | 40.83 | 40.90 | 0.07 | 75 | 07011 | SILTSTONE | CLYY. M-DK. GY. SLD |
| 12 | 40.90 | 41.11 | 0.21 | 76 | 07012 N | COAL | C-3. VBRKN |
| 12 | 41.11 | 41.18 | 0.07 | 76 | 07012 N | COAL | C-6. BRKN LITRISTIC SURFACES. |
| 12 | 41.18 | 41.28 | 0.10 | 76 | 07012 N | COAL LOSS | |
| 12 | 41.28 | 41.44 | 0.16 | 76 | 07012 N | COAL | C-2. PWRD GRADE DIFFICULT TO TELL. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 41.44 | 41.48 | 0.04 | 77 | 07012 N | COAL | C-2. PWRD |
| 12 | 41.48 | 41.58 | 0.10 | 77 | 07012 N | COAL | C-5. VBRKN |
| 12 | 41.58 | 41.76 | 0.18 | 77 | 07012 N | COAL | C-3. VBRKN |
| 12 | 41.76 | 41.79 | 0.03 | 77 | 07012 N | COAL | C-6. SLD QTZ, BONE COAL. |
| 12 | 41.79 | 41.81 | 0.02 | 77 | 07012 N | COAL | C-3. PWRD |
| 12 | 41.81 | 42.50 | 0.69 | 78 | 07013 | SILTSTONE | CARB. M-DK. GY. SLD COAL AND PLANT FRAGS. UPPER 25 CM SAMPL ED. |
| 13 | 42.50 | 42.80 | 0.30 | 79 | | SILTSTONE | SSY. DK. GY. LAM. SSD. BRKN DOMINANTLY SLTST W/ RARE THIN VFG SS LA MS UP TO .5 CM (ESP. NEAR BASE). COMMONLY DISRUPTED BY SSD. GRADATIONAL LOWER CO NTACTS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 42.80 | 43.94 | 1.14 | *81 | | SANDSTONE | SLTY. VFG. WEL. M. GY. LAM. SSD. BRKN INTLAM VFG SS/MUDDY SLTST WITH OCCASION AL FG SS. SS/SLTST = 60/40. COMMON SSD - CORRECT WAY UP. WAVY - SUB-HORIZONTAL LAM WITH RAPID GRADATIONAL TO SHARP CO NTACTS. |
| 13 | 43.94 | 44.44 | 0.50 | 77 | | SANDSTONE | SLTY. VFG. WEL. M-DK. GY. LAM. SSD. BRKN SAME A/A BUT (50/50). |
| 14 | 44.44 | 45.95 | 1.51 | *73 | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN SAME A/A BUT SS/SLTST = 40/60. SHARP LO WER CONTACT. |
| 14 | 45.95 | 46.06 | 0.11 | 75 | | SANDSTONE | VFG. WVEL. LT-M. GY. LAM. SSD. SLD DOMINANTLY VFG. CLEAN SS WITH RARE THIN SLTST LAMS. SS/SLTST = 90/10. SHARP LOW ER CONTACT. |
| 14 | 46.06 | 46.64 | 0.58 | *76 | | SANDSTONE | SLTY. VFG. WEL. M. GY. LAM. SSD. SLD INTLAM VFG SS/SLTST AS BEFORE. SS/SLTST = 65/35. CORRECT WAY UP - SSD. |
| 15 | 46.64 | 46.94 | 0.30 | 76 | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN INTLAM. CLEAN VFG. SS/SLTST (45/55). CORR ECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 46.94 | 47.99 | 1.05 | *76 | | SANDSTONE | SLTY. VFG. WEL. M-DK. GY. LAM. SSD. BRKN INTLAM FG SS/VFG SS/SLTST (5/60/35). LA M ARE SUB-HORIZONTAL WITH RAPID GRADATI ONAL - SHARP CONTACTS. COMMONLY DISRUPTI D BY SSD - CORRECT WAY UP. RARE SMALL P ROXIMAL RIP-UP CLASTS. SHARP LOWER CONT ACT. |
| 15 | 47.99 | 48.63 | 0.64 | 75 | | SANDSTONE | FG. WVEL. LT. GY. MAS. SLD CLEAN RESISTIVE MASSIVE FG SS WITH SMAL L (<1 CM) ANGULAR PROXIMAL RIP-UPS AT U PPER CONTACT. |
| 16 | 48.63 | 48.68 | 0.05 | 75 | | SANDSTONE | FG. WVEL. S-P. MAS. SLD SAME A/A. |
| 16 | 48.68 | 48.72 | 0.04 | 75 | | SILTSTONE | SSY. DK. GY. LAM. SLD INTLAM FG SS/SLTST (20/80) WITH SHARP H ORIZONTAL CONTACTS. |
| 16 | 48.72 | 49.04 | 0.32 | 75 | | SANDSTONE | FG. WVEL. S-P. MAS. SLD MASSIVE CLEAN SS. ABRUPT LOWER CONTACT. |
| 16 | 49.04 | 49.14 | 0.10 | *75 | | SILTSTONE | SSY. M-DK. GY. YTHNB. VBRKN THINLY INTBEDDED VFG SS/SLTST (35/65) W ITH SHARP HORIZONTAL CONTACTS. |
| 16 | 49.14 | 49.26 | 0.12 | 75 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 49.26 | 50.04 | 0.78 | 76 | | | SANDSTONE | FG.VHEL.S-P.MAS.BRKN MASSIVE CLEAN SS WITH OCCASIONAL SLTST LAMS AT UNIT'S BASE. |
| 16 | 50.04 | 50.78 | 0.74 | 77 | | | SANDSTONE | FG.VHEL.S-P.GY.MAS.XBDG.BRKN SAME A/A WITH RARE SMALL SUB-ROUNDED RIP-UP CLASTS W/IN. NEAR UNIT'S BASE MINOR THIN SLTST LAMS ARE COMMON FORMING WELL DEVELOPED LOW ANGLE X-BDG. CORRECT WAY UP. |
| 17 | 50.78 | 52.57 | 1.79 | 79 | | | SANDSTONE | FG.VHEL.S-P.MAS.BRKN SAME A/A WITH OUT X-BDG. NEAR UNIT'S BASE OCCASIONAL SLTST LAMS & RARE RIP-UP CLASTS PRESENT. RARE QTZ/SIDERITE VEIN-FILLING. ABRUPT LOWER CONTACT. |
| 17 | 52.57 | 52.86 | 0.29 | *81 | | | MUDSTONE | SLTY.DK.GY.MAS.VBRKN VERY SILTY AT TOP GRADING RAPIDLY DOWN INTO SLIGHTLY SILTY MUDST AT BASE. COMMON QTZ-VEINING. |
| 17 | 52.86 | 53.06 | 0.20 | 81 | | | ROCK LOSS | |
| 18 | 53.06 | 53.21 | 0.15 | 82 | | | SILTSTONE | DK.GY.MAS.SLD MUDDY & SLIGHTLY CARB. SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 53.21 | 55.18 | 1.97 | *84 | | | SILTSTONE | DK.GY.LAM.SSD.BRKN SLIGHT MUDDY SLTST WITH COMMON THIN VFG SS LAMS WITH RAPID GRADATIONAL WAVY CONTACTS. SSD COMMON. CORRECT WAY UP. SS/SLTST = 10/90. |
| 19 | 55.18 | 56.10 | 0.92 | *86 | | | SILTSTONE | DK.GY.MAS.SLD SAME A/A BUT MUDDY SLTST/SLTST = 5/95. RARE PLANT FRAGMENTS. |
| 19 | 56.10 | 57.28 | 1.18 | 81 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A BUT ONLY VERY RARE THIN CLEAN SLTST LAMS. |
| 20 | 57.28 | 59.15 | 1.87 | *74 | | | SILTSTONE | DK.GY.MAS.BRKN VERY MUDDY SLTST WITH VERY FAINT HORIZONTAL LAMINAE DUE TO VERY SLIGHT GRAIN SIZE VARIATIONS. POSSIBLE BENTONITE (CREST?) DRILLED OUT AT END OF RUN. SHARP CONTACT WITH WHITE CLAY LEFT AT END OF CORE. HOWEVER COULD ALSO BE CLAY FRACTURE FIL. |
| 20 | 59.15 | 59.26 | 0.11 | 74 | | | MUDSTONE | CARB.DK.GY.MAS.VBRKN SLTY. CARB. MUDST. |
| 20 | 59.26 | 59.36 | 0.10 | 74 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 59.36 | 60.05 | 0.69 | *74 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SAME A/A BECOMING MORE CARB & NON-SLTY TOWARDS UNIT'S BASE. GRADATIONAL LOWER CONTACT. |
| 21 | 60.05 | 60.11 | 0.06 | 78 | | | COAL | C-6. BLK. LAM. SLD THINLY INTLAM. COAL/MUDST. GRADATIONAL L. OWER CONTACT. |
| 21 | 60.11 | 60.24 | 0.13 | 79 | | | MUDSTONE | CARB. BLK. SLD ABRUPT LOWER CONTACT. |
| 21 | 60.24 | 60.25 | 0.01 | 80 | | | COAL | C-1. BLK. SLD ABRUPT LOWER CONTACT. |
| 21 | 60.25 | 60.65 | 0.40 | 82 | | | SILTSTONE | CARB. M-DK. GY. LAM. BRKN SLIGHT MUDDY & CARB AT TOP BECOMING SLT Y & SL SSY. VFG SS/SLTST = 40/60. GRADE S INTO SLTST AGAIN AT BASE OF UNIT. |
| 21 | 60.65 | 60.89 | 0.24 | 86 | | | SILTSTONE | CARB. DK. GY. MAS. SLD VERY COMMON WELL DEVELOPED PLANT FOSSIL S INCLUDING "NILSSONIA SCHAUMBURGENSIS ", "ACTENIS BOREALIS" & "NILSSONIA SP". |
| 21 | 60.89 | 60.99 | 0.10 | *88 | | | MUDSTONE | CARB. BLK. LAM. SLD VERY COALY MUDST WITH COMMON PLANT DEBR IS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|-----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 60.99 | 61.36 | 0.37 | 88 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN MASSIVE SLIGHTLY CARB MUDST W/ OCCASION AL PLANT DEBRIS THROUGHOUT. THIN COAL L AMS. AT UNIT'S TOP. |
| 22 | 61.36 | 61.55 | 0.19 | 87 | 07014 | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT PLANT FRAGS (EQUISETITES LYELL I) SOME COALIFIED. |
| 22 | 61.55 | 61.62 | 0.07 | 87 | 07015 M/N | | COAL | C-4. BRKN C-2 BANDS. |
| 22 | 61.62 | 61.66 | 0.04 | 87 | 07015 M/N | | SILTSTONE | M-DK. GY. SLD COALY STRINGERS. |
| 22 | 61.66 | 61.70 | 0.04 | 87 | 07015 M/N | | COAL | C-6. PHRD VITRAIN STRINGERS. |
| 22 | 61.70 | 61.79 | 0.09 | 86 | 07015 M/N | | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED. |
| 22 | 61.79 | 61.83 | 0.04 | 86 | 07015 M/N | | COAL | C-3. PHRD |
| 22 | 61.83 | 61.93 | 0.10 | 86 | 07015 M/N | | SILTSTONE | M. GY. SLD QTZ WITHIN. |
| 22 | 61.93 | 61.98 | 0.05 | 86 | 07015 M/N | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 61.98 | 62.07 | 0.09 | 86 | 07015 | M/N | COAL LOSS | |
| 22 | 62.07 | 62.20 | 0.13 | 86 | 07015 | M/N | COAL | C-3.VBRKN |
| 22 | 62.20 | 62.28 | 0.08 | 85 | 07015 | M/N | COAL | C-2.VBRKN |
| 22 | 62.28 | 62.39 | 0.11 | 85 | 07015 | M/N | MUDSTONE | CARB.DK.GY.BRKN MINOR COALY STRINGERS. |
| 22 | 62.39 | 62.43 | 0.04 | 85 | 07015 | M/N | COAL | C-1.VBRKN |
| 22 | 62.43 | 62.74 | 0.31 | 85 | 07016 | | MUDSTONE | CARB.DK.GY.SLD ABUNDANT PLANT FRAGS. |
| 22 | 62.74 | 63.48 | 0.74 | 84 | | | SILTSTONE | M-DK.GY.SLD |
| 23 | 63.48 | 65.35 | 1.87 | *81 | | | SANDSTONE | SLTY.VFG.VNEL.M.GY.LAM.WRMBU.BRKN INTLAM.VFG.SS/SLTST (60/40) COMMONLY CHURNED BY BIOTRB (BIVALVE BURROWS COMMON). COMMON BIVALVES THROUGHOUT. BIVALVES = POORLY DEFINED FEATURES DUE TO SS HO ST BUT ARE PROBABLY "STAFFINELLA" OR "HERZOGINA" & RANGE UP TO 2 X 1.3 X 1 CM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 | 65.35 | 65.52 | 0.17 | 82 | | | SANDSTONE | SLTY.VFG.VNEL.M.GY.LAM.WRMBU.SLD SAME A/A BUT (50/50). |
| 24 | 65.52 | 67.65 | 2.13 | *84 | | | SANDSTONE | SLTY.VFG.VNEL.M.GY.LAM.WRMBU.BRKN SAME A/A WITH COMMON BIVALVES (FORMING HORIZONS AT AT .05 M & .27-.45 M) & BIVALVE BURROWS. CORRECT WAY UP. SS/SLTST = 55/45. COMMON PLANT DEBRIS (EVEN AMONG BIVALVES). INCLUDING POSS "GINKO PLURIPARTITA". |
| 25 | 67.65 | 68.36 | 0.71 | 83 | | | SILTSTONE | SSY.M-DK.GY.LAM.BIOTR.BRKN UPPER HALF OF UNIT ALMOST COMPLETELY MIXED (DUE TO BIOTRB) VFG SS/SLTST WITH FAINT BURROW TRACES W/IN. LOWER HALF OF UNIT = INTLAM.VFG.SS/SLTST (A/A). |
| 25 | 68.36 | 69.78 | 1.42 | *82 | | | SILTSTONE | SSY.M-DK.GY.LAM.SSD.BRKN INTLAM.VFG.SS/SLTST (35/65). LAM CONTACTS ARE SUB-HORIZONTAL - WAVY & RAPID GRADATIONAL - SHARP OCCASIONALLY DISRUPTED BY SSD & POSSIBLY BIOTRB. COMMON BROKEN PLANT DEBRIS (THEREFORE SLIGHTLY CARB). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26 | 69.78 | 70.50 | 0.72 | *85 | | | SILTSTONE | SSY.M-DK.GY.LAM.BIOTR.SLD SAME A/A BUT SS/SLTST = 50/50. COMMON B IOTRB & SSD THROUGHOUT. CORRECT WAY UP. SMALL SCALE NORMAL FAULTING. SHARP LOWER CONTACT. |
| 26 | 70.50 | 71.37 | 0.87 | 82 | | | SILTSTONE | DK.GY.MAS.BRKN MASSIVE FEATURELESS SLTST. |
| 26 | 71.37 | 71.81 | 0.44 | 80 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A. |
| 27 | 71.81 | 72.28 | 0.47 | 78 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A. |
| 27 | 72.28 | 72.53 | 0.25 | 77 | | | SILTSTONE | SSY.PR.M-DK.GY.MAS.SLD VERY SLOW GRADATIONAL FINING UPWARD CYCLE W/IN UNIT; MASSIVE SLTST AS ABOVE AT TOP & SLOWLY GRADING INTO A SSY SLTST & THEN INTO A SLTY SS AT THE UNIT'S BASE. E. UNIT IS V WELL BIMODALLY SORTED (SS & SLTST), SLIGHTLY CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27 | 72.53 | 72.74 | 0.21 | 76 | | | SANDSTONE | CARB.FG.MEL.LT-M.GY.MAS.SSD.SLD 98% FG SS WITH VTHIN WISPS OF VERY DISRUPTED CARB SLTST W/IN. ABRUPT LOWER CONTACT ALTHOUGH OCCASIONAL SSD AT BASE. RARE SOLITARY BIVALVE AS PREVIOUS DESCRIBED. |
| 27 | 72.74 | 72.97 | 0.23 | 75 | | | SANDSTONE | CARB.VFG.PR.M.GY.THNB.VBRKN THINLY INTBD FG SS/VFG SS/SLTST/& MINOR MUDST. INTBD CONTACTS ARE RAPID GRADATIONAL - SHARP & COMMONLY WAVY. SLIGHTLY BRECCIATED IN SOME ZONES THEREFORE MIN OR. QTZ-VEINING. |
| 27 | 72.97 | 73.09 | 0.12 | 75 | | | ROCK LOSS | |
| 27 | 73.09 | 74.03 | 0.94 | *73 | | | SILTSTONE | SSY.M-DK.GY.LAM.SSD.BRKN INTLAM VFG SS/SLTST (40/60) WITH RAPID GRADATIONAL - SHARP, SUB-HORIZONTAL TO WAVY CONTACTS. OCCASIONAL SSD. CORRECT WAY UP. |
| 28 | 74.03 | 74.10 | 0.07 | 73 | | | SILTSTONE | SSY.M-DK.GY.LAM.SSD.BRKN SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 74.10 | 74.21 | 0.11 | 74 | | | SANDSTONE | FG.LT-M.GY.LAM.SLD DOMINANTLY SS WITH RARE THIN WISPS. |
| 28 | 74.21 | 74.48 | 0.27 | 74 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN INTLAM VFG SS/SLTST (40/60) WITH SHARP SUB-HORIZONTAL CONTACTS. |
| 28 | 74.48 | 74.74 | 0.26 | *74 | | | SANDSTONE | FG.MOD.LT-M.GY.LAM.SSD.BRKN DOMINANTLY VFG-FG SS WITH OCCASIONAL TH IN SLTST LAMS UP TO 1 CM. SS/SLTST = 85 /15. RAPID GRADATIONAL LOWER CONTACT. |
| 28 | 74.74 | 74.95 | 0.21 | 74 | | | SANDSTONE | FG.PR.LT.GY.VTHNB.SSD.SLD DOMINANTLY VFG SS ALTHOUGH GRAIN SIZE V ARIES FROM SLTST - VCG SS. RARE DISRUPT ED SLTST BEDS UP TO 2 CM ALSO OCCUR. SH ARP UPPER CONTACT. |
| 28 | 74.95 | 75.28 | 0.33 | 74 | | | SANDSTONE | VFG.MOD.M.GY.VTHNB.VBRKN THINLY INTBD VFG DIRTY SS/SLTST (80/20) WITH RARE FG SS ZONES. |
| 28 | 75.28 | 75.35 | 0.07 | 75 | | | ROCK LOSS | |
| 28 | 75.35 | 75.73 | 0.38 | 75 | | | SANDSTONE | FG.VPR.M.GY.VTHNB.BRKN THIN DISRUPTED BEDS RANGING FROM SLTST - VCG SS BUT DOMINATED BY FG SS. Contac TS TEND TO BE WAVY BUT SHARP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|------------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 75.73 | 75.79 | 0.06 | 75 | | | ROCK LOSS | |
| 28 | 75.79 | 76.11 | 0.32 | 75 | | | SANDSTONE | VFG.M-DK.GY.VTHNB.SSD.VBRKN THINLY INTBD VFG SS/SLTST (50/50) WITH MOD GRADATIONAL - RAPID GRADATIONAL MAY Y CONTACTS. CORRECT MAY UP (SSD). |
| 29 | 76.11 | 76.43 | 0.32 | 76 07017 | | | MUDSTONE | SLTY.M-DK.GY.SLD MINOR COALY FRAGS. |
| 29 | 76.43 | 76.93 | 0.50 | 76 07018 ? | | | COAL | C-2.SHRD HIGHLY SHEARED & POWDERED, HARD TO TELL GRADE, C2-C3. |
| 29 | 76.93 | 77.00 | 0.07 | 76 07018 ? | | | COAL | C-4.SLD |
| 29 | 77.00 | 77.18 | 0.18 | 76 07019 | | | MUDSTONE | CLYY.M-DK.GY.SLD MINOR PLANT FRAGS. |
| 29 | 77.18 | 77.25 | 0.07 | 76 07019 | | | COAL | C-6.BRKN MINOR VITRAIN STRINGERS. |
| 29 | 77.25 | 77.27 | 0.02 | 77 | | | COAL | C-4.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------|
| 29 | 77.27 | 77.39 | 0.12 | 77 | | | MUDSTONE | CARB. DK. GY. SLD MINOR COALY STRINGERS. |
| 29 | 77.39 | 77.71 | 0.32 | 77 | | | MUDSTONE | CLYY. M-DK. GY. SLD |
| 29 | 77.71 | 78.11 | 0.40 | 77 | | | SILTSTONE | M-DK. GY. SLD PLANT FRAGS, MUDDY LAMINAE. |
| 30 | 78.11 | 78.23 | 0.12 | 77 | | | MUDSTONE | CARB. DK. GY. MAS. SLD OCCASIONAL THIN (<.5 CM) COAL LAMS W/IN |
| 30 | 78.23 | 78.25 | 0.02 | 77 | | | COAL | C-4. BLK. SLD |
| 30 | 78.25 | 78.36 | 0.11 | 78 | | | MUDSTONE | CARB. DK. GY. SLD OCCASIONAL THIN (<1 MM) COAL LAMS. ABRU PT LOWER CONTACT. |
| 30 | 78.36 | 78.38 | 0.02 | 78 | | | COAL | C-2. BLK. PHRD ABRUPT LOWER CONTACT. |
| 30 | 78.38 | 78.57 | 0.19 | 78 | | | MUDSTONE | CARB. DK. GY. BRKN COMMON THIN COAL LAMS. |
| 30 | 78.57 | 78.58 | 0.01 | 78 | | | COAL | C-2. BLK. PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 78.58 | 78.65 | 0.07 | 78 | | | ROCK LOSS | |
| 30 | 78.65 | 78.95 | 0.30 | 78 | | | MUDSTONE | CARB. LT. BLK. MAS. VBRKN SLIGHTLY CARB. MUDST W/ COMMON PLANT DEB RIS THROUGHOUT INCLUDING "NILSSONIA SP" SLIGHT SLY NEAR BASE. GRADATIONAL LO HER CONTACT. |
| 30 | 78.95 | 79.34 | 0.39 | 78 | | | SILTSTONE | M. GY. LAM. BRKN INTLAM VFG SS/SLTST/MUDST (10/65/25). M UDST/SLTST AT TOP & VFG SS/SLTST AT BAS E OF UNIT. LAMS ARE SUB-HORIZONTAL WITH RAPID GRADATIONAL - SHARP CONTACTS. AB RUPT LOWER CONTACT. |
| 30 | 79.34 | 80.30 | 0.96 | *79 | | | SANDSTONE | CARB. FG. MEL. LT. GY. MAS. XBDG. SLD MASSIVE CLEAN RESISTIVE SS WITH OCCASIO NAL THIN CARB LAMS & WISPS THROUGHOUT O CCASIONALLY DEFINING FAINT LOW ANGLE X- BDG W/IN THE SAND. |
| 31 | 80.30 | 80.69 | 0.39 | 81 | | | SANDSTONE | CARB. FG. VNEL. LT. GY. MAS. SLD SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31 | 80.69 | 81.34 | 0.65 | 83 | | SANDSTONE | CARB. FG. VNEL. LT. GY. MAS. BRKN SAME A/A. BASAL .15 M OF UNIT HAS RARE VERY THIN SLTST LAMS W/IN. OTHERWISE SL IGHTLY CARB SS A/A. ABRUPT LOWER CONTACT. |
| 31 | 81.34 | 81.80 | 0.46 | *85 | | SANDSTONE | FG. VNEL. M. GY. YTHNB. SSD. BRKN THINLY INTBD & INTLAM FG SS/MUDDY SLTST (55/45). COMMON SSD THROUGHOUT INCLUDI NG WELL DEVELOPED BALL & PILLOW STRUCTU RES. CORRECT MAY UP. |
| 31 | 81.80 | 82.38 | 0.58 | 82 | | SANDSTONE | FG. VNEL. LT. GY. MAS. BRKN MASSIVE CLEAN RESISTIVE S&P SS. BASAL 10 M OF UNIT HAS THIN (1 CM) SLTST LAMS H/IN WITH SHARP WAVY CONTACTS. SOME SU B-ROUNDED PROXIMAL RIP-UP CLASTS UP TO 3 CM X 1 CM. |
| 32 | 82.38 | 82.46 | 0.08 | 80 | | SILTSTONE | M. GY. MAS. SLD ABRUPT LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 32 | 82.46 | 83.08 | 0.62 | 78 | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. SSD. SLD DOMINANTLY FG SS WITH OCCASIONAL SLTST LAM W/IN. INCREASING TOWARDS THE UNIT'S BASE. SS/SLTST = 75/25. LAM ARE COMMON LY WAVY WITH SHARP CONTACTS. ABRUPT LOW ER CONTACT. OCCASIONAL SMALL WELL-ROUND ED RIP-UP CLASTS. |
| 32 | 83.08 | 83.72 | 0.64 | *74 | | SILTSTONE | SSY. M-DK. GY. LAM. XBDG. BRKN INTLAM VFG SS/SLTST/MUDST (40/55/5). TH IN LAM (<1 MM-1 CM) WITH SHARP WAVY CON TACTS. MINOR SMALL SCALE LOW ANGLE X-BD G. CORRECT MAY UP. MINOR SSD. |
| 32 | 83.72 | 84.32 | 0.60 | *80 | | SILTSTONE | SSY. M. GY. LAM. BIOTR. BRKN INTLAM BUT COMMONLY MIXED VFG SS/SLTST (25/75). LAM CONTACTS ARE SLOW GRAD & A RE COMMONLY DISRUPTED (BIOTRB?). |
| 33 | 84.32 | 84.92 | 0.60 | 79 | | SANDSTONE | SLTY. VFG. WEL. LT-M. GY. MAS. BIOTR. BRKN DOMINANTLY SS WITH SOME INTLAM WELL MIX ED SLTST. BIOTRB COMMON WITH OCCASIONAL BURROW TRACES (ESP NEAR TOP). SS/SLTST = 80/20. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33 | 84.92 | 86.45 | 1.53 | *77 | | | SANDSTONE | SLTY. VFG. VHCL. LT-M. GY. LAM. XBDG. BRKN DOMINANTLY VFG SS WITH COMMON VERY THIN SLTST INTERLAM. (SS/SLTST=80/20). LAM S ARE HORIZONTAL WITH RAPID GRADATIONAL CONTACTS, COMMONLY FORMING WELL DEVELO PED X-BDG & HORIZONTAL BEDDING. COMMON BIOTRB. CORRECT WAY UP. |
| 34 | 86.45 | 86.79 | 0.34 | 76 | | | SANDSTONE | SLTY. VFG. VHCL. LT-M. GY. LAM. XBDG. BRKN SAME A/A BUT LACKING BIOTRB. SS/SLTST = 95/05. |
| 34 | 86.79 | 88.50 | 1.71 | 75 | | | SANDSTONE | VFG. VHCL. LT. GY. LAM. XBDG. SLD SAME A/A. HORIZONTAL & CROSS-LAMINATED SS WITH OCC SLTST M/IN. COMMON BIOTRB & WORM BURROWS (ESP. M/IN LOWER HALF OF U NIT). CLEAN RESISTIVE VFG S&P SS. |
| 35 | 88.50 | 89.58 | 1.08 | 73 | 07020 | | SANDSTONE | SLTY. FG. PR. LT-M. GY. LAM SILTY LAMINAE THROUGHOUT. LOWER 9 CM SA MPLED. |
| 35 | 89.58 | 89.74 | 0.16 | 72 | 07020 | | SILTSTONE | M. GY. SLD ABUNDANT PYRITE, COALY BANDS, MINOR QTZ |
| 35 | 89.74 | 89.78 | 0.04 | 72 | 07021 M | | COAL | C-3. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------|
| 35 | 89.78 | 89.81 | 0.03 | 72 | 07021 M | | MUDSTONE | CARB. DK. GY. SLD VITRAIN STRINGERS. |
| 35 | 89.81 | 90.23 | 0.42 | 72 | 07021 M | | COAL | C-2. BRKN |
| 35 | 90.23 | 90.26 | 0.03 | 72 | 07021 M | | COAL | C-4. YBRKN |
| 35 | 90.26 | 90.28 | 0.02 | 72 | 07021 M | | COAL | C-2. YBRKN |
| 35 | 90.28 | 90.42 | 0.14 | 72 | 07021 M | | MUDSTONE | CARB. DK. GY. BRKN POORLY CONSOLIDATED. |
| 35 | 90.42 | 90.46 | 0.04 | 72 | 07021 M | | COAL | C-2. PMRD |
| 36 | 90.46 | 90.48 | 0.02 | 72 | 07021 M | | COAL | C-3. PMRD |
| 36 | 90.48 | 90.49 | 0.01 | 72 | 07021 M | | SILTSTONE | M. GY. SLD |
| 36 | 90.49 | 90.56 | 0.07 | 72 | 07021 M | | MUDSTONE | CARB. DK. GY. PMRD SHEARED CONTAINS COAL FLECKS. |
| 36 | 90.56 | 90.65 | 0.09 | 71 | 07021 M | | COAL | C-3. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------|
| 36 | 90.65 | 90.66 | 0.01 | 71 | 07021 | M | MUDSTONE | CARB. DK. GY. SLD |
| 36 | 90.66 | 90.74 | 0.08 | 71 | 07021 | M | COAL | C-5. PHRD SHEARED COAL & MUD MIX, APPEARS AS SPOIL. |
| 36 | 90.74 | 90.79 | 0.05 | 71 | 07021 | M | MUDSTONE | CARB. DK. GY. SLD |
| 36 | 90.79 | 90.90 | 0.11 | 71 | 07021 | M | COAL LOSS | |
| 36 | 90.90 | 91.23 | 0.33 | 71 | 07021 | M | COAL | C-2. VBRKN |
| 36 | 91.23 | 91.30 | 0.07 | 71 | 07021 | M | COAL | C-3. VBRKN |
| 36 | 91.30 | 91.46 | 0.16 | 71 | 07022 | | MUDSTONE | CARB. DK. GY. SLD |
| 36 | 91.46 | 91.58 | 0.12 | 70 | 07022 | | SILTSTONE | M. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 91.58 | 92.40 | 0.82 | 70 | | | SANDSTONE | SLTY. FG. LT-M. GY. GRADES FROM SLTST AT TOP. |
| 37 | 92.40 | 93.07 | 0.67 | *69 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. THNB. SSD. SLD. THINLY INTBD FG SS/VFG SS/SLTST BUT STRONGLY DOMINATED BY VFG SS. CONTACT BETWEEN BEDS ARE RAPID GRADATIONAL & MIXING COMMONLY OCCURS. |
| 37 | 93.07 | 94.41 | 1.34 | 72 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. THNB. SSD. BRKN. SAME A/A BUT SS/SLTST = 55/45. |
| 38 | 94.41 | 95.43 | 1.02 | 75 | | | SILTSTONE | SSY. M-DK. GY. LAM. BIOTR. BRKN. FAINTLY LAMINATED BUT CHURNED INTLAM VFG SS/SLTST (25/75). SOME APPARENT BIOTR. SLOW GRADATIONAL LOWER CONTACT. |
| 38 | 95.43 | 96.03 | 0.60 | 77 | | | SANDSTONE | SLTY. VFG. M-DK. GY. LAM. SSD. BRKN. SLIGHTLY MIXED INTERLAM VFG SS/SLTST (55/45). CONTACTS OF LAM ARE MOD GRADATIONAL & SUB-HORIZONTAL - WAVY. MINOR SSD CAUSING SOME MIXING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 96.03 | 96.49 | 0.46 | *79 | | SANDSTONE | FG. LT-M. GY. VTHNB. SLD THINLY INTBD FG SS/VFG SS/SLTST (65/10/25). INDIVIDUAL BEDS TEND TO HAVE SHORT (5 CM) INTERNAL COARSENING UPWARD CYCLES, WITH ABRUPT LOWER CONTACTS & SLOW GRADATIONAL TRENDS FROM SLTST - FG SS. CONTACTS ARE WAVY TO SUB-HORIZONTAL. |
| 39 | 96.49 | 97.74 | 1.25 | *78 | | SANDSTONE | SLTY. VFG. MOD. M. GY. VTHNB. BIOTR. VSHRD SAME A/A BUT DOMINATED BY VFG SS (10/45/45). CORE IS VERY SHEARED. SOME BIOTR & POSSIBLE BURROWS. SLIGHTLY CARB TOMA RDS. BASE. |
| 39 | 97.74 | 97.99 | 0.25 | 78 | | ROCK LOSS | |
| 40 | 97.99 | 98.18 | 0.19 | 78 | | SILTSTONE | SSY. M-DK. GY. LAM. SLD DOMINANTLY SLTST WITH COMMON THIN VFG S S. LAMS. SS/SLTST = 25/75. |
| 40 | 98.18 | 98.77 | 0.59 | 78 | | SANDSTONE | SLTY. M. GY. LAM. BRKN OVERALL COARSENING UPWARD TREND OF UNIT & FG SS AT TOP GRADING DOWN TO SLTST AT BASE. OCCASIONAL LAM W/IN. SS/SLTST = 65/35. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | 98.77 | 99.82 | 1.05 | *78 | | SANDSTONE | SLTY. VFG. MOD. M. GY. LAM. SSD. BRKN INTLAM VFG SS/SLTST (55/45). UNIT BECOMES SILTIER TOWARDS BASE. LAM CONTACTS ARE RAPID GRADATIONAL & WAVY TO SUB-HORIZONTAL WITH SOME MINOR MIXING & SSD. |
| 40 | 99.82 | 100.02 | 0.20 | 76 | | ROCK LOSS | |
| 41 | 100.02 | 100.88 | 0.86 | 74 | | SILTSTONE | SSY. M-DK. GY. VBRKN DOMINANTLY SLTST (ESP. AT TOP), BECOMING SANDIER TOWARDS BASE. INTERLAM VFG SS/SLTST (30/70). SLIGHTLY BRECCIATED TOWARDS BASE. |
| 41 | 100.88 | 101.13 | 0.25 | 72 | | ROCK LOSS | |
| 41 | 101.13 | 101.61 | 0.48 | 71 | | SILTSTONE | M-DK. GY. VBRKN SLIGHTLY BRECCIATED W/ COMMON QTZ-VEINING. MUDDY SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 101.61 | 102.11 | 0.50 | *69 | | SILTSTONE | SSY. M. GY. LAM. SSD. BRKN INTLAM VFG SS/SILTST (35/65). LAM ARE COMMONLY MIXED & HAVE MOD GRADATIONAL SUB-HORIZONTAL - WAVY CONTACTS. |
| 42 | 102.11 | 102.22 | 0.11 | 69 | | SILTSTONE | DK. GY. MAS. BRKN |
| 42 | 102.22 | 104.03 | 1.81 | *68 | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN INTLAM BUT COMMONLY PARTIALLY MIXED VFG SS/SILTST (35/65). COMMON SSD & OCCASIONAL BURROWS (ESP. IN UPPER HALF). SILTST INCREASES TOWARDS BASE. CORRECT WAY UP. MINOR SIDERITE VEIN-FILLING NEAR BASE. SLIGHTLY CARB WITH OCC PLANT FRAGS. |
| 43 | 104.03 | 105.09 | 1.06 | 66 | | SILTSTONE | DK. GY. MAS. VBRKN MAS SLIGHTLY MUDDY SILTST. |
| 43 | 105.09 | 105.27 | 0.18 | 65 | | ROCK LOSS | |
| 43 | 105.27 | 106.06 | 0.79 | 64 | | SILTSTONE | DK. GY. MAS. VBRKN SAME A/A. OCCASIONAL MUDDY SILTST. ZONES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 44 | 106.06 | 107.93 | 1.87 | *62 | | SILTSTONE | DK. GY. MAS. SSD. SHRD SAME A/A BUT WITH OCCASIONAL VERY THIN VFG SS LAMS FROM 93-1.23 M. RARE APPARENT SSD & POSSIBLE BURROWS. CORRECT WAY UP. MINOR SMALL SCALE X-BDG & OCCASIONAL SHORT (2 MM) COARSENING UPWARD CYCLE S. H/IN RARE LAMINAE. |
| 45 | 107.93 | 108.23 | 0.30 | 61 | | SILTSTONE | M. GY. SLD MINOR COALY CARB STRINGERS. |
| 45 | 108.23 | 108.67 | 0.44 | *60 | 07023 | SILTSTONE | M. GY. BRKN LOWER 25 CM SAMPLED. |
| 45 | 108.67 | 108.70 | 0.03 | 61 | 07024 L | COAL | C-4. BRKN ABUNDANT QTZ. |
| 45 | 108.70 | 108.92 | 0.22 | 61 | 07024 L | COAL | C-2. VBRKN |
| 45 | 108.92 | 109.19 | 0.27 | 62 | 07024 L | COAL | C-3. SHRD SHEARED & BROKEN. MINOR THIN MUDDY BAND S. |
| 45 | 109.19 | 109.25 | 0.06 | 63 | 07024 L | SILTSTONE | M. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 109.25 | 109.47 | 0.22 | 63 | 07024 | L | COAL | C-3.SHRD |
| 45 | 109.47 | 109.50 | 0.03 | 64 | 07024 | L | COAL | C-2.SHRD |
| 45 | 109.50 | 109.78 | 0.28 | 64 | 07025 | | MUDSTONE | CARB.DK.GY.SLD MINOR PLANT FRAGS. |
| 46 | 109.78 | 109.84 | 0.06 | 65 | | | MUDSTONE | CARB.DK.GY.MAS.BRKN SLIGHTLY SLTY.CARB.MUDST. |
| 46 | 109.84 | 109.92 | 0.08 | 65 | | | ROCK LOSS | |
| 46 | 109.92 | 111.24 | 1.32 | 68 | | | SANDSTONE | SLTY.VFG.WEL.M.GY.LAM.SSD.BRKN INTLAM BUT COMMONLY DISRUPTED OR CHURNE D.VFG.SS/SLTST (60/40). LAM CONTACT ARE GENERALLY MIXED & COMMONLY VERY WAVY. CORRECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 111.24 | 111.81 | 0.57 | *71 | | | SANDSTONE | SLTY.VFG.WEL.LT-M.GY.LAM.BIOTR.SLD DOM VFG CLEAN SS WITH OCC THIN SLTST OR CARB LAMS (CARB LAMS COMMON NEAR BASE) COMMON SLTST & MUDST SUB-HELL ROUNDED RIP-UP CLASTS (PROXIMAL) DOM NEAR BASE OF UNIT. SS/SLTST = 90/10. LAM ARE COM MONLY DISRUPTED BY BIOTRB. OCCASIONAL B URROWS. |
| 47 | 111.81 | 113.92 | 2.11 | *75 | | | SANDSTONE | CARB.VFG.VHEL.LT-M.GY.MAS.HRMBU.SLD SL CARB MAS CLEAN SS WITH V RARE THIN C ARB SLTST LAM W/IN. COMMON LARGE SCALE BURROW (BIV.) UP TO .15M IN LENGTH. CORR ECT WAY UP. BIOTRB & BIVALVE BURROWS CO MMON. BIVALVES (UP TO 2.5 X 2 X 1 CM & POORLY PRESERVED DUE TO SS.HOST)PRESENT AT .5-.6 M. |
| 48 | 113.92 | 114.26 | 0.34 | 76 | | | SANDSTONE | CARB.VFG.VHEL.LT-M.GY.MAS.HRMBU BRKN SAME A/A W/ OCCASIONAL FG SS ZONES (ESP NEAR TOP). VERY RARE BIVALVE FRAGMENTS. |
| 48 | 114.26 | 114.34 | 0.08 | 76 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 114.34 | 115.94 | 1.60 | *77 | | SANDSTONE | SLTY. FG. HFL. LT-M. GY. VTHNB. WRMBU. SLD. DOM VFG-FG CLEAN SS WITH COMMON SLTST LAMS UP TO 1 CM THROUGHOUT. LAM HAVE SHARP SUB-HORIZONTAL - WAVY CONTACTS BUT ARE COMMONLY DISTURBED BY LARGE SCALE BURROWS, BIOTRB & SOME SSD. OCCASIONAL BI VALVE SHELL FRAGS PRESENT. CORRECT WAY UP. |
| 49 | 115.94 | 116.42 | 0.48 | 76 | | SILTSTONE | SSY. DK. GY. VTHNB. SSD. BRKN. DOM MASSIVE SLTST W/ COMMON VFG SS LAMS (ESP NEAR THE TOP OF THE UNIT). OCCASIONAL SSD & BIOTRB. SS/SLTST = 25/75. OCCASIONAL QTZ VEIN-FILLING. ABRUPT LOWER CONTACTS. |
| 49 | 116.42 | 116.50 | 0.08 | 76 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 116.50 | 117.33 | 0.83 | *76 | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. THNB. SSD. BRKN. BROAD OVERALL COARSENING UPWARD TREND: BASE OF UNIT IS DOM SLTST W/ COMMON VFG SS LAMS W/IN GRADING UP INTO VFG SS W/ OCC SLTST THIN LAMS GRADING UP INTO FG MAS SS AT UNIT TOP. RARE SSD AT BASE. ABRUPT LOWER CONTACT. SS/SLTST = 75/25. |
| 49 | 117.33 | 118.06 | 0.73 | 78 | | SANDSTONE | SLTY. FG. VHEL. LT-M. GY. THNB. SSD. SLD. REPEATED OVERALL COARSENING UPWARD TREND AS PREVIOUSLY DESCRIBED. HOWEVER, FG SS IS THE DOMINANT LITHOLOGY. SS/SLTST = 80/20. |
| 49 | 118.06 | 118.14 | 0.08 | 79 | | ROCK LOSS | |
| 50 | 118.14 | 120.31 | 2.17 | *81 | | SANDSTONE | SLTY. FG. VHEL. LT-M. GY. VTHNB. WRMBU. BRKN. DOM SS WITH COMMON THIN INTERBEDS & INT ERLAM OF SLTST. SS/SLTST = 90/10. LAM HAVE SHARP SUB-HORIZONTAL - WAVY CONTACTS & ARE COMMONLY BROKEN THUS FORMING OC C SUB-ANGULAR - SUB-ROUNDED RIP-UP CLASTS OF VARIOUS SIZES. CORRECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 51 | 120.91 | 120.45 | 0.14 | 82 | | | SILTSTONE | SSY.M.GY.VTHNB.SLD SAME A/A BUT SS/SLTST = 25/75. |
| 51 | 120.45 | 121.49 | 1.04 | *83 | | | SILTSTONE | SSY.M-DK.GY.LAM.BIOTR.SLD INTLAM VFG SS/SLTST (45/55). COMMONLY 8 IOTURBATED. OVERALL TREND IS COARSENING UP; SILTIER AT BASE & SANDIER AT TOP. SLOW GRADATIONAL LOWER CONTACT. |
| 51 | 121.49 | 122.41 | 0.92 | 84 | | | SILTSTONE | DK.GY.MAS.BIOTR.BRKN BIOTURBATED OCCASIONALLY SANDY SLTST WI TH COMMON "HELMINTHOPSIS" & VERY RARE S MALL (.5 CM) GASTROPODS W/IN. UNIT TEND S TO BECOME SLIGHT MUDDY TOWARDS BASE. |
| 51 | 122.41 | 122.49 | 0.08 | 84 | | | ROCK LOSS | |
| 52 | 122.49 | 123.47 | 0.98 | 84 | 07026 | | MUDSTONE | SLTY.M-DK.GY GASTROPODS (4-10MM) OCCUR SPORADICALLY THROUGHOUT AND IN SMALL CLUSTERS. LOWER 25 CM SAMPLED. |
| 52 | 123.47 | 123.51 | 0.04 | 85 | 07027 ? | | COAL | C-3.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 52 | 123.51 | 123.55 | 0.04 | 85 | 07027 ? | | SILTSTONE | M.GY.SLD ABUNDANT COAL STRINGERS & QTZ. |
| 52 | 123.55 | 123.70 | 0.15 | 85 | 07027 ? | | COAL | C-2.PMRD |
| 52 | 123.70 | 123.77 | 0.07 | 85 | 07027 ? | | COAL | C-3.VBRKN |
| 52 | 123.77 | 124.36 | 0.59 | 85 | 07028 | | SILTSTONE | CLYY.M-DK.GY.SLD ABUNDANT PLANT FRAGS. COALIFIED NEAR TO P OF UNIT. UPPER 25 CM SAMPLED. |
| 53 | 124.36 | 126.42 | 2.06 | *86 | | | SILTSTONE | DK.GY.MAS.BRKN MASSIVE FEATURELESS SLTST WITH OCCASION AL VERY FAINT LAMINAE DUE TO SLIGHT GRA IN SIZE VARIATIONS. VERY RARE PLANT FRA GS W/IN. |
| 54 | 126.42 | 127.29 | 0.87 | 77 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A. ABRUPT LOWER CONTACT. |
| 54 | 127.29 | 127.31 | 0.02 | 74 | | | COAL | C-4.BLK.SLD COMMON V THIN QTZ VEINS MAY REPLACE COA LIFIED HOOD FRAGMENT. ABRUPT LOWER CONT ACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 54 | 127.31 | 127.62 | 0.31 | 73 | | | SILTSTONE | CARB. DK. GY. MAS. BRKN COMMON THIN COAL LAMS W/IN THE SSY SLTS T. SHARP LOWER CONTACT. |
| 54 | 127.62 | 127.77 | 0.15 | 72 | | | SILTSTONE | CARB. DK. GY. MAS. SLD BRECCIATED BUT SAME A/A. |
| 54 | 127.77 | 127.97 | 0.20 | 71 | | | SANDSTONE | SLTY. VFG. M. GY. MAS. SLD MIXED SLTY. SS. ABRUPT LOWER CONTACT. SL IGHTLY CARB. |
| 54 | 127.97 | 128.00 | 0.03 | 70 | | | COAL | C-3. BLK. SLD ABRUPT. LOWER CONTACT. |
| 54 | 128.00 | 128.37 | 0.37 | *69 | | | SANDSTONE | SLTY. VFG. M. GY. MAS. BRKN MIXED SLTY. SS. SLIGHTLY CARB. |
| 55 | 128.37 | 129.40 | 1.03 | *70 | | | SANDSTONE | SLTY. VFG. LT-M. GY. LAM. BIOTR. BRKN PARTIALLY MIXED INTLAM VFG. SS/SLTST (80 /20) WITH COMMON BIOTR & SSD. UNIT BEC OMES SANDIER & FINE-GRAINED TOWARDS BAS E. |
| 55 | 129.40 | 129.72 | 0.32 | 70 | | | SANDSTONE | CARB. FG. MEL. LT. GY. MAS. BRKN VERY RARE THIN SLTST & CARB. WISPS W/IN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 55 | 129.72 | 130.44 | 0.72 | 70 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. LAM. SSD. BRKN INTLAM PARTIALLY MIXED VFG. SS/SLTST (60 /40) WITH COMMON SSD & OCCASIONAL BIOTR B. CORRECT MAY UP. |
| 56 | 130.44 | 132.43 | 1.99 | *71 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. LAM. SSD. BRKN INTLAM FG. SS/VFG. SS/SLTST = 20/35/45. L. AM CONTACTS ARE COMMONLY WAVY & MOD GRA DATIONAL. OCCASIONAL SSD. SLIGHTLY CARB. |
| 56 | 132.43 | 132.53 | 0.10 | 66 | | | SANDSTONE | SLTY. VFG. MOD. M. GY. LAM. SSD. SLD SAME A/A. SLIGHTLY CARB. |
| 57 | 132.53 | 134.65 | 2.12 | *60 | | | SANDSTONE | SLTY. VFG. MEL. M. GY. LAM. SSD. BRKN SAME A/A BUT ONLY INTLAM VFG. SS/SLTST (1 65/35). LAM CONTACTS ARE RAPID GRADATIO NAL - SHARP & SUB-HORIZONTAL - WAVY. SL IGHTLY CARB. |
| 58 | 134.65 | 134.74 | 0.09 | 68 | | | SANDSTONE | SLTY. VFG. MEL. M. GY. LAM. SSD. BRKN SAME A/A. |
| 58 | 134.74 | 135.07 | 0.33 | 70 | | | SANDSTONE | SLTY. VFG. M. GY. MAS. VBRKN SEVERELY BRECCIATED SLTY. SS. A/A. COMMON QTZ VEIN-FILLING THROUGHOUT. |
| 58 | 135.07 | 135.12 | 0.05 | 71 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 135.12 | 135.44 | 0.32 | 72 | | SANDSTONE | SLTY.VFG.MOD.M.GY.LAM.SSD.BRKN PARTIALLY MIXED INTLAM VFG SS/SLTST (65/35). |
| 58 | 135.44 | 136.70 | 1.26 | *78 | | SANDSTONE | SLTY.VFG.MOD.M.GY.LAM.XBDG.BRKN INTLAM VFG SS/SLTST (60/40), PARTIALLY MIXED IN SOME ZONES. LAM CONTACTS ARE SUB-HORIZONTAL - HAVY & MOD GRADATIONAL. UNIT BECOMES MUDDY & CARB TOWARDS BASE |
| 59 | 136.70 | 138.36 | 1.66 | *73 | | SILTSTONE | CARB.M-DK.GY.MAS.SSD.VBRKN WELL MIXED (PREVIOUSLY THINLY BEDDED) SILTST WITH COMMON SS BEDS. OCC THIN COAL LAMS (UP TO .5 CM). BASAL PORTION OF UNIT SHOWS SOME MINOR BRECCIATION. |
| 59 | 138.36 | 138.41 | 0.05 | 72 | | ROCK LOSS | |
| 59 | 138.41 | 138.53 | 0.12 | 72 | | SILTSTONE | CARB.DK.GY.MAS.VBRKN MUDDY SILTST WITH COMMON LISTRIC SURFACE S. |
| 60 | 138.53 | 139.94 | 1.41 | 71 | 07029 | SILTSTONE | M.GY.BRKN MINOR LISTRIC SURFACES. LOWER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|------------------------------------------------|
| 60 | 139.94 | 140.19 | 0.25 | 70 | 07030 K/L | COAL | C-3. SHRD SHEARED & BROKEN, SOME MUDDY PIECES. |
| 60 | 140.19 | 140.22 | 0.03 | 69 | 07030 K/L | MUDSTONE | CARB.M-DK.GY.SLD LISTRIC SURFACES. |
| 60 | 140.22 | 140.27 | 0.05 | 69 | 07030 K/L | COAL | C-5. BRKN C-5 STRINGERS. |
| 60 | 140.27 | 140.36 | 0.09 | 69 | 07030 K/L | MUDSTONE | CARB.DK.GY.BRKN LISTRIC SURFACES. |
| 61 | 140.36 | 140.42 | 0.06 | 69 | 07030 K/L | COAL | C-4. VSHRD MIXED WITH MUD. |
| 61 | 140.42 | 140.59 | 0.17 | 69 | 07030 K/L | MUDSTONE | CARB.DK.GY.VSHRD VITRAIN STRINGERS. |
| 61 | 140.59 | 140.64 | 0.05 | 69 | 07030 K/L | COAL | C-5. VSHRD |
| 61 | 140.64 | 140.88 | 0.24 | 69 | 07030 K/L | COAL | C-3. VSHRD BCA'S TURN OVER THROUGH 0 DEGREES. |
| 61 | 140.88 | 141.07 | 0.19 | 68 | 07030 K/L | MUDSTONE | CARB.DK.GY. SHRD |
| 61 | 141.07 | 141.27 | 0.20 | 68 | 07030 K/L | COAL | C-4. VBRKN BANDED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|----------------------------------------------------------------------------------------|
| 61 | 141.27 | 141.44 | 0.17 | 68 | 07030 K/L | MUDSTONE | CARB.DK.GY.VBRKN |
| 61 | 141.44 | 141.91 | 0.47 | 67 | 07030 K/L | COAL | C-5.SHRD SHEARED & BROKEN, ABUNDANT MUDST WITH V ITRAIN STRINGERS. |
| 61 | 141.91 | 142.05 | 0.14 | 67 | 07030 K/L | MUDSTONE | CARB.DK.GY.SHRD |
| 62 | 142.05 | 142.75 | 0.70 | 67 | 07030 K/L | MUDSTONE | CARB.DK.GY.SHRD ABUNDANT LISTRIC SURFACES. VITRAIN STRI NGERS. |
| 62 | 142.75 | 142.85 | 0.10 | 66 | 07030 K/L | ROCK LOSS | |
| 62 | 142.85 | 143.10 | 0.25 | 66 | 07030 K/L | COAL | C-4.SHRD BCA'S GO THROUGH 0 DEGREES, MUDST PARAL LELS COAL THROUGH MOST OF UNIT. |
| 62 | 143.10 | 143.25 | 0.15 | 66 | 07030 K/L | MUDSTONE | CARB.DK.GY.BRKN |
| 62 | 143.25 | 143.36 | 0.11 | 65 | 07030 K/L | COAL | C-3.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|--------------------------------------|
| 62 | 143.36 | 143.69 | 0.33 | 65 | 07030 K/L | MUDSTONE | CARB.DK.GY.BRKN |
| 62 | 143.69 | 143.80 | 0.11 | 65 | 07030 K/L | COAL | C-4.BRKN |
| 63 | 143.80 | 144.33 | 0.53 | 64 | 07030 K/L | MUDSTONE | CARB.DK.GY.BRKN LISTRIC SURFACES. |
| 63 | 144.33 | 144.55 | 0.22 | 64 | 07030 K/L | COAL | C-6.BRKN VITRAIN STRINGERS. |
| 63 | 144.55 | 144.69 | 0.14 | 64 | 07030 K/L | MUDSTONE | CLYY.M-DK.GY.BRKN |
| 63 | 144.69 | 144.89 | 0.20 | 63 | 07030 K/L | COAL | C-5.SLD C-2 BANDS. |
| 63 | 144.89 | 145.15 | 0.26 | 63 | 07030 K/L | MUDSTONE | CLYY.M-DK.GY.BRKN |
| 63 | 145.15 | 145.30 | 0.15 | 63 | 07030 K/L | COAL | C-5.SLD VITRAIN STRINGERS. |
| 63 | 145.30 | 145.45 | 0.15 | 63 | 07030 K/L | SANDSTONE | FG.PR.M.GY.BRKN ABUNDANT QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------|
| 63 | 145.45 | 145.52 | 0.07 | 62 07030 | K/L | MUDSTONE | CARB. DK. GY. SHRD |
| 64 | 145.52 | 145.56 | 0.04 | 62 07030 | K/L | COAL | C-4.SLD |
| 64 | 145.56 | 145.66 | 0.10 | 62 07030 | K/L | COAL | C-3.SLD |
| 64 | 145.66 | 145.68 | 0.02 | 62 07030 | K/L | COAL | C-5.SLD |
| 64 | 145.68 | 145.70 | 0.02 | 62 07030 | K/L | SILTSTONE | M.GY.SLD |
| 64 | 145.70 | 145.84 | 0.14 | 62 07030 | K/L | COAL | C-3.SHRD |
| 64 | 145.84 | 146.01 | 0.17 | 62 07030 | K/L | MUDSTONE | CLYY.M-DK.GY.BRKN |
| 64 | 146.01 | 146.15 | 0.14 | 62 07030 | K/L | COAL | C-4.SLD |
| 64 | 146.15 | 146.20 | 0.05 | 62 07030 | K/L | SILTSTONE | SSY.M.GY.SLD |
| 64 | 146.20 | 146.25 | 0.05 | 61 07030 | K/L | MUDSTONE | CARB.DK.GY.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------|
| 64 | 146.25 | 146.37 | 0.12 | 61 07030 | K/L | COAL | C-5.BRKN |
| 64 | 146.37 | 146.47 | 0.10 | 61 07030 | K/L | SILTSTONE | SSY.M.GY |
| 64 | 146.47 | 146.90 | 0.43 | 61 07030 | K/L | SILTSTONE | M-DK.GY COALY STRINGERS WITHIN. |
| 64 | 146.90 | 146.93 | 0.03 | 61 07030 | K/L | COAL | C-3.BRKN |
| 65 | 146.93 | 147.87 | 0.94 | 60 07030 | K/L | MUDSTONE | CARB.DK.GY.VBRKN LOCALLY CLAYEY, SHEARED. |
| 65 | 147.87 | 148.24 | 0.37 | 59 07030 | K/L | COAL LOSS | |
| 65 | 148.24 | 148.69 | 0.45 | 58 07030 | K/L | ROCK LOSS | |
| 65 | 148.69 | 148.84 | 0.15 | 58 07030 | K/L | COAL | C-3.PWRD |
| 65 | 148.84 | 148.92 | 0.08 | 58 07030 | K/L | COAL | C-5.BRKN |
| 65 | 148.92 | 149.07 | 0.15 | 58 07030 | K/L | MUDSTONE | CLYY.M-DK.GY.BRKN |
| 65 | 149.07 | 149.21 | 0.14 | 58 07030 | K/L | COAL | C-4.VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|-----------------------------------------------------|
| 65 | 149.21 | 149.35 | 0.14 | 57 | 07030 K/L | MUDSTONE | CARB. DK. GY. SHRD MIXED WITH COAL FLECKS. |
| 66 | 149.35 | 149.57 | 0.22 | 57 | 07030 K/L | COAL | C-3. BRKN |
| 66 | 149.57 | 149.61 | 0.04 | 57 | 07030 K/L | COAL | C-4. BRKN |
| 66 | 149.61 | 149.89 | 0.28 | 57 | 07030 K/L | MUDSTONE | CARB. DK. GY. BRKN |
| 66 | 149.89 | 149.94 | 0.05 | 57 | 07030 K/L | SILTSTONE | M. GY. SLD |
| 66 | 149.94 | 150.11 | 0.17 | 56 | 07030 K/L | COAL | C-3. BRKN |
| 66 | 150.11 | 150.47 | 0.36 | 56 | 07030 K/L | MUDSTONE | CARB. DK. GY. BRKN COALY STRINGERS & THIN BANDS. |
| 66 | 150.47 | 150.63 | 0.16 | 56 | 07030 K/L | ROCK LOSS | |
| 66 | 150.63 | 150.73 | 0.10 | 56 | 07030 K/L | COAL LOSS | |
| 66 | 150.73 | 150.95 | 0.22 | 55 | 07030 K/L | COAL | C-3. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 66 | 150.95 | 151.24 | 0.29 | *55 | 07031 | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT COALY PLANT FRAGS. |
| 67 | 151.24 | 151.73 | 0.49 | 58 | | MUDSTONE | CARB. DK. GY. MAS. BRKN SLTY MUDST WITH COMMON PLANT FRAGS THRO UGHOUT. PLANT FRAGS ARE COMMONLY COALIF IED & NOT IDENTIFIABLE. GRADATIONAL LOW ER CONTACT. |
| 67 | 151.73 | 152.80 | 1.07 | 63 | | SANDSTONE | SLTY. VFG. MEL. M-DK. GY. LAM. SSD. BRKN INTLAM VFG SS/SLTST (55/45) WITH RAPID GRADATIONAL - SHARP SUB-HORIZONTAL TO W AVY CONTACTS. COMMON SSD. CORRECT WAY U P. |
| 67 | 152.80 | 153.29 | 0.49 | *68 | | SANDSTONE | FG. VMEL. LT. GY. LAM. SSD. SLD DOM FG CLEAN SLIGHTLY CARB SS W/ RARE Y HIN SLTST LAMS (ESP AT .08 M-.16 M). CA RB WISPS OCC OCCUR THROUGHOUT. SLTST LA MS ARE COMMONLY DISRUPTED BY SSD. |
| 68 | 153.29 | 153.78 | 0.49 | 69 | | SANDSTONE | CARB. FG. VMEL. LT. GY. MAS. SSD. SLD OCCASIONAL THIN CARB DISCONTINUOUS LAMS & WISPS (<1 MM). MINOR APPARENT SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 68 | 153.78 | 155.27 | 1.49 | *71 | | SANDSTONE | CARB. FG. VHEL. LT. GY. MAS. BRKN DOM FG & MG CLEAN SS W/ OCC CARB MISPS A/A. TWO DISTINCT WELL ROUNDED SLTST RI P-UP CLAST HORIZONS EXIST AT 1) 26-.30 M & 2) 1.10-1.22 M, OFTEN LYING TIGHTLY PACKED W/IN THE SS HOST. |
| 69 | 155.27 | 156.75 | 1.48 | *64 | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. HRMBU. BRKN INTLAM FG SS/VFG SS/SLTST (60/20/20). L AM ARE DOM HORIZONTAL - SUB-HORIZ WITH RAPID GRADATIONAL - SHARP CONTACTS. OCC SSD, BURROWS, SUB-ROUNDED RIP-UP CLAST S. & THIN CARB MISPS. CORRECT WAY UP. |
| 69 | 156.75 | 157.24 | 0.49 | 61 | | SANDSTONE | SLTY. FG. WEL. LT-M. GY. LAM. SSD. BRKN SAME A/A BUT WITHOUT APPARENT HRMBURS. |
| 70 | 157.24 | 157.68 | 0.44 | *59 | | SILTSTONE | SSY. M. GY. LAM. SSD. VBRKN INTLAM VFG SS/SLTST (40/60) (UP TO 1 CM) . LAM ARE HORIZ - SUB-HORIZ WITH ABRUP T CONTACTS. WELL DEVELOPED LOAD CASTS. CORRECT WAY UP. GRAD LOWER CONTACT. |
| 70 | 157.68 | 157.92 | 0.24 | 58 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 157.92 | 158.91 | 0.99 | 57 | | SANDSTONE | FG. LT. GY. MAS. BRKN DOM MASSIVE CLEAN SS W/ RARE V THIN SLT ST BEDS (WITH INTERNAL FINING UPWARD CY CLES) UP TO 2 CM THICK. VERY RARE THIN CARB LAMS & MISPS (<1 MM) W/IN. SLTST L AMS APPEAR NEAR UNIT'S BASE. |
| 70 | 158.91 | 159.40 | 0.49 | 56 | | SILTSTONE | SSY. M. GY. VTHNB. VBRKN INTBD VFG SS/SLTST (45/55) WITH SHARP, SUB-HORIZONTAL INTERBED CONTACTS. BED T THICKNESS RANGE UP TO 2 CM. UNIT IS SLIG HT BRECCIATED NEAR BASE WITH COMMON SMA LL-SCALE NORMAL FAULTING. |
| 70 | 159.40 | 159.80 | 0.40 | 55 | | ROCK LOSS | |
| 71 | 159.80 | 159.86 | 0.06 | 55 | | SILTSTONE | SSY. M. GY. VTHNB. VBRKN SAME A/A. SLIGHT BRECCIATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 71 | 159.86 | 161.72 | 1.86 | *53 | | SANDSTONE | SLTY. FG. VHEL. LT-M. GY. LAM. WRMBU. BRKN BROAD FINING UPWARD TREND WITH SLTST WITH VFG SS LAMS AT TOP GRADING INTO FG & VFG SS WITH SLTST LAMS W/IN GRADING IN TO MIXED VFG & FG SS WITH RARE SLTST AT THE UNIT'S BASE. BURROWS & X-LAMS COMM ON ESP. IN CENTRAL PORTION OF UNIT. |
| 72 | 161.72 | 162.98 | 1.26 | 53 | | SANDSTONE | SLTY. VFG. HEL. LT-M. GY. LAM. BIOTR. BRKN INTLAM. FG. SS/VFG. SS/SLTST (20/50/30). LAMS ARE WAVY & OFTEN DISCONTINUOUS WITH RAPID GRADATIONAL - SHARP CONTACTS. COMMON. SSD & BIOTRB ZONES. |
| 72 | 162.98 | 163.70 | 0.72 | 54 | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN SAME A/A BUT INTLAM VFG. SS/SLTST (40/60). |
| 73 | 163.70 | 165.80 | 2.10 | *54 | | SILTSTONE | SSY. DK. GY. LAM. BIOTR. SLD INTLAM VFG SS/SLTST BUT STRONGLY DOM BY SLTST (20/80). LAM ARE ALMOST COMPLETELY CHURNED & BROKEN WITH PARTIAL MIXING DUE TO BIOTRB. |
| 74 | 165.80 | 166.07 | 0.27 | 50 | | SILTSTONE | SSY. DK. GY. LAM. BIOTR. SLD SAME A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 74 | 166.07 | 167.73 | 1.66 | *47 | | SILTSTONE | SSY. DK. GY. LAM. BIOTR. BRKN SAME A/A BUT SS/SLTST = 40/60. BIOTRB BECOMES LESS COMMON TOWARDS BASE OF UNIT |
| 75 | 167.73 | 168.82 | 1.09 | *39 | | SILTSTONE | SSY. M-DK. GY. LAM. SSD. BRKN INTBD & INTLAM VFG SS/SLTST (45/55). BECOMING SANDIER TOWARDS BASE. LAM ARE SUB-HORIZONTAL WITH SHARP CONTACTS & ARE OCCASIONAL DISRUPTED BY SSD & POSSIBLY BIOTRB. GRADATIONAL LOWER CONTACT. |
| 75 | 168.82 | 169.16 | 0.34 | 41 | | SANDSTONE | FG. LT. GY. MAS. BRKN MASSIVE CLEAN SS. SLTY NEAR BASE. |
| 75 | 169.16 | 169.85 | 0.69 | 43 | | SILTSTONE | SSY. M-DK. GY. LAM. BIOTR. BRKN INTLAM BUT CHURNED DUE TO BIOTRB VFG SS /SLTST (40/60). BASAL .25 M NOT BIOTRB. |
| 76 | 169.85 | 170.82 | 0.97 | *45 | | SANDSTONE | SLTY. VFG. HEL. M-DK. GY. LAM. BIOTR. BRKN SAME A/A BUT SS/SLTST = 55/45. SS DECREASES TOWARDS BASE. LAMINAE TEND TO BECOME THINNER APPROACHING THE UNIT'S BASE (THEREFORE A GRADATIONAL LOWER CONTACT) COMMON BIOTRB & SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM TO | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 76 | 170.82 | 171.80 | 0.98 | 44 | | | SILTSTONE | SSY, DK, GY, MAS, BRKN WELL MIXED SLIGHT SSSY SLTST. MASSIVE TH ROUGHOUT EXCEPT FOR VERY FAINT LAMINAE NEAR TOP OF UNIT DUE TO SLIGHT GRAIN SI ZE VARIATIONS. BIVALVE HORIZON AT .63- 68 M. BIVALVES COMMONLY BROKEN & DEFORM ED. |
| 77 | 171.80 | 172.19 | 0.39 | 43 | | | SILTSTONE | DK, GY, MAS, SLD MASSIVE CLEAN SLTST WITH COMMON SMALL B IVALVES A/A. BIVALVES = UP TO 2 CM x 1. 5 CM x .60 CM. POORLY PRESERVED. |
| 77 | 172.19 | 173.81 | 1.62 | *41 | | | SILTSTONE | DK, GY, MAS, SLD SAME A/A. BIVALVES COMMON THROUGHOUT - POSSIBLY "STAFFINELLA". |
| 78 | 173.81 | 175.25 | 1.44 | 37 | | | SILTSTONE | DK, GY, MAS, BRKN SAME A/A. BIVALVES ARE STILL COMMONLY B ROKEN & DISARTICULATED BUT ARE COMMONLY LARGER (UP TO 4.5 CM x 3.5 CM) WITH ~1 3 RIBS/CM. |
| 78 | 175.25 | 175.73 | 0.48 | 35 | | | SILTSTONE | DK, GY, MAS, BRKN SAME A/A. |
| 79 | 175.73 | 177.81 | 2.08 | *32 | | | SILTSTONE | DK, GY, MAS, BRKN SAME A/A. COMMON BIVALVES AS PREVIOUSLY DESCRIBED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM TO | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 80 | 177.81 | 178.21 | 0.40 | 33 | | | SILTSTONE | CARB, DK, GY, MAS, BRKN SAME A/A BUT WITH NO APPARENT BIVALVES. RARE THIN DISCONTINUOUS COAL LAMS PRES ENT. |
| 80 | 178.21 | 179.79 | 1.58 | *33 | | | SILTSTONE | DK, GY, MAS, BRKN SAME A/A. MASSIVE CLEAN SLTST WITH COMM ON BIVALVE AS PREVIOUSLY DESCRIBED. VER Y RARE VERY FAINT LAMS DUE TO SLIGHT GR AIN SIZE VARIATIONS. |
| 81 | 179.79 | 181.29 | 1.50 | *35 | | | SILTSTONE | DK, GY, MAS, SLD SAME A/A BUT WITH NO APPARENT BIVALVES PRESENT. |
| 81 | 181.29 | 181.87 | 0.58 | 32 | | | SILTSTONE | SSY, DK, GY, MAS, SLD MAS SLIGHTLY SSSY CLEAN SLTST. UNIT IS E SP SSSY AT BASE. |
| 82 | 181.87 | 183.90 | 2.03 | 29 | | | SILTSTONE | SSY, DK, GY, MAS, BRKN SANDY PYRITE-RICH SLTST AT TOP GRADING SLOWLY INTO CLEAN MASSIVE SLTST. VERY R ARE BROKEN BIVALVE SHELL FRAGS W/IN. |
| 83 | 183.90 | 184.29 | 0.39 | 26 | | | SILTSTONE | DK, GY, MAS, SLD CLEAN SLIGHTLY CARB MAS SLTST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83 | 184.29 | 185.96 | 1.67 | *23 | | | SILTSTONE | DK.GY.MAS.SLD SAME A/A BUT BIVALVES APPEAR MIDWAY THROUGH UNIT & INCREASE TOWARDS BASE. BIVALVES ARE POORLY DEFINED, SOME OF WHICH DIFFER FROM PREVIOUS BIVALVES (RIBS RADIAL AWAY FROM THE BEAK, SP UNKNOWN). COMMON "STAFFINELLA" AS BEFORE. |
| 84 | 185.96 | 187.40 | 1.44 | 21 | | | SILTSTONE | DK.GY.MAS.BRKN SAME A/A. BIVALVES ARE COMMONLY FORMING THIN BEDS OR ARE SOLITARY W/IN THE UNIT. |
| 84 | 187.40 | 188.02 | 0.62 | *20 | | | SILTSTONE | DK.GY.MAS.BIOTR.SLD SAME A/A. FAINT LAMINATIONS BEGIN TO BECOME APPARENT, SOME OF WHICH ARE CHURNE D. UNIT BECOMES SLIGHTLY SSSY TOWARDS BASE. |
| 85 | 188.02 | 189.27 | 1.25 | *24 | | | SILTSTONE | SSY.M-DK.GY.MAS.SLD VERY SSSY SLTST BECOMING VFG SS TOWARDS BASE OF UNIT THEREFORE SLIGHT FINING UPWARD TREND. OCCASIONAL THIN SLTST LAMS UP TO 1 CM W/IN UNIT. BIVALVES PRESENT AS BROKEN PIECES (ESP NEAR TOP). SLIGHTLY CARB. ABRUPT LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 85 | 189.27 | 189.75 | 0.48 | 24 | | | SILTSTONE | CARB.DK.GY.VTHNB.BRKN SLIGHT SSSY CARB SLTST WITH COMMON THIN COAL LAMS UP TO .5 CM W/IN. |
| 85 | 189.75 | 190.21 | 0.46 | 24 | | | SILTSTONE | SSY.M.GY.MAS.SLD VERY SSSY WELL MIXED CARB SLTST WITH COMMON PYRITE TOWARDS UNIT'S BASE. SLIGHTLY BRECCIATED AT BASE. |
| 86 | 190.21 | 190.42 | 0.21 | 24 | 07033 | ? | COAL | C-6.SLD MIXTURE OF COALY FLECKS, MUDST AND PYRITE. |
| 86 | 190.42 | 190.71 | 0.29 | 24 | 07033 | ? | COAL | C-6.SLD AS ABOVE. |
| 86 | 190.71 | 190.77 | 0.06 | 24 | 07033 | ? | COAL | C-3.SLD |
| 86 | 190.77 | 190.97 | 0.20 | 24 | 07033 | ? | COAL | C-2.SLD PARALLELED BY MUDST & SLTST FOR MOST OF THE UNIT. |
| 86 | 190.97 | 191.40 | 0.43 | 24 | 07033 | ? | MUDSTONE | CARB.DK.GY.SLD ABUNDANT COALY PLANT FRAGS. COAL STRINGERS NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 86 | 191.40 | 191.73 | 0.33 | 24 | 07034 ? | COAL | C-3.YBRKN |
| 86 | 191.73 | 191.98 | 0.25 | 24 | 07034 ? | COAL | C-2.BRKN |
| 87 | 191.98 | 192.58 | 0.60 | 24 | 07034 ? | COAL | C-2.BRKN |
| 87 | 192.58 | 192.75 | 0.17 | 24 | 07034 ? | COAL | C-4.BRKN PARALLELED BY C-2. LOW BCA'S ~30. |
| 87 | 192.75 | 193.51 | 0.76 | 24 | 07034 ? | COAL | C-3.SLD MIXTURE OF CONTORTED QTZ, COAL & SLTST. |
| 87 | 193.51 | 193.80 | 0.29 | 24 | 07034 ? | COAL LOSS | |
| 87 | 193.80 | 194.16 | 0.36 | 24 | 07035 | MUDSTONE | CARB.DK.GY.SLD ABUNDANT COALY PLANT FRAGS & STRINGERS. UPPER 25 CM SAMPLED. |
| 88 | 194.16 | 194.87 | 0.71 | 24 | | SILTSTONE | CARB.DK.GY.MAS.BRKN RESISTIVE CARB SLTST WITH COMMON PLANT DEBRIS INCLUDING "NILSSONIA SP" AND POS SIBLY "CTENIS BOREALIS" COMMON QTZ VEI NING UP TO 1.5 CM MIDWAY THROUGH UNIT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88 | 194.87 | 196.26 | 1.39 | *24 | | SILTSTONE | CARB.DK.GY.MAS.SSD.BRKN SAME A/A BUT TOP PORTION HAS COMMON VER Y FAINT HORIZONTAL LAMINAE DUE TO SLIGH T. GRAIN SIZE VARIATIONS. CORRECT WAY UP |
| 89 | 196.26 | 196.59 | 0.33 | 23 | | SILTSTONE | CARB.DK.GY.MAS.SSD.BRKN SAME A/A. |
| 89 | 196.59 | 197.02 | 0.43 | 22 | | SILTSTONE | CLYY.LT.GY.MAS.BIOTR.BRKN WELL CEMENTED MASSIVE SLTST WITH RARE C HURNED SS WISPS W/IN. SHARP LOWER CONTA CT WITH RARE SMALL WELL-ROUNDED RIP-UP CLASTS (DK GY SLTST) AT CONTACT. |
| 89 | 197.02 | 197.32 | 0.30 | *22 | | SANDSTONE | SLTY.YFG.LT-M.GY.LAM.BRKN DOMINANTLY CLEAN YFG SS WITH COMMON VER Y THIN SLTST HORIZONTAL LAMS W/IN. (SS/ SLTST = 95/5). OCCASIONAL SMALL WELL-RO UNDED RIP-UP CLASTS. SHARP LOWER CONTA CT. |
| 89 | 197.32 | 197.44 | 0.12 | 23 | | SILTSTONE | SSY.M.GY.BRKN UNIT CONSISTS ALMOST ENTIRELY OF SUB-ME LL-ROUNDED RIP-UP CLASTS W/IN A YFG-FG SS HOST A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 89 | 197.44 | 198.17 | 0.73 | *26 | | SANDSTONE | VFG.WEL.LT-M.GY.LAM.SSD.SLD INTLAM VFG SS/SLTST (70/30) COMMONLY DISTURBED BY SSD. LAM CONTACTS ARE RAPID GRADATIONAL & GENERALLY SUB-HORIZONTAL - WAVY (ESP AT BASE OF UNIT). |
| 90 | 198.17 | 199.58 | 1.41 | *22 | | SANDSTONE | SLTY.VFG.MOD.M.GY.LAM.SSD.BRKN SAME A/A BUT SS/SLTST = 65/35. CORRECT WAY UP (SSD). SLIGHTLY CARB. |
| 90 | 199.58 | 200.09 | 0.51 | 27 | 07036 | SANDSTONE | SLTY.VFG.MOD.M.GY.HAS.SSD.SLD SAME A/A BUT VERY CHURNED & WELL MIXED WITH ONLY VERY FAINT DISRUPTED LAMS PRESENT. RARE THIN COAL BANDS OCCUR & INCREASE TOWARDS BASE. GRADATIONAL LOWER CONTACT. LOWER 25 CM SAMPLED. |
| 90 | 200.09 | 200.12 | 0.03 | 29 | 07037 K | COAL | C-5.LT.BLK.BRKN SANDY LAMS W/IN THE COAL. |
| 90 | 200.12 | 200.27 | 0.15 | 29 | 07037 K | COAL | C-3.LT.BLK.BRKN SLIGHTLY SSSY. |
| 91 | 200.27 | 200.89 | 0.62 | 31 | 07037 K | COAL | C-3.VSHRD VERY SHEARED & POWDERED, MINOR CLAY BANDS RUNNING NEARLY PARALLEL TO CORE. |
| 91 | 200.89 | 201.01 | 0.12 | 33 | 07037 K | MUDSTONE | DK.GY.VSHRD VERY CARB. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------|
| 91 | 201.01 | 201.85 | 0.84 | 36 | 07037 K | COAL | C-3.VSHRD SHEARED & POWDERED. |
| 91 | 201.85 | 201.98 | 0.13 | 38 | 07038 K | MUDSTONE | M-DK.GY.BRKN |
| 92 | 201.98 | 202.33 | 0.35 | 40 | 07038 K | MUDSTONE | M-DK.GY.YBRKN |
| 92 | 202.33 | 202.74 | 0.41 | 42 | 07039 K | COAL | C-2.SLD |
| 92 | 202.74 | 203.03 | 0.29 | 43 | 07039 K | COAL | C-4.SLD ABUNDANT QTZ AND VITRAIN BANDS. |
| 92 | 203.03 | 203.30 | 0.27 | *45 | 07039 K | COAL | C-4.SLD MUDST PARALLELING COAL AT LOW ANGLE, C-2 BANDS. |
| 92 | 203.30 | 203.42 | 0.12 | 43 | 07039 K | COAL LOSS | |
| 92 | 203.42 | 203.50 | 0.08 | 41 | 07039 K | ROCK LOSS | |
| 92 | 203.50 | 203.79 | 0.29 | 39 | 07039 K | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 92 | 203.79 | 204.17 | 0.38 | 35 | 07040 | | MUDSTONE | CARB. DK. GY. SLD CARB PLANT FRAGS. SOME COALIFIED. UPPER 25 CM SAMPLED. |
| 93 | 204.17 | 205.46 | 1.29 | 24 | | | SILTSTONE | CARB. DK. GY. MAS. VBRKN UNIT BECOMES SLIGHTLY MUDDY TOWARDS BAS E. RARE TH IN COAL LAMS & BANDS UP TO 5CM. BRECCIATED ZONE AT .40-.50 M W/ COMMON QTZ VEIN-FILLING. |
| 93 | 205.46 | 206.15 | 0.69 | *12 | | | SILTSTONE | DK. GY. MAS. SLD MUDDY SLTST. |
| 94 | 206.15 | 208.01 | 1.86 | *01 | | | SILTSTONE | M-DK. GY. LAM. BRKN FAINTLY INTLAM SSSY SLTST/SLTST POSSIBLY FORMING FOLD HINGE. VERTICAL BEDDING AT .40 M - POSSIBLE FOLD HINGE. BCA'S INCREASE SLOWLY TOWARDS BASE. |
| 94 | 208.01 | 208.23 | 0.22 | *13 | | | SILTSTONE | M-DK. GY. LAM. VSHRD SAME A/A BUT SLIGHTLY BRECCIATED W/ COMMON QTZ VEIN-FILLING. |
| 94 | 208.23 | 208.30 | 0.07 | 13 | | | ROCK LOSS | |
| 95 | 208.30 | 208.68 | 0.38 | *14 | | | SILTSTONE | M-DK. GY. LAM. VBRKN V FAINTLY LAM. SLIGHTLY SSSY SLTST WITH MINOR BRECCIATION & QTZ VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 95 | 208.68 | 208.75 | 0.07 | 14 | | | ROCK LOSS | |
| 95 | 208.75 | 209.32 | 0.57 | 15 | | | SILTSTONE | M-DK. GY. LAM. VBRKN SAME A/A. GRADATIONAL LOWER CONTACT. |
| 95 | 209.32 | 210.37 | 1.05 | *16 | | | SANDSTONE | CARB. VFG. VMEL. LT-M. GY. MAS. BRKN CLEAN MASSIVE SS WITH OCCASIONAL VERY THIN CARB & SLTST LAMS UP TO 2 MM. LAMS ARE COMMONLY VERY WAVY & OFTEN DISCONTINUOUS WITH GRADATIONAL CONTACTS. |
| 96 | 210.37 | 211.77 | 1.40 | *21 | | | SANDSTONE | SLTY. VFG. WEL. LT-M. GY. LAM. BRKN INTLAM VFG SS/SLTST (75/25). LAM ARE UP TO 1 CM & HAVE RAPID GRADATIONAL HORIZONTAL - SUB-HORIZONTAL CONTACTS. GRAIN SIZE DIFFERENCES BETWEEN LAM ARE SLIGHT & THEREFORE LAM ARE VERY FAINT. |
| 96 | 211.77 | 212.41 | 0.64 | *26 | | | SANDSTONE | SLTY. VFG. WEL. LT. GY. MAS. SSD. SLD WELL MIXED SLTY SS WITH VERY RARE FAINT LAM TRACES. SLIGHTLY CARB. |
| 97 | 212.41 | 213.22 | 0.81 | *40 | 07041 | | SANDSTONE | FG. PR. M. GY. SLD LAMINATED WITH MUDST. LOWER 25 CM SAMPLED. |
| 97 | 213.22 | 213.53 | 0.31 | 39 | 07042 ? | | COAL | C-3. SHRD SHEARED & BROKEN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 97 | 213.53 | 213.64 | 0.11 | 39 | 07042 | ? | COAL | C-4.VBRKN HARD & MUDDY. |
| 97 | 213.64 | 213.74 | 0.10 | 39 | 07042 | ? | ROCK LOSS | |
| 97 | 213.74 | 213.87 | 0.13 | 39 | 07042 | ? | COAL | C-3.VBRKN |
| 97 | 213.87 | 214.38 | 0.51 | 38 | 07043 | | MUDSTONE | CARB.DK.GY.SLD ABUNDANT CARB PLANT FRAGS (SOME COALY), UPPER 25CM SAMPLED. |
| 98 | 214.38 | 214.69 | 0.31 | 38 | | | SILTSTONE | CARB.DK.GY.MAS.BRKN MASSIVE SLIGHTLY MUDDY SLTST W/ VERY RA RE PLANT DEBRIS W/IN. |
| 98 | 214.69 | 214.80 | 0.11 | 37 | | | ROCK LOSS | |
| 98 | 214.80 | 215.61 | 0.81 | 37 | | | MUDSTONE | CARB.DK.GY.MAS.VBRKN COMMON THIN COAL BANDS & LAM THROUGHOUT THE SLTY MUDST. ABRUPT LOWER CONTACT. |
| 98 | 215.61 | 215.65 | 0.04 | 36 | | | COAL | C-2.BLK.PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 98 | 215.65 | 216.36 | 0.71 | 36 | | | SILTSTONE | CARB.DK.GY.MAS.BRKN COMMON BROKEN PLANT DEBRIS THROUGHOUT, OCCASIONAL THIN COAL LAMS & BANDS UP TO .5 CM. |
| 99 | 216.36 | 217.83 | 1.47 | *34 | | | SILTSTONE | CARB.DK.GY.MAS.SLD SAME A/A BUT WITHOUT COAL LAMS. PLANT F OSSILS POSSIBLY INCLUDE "PTILOPHYLLUM M ONTANENSE". RARE VERY FAINT HORIZONTAL LAMINAE VISIBLE. |
| 100 | 217.83 | 218.55 | 0.72 | 36 | | | SILTSTONE | CARB.DK.GY.MAS.BRKN SAME A/A BUT LESS PLANT DEBRIS. UNIT BE COMES SLOWLY MORE CARB TOWARD BASE. |
| 100 | 218.55 | 218.59 | 0.04 | 36 | | ? | COAL | C-4.BLK.LAM.VBRKN INTLAM C-1 COAL/CARB MUDST (60/40). |
| 100 | 218.59 | 219.31 | 0.72 | 37 | | ? | COAL LOSS | |
| 100 | 219.31 | 219.55 | 0.24 | 37 | | ? | MUDSTONE | CARB.BLK.MAS.SHRD COMMON THIN COAL LAMS AT TOP. |
| 100 | 219.55 | 219.58 | 0.03 | 37 | | ? | COAL | C-3.BLK.BRKN |
| 100 | 219.58 | 219.69 | 0.11 | 38 | | ? | COAL | C-2.BLK.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|---------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100 | 219.69 | 219.71 | 0.02 | 38 | ? | | COAL | C-3.BLK.BRKN |
| 100 | 219.71 | 219.73 | 0.02 | 38 | ? | | COAL | C-4.BLK.BRKN |
| 100 | 219.73 | 219.93 | 0.20 | 38 | ? | | COAL LOSS | |
| 100 | 219.93 | 220.52 | 0.59 | 38 | | | MUDSTONE | CARB.DK.GY.VTHNB.SLD COMMON THIN COAL LAMS & BANDS UP TO .5 CM. SLIGHTLY SLTY AT BASE. GRAD LOWER C CONTACT. |
| 101 | 220.52 | 221.54 | 1.02 | 40 | | | SILTSTONE | CARB.DK.GY.MAS.SLD MUDDY SLTST AT BASE GRADING SLOWLY INTO CLEAN SLTST. COMMON PLANT FRAGS (ESP N EAR TOP). OCCASIONAL COALIFIED WOOD FRA GS. |
| 101 | 221.54 | 222.53 | 0.99 | *41 | | | SILTSTONE | SSY.M-DK.GY.MAS.BRKN OVERALL SLOW GRADATION FROM SLTST (A/A) ON TOP OF UNIT TO YFG SLTY SS AT THE U NIT'S BASE. FAINT LAMS APPEAR FROM MIDW AY TO THE BASE OF THE UNIT. GRAD UPPER CONTACT. RARE PYR. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87028

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|---------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 102 | 222.53 | 224.58 | 2.05 | *45 | | | SANDSTONE | FG.LT-M.GY.LAM.SSD.BRKN INTLAM VFG SS/SLTST (85/15) WITH OCCASI ONAL SSD. INDIVIDUAL LAM TEND TO HAVE S HARP SUB-HORIZONTAL CONTACTS WITH RARE DISRUPTED ZONES. APPEARS CORRECT WAY UP (SSD). END OF HOLE. T.D. = 224.64 M. D RILLER'S MARK. |

* DENOTES MEASURED BCA
NEWPAGE

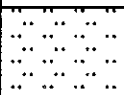
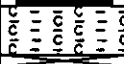
GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87028 SEAM : L INTERVAL(M) : 108.67 - 109.50 ELEVATION(M) : 1418.9
 GEOLOGIST : LEDDA SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | |
|------------|--------------------|----------------------------------------------------------------------------------------|-----------------|------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|------|----------------|---|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/Kg | |
| | 108.67 | ↑  | | 0.46 | | | | | | | | | | | | |
| | | ↓ | | 0.22 | 100.0 | 7024 | 125 | 0.68 / 0.05 | 0.68 / 0.05 | 0.59 | 24.50 | 8.02 | 66.88 | 0.49 | 22.79 | — |
| | 109.50 | ↓  | | | | | | 0.73 | 0.73 | | | | | | | |

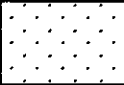
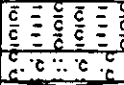
GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87028 SEAM : ? INTERVAL(M) : 213.22 - 213.87 ELEVATION(M) : 1418.9
 GEOLOGIST : LEDDA SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | |
|------------|--------------------|----------------------------------------------------------------------------------------|-----------------|------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|----|----------------|---|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | |
| | 213.22 | ↑  | | 0.27 | 84.8 | 7042 | 131 | 0.35 / 0.08 | | | | | | | | |
| | 213.87 | ↓  | | 0.09 | | | | 0.41 | | 0.88 | 54.50 | 8.05 | 36.57 | — | 12.80 | — |

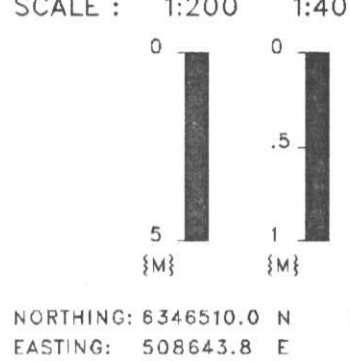
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87028

740

GEOLOGIST : LEDDA

DATE : MAR 08/88

DRAWING NO. :



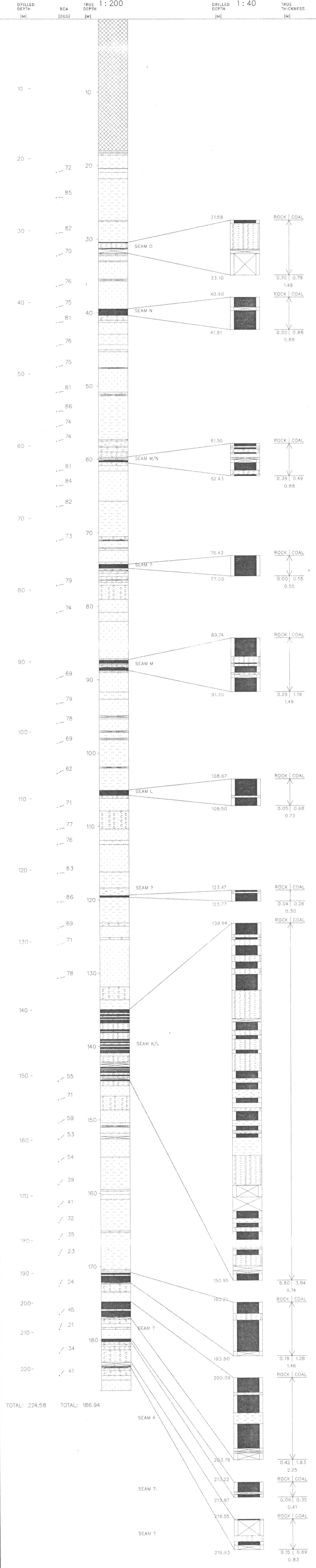
NORTHING: 6346510.0 N
 EASTING: 508643.8 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



Gulf Canada Resources Limited

Coal Division

Geophysical Log

740

Datasource: KPNLRDDH87028

Province: BC

Northing: 6346510.00

Lat: 571548

Log Date: 84-01-06

Zone: 9

Easting: 508644.00

Long: 1285124

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1418.8

Geologist: LEDDA

Scale: 1 to 200.0

Depth Range: 0.0 to 229.0

True Thickness: NO

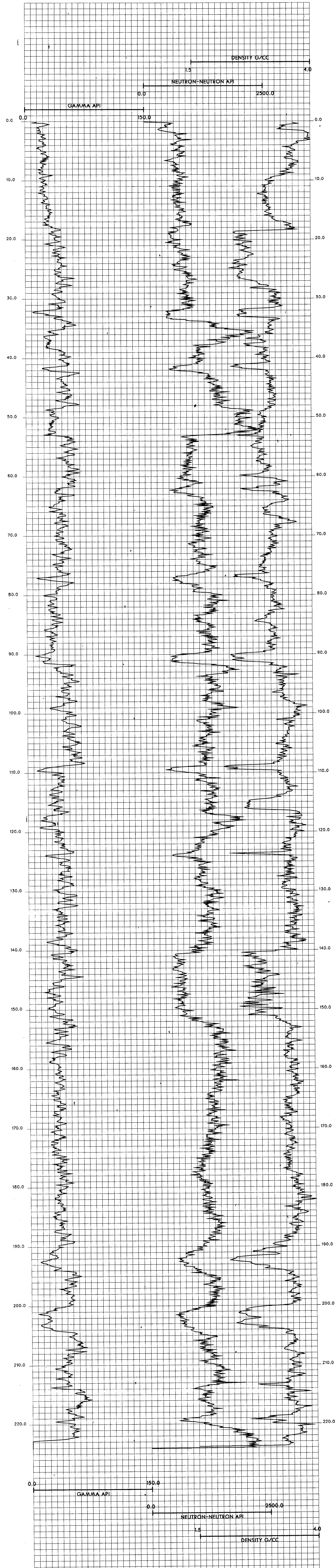
Comments:

1. LOGGED THROUGH RODS.

2.

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9055A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87029

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87029

DATE - 03/04/88

- HISTORY -

START DATE - 10/05/87

END DATE - 10/07/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PENMAN

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE V. INTERSECTED H, H (REP), H (OVT) (PART), H/
I (2) (OVT), H/I (2), H, H-1, PH, G, F.

- LOCATION -

PROVINCE - BC

ELEVATION - 1420.71

ZONE - 9

NORTHING - 6346467.17

EASTING - 508209.75

LICENCE/LEASE NUMBER -

LATITUDE - 571547

LONGITUDE - 1285150

- ORIENTATION -

LENGTH - 211.76

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 12.19

AQUIFER DEPTHS (M) - 0.00

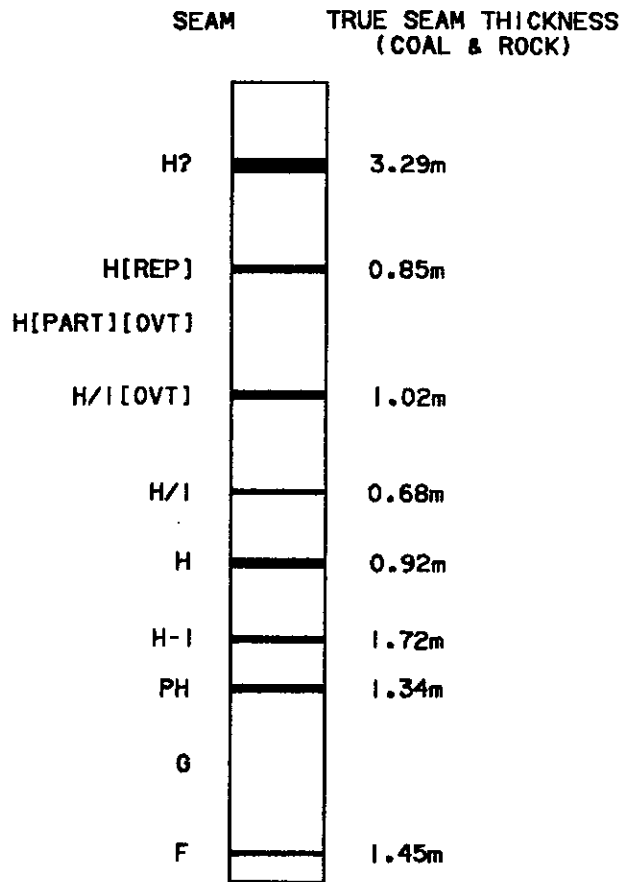
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87029**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|------------|---------------------------------------------------------------------|
| | 0.00 | 12.19 | 12.19 | 70 | | CASING | CASING DEPTH |
| 1 | 12.19 | 12.26 | 0.07 | 70 | | OVERBURDEN | SS AND CONGL GRAVEL TO 5 CM |
| 1 | 12.26 | 13.10 | 0.84 | 70 | | SANDSTONE | FG.PR.LT.GY.LAM.BRKN SLTST LAM |
| 1 | 13.10 | 13.20 | 0.10 | 70 | | SANDSTONE | FG.PR.LT.GY.LAM.VSHRD CORE LOSS |
| 1 | 13.20 | 13.99 | 0.79 | *70 | | SANDSTONE | FG.PR.LT.GY.LAM.XBDG.BRKN TOPS UP. SLTST LAM INCREASING TO BASE. |
| 2 | 13.99 | 14.88 | 0.89 | 69 | | SANDSTONE | FG.PR.LT.GY.LAM.SLD SSD THROUGHOUT. 10 CM SS BREC. IN QTZ. |
| 2 | 14.88 | 15.57 | 0.69 | 68 | | SANDSTONE | FG.PR.LT.GY.LAM.VBRKN SSD THROUGHOUT. |
| 3 | 15.57 | 15.76 | 0.19 | 67 | | SANDSTONE | FG.PR.LT.GY.LAM.VSHRD SSD. CORE LOSS. |
| 3 | 15.76 | 16.47 | 0.71 | 66 | | SANDSTONE | FG.PR.LT.GY.THNB.BRKN SS AND SLTY SS BANDS. |
| 3 | 16.47 | 17.44 | 0.97 | *65 | | SANDSTONE | FG.PR.LT.GY.LAM.SLD SSD. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------|
| 4 | 17.44 | 17.62 | 0.18 | 65 | | SANDSTONE | FG.PR.LT.GY.LAM.SLD SSD. |
| 4 | 17.62 | 17.70 | 0.08 | 65 | | SANDSTONE | FG.PR.LT.GY.LAM.VSHRD CORE LOSS. |
| 4 | 17.70 | 19.46 | 1.76 | 65 | | SANDSTONE | SLTY.FG.PR.LT.GY.LAM.SSD.BRKN MINOR WRMBUR. |
| 5 | 19.46 | 19.73 | 0.27 | 65 | | SILTSTONE | M.GY.SLD |
| 5 | 19.73 | 20.65 | 0.92 | 65 06975 | | SILTSTONE | M.GY.SLD PLANT FRAGS, MANY COALIFIED. LOWER 25 C H SAMPLED. |
| 5 | 20.65 | 20.70 | 0.05 | 65 06976 H | | COAL | C-5.SLD QTZ AND VITRAIN STRINGERS THROUGHOUT |
| 5 | 20.70 | 21.31 | 0.61 | 65 06976 H | | COAL LOSS | |
| 5 | 21.31 | 21.40 | 0.09 | 65 06976 H | | MUDSTONE | CARB.DK.GY.SLD POORLY CONSOLIDATED. |
| 5 | 21.40 | 21.44 | 0.04 | 65 06976 H | | COAL | C-3.VBRKN |
| 5 | 21.44 | 21.91 | 0.47 | 65 06976 H | | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------|
| 5 | 21.91 | 21.99 | 0.08 | 65 06976 | H | ROCK LOSS | |
| 5 | 21.99 | 22.00 | 0.01 | 65 06976 | H | MUDSTONE | CARB.DK.GY.SLD |
| 5 | 22.00 | 22.62 | 0.62 | 65 06976 | H | COAL | C-3.VBRKN SHEARED AND BROKEN. |
| 6 | 22.62 | 22.67 | 0.05 | 65 06976 | H | COAL | C-5.PWRD |
| 6 | 22.67 | 22.70 | 0.03 | 65 06976 | H | MUDSTONE | CARB.DK.GY.SHRD |
| 6 | 22.70 | 23.34 | 0.64 | 65 06976 | H | COAL | C-3.VSHRD SHEARED AND POWDERED. |
| 6 | 23.34 | 23.39 | 0.05 | 65 06976 | H | MUDSTONE | CARB.DK.GY.VSHRD MIXED WITH COAL FLECKS. |
| 6 | 23.39 | 23.79 | 0.40 | 65 06976 | H | COAL | C-3.VSHRD |
| 6 | 23.79 | 23.87 | 0.08 | 65 06976 | H | MUDSTONE | CARB.DK.GY.VSHRD UNCONSOLIDATED, MIXED WITH COAL FLECKS. |
| 6 | 23.87 | 24.01 | 0.14 | 65 06976 | H | COAL | C-3.SHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 6 | 24.01 | 24.24 | 0.23 | 65 06976 | H | COAL LOSS | |
| 6 | 24.24 | 24.28 | 0.04 | 65 06976 | H | COAL | C-5.SHRD |
| 6 | 24.28 | 24.65 | 0.37 | 65 06977 | | MUDSTONE | CARB.DK.GY.SLD MINOR THIN COALY BANDS. |
| 7 | 24.65 | 24.82 | 0.17 | 65 | | SILTSTONE | DK.GY.BRKN QTZ STRINGERS. |
| 7 | 24.82 | 25.91 | 1.09 | *65 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN QTZ STRINGERS. MINOR BREC. |
| 7 | 25.91 | 26.41 | 0.50 | 36 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.VSHRD QTZ STRINGER. NUMEROUS SPIN OFFS. CONTAINS 2 CM CARB MUD AND 4 CM OF LT GY MUD. OVERTURNING BEGINS. |
| 7 | 26.41 | 26.54 | 0.13 | *25 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD FINE SLTST LAM. |
| 8 | 26.54 | 28.49 | 1.95 | *02 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN LOCAL CONCENTRATIONS OF SS BREC IN QTZ BAND. FOLLOWED BY 7 CM OF RUBBLE. CORE L OSS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 28.49 | 28.86 | 0.37 | 06 | | SANDSTONE | FG.MOD.LT.GY.LAM.SSD.SLD |
| 9 | 28.86 | 29.15 | 0.29 | 07 | | SANDSTONE | FG.MOD.LT.GY.LAM.SSD.VBRKN 4 CM QTZ BAND. UNIT BECOMES QUITE SLTY AT BASE. |
| 9 | 29.15 | 30.46 | 1.31 | *10 | | SILTSTONE | DK.GY.LAM.VBRKN MINOR SLICKENSIDES. SS - SLTST LAM. |
| 10 | 30.46 | 31.18 | 0.72 | 11 | | SILTSTONE | SSY.PR.M.GY.LAM.SLD ONE BRAKE NEAR BASE WITH SLICKENSIDES. |
| 10 | 31.18 | 31.51 | 0.33 | 12 | | SILTSTONE | SSY.PR.M.GY.LAM.VSHRD NUMEROUS SLICKENSIDES. |
| 10 | 31.51 | 31.92 | 0.41 | 12 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN QTZ STRINGERS AT BASE. CORE LOSS. |
| 10 | 31.92 | 32.26 | 0.34 | 13 | | SANDSTONE | SLTY.FG.PR.LT.GY.LAM.VBRKN QTZ STRINGERS. |
| 11 | 32.26 | 32.70 | 0.44 | 13 | | SILTSTONE | SSY.PR.DK.GY.LAM.BRKN QTZ STRINGERS. FAULT AT BASE >10 CM MOVEMENT. QTZ FINELY DISEMINATED THROUGH SLTST BELOW FAULT. POSS. MILKY WAY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 11 | 32.70 | 32.79 | 0.09 | 14 | | SILTSTONE | PR.DK.GY.VSHRD CORE LOSS. |
| 11 | 32.79 | 33.14 | 0.35 | 14 | | SILTSTONE | PR.DK.GY.LAM.VBRKN MORE POSS. MILKY WAY. |
| 11 | 33.14 | 33.66 | 0.52 | 14 | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN SS BREC IN QTZ THROUGHOUT. |
| 11 | 33.66 | 34.33 | 0.67 | *15 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD SLTST LAM. |
| 12 | 34.33 | 35.21 | 0.88 | *15 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.SLD QTZ STRINGERS AT BASE OF UNIT. TOP DOWN |
| 12 | 35.21 | 35.70 | 0.49 | 18 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.VBRKN FRACTURED WITH SLICKENSIDES. |
| 12 | 35.70 | 36.40 | 0.70 | *20 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.BRKN SLTST LAM. SLICKENSIDES AT TOP. |
| 13 | 36.40 | 36.79 | 0.39 | *15 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.SLD |
| 13 | 36.79 | 38.38 | 1.59 | 19 | | SANDSTONE | FG.MOD.LY.GY.VTHNB.BRKN VERY FRACTURED WITH SS BREC IN QTZ. STR ESS RELEASE FRACTURES WITH .5 CM MOVEMENT. TOPS DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------|
| 14 | 38.38 | 38.58 | 0.20 | | 23 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.VSHRD AS ABOVE AND CORE LOSS. |
| 14 | 38.58 | 39.30 | 0.72 | * | 25 | | SANDSTONE | FG.MEL.LT.GY.TMKB |
| 14 | 39.30 | 39.48 | 0.18 | | 25 | | SANDSTONE | FG.LT.GY.SLD SS BREC IN QTZ. |
| 14 | 39.48 | 40.01 | 0.53 | | 25 | | SANDSTONE | FG.MEL.LT.GY.TMKB.BRKN SLICKENSIDES AT BASE. QTZ STRINGERS THR OUGHOUT. |
| 15 | 40.01 | 40.90 | 0.89 | * | 25 | | SANDSTONE | VFG.MEL.LT.GY.THNB.SLD MINOR QTZ. SLTST WISPS. |
| 15 | 40.90 | 41.02 | 0.12 | | 23 | | SANDSTONE | VFG.MEL.LT.GY.THNB.BRKN AS ABOVE. 2 CM QTZ RUBBLE AT BASE. |
| 15 | 41.02 | 41.42 | 0.40 | | 22 | | MUDSTONE | CARB.M.BLK.LAM.VBRKN COAL STRINGERS TO .5 CM (C-5 OR C-6) |
| 15 | 41.42 | 41.92 | 0.50 | | 20 | | SANDSTONE | VFG.MEL.LT.GY.SLD |
| 16 | 41.92 | 43.77 | 1.85 | * | 15 | | SANDSTONE | VFG.MEL.LT.GY.VTHNB.BRKN SLTST LAM. QTZ STRINGERS. TOPS DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPW BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------|
| 16 | 43.77 | 43.90 | 0.13 | | 22 | | SANDSTONE | VFG.MEL.LT.GY.VTHNB.SLD |
| 17 | 43.90 | 43.98 | 0.08 | | 23 | | SANDSTONE | VFG.MEL.LT.GY.VTHNB.BRKN |
| 17 | 43.98 | 44.34 | 0.36 | | 24 | | CONGLOMERATE | LT.GY.VTHNB.BRKN SLTST CLASTS WITH VFG SS MATRIX. BOTTOM 15 CM RUBBLE WITH NUMEROUS QTZ STRINGE RS. PROB. CORE LOSS. |
| 17 | 44.34 | 44.62 | 0.28 | | 27 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.VSHRD |
| 17 | 44.62 | 45.31 | 0.69 | * | 30 | | SANDSTONE | FG.MOD.LT.GY.LAM.VBRKN SLTST LAM. QTZ STRINGERS. |
| 17 | 45.31 | 45.61 | 0.30 | | 27 | | SANDSTONE | FG.MOD.LT.GY.VSHRD CORE LOSS. |
| 18 | 45.61 | 45.81 | 0.20 | | 25 | | SANDSTONE | FG.MOD.LT.GY.VSHRD SS RUBBLE WITH QTZ STRINGERS. |
| 18 | 45.81 | 46.40 | 0.59 | * | 23 | | SANDSTONE | FG.MEL.LT.GY.THNB.BRKN SLTST WISPS. |

* DENOTES MEASURED BCA

88/03/04

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 9

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------|
| 18 | 46.40 | 47.39 | 0.99 | 25 | | | SANDSTONE | FG.WEL.LT.GY.VBRKN NUMEROUS QTZ STRINGERS. |
| 19 | 47.39 | 47.64 | 0.25 | 27 | | | SANDSTONE | FG.WEL.LT.GY.SLD ALMOST A SLTST CONG. QTZ STRINGERS. 4' C M SS BREC IN QTZ BAND AT BASE. |
| 19 | 47.64 | 48.57 | 0.93 | 29 | | | SANDSTONE | FG.WEL.LT.GY.SLD V FINE QTZ STRINGERS WITH 2 CM BAND AT BASE. |
| 19 | 48.57 | 48.77 | 0.20 | 30 | | | MUDSTONE | M.BLK.LAM.BRKN TALC. ON FRACTURE SURFACES. |
| 19 | 48.77 | 48.94 | 0.17 | 31 | | | MUDSTONE | M.BLK.LAM.VSHRD AS ABOVE. POSS. CORE LOSS. |
| 19 | 48.94 | 49.22 | 0.28 | 31 | 06978 | | MUDSTONE | CARB.DK.BLK.LAM.VSHRD SOFT WET MUDST WITH COAL STRINGERS. LOW ER 17 CM SAMPLED. |
| 20 | 49.22 | 49.30 | 0.08 | 32 | 06978 | | MUDSTONE | CARB.DK.GY.SLD POORLY CONSOLIDATED. |
| 20 | 49.30 | 49.34 | 0.04 | 32 | 06979 | H REP | COAL | C-4, SHRD |
| 20 | 49.34 | 49.50 | 0.16 | 32 | 06979 | H REP | COAL LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------|
| 20 | 49.50 | 49.63 | 0.13 | 33 | 06979 | H REP | MUDSTONE | CARB.DK.GY.SLD POORLY CONSOLIDATED. |
| 20 | 49.63 | 49.80 | 0.17 | 33 | 06979 | H REP | COAL LOSS | |
| 20 | 49.80 | 50.33 | 0.53 | 34 | 06979 | H REP | COAL | C-3, VBRKN SHEARED. |
| 20 | 50.33 | 50.40 | 0.07 | 35 | 06979 | H REP | ROCK LOSS | |
| 20 | 50.40 | 50.81 | 0.41 | 36 | 06979 | H REP | COAL LOSS | |
| 20 | 50.81 | 51.89 | 1.08 | 38 | 06980 | | SANDSTONE | SLTY.FG.PR.H.GY MUDDY LAMINAE. MINOR SLTST. UPPER 25 CM SAMPLED. |
| 21 | 51.89 | 52.26 | 0.37 | *40 | | | SANDSTONE | SLTY.FG.PR.H.GY.LAM.BRKN SLTST LAM. |
| 21 | 52.26 | 52.56 | 0.30 | 33 | | | SANDSTONE | HG.WEL.LT.GY.THNB.BRKN QTZ STRINGER AT TOP. CORE LOSS AT TOP. |
| 21 | 52.56 | 52.61 | 0.05 | 30 | | | ROCK LOSS | |
| 21 | 52.61 | 52.67 | 0.06 | 29 | | | SANDSTONE | FG.LT.GY.VSHRD POSS. CORE LOSS. THROUGH SHARP FOLD. |

* DENOTES MEASURED BCA

FORM 4001

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------|
| 21 | 52.67 | 52.79 | 0.12 | 27 | | SANDSTONE | VFG. MOD. LT. GY. LAM. SLD 4 CM QTZ VEIN AT TOP. SLTST LAM TO 1' C M. |
| 21 | 52.79 | 53.88 | 1.09 | *15 | | MUDSTONE | LT. BLK. LAM. SSD. SLD SLTST LAM. SSD - TOPS DOWN. |
| 22 | 53.88 | 54.81 | 0.93 | 17 | | MUDSTONE | LT. BLK. LAM. VBRKN TOP OF UNIT YSHRD. 3 CM SLTST LAM AT BA SE. OF SCOUR FILL. |
| 22 | 54.81 | 54.86 | 0.05 | 18 | | ROCK LOSS | |
| 22 | 54.86 | 55.23 | 0.37 | 19 | | SANDSTONE | SLTY. FG. PR. H. GY. BRKN PYRITE THROUGHOUT QTZ STRINGERS. |
| 22 | 55.23 | 55.38 | 0.15 | 19 | | MUDSTONE | M. BLK. LAM. BRKN |
| 22 | 55.38 | 55.70 | 0.32 | *20 | | SANDSTONE | FG. PR. DK. GY. LAM. BRKN MUDDY SS. |
| 22 | 55.70 | 55.88 | 0.18 | 19 | | MUDSTONE | M. BLK. SLD NO BEDDING EVIDENT. |
| 23 | 55.88 | 56.00 | 0.12 | 18 | | MUDSTONE | M. BLK. SLD NO BEDDING EVIDENT. |

* DENOTES MEASURED BCA

88/03/04

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------|
| 23 | 56.00 | 57.23 | 1.23 | 14 | | MUDSTONE | M. BLK. SLD SLICKENSIDES WITH QTZ INFILL AT BASE WI TH 2 CM QTZ BAND WITH SLT BREC. |
| 23 | 57.23 | 57.65 | 0.42 | *10 | | SILTSTONE | DK. GY. LAM. BRKN MUDST LAM. |
| 24 | 57.65 | 59.08 | 1.43 | *05 | | SILTSTONE | DK. GY. LAM. BRKN MUDST LAM. |
| 24 | 59.08 | 59.20 | 0.12 | 09 | | MUDSTONE | LT. BLK. PWRD SCOUR FILL WITH QTZ PEBBLES. |
| 24 | 59.20 | 59.30 | 0.10 | 10 | | ROCK LOSS | |
| 24 | 59.30 | 59.57 | 0.27 | 11 | | MUDSTONE | M. BLK. YSHRD NO BEDDING EVIDENT. |
| 25 | 59.57 | 59.64 | 0.07 | 11 | | MUDSTONE | M. BLK. SLD NO BEDDING EVIDENT. |
| 25 | 59.64 | 59.76 | 0.12 | 12 | | SANDSTONE | LT. GY. SLD SLTST WISPS. QTZ STRINGERS. |
| 25 | 59.76 | 60.02 | 0.26 | 13 | | SILTSTONE | DK. GY. LAM. VBRKN SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|------------|-----------|---------------------------------------------------------------------------------------------------------|
| 25 | 60.02 | 60.56 | 0.54 | 15 | M OYT PART | MUDSTONE | CARB. DK. BLK. VSHRD SLICKENSIDES AND QTZ STRINGERS AT TOP. BOTTOM HALF VERY CARB. SOME C-6 COAL. |
| 25 | 60.56 | 60.81 | 0.25 | 17 | | ROCK LOSS | |
| 25 | 60.81 | 61.36 | 0.55 | 19 | | MUDSTONE | M. BLK. VBRKN NO BEDDING EVIDENT. CORE LOSS AT BASE. |
| 25 | 61.36 | 61.61 | 0.25 | 21 | | ROCK LOSS | |
| 25 | 61.61 | 61.85 | 0.24 | 23 | | MUDSTONE | M. BLK. SLD NO BEDDING EVIDENT. |
| 26 | 61.85 | 62.52 | 0.67 | 25 | | MUDSTONE | M. BLK. LAM. SLD SLTST LAM. |
| 26 | 62.52 | 63.81 | 1.29 | *30 | | MUDSTONE | M. BLK. LAM. SSD. SLD SLTST LAM. SSD - TOPS DOWN. |
| 26 | 63.81 | 63.91 | 0.10 | 32 | | ROCK LOSS | |
| 27 | 63.91 | 64.22 | 0.31 | 33 | | MUDSTONE | M. BLK. LAM. VSHRD PYRITE. CORE LOSS. |
| 27 | 64.22 | 64.92 | 0.70 | 35 | | MUDSTONE | SLTY. LT. BLK. LAM. SSD. SLD SSD - TOPS DOWN. HORIZONTAL HRMBUR. SS LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------|
| 27 | 64.92 | 65.73 | 0.81 | *37 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD SSD - TOPS DOWN. SLTY MUDST LAM. |
| 28 | 65.73 | 67.82 | 2.09 | *40 | | SANDSTONE | FG. MOD. LT. GY. LAM. SLD SLTST LAM. SSD - TOPS DOWN. |
| 29 | 67.82 | 68.01 | 0.19 | 45 | | SANDSTONE | FG. MOD. LT. GY. LAM. VBRKN 3 CM QTZ BAND WITH SS BREC. CORE LOSS AT T BASE. |
| 29 | 68.01 | 68.11 | 0.10 | 45 | | ROCK LOSS | |
| 29 | 68.11 | 68.88 | 0.77 | *47 | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN SLTST LAM. HORIZONTAL HRMBUR. TOPS DOWN |
| 29 | 68.88 | 69.49 | 0.61 | 45 | | SANDSTONE | FG. MOD. LT. GY. LAM. BRKN AS ABOVE. |
| 29 | 69.49 | 69.85 | 0.36 | 44 | | SANDSTONE | MG. MEL. LT. GY. THKB. SLD MINOR QTZ STRINGERS. |
| 30 | 69.85 | 71.19 | 1.34 | 42 | | SANDSTONE | MG. MEL. LT. GY. THKB. SLD 2 QTZ STRINGERS 2 CM EACH. MINOR SLTST BANDS TO .05 CM AND SLTST RIPUP AT BASE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------|
| 30 | 71.19 | 71.21 | 0.02 | 40 | | | ROCK LOSS | |
| 30 | 71.21 | 71.28 | 0.07 | *40 | | | SILTSTONE | DK.GY.LAM.VBRKN |
| 30 | 71.28 | 71.68 | 0.40 | 41 | | | SANDSTONE | VFG.MEL.LT.GY.THKB.SLD |
| 31 | 71.68 | 71.75 | 0.07 | 41 | | | SILTSTONE | DK.GY.LAM.BRKN SS.LAM. 60/40 SLTST/SS. |
| 31 | 71.75 | 71.99 | 0.24 | 42 | | | SANDSTONE | FG.MEL.LT.GY.THKB.SLD CORE LOSS AT BASE. |
| 31 | 71.99 | 72.09 | 0.10 | *42 | | | SILTSTONE | DK.GY.LAM.BRKN SS.LAM. QTZ INFILL ALONG BEDDING. |
| 31 | 72.09 | 73.57 | 1.48 | 35 | | | SANDSTONE | FG.MEL.LT.GY.THKB.SLD MINOR SLTST LAM. .5 CM QTZ BAND AT BASE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------|
| 32 | 73.57 | 74.55 | 0.98 | *23 | | | SANDSTONE | FG.MEL.LT.GY.THNB.SLD QTZ BANDS TO 5 CM NEAR TOP. SLTST WISPS . 1 CM QTZ BAND AT BASE. |
| 32 | 74.55 | 75.51 | 0.96 | 35 | | | SANDSTONE | FG.MEL.LT.GY.THKB.SLD NO BEDDING EVIDENT. |
| 33 | 75.51 | 75.83 | 0.32 | *43 | | | SANDSTONE | FG.MEL.LT.GY.VTHNB.BRKN SLTST LAM INC TO BASE. |
| 33 | 75.83 | 77.42 | 1.59 | 43 | | | SILTSTONE | LT.BLK.LAM.BRKN SSD - TOPS DOWN. SS LAM. 1.5 CM QTZ BAN D NEAR BASE |
| 34 | 77.42 | 77.65 | 0.23 | 44 | | | SILTSTONE | LT.BLK.LAM.BRKN SS LAM. |
| 34 | 77.65 | 79.50 | 1.85 | 44 | | | SILTSTONE | LT.BLK.LAM.SLD SS LAM. TOPS DOWN. |
| 35 | 79.50 | 80.77 | 1.27 | 44 | | | SILTSTONE | LT.BLK.LAM.SLD SS LAM. SSD - TOPS DOWN. |
| 35 | 80.77 | 81.56 | 0.79 | 45 | | | SILTSTONE | LT.BLK.LAM.SLD AS ABOVE. MRMBUR. |
| 36 | 81.56 | 82.24 | 0.68 | *45 | | | SILTSTONE | SSY.M.GY.LAM.SLD SANDY BANDS ESPECIALLY NEAR TOP. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|----------|-----------|--------------------------------------------------------------------------|
| 36 | 82.24 | 82.34 | 0.10 | 44 | | | ROCK LOSS | |
| 36 | 82.34 | 83.15 | 0.81 | 43 | 06981 | | MUDSTONE | SLTY. DK. GY. VBRKN ABUND. COALY STRINGERS. LOWER 25 CM SAMP. LED. |
| 36 | 83.15 | 83.43 | 0.28 | 42 | 06982 | H/I2 OYT | COAL LOSS | |
| 36 | 83.43 | 83.54 | 0.11 | 42 | 06982 | H/I2 OYT | COAL | C-3. VBRKN |
| 36 | 83.54 | 83.65 | 0.11 | 42 | 06982 | H/I2 OYT | COAL | C-2. SLD |
| 37 | 83.65 | 83.75 | 0.10 | 42 | 06982 | H/I2 OYT | COAL | C-2. SLD |
| 37 | 83.75 | 83.79 | 0.04 | 42 | 06982 | H/I2 OYT | MUDSTONE | CARB. DK. GY. SLD VITRAIN STRINGERS. |
| 37 | 83.79 | 83.81 | 0.02 | 41 | 06982 | H/I2 OYT | COAL | C-5. SLD |
| 37 | 83.81 | 84.07 | 0.26 | 41 | 06982 | H/I2 OYT | COAL LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|----------|-----------|-------------------------------------------------|
| 37 | 84.07 | 84.10 | 0.03 | 41 | 06982 | H/I2 OYT | MUDSTONE | CARB. DK. GY. SLD VITRAIN STRINGERS. |
| 37 | 84.10 | 84.12 | 0.02 | 41 | 06982 | H/I2 OYT | COAL | C-4. SLD MUD BANDS. |
| 37 | 84.12 | 84.16 | 0.04 | 41 | 06982 | H/I2 OYT | COAL LOSS | |
| 37 | 84.16 | 84.21 | 0.05 | 41 | 06982 | H/I2 OYT | MUDSTONE | SLTY. M. GY. BRKN |
| 37 | 84.21 | 84.31 | 0.10 | 41 | 06982 | H/I2 OYT | COAL LOSS | |
| 37 | 84.31 | 84.50 | 0.19 | 40 | 06982 | H/I2 OYT | COAL | C-3. VBRKN |
| 37 | 84.50 | 84.56 | 0.06 | 40 | 06982 | H/I2 OYT | ROCK LOSS | |
| 37 | 84.56 | 84.70 | 0.14 | 40 | 06982 | H/I2 OYT | COAL | C-4. SLD |
| 37 | 84.70 | 85.17 | 0.47 | 39 | 06983 | | MUDSTONE | SLTY. PR. M-DK. GY. SLD UPPER 25 CM SAMPLED. |
| 37 | 85.17 | 85.83 | 0.66 | 38 | | | SILTSTONE | SSY. PR. M. GY. LAM. SLD GRADES FROM ABOVE. |
| 38 | 85.83 | 85.92 | 0.09 | 38 | | | MUDSTONE | SSY. BLK. LAM. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------|
| 38 | 85.92 | 86.77 | 0.85 | 37 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.SLD SLTST LAM. PYRITE BANDS. |
| 38 | 86.77 | 87.80 | 1.03 | *35 | | SANDSTONE | FG.MOD.LT.GY.SLD SLTST WISPS. |
| 39 | 87.80 | 88.21 | 0.41 | 35 | | SANDSTONE | FG.MOD.LT.GY.SLD SLTST WISPS. |
| 39 | 88.21 | 89.66 | 1.45 | *35 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD 60/40 SLTST/SS |
| 39 | 89.66 | 89.96 | 0.30 | 36 | | ROCK LOSS | |
| 40 | 89.96 | 90.02 | 0.06 | 37 | | SILTSTONE | LT.BLK.VSHRD SCOUR FILL. CORE LOSS |
| 40 | 90.02 | 91.91 | 1.89 | *38 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.SLD NUMEROUS QTZ FRACTURE FILL AND STRINGER S. SLTST LAM AND PEBBLE BANDS ABUND. |
| 41 | 91.91 | 92.04 | 0.13 | 39 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD AS ABOVE. |
| 41 | 92.04 | 92.22 | 0.18 | 39 | | ROCK LOSS | |
| 41 | 92.22 | 92.25 | 0.03 | 39 | | MUDSTONE | M.BLK.LAM.VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 41 | 92.25 | 92.38 | 0.13 | 39 | | SANDSTONE | FG.MOD.LT.GY.LAM.SLD AS ABOVE. |
| 41 | 92.38 | 92.80 | 0.42 | 39 | | SANDSTONE | PBL.PR.LT.GY.THNB.BRKN FINE SS BANDS. |
| 41 | 92.80 | 93.12 | 0.32 | 40 | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN QTZ STRINGERS. MINOR SLTST LAM. |
| 41 | 93.12 | 94.04 | 0.92 | *40 | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN AS ABOVE. |
| 42 | 94.04 | 95.77 | 1.73 | *36 | | SANDSTONE | FG.MEL.LT.GY.VTHNB.BRKN MINOR SLTST LAM. HIGHLY FRACTURED INTER VALS WITH SS BREC IN QTZ. |
| 42 | 95.77 | 95.99 | 0.22 | 40 | | SILTSTONE | DK.GY.SLD TOP 11 CM BREC IN QTZ. QTZ STRINGERS AT BASE. |
| 43 | 95.99 | 96.10 | 0.11 | 40 | | SILTSTONE | DK.GY.SLD FINE QTZ STRINGERS THROUGHOUT. |
| 43 | 96.10 | 96.68 | 0.58 | 42 | | SILTSTONE | DK.GY.SLD QTZ STRINGERS THROUGHOUT. GRADES TO SS AT BASE. TOPS UP. |
| 43 | 96.68 | 97.73 | 1.05 | *45 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.BRKN SSD IN SLTST LAM. TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 44 | 97.73 | 97.99 | 0.26 | 49 | | SANDSTONE | FG.LT.GY.VTHNB.SLD AS ABOVE. |
| 44 | 97.99 | 99.10 | 1.11 | 53 | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD MINOR SLTST WISPS AND RIPUPS. |
| 44 | 99.10 | 99.78 | 0.68 | 58 | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD AS ABOVE. |
| 45 | 99.78 | 101.72 | 1.94 | *66 | | SANDSTONE | FG.MOD.LT.GY.LAM.WRMBU.SLD SSD AND WRMBUR IN SLTST LAM. TOPS UP. SOME V FINE BANDING. |
| 46 | 101.72 | 102.05 | 0.33 | 63 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.BRKN SLTST LAM. CORE LOSS AT BASE. |
| 46 | 102.05 | 102.25 | 0.20 | 62 | | ROCK LOSS | |
| 46 | 102.25 | 103.99 | 1.74 | *60 | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN 5 CM SS BREC QTZ BAND NEAR TOP. SLTST LAM AND RIPUPS. LARGE SLICKENSIDE THROUGH H.CENTER. |
| 47 | 103.99 | 104.39 | 0.40 | 61 | | SANDSTONE | VFG.WEL.LT.GY.THKB.SLD MINOR SLTST LAM. |
| 47 | 104.39 | 104.82 | 0.43 | 62 | | SANDSTONE | PBL.MOD.LT.GY.THKB.SLD VFG SS MATRIX |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------|
| 47 | 104.82 | 105.40 | 0.58 | 62 | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD MINOR SLTST LAM WITH BIVALVE BURROW AND PEBBLE BANDING. |
| 47 | 105.40 | 106.02 | 0.62 | 63 | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD SLTST AND PEBBLE BANDING. |
| 48 | 106.02 | 106.61 | 0.59 | 64 | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD AS ABOVE. |
| 48 | 106.61 | 107.72 | 1.11 | *65 | | SANDSTONE | FG.MOD.M.GY.LAM SLTST LAM. POSS. HORIZONTAL WRMBUR. |
| 48 | 107.72 | 107.94 | 0.22 | 65 | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD MINOR BIOTRB AND SLTST LAM. |
| 49 | 107.94 | 108.21 | 0.27 | 64 | | SANDSTONE | FG.PR.M.GY.SLD ABUND. MUDDY LAM. PYRITE. |
| 49 | 108.21 | 109.15 | 0.94 | 64 | | SANDSTONE | FG.PR.M.GY.SLD ABUND. MUDDY LAM. PYRITE. |
| 49 | 109.15 | 109.84 | 0.69 | 64 06984 | | MUDSTONE | SLTY.PR.M-DK.GY.SLD SILTY-SANDY LAMINAE WITHIN. BECOMES CARB. AT BASE. LOWER 25 CM SAMPLED. |
| 49 | 109.84 | 109.88 | 0.04 | 63 06985 | H/12 | COAL | C-4.SLD ABUND. QTZ. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------|
| 49 | 109.88 | 109.90 | 0.02 | 63 | 06985 | H/I2 | COAL | C-2.SLD |
| 50 | 109.90 | 110.03 | 0.13 | 63 | 06985 | H/I2 | COAL | C-3.BRKN ABUND QTZ. |
| 50 | 110.03 | 110.06 | 0.03 | 63 | 06985 | H/I2 | COAL | C-4.BRKN |
| 50 | 110.06 | 110.15 | 0.09 | 63 | 06985 | H/I2 | ROCK LOSS | |
| 50 | 110.15 | 110.20 | 0.05 | 63 | 06985 | H/I2 | MUDSTONE | CARB.DK.GY.BRKN VITRAIN STRINGERS. |
| 50 | 110.20 | 110.35 | 0.15 | 63 | 06985 | H/I2 | COAL | C-3.SHRD |
| 50 | 110.35 | 110.53 | 0.18 | 63 | 06985 | H/I2 | COAL | C-4.BRKN THIN MUDDY BANDS. |
| 50 | 110.53 | 110.60 | 0.07 | 63 | 06985 | H/I2 | COAL | C-6.SLD VITRAIN STRINGERS AND CARB VEINLETS. |
| 50 | 110.60 | 111.08 | 0.48 | 63 | 06986 | | MUDSTONE | SLTY.M-DK.GY.SLD COALY CARB STRINGERS THROUGHOUT. UPPER 25 CM SAMPLED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 50 | 111.08 | 111.84 | 0.76 | 62 | | | SANDSTONE | SLTY.FG.M.GY.SLD MUDDY LAMINAE 2 CM QTZ VEIN AT 30 DEGREES ES TO CORE. MINOR COALY LENSES. |
| 51 | 111.84 | 113.90 | 2.06 | 61 | | | SILTSTONE | MDD.DK.GY.LAM.BRKN SS LAM. MINOR BIOTRB AND QTZ STRINGERS INC.SS. AT BASE. |
| 52 | 113.90 | 114.04 | 0.14 | 61 | | | SILTSTONE | SSY.M.GY.LAM.VSHRD CORE LOSS. |
| 52 | 114.04 | 114.10 | 0.06 | 61 | | | ROCK LOSS | |
| 52 | 114.10 | 115.84 | 1.74 | *60 | | | SILTSTONE | DK.GY.LAM.BRKN SS LAM. MINOR HORIZONTAL HRMBUR. 6 CM Q TZ BAND THROUGH MIDDLE. TOPS UP. SHARP CONTACT AT BASE. |
| 53 | 115.84 | 116.55 | 0.71 | 49 | | | SANDSTONE | FG.MEL.LT.GY.THKB.SLD TOP FRACTURED WITH QTZ STRINGERS. ONE S LTST LAM. |
| 53 | 116.55 | 116.81 | 0.26 | 44 | | | SANDSTONE | FG.MEL.LT.GY.THKB.VBRKN POSSIBLE CORE LOSS. |
| 53 | 116.81 | 116.87 | 0.06 | 42 | | | ROCK LOSS | |
| 53 | 116.87 | 117.82 | 0.95 | 38 | | | SANDSTONE | FG.MEL.LT.GY.THKB.SLD NO BEDDING EVIDENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------|
| 54 | 117.82 | 119.74 | 1.92 | 24 | | | SANDSTONE | FG.WEL.LT.GY.THKB.SLD MINOR SLT RIPUPS AT BASE NEXT TO SHARP SS-SLTST CONTACT. |
| 54 | 119.74 | 119.80 | 0.06 | *15 | | | SILTSTONE | DK.GY.LAM.SLD SSD - TOPS UP. |
| 55 | 119.80 | 119.87 | 0.07 | 15 | | | SILTSTONE | DK.GY.LAM.VSHRD POSS. CORE LOSS. |
| 55 | 119.87 | 119.93 | 0.06 | 15 | | | ROCK LOSS | |
| 55 | 119.93 | 120.46 | 0.53 | *15 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN SS - SLTST CONTACT PRESENT IN MOST OF U NIT. TOPS UP. |
| 55 | 120.46 | 121.06 | 0.60 | *01 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN BEDS TURN OVER AT THIS POINT. |
| 55 | 121.06 | 121.42 | 0.36 | *15 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN SHARP SS - SLTST CONTACT. TOPS DOWN. |
| 55 | 121.42 | 121.73 | 0.31 | 15 | | | SILTSTONE | DK.GY.LAM.SLD |
| 56 | 121.73 | 122.08 | 0.35 | 16 | | | SILTSTONE | DK.GY.LAM.SLD POSS. BIVALVE BURROW AT SLTST-SS CONTACT. T. TOPS DOWN. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------|
| 56 | 122.08 | 123.04 | 0.96 | 17 | | | SANDSTONE | FG.MOD.LT.GY.THKB.BRKN SLTST LAM AND RIPUPS. |
| 56 | 123.04 | 123.81 | 0.77 | 18 | | | SANDSTONE | FG.WEL.LT.GY.THKB.SLD NO BEDDING EVIDENT. MINOR SLTST RIPUPS. |
| 57 | 123.81 | 125.49 | 1.68 | 19 | | | SANDSTONE | FG.WEL.LT.GY.THKB.SLD NO BEDDING EVIDENT. VERY MINOR QTZ STRINGERS. |
| 57 | 125.49 | 125.97 | 0.48 | 21 | | | SANDSTONE | FG.WEL.LT.GY.THKB.VBRKN CORE LOSS. |
| 57 | 125.97 | 126.03 | 0.06 | 21 | | | ROCK LOSS | |
| 58 | 126.03 | 126.33 | 0.30 | 21 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN NO BEDDING EVIDENT. 2 CM QTZ BAND. |
| 58 | 126.33 | 128.03 | 1.70 | 22 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN SLTST RIPUP. MINOR QTZ STRINGERS WITH ONE NE 1.5 CM. |
| 59 | 128.03 | 128.92 | 0.89 | 24 | | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN NO BEDDING EVIDENT. MINOR QTZ STRINGERS |
| 59 | 128.92 | 128.96 | 0.04 | 25 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------|
| 59 | 128.96 | 129.06 | 0.10 | 25 | | | SANDSTONE | FG.WEL.LT.GY.THKB.VSHRD SS AND QTZ RUBBLE. CORE LOSS. |
| 59 | 129.06 | 129.26 | 0.20 | *25 | | | SANDSTONE | FG.WEL.LT.GY.THKB.SLD QTZ STRINGERS. |
| 59 | 129.26 | 130.04 | 0.78 | 27 | | | SANDSTONE | FG.WEL.LT.GY.THKB.SLD QTZ STRINGERS. |
| 60 | 130.04 | 130.47 | 0.43 | 30 | | | SANDSTONE | FG.MOD.M.GY.LAM.BRKN SLTST LAM. 3 CM QTZ STRINGERS. |
| 60 | 130.47 | 132.06 | 1.59 | *35 | | | SILTSTONE | DK.GY.LAM.HRMBU.SLD SS LAM. TOPS UP. MUDDY SLTST. |
| 61 | 132.06 | 132.36 | 0.30 | 36 | | | SILTSTONE | DK.GY.LAM.HRMBU.SLD MUDDY. AS ABOVE. |
| 61 | 132.36 | 134.09 | 1.73 | 37 | | | MUDSTONE | SLTY.LT.BLK.LAM.HRMBU.SLD AS ABOVE. |
| 62 | 134.09 | 135.48 | 1.39 | 39 | | | MUDSTONE | SLTY.M.BLK.LAM.SLD SS LAM. MINOR BIOTRB. |
| 62 | 135.48 | 136.16 | 0.68 | 40 | | | MUDSTONE | SLTY.M.BLK.LAM.BRKN AS ABOVE. |
| 63 | 136.16 | 137.99 | 1.83 | *42 | | | MUDSTONE | SLTY.M.BLK.LAM.SLD COAL STRINGER WITH QTZ NEAR BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 63 | 137.99 | 138.28 | 0.29 | 43 | 06987 | | MUDSTONE | SLTY.M.BLK.LAM.BRKN NUMEROUS COAL STRINGERS WITH QTZ. LOWER 25 CM SAMPLED. |
| 64 | 138.28 | 138.43 | 0.15 | 43 | 06988 | H | COAL | C-4.SLD ABUND. C-2 BANDS AND QTZ STRINGERS. |
| 64 | 138.43 | 138.53 | 0.10 | 43 | 06988 | H | COAL LOSS | |
| 64 | 138.53 | 138.79 | 0.26 | 43 | 06988 | H | ROCK LOSS | |
| 64 | 138.79 | 139.30 | 0.51 | 43 | 06988 | H | COAL | C-3.PWRD SHEARED AND POWDERED. |
| 64 | 139.30 | 139.44 | 0.14 | 44 | 06988 | H | MUDSTONE | CARB.DK.GY.BRKN |
| 64 | 139.44 | 139.62 | 0.18 | 44 | 06988 | H | COAL | C-4.BRKN |
| 64 | 139.62 | 140.40 | 0.78 | 44 | 06989 | | SILTSTONE | CLYY.M-DK.GY.LAM.BIOTR.SLD PYRITE AT TOP OF UNIT. UPPER 25 CM SAMP. LED. |
| 65 | 140.40 | 141.78 | 1.38 | *45 | | | SILTSTONE | M.GY.LAM.BRKN MUDST LAM. MINOR HRMBUR AND SSD TOPS UP |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------|
| 65 | 141.78 | 142.50 | 0.72 | 47 | | | SILTSTONE | M.GY.LAM.SLD AS ABOVE. |
| 66 | 142.50 | 143.44 | 0.94 | 48 | | | SILTSTONE | SSY.M.GY.LAM.BRKN AS ABOVE AND PYRITE. |
| 66 | 143.44 | 144.60 | 1.16 | *50 | | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN SLTST AND PEBBLE BANDS. QYZ STRINGERS T O 1 CM. |
| 67 | 144.60 | 144.66 | 0.06 | 49 | | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN AS ABOVE. |
| 67 | 144.66 | 144.71 | 0.05 | 49 | | | ROCK LOSS | |
| 67 | 144.71 | 146.47 | 1.76 | 48 | | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN AS ABOVE. PROBABLY CORE LOSS IN MIDDLE OF UNIT. PYRITE. |
| 68 | 146.47 | 147.21 | 0.74 | 46 | | | SANDSTONE | FG.MOD.LT.GY.VTHNB.BRKN MINOR SLTST LAM. TWO 4 TO 5 CM SS BREC IN QTZ BANDS. CORE LOSS AT BASE. |
| 68 | 147.21 | 147.84 | 0.63 | *45 | | | SANDSTONE | FG.MOD.LT.GY.VTHNB.BRKN SLTST LAM AND QTZ STRINGERS. |
| 68 | 147.84 | 148.05 | 0.21 | 47 | | H-1 | MUDSTONE | M.BLK.VBRKN NO BEDDING EVIDENT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 68 | 148.05 | 148.15 | 0.10 | 48 | | H-1 | ROCK LOSS | |
| 69 | 148.15 | 148.77 | 0.62 | 49 | | H-1 | MUDSTONE | M.BLK.VBRKN NUMEROUS QTZ STRINGERS AND BANDS TO 9 C M WITH MUDST BREC. |
| 69 | 148.77 | 149.10 | 0.33 | 52 | | H-1 | MUDSTONE | M.BLK.BRKN NO BEDDING EVIDENT. |
| 69 | 149.10 | 150.03 | 0.93 | 55 | | H-1 | MUDSTONE | M.BLK.LAM.VBRKN SLTST LAM AT TOP TO SS LAM AT BASE. PYR ITE. TOPS UP. MINOR QTZ STRINGERS. |
| 69 | 150.03 | 150.18 | 0.15 | 57 | | | ROCK LOSS | |
| 70 | 150.18 | 150.35 | 0.17 | 58 | | | SANDSTONE | FG.MOD.LT.GY.LAM.VSHRD CORE LOSS |
| 70 | 150.35 | 150.50 | 0.15 | 59 | | | ROCK LOSS | |
| 70 | 150.50 | 151.71 | 1.21 | 62 | | | SANDSTONE | FG.MOD.LT.GY.THNB.VBRKN MINOR SLTST LAM WITH SSD TOPS UP. |
| 70 | 151.71 | 152.00 | 0.29 | 66 | | | SANDSTONE | VFG.MEL.LT.GY.THKB.SLD NO BEDDING EVIDENT. |
| 71 | 152.00 | 153.53 | 1.53 | 70 | | | SANDSTONE | VFG.MEL.LT.GY.THKB.SLD MINOR SLTY WISPS. CORE LOSS AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------|
| 71 | 153.53 | 153.58 | 0.05 | 74 | | ROCK LOSS | |
| 71 | 153.58 | 153.82 | 0.24 | 74 | | SANDSTONE | FG.WEL.LT.GY.THKB.BRKN MINOR SLTY MISPS. |
| 72 | 153.82 | 155.95 | 2.13 | *80 | | SANDSTONE | FG.MOD.LT.GY.VTHNB.BRKN SLTST.BANDS WITH SSD AND HRMBUR TOPS UP |
| 73 | 155.95 | 156.66 | 0.71 | 78 | | SANDSTONE | FG.WEL.LT.GY.VTHNB.BRKN MINOR SLTST RIPUP AND LAM. |
| 73 | 156.66 | 156.99 | 0.33 | 78 | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD MINOR SLTST LAM AND ONE PEBBLE BAND OF .5 CM. |
| 73 | 156.99 | 157.30 | 0.31 | 77 | | SANDSTONE | FG.WEL.LT.GY.VSHRD CORE LOSS. |
| 73 | 157.30 | 157.39 | 0.09 | 77 | | ROCK LOSS | |
| 73 | 157.39 | 157.88 | 0.49 | 77 | | SANDSTONE | FG.WEL.LT.GY.THNB.BRKN MINOR SLTST LAM. SSD - TOPS UP. |
| 74 | 157.88 | 158.49 | 0.61 | 76 | | SANDSTONE | FG.MOD.LT.GY.VSHRD CORE LOSS. |
| 74 | 158.49 | 158.59 | 0.10 | 76 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------|
| 74 | 158.59 | 159.10 | 0.51 | 75 | | SANDSTONE | SLTY.FG.PR.M.GY.BRKN SOFT SLTY SS. |
| 74 | 159.10 | 159.96 | 0.86 | 75 | | SANDSTONE | VFG.MOD.M.GY.LAM.SLD SLTST LAM WITH SSD TOPS UP. |
| 75 | 159.96 | 160.04 | 0.08 | 74 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM MUDDY LAMINAE. |
| 75 | 160.04 | 160.65 | 0.61 | 74 | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.MRMBU.SLD PYRITE. BIOTRB. |
| 75 | 160.65 | 161.31 | 0.66 | 73 06990 | | MUDSTONE | SLTY.M-DK.GY.LAM.SLD GRADES FROM ABOVE. LOWER 25 CM SAMPLED. |
| 75 | 161.31 | 161.52 | 0.21 | 72 06991 PH | | COAL | C-3.BRKN |
| 75 | 161.52 | 161.63 | 0.11 | 72 06991 PH | | COAL | C-6.SLD |
| 75 | 161.63 | 161.70 | 0.07 | 72 06991 PH | | COAL LOSS | |
| 75 | 161.70 | 161.93 | 0.23 | 72 06991 PH | | COAL | C-2.VBRKN |
| 76 | 161.93 | 162.35 | 0.42 | 71 06991 PH | | COAL | C-3.SHRD SHEARED WITH LISTRIC SURFACES. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------|
| 76 | 162.35 | 162.40 | 0.05 | 71 | 06991 | PH | COAL | C-4, SLD |
| 76 | 162.40 | 162.51 | 0.11 | 71 | 06991 | PH | MUDSTONE | CARB. DK. GY. BRKN COAL STRINGERS AND THIN BANDS. |
| 76 | 162.51 | 162.72 | 0.21 | 71 | 06991 | PH | COAL | C-3, SHRD SHEARED AND POWDERED. |
| 76 | 162.72 | 162.98 | 0.26 | 71 | 06992 | | MUDSTONE | CARB. DK. GY. BRKN ABUND. PLANT FRAGS. MANY COALIFIED. UPP ER 25 CM SAMPLED. |
| 76 | 162.98 | 163.67 | 0.69 | 70 | | | MUDSTONE | CARB. DK. GY. BRKN ABUND. PLANT FRAGS MANY COALIFIED. |
| 77 | 163.67 | 165.62 | 1.95 | 68 | | | SILTSTONE | LT. BLK. LAM. BIOTR. SLD MUDDY. VFG SS LAM. TOPS UP. |
| 78 | 165.62 | 166.07 | 0.45 | 67 | | | SILTSTONE | LT. BLK. LAM. BIOTR. SLD MUDDY. AS ABOVE. |
| 78 | 166.07 | 167.44 | 1.37 | *66 | | | SILTSTONE | LT. BLK. LAM. BRKN MUDDY. AS ABOVE. 10 CM SCOUR FILL. |
| 79 | 167.44 | 167.58 | 0.14 | 65 | | | SILTSTONE | LT. BLK. LAM. BRKN TOPS UP. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| 79 | 167.58 | 169.00 | 1.42 | 64 | | | SANDSTONE | FG. MOD. LT. GY. THNB. BRKN SLTST LAM AND RIPUP NEAR TOP. FEW FINE SLTY BANDS THROUGH THE REST. |
| 79 | 169.00 | 169.32 | 0.32 | 64 | | | SANDSTONE | FG. MEL. LT. GY. THNB |
| 80 | 169.32 | 169.45 | 0.13 | 63 | | | SANDSTONE | FG. MEL. LT. GY. THNB. SLD QTZ. STRINGERS WITH SS. BREC. AT BASE. |
| 80 | 169.45 | 169.83 | 0.38 | 63 | | | SANDSTONE | SLTY. FG. MOD. M. GY. LAM. BRKN 10 CM OF SS. BREC. IN. QTZ. |
| 80 | 169.83 | 169.94 | 0.11 | 63 | | | SILTSTONE | DK. GY. LAM. BRKN QTZ. STRINGERS. |
| 80 | 169.94 | 171.25 | 1.31 | 62 | | | SANDSTONE | FG. MOD. LT. GY. THNB. BRKN QTZ. STRINGERS AND BANDS TO 12 CM WITH S S. BREC. SLTST RIPUPS AND MINOR CONCENTR ATIONS OF LAM. |
| 81 | 171.25 | 171.54 | 0.29 | 61 | | | SANDSTONE | MG. MEL. LT. GY. THNB. VSHRD QTZ. STRINGERS. CORE LOSS. MINOR SLTST R IPUPS. |
| 81 | 171.54 | 171.92 | 0.38 | 61 | | | SANDSTONE | MG. MEL. LT. GY. THNB. SLD QTZ. STRINGERS. SLTST RIPUPS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------|
| 81 | 171.92 | 172.14 | 0.22 | 61 | | SANDSTONE | FG. MOD. M. GY. LAM. VSHRD SLTST WISPS. CORE LOSS. |
| 81 | 172.14 | 173.08 | 0.94 | *60 | | SANDSTONE | FG. MOD. M. GY. LAM. BRKN SSD TOPS UP. INCREASING SLTST LAMS TO B OTTOM. |
| 82 | 173.08 | 173.67 | 0.59 | 61 | | SILTSTONE | DK. GY. LAM. SLD SS LAM WITH MINOR BIOTRB. |
| 82 | 173.67 | 174.54 | 0.87 | 62 | | SANDSTONE | VFG. MOD. M. GY. LAM. BRKN SLTST LAM WITH SSD TOPS UP. |
| 82 | 174.54 | 175.01 | 0.47 | 62 | | SILTSTONE | DK. GY. LAM. SLD SS LAM. |
| 83 | 175.01 | 175.10 | 0.09 | 63 | | SILTSTONE | DK. GY. LAM. SLD MUDDY. |
| 83 | 175.10 | 177.00 | 1.90 | 64 | | MUDSTONE | SLTY. M. BLK. LAM. SLD MINOR BIOTRB AND SSD AROUND SS LAM. |
| 84 | 177.00 | 178.17 | 1.17 | 65 | | MUDSTONE | M. BLK. LAM. SLD CORE LOSS AT BASE. |
| 84 | 178.17 | 178.96 | 0.79 | 66 | | MUDSTONE | M. BLK. LAM. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDM87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 85 | 178.96 | 180.73 | 1.77 | 68 | | MUDSTONE | M. BLK. LAM. BRKN V FINE SLTY LAM. MINOR INTERVALS WITH Q TZ BANDING WITH FINE MUDST BREC. |
| 86 | 180.73 | 180.88 | 0.15 | 69 | | MUDSTONE | M. BLK. BRKN POSS. BENTONITIC CLAY FRACTURE FILL. QT Z STRINGERS. |
| 86 | 180.88 | 182.67 | 1.79 | *70 | | MUDSTONE | M. BLK. LAM. VBRKN QTZ STRINGERS THROUGHOUT. SHEAR ZONES. POSS. BENTONITIC CLAY FRACTURE FILL. SP IN OFFS WITH POSS. CORE LOSS. |
| 87 | 182.67 | 184.02 | 1.35 | *72 | | MUDSTONE | M. BLK. LAM. VSHRD QTZ STRINGER. 4 CM QTZ BAND WITH MUDST BREC. AT BASE. POSS. CORE LOSS THROUGHOU T. |
| 87 | 184.02 | 184.48 | 0.46 | 30 | | MUDSTONE | M. BLK. VBRKN ROCK SHATTERED WITH QTZ INFILL. |
| 88 | 184.48 | 185.18 | 0.70 | *03 | | SILTSTONE | LT. GY. 2 CM BENTONITE BAND (MUDDY). |
| 88 | 185.18 | 186.06 | 0.88 | *22 | | MUDSTONE | SLTY. LT. BLK. VBRKN SOFT CARB BANDS TO 6 CM. QTZ STRINGERS. 13 CM QTZ BAND WITH MUDST BREC. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0HB7029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 88 | 186.06 | 186.32 | 0.26 | 23 | | | MUDSTONE | CARB. M. BLK. VSHRD C-6 STRINGER. CORE LOSS. |
| 89 | 186.32 | 186.61 | 0.29 | 24 | | G | COAL | C-4 VERY LOW BCA'S (0 DEGREES). C-2 BANDS AND ND QTZ BANDS PREDOMINANT. |
| 89 | 186.61 | 187.16 | 0.55 | 25 | | G | MUDSTONE | CARB. DK. GY. BRKN CARB PLANT FRAGS. |
| 89 | 187.16 | 187.18 | 0.02 | 26 | | G | COAL | C-2. SLD |
| 89 | 187.18 | 187.30 | 0.12 | 26 | | G | COAL LOSS | |
| 89 | 187.30 | 187.72 | 0.42 | 26 | | | MUDSTONE | CARB. DK. GY. BRKN COALY STRINGERS AND THIN BANDS. CARB PLANT FRAGS. |
| 89 | 187.72 | 188.11 | 0.39 | 27 | | | SILTSTONE | SSY. M. GY. SLD SLTY AND SSY LAMINAE. |
| 90 | 188.11 | 189.86 | 1.75 | *30 | | | SILTSTONE | DK. GY. LAM. VBRKN SS BANDS TO 8 CM. RECRYSTALLIZATION NEAR R. BASE. |
| 90 | 189.86 | 190.03 | 0.17 | 37 | | | SANDSTONE | FG. MOD. M. GY. LAM. SLD SLTST LAM. SSD. TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0HB7029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 91 | 190.03 | 190.37 | 0.34 | 39 | | | SANDSTONE | FG. MOD. M. GY. LAM. SLD QTZ STRINGERS AT TOP. |
| 91 | 190.37 | 190.47 | 0.10 | 41 | | | SILTSTONE | DK. GY. YTHMB. SLD AS ABOVE. |
| 91 | 190.47 | 190.92 | 0.45 | *43 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. |
| 91 | 190.92 | 192.16 | 1.24 | 44 | | | MUDSTONE | M. BLK. BRKN VERY FINE COAL AND QTZ STRINGERS. COAL AND QTZ BANDS TO 4 CM NEAR BASE. |
| 92 | 192.16 | 192.90 | 0.74 | 46 | | | MUDSTONE | M. BLK. BRKN MINOR QTZ VERY CARB AT BASE WITH COAL STRINGERS. |
| 92 | 192.90 | 193.00 | 0.10 | 46 | | | ROCK LOSS | |
| 92 | 193.00 | 193.22 | 0.22 | 47 | | | MUDSTONE | M. BLK. LAM. BRKN COAL STRINGERS AND CORE LOSS AT TOP AND BOTTOM. |
| 92 | 193.22 | 193.32 | 0.10 | 47 | | | ROCK LOSS | |
| 92 | 193.32 | 193.95 | 0.63 | 48 | | | MUDSTONE | LT. BLK. VBRKN QTZ THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 92 | 193.95 | 194.23 | 0.28 | 48 | | | SANDSTONE | FG. MOD. M. GY. VBRKN FRACTURED WITH QTZ INFILL. BIVALVES. |
| 92 | 194.23 | 194.32 | 0.09 | 49 | | | SILTSTONE | DK. GY. BRKN |
| 93 | 194.32 | 196.18 | 1.86 | *50 | | | SILTSTONE | DK. GY. LAM. VBRKN SHATTERED INTERVALS WITH QTZ INFILL. CORE LOSS THROUGHOUT. |
| 93 | 196.18 | 196.30 | 0.12 | 49 | | | ROCK LOSS | |
| 93 | 196.30 | 196.34 | 0.04 | 49 | | | SILTSTONE | DK. GY. LAM. VSHRD |
| 94 | 196.34 | 196.61 | 0.27 | 49 | | | SILTSTONE | DK. GY. BRKN FINE QTZ STRINGERS. |
| 94 | 196.61 | 198.33 | 1.72 | 47 | | | SANDSTONE | VFG. LT. GY. BRKN QUITE FRACTURED. QTZ STRINGERS. MINOR S. HEAR ZONES WITH FRACTURED QTZ AND SS. |
| 95 | 198.33 | 198.46 | 0.13 | 46 | | | SANDSTONE | FG. LT. GY. BRKN SCOUR FILL |
| 95 | 198.46 | 198.79 | 0.33 | 46 | | | SANDSTONE | FG. MOD. LT. GY. VSHRD CORE LOSS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 95 | 198.79 | 198.89 | 0.10 | 46 | | | ROCK LOSS | |
| 95 | 198.89 | 199.07 | 0.18 | 46 | | | SANDSTONE | FG. MOD. LT. GY. BRKN SLTST. BAND (3 CM). |
| 95 | 199.07 | 199.43 | 0.36 | 45 | | | SANDSTONE | FG. MOD. LT. GY. LAM. VSHRD CORE LOSS. |
| 95 | 199.43 | 199.58 | 0.15 | 45 | | | ROCK LOSS | |
| 95 | 199.58 | 199.96 | 0.38 | 45 | | | SANDSTONE | FG. MOD. LT. GY. LAM. VSHRD CORE LOSS. |
| 95 | 199.96 | 200.26 | 0.30 | 44 | | | SANDSTONE | FG. MOD. LT. GY. LAM. BIOTR. SLD |
| 96 | 200.26 | 200.46 | 0.20 | 44 | | | SILTSTONE | DK. GY. VSHRD CORE LOSS. |
| 96 | 200.46 | 200.61 | 0.15 | 44 | | | ROCK LOSS | |
| 96 | 200.61 | 200.71 | 0.10 | 44 | | | SANDSTONE | FG. MOD. LT. GY. LAM. VSHRD CORE LOSS. |
| 96 | 200.71 | 200.81 | 0.10 | 43 | | | ROCK LOSS | |
| 96 | 200.81 | 202.46 | 1.65 | 42 | | | SANDSTONE | FG. MOD. LT. GY. THMB. VBRKN SLTST LAM AT TOP AND BOTTOM. 2 CM QTZ B. AND WITH SS BREC AT TOP. QTZ STRINGERS. |

* DENOTES MEASURED BCA

88/03/04

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 41

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 97 | 202.46 | 202.86 | 0.40 | 41 | | | SANDSTONE | FG. MOD. LT. GY. VTHNB. BRKN VERY FINE SLTST LAM. BIOTRB. QTZ STRINGERS. |
| 97 | 202.86 | 202.96 | 0.10 | 41 | | | ROCK LOSS | |
| 97 | 202.96 | 204.36 | 1.40 | *40 | | | SANDSTONE | FG. MOD. LT. GY. LAM. XBDG. VBRKN SSD - TOPS UP. CORE LOSS AT TOP. INTERMITTENT SLICKENSIDES. |
| 98 | 204.36 | 204.61 | 0.25 | *55 | 06993 | | SANDSTONE | SLTY. FG. LT-M. GY. LAM. XBDG. SLD LOWER 13 CM. SAMPLED. |
| 98 | 204.61 | 204.73 | 0.12 | 55 | 06993 | | MUDSTONE | CARB. DK. GY. SLD |
| 98 | 204.73 | 204.91 | 0.18 | 56 | 06994 | F | COAL | C-4. BRKN SHEARED. |
| 98 | 204.91 | 204.93 | 0.02 | 56 | 06994 | F | MUDSTONE | SLTY. M-DK. GY. SLD |
| 98 | 204.93 | 205.24 | 0.31 | 56 | 06994 | F | COAL | C-4. BRKN SHEARED. |
| 98 | 205.24 | 205.52 | 0.28 | 56 | 06994 | F | COAL | C-3. VBRKN |

* DENOTES MEASURED BCA

88/03/04

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 42

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------|
| 98 | 205.52 | 205.57 | 0.05 | 57 | 06994 | F | MUDSTONE | CARB. DK. GY. SLD |
| 98 | 205.57 | 205.61 | 0.04 | 57 | 06994 | F | COAL | C-5. SLD |
| 98 | 205.61 | 205.64 | 0.03 | 57 | 06994 | F | COAL LOSS | |
| 98 | 205.64 | 205.75 | 0.11 | 57 | 06994 | F | SILTSTONE | M-DK. GY. VBRKN MIXED WITH SOME COAL. LISTRIC SURFACES. |
| 98 | 205.75 | 205.87 | 0.12 | 57 | 06994 | F | COAL | C-3. VBRKN |
| 98 | 205.87 | 205.90 | 0.03 | 57 | 06994 | F | SILTSTONE | M. GY. SLD |
| 98 | 205.90 | 205.96 | 0.06 | 57 | 06994 | F | COAL | C-3. VBRKN |
| 98 | 205.96 | 206.03 | 0.07 | 57 | 06994 | F | MUDSTONE | CARB. DK. GY. SLD |
| 98 | 206.03 | 206.06 | 0.03 | 57 | 06994 | F | COAL | C-5. SLD |
| 99 | 206.06 | 206.18 | 0.12 | 58 | 06994 | F | COAL | C-5. BRKN |

* DENOTES MEASURED BCA

88/03/04

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 43

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------|
| 99 | 206.18 | 206.32 | 0.14 | 58 | 06994 F | MUDSTONE | SLTY. M-DK. GY. SLD ABUND. QTZ. |
| 99 | 206.32 | 206.47 | 0.15 | 58 | 06994 F | COAL | C-3. SHRD BROKEN. |
| 99 | 206.47 | 207.78 | 1.31 | 59 | 06995 | SILTSTONE | CLYY. M-DK. GY. BRKN COALY QTZ STRINGERS. UPPER 25 CM SAMPLE D. |
| 100 | 207.78 | 208.09 | 0.31 | 60 | | SILTSTONE | DK. GY. LAM. SLD MUDST LAM. QTZ STRINGERS WITH MUDST BRE C. |
| 100 | 208.09 | 209.69 | 1.60 | 62 | | SILTSTONE | DK. GY. LAM. BRKN SS LAM. QTZ STRINGERS. WITH MUDST. BREC. |
| 101 | 209.69 | 210.60 | 0.91 | 64 | | SILTSTONE | DK. GY. LAM. BRKN SS LAM. |
| 101 | 210.60 | 210.95 | 0.35 | *65 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD SSD - TRPS. UP. |
| 101 | 210.95 | 211.06 | 0.11 | 65 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. VBRKN QTZ. BAND. AT MARKER. |
| 101 | 211.06 | 211.51 | 0.45 | 65 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD |

* DENOTES MEASURED BCA.

88/03/04

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 44

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87029

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------|
| 102 | 211.51 | 211.76 | 0.25 | 65 | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN CORE LOSS. END OF HOLE, NO END MARKER P RESENT. |

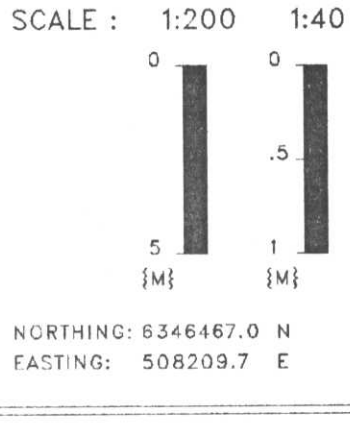
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87029

740

GEOLOGIST : PENMAN

DATE : MAR 08/88

DRAWING NO. :



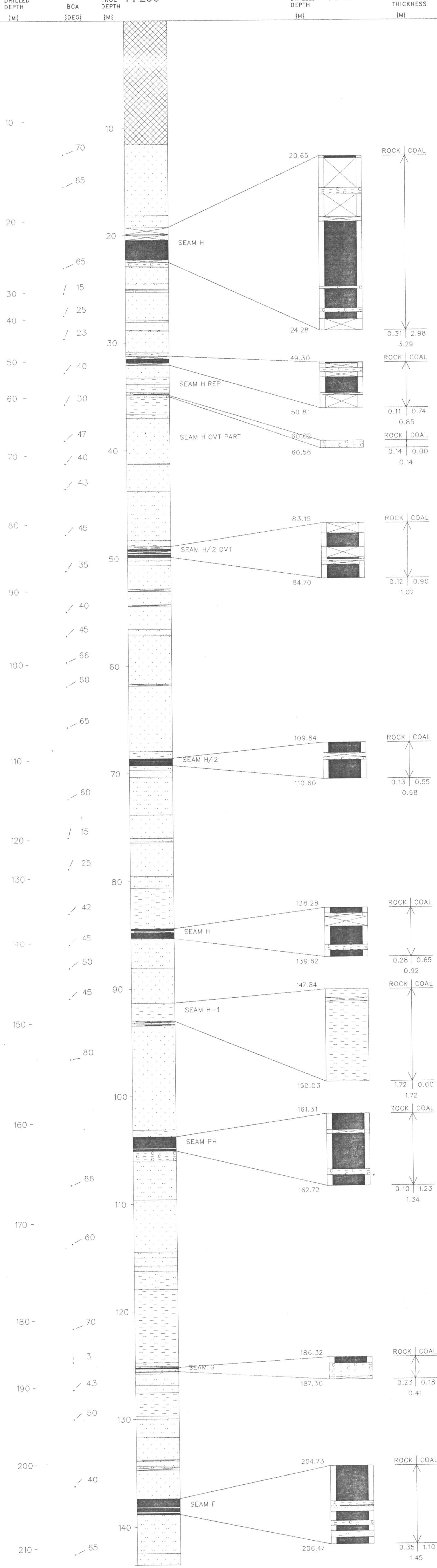
NORTHING: 8346467.0 N
 EASTING: 508209.7 E

INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



TOTAL: 211.76

TOTAL: 143.51

Gulf Canada Resources Limited

Coal Division

Geophysical Log

740

Datasource: **KPNLRDDH87029**

Province: BC

Northing: 6346470.00

Lat: 571547

Log Date: 91-12-07

Zone: 9

Easting: 508210.00

Long: 1285150

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1420.7

Geologist: PENMAN

Scale: 1 to 200.0

Comments:

Depth Range: 0.0 to 216.0

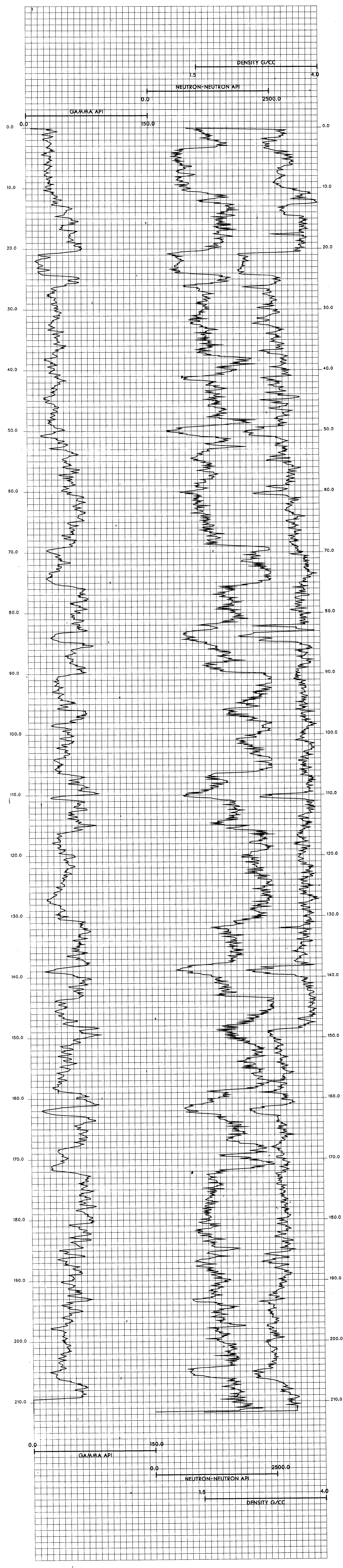
1. LOGGED THROUGH RODS.

2.

True Thickness: NO

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87030

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87030

DATE - 03/01/88

- HISTORY -

START DATE - 10/08/87

END DATE - 10/12/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - PARRY

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - SITE T. INTERSECTED SEAMS: ?, M, L, ?, K/L, ?, ?,
K, ?, J, I.

- LOCATION -

PROVINCE - BC

ELEVATION - 1376.50

ZONE - 9

NORTHING - 6347236.20

EASTING - 508236.46

LICENCE/LEASE NUMBER -

LATITUDE - 571612

LONGITUDE - 1285148

- ORIENTATION -

LENGTH - 250.10

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 21.34

AQUIFER DEPTHS (M) - 0.00

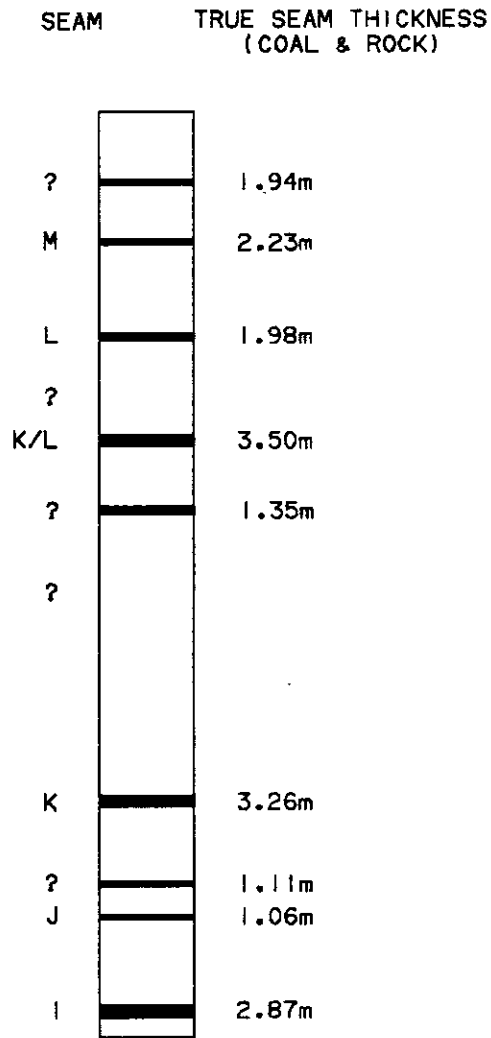
0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87030

GULF CANADA RESOURCES LTD.
19/04/88
KLAP:[205057]BB0072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|------------|-----------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 21.34 | 21.34 | 72 | | CASING | CASING DEPTH |
| 1 | 21.34 | 22.05 | 0.71 | 72 | | ROCK LOSS | |
| 1 | 22.05 | 22.29 | 0.24 | 72 | | OVERBURDEN | FG.LY.GY.VBRKN RUBBLE, SS TILL. |
| 1 | 22.29 | 22.56 | 0.27 | 72 | | MUDSTONE | SLTY.DK.BN.MAS.BRKN |
| 1 | 22.56 | 22.61 | 0.05 | 72 | | SILTSTONE | M.GY.MAS.BRKN |
| 1 | 22.61 | 22.66 | 0.05 | 72 | | MUDSTONE | SLTY.DK.BN.MAS.BRKN SOME SAND. |
| 1 | 22.66 | 23.51 | 0.85 | *72 | | SANDSTONE | CLYY.MG.VPR.LT.GY.MAS.VBRKN V. ARG SS (POORLY CONSOL); BECOMES 50/5 O MUDST/SS AT STRAT BASE. MINOR SLTST. B ANDS. |
| 1 | 23.51 | 23.56 | 0.05 | 75 | | ROCK LOSS | |
| 1 | 23.56 | 23.75 | 0.19 | 75 | | SANDSTONE | CG.PR.GY.MAS.VBRKN RUBBLE, ARG AT STRAT BASE. SLTST RIP-UP CLAST. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1 | 23.75 | 23.79 | 0.04 | 76 | | MUDSTONE | SSY.DK.BN.LAM.BRKN MUDST WITH SSY LAMS. |
| 2 | 23.79 | 23.91 | 0.12 | 77 | | SANDSTONE | CLYY.MG.VPR.LT.GY.MAS.BRKN V ARG SS (POORLY CONSOL). MAS WITH SLTS T LAMS. |
| 2 | 23.91 | 24.04 | 0.13 | 77 | | SANDSTONE | CG.PR.LT.GY.MAS.SLD COARSE GRAINED WITH LESSER VERY COARSE GRAINED SAND WITHIN. |
| 2 | 24.04 | 24.13 | 0.09 | 78 | | SANDSTONE | FG.VPR.M.GY.MAS.BRKN VERY POORLY CONSOLIDATED & VERY ARGILLA CEOUS SANDSTONE. |
| 2 | 24.13 | 24.70 | 0.57 | 80 | | SANDSTONE | CG.MOD.LT.GY.MAS.BRKN POORLY SORTED AT STRAT TOP. |
| 2 | 24.70 | 24.75 | 0.05 | 82 | | ROCK LOSS | |
| 2 | 24.75 | 25.02 | 0.27 | 83 | | SANDSTONE | MG.MOD.LT.GY.MAS.VBRKN |
| 2 | 25.02 | 25.52 | 0.50 | *85 | | SANDSTONE | CLYY.FG.LT.GY.MAS.BRKN V ARG SS (POORLY CONSOL). MASSIVE WITH SLTST LAMS.BEDDING HARD TO SEE DUE TO S MEARING OF MUD ON CORE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DBH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 25.52 | 25.99 | 0.47 | 86 | | | MUDSTONE | SSY, DK, BN, MAS, SSD, BRKN SILTY MUDSTONE TO SANDY MUDSTONE. TWO V. THN SS BEDS. LOAD CASTS (RMU). |
| 3 | 25.99 | 26.26 | 0.27 | 87 | | | SANDSTONE | CLYY, FG, PR, LT, GY, MAS, BRKN ARG SS (NOT AS ARG AS PREVIOUSLY MENTIONED). |
| 3 | 26.26 | 26.84 | 0.58 | 88 | | | SANDSTONE | CLYY, FG, PR, M-DK, BN, BIOTR, BRKN HRMBUR, HEAVILY BIOTURBATED MUD AND SAND. INTERMIXED SAND AND MUD (50/50). RANGES FROM A MUDDY SS TO A SSSY MUDST. LENTICULAR BEDDING IN MUD. |
| 3 | 26.84 | 27.07 | 0.23 | 89 | | | SANDSTONE | CLYY, MG, VPR, LT, GY, MAS, SLD LARGE RIP-UP CLASTS, ARG SS. |
| 3 | 27.07 | 27.26 | 0.19 | *90 | | | MUDSTONE | SSY, DK, BN, THNB, BRKN INTBEDDED, ARG SS & SSSY MUDST. |
| 4 | 27.26 | 27.39 | 0.13 | 88 | | | SANDSTONE | MG, MOD, LT, GY, MAS, SLD SLIGHTLY ARG. |
| 4 | 27.39 | 28.92 | 1.53 | *80 | | | SANDSTONE | CLYY, FG, PR, LT, GY, MAS, BRKN ARG SS WITH MINOR MUDST LAMS. OFTEN SS IS CLEAN, LT GY CLYY SS BAND (5.0CM THICK); SOAPY FEELING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DBH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------|
| 4 | 28.92 | 28.97 | 0.05 | 82 | | | ROCK LOSS | |
| 4 | 28.97 | 29.17 | 0.20 | 83 | | | SANDSTONE | CLYY, FG, PR, LT, GY, MAS, VBRKN ARG SS. LARGE RIP-UP CLASTS. |
| 5 | 29.17 | 29.54 | 0.37 | 84 | | | SANDSTONE | CLYY, FG, VPR, LT, BN, MAS, BRKN V. ARG V. POORLY CONSOLIDATED SS (50% MUD ST). |
| 5 | 29.54 | 31.36 | 1.82 | *87 | | | SANDSTONE | CLYY, FG, PR, LT, GY, MAS, BRKN RIP-UP CLASTS, MINOR SLTY MUDST LAMS, ARG SS. |
| 6 | 31.36 | 32.07 | 0.71 | 88 | | | SANDSTONE | CLYY, FG, PR, LT, GY, MAS, BRKN MASSIVE ARG SS WITH MUDST LAMS. |
| 6 | 32.07 | 32.89 | 0.82 | *88 | | | SANDSTONE | CLYY, FG, PR, LT, GY, MAS, BRKN MASSIVE ARG SS WITH MUDST LAMS. |
| 6 | 32.89 | 32.94 | 0.05 | 85 | | | ROCK LOSS | |
| 6 | 32.94 | 33.12 | 0.18 | 85 | | | MUDSTONE | SSY, DK, BN, MAS, VBRKN SSSY MUDST WITH SS LAMS & VERY THIN BEDS. POORLY CONSOLIDATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 33.12 | 33.16 | 0.04 | 84 | | | SILTSTONE | M.GY.MAS.BRKN |
| 7 | 33.16 | 34.40 | 1.24 | *80 | 05867 | | SILTSTONE | SSY.M.GY.LAM.BRKN RUBBLE AT TOP OF BOX. INT-BEDDED YFG SS AND DARK GREY SILTY MUDST. GRADATIONAL CONTACTS. HELMINTHOPSIS, BLACK WORM PE LLETS (?). BECOMES LESS SSY DOWNWARDS. LOWER 23CM SAMPLED. |
| 7 | 34.40 | 34.42 | 0.02 | 80 | 05867 | | MUDSTONE | PYR.YEL.LAM.VBRKN MUCH DISSEM. PYRITE THROUGHOUT. ACCENTU ATING THE FINE LAMINAE. |
| 7 | 34.42 | 34.71 | 0.29 | 80 | 05868 | M | COAL | C-3.BLK.VBRKN CORE TWIST-OFF. NUMEROUS SMALL BANDS OF C-2. |
| 7 | 34.71 | 34.76 | 0.05 | 80 | 05868 | M | COAL | C-3.BLK.VBRKN |
| 7 | 34.76 | 34.90 | 0.14 | 80 | 05868 | M | COAL | C-5.BLK.BRKN BANDS OF C-4. |
| 7 | 34.90 | 34.93 | 0.03 | 80 | 05868 | M | MUDSTONE | CARB.BLK.BRKN PLANT HASH. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------|
| 7 | 34.93 | 34.96 | 0.03 | 80 | 05868 | M | MUDSTONE | CARB.BLK.VSHRD VERY CARB WITH ABUNDANT C-4 AND C-5 BAN DS. |
| 8 | 34.96 | 34.99 | 0.03 | 80 | 05868 | M | COAL | C-6.BLK.VSHRD MUD MIXED IN. |
| 8 | 34.99 | 35.04 | 0.05 | 80 | 05868 | M | MUDSTONE | CARB.BLK.VSHRD SOFT, POORLY CONSOLIDATED; LIKE PLASTIC ENE. |
| 8 | 35.04 | 35.13 | 0.09 | 80 | 05868 | M | COAL | C-4.BLK.VBRKN |
| 8 | 35.13 | 35.18 | 0.05 | 80 | 05868 | M | MUDSTONE | CARB.DK.GY.MAS.BRKN MUCH PLANT HASH; SOME COALIFIED BITS. |
| 8 | 35.18 | 35.32 | 0.14 | 80 | 05868 | M | COAL | C-3.BLK.BRKN ONE QUARTZ VEIN (2MM WIDE) PARALLEL TO CORE AXIS. |
| 8 | 35.32 | 35.36 | 0.04 | 80 | 05868 | M | COAL | C-2.BLK.VBRKN |
| 8 | 35.36 | 35.41 | 0.05 | 80 | 05868 | M | COAL | C-3.BLK.VBRKN |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------|
| 8 | 35.41 | 35.46 | 0.05 | 80 | 05868 | M | COAL | C-5.BLK.VBRKN |
| 8 | 35.46 | 35.48 | 0.02 | 80 | 05868 | M | MUDSTONE | CARB.BLK.BRKN |
| 8 | 35.48 | 35.62 | 0.14 | 80 | 05868 | M | COAL | C-3.BLK.VBRKN VERY CRUMBLY. GOOD CLEAT. |
| 8 | 35.62 | 35.69 | 0.07 | 80 | 05868 | M | MUDSTONE | CARB.BLK.MAS.BRKN COALY LENSES THROUGHOUT. COALIFIED PLAN T MATERIAL HARD. |
| 8 | 35.69 | 35.79 | 0.10 | 80 | 05868 | M | COAL | C-3.BLK.BRKN WITH BANDS OF C-2 (2-5 MM WIDE). |
| 8 | 35.79 | 35.85 | 0.06 | 80 | 05868 | M | COAL | C-5.BLK.SLD |
| 8 | 35.85 | 35.88 | 0.03 | 80 | 05868 | M | COAL | C-3.BLK.SLD |
| 8 | 35.88 | 36.01 | 0.13 | 80 | 05868 | M | COAL | C-5.BLK.BRKN BANDS OF C-4. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 36.01 | 36.15 | 0.14 | 80 | 05868 | M | MUDSTONE | CARB.BLK.LAM.BRKN FINE COALY STRINGERS THROUGHOUT. 3CM LENS NS OF POORLY CONSOLIDATED MUDST. |
| 8 | 36.15 | 36.19 | 0.04 | 80 | 05868 | M | COAL | C-4.BLK.BRKN |
| 8 | 36.19 | 36.68 | 0.49 | 80 | 05868 | M | COAL LOSS | |
| 8 | 36.68 | 37.16 | 0.48 | *80 | 05869 | | MUDSTONE | CARB.BLK.LAM.BRKN COALY LENSES AND STRINGERS THROUGHOUT. BUT BECOMING LESS CARB DOWNWARD. VERY FAINT BEDDING. UPPER 25 CM SAMPLED. |
| 9 | 37.16 | 37.30 | 0.14 | 82 | | | MUDSTONE | CARB.DK.GY.MAS.BRKN |
| 9 | 37.30 | 37.37 | 0.07 | 82 | | | ROCK LOSS | |
| 9 | 37.37 | 37.73 | 0.36 | 83 | | | SILTSTONE | M-DK.GY.MAS.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------|
| 9 | 37.73 | 39.23 | 1.50 | *88 | | | SILTSTONE | M.GY.MAS.BRKN CALCAREOUS .33M FROM STRAT BASE. |
| 10 | 39.23 | 40.42 | 1.19 | 84 | | | SILTSTONE | M.GY.MAS.BRKN MASSIVE WITH LAMINATED ZONES. |
| 10 | 40.42 | 40.69 | 0.27 | 81 | | | SILTSTONE | SSY.LT-M.GY.MAS.BRKN WORM-PELLETS (FILL IN HOLLOW). |
| 10 | 40.69 | 41.17 | 0.48 | *80 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.BRKN INT-LAM & V.THINLY INTBEDDED SLTST/SS (50/50). SMALL SLUMP FEATURES. |
| 11 | 41.17 | 41.67 | 0.50 | *86 | | | SILTSTONE | SSY.LT-M.GY.LAM.SSD.BRKN INT-LAM SLTST/SS (65/35) WITH WORM PELLETS AND LOAD CASTS (RIGHT WAY UP). |
| 11 | 41.67 | 43.19 | 1.52 | 84 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SSD.BRKN VFG-FG SS WITH WORM PELLETS AND LOAD CASTS (RWU). |
| 12 | 43.19 | 43.48 | 0.29 | 82 | | | SANDSTONE | SLTY.VFG.WEL.LT-M.GY.MAS.SSD.SLD MASSIVE SS WITH TWO VERY THIN SLTST BANDS THAT CONTAIN WORM PELLETS. VFG-FG SS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 12 | 43.48 | 43.88 | 0.40 | 82 | | | SILTSTONE | SSY.M.GY.THNB.SSD.BRKN THINLY BEDDED SLTST (80%) WITH VERY THIN SS INTERBEDS (20%). LOAD CASTS AND WORM PELLETS (RWU). |
| 12 | 43.88 | 45.26 | 1.38 | *80 | | | SANDSTONE | SLTY.FG.WEL.LT.GY.THNB.SSD.BRKN INTERBEDDED SS/CALCAREOUS SILTSTONE (70/30) WITH WORM PELLETS. |
| 13 | 45.26 | 46.19 | 0.93 | 78 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SSD.BRKN SS WITH ONE (5CM) SLTST BAND (CALCAREOUS). |
| 13 | 46.19 | 46.50 | 0.31 | *77 | | | SILTSTONE | M.GY.MAS.BRKN CALCAREOUS. WORM PELLETS. SANDY TOWARDS STRAT BASE. |
| 13 | 46.50 | 46.74 | 0.24 | 79 | | | SANDSTONE | FG.WEL.LT.GY.MAS.VBRKN POSSIBLE CORE LOSS. VFG AT STRAT BASE. WORM PELLETS AT STRAT BASE. |
| 13 | 46.74 | 46.89 | 0.15 | 80 | | | ROCK LOSS | |
| 13 | 46.89 | 47.09 | 0.20 | 81 | | | SANDSTONE | VFG.LT.GY.VBRKN POSSIBLE CORE LOSS. VFG-FG SS. |
| 13 | 47.09 | 47.24 | 0.15 | 82 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 47.24 | 48.16 | 0.92 | *86 | | | SANDSTONE | FG. MEL. LT. GY. MAS. SSD. VBRKN VFG-FG SS WITH WORM PELLETS AND LOAD CA STS (RMU). CALCAREOUS SLTST BAND (4CM). RUBBLED AT BASE POSSIBLE CORE LOSS. |
| 14 | 48.16 | 48.31 | 0.15 | 82 | | | ROCK LOSS | |
| 14 | 48.31 | 49.01 | 0.70 | 79 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN VERY BRKN AT STRAT BASE AND RUBBLED AT STRAT TOP (POSSIBLE CORE LOSS). BRECCIA TED ZONE .24M FROM STRAT TOP (.16M THIC K) CONTAINING SLTST AND SS BRECCIA. SMA LL NORMAL FRACTURES. |
| 14 | 49.01 | 49.16 | 0.15 | 76 | | | ROCK LOSS | |
| 15 | 49.16 | 50.13 | 0.97 | *72 | | | SANDSTONE | VFG. MEL. LT. GY. MAS. BRKN SLTY LAMS NEAR STRAT BASE. |
| 15 | 50.13 | 51.01 | 0.88 | 74 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN VFG-FG SS. SLTY LAMINATED REGIONS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 16 | 51.01 | 52.10 | 1.09 | 77 | | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN SCOUR (RMU). |
| 16 | 52.10 | 52.24 | 0.14 | 79 | | | SILTSTONE | M. GY. THNB. BRKN CALCAREOUS. SLTST ROLL (SLUMP?). |
| 16 | 52.24 | 53.14 | 0.90 | 80 | | | SANDSTONE | VFG. MOD. LT. GY. MAS. XBDG. BRKN SOME SLTST MISPS AND LAMS. VFG-FG SS. C ORRECT WAY UP. |
| 17 | 53.14 | 54.19 | 1.05 | 83 | | | SANDSTONE | VFG. MOD. LT. GY. XBDG. BRKN MINOR SLTST LAMS AND V. THIN BEDS. BROKE N. AT STRAT BASE. RIGHT WAY UP. |
| 17 | 54.19 | 54.45 | 0.26 | 84 | | | SILTSTONE | SSY. M. GY. MAS. BRKN CALCAREOUS. SCOUR (RMU). |
| 17 | 54.45 | 54.70 | 0.25 | *85 | | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. VTHNB. BRKN INT-BEDDED SS/SLTST. |
| 17 | 54.70 | 54.78 | 0.08 | 85 | | | SILTSTONE | M. GY. LAM. SLD |
| 17 | 54.78 | 54.92 | 0.14 | 86 | | | SANDSTONE | VFG. MOD. LT. GY. MAS. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 54.92 | 56.31 | 1.39 | *88 | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. THNB. XBDG. BRKN. THINLY INT-BEDDED SS/SLTST (70/30). INDIVIDUAL BEDS ARE LAMINATED; EG. SS BEDS HAVE SLTST LAMS AND VISA VERSA. SCOUR (RMU). VBRKN IN ONE PLACE. |
| 18 | 56.31 | 56.49 | 0.18 | 88 | | SANDSTONE | SLTY. VFG. MOD. LT-M. GY. VBRKN. RUBBLED SS/SLTST. |
| 18 | 56.49 | 56.59 | 0.10 | 88 | | ROCK LOSS | |
| 18 | 56.59 | 56.74 | 0.15 | 88 | | SILTSTONE | M. GY. MAS. BRKN |
| 19 | 56.74 | 57.02 | 0.28 | 88 | | SANDSTONE | VFG. MOD. LT. GY. MAS. BRKN. MINOR SLTST LAMS. |
| 19 | 57.02 | 57.22 | 0.20 | 88 | | ROCK LOSS | |
| 19 | 57.22 | 58.42 | 1.20 | *88 | | SILTSTONE | M. GY. MAS. SSD. VBRKN. POSSIBLE CORE LOSS. LOAD CASTS (RMU). BIVALVES (STAFFINELLA?). |
| 20 | 58.42 | 58.56 | 0.14 | *87 | | MUDSTONE | SLTY. DK. GY. LAM. HRMBU. SLD. FAINT BEDDING. ONE HORIZ. NORM BURROW INDICATES TOPS UP. |
| 20 | 58.56 | 58.66 | 0.10 | 87 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 | 58.66 | 59.98 | 1.32 | 87 05851 | | MUDSTONE | DK. GY. LAM. VBRKN. SILTY AND LAMINATED NEAR TOP BECOMING LESS SILTY AND MORE CARB DOWNWARDS. (PLANT HASH NEAR BASE). PLANTS INCLUDE "CLADOPHLEBIS SP" AND "SPHENOPTERIS SP". FINE FAINT SLTST LAMINAE NEAR TOP. LOWER 25 CM SAMPLED. |
| 20 | 59.98 | 60.05 | 0.07 | 88 05852 L | | COAL | C-2. BLK. PHRD. CRUSHED COAL. APPEARS TO BE MOSTLY C-2 AND C-3. |
| 20 | 60.05 | 60.10 | 0.05 | 88 05852 L | | COAL | C-3. BLK. PHRD. CRUSHED COAL. |
| 20 | 60.10 | 60.11 | 0.01 | 88 05852 L | | COAL | C-6. BLK. VBRKN. |
| 20 | 60.11 | 60.17 | 0.06 | 88 05852 L | | COAL | C-3. BLK. VBRKN. |
| 21 | 60.17 | 60.35 | 0.18 | 88 05852 L | | COAL | BLK. BRKN. |
| 21 | 60.35 | 60.67 | 0.32 | 88 05852 L | | COAL | BLK. BRKN. OCCASIONAL BANDS OF C-5 AND C-6. |
| 21 | 60.67 | 60.92 | 0.25 | 88 05852 L | | COAL | C-2. BLK. VBRKN. CRUSHED AT TOP OF INTERVAL... CORE LOSS? |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 60.92 | 61.09 | 0.17 | 88 | 05852 | L | COAL | C-3.BLK.VBRKN |
| 21 | 61.09 | 61.21 | 0.12 | 88 | 05852 | L | COAL | C-3.BLK.VSHRD ALMOST POWDERED. ALL LISTRIC SURFACES. .LOSS? |
| 21 | 61.21 | 61.30 | 0.09 | 89 | 05852 | L | COAL | C-2.BLK.VBRKN |
| 21 | 61.30 | 61.96 | 0.66 | 89 | 05852 | L | COAL LOSS | |
| 21 | 61.96 | 62.33 | 0.37 | *89 | 05853 | | MUDSTONE | CARB.BLK.MAS.VBRKN MOSTLY MASSIVE WITH NUMEROUS COAL STRINGS & LENSES UP TO 3MM WIDE THROUGHOUT. VERY CARB. BCA TAKEN ON ONE PYRITE BAND 2MM WIDE. BAIFERA FURCATA. COALIFIED TWIGS. UPPER 25CM SAMPLED. |
| 21 | 62.33 | 62.38 | 0.05 | 87 | | | ROCK LOSS | |
| 22 | 62.38 | 62.57 | 0.19 | 86 | | | MUDSTONE | DK.GY.MAS.BRKN SOME COALIFIED PLANT FOSSILS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 62.57 | 62.95 | 0.38 | 84 | | | SILTSTONE | M-DK.GY.MAS.BRKN SLTST WITH A GRADATIONAL CONTACT...UNDERLYING SS (FINING UP). |
| 22 | 62.95 | 64.32 | 1.37 | *76 | | | SANDSTONE | VFG.WEL.LT.GY.MAS.BIOTR.BRKN MINOR SLTST LAMS. BIOTRB FROM 1.02M TO 1.22M. WITH BIVALVES AND ASSOCIATED BURROWS. CALCAREOUS CEMENT IN PLACES. |
| 22 | 64.32 | 64.49 | 0.17 | 77 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD BIVALVES. |
| 23 | 64.49 | 64.89 | 0.40 | 78 | | | SANDSTONE | VFG.WEL.LT.GY.MAS.SLD WORM PELLETS, BIVALVES, BIVALVE ESCAPE TUBES. RIGHT WAY UP. |
| 23 | 64.89 | 65.35 | 0.46 | 79 | | | SILTSTONE | SSY.M.GY.LAM.BRKN INT-LAM AND V.THINLY INT-BEDDED SS/SLTS T (40/60). |
| 23 | 65.35 | 66.45 | 1.10 | *80 | | | SANDSTONE | SLTY.FG.MOD.LT-M.GY.VTHNB.BIOTR BRKN VFG-MG SS. -VERY THIN TO THINLY BEDDED SS (80%) WITH SLTST (20%) INT-LAMS & V. THN INT-BEDS. BIOTRB AT STRAT.TOP. WORM PELLETS AND LOAD CASTS (RHU). |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 24 | 66.45 | 66.91 | 0.46 | *80 | | | SANDSTONE | SLTY FG. MOD. LT-M. GY. VTHNB. SLD. VFG-MG SS (60%) INTERBEDDED WITH SLTST (40%). |
| 24 | 66.91 | 67.61 | 0.70 | 76 | | | SANDSTONE | FG. WEL. LT. GY. MAS. BIOTR. BRKN VFG-MG SS WITH BIVALVES AND BIVALVE BUR RONS. |
| 24 | 67.61 | 67.83 | 0.22 | 73 | | | SILTSTONE | SSY. M. GY. VTHNB. BRKN INT-BEDDED AND INT-LAMINATED SS/SLTST (20/80). GRADATIONAL CONTACT WITH UNDERLYING SS. |
| 24 | 67.83 | 68.00 | 0.17 | 72 | | | SANDSTONE | VFG. MOD. LT. GY. MAS. BRKN SILTY WISPS. |
| 24 | 68.00 | 68.31 | 0.31 | *70 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD SOME SLTST LAMS AND WISPS. SOME RIP-UP CLASTS. |
| 24 | 68.31 | 68.51 | 0.20 | 69 | | | SANDSTONE | FG. MOD. LT. GY. MAS. SLD FINE SLTST LAMS. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 68.51 | 70.26 | 1.75 | *65 | | | SANDSTONE | FG. WEL. LT. GY. MAS. BRKN MINOR SLTST LAMS. RIP-UP CLAST ZONE AT .36M (11CM THK) WITH CLASTS FROM 1.0 TO 1.5CM SCATTERED THROUGHOUT. ONE LARGE RIP-UP CLAST (5.0 BY 5.0CM); WORM PELLETS. V. BRKN REGION (.40M OF CORE) WITH POSSIBLE CORE LOSS. |
| 25 | 70.26 | 70.46 | 0.20 | 77 | | | ROCK LOSS | |
| 26 | 70.46 | 70.74 | 0.28 | *80 | | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN SLIGHTLY ARGILLACEOUS UNIT WITH ABUNDANT WORM PELLETS. |
| 26 | 70.74 | 71.49 | 0.75 | 81 | | | SILTSTONE | M. GY. VTHNB. BRKN VERY THIN BEDDED TO LAMINATED. ABUNDANT "HELMINTHOPSIS". |
| 26 | 71.49 | 72.41 | 0.92 | 82 | | | SILTSTONE | M. GY. VTHNB. BRKN V. THIN BEDDED TO THIN BEDDED WITH ABUNDANT "HELMINTHOPSIS". BECOMES A SLTY MUD ST LOCALLY. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27 | 72.41 | 72.67 | 0.26 | 83 | | | SANDSTONE | SLTY. VFG. PR. LT-M. GY. VTHNB. XBOG. SLD |
| 27 | 72.67 | 73.62 | 0.95 | *84 | | | SILTSTONE | CLYY. M. GY. VTHNB. BRKN INTERBEDDED SLT (85%) & MUD (15%). OCCASIONAL FINING UP SEQUENCES WITH ABUNDANT "HELMINTHOPSIS". |
| 27 | 73.62 | 74.50 | 0.88 | 82 | | | MUDSTONE | DK. GY. MAS. BRKN GASTROPOD HORIZON (3MM THICK); ABUNDANT "HELMINTHOPSIS". |
| 27 | 74.50 | 74.62 | 0.12 | 81 | | | SILTSTONE | LT-M. GY. VTHNB. BRKN ABUNDANT "HELMINTHOPSIS". |
| 28 | 74.62 | 75.14 | 0.52 | 80 | 05854 | | MUDSTONE | DK. GY. MAS. YBRKN 7CM WIDE BRECCIATED MUDST. BIVALVES COMMON AND GASTROPODS UP TO 5MM LONG. ABUNDANT QUARTZ REPLACED BIVALVES AT BASE. ALMOST COQUINA. LOWER 20CM SAMPLED. |
| 28 | 75.14 | 75.20 | 0.06 | 79 | 05854 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 75.20 | 75.25 | 0.05 | 79 | 05854 | | MUDSTONE | PYR. YEL. MAS DENSE ACCUMULATION OF QUARTZ REPLACED BIVALVES IN MUDST WITH MUCH DISSEMINATED PYRITE. |
| 28 | 75.25 | 75.72 | 0.47 | 79 | 05855 ? | | COAL | C-3. BLK. YBRKN OCC CRUSHED ZONES. C-2 BANDS. AND ELONGATED PYRITE BLEBS. |
| 28 | 75.72 | 75.73 | 0.01 | 78 | 05855 ? | | COAL LOSS | |
| 28 | 75.73 | 76.18 | 0.45 | 78 | 05856 | | MUDSTONE | DK. GY. MAS. YBRKN NUMEROUS PYRITE LAMS AND BLEBS AT TOP OF INTERVAL. MODERATELY FINE ANKERITE VEINLETS AT TOP OF INTERVAL. SLICKENSIDES. CRUSHED COAL AT BASAL CONTACT. POSSIBLY NOT IN PLACE. UPPER 25CM SAMPLED. |
| 28 | 76.18 | 76.37 | 0.19 | *77 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN FINE SILTY LAMINAE. |
| 29 | 76.37 | 77.15 | 0.78 | 77 | | | SILTSTONE | M-DK. GY. LAM. BRKN |
| 29 | 77.15 | 77.51 | 0.36 | 77 | | | SANDSTONE | SLTY. FG. MOD. LT. GY. MAS. BRKN MASSIVE SS (85%) WITH SLTST V. THIN BEDS (15%). RIP-UP CLASTS AT STRAT TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------|
| 29 | 77.51 | 77.93 | 0.42 | 77 | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN MINOR SLTST LAMS AND ONE VERY THIN SLTST BED. FINE TO MEDIUM GRAINED SS. |
| 29 | 77.93 | 78.40 | 0.47 | *77 | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN |
| 30 | 78.40 | 80.18 | 1.78 | *88 | | SANDSTONE | MG.WEL.LT.GY.MAS.VBRKN ALMOST COARSE GRAINED. POSSIBLE CORE LOSS. |
| 30 | 80.18 | 80.38 | 0.20 | 82 | | ROCK LOSS | |
| 31 | 80.38 | 80.50 | 0.12 | 81 | | SANDSTONE | MG.WEL.LT.GY.MAS.VBRKN POSSIBLE CORE LOSS. WORM PELLETS. |
| 31 | 80.50 | 82.15 | 1.65 | 75 | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN ABUNDANT QUARTZ AND TALC FILLED FRACTURES. VERY BROKEN IN LOWER PORTION. SMALL RIP-UP CLASTS. |
| 32 | 82.15 | 83.33 | 1.18 | 67 | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN SMALL FRACTURES IN UPPER HALF AND LARGE QUARTZ-FILLED FRACTURES (1-4CM) AT STRAT AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 32 | 83.33 | 83.53 | 0.20 | 62 | | SILTSTONE | M.GY.MAS.VBRKN POSSIBLE CORE LOSS. |
| 32 | 83.53 | 83.73 | 0.20 | 61 | | ROCK LOSS | |
| 32 | 83.73 | 84.03 | 0.30 | 59 | | SANDSTONE | VFG.MOD.LT.GY.MAS.VBRKN LARGE QUARTZ VEINS (2-3CM). SILTY MISPS. |
| 32 | 84.03 | 84.19 | 0.16 | *58 | | SILTSTONE | M-DK.GY.MAS.SSD.BRKN SANDY AT STRAT TOP. RIGHT WAY UP. |
| 33 | 84.19 | 84.84 | 0.65 | 59 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN MASSIVE MUDSTONE WITH SLTST LAMINAE. QTZ VEINS (1 CM) AND PLANT FOSSILS. |
| 33 | 84.84 | 86.14 | 1.30 | *60 | | MUDSTONE | CARB.DK.GY.MAS.VBRKN COALIFIED PLANT FOSSILS AND POLISHED SURFACES. MINOR SLTST BANDS. 8MM QTZ VEIN. |
| 34 | 86.14 | 86.60 | 0.46 | 55 05857 | | MUDSTONE | CARB.BLK.MAS.BRKN OCC FINE COAL STRINGERS. VERY BRKN NEAR THE BASE OF THE UNIT. LOWER 25 CM SAMP LED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|------------------------------------------------------|
| 34 | 86.60 | 86.62 | 0.02 | 53 | 05858 K/L | COAL | C-2.BLK.VBRKN |
| 34 | 86.62 | 86.68 | 0.06 | 53 | 05858 K/L | COAL | C-5.BLK.VBRKN |
| 34 | 86.68 | 86.69 | 0.01 | 53 | 05858 K/L | COAL | C-2.BLK.BRKN |
| 34 | 86.69 | 86.71 | 0.02 | 53 | 05858 K/L | COAL | C-5.BLK.BRKN |
| 34 | 86.71 | 86.74 | 0.03 | 53 | 05858 K/L | MUDSTONE | CARB.BLK.MAS.VSHRD LISTRIC SURFACES THROUGHOUT. |
| 34 | 86.74 | 86.81 | 0.07 | 52 | 05858 K/L | COAL | C-3.BLK.PWRD |
| 34 | 86.81 | 87.06 | 0.25 | 51 | 05858 K/L | COAL | C-2.BLK.VBRKN EXTREMELY CRUMBLD CORE. GOOD CLEAT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|-----------------------------------------------------|
| 34 | 87.06 | 87.13 | 0.07 | 50 | 05858 K/L | COAL | C-4.BLK.VBRKN SHEARED SURFACES AND SLICKENSIDES. |
| 34 | 87.13 | 87.37 | 0.24 | 49 | 05858 K/L | COAL LOSS | |
| 34 | 87.37 | 87.54 | 0.17 | 48 | 05858 K/L | ROCK LOSS | |
| 34 | 87.54 | 87.66 | 0.12 | 47 | 05858 K/L | COAL LOSS | |
| 34 | 87.66 | 87.80 | 0.14 | 46 | 05858 K/L | ROCK LOSS | |
| 34 | 87.80 | 87.94 | 0.14 | 46 | 05858 K/L | COAL LOSS | |
| 34 | 87.94 | 88.02 | 0.08 | 45 | 05858 K/L | ROCK LOSS | |
| 34 | 88.02 | 88.08 | 0.06 | 45 | 05858 K/L | MUDSTONE | CARB.BLK.BRKN PWRD AT BASE. |
| 34 | 88.08 | 88.10 | 0.02 | 44 | 05858 K/L | COAL LOSS | |
| 34 | 88.10 | 88.19 | 0.09 | 44 | 05858 K/L | COAL | C-3.BLK.BRKN |
| 34 | 88.19 | 88.22 | 0.03 | 44 | 05858 K/L | COAL | C-6.BLK.SLD |
| 34 | 88.22 | 88.25 | 0.03 | 43 | 05858 K/L | COAL | C-5.BLK.SLD MINOR ANKERITE VEINLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 34 | 88.25 | 88.27 | 0.02 | 43 05858 | K/L | COAL | C-6.BLK.SLD MINOR ANKERITE VEINLETS. |
| 34 | 88.27 | 88.32 | 0.05 | 43 05858 | K/L | COAL | C-5.BLK.SLD MINOR ANKERITE VEINLETS. |
| 34 | 88.32 | 88.36 | 0.04 | 43 05858 | K/L | MUDSTONE | CARB.BLK.SHRD MINOR ANKERITE VEINLETS. |
| 34 | 88.36 | 88.41 | 0.05 | 42 05858 | K/L | ROCK LOSS | |
| 34 | 88.41 | 88.50 | 0.09 | 42 05858 | K/L | COAL LOSS | |
| 34 | 88.50 | 88.59 | 0.09 | 42 05858 | K/L | COAL | C-6.BLK.BRKN CONTORTED C-6 MIXED WITH MUDSTONE. |
| 35 | 88.59 | 88.71 | 0.12 | 41 05858 | K/L | MUDSTONE | CARB.BLK.VBRKN CONTORTED MUDSTONE MIXED WITH COALY LENS SES AND MINOR ANKERITE VEINING. |
| 35 | 88.71 | 88.82 | 0.11 | 40 05858 | K/L | COAL | C-5.BLK.VBRKN BANDS OF C-6 AND C-2 UP TO 4MM WIDE. |
| 35 | 88.82 | 89.00 | 0.18 | 39 05858 | K/L | COAL | C-3.BLK.VBRKN BANDS OF C-5. MINOR ANKERITE VEINLETS. |
| 35 | 89.00 | 89.03 | 0.03 | 39 05858 | K/L | COAL | C-5.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 35 | 89.03 | 89.08 | 0.05 | 38 05858 | K/L | MUDSTONE | CARB.BLK.BRKN |
| 35 | 89.08 | 89.13 | 0.05 | 38 05858 | K/L | COAL | C-6.BLK.BRKN |
| 35 | 89.13 | 89.21 | 0.08 | 38 05858 | K/L | MUDSTONE | CARB.DK.GY.MAS.VBRKN COMMON QTZ VEINING. |
| 35 | 89.21 | 89.32 | 0.11 | 37 05858 | K/L | COAL | C-3.BLK.PWRD CRUSHED CORE. |
| 35 | 89.32 | 89.47 | 0.15 | 36 05859 | K/L | MUDSTONE | CARB.BLK.VBRKN VERY CARB MUDST MIXED WITH COAL. COAL LENSES ARE UP TO 5MM WIDE. |
| 35 | 89.47 | 89.55 | 0.08 | 36 05859 | K/L | MUDSTONE | CARB.BLK.VBRKN CRUSHED CORE WITH ABUNDANT COAL STRINGERS AND LENSES THROUGHOUT. |
| 35 | 89.55 | 89.67 | 0.12 | 35 05859 | K/L | MUDSTONE | CARB.BLK.PWRD VERY CARB MUDST CHUNKS SWIMMING WITHIN SPARKLY VSHRD COALY FOAM. LISTRIC SURFACES. |
| 36 | 89.67 | 89.72 | 0.05 | 35 05859 | K/L | MUDSTONE | CARB.BLK.SHRD VERY SOFT AND POORLY CONSOLIDATED WITH ABUNDANT LISTRIC SURFACES. LIKE PLASTIC ENE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 89.72 | 90.18 | 0.46 | *33 | 05859 | K/L | MUDSTONE | CARB. BLK. LAM. YBRKN CARB WITH ABUNDANT COALY LENSES AND STRINGERS. VERY FAINT BEDDING. BCA=33 DEGREES AT TOP AND 10 DEGREES NEAR BASE. |
| 36 | 90.18 | 90.33 | 0.15 | 39 | 05859 | K/L | COAL | C-4. BLK. PHRD MODERATE QTZ. VEINING VISIBLE ON LARGE PIECES. |
| 36 | 90.33 | 90.38 | 0.05 | 40 | 05859 | K/L | MUDSTONE | SLTY. BLK. MAS. BRKN ONE PIECE... IN PLACE? |
| 36 | 90.38 | 90.44 | 0.06 | 41 | 05859 | K/L | MUDSTONE | CARB. BLK. YBRKN |
| 36 | 90.44 | 90.45 | 0.01 | 42 | 05859 | K/L | COAL | C-3. BLK. YBRKN |
| 36 | 90.45 | 90.47 | 0.02 | 42 | 05859 | K/L | MUDSTONE | CARB. BLK. YBRKN VERY COALY. ABUNDANT COAL STRINGERS. |
| 36 | 90.47 | 90.64 | 0.17 | 44 | 05859 | K/L | MUDSTONE | CARB. BLK. MAS. SLD HARD AND WELL CONSOLIDATED. PYRITE BLEB (5MM IN DIAMETER). |
| 36 | 90.64 | 90.66 | 0.02 | 46 | 05859 | K/L | COAL | C-6. BLK. YBRKN MUD LAYERS COMMON. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 36 | 90.66 | 90.67 | 0.01 | 46 | 05859 | K/L | MUDSTONE | CARB. BLK. BRKN |
| 36 | 90.67 | 90.69 | 0.02 | 46 | 05859 | K/L | COAL | C-4. BLK. BRKN |
| 36 | 90.69 | 90.72 | 0.03 | 47 | 05859 | K/L | COAL | C-6. BLK. BRKN |
| 36 | 90.72 | 90.93 | 0.21 | 49 | 05859 | K/L | MUDSTONE | CARB. BLK. SHRD ABUNDANT LITRIC SURFACES AND OCCASIONAL COALY STRINGERS. MUCH SHEARED COAL MIXED INTO SOME ZONES. |
| 37 | 90.93 | 91.02 | 0.09 | 52 | 05859 | K/L | MUDSTONE | CARB. BLK. YBRKN ABUNDANT COALY LENSES THROUGHOUT. |
| 37 | 91.02 | 91.05 | 0.03 | 53 | 05859 | K/L | COAL | C-5. BLK. SLD |
| 37 | 91.05 | 91.21 | 0.16 | 54 | 05859 | K/L | MUDSTONE | CARB. BLK. YBRKN LITRIC SURFACES AND ABUNDANT COALY LENSES. |
| 37 | 91.21 | 91.23 | 0.02 | 56 | 05859 | K/L | COAL | C-5. BLK. YBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 91.23 | 91.29 | 0.06 | 57 | 05859 K/L | MUDSTONE | CARB. BLK. VBRKN COAL STRINGERS THROUGHOUT...ALMOST C-6. |
| 37 | 91.29 | 91.33 | 0.04 | 58 | 05859 K/L | COAL | C-5. BLK. VBRKN CRUMBLD. |
| 37 | 91.33 | 91.40 | 0.07 | 59 | 05859 K/L | MUDSTONE | CARB. BLK. VBRKN COAL STRINGERS THROUGHOUT...ALMOST C-6. |
| 37 | 91.40 | 91.45 | 0.05 | 60 | 05859 K/L | COAL | C-3. BLK. VBRKN RUBBLE. |
| 37 | 91.45 | 91.62 | 0.17 | 62 | 05859 K/L | COAL LOSS | |
| 37 | 91.62 | 92.04 | 0.42 | 67 | 05860 | MUDSTONE | CARB. BLK. MAS. BRKN SLICKENSIDES, TALC. MUCH BIT WEAR. LESS CARB DOWNWARDS. COAL BLEBS. UPPER 25CM SAMPLED. |
| 37 | 92.04 | 92.38 | 0.34 | *74 | | SILTSTONE | SSY. M. GY. LAM. SSD. BRKN INTERLAMINATED FINE DARK SILTY MUDST AN D FINE GRAINED SS. SAND CONTENT INCREAS ES DOWNWARD. TOPS UP. |
| 37 | 92.38 | 92.61 | 0.23 | 74 | | SANDSTONE | FG. PR. M. GY. LAM. SLD FINE DARK SILTY WISPS THROUGHOUT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 92.61 | 94.18 | 1.57 | *75 | | SANDSTONE | SLTY. FG. PR. LT. GY. MAS. BRKN ANGULAR SS WITH SLTST LAMS (VFG-MG SS). PYRITE BAND 1.3 CM THICK. RIP-UP CLAST S. |
| 38 | 94.18 | 94.32 | 0.14 | 71 | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN LARGE SLTST RIP-UP CLASTS. (RMU). |
| 38 | 94.32 | 94.44 | 0.12 | 70 | | SILTSTONE | SSY. LT-M. GY. THNB. BRKN INTERLAMINATED SLTST/SS AT STRAT. BASE. |
| 39 | 94.44 | 94.70 | 0.26 | 69 | | SILTSTONE | M-DK. GY. MAS. BRKN MINOR SS LAMS. |
| 39 | 94.70 | 95.07 | 0.37 | 68 | | SANDSTONE | SLTY. LT. GY. VTHNB. BRKN VERY THINLY INTERBEDDED AND INTERLAMINA TED SLTST/SS (30/70). SOME SLTST BANDS BROKEN UP INTO RIP-UP CLASTS. NORMAL FR ACTURE. |
| 39 | 95.07 | 96.37 | 1.30 | *64 | | SANDSTONE | FG. MOD. LT. GY. MAS. BRKN CALCAREOUS SLTST BANDS 9 CM BY 1.5 CM T HICK. THE UNIT'S LOWER HALF IS LOCALLY POORLY SORTED, ARGILLACEOUS AND MEDIUM GRAINED, WHILE ITS UPPER HALF IS CLEAN AND WELL SORTED. RIP-UP CLAST HORIZON (9 CM THICK) AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | 96.37 | 96.51 | 0.14 | 64 | | SANDSTONE | FG. MEL. LT. GY. MAS. BRKN ALMOST MEDIUM GRAINED. |
| 40 | 96.51 | 97.15 | 0.64 | 65 | | SILTSTONE | SSY. M-DK. GY. MAS. BRKN SANDY SLTST WITH MINOR SANDSTONE LAMINA TIONS. NEAR STRAT BASE, TWO SS BANDS 6 CM AND 4 CM THICK. COLLAPSED BANK FEATU RE SIMILAR TO THAT IN DDH87031 (SLUMP). |
| 40 | 97.15 | 97.63 | 0.48 | 65 | | SILTSTONE | SSY. LT-M. GY. LAM. BRKN INTERLAMINATED SS/SLTST (40/60). |
| 40 | 97.63 | 98.15 | 0.52 | *65 | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. THNB. BRKN INTERLAMINATED AND INTERBEDDED SLTST/SS (20/80). SOME NORMAL FRACTURES. |
| 41 | 98.15 | 100.15 | 2.00 | *65 | | SANDSTONE | SLTY. FG. PR. LT. GY. MAS. BRKN MASSIVE POORLY TO MODERATELY SORTED ARG ILLACEOUS SS (80%) WITH VERY THIN INTER BEDS AND INTERLAMS OF SLTST (20%). RIP- UP CLASTS. |
| 42 | 100.15 | 100.93 | 0.78 | 64 | | SANDSTONE | FG. MOD. LT-M. GY. LAM. BRKN INT-LAM TO V. THINLY INT-BEDDED SS/SLTST (65/35). NORM PELLETS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 100.93 | 101.73 | 0.80 | *63 | | SILTSTONE | SSY. M. GY. LAM. BIOTR. BRKN DOMINANTLY SLTST (85%) WITH THIN SS LAM S (15%). NORM PELLETS, MINOR BIOTURBATI ON (BURROWS), AND SSD (LOAD CASTS). PRES ENT. CORRECT WAY UP. |
| 42 | 101.73 | 102.37 | 0.64 | 66 | | SILTSTONE | M. GY. MAS. SLD |
| 43 | 102.37 | 102.46 | 0.09 | 67 | | SILTSTONE | SSY. M. GY. MAS. SLD INTERMIXED SS/SLTST. |
| 43 | 102.46 | 102.70 | 0.24 | *68 | | SANDSTONE | SLTY. VFG. PR. LT-M. GY. MAS. VBRKN MASSIVE SS WITH SLTST LAMS. |
| 43 | 102.70 | 103.57 | 0.87 | 68 | | ROCK LOSS | |
| 43 | 103.57 | 103.89 | 0.32 | 69 | | SILTSTONE | M-DK. GY. MAS. BRKN BECOMES MUDDIER AT STRAT. BASE. |
| 43 | 103.89 | 103.98 | 0.09 | 69 | | MUDSTONE | DK. GY. SHRD |
| 43 | 103.98 | 104.48 | 0.50 | 69 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| | 43 | 104.48 | 104.68 | 0.20 | 70 | | SANDSTONE | SLTY. VFG. PR. LT. GY. MAS. BRKN INTERMIXED SILTSTONE & SANDSTONE. |
| | 43 | 104.68 | 105.48 | 0.80 | 70 | | SANDSTONE | SLTY. VFG. PR. LT. GY. MAS. BRKN ABUNDANT RANDOM FRACTURES AT STRAT BASE . INTERMIXED SLTST/SS. |
| | 44 | 105.48 | 106.28 | 0.80 | 70 | | SANDSTONE | SLTY. PR. H. GY. MAS. SHRD ABUNDANT SLICKENSIDES AND POLISHED FRACTURE SURFACES. QUARTZ VEINING THROUGHOUT...ALMOST BRECCIA. |
| | 44 | 106.28 | 106.78 | 0.50 | 71 | | ROCK LOSS | |
| | 44 | 106.78 | 106.82 | 0.04 | 71 | | SILTSTONE | DK. GY. SLD GRADATIONAL FROM ABOVE, WITH MUCH QTZ VEINING AND OCCASIONAL PYRITE BLEBS. |
| | 44 | 106.82 | 107.01 | 0.19 | 71 | ? | MUDSTONE | CARB. BLK. VSHRD EXTREMELY SHEARED WITH LISTRIC SURFACES THROUGHOUT. PROBABLY MUCH COAL MIXED IN WITH MUDSTONE...FAIRLY LIGHTWEIGHT. |
| | 44 | 107.01 | 107.41 | 0.40 | 71 | ? | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 44 | 107.41 | 107.60 | 0.19 | 72 | ? | MUDSTONE | CARB. BLK. VSHRD ALL LISTRIC SURFACES BUT SLIGHTLY LESS CARB THAN ABOVE...HEAVIER THAN ABOVE. LARGE MUDST. CHUNKS W/IN COALY FOAM WITH SOME CHUNKS BEING POORLY CONSOLIDATED CLAYSTONE. POSSIBLE CORE LOSS. |
| | 45 | 107.60 | 107.71 | 0.11 | 72 | ? | MUDSTONE | CARB. BLK. SHRD |
| | 45 | 107.71 | 107.88 | 0.17 | 72 | ? | MUDSTONE | SLTY. DK. GY. VBRKN ABUNDANT SHEARED SURFACES AND PLANT FOS SILS. |
| | 45 | 107.88 | 108.24 | 0.36 | 72 | ? | ROCK LOSS | |
| | 45 | 108.24 | 108.66 | 0.42 | 72 | | SILTSTONE | DK. GY. MAS. VBRKN UNIT IS FRACTURED AND BECOMES SANDY NEAR STRAT BASE. |
| | 45 | 108.66 | 109.76 | 1.10 | *73 | | SANDSTONE | SLTY. VFG. PR. LT. GY. MAS. BRKN LOWER HALF IS LAMINATED. FRACTURED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 109.76 | 109.86 | 0.10 | 57 | | | SILTSTONE | M.GY.VTHNB.BRKN |
| 46 | 109.86 | 110.71 | 0.85 | *45 | | | SANDSTONE | VFG.PR.LT.GY.MAS.VBRKN HIGHLY FRACTURED VFG-FG SS. POSSIBLE CORE LOSS. |
| 46 | 110.71 | 111.02 | 0.31 | 46 | | | SANDSTONE | VFG.PR.LT.GY.MAS.VBRKN HIGHLY FRACTURED WITH ABUNDANT QTZ VEINING. POSSIBLE CORE LOSS. |
| 46 | 111.02 | 111.35 | 0.33 | 46 | | | MUDSTONE | SSY.DK.BN.SLD INTERMIXED AND PULVERIZED. BRECCIATED ROCK WITH TALC-LIKE POWDER THROUGHOUT. |
| 47 | 111.35 | 111.65 | 0.30 | 47 | | | SANDSTONE | CLYY.VFG.PR.LT.GY.MAS.BRKN BRECCIATED, BECOMING MUDDY TOWARDS BASE |
| 47 | 111.65 | 113.35 | 1.70 | 48 | | | MUDSTONE | DK.GY.MAS.VSHRD ROCK BRECCIA AND QTZ VEIN BRECCIA IMBEDDED WITH MUDST. 10 CM SSY ZONE (BRECCIATED SS PIECES). UNIT IS INTACT BUT SHEARED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------|
| 48 | 113.35 | 113.44 | 0.09 | 49 | | | MUDSTONE | DK.GY.VSHRD |
| 48 | 113.44 | 113.72 | 0.28 | 50 | | | MUDSTONE | SSY.DK.GY.VSHRD VERY ARGILLACEOUS BRECCIATED SS CONTAINING SOME BRECCIATED QTZ. |
| 48 | 113.72 | 114.57 | 0.85 | 51 | | | MUDSTONE | DK.GY.MAS.SHRD INTACT BUT SHEARED. |
| 48 | 114.57 | 115.04 | 0.47 | 51 | | | ROCK LOSS | |
| 48 | 115.04 | 115.52 | 0.48 | 52 | | | MUDSTONE | SSY.DK.GY.MAS.VBRKN SHEARED. |
| 48 | 115.52 | 116.02 | 0.50 | 53 | | | ROCK LOSS | |
| 49 | 116.02 | 116.36 | 0.34 | 53 | | | SANDSTONE | CLYY.FG.VPR.M.GY.MAS.VBRKN VERY ARGILLACEOUS SS. POSSIBLE CORE LOSS. |
| 49 | 116.36 | 116.86 | 0.50 | 54 | | | ROCK LOSS | |
| 49 | 116.86 | 117.73 | 0.87 | *55 | | | SILTSTONE | SSY.M.GY.VBRKN SANDSTONE LAMS. POSSIBLE CORE LOSS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 50 | 117.73 | 117.90 | 0.17 | 58 | | | MUDSTONE | SSY.DK.GY.SHRD INTERMIXED SAND AND MUD. POSSIBLE CORE LOSS. |
| 50 | 117.90 | 119.54 | 1.64 | *62 | | | SILTSTONE | SSY.W.GY.LAM.BRKN SHEARED AND BRECCIATED IN ZONES WITH SO ME FINING UPWARD SEQUENCES PRESENT (0.5 TO 1.0 CM). |
| 51 | 119.54 | 119.94 | 0.40 | 68 | | | MUDSTONE | SLTY.DK.GY.MAS.SHRD |
| 51 | 119.94 | 120.00 | 0.06 | 69 | | | ROCK LOSS | |
| 51 | 120.00 | 120.32 | 0.32 | 70 | | | SILTSTONE | M.GY.LAM.VBRKN QUARTZ VEINING (LG QTZ CRYSTALS). |
| 51 | 120.32 | 120.60 | 0.28 | 71 | | | SANDSTONE | SLTY.VFG.MOD.LT-M.GY.LAM.SSD.YBRKN SANDSTONE WITH SILTSTONE LAMS. LOAD CASTS PRESENT...RIGHT WAY UP. |
| 51 | 120.60 | 120.90 | 0.30 | 73 | | | SILTSTONE | M.GY.LAM.VBRKN MINOR SS LAMS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------|
| 51 | 120.90 | 121.34 | 0.44 | *75 | | | SILTSTONE | M.GY.LAM.BRKN MINOR SS LAMS. SHEARED IN ONE PLACE. |
| 52 | 121.34 | 122.46 | 1.12 | *80 | | | SILTSTONE | M.GY.LAM.WRMBU.BRKN 1.0 TO 2.0 CM FINING UP SEQUENCES (VFG SS TO MUDST). RIGHT WAY UP. |
| 52 | 122.46 | 123.30 | 0.84 | 76 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN INTERLAMINATED SLTST AND MUDST. |
| 53 | 123.30 | 123.54 | 0.24 | *74 | | | MUDSTONE | SLTY.DK.GY.LAM.BRKN SLTST LAMS...WITH SOME 1 CM FINING UPWARD SEQUENCES. |
| 53 | 123.54 | 123.71 | 0.17 | 76 | | | MUDSTONE | DK.GY.MAS.BRKN |
| 53 | 123.71 | 124.17 | 0.46 | 80 | | | SILTSTONE | M-DK.GY.MAS.BRKN |
| 53 | 124.17 | 125.13 | 0.96 | *88 | | | SILTSTONE | CLVY.W-DK.GY.LAM.SSD.BRKN INTERLAMINATED MUDST AND SLTST WITH SOME SS. LOAD CASTS...RIGHT WAY UP. |
| 54 | 125.13 | 126.33 | 1.20 | *82 | | | SILTSTONE | M.GY.MAS.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 54 | 126.33 | 126.88 | 0.55 | 77 | | SILTSTONE | M.GY.MAS.BRKN |
| 55 | 126.88 | 127.76 | 0.88 | 73 | | SILTSTONE | M.GY.MAS.SSD.BRKN SOME MUD AND SAND NEAR STRAT BASE. LOAD CASTS (RWJ). |
| 55 | 127.76 | 128.12 | 0.36 | *70 | | SANDSTONE | SLTY.VFG.PR.M.GY.SSD.BRKN INTERBEDDED AND INTERLAMINATED SS/SLTST WITH INTENSE QTZ-FILLED FRACTURES. RIG HT WAY UP. |
| 55 | 128.12 | 128.84 | 0.72 | 70 | | SILTSTONE | M.GY.MAS.VBRKN INTENSE QTZ-FILLED FRACTURES...28 CM QT Z. VEIN WITH SLTST BRECCIA. |
| 56 | 128.84 | 129.20 | 0.36 | 70 | | SILTSTONE | M.GY.VBRKN THQ. QTZ-FILLED REGIONS. |
| 56 | 129.20 | 129.35 | 0.15 | 70 | ? | ROCK LOSS | |
| 56 | 129.35 | 129.50 | 0.15 | 70 | ? | MUDSTONE | CARB.BLK.PWRD INTERMIXED COAL, MUDST, AND SLTST FRAGM ENTS. POSSIBLE CORE LOSS ON BOTH SIDES OF MARKER. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 56 | 129.50 | 130.61 | 1.11 | 70 | | ROCK LOSS | |
| 56 | 130.61 | 131.95 | 1.34 | 70 | | SANDSTONE | FG.MOD.LT.GY.MAS.BRKN BRECCIATED (QTZ-FILLED) VFG TO FG SS. |
| 57 | 131.95 | 132.64 | 0.69 | 70 | | SANDSTONE | FG.MOD.LT.GY.THNB.BRKN BRECCIATED AT STRAT TOP WITH ASSOCIATED QTZ VEINING. MOD. QTZ-FILLED FRACTURES. VFG TO FG |
| 57 | 132.64 | 133.69 | 1.05 | *70 | | SANDSTONE | SLTY.VFG.MOD.LT.GY.MAS.SSD.BRKN MASSIVE SANDSTONE (85%) WITH SILTSTONE LAMS (15%). COMMON LOAD CASTS (RWJ), NO RM PELLETS, AND NORMAL FRACTURES. 5 CM QTZ-FILLED BRECCIA ZONE. |
| 57 | 133.69 | 133.89 | 0.20 | 69 | | SANDSTONE | VFG.MOD.LT.GY.MAS.SSD.BRKN LOAD CASTS (RWJ SOME SHOW OVTN) AND MIN OR SLTST LAMS. |
| 58 | 133.89 | 134.72 | 0.83 | 69 | | SANDSTONE | SLTY.VFG.WEL.LT-M.GY.LAM.SSD.BRKN INTERLAMINATED AND INTERBEDDED SLTST/SS (40/60) WITH BIOTRB, WORM PELLETS, LOA D CASTS, BALL/PILLOW STRUCTURES, AND RE VERSE FRACTURES. RIGHT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 58 | 134.72 | 135.02 | 0.30 | 69 | | | SILTSTONE | M.GY.MAS.SLD |
| 58 | 135.02 | 135.89 | 0.87 | *68 | | | SILTSTONE | SSY.LT-M.GY.LAM.SSD.BRKN INT-LAM SLTST/SS (60/40) WITH LOAD CAST S (RMU). |
| 59 | 135.89 | 136.06 | 0.17 | 67 | | | SANDSTONE | SLTY.VFG.MOD.LT.GY.MAS.WRMBU.SLD LAMINATED AT STRAT TOP. LOWER 10 CM REP S A FINING UPWARD SEQUENCE (VFG SS TO S LTST). |
| 59 | 136.06 | 136.57 | 0.51 | 67 | | | SANDSTONE | SLTY.FG.MOD.LT.GY.THNB.XBDG.BRKN MINOR SLTST LAMS THROUGHOUT, WITH ONE 9 CM SLTST BAND. LOAD CASTS (RMU) AND NO RMAL FRACTURES. |
| 59 | 136.57 | 136.68 | 0.11 | 66 | | | SILTSTONE | M.GY.VTHNB.SLD |
| 59 | 136.68 | 137.83 | 1.15 | *65 | | | SILTSTONE | M.GY.VTHNB.SSD.BRKN MINOR SS LAMS. 2 TO 3 CM FINING UPWARD SEQUENCES. LOAD CASTS (RMU) AND "HELMIN THOPSIS". |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 60 | 137.83 | 139.01 | 1.18 | *58 | | | SILTSTONE | M.GY.VTHNB.BRKN HELMINTHOPSIS, MINOR SS LAMS, AND 1 TO 3 CM FINING UPWARD SEQUENCES. |
| 60 | 139.01 | 139.76 | 0.75 | 59 | | | SILTSTONE | M.GY.MAS.BRKN LAMINATED AT STRAT TOP. HELMINTHOPSIS. |
| 61 | 139.76 | 140.62 | 0.86 | 59 | | | SILTSTONE | M-DK.GY.MAS.BRKN HELMINTHOPSIS. |
| 61 | 140.62 | 141.60 | 0.98 | *60 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN PYRITE BLEBS AND STRINGERS. WORM PELLET S...HELMINTHOPSIS? |
| 62 | 141.60 | 141.83 | 0.23 | 51 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN WORM PELLETS. |
| 62 | 141.83 | 143.08 | 1.25 | *40 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN PYRITE BLEBS AND WORM PELLETS OR HELMIN THOPSIS. |
| 62 | 143.08 | 143.33 | 0.25 | 31 | | | MUDSTONE | DK.GY.MAS.SHRD QUARTZ VEINING AT STRATIGRAPHIC BASE. |
| 63 | 143.33 | 144.82 | 1.49 | *20 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN PYRITE BLEBS AND WORM PELLETS OR HELMIN THOPSIS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 63 | 144.82 | 145.06 | 0.24 | 29 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN AS ABOVE. |
| 64 | 145.06 | 146.74 | 1.68 | *40 | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN LT-M. GY. SILTST BAND (16 CM THICK (BCA=28)). PYRITE BLEBS AND SCATTERED HELMINTH OPSIS. |
| 65 | 146.74 | 147.79 | 1.05 | *80 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN PYRITE BLEBS AND WORM PELLETS. |
| 65 | 147.79 | 147.85 | 0.06 | 72 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN |
| 65 | 147.85 | 148.29 | 0.44 | 69 | | SILTSTONE | M. GY. MAS. BRKN HELMINTHOPSIS-LIKE WORM PELLETS, PYRITE BLEBS. |
| 65 | 148.29 | 148.42 | 0.13 | 65 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN WORM PELLETS (A/A). |
| 65 | 148.42 | 148.67 | 0.25 | 62 | | SILTSTONE | M-DK. GY. MAS. BRKN MUDST LAMS, WISPY BEDDING, AND PYRITE BLEBS. |
| 65 | 148.67 | 148.73 | 0.06 | 60 | | MUDSTONE | SLTY. DK. GY. MAS. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 66 | 148.73 | 149.75 | 1.02 | 52 | | SILTSTONE | LT-M. GY. THNB. BRKN MUDST LAMS TOWARD STRAY BASE. 28 CM CAL CAREOUS BAND. MOD QTZ-FILLED FRACTURES. PYRITE BLEBS AND WORM PELLETS. |
| 66 | 149.75 | 150.51 | 0.76 | *40 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SILTST LAMS THROUGHOUT (ONE BAND = 12 CM THICK). WORM PELLETS AND PYRITE BLEBS AND LAMS. |
| 67 | 150.51 | 150.60 | 0.09 | 33 | | MUDSTONE | SLTY. DK. GY. MAS. SLD THRUSTED FRACTURE. WORM PELLETS. |
| 67 | 150.60 | 150.70 | 0.10 | *32 | | SILTSTONE | LT. GY. MAS. SLD INTENSE QUARTZ-FILLED FRACTURES. CALCAR FOUS. |
| 67 | 150.70 | 151.17 | 0.47 | *25 | | SILTSTONE | LT. GY. MAS. BRKN QTZ-FILLED 12 CM THICK BRECCIATED ZONE. CALCAREOUS. |
| 67 | 151.17 | 152.14 | 0.97 | 38 | | SILTSTONE | M. GY. MAS. VBRKN MINOR VERY THIN MUDST BEDS. 11 CM QTZ V EIN. WORM PELLETS (HELMINTHOPSIS-LIKE). |
| 67 | 152.14 | 152.29 | 0.15 | 48 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 68 | 152.29 | 152.39 | 0.10 | | 50 | | MUDSTONE | DK.GY.VSHRD VERY BROKEN...TALC POWDER. |
| 68 | 152.39 | 153.78 | 1.39 | *63 | | | SILTSTONE | M-DK.GY.VTHNB.BRKN LAM TO VERY THIN BEDDED WITH WORM PELLETS AND PYRITE BLEBS AND STRINGERS. |
| 68 | 153.78 | 153.99 | 0.21 | | 62 | | SILTSTONE | CLYY.M-DK.GY.VTHNB.BRKN WORM PELLETS. |
| 69 | 153.99 | 156.19 | 2.20 | *60 | | | MUDSTONE | SLTY.DK.GY.VTHNB.SSD.BRKN SILTY LAMS AND SOME MASSIVE REGIONS WITH 1 TO 2 CM FINING UPWARD SEQUENCES, LOAD CASTS, WORM PELLETS, AND SCOURS (RMU). |
| 70 | 156.19 | 157.02 | 0.83 | *58 | | | MUDSTONE | SLTY.DK.GY.VTHNB.BRKN VERY THIN BEDDED TO LAMINATED WITH A VERY SILTY 12 CM BAND, ABUNDANT WORM PELLETS, AND PYRITE BLEBS. |
| 70 | 157.02 | 158.10 | 1.08 | | 58 | | MUDSTONE | SLTY.DK.GY.MAS.SSD.BRKN SILTSTONE LAMS AND VERY THIN BEDS WITH LOAD CASTS, WORM PELLETS, AND PYRITE BLEBS AND MISPS. CORRECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 71 | 158.10 | 159.93 | 1.83 | *57 | | | MUDSTONE | SLTY.DK.GY.LAM.SSD.BRKN INTERLAMINATED SILTSTONE AND MUDST WITH LOAD CASTS, WORM PELLETS, AND PYRITE BLEBS. RIGHT WAY UP. |
| 71 | 159.93 | 160.05 | 0.12 | | 58 | | MUDSTONE | SLTY.DK.GY.MAS.SLD |
| 72 | 160.05 | 162.05 | 2.00 | *60 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SILTSTONE LAMS, WORM PELLETS, AND PYRITE BLEBS. |
| 73 | 162.05 | 162.61 | 0.56 | *54 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SAME A/A. |
| 73 | 162.61 | 163.51 | 0.90 | | 46 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN FINING UPWARD SEQUENCES (2 CM); SILTY TO MUDST. WORM PELLETS AND PYRITE BLEBS. |
| 73 | 163.51 | 163.96 | 0.45 | | 39 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN WORM PELLETS, PYRITE BLEBS, AND SILTY LAMS. |
| 74 | 163.96 | 165.22 | 1.26 | *30 | | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SAME AS ABOVE WITH ONE VERY BROKEN TO RUBBLED ZONE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 74 | 165.22 | 165.37 | 0.15 | 36 | | | ROCK LOSS | |
| 74 | 165.37 | 165.71 | 0.34 | 39 | | | SILTSTONE | LT. GY. MAS. SLD CALCAREOUS. SOME WORM PELLETS. |
| 74 | 165.71 | 165.88 | 0.17 | 41 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD SLTST LAMS. WORM PELLETS. |
| 75 | 165.88 | 166.58 | 0.70 | *45 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN TWO VERY THIN SLTST BEDS, WORM PELLETS, AND PYRITE BLEBS AND LAMS. |
| 75 | 166.58 | 167.94 | 1.36 | 47 | | | MUDSTONE | SLTY. DK. GY. MAS. SLD PYRITE BLEBS, WORM PELLETS, AND MINOR S LST LAMS. |
| 76 | 167.94 | 169.62 | 1.68 | *50 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN FAINT 2 CM FINING UPWARD SEQUENCES (RMU) WORM PELLETS. |
| 76 | 169.62 | 169.90 | 0.28 | 48 | | | MUDSTONE | DK. GY. MAS. BRKN PYRITE BLEBS AND WORM PELLETS. |
| 77 | 169.90 | 171.78 | 1.88 | *45 | | | MUDSTONE | DK. GY. MAS. BRKN PYRITE BLEBS AND WORM PELLETS. |
| 78 | 171.78 | 172.60 | 0.82 | *53 | | | MUDSTONE | DK. GY. MAS. BRKN AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 78 | 172.60 | 173.77 | 1.17 | 52 | | | MUDSTONE | DK. GY. MAS. BRKN PYRITIZED NODULES AND PYRITE TUBES (WORM BURROWS?). |
| 79 | 173.77 | 175.85 | 2.08 | 51 | | | MUDSTONE | DK. GY. MAS. BRKN PYRITIZED TUBES (A/A), PYRITIZED BIVALV ES. AND A SILICIFIED BELEMNITE. |
| 80 | 175.85 | 177.79 | 1.94 | 50 | | | MUDSTONE | DK. GY. MAS. BRKN VERY BROKEN IN PLACES... SOME LISTRIC SU RFACES. |
| 81 | 177.79 | 177.87 | 0.08 | 50 | | | MUDSTONE | DK. GY. MAS. SLD |
| 81 | 177.87 | 179.77 | 1.90 | 49 | | | MUDSTONE | DK. GY. MAS. BRKN PYRITIZED BIVALVES. |
| 82 | 179.77 | 180.93 | 1.16 | 48 | | | MUDSTONE | DK. GY. MAS. BRKN A 28 CM ZONE OF QTZ FILLED FRACTURES (M UD BRECCIA IN FRACTURES). |
| 82 | 180.93 | 181.08 | 0.15 | 48 | | | ROCK LOSS | |
| 82 | 181.08 | 181.88 | 0.80 | 47 | | | MUDSTONE | DK. GY. MAS. VBRKN PYRITIZED BIVALVES. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 83 | 181.88 | 183.78 | 1.90 | 46 | | MUDSTONE | DK.GY.MAS.BRKN VERY BROKEN REGIONS. BIVALVES. |
| 84 | 183.78 | 183.90 | 0.12 | 46 | | MUDSTONE | DK.GY.MAS.BRKN |
| 84 | 183.90 | 184.78 | 0.88 | 46 | | MUDSTONE | DK.GY.MAS.BRKN |
| 84 | 184.78 | 185.12 | 0.34 | 45 05861 | | SILTSTONE | CLYY.DK.GY.MAS.BRKN ABUNDANT PYRITE BLEBS,WISPS, AND LAMS AND COMMON PYRITIZED BIVALVES (BUCHIA & STAFFINELLA), SILICIFIED TUBES AS WELL? ? LOWER 25 CM SAMPLED. |
| 84 | 185.12 | 185.24 | 0.12 | *45 05862 K | | COAL | C-6.BLK.BRKN PYRITE SPECKS. |
| 84 | 185.24 | 185.68 | 0.44 | 46 05862 K | | COAL LOSS | |
| 84 | 185.68 | 185.73 | 0.05 | 47 05862 K | | MUDSTONE | CARB.BLK.MAS.SLD PYRITE BLEBS. |
| 84 | 185.73 | 185.90 | 0.17 | 48 05862 K | | COAL | C-3.BLK.BRKN PYRITE SPECKS. |
| 84 | 185.90 | 185.94 | 0.04 | 49 05862 K | | COAL LOSS | |
| 84 | 185.94 | 185.98 | 0.04 | 49 05862 K | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| 84 | 185.98 | 186.01 | 0.03 | 49 05862 K | | MUDSTONE | CARB.BLK.SLD AS ABOVE. |
| 84 | 186.01 | 186.05 | 0.04 | 49 05862 K | | COAL | C-3.BLK.VBRKN AS ABOVE. |
| 84 | 186.05 | 186.54 | 0.49 | 50 05862 K | | COAL LOSS | |
| 85 | 186.54 | 186.77 | 0.23 | 52 05862 K | | ROCK LOSS | |
| 85 | 186.77 | 186.91 | 0.14 | 53 05862 K | | MUDSTONE | PYR.M.GY.VBRKN DENSE ACCUMULATION OF DISSEMINATED PYRITE, MOD ANKERITE VEINING, MINOR COALY BANDS AND POLISHED SLIPPAGE SURFACES. |
| 85 | 186.91 | 187.06 | 0.15 | 54 05862 K | | COAL | C-5.BLK.BRKN MUD BANDS UP TO 5 MM WIDE. PYRITE BLEBS CRUSHED LOWER CONTACT. |
| 85 | 187.06 | 187.15 | 0.09 | 54 05862 K | | COAL | C-3.BLK.BRKN CONTORTED MIXTURE OF C-3, DISSEM PYRITE AND BANDS OF LESSER GRADES OF COAL AND MUDSTONE. OCC QTZ/ANK VEINING. |
| 85 | 187.15 | 187.19 | 0.04 | 54 05862 K | | ROCK LOSS | |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------|
| 85 | 187.19 | 187.20 | 0.01 | 55 | 05862 K | MUDSTONE | CARB. BLK. VBRKN |
| 85 | 187.20 | 187.30 | 0.10 | 55 | 05862 K | COAL | C-5. BLK. BRKN BANDS OF C-3 AND C-4. MUCH DISSEM. PYRITE AND MINOR ANKERITE VEINS. |
| 85 | 187.30 | 187.34 | 0.04 | 55 | 05862 K | COAL | C-3. BLK. VBRKN |
| 85 | 187.34 | 187.40 | 0.06 | 55 | 05862 K | COAL | C-4. BLK. VBRKN DISSEMINATED PYRITE AND MOD ANKERITE VEINING. |
| 85 | 187.40 | 187.44 | 0.04 | 56 | 05862 K | MUDSTONE | CARB. BLK. BRKN QCC. BANDS OF C-3 AND C-5. |
| 85 | 187.44 | 187.47 | 0.03 | 56 | 05862 K | MUDSTONE | PYR. YEL. LAM. BRKN DENSE DISSEM. PYRITE. |
| 85 | 187.47 | 187.62 | 0.15 | 56 | 05862 K | COAL | C-4. BLK. VBRKN GOOD CLEAT. CRUSHED COAL WITH FINE ANKERITE VEINING THROUGHOUT. POSSIBLE CORE LOSS. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 85 | 187.62 | 187.72 | 0.10 | 57 | 05862 K | COAL | C-4. BLK. VSHRD BRECCIATED AND VSHRD WITH SOME MIXED MUD. UPPER 10 CM = COALY FAULT GOUGE RECONSOLIDATED WITH ANKERITE VEINING. MUD BANDS THROUGHOUT. SOME C-3 CHUNKS. POSSIBLE CORE LOSS. |
| 85 | 187.72 | 187.74 | 0.02 | 57 | 05862 K | MUDSTONE | PYR. YEL. LAM. SLD ALMOST SOLID PYRITE WITH FINE LAMINAE VISIBLE. |
| 85 | 187.74 | 187.78 | 0.04 | 57 | 05862 K | COAL | C-4. BLK. VSHRD ALMOST POWDERED. MUCH DISSEM. PYRITE. |
| 86 | 187.78 | 187.84 | 0.06 | 57 | 05862 K | MUDSTONE | CARB. BLK. MAS. VSHRD PROBABLY MUCH MIXED COAL. LITRIFIC SURFACES THROUGHOUT. |
| 86 | 187.84 | 187.93 | 0.09 | 58 | 05862 K | COAL | C-3. BLK. PHRD C-4 BANDS. |
| 86 | 187.93 | 187.95 | 0.02 | 58 | 05862 K | COAL | C-5. BLK. BRKN ABUNDANT PYRITE STRINGERS THROUGHOUT. |
| 86 | 187.95 | 188.02 | 0.07 | 58 | 05862 K | COAL | C-4. BLK. BRKN |
| 86 | 188.02 | 188.10 | 0.08 | 59 | 05862 K | COAL LOSS | |

* DENOTES MEASURED BCA

FORM
4001

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------|
| 86 | 188.10 | 188.18 | 0.08 | 59 | 05862 K | ROCK LOSS | |
| 86 | 188.18 | 188.19 | 0.01 | 59 | 05862 K | MUDSTONE | CARB. BLK. VSHRD ALMOST POWDERED. |
| 86 | 188.19 | 188.30 | 0.11 | 60 | 05862 K | COAL | C-4. BLK. VBRKN PHRD IN PLACES. |
| 86 | 188.30 | 188.32 | 0.02 | 60 | 05862 K | COAL | C-3. BLK |
| 86 | 188.32 | 188.44 | 0.12 | 60 | 05862 K | COAL | C-4. BLK. VBRKN PHRD IN PLACES WITH OCC BANDS OF C-3. |
| 86 | 188.44 | 188.48 | 0.04 | 61 | 05862 K | COAL | C-5. BLK. VSHRD |
| 86 | 188.48 | 188.61 | 0.13 | 61 | 05862 K | COAL | C-4. BLK. VSHRD ABUNDANT LISTRIC SURFACES AND BANDS OF C-3. PHRD IN SOME PLACES. SOME C-4 HAS GOOD CLEAT. |
| 86 | 188.61 | 188.63 | 0.02 | 61 | 05862 K | MUDSTONE | CARB. BLK. BRKN ABUNDANT COALY WISPS. |
| 86 | 188.63 | 188.65 | 0.02 | 61 | 05862 K | COAL | C-4. BLK. BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 86 | 188.65 | 188.69 | 0.04 | 62 | 05862 K | MUDSTONE | CARB. BLK. VBRKN ABUNDANT COALY WISPS UP TO 3 MM WIDE. |
| 86 | 188.69 | 188.72 | 0.03 | 62 | 05862 K | COAL | C-5. BLK. VBRKN |
| 86 | 188.72 | 189.15 | 0.43 | 63 | 05862 K | COAL LOSS | |
| 86 | 189.15 | 189.20 | 0.05 | 64 | 05863 | MUDSTONE | CARB. BLK. VBRKN ABUNDANT COAL WISPS. CRUSHED IN PLACES. |
| 86 | 189.20 | 189.40 | 0.20 | 65 | 05863 | ROCK LOSS | |
| 86 | 189.40 | 189.81 | 0.41 | 66 | 05863 | MUDSTONE | CARB. BLK. BRKN VERY CONTORTED MIXTURE OF COAL BANDS AND MUD. MOD QTZ/ANK VEINING NEAR BASE. L LISTRIC SURFACES IN PLACES. UPPER 20 CM SAMPLED. |
| 87 | 189.81 | 189.88 | 0.07 | 67 | | MUDSTONE | CARB. BLK. SLD ABUNDANT COALY LENSES. POSSIBLE CORE LO SS. AT INTERVAL BASE. |
| 87 | 189.88 | 190.19 | 0.31 | *68 | | MUDSTONE | SLTY. DK. GY. LAM. BRKN NO CONTACT WITH OVERLYING MUDSTONE... LO SS? |
| 87 | 190.19 | 190.38 | 0.19 | 68 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 87 | 190.38 | 191.54 | 1.16 | 69 | | | MUDSTONE | CARB. DK. GY. VBRKN VERY CONTORTED MIXTURE OF CARB MUDST AN D COAL LENSES & STRINGERS. MUCH QTZ/ANK VEINING THROUGHOUT. CRUMBLD IN PLACES . NUMEROUS LISTRIC SURFACES. |
| 87 | 191.54 | 191.79 | 0.25 | 69 | | | ROCK LOSS | |
| 88 | 191.79 | 192.31 | 0.52 | 70 | | | MUDSTONE | CARB. BLK. MAS. VBRKN QTZ FRACTURES AND COAL STRINGERS. |
| 88 | 192.31 | 192.56 | 0.25 | 70 | | | ROCK LOSS | |
| 88 | 192.56 | 192.87 | 0.31 | *70 | | | MUDSTONE | SLTY. DK. GY. MAS. BRKN SLTST LAMS. |
| 88 | 192.87 | 192.91 | 0.04 | 70 | | | MUDSTONE | CARB. DK. GY. BRKN |
| 88 | 192.91 | 193.15 | 0.24 | 70 | | | MUDSTONE | CARB. DK. GY. MAS. BRKN CALCAREOUS WITH QTZ-FILLED FRACTURES AN D COAL LAMS UP TO 1.0 CM THICK. |
| 88 | 193.15 | 193.40 | 0.25 | 70 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------|
| 88 | 193.40 | 193.75 | 0.35 | 70 | | | MUDSTONE | CARB. BLK. MAS. VBRKN COAL STRINGERS. |
| 88 | 193.75 | 194.00 | 0.25 | 70 | | | ROCK LOSS | |
| 88 | 194.00 | 194.28 | 0.28 | 70 | | | MUDSTONE | CARB. BLK. MAS. VBRKN COAL LAMS UP TO 4-5 MM. |
| 88 | 194.28 | 194.53 | 0.25 | 70 | | | ROCK LOSS | |
| 89 | 194.53 | 194.95 | 0.42 | 69 | | | MUDSTONE | CARB. BLK. MAS. BRKN COAL STRINGERS, LAMS, AND COALIFIED PLA NTS. CORE TWIST-OFF... POSSIBLE CORE LOS S. |
| 89 | 194.95 | 195.45 | 0.50 | 69 | | | ROCK LOSS | |
| 89 | 195.45 | 195.60 | 0.15 | 69 | | | SANDSTONE | MG. WEL. S-P. GY. VBRKN RUBBLE... POSSIBLE CORE LOSS. |
| 89 | 195.60 | 195.85 | 0.25 | 69 | | | ROCK LOSS | |
| 89 | 195.85 | 196.58 | 0.73 | 69 | | | MUDSTONE | CARB. BLK. MAS. BRKN COAL STRINGERS AND LAMS, WITH COALIFIED PLANT FOSSILS. ONE C-1 COAL BAND 4 CM THICK. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------|
| 89 | 196.58 | 197.08 | 0.50 | 69 | | MUDSTONE | DK.GY.MAS.BRKN PLANT FOSSILS. |
| 90 | 197.08 | 197.39 | 0.31 | 69 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN SLTST BAND 9 CM THICK AT STRATIGRAPHIC BASE. PYRITE BLEBS. |
| 90 | 197.39 | 199.09 | 1.70 | 68 | | MUDSTONE | SLTY.DK.GY.MAS.BRKN COAL STRINGERS AND LESS SILT AT STRAT B ASE. COAL IS QTZ COATED. SOME SLTST BLE BS. |
| 91 | 199.09 | 199.33 | 0.24 | 68 | | MUDSTONE | CARB.BLK.MAS.BRKN COALIFIED PLANTS VERY ABUNDANT. |
| 91 | 199.33 | 199.42 | 0.09 | 68 | | SILTSTONE | M.GY.MAS.SLD COAL STRINGERS. |
| 91 | 199.42 | 199.54 | 0.12 | 68 | | MUDSTONE | DK.GY.MAS.SLD ABUNDANT PLANTS. |
| 91 | 199.54 | 199.61 | 0.07 | 68 | | BENTONITE | M.GY.LAM.SHRD MUD LAMS AT STRAT BASE. |
| 91 | 199.61 | 199.73 | 0.12 | *68 | | MUDSTONE | M.GY.MAS.BRKN MUDST WITH LESSER INTERMIXED BENTONITE. |
| 91 | 199.73 | 199.79 | 0.06 | 68 | | MUDSTONE | DK.GY.BRKN NO BENTONITE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 91 | 199.79 | 200.05 | 0.26 | 67 | | MUDSTONE | CARB.BLK.MAS.BRKN PYRITE BLEBS. |
| 91 | 200.05 | 200.09 | 0.04 | 67 | | COAL | C-1.BLK.BRKN |
| 91 | 200.09 | 200.13 | 0.04 | 67 | | MUDSTONE | CARB.BLK.SLD |
| 91 | 200.13 | 200.17 | 0.04 | 67 | | COAL | C-1.BLK.SLD PYRITE TRACES. |
| 91 | 200.17 | 200.19 | 0.02 | 67 | | COAL | C-6.BLK.BRKN |
| 91 | 200.19 | 201.03 | 0.84 | 65 | | MUDSTONE | CARB.BLK.MAS.BRKN COAL STRINGERS AND ABUNDANT COALIFIED P LANT FOSSILS. UNIT BECOMES LESS CARB TO WARDS STRAT BASE. |
| 92 | 201.03 | 201.91 | 0.88 | 63 | | MUDSTONE | CARB.BLK.MAS.BRKN VERY CARB ZONE (15 CM THICK). BECOMES L ESS CARB TOWARDS STRAT BASE. |
| 92 | 201.91 | 203.08 | 1.17 | *60 | | SILTSTONE | M.GY.MAS.BRKN STILL SILTSTONE BUT 25 CM MUDDY ZONE. |
| 92 | 203.08 | 203.33 | 0.25 | 55 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 93 | 203.33 | 203.42 | 0.09 | 54 | | | MUDSTONE | SLTY. DK. GY. MAS. VBRKN SOME INTERMIXED COAL FRAGMENTS. |
| 93 | 203.42 | 204.15 | 0.73 | 51 | | | SILTSTONE | M. GY. LAM. SSD. SLD MINOR SS LAMS WITH COMMON LOAD CASTS (R NU). |
| 93 | 204.15 | 205.16 | 1.01 | *45 | | | SANDSTONE | SLTY. FG. PR. LT. GY. LAM. BRKN INTERLAMINATED AND INTERDEDEDDED SLTST/SS (15/85) WITH ONE 12 CM SLTST BAND. SS IS VFG TO FG. |
| 94 | 205.16 | 205.28 | 0.12 | 43 | | | SANDSTONE | SLTY. VFG. LT. GY. LAM. BRKN INTERMIXED AND INTERLAMINATED SLTST/SS. |
| 94 | 205.28 | 206.28 | 1.00 | *41 | | | SILTSTONE | SSY. M. GY. MAS. BIOTR. BRKN INTERMIXED SS (15%) / SLTST (85%) WITH ONE CALCAREOUS BAND 14 CM WIDE. |
| 94 | 206.28 | 206.57 | 0.29 | 41 | | | SANDSTONE | SLTY. FG. PR. LT. GY. MAS. BRKN SLTST LAMS. GRADATIONAL CONTACT WITH OV ERLYING SLTST. |
| 94 | 206.57 | 206.95 | 0.38 | 42 | | | MUDSTONE | DK. GY. MAS. BRKN MINOR SLTST LAMS. |
| 94 | 206.95 | 207.15 | 0.20 | 42 | | | SILTSTONE | LT-M. GY. MAS. BRKN CALCAREOUS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 95 | 207.15 | 207.46 | 0.31 | 42 | | | SILTSTONE | LT-M. GY. MAS. BRKN CALCAREOUS. |
| 95 | 207.46 | 207.71 | 0.25 | 42 | | | BRECCIA | MH. SLD QTZ VLEN WITH SILTSTONE BRECCIA. |
| 95 | 207.71 | 208.06 | 0.35 | 42 | | | MUDSTONE | CARB. DK. GY. MAS. VBRKN POLISHED SURFACES, COALIFIED PLANTS, CO AL LAMS AND STRINGERS. |
| 95 | 208.06 | 208.39 | 0.33 | 42 | ? | | MUDSTONE | CARB. DK. GY. MAS. VBRKN POLISHED SURFACES, COALIFIED PLANTS, CO AL LAMS AND STRINGERS. |
| 95 | 208.39 | 208.51 | 0.12 | 42 | ? | | MUDSTONE | M. BN. SHRD INTACT BUT SHEARED (BRECCIATED) WITH SO ME SLTST PIECES. |
| 95 | 208.51 | 208.60 | 0.09 | 42 | ? | | SILTSTONE | LT-M. GY. BRKN CALCAREOUS WITH ABUNDANT PYRITE AND QTZ -FILLED FRACTURES. |
| 95 | 208.60 | 209.10 | 0.50 | 43 | ? | | MUDSTONE | CARB. BLK. BRKN ABUNDANT COAL LAMS AND PLANTS WITH SOME LOCAL C-6 BANDING. HAIR-LINE QTZ-FILLE D FRACTURES VERY ABUNDANT IN CLEATS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------|
| 96 | 209.10 | 209.70 | 0.60 | 43 | ? | | MUDSTONE | CARB. DK. GY. MAS. BRKN ABUNDANT COAL LAMS, COALIFIED PLANTS, AND QTZ-FILLED CLEATS. |
| 96 | 209.70 | 210.42 | 0.72 | 43 | | | MUDSTONE | CARB. DK. GY. BRKN LESS CARB THAN PREVIOUS UNIT. |
| 96 | 210.42 | 210.92 | 0.50 | 44 | | | ROCK LOSS | |
| 96 | 210.92 | 211.44 | 0.52 | 44 | | | SILTSTONE | M. GY. MAS. BRKN CORE TWIST-OFF... POSSIBLE CORE LOSS. |
| 96 | 211.44 | 211.89 | 0.45 | 44 | | | ROCK LOSS | |
| 97 | 211.89 | 212.52 | 0.63 | 44 | | | SILTSTONE | M. GY. MAS. BRKN COAL STRINGERS AND QTZ-FILLED FRACTURES AT STRAT TOP. |
| 97 | 212.52 | 212.57 | 0.05 | 45 | | | SANDSTONE | MG. MOD. S-P. GY. BRKN POSSIBLE CORE LOSS. |
| 97 | 212.57 | 213.91 | 1.34 | *45 | | | SILTSTONE | M. GY. MAS. SLD CALCAREOUS BAND 26 CM THICK. |
| 98 | 213.91 | 215.64 | 1.73 | *65 | | | SILTSTONE | M. GY. MAS. BRKN CALCAREOUS BANDS 12 AND 23 CM THICK. |
| 98 | 215.64 | 215.81 | 0.17 | 67 | | | SILTSTONE | M. GY. MAS. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 99 | 215.81 | 215.92 | 0.11 | 67 | | | SILTSTONE | M. GY. MAS. SLD |
| 99 | 215.92 | 216.50 | 0.58 | *68 | | | MUDSTONE | SLTY. M-DK. GY. MAS. BRKN SLTST BLEBS. |
| 99 | 216.50 | 216.66 | 0.16 | 68 | | | SILTSTONE | LT-M. GY. MAS. BIOTR. SLD CALCAREOUS. |
| 99 | 216.66 | 216.90 | 0.24 | 67 | | | MUDSTONE | DK. GY. MAS. BRKN |
| 99 | 216.90 | 217.70 | 0.80 | 67 | | J | MUDSTONE | CARB. DK. GY. MAS. BRKN COAL LAMS AND COALIFIED PLANTS. |
| 100 | 217.70 | 217.82 | 0.12 | 66 | | J | MUDSTONE | CARB. DK. GY. MAS. SLD |
| 100 | 217.82 | 218.06 | 0.24 | 66 | | J | MUDSTONE | CARB. DK. GY. MAS. SLD |
| 100 | 218.06 | 218.30 | 0.24 | 66 | | | SILTSTONE | M. GY. THNB. BRKN CALCAREOUS THROUGHOUT WITH ONE LIGHT GR EY 10 CM THICK BAND. INTENSE QTZ VEININ G IN LOWER HALF. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 100 | 218.30 | 219.66 | 1.36 | *65 | | | SILTSTONE | M.GY.LAM.XBDG.BRKN MINOR SS LAMS AND VERY THIN BEDS WITH S MALL-SCALE FINING UP SEQUENCES (2 TO 7C M.). RIGHT WAY UP. |
| 101 | 219.66 | 219.90 | 0.24 | 65 | | | SILTSTONE | CLYY.M.GY.LAM.BRKN UNIT BECOMES MUDDIER TOWARDS STRAT.BASE |
| 101 | 219.90 | 221.34 | 1.44 | *65 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN VERY WELL LAMINATED WITH SLTST (RHYTHMI C...COASTER-LIKE). |
| 101 | 221.34 | 221.63 | 0.29 | 54 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN AS ABOVE. |
| 102 | 221.63 | 222.68 | 1.05 | *45 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN AS ABOVE. |
| 102 | 222.68 | 223.05 | 0.37 | 44 | | | SILTSTONE | SSY.M.GY.LAM.BRKN SS BAND (9 CM). |
| 102 | 223.05 | 223.38 | 0.33 | *43 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN MINOR FAULT OR SLUMP; BCAS CHANGE FROM 43 AT STRAT TOP TO 13, 7CM LOWER (ALMOS T IMMEDIATELY). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 103 | 223.38 | 223.74 | 0.36 | *45 | | | MUDSTONE | SLTY.M.GY.LAM.BRKN COASTER-LIKE AS PREVIOUSLY DESCRIBED BU T MORE SILTY. |
| 103 | 223.74 | 225.37 | 1.63 | 51 | | | SILTSTONE | M.GY.MAS.BRKN CALCAREOUS SLTST BLEBS AND BANDS. |
| 104 | 225.37 | 225.71 | 0.34 | *57 | | | SILTSTONE | M.GY.MAS.BRKN MOD QTZ-FILLED FRACTURES. |
| 104 | 225.71 | 225.86 | 0.15 | 57 | | | SANDSTONE | VFG.MOD.LT.GY.MAS.BRKN SLTST LAMS AND FRACTURES AS ABOVE. |
| 104 | 225.86 | 227.36 | 1.50 | 59 | | | BRECCIA | SSY.FG.MOD.LT.GY.BRKN BRECCIATED SLTST AND SS (MOSTLY SS) WIT H QTZ INFILLED FRACTURES AND BRECCIA ZO NES. |
| 105 | 227.36 | 227.91 | 0.55 | 61 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD BRECCIATED (QTZ-FILLED) WITH MINOR SLTS T LAMS AND A MINOR VERTICAL FAULT WITH 4 CM OF DISPLACEMENT. SS IS VFG TO FG. |
| 105 | 227.91 | 229.06 | 1.15 | *62 | | | SANDSTONE | SLTY.VFG.PR.LT-M.GY.LAM.XBDG.BRKN ARG SS (INTERMIXED SLTST AND SAND 50/50) WITH SOME BRECCIATED REGIONS. RMU. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------|
| 105 | 229.06 | 229.39 | 0.33 | 65 | | | SILTSTONE | SSY.M.GY.MAS.BRKN BRECCIATED CLASTS THROUGHOUT (VFG SAND TO SILT). |
| 106 | 229.39 | 231.37 | 1.98 | *70 | | | SILTSTONE | SSY.M.GY.LAM.BRKN INTERMIXED AND INTERLAMINATED SLTST/SS. |
| 107 | 231.37 | 231.95 | 0.58 | 79 | | | SILTSTONE | SSY.M.GY.LAM.BRKN |
| 107 | 231.95 | 232.08 | 0.13 | 81 | | | SANDSTONE | SLTY.VFG.PR.LY.GY.LAM.SLD ARG SS WITH SLTY LAMS. |
| 107 | 232.08 | 232.51 | 0.43 | *83 | | | SANDSTONE | FG.MOD.LY.GY.LAM.BRKN VFG TO FG SS WITH SLTST LAMS. FRACTURED PARALLEL TO CORE (QTZ-FILLED). |
| 107 | 232.51 | 233.24 | 0.73 | 80 | | | SILTSTONE | M.GY.MAS.BRKN |
| 108 | 233.24 | 233.32 | 0.08 | 79 | | | SILTSTONE | M.GY.MAS.BRKN |
| 108 | 233.32 | 234.88 | 1.56 | *75 | | | MUDSTONE | DK.GY.LAM.BRKN BRECCIATED IN PLACES AND BECOMING COAST ER-LIKE IN LOWER HALF. SILTY IN UPPER HALF. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|----------|---------|-----------|-----------------------------------------------------------------------------------------|
| 108 | 234.88 | 235.17 | 0.29 | 77 | | | MUDSTONE | DK.GY.LAM.BRKN COASTER-LIKE BUT LESS SLTY THAN PREVIOUSLY DESCRIBED COASTER-LIKE ZONES. |
| 109 | 235.17 | 237.37 | 2.20 | *80 | | | MUDSTONE | DK.GY.LAM.BRKN AS ABOVE. |
| 110 | 237.37 | 237.44 | 0.07 | 77 | | | MUDSTONE | DK.GY.LAM.SLD AS ABOVE. |
| 110 | 237.44 | 237.89 | 0.45 | 76 | | | MUDSTONE | CARB.DK.GY.MAS.BRKN COALIFIED PLANTS, COAL STRINGERS AND LAMS. |
| 110 | 237.89 | 239.42 | 1.53 | 73 | | | MUDSTONE | CARB.BLK.MAS.BRKN AS ABOVE. |
| 111 | 239.42 | 240.34 | 0.92 | 70 | | | MUDSTONE | CARB.BLK.MAS.BRKN AS ABOVE WITH 2 CM. QTZ VEINS. |
| 111 | 240.34 | 241.29 | 0.95 | 67 | | | MUDSTONE | CARB.BLK.MAS.BRKN AS ABOVE W/OUT QTZ VEINS. VERY CARB. MIT H 3 TO 10 MM COAL LAMS. |
| 112 | 241.29 | 241.34 | 0.05 | 66.05865 | J | | COAL | C-4.BLK.BRKN BANDS OF C-3. LITRIC SURFACES AND MINOR ANKERITE VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------|
| 112 | 241.34 | 241.57 | 0.23 | 65 05865 | I | COAL LOSS | |
| 112 | 241.57 | 241.58 | 0.01 | 65 05865 | I | MUDSTONE | CARB. BLK. BRKN COALIFIED PLANT HASH. |
| 112 | 241.58 | 241.59 | 0.01 | 65 05865 | I | COAL | C-4. BLK. SLD |
| 112 | 241.59 | 241.62 | 0.03 | 65 05865 | I | MUDSTONE | CARB. BLK. BRKN LISTRIC SURFACES. COALY STRINGERS THROU GHOUT. |
| 112 | 241.62 | 241.68 | 0.06 | 65 05865 | I | COAL | C-4. BLK. VBRKN CONTORTED MIXTURE OF MUD BANDS AND C-4 COAL. |
| 112 | 241.68 | 241.79 | 0.11 | 65 05865 | I | COAL | C-6. BLK. BRKN LISTRIC SURFACES. |
| 112 | 241.79 | 241.81 | 0.02 | 64 05865 | I | COAL | C-4. BLK. BRKN MUD BANDS LESS THAN 5 MM. WIDE. |
| 112 | 241.81 | 241.98 | 0.17 | 64 05865 | I | COAL | C-6. BLK. BRKN VERY CONTORTED MIXTURE OF C-6, C-5 COAL AND MUDSTONE. MOD QTZ/ANK VEINING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------|
| 112 | 241.98 | 241.99 | 0.01 | 64 05865 | I | MUDSTONE | CARB. BLK. BRKN |
| 112 | 241.99 | 242.06 | 0.07 | 64 05865 | I | COAL LOSS | |
| 112 | 242.06 | 242.17 | 0.11 | 64 05865 | I | COAL | C-3. BLK. SLD |
| 112 | 242.17 | 242.24 | 0.07 | 63 05865 | I | COAL | C-5. BLK. VBRKN MUDST BANDS, C-6 STRINGERS, AND MINOR A NKERITE VEINS. |
| 112 | 242.24 | 242.31 | 0.07 | 63 05865 | I | COAL | C-3. BLK. VBRKN SHEAR AND LISTRIC SURFACES. |
| 112 | 242.31 | 242.65 | 0.34 | 62 05865 | I | COAL | C-3. BLK. VBRKN C-2 COAL BANDS NEAR TOP OF INTERVAL. CR USHED IN PLACES. |
| 112 | 242.65 | 242.80 | 0.15 | 62 05865 | I | COAL LOSS | |
| 112 | 242.80 | 242.86 | 0.06 | 62 05865 | I | MUDSTONE | CARB. BLK. VSHRD POORLY CONSOL WITH LISTRIC SURFACES THR OUGHOUT. WAXY TEXTURE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------|
| 112 | 242.86 | 243.02 | 0.16 | 61 | 05865 | I | COAL | C-4.BLK.PMRD CRUSHED CORE (POSSIBLE CORE LOSS), BECOMING SLIGHTLY MORE CONSOL NEAR BASE. OCC BANDS OF C-5. |
| 113 | 243.02 | 243.23 | 0.21 | 61 | 05865 | I | COAL | C-4.BLK.VBRKN CRUSHED AT TOP OF BOX. |
| 113 | 243.23 | 243.32 | 0.09 | 60 | 05865 | I | COAL LOSS | |
| 113 | 243.32 | 243.39 | 0.07 | 60 | 05865 | I | MUDSTONE | CARB.BLK.BRKN BANDS OF C-5 UP TO 1-3 MM WIDE. |
| 113 | 243.39 | 243.44 | 0.05 | 60 | 05865 | I | COAL | C-3.BLK.SLD |
| 113 | 243.44 | 243.49 | 0.05 | 60 | 05865 | I | MUDSTONE | CARB.BLK.BRKN |
| 113 | 243.49 | 243.53 | 0.04 | 60 | 05865 | I | COAL | C-4.BLK.BRKN CRUSHED AT BASE OF INTERVAL. |
| 113 | 243.53 | 243.56 | 0.03 | 59 | 05865 | I | MUDSTONE | CARB.BLK.BRKN |
| 113 | 243.56 | 243.59 | 0.03 | 59 | 05865 | I | COAL | C-4.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------|
| 113 | 243.59 | 243.83 | 0.24 | 59 | 05865 | I | COAL | C-3.BLK.VBRKN CRUSHED AND POWDERED IN PLACES. GOOD CL EAT. |
| 113 | 243.83 | 243.85 | 0.02 | 59 | 05865 | I | MUDSTONE | CARB.BLK.VBRKN FRIABLE. |
| 113 | 243.85 | 243.89 | 0.04 | 59 | 05865 | I | COAL | C-4.BLK.VBRKN ALMOST POWDERED. EXTREMELY CRUMBLY. |
| 113 | 243.89 | 243.92 | 0.03 | 58 | 05865 | I | COAL | C-3.BLK.BRKN |
| 113 | 243.92 | 243.98 | 0.06 | 58 | 05865 | I | COAL | C-4.BLK.VBRKN |
| 113 | 243.98 | 244.05 | 0.07 | 58 | 05865 | I | COAL | C-3.BLK.PMRD OCC BANDS AND LARGE CHUNKS OF C-2. |
| 113 | 244.05 | 244.07 | 0.02 | 58 | 05865 | I | MUDSTONE | CARB.BLK.BRKN MOD CONSOL...SOFT AND FRIABLE. |
| 113 | 244.07 | 244.18 | 0.11 | 58 | 05865 | I | COAL | C-3.BLK.BRKN |
| 113 | 244.18 | 244.57 | 0.39 | 57 | 05865 | I | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------|
| 113 | 244.57 | 244.67 | 0.10 | 56 | 05866 | MUDSTONE | CARB. DK. GY. YBRKN OCC COALY WISPS AND STRINGERS. SOFT WAXY TEXTURE. |
| 114 | 244.67 | 244.88 | 0.21 | 56 | | MUDSTONE | CARB. BLK. MAS. BRKN COALIFIED PLANTS. |
| 114 | 244.88 | 245.25 | 0.37 | 55 | | MUDSTONE | SLTY. DK. GY. MAS. BRKN COALIFIED PLANTS... FOSSILS INCLUDE NILS SONIA CANADENSIS. |
| 114 | 245.25 | 246.05 | 0.80 | 54 | | SILTSTONE | DK. GY. MAS. BIOTR. BRKN MINOR SS LAMS. COALIFIED PLANTS. |
| 114 | 246.05 | 246.62 | 0.57 | 52 | | SILTSTONE | SSY. M. GY. LAM. BIOTR. BRKN INTERLAMINATED AND MIXED SLTST/SS WITH ONE 6 CM SS BAND. |
| 115 | 246.62 | 246.82 | 0.20 | 51 | | SANDSTONE | FG. MOD. S-P. GY. MAS. SLD MOD QTZ VEINING. |
| 115 | 246.82 | 247.12 | 0.30 | 50 | | SANDSTONE | SLTY. FG. PR. LT. M. GY. MAS. BIOTR. YBRKN ARGILLACEOUS SS. |
| 115 | 247.12 | 248.13 | 1.01 | *48 | | SANDSTONE | FG. MOD. S-P. GY. MAS. BRKN ANGULAR SLTST RIP-UP CLASTS NEAR STRAT TOP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87030

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 115 | 248.13 | 248.53 | 0.40 | 59 | | SANDSTONE | FG. MOD. S-P. GY. MAS. BRKN SLTST RIP-UP CLASTS (1 TO 2 CM). |
| 116 | 248.53 | 249.23 | 0.70 | 67 | | SANDSTONE | FG. MOD. S-P. GY. MAS. BRKN |
| 116 | 249.23 | 249.81 | 0.58 | *77 | | SANDSTONE | FG. MOD. S-P. GY. MAS. SLD FINE TO MEDIUM GRAINED SANDSTONE. |
| 116 | 249.81 | 250.10 | 0.29 | 77 | | SANDSTONE | CLYY. FG. PR. LT. GY. MAS. BRKN ARGILLACEOUS SS BECOMING VERY ARGILLACEOUS TOWARD STRAT BASE. RIP-UP CLAST HORIZON AT STRAT TOP (12 CM). END OF HOLE. ..DRILLER'S TD = 252.07M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87030 SEAM : ? INTERVAL(M) : 75.25 - 75.73 ELEVATION(M) : 1376.5
 GEOLOGIST : PARRY SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. <small>1 2 3 4 5 6</small> | DRILL DEPTH <small>METRES</small> | COAL SEAM LOG | INTERVAL <small>METRES</small> | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | | | |
|------------------------------------------|--------------------------------------|---------------|-----------------------------------|-------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|------|----------------|--|--|--|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | | | | |
| | 75.25 | ↑ | | 0.46 | 97.8 | 5855 | 141 | 0.47 / 0.00 | | | | | | | | | | | |
| | 75.73 | ↓ | | (CAL) | | | ↓ | 0.47 | | 1.20 | 22.13 | 7.34 | 69.33 | 5.62 | 26.42 | | | | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87030

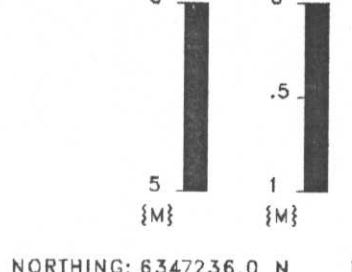
740

GEOLOGIST : PARRY

DATE : MAR 08/88

DRAWING NO. :

SCALE : 1:200 1:40



NORTHING: 6347236.0 N
 EASTING: 508236.4 E

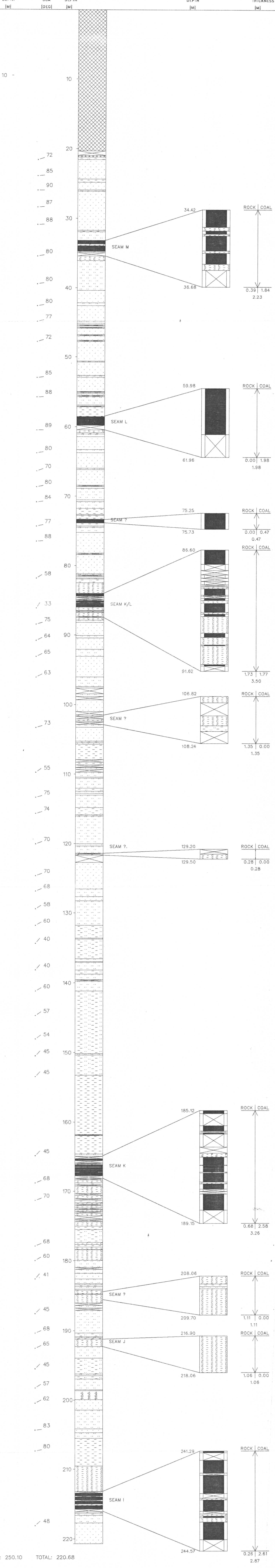
INCLINATION: 90.0°

LITHOLOGIC SYMBOLS

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL

DRILLED DEPTH [m] BCA [DEG] TRUE DEPTH [m] 1:200 DRILLED DEPTH [m] 1:40 TRUE THICKNESS [m]



TOTAL: 250.10 TOTAL: 220.68

Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87030**

Province: BC Northing: 6347240.00 Lat: 571612

Log Date: 45-09-13

Zone: 9 Easting: 508236.00 Long: 1285148

Company: CENTURY

Measuring Point: GROUND LEVEL Elevation: 1376.5

Geologist: PARRY

Scale: 1 to 200.0

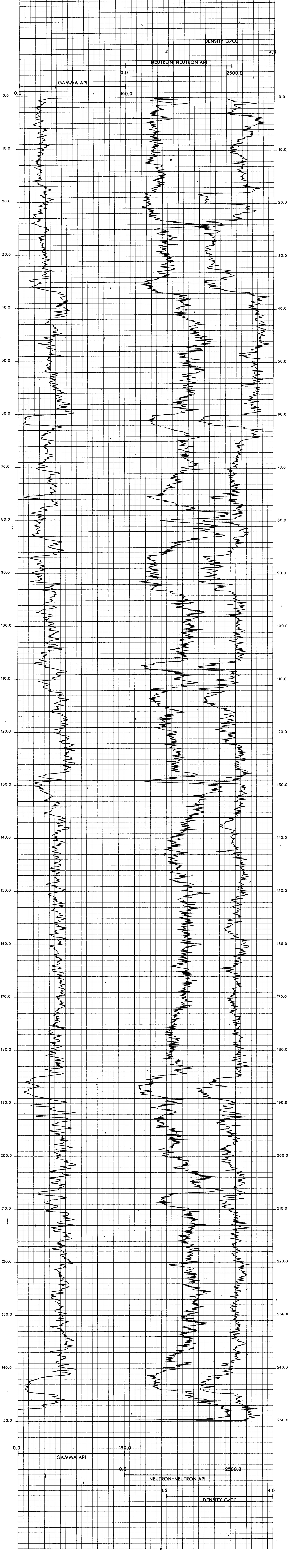
Comments:

1. LOGGED THROUGH RODS.
- 2.

Depth Range: 0.0 to 254.0

True Thickness: NO

| Logs Plotted: | Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|---------------|---------------------|---------------|-------------|------------------|-------|----------|
| 1. | GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | I/N PIPE |
| 2. | NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | I/N PIPE |
| 3. | DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | I/N PIPE |



KPNLRDDH87031

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87031

DATE - 03/01/88

- HISTORY -

START DATE - 10/08/87

END DATE - 10/12/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEE

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS M, L, ?, ?, K/L (PART), L (REP),
K/L (REP), K. SITE X.

- LOCATION -

PROVINCE - BC

ELEVATION - 1393.83

LICENCE/LEASE NUMBER -

ZONE - 9

NORTHING - 6346975.89

EASTING - 508782.51

LATITUDE - 571603

LONGITUDE - 1285116

- ORIENTATION -

LENGTH - 205.24

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 15.85

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 15.85 | 15.85 | 38 | | | CASING | CASING DEPTH |
| 1 | 15.85 | 16.10 | 0.25 | 38 | | | OVERBURDEN | M-DK.GY MUD, POORLY CONSOLIDATED, V SOFT |
| 1 | 16.10 | 16.70 | 0.60 | 38 | | | ROCK LOSS | |
| 1 | 16.70 | 16.77 | 0.07 | 38 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN SLTY LAMS, TWIST OFF AT TOP |
| 1 | 16.77 | 17.65 | 0.88 | 38 | | | OVERBURDEN | M.GY.BRKN TILL, MOD CONSOLIDATED MUD W/ ANGULAR P EBBLES (GRANULAR SIZE TO 2X5 CM PEBBLE) SOME PEBBLES ARE WEATHERED (FE STAINED) |
| 1 | 17.65 | 18.00 | 0.35 | 38 | | | OVERBURDEN | M.GY.VBRKN AS ABOVE |
| 1 | 18.00 | 18.30 | 0.30 | 38 | | | ROCK LOSS | |
| 1 | 18.30 | 18.72 | 0.42 | 38 | | | OVERBURDEN | M.GY.VBRKN TILL, POORLY CONSOLIDATED MUD WITH OCCA SIONAL PEBBLE (UP TO .75CM LONG) |
| 2 | 18.72 | 19.34 | 0.62 | 38 | | | SANDSTONE | SLTY.VFG.M.GY.BRKN BRECCIATED BY CLAY FILLED FRACTURES, MO RE FRACTURE TOWARDS BASE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| 2 | 19.34 | 20.13 | 0.79 | 38 | | | SILTSTONE | M.GY.VTHNB.VBRKN OCCASIONAL VFG SS BEDS, BECOMES VFG SS AT BASE, PROBABLE CORE LOSS, ZONE OF 1CM QTZ SHARDS |
| 2 | 20.13 | 20.58 | 0.45 | 38 | | | ROCK LOSS | |
| 2 | 20.58 | 20.69 | 0.11 | 38 | | | SANDSTONE | VFG.M.GY.VBRKN |
| 2 | 20.69 | 21.04 | 0.35 | 38 | | | ROCK LOSS | |
| 3 | 21.04 | 21.39 | 0.35 | *38 | | | SILTSTONE | M-DK.GY.LAM.VBRKN VFG SS LAMS, OCCASIONAL FRACTURING (ESP TOWARDS BASE), OCCASIONAL QTZ FILL AT BASE |
| 3 | 21.39 | 21.60 | 0.21 | 40 | | | SANDSTONE | FG.M.GY.SLD WITH SLTST RIP-UPS, OCCASIONAL CLAY FIL LED FRACTURES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 21.60 | 22.48 | 0.88 | | 43 | | SANDSTONE | FG.M.GY.VTHNB.BRKN OCCASIONAL SILTY WISPS, OCCASIONAL QTZ FILLED FRACTURES |
| 3 | 22.48 | 23.10 | 0.62 | | 48 | | SANDSTONE | FG.M.GY.BRKN SLTST RIP-UPS (UP TO 2.5CM LONG) AND DISCONTINUOUS LAMS |
| 4 | 23.10 | 23.24 | 0.14 | | 51 | | SANDSTONE | FG.M.GY.SLD NUMEROUS SLTST RIP-UPS (UP TO 1.25X2.5CM) (ALMOST CLAST SUPPORTED) |
| 4 | 23.24 | 23.99 | 0.75 | * | 54 | | SANDSTONE | FG.LT-M.GY.SLD CLAY FILLED FRACTURES, OCCASIONAL SLTY WISPS, RARE SLTST RIP-UPS. |
| 4 | 23.99 | 24.77 | 0.78 | | 63 | | SANDSTONE | FG.LT-M.GY.VBRKN NUMEROUS CLAY FILLED FRACTURES, OCCASIONAL 1 CM QTZ VEINS, POSSIBLE CORE LOSS, MOD CONSOLIDATED (ESP TOWARDS THE BASE) |
| 5 | 24.77 | 24.92 | 0.15 | | 69 | | SILTSTONE | SSY.M-DK.GY.VBRKN RUBBLE AT BASE |
| 5 | 24.92 | 24.98 | 0.06 | | 70 | | SANDSTONE | FG.LT-M.GY.SLD MOD CONSOLIDATED, SOME FRACTURES |
| 5 | 24.98 | 25.03 | 0.05 | | 71 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------|
| 5 | 25.03 | 25.30 | 0.27 | | 73 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS, OCCASIONAL CLAY FILLED FRACTURES, THIST OFF AT TOP |
| 5 | 25.30 | 25.49 | 0.19 | | 75 | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN M/ SLTST LAMS, AS ABOVE. |
| 5 | 25.49 | 25.79 | 0.30 | | 78 | | ROCK LOSS | |
| 5 | 25.79 | 26.43 | 0.64 | * | 84 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS & V THIN BEDS, OCCASIONAL FRACTURES (ESP TOWARDS BASE) |
| 5 | 26.43 | 26.58 | 0.15 | | 83 | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE, HIGHLY FRACTURED |
| 5 | 26.58 | 26.91 | 0.33 | | 83 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS |
| 6 | 26.91 | 27.48 | 0.57 | | 82 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN OCCASIONAL SLTST VTHNBDS & WISPS, OCCASIONAL CLAY FILLED FRACTURES |
| 6 | 27.48 | 27.78 | 0.30 | | 82 | | ROCK LOSS | |
| 6 | 27.78 | 27.87 | 0.09 | | 81 | | SANDSTONE | FG.LT-M.GY.VBRKN .5CM QTZ VEIN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 6 | 27.87 | 28.09 | 0.22 | *81 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD SLTST LAMS, 9CM FROM TOP IS A ZONE OF SMALL SCALE FAULTING (DISPLACEMENT < 0.5 CM) |
| 6 | 28.09 | 28.19 | 0.10 | 80 | | SANDSTONE | FG.LT-M.GY.VBRKN OCCASIONAL QTZ FILLED FRACTURES, OCCASIONAL SHEAR SURFACE |
| 6 | 28.19 | 28.33 | 0.14 | 79 | | SANDSTONE | FG.LT-M.GY.SLD SLTST LAMS |
| 6 | 28.33 | 28.45 | 0.12 | 78 | | SILTSTONE | M-DK.GY.LAM.BRKN VFG SS LAMS NEAR TOP, OCCASIONAL SSD, OCCASIONAL QTZ VOID FILL |
| 6 | 28.45 | 28.56 | 0.11 | 77 | | SANDSTONE | VFG.LT-M.GY.LAM.SLD SLTST LAMS, MINOR XBDG (TOPS UP), RIPPLE MARKS |
| 6 | 28.56 | 28.60 | 0.04 | 76 | | SANDSTONE | VFG.LT-M.GY.VBRKN AS ABOVE |
| 6 | 28.60 | 28.85 | 0.25 | 75 | | ROCK LOSS | |
| 6 | 28.85 | 29.01 | 0.16 | 74 | | SANDSTONE | VFG.LT-M.GY.LAM.SSD.BRKN AS ABOVE, SOME SWIRLED UP BEDS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------|
| 6 | 29.01 | 29.14 | 0.13 | 73 | | SILTSTONE | M.GY.LAM.VBRKN VFG SS LAMS |
| 6 | 29.14 | 29.39 | 0.25 | 71 | | ROCK LOSS | |
| 6 | 29.39 | 29.51 | 0.12 | 70 | | SILTSTONE | M-DK.GY.LAM.BRKN MOD CONSOLIDATED, NUMEROUS CLY FILLED FRACTURES |
| 7 | 29.51 | 29.62 | 0.11 | *69 | | SILTSTONE | M-DK.GY.LAM.SLD MUDST LAMS |
| 7 | 29.62 | 30.45 | 0.83 | 68 05804 | | MUDSTONE | CARB.DK.GY.SLD MINOR COALY LENSES, PYRITE NEAR BASE, LOWER 25 CM SAMPLED |
| 7 | 30.45 | 30.50 | 0.05 | 68 05805 M | | COAL | C-4.BLK.BRKN |
| 7 | 30.50 | 30.75 | 0.25 | 68 05805 M | | COAL | C-2.BLK.PMRD |
| 7 | 30.75 | 31.33 | 0.58 | 67 05805 M | | COAL LOSS | |
| 7 | 31.33 | 31.39 | 0.06 | 67 05805 M | | MUDSTONE | CARB.DK.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------|
| 7 | 31.39 | 31.46 | 0.07 | 67 | 05805 M | COAL | C-3.BLK.PHRD |
| 7 | 31.46 | 31.52 | 0.06 | 67 | 05805 M | COAL | C-5.BLK.BRKN THIN MUDST BANDS WITHIN |
| 7 | 31.52 | 31.70 | 0.18 | 67 | 05805 M | COAL | C-3.BLK.SHRD SHRD & PHRD |
| 7 | 31.70 | 31.88 | 0.18 | 67 | 05805 M | COAL LOSS | BLK |
| 7 | 31.88 | 32.01 | 0.13 | 66 | 05805 M | COAL | C-4.BLK.VBRKN |
| 7 | 32.01 | 32.05 | 0.04 | 66 | 05805 M | COAL | C-5.BLK.SLD |
| 8 | 32.05 | 32.13 | 0.08 | 66 | 05805 M | COAL | C-3.BLK.VBRKN |
| 8 | 32.13 | 32.14 | 0.01 | 66 | 05805 M | COAL | C-6.BLK.SLD |
| 8 | 32.14 | 32.36 | 0.22 | 66 | 05805 M | COAL | C-3.BLK.VBRKN WEATHERED |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------|
| 8 | 32.36 | 32.38 | 0.02 | 66 | 05805 M | COAL | C-4.BLK.BRKN |
| 8 | 32.38 | 32.40 | 0.02 | 66 | 05805 M | COAL | C-2.BLK.SLD |
| 8 | 32.40 | 32.43 | 0.03 | 66 | 05805 M | COAL | C-6.BLK.SLD |
| 8 | 32.43 | 32.49 | 0.06 | 66 | 05805 M | COAL | C-4.BLK.VBRKN |
| 8 | 32.49 | 32.63 | 0.14 | 66 | 05805 M | COAL | C-3.BLK.PHRD |
| 8 | 32.63 | 32.72 | 0.09 | 66 | 05805 M | COAL | C-5.BLK.VBRKN SHRD |
| 8 | 32.72 | 32.76 | 0.04 | 66 | 05806 | MUDSTONE | CARB.DK.GY.SLD COALLY STRINGERS |
| 8 | 32.76 | 32.97 | 0.21 | 65 | 05806 | SILTSTONE | M.GY.SLD ABUNDANT COALLY LENSES & STRINGERS |
| 8 | 32.97 | 33.67 | 0.70 | *65 | | SANDSTONE | FG.M.GY.SLD SILTY BANDS WITHIN |
| 9 | 33.67 | 33.73 | 0.06 | 69 | | SANDSTONE | FG.LT-M.GY.VBRKN SLTST WISPS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|--------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 9 | 33.73 | 33.78 | 0.05 | | 69 | | ROCK LOSS | |
| 9 | 33.78 | 34.03 | 0.25 | *71 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SSY SLTST. VTHBD & DISCONTINUOUS LAMS |
| 9 | 34.03 | 34.07 | 0.04 | | 70 | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE |
| 9 | 34.07 | 34.14 | 0.07 | | 69 | | ROCK LOSS | |
| 9 | 34.14 | 35.00 | 0.86 | *66 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN OCCASIONAL DISCONTINUOUS SLTST WISPS, OC CASIONAL FRACTURES |
| 9 | 35.00 | 35.63 | 0.63 | | 53 | | SANDSTONE | FG.LT-M.GY OCCASIONAL QTZ FILLED FRACTURES, BAND O F QTZ FRACTURE FILL AT .58M DOWN (2.5CM THICK) |
| 10 | 35.63 | 36.11 | 0.48 | | 44 | | SANDSTONE | FG.LT-M.GY.BRKN DISCONTINUOUS QTZ FILLED FRACTURE, 2CM CLAY BAND AT BASE, SILTY AT TOP |
| 10 | 36.11 | 36.35 | 0.24 | *38 | | | CONGLOMERATE | PBLY.VPR.M.GY.BRKN V SHARP CONTACT WITH ABOVE UNIT, PEBBLE S ARE UP TO 1.5 CM LONG, MATRIX IS FG-M G SS, 6CM BANDS OF PBLY SS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 10 | 36.35 | 36.42 | 0.07 | | 39 | | ROCK LOSS | |
| 10 | 36.42 | 36.88 | 0.46 | | 42 | | SANDSTONE | PBLY.MG.VPR.LT-M.GY.VBRKN CHERT & QTZ PEBBLES SCATTERED & IN BAND S PEBBLES ARE UP TO 1X1CM AND ARE SUB- ROUNDED |
| 10 | 36.88 | 37.01 | 0.13 | | 44 | | SANDSTONE | PBLY.MG.VPR.LT-M.GY.SLD AS ABOVE |
| 10 | 37.01 | 37.03 | 0.02 | | 45 | | SANDSTONE | PBLY.MG.VPR.LT-M.GY.VBRKN AS ABOVE |
| 10 | 37.03 | 37.05 | 0.02 | | 45 | | ROCK LOSS | |
| 10 | 37.05 | 37.40 | 0.35 | | 47 | | SANDSTONE | PBLY.MG.VPR.LT-M.GY.SLD AS ABOVE |
| 10 | 37.40 | 37.63 | 0.23 | | 49 | | SANDSTONE | PBLY.MG.VPR.LT-M.GY.VBRKN AS ABOVE |
| 10 | 37.63 | 37.73 | 0.10 | | 51 | | ROCK LOSS | |
| 11 | 37.73 | 38.01 | 0.28 | | 52 | | SANDSTONE | PBLY.FG.VPR.LT-M.GY.VBRKN MOSTLY RUBBLE |
| 11 | 38.01 | 38.13 | 0.12 | | 54 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 38.13 | 38.18 | 0.05 | 55 | | | SANDSTONE | PBLY. FG. VPR. LT-M. GY. VBRKN RUBBLE |
| 11 | 38.18 | 38.65 | 0.47 | *57 | | | SANDSTONE | PBLY. MG. VPR. LT-M. GY. BRKN NUMEROUS 'CHERT' PEBBLES (MAKE UP 70% OF ROCK). SIZE VARIES FROM GRANULAR TO .75 X 1.00CM. QTZ FRACTURE FILL. |
| 11 | 38.65 | 38.91 | 0.26 | 57 | | | SANDSTONE | FG. LT-M. GY. BRKN FG-MG SS. NUMEROUS FRACTURES (SOME QTZ FILLED), PEBBLE BAND NEAR BASE |
| 11 | 38.91 | 39.05 | 0.14 | 56 | | | SANDSTONE | PBLY. FG. LT-M. GY. VBRKN PEBBLES MAKE UP 35% OF ROCK, OCCASIONAL FRACTURES |
| 11 | 39.05 | 39.10 | 0.05 | 56 | | | ROCK LOSS | |
| 11 | 39.10 | 39.41 | 0.31 | 56 | | | SANDSTONE | PBLY. FG. LT-M. GY. BRKN AS ABOVE |
| 11 | 39.41 | 39.54 | 0.13 | 56 | | | SANDSTONE | PBLY. FG. LT-M. GY. VBRKN AS ABOVE |
| 11 | 39.54 | 39.64 | 0.10 | 56 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 39.64 | 40.25 | 0.61 | 55 | | | CONGLOMERATE | VPR. LT-M. GY. VBRKN PEBBLES MAKE UP 85% OF ROCK, CLAST SUPPORTED, PEBBLES ARE SUB-ROUNDED TO SUB-ANGULAR (AVG. SIZE = .75X.50CM), MATRIX IS FG SS |
| 12 | 40.25 | 40.69 | 0.44 | 55 | | | CONGLOMERATE | VPR. LT-M. GY. BRKN AS ABOVE |
| 12 | 40.69 | 41.35 | 0.66 | *54 | | | SANDSTONE | FG. LT-M. GY. BRKN OCCASIONAL QTZ FRACTURE FILL. SHARP CONTACT WITH ABOVE, OCCASIONAL ROUNDED SLT ST. RIP-UPS AT BASE (UP TO 1CM LONG) |
| 12 | 41.35 | 41.46 | 0.11 | 56 | | | SANDSTONE | FG. LT-M. GY. SLD BANDS OF SLTST RIP-UPS |
| 13 | 41.46 | 41.64 | 0.18 | 57 | | | SANDSTONE | FG. LT-M. GY. MAS. SLD QTZ FRACTURE FILL |
| 13 | 41.64 | 41.82 | 0.18 | 58 | | | SANDSTONE | FG. LT-M. GY. BRKN BANDS OF NUMEROUS SLTST RIP-UPS (.25 X 1.25 CM). |
| 13 | 41.82 | 42.13 | 0.31 | 59 | | | SANDSTONE | FG. LT-M. GY. BRKN FG-MG, OCCASIONAL QTZ FRACTURE FILL |
| 13 | 42.13 | 42.28 | 0.15 | 60 | | | SANDSTONE | FG. LT-M. GY. VBRKN QTZ VEINS (SOME WITH BRECCIA) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 42.28 | 42.35 | 0.07 | 61 | | | ROCK LOSS | |
| 13 | 42.35 | 42.69 | 0.34 | *62 | | | SILTSTONE | M.GY.LAM.BRKN SSY INTERLAMs, MINOR SSD, FRACTURED, SOME SHEAR SURFACES |
| 13 | 42.69 | 43.01 | 0.32 | 61 | | | SILTSTONE | SSY, M.GY.LAM.VBRKN LAM-VTHNB, QTZ FRACTURE FILL (SOME LIGHT GREEN IN COLOUR). |
| 13 | 43.01 | 43.18 | 0.17 | 60 | | | SANDSTONE | VFG.LT-M.GY.VTHNB.SLD SILTY WISPS, QTZ FRACTURE FILL |
| 14 | 43.18 | 43.32 | 0.14 | 60 | | | SILTSTONE | M.GY.LAM.VBRKN SSY LAMS, QTZ VEINS |
| 14 | 43.32 | 43.37 | 0.05 | 60 | | | ROCK LOSS | |
| 14 | 43.37 | 43.83 | 0.46 | *59 | | | SANDSTONE | VFG.LT-M.GY.LAM.BRKN SLTST LAMS, SILTIER DOWNWARDS, MINOR SSD, QTZ VEIN AT BASE |
| 14 | 43.83 | 43.95 | 0.12 | 59 | | | SANDSTONE | VFG.LT-M.GY.LAM.SLD SLTST LAMS, SLUMPED FEATURE .05M DOWN - > BLOCK HAS FALLEN PERPENDICULAR TO "IN PLACE" POSITION (BEDDING IS PERPENDICULAR TO BEDDING BELOW SLUMP BLOCK), SSD IN SLUMP BLOCK BEDS, .29M SAMPLED |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 14 | 43.95 | 44.22 | 0.27 | 59 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN INTERBEDDED WITH VFG SS, OCCASIONAL SLTST WISPS, BEDS SLIGHTLY DISTURBED AT TOP |
| 14 | 44.22 | 44.29 | 0.07 | 58 | | | SANDSTONE | FG.LT-M.GY.BRKN |
| 14 | 44.29 | 44.44 | 0.15 | 58 | | | SILTSTONE | M.GY.LAM.BRKN SSY LAMS, QTZ FRACTURE FILL AT BASE |
| 14 | 44.44 | 44.81 | 0.37 | *58 | | | SANDSTONE | FG.LT-M.GY.BRKN 3CM QTZ VEIN W/ BRECCIA AT TOP, OCCASIONAL SLTST WISPS AND LAMS. |
| 14 | 44.81 | 44.92 | 0.11 | 59 | | | SILTSTONE | M.GY.LAM.SSD.BRKN SSY LAMS |
| 14 | 44.92 | 45.04 | 0.12 | 59 | | | SANDSTONE | FG.LT-M.GY.SLD |
| 15 | 45.04 | 45.78 | 0.74 | *61 | | | SANDSTONE | SLTY.FG.LT-M.GY.SLD MINOR QTZ, THIN SLTST BANDS |
| 15 | 45.78 | 46.11 | 0.33 | 64 | 05807 | | MUDSTONE | CARB.DK.GY.SHRD LISTRIC SURFACES, LOWER 10CM SAMPLED |
| 15 | 46.11 | 46.17 | 0.06 | 65 | 05807 | | COAL | C-4.BLK.PHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------|
| 15 | 46.17 | 46.28 | 0.11 | 65 | | ROCK LOSS | |
| 15 | 46.28 | 46.33 | 0.05 | 66 | 05807 | MUDSTONE | SLTY.M-DK.GY.VBRKN |
| 15 | 46.33 | 46.37 | 0.04 | 66 | 05807 | MUDSTONE | SLTY.M.GY.BRKN |
| 15 | 46.37 | 47.31 | 0.94 | 68 | 05808 L | COAL LOSS | |
| 15 | 47.31 | 47.42 | 0.11 | 71 | 05808 L | COAL | C-2.BLK.PWRD |
| 15 | 47.42 | 47.60 | 0.18 | 72 | 05808 L | COAL | C-4.BLK.SHRD PWRD |
| 15 | 47.60 | 47.76 | 0.16 | 73 | 05808 L | COAL | C-3.BLK.PWRD |
| 16 | 47.76 | 47.88 | 0.12 | 73 | 05808 L | COAL | C-3.BLK.VBRKN PARTIALLY POWDERED |
| 16 | 47.88 | 47.91 | 0.03 | 74 | 05808 L | COAL | C-5.BLK.BRKN |
| 16 | 47.91 | 48.70 | 0.79 | *76 | 05809 | SILTSTONE | CLYY.M-DK.GY.LAM.BIOTR.SLD SSD, SLTST LAMS, UPPER 25CM SAMPLED |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 48.70 | 48.81 | 0.11 | 76 | | SILTSTONE | LT.GY.SLD RECRYSTALLIZED |
| 16 | 48.81 | 49.64 | 0.83 | 76 | | SANDSTONE | FG.M.GY.BIOTR.SLD MINOR SILTY LAMS, LISTRIC SURFACES |
| 16 | 49.64 | 49.69 | 0.05 | 76 | | COAL | C-3.BLK.VBRKN PIECES WITH MUDST BANDS, SHEARED |
| 16 | 49.69 | 49.72 | 0.03 | 76 | | COAL | C-3.BLK.VBRKN "COFFEE GROUND" TEXTURE |
| 16 | 49.72 | 49.79 | 0.07 | 76 | | COAL | C-3.BLK.VBRKN PIECES WITH MUDST BANDS, SHEARED |
| 16 | 49.79 | 50.18 | 0.39 | *76 | | SILTSTONE | DK.GY.LAM.BRKN MUDST LAMS, PLANT FRAGMENTS AT TOP, LISTRIC SURFACES, NUMEROUS BREAKS IN CORE |
| 16 | 50.18 | 50.54 | 0.36 | 75 | | SANDSTONE | VFG.M.GY.BIOTR.SLD SLTST LAMS, BEDS ARE DISTURBED, SOME SS D, OCCASIONAL PLANT FRAGMENTS, LISTRIC SURFACES, QTZ FRACTURE FILL |
| 16 | 50.54 | 50.79 | 0.25 | 74 | | SANDSTONE | VFG.M.GY.VBRKN BRKN TO VBRKN, AS ABOVE, NUMEROUS QTZ FILL FRACTURES, LESS SLTST TOWARDS BAS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 16 | 50.79 | 50.93 | 0.14 | 73 | | SANDSTONE | VFG.M.GY.BRKN DISCONTINUOUS SILTY BEDS, QTZ FILLED FRACTURES |
| 16 | 50.93 | 51.03 | 0.10 | 73 | | SILTSTONE | H.GY.VBRKN QTZ FRACTURE FILL, OCCASIONAL SSS LAMS, LISTRIC SURFACES |
| 16 | 51.03 | 51.18 | 0.15 | 72 | | SANDSTONE | VFG.M.GY.BIOTR.SLD DISTURBED BEDS, SOME SILTY BEDS, OCCASIONAL DISCONTINUOUS QTZ FILLED FRACTURES |
| 16 | 51.18 | 51.39 | 0.21 | 72 | | SANDSTONE | VFG.M.GY.VTHNB.SLD OCCASIONAL SILTY WISPS |
| 17 | 51.39 | 51.48 | 0.09 | 71 | | SANDSTONE | FG.LT-M.GY.SLD DISCONTINUOUS SLTST LAMS IN IRREGULAR PATTERN, BIVALVE (X-SECTION = 1.7 CM), QTZ FRACTURE FILL, LISTRIC SURFACES. |
| 17 | 51.48 | 52.02 | 0.54 | *70 | | SANDSTONE | FG.LT-M.GY.VTHNB.BIOTR.BRKN OCCASIONAL SLTST LAMS, QTZ FRACTURE FILL, BIOTRB ZONE, SOME SSD, LISTRIC SURFACES |
| 17 | 52.02 | 52.55 | 0.53 | *69 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST WISPS, QTZ FRACTURE FILL, SOME DISCONTINUOUS SLTST LAMS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 17 | 52.55 | 53.43 | 0.88 | 71 | | SANDSTONE | FG FG-VFG SS, NUMEROUS QTZ FRACTURE FILL, OCCASIONAL DISCONTINUOUS SLTST LAMS |
| 18 | 53.43 | 53.70 | 0.27 | 72 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD CLAY FILLED FRACTURE, DISCONTINUOUS SLTST LAMS |
| 18 | 53.70 | 54.03 | 0.33 | 73 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN SLTST LAMS, SSD-TOPS UP, OCCASIONAL FRACTURES |
| 18 | 54.03 | 54.43 | 0.40 | 74 | | SANDSTONE | FG.M-DK.GY.LAM.SSD.VBRKN BRKN-VBRKN, INTERLAM WITH SLTST, QTZ FRACTURE FILL |
| 18 | 54.43 | 54.84 | 0.41 | 75 | | SANDSTONE | FG.M-DK.GY.VTHNB.SSD.SLD SILTY BEDS & WISPS, QTZ FRACTURE FILL, SOME BED DISPLACEMENT |
| 18 | 54.84 | 55.08 | 0.24 | 76 | | SANDSTONE | FG.M-DK.GY.SLD SOME BRECCIA FORMED FROM CLAY & QTZ FILLED FRACTURES |
| 19 | 55.08 | 55.28 | 0.20 | 76 | | SANDSTONE | FG.M-DK.GY.VTHNB.VBRKN SLTST BEDS PRESENT, HIGHLY FRACTURED, NUMEROUS SHEARED SURFACES, SOME <.5CM BED DISPLACEMENTS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 55.28 | 55.68 | 0.40 | 77 | | | SANDSTONE | FG.LT-M.GY.LAM.VBRKN SLTST LAMS & BEDS, NUMEROUS SMALL SCALE FAULTS (<1CM DISPLACEMENTS) CLAY & QTZ FRACTURE FILL |
| 19 | 55.68 | 56.36 | 0.68 | 78 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE WITH MORE CLAY FILLED FRACTURE |
| 20 | 56.36 | 56.52 | 0.16 | 79 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN INTERBEDDED WITH SLTST, OCCASIONAL NORM AL FAULT WITH UP TO 1.5CM DISPLACEMENT |
| 20 | 56.52 | 56.82 | 0.30 | 80 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN SLTST LAMS, OCCASIONAL SMALL SCALE FAUL T, QTZ FRACTURE FILL AT BASE |
| 20 | 56.82 | 57.22 | 0.40 | 81 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN SLTST INTERBEDS, 1CM CLAY BAND (WHITE-L T GREY) AT TOP, ANOTHER CLAY BAND .16M DOWN, HIGHLY FRACTURED WITH CLAY & QTZ FILL |
| 20 | 57.22 | 57.64 | 0.42 | 82 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS, OCCASIONAL QTZ & CLAY FILLE D FRACTURES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------|
| 20 | 57.64 | 57.79 | 0.15 | 82 | | | SILTSTONE | SSY.DK.GY.VTHNB.VBRKN FRACTURED, OCCASIONAL FG SS LAM, NUMERO US SHEARED SURFACES, HELMINTHOPSIS IN F G SS |
| 21 | 57.79 | 58.37 | 0.58 | 83 | | | SILTSTONE | M-DK.GY.LAM.VBRKN INTERLAM M/ FG SS, MINOR SSD, HELMINTHO PSIS. |
| 21 | 58.37 | 58.48 | 0.11 | *84 | | | SILTSTONE | M-DK.GY.LAM.SLD AS ABOVE, HELMINTHOPSIS. |
| 21 | 58.48 | 58.85 | 0.37 | 83 | | | SILTSTONE | SSY.M-DK.GY.LAM.SHRD AS ABOVE, NUMEROUS FRACTURES, SOME VBRK N ZONES, HELMINTHOPSIS. |
| 21 | 58.85 | 59.05 | 0.20 | 83 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN FG SS LAMS, CLAY FILLED FRACTURES, SOME BED DISPLACEMENTS, HELMINTHOPSIS |
| 21 | 59.05 | 59.09 | 0.04 | 82 | | | SILTSTONE | SSY.M-DK.GY.VSHRD SOFT, POORLY CONSOLIDATED COAL, "COFFEE GROUND" TEXTURE AT BASE. |
| 21 | 59.09 | 59.13 | 0.04 | 82 | | | SILTSTONE | SSY.M-DK.GY.SHRD MOD CONSOLIDATED |
| 21 | 59.13 | 59.33 | 0.20 | 82 | | | SILTSTONE | M-DK.GY.LAM.SLD SSY LAMS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------|
| 21 | 59.33 | 59.44 | 0.11 | 81 | | | SILTSTONE | M-DK. GY. LAM. VBRKN SSY LAMS, CLAY & TALC FRACTURE FILL |
| 22 | 59.44 | 60.11 | 0.67 | 80 | 05810 | | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED, LOWER 25CM SAMPLED |
| 22 | 60.11 | 60.28 | 0.17 | 79 | 05811 ? | | COAL | C-3. BLK. VBRKN |
| 22 | 60.28 | 60.37 | 0.09 | 79 | 05811 ? | | MUDSTONE | CARB. DK. GY. SLD POORLY CONSOLIDATED |
| 22 | 60.37 | 60.44 | 0.07 | 79 | 05811 ? | | COAL | C-3. BLK. BRKN |
| 22 | 60.44 | 60.70 | 0.26 | 78 | 05811 ? | | COAL | C-2. BLK. BRKN UPPER 25 CM SAMPLED |
| 22 | 60.70 | 61.38 | 0.68 | 77 | 05812 | | MUDSTONE | CARB. DK. GY. BRKN COALY STRINGERS IN PLACES |
| 22 | 61.38 | 61.42 | 0.04 | 76 | | | COAL | C-5. BLK. BRKN |
| 22 | 61.42 | 61.48 | 0.06 | 76 | | | MUDSTONE | CARB. DK. GY. BRKN COALY PLANT FRAGMENTS, LYSTRIC SURFACES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------|
| 23 | 61.48 | 61.61 | 0.13 | 76 | | | SILTSTONE | DK. GY. VBRKN NUMEROUS SHEARED SURFACES, OCCASIONAL Q TZ FRACTURE FILL |
| 23 | 61.61 | 61.71 | 0.10 | 75 | | | ROCK LOSS | |
| 23 | 61.71 | 61.91 | 0.20 | 75 | | | SILTSTONE | SSY. M-DK. GY. MUDST BAND AT .08M DOWN, HIGHLY FRACTUR ED WITH CLAY INFILL, QTZ FILL AT BASE |
| 23 | 61.91 | 62.06 | 0.15 | 75 | | | ROCK LOSS | |
| 23 | 62.06 | 62.36 | 0.30 | 74 | | | SILTSTONE | SSY. M-DK. GY. VSHRD SOME <1CM QTZ SHARDS, COAL SPECKS NEAR BASE (MAY NOT BE IN PLACE) |
| 23 | 62.36 | 62.42 | 0.06 | 74 | | | SILTSTONE | DK. GY. SLD QTZ VEIN AT BASE, HIGHLY SHRD |
| 23 | 62.42 | 62.54 | 0.12 | 73 | | | COAL | C-2. BLK. SHRD MUDST BANDS & QTZ |
| 23 | 62.54 | 62.62 | 0.08 | 73 | | | MUDSTONE | DK. GY. VBRKN C-2 COAL BANDS, SHRD |
| 23 | 62.62 | 62.67 | 0.05 | 73 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------|
| 23 | 62.67 | 62.82 | 0.15 | 73 | | SILTSTONE | DK.GY.BRKN LISTRIC SURFACES, QTZ FRACTURE FILL |
| 23 | 62.82 | 63.26 | 0.44 | 72 | | SILTSTONE | M-DK.GY.BRKN HIGHLY FRACTURED (QTZ FILLED), SOME LISTRIC SURFACES |
| 23 | 63.26 | 63.47 | 0.21 | 71 | | SILTSTONE | SSY.M.GY.BRKN DISTURBED BEDS WITH MUDST WISPS, QTZ FRACTURE FILL |
| 24 | 63.47 | 63.66 | 0.19 | 70 | | SILTSTONE | SSY.M.GY.SLD CLAY FRACTURE FILL, DISTURBED BEDS, QTZ FRACTURE AND VLEN FILL AT TOP |
| 24 | 63.66 | 64.68 | 1.02 | 69 | | SILTSTONE | M-DK.GY.BRKN FEW FEATURES, RARE PLANT FRAGMENTS |
| 24 | 64.68 | 64.83 | 0.15 | 67 | | SILTSTONE | M-DK.GY.VBRKN AS ABOVE, OCCASIONAL QTZ FRACTURE FILL |
| 24 | 64.83 | 64.88 | 0.05 | 67 | | ROCK LOSS | |
| 24 | 64.88 | 65.28 | 0.40 | 66 | | SILTSTONE | M-DK.GY.BRKN ZONE OF DISTURBED SSY.BEDS. AT .16M DOWN |
| 24 | 65.28 | 65.43 | 0.15 | 66 | | SILTSTONE | M-DK.GY.VBRKN HIGHLY FRACTURED FORMING BRECCIA (CLAY FILLED) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------|
| 24 | 65.43 | 65.50 | 0.07 | 65 | | ROCK LOSS | |
| 24 | 65.50 | 65.57 | 0.07 | 65 | | SILTSTONE | M-DK.GY.VBRKN MED GREY MUD AT TOP (2CM THICK), FRACTURED |
| 25 | 65.57 | 66.37 | 0.80 | 64 05813 | | SILTSTONE | M-DK.GY.SLD COALY LENSES & STRINGERS, LOWER 16CM SAMPLED |
| 25 | 66.37 | 66.46 | 0.09 | 63 05813 | | MUDSTONE | CARB.DK.GY.BRKN |
| 25 | 66.46 | 66.60 | 0.14 | 63 05814 ? | | COAL | C-2.BLK.BRKN |
| 25 | 66.60 | 66.70 | 0.10 | 62 05814 ? | | COAL | C-3.BLK.BRKN |
| 25 | 66.70 | 66.75 | 0.05 | 62 05814 ? | | COAL LOSS | |
| 25 | 66.75 | 66.77 | 0.02 | 62 05814 ? | | MUDSTONE | CLYY.LT-M.GY.SLD POORLY CONSOLIDATED |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 25 | 66.77 | 66.94 | 0.17 | 62 | 05814 | ? | COAL | C-3.BLK.PHRD |
| 25 | 66.94 | 67.14 | 0.20 | 61 | 05814 | ? | MUDSTONE | CARB.DK.GY.SLD |
| 25 | 67.14 | 67.25 | 0.11 | 61 | 05814 | ? | COAL | C-3.BLK.BRKN |
| 25 | 67.25 | 67.48 | 0.23 | 60 | 05815 | | MUDSTONE | CARB.DK.GY.BRKN COALY LENSES AND STRINGERS WITHIN |
| 26 | 67.48 | 67.97 | 0.49 | 59 | | | SILTSTONE | DK.GY.SHRD OCCASIONAL COAL STRINGERS (C-2), PYRITE BLEB NEAR TOP. |
| 26 | 67.97 | 68.16 | 0.19 | 59 | | | SILTSTONE | SSY.M-DK.GY.LAM.SHRD MUDDY LAMS |
| 26 | 68.16 | 68.22 | 0.06 | 58 | | | SILTSTONE | DK.GY.LAM.SLD QTZ FRACTURES AT TOP |
| 26 | 68.22 | 68.36 | 0.14 | *58 | | | SILTSTONE | SSY.DK.GY.BRKN MUDST WISPS, OCCASIONAL COAL STRINGER, OCCASIONAL COALY PLANT FRAGMENTS, LISTRIC SURFACES |
| 26 | 68.36 | 68.43 | 0.07 | 58 | | | SILTSTONE | SSY.DK.GY.VBRKN LISTRIC SURFACES, MUDDY LAMS |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------|
| 26 | 68.43 | 68.53 | 0.10 | 58 | | | SILTSTONE | SSY.DK.GY.BRKN LISTRIC SURFACES, MUDDY WISPS |
| 26 | 68.53 | 68.59 | 0.06 | 59 | | | MUDSTONE | DK.GY.LAM.SLD LISTRIC SURFACES, COALY STRINGERS |
| 26 | 68.59 | 68.89 | 0.30 | 59 | | | SILTSTONE | M.GY.VBRKN |
| 26 | 68.89 | 68.94 | 0.05 | 59 | | | SILTSTONE | M-DK.GY.VBRKN NUMEROUS LISTRIC SURFACES (SOME WITH YALC), RUBBLED |
| 26 | 68.94 | 68.96 | 0.02 | 60 | | | ROCK LOSS | |
| 26 | 68.96 | 69.29 | 0.33 | 60 | | | SILTSTONE | M-DK.GY.VBRKN NUMEROUS LISTRIC SURFACES, MUDDY, NUMEROUS COALY PLANT FRAGMENTS |
| 27 | 69.29 | 70.00 | 0.71 | 61 | | | SILTSTONE | M-DK.GY.THNB.BRKN MUDDY WISPS, FRACTURED, LISTRIC SURFACES |
| 27 | 70.00 | 70.19 | 0.19 | 62 | | | SILTSTONE | SSY.M.GY.VTHNB.BRKN BEDS ARE SLIGHTLY DISTURBED, DISCONTINUOUS MUDST WISPS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------|
| 27 | 70.19 | 70.52 | 0.33 | 63 | | | SILTSTONE | M-DK.GY.BRKN FRACTURED WITH DK'GY FILL, LISTRIC SURFACES (SOME WITH TALC) |
| 27 | 70.52 | 70.92 | 0.40 | 64 | | | SILTSTONE | M-DK.GY.BRKN FRACTURED WITH CLAY FILL, LISTRIC SURFACES (SOME WITH TALC) |
| 27 | 70.92 | 71.22 | 0.30 | 65 | | | SILTSTONE | M-DK.GY.BRKN HIGHLY FRACTURED (CLAY FILLED), LISTRIC SURFACES, MODERATELY CONSOLIDATED |
| 28 | 71.22 | 71.53 | 0.31 | 65 | | | SANDSTONE | FG.M.GY.VBRKN BRECCIA FORMED BY CLAY FILLED FRACTURES MODERATELY CONSOLIDATED (DECREASING DOWNWARDS) |
| 28 | 71.53 | 71.68 | 0.15 | 66 | | | SANDSTONE | FG.M.GY.VBRKN HIGHLY FRACTURED BAND PARALLEL TO CORE (CLAY FILLED) |
| 28 | 71.68 | 71.70 | 0.02 | 66 | | | ROCK LOSS | |
| 28 | 71.70 | 71.85 | 0.15 | 66 | | | SANDSTONE | SLTY.M.GY.VBRKN NUMEROUS LISTRIC SURFACES, SOME QTZ FRACTURE FILL |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------|
| 28 | 71.85 | 72.46 | 0.61 | 67 | | | SANDSTONE | VFG.M.GY.BRKN HIGHLY FRACTURED (CLAY FILLED), LISTRIC SURFACES |
| 28 | 72.46 | 72.53 | 0.07 | 68 | | | SANDSTONE | VFG.M.GY.VBRKN HIGHLY FRACTURED |
| 28 | 72.53 | 73.24 | 0.71 | *69 | | | SANDSTONE | SLTY.M-DK.GY.VTHNB.BRKN SLTST BEDS, NUMEROUS LISTRIC SURFACES |
| 29 | 73.24 | 73.95 | 0.71 | *55 | | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN SLTST BEDS, BEDS ARE SLIGHTLY DISTURBED LISTRIC SURFACES |
| 29 | 73.95 | 74.01 | 0.06 | 57 | | | SANDSTONE | VFG.LT-M.GY.VTHNB.SLD SILTY MISPES |
| 29 | 74.01 | 74.11 | 0.10 | 57 | | | SILTSTONE | M.GY.LAM.SLD SSY MISPES, SLTST FORMS DISCONTINUOUS LAMS WHICH BECOME CLASTS AT BASE |
| 29 | 74.11 | 74.40 | 0.29 | 58 | | | SANDSTONE | FG.LT-M.GY.VTHNB MISPY BANDS OF DK'GY GRAINS (UP TO .5MM IN DIAMETER), OCCASIONAL QTZ FILLED FRACTURE |
| 29 | 74.40 | 74.49 | 0.09 | 59 | | | SANDSTONE | FG.LT-M.GY.VTHNB.VBRKN SLTST MISPES & LAMS AT BASE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 29 | 74.49 | 74.79 | 0.30 | *60 | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN DISCONTINUOUS WISPY BANDS CONTAINING BLK GRAINS, QTZ FRACTURE FILL |
| 29 | 74.79 | 75.16 | 0.37 | 60 | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN REGULAR SLTST LAMS & BEDS, BED DISPLACEMENTS (UP TO 1CM), QTZ FILLED FRACTURES AT TOP |
| 30 | 75.16 | 75.33 | 0.17 | 60 | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN VFG SS BED, REGULAR BANDS OF BLK GRAINS, QTZ & CLAY FILLED FRACTURES, SOME BED DISPLACEMENTS |
| 30 | 75.33 | 75.49 | 0.16 | 60 | | SILTSTONE | M-DK.GY.LAM.BRKN FG SS WISPS, QTZ FILLED FRACTURES, LISTRIC SURFACES |
| 30 | 75.49 | 75.61 | 0.12 | 59 | | SILTSTONE | SSY-LT-M.GY.LAM.BRKN FG SS LAMS, LISTRIC SURFACES |
| 30 | 75.61 | 75.71 | 0.10 | 59 | | SILTSTONE | M.GY.VTHNB.SLD |
| 30 | 75.71 | 76.12 | 0.41 | 59 | | SANDSTONE | FG-LT-M.GY.LAM.SSD.BRKN DISCONTINUOUS SLTST LAMS & CLASTS, OCCASIONAL FRACTURE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | 76.12 | 76.34 | 0.22 | *59 | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN REGULAR WISPY BANDS OF BLK GRAINS |
| 30 | 76.34 | 76.54 | 0.20 | 60 | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN BLK GRAIN BANDS ARE LESS REGULAR, SLTST BANDS AND RIP-UPS (<1CM), PLANT FRAGMENTS |
| 30 | 76.54 | 76.65 | 0.11 | 60 | | SILTSTONE | M.GY.VTHNB.SLD WITH FINE GRAINED SAND WISPS AND MUDSTONE RIP-UP CLASTS LESS THAN 1CM IN DIAMETER. PLANT FRAGMENTS. |
| 30 | 76.65 | 77.28 | 0.63 | 62 | | SANDSTONE | FG-LT-M.GY.VTHNB.BRKN REGULAR BANDS OF BLK GRAINS AND SOME SCATTERED THROUGHOUT, ANGULAR SLTST RIPUPS AT .02M & .56M DOWN, QTZ FILLED FRACTURES WITH <1CM BED DISPLACEMENTS |
| 31 | 77.28 | 77.45 | 0.17 | 63 | | SANDSTONE | FG-LT-M.GY.VTHNB.SLD FG-MG SS, OCCASIONAL LT BEIGE BANDS |
| 31 | 77.45 | 77.47 | 0.02 | 64 | | SANDSTONE | FG-LT-M.GY.VTHNB.VBRKN AS ABOVE |
| 31 | 77.47 | 77.54 | 0.07 | 64 | | SANDSTONE | FG-LT.GY.SLD BEIGE-LT GY, TWIST OFF AT TOP |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------|
| 31 | 77.54 | 77.62 | 0.08 | 64 | | SANDSTONE | MG. S-P. GY. SLD |
| 31 | 77.62 | 77.70 | 0.08 | 65 | | SANDSTONE | MG. LT-M. GY. VTHNB. SLD SILTY WISPS, SCATTERED BLK GRAINS AT BASE |
| 31 | 77.70 | 77.80 | 0.10 | *65 | | SANDSTONE | FG. LT-M. GY. VTHNB FG-MG SS, BLK GRAINS MAKE UP 40% OF ROCK (IN BANDS AND ARE V. CLOSE TOGETHER) |
| 31 | 77.80 | 78.67 | 0.87 | 67 | | SANDSTONE | FG. LT-M. GY. MAS. BRKN FG-MG SS. OCCASIONAL 1CM SLTST. RIP. UP. N EAR TOP |
| 31 | 78.67 | 79.36 | 0.69 | 70 | | SANDSTONE | FG. LT-M. GY. SSD FG-MG SS, SLTST BEDS, DISCONTINUOUS LAMS AND RIP-UPS (UP TO 4X1CM), SSD TOWARD S. BASE |
| 32 | 79.36 | 79.61 | 0.25 | 71 | | SANDSTONE | FG. LT-M. GY. BRKN SILTY WISPS, MG SS. BEDS, OCCASIONAL CLAY FILLED FRACTURE, POSSIBLE CORE LOSS AT BASE |
| 32 | 79.61 | 79.70 | 0.09 | *72 | | SANDSTONE | FG. LT. GY. VTHNB. SLD SILTY WISPS, MUDST CLASTS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 32 | 79.70 | 80.01 | 0.31 | 71 | | SANDSTONE | MG. LT-M. GY. VTHNB. BRKN CLAY FILLED FRACTURES |
| 32 | 80.01 | 80.12 | 0.11 | 70 | | SANDSTONE | MG. LT-M. GY. VBRKN AS ABOVE |
| 32 | 80.12 | 80.37 | 0.25 | 69 | | SANDSTONE | MG. LT-M. GY. VTHNB SILTY LAMS, CLAY FILLED FRACTURES, QTZ AT BASE, POORLY CONSOLIDATED CLAY BAND AT BASE (<.5CM) X-CUTTING BDG. |
| 32 | 80.37 | 80.53 | 0.16 | 68 | | SANDSTONE | MG. LT-M. GY. VBRKN AS ABOVE |
| 32 | 80.53 | 80.59 | 0.06 | 67 | | SANDSTONE | MG. LT-M. GY. SLD AS ABOVE |
| 32 | 80.59 | 81.20 | 0.61 | 65 | | SANDSTONE | MG. VPR. LT-M. GY. VBRKN MOSTLY LARGE CORE PIECES (.17 M LONG), GRANULARS ARE MORE CONCENTRATED IN BANDS (ROUGHLY) |
| 33 | 81.20 | 81.47 | 0.27 | 63 | | SANDSTONE | PBLV. CG. LT. GY. SLD ABUNDANT QTZ |
| 33 | 81.47 | 81.55 | 0.08 | 62 | 05816 | COAL | C-4. BLK. VSHRD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|--------------------|--------------------------------------------------------------------|
| 33 | 81.55 | 81.65 | 0.10 | 62 | 05816 | MUDSTONE | CARB. DK. GY. VSHRD |
| 33 | 81.65 | 81.71 | 0.06 | 61 | 05816 | ROCK LOSS | |
| 33 | 81.71 | 81.76 | 0.05 | 61 | 05817 | K/L PART COAL LOSS | |
| 33 | 81.76 | 82.53 | 0.77 | 59 | 05817 | K/L PART COAL | C-4. BLK. VSHRD ABUNDANT LISTRIC SURFACES |
| 33 | 82.53 | 82.60 | 0.07 | 56 | 05818 | SANDSTONE | PBLY. CG. LT. GY. SLD |
| 33 | 82.60 | 82.76 | 0.16 | 56 | 05818 | SANDSTONE | FG. LT-M. GY. SLD MINOR SILTY LAMS |
| 33 | 82.76 | 82.84 | 0.08 | 55 | | SILTSTONE | M. GY. SLD SANDY LAMS |
| 33 | 82.84 | 83.14 | 0.30 | 54 | | SANDSTONE | FG. LT-M. GY. SLD |
| 34 | 83.14 | 83.74 | 0.60 | 52 | | SANDSTONE | FG. LT-M. GY. MAS. BRKN QTZ FRACTURE FILL, SOME LISTRIC SURFACE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 34 | 83.74 | 84.84 | 1.10 | *47 | | SANDSTONE | FG. LT-M. GY. YTHNB. BRKN SCATTERED BLK GRAINS BECOMING MORE NUMEROUS & LARGER (UP TO IMM) DOWNWARDS, OCCASIONAL SILTST. LAMS, QTZ FRACTURE FILL |
| 34 | 84.84 | 85.01 | 0.17 | 50 | | SILTSTONE | SSY. M-DK. GY. VBRKN HIGHLY FRACTURED (CLAY FILLED) |
| 34 | 85.01 | 85.11 | 0.10 | 51 | | ROCK LOSS | |
| 35 | 85.11 | 85.26 | 0.15 | 52 | | SILTSTONE | SSY. LT-M. GY. VBRKN FRACTURED |
| 35 | 85.26 | 85.71 | 0.45 | 53 | | SILTSTONE | M-DK. GY. VTHNB. BRKN DISCONTINUOUS MUDST WISPS, BIVALVES: FER GANOCONCHA = (>3.0X2.5CM), UNKNOWN = (4 .2X1.8CM) & (2.0X1.0MM), WELL PRESERVED |
| 35 | 85.71 | 85.81 | 0.10 | 55 | | SILTSTONE | M-DK. GY. VBRKN AS ABOVE |
| 35 | 85.81 | 86.48 | 0.67 | *57 | | SILTSTONE | DK. GY. BRKN FRACTURED IN BRICK PATTERN, OCCASIONAL BIVALVE FRAGMENT OR COMPRESSED X-SECTION |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 35 | 86.48 | 87.15 | 0.67 | 57 | | SILTSTONE | DK.GY.BRKN WELL PRESERVED BIVALVES, X-SECTIONS PARTIALLY COMPRESSED, MINOR BRICK PATTERN FRACTURES |
| 36 | 87.15 | 87.45 | 0.30 | 57 | | SILTSTONE | DK.GY.BRKN AS ABOVE WITH BIVALVE X-SECTIONS. |
| 36 | 87.45 | 88.61 | 1.16 | 57 | | SILTSTONE | SSY.DK.GY.BRKN 3CM LT.GY.CLAY BAND (POORLY CONSOLIDATED) AT TOP, SILTST AS ABOVE WITH X-SECTION OF BIVALVES & FRAGMENTS NEAR TOP |
| 36 | 88.61 | 88.71 | 0.10 | 57 | | SILTSTONE | SSY.DK.GY.VBRKN |
| 36 | 88.71 | 88.76 | 0.05 | 57 | | ROCK LOSS | |
| 36 | 88.76 | 88.92 | 0.16 | 57 | | SILTSTONE | SSY.DK.GY.BRKN AS ABOVE WITH BIVALVES |
| 36 | 88.92 | 89.02 | 0.10 | 57 | | SILTSTONE | DK.GY.BRKN QTZ SHARDS (.5MM). ETCHED SURFACE ON CORE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36 | 89.02 | 89.14 | 0.12 | 57 | | SILTSTONE | SSY.DK.GY.VBRKN WHITE SHARDS, AS ABOVE |
| 37 | 89.14 | 89.34 | 0.20 | *57 | | SILTSTONE | SSY.DK.GY.VTHNB.SLD MUDDY WISPS |
| 37 | 89.34 | 89.39 | 0.05 | 57 | | SILTSTONE | SSY.DK.GY.VBRKN AS ABOVE |
| 37 | 89.39 | 89.67 | 0.28 | 58 | | SILTSTONE | SSY.DK.GY.VTHNB.SLD AS ABOVE, FRACTURED, COALIFIED FRAGMENT S NEAR BASE |
| 37 | 89.67 | 89.92 | 0.25 | 59 | | SILTSTONE | SSY.DK.GY.VTHNB.VBRKN AS ABOVE |
| 37 | 89.92 | 89.97 | 0.05 | 59 | | ROCK LOSS | |
| 37 | 89.97 | 90.17 | 0.20 | 60 | | SILTSTONE | SSY.DK.GY.VTHNB.BRKN AS ABOVE, FRACTURED, POSSIBLE HELMINTHO PSIS |
| 37 | 90.17 | 90.52 | 0.35 | 61 | | SILTSTONE | SSY.DK.GY.VTHNB.BRKN AS ABOVE, TWIST OFF AT TOP, POSSIBLE MINIMAL CORE LOSS AT BASE, BIVALVE FRAGMENTS (1MM X 2MM, FERGA NOCONCHA), POSSIBLE SMALL GASTROPOD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 90.52 | 90.56 | 0.04 | 62 | | SILTSTONE | SSY.DK.GY.VBRKN |
| 37 | 90.56 | 90.61 | 0.05 | 62 | | ROCK LOSS | |
| 37 | 90.61 | 91.27 | 0.66 | *63 | | SILTSTONE | SSY.DK.GY.VTHNB.BRKN MUDDY LAMS, DISTURBED BEDS, BIVALVES (F ERGANOCONCHA & 2 UNKNOWN), TINY GASTRO PODS (2.5MM LONG), BED OF ABUNDANT BIVA LVES (WHOLE & FRAGMENTS) & GASTROPODS A T .45M DOWN |
| 38 | 91.27 | 91.67 | 0.40 | 67 | | SANDSTONE | FG.M.GY.VTHNB.BRKN FRACTURED, .5CM TALC & CLAY FILLED FRAC TURE AT .26 M DOWN, GASTROPODS & BIVALV ES. |
| 38 | 91.67 | 91.96 | 0.29 | 70 | | SILTSTONE | SSY.M-DK.GY.VTHNB.BRKN VFG SS BEDS WITH SLTST WISPS, LISTRIC S URFACES WITH TALC & QTZ, OCCASIONAL GAS TROPODS & SHELL FRAGMENTS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | 91.96 | 92.42 | 0.46 | 73 | | SANDSTONE | SLTY.M-DK.GY.VTHNB.VBRKN 2.5CM CLAY BAND AT .27M DOWN, FRACTURED , LISTRIC SURFACE WITH TALC, SHELL FRAG MENTS. |
| 38 | 92.42 | 92.47 | 0.05 | 76 | | ROCK LOSS | |
| 38 | 92.47 | 92.80 | 0.33 | 77 | | SANDSTONE | SLTY.M.GY.VTHNB.BRKN INTERBEDDED WITH SLTST, MINOR SSD, SHELL FRAGMENTS & GASTROPODS |
| 38 | 92.80 | 92.87 | 0.07 | 79 | | SILTSTONE | M.GY.VBRKN SOME VFG SS |
| 38 | 92.87 | 92.92 | 0.05 | 79 | | ROCK LOSS | |
| 38 | 92.92 | 93.26 | 0.34 | *81 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SLTST BEDS, TWIST OFF AT TOP, LISTRIC S URFACES NEAR TOP, SHELL FRAGMENTS |
| 39 | 93.26 | 93.85 | 0.59 | 79 | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN SSY SLTST LAMS & BEDS, DISTURBED BEDS T OWARDS BASE, FERGANOCONCHA BIVALVE, NUME ROUS LISTRIC SURFACES (SHRD) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| 39 | 93.85 | 93.99 | 0.14 | 77 | | MUDSTONE | SLTY. DK. GY. LAM. VBRKN COAL STRINGERS, DISCONTINUOUS QYZ FILL D FRACTURES |
| 39 | 93.99 | 94.02 | 0.03 | 77 | | ROCK LOSS | |
| 39 | 94.02 | 94.28 | 0.26 | 76 | | MUDSTONE | SLTY. DK. GY. LAM. BRKN SILTIER DOWNWARDS, PLANT FRAGMENTS |
| 39 | 94.28 | 94.89 | 0.61 | *74 | 05819 | SANDSTONE | SLTY. M-DK. GY. BRKN GRADES FROM SSSY SLTST TO SILTY SS. PLAN T FRAGMENTS ON SOME BEDDING PLANES. LOW ER 25CM SAMPLED |
| 39 | 94.89 | 94.91 | 0.02 | 74 | 05820 L REP | COAL | C-2. BLK. SLD QYZ VEINING, WELL CLEATED |
| 39 | 94.91 | 95.07 | 0.16 | 74 | 05820 L REP | COAL | C-3. BLK. VBRKN CRUMBLD (1MM FRAGMENTS) |
| 39 | 95.07 | 95.14 | 0.07 | 75 | 05820 L REP | COAL | C-3. BLK. BRKN C-2 TO C-3, BANDED |
| 40 | 95.14 | 95.17 | 0.03 | 75 | 05820 L REP | COAL | C-3. BLK. SLD |
| 40 | 95.17 | 95.30 | 0.13 | 75 | 05820 L REP | COAL LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|-------------|-----------|--------------------------------------------------------------------------------------|
| 40 | 95.30 | 95.48 | 0.18 | 75 | 05820 L REP | MUDSTONE | CARB. DK. GY. SLD ABUNDANT VITRAIN STRINGERS |
| 40 | 95.48 | 95.60 | 0.12 | 75 | 05820 L REP | COAL LOSS | |
| 40 | 95.60 | 95.66 | 0.06 | 75 | 05820 L REP | COAL | C-3. BLK. SLD |
| 40 | 95.66 | 95.79 | 0.13 | 75 | 05820 L REP | COAL | C-5. BLK. SLD C-2 BANDS WITHIN |
| 40 | 95.79 | 96.07 | 0.28 | 76 | 05820 L REP | MUDSTONE | CARB. DK. GY. SLD MINOR CARB. PLANT FRAGMENTS |
| 40 | 96.07 | 96.24 | 0.17 | 76 | 05820 L REP | MUDSTONE | CARB. DK. GY. BRKN ABUNDANT PYRITE |
| 40 | 96.24 | 96.37 | 0.13 | 76 | 05820 L REP | COAL | C-2. BLK. BRKN |
| 40 | 96.37 | 96.54 | 0.17 | 76 | 05820 L REP | COAL | C-3. BLK. VBRKN |
| 40 | 96.54 | 96.59 | 0.05 | 76 | 05820 L REP | COAL | C-4. BLK. BRKN C-2 BANDS WITHIN |
| 40 | 96.59 | 97.16 | 0.57 | 77 | 05821 | MUDSTONE | CARB. DK. GY. SLD ABUNDANT VITRAIN STRINGERS & THIN BANDS , UPPER 25CM SAMPLED |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 41 | 97.16 | 97.42 | 0.26 | 77 | | MUDSTONE | DK.GY.LAM.BRKN ABUNDANT COALY PLANT FRAGMENTS, OCCASIONAL COAL STRINGERS. |
| 41 | 97.42 | 97.44 | 0.02 | 77 | | COAL | C-2.BLK.SLD WELL CLEATED, RARE CONCHOIDAL FRACTURE |
| 41 | 97.44 | 97.73 | 0.29 | 77 | | MUDSTONE | DK.GY.LAM.BRKN 3MM QTZ VEIN AT TOP & .19M DOWN, NUMEROUS LISTRIC SURFACES, CORE BREAKS APART EASILY, PLANT FRAGMENTS |
| 41 | 97.73 | 97.85 | 0.12 | 78 | | MUDSTONE | DK.GY.LAM.BRKN ABUNDANT COALY PLANT FRAGMENTS, QTZ VEIN |
| 41 | 97.85 | 97.89 | 0.04 | 78 | | SILTSTONE | M.GY.SLD DISTURBED BEDS |
| 41 | 97.89 | 98.21 | 0.32 | *78 | | MUDSTONE | DK.GY.LAM.BRKN ABUNDANT COALY PLANT FRAGMENTS, LISTRIC SURFACES, QTZ FRACTURE FILL |
| 41 | 98.21 | 98.43 | 0.22 | 76 | | MUDSTONE | DK.GY.LAM.VBRKN SOME SLTST LAMS, QTZ FRACTURE FILL, OCCASIONAL COAL STRINGER, LISTRIC SURFACE |
| 41 | 98.43 | 98.53 | 0.10 | 75 | | ROCK LOSS | |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 41 | 98.53 | 98.99 | 0.46 | 73 | | SANDSTONE | SLTY.M.GY.VTHNB.VBRKN LARGE CORE PIECES (15CM), SOME SLTST BEDS, PYRITE BLEBS .22M DOWN, QTZ AND CLAY FILLED FRACTURES |
| 41 | 98.99 | 99.11 | 0.12 | 71 | | ROCK LOSS | |
| 41 | 99.11 | 99.21 | 0.10 | 71 | | SILTSTONE | M.GY.LAM.VBRKN RUBBLE, NUMEROUS LISTRIC SURFACES, PLANT FRAGMENTS |
| 42 | 99.21 | 99.30 | 0.09 | *70 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN SLTST WHIPS |
| 42 | 99.30 | 99.83 | 0.53 | 76 | | SANDSTONE | SLTY.VFG.LT-M.GY.VTHNB.BRKN SLTST LAMS, HIGHLY FRACTURED (QTZ FILL) <1CM BED DISPLACEMENTS, SOME FG.SS.BEDS TOWARDS BASE |
| 42 | 99.83 | 99.93 | 0.10 | 82 | | ROCK LOSS | |
| 42 | 99.93 | 100.12 | 0.19 | 85 | | SANDSTONE | FG.M.GY.VTHNB.VBRKN SLTST LAMS, HIGHLY FRACTURED (QTZ FILLED), SMALL BED DISPLACEMENTS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 42 | 100.12 | 100.29 | 0.17 | *88 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN LAMS BECOMING VTHBDS DOWNWARDS, MUDDY S LTST LAMS & VTHNBS, QTZ FRACTURE FILL, SOME BED DISPLACEMENTS NEAR TOP |
| 42 | 100.29 | 101.21 | 0.92 | 84 | | | SANDSTONE | FG.LT-M.GY.THNB.BRKN FG-MG.SS AT TOP BECOMING FG.SS DOWNWARD S, OCCASIONAL CLAY FRACTURE FILL, BDG I S ~48CM THICK |
| 43 | 101.21 | 101.42 | 0.21 | 81 | | | SANDSTONE | FG.LT-M.GY.THNB.BRKN QTZ FRACTURE FILL |
| 43 | 101.42 | 101.75 | 0.33 | 79 | | | SANDSTONE | FG.LT-M.GY.THNB.BIOTR.BRKN SLTST LAMS, SSD (TOPS UP) |
| 43 | 101.75 | 102.05 | 0.30 | *77 | | | SANDSTONE | FG.LT-M.GY.THNB.SSD.BRKN SLTST LAMS & WISPS, SSD (TOPS UP) |
| 43 | 102.05 | 102.21 | 0.16 | 76 | | | SANDSTONE | SLTY.M.GY.LAM.BIOTR.BRKN SLTST LAMS |
| 43 | 102.21 | 102.45 | 0.24 | 74 | | | SANDSTONE | FG.M.GY.VTHNB.SLD SLTST LAMS (ESP NEAR BASE), POSSIBLE CO RE LOSS AT BASE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 43 | 102.45 | 103.07 | 0.62 | 72 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN SLTST WISPS AT TOP, SLTST LAMS DOWNWARD S, QTZ FILLED FRACTURES, SOME MINOR BED DISPLACEMENT |
| 43 | 103.07 | 103.15 | 0.08 | 69 | | | ROCK LOSS | |
| 44 | 103.15 | 103.32 | 0.17 | 69 | | | SANDSTONE | FG.LT-M.GY.VBRKN SLTST WISPS, QTZ FRACTURE FILL, HIGHLY FRACTURED, LISTRIC SURFACES |
| 44 | 103.32 | 104.27 | 0.95 | *65 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS & WISPS, OCCASIONAL QTZ FRA TURE FILL |
| 44 | 104.27 | 104.77 | 0.50 | *70 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN AS ABOVE, BCA'S INCREASE DOWNWARDS |
| 44 | 104.77 | 105.29 | 0.52 | *78 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE, MORE SLTST LAMS, SSD (TOPS UP) , OCCASIONAL QTZ FRACTURE FILL |
| 45 | 105.29 | 105.40 | 0.11 | 79 | | | SANDSTONE | FG.LT-M.GY.BRKN OCCASIONAL SILTY WISP, QTZ FILLED FRACT URES WITH <2MM BED DISPLACEMENTS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | 105.40 | 105.46 | 0.06 | 80 | | | SILTSTONE | M.GY.VTHNB.SSD.SLD MUDST LAMS AT TOP, MUDST WISPS THROUGHOUT |
| 45 | 105.46 | 107.19 | 1.73 | *83 | | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH MUDDY SLTST & SOME MUDST. ST. HELMINTHOPSIS. MINOR SSD. OCCASIONAL FRACTURE WITH SOME QTZ FILL. TINY PLANT FRAGMENTS ABUNDANT ON SOME BEDS, PYRITE FLECKS & BLEBS 1.24M DOWN |
| 45 | 107.19 | 107.36 | 0.17 | 80 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.BRKN AS ABOVE. MORE QTZ FILLED FRACTURES, LITESTRUC SURFACES, HELMINTHOPSIS |
| 45 | 107.36 | 107.39 | 0.03 | 79 | | | SANDSTONE | LT-M.GY.VTHNB.SLD NO HELMINTHOPSIS |
| 46 | 107.39 | 107.61 | 0.22 | 79 | | | MUDSTONE | DK.GY.BRKN BECOMES SLTST AT BASE, NUMEROUS VFG SIZED WHITE GRAINS THROUGHOUT |
| 46 | 107.61 | 107.72 | 0.11 | 78 | | | SANDSTONE | FG.M.GY.SLD SLTST RIP-UPS(?) AT BASE (UP TO 1 X 2.7 5CM). OCCASIONAL QTZ FILLED FRACTURE. |
| 46 | 107.72 | 107.83 | 0.11 | 78 | | | SANDSTONE | MG.LT-M.GY.BRKN QTZ FILLED FRACTURES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 46 | 107.83 | 108.39 | 0.56 | *77 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN SOME VFG SS BEDS, SLTST LAMS. MINOR SSD. OCCASIONAL .25 TO .50 MM BEIGE GRAIN IN SS. |
| 46 | 108.39 | 108.45 | 0.06 | 77 | | | SILTSTONE | M.GY.LAM.BRKN FG.SS.LAMS. OCCASIONAL BEIGE GRAIN IN SS. |
| 46 | 108.45 | 109.10 | 0.65 | 77 | | | SANDSTONE | FG.LT-M.GY.BRKN OCCASIONAL BEIGE GRAIN NEAR TOP. SILTY WISPS, V ANGULAR SLTST RIP-UPS, FRACTURED TOWARDS BASE. MUDST LAM < .5CM THICK .48M DOWN |
| 46 | 109.10 | 109.38 | 0.28 | 77 | | | SANDSTONE | FG.LT-M.GY.YBRKN |
| 46 | 109.38 | 109.53 | 0.15 | 77 | | | ROCK LOSS | |
| 47 | 109.53 | 109.58 | 0.05 | 77 | | | SANDSTONE | FG.LT-M.GY.YBRKN RUBBLE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 47 | 109.58 | 109.99 | 0.41 | 78 | | | SANDSTONE | FG.LT-M.GY.VBRKN QTZ FRACTURE FILL |
| 47 | 109.99 | 110.11 | 0.12 | 78 | | | ROCK LOSS | |
| 47 | 110.11 | 110.57 | 0.46 | 78 | | | SANDSTONE | FG.LT-M.GY.MAS.BRKN AS ABOVE |
| 47 | 110.57 | 111.07 | 0.50 | 78 | | | SANDSTONE | FG.LT-M.GY.VBRKN |
| 48 | 111.07 | 111.29 | 0.22 | *78 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST LAMS |
| 48 | 111.29 | 111.54 | 0.25 | 78 | | | SANDSTONE | FG.LT-M.GY.VBRKN DISCONTINUOUS SILTY WISPS |
| 48 | 111.54 | 111.61 | 0.07 | 78 | | | ROCK LOSS | |
| 48 | 111.61 | 111.97 | 0.36 | 78 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN FG-MG SS INTERBEDDED WITH VFG SS, OCCAS IONAL QTZ FRACTURE FILL |
| 48 | 111.97 | 112.17 | 0.20 | 79 | | | SANDSTONE | VFG.LT-M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, ABUNDANT SSD (TOPS UP), QTZ FRACTURE FILL |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48 | 112.17 | 112.92 | 0.75 | 79 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN SOME VFG SS BEDS, SLTST WISPS, OCCASION AL BANDS OF ANGULAR RIP-UPS, BIOTRB AT 32M DOWN, OCCASIONAL SSD, QTZ FRACTURE FILL |
| 49 | 112.92 | 113.11 | 0.19 | 79 | | | SANDSTONE | FG.LT-M.GY.SLD NUMEROUS QTZ FILLED FRACTURES, SLTST LA MS, DISPLACED BEDS (4CM) |
| 49 | 113.11 | 113.55 | 0.44 | 79 | | | SANDSTONE | FG.LT-M.GY.BRKN SLTST LAMS, HIGHLY FRACTURED (CLAY & QT Z FILL) -> ALMOST FORMS BRECCIA IN PLAC ES |
| 49 | 113.55 | 113.70 | 0.15 | 80 | | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE, RUBBLE |
| 49 | 113.70 | 113.94 | 0.24 | 80 | | | SANDSTONE | FG.LT-M.GY.BRKN AS ABOVE |
| 49 | 113.94 | 113.98 | 0.04 | 80 | | | SANDSTONE | FG.LT-M.GY.VBRKN RUBBLE |
| 49 | 113.98 | 114.08 | 0.10 | 80 | | | ROCK LOSS | |
| 49 | 114.08 | 114.29 | 0.21 | 80 | | | SANDSTONE | FG.LT-M.GY.BRKN QTZ & SOME CLAY FILLED FRACTURES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 49 | 114.29 | 114.71 | 0.42 | 80 | | SANDSTONE | FG.LT-M.GY.VBRKN QTZ FILLED FRACTURES |
| 49 | 114.71 | 114.86 | 0.15 | 80 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD LESS QTZ FILLED FRACTURES THAN ABOVE |
| 50 | 114.86 | 114.98 | 0.12 | 80 | | SANDSTONE | FG.LT-M.GY.SLD QTZ FRACTURE FILL, CLAY FILL AT BASE |
| 50 | 114.98 | 115.14 | 0.16 | 80 | | SANDSTONE | FG.LT-M.GY.VBRKN CLAY RUBBLE |
| 50 | 115.14 | 115.24 | 0.10 | 80 | | ROCK LOSS | |
| 50 | 115.24 | 115.54 | 0.30 | 81 | | SANDSTONE | VFG.LT-M.GY.BRKN 2.5CM CLAY FRACTURE FILL CUTTING BDG. B ANDS OF LAM SLTST & MUDST, FINE QTZ FIL LED FRACTURES |
| 50 | 115.54 | 116.46 | 0.92 | *81 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN INTERBEDDED WITH VFG SS, BANDS OF LAM S LTST & MUDST, 6CM THICK & 9CM APART. S SD (TOPS UP), 2.5CM QTZ VEIN AT BASE |
| 50 | 116.46 | 116.54 | 0.08 | 79 | | SANDSTONE | FG.LT-M.GY.SLD AS ABOVE, CLAY FILLED FRACTURES |
| 50 | 116.54 | 116.68 | 0.14 | 79 | | SANDSTONE | VFG.LT-M.GY.VTHNB.SSD.BRKN AS ABOVE WITHOUT FRACTURES |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------|
| 50 | 116.68 | 116.85 | 0.17 | 78 | | SANDSTONE | VFG.LT-M.GY.VTHNB.BRKN QTZ & SIDERITE FILLED FRACTURES |
| 51 | 116.85 | 116.98 | 0.13 | 77 | | SANDSTONE | VFG.LT-M.GY.LAM.BRKN LAM TO VTHNB, SLTST LAMS, QTZ FILLED FR ACTURE, MINOR SSD |
| 51 | 116.98 | 117.27 | 0.29 | 76 | | SANDSTONE | FG.LT-M.GY.BRKN ZONE OF QTZ FILLED FRACTURES |
| 51 | 117.27 | 117.66 | 0.39 | 75 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SLTST LAMS, BECOMES LAM DOWNWARDS |
| 51 | 117.66 | 117.78 | 0.12 | *74 | | SILTSTONE | M.GY.LAM.SSD.BRKN VFG SS LAMS |
| 51 | 117.78 | 117.93 | 0.15 | 74 | | SANDSTONE | FG.M.GY.SLD |
| 51 | 117.93 | 118.17 | 0.24 | 74 | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, OCCASIONAL QTZ FIL LED FRACTURES, SSD (TOPS UP) |
| 51 | 118.17 | 118.26 | 0.09 | 74 | | SILTSTONE | M.GY.LAM.VBRKN QTZ FRACTURE FILL, INTERLAM WITH FG SS |
| 51 | 118.26 | 118.34 | 0.08 | 74 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------|
| 51 | 118.34 | 118.54 | 0.20 | 74 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN SLTST LAMS, OCCASIONAL QTZ FILLED FRACTURES, THINNER BEDS DOWNWARDS |
| 51 | 118.54 | 118.81 | 0.27 | 73 | | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN SS BEDS GRADE TO SILTY SS, SLTST LAMS, MINOR SSD |
| 52 | 118.81 | 119.04 | 0.23 | 73 | | | SILTSTONE | SSY.M.GY.VTHNB.SLD FG SS INTERBEDS, BDG IS DISTURBED, HELMINTHOPSIS |
| 52 | 119.04 | 119.17 | 0.13 | 73 | | | SANDSTONE | VFG.M.GY.LAM.SLD SLTST LAMS, SLIGHTLY DISTURBED BEDS |
| 52 | 119.17 | 119.43 | 0.26 | *73 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST WISPS |
| 52 | 119.43 | 119.69 | 0.26 | 73 | | | SILTSTONE | M-DK.GY.LAM.BIOTR.BRKN LAM TO VTHNB, FG SS LAMS, HELMINTHOPSIS IN UPPER .13 M OF UNIT |
| 52 | 119.69 | 119.85 | 0.16 | 73 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST BED AT BASE (4.5CM THICK) |
| 52 | 119.85 | 119.92 | 0.07 | 72 | | | SANDSTONE | VFG.M.GY.BRKN HELMINTHOPSIS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 52 | 119.92 | 120.45 | 0.53 | 72 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN INTERBEDDED WITH SLTST, OCCASIONAL BAND OF HELMINTHOPSIS, BAND OF BIOTRB. |
| 52 | 120.45 | 120.83 | 0.38 | 72 | | | SILTSTONE | M.GY.LAM.SSD.BRKN INTERLAM WITH VFG SS, HELMINTHOPSIS, SOME ME.SSD, TINY PLANT (?) FRAGMENTS |
| 53 | 120.83 | 121.18 | 0.35 | 71 | | | SILTSTONE | SSY.LT-M.GY.VTHNB.BRKN LAM TO VTHNB, MUDDY LAMS & BEDS, HELMINTHOPSIS, MINOR SSD, MINOR PLANT HASH |
| 53 | 121.18 | 121.83 | 0.65 | *71 | | | SILTSTONE | M-DK.GY.LAM.BRKN MUDST WISPS, SSY LAMS NEAR BASE, PYR BANDS AND BLEBS, RARE QTZ VEIN, HELMINTHOPSIS, MINOR PLANT HASH |
| 53 | 121.83 | 122.09 | 0.26 | 69 | | | SILTSTONE | M-DK.GY.LAM.BRKN AS ABOVE, NUMEROUS CLAY FILLED FRACTURE |
| 53 | 122.09 | 122.23 | 0.14 | 69 | | | SILTSTONE | M-DK.GY.LAM.VBRKN AS ABOVE |
| 53 | 122.23 | 122.35 | 0.12 | 68 | | | ROCK LOSS | |
| 53 | 122.35 | 122.80 | 0.45 | 67 | | | SILTSTONE | M-DK.GY.LAM MUDDY & SSY WISPS, PYR BLEBS, SOME HELMINTHOPSIS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------|
| 53 | 122.80 | 122.90 | 0.10 | 66 | | | ROCK LOSS | |
| 54 | 122.90 | 123.56 | 0.66 | 65 | | | SILTSTONE | M-DK.GY.LAM.BRKN MUDDY WISPS, HELMINTHOPSIS, PYR BLEBS & BANDS, PLANT HASH |
| 54 | 123.56 | 123.69 | 0.13 | 64 | | | SILTSTONE | M-DK.GY.LAM.VBRKN AS ABOVE |
| 54 | 123.69 | 123.74 | 0.05 | 63 | | | SILTSTONE | M-DK.GY.LAM.SLD SSY WISPS |
| 54 | 123.74 | 123.87 | 0.13 | 63 | | | SILTSTONE | M-DK.GY.LAM.VBRKN CLAY FRACTURE FILL |
| 54 | 123.87 | 124.02 | 0.15 | 62 | | | ROCK LOSS | |
| 54 | 124.02 | 124.24 | 0.22 | 62 | | | SILTSTONE | M-DK.GY.LAM.VBRKN MUDDY & SSY WISPS |
| 54 | 124.24 | 124.45 | 0.21 | *61 | | | SILTSTONE | M.GY.VTHNB.SLD MUDDY WISPS & SSY LAMS, DISCONTINUOUS Q TZ FRACTURE FILL, PYR BLEBS NEAR BASE |
| 54 | 124.45 | 124.58 | 0.13 | 61 | | | SILTSTONE | M.GY.SHRD CLAY FRACTURE FILL ALMOST FORMS BRECCIA |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------|
| 54 | 124.58 | 124.75 | 0.17 | 61 | | | MUDSTONE | DK.GY.SHRD HIGHLY FRACTURED (CLAY FILLED), ALMOST BRECCIA |
| 55 | 124.75 | 124.96 | 0.21 | 61 | | | MUDSTONE | DK.GY.LAM.SHRD INTERLAM WITH SLTST, NUMEROUS LISTRIC S URFACES |
| 55 | 124.96 | 125.91 | 0.95 | 61 | | | MUDSTONE | DK.GY.LAM.BRKN SLTST LAMS, OCCASIONAL LISTRIC SURFACES & PLANT HASH (PYRITIZED), OCCASIONAL PY R BLEB |
| 55 | 125.91 | 125.99 | 0.08 | 61 | | | ROCK LOSS | |
| 55 | 125.99 | 126.08 | 0.09 | 61 | | | MUDSTONE | DK.GY.VBRKN ABUNDANT PYRITIZED PLANT HASH |
| 55 | 126.08 | 126.20 | 0.12 | 62 | | | SANDSTONE | FG.DK.GY.BRKN MUDDY, SOME GRAINS UP TO IMM. SOME LIST RIC SURFACES |
| 55 | 126.20 | 126.28 | 0.08 | 62 | | | ROCK LOSS | |
| 55 | 126.28 | 126.31 | 0.03 | 62 | | | SANDSTONE | FG.DK.GY.VBRKN AS ABOVE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 55 | 126.31 | 126.59 | 0.28 | 62 | | | SANDSTONE | FG.M-DK.GY.SLD ANGULAR CLASTS INCREASE IN SIZE (FROM 1 MM TO 5MM) AND ABUNDANCE DOWNWARDS TO A POORLY SORTED BAND .07M THICK AT .13M DOWN, OCCASIONAL QTZ FRACTURE FILL |
| 55 | 126.59 | 126.75 | 0.16 | 62 | | | SANDSTONE | FG.M.GY.VBRKN QTZ FRACTURE FILL |
| 55 | 126.75 | 126.80 | 0.05 | 62 | | | ROCK LOSS | |
| 56 | 126.80 | 127.00 | 0.20 | 62 | | | SANDSTONE | FG.LT-M.GY.SLD ANGULAR CLASTS (1-3MM), NUMEROUS PYR FL ECKS & BLEBS (<.5CM), QTZ FRACTURE FILL |
| 56 | 127.00 | 127.13 | 0.13 | 62 | | | SILTSTONE | M-DK.GY.SLD MUDST WISPS, 1-5MM THICK BANDS OF PYR (BANDS ARE WAVY & DISCONTINUOUS) |
| 56 | 127.13 | 127.41 | 0.28 | 62 | | | SILTSTONE | M-DK.GY.LAM.VBRKN INTERLAM WITH VFG SS, PYR BANDS IN TOP 2CM, NUMEROUS LISTRIC SURFACES |
| 56 | 127.41 | 127.48 | 0.07 | 62 | | | ROCK LOSS | |
| 56 | 127.48 | 128.18 | 0.70 | *62 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, OCCASIONAL PYR BLE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------|
| 56 | 128.18 | 128.29 | 0.11 | 63 | | | SANDSTONE | VFG.M.GY.LAM.BIOTR.SLD DISCONTINUOUS SLTST LAMS, ANGULAR QTZ G RAINS (UP TO 1MM) |
| 56 | 128.29 | 128.54 | 0.25 | 63 | | | SANDSTONE | VFG.M.GY.BRKN DISCONTINUOUS SLTST LAMS, ANGULAR CLAST S UP TO 6MM LONG |
| 56 | 128.54 | 128.76 | 0.22 | 63 | | | SILTSTONE | M-DK.GY.LAM.BRKN INTERLAM FG.SS, CLAY FILLED FRACTURES |
| 57 | 128.76 | 128.89 | 0.13 | 63 | | | SANDSTONE | FG.M.GY.LAM.BIOTR.BRKN INTERLAM WITH SLTST, ZONE OF BIOTRB .06 M THICK AT .03M DOWN |
| 57 | 128.89 | 129.42 | 0.53 | 64 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN INTERBEDDED WITH VFG SS THAT CONTAINS S LTST LAMS |
| 57 | 129.42 | 129.65 | 0.23 | 64 | | | SANDSTONE | FG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, OCCASIONAL QTZ FIL LED FRACTURE |
| 57 | 129.65 | 129.73 | 0.08 | 65 | | | SANDSTONE | FG.M.GY.LAM.SLD AS ABOVE, NUMEROUS CLAY FILLED FRACTURE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 57 | 129.73 | 130.20 | 0.47 | *65 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN INTERBEDDED WITH SLTY BANDS, OCCASIONAL QTZ & CLAY FILLED FRACTURES |
| 57 | 130.20 | 130.51 | 0.31 | 64 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, NUMEROUS CLAY FILL ED FRACTURES, OCCASIONAL LISTRIC SURFAC ES |
| 58 | 130.51 | 131.60 | 1.09 | 61 | | | SILTSTONE | M-DK.GY.LAM.BRKN MUDST WISPS, OCCASIONAL PYR BLEB, MINOR FINE FRACTURES, PLANT HASH |
| 58 | 131.60 | 131.83 | 0.23 | 59 | | | SILTSTONE | SSY.M.GY.LAM.BRKN OCCASIONAL SSY WISP, LISTRIC SURFACES |
| 58 | 131.83 | 132.05 | 0.22 | 58 | | | SILTSTONE | SSY.M-DK.GY.LAM.BRKN MUDST WISPS, PLANT HASH |
| 58 | 132.05 | 132.50 | 0.45 | *57 | | | SANDSTONE | VFG.M-DK.GY.LAM.BRKN LAM-VTHNB, INTERLAM WITH SLTST, PLANT H ASH, SOME LISTRIC SURFACES |
| 59 | 132.50 | 132.69 | 0.19 | 58 | 05822 | | MUDSTONE | CARB.DK.GY.SLD ABUNDANT PLANT HASH |
| 59 | 132.69 | 132.80 | 0.11 | 58 | 05822 | | MUDSTONE | CARB.DK.GY.SLD AS ABOVE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------|
| 59 | 132.80 | 132.84 | 0.04 | 58 | 05823 | K/L REP | COAL | C-5.BLK.VSHRD |
| 59 | 132.84 | 132.86 | 0.02 | 58 | 05823 | K/L REP | SILTSTONE | SLD |
| 59 | 132.86 | 132.93 | 0.07 | 58 | 05823 | K/L REP | COAL | C-4.BLK.VSHRD |
| 59 | 132.93 | 133.44 | 0.51 | 59 | 05823 | K/L REP | COAL | C-3.BLK.VSHRD |
| 59 | 133.44 | 133.46 | 0.02 | 60 | 05823 | K/L REP | MUDSTONE | SLTY.M-DK.GY.SLD |
| 59 | 133.46 | 133.84 | 0.38 | 60 | 05823 | K/L REP | COAL | C-3.BLK.VSHRD |
| 59 | 133.84 | 134.22 | 0.38 | 61 | 05823 | K/L REP | COAL LOSS | |
| 59 | 134.22 | 134.27 | 0.05 | 61 | 05823 | K/L REP | MUDSTONE | CARB.DK.GY.BRKN |
| 59 | 134.27 | 134.40 | 0.13 | 61 | 05823 | K/L REP | COAL | C-5.BLK.VBRKN |
| 59 | 134.40 | 134.45 | 0.05 | 62 | 05823 | K/L REP | MUDSTONE | SLTY.DK.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------|
| 59 | 134.45 | 134.51 | 0.06 | 62 05823 | K/L REP | COAL | C-4.BLK.PWRD |
| 59 | 134.51 | 134.58 | 0.07 | 62 05823 | K/L REP | MUDSTONE | CARB.DK.GY.BRKN |
| 59 | 134.58 | 134.62 | 0.04 | 62 05823 | K/L REP | COAL | C-3.BLK.VSHRD PWRD |
| 60 | 134.62 | 134.73 | 0.11 | 62 05823 | K/L REP | COAL | C-4.BLK.VSHRD |
| 60 | 134.73 | 134.76 | 0.03 | 62 05823 | K/L REP | MUDSTONE | CLYY.M.BN.SLD POORLY CONSOLIDATED |
| 60 | 134.76 | 135.08 | 0.32 | 63 05823 | K/L REP | COAL | C-4.BLK.VSHRD |
| 60 | 135.08 | 135.27 | 0.19 | 63 05823 | K/L REP | COAL LOSS | |
| 60 | 135.27 | 135.30 | 0.03 | 63 05823 | K/L REP | MUDSTONE | CARB.DK.GY.SHRD |
| 60 | 135.30 | 135.51 | 0.21 | 64 05823 | K/L REP | COAL | C-5.BLK.VSHRD |
| 60 | 135.51 | 135.54 | 0.03 | 64 05823 | K/L REP | SILTSTONE | M.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------|
| 60 | 135.54 | 136.12 | 0.58 | 65 05823 | K/L REP | COAL | C-3.BLK.VSHRD |
| 60 | 136.12 | 136.35 | 0.23 | 65 05823 | K/L REP | COAL LOSS | |
| 60 | 136.35 | 136.67 | 0.32 | 66 05823 | K/L REP | ROCK LOSS | |
| 60 | 136.67 | 136.69 | 0.02 | 66 05823 | K/L REP | MUDSTONE | CARB.DK.GY.BRKN POORLY CONSOLIDATED |
| 60 | 136.69 | 136.92 | 0.23 | 67 05823 | K/L REP | COAL | C-3.BLK.VSHRD |
| 61 | 136.92 | 137.00 | 0.08 | 67 05825 | | MUDSTONE | DK.GY.VSHRD COAL STRINGERS, CORE IS IN SMALL PIECES & FLAKES |
| 61 | 137.00 | 137.19 | 0.19 | 67 05825 | | ROCK LOSS | |
| 61 | 137.19 | 137.22 | 0.03 | 68 05825 | | SANDSTONE | FG.LT-M.GY.VBRKN LITRAC SURFACES |
| 61 | 137.22 | 137.28 | 0.06 | 68 05825 | | SANDSTONE | VFG.M.GY.SLD SOME SLTST. STRINGY.PYR.BLEBS. QTZ.FRAC TURE FILL |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------|
| 61 | 137.28 | 137.37 | 0.09 | 68 | 05825 | | MUDSTONE | M-DK.GY.VSHRD POORLY CONSOLIDATED, SOFT, .5CM COAL ST RINGERS, DISCONTINUOUS QTZ FRACTURE FIL L NEAR TOP |
| 61 | 137.37 | 137.67 | 0.30 | 68 | | | ROCK LOSS | |
| 61 | 137.67 | 137.74 | 0.07 | 69 | | | MUDSTONE | M-DK.GY.VSHRD 5CM CLAY BAND AT TOP (CONTAINS COALY FL ECKS), POORLY CONSOLIDATED BUT STILL IN FACT |
| 61 | 137.74 | 137.81 | 0.07 | 69 | | | MUDSTONE | M-DK.GY.SHRD 1MM COAL STRINGERS |
| 61 | 137.81 | 137.90 | 0.09 | 69 | | | COAL | C-2.BLK.VBRKN 6X2CM PIECES, WELL CLEATED, SOME CONCHO IDAL FRACTURES |
| 61 | 137.90 | 138.05 | 0.15 | 69 | | | ROCK LOSS | |
| 61 | 138.05 | 138.20 | 0.15 | 70 | | | MUDSTONE | DK.GY.LAM.SHRD YBRKN CORE, SLTST LAMS, OCCASIONAL QTZ FILLED FRACTURE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 61 | 138.20 | 138.23 | 0.03 | 70 | | | COAL | C-4.BLK.SLD C-2 BANDS & MUDDY STRINGERS |
| 61 | 138.23 | 138.45 | 0.22 | *70 | | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SLTST WISPS, DISCONTINUOUS QTZ FILLED F RACTURES, LITRIC SURFACES, OCCASIONAL RED DISPLACEMENT (<1 CM) |
| 61 | 138.45 | 138.75 | 0.30 | 69 | | | SANDSTONE | FG.LT-M.GY.BRKN OCCASIONAL DISCONTINUOUS SILTY WISP, DI SCONTINUOUS QTZ FILLED FRACTURES |
| 61 | 138.75 | 139.19 | 0.44 | 68 | | | SANDSTONE | FG.LT-M.GY.BRKN NUMEROUS QTZ FRACTURE FILL |
| 61 | 139.19 | 139.26 | 0.07 | 67 | | | SILTSTONE | M-DK.GY.LAM.SSD.SLD INTERLAM WITH VFG SS |
| 62 | 139.26 | 139.70 | 0.44 | 66 | | | SANDSTONE | FG.LT-M.GY.BRKN QTZ FRACTURE FILL |
| 62 | 139.70 | 139.93 | 0.23 | 64 | | | SANDSTONE | FG.LT-M.GY.BRKN AS ABOVE |
| 62 | 139.93 | 140.04 | 0.11 | 64 | | | SILTSTONE | M.GY.LAM.SSD.SLD INTERLAM WITH VFG SS |
| 62 | 140.04 | 140.09 | 0.05 | 63 | | | SILTSTONE | M.GY.BRKN CLYV, SOFT AT TOP |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| 62 | 140.09 | 140.21 | 0.12 | 63 | | | ROCK LOSS | |
| 62 | 140.21 | 140.75 | 0.54 | 62 | | | SANDSTONE | FG.LT-M.GY.VBRKN QTZ FRACTURE FILL |
| 62 | 140.75 | 141.08 | 0.33 | *60 | | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST WISPS, QTZ FRACTURE FILL, MINOR X BDG (TOPS UP) |
| 62 | 141.08 | 141.12 | 0.04 | 60 | | | SANDSTONE | FG.LT-M.GY.VBRKN |
| 63 | 141.12 | 141.51 | 0.39 | 60 | | | SANDSTONE | FG.LT-M.GY.BRKN DISCONTINUOUS SILTY WISPS, QTZ FRACTURE FILL (ESP TOWARDS BASE), ANGULAR SLTST RIP-UPS NEAR BASE |
| 63 | 141.51 | 141.86 | 0.35 | 59 | | | SANDSTONE | FG.LT-M.GY.VBRKN RUBBLE TOWARDS BASE, QTZ FRACTURE FILL WITH SOME BRECCIA |
| 63 | 141.86 | 141.96 | 0.10 | 59 | | | ROCK LOSS | |
| 63 | 141.96 | 142.34 | 0.38 | *59 | | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN INTERLAM WITH SLTST, SSD (TOPS UP) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------|
| 63 | 142.34 | 142.50 | 0.16 | 60 | | | SANDSTONE | VFG.M.GY.LAM.VBRKN AS ABOVE, QTZ FRACTURE FILL |
| 63 | 142.50 | 142.65 | 0.15 | 60 | | | ROCK LOSS | |
| 63 | 142.65 | 142.72 | 0.07 | 60 | | | SANDSTONE | FG.M.GY.VBRKN QTZ FRACTURE FILL, SLTST WISPS |
| 63 | 142.72 | 142.89 | 0.17 | 60 | | | SANDSTONE | FG.M.GY.VTHNB.SLD SLTST LAMS, QTZ FRACTURE FILL |
| 64 | 142.89 | 143.13 | 0.24 | 61 | | | SANDSTONE | FG.M.GY.BRKN OCCASIONAL DISCONTINUOUS SLTST WISPS, Q TZ FILLED FRACTURES |
| 64 | 143.13 | 143.59 | 0.46 | 61 | | | SANDSTONE | FG.M.GY.VTHNB.VBRKN SLTST LAMS, NUMEROUS QTZ FILLED FRACTUR ES |
| 64 | 143.59 | 143.69 | 0.10 | 62 | | | ROCK LOSS | |
| 64 | 143.69 | 144.07 | 0.38 | 62 | | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN OCCASIONAL SLTST WISP, QTZ FRACTURE FIL L |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 64 | 144.07 | 144.37 | 0.30 | *63 | | SANDSTONE | YFG.M.GY.LAM.SSD.BRKN LAM-VTHNB, SLTST LAMS, DISCONTINUOUS QTZ FRACTURE FILL, BEDS CURVE UP IN ONE Z ONE |
| 64 | 144.37 | 144.69 | 0.32 | 63 | | SANDSTONE | FG.M.GY.VTHNB.BRKN SLTST MISPS |
| 64 | 144.69 | 144.83 | 0.14 | 62 | | SANDSTONE | YFG.M.GY.LAM.SSD.BRKN SLTST LAMS, QTZ VEINING AT .06M DOWN |
| 65 | 144.83 | 145.34 | 0.51 | *62 | | SANDSTONE | FG.M.GY.VTHNB.BRKN LAM-VTHNB, YFG SS BEDS & SLTST LAMS, MI NOR SSD, BAND OF ROUNDED PELLETS (UP TO 1MM) AT .38 M FROM TOP, SOME BEDS ARE SLIGHTLY RIPPLED |
| 65 | 145.34 | 145.69 | 0.35 | 61 | | SANDSTONE | YFG.M.GY.VTHNB.SSD.BRKN SLTST LAMS, SSD (TOPS UP) |
| 65 | 145.69 | 145.93 | 0.24 | 61 | | SANDSTONE | FG.LT-M.GY.VTHNB.SLD LAMS OF FINER GRAINED SS, QTZ FRACTURE FILL |
| 65 | 145.93 | 146.09 | 0.16 | 60 | | SANDSTONE | FG.LT-M.GY.VBRKN AS ABOVE, BECOMES ROUNDED RUBBLE AT BASE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 65 | 146.09 | 146.23 | 0.14 | 60 | | SANDSTONE | FG.LT-M.GY SLTST LAMS & MISPS |
| 65 | 146.23 | 146.46 | 0.23 | 60 | | SANDSTONE | YFG.LT-M.GY.LAM.SSD.SLD SLTST INTERLAMS, SSD (TOPS UP), OCCASIONAL QTZ FILLED FRACTURES WITH 1 MM BED DISPLACEMENTS. |
| 65 | 146.46 | 146.69 | 0.23 | 59 | | SANDSTONE | FG.LT-M.GY.VTHNB.BRKN SLTST MISPS, DISCONTINUOUS QTZ FILLED FRACTURES |
| 66 | 146.69 | 146.83 | 0.14 | 59 | | SANDSTONE | FG.LT-M.GY.VTHNB.SSD.BRKN SLTST LAMS |
| 66 | 146.83 | 147.01 | 0.18 | 59 | | SANDSTONE | YFG.LT-M.GY.LAM.SSD.BRKN INTLAM WITH SLTST |
| 66 | 147.01 | 147.16 | 0.15 | 58 | | SILTSTONE | SSY.M.GY.VTHNB.SLD SLIGHTLY DISTURBED BEDS |
| 66 | 147.16 | 147.58 | 0.42 | *58 | | SANDSTONE | YFG.LT-M.GY.VTHNB.BRKN SLTST LAMS, QTZ FRACTURE FILL, <1CM BED DISPLACEMENTS |
| 66 | 147.58 | 147.68 | 0.10 | 58 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 66 | 147.68 | 147.79 | 0.11 | 59 | | SANDSTONE | VFG.M.GY.LAM.VBRKN INTERLAM WITH SLTST, HELMINTHOPSIS, DIS CONTINUOUS QTZ FRACTURE FILL |
| 66 | 147.79 | 148.56 | 0.77 | 59 | | SANDSTONE | VFG.M.GY.LAM.SSD.BRKN AS ABOVE |
| 66 | 148.56 | 148.81 | 0.25 | 60 | | SANDSTONE | VFG.M.GY.LAM.SLD AS ABOVE, QTZ FILLED FRACTURES |
| 67 | 148.81 | 149.09 | 0.28 | 60 | | SILTSTONE | M.GY.LAM.BRKN SSY SLTST INTERLAMS, QTZ FRACTURE FILL, HELMINTHOPSIS, SOME LITRIC SURFACES |
| 67 | 149.09 | 149.20 | 0.11 | 60 | | SANDSTONE | FG.LT-M.GY.SLD VFG SS BED WITH HELMINTHOPSIS |
| 67 | 149.20 | 149.85 | 0.65 | *61 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SLTST LAMS, HELMINTHOPSIS, PYR BLEBS, D ISCONTINUOUS QTZ FRACTURE FILL, RARE PL ANT HASH |
| 67 | 149.85 | 150.01 | 0.16 | 62 | | SANDSTONE | VFG.VTHNB.SLD HELMINTHOPSIS |
| 67 | 150.01 | 150.89 | 0.88 | 62 | | SILTSTONE | SSY.M.GY.LAM.BRKN VFG SS VTHNBS, HELMINTHOPSIS, PYR BLEBS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 68 | 150.89 | 151.13 | 0.24 | 63 | | SILTSTONE | SSY.M-DK.GY.LAM.VBRKN QTZ FRACTURE FILL, PYR BLEBS |
| 68 | 151.13 | 151.23 | 0.10 | 63 | | ROCK LOSS | |
| 68 | 151.23 | 151.68 | 0.45 | 64 | | SILTSTONE | M-DK.GY.LAM INTERLAM WITH MUDST, NUMEROUS PYR BLEBS & BANDS, OCCASIONAL QTZ FRACTURE FILL |
| 68 | 151.68 | 153.01 | 1.33 | 65 | | SILTSTONE | SSY.M-DK.GY.VTHNB.SSD.BRKN MUDDY LAMS, SLIGHTLY DISTURBED BEDS, SOM E PYRITE BLEBS |
| 69 | 153.01 | 154.68 | 1.67 | 67 | | SANDSTONE | VFG.M-DK.GY.VTHNB.BRKN INTERBEDDED WITH SLTST, PYR BLEBS & OCC ASIONAL BAND OF PYR FLECKS, OCCASIONAL BAND OF HELMINTHOPSIS NEAR TOP, QTZ VEI NING AT .57 M DOWN, MINOR PLANT HASH NE AR TOP, WHITE SLTST BAND (1.5 CM THICK & .89M DOWN) WITH HELMINTHOPSIS |
| 69 | 154.68 | 155.11 | 0.43 | 68 | | SANDSTONE | VFG.M-DK.GY.VTHNB.SLD AS ABOVE, OCCASIONAL IMM ANGULAR BLK GR AINS |
| 70 | 155.11 | 155.66 | 0.55 | 69 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SOME DISTURBED BEDS, DISCONTINUOUS (<.5 CM) MUDST WISPS SIMILAR TO HELMINTHOPSI S |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 70 | 155.66 | 156.37 | 0.71 | 70 | | SILTSTONE | SSY.M.GY.VTHNB.BRKN VFG SS LAMS, PYR BLEBS & DISCONTINUOUS WISPS, SOME SLIGHTLY DISTURBED BEDS, HELMINTHOPSIS |
| 70 | 156.37 | 156.64 | 0.27 | 70 | | SANDSTONE | FG.M.GY.VTHNB.SSD.BRKN SLTST LAMS, SILTY SS RIP-UPS, SOME DISTURBED BEDS, FG SS CLAST (9MM LONG) WITH .5MM THICK SLTST RIM, SCATTERED SUB-ROUNDED & SUB-ANGULAR BLK GRAINS |
| 70 | 156.64 | 156.79 | 0.15 | 71 | | SANDSTONE | FG.LT-M.GY.SLD CLEAN SAND, QTZ FRACTURE FILL |
| 70 | 156.79 | 157.31 | 0.52 | *71 | | SANDSTONE | VFG.M.GY.VTHNB.SLD DISCONTINUOUS SLTST LAMS & CLASTS, WISPS OF PYR FLECKS, SUB-ANGULAR BLK GRAINS |
| 71 | 157.31 | 157.68 | 0.37 | 73 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SSY SLTST BEDS & DISCONTINUOUS MUDDY LAMS, IMM WISPY BLK GRAINS ARE SIMILAR TO HELMINTHOPSIS |
| 71 | 157.68 | 157.97 | 0.29 | *74 | | SANDSTONE | VFG.M.GY.VTHNB.SLD SILTY WISPS, DISCONTINUOUS MUDST LAMS, DISCONTINUOUS BANDS OF PYR FLECKS, BLK GRAINS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 71 | 157.97 | 158.15 | 0.18 | 74 | | SANDSTONE | VFG.M.GY.BRKN ABUNDANT QTZ VEINS & FRACTURE FILLING PARALLEL TO BDG AT BASE, 1.5CM M GY CLAY FILLED FRACTURE AT BASE |
| 71 | 158.15 | 159.20 | 1.05 | 73 | | SILTSTONE | SSY.M.GY.VTHNB.SSD.BRKN VFG SS BEDS & DISCONTINUOUS LAMS, SSD (TOPS UP), OCCASIONAL FRACTURE WITH .5CM BED DISPLACEMENT, QTZ VEINING AT BASE, BLK GRAINS IN SS, SLICKENSIDES ON FRACTURE SURFACES (REVERSE FAULTING) |
| 72 | 159.20 | 160.61 | 1.41 | *71 | | SILTSTONE | SSY.M-DK.GY.VTHNB.SSD.BRKN VFG SS BEDS & WISPS, OCCASIONAL QTZ FRACTURE FILL, OCCASIONAL PYR BLEB, 1CM SS RIP UPS |
| 72 | 160.61 | 160.72 | 0.11 | 71 | | SILTSTONE | SSY.M-DK.GY.VTHNB.SSD.SLD AS ABOVE |
| 72 | 160.72 | 160.84 | 0.12 | 71 | | SANDSTONE | VFG.LT-M.GY.SLD NUMEROUS SILT FILLED FRACTURES & HELMINTHOPSIS-LIKE GRAINS |
| 72 | 160.84 | 161.20 | 0.36 | 71 | | SILTSTONE | SSY.M-DK.GY.VTHNB.SSD.BRKN AS ABOVE, SLTST/VFG SS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------|
| 73 | 161.20 | 163.40 | 2.20 | 70 | | SILTSTONE | SSY, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE, FG SS BEDS, LAMS & RIP-UPS, PYR BLEBS, SSD (TOPS UP) |
| 74 | 163.40 | 163.65 | 0.25 | 69 | | SILTSTONE | SSY, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE |
| 74 | 163.65 | 165.51 | 1.86 | *69 | | SILTSTONE | SSY, M-DK, GY, VTHNB, SSD, BRKN AS ABOVE, MUDDIER AT TOP, SOME SANDIER ZONES, PYR BLEBS & STRINGERS |
| 75 | 165.51 | 166.10 | 0.59 | *74 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN VFG SS BEDS & DISCONTINUOUS LAMS, OCCASIONAL PLANT HASH |
| 75 | 166.10 | 166.25 | 0.15 | 74 | | SILTSTONE | SSY, M, GY, VTHNB, BRKN INTERBEDDED WITH VFG SS, HELMINTHOPSIS |
| 75 | 166.25 | 166.55 | 0.30 | 74 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN VFG SS BEDS, PYR BLEBS, RARE TINY PLANT HASH |
| 75 | 166.55 | 167.61 | 1.06 | 73 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN AS ABOVE, NUMEROUS PYR BLEBS IN IRREGULAR SHAPES, OCCASIONAL PLANT HASH |
| 76 | 167.61 | 168.67 | 1.06 | *73 | | SILTSTONE | M-DK, GY, VTHNB, BRKN VFG SS LAMS, MINOR SSD, PYR BLEBS (IRREGULAR SHAPED), RARE TINY PLANT HASH |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 76 | 168.67 | 168.71 | 0.04 | 72 | | SANDSTONE | VFG, LT-M, GY, VTHNB, SLD GRADES FROM SSY SILTST TO VFG SS |
| 76 | 168.71 | 169.01 | 0.30 | 71 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN VFG SS LAMS (MORE NUMEROUS AT BASE), OCCASIONAL 1 MM SUB-ANGULAR BLK GRAINS |
| 76 | 169.01 | 169.51 | 0.50 | 70 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN OCCASIONAL VFG SS LAMS |
| 76 | 169.51 | 169.70 | 0.19 | 69 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN AS ABOVE, OCCASIONAL TINY PLANT HASH, PYR STRINGER |
| 77 | 169.70 | 171.83 | 2.13 | *66 | | SILTSTONE | M-DK, GY, VTHNB, SSD, BRKN OCCASIONAL SSY LAMS & MUDST WISPS, PYR BLEBS, OCCASIONAL FINING UP BEDS, MINOR PLANT HASH AT 96M DOWN, OCCASIONAL BLK GRAINS, BCA = 69 DEGREES AT BASE |
| 78 | 171.83 | 172.45 | 0.62 | *74 | | SILTSTONE | M-DK, GY, VTHNB, BRKN AS ABOVE |
| 78 | 172.45 | 173.88 | 1.43 | *68 | | SILTSTONE | M-DK, GY, VTHNB, SLD AS ABOVE, OCCASIONAL PYR WISPS, DISCONTINUOUS BLK WISPS (UP TO 3MM) IN SOME BEDS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 79 | 173.88 | 174.05 | 0.17 | *65 | | SILTSTONE | M-DK.GY.VTHNB.SLD MUDST WISPS & OCCASIONAL SSSY LAMS, CORE IS WORN DOWN TO SMALLER DIAMETER, THIS T. OFF AT BASE |
| 79 | 174.05 | 175.48 | 1.43 | *62 | | SILTSTONE | M-DK.GY.VTHNB.SSD.BRKN MUDST WISPS & OCCASIONAL SSSY LAMS, PYR STRINGERS & BLEBS, OCCASIONAL BEDS WITH TINY PLANT HASH, CORE IS WORN TO SMALLER DIAMETER. MINOR SSD IN SSSY LAMS |
| 79 | 175.48 | 175.90 | 0.42 | *59 | | SILTSTONE | M-DK.GY.SSD.BRKN MUDST WISPS, PYR STRINGER, CORE IS WORN TO SMALLER DIAMETER, BCA IS QUESTIONABLE DUE TO IRREGULAR BDG SURFACE |
| 80 | 175.90 | 177.12 | 1.22 | *65 | | SILTSTONE | M-DK.GY.VTHNB.BRKN LAM-VTHNB, MUDST LAMS, NUMEROUS DISCONTINUOUS PYR STRINGERS, OCCASIONAL QTZ FRACTURE FILL |
| 80 | 177.12 | 177.53 | 0.41 | *66 | | SILTSTONE | M-DK.GY.BRKN AS ABOVE, OCCASIONAL BIVALVES, ETCHY CORE SURFACE, NOT AS WELL CONSOLIDATED AS UNIT ABOVE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 80 | 177.53 | 177.97 | 0.44 | *67 | | SILTSTONE | DK.GY.LAM.BRKN MUDDY, MUDST WISPS, ROUND PELLETS (6MM IN DIAMETER), SOME ARE PYR REPLACEMENT NODULES |
| 81 | 177.97 | 178.42 | 0.45 | *67 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN MUDST WISPS, DISCONTINUOUS PYR STRINGERS, 2MM DIAMETER QTZ REPLACED TUBE (SCAP HOPOD?), STAFFINELLA LIKE BIVALVE (HERZOGINA?), COALY PLANT FRAGMENTS, NUMEROUS SPHERICAL & TUBULAR NODULES (SOME PYR REPLACED) |
| 81 | 178.42 | 178.56 | 0.14 | *68 | | MUDSTONE | SLTY.DK.GY.VBRKN AS ABOVE, TWIST OFF AT TOP, BIVALVE |
| 81 | 178.56 | 178.66 | 0.10 | *68 | | ROCK LOSS | |
| 81 | 178.66 | 180.00 | 1.34 | *69 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN AS ABOVE, NUMEROUS ROUND & TUBULAR NODULES, SOME PYR, OCCASIONAL BIVALVE |
| 82 | 180.00 | 180.52 | 0.52 | *70 | | MUDSTONE | SLTY.DK.GY.LAM.BRKN OCCASIONAL MUDDY WISP, OCCASIONAL BIVALVE FRAGMENT, PYRITIZED NODULES (NOT AS PREVALENT AS ABOVE), POSSIBLE AMMONITE AT BASE (SAMPLED) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------|
| 82 | 180.52 | 181.70 | 1.18 | *71 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN AS ABOVE WITH RARE BIVALVE (2X3CM)->INO CERAMUS? |
| 82 | 181.70 | 181.84 | 0.14 | 70 | | | SILTSTONE | M. GY. BRKN BIVALVE FRAGMENT |
| 82 | 181.84 | 182.06 | 0.22 | 70 | | | MUDSTONE | SLTY. DK. GY. LAM. BRKN LISTRIC SURFACES |
| 83 | 182.06 | 182.60 | 0.54 | 70 | 05826 | | MUDSTONE | SLTY. M-DK. GY. SLD CARB NEAR BASE, LOWER 25CM SAMPLED |
| 83 | 182.60 | 182.63 | 0.03 | 70 | 05827 | K | COAL | C-4. BLK. BRKN |
| 83 | 182.63 | 182.73 | 0.10 | 70 | 05827 | K | COAL | C-3. BLK. BRKN |
| 83 | 182.73 | 182.82 | 0.09 | 69 | 05827 | K | MUDSTONE | SLTY. M-DK. GY. SLD PYR |
| 83 | 182.82 | 182.97 | 0.15 | 69 | 05827 | K | COAL | C-4. BLK. SLD C-2 BANDS, PYR NODUALS |
| 83 | 182.97 | 183.07 | 0.10 | 69 | 05827 | K | COAL | C-3. BLK. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------|
| 83 | 183.07 | 183.16 | 0.09 | 69 | 05827 | K | MUDSTONE | CARB. DK. GY. SLD |
| 83 | 183.16 | 183.22 | 0.06 | 69 | 05827 | K | COAL | C-3. BLK. SLD |
| 83 | 183.22 | 183.29 | 0.07 | 69 | 05827 | K | COAL | C-2. BLK. BRKN |
| 83 | 183.29 | 183.32 | 0.03 | 69 | 05827 | K | MUDSTONE | CARB. DK. GY. SLD |
| 83 | 183.32 | 183.41 | 0.09 | 69 | 05827 | K | COAL | C-2. BLK. BRKN |
| 83 | 183.41 | 183.52 | 0.11 | 69 | 05827 | K | COAL | C-5. BLK. BRKN |
| 83 | 183.52 | 183.80 | 0.28 | 69 | 05827 | K | COAL LOSS | |
| 83 | 183.80 | 183.93 | 0.13 | 68 | 05828 | K | ROCK LOSS | |
| 83 | 183.93 | 183.95 | 0.02 | 68 | 05828 | K | SILTSTONE | M-DK. GY. SLD |
| 83 | 183.95 | 183.98 | 0.03 | 68 | 05828 | K | MUDSTONE | CARB. DK. GY. BRKN |
| 83 | 183.98 | 184.10 | 0.12 | 68 | 05828 | K | COAL | C-5. BLK. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------|
| 83 | 184.10 | 184.26 | 0.16 | 68 | 05828 | K | COAL | C-2.BLK.SLD |
| 84 | 184.26 | 184.31 | 0.05 | 68 | 05828 | K | COAL | C-3.BLK.BRKN |
| 84 | 184.31 | 184.46 | 0.15 | 68 | 05828 | K | COAL | C-5.BLK.SLD VITRAIN STRINGERS & BANDS |
| 84 | 184.46 | 184.50 | 0.04 | 68 | 05828 | K | MUDSTONE | SLTY.M.GY.SLD |
| 84 | 184.50 | 184.76 | 0.26 | 68 | 05828 | K | COAL | C-4.BLK.SLD C-2 BANDS |
| 84 | 184.76 | 184.81 | 0.05 | 68 | 05828 | K | MUDSTONE | CARB.DK.GY.BRKN |
| 84 | 184.81 | 184.84 | 0.03 | 68 | 05828 | K | COAL | C-3.BLK.SLD |
| 84 | 184.84 | 184.98 | 0.14 | 67 | 05828 | K | COAL | C-4.BLK.SLD C-2 BANDS |
| 84 | 184.98 | 184.99 | 0.01 | 67 | 05828 | K | MUDSTONE | CLYY.M.GY.SLD |
| 84 | 184.99 | 185.10 | 0.11 | 67 | 05828 | K | COAL | C-3.BLK.SHRD WEATHERED |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------|
| 84 | 185.10 | 185.32 | 0.22 | 67 | 05828 | K | COAL | C-5.BLK.BRKN BANDED |
| 84 | 185.32 | 185.44 | 0.12 | 67 | 05828 | K | COAL | C-3.BLK.BRKN |
| 84 | 185.44 | 185.52 | 0.08 | 67 | 05828 | K | COAL | C-2.BLK.SLD |
| 84 | 185.52 | 185.65 | 0.13 | 67 | 05828 | K | COAL | C-4.BLK.SLD |
| 84 | 185.65 | 185.74 | 0.09 | 67 | 05828 | K | COAL | C-5.BLK |
| 84 | 185.74 | 185.91 | 0.17 | 67 | 05828 | K | COAL | C-4 |
| 84 | 185.91 | 185.96 | 0.05 | 67 | 05828 | K | COAL LOSS | |
| 84 | 185.96 | 186.15 | 0.19 | 66 | 05829 | K | ROCK LOSS | |
| 84 | 186.15 | 186.43 | 0.28 | 66 | 05829 | K | COAL LOSS | |
| 84 | 186.43 | 186.54 | 0.11 | 66 | 05829 | K | MUDSTONE | CARB.DK.GY.SLD VITRAIN STRINGERS |
| 84 | 186.54 | 186.56 | 0.02 | 66 | 05829 | K | COAL | C-3.BLK.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------|
| 85 | 186.56 | 186.62 | 0.06 | 66 05829 | K | COAL | C-4.BLK.SLD |
| 85 | 186.62 | 186.71 | 0.09 | 66 05829 | K | MUDSTONE | CARB.DK.GY.SLD |
| 85 | 186.71 | 186.75 | 0.04 | 66 05829 | K | COAL | C-4.BLK.SLD |
| 85 | 186.75 | 186.80 | 0.05 | 66 05829 | K | MUDSTONE | CARB.DK.GY.SLD |
| 85 | 186.80 | 186.83 | 0.03 | 66 05829 | K | SILTSTONE | M.GY.SLD |
| 85 | 186.83 | 186.89 | 0.06 | 66 05829 | K | COAL | C-4.BLK.SLD COALY BANDS WITHIN |
| 85 | 186.89 | 186.91 | 0.02 | 66 05829 | K | MUDSTONE | CARB.DK.GY.BRKN |
| 85 | 186.91 | 186.95 | 0.04 | 66 05829 | K | COAL | C-3.BLK.BRKN |
| 85 | 186.95 | 187.05 | 0.10 | 66 05829 | K | SILTSTONE | M.GY.SLD COALY QTZ |
| 85 | 187.05 | 187.11 | 0.06 | 65 05829 | K | COAL | C-4.BLK.YBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 85 | 187.11 | 187.45 | 0.34 | 65 05830 | | SILTSTONE | CLY.M.GY.SLD COALY CARB STRINGERS, UPPER 25CM SAMPLE D |
| 85 | 187.45 | 188.17 | 0.72 | 65 | | SILTSTONE | CLY.M-DK.GY.BRKN COALY LENSES & STRINGERS WITHIN, MORE C ARR.TOWARDS BASE |
| 85 | 188.17 | 188.21 | 0.04 | 64 | | COAL | C-2.BLK.SLD |
| 86 | 188.21 | 188.30 | 0.09 | 64 | | COAL | C-2.BLK.BRKN WELL CLEATED, SOME C-1 BANDS WITH GOOD CONCHOIDAL FRACTURES, OCCASIONAL MUDST BANDS, QUITE HARD |
| 86 | 188.30 | 188.33 | 0.03 | 64 | | MUDSTONE | DK.GY.SHRD COAL BANDS & QTZ FRACTURE FILL, DISCONT INUOUS PYR WISPS |
| 86 | 188.33 | 188.42 | 0.09 | 64 | | SILTSTONE | DK.GY.SHRD DISCONTINUOUS PYR WISPS (PLANT FRAGMENT S?) |
| 86 | 188.42 | 188.82 | 0.40 | 64 | | MUDSTONE | DK.GY.LAM NUMEROUS 3MM COAL (C-2) STRINGERS (ESP TOWARDS TOP), COALY PLANT FRAGS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 86 | 188.82 | 188.89 | 0.07 | 64 | | | SILTSTONE | M.GY.SLD QTZ VEINING ASSOCIATED WITH 3MM COAL BANDS, POSSIBLE CORE LOSS |
| 86 | 188.89 | 189.33 | 0.44 | 64 | | | MUDSTONE | DK.GY.BRKN COALY PLANT FRAGMENTS, OCCASIONAL COAL STRINGER |
| 86 | 189.33 | 190.18 | 0.85 | *63 | | | SILTSTONE | M.GY.VTHNB.BRKN FRACTURED, DISTURBED BEDS AT TOP, INTERBEDDED WITH MUDDY BEDS TOWARDS BASE, OCCASIONAL 3 MM LONG BLK WISPS AT VARYING ORIENTATIONS. |
| 87 | 190.18 | 190.31 | 0.13 | 63 | | | SILTSTONE | M.GY.VTHNB.SLD OCCASIONAL DISCONTINUOUS MUDST WISP & ANGULAR CLAST |
| 87 | 190.31 | 191.05 | 0.74 | 64 | | | SILTSTONE | M.GY.VTHNB.BRKN SLIGHTLY DISTURBED BEDS, LARGE QTZ & COAL FILLED BLEB (1.5X6CM) AT .075M DOWN, COALY WOOD FRAGMENT |
| 87 | 191.05 | 191.66 | 0.61 | 65 | | | SILTSTONE | SSY.M.GY.VTHNB.BRKN SILT FILLED FRACTURES, QTZ FILLED FRACTURES, SLIGHTLY DISTURBED BEDDING, OCCASIONAL LISTRIC SURFACE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------|
| 87 | 191.66 | 192.06 | 0.40 | *65 | | | SILTSTONE | M.GY.VTHNB.BRKN ALMOST MOTTLED LOOK, DISCONTINUOUS MUDST WISPS |
| 88 | 192.06 | 192.35 | 0.29 | *63 | | | SILTSTONE | M.GY.VTHNB.BRKN DISCONTINUOUS MUDST WISPS, QTZ REPLACED BY ALYTES |
| 88 | 192.35 | 192.41 | 0.06 | 63 | 05992 | | BENTONITE | LT.GY.BRKN SOFT, STICKY, SAMPLED |
| 88 | 192.41 | 192.54 | 0.13 | 63 | | | SILTSTONE | SSY.M.GY.SLD COALY PLANT FRAGMENTS, HARD |
| 88 | 192.54 | 192.63 | 0.09 | 63 | | | SILTSTONE | LT-M.GY.VBRKN MOTTLED, FG.SS PIECES AT BASE (IN PLACE?) |
| 88 | 192.63 | 193.11 | 0.48 | 63 | | | SILTSTONE | M.GY.VTHNB.BRKN OCCASIONAL MUDST WISP, SSY BANDS ARE MOTTLED |
| 88 | 193.11 | 193.19 | 0.08 | 63 | | | SILTSTONE | M.GY.VBRKN AS ABOVE |
| 88 | 193.19 | 193.86 | 0.67 | 63 | | | SILTSTONE | M.GY.VTHNB.BRKN SSY BEDS, MUDST WISPS, COALY WOOD FRAGMENTS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 89 | 193.86 | 194.09 | 0.23 | 63 | | SILTSTONE | SSY.LT.GY.BRKN MOTTLED, QTZ FRACTURE FILL NEAR BASE, L ISTRIC SURFACES |
| 89 | 194.09 | 195.14 | 1.05 | *63 | | SILTSTONE | M.GY.VTHNB.SLD INTERBEDDED WITH VFG SS, COALY HOOD FRA GMENTS, SOME DISTURBED BEDS |
| 89 | 195.14 | 195.18 | 0.04 | 63 | | SILTSTONE | M.GY.VBRKN AS ABOVE |
| 89 | 195.18 | 195.93 | 0.75 | 63 | | SILTSTONE | SSY.M.GY.VTHNB.SSD.SLD INTERBEDDED WITH VFG SS, SSD IN SS BEDS |
| 90 | 195.93 | 195.97 | 0.04 | 64 | | SILTSTONE | SSY.LT.GY.VBRKN |
| 90 | 195.97 | 196.14 | 0.17 | 64 | | SANDSTONE | VFG.M.GY.VTHNB.BRKN SLTST LAMS |
| 90 | 196.14 | 197.90 | 1.76 | *64 | | SANDSTONE | VFG.M.GY.VTHNB.SSD.BRKN BANDS OF FG SS (ABUNDANT SSD & SILT RIP UPS) & BANDS OF SLTST, OCCASIONAL COAL Y BLEB WITH QTZ |
| 91 | 197.90 | 198.11 | 0.21 | 62 | | SILTSTONE | M.GY.VTHNB.BRKN BANDS OF VFG SS WITH SLTST LAMS & RIP-U PS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 91 | 198.11 | 198.28 | 0.17 | 62 | | SANDSTONE | FG.LT-M.GY.THNB.SSD.SLD SILTY LAMS & DISCONTINUOUS WISPS, SSD (TOPS UP) |
| 91 | 198.28 | 198.57 | 0.29 | 62 | | SILTSTONE | M.GY.SSD.BRKN BANDS OF FG SS (UP TO 8CM THICK) CONTAINING SSD & RIP-UPS |
| 91 | 198.57 | 199.21 | 0.64 | 61 | | SANDSTONE | FG.LT-M.GY.THNB.BRKN ANGULAR SLTST RIP UPS (UP TO 2.5X3.5CM) & 6CM BEDS WITH SS LOAD CASTS & RIP UPS |
| 91 | 199.21 | 199.32 | 0.11 | 61 | | SANDSTONE | FG.LT-M.GY.THNB.SLD ANGULAR SLTST RIP-UPS |
| 91 | 199.32 | 199.91 | 0.59 | *60 | | SANDSTONE | MG.LT-M.GY.THNB.SLD SPECKLED LOOK NEAR TOP WHERE ABOVE UNIT IS INTERMIXED WITH THIS UNIT (FG & MG SAND), OCCASIONAL FINER GRAINED LAMS, NUMEROUS SUB-ANGULAR SLTST RIP-UPS IN LOWER 4CM OF CORE |
| 92 | 199.91 | 199.99 | 0.08 | 62 | | SANDSTONE | MG.LT-M.GY.SLD NUMEROUS SLTST RIP-UPS & LAMS |
| 92 | 199.99 | 200.51 | 0.52 | 63 | | SANDSTONE | FG.LT-M.GY.THNB.SSD.BRKN INTERBEDDED WITH SLTST, OCCASIONAL FINE GRAINED LAMS IN SS BEDS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 92 | 200.51 | 200.68 | 0.17 | 65 | | SILTSTONE | M.GY.VTHNB.BRKN MUDDY LAMS, POSSIBLE HELMINTHOPSIS |
| 92 | 200.68 | 200.73 | 0.05 | 66 | | SANDSTONE | FG.M.GY.LAM.SSD.SLD INTERLAM WITH MUDST, ABUNDANT SSD |
| 92 | 200.73 | 201.45 | 0.72 | *68 | | SANDSTONE | FG.LT-M.GY.THNB.SSD.BRKN SLTST & MUDST SUB-ANGULAR RIP-UPS (AVG = .75X1.75CM), SLTST & MUDST LAMS (DISC ONTINUOUS), OCCASIONAL VOID FILLING QTZ |
| 92 | 201.45 | 201.75 | 0.30 | 67 | | SILTSTONE | M.GY.VTHNB.BRKN MUDDY LAMS, MUD FILLED FRACTURES |
| 92 | 201.75 | 201.87 | 0.12 | 67 | | SANDSTONE | FG.M.GY.THNB.SLD FG-MG SS |
| 92 | 201.87 | 201.95 | 0.08 | 66 | | SANDSTONE | MG.LT-M.GY.THNB.SLD ROUNDED SLTST RIP-UPS (.5-1.0CM DIAMETE R) |
| 93 | 201.95 | 202.04 | 0.09 | 66 | | SANDSTONE | FG.M.GY.VTHNB.SLD FG-MG SS, MUDDY SLTST BAND, IRREGULAR B DG CONTACT (RIPPLED) |
| 93 | 202.04 | 202.13 | 0.09 | 66 | | SILTSTONE | SSY.M.GY.VTHNB.BRKN ANGULAR MUDST CLASTS (UP TO 3MM) |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 93 | 202.13 | 202.44 | 0.31 | 66 | | SANDSTONE | MG.LT-M.GY.THNB.SLD FINER GRAINED INTERBEDS |
| 93 | 202.44 | 202.54 | 0.10 | 65 | | SANDSTONE | FG.M.GY.VTHNB.SLD DISCONTINUOUS MUDST WISPS, IRREGULAR CO NTACT WITH ABOVE UNIT |
| 93 | 202.54 | 202.74 | 0.20 | 65 | | SANDSTONE | FG.LT-M.GY.BRKN POSSIBLE CORE LOSS, NUMEROUS SUB-ROUNDE D SLTST RIP-UPS (1.5X2.25CM) & ANGULAR MUDST RIP-UPS (.1X.4CM), FRACTURED |
| 93 | 202.74 | 203.13 | 0.39 | 64 | | SANDSTONE | MG.LT-M.GY.SLD FG-MG SS, NUMEROUS BLK GRAINS (UP TO 1M M LONG), SUB-ANGULAR SLTST & MUDST RIP- UPS AT BASE |
| 93 | 203.13 | 203.17 | 0.04 | 64 | | SILTSTONE | M-DK.GY.LAM.SLD RIPPLED WITH DISCONTINUOUS SS GRAINS, M ISPS THROUGHOUT, QTZ FRACTURE FILL |
| 93 | 203.17 | 203.24 | 0.07 | 64 | | SILTSTONE | M.GY.VTHNB.SLD OCCASIONAL FG SS WISPS |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7031

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 93 | 203.24 | 203.96 | 0.72 | *63 | | SANDSTONE | MG.LT-M.GY.THNB.BRKN FG-MG SS WITH BANDS OF LAMINATED SLTST & FG SS, BANDS OF LAM SLTST & MUDST, OCCASIONAL QTZ FILLED FRACTURE, 4CM BED DISPLACEMENT, NORMAL FAULT .27M DOWN, OCCASIONAL LISTRIC SURFACE |
| 94 | 203.96 | 204.20 | 0.24 | 68 | | SANDSTONE | FG.M.GY.VTHNB.SLD DISCONTINUOUS SLTST LAMS, SUB-ANGULAR RIP UPS (<.5CM), COALY WOOD FRAGMENTS |
| 94 | 204.20 | 204.40 | 0.20 | 70 | | SANDSTONE | MG.M.GY.VTHNB.SLD SLTST RIP UPS (UP TO 1.QX2.5CM), COALY WOOD FRAGMENTS |
| 94 | 204.40 | 205.24 | 0.84 | *76 | | SILTSTONE | M-DK.GY.THNB.BRKN MG SS LAMS & THNBS, OCCASIONAL QTZ FILLED FRACTURES W/ < 1 CM BED DISPLACEMENT S COALY WOOD FRAGMENTS, POSSIBLE SS FILLED WRMBUR IN SLTST AT .76 M DOWN, OCCASIONAL PLANT HASH, DRILLERS T.D. =206.35 M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

COAL DIVISION
MOUNT KLAPPAN PROJECT

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87031 SEAM : ? INTERVAL(M) : 60.11 - 60.70 ELEVATION(M) : 1393.8
 GEOLOGIST : LEE SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | |
|------------|--------------------|---------------|-----------------|------|--------|-----------|------|-----------------|----------------|---------------------|-------|------|-------|------|----------------|---|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/KG | |
| | 60.11 | ↑ | | 0.17 | | | | | | | | | | | | |
| | | | 0.09 | | 100.0 | 5811 | 147 | 0.49 / 0.09 | 0.49 / 0.09 | 1.04 | 41.34 | 7.73 | 49.89 | 1.66 | 18.52 | — |
| | 60.70 | ↓ | | 0.32 | | | | 0.58 | 0.58 | | | | | | | |

GULF CANADA CORPORATION

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN LR DDH87031 SEAM : K/L (PART) INTERVAL(M) : 81.71 - 82.53 ELEVATION(M) : 1393.8
 GEOLOGIST : LEE SCALE: 1:40 DATE : FEB 24/88 DRAWING NO. :

| SEAM COMP. | DRILL DEPTH METRES | COAL SEAM LOG | INTERVAL METRES | | % REC. | SAMPLE ID | | COAL/ROCK TOTAL | | COAL QUALITY A.D.B. | | | | | | | | |
|------------|--------------------|---------------|-----------------|------|--------|-----------|------|---------------------|---------------------|---------------------|-------|------|-------|------|----------------|---|--|--|
| | | | ROCK | COAL | | SIMP | COMP | COMPOS | MINING SECTION | RES MOIST | ASH | VM | FC | TS | CAL. VAL MJ/Kg | | | |
| | 81.71 | ↑ | | | | | | | | | | | | | | | | |
| | 82.53 | ↓ | | 0.66 | 93.7 | 5817 | 148 | 0.70 / 0.00 0.70 | 0.70 / 0.00 0.70 | 1.22 | 19.80 | 6.38 | 72.60 | 1.12 | 27.76 | — | | |

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87031

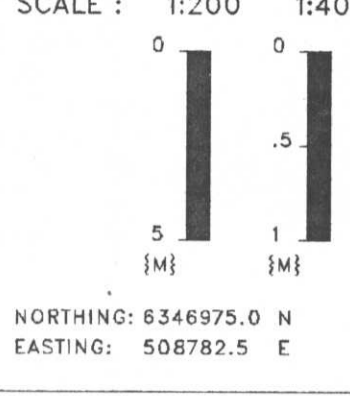
740

GEOLOGIST : LEE

DATE : MAR 08/88

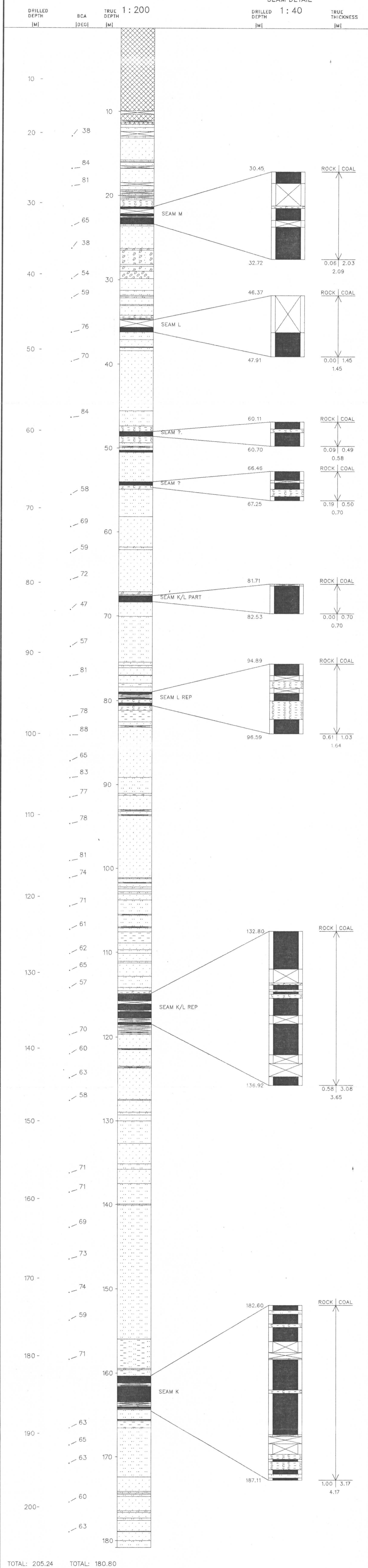
DRAWING NO. :

LITHOLOGIC SYMBOLS



NORTHING: 6346975.0 N
 EASTING: 508782.5 E
 INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |



TOTAL: 205.24 TOTAL: 180.80

Gulf Canada Resources Limited

Coal Division

740

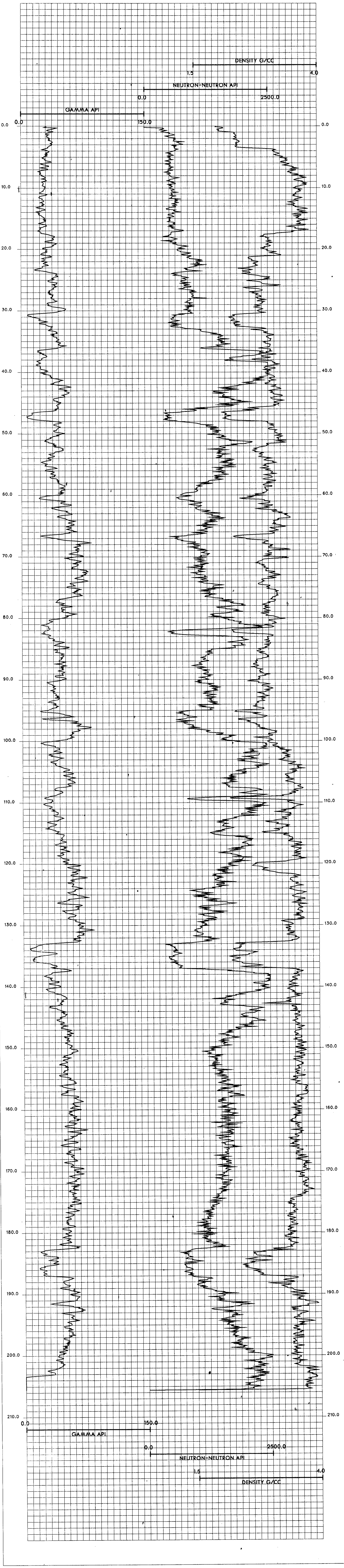
Geophysical Log

| | | |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Datasource: KPNLRDDH87031 Log Date: 63-09-23 Company: CENTURY Geologist: LEE | Province: BC Northing: 6346980.00 Lat: 571603 Zone: 9 Easting: 508783.00 Long: 1285116 Measuring Point: GROUND LEVEL Elevation: 1393.8 | |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

Scale: 1 to 200.0
 Depth Range: 0.0 to 210.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



KPNLRDDH87032

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87032

DATE - 03/01/88

- HISTORY -

START DATE - 10/12/87
END DATE - 10/13/87

CONTRACTOR - J.T. THOMAS
GEOLOGIST - PENMAN

OPERATOR - G.C.R.
SURVEYOR - TRONNES

REMARKS - SITE "C" TWINNED INTERSECTING SEAM "I"

- LOCATION -

PROVINCE - BC
ELEVATION - 1615.67

ZONE - 9
NORTHING - 6345000.24
EASTING - 505860.97

LICENCE/LEASE NUMBER -

LATITUDE - 571500
LONGITUDE - 1285410

- ORIENTATION -

LENGTH - 57.00
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

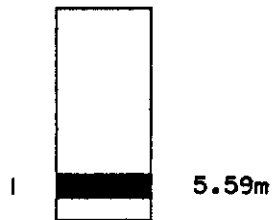
CEMENT - N
PLUG - N
PIEZ - N

CASING DEPTH (M) - 7.62
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87032**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]8800720 12.LG



88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|----------------------------------------------------------------------------|
| | 0.00 | 7.62 | 7.62 | 65 | | | CASING | CASING DEPTH |
| 1 | 7.62 | 7.67 | 0.05 | 65 | | | SANDSTONE | MG. MOD. LT. GY. SLD OVERBURDEN. WEATHERED ORNG-BRN. |
| 1 | 7.67 | 7.87 | 0.20 | 65 | | | SILTSTONE | DK. GY. LAM. SLD MINOR MRMBUR AND BIOTRB. TOPS UP |
| 1 | 7.87 | 8.05 | 0.18 | 65 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. SLD MINOR SSD AND BIOTRB. |
| 1 | 8.05 | 8.28 | 0.23 | *65 | | | SILTSTONE | SSY. M. GY. LAM. SLD |
| 1 | 8.28 | 8.75 | 0.47 | 65 | | | SANDSTONE | FG. MOD. LT. GY. YTHNB. SLD MINOR SLTST LAMS. (SOME CONTAINING QUARTZ). |
| 1 | 8.75 | 8.98 | 0.23 | 66 | | | SILTSTONE | DK. GY. LAM. XBDG. SLD |
| 1 | 8.98 | 9.29 | 0.31 | 66 | | | ROCK LOSS | |
| 1 | 9.29 | 9.87 | 0.58 | 66 | | | SANDSTONE | FG. MOD. LT. GY. THNB. BRKN MINOR SLTST LAMS. WEATHERED ORNG-BN. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 2

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------|
| 2 | 9.87 | 10.64 | 0.77 | 67 | | | SANDSTONE | FG. MEL. LT. GY. THKB. SLD NO BEDDING. WEATHERED ORNG-BN. CORE LOS S AT END OF UNIT. |
| 2 | 10.64 | 11.79 | 1.15 | 68 | | | SANDSTONE | FG. MEL. LT. GY. THKB. BRKN NO BEDDING. WEATHERED ORNG-BN. |
| 2 | 11.79 | 12.25 | 0.46 | 69 | | | ROCK LOSS | |
| 3 | 12.25 | 13.69 | 1.44 | *70 | | | SANDSTONE | FG. MEL. LT. GY. YTHNB. YBRKN CORE LOSS |
| 3 | 13.69 | 13.94 | 0.25 | 69 | | | SANDSTONE | FG. MEL. LT. GY. YTHNB. SLD |
| 4 | 13.94 | 16.00 | 2.06 | 67 | | | SANDSTONE | FG. MEL. LT. GY. THKB. BRKN QTZ STRINGERS. INTERVALS VSHRD WITH POS SIBLE CORE LOSS. |
| 5 | 16.00 | 16.67 | 0.67 | 65 | | | SANDSTONE | FG. MEL. LT. GY. THKB. YBRKN QTZ STRINGERS. |
| 5 | 16.67 | 17.79 | 1.12 | 64 | | | SANDSTONE | FG. MEL. LT. GY. THKB. YBRKN |
| 6 | 17.79 | 18.45 | 0.66 | 63 | | | SANDSTONE | FG. MEL. LT. GY. THKB. YBRKN QTZ BANDING (UP TO 1 CM). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 18.45 | 18.67 | 0.22 | 62 | | | SILTSTONE | M. GY. LAM. VBRKN CORE LOSS AT BASE |
| 6 | 18.67 | 18.78 | 0.11 | 62 | | | SANDSTONE | FG. MOD. LT. GY. YTHNB. SLD WRMBUR AND SSD IN SLTST LAMS. TOPS UP. |
| 6 | 18.78 | 18.90 | 0.12 | *62 | | | SILTSTONE | DK. GY. LAM. SLD |
| 6 | 18.90 | 19.14 | 0.24 | 62 | | | SANDSTONE | FG. MOD. LT. GY. YTHNB. BRKN SSD IN SLTST LAM |
| 6 | 19.14 | 19.25 | 0.11 | 62 | | | SILTSTONE | M. GY. LAM. BRKN |
| 6 | 19.25 | 19.82 | 0.57 | 62 | | | SANDSTONE | FG. PR. M. GY. LAM. BRKN SSD IN SLTST LAMS. TOPS UP. |
| 7 | 19.82 | 21.84 | 2.02 | 63 | | | SANDSTONE | SLTY. FG. PR. M. GY. LAM. BRKN POSSIBLE CORE LOSS AT TOP. SS/SLTST = 6 0/40 WITH SSD AND WRMBURS IN SLTST LAMS SOME INTERVALS ARE WEATHERED ORANGE/B ROWN. |
| 8 | 21.84 | 22.60 | 0.76 | 64 | | | SILTSTONE | M. GY. LAM. BRKN SS LAM. SSD |
| 8 | 22.60 | 22.94 | 0.34 | 65 | | | SANDSTONE | FG. MOD. LT. GY. VSHRD CORE LOSS. NO APPARENT BEDDING. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------|
| 8 | 22.94 | 23.69 | 0.75 | *65 | | | SANDSTONE | FG. MOD. LT. GY. LAM. XBDG. BRKN |
| 9 | 23.69 | 24.33 | 0.64 | 67 | | | SILTSTONE | DK. GY. LAM. BRKN |
| 9 | 24.33 | 25.85 | 1.52 | *70 | | | SANDSTONE | FG. PR. LT. GY. LAM. BRKN BENTONITIC SS WITH SLTST LAM. |
| 10 | 25.85 | 25.96 | 0.11 | 69 | | | SANDSTONE | FG. PR. LT. GY. LAM. SLD A/A |
| 10 | 25.96 | 26.05 | 0.09 | 69 | | | BENTONITE | LT. GY. SLD |
| 10 | 26.05 | 26.17 | 0.12 | 69 | | | BENTONITE | LT. GY. SLD |
| 10 | 26.17 | 27.70 | 1.53 | 68 | | | SANDSTONE | FG. PR. LT. GY. LAM. VBRKN CORE LOSS AT TOP. |
| 11 | 27.70 | 28.57 | 0.87 | 67 | | | SANDSTONE | VFG. PR. LT. GY. LAM. VSHRD BENTONITIC SS. CORE LOSS AT BASE. |
| 11 | 28.57 | 29.10 | 0.53 | 67 | | | BENTONITE | SLTY. PR. LT. GY. LAM. VBRKN SLTY LAM. |
| 11 | 29.10 | 29.54 | 0.44 | 66 | | | BENTONITE | SLTY. PR. LT. GY. LAM. VBRKN SLTY LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------|
| 12 | 29.54 | 29.91 | 0.37 | 66 | | | BENTONITE | WEL. LT. GY. VBRKN 3CM QTZ BAND AT BASE. |
| 12 | 29.91 | 31.53 | 1.62 | 65 | | | SILTSTONE | DK. GY. LAM. XBDG. BRKN SSD, AND HORIZONTAL AND VERTICAL NORM B URROWS. |
| 13 | 31.53 | 32.23 | 0.70 | 64 | | | SILTSTONE | LT. GY. LAM. BRKN |
| 13 | 32.23 | 33.58 | 1.35 | 63 | | | SILTSTONE | LT. GY. LAM. BRKN MINOR BIOTRB. NEAR TOP. |
| 14 | 33.58 | 35.39 | 1.81 | *62 | | | SILTSTONE | CLYY. DK. GY. LAM. BRKN SLTY. SS. LAM. |
| 14 | 35.39 | 35.60 | 0.21 | 61 | | | SILTSTONE | CLYY. DK. GY. LAM. BRKN SLTY. SS. LAM. |
| 15 | 35.60 | 37.71 | 2.11 | *60 | | | SILTSTONE | CLYY. LT. GY. LAM. SLD CLEAN. SLTST. & YFG. SS. LAM. |
| 16 | 37.71 | 38.43 | 0.72 | 60 | | | MUDSTONE | LT. BLK. LAM. BRKN SLTST. LAM. |
| 16 | 38.43 | 39.70 | 1.27 | 60 | | | MUDSTONE | LT. BLK. LAM. SLD SLTST. LAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------|
| 17 | 39.70 | 41.17 | 1.47 | 60 | | | MUDSTONE | M. BLK. LAM. BRKN SLTST. LAM. |
| 17 | 41.17 | 41.21 | 0.04 | 60 | | | MUDSTONE | M. BLK. LAM. SLD SLTST. LAM. |
| 18 | 41.21 | 43.32 | 2.11 | *60 | | | MUDSTONE | M. BLK. LAM. SLD SLTST. LAM. |
| 19 | 43.32 | 44.20 | 0.88 | 61 | | | SILTSTONE | CARB. M. GY. BRKN ABUNDANT CARBONACEOUS PLANT FRAGMENTS. |
| 19 | 44.20 | 44.46 | 0.26 | 62 | 07000 | | MUDSTONE | CARB. DK. GY. SLD ABUNDANT CARB PLANT FRAGMENTS. |
| 19 | 44.46 | 44.52 | 0.06 | 62 | 05801 | I | COAL | C-3. VBRKN |
| 19 | 44.52 | 44.72 | 0.20 | 62 | 05801 | I | COAL LOSS | |
| 19 | 44.72 | 44.76 | 0.04 | 62 | 05801 | I | MUDSTONE | CLYY. DK. GY. SLD POORLY CONSOLIDATED. |
| 19 | 44.76 | 45.11 | 0.35 | 62 | 05801 | I | COAL | C-2. BRKN |
| 19 | 45.11 | 45.14 | 0.03 | 63 | 05801 | I | MUDSTONE | CARB. DK. GY. BRKN UNCONSOLIDATED. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------|
| 19 | 45.14 | 45.18 | 0.04 | 63 | 05801 | I | COAL | C-2.SLD |
| 19 | 45.18 | 45.24 | 0.06 | 63 | 05801 | I | MUDSTONE | CARB.DK.GY.VBRKN UNCONSOLIDATED MUD WITH COAL THROUGHOUT |
| 19 | 45.24 | 45.30 | 0.06 | 63 | 05801 | I | COAL | C-3.BRKN |
| 20 | 45.30 | 45.54 | 0.24 | 63 | 05801 | I | COAL | C-2.BRKN |
| 20 | 45.54 | 46.32 | 0.78 | 63 | 05801 | I | COAL LOSS | |
| 20 | 46.32 | 46.41 | 0.09 | 64 | 05801 | I | MUDSTONE | CARB.DK.GY.SLD |
| 20 | 46.41 | 46.52 | 0.11 | 64 | 05801 | I | ROCK LOSS | |
| 20 | 46.52 | 46.96 | 0.44 | 64 | 05801 | I | COAL LOSS | |
| 20 | 46.96 | 46.98 | 0.02 | 64 | 05801 | I | COAL | C-4.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------|
| 20 | 46.98 | 47.04 | 0.06 | 64 | 05801 | I | MUDSTONE | CARB.DK.GY.BRKN |
| 20 | 47.04 | 47.22 | 0.18 | 65 | 05801 | I | ROCK LOSS | |
| 20 | 47.22 | 47.60 | 0.38 | 65 | 05801 | I | COAL LOSS | |
| 20 | 47.60 | 48.20 | 0.60 | 65 | 05801 | I | COAL | C-2.VBRKN |
| 20 | 48.20 | 48.39 | 0.19 | 66 | 05801 | I | COAL | C-2.VBRKN |
| 20 | 48.39 | 48.62 | 0.23 | 66 | 05801 | I | COAL | C-3.YSHRD |
| 21 | 48.62 | 48.76 | 0.14 | 66 | 05801 | I | COAL | C-3.YSHRD MUSHED CORE. |
| 21 | 48.76 | 50.15 | 1.39 | 67 | 05802 | I | COAL | C-1.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------|
| 21 | 50.15 | 50.27 | 0.12 | 67 | 05802 | I | COAL | C-2.VBRKN |
| 21 | 50.27 | 50.32 | 0.05 | 68 | 05802 | I | COAL | C-1.VBRKN |
| 21 | 50.32 | 50.38 | 0.06 | 68 | 05802 | I | COAL | C-2.VBRKN |
| 22 | 50.38 | 50.49 | 0.11 | 68 | 05802 | I | COAL | C-1.VBRKN |
| 22 | 50.49 | 50.63 | 0.14 | 68 | 05802 | I | COAL LOSS | |
| 22 | 50.63 | 50.65 | 0.02 | 68 | 05803 | | MUDSTONE | CARB.DK.GY.SLD POORLY CONSOLIDATED. |
| 22 | 50.65 | 52.30 | 1.65 | 69 | 05803 | | SILTSTONE | SSY.M.GY.BRKN CARR.NEAR TOP W/ ABUNDANT PLANT FRAGMEN TS. LAMINATED WITH SS TOWARDS BASE. UPP ER 23CM SAMPLED. |
| 23 | 52.30 | 53.61 | 1.31 | *70 | | | SANDSTONE | SLTY.FG.PR.M.GY.LAM.BRKN SSD IN SLTST LAMS (TOPS UP). VERY SHRD WITH PROBABLE CORE LOSS AT BASE. |
| 23 | 53.61 | 53.76 | 0.15 | 73 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87032

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|----------------------------------------------------------------------------------------|
| 23 | 53.76 | 54.43 | 0.67 | 75 | | | SANDSTONE | FG.MOD.M.GY.LAM.VBRKN |
| 24 | 54.43 | 56.47 | 2.04 | *80 | | | SANDSTONE | FG.MOD.LT.GY.LAM.VBRKN SLTST LAM. |
| 25 | 56.47 | 57.00 | 0.53 | 80 | | | SANDSTONE | FG.MOD.LT.GY.LAM.BRKN QTZ STRINGERS AT BASE. CORE LOSS. DRILL ER'S T.D.: 57.00M. |

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87032

740

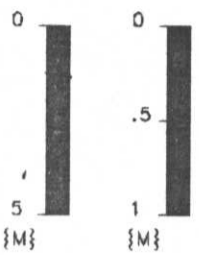
GEOLOGIST : PENMAN

DATE : MAR 08/88

DRAWING NO. :

LITHOLOGIC SYMBOLS

SCALE : 1:200 1:40

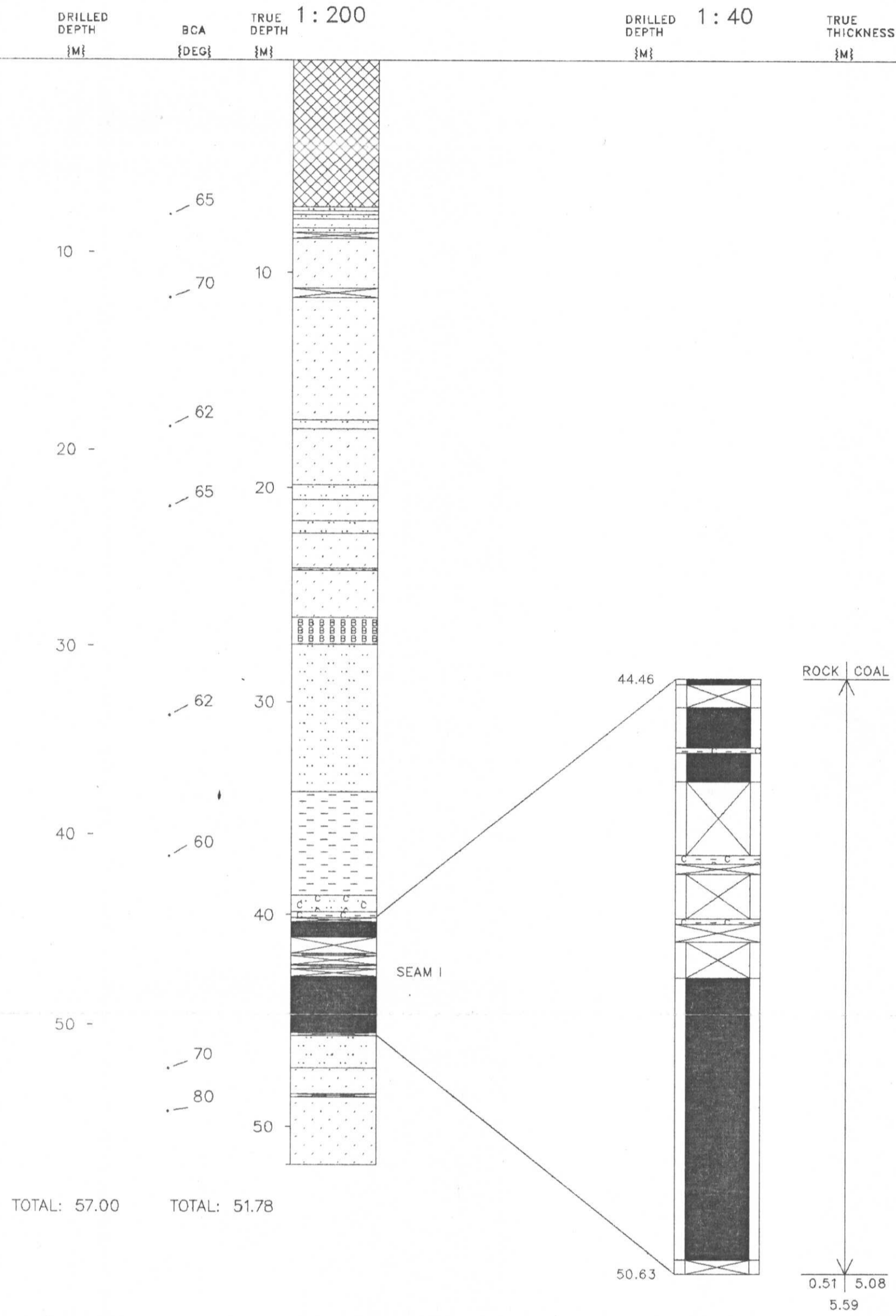


NORTHING: 6345000.0 N
 EASTING: 505860.9 E

INCLINATION: 90.0°

| | | | |
|--|---------------------|--|--------------|
| | SANDSTONE | | BENTONITE |
| | SILTSTONE | | BRECCIA |
| | COAL | | CARBONACEOUS |
| | OVERBURDEN | | QUARTZ |
| | MUDSTONE, CLAYSTONE | | PYRITE |
| | TUFF | | FERRUGINOUS |
| | LIMESTONE | | CONGLOMERATE |
| | CORE LOSS | | FOSSIL BED |

SEAM DETAIL



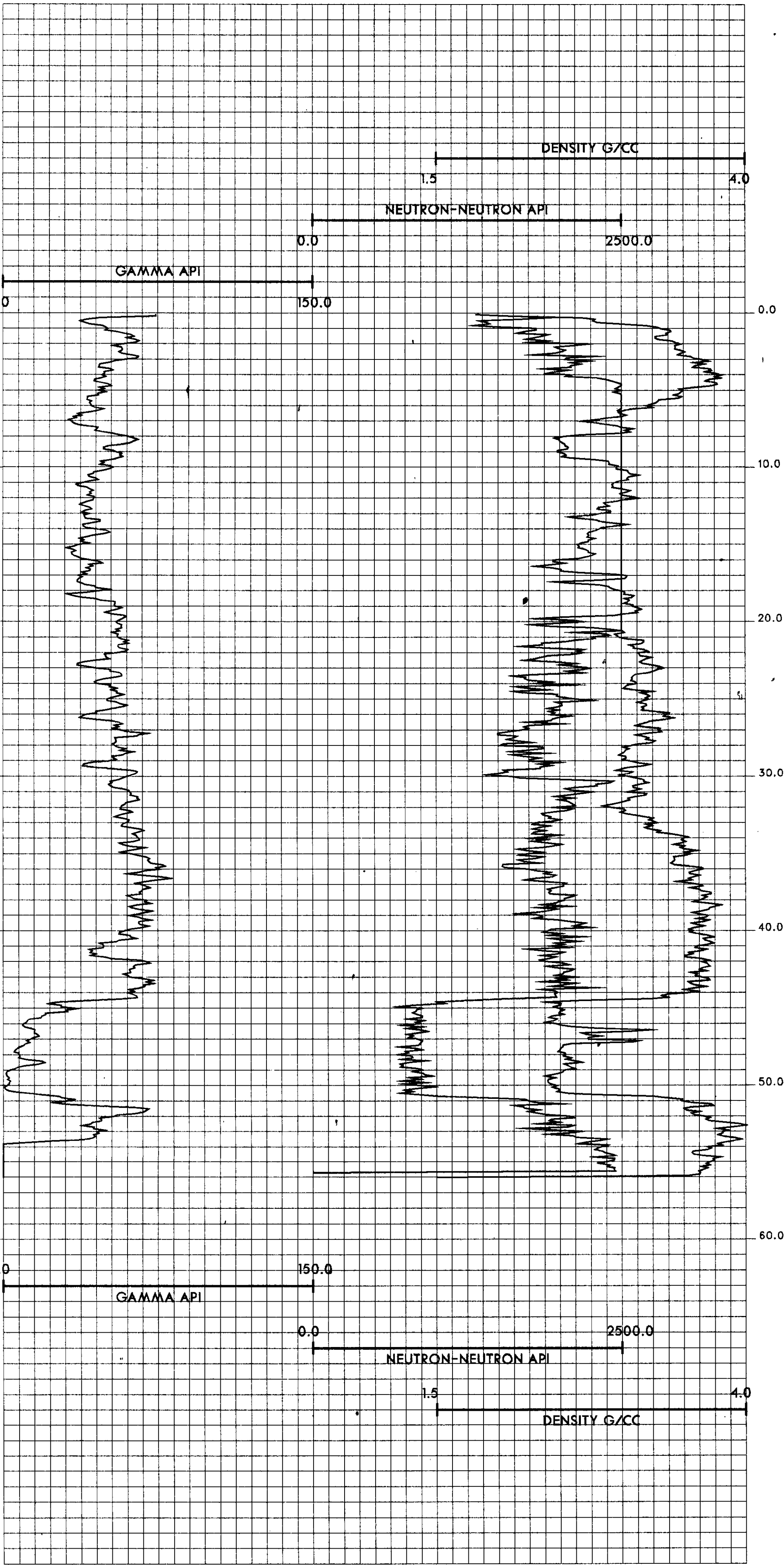
Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

| | |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Datasource: KPNLRDDH87032 Log Date: 12-03-12 Company: CENTURY Geologist: PENMAN | Province: BC Northing: 6345000.00 Lat: 571500 Zone: 9 Easting: 505861.00 Long: 1285410 Measuring Point: GROUND LEVEL Elevation: 1615.6 |
| Scale: 1 to 200.0 Depth Range: 0.0 to 61.0 True Thickness: NO | Comments: 1. LOGGED THROUGH RODS. 2. |
| Logs Plotted: | |
| Description | Axis Range Axis Length Smoothing Points Tool Comments |
| 1. GAMMA API | 0.0 to 150.0 10.0 31 9030A IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 10.0 9 9055A IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 10.0 15 9030A IN PIPE |



KPNLRDDH87033

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87033

DATE - 03/01/88

- HISTORY -

START DATE - 10/13/87

END DATE - 10/14/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - BARKER

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAMS K, J, I.

- LOCATION -

PROVINCE - BC

ELEVATION - 1643.71

ZONE - 9

NORTHING - 6344798.90

EASTING - 506456.91

LICENCE/LEASE NUMBER -

LATITUDE - 571453

LONGITUDE - 1285335

- ORIENTATION -

LENGTH - 124.07

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 27.43

AQUIFER DEPTHS (M) - 0.00

0.00

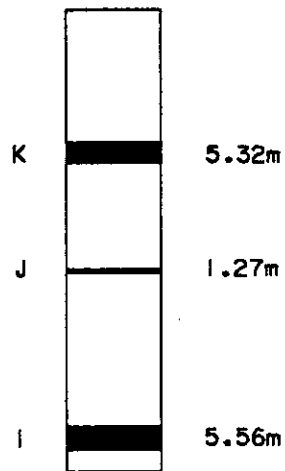
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

1987 DIAMOND DRILL HOLES
DDH87033

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057] 880072012.LG



88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 1

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 27.43 | 27.43 | 75 | | CASING | CASING DEPTH |
| 1 | 27.43 | 27.51 | 0.08 | 75 | | OVERBURDEN | M. BN. VBRKN RUBBLE. SLUMP FROM UP HOLE? |
| 1 | 27.51 | 29.57 | 2.06 | 75 | | ROCK LOSS | |
| 1 | 29.57 | 30.63 | 1.06 | *75 | | SANDSTONE | SLTY. FG. VPR. M. GY. LAM. BRKN FINE DARK MUDDY LAMINAE THROUGHOUT. MUC H. SILT AND CLAY MIXED IN. CORE DISSOLVES EASILY WHEN WASHED. FRIABLE AND WILL WEATHER EASILY. SAND CONTENT DECREASES DOWNWARD. |
| 1 | 30.63 | 30.85 | 0.22 | 75 | | ROCK LOSS | |
| 2 | 30.85 | 32.12 | 1.27 | 76 | | SILTSTONE | SSY. VPR. M. GY. LAM. BRKN FINE DARK MUDDY LAMINAE THROUGHOUT. FG SS AND PROBABLY SOME CLAY MIXED IN AS WELL. CORE DISSOLVES EASILY WHEN WASHED AND WILL WEATHER EASILY. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|------------------------------------------------------------------------------------------|
| 2 | 32.12 | 32.23 | 0.11 | 76 | | ROCK LOSS | |
| 2 | 32.23 | 32.83 | 0.60 | 76 | | SILTSTONE | SSY. VPR. M. GY. LAM. BRKN SANDY SILTST WITH FINE LAMINAE AND CLAY MIXED IN AS ABOVE. |
| 3 | 32.83 | 34.80 | 1.97 | *77 | | SILTSTONE | SSY. VPR. M. GY. LAM. BRKN SSY SILTST WITH FINE DARK LAMINAE AND CLAY MIXED IN AS ABOVE. |
| 4 | 34.80 | 35.83 | 1.03 | *78 | 05873 | MUDSTONE | SLTY. M. GY. SLD MINOR CARB & COALY PLANT FRAGMENTS. LOWER 12CM SAMPLED. |
| 4 | 35.83 | 35.96 | 0.13 | 76 | 05873 | MUDSTONE | CARB. DK. GY. SLD COAL STRINGERS AND LENSES. |
| 4 | 35.96 | 36.57 | 0.61 | 75 | 05874 K | COAL LOSS | |
| 4 | 36.57 | 36.61 | 0.04 | 74 | 05874 K | COAL | C-4. SLD |
| 4 | 36.61 | 36.74 | 0.13 | 74 | 05874 K | COAL | C-2. BRKN |
| 4 | 36.74 | 36.80 | 0.06 | 74 | 05874 K | COAL | C-3. SLD |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-------------------------------------------|
| 4 | 36.80 | 36.91 | 0.11 | 73 | 05874 K | COAL | C-2, BRKN |
| 4 | 36.91 | 36.98 | 0.07 | 73 | 05874 K | MUDSTONE | CLYY, DK, GY, SLD POORLY CONSOLIDATED. |
| 5 | 36.98 | 37.12 | 0.14 | 73 | 05874 K | COAL | C-3, BRKN |
| 5 | 37.12 | 37.73 | 0.61 | 72 | 05874 K | COAL | C-2, BRKN MINOR C-6 BANDS WITHIN. |
| 5 | 37.73 | 37.78 | 0.05 | 71 | 05874 K | MUDSTONE | CLYY, DK, GY, BRKN |
| 5 | 37.78 | 37.91 | 0.13 | 70 | 05874 K | ROCK LOSS | |
| 5 | 37.91 | 38.16 | 0.25 | 70 | 05874 K | COAL LOSS | |
| 5 | 38.16 | 38.40 | 0.24 | 69 | 05874 K | COAL | C-3, BRKN |
| 5 | 38.40 | 38.43 | 0.03 | 69 | 05874 K | COAL | C-2, SLD |
| 5 | 38.43 | 39.14 | 0.71 | 68 | 05874 K | COAL | C-1, BRKN GOOD CLEAT. |

* DENOTES MEASURED BCA

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GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------|
| 6 | 39.14 | 39.26 | 0.12 | 66 | 05874 K | COAL | C-2, SLD |
| 6 | 39.26 | 39.28 | 0.02 | 66 | 05874 K | COAL | C-5, SLD |
| 6 | 39.28 | 39.59 | 0.31 | 66 | 05874 K | COAL | C-2, SLD MINOR C-6 BANDS |
| 6 | 39.59 | 39.74 | 0.15 | 65 | 05874 K | COAL | C-2, SLD |
| 6 | 39.74 | 39.77 | 0.03 | 65 | 05874 K | MUDSTONE | CARB, DK, GY, SLD |
| 6 | 39.77 | 39.85 | 0.08 | 65 | 05874 K | COAL | C-3, SLD |
| 6 | 39.85 | 39.92 | 0.07 | 64 | 05874 K | COAL | C-2, SLD |
| 6 | 39.92 | 40.03 | 0.11 | 64 | 05874 K | MUDSTONE | CLYY, M, GY, SLD |
| 6 | 40.03 | 40.12 | 0.09 | 64 | 05874 K | COAL | C-3, SLD |
| 6 | 40.12 | 40.15 | 0.03 | 64 | 05874 K | MUDSTONE | CLYY, M, GY, SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------|
| 6 | 40.15 | 40.35 | 0.20 | 63 | 05874 | K | COAL LOSS | |
| 6 | 40.35 | 40.47 | 0.12 | 63 | 05874 | K | COAL | C-3.SLD |
| 6 | 40.47 | 40.82 | 0.35 | 62 | 05874 | K | COAL | C-2.VBRKN |
| 6 | 40.82 | 41.00 | 0.18 | 61 | 05875 | K | MUDSTONE | CARB.DK.GY.BRKN |
| 7 | 41.00 | 41.79 | 0.79 | 60 | 05875 | K | MUDSTONE | CARB.M-DK.GY.BRKN SILTY IN PLACES. |
| 7 | 41.79 | 41.89 | 0.10 | 59 | 05875 | K | ROCK LOSS | |
| 7 | 41.89 | 42.19 | 0.30 | 58 | 05876 | K | COAL LOSS | |
| 7 | 42.19 | 42.60 | 0.41 | 57 | 05876 | K | COAL | C-2.BRKN |
| 7 | 42.60 | 42.63 | 0.03 | 56 | 05876 | K | MUDSTONE | CARB.M.GY.SLD |
| 7 | 42.63 | 42.77 | 0.14 | 56 | 05876 | K | COAL | C-3.VBRKN |
| 7 | 42.77 | 42.84 | 0.07 | 56 | 05876 | K | COAL | C-4.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 42.84 | 43.25 | 0.41 | *55 | 05877 | | MUDSTONE | CARB.DK.GY.SLD ABUNDANT CARB PLANT FRAGMENTS. UPPER 25 CM SAMPLED. |
| 8 | 43.25 | 45.21 | 1.96 | *63 | | | MUDSTONE | DK.GY.MAS.BIOTR.SLD MINUTE PYRITE BLEBS LESS THAN 1 MM IN D IA. ABUNDANT NEAR TOP. OCC LIGHTER GREY BIOTRB MOTTLES IN LOWER HALF OF INTERV AL. BCA TAKEN FROM FINE PYRITE LAYER. M INOR PLANT HASH. |
| 9 | 45.21 | 46.65 | 1.44 | 63 | | | MUDSTONE | DK.GY.VTHNB.VBRKN SLIGHTLY SILTY THAN ABOVE WITH MORE AB UNDANT MOTTLED ZONES. ALL BEDDING HAS B EEN DISRUPTED DUE TO BIOTRB. |
| 9 | 46.65 | 47.57 | 0.92 | 63 | | | ROCK LOSS | |
| 9 | 47.57 | 47.85 | 0.28 | 63 | | | SILTSTONE | SSY.M.GY.VTHNB.VBRKN GRADATIONAL FROM ABOVE. INTERBEDDED FG SS AND SILTST. NO BIOTRB BUT OCC FINE W RINKLED LINES RUNNING DOWN THROUGH BEDD ING.(ROOTLETS). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | 47.85 | 47.97 | 0.12 | 63 | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD COARSE BASE OF A F.U.S. WHICH GRADES IN TO THE ABOVE TWO INTERVALS. FAIRLY SHARP LOWER CONTACT. |
| 10 | 47.97 | 48.80 | 0.83 | 63 | | SILTSTONE | SSY.MOD.M.GY.LAM.WRMBU.SLD ABUNDANT FINE MUD AND FG SLTY SS INTERBEDS. ENTIRE UNIT IS A FINING UPWARD SEQUENCE. SAND CONTENT INCREASES DOWNWARD. HORIZONTAL WRMBURS IN THE CALCAREOUS UPPER PORTION OF THE UNIT NEAR THE CONTACT. TOPS UP. |
| 10 | 48.80 | 49.80 | 1.00 | 63 | | SILTSTONE | MOD.M.GY.MAS.RTB.BRKN ROOTLETS AT UPPER CONTACT EXTENDING ABOUT 12 CM DOWN. SOME BIOTRUB VISIBLE. MASSIVE OVERALL WITH ONE CALCAREOUS ZONE 16 CM WIDE. |
| 10 | 49.80 | 50.15 | 0.35 | 64 | | ROCK LOSS | |
| 11 | 50.15 | 50.53 | 0.38 | 64 | | SILTSTONE | SSY.PR.M.GY.THNB.BRKN F.U.S. WHICH INCLUDES THE TWO ABOVE UNITS. A GRADATIONAL INTERVAL WITH SLY SLT AT TOP OF UNIT AND F-MG SS (WITH A SHARP LOWER CONTACT) AT BASE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 50.53 | 51.95 | 1.42 | 64 | | SILTSTONE | SSY.PR.M-DK.GY.LAM.BRKN LAMINAE RANGING FROM FINE DARK MUDST TO FG SS. |
| 11 | 51.95 | 52.27 | 0.32 | 64 | | ROCK LOSS | |
| 12 | 52.27 | 53.28 | 1.01 | 64 | | SILTSTONE | SSY.PR.M-DK.GY.THNB.XBDG.BRKN THIS INTERVAL IS THE BASAL PORTION OF ANOTHER F.U.S. WHICH INCLUDES THE ABOVE INTERVAL. MASSIVE SLTY SS AT TOP OF BOX GRADING TO F-MG SS WITH A SHARP LOWER CONTACT AT BASE OF INTERVAL. FAINT XBDG. |
| 12 | 53.28 | 53.95 | 0.67 | 64 | | SILTSTONE | SSY.M.GY.VTHNB.BRKN INTERBEDDED FINE SLTY MUDST AND VFG SS. |
| 13 | 53.95 | 55.99 | 2.04 | *64 | | SILTSTONE | SSY.M.GY.LAM.SLD FINELY PLANAR LAMINATED... GRADING DOWN INTO THE COASTER ZONE BELOW. |
| 14 | 55.99 | 57.98 | 1.99 | *69 | | SILTSTONE | M.GY.LAM.BRKN OVERALL FINER THAN ABOVE. FINE PLANAR LAMINAE. ALMOST COASTER ZONE. NOT VERY FISSILE BUT CLEAVAGE IS PARALLEL TO BEDDING. ROOTLETS (VERTICAL WRINKLED LINES) IN ONE WIDER SLTST LAYER. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | 57.98 | 58.28 | 0.30 | 68 | . | ROCK LOSS | |
| 15 | 58.28 | 59.62 | 1.34 | 67 | | MUDSTONE | SLTY.M-DK.GY.LAM.VBRKN INTENSLY PLANAR LAMINATED SLTY MUDST. RHYTHMITES...COASTER ZONE. PARTS ALONG BEDDING. CORE CRUSHED IN PLACES. |
| 15 | 59.62 | 59.74 | 0.12 | 67 | | ROCK LOSS | |
| 15 | 59.74 | 59.85 | 0.11 | 67 | | MUDSTONE | SLTY.M-DK.GY.LAM.VBRKN RHYTHMITES AS ABOVE. |
| 15 | 59.85 | 60.06 | 0.21 | 66 | | ROCK LOSS | |
| 16 | 60.06 | 60.83 | 0.77 | 66 | | SILTSTONE | SSY.M-DK.GY.LAM.VBRKN SILTY MUDST. RHYTHMITES AT TOP OF INTERVAL BECOMING SANDIER AND LESS FINELY LAMINATED AT BASE. CORE CRUSHED IN PLACES (POSSIBLE CORE LOSS). |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 16 | 60.83 | 61.13 | 0.30 | 65 | | ROCK LOSS | |
| 16 | 61.13 | 61.87 | 0.74 | *65 | | SILTSTONE | SSY.M.GY.VTHMB.XBDG.VBRKN FAINT BEDDING WITH PLANAR XBDG. BEDDING IS FINE DARK MUDST COARSENING UP TO FG SS BANDS. |
| 17 | 61.87 | 63.55 | 1.68 | 65 | | SILTSTONE | SSY.M-DK.GY.LAM.VBRKN SAND CONTENT LESS THAN ABOVE. FINING DOWN INTO COASTER ZONE BELOW AGAIN. INTER-LAM FG SS AND MUDST. |
| 17 | 63.55 | 63.85 | 0.30 | 66 | | ROCK LOSS | |
| 18 | 63.85 | 64.31 | 0.46 | 66 | | SILTSTONE | M-DK.GY.LAM.VBRKN LESS SAND THAN ABOVE GRADING DOWN TO COASTERS (RHYTHMITES) BELOW. |
| 18 | 64.31 | 64.56 | 0.25 | 66 | | MUDSTONE | SLTY.M.GY.LAM.VBRKN INTENSLY PLANAR LAM RHYTHMITES. FISSILE CLASSIC COASTER ZONE. CRUSHED CORE. LOSS HERE? |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | 64.56 | 65.84 | 1.28 | 66 | | | ROCK LOSS | |
| 19 | 65.84 | 67.08 | 1.24 | 66 | | | MUDSTONE | SLTY. M. GY. LAM. VBRKN CLASSIC COASTER ZONE AS ABOVE. RHYTHMITIC SLTY. FISSILE MUDST. CRUSHED CORE. LO SS HERE?? |
| 19 | 67.08 | 67.36 | 0.28 | 66 | | | ROCK LOSS | |
| 20 | 67.36 | 67.71 | 0.35 | 66 | | | MUDSTONE | SLTY. M-DK. GY. LAM. VBRKN FISSILE RHYTHMITIC SLTY MUDST AS ABOVE CLASSIC COASTER ZONE. CRUSHED CORE IN PLACES... POSSIBLE CORE LOSS. |
| 20 | 67.71 | 68.28 | 0.57 | 67 | | | ROCK LOSS | |
| 20 | 68.28 | 68.58 | 0.30 | 67 | | | MUDSTONE | DK. GY. LAM. VBRKN DARKER AND MORE CARBONACOUS THAN ABOVE. SOFT & CRUMBLY BUT STILL COASTER ZONE AS ABOVE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|--------------------------------------------------------------------------------------------------------|
| 20 | 68.58 | 68.93 | 0.35 | 67 | | | ROCK LOSS | |
| 21 | 68.93 | 69.19 | 0.26 | 67 | | | MUDSTONE | DK. GY. LAM. BRKN RHYTHMITIC MUDST. DK AND CARB AS ABOVE. |
| 21 | 69.19 | 69.57 | 0.38 | 67 | | | MUDSTONE | DK. GY. LAM. BRKN DK GY CARB RHYTHMITIC MUDST AS ABOVE. |
| 21 | 69.57 | 69.70 | 0.13 | 67 | | | CLAYSTONE | LT. GY. MAS BENTONITIC? SOFT & MOD CONSOLIDATED GRADING DOWN INTO SLTST BELOW. SHARP UPPER CONTACT. |
| 21 | 69.70 | 69.78 | 0.08 | 67 | | | SILTSTONE | LT. GY. MAS BENTONITIC. SHARP LOWER CONTACT. |
| 21 | 69.78 | 69.88 | 0.10 | 67 | | J | COAL | C-2. BLK. SLD PYRITE LAYERS (1 TO 8 MM WIDE). 'J'-SEA M. |
| 21 | 69.88 | 69.90 | 0.02 | 67 | | J | COAL | C-6. BLK. SLD MUD BANDS 1-3MM WIDE. |
| 21 | 69.90 | 69.91 | 0.01 | 67 | | J | COAL | C-5. BLK. SLD 'J' SEAM. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 21 | 69.91 | 70.07 | 0.16 | 67 | J | | MUDSTONE | CARB. BLK. LAM. SLD ABUNDANT COALY STRINGERS; "J" SEAM. |
| 21 | 70.07 | 70.09 | 0.02 | 67 | J | | MUDSTONE | LT. GY. SHRD BENTONITIC?? POORLY CONSOLIDATED. SOFT & CRUMBLY. |
| 21 | 70.09 | 70.36 | 0.27 | 67 | J | | ROCK LOSS | |
| 21 | 70.36 | 71.16 | 0.80 | 67 | J | | MUDSTONE | CARB. BLK. BRKN ABUNDANT COAL STRINGERS (UP TO 1CM WIDE) "J" SEAM. PYR. BANDS 5MM WIDE. OCC. A NK/QTZ VEINLETS IN COAL LAYERS. |
| 22 | 71.16 | 71.77 | 0.61 | 67 | | | MUDSTONE | CARB. BLK. BRKN COAL STRINGERS THROUGHOUT. ONE ZONE OF BIOTURBATED MOTTLING 4 CM WIDE. |
| 22 | 71.77 | 72.24 | 0.47 | 67 | | | MUDSTONE | SLTY. M-DK. GY. LAM. BRKN FINE FAINT MUDST LAMINAE, BECOMING SILT IER. AND COARSER DOWNWARDS. |
| 22 | 72.24 | 73.04 | 0.80 | 68 | | | SILTSTONE | SSY. LT-M. GY. VTHNB. BRKN FAINT BANDS OF YFG TO FG SS. INTERBEDDED W/ SSY SLTST. GRADATIONAL CONTACTS. |
| 22 | 73.04 | 73.47 | 0.43 | 68 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 23 | 73.47 | 75.12 | 1.65 | *68 | | | SILTSTONE | M-DK. GY. LAM. BIOTR. VBRKN NARROW ZONES OF BIOTURBATION AND DISRUP TED BEDDING. |
| 24 | 75.12 | 75.29 | 0.17 | 67 | | | SILTSTONE | SSY. M. GY. VTHNB. SLD |
| 24 | 75.29 | 75.81 | 0.52 | 67 | | | SILTSTONE | SSY. M. GY. LAM. SSD. SLD FINE MUDDY LAMINAE THROUGHOUT. MUCH YFG -FG SAND MIXED IN. |
| 24 | 75.81 | 76.82 | 1.01 | 67 | | | SANDSTONE | SLTY. FG. YPR. M. GY. VTHNB. SLD FINE MUDDY WISPS VISIBLE BUT MORE SANDY THAN ABOVE. ONE 8CM WIDE ZONE OF DK GY SLTST. |
| 24 | 76.82 | 77.19 | 0.37 | 66 | | | SANDSTONE | FG. LT-M. GY. MAS. BRKN PREDOMINANTLY MASSIVE WITH OCC. SLTY LAM INAE. LESS SLTY THAN ABOVE. |
| 24 | 77.19 | 77.22 | 0.03 | 66 | | | ROCK LOSS | |
| 25 | 77.22 | 78.33 | 1.11 | *66 | | | SANDSTONE | FG. PR. LT. GY. LAM. BRKN OCC MUDDY LAMINAE. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------|
| 25 | 78.33 | 79.21 | 0.88 | 66 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD PREDOMINANTLY MASSIVE. ONLY RARE FINE M UDST WISPS. |
| 26 | 79.21 | 80.82 | 1.61 | 66 | | | SANDSTONE | FG.MOD.LT.GY.MAS.VBRKN MASSIVE WITH OCC MG SAND GRAINS MIXED I N. OCC BEIGE MG SAND GRAINS. FELDSPARS OR VOLCANIC SHARDS? |
| 26 | 80.82 | 81.32 | 0.50 | 67 | | | ROCK LOSS | |
| 27 | 81.32 | 82.85 | 1.53 | 67 | | | SANDSTONE | FG.MOD.LT.GY.MAS.VBRKN CRUSHED IN PLACES WITH A CORE TWISTOFF. BEIGE MG SAND GRAINS ARE MORE COMMON T HAN ABOVE. |
| 27 | 82.85 | 83.11 | 0.26 | 67 | | | ROCK LOSS | |
| 28 | 83.11 | 83.52 | 0.41 | 67 | | | SANDSTONE | MG.WEL.M.GY.MAS.BRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | 83.52 | 84.59 | 1.07 | 67 | | | SANDSTONE | FG.WEL.M.GY.MAS.BRKN OCC BEIGE MG SAND GRAINS; FELDSPARS OR VOLCANIC SHARDS AS HAVE BEEN FOUND IN T HE SS ABOVE THE TUFFITE ZONE. |
| 28 | 84.59 | 84.78 | 0.19 | 67 | | | SANDSTONE | FG.WEL.M.GY.MAS.BRKN F-MG SAND AS ABOVE WITH ONE 5 MM WIDE Q TZ VLEN. |
| 28 | 84.78 | 84.88 | 0.10 | 67 | | | ROCK LOSS | |
| 29 | 84.88 | 86.24 | 1.36 | 67 | | | SANDSTONE | FG.WEL.M.GY.MAS.VBRKN F-MG SS WITH BEIGE MG SAND CLASTS AS AB OVE. |
| 30 | 86.24 | 87.27 | 1.03 | 68 | | | SANDSTONE | FG.WEL.M.GY.MAS.BRKN F-MG SS AS ABOVE. BEIGE MG SAND GRAINS. FELDSPARS OR VOLCANIC SHARDS? |
| 30 | 87.27 | 88.32 | 1.05 | 68 | | | SANDSTONE | FG.WEL.M.GY.MAS.SLD A/A |
| 31 | 88.32 | 90.24 | 1.92 | *68 | | | SANDSTONE | FG.WEL.M.GY.MAS.BRKN SLIGHTLY FINER GRAINS THAN ABOVE. ONE 2 CM WIDE SILT BAND. |

* DENOTES MEASURED BCA

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PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------|
| 32 | 90.24 | 90.53 | 0.29 | 68 | | | SANDSTONE | FG.WEL.M.GY.MAS.BRKN FG SS AS ABOVE WITH BEIGE MG SAND SIZED CLASTS AS ABOVE. |
| 32 | 90.53 | 91.94 | 1.41 | 69 | | | SANDSTONE | FG.WEL.M.GY.MAS.BRKN FG SS WITH BEIGE CLASTS AS ABOVE. |
| 32 | 91.94 | 92.42 | 0.48 | 69 | | | ROCK LOSS | |
| 33 | 92.42 | 94.04 | 1.62 | 69 | | | SANDSTONE | FG.MEL.M.GY.MAS.VBRKN A/A |
| 34 | 94.04 | 94.49 | 0.45 | 69 | | | SANDSTONE | FG.MEL.M.GY.MAS.SLD A/A |
| 34 | 94.49 | 96.03 | 1.54 | 70 | | | SANDSTONE | SLTY.FG.PR.M-DK.GY.LAM.SLD NUMEROUS DARK SILTST LAMINAE THROUGHOUT RANGING IN WIDTH FROM 1 TO 12 MM WIDE. |
| 35 | 96.03 | 96.06 | 0.03 | 70 | | | SANDSTONE | FG.MOD.M.GY.MAS.SLD |
| 35 | 96.06 | 96.16 | 0.10 | *70 | | | SILTSTONE | DK.GY.MAS.SLD SHARP UPPER AND LOWER CONTACTS. |
| 35 | 96.16 | 96.21 | 0.05 | 70 | | | SANDSTONE | FG.MOD.M.GY.LAM.SLD FINE WISPY SILTST LAMINAE. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 18

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 35 | 96.21 | 96.62 | 0.41 | 70 | | | ROCK LOSS | |
| 35 | 96.62 | 98.17 | 1.55 | 72 | | | SANDSTONE | SLTY.FG.VPR.M.GY.THNB.VBRKN OCC SILTY LAMINAE THROUGHOUT WITH WIDER ZONES 50 CM WIDE WHICH FINE UP FROM SILTST TO FG SS. |
| 35 | 98.17 | 98.20 | 0.03 | 73 | | | ROCK LOSS | |
| 36 | 98.20 | 99.03 | 0.83 | 74 | | | SANDSTONE | FG.MOD.M.GY.MAS.BRKN SOME MG SAND MIXED IN. LESS SILT THAN ABOVE. |
| 36 | 99.03 | 100.29 | 1.26 | *75 | | | SANDSTONE | FG.MOD.M.GY.MAS.XBDG.BRKN PREDOMINANTLY MASSIVE WITH OCC VERY FINE SILTY WISPS THROUGHOUT (WISPS DEFINE XBDG). |
| 37 | 100.29 | 100.82 | 0.53 | 72 | | | SANDSTONE | MG.PR.M.GY.VTHNB.XBDG.SLD OCC DARK WISPS OF FINE SILT. EACH BED FINES UP FROM MG SS TO VFG SS. SHARP LOWER CONTACT; SCOUR. |
| 37 | 100.82 | 102.02 | 1.20 | *69 | | | SILTSTONE | SSY.VPR.M.GY.LAM.SSD.SLD FINELY LAM SILTST WITH MUCH VFG AND FG S MIXED IN. LOAD CASTS SHOW TOPS UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | 102.02 | 102.29 | 0.27 | 69 | | | SILTSTONE | SSY.VPR.M.GY.LAM.SLD FINELY LAM SSY SLTST AS ABOVE. |
| 38 | 102.29 | 104.44 | 2.15 | *70 | | | SANDSTONE | SLTY.VFG.VPR.M.GY.LAM.SSD.SLD ABUNDANT FINE DARK SILTY MUD WISPS THRO UGHOUT. MUCH SILT MIXED IN WITH VFG SAN D. |
| 39 | 104.44 | 105.15 | 0.71 | 69 | | | SANDSTONE | SLTY.VFG.VPR.M.GY.LAM.XBDG.SLD A/A. |
| 39 | 105.15 | 106.32 | 1.17 | 69 | | | SANDSTONE | SLTY.VFG.VPR.M.GY.LAM.BIOTR.BRKN SLIGHTLY FEWER SLTST LAMINAE THAN ABOVE . TWO ZONES OF DISRUPTED BEDDING DUE TO . BIOTRB AND SSD. LOAD CASTS INDICATE TO PS UP. |
| 40 | 106.32 | 108.21 | 1.89 | 68 | | | SANDSTONE | VFG.VPR.M.GY.THNB.SSD.VBRKN VFG-FG SS BUT LESS SILTY THAN ABOVE. LO AD CASTS INDICATE TOPS UP. ONE QTZ VEIN PARALLEL TO CORE AXIS (.5 TO 2 MM WIDE). |
| 41 | 108.21 | 108.61 | 0.40 | *68 | | | SANDSTONE | FG.VPR.LT-M.GY.LAM.BRKN FAINT BEDDING. FEWER DARK SILTY LAMINAE THAN ABOVE. GRADATIONAL TO TUFFITE BEL OW. RARE SLTST RIPUP CLASTS 5MM-1CM ACR OSS. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | 108.61 | 109.91 | 1.30 | 65 | | | SANDSTONE | FG.VPR.LT.GY.LAM.XBDG.VBRKN TUFFITE MIXED IN WITH SAND. VERY LIGHT GREY WITH VERY FINE LAMINAE SHOWING XBD G. CRUSHED AT TOP OF INTERVAL. TUFFACEO US & FINER DOWNWARDS. TYPICAL TUFFITE Z ONE ABOVE "I" SEAM. |
| 42 | 109.91 | 110.05 | 0.14 | 63 | | | SANDSTONE | FG.VPR.LT.GY.LAM.SLD TUFFITE MIXED IN WITH SILT. GRADATIONAL LOWER CONTACT. |
| 42 | 110.05 | 110.21 | 0.16 | 62 | | | CLAYSTONE | VPR.LT.GY.LAM.SLD BENTONITIC TUFFITE ABOVE "I" SEAM. BENT ONITE BAND GROUND OUT IN DRILLING. SHAR P LOWER CONTACT. |
| 42 | 110.21 | 110.80 | 0.59 | 61 | | | MUDSTONE | PR.DK.GY.VTHNB.BRKN FINE MUDST WITH FAINT UNIFORM PLANAR BE DDING. EACH BED APPEARS TO FINE UPWARDS . |
| 42 | 110.80 | 111.61 | 0.81 | *59 | | | MUDSTONE | PR.DK.GY.VTHNB.BRKN MUDST AS ABOVE. |
| 43 | 111.61 | 112.85 | 1.24 | 61 | 05878 | | SILTSTONE | M.GY.LAM.BRKN LOWER 6CM SAMPLED. |
| 43 | 112.85 | 112.94 | 0.09 | 63 | 05878 | | MUDSTONE | CARB.DK.GY.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| DEPTH | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|--------|----------------|--------------|---------|-----------|----------------|
| 113.04 | 0.10 | 63 05878 | | SILTSTONE | M.GY.LAM.SLD |
| 113.23 | 0.19 | 63 05879 | I | COAL LOSS | |
| 113.27 | 0.04 | 64 05879 | I | COAL | C-4.VBRKN |
| 113.32 | 0.05 | 64 05879 | I | COAL | C-2.VBRKN |
| 113.35 | 0.03 | 64 05879 | I | MUDSTONE | CARB.DK.GY.SLD |
| 113.61 | 0.26 | 64 05879 | I | COAL | C-2.VBRKN |
| 114.17 | 0.56 | 65 05879 | I | COAL | C-2.VBRKN |
| 114.21 | 0.04 | 66 05879 | I | COAL | C-3.BRKN |
| 114.38 | 0.17 | 66 05879 | I | COAL | C-2.SLD |
| 114.40 | 0.02 | 66 05879 | I | COAL | C-4.SLD |

MEASURED BCA

THICKNESS

IN(M) : 1643.7

NO. :

D.B.

| TS | CAL. VAL MJ/KG | |
|------|-------------------|--|
| 0.43 | 24.25 | |
| | 0.75 | |
| 0.48 | 21.28 | |

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87033

| DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|----------|----------------|--------------|---------|-----------|--------------------------------------|
| 114.77 | 0.37 | 67 05879 | I | COAL LOSS | |
| 114.86 | 0.09 | 67 05880 | I | ROCK LOSS | |
| 114.99 | 0.13 | 67 05880 | I | MUDSTONE | CARB.DK.GY.SLD VITRAIN STRINGERS. |
| 115.18 | 0.19 | 68 05880 | I | COAL | C-2.SLD |
| 115.34 | 0.16 | 68 05880 | I | MUDSTONE | CARB.DK.GY.SLD VITRAIN STRINGERS. |
| 116.17 | 0.83 | 69 05880 | I | COAL LOSS | |
| 116.20 | 0.03 | 70 05880 | I | COAL | C-3.SLD |
| 116.48 | 0.28 | 71 05880 | I | COAL | C-2.BRKN |
| 116.51 | 0.03 | 71 05880 | I | COAL | C-2.BRKN |
| 116.57 | 0.06 | 71 05880 | I | MUDSTONE | CARB.DK.GY.SLD |
| 116.64 | 0.07 | 71 05880 | I | COAL | C-3.SLD |

MEASURED BCA

FORM 4001

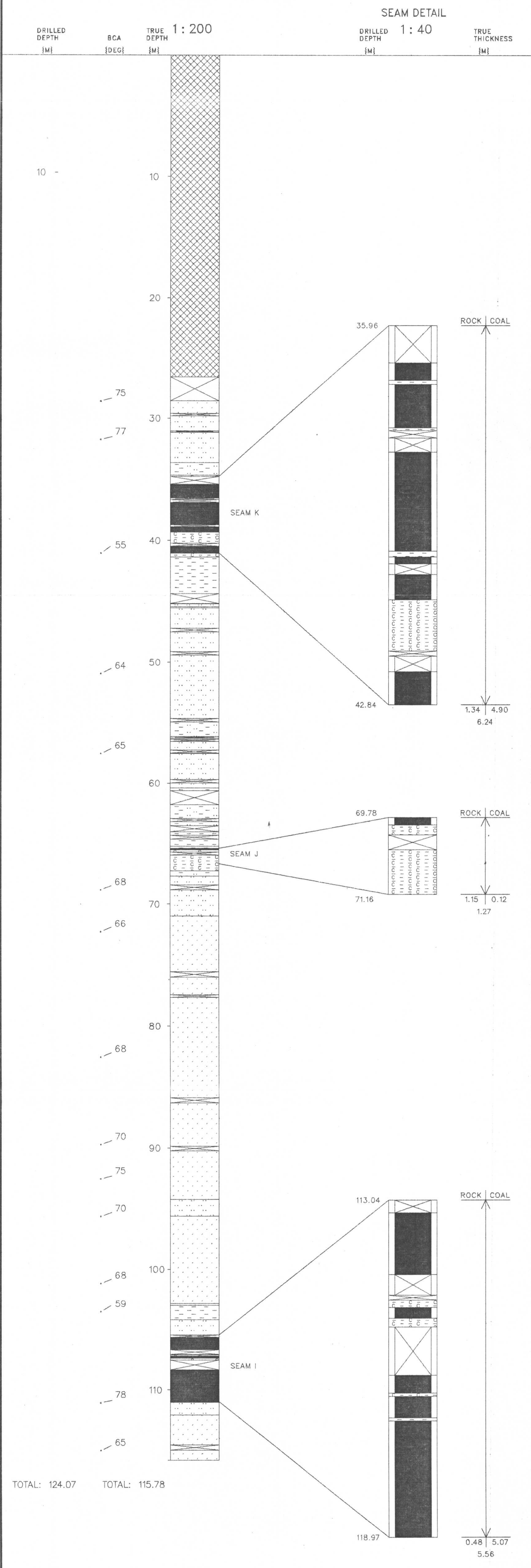
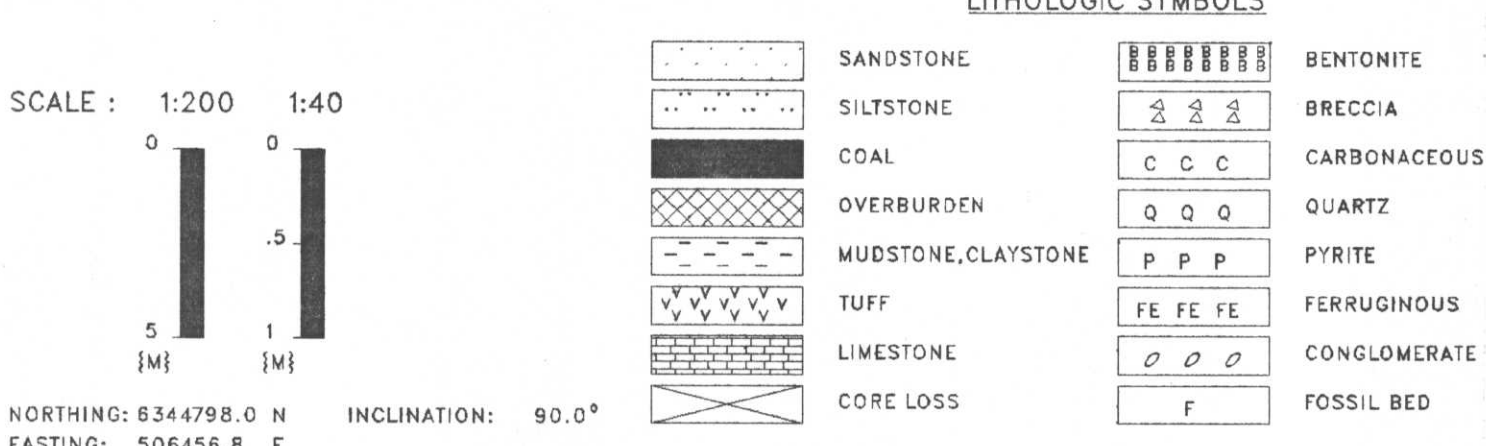
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87033

740

GEOLOGIST : BARKER

DATE : MAR 08/88

DRAWING NO. :



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

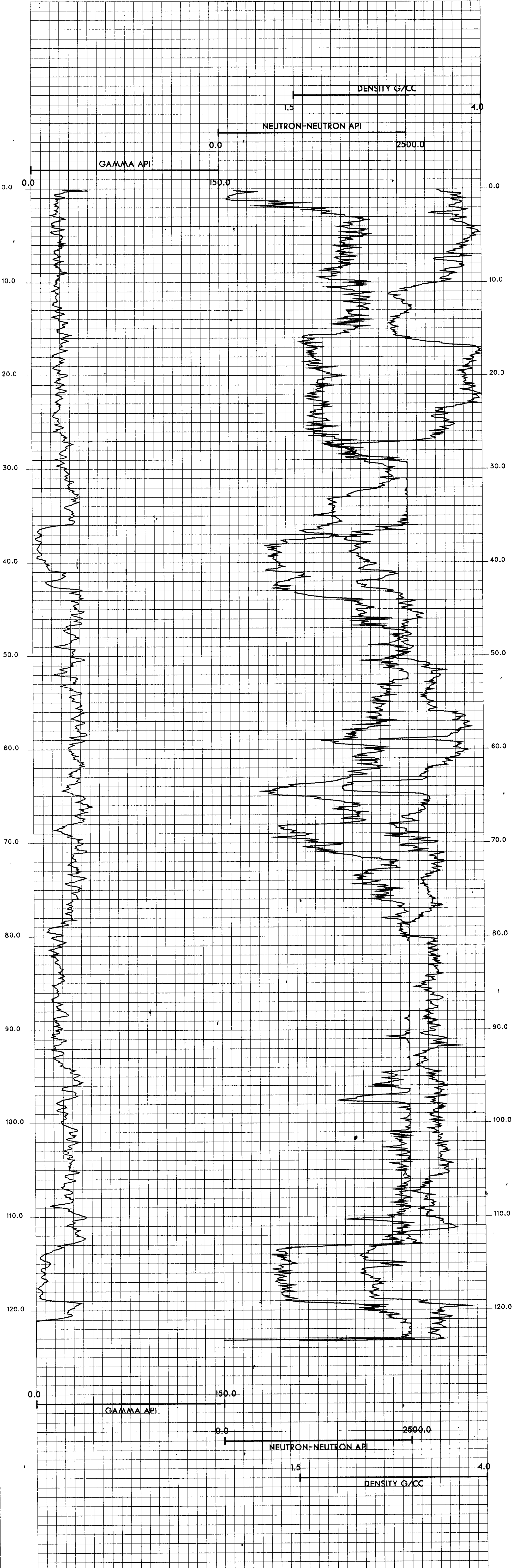
Datasource: **KPNLRDDH87033**
 Log Date: 19-08-18
 Company: CENTURY
 Geologist: BARKER

Province: BC Northing: 6344800.00 Lat: 571453
 Zone: 9 Easting: 506457.00 Long: 1285335
 Measuring Point: GROUND LEVEL Elevation: 1643.7

Scale: 1 to 200.0
 Depth Range: 0.0 to 128.0
 True Thickness: NO

Comments:
 1. LOGGED THROUGH RODS.
 2.

| Logs Plotted: | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|-----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | 1 IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | 1 IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | 1 IN PIPE |



KPNLRDDH87034

===== GULF CANADA CORPORATION =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH87034

DATE - 03/01/88

- HISTORY -

START DATE - 10/14/87

END DATE - 10/14/87

CONTRACTOR - J.T. THOMAS

GEOLOGIST - LEDDA

OPERATOR - G.C.R.

SURVEYOR - TRONNES

REMARKS - INTERSECTED SEAM I. SITE B+

- LOCATION -

PROVINCE - BC

ELEVATION - 1620.07

ZONE - 9

NORTHING - 6344895.56

EASTING - 506207.14

LICENCE/LEASE NUMBER -

LATITUDE - 571456

LONGITUDE - 1285350

- ORIENTATION -

LENGTH - 57.00

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ - N

CASING DEPTH (M) - 6.09

AQUIFER DEPTHS (M) - 0.00

0.00

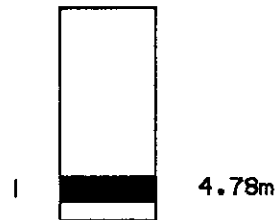
LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

SEAM TRUE SEAM THICKNESS
(COAL & ROCK)



NOTE:

SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm ANTHRACITE.

SCALE 1:2000

FIGURE

MOUNT KLAPPAN ANTHRACITE PROJECT

**1987 DIAMOND DRILL HOLES
DDH87034**

GULF CANADA RESOURCES LTD.
19/04/88
KLAP: [205057]880072012.LG



PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| | 0.00 | 6.09 | 6.09 | 66 | | CASING | CASING DEPTH |
| 1 | 6.09 | 6.27 | 0.18 | 66 | | OVERBURDEN | M-DK.GY.BRKN POORLY CONSOL. DOMINANTLY MUD (TILL). |
| 1 | 6.27 | 7.36 | 1.09 | 66 | | ROCK LOSS | |
| 1 | 7.36 | 7.66 | 0.30 | 66 | | OVERBURDEN | LT.GY.BRKN PART OF TILL BUT UNIT REPRESENTS A PORTION OF A FG SS BOULDER. BASAL CONTACT = WEATHERED RUST-BROWN. |
| 1 | 7.66 | 8.23 | 0.57 | 66 | | OVERBURDEN | M.BN.BRKN TILL: SUB-ANGULAR TO SUB-ROUNDED CLASTS OF VARIOUS LITHOLOGIES W/IN A BROWN POORLY CONSOL MUDDY MATRIX. CLASTS/MATRIX = 35/65. |
| 1 | 8.23 | 8.72 | 0.49 | 66 | | SANDSTONE | VFG LT-M.GY.VBRKN VERY WEATHERED, VERY BROKEN. VFG SS W/IN M COMMON MIXED TILL ZONES W/IN. POSS. C ORE LOSS. |
| 1 | 8.72 | 11.28 | 2.56 | 66 | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | 11.28 | 11.90 | 0.62 | 66 | | SANDSTONE | FG.M.GY.VBRKN VERY WEATHERED & BROKEN. MIXED TILL & S S. A/A. PROB CORE LOSS. |
| 2 | 11.90 | 14.33 | 2.43 | 66 | | ROCK LOSS | |
| 2 | 14.33 | 14.66 | 0.33 | 66 | | SANDSTONE | FG.M.GY.VBRKN SAME A/A BUT COMMON SLTST RUBBLE W/IN. |
| 2 | 14.66 | 15.64 | 0.98 | 66 | | ROCK LOSS | |
| 3 | 15.64 | 16.23 | 0.59 | *66 | | MUDSTONE | CARB.DK.GY.MAS.SSD.BRKN SL CARB SLTY MUDST WITH COMMON BROKEN PLANT DEBRIS THROUGHOUT. GRAD LOWER CONTACT. MINOR V FAINTE DISRUPTED LAMINAE COMMON (ESP NEAR BASE OF UNIT). |
| 3 | 16.23 | 16.94 | 0.71 | *62 | | SANDSTONE | SLTY.VFG.PR.M.GY.VTHNB.SSD.SLO THINLY INTBD BUT PARTIALLY MIXED (SSD) FG SS/VFG SS/SLTST (20/45/35) WITH A BRAD OVERALL FINING UPWARD TREND. RAPID GRAD LOWER CONTACT. BED CONTACTS ARE GRAD, WAVY AND COMMONLY MIXED. |
| 3 | 16.94 | 17.37 | 0.43 | 59 | | SANDSTONE | SLTY.VFG.PR.M.GY.VTHNB.SSD.BRKN SAME A/A. REPEATED FINING UPWARD CYCLE A/A. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 17.37 | 17.59 | 0.22 | 58 | | | SANDSTONE | SLTY. VFG. PR. LT-M. GY. VTHNB. SSD. BRKN SAME A/A. CONTINUED PORTION OF PREVIOUS FINING UPWARD TREND. UNIT REPS COARSER GR BASAL PORTION OF CYCLE. |
| 4 | 17.59 | 18.20 | 0.61 | 56 | | | SANDSTONE | SLTY. VFG. PR. LT-M. GY. LAM. SSD. BRKN DOM. FG. CLEAN SS WITH COMMON DISRUPTED S LTST LAMS THROUGHOUT (ESP NEAR TOP). SS /SLTST = 60/40. LAMS HAVE GRAD. WAVY AN D COMMONLY BROKEN CONTACTS. CORRECT MAY UP (SSD). |
| 4 | 18.20 | 18.35 | 0.15 | 54 | | | ROCK LOSS | |
| 4 | 18.35 | 19.37 | 1.02 | *51 | | | SANDSTONE | VFG. MEL. LT-M. GY. LAM. HRMBU. BRKN DOM. CLEAN VFG-FG SS WITH OCC SL DISRUPT ED SLTST LAMS THROUGHOUT (ESP NEAR TOP) POORLY DEVELOPED SMALL HRMBURS NEAR U NIT'S TOP. SS/SLTST = 90/10. MOD GRAD L OWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: D0H87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | 19.37 | 19.75 | 0.38 | 56 | | | SILTSTONE | CARB. DK. GY. MAS. HRMBU. SLD CARB. MUDDY SLTST WITH V RARE VFG SS GRA D LENSES AND LAMS. POORLY PRESERVED RAR E HRMBURS AND SOME SSD. PRESENT. OCC PLA NT FRAGS. |
| 5 | 19.75 | 20.42 | 0.67 | 60 | | | SILTSTONE | CARB. DK. GY. MAS. BIOTR. BRKN CHURNED (BIOTR) SLTST A/A. SSS LENSES AND LAMS CHURNED INTO SLTST. AT 0.13 M: THIN POORLY CONSOL. SSS SLTST. ZONE. |
| 5 | 20.42 | 21.79 | 1.37 | *67 | | | SILTSTONE | SSY. M-DK. GY. VTHNB. SSD. BRKN THINLY INTBD. VFG SS/SLTST (25/75). BEDS ARE COMMONLY CHURNED, DISRUPTED, OR PA RTIALLY MIXED BY SSD AND BIOTR. RARE S HARP CONTACTS. CORRECT. MAY UP. (SSD). |
| 5 | 21.79 | 21.82 | 0.03 | 66 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | 21.82 | 22.83 | 1.01 | 65 | | | SANDSTONE | SLTY. FG. MOD. LT-M. GY. VTHNB. SSD. BRKN DOM CLEAN FG SS WITH COMMON THIN CARB S LTST BEDS, LAMS, AND DISCONT WISPS. VER Y WELL DEVELOPED SSD STRUCTURES INCLUDI NG H2O ESCAPE FEATURES AND LOAD CASTS. CORRECT WAY UP. SS/SLTST = 80/20. SHORT (1.5 CM) REPETITIVE FINING UPWARD CYCL ES COMMON. |
| 6 | 22.83 | 23.47 | 0.64 | *64 | | | SILTSTONE | SSY. DK. GY. MAS. SSD. YBRKN DOM SLTST WITH RARE THIN FAINT VFG SS W ISPS. SS/SLTST = 10/90. |
| 6 | 23.47 | 23.75 | 0.28 | 64 | | | SILTSTONE | SSY. DK. GY. LAM. YBRKN SAME A/A BUT OCC SS LAMS. SS/SLTST = 30 /70. |
| 7 | 23.75 | 24.14 | 0.39 | 63 | | | SANDSTONE | SLTY. VFG. MEL. M. GY. LAM. WRMBU. BRKN INTLAM VFG SS/SLTST (85/15) WITH RAPID GRAD TO SHARP, SUB-HORIZONTAL CONTACTS. V RARE HRMBURS. SL FINING UPWARD TREND M/IN. ABRUPT LOWER CONTACT. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | 24.14 | 24.82 | 0.68 | *63 | | | SANDSTONE | SLTY. FG. VHEL. M. GY. VTHNB. BRKN FINING UPWARD CYCLE: MASSIVE FG CLEAN SS AT BASE -> GRADING INTO INTLAM FG SS/VFG SS/SLTST -> BECOMING MASSIVE SSY. SLTST. M / RARE SS LAMS AT TOP. ABRUPT LOWER CON TACT. |
| 7 | 24.82 | 24.99 | 0.17 | 64 | | | SILTSTONE | DK. GY. YBRKN SL BRECCIATED, SL CARB SSY SLTST. |
| 7 | 24.99 | 25.73 | 0.74 | 65 | | | SILTSTONE | CARB. M. GY. MAS. BRKN WELL CEMENTED SL CLYY SLTST. RARE PLANT FRAGS. |
| 8 | 25.73 | 26.52 | 0.79 | *67 | | | SILTSTONE | M. GY. VTHNB. BRKN SAME A/A BUT BECOMING SL SANDY TOWARDS BASE. |
| 8 | 26.52 | 26.99 | 0.47 | 67 | | | SILTSTONE | DK. GY. MAS. YBRKN VERY MUDDY, SL BRECCIATED SLTST. OCC QT Z VEINING AND MINOR FAULTING. |
| 8 | 26.99 | 27.23 | 0.24 | 68 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 7

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | 27.23 | 27.75 | 0.52 | 68 | | | SANDSTONE | SLTY. FG. HEL. LT-M. GY. LAM. SSD. BRKN INTLAM FG CLEAN SS/SLTST (80/20). LAM C ONCONTACTS ARE SUB-HORIZ AND RAPID GRAD WI TH MINOR NORMAL FAULTING. LAMS RANGE UP TO 1 CM. MINOR SSD. |
| 9 | 27.75 | 29.57 | 1.82 | *69 | | | SANDSTONE | SLTY. FG. HEL. LT-M. GY. LAM. SSD. BRKN INTLAM FG SS/VFG SS/SLTST (40/40/20). S AME A/A WITH RARE XBDG. CORRECT WAY UP. |
| 9 | 29.57 | 29.68 | 0.11 | 71 | | | SANDSTONE | SLTY. FG. HEL. LT-M. GY. LAM. SSD. VBRKN SAME A/A. |
| 10 | 29.68 | 31.28 | 1.60 | *72 | | | SANDSTONE | SLTY. FG. HEL. LT-M. GY. LAM. SSD. VBRKN DOM CLEAN FG SS WITH COMMON INTBD AND I NTLAM SLTST. SS/SLTST = 80/20. LAMS MAY E RAPID GRAD TO SHARP SUB-HORIZ CONTACT S. MINOR XBDG AND SSD. CORRECT WAY UP. BASAL PORTION OF UNIT IS VERY BROKEN (R UBBLE). POSS CORE LOSS. |
| 11 | 31.28 | 31.76 | 0.48 | 71 | | | SILTSTONE | SSY. M. GY. VTHMB. SHRD INTBD VFG SS/SLTST (35/65). |
| 11 | 31.76 | 32.27 | 0.51 | 71 | | | ROCK LOSS | |
| 11 | 32.27 | 32.61 | 0.34 | *71 | | | SANDSTONE | CARB. FG. HEL. LT. GY. MAS. VBRKN OCC CARB. WISPS W/IN. |

* DENOTES MEASURED BCA

88/03/01

GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG

PAGE 8

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | 32.61 | 32.93 | 0.32 | 70 | | | SANDSTONE | CARB. FG. HEL. LT. GY. MAS. VBRKN SAME A/A. MINOR QTZ VEINING AT BASE. |
| 12 | 32.93 | 33.13 | 0.20 | 70 | | | SANDSTONE | CARB. FG. HEL. LT. GY. MAS. BRKN SAME A/A. GRAD LOWER CONTACT. |
| 12 | 33.13 | 34.12 | 0.99 | *68 | | | SANDSTONE | SLTY. VFG. HEL. LT-M. GY. LAM. SSD. SHRD INTLAM VFG SS/SLTST (65/35) WITH COMMON THIN CARB WISPS W/IN. MAJORITY OF UNIT IS EXTREMELY BROKEN (PROB CORE LOSS). MINOR SSD AND SMALL SCALE XBDG. CORRECT WAY UP. |
| 12 | 34.12 | 35.66 | 1.54 | 66 | | | ROCK LOSS | |
| 12 | 35.66 | 35.84 | 0.18 | 65 | | | SANDSTONE | SLTY. VFG. HEL. M. GY. LAM. SHRD SAME A/A. |
| 12 | 35.84 | 36.33 | 0.49 | 65 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13 | 36.33 | 38.06 | 1.73 | *63 | | | SANDSTONE | CARB. VFG. VHEL. LT. GY. MAS. XBDG. VBRKN CLEAN RESISTIVE MASSIVE SS WITH OCC V T HIN COMMONLY DISCONT CARB WISPS AND LAM S UP TO 1 MM. VERY RARE SLTST NEAR BASE ; MINOR XBDG (CORRECT WAY UP). POSS COR E LOSS. |
| 14 | 38.06 | 38.53 | 0.47 | 59 | | | SANDSTONE | VFG. VHEL. LT. GY. LAM. SSD. SLD SAME A/A WITH OCC SLTST. SLTST AND CARB LAMS ARE VERY CHURNED UP (BIOTRB & SSD) WITH RARE WRMBURS PRESENT. CORRECT WA Y UP. VFG TO FG SS/SLTST = 85/15. |
| 14 | 38.53 | 39.92 | 1.39 | *55 | | | SANDSTONE | SLTY. VFG. VHEL. LT. M. GY. LAM. SSD. VBRKN THINLY INTLAM VFG SS/SLTST (55/45). LAM S ARE FAINT BUT HAVE SHARP HORIZ CONTACT TS W/ VERY RARE SSD STRUCTURES. CORRECT WAY UP. POSS CORE LOSS. |
| 15 | 39.92 | 40.67 | 0.75 | *60 | | | SANDSTONE | SLTY. VFG. VHEL. LT. GY. MAS. VBRKN SAME A/A BUT VFG SS STRONGLY DOM (90/10) ALTHOUGH MUCH OF THE UNIT CONSISTS OF VERY WELL MIXED SLTY SS. RARE V THIN C ARB WISPS. FAINT LAM ARE VERY FAINT. CR USHED AT BASE SHOWING SL TUFFACEOUS CON T. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|-----|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | 40.67 | 40.68 | 0.01 | 54 | | | MUDSTONE | CLY. LT. GY. SLD VERY SOFT AND UNCONSOLIDATED TUFFACEOUS CLAY HORIZON. |
| 15 | 40.68 | 41.66 | 0.98 | *47 | | | SANDSTONE | VFG. VHEL. LT. GY. LAM. BRKN SL TUFFACEOUS VFG SS W/ V RARE THIN CAR B WISPS THROUGHOUT. WELL DEVELOPED BUT V FAINT HORIZ LAM DUE TO SL GR SIZE (& CARB) VARIATIONS W/IN THE SS. SL OVERAL L FINING UPWARD TREND; FG SS TO VFG SS. |
| 16 | 41.66 | 43.49 | 1.83 | *45 | | | SANDSTONE | CARB. VFG. VHEL. LT. GY. LAM. BRKN SL TUFF. VFG-FG CLEAN SS W/ COMMON LAMS. LAMS ARE PROMINENT & DUE TO SL GR SIZE VARIATIONS & CARB CONTENT VARIATIONS B ETWEEN LAMS. LAMS ARE SHARP & HORIZONTA L W/ V RARE XBDG. |
| 17 | 43.49 | 44.07 | 0.58 | 45 | | | SANDSTONE | SLTY. LT. GY. LAM. XBDG. BRKN TUFFACEOUS SS. |
| 17 | 44.07 | 44.59 | 0.52 | 45 | | | SANDSTONE | SLTY. LT. GY. LAM. XBDG. BRKN A/A |
| 17 | 44.59 | 44.66 | 0.07 | 44 | | | BENTONITE | CLY. LT. GY. BRKN POORLY CONSOL. |
| 17 | 44.66 | 45.27 | 0.61 | 44 | | | MUDSTONE | CARB. DK. GY. SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|-----------------------------------------------------|
| 18 | 45.27 | 45.40 | 0.13 | 44 | 05870 | SILTSTONE | M.GY.BRKN |
| 18 | 45.40 | 45.50 | 0.10 | 44 | 05870 | MUDSTONE | CARB.DK.GY.BRKN |
| 18 | 45.50 | 45.61 | 0.11 | 44 | 05871 I | COAL | C-4.PMRD POWDERED AND SHEARED, MIXED WITH MUDST. |
| 18 | 45.61 | 45.84 | 0.23 | 44 | 05871 I | COAL | C-2.BRKN |
| 18 | 45.84 | 47.18 | 1.34 | 44 | 05871 I | COAL LOSS | |
| 18 | 47.18 | 47.24 | 0.06 | 44 | 05871 I | MUDSTONE | SLTY.DK.GY.SLD |
| 18 | 47.24 | 47.32 | 0.08 | 44 | 05871 I | MUDSTONE | CLYY.M.BN.SLD |
| 18 | 47.32 | 47.42 | 0.10 | 44 | 05871 I | COAL | C-3.VBRKN |
| 18 | 47.42 | 47.48 | 0.06 | 44 | 05871 I | COAL LOSS | |
| 18 | 47.48 | 47.65 | 0.17 | 44 | 05871 I | ROCK LOSS | |
| 18 | 47.65 | 47.68 | 0.03 | 44 | 05871 I | MUDSTONE | CARB.DK.GY.SLD |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDHB7034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. BCA ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------------|---------|-----------|---------------------------------------|
| 18 | 47.68 | 48.05 | 0.37 | 44 | 05871 I | COAL | C-3.VBRKN |
| 18 | 48.05 | 49.20 | 1.15 | 43 | 05871 I | COAL LOSS | |
| 18 | 49.20 | 49.28 | 0.08 | 43 | 05871 I | MUDSTONE | CARB.DK.GY.BRKN VITRAIN STRINGERS. |
| 18 | 49.28 | 49.55 | 0.27 | 43 | 05871 I | COAL | C-3.VSHRD SHEARED AND POWDERED |
| 18 | 49.55 | 49.57 | 0.02 | 43 | 05871 I | MUDSTONE | CARB.DK.GY.SLD |
| 19 | 49.57 | 50.70 | 1.13 | 43 | 05871 I | COAL LOSS | |
| 19 | 50.70 | 52.06 | 1.36 | 43 | 05871 I | COAL | C-1.VBRKN CRUSHED |
| 19 | 52.06 | 52.30 | 0.24 | 43 | 05871 I | COAL | C-2.VBRKN CRUSHED. |
| 19 | 52.30 | 52.36 | 0.06 | 42 | 05871 I | COAL | C-4.BRKN |
| 19 | 52.36 | 52.46 | 0.10 | 42 | 05871 I | COAL | C-3.VBRKN |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 | 52.46 | 52.54 | 0.08 | 42 | 05872 | | MUDSTONE | CARB. DK. GY. SLD ABUND. CARB PLANT FRAGS. |
| 19 | 52.54 | 52.86 | 0.32 | 42 | | | ROCK LOSS | |
| 20 | 52.86 | 53.18 | 0.32 | 42 | | | MUDSTONE | CARB. BLK. MAS. BRKN VERY CARB. BLK. MUDST WITH COMMON PLANT D. EBRIS AND RARE THIN COAL LAMS AND BANDS UPTO .5 CM. OCC. QZ VEINING. GRAD. LOWE R. CONTACT. |
| 20 | 53.18 | 53.95 | 0.77 | 42 | | | SILTSTONE | DK. GY. MAS. BRKN SL. CARB. MUDDY SLTST W/ COMMON VERY FAIN T VERY THIN (1MM) HORIZ LAMINAE (ESP TO WARDS BASE OF UNIT). |
| 20 | 53.95 | 54.59 | 0.64 | *42 | | | SILTSTONE | SSY. M-DK. GY. MAS. BIOTR. BRKN PARTIALLY MIXED & CHURNED INTLAM VFG SS /SLTST (30/70). COMMON SSD, BIOTRB. & V RARE HRMBURS. CORRECT WAY UP. |
| 21 | 54.59 | 56.38 | 1.79 | *52 | | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. BIOTR. BRKN SAME A/A, EXCEPT SS/SLTST = 55/45. COMM ON BIOTRB (ESP IN UPPER HALF OF UNIT). COMMON SSD THROUGHOUT; WELL DEV. BALL & PILLOWS & LOAD CASTS. CORRECT WAY UP. |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: LR DATA SOURCE: DDH87034

| BOX | DEPTH FROM | DEPTH TO | INTRVAL THICK. | BCA ID | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|-----|------------|----------|----------------|--------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| 21 | 56.38 | 56.60 | 0.22 | 52 | | | ROCK LOSS | |
| 22 | 56.60 | 57.00 | 0.40 | 52 | | | SANDSTONE | SLTY. VFG. MEL. LT-M. GY. LAM. SSD. VBRKN SAME A/A. POSS. CORE LOSS. END OF HOLE. TD = 57.00 M DRILLER'S DEPTH. |

-854- NOW IN CONTACT WITH SYSTEM 2000 -
COPYRIGHT (C) 1985 SAS INSTITUTE INC., CARY, N.C. 27511, U.S.A. -
***** GEX - 03.01 - COCC.COAL/21 ALLOCATED.
-855- NO LONGER IN CONTACT WITH SYSTEM 2000 -

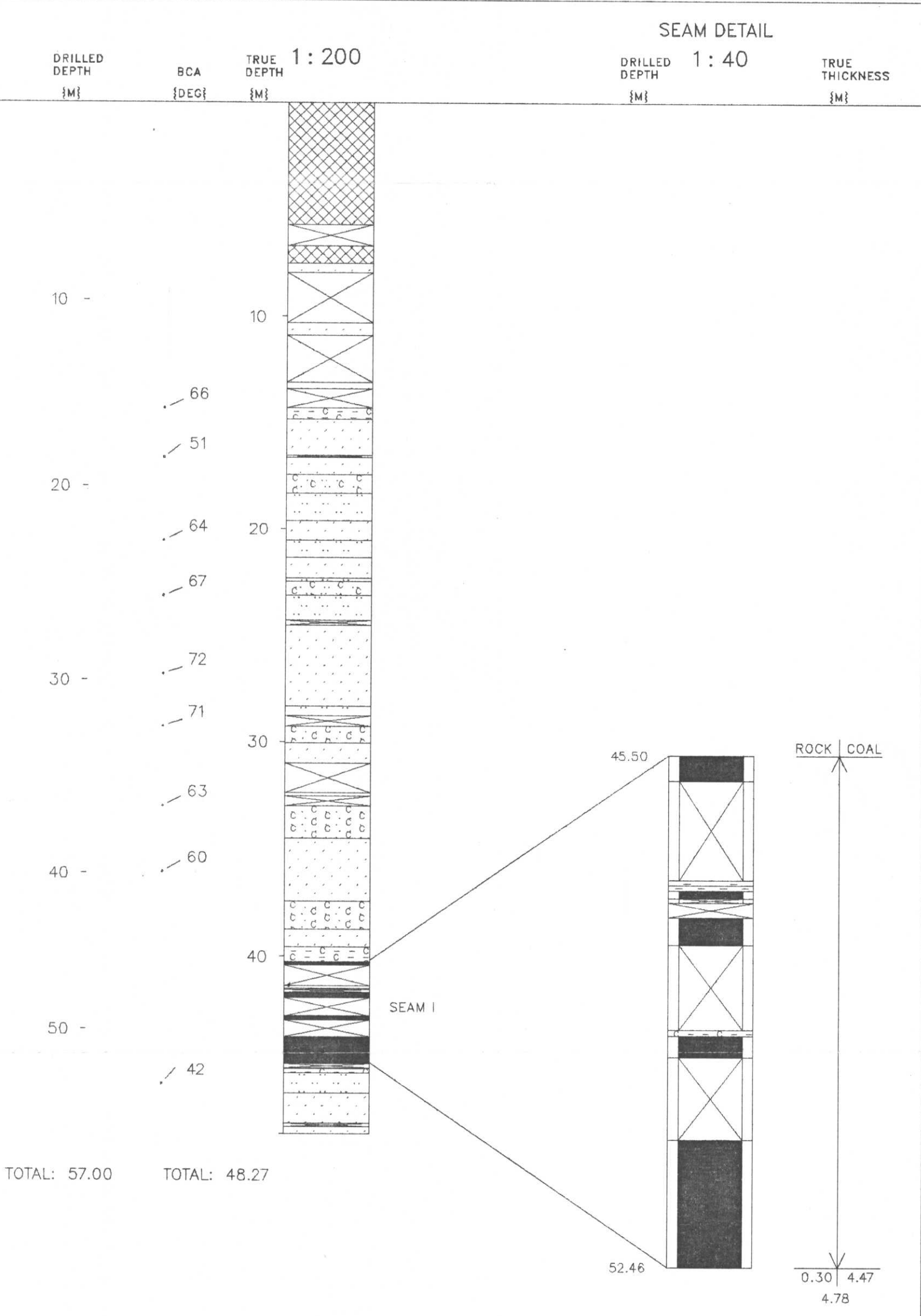
GULF CANADA CORPORATION
 COAL DIVISION
 KLAPPAN PROJECT
 STRATIGRAPHIC LOG
 KPN LR DDH87034

740

GEOLOGIST : LEDDA DATE : MAR 08/88 DRAWING NO. :

LITHOLOGIC SYMBOLS

| | | | | |
|-----------------------|--|---------------------|--|--------------|
| SCALE : 1:200 1:40 | | SANDSTONE | | BENTONITE |
| | | SILTSTONE | | BRECCIA |
| | | COAL | | CARBONACEOUS |
| NORTHING: 6344895.0 N | | OVERBURDEN | | QUARTZ |
| EASTING: 506207.1 E | | MUDSTONE, CLAYSTONE | | PYRITE |
| INCLINATION: 90.0° | | TUFF | | FERRUGINOUS |
| | | LIMESTONE | | CONGLOMERATE |
| | | CORE LOSS | | FOSSIL BED |



Gulf Canada Resources Limited

Coal Division

740

Geophysical Log

Datasource: **KPNLRDDH87034**

Province: BC

Northing: 6344900.00

Lat: 571456

Log Date: 86-05-20

Zone: 9

Easting: 506207.00

Long: 1285350

Company: CENTURY

Measuring Point: GROUND LEVEL

Elevation: 1620.0

Geologist: LEDDA

Scale: 1 to 200.0

Comments:

Depth Range: 0.0 to 61.0

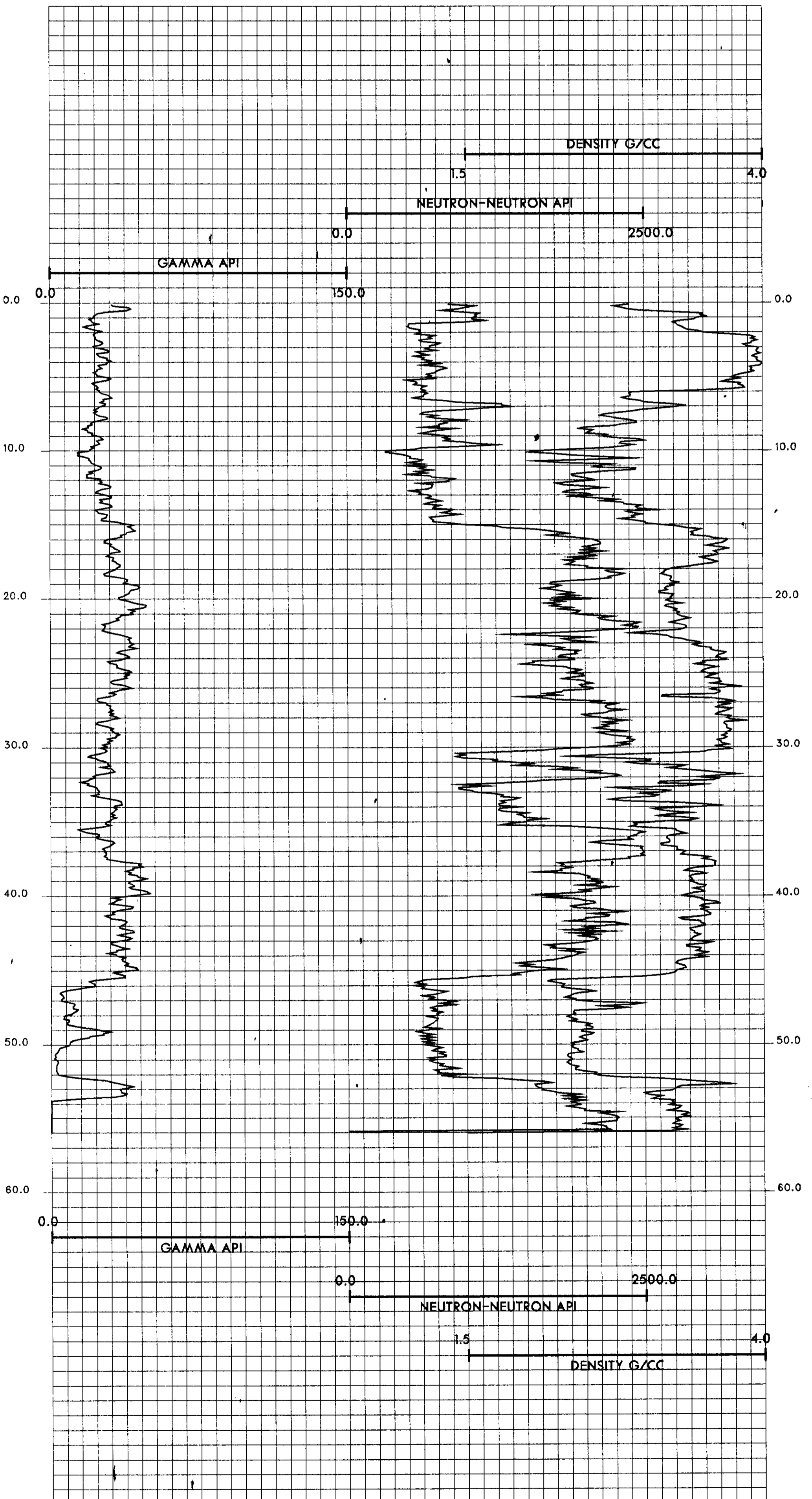
1. LOGGED THROUGH RODS.

2.

True Thickness: NO

Logs Plotted:

| Description | Axis Range | Axis Length | Smoothing Points | Tool | Comments |
|------------------------|---------------|-------------|------------------|-------|----------|
| 1. GAMMA API | 0.0 to 150.0 | 10.0 | 31 | 9030A | IN PIPE |
| 2. NEUTRON-NEUTRON API | 0.0 to 2500.0 | 10.0 | 9 | 9055A | IN PIPE |
| 3. DENSITY G/CC | 1.5 to 4.0 | 10.0 | 15 | 9030A | IN PIPE |



1:10 000 DIAMOND DRILL HOLE
LOCATION MAP



LEGEND

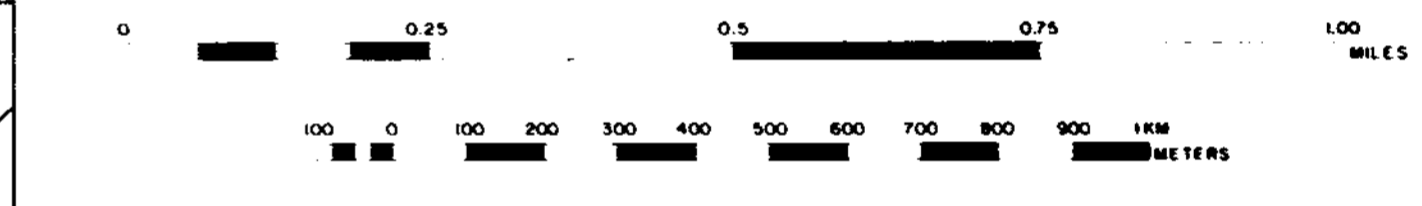
| | | |
|-----------------------------------|-----|-----|
| BUILDING | --- | □ |
| ROAD, HARD SURFACE | --- | ▬ |
| LOOSE SURFACE | --- | ▬ |
| RAIL TRACK | --- | ▬ |
| TRAIL | --- | ▬ |
| RAILROAD BED | --- | ▬ |
| RIVER | --- | ▬ |
| STREAM, DEFINITE | --- | ▬ |
| APPROXIMATE | --- | ▬ |
| SPLIT | --- | ▬ |
| LAKE | --- | ▬ |
| WATER LEVEL | --- | ▬ |
| SWAMP | --- | ▬ |
| BEAVER DAM | --- | ▬ |
| TREE LINE | --- | ▬ |
| CUT LINE | --- | ▬ |
| CONTOURS, INDEX | --- | ▬ |
| INTERMEDIATE | --- | ▬ |
| DEPRESSION | --- | ▬ |
| APPROXIMATE | --- | ▬ |
| SPOT ELEVATION | --- | ▬ |
| FIELD CONTROL POINT | --- | ▬ |
| COAL LICENCE | --- | ▬ |
| DIAMOND DRILL HOLE | --- | DDH |
| ROTARY DRILL HOLE | --- | RDH |
| WIRE DRILL HOLE | --- | WDH |
| ROAD | --- | ▬ |
| PERIMETER OF 1985 TRIAL CARGO PIT | --- | ▬ |

NOTES

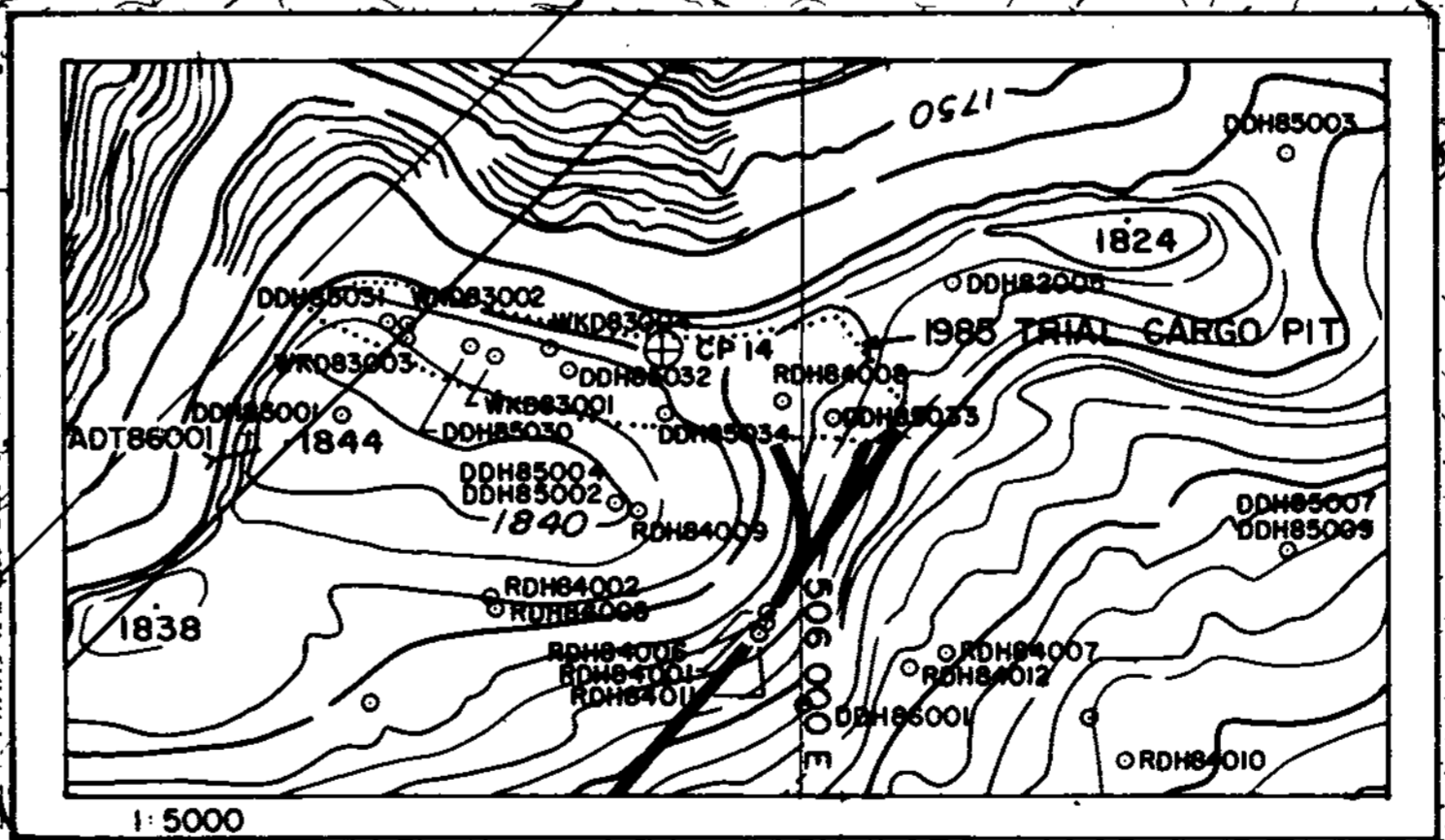
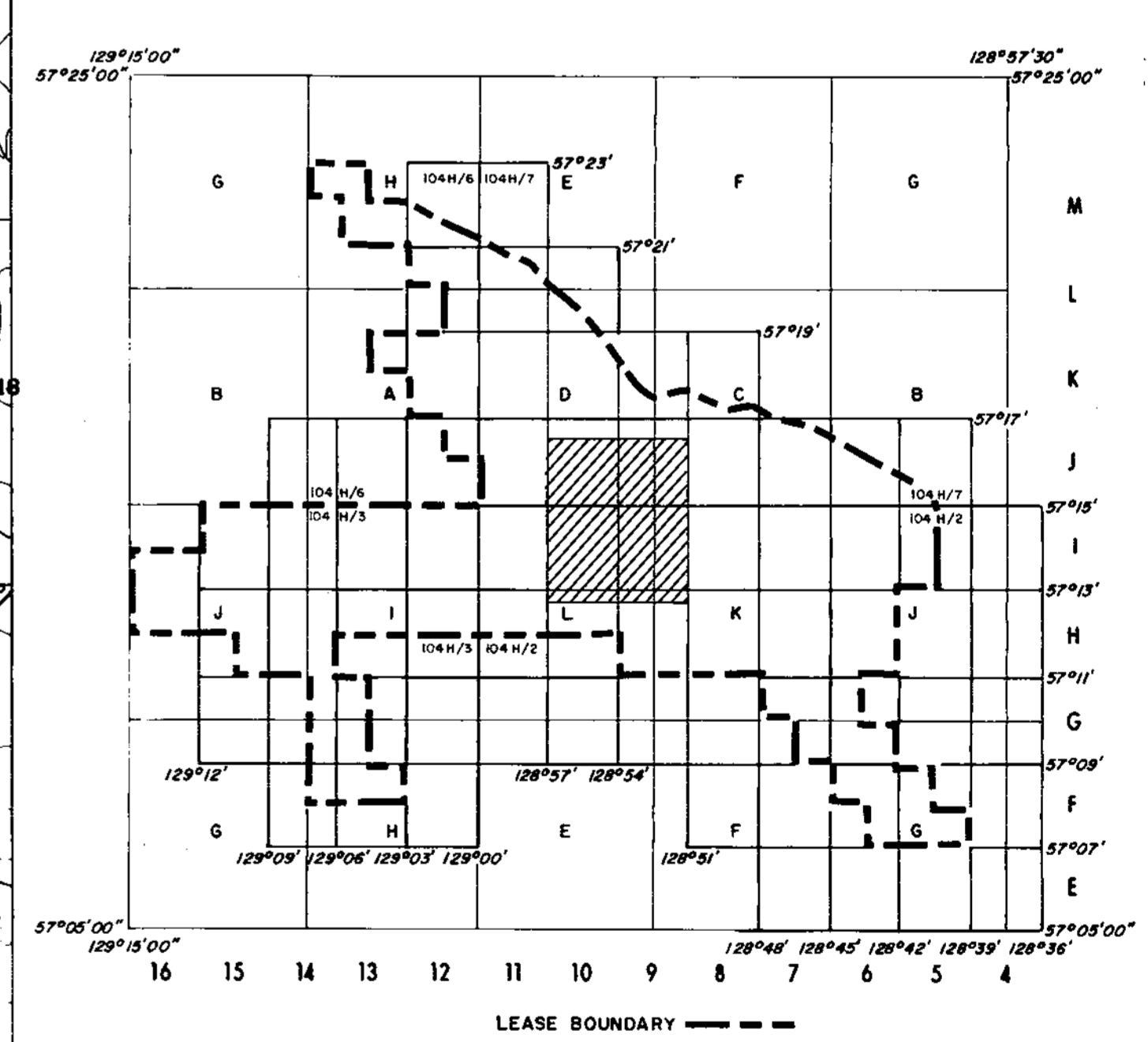
CONTOUR INTERVAL 10 METERS
 SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.
 RAILROAD BED LOCATION BASED ON DATA SUPPLIED BY B.C. RAIL
 COMPILED BY WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD MCELLEAN LTD. FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/87 AT A SCALE OF 1:6000 (APPROXIMATE)



SCALE 1:10000



MT. KLAPPAN AREA
INDEX MAP



740

| | | |
|-----------------------------------------------------------------------------------|---------------|-----------------|
| GULF CANADA RESOURCES LTD. | | |
| CALGARY | Coal Division | |
| MOUNT KLAPPAN COAL PROPERTY 1987 LOST - FOX AREA DRILL HOLE LOCATION MAP | | |
| PREPARED BY: A.P., S.L. | | DRAWING No. |
| APPROVED BY: E.S. | | DATE: FEB. 1988 |
| | | KPN87001 |