# MOUNT KLAPPAN COAL PROJECT

# HOBBIT - BROATCH AREA

# GEOLOGICAL REPORT

# 1984

## APPENDIX IV

## VOLUME I

## 1982 DIAMOND DRILL HOLE DATA

695

GULF CANADA RESOURCES INC.

COAL DIVISION

MOUNT KLAPPAN COAL PROJECT

APPENDIX IV

DIAMOND DRILL HOLE DATA

# LOGGING FORM
# DESCRIPTIONS AND INPUT PROCEDURES
# AND ABBREVIATIONS

PROJECT, BLOCK

DESCRIPTION - The project denotes the exploration program to which the data source belongs. The block is a sub-division of the project and can be an arbitrary or geographical division.

INPUT PROCEDURE - Each project has a three character code which is validated on data entry. The exact same code must be used for each data source on a project. Two characters are allowed for block designation. If there is no block designation required enter an "XX" for this field.

DATA SOURCE

DESCRIPTION - All drill holes, adits, trenches and if desired outcrops are data sources. Any location from which data is obtained is a data source.

INPUT PROCEDURE - Eight characters are allowed for the hole number. The first three are for drill hole or data source type (RDH, DDH, ADT, TRC, OTC). The next two characters record the year and the last three characters are for sequence number (e.g., the first hole is 001). This must be completed for every page.

SHEET NUMBER

DESCRIPTION - This item essentially a page number should the various pages become disordered.

INPUT PROCEDURE - The Sheet number is not actually entered into the computer. Enough space is provided to include the page number and total number of pages (e.g., 2 of 31).

GROUP, FORMATION, MEMBER

DESCRIPTION - These data items help to describe the stratigraphic position of the components on the sheet.

INPUT PROCEDURE - Completion of these spaces is not necessary during the core logging procedure and may not even be possible at that time. Later, the spaces need to be completed only when one of the items changes since any previous entry is carried along. Should one of these items change, a new page must be started insuring that all components on any page belong to the same group, formation or member.

SEAM

DESCRIPTION - The name applied to a stratigraphic interval containing coal. The stratigraphic interval may be composed of one or any number of components.

INPUT PROCEDURE - This space may or may not be completed during core logging, but should if possible, be completed before data entry. Seam splits can be labelled using letters.

NOTE: A new page must be started for each seam so that all components on the sheet apply to that seam designation.

STRATIGRAPHIC UNIT

DESCRIPTION - An arbitrary informal sub-division of a member or formation to facilitate correlation in any particular area.

INPUT PROCEDURE - Indicating the stratigraphic unit is completely optional. If a new or different stratigraphic unit is added, a new page must be started since the stratigraphic unit applies to all components on the page and is carried on to succeeding pages unless changed.

BCA

DESCRIPTION - The bedding to core angle is the angle between the longitudinal core axis and the bedding. A vertical hole intersecting horizontal strata would produce a BCA of 90°.

INPUT PROCEDURE - The BCA applies to a component or interval of core. It should be recorded to the nearest degree.

BOX/MARK

DESCRIPTION - These are two separate items entered into same column. The box is the number assigned to a box of core by the drillers and since all core is placed in a box, each component will have an associated box number. The mark or marker, is the drillers footage or "meterage" values found on tags with the box.

INPUT PROCEDURE - Since the box pertains to a series of components rather than just one, an arrow down the edge of the column is necessary to illustrate this to the data entry personnel (see examples). The box number can be entered on a line to itself. In order to help distinguish drillers depth markers from box numbers, the markers must be labelled according to the units used. The drillers marker should be entered on the same line as the next component, therefore, where a marker exists, it immediately preceded the component described on the same line.

INTERVAL THICKNESS

DESCRIPTION - The length of a component as measured along the length of the drill core.

INPUT PROCEDURE - Values should be entered in metres to the nearest centimetre.
Enough space should be left between interval lines to enter lost core at a latter time.

DEPTH FROM, DEPTH TO

DESCRIPTION - These are the depths of the start and end of each component. The difference between the two equals the interval thickness.

INPUT PROCEDURE - The computer only needs the "depth from" of the first component to start with and will calculate all others if necessary. If a depth from is not provided for the first component, zero will be assumed. These columns can be used when adjusting the logs and determining lithology thickness.

LITHOLOGY THICKNESS

DESCRIPTION - The thickness of a lithologic unit which may be the sum of several components.

INPUT PROCEDURE - The lithology thickness must be entered on the same line as the last component which comprises it. Completion of this column is not necessary, as are not part of the formal report.

SAMPLE I.D.

DESCRIPTION - Identification of the sample collected over one or several components.

INPUT PROCEDURE - The sample ID must be entered on the line with the first component that comprises it and an arrow down that column to the last component that comprises the sample.

ROCK TYPE

DESCRIPTION - The dominant type of lithology which comprises the component and generally is determined megascopically.

INPUT PROCEDURE - Rock type can be written out in full or abbreviated, however consistency is important. Should two successive components have the same rock type, an arrow can be drawn down the column indicating that the same lithology applies to those components as well.

MODIFIER

DESCRIPTION - A descriptive adjective which further defines the rock type.

INPUT PROCEDURE - Only the following codes are allowed in this column:

| For Rock | | For Coal |
|---|---|---|
| PBLY | (Pebbly) | C-1 |
| SSY | (Sandy) | C-2 |
| SLTY | (Silty) | C-3 |
| CLYY | (Clayey) | C-4 |
| CARB | (Carbonaceous) | C-5 |
| GYP | (Gypsiferous) | C-6 |
| FER | (Ferruginous) | |
| PYR | (Pyritic) | |

GRAIN SIZE

DESCRIPTION - A term categorizing the size of mineral particles that comprise a rock or sediment.

INPUT PROCEDURE - Only the following codes are allowed in the grain size column.

| | |
|---|---|
| CBL | (Cobble) |
| PBL | (Pebble) |
| GRAN | (Granular) |
| VCG | (Very Coarse Grained) |
| CG | (Coarse Grained) |
| MG | (Medium Grained) |
| FG | (Fine Grained) |
| VFG | (Very Fine Grained) |

NOTE: If one needs to state a range between two grain sizes (e.g., medium to coarse grained) then record a minus sign after the code to express the presence of the next coarsest grain size. (e.g., MG-).

SORTING

DESCRIPTION - Indicates the degree of similarity in grain size.

INPUT PROCEDURE - Only the following codes are allowed in the sorting column:

| | |
|---|---|
| VPR | (Very Poor) |
| PR | (Poor) |
| MOD | (Moderate) |
| WEL | (Well) |
| VWEL | (Very Well) |

COLOR

DESCRIPTION - The color of the component.

INPUT PROCEDURE - Only the following codes are allowed in the color column:

| | |
|---|---|
| BLK | (Black) |
| BN | (Brown) |
| BF | (Buff) |
| GN | (Green) |
| GY | (Grey) |
| MAR | (Maroon) |
| ORNG | (Orange) |
| PURP | (Purple) |
| YEL | (Yellow) |
| TAN | (Tan) |
| BLU | (Blue) |
| WH | (White) |

COLOR MODIFIER

DESCRIPTION - Modifies or further defines the color of a component.

INPUT PROCEDURE - Only the following codes are allowed in the color modifier column:

| | |
|---|---|
| DK | (Dark) |
| M | (Medium) |
| LT | (Light) |
| LT-M | (Light to Medium) |
| M-DK | (Medium to Dark) |
| LT-DK | (Light to Dark) |
| S-P | (Salt and Pepper) |
| WEATH | (Weathered) |

BEDDING

DESCRIPTION - Planes dividing sedimentary rocks of the same of different lithology.

INPUT PROCEDURE - Only the following codes are allowed in the bedding column:

| | |
|---|---|
| MAS | (Massive) |
| VTHKB | (Very Thick Bedded) |
| THKB | (Thick Bedded) |
| MB | (Medium Bedded) |
| THNB | (Thin Bedded) |
| VTHNB | (Very Thin Bedded) |
| LAM | (Laminated) |

NOTE: See page 55 of Field Manual for criteria.

SEDIMENTARY STRUCTURES

DESCRIPTION - Any structure in a sedimentary rock.

INPUT PROCEDURE - Only the following codes are allowed in the sedimentary structure column. (The column can only accommodate one of the codes, additional structures should be mentioned in the notes).

| | |
|---|---|
| XBDG | (Cross Bedding) |
| WRMBUR | (Worm Burrow) |
| RIPMK | (Ripple Marks) |
| BIOTRB | (Bioturbated) |
| RTB | (Rootlet Bed) |
| SSD | (Soft Sediment Deformation) |

CORE STATE

DESCRIPTION - The condition or quality of the core for a given component.

INPUT PROCEDURE - Only the following codes are allowed in the core state column:

| | |
|---|---|
| PWRD | (Powdered) |
| VSHRD | (Very Sheared) |
| SHRD | (Sheared) |
| VBRKN | (Very Broken) |
| BRKN | (Broken) |
| SLD | (Solid) |

NOTES

DESCRIPTION - Relevant additional comments on a particular component which add to the description.

INPUT PROCEDURE - Abbreviations can be used but this is not necessary. A maximum of 250 characters is allowed for in the notes for each component. This should not limit the literary talent of most geologists.

KEY BED

DESCRIPTION - An identifiable bed occurring at a particular stratigraphic position.

INPUT PROCEDURE - Enter Y if it is a Key Bed.

GULF CANADA RESOURCES INC.

## - D A T A  S O U R C E  S U M M A R Y -

DATA SOURCE - KPNHCDDH82001 DATE - 02/06/85

### - H I S T O R Y -

START DATE - 08/01/82
END DATE - 08/03/82

CONTRACTOR - J.T.THOMAS
GEOLOGIST - SWANBERGSON
OPERATOR - GCRI
SURVEYOR -

REMARKS - VERTICAL HOLE, NO GEOPHYSICAL LOGS AS LOGGING UNIT WAS DESTROYED IN ACCIDENT , DRILLERS' MARKERS MEASURED FROM GROUND LEVEL + APPROX. 0.6M

### - L O C A T I O N -

PROVINCE - BC
ELEVATION - 1400.00
ZONE - 9
NORTHING - 6343645.00
EASTING - 514375.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571415
LONGITUDE - 1284543

### - O R I E N T A T I O N -

LENGTH - 124.05
INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 95.8

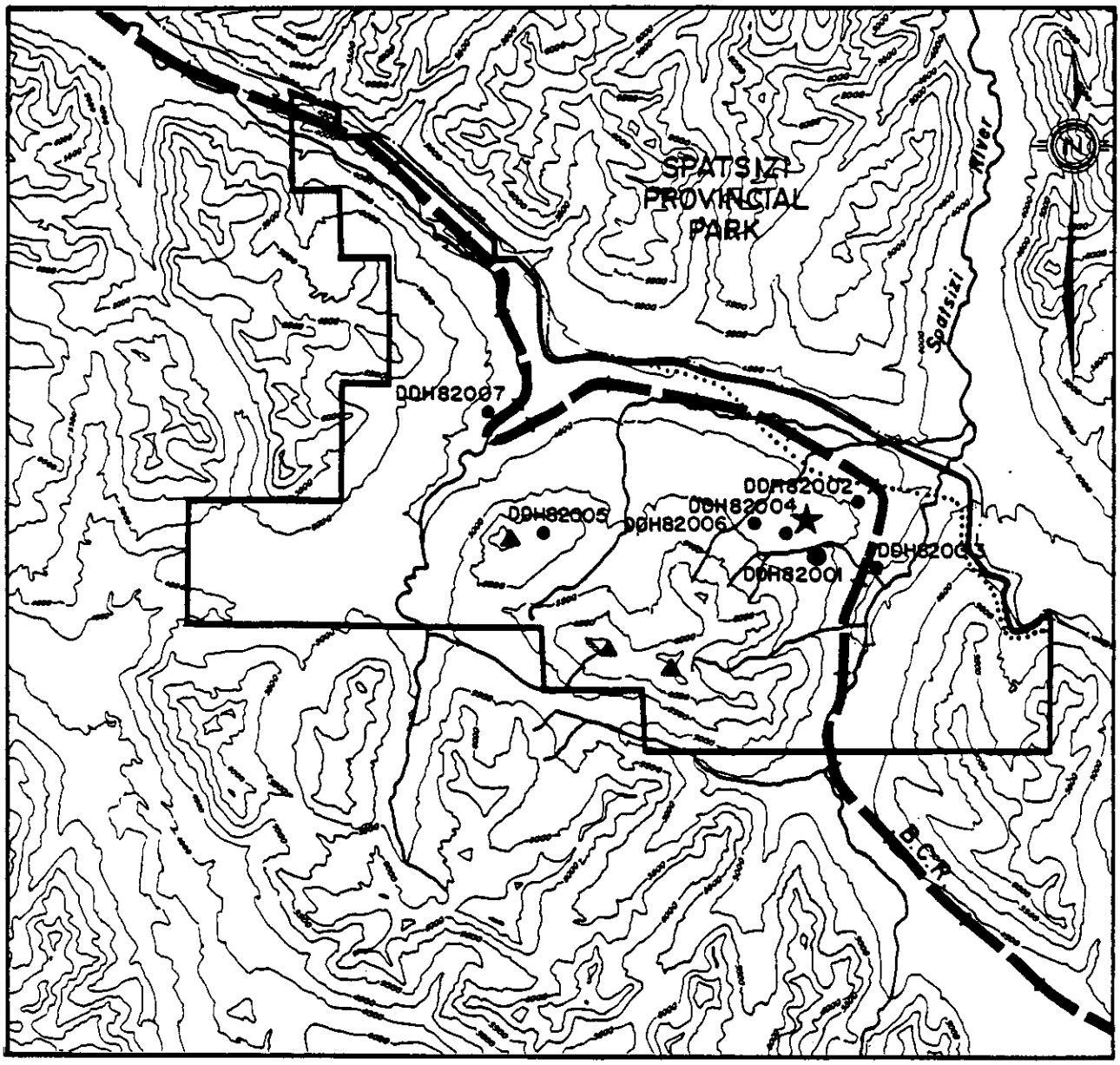
CEMENT -
PLUG - Y
PIEZ -

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

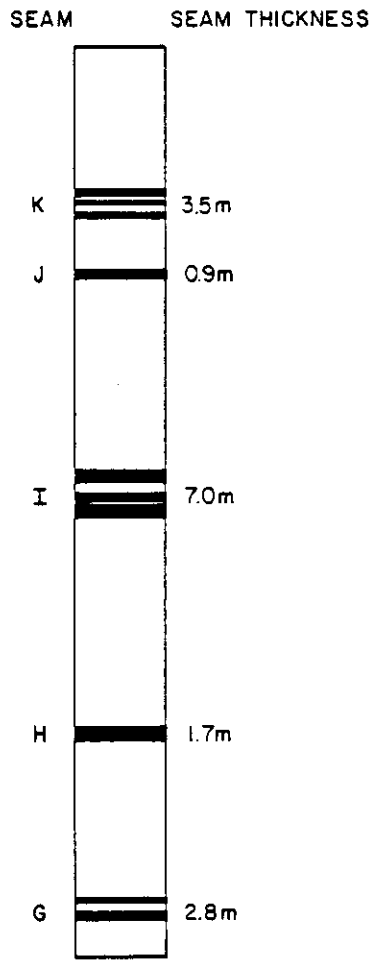
# MT. KLAPPAN COAL PROPERTY

## DIAMOND DRILL HOLES

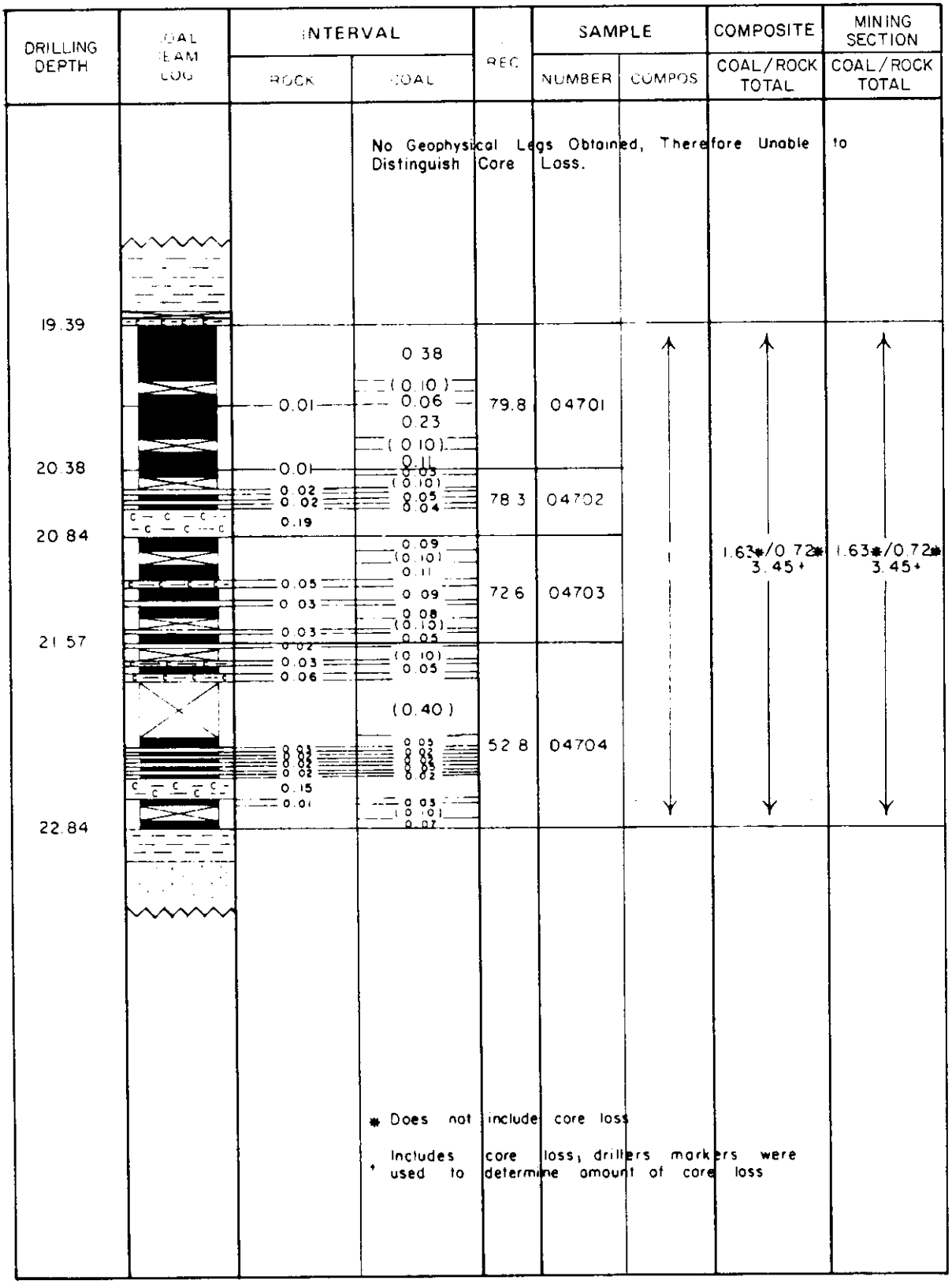


# MT. KLAPPAN COAL PROPERTY

## DDH82001




SCALE - 1:1000




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-001
## SEAM K

| | |
|---|---|
| PREPARED BY: | SCALE 1:40 |
| APPROVED BY: J.M.D. DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12-80)

DENSITY ——— RESISTIVITY ———

Apparent Thickness

DRILL NO. DDH - 82 - 001 SEAM K SEAM INTERVAL

SCALE 1:40

**DENSITY SCALE**

1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY **SCALE**

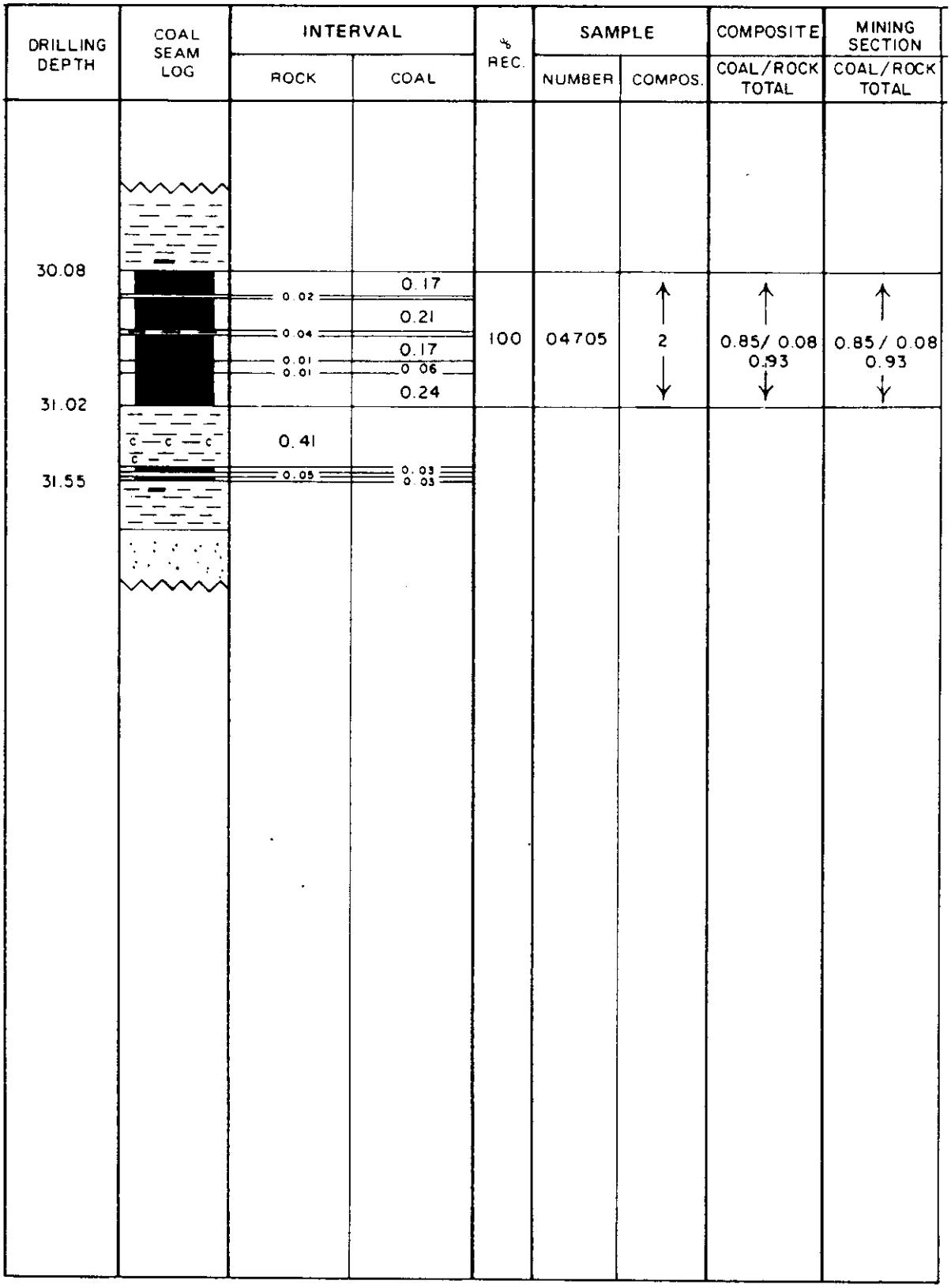
No Geophysical Logs Obtained

GEOPHYSICAL LOGS

| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19.39 | | | 0.38 (0.10) 0.06 | 79.8 | 04701 | | | | | | | | |
| | | | 0.01 | 0.23 (0.10) 0.11 | | | | | | | | | | |
| | 20.38 | | 0.01 | 0.03 (0.10) 0.05 0.04 | 78.3 | 04702 | | | | | | | | |
| | 20.84 | | 0.02 0.02 | 0.19 | | | | | | | | | | |
| | | | | 0.09 (0.10) 0.11 | | | | | | | | | | |
| | | | 0.05 | 0.09 | 72.6 | 04703 | | 1.75 | 28.02 | 8.78 | 61.45 | | 23.09 | |
| | | | 0.03 | 0.08 (0.10) | | | | | | | | | | |
| | 21.57 | | 0.03 | 0.05 | | | | | | | | | | |
| | | | 0.02 | (0.10) | | | | | | | | | | |
| | | | 0.03 | 0.05 | | | | | | | | | | |
| | | | 0.06 | | | | | | | | | | | |
| | | | | (0.40) | | | | | | | | | | |
| | | | 0.03 0.02 0.02 0.02 0.02 | 0.05 0.03 0.02 0.02 0.02 | 52.8 | 04704 | | | | | | | | |
| | | | | 0.15 | | | | | | | | | | |
| | 22.84 | | 0.01 | (0.10) 0.03 0.02 | | | | | | | | | | |

Seam Interval (m): 19.39 - 22.84
Seam True Thickness (Coal/Rock): 1.63*/0.72*
Total 3.45

* does not include core loss




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

Gulf

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH - 82-001
SEAM J

| | |
|---|---|
| PREPARED BY: C L | SCALE 1 : 40 |
| APPROVED BY: J M D DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12-80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 001 SEAM J SEAM INTERVAL

SCALE 1:40

DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

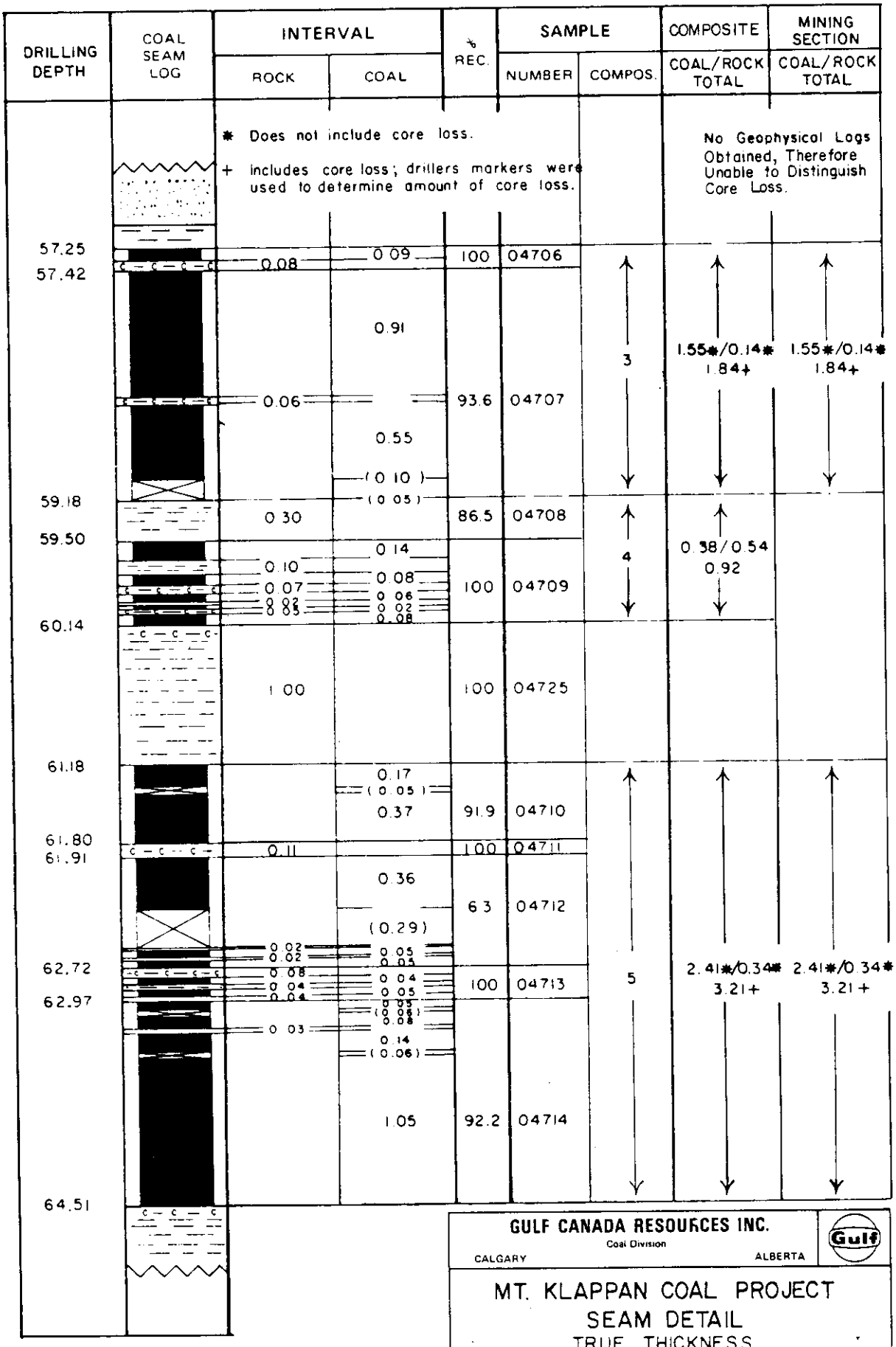
RESISTIVITY SCALE

No Geophysical Logs Obtained

GEOPHYSICAL LOGS

| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30.08 | | | 0.18 | | | | | | | | | | |
| | | | 0.02 | 0.21 | | | | | | | | | | |
| | | | 0.04 | 0.17 | 100 | 04705 | 2 | 1.13 | 22.07 | 9.05 | 67.75 | | 26.03 | |
| | | | 0.01 | 0.06 | | | | | | | | | | |
| | | | 0.01 | 0.24 | | | | | | | | | | |
| | 31.02 | -C-C-C-C- | 0.42 | | | | | | | | | | | |
| | 31.55 | | 0.05 | 0.03 | | | | | | | | | | |
| | | | | 0.03 | | | | | | | | | | |

Seam Interval (m) : 30.08 - 31.02
Seam True Thickness (Coal / Rock) : 0.85 / 0.08
Total 0.93




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-001
SEAM I

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. | DATE: NOV. 82 DRAWING No. |

## COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

P - 267 (12-80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 001 SEAM 1 SEAM INTERVAL

SCALE 1:40

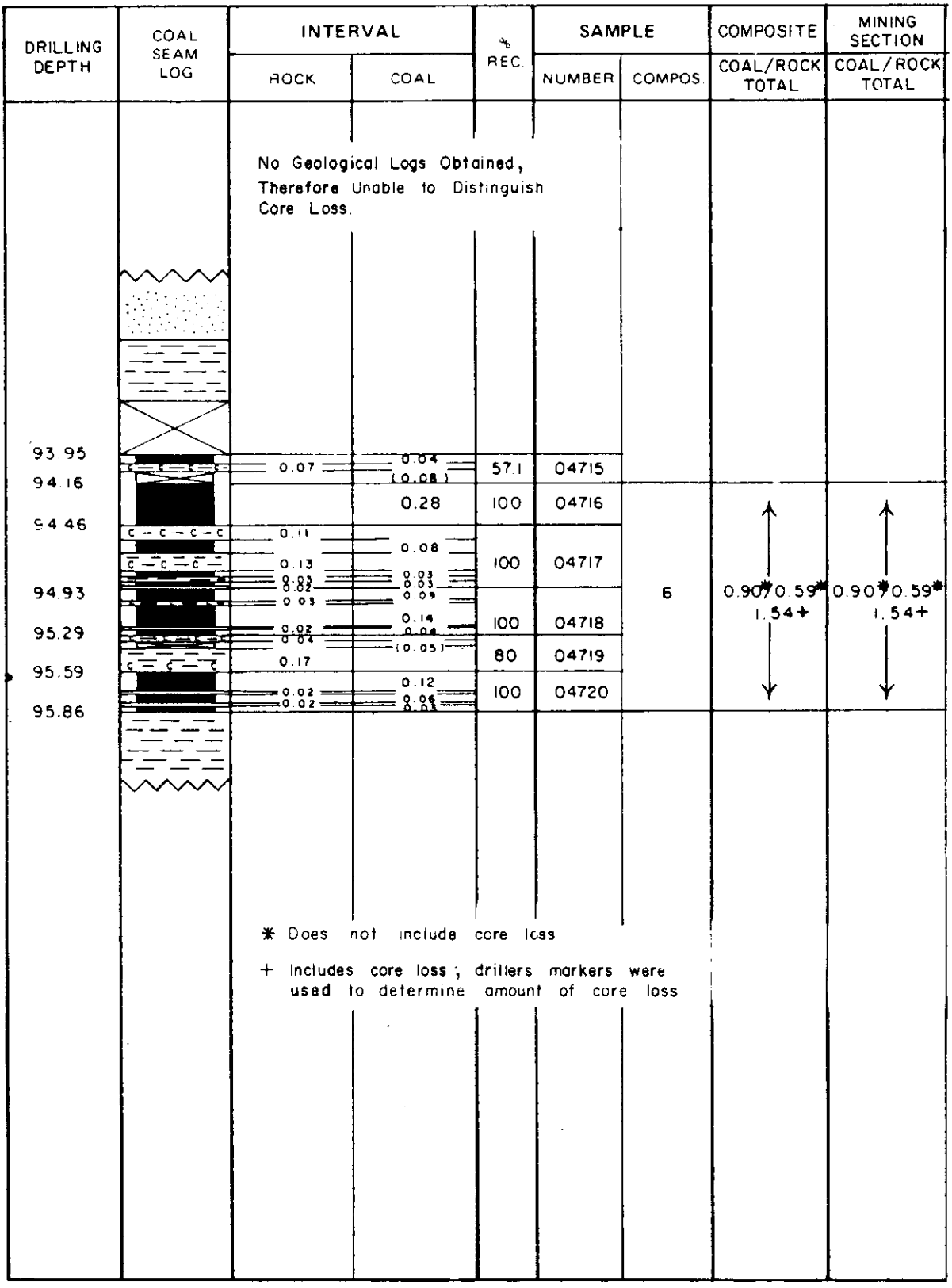
DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE

No Geophysical Logs Obtained

GEOPHYSICAL LOGS

| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Seam Interval (m) : 57.25 - 64.51 | | | | | | | | | | | |
| | | | Seam True Thickness (Coal/Rock) : | | | | | 4.34*/2.02* | | | | | | |
| | | | | | | | Total | 6.97 | | | | | | |
| | | | * does not include core loss | | | | | | | | | | | |
| | 57.25 | | | | | | | | | | | | | |
| | 57.42 | | 0.08 | 0.09 | 100 | 04706 | | | | | | | | |
| | | | | 0.96 | 93.6 | 04707 | | | | | | | | |
| | | | 0.06 | | | | 3 | 2.04 | 18.01 | 7.25 | 72.20 | | 27 30 | |
| | | | | 0.58 | | | | | | | | | | |
| | | | | (0.11) (0.05) | | | | | | | | | | |
| | 59.18 | | | | | | | | | | | | | |
| | 59.50 | | 0.32 | | 86.5 | 04708 | | | | | | | | |
| | | | | 0.15 | | | | | | | | | | |
| | | | 0.11 | | | | 4 | 1.93 | 50.42 | 7 | 78 | 39.87 | 14 32 | |
| | | | 0.07 | 0.08 | 100 | 04709 | | | | | | | | |
| | | | 0.02 | 0.06 | | | | | | | | | | |
| | | | 0.05 | 0.02 | | | | | | | | | | |
| | 60.14 | | | 0.08 | | | | | | | | | | |
| | | | 1.04 | | 100 | 04725 | | | | | | | | |
| | 61.18 | | | | | | | | | | | | | |
| | | | | 0.18 | | | | | | | | | | |
| | | | | (0.05) | 91.9 | 04710 | | | | | | | | |
| | | | | 0.39 | | | | | | | | | | |
| | 61.80 | | | | | | | | | | | | | |
| | 61.91 | | 0.11 | | 100 | 04711 | | | | | | | | |
| | | | | 0.37 | | | | | | | | | | |
| | | | | 0.30 | 63 | 04712 | | | | | | | | |
| | | | 0.02 | 0.05 | | | | | | | | | | |
| | 62.72 | | 0.02 | 0.05 | | | | | | | | | | |
| | | | 0.08 | | | | | | | | | | | |
| | | | 0.04 | 0.04 | 100 | 04713 | 5 | 1.63 | 16.91 | 6.99 | 74 47 | | 28.73 | |
| | | | 0.04 | 0.05 | | | | | | | | | | |
| | 62.97 | | | 0.05 | | | | | | | | | | |
| | | | | (0.06) | | | | | | | | | | |
| | | | | 0.08 | | | | | | | | | | |
| | | | 0.03 | | | | | | | | | | | |
| | | | | 0.15 | | | | | | | | | | |
| | | | | (0.06) | | | | | | | | | | |
| | | | | 1.11 | 92.9 | 04714 | | | | | | | | |
| | 64.51 | | | | | | | | | | | | | |




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-001
SEAM H

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12-80)

DENSITY ▬ ▬ ▬ RESISTIVITY ▬▬▬

DRILL NO. DDH - 82 - 001 SEAM H SEAM INTERVAL Apparent Thickness

SCALE 1:40

**DENSITY SCALE** 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY **SCALE**

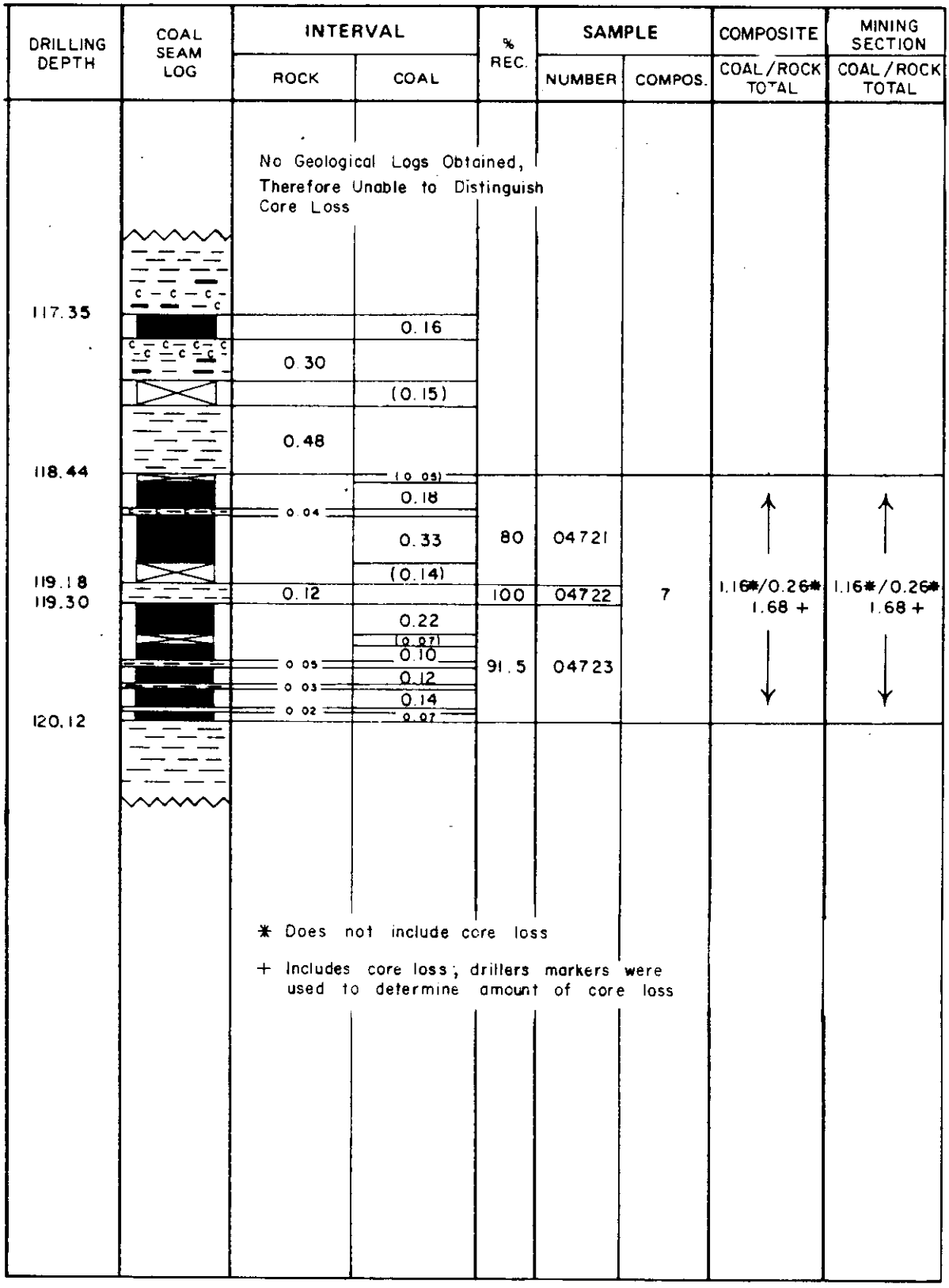
No Geophysical Logs Obtained

GEOPHYSICAL LOGS

| SEAM COMP. 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. % | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 93.95 | | | 0.08 / 0.04 (0.09) | 57.1 | 04715 | | | | | | | | |
| | 94.16 | | | 0.30 | 100 | 04716 | | | | | | | | |
| | 94.46 | | | 0.12 / 0.09 / 0.15 | 100 | 04717 | | | | | | | | |
| | 94.93 | | | 0.03 / 0.03 / 0.02 / 0.03 / 0.10 | 100 | 04718 | 6 | 1.77 | 40.16 | 7.19 | 50.88 | | 19.47 | |
| | 95.29 | | | 0.02 / 0.05 / 0.03 / (0.06) | | | | | | | | | | |
| | 95.59 | | | 0.19 | 80 | 04719 | | | | | | | | |
| | 95.86 | | | 0.13 / 0.02 / 0.02 / 0.04 | 100 | 04720 | | | | | | | | |

Seam Interval (m) 93.95 - 95.86
Seam True Thickness (Coal/Rock) : 0.94* 0.66*
Total 1.73

* does not include core loss




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH- 82-001
SEAM G

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 12 80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 001 SEAM G SEAM INTERVAL

SCALE 1:40

DENSITY SCALE
1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE

No Geophysical Logs Obtained

GEOPHYSICAL LOGS

| SEAM COMP. 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 117.35 | | | 0.16 | | | | | | | | | | |
| | | | 0.30 | | | | | | | | | | | |
| | | | | (0.15) | | | | | | | | | | |
| | | | 0.48 | | | | | | | | | | | |
| | 118.44 | | | 0.05 | | | | | | | | | | |
| | | | 0.04 | 0.18 | | | | | | | | | | |
| | | | | 0.33 | 80 | 04721 | | | | | | | | |
| | 119.18 | | | (0.14) | | | | | | | | | | |
| | 119.30 | | 0.12 | | 100 | 04722 | 7 | 1.85 | 32.05 | 7.40 | 58.70 | | 22.61 | |
| | | | | 0.22 | | | | | | | | | | |
| | | | | (0.07) | | | | | | | | | | |
| | | | 0.05 | 0.10 | | | | | | | | | | |
| | | | | 0.12 | 91.5 | 04723 | | | | | | | | |
| | | | 0.03 | | | | | | | | | | | |
| | | | | 0.14 | | | | | | | | | | |
| | 120.12 | | 0.02 | 0.07 | | | | | | | | | | |

Seam Interval (m) : 117.35 - 120.12
Seam True Thickness (Coal/Rock) : 1.32* / 1.04*
Total 2.77

* does not include core loss

CANADA RESOURCES INC. - COAL DIVISION

SIMPLE SAMPLE SUMMARY PAGE 1

| PLE D | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK | D UCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 701 | 19.39 | 20.38 | 0.79 | 79.80 | 0.78 | 0.01 | 0.20 | 0.00 | 0.72 | 1.10 | 0.00 |
| 702 | 20.38 | 20.84 | 0.36 | 78.26 | 0.12 | 0.24 | 0.10 | 0.00 | 0.08 | 0.00 | 0.00 |
| 703 | 20.84 | 21.57 | 0.53 | 72.60 | 0.42 | 0.11 | 0.20 | 0.00 | 0.14 | 0.16 | 0.00 |
| 704 | 21.57 | 22.64 | 0.67 | 52.76 | 0.31 | 0.36 | 0.60 | 0.00 | 0.57 | 0.00 | 0.00 |
| 705 | 30.06 | 31.02 | 0.94 | 100.00 | 0.86 | 0.08 | 0.00 | 0.00 | 0.34 | 0.47 | 0.00 |
| 706 | 57.25 | 57.42 | 0.17 | 100.00 | 0.09 | 0.08 | 0.00 | 0.00 | 0.65 | 0.06 | 0.00 |
| 707 | 57.42 | 59.18 | 1.60 | 90.91 | 1.54 | 0.06 | 0.16 | 0.00 | 0.26 | 0.26 | 0.00 |
| 708 | 59.18 | 59.50 | 0.32 | 100.00 | 0.00 | 0.32 | 0.00 | 0.00 | | | |
| 709 | 59.50 | 60.14 | 0.64 | 100.00 | 0.39 | 0.25 | 0.00 | 0.00 | | | |
| 710 | 61.18 | 61.80 | 0.57 | 91.94 | 0.57 | 0.00 | 0.05 | 0.00 | | | |
| 711 | 61.80 | 61.91 | 0.11 | 100.00 | 0.00 | 0.11 | 0.00 | 0.00 | | | |
| 712 | 61.91 | 62.72 | 0.51 | 62.96 | 0.47 | 0.04 | 0.30 | 0.00 | | | |
| 713 | 62.72 | 62.97 | 0.25 | 100.00 | 0.09 | 0.16 | 0.00 | 0.00 | | | |
| 714 | 62.97 | 64.51 | 1.42 | 92.21 | 1.39 | 0.03 | 0.12 | 0.00 | | | |
| 715 | 93.95 | 94.16 | 0.12 | 57.14 | 0.04 | 0.08 | 0.09 | 0.00 | | | |
| 716 | 94.16 | 94.46 | 0.30 | 100.00 | 0.30 | 0.00 | 0.00 | 0.00 | | | |
| 717 | 94.46 | 94.93 | 0.47 | 100.00 | 0.15 | 0.32 | 0.00 | 0.00 | | | |
| 718 | 94.93 | 95.29 | 0.36 | 100.00 | 0.31 | 0.05 | 0.00 | 0.00 | | | |
| 719 | 95.24 | 95.59 | 0.24 | 80.00 | 0.00 | 0.24 | 0.06 | 0.00 | | | |
| 720 | 95.59 | 95.86 | 0.27 | 100.00 | 0.23 | 0.04 | 0.00 | 0.00 | | | |
| 721 | 118.44 | 119.18 | 0.55 | 74.32 | 0.51 | 0.04 | 0.19 | 0.00 | | | |
| 722 | 119.18 | 119.30 | 0.12 | 100.00 | 0.00 | 0.12 | 0.00 | 0.00 | | | |
| 723 | 119.30 | 120.12 | 0.82 | 100.00 | 0.74 | 0.08 | 0.00 | 0.00 | | | |
| 725 | 60.14 | 61.18 | 1.04 | 100.00 | 0.00 | 1.04 | 0.00 | 0.00 | | | |

PROJECT: KPN BLOCK: HC DATA SOURCE: GDHG2001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 0.00 | 9.37 | 9.37 | | | OVERBURDEN | |
| 9.37 | 9.48 | 0.11 | | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN |
| 9.48 | 9.54 | 0.06 | | | SANDSTONE | MG.WEL.LT.GY.THNB.BRKN |
| 9.54 | 9.58 | 0.04 | | | MUDSTONE | SLTY.GY.BRKN |
| 9.58 | 9.69 | 0.11 | | | SANDSTONE | MG.WEL.LT.GY.MB.SLD<br>MNR CALCT FRACTURE |
| 9.69 | 9.71 | 0.02 | | | MUDSTONE | DK.GY.MAS.BRKN |
| 9.71 | 10.08 | 0.37 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR SLTY BANDING |
| 10.08 | 10.10 | 0.02 | | | MUDSTONE | SLTY.GY.VTHNB.SLD<br>INTBD WITH 3CM SS BED |
| 10.10 | 10.52 | 0.30 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR SHALL INTBS |
| 10.52 | 10.57 | 0.05 | | | MUDSTONE | SLTY.GY.MAS.SLD |
| 10.57 | 10.67 | 0.10 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH2001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 10.67 | 10.72 | 0.05 | | | CORE LOSS | |
| 10.72 | 11.22 | 0.50 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR CARB LAMS IN MIDDLE. CORE BRKN AT BASE |
| 11.22 | 11.31 | 0.09 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD |
| 11.31 | 11.35 | 0.04 | | | MUDSTONE | GY.MAS.SLD |
| 11.35 | 11.49 | 0.14 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD |
| 11.49 | 11.54 | 0.05 | | | CORE LOSS | |
| 11.54 | 11.59 | 0.05 | | | MUDSTONE | SLTY.GY.MAS.BRKN |
| 11.59 | 11.85 | 0.26 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR SLTY BANDS. RARE CALCT |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 11.90 | 12.16 | 0.26 | | | SANDSTONE | FG.WEL.LT.GY.THNB.BRKN<br>MASSIVE IN BASAL HALF |
| 12.16 | 12.29 | 0.13 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD |
| 12.29 | 12.50 | 0.21 | | | CORE LOSS | |
| 12.50 | 12.79 | 0.29 | | | CORE LOSS | |
| 12.79 | 13.40 | 0.61 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR SLTY INTBS. CORE VBRKN AT TOP |
| 13.40 | 14.33 | 0.93 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>SLTY INTBS |
| 14.33 | 14.52 | 0.19 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR SLTY INTBS |
| 14.52 | 14.61 | 0.09 | | | MUDSTONE | SLTY.GY.MAS.SLD |
| 14.61 | 15.41 | 0.80 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>SLTY BANDS |
| 15.41 | 16.53 | 1.12 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>MNR SLTY INTBS |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 16.53 | 17.50 | 0.97 | | | SILTSTONE | GY.THNB.SLD<br>MNT SS INTBS |
| 17.50 | 17.98 | 0.48 | | | MUDSTONE | GY.VTHNB.SLD<br>THIN SLTY INTBS |
| 17.98 | 19.20 | 1.22 | | | MUDSTONE | GY.VTHNB.SLD<br>THIN SLTY INTBS. MNR SHALE NODULES TO 3 CM DIAMETER. MNR COAL LAMS TOWARDS BASE |
| 19.20 | 19.23 | 0.03 | | | MUDSTONE | M.GY.BRKN<br>AS ABOVE |
| 19.23 | 19.30 | 0.07 | | | MUDSTONE | BLK.SLD<br>MNR COAL STRGS. CORE VBRKN AT BOTTOM |
| 19.30 | 19.35 | 0.05 | | | CORE LOSS | |
| 19.35 | 19.39 | 0.04 | | | CLAYSTONE | CARB.BLK.SLD<br>BRIGHT COAL BANDS |
| 19.39 | 19.42 | 0.03 | 04701 | K | COAL | C-1.BLK.SLD<br>GOOD CLEAVAGE |
| 19.42 | 19.46 | 0.04 | 04701 | K | COAL | C-3.BLK.SLD<br>GOOD CLEAVAGE |
| 19.46 | 19.48 | 0.02 | 04701 | K | COAL | C-4.BLK.SLD |

PROJECT: KPN BLOCK: NC DATA SOURCE: DDH82C01

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 19.48 | 19.52 | 0.04 | 04701 | K | COAL | C-3.BLK.SLD |
| 19.52 | 19.64 | 0.12 | 04701 | K | COAL | C-4.BLK.SLD<br>MNR QTZ INFILLING PERPENDICULAR TO BDG |
| 19.64 | 19.70 | 0.06 | 04701 | K | COAL | C-3.BLK.SLD<br>2 MNR SHALE PARTINGS |
| 19.70 | 19.77 | 0.07 | 04701 | K | COAL | C-4.BLK.SLD |
| 19.77 | 19.87 | 0.10 | 04701 | K | CORE LOSS | |
| 19.87 | 19.90 | 0.03 | 04701 | K | COAL | C-4.BLK.VBRKN |
| 19.90 | 19.93 | 0.03 | 04701 | K | COAL | C-4.BLK.SLD |
| 19.93 | 19.94 | 0.01 | 04701 | K | MUDSTONE | DK.GY.MAS.SLD |
| 19.94 | 20.01 | 0.07 | 04701 | K | COAL | C-4.BLK.SLD |
| 20.01 | 20.11 | 0.10 | 04701 | K | COAL | C-3.BLK.SLD<br>MNR SHALE PARTINGS |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82061

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 20.11 | 20.17 | 0.06 | 04701 | K | COAL | C-4.BLK.SLD<br>MNR SHALE PARTINGS LESS THAN 2MM |
| 20.17 | 20.27 | 0.10 | 04701 | K | CORE LOSS | |
| 20.27 | 20.31 | 0.04 | 04701 | K | COAL | C-3.BLK.VBRKN |
| 20.31 | 20.33 | 0.02 | 04701 | K | COAL | C-4.BLK.SLD |
| 20.33 | 20.36 | 0.03 | 04701 | K | COAL | C-3.BLK.SLD |
| 20.36 | 20.38 | 0.02 | 04701 | K | COAL | C-4.BLK.SLD |
| 20.38 | 20.39 | 0.01 | 04702 | K | MUDSTONE | BLK.VTHNR.SLD<br>MNR COAL STRGS |
| 20.39 | 20.42 | 0.03 | 04702 | K | COAL | C-3.BLK.BRKN |
| 20.42 | 20.52 | 0.10 | 04702 | K | CORE LOSS | |
| 20.52 | 21.54 | 0.02 | 04702 | K | CLAYSTONE | CARB.BLK.BRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 20.54 | 20.59 | 0.05 | 04702 | K | COAL | C-2.BLK.SLD<br>COKE BRKN AT BASE |
| 20.59 | 20.61 | 0.02 | 04702 | K | CLAYSTONE | CARB.BLK.SLD |
| 20.61 | 20.65 | 0.04 | 04702 | K | COAL | C-3.BLK.SLD<br>COKE BRKN AT TOP |
| 20.65 | 20.67 | 0.02 | 04702 | K | CLAYSTONE | CARB.BLK.SLD |
| 20.67 | 20.70 | 0.03 | 04702 | K | MUDSTONE | DK.BN.MAS.SLD<br>SOFT |
| 20.70 | 20.77 | 0.07 | 04702 | K | MUDSTONE | MAS.SLD<br>DISSEMINATED PYR AT TOP. MNR COAL STRGS<br>. HARD |
| 20.77 | 20.84 | 0.07 | 04702 | K | CLAYSTONE | CARB.SLD<br>COAL STRGS MORE ABUNDANT |
| 20.84 | 20.88 | 0.04 | 04703 | K | COAL | C-2.BLK.SLD<br>MNR LENTICULAR SHALE |
| 20.88 | 20.93 | 0.05 | 04703 | K | COAL | C-4.BLK.SLD |

PROJECT: KFN BLOCK: HC DATA SOURCE: GDHC2001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 21.00 | 21.09 | 0.09 | 04703 | K | COAL | C-3.BLK.VBRKN |
| 21.09 | 21.14 | 0.05 | 04703 | K | COAL | C-4.BLK.SLD |
| 21.14 | 21.19 | 0.05 | 04703 | K | MUDSTONE | BLK.THNB.SLD<br>0.5CM BRIGHT COAL BAND NEAR TOP. COAL S TRGS THROUGHOUT |
| 21.19 | 21.28 | 0.09 | 04703 | K | COAL | C-3.BLK.SLD |
| 21.28 | 21.31 | 0.03 | 04703 | K | MUDSTONE | BLK.MAS.SLD<br>HARD. MNR COAL STRGS |
| 21.31 | 21.39 | 0.08 | 04703 | K | COAL | C-3.BLK.BRKN |
| 21.39 | 21.49 | 0.10 | 04703 | K | COKE LOSS | |
| 21.49 | 21.52 | 0.03 | 04703 | K | CLAYSTONE | CARB.BLK.VBRKN |
| 21.52 | 21.57 | 0.05 | 04703 | K | COAL | C-4.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 21.59 | 21.69 | 0.10 | 04704 | K | CORE LOSS | |
| 21.69 | 21.72 | 0.03 | 04704 | K | CLAYSTONE | CARB.BLK.VBRKN |
| 21.72 | 21.77 | 0.05 | 04704 | K | COAL | C-4.BLK.BRKN |
| 21.77 | 21.83 | 0.06 | 04704 | K | CLAYSTONE | CARB.BLK.VBRKN |
| 21.83 | 22.13 | 0.30 | 04704 | K | CORE LOSS | |
| 22.13 | 22.23 | 0.10 | 04704 | K | CORE LOSS | |
| 22.23 | 22.28 | 0.05 | 04704 | K | COAL | C-3.BLK.VBRKN |
| 22.28 | 22.31 | 0.03 | 04704 | K | CLAYSTONE | CARB.BLK.SLD |
| 22.31 | 22.33 | 0.02 | 04704 | K | COAL | C-1.BLK.SLD |
| 22.33 | 22.35 | 0.02 | 04704 | K | CLAYSTONE | CARB.BLK.SLD |
| 22.35 | 22.37 | 0.02 | 04704 | K | COAL | C-2.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH2001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM IE | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 22.37 | 22.39 | 0.02 | 04704 | K | CLAYSTONE | CARB.BLK.SLD<br>ABUNDANT COAL STRGS |
| 22.39 | 22.44 | 0.05 | 04704 | K | COAL | C-3.BLK.SLD |
| 22.44 | 22.46 | 0.02 | 04704 | K | MUDSTONE | DK.GY.MAS.SLD<br>HARD |
| 22.46 | 22.48 | 0.02 | 04704 | K | COAL | C-4.BLK.SLD |
| 22.48 | 22.58 | 0.10 | 04704 | K | MUDSTONE | DK.GY.MAS.SLD |
| 22.58 | 22.63 | 0.05 | 04704 | K | CLAYSTONE | CARB.BLK.BRKN<br>ABUNDANT COAL STRGS |
| 22.63 | 22.66 | 0.03 | 04704 | K | COAL | C-3.BLK.SLD |
| 22.66 | 22.67 | 0.01 | 04704 | K | MUDSTONE | DK.GY.MAS.SLD |
| 22.67 | 22.77 | 0.10 | 04704 | K | CORE LOSS | |
| 22.77 | 22.84 | 0.07 | 04704 | K | COAL | C-3.BLK.VBRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDBE2001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. NUM FROM | SAMP. NUM TO | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 22.04 | 22.69 | 0.65 | | | MUDSTONE | DK.GY.MAS.BRKN<br>MNR COAL STRGS. IRREGULAR QTZ VEINING |
| 22.69 | 23.06 | 0.37 | | | MUDSTONE | SLTY.M.GY.BRKN |
| 23.06 | 23.84 | 0.78 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>COARSENING DOWNWARD. BROAD SLTY BANDS T<br>OWARDS BASE |
| 23.84 | 24.07 | 0.23 | | | MUDSTONE | M.GY.THNB.SLD<br>MNR COAL LENSES AT BASE |
| 24.07 | 24.11 | 0.04 | | | CLAYSTONE | CARB.THNB.SLD<br>HARD. PYR XTALS AT BASE. MNR COAL STRGS |
| 24.11 | 24.16 | 0.05 | | | MUDSTONE | DK.GY.THNB.SLD<br>SOFT |
| 24.16 | 24.27 | 0.11 | | | SILTSTONE | M.GY.SSD.SLD<br>MINUTE FOSSIL FRAGS |
| 24.27 | 24.72 | 0.45 | | | MUDSTONE | M.GY.THNB.SLD<br>CORE BRKN AT BASE |
| 24.72 | 24.85 | 0.13 | | | CORE LOSS | |
| 24.85 | 25.30 | 0.45 | | | MUDSTONE | M.GY.THNB.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82V01

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 25.30 | 25.42 | 0.12 | | | CORE LOSS | |
| 25.42 | 26.06 | 0.64 | | | MUDSTONE | M.GY.VFHNB.SLD<br>AS ABOVE. CORE VBRKN AT TOP |
| 26.06 | 26.52 | 0.44 | | | MUDSTONE | M.GY.VFHNB.SLD |
| 26.52 | 27.04 | 0.52 | | | MUDSTONE | M.GY.VFHNB.SLD<br>AS ABOVE |
| 27.04 | 27.26 | 0.22 | | | MUDSTONE | LT.BN.VFHNB.SLD<br>HARD. HAS A NODULAR CLAST WITHIN SHALE UNIT. LARGE QUALIFIED FRAG (4CM) IN CENTER OF CLAST |
| 27.26 | 27.30 | 0.04 | | | MUDSTONE | M.GY.MAS.SLD<br>BRIGHT COAL BANDING. UPPER AND LOWER CONTACTS |
| 27.30 | 27.65 | 0.35 | | | MUDSTONE | M.GY.VFHNB.SLD<br>CORE VBRKN AT BASE |
| 27.65 | 27.68 | 0.03 | | | MUDSTONE | M.GY.VFHNB.VBRKN<br>AS ABOVE |
| 27.68 | 28.01 | 0.33 | | | MUDSTONE | LT.BN.VFHNB.SLD<br>NODULAR CLAST |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 28.61 | 29.50 | 1.45 | | | MUDSTONE | M.GY.THNB.SLD<br>THIN COAL STRGS IN BASAL HALF |
| 29.50 | 29.57 | 0.07 | | | CLAYSTONE | CARB.BLK.BRKN<br>MNR BRIGHT COAL |
| 29.57 | 29.82 | 0.25 | | | CLAYSTONE | CARB.BLK.SLD<br>AS ABOVE. CORE BRKN IN MIDDLE |
| 29.82 | 30.08 | 0.26 | | | MUDSTONE | DK.GY.SLD<br>MNR COAL STRGS |
| 30.08 | 30.26 | 0.18 | 04705 | J | COAL | C-4.BLK.VBRKN |
| 30.26 | 30.28 | 0.02 | 04705 | J | MUDSTONE | M.GY.MAS.SLD<br>SILICEOUS. VERY HARD |
| 30.28 | 30.38 | 0.10 | 04705 | J | COAL | C-4.BLK.BRKN |
| 30.38 | 30.49 | 0.11 | 04705 | J | COAL | C-3.BLK.SLD<br>MNR SHALE BANDS |
| 30.49 | 30.53 | 0.04 | 04705 | J | MUDSTONE | M.GN.MAS.SLD |
| 30.53 | 30.55 | 0.02 | 04705 | J | COAL | C-2.BLK.SLD |

PROJECT: KMN BLOCK: HC DATA SOURCE: DDH82061

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 30.55 | 30.58 | 0.03 | 04705 | J | COAL | C-4.BLK.SLD |
| 30.58 | 30.62 | 0.04 | 04705 | J | COAL | C-3.BLK.SLD<br>MNR SHALE BANDS |
| 30.62 | 30.70 | 0.08 | 04705 | J | COAL | C-4.BLK.SLD<br>MNR SHALE BANDS |
| 30.70 | 30.71 | 0.01 | 04705 | J | MUDSTONE | M.GY.SLD |
| 30.71 | 30.74 | 0.03 | 04705 | J | COAL | C-4.BLK.BRKN |
| 30.74 | 30.77 | 0.03 | 04705 | J | COAL | C-2.BLK.SLD<br>MNR ROCK SPLIT |
| 30.77 | 30.78 | 0.01 | 04705 | J | MUDSTONE | BLK.SLD |
| 30.78 | 30.83 | 0.05 | 04705 | J | COAL | C-4.BLK.SLD<br>CORE WORKN AT TOP |
| 30.83 | 30.86 | 0.03 | 04705 | J | COAL | C-1.BLK.SLD |
| 30.86 | 30.91 | 0.05 | 04705 | J | COAL | C-3.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDR82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 30.91 | 30.97 | 0.06 | C4705 | J | COAL | C-1.BLK.SLD |
| 30.97 | 31.02 | 0.05 | C4705 | J | COAL | C-3.BLK.SLD<br>MNR SHALE SPLITS |
| 31.02 | 31.09 | 0.07 | | | MUDSTONE | DK.GY.MAS.SLD<br>MNR COAL STRGS |
| 31.09 | 31.39 | 0.30 | | | MUDSTONE | DK.GY.MAS.SLD<br>AS ABOVE |
| 31.39 | 31.41 | 0.02 | | | CLAYSTONE | CARB.BLK.VBRKN |
| 31.41 | 31.44 | 0.03 | | | MUDSTONE | M.GY.MAS.SLD |
| 31.44 | 31.47 | 0.03 | | | COAL | C-2.BLK.SLD |
| 31.47 | 31.52 | 0.05 | | | QUARTZ | WH.SLD<br>INFILLING OF COALIFIED FRAC |
| 31.52 | 31.55 | 0.03 | | | COAL | C-2.BLK.SLD |
| 31.55 | 31.59 | 0.04 | | | MUDSTONE | DK.GY.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 31.65 | 32.57 | 0.66 | | | SANDSTONE | SLTY.FG.WEL.LT.GY.THNB.SSD.SLD<br>SLTY AT TOP. SSD AT TOP |
| 32.57 | 32.63 | 0.06 | | | MUDSTONE | GY.MB.BRKN<br>SLTY INTBS |
| 32.63 | 32.75 | 0.12 | | | SILTSTONE | GY.MB.BRKN<br>DISTINCT PYR XTALS |
| 32.75 | 34.44 | 1.69 | | | MUDSTONE | DK.GY.MB.SLD<br>MNR SLTY INTBS THROUGHOUT, MNR COAL STR<br>GS IN MIDDLE SECTION, UNDULATING BDG |
| 34.44 | 34.69 | 0.25 | | | SANDSTONE | FG.LT.GY.MAS.SLD<br>MNR SLTY INTB AT BASE, UNDULATING BDG |
| 34.69 | 35.41 | 0.72 | | | SANDSTONE | FG.LT.GY.MAS.SLD<br>AS ABOVE, MNR IRREGULAR COAL STRGS, COR<br>E BRKN AT BASE |
| 35.41 | 35.87 | 0.46 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>MNR COAL STRGS THROUGHOUT |
| 35.87 | 36.44 | 0.57 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>MNR COAL STRGS THROUGHOUT |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDHC2001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 38.44 | 38.16 | 1.72 | | | MUDSTONE | GY.VTHNB.SLD<br>SLTY AND FG SS INTBS. BIOTRUB IN PART.<br>POSSIBLE SMALL SCALE RIP-UP AT BASE IND<br>ICATING TOPS UP |
| 38.16 | 38.40 | 0.24 | | | SANDSTONE | FG.LT.GY.THNB.SLD<br>WITH SLTY INTBS AT BASE. UNDULATING BDS |
| 38.40 | 38.82 | 0.42 | | | SANDSTONE | FG.GY.MB.SLD<br>MNR DK SHALE INTBS. IRREGULAR BDG |
| 37.82 | 39.28 | 1.46 | | | SANDSTONE | CG.LT.GY.BRKN<br>PBLY BANDS. PBLS LESS THAN 4CM. JOINT P<br>LANE AT 20 DEGREES |
| 40.28 | 40.52 | 0.24 | | | SILTSTONE | DK.GY.MB.BRKN<br>WAVY BEDS. MNR COAL STRGS |
| 40.52 | 41.25 | 0.73 | | | SANDSTONE | CG.LT.GY.SLD<br>COAL LENSES AND NODULES TO 7.5CM IN LEN<br>GTH. MNR SLTY INTB. PBLY AT BASE |
| 41.25 | 41.26 | 0.01 | | | CLAYSTONE | CARB.BLK.SLD |
| 41.26 | 41.32 | 0.06 | | | SANDSTONE | CG.LT.GY.MAS.SLD<br>PBLY |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDBE2001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 41.32 | 41.41 | 0.09 | | | SANDSTONE | CG.LT.GY.MAS.SLD<br>AS ABOVE. LOWER GRADATIONAL CONTACT |
| 41.41 | 41.48 | 0.07 | | | MUDSTONE | GY.VTHNB.SLD<br>SOMEWHAT CARB |
| 41.48 | 42.04 | 0.56 | | | SANDSTONE | CG.LT.GY.MB.SLD<br>PBLY BANDS. MNR COAL CLASTS UP TO 3CM I<br>N LENGTH |
| 42.04 | 42.16 | 0.12 | | | CLAYSTONE | CARB.SLK.BRKN<br>MNR BRIGHT COAL BANDS |
| 42.16 | 43.10 | 0.94 | | | SANDSTONE | CG.LT.GY.MB.SLD<br>MNR COAL STRGS AT TOP. FINING TO BASE.<br>JOINT SURFACE AT 10 DEGREES |
| 43.10 | 43.18 | 0.08 | | | SILTSTONE | DK.GN.THNB.SLD<br>MNR COAL STRGS. GRADING TO SS AT BASE |
| 43.18 | 44.11 | 0.93 | | | SANDSTONE | CG.LT.GY.MB.SLD<br>FINING TO BASE. SHALE CLASTS AT BASE UP<br>TO 2CM |
| 44.11 | 44.18 | 0.07 | | | SANDSTONE | FG.M.GY.THNB.SLD<br>SLIGHTLY CARB |
| 44.18 | 44.23 | 0.05 | | | SANDSTONE | CG.LT.GY.MAS.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH02001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 44.23 | 44.50 | 0.27 | | | SANDSTONE | CG.LT.GY.MAS.SLD<br>AS ABOVE |
| 44.50 | 45.15 | 0.65 | | | SANDSTONE | MG.LT.GY.MB.SLD<br>CG INTBS |
| 45.15 | 45.33 | 0.18 | | | SANDSTONE | CG.LT.GY.MB.SLD<br>SLTST INTBS, MNR CARB BAND AT BASE, RAR E SHALE CLASTS UP TO 1.5CM |
| 45.33 | 46.90 | 1.57 | | | SANDSTONE | MG.LT.GY.MB.SLD<br>MNR SHALE INTBS, CG INTBS, PROBABLE JOI NT AT 20 DEGREES |
| 46.90 | 49.47 | 2.57 | | | SANDSTONE | MG.MOD.LT.GY.SLD<br>MNR SHALE INTBS, CG INTBS |
| 49.47 | 49.77 | 0.30 | | | SANDSTONE | MG.WEL.LT.GY.MB.SLD |
| 49.77 | 50.25 | 0.48 | | | SANDSTONE | MG.WEL.LT.GY.MB.SLD<br>AS ABOVE, BRKN AT BASE |
| 50.25 | 50.29 | 0.04 | | | CORE LOSS | |
| 50.29 | 52.71 | 2.42 | | | SANDSTONE | MG.MOD.LT.GY.MB.SLD<br>CG INTBS, MNR SHALE INTBS, MNR SHALE CL ASTS IN MIDDLE SECTION |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDHC2001

| DEPTH From | DEPTH To | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 52.71 | 53.46 | 0.75 | | | SANDSTONE | MG.MOD.LT.GY.MB.BRKN<br>AS ABOVE, JOINT AT 20 DEGREES, COARSENING TO BASE |
| 53.46 | 54.20 | 0.74 | | | SANDSTONE | MG.MOD.LT.GY.MB.SLD<br>MNR SLTY INTBS |
| 54.20 | 54.35 | 0.15 | | | MUDSTONE | SLTY.PR.GY.MB.SLD<br>SOFT |
| 54.35 | 55.67 | 1.32 | | | SANDSTONE | MG.MOD.LT.GY.THNB.SLD<br>FG INTBS, MNR LENTICULAR SHALE BEDS |
| 55.67 | 56.18 | 0.51 | | | SANDSTONE | MG-.MOD.LT.GY.THNB.SLD<br>COARSENING UPWARDS SEQUENCE, RARE SHALE CLASTS, MNR FAULT DISPLACEMENT AT BASE BEARING 45 DEGREES |
| 56.18 | 56.43 | 0.25 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>CORE BRKN AT BASE |
| 56.43 | 56.69 | 0.26 | | | CORE LOSS | |
| 56.69 | 56.84 | 0.15 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>AS ABOVE, FAULT AT BASE AT 45 DEGREES |
| 56.84 | 57.07 | 0.23 | | | SANDSTONE | MG.LT.GY.MAS.SLD<br>CLY VEINED |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 57.07 | 57.23 | 0.16 | | | MUDSTONE | LT.GY.MAS.SLD<br>GTZ VEINED. SOFT |
| 57.23 | 57.34 | 0.09 | 04706 | 1 | COAL | C-3.BLK.VBRKN |
| 57.34 | 57.40 | 0.06 | 04706 | 1 | CLAYSTONE | CARB.BLK.SLD |
| 57.40 | 57.42 | 0.02 | 04706 | 1 | MUDSTONE | BLK.MAS.BRKN<br>SOFT |
| 57.42 | 56.38 | 0.96 | 04707 | 1 | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES |
| 56.38 | 56.44 | 0.06 | 04707 | 1 | CLAYSTONE | CARB.BLK.BRKN<br>SOFT |
| 56.44 | 57.00 | 0.16 | 04707 | 1 | COAL | C-4.BLK.VBRKN |
| 57.00 | 57.42 | 0.42 | 04707 | 1 | COAL | C-4.BLK.VBRKN<br>CORE PULVERIZED AT BASE |
| 57.42 | 57.53 | 0.11 | 04707 | 1 | CORE LOSS | |
| 57.53 | 57.58 | 0.05 | 04707 | 1 | CORE LOSS | |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 59.12 | 59.50 | 0.32 | 04708 | 1 | MUDSTONE | M.GY.MAS.BRKN<br>SOFT. LISTRIC SURFACES |
| 59.50 | 59.65 | 0.15 | 04709 | 1 | COAL | C-4.BLK.VBRKN |
| 59.65 | 59.76 | 0.11 | 04709 | 1 | MUDSTONE | M.GY.MAS.SLD |
| 59.76 | 59.84 | 0.08 | 04709 | 1 | COAL | C-3.BLK.SLD<br>CORE VBRKN AT BASE |
| 59.84 | 59.86 | 0.02 | 04709 | 1 | MUDSTONE | M.GY.BRKN<br>SOFT |
| 59.86 | 59.91 | 0.05 | 04709 | 1 | CLAYSTONE | CARB.BLK.SLD<br>BRIGHT COAL BANDS |
| 59.91 | 59.97 | 0.06 | 04709 | 1 | COAL | C-4.BLK.BRKN<br>VBRKN IN PART |
| 59.97 | 59.99 | 0.02 | 04709 | 1 | CLAYSTONE | CARB.BLK.SLD<br>MARL |
| 59.99 | 60.01 | 0.02 | 04709 | 1 | COAL | C-3.BLK.SLD |
| 60.01 | 60.06 | 0.05 | 04709 | 1 | CLAYSTONE | CARB.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDN62001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 60.00 | 60.14 | 0.14 | 04709 | 1 | COAL | C-4.BLK.VBRKN |
| 60.14 | 60.21 | 0.07 | 04725 | 1 | CLAYSTONE | CARB.BLK.SLD<br>HARD. QTZ VEINED |
| 60.21 | 61.18 | 0.97 | 04725 | 1 | MUDSTONE | DK.GY.VTHNB.SLD |
| 61.18 | 61.36 | 0.18 | 04710 | 1 | COAL | C-4.BLK.VBRKN |
| 61.36 | 61.41 | 0.05 | 04710 | 1 | CORE LOSS | |
| 61.41 | 61.50 | 0.09 | 04710 | 1 | COAL | C-3.BLK.VBRKN |
| 61.50 | 61.60 | 0.10 | 04711 | 1 | CLAYSTONE | CARB.BLK.SLD<br>MNR COAL STRGS |
| 61.60 | 61.61 | 0.01 | 04711 | 1 | CLAYSTONE | CARB.BLK.BRKN<br>MNR COAL STRGS |
| 61.61 | 62.02 | 0.41 | 04712 | 1 | COAL | C-3.BLK.SLD |
| 62.02 | 62.09 | 0.07 | 04712 | 1 | COAL | C-4.BLK.SLD |

GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| [illegible] | 02.14 | 0.05 | 04712 | 1 | COAL | C-3.BLK.VBRKN |
| 02.14 | 02.21 | 0.07 | 04712 | 1 | COAL | C-4.BLK.VBRKN |
| 02.21 | 02.28 | 0.07 | 04712 | 1 | COAL | C-3.BLK.SLD |
| 02.28 | 02.48 | 0.20 | 04712 | 1 | CORE LOSS | |
| 02.48 | 02.58 | 0.10 | 04712 | 1 | CORE LOSS | |
| 02.58 | 02.60 | 0.02 | 04712 | 1 | CLAYSTONE | CARB.BLK.VBRKN |
| 02.60 | 02.65 | 0.05 | 04712 | 1 | COAL | C-1.BLK.SLD |
| 02.65 | 02.67 | 0.02 | 04712 | 1 | MUDSTONE | DK.GY.MAS.SLD<br>SLIP 1 |
| 02.67 | 02.72 | 0.05 | 04712 | 1 | COAL | C-1.BLK.BRKN |
| 02.72 | 02.80 | 0.08 | 04713 | 1 | CLAYSTONE | CARB.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH02C01

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 62.60 | 62.64 | 0.04 | 04713 | 1 | COAL | C-3.BLK.SLD |
| 62.64 | 62.68 | 0.04 | 04713 | 1 | MUDSTONE | DK.GY.MAS.SLD |
| 62.68 | 62.93 | 0.05 | 04713 | 1 | COAL | C-3.BLK.SLD |
| 62.93 | 62.97 | 0.04 | 04713 | 1 | MUDSTONE | DK.GY.MAS.SLD |
| 62.97 | 63.02 | 0.05 | 04714 | 1 | COAL | C-4.BLK.SLD |
| 63.02 | 63.08 | 0.06 | 04714 | 1 | CORE LOSS | |
| 63.08 | 63.11 | 0.03 | 04714 | 1 | COAL | C-3.BLK.VBRKN |
| 63.11 | 63.16 | 0.05 | 04714 | 1 | COAL | C-3.BLK.SLD |
| 63.16 | 63.19 | 0.03 | 04714 | 1 | CLAYSTONE | CARB.BLK.SLD |
| 63.19 | 63.34 | 0.15 | 04714 | 1 | COAL | C-3.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 63.34 | 63.40 | 0.06 | 04714 | 1 | CORE LOSS | |
| 63.40 | 63.54 | 0.14 | 04714 | 1 | COAL | C-4.BLK.VBRKN |
| 63.54 | 63.56 | 0.02 | 04714 | 1 | COAL | C-4.BLK.SLD |
| 63.56 | 63.59 | 0.03 | 04714 | 1 | COAL | C-1.BLK.SLD |
| 63.59 | 64.39 | 0.80 | 04714 | 1 | COAL | C-4.BLK.VBRKN |
| 64.39 | 64.51 | 0.12 | 04714 | 1 | COAL | C-4.BLK.VBRKN |
| 64.51 | 64.57 | 0.06 | | | CLAYSTONE | CARB.BLK.SLD<br>GIZ VEINS PARALLEL BDS. MORE COALY AT T OP |
| 64.57 | 65.40 | 0.83 | | | MUDSTONE | M.GY.VTHNB.SLD<br>SLTY INTBS. MNR DEFORMATION |
| 65.40 | 67.21 | 1.81 | | | MUDSTONE | DK.GY.THNB.SSD.SLD<br>AS ABOVE. CONCRETIONARY NODULES UP TO 7 CM. SLTY INTDS. WM BURROWS. TOPS UP |

PROJECT: KPN BLOCK: HC DATA SOURCE: DLH82001

| DEPTH FEET | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 67.21 | 67.91 | 0.70 | | | SANDSTONE | MG.WEL.LT.GY.MB.SLD<br>ROUNDED RIP-UP SHALE CLASTS AT TOP, UP TO 3CM IN LENGTH, CORE BRKN AT BASE, JOINTED AT 20 DEGREES |
| 67.91 | 68.39 | 0.48 | | | MUDSTONE | GY.VTHNB.WRMBD.SLD<br>MNR SLTY INTBS, BIOTURB TOWARDS BASE, TOPS UP |
| 68.39 | 68.58 | 0.19 | | | SANDSTONE | MG.WEL.GY.MAS.BRKN |
| 68.58 | 69.16 | 0.58 | | | SANDSTONE | FG.GY.THNB.SLD<br>SLTY INTBS, THINLY BEDDED, CORE ROTATED AT TOP |
| 69.16 | 70.05 | 0.89 | | | SANDSTONE | FG.WEL.GY.MB.SLD<br>SMALL SCALE SLTY RIP-UPS TOWARDS BASE, SLTY TOWARDS BASE |
| 70.05 | 71.32 | 1.27 | | | SANDSTONE | FG.WEL.GY.THNB.SLD<br>SLTY INTBS THROUGHOUT |
| 71.32 | 71.63 | 0.31 | | | MUDSTONE | DK.GY.VTHNB.BRKN |
| 71.63 | 72.73 | 1.10 | | | MUDSTONE | DK.GY.VTHNB.BRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 72.73 | 73.39 | 0.66 | | | MUDSTONE | DK.GY.VTHNB.SLD |
| 73.39 | 73.44 | 0.05 | | | SANDSTONE | FR.GY<br>MNR COAL AND SLTY LENSES |
| 73.44 | 73.74 | 0.30 | | | MUDSTONE | DK.GY.VTHNB.SLD |
| 73.74 | 74.07 | 0.33 | | | SANDSTONE | MC.MOD.GY.MB.SLD<br>SHALY INTBS. UPPER GRADATIONAL CONTACT.<br>MNR SHALE CLASTS. COARSENING GRAIN SIZ<br>E TO BASE |
| 74.07 | 75.22 | 1.15 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>JOINT AT 40 DEGREES. MNR COAL STRGS |
| 75.22 | 75.52 | 0.30 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE |
| 75.52 | 75.77 | 0.25 | | | SILTSTONE | MEL.N.GY.THNB.BRKN |
| 75.77 | 76.21 | 0.44 | | | MUDSTONE | M.GY.VTHNB.SLD |
| 76.21 | 76.57 | 0.36 | | | MUDSTONE | SLTY.M.GY.VTHNB.BRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: LOG2001

| DEPTH FROM | DEPTH TO | INTRVAL Thick. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 76.37 | 77.38 | 1.01 | | | SANDSTONE | FG.WEL.GY.MB.SLD<br>MNR SHALY INTBS |
| 77.38 | 78.09 | 0.71 | | | MUDSTONE | DK.GY.VTHNB<br>MNR COAL STRGS |
| 78.09 | 78.33 | 0.24 | | | SANDSTONE | MG.WEL.GY.MB.SLD<br>SHALY AT TOP |
| 78.33 | 78.87 | 0.54 | | | SANDSTONE | FG.WEL.GY.THNB.SLD<br>SHALE INTBS THROUGHOUT |
| 78.87 | 79.22 | 0.35 | | | SANDSTONE | MG.WEL.LT.GY.MB.SLD<br>MNR IRREGULAR SHALE INTBS. CUT AND FILL INDICATED DPS UP |
| 79.22 | 79.25 | 0.03 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>MNR SS BDS |
| 79.25 | 80.09 | 0.84 | | | SANDSTONE | MG.MUD.LT.GY.MB.SLD<br>MNR SHALE INTBS AND ROUNDED RIP-UP SHALE CLASTS TO 4CM |
| 80.09 | 80.70 | 0.61 | | | SANDSTONE | CG.WEL.LT.GY.MAS.SLD<br>MNR SHALE CLASTS . CORE BROKEN AT TOP |
| 80.70 | 81.82 | 1.12 | | | SANDSTONE | FG.WEL.GY.MAS.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: GDHC2001

| DEPTH FROM | DEPTH TO | INTERVAL INTERVAL | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 80.82 | 80.94 | 0.12 | | | SANDSTONE | MG.WEL.GY.MAS.SLD<br>AS ABOVE |
| 80.94 | 81.28 | 0.34 | | | SANDSTONE | FG.WEL.GY.THNB.SLD<br>SHALE AND SLTY INTBS. IRREGULAR FRACTURES |
| 81.28 | 81.39 | 0.11 | | | MUDSTONE | DK.GY.VTHNB.BRKN<br>MNR SLTY INTBS |
| 81.39 | 81.54 | 0.15 | | | SANDSTONE | MG.WEL.GY.THNB.SLD<br>SLTY SHALE INTBS |
| 81.54 | 81.61 | 0.07 | | | SANDSTONE | MG.WEL.GY.THNB.SLD<br>AS ABOVE |
| 81.61 | 82.04 | 0.43 | | | SILTSTONE | GY.THNB.BIOTR.SLD<br>MNR SHALY INTBS |
| 82.04 | 82.80 | 0.76 | | | SANDSTONE | MG.MOD.CLY.GY.MB.SLD<br>ROUNDED SHALE CLASTS TOWARDS BASE. MNR SHALY INTRS |
| 82.80 | 83.56 | 0.76 | | | SANDSTONE | FG.MOD.M.GY.THNB.SLD<br>SLTY INTBS AT TOP. IRREGULAR FRACTURES |
| 83.56 | 84.14 | 0.58 | | | SANDSTONE | FG.MOD.M.GY.THNB.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 84.16 | 84.42 | 0.26 | | | SANDSTONE | CG.MOD.GY.MB.SLD<br>FINING UPWARDS. MNR IRREGULAR SHALE BED |
| 84.42 | 84.61 | 0.19 | | | SANDSTONE | MG.WELL.LT.GY.MAS.SLD<br>SUBROUNDED SHALE CLASTS AT BASE UP TO 5 CM IN LENGTH. MNR COAL CLASTS TOWARDS T UP |
| 84.61 | 86.04 | 1.43 | | | SANDSTONE | MG.WELL.LT.GY.MAS.SLD<br>MNR SHALE CLASTS INCLUDES 4CM SHALE BAN D. JOINT AT 30 DEGREES |
| 86.04 | 86.24 | 0.20 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD |
| 86.24 | 87.17 | 0.93 | | | SANDSTONE | FG.WLL.M.GY.THNB.BRKN<br>SHALY INTBS. COAL SLD IN BASAL HALF |
| 87.17 | 87.54 | 0.37 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD |
| 87.54 | 87.60 | 0.06 | | | BENTONITE | BF.MAS.BRKN<br>SOAPY TEXTURE |
| 87.60 | 87.65 | 0.05 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>MNR SHALE CLASTS |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 87.65 | 87.75 | 0.10 | | | SANDSTONE | CG.MOD.LT.GY.MAS.VBRKN<br>ROTATED CORE |
| 87.75 | 88.35 | 0.60 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>MNR SHALY INTBS |
| 88.35 | 88.70 | 0.35 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.VBRKN<br>AS ABOVE |
| 88.70 | 90.53 | 1.83 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE. SHALY INTBS IN PART |
| 90.53 | 90.79 | 0.26 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 90.79 | 92.21 | 1.42 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 92.21 | 92.74 | 0.53 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>SLTY INTBS BECOMING SANDY TOWARDS BASE |
| 92.74 | 93.10 | 0.36 | | | SANDSTONE | MG.LT.GY.MB.SLD<br>MNR SHALE CLASTS |
| 93.10 | 93.55 | 0.45 | | | MUDSTONE | DK.VTHNB.SLD<br>MNR COAL STRGS, PYRITIC AT BASE. CORE B<br>RKN AT BASE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 93.51 | 93.66 | 0.15 | | | CORE LOSS | |
| 93.66 | 93.95 | 0.07 | | | CORE LOSS | |
| 93.91 | 93.94 | 0.04 | 04715 | H | COAL | C-3.BLK.SLD |
| 93.94 | 94.07 | 0.08 | 04715 | H | CLAYSTONE | CARB.BLK.SLD<br>CORE BRKN AT BOTTOM |
| 94.07 | 94.16 | 0.09 | 04715 | H | CORE LOSS | |
| 94.16 | 94.20 | 0.04 | 04716 | H | COAL | C-4.BLK.SLD |
| 94.20 | 94.24 | 0.04 | 04716 | H | COAL | C-2.BLK.SLD |
| 94.24 | 94.35 | 0.11 | 04716 | H | COAL | C-4.BLK.SLD |
| 94.35 | 94.46 | 0.11 | 04716 | H | COAL | C-3.BLK.SLD |
| 94.46 | 94.51 | 0.05 | 04717 | H | CLAYSTONE | CARB.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82C01

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 94.58 | 94.64 | 0.06 | 04717 | H | COAL | C-4.BLK.SLD |
| 94.64 | 94.67 | 0.03 | 04717 | H | COAL | C-1.BLK.SLD |
| 94.67 | 94.70 | 0.03 | 04717 | H | MUDSTONE | DK.GY.MAS.SLD |
| 94.70 | 94.76 | 0.06 | 04717 | H | CLAYSTONE | CARB.BLK.SLD |
| 94.76 | 94.82 | 0.06 | 04717 | H | MUDSTONE | DK.GY.MAS.SLD |
| 94.82 | 94.85 | 0.03 | 04717 | H | COAL | C-3.BLK.SLD |
| 94.85 | 94.88 | 0.03 | 04717 | H | CLAYSTONE | CARB.BLK.SLD |
| 94.88 | 94.91 | 0.03 | 04717 | H | COAL | C-2.BLK.SLD |
| 94.91 | 94.97 | 0.06 | 04717 | H | MUDSTONE | DK.GY.MAS.SLD |
| 94.97 | 95.03 | 0.06 | 04717 | H | COAL | C-2.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 94.97 | 95.03 | 0.06 | 04718 | H | COAL | C-3.BLK.SLD<br>MNR SHALE SPLITS |
| 95.03 | 95.08 | 0.05 | 04718 | H | CLAYSTONE | CARB.BLK.SLD |
| 95.08 | 95.22 | 0.14 | 04718 | H | COAL | C-4.BLK.SLD |
| 95.22 | 95.24 | 0.02 | 04718 | H | CLAYSTONE | CARB.BLK.SLD |
| 95.24 | 95.29 | 0.05 | 04719 | H | COAL | C-4.BLK.SLD |
| 95.29 | 95.34 | 0.05 | 04719 | H | CLAYSTONE | CARB.BLK.SLD |
| 95.34 | 95.40 | 0.06 | 04719 | H | CORE LOSS | |
| 95.40 | 95.55 | 0.15 | 04719 | H | MUDSTONE | LT.GY.THNB.SLD<br>SOFT |
| 95.55 | 95.59 | 0.04 | 04719 | H | CLAYSTONE | CARB.BLK.SLD<br>ABUNDANT COAL STRGS |
| 95.59 | 95.63 | 0.04 | 04720 | H | COAL | C-2.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DUNG2001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 95.63 | 95.65 | 0.02 | 04720 | H | COAL | C-4.BLK.SLD |
| 95.65 | 95.72 | 0.07 | 04720 | H | COAL | C-2.BLK.SLD |
| 95.72 | 95.74 | 0.02 | 04720 | H | CLAYSTONE | CARB.BLK.SLD |
| 95.74 | 95.81 | 0.07 | 04720 | H | COAL | C-2.BLK.SLD |
| 95.81 | 95.83 | 0.02 | 04720 | H | CLAYSTONE | CARB.BLK.BRKN |
| 95.83 | 95.86 | 0.03 | 04720 | H | COAL | C-3.BLK |
| 95.86 | 96.62 | 0.76 | | | MUDSTONE | M.GY.MAS.SLD |
| 96.62 | 97.39 | 0.77 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>MNR COAL |
| 97.39 | 98.79 | 1.40 | | | SANDSTONE | FG.WLL.S.GY.THNB.SLD<br>SLTY INTBS, SLTY CLASTS AT TOP, MNR GTZ VEIN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDNE2001

| DEPTH FROM | DEPTH TO | INTERVAL INDEX | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 98.79 | 98.85 | 0.06 | | | MUDSTONE | M.GY.MAS<br>PYRITIC |
| 98.85 | 99.47 | 0.62 | | | SANDSTONE | MG.LT.GY.THNB.SLD<br>SUBROUNDED SLTY CLASTS AT TOP, MNR SLTY INTBS |
| 99.47 | 99.67 | 0.20 | | | SANDSTONE | MG.LT.GY.THNB.SLD<br>AS ABOVE |
| 99.67 | 102.32 | 2.65 | | | SANDSTONE | MG.MUD.LT.GY.MAS.SLD<br>MNR SLTY INTBS AT TOP, MNR CG BAND IN MIDDLE, SUP TEXTURE, HIGH FELDSPAR CONTENT |
| 102.32 | 102.72 | 0.40 | | | SANDSTONE | MG.MUD.LT.GY.MAS.SLD<br>AS ABOVE |
| 102.72 | 104.27 | 1.55 | | | SANDSTONE | MG.MUD.LT.GY.MAS.SLD<br>AS ABOVE |
| 104.27 | 104.50 | 0.23 | | | SANDSTONE | CG.MUD.LT.GY.MAS.SLD<br>PBLY AT BASE |
| 104.50 | 105.77 | 1.27 | | | SANDSTONE | PBLY.MG-.PR.LT.GY.SLD<br>SMALL ROUNDED PBLS THROUGHOUT.MNR QTZ AND CALCT VEINS, WEAKLY BEDDED |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82061

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 105.77 | 105.90 | 0.13 | | | SANDSTONE | PBLY.MG-.PR.LT.GY.SLD<br>2CM QTZ VEIN PARALLELING CORE |
| 105.90 | 106.58 | 0.68 | | | SANDSTONE | PBLY.MG-.PR.LT.GY.SLD<br>AS ABOVE. MNR QTZ VEINING. CORE BRKN AT BASE |
| 106.58 | 107.78 | 1.20 | | | SANDSTONE | MG.PR.M.GY.SLD<br>AS ABOVE. MNR COAL STRGS. SUBROUNDED PBLS. PBLS COMPRISE LESS THAN 5%. BDG INDISTINCT |
| 107.78 | 108.13 | 0.35 | | | CONGLOMERATE | PBLY.PR.LT.GY.MAS.SLD<br>COARSENING TO BASE. PBLS GREATER THAN 0.5CM. COMPRISE 10%. SANDY MATRIX. PBLS SUBROUNDED |
| 108.13 | 108.76 | 0.63 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>SHARP UPPER CONTACT. 5% MAFICS |
| 108.76 | 109.42 | 0.66 | | | SANDSTONE | MG.WLL.LT.GY.MAS.SLD<br>AS ABOVE. MNR SLTY SPLIT AT TOP |
| 109.42 | 110.42 | 1.01 | | | SANDSTONE | MG.WLL.LT.GY.MAS.SLD<br>AS ABOVE. MNR SUBROUNDED LENTICULAR SHALE NODULES |
| 110.42 | 111.45 | 1.03 | | | SILTSTONE | MG.V.MINR.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 111.55 | 111.86 | 0.31 | | | MUDSTONE | DK.GY.MAS.SLD<br>SLTY |
| 111.86 | 114.48 | 2.62 | | | SILTSTONE | WEL.M.GY.VTHNB.SLD<br>SHALY INTBS. CONCRETIONARY NODULE IN MI<br>DDLE 15CM THICK |
| 114.48 | 114.91 | 0.43 | | | SILTSTONE | WEL.M.GY.VTHNB.SLD<br>AS ABOVE |
| 114.91 | 117.31 | 2.40 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>SLTY INTBS. RARE COAL STRGS |
| 117.31 | 117.35 | 0.04 | | | CLAYSTONE | CARB.BLK.SLD<br>ABUNDANT COAL STRGS |
| 117.35 | 117.39 | 0.04 | | 6 | COAL | C-4.BLK.SLD<br>SHALE STRGS THROUGHOUT |
| 117.39 | 117.51 | 0.12 | | 6 | COAL | C-3.BLK.SLD<br>SHALE STRGS THROUGHOUT |
| 117.51 | 117.54 | 0.03 | | 6 | CLAYSTONE | CARB.BLK.SLD |
| 117.54 | 117.81 | 0.27 | | 6 | MUDSTONE | BLK.MAS.SLD<br>ANK COAL STRGS AT TOP. CORE BRKN AT BAS<br>E |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 117.61 | 117.96 | 0.15 | | G | CORE LOSS | |
| 117.96 | 118.44 | 0.48 | | G | MUDSTONE | BLK.MAS.BRKN |
| 118.44 | 118.49 | 0.05 | 04721 | G | CORE LOSS | |
| 118.49 | 118.67 | 0.18 | 04721 | G | COAL | C-3.BLK.VBRKN |
| 118.67 | 118.71 | 0.04 | 04721 | G | CLAYSTONE | CARB.BLK.VBRKN<br>ABUNDANT COAL BANDS |
| 118.71 | 118.79 | 0.08 | 04721 | G | COAL | C-3.BLK.SLD |
| 118.79 | 118.83 | 0.04 | 04721 | G | COAL | C-2.BLK.SLD |
| 118.83 | 118.91 | 0.08 | 04721 | G | COAL | C-3.BLK.SLD |
| 118.91 | 118.98 | 0.05 | 04721 | G | COAL | C-2.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 118.96 | 119.04 | 0.08 | 04721 | G | COAL | C-4.BLK.VBRKN |
| 119.04 | 119.18 | 0.14 | 04721 | G | CORE LOSS | |
| 119.18 | 119.30 | 0.12 | 04722 | G | MUDSTONE | DK.GY.MAS.SLD<br>SOFT |
| 119.30 | 119.33 | 0.03 | 04723 | G | COAL | C-2.BLK.SLD |
| 119.33 | 119.39 | 0.06 | 04723 | G | COAL | C-3.BLK.SLD |
| 119.39 | 119.52 | 0.13 | 04723 | G | COAL | C-3.BLK.VBRKN |
| 119.52 | 119.59 | 0.07 | 04723 | G | CORE LOSS | |
| 119.59 | 119.69 | 0.10 | 04723 | G | COAL | C-2.BLK.BRKN<br>CORE VBRKN AT BASE |
| 119.69 | 119.71 | 0.02 | 04723 | G | MUDSTONE | M.GY.MAS.SLD<br>HARD. SILICEOUS |
| 119.71 | 119.74 | 0.03 | 04723 | G | MUDSTONE | M.GY.MAS.SLD<br>SOFT |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82001

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 119.74 | 119.86 | 0.12 | 04723 | G | COAL | C-4.BLK.SLD |
| 119.86 | 119.89 | 0.03 | 04723 | G | MUDSTONE | DK.GY.MAS.SLD |
| 119.89 | 120.03 | 0.14 | 04723 | G | COAL | C-4.BLK.SLD |
| 120.03 | 120.05 | 0.02 | 04723 | G | CLAYSTONE | CARB.BLK.BRKN |
| 120.05 | 120.10 | 0.05 | 04723 | G | COAL | C-5.BLK.SLD |
| 120.10 | 120.12 | 0.02 | 04723 | G | COAL | C-4.BLK.SLD |
| 120.12 | 120.25 | 0.13 | | | MUDSTONE | DK.GY.THNB.SLD |
| 120.25 | 120.80 | 0.55 | | | MUDSTONE | DK.GY.THNB.SLD<br>AS ABOVE |
| 120.80 | 120.90 | 0.10 | | | MUDSTONE | DK.GY.THNB.SLD<br>AS ABOVE |
| 120.90 | 121.10 | 0.20 | | | MUDSTONE | DK.GY.BRKN |

PROJECT: KPN BLOCK: NC DATA SOURCE: DDHB2001

| DEPTH FROM. | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 121.10 | 122.40 | 1.30 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>MNR SLTY INTBS |
| 122.40 | 123.28 | 0.88 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>SLTY INTBS |
| 123.28 | 123.70 | 0.42 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE |
| 123.70 | 124.05 | 0.35 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>MNR SHALE INTBS//////////END OF CORE..D<br>KILLEAS MARKER 124.05M////////// |

OTES MEASURED BCA

GR.-Mt. Klappan 84(3) A

695

# MOUNT KLAPPAN
## DRILL HOLE LOG
DDH 82-001

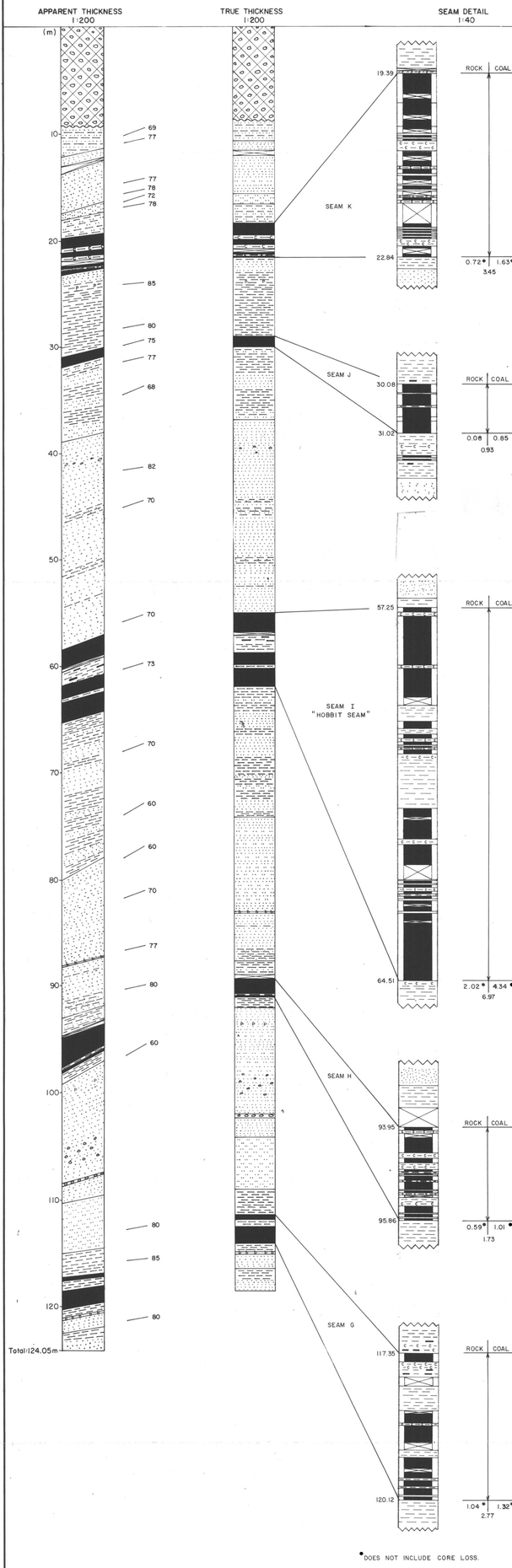
SCALE : 1:200 1:40
0 0
0.5
5 1
(m) (m)

NORTHING: 6343655 N
EASTING: 514375 E

INCLINATION: 90°
BEARING: —

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL - THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL




*DOES NOT INCLUDE CORE LOSS.

# VERTICAL DEVIATION

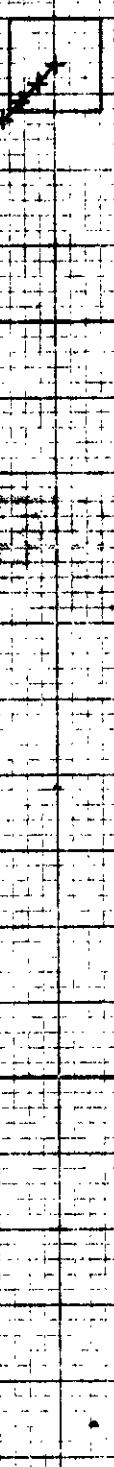
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

CLIENT : GULF CANADA RES. INC
LOCATION : KLAPPAN MTN.
HOLE ID : DDH-82-001
DATE OF LOG : 08-14-82
PROBE : 9055A 0065

SCALE: .10 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 30.3 M
AZIMUTH: 224.0
DISTANCE: .94 M

+ = 1.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

Tube #2 Tube #4 Fluids Above Casing

GR.-Mt. Klappan 84(3)M

367

112

112

GR.-Mt. Klappan 84(3)A

695

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG VSL1 DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : DDH-82-001

LOCATION : KLAPPAN MTN. DATE OF LOG : 08-14-82

DATA FROM : VSL2*A PROBE : 9055A 0065

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

| | DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|---|---|---|---|---|---|---|---|---|
| | .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| | 1.00 | .99 | -.02 | -.02 | .03 | 224.2 | 1.9 | 224.2 |
| | 2.00 | 1.99 | -.04 | -.04 | .06 | 224.2 | 1.9 | 224.2 |
| | 3.00 | 2.99 | -.07 | -.06 | .09 | 224.2 | 1.9 | 224.2 |
| | 4.00 | 3.99 | -.09 | -.09 | .13 | 224.2 | 1.9 | 224.2 |
| | 5.00 | 4.99 | -.11 | -.11 | .16 | 224.2 | 1.9 | 224.2 |
| | 6.00 | 5.99 | -.14 | -.13 | .19 | 224.2 | 1.9 | 224.2 |
| | 7.00 | 6.99 | -.16 | -.16 | .23 | 224.2 | 1.9 | 224.2 |
| | 8.00 | 7.99 | -.19 | -.18 | .26 | 224.2 | 1.9 | 224.2 |
| | 9.00 | 8.99 | -.21 | -.20 | .29 | 224.2 | 1.9 | 224.2 |
| | 10.00 | 9.99 | -.23 | -.23 | .33 | 224.2 | 1.9 | 224.2 |
| | 11.00 | 10.99 | -.26 | -.25 | .36 | 224.2 | 1.9 | 224.2 |
| | 12.00 | 11.99 | -.28 | -.27 | .39 | 224.2 | 1.9 | 224.2 |
| | 13.00 | 12.99 | -.31 | -.30 | .43 | 224.2 | 1.9 | 224.2 |
| | 14.00 | 13.99 | -.33 | -.32 | .46 | 224.2 | 1.9 | 224.2 |
| | 15.00 | 14.99 | -.35 | -.34 | .49 | 224.2 | 1.9 | 224.2 |
| | 16.00 | 15.99 | -.38 | -.37 | .53 | 224.2 | 1.9 | 224.2 |
| | 17.00 | 16.99 | -.40 | -.39 | .56 | 224.2 | 1.9 | 224.2 |
| | 18.00 | 17.99 | -.42 | -.41 | .59 | 224.2 | 1.9 | 224.2 |
| | 19.00 | 18.98 | -.44 | -.43 | .62 | 224.3 | 1.6 | 224.5 |
| | 20.00 | 19.98 | -.47 | -.45 | .66 | 223.9 | 1.8 | 224.1 |
| | 21.00 | 20.98 | -.49 | -.47 | .68 | 223.7 | 1.6 | 223.6 |
| | 22.00 | 21.98 | -.51 | -.49 | .71 | 223.6 | 1.6 | 223.4 |
| | 23.00 | 22.98 | -.53 | -.51 | .74 | 223.6 | 1.4 | 223.9 |
| | 24.00 | 23.98 | -.55 | -.53 | .76 | 223.6 | 1.4 | 223.1 |
| | 25.00 | 24.98 | -.57 | -.54 | .79 | 223.6 | 1.5 | 224.0 |
| | 26.00 | 25.98 | -.59 | -.56 | .82 | 223.6 | 1.5 | 223.9 |
| | 27.00 | 26.98 | -.61 | -.58 | .85 | 223.7 | 1.6 | 223.2 |
| | 28.00 | 27.98 | -.63 | -.60 | .88 | 223.8 | 1.5 | 223.4 |
| | 29.00 | 28.98 | -.65 | -.62 | .90 | 223.9 | 1.5 | 223.4 |
| | 30.00 | 29.98 | -.67 | -.64 | .93 | 224.0 | 1.5 | 223.3 |
| TD | 30.30 | 30.28 | -.67 | -.65 | .94 | 224.0 | 1.5 | 223.9 |

GR - Mt. Klappan 84(3)A

695

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG VSL1 DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : DDH-82-001

LOCATION : KLAPPAN MTN. DATE OF LOG : 08-14-82

DATA FROM : VSL2*A PROBE : 9055A 0065

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|---|---|---|---|---|---|---|---|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 1.00 | .99 | -.02 | -.02 | .03 | 224.2 | 1.9 | 224.2 |
| 2.00 | 1.99 | -.04 | -.04 | .06 | 224.2 | 1.9 | 224.2 |
| 3.00 | 2.99 | -.07 | -.06 | .09 | 224.2 | 1.9 | 224.2 |
| 4.00 | 3.99 | -.09 | -.09 | .13 | 224.2 | 1.9 | 224.2 |
| 5.00 | 4.99 | -.11 | -.11 | .16 | 224.2 | 1.9 | 224.2 |
| 6.00 | 5.99 | -.14 | -.13 | .19 | 224.2 | 1.9 | 224.2 |
| 7.00 | 6.99 | -.16 | -.16 | .23 | 224.2 | 1.9 | 224.2 |
| 8.00 | 7.99 | -.19 | -.18 | .26 | 224.2 | 1.9 | 224.2 |
| 9.00 | 8.99 | -.21 | -.20 | .29 | 224.2 | 1.9 | 224.2 |
| 10.00 | 9.99 | -.23 | -.23 | .33 | 224.2 | 1.9 | 224.2 |
| 11.00 | 10.99 | -.26 | -.25 | .36 | 224.2 | 1.9 | 224.2 |
| 12.00 | 11.99 | -.28 | -.27 | .39 | 224.2 | 1.9 | 224.2 |
| 13.00 | 12.99 | -.31 | -.30 | .43 | 224.2 | 1.9 | 224.2 |
| 14.00 | 13.99 | -.33 | -.32 | .46 | 224.2 | 1.9 | 224.2 |
| 15.00 | 14.99 | -.35 | -.34 | .49 | 224.2 | 1.9 | 224.2 |
| 16.00 | 15.99 | -.38 | -.37 | .53 | 224.2 | 1.9 | 224.2 |
| 17.00 | 16.99 | -.40 | -.39 | .56 | 224.2 | 1.9 | 224.2 |
| 18.00 | 17.99 | -.42 | -.41 | .59 | 224.2 | 1.9 | 224.2 |
| 19.00 | 18.98 | -.44 | -.43 | .62 | 224.3 | 1.6 | 224.5 |
| 20.00 | 19.98 | -.47 | -.45 | .66 | 223.9 | 1.8 | 224.1 |
| 21.00 | 20.98 | -.49 | -.47 | .68 | 223.7 | 1.6 | 223.6 |
| 22.00 | 21.98 | -.51 | -.49 | .71 | 223.6 | 1.6 | 223.4 |
| 23.00 | 22.98 | -.53 | -.51 | .74 | 223.6 | 1.4 | 223.9 |
| 24.00 | 23.98 | -.55 | -.53 | .76 | 223.6 | 1.4 | 223.1 |
| 25.00 | 24.98 | -.57 | -.54 | .79 | 223.6 | 1.5 | 224.0 |
| 26.00 | 25.98 | -.59 | -.56 | .82 | 223.6 | 1.5 | 224.0 |
| 27.00 | 26.98 | -.61 | -.58 | .85 | 223.7 | 1.6 | 224.2 |
| 28.00 | 27.98 | -.63 | -.60 | .88 | 223.8 | 1.5 | 224.4 |
| 29.00 | 28.98 | -.65 | -.62 | .90 | 223.9 | 1.5 | 224.4 |
| 30.00 | 29.98 | -.67 | -.64 | .93 | 224.0 | 1.5 | 224.3 |
| TD 30.30 | 30.28 | -.67 | -.65 | .94 | 224.0 | 1.5 | 224.9 |

GULF CANADA RESOURCES INC.

## - D A T A  S O U R C E  S U M M A R Y -

DATA SOURCE - KPNHCDDH82002 DATE - 02/06/85

### - H I S T O R Y -

START DATE - 08/05/82
END DATE - 08/08/82

CONTRACTOR - J.T.THOMAS
GEOLOGIST - SWANBERGSON
OPERATOR - GCRI
SURVEYOR -

REMARKS - NEUTRON-GAMMA TOOL GAVE OFF SCALE READINGS IN BASAL PORTION OF HOLE AS A RESULT OF TOOL FAILURE- TO BE DETERMINED , GEOPHYSICAL LOG MEASURED FROM GROUND LEVEL + APProx. o.6m

### - L O C A T I O N -

PROVINCE - BC
ELEVATION - 1342.00
ZONE - 9
NORTHING - 6345134.00
EASTING - 515445.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571503
LONGITUDE - 1284439

### - O R I E N T A T I O N -

LENGTH - 178.96
INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 95.8

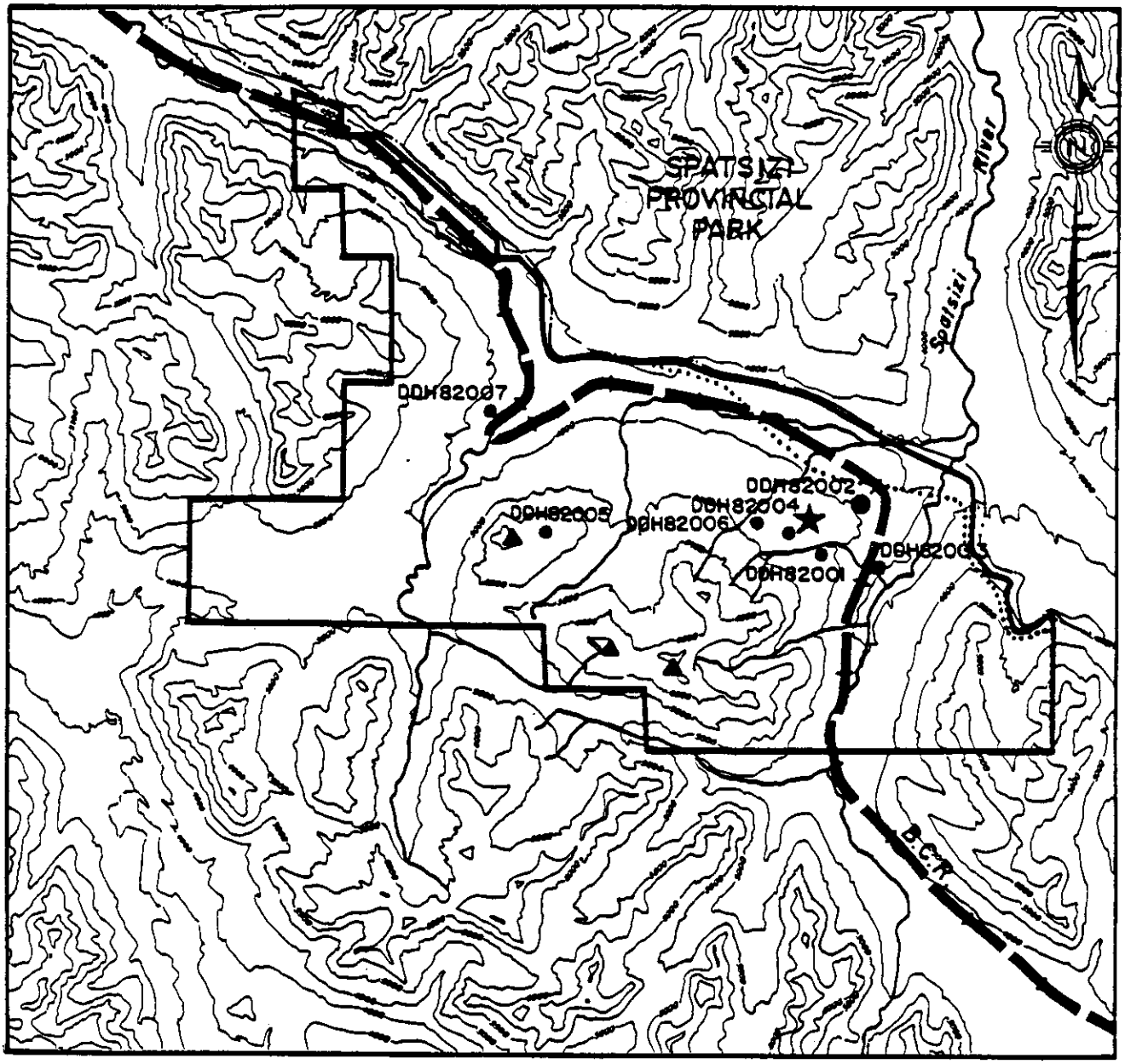
CEMENT - Y
PLUG -
PIEZ -

CASING DEPTH(M) - 0.61
AQUIFER DEPTHS(M) - 0.00
0.00
LOST CIRC. DEPTHS(M) - 0.00
0.00

*** NOTE *** O INDICATES NO VALUE

# MT. KLAPPAN COAL PROPERTY

## DIAMOND DRILL HOLES

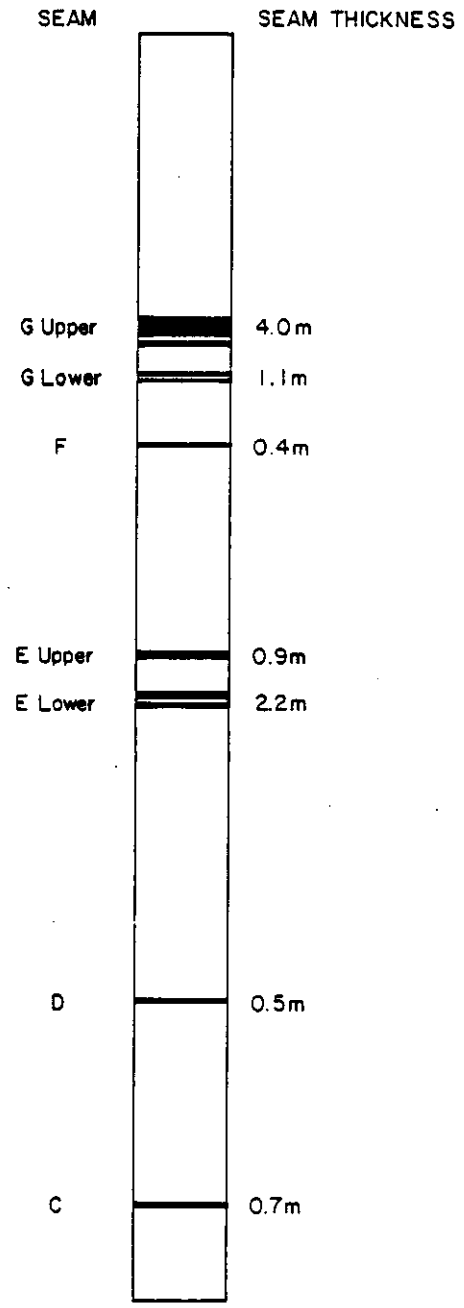



0 1 2 3 4 5 Km

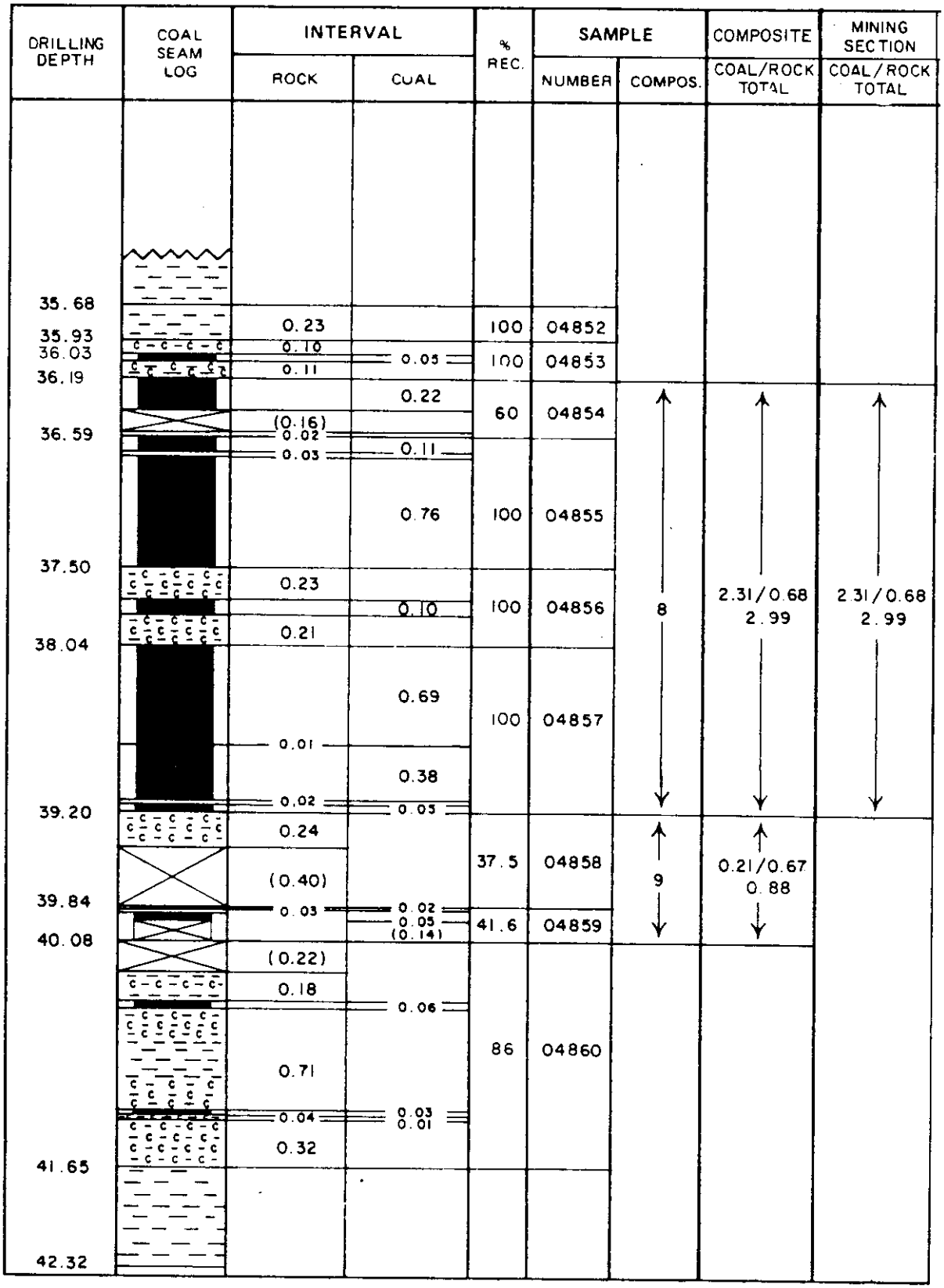
- Prepared Rail Bed
- Provincial Park Boundary
- Camp
- Diamond Drill Hole
- Redefined Property Boundary
- Peaks

# MT. KLAPPAN COAL PROPERTY

## DDH82002




SCALE - 1:1000




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-002
SEAM G UPPER

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

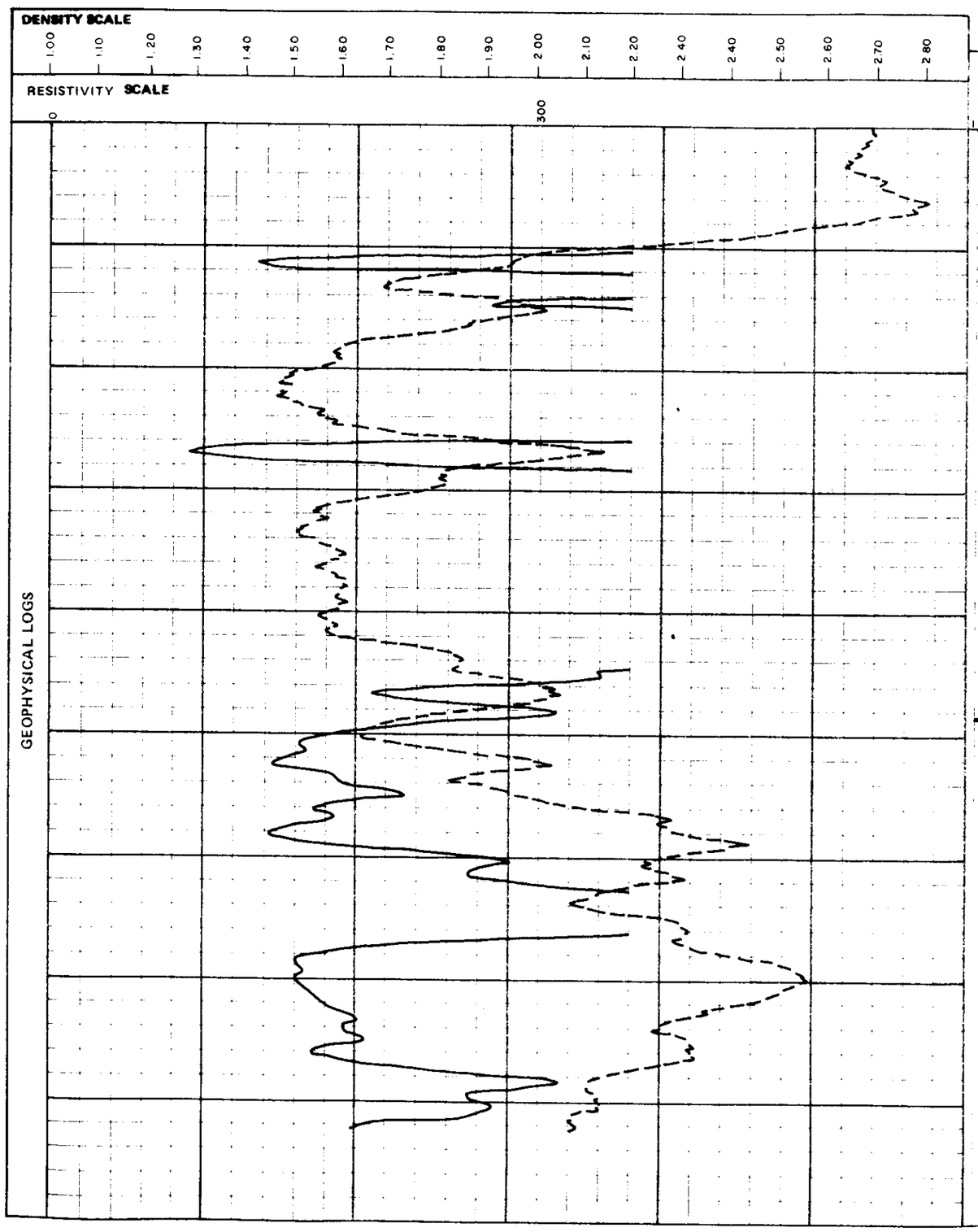
GULF CANADA RESOURCES INC
COAL DIVISION

P-267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO DDH-82-002 SEAM G Upper SEAM INTERVAL

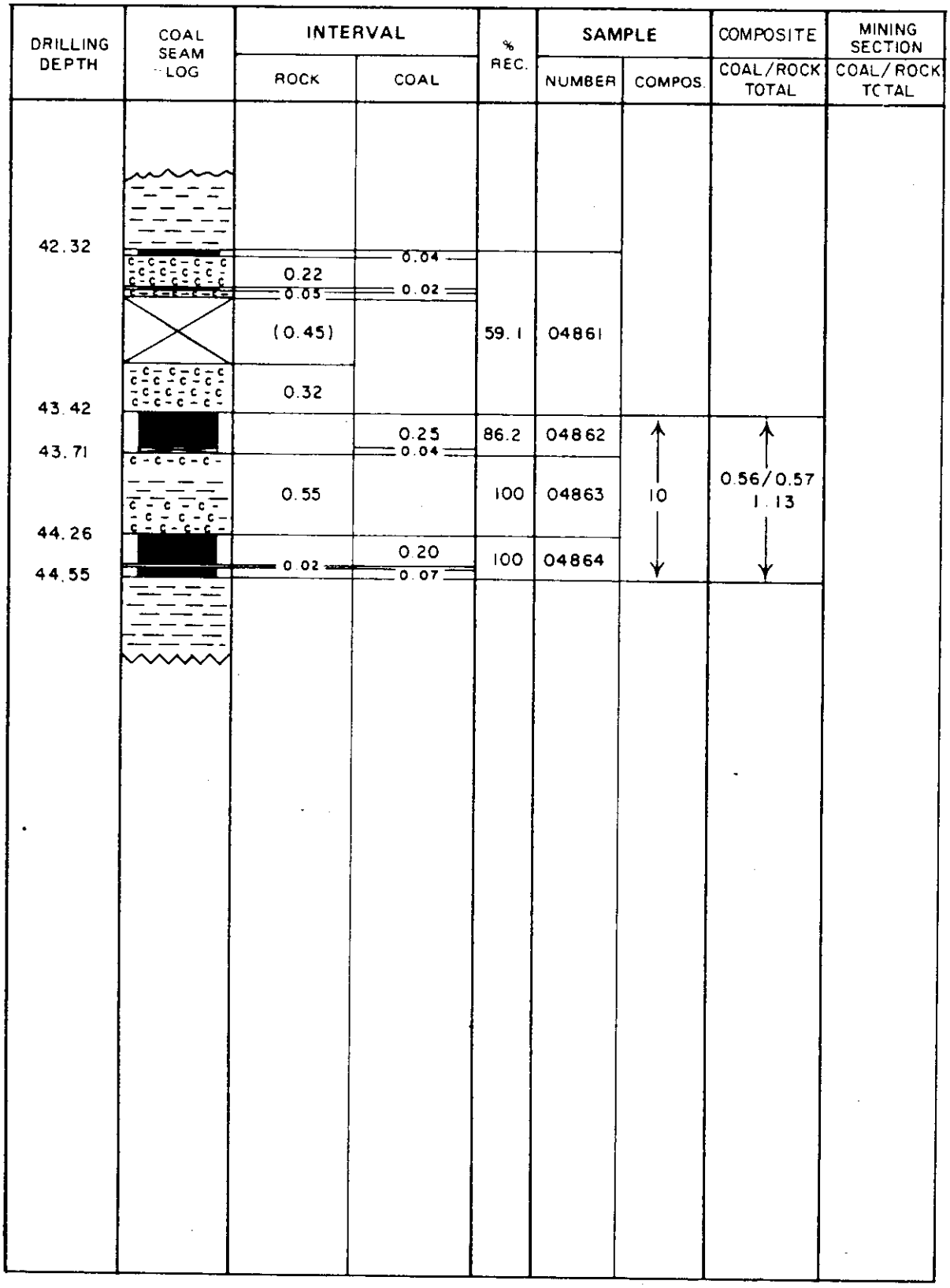
SCALE 1:40




| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL.VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 35.68 | | | | | | | | | | | | | |
| | 35.93 | | | 0.25 | 100 | 04852 | | | | | | | | |
| | 36.03 | | | 0.10 | | | | | | | | | | |
| | 36.19 | | | 0.11 | 100 | 04853 | | | | | | | | |
| | | | | 0.22 | 60 | 04854 | | | | | | | | |
| | 36.59 | | | (0.16) 0.02 | | | | | | | | | | |
| | | | | 0.11 | | | | | | | | | | |
| | | | | 0.77 | 100 | 04855 | | | | | | | | |
| | 37.50 | | | 0.23 | | | | | | | | | | |
| | | | | 0.10 | 100 | 04856 | 8 | 1.43 | 25.59 | 7.75 | 65.23 | —— | 24.09 | —— |
| | 38.04 | | | 0.21 | | | | | | | | | | |
| | | | | 0.70 | | | | | | | | | | |
| | | | | 0.01 | 100 | 04857 | | | | | | | | |
| | | | | 0.38 | | | | | | | | | | |
| | 39.20 | | | 0.02 0.05 | | | | | | | | | | |
| | | | | 0.24 | | | | | | | | | | |
| | | | | (0.40) | 37.5 | 04858 | | | | | | | | |
| | 39.84 | | | 0.03 0.02 0.05 | | | 9 | 1.52 | 45.61 | 8.73 | 44.14 | —— | 15.17 | —— |
| | 40.08 | | | (0.14) | 41.6 | 04859 | | | | | | | | |
| | | | | (0.22) | | | | | | | | | | |
| | | | | 0.18 | | | | | | | | | | |
| | | | | 0.06 | | | | | | | | | | |
| | | | | 0.71 | 86 | 04860 | | | | | | | | |
| | | | | 0.04 0.03 0.01 | | | | | | | | | | |
| | 41.65 | | | 0.32 | | | | | | | | | | |
| | 42.32 | | | | | | | | | | | | | |

Seam Interval (m): 36.03 - 40.08
Seam True Thickness (Coal/Rock): 2.57/1.46
Total 4.03

Apparent Thickness




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-002
SEAM G LOWER

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

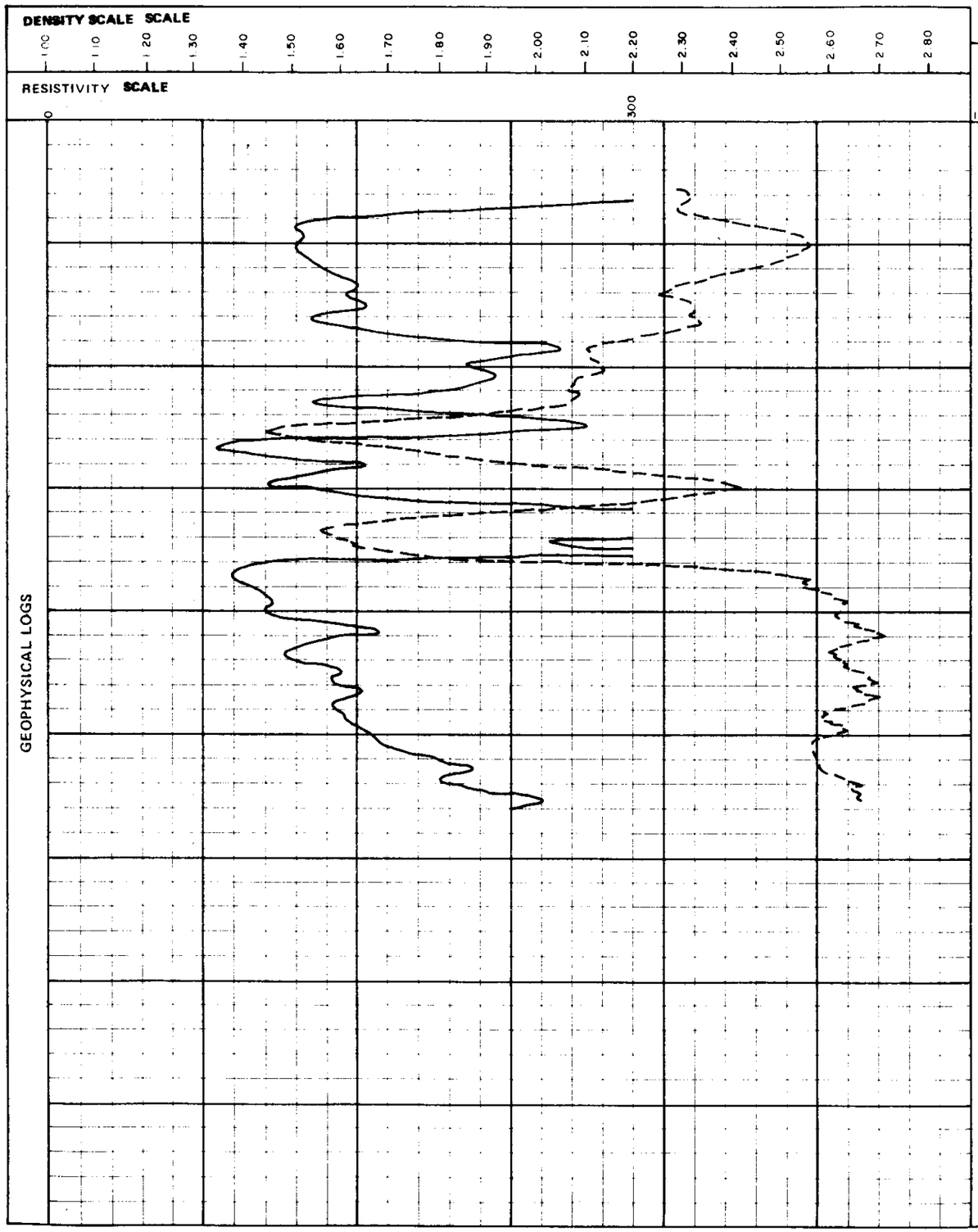
P-267 (12-80)

DENSITY ——— RESISTIVITY ———

Apparent Thickness

DRILL NO. DDH - 82 - 002 SEAM G Lower SEAM INTERVAL

SCALE 1:40




| SEAM COMP. 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S' | CAL.VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 42.32 | | | 0.04 | | | | | | | | | | |
| | | | 0 22 | 0.02 | | | | | | | | | | |
| | | | | 0.05 | | | | | | | | | | |
| | | | (0 45) | | 59.1 | 04861 | | | | | | | | |
| | | | 0.32 | | | | | | | | | | | |
| | 43.42 | | | 0.25 (0.04) | 86.2 | 04862 | | | | | | | | |
| | 43.71 | | 0.55 | | 100 | 04863 | 10 | 1.44 | 48.77 | 6.46 | 43.33 | —— | 14.52 | —— |
| | 44.26 | | | 0.20 | 100 | 04864 | | | | | | | | |
| | 44.55 | | 0.02 | 0.07 | | | | | | | | | | |

Seam Interval (m): 43.42 - 44.55
Seam True Thickness (Coal/Rock): 0.56/0.57
Total 1.13

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS. | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 52.54 | | | 0.29 | | | | 0.35/0.00 | |
| 52.89 | | 0.05 | 0.06 | 100 | 04724 | | 0.35 | |
| | | (0.32) | | | | | | |
| 53.47 | | 0.08 | 0.06 (0.06) | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-002
SEAM F

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1 40 |
| APPROVED BY: J. M. D. DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12-80)

DENSITY ——— RESISTIVITY ———

Apparent Thickness

DRILL NO DDH - 82 - 002 SEAM F SEAM INTERVAL

SCALE 1:40

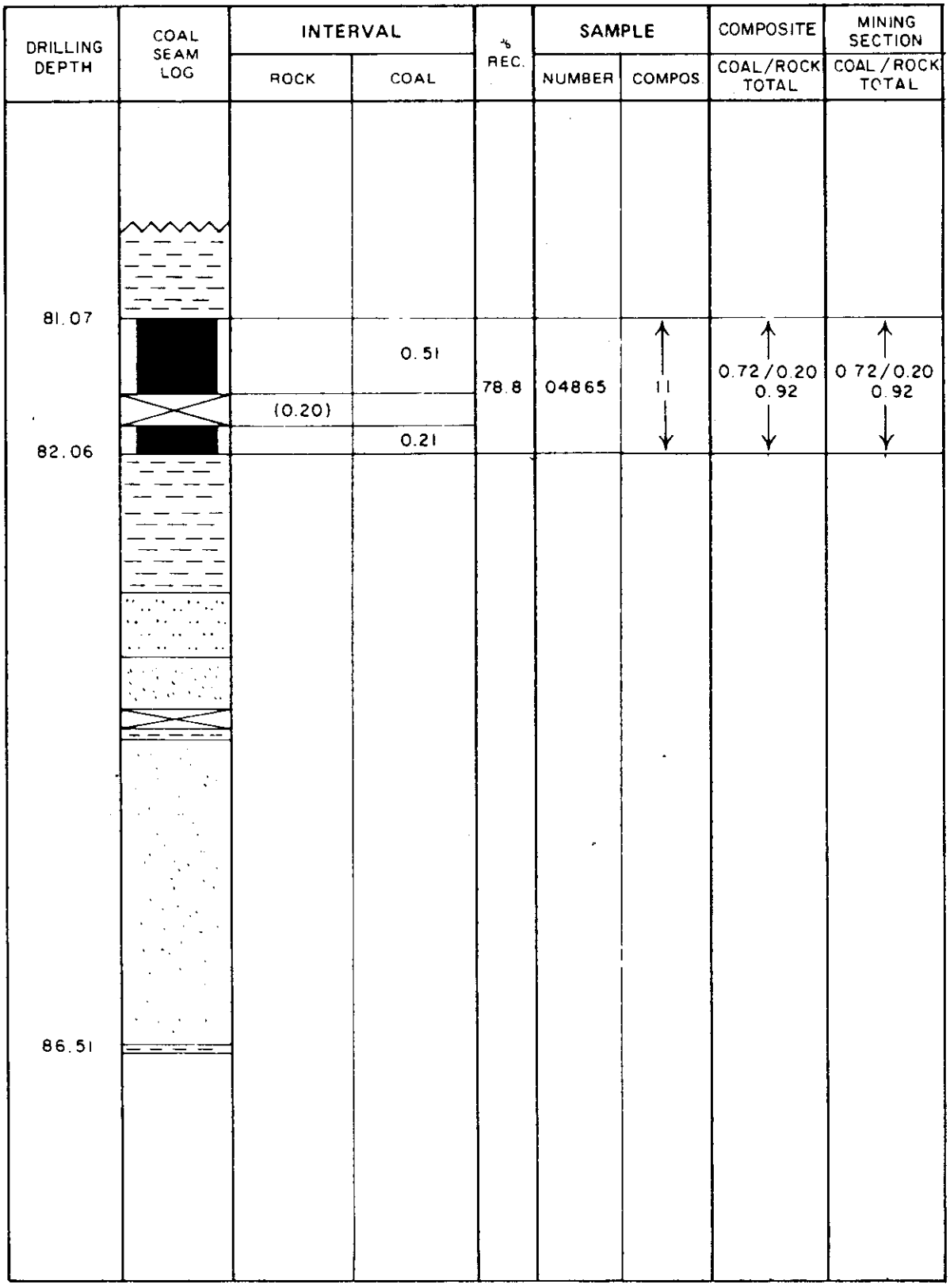
DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE 0 300

GEOPHYSICAL LOGS

| SEAM COMP. 123456 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | BTU | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 52.54 | | | | | | | | | | | | | |
| | | | | 0.29 | | | | | | | | | | |
| | 52.89 | | | 0.06 | 100 | 04724 | | | | | | | | |
| | | | 0.05 | | | | | | | | | | | |
| | | | (0.33) | | | | | | | | | | | |
| | 53.35 | | | 0.08 | | | | | | | | | | |
| | 53.47 | | | 0.06 | | | | | | | | | | |
| | | | | (0.06) | | | | | | | | | | |

Seam Interval (m): 52.54 - 52.89
Seam True Thickness (Coal/Rock): 0.35/0.00
Total 0.35




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-002
SEAM E UPPER

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: M. L. DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

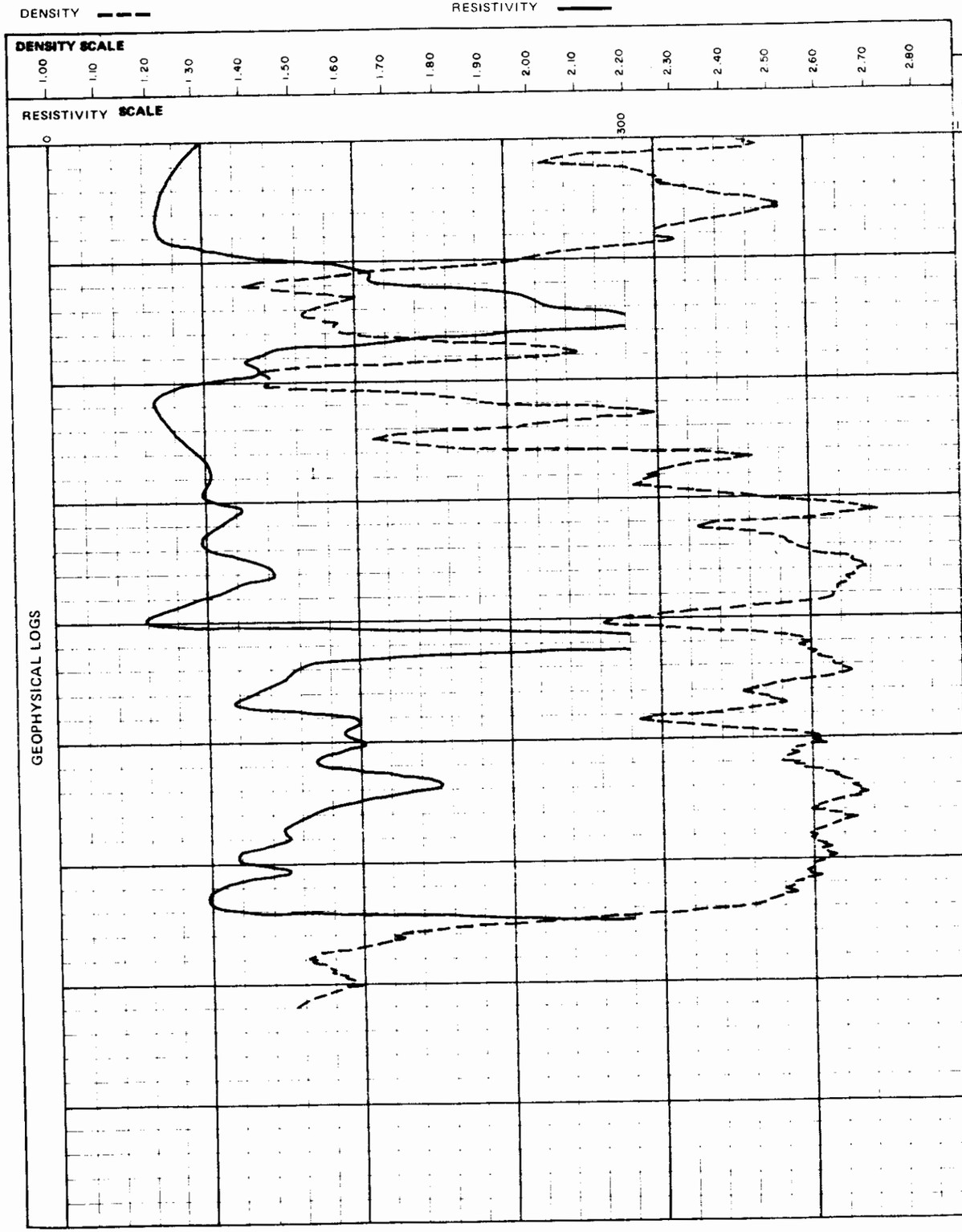
GULF CANADA RESOURCES INC.
COAL DIVISION

Apparent Thickness

DENSITY ——— RESISTIVITY ———

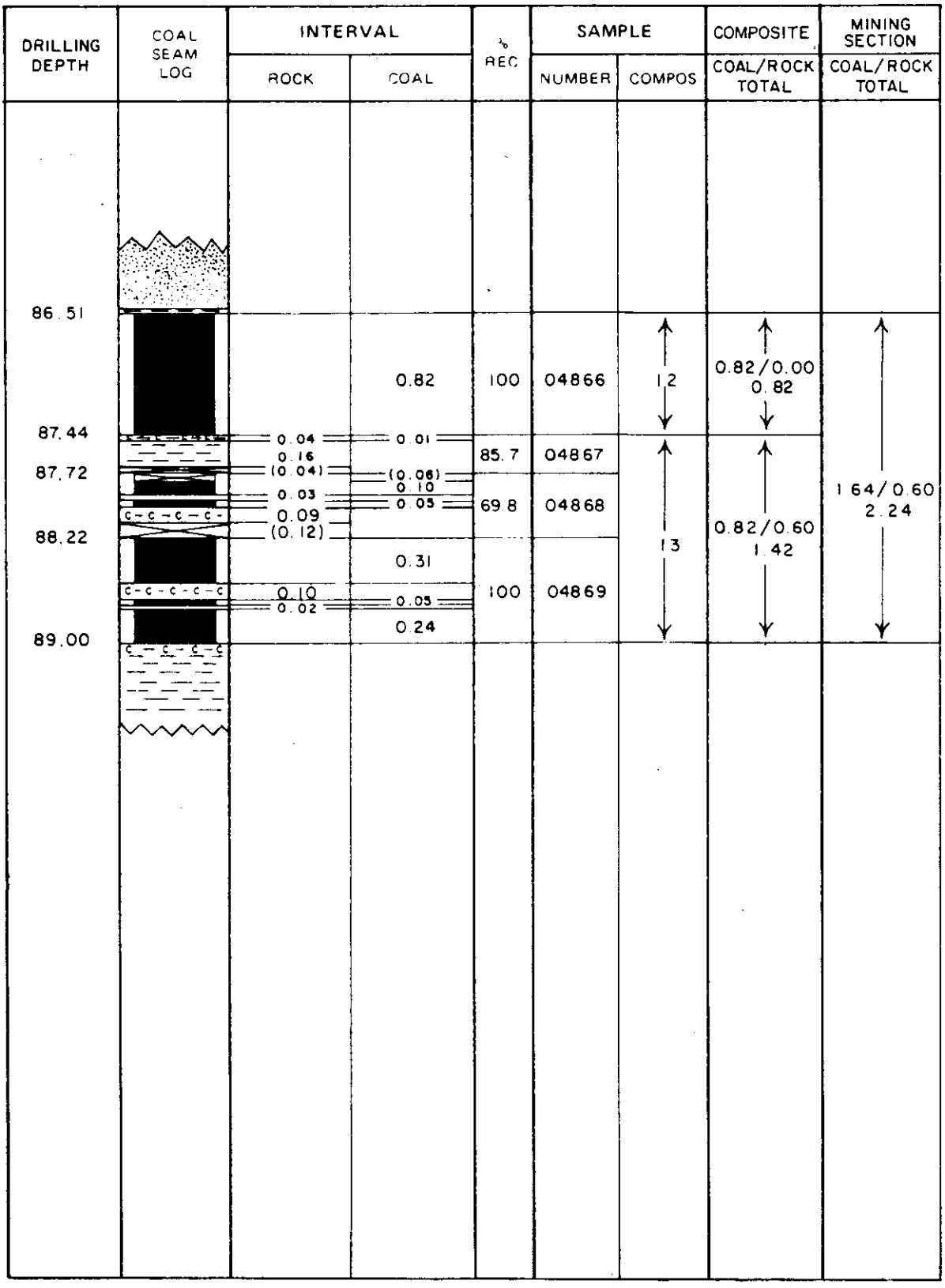
DRILL NO. DDH - 82 - 002 SEAM E Upper SEAM INTERVAL

SCALE 1:40




| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. % | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL.VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 81.07 | | | 0.56 | 78.8 | 04865 | II | 1.30 | 25.04 | 7.70 | 65.96 | —— | 25.36 | —— |
| | | | (0.21) | | | | | | | | | | | |
| | 82.06 | | | 0.22 | | | | | | | | | | |
| | 86.51 | | | | | | | | | | | | | |

Seam Interval (m): 81.07 - 82.06
Seam True Thickness (Coal/Rock): 0.72/0.20
Total 0.92




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
## DDH-82-002
## SEAM E LOWER

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 002 SEAM E Lower SEAM INTERVAL Apparent Thickness

SCALE 1:40

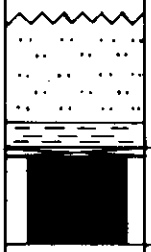
DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE 0 300

GEOPHYSICAL LOGS

| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL.VAL KJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 86.51 | | | 0.93 | 100 | 04866 | 12 | 1.06 | 23.43 | 10.44 | 65.07 | —— | 25.18 | —— |
| | 87.44 | | 0.05 | 0.01 | | | | | | | | | | |
| | | | 0.18 | | 85.7 | 04867 | | | | | | | | |
| | 87.72 | | (0.04) | (0.07) | | | | | | | | | | |
| | | | | 0.11 | | | | | | | | | | |
| | | | 0.03 | 0.08 | 69.8 | 04868 | | | | | | | | |
| | | | 0.10 | | | | | | | | | | | |
| | 88.22 | | (0.13) | | | | 13 | 1.57 | 52.33 | 7.76 | 38.34 | —— | 13.70 | —— |
| | | | | 0.34 | | | | | | | | | | |
| | | | 0.11 | | 100 | 04869 | | | | | | | | |
| | | | 0.02 | 0.05 | | | | | | | | | | |
| | | | | 0.26 | | | | | | | | | | |
| | 89.00 | | | | | | | | | | | | | |

Seam Interval (m): 86.51 - 89.00
Seam True Thickness (Coal/Rock): 1.64/0.60
Total 2.24

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS. | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 138.38 |  | | (0.08) | | | | | |
| | | | 0.45 | 86.8 | 04870 | 14 | 0.53/0.00 0.53 | 0.53/0.00 0.53 |
| 138.92 | | | | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-002
## SEAM D

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1 : 40 |
| APPROVED BY: J. M. D. DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

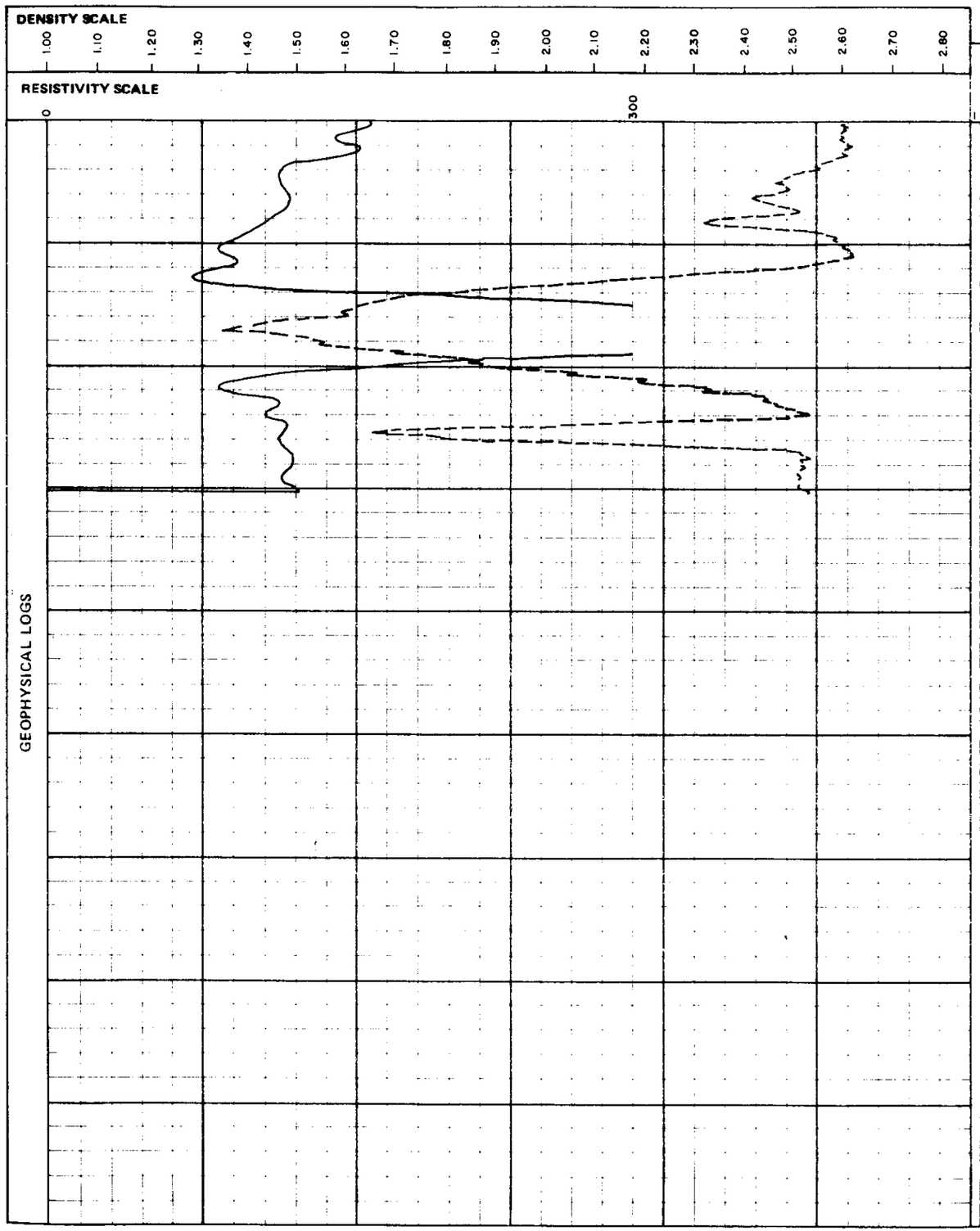
GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO DDH-82-002 SEAM D SEAM INTERVAL Apparent Thickness

SCALE 1:40




| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 138.38 | | | | | | | | | | | | | |
| | | | | 0.08 | | | | | | | | | | |
| | | | | 0.46 | 85.2 | 04870 | 14 | 1.14 | 25.63 | 9.22 | 64.01 | —— | 24.85 | —— |
| | 138.92 | | | | | | | | | | | | | |

Seam Interval (m): 138.38-138.92
Seam True Thickness (Coal/Rock): 0.53/0.00
Total 0.53

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS. | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 165.97 | | | 0.67 | 100 | 04871 | 1.5 | 0.67/0.00 0.67 | 0.67/0.00 0.67 |
| 166.66 | | | | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-002
SEAM C

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

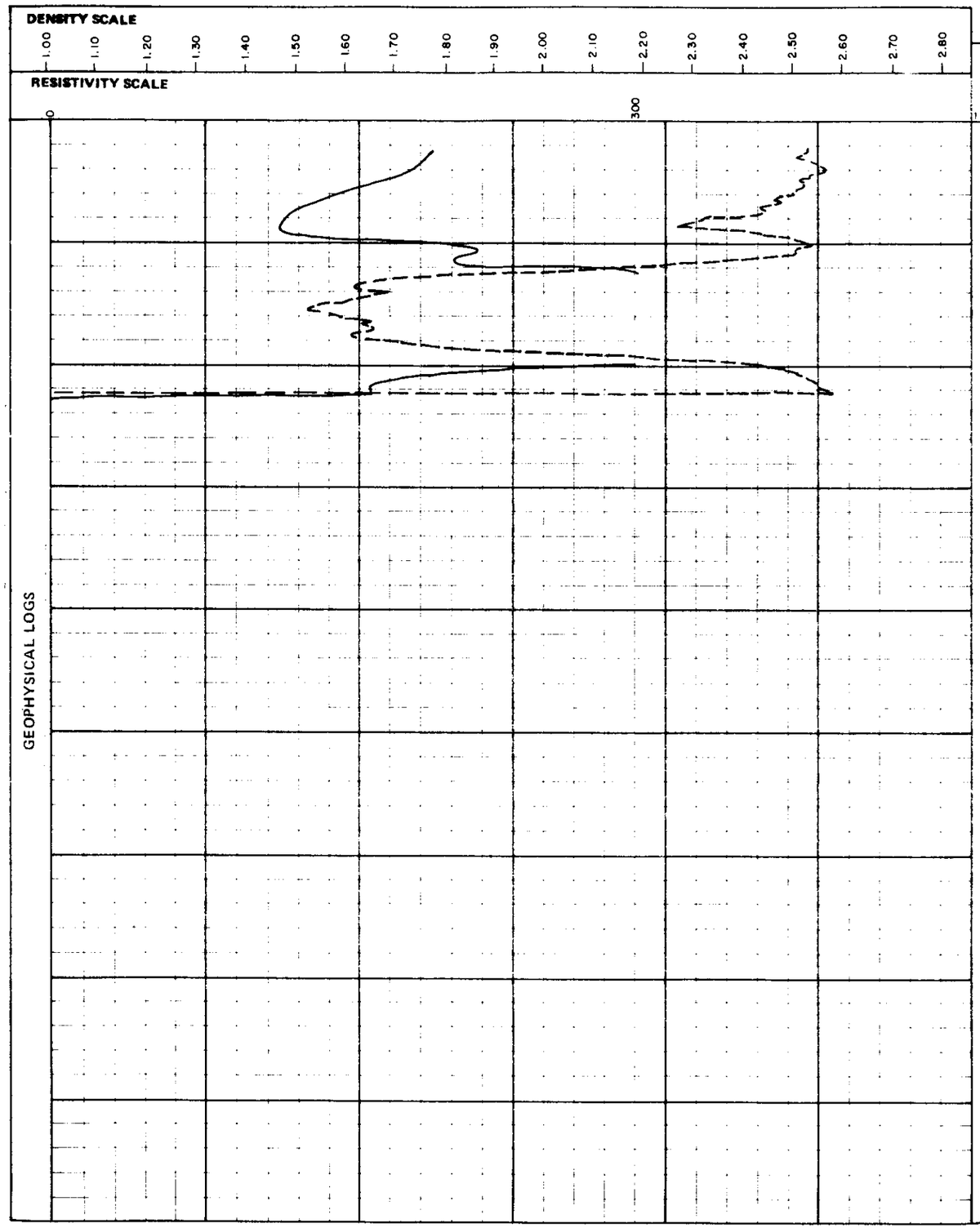
GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12 80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH-82-002 SEAM C SEAM INTERVAL Apparent Thickness

SCALE 1:40




| SEAM COMP. 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 165.97 | | | | | | | | | | | | | |
| | | | | 0.67 | 100 | 04871 | 15 | 1.48 | 25.67 | 7.77 | 65.08 | — | 24.66 | — |
| | 166.66 | | | | | | | | | | | | | |

Seam Interval (m): 165.97-166.66
Seam True Thickness (Coal/Rock): 0.67/0.00
Total 0.67

GULF CANADA RESOURCES INC. - COAL DIVISION

02/DEC/82 SIMPLE SAMPLE SUMMARY PAGE 1

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|
| DDH82002 | | | | | | | | | | |
| | F | 4824 | 52.63 | 52.69 | 0.06 | 100.00 | 0.06 | 0.00 | 0.00 | 0.00 |
| | | 4852 | 35.68 | 35.93 | 0.25 | 100.00 | 0.00 | 0.25 | 0.00 | 0.00 |
| | G UPPER | 4853 | 35.93 | 36.19 | 0.26 | 100.00 | 0.05 | 0.21 | 0.00 | 0.00 |
| | G UPPER | 4854 | 36.19 | 36.59 | 0.24 | 60.00 | 0.22 | 0.02 | 0.00 | 0.16 |
| | G UPPER | 4855 | 36.59 | 37.50 | 0.91 | 100.00 | 0.88 | 0.03 | 0.00 | 0.00 |
| | G UPPER | 4856 | 37.50 | 38.04 | 0.54 | 100.00 | 0.10 | 0.44 | 0.00 | 0.00 |
| | G UPPER | 4857 | 38.04 | 39.20 | 1.16 | 100.00 | 1.13 | 0.03 | 0.00 | 0.00 |
| | G UPPER | 4858 | 39.20 | 39.64 | 0.24 | 37.50 | 0.00 | 0.24 | 0.00 | 0.40 |
| | G UPPER | 4859 | 39.64 | 40.08 | 0.10 | 41.67 | 0.03 | 0.07 | 0.14 | 0.00 |
| | | 4860 | 40.08 | 41.65 | 1.35 | 85.99 | 0.10 | 1.25 | 0.00 | 0.22 |
| | | 4861 | 42.32 | 43.42 | 0.65 | 59.09 | 0.06 | 0.59 | 0.00 | 0.45 |
| | G LOWER | 4862 | 43.42 | 43.71 | 0.25 | 86.21 | 0.25 | 0.00 | 0.04 | 0.00 |
| | G LOWER | 4863 | 43.71 | 44.26 | 0.55 | 100.00 | 0.00 | 0.55 | 0.00 | 0.00 |
| | G LOWER | 4864 | 44.26 | 44.55 | 0.29 | 100.00 | 0.27 | 0.02 | 0.00 | 0.00 |
| | E UPPER | 4865 | 81.07 | 82.06 | 0.76 | 76.79 | 0.76 | 0.00 | 0.00 | 0.21 |
| | E LOWER | 4866 | 86.51 | 87.44 | 0.93 | 100.00 | 0.93 | 0.00 | 0.00 | 0.00 |
| | E LOWER | 4867 | 87.44 | 87.72 | 0.24 | 85.71 | 0.01 | 0.23 | 0.04 | 0.00 |
| | E LOWER | 4868 | 87.72 | 88.22 | 0.30 | 60.00 | 0.17 | 0.13 | 0.07 | 0.13 |
| | E LOWER | 4869 | 88.22 | 89.00 | 0.78 | 100.00 | 0.65 | 0.13 | 0.00 | 0.00 |
| | D | 4870 | 138.36 | 138.92 | 0.46 | 85.19 | 0.46 | 0.00 | 0.06 | 0.00 |
| | C | 4871 | 165.97 | 166.66 | 0.69 | 100.00 | 0.69 | 0.00 | 0.00 | 0.00 |

GULF CANADA RESOURCES INC. - COAL DIVISION

02/DEC/82 COMPOSITE SAMPLE SUMMARY PAGE 1

| SEAM | SAMPLE ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| G UPPER | 8 | 4654 | 4657 | 36.19 | 39.20 | 2.85 | 94.66 | 2.33 | 0.52 | 0.00 | 0.16 |
| G UPPER | 9 | 4658 | 4659 | 39.20 | 40.66 | 0.34 | 38.64 | 0.07 | 0.27 | 0.14 | 0.40 |
| G LOWER | 10 | 4662 | 4664 | 43.42 | 44.55 | 1.09 | 96.46 | 0.52 | 0.57 | 0.04 | 0.00 |
| E UPPER | 11 | 4665 | 4665 | 81.07 | 82.06 | 0.78 | 78.79 | 0.78 | 0.00 | 0.00 | 0.21 |
| E LOWER | 12 | 4666 | 4666 | 86.51 | 87.44 | 0.93 | 100.00 | 0.93 | 0.00 | 0.00 | 0.00 |
| E (ALL) | 13 | 4667 | 4669 | 87.44 | 89.00 | 1.32 | 84.62 | 0.83 | 0.49 | 0.07 | 0.17 |
| D | 14 | 4670 | 4670 | 136.50 | 139.03 | 0.46 | 66.79 | 0.46 | 0.00 | 0.07 | 0.00 |
| C | 15 | 4671 | 4671 | 166.20 | 166.89 | 0.69 | 100.00 | 0.69 | 0.00 | 0.00 | 0.00 |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SLAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 0.00 | 0.61 | 0.61 | | | OVERBURDEN | |
| 0.61 | 0.91 | 0.30 | | | ROCK LOSS | |
| 0.91 | 1.73 | 0.82 | | | SANDSTONE | MG.WEL.LT.GY.THNB.BRKN<br>SUBROUNDED CHERT CLASTS (DARK) AT TOP. UP TO 1.5CM DIAMETER |
| 1.73 | 1.84 | 0.11 | | | CONGLOMERATE | MG.MOD.LT.GY.MAS.SLD<br>SUBROUNDED CHERT CLASTS UP TO 1CM DIAMETER |
| 1.84 | 3.62 | 1.78 | | | SANDSTONE | MG.MOD.LT.GY.MB.BRKN<br>INFREQUENT CLASTS OF CHERT UP TO 0.5CM DIAMETER |
| 3.62 | 3.82 | 0.20 | | | SANDSTONE | MG.MOD.LT.GY.MB.BRKN<br>AS ABOVE. MNR CHERT AND COAL CLASTS |
| 3.82 | 4.06 | 0.24 | | | ROCK LOSS | |
| 4.06 | 5.84 | 1.78 | | | SANDSTONE | MG.WEL.LT.GY.MB.BRKN<br>MNR SUBROUNDED CHERT CLASTS UP TO 1CM D |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH02002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 6.27 | 6.44 | 0.17 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD |
| 6.44 | 7.91 | 1.47 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE, WITH 7CM SLTY BED, MNR QTZ VE<br>INS IN MIDDLE OF SECTION |
| 7.91 | 9.97 | 2.06 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE, RARE CHERT CLASTS |
| 9.97 | 11.00 | 1.03 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |
| 11.00 | 12.03 | 1.03 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |
| 12.03 | 14.11 | 2.08 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE, CORE BRKN AT BASE, JOINT ATTI<br>TUDE 10 DEGREES |
| 14.11 | 16.21 | 2.10 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |
| 16.21 | 16.46 | 0.25 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: MC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 17.21 | 19.13 | 1.92 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 19.13 | 20.16 | 1.03 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 20.16 | 21.89 | 1.73 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE. JOINT MEASUREMENT 5 DEGREES.<br>CALCT INFILLING |
| 21.89 | 23.17 | 1.28 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE. CORE VBRKN IN BASAL HALF |
| 23.17 | 24.47 | 1.30 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 24.47 | 25.93 | 1.46 | | | SANDSTONE | FG.WEL.M.GY.THNB.VBRKN<br>SLTY-SHALE INTBS |
| 25.93 | 27.13 | 1.20 | | | SANDSTONE | FG.WEL.M.GY.THNB.BRKN<br>AS ABOVE |
| 27.13 | 28.05 | 0.92 | | | SANDSTONE | FG.WEL.M.GY.THNB.VBRKN<br>AS ABOVE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 28.31 | 29.34 | 1.03 | | | SILTSTONE | WEL.M.GY.VTHNB.XBDG.BRKN<br>SHALE INTBS. TOPS UP |
| 29.34 | 29.67 | 0.33 | | | SILTSTONE | WEL.M.GY.VTHNB.XBDG.BRKN<br>AS ABOVE |
| 29.67 | 31.81 | 2.14 | | | SILTSTONE | WEL.M.GY.VTHNB.XBDG.SLD<br>AS ABOVE |
| 31.81 | 32.50 | 0.69 | | | SILTSTONE | WEL.M.GY.VTHNB.XBDG.SLD<br>AS ABOVE |
| 32.50 | 33.88 | 1.38 | | | SILTSTONE | WEL.M.GY.VTHNB.XBDG.SLD<br>AS ABOVE |
| 33.88 | 34.33 | 0.45 | | | MUDSTONE | DK.GY.BIOTR.SLD<br>MNR COAL AND CALCT STRGS AT TOP |
| 34.33 | 35.89 | 1.56 | 04854 | | MUDSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE. MNR PLANT FRAGS.//SAMPLE CONS ISTS OF 25CM OF ROOF ROCK FOR BELOW COA L SEAM// |
| 35.89 | 35.93 | 0.04 | 04855 | | MUDSTONE | BLK.SLD<br>AS ABOVE. BRIGHT COAL LENSES |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH62002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 36.00 | 36.06 | 0.06 | 04653 | 6 UPPER | COAL | C-4.BLK.VBRKN |
| 36.06 | 36.08 | 0.02 | 04653 | 6 UPPER | COAL | C-4.BLK.BRKN |
| 36.08 | 36.17 | 0.09 | 04653 | 6 UPPER | MUDSTONE | DK.GY.SLD<br>CORE BRKN AT TOP. SOFT |
| 36.17 | 36.19 | 0.02 | 04653 | 6 UPPER | CLAYSTONE | CARB.BLK.SLD<br>THIN BRIGHT COAL BANDS |
| 36.19 | 36.23 | 0.04 | 04654 | 6 UPPER | COAL | C-4.BLK.SLD |
| 36.23 | 36.28 | 0.05 | 04654 | 6 UPPER | COAL | C-3.BLK.SLD |
| 36.28 | 36.31 | 0.03 | 04654 | 6 UPPER | COAL | C-3.BLK.VBRKN |
| 36.31 | 36.35 | 0.04 | 04654 | 6 UPPER | COAL | C-4.BLK.SLD |
| 36.35 | 36.41 | 0.06 | 04654 | 6 UPPER | COAL | C-5.BLK.SLD |

2702 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG

PROJECT: KPN BLOCK: HC DATA SOURCE: DDHB2002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 36.57 | 36.59 | 0.02 | 04854 | G UPPER | MUDSTONE | DK.GY.VBRKN SOFT |
| 36.59 | 36.64 | 0.05 | 04855 | G UPPER | COAL | C-4.BLK.SLD MNR BRIGHT BANDING |
| 36.64 | 36.70 | 0.06 | 04855 | G UPPER | COAL | C-3.BLK.SLD |
| 36.70 | 36.73 | 0.03 | 04855 | G UPPER | MUDSTONE | M.GY.SLD |
| 36.73 | 36.76 | 0.03 | 04855 | G UPPER | COAL | C-3.BLK.SLD |
| 36.76 | 36.90 | 0.14 | 04855 | G UPPER | COAL | C-4.BLK.BRKN |
| 36.90 | 37.25 | 0.35 | 04855 | G UPPER | COAL | C-4.BLK.VBRKN BRIGHT BANDED IN PART |
| 37.25 | 37.40 | 0.15 | 04855 | G UPPER | COAL | C-4.BLK.VBRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 37.40 | 37.50 | 0.04 | 04855 | G UPPER | COAL | C-3.BLK.VBRKN |
| 37.50 | 37.52 | 0.02 | 04856 | G UPPER | CLAYSTONE | CARB.BLK.SLD |
| 37.52 | 37.62 | 0.10 | 04856 | G UPPER | MUDSTONE | DK.GY.MAS.SLD<br>SOFT |
| 37.62 | 37.73 | 0.11 | 04856 | G UPPER | CLAYSTONE | CARB.BLK.SLD<br>BRIGHT COAL STGRS |
| 37.73 | 37.83 | 0.10 | 04856 | G UPPER | COAL | C-4.BLK.SLD |
| 37.83 | 38.04 | 0.21 | 04856 | G UPPER | CLAYSTONE | CARB.BLK.SLD |
| 38.04 | 38.74 | 0.70 | 04857 | G UPPER | COAL | C-3.BLK.SLD<br>CORE VBRKN IN MIDDLE |
| 38.74 | 38.75 | 0.01 | 04857 | G UPPER | MUDSTONE | DK.GY.MAS.SLD |
| 38.75 | 39.13 | 0.38 | 04857 | G UPPER | COAL | C-3.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 39.15 | 39.18 | 0.03 | 04857 | 6 UPPER | COAL | C-4.BLK.SLD |
| 39.18 | 39.20 | 0.02 | 04857 | 6 UPPER | COAL | C-6.BLK.SLD |
| 39.20 | 39.37 | 0.17 | 04858 | 6 UPPER | CLAYSTONE | CARB.BLK.BRKN |
| 39.37 | 39.44 | 0.07 | 04858 | 6 UPPER | CLAYSTONE | CARB.BLK.VBRKN<br>CORE PULVERIZED |
| 39.44 | 39.84 | 0.40 | 04858 | 6 UPPER | ROCK LOSS | |
| 39.84 | 39.86 | 0.02 | 04859 | 6 UPPER | COAL | C-6.BLK |
| 39.86 | 39.89 | 0.03 | 04859 | 6 UPPER | CLAYSTONE | CARB.DK.GY.VBRKN<br>CORE PULVERIZED |
| 39.89 | 39.94 | 0.05 | 04859 | 6 UPPER | COAL | C-5.BLK |
| 39.94 | 40.08 | 0.14 | 04859 | 6 UPPER | COAL LOSS | |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 40.34 | 40.44 | 0.10 | 04800 | | CLAYSTONE | CARB.VBRKN |
| 40.44 | 40.48 | 0.04 | 04800 | | MUDSTONE | DK.GY.MAS.SLD |
| 40.48 | 40.54 | 0.06 | 04800 | | COAL | C-4.BLK.VBRKN |
| 40.54 | 40.74 | 0.20 | 04800 | | CLAYSTONE | CARB.BLK.SLD<br>CORE VBRKN AT BASE |
| 40.74 | 40.91 | 0.17 | 04800 | | MUDSTONE | DK.GY.MAS.SLD<br>BRIGHT COAL BAND AT BASE |
| 40.91 | 41.25 | 0.34 | 04800 | | CLAYSTONE | CARB.BLK.SLD |
| 41.25 | 41.28 | 0.03 | 04800 | | COAL | C-5.BLK.SLD |
| 41.28 | 41.32 | 0.04 | 04800 | | CLAYSTONE | CARB.BLK.SLD |
| 41.32 | 41.33 | 0.01 | 04800 | | COAL | C-5.BLK.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 41.47 | 41.52 | 0.05 | 04660 | | MUDSTONE | DK.GY.MAS.SLD |
| 41.52 | 41.61 | 0.09 | 04660 | | CLAYSTONE | CARB.BLK.SLD |
| 41.61 | 41.65 | 0.04 | 04660 | | CLAYSTONE | CARB.BLK.BRKN<br>BRIGHT COAL STRGS, CALCT VEINING PARALLELS BDG |
| 41.65 | 42.22 | 0.57 | | | MUDSTONE | DK.GY.MAS.SLD<br>RARE COAL STRGS |
| 42.22 | 42.25 | 0.03 | | | CLAYSTONE | CARB.BLK.BRKN<br>ABUNDANT COAL STRGS |
| 42.25 | 42.32 | 0.07 | | | MUDSTONE | DK.GY.MAS.SLD |
| 42.32 | 42.36 | 0.04 | 04661 | | COAL | C-4.BLK.SLD |
| 42.36 | 42.58 | 0.22 | 04661 | | CLAYSTONE | CARB.BLK.BRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82062

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 42.60 | 42.65 | 0.05 | 04661 | | CLAYSTONE | CARB.BLK.BRKN |
| 42.65 | 43.10 | 0.45 | 04661 | | ROCK LOSS | |
| 43.10 | 43.16 | 0.06 | 04661 | | CLAYSTONE | CARB.BLK.SLD |
| 43.16 | 43.19 | 0.03 | 04661 | | MUDSTONE | DK.GY.MAS.SLD |
| 43.19 | 43.42 | 0.23 | 04661 | | CLAYSTONE | CARB.BLK.SLD |
| 43.42 | 43.67 | 0.25 | 04662 | G LOWER | COAL | C-S.BLK.VBRKN |
| 43.67 | 43.71 | 0.04 | 04662 | G LOWER | COAL LOSS | |
| 43.71 | 43.82 | 0.11 | 04663 | G LOWER | MUDSTONE | DK.GY.MAS.BRKN |
| 43.82 | 43.85 | 0.03 | 04663 | G LOWER | CLAYSTONE | CARB.BLK.VBRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 44.26 | 44.32 | 0.06 | 04864 | G LOWER | COAL | C-4.BLK.SLD |
| 44.32 | 44.41 | 0.09 | 04864 | G LOWER | COAL | C-3.BLK.VBRKN |
| 44.41 | 44.46 | 0.05 | 04864 | G LOWER | COAL | C-4.BLK.SLD |
| 44.46 | 44.48 | 0.02 | 04864 | G LOWER | CLAYSTONE | CARB.BLK.BRKN |
| 44.48 | 44.53 | 0.05 | 04864 | G LOWER | COAL | C-4.BLK.BRKN |
| 44.53 | 44.55 | 0.02 | 04864 | G LOWER | COAL | C-2.BLK.SLD |
| 44.55 | 45.20 | 0.65 | | | MUDSTONE | DK.GY.THNB.SLD<br>SLTY INTBS |
| 45.20 | 45.44 | 0.24 | | | MUDSTONE | DK.GY.THNB.SLD<br>AS ABOVE |
| 45.44 | 47.25 | 1.81 | | | SANDSTONE | MG.WEL.M.GY.THNB.BRKN |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SLAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 47.55 | 47.66 | 0.11 | | | SANDSTONE | MG.WEL.M.GY.THNB.BRKN<br>AS ABOVE. SUBROUNDED PYR NODULE 1.5CM W IDE FOUND AT BASE |
| 47.66 | 48.75 | 1.09 | | | SANDSTONE | MG.WEL.M.GY.MAS.BRKN<br>MNR SHALY INTBS AND RIP-UP CLASTS. QTZ VEIN 3CM WIDE IN MIDDLE SECTION |
| 48.75 | 48.97 | 0.22 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>AS ABOVE. NO QTZ VEINING |
| 48.97 | 50.64 | 1.67 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>AS ABOVE. CUT AND FILL INDICATE TOPS UP |
| 50.64 | 50.66 | 0.02 | | | CLAYSTONE | CARB.BLK.VBRKN |
| 50.66 | 50.93 | 0.27 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>AS ABOVE |
| 50.93 | 51.74 | 0.81 | | | SANDSTONE | FG-.WEL.M.GY.THN3.SLD<br>SHALE INTBS |
| 51.74 | 52.40 | 0.66 | | | SANDSTONE | MG.WEL.GY.MAS.SLD<br>MNR SLTY INTBS AT BASE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| ) | 52.47 | 52.54 | 0.07 | | | CLAYSTONE | CARB.BLK.SLD<br>BRIGHT COAL STRGS THROUGHOUT |
| ) | 52.54 | 52.62 | 0.08 | | F | COAL | C-2.BLK.SLD |
| ) | 52.62 | 52.72 | 0.10 | | F | COAL | C-3.BLK.VBRKN |
| ) | 52.72 | 52.79 | 0.07 | | F | COAL | C-3.BLK.SLD<br>MNR CALCT VEINLETS |
| ) | 52.79 | 52.83 | 0.04 | | F | COAL | C-4.BLK.SLD |
| ) | 52.83 | 52.89 | 0.06 | 04724 | F | COAL | C-3.BLK.SLD<br>SAMPLED FOR INITIAL ANALYSIS OF UNWEATH<br>ERED COALS |
| ) | 52.89 | 52.94 | 0.05 | | | CLAYSTONE | CARB.BLK.VBRKN |
| ) | 52.94 | 52.97 | 0.03 | | | ROCK LOSS | |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH62002

| CA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 76 | 53.35 | 53.41 | 0.06 | | | COAL | C-3.BLK.BRKN |
| 76 | 53.41 | 53.47 | 0.06 | | | COAL LOSS | |
| 76 | 53.47 | 54.00 | 0.53 | | | MUDSTONE | DK.GY.BRKN<br>MNR COAL STRGS |
| 76 | 54.00 | 54.74 | 0.74 | | | MUDSTONE | DK.GY.BRKN<br>AS ABOVE |
| 76 | 54.74 | 55.27 | 0.53 | | | MUDSTONE | DK.GY.BRKN<br>CALCT INFILLING (IRREGULAR) |
| 77 | 55.27 | 57.09 | 1.82 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE. COAL STRGS IN BASAL SECTION.<br>///2CM BRIGHT COAL SPLIT SENT FOR PETRO<br>GRAPHIC ANALYSIS. SAMPLE #04851/// |
| 77 | 57.09 | 57.26 | 0.17 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE. MNR COAL STRGS |
| 76 | 57.26 | 58.40 | 1.14 | | | MUDSTONE | M.GY |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH62002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 59.52 | 60.04 | 0.52 | | | SANDSTONE | FG-.WEL.M.GY.THNB.BIOTR<br>SHALE INTBS |
| 60.04 | 61.32 | 1.28 | | | SANDSTONE | MG-.MOD.LT.GY.MAS.SLD |
| 61.32 | 61.52 | 0.20 | | | SANDSTONE | MG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |
| 61.52 | 63.02 | 1.50 | | | SANDSTONE | MG-.MOD.LT.GY.MB.SLD<br>MNR SHALY STRKS. 5CM SHALE FRAGS AT BAS<br>E |
| 63.63 | 65.63 | 2.61 | | | SANDSTONE | MG-.MOD.LT.GY.MB.SLD<br>AS ABOVE. PBLY BANDS IN MIDDLE OF SECTI<br>ON |
| 65.63 | 66.62 | 0.59 | | | SANDSTONE | MG-.MOD.LT.GY.MB.SLD<br>AS ABOVE. MNR ELONGATE SHALE PBLS IN BA<br>SAL SECTION |
| 66.62 | 67.67 | 1.05 | | | SANDSTONE | MG-.MOD.LT.GY.MB.SLD<br>AS ABOVE. MNR SHALE PBLS |
| 67.67 | 67.77 | 0.40 | | | SANDSTONE | MG-.MOD.LT.GY.MB.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH02002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 67.77 | 69.36 | 1.59 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>MNR SLTY INTBS. COAL STRGS AND THIN QTZ VEIN IN MIDDLE SECTION |
| 69.36 | 71.51 | 2.15 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>AS ABOVE. MNR QTZ VEINLETS IN MIDDLE SECTION |
| 71.51 | 71.91 | 0.40 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>AS ABOVE. SHALE RIP-UP AT BASE. TOPS UP |
| 71.91 | 72.23 | 0.32 | | | SANDSTONE | FG.M.GY.THNB.SLD<br>SHALY INTBS |
| 72.23 | 73.59 | 1.36 | | | SANDSTONE | FG.M.GY.THNB.SLD<br>AS ABOVE |
| 73.59 | 75.50 | 1.91 | | | SANDSTONE | FG.M.GY.THNB.SLD<br>AS ABOVE. MNR CALCT VEINING IN UPPER SECTION. CORE BRKN IN MIDDLE |
| 75.50 | 75.90 | 0.40 | | | SANDSTONE | FG.M.GY.THNB.SLD<br>AS ABOVE |
| 75.90 | 77.66 | 1.76 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH62002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 77.00 | 78.39 | 0.73 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>AS ABOVE. MNR QTZ VEINLETS (PARALLEL TO BDG) AT TOP |
| 78.39 | 78.75 | 0.36 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.BRKN<br>AS ABOVE. CUALY STRGS AT BASE |
| 78.75 | 79.61 | 0.86 | | | MUDSTONE | DK.GY.VTHNB.BRKN<br>JOINT AT 15 DEGREES |
| 79.61 | 81.07 | 1.46 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>MNR QTZ VEINING AT BASE. LISTRIC SURFACES |
| 81.07 | 81.27 | 0.20 | 04865 | E UPPER | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES |
| 81.27 | 81.63 | 0.36 | 04865 | E UPPER | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES |
| 81.63 | 81.84 | 0.21 | 04865 | E UPPER | ROCK LOSS | |
| 81.84 | 82.06 | 0.22 | 04865 | E UPPER | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 83.04 | 83.51 | 0.47 | | | SILTSTONE | PR.M.GY.BIOTR.SLD |
| 83.51 | 83.97 | 0.46 | | | SANDSTONE | FG-.MOD.M.GY.SLD<br>IRREGULAR SHALY INTBS |
| 83.97 | 84.06 | 0.09 | | | ROCK LOSS | |
| 84.06 | 84.14 | 0.08 | | | BENTONITE | M.GY.SLD<br>SOAPY TEXTURE. CORE BRKN AT TOP. POSSIB LE BENTONITE |
| 84.14 | 85.14 | 1.00 | | | SANDSTONE | FG-.M.GY.MB.BIOTR.SLD<br>JOINT AT 20 DEGREES. GTZ INFILLED. SLTY IN MIDDLE SECTION. DISSEMINATED PYR LA YER NEAR BASE |
| 85.14 | 86.46 | 1.32 | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>SHALE INTBS THROUGHOUT |
| 86.46 | 86.51 | 0.05 | | | MUDSTONE | M.GY.MAS.VBRKN<br>LISTRIC SURFACES |
| 86.51 | 87.05 | 0.54 | 042006 | E LOWER | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 60 | 57.21 | 57.36 | 0.17 | 04866 | E LOWER | COAL | C-3.BLK.SLD<br>MNR CALCT VEINLETS |
| 60 | 57.36 | 57.44 | 0.10 | 04866 | E LOWER | COAL | C-4.BLK.VBRKN |
| 60 | 57.44 | 57.49 | 0.05 | 04867 | E LOWER | CLAYSTONE | CARB.BLK<br>MNR CLYST BANDS |
| 61 | 57.49 | 57.50 | 0.01 | 04867 | E LOWER | COAL | C-1.BLK.VBRKN |
| 61 | 57.50 | 57.66 | 0.16 | 04867 | E LOWER | MUDSTONE | M.GY<br>LISTRIC SURFACES, MNR COAL STRGS |
| 62 | 57.66 | 57.72 | 0.14 | 04867 | E LOWER | ROCK LOSS | |
| 62 | 57.72 | 57.79 | 0.07 | 04868 | E LOWER | COAL LOSS | |
| 63 | 57.79 | 57.90 | 0.11 | 04868 | E LOWER | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES, MNR CLY INTBS |
| 63 | 57.90 | 57.93 | 0.03 | 04868 | E LOWER | CLAYSTONE | CARB.BLK |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 87.95 | 88.09 | 0.14 | 04866 | E LOWER | MUDSTONE | SLD<br>MNR COAL STRGS |
| 88.09 | 88.22 | 0.13 | 04866 | E LOWER | ROCK LOSS | |
| 88.22 | 88.31 | 0.09 | 04869 | E LOWER | COAL | C-4.BLK.BRKN |
| 88.31 | 88.51 | 0.20 | 04869 | E LOWER | COAL | C-3.BLK.SLD |
| 88.51 | 88.58 | 0.05 | 04869 | E LOWER | COAL | C-4.BLK.VBRKN |
| 88.58 | 88.67 | 0.11 | 04869 | E LOWER | CLAYSTONE | CARB.SLD |
| 88.67 | 88.72 | 0.05 | 04869 | E LOWER | COAL | C-3.BLK.SLD<br>MNR SHALE BANDS |
| 88.72 | 88.74 | 0.02 | 04869 | E LOWER | MUDSTONE | SLD<br>MNR COAL PARTINGS |
| 88.74 | 88.84 | 0.10 | 04869 | E LOWER | COAL | C-4.BLK.SLD<br>MNR SHALE PARTING NEAR TOP |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 88.94 | 89.00 | 0.06 | 04869 | E LOWER | COAL | C-4.BLK.SLD |
| 89.00 | 89.09 | 0.09 | | | CLAYSTONE | CARB.SLD<br>MNR LENTICULAR CALCT PARALLEL TO BDG |
| 89.09 | 89.27 | 0.18 | | | MUDSTONE | M.GY.BRKN<br>DISTRIC SURFACE |
| 89.27 | 90.37 | 1.10 | | | MUDSTONE | M.GY.LAM.&RMBD<br>MNR SLTY INTBS AT BASE, TUPS UP |
| 90.37 | 91.16 | 0.79 | | | SANDSTONE | M.GY.THNB.SLD<br>SHALE INTBS, SS RIP-UP AT TOP//////////<br>///DRILLERS ADDITION ERROR, 93.27M SHOU<br>LD READ AS 90.22M, ALL MARKERS FROM HER<br>E ON SHOULD READ 3.05M LESS//////////<br>/// |
| 91.16 | 91.29 | 0.13 | | | SANDSTONE | M.GY.THNB.SLD<br>AS ABOVE, CORE BRKN AT BASE |
| 91.29 | 91.55 | 0.26 | | | CLAYSTONE | LT.GY.SLD<br>SOFT AND &AXY |

PROJECT: KPN BLOCK: MC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 95.25 | 96.65 | 0.40 | | | SANDSTONE | MG.WEL.M.GY.THNB.WRMBU.SLD<br>AS ABOVE |
| 96.65 | 98.25 | 1.60 | | | SANDSTONE | MG.WEL.M.GY.THNB.WRMBU.SLD<br>AS ABOVE |
| 98.25 | 99.65 | 1.40 | | | SANDSTONE | MG.WEL.M.GY.THNB.WRMBU.SLD<br>AS ABOVE. CORE BRKN IN MIDDLE |
| 99.65 | 97.39 | 0.74 | | | SANDSTONE | FG-.WEL.GY.MB.SLD<br>MNR SHALY BANDS |
| 97.39 | 99.58 | 2.19 | | | SANDSTONE | FG-.WEL.GY.MB.SLD<br>AS ABOVE. SHARP CONTACT BETWEEN GRAIN S IZES. MNR CALCT VEINING SUBPARALLEL TO BDG |
| 99.58 | 101.73 | 2.15 | | | SANDSTONE | FG-.WEL.GY.MB.WRMBU.SLD<br>AS ABOVE. MORE THIN SHALE INTBS IN BASA L SECTION. MNR CALCT VEINING |
| 101.73 | 102.73 | 1.00 | | | SILTSTONE | M.GY.THNB.SLD<br>SLIGHTLY SANDY INTBS |
| 102.73 | 103.70 | 0.97 | | | SILTSTONE | M.GY.THNB.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDh82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 103.70 | 103.85 | 0.15 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>CORE BRKN IN MIDDLE, UPPER GRADATIONAL CONTACT |
| 103.85 | 104.15 | 0.30 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>AS ABOVE |
| 104.15 | 105.75 | 1.60 | | | SILTSTONE | M.GY.THNB.SLD<br>SLIGHTLY SANDY INTBS |
| 105.75 | 105.95 | 0.20 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 105.95 | 107.37 | 1.42 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE, IRREGULAR QTZ VEINING THROUGH OUT |
| 107.37 | 108.15 | 0.78 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE, IRREGULAR QTZ VEINING THROUGH OUT |
| 108.15 | 108.33 | 0.18 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 108.33 | 108.92 | 0.59 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 109.12 | 109.34 | 0.22 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE, QTZ VEINED AT BASE |
| 109.34 | 110.19 | 0.85 | | | SANDSTONE | FG.WEL.M.GY.SLD<br>QTZ VEINED THROUGHOUT, SHALY INTERVALS. CONTACTS HIGHLY CONTORTED, NO BDG APPARENT |
| 110.19 | 111.05 | 0.86 | | | SANDSTONE | FG.WEL.M.GY.SLD<br>AS ABOVE, SECTION QTZ VEINED AND FRACTURED, CORE BRKN AT BASE |
| 111.05 | 111.42 | 0.37 | | | QUARTZ | QTZ VEIN, MNR SHALY BEDS AND BRECCIA, FRACTURE INFILLING, UNKNOWN IF FAULT |
| 111.42 | 112.04 | 0.62 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>MNR SLTY INTBS, MNR QTZ VEINING |
| 112.04 | 112.23 | 0.19 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 112.23 | 113.44 | 1.21 | | | SANDSTONE | FG-.WEL.LT.GY.THNB.SLD<br>CORE BRKN AT TOP, IRREGULAR QTZ VEINING AT BASE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 114.24 | 115.16 | 0.92 | | | SILTSTONE | M.GY.THNB.BRKN<br>AS ABOVE |
| 115.16 | 116.13 | 0.95 | | | SANDSTONE | FG.WEL.M.GY.SLD<br>MNR SLTY INTBS, IRREGULAR QTZ VEINING, INDISTINCT BDG |
| 116.13 | 116.64 | 0.51 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>AS ABOVE |
| 116.64 | 116.88 | 0.24 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>SHELL FRAGS IN MIDDLE, HARD |
| 116.88 | 118.02 | 1.14 | | | SILTSTONE | M.GY.THNB.SLD<br>QTZ VEIN, ATTITUDE 20 DEGREES, 4CM THICK |
| 118.02 | 118.21 | 0.19 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE, SHALY INTBS TOWARDS BASE |
| 118.21 | 118.27 | 0.06 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 118.27 | 119.18 | 0.91 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>SHALE INTBS, CORE BRKN AT TOP, MNR IRRE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 119.18 | 119.48 | 0.30 | | | SANDSTONE | FG.MOD.LT.GY<br>SHELL FRAGS, HARD, FOSSILS ARE QTZ INFILLED |
| 119.48 | 120.40 | 0.92 | | | SILTSTONE | M.GY.SLD<br>BDG INDISTINCT |
| 120.40 | 120.91 | 0.51 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>GRADATIONAL FROM UPPER SECTION |
| 120.91 | 121.13 | 0.22 | | | SANDSTONE | FG.WEL.LT.GY.THNB.BRKN<br>CORE VBRKN AT TOP, SHALY TOWARDS TOP |
| 121.13 | 121.84 | 0.71 | | | SANDSTONE | FG.WEL.LT.GY.THNB.VBRKN<br>AS ABOVE, IRREGULAR QTZ VEINING THROUGH OUT |
| 121.84 | 122.16 | 0.32 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>SLTY INTBS, QTZ VEINED |
| 122.16 | 122.39 | 0.23 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 122.39 | 123.42 | 1.03 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>SHALY INTBS AT BASE, CORE BRKN AT BASE, |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH62002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 123.42 | 124.12 | 0.70 | | | SILTSTONE | M.GY.THNB.SLD<br>MNR SANDY INTBS. MNR QTZ VEINING |
| 124.12 | 124.30 | 0.18 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 124.30 | 126.00 | 1.70 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE. CORE BRKN IN MIDDLE |
| 126.00 | 126.17 | 0.17 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 126.17 | 127.37 | 1.20 | | | SILTSTONE | M.GY.THNB.BRKN<br>MNR FINE GRAINED SS INTBS. MNR EVIDENCE OF FOSSILS |
| 127.37 | 127.47 | 0.10 | | | SANDSTONE | FG.WEL.M.GY.MAS.SLD<br>FOLD AXIS CUTS PERPENDICULAR TO CORE TH RROUGH CENTER OF UNIT. DISSEMINATED PYR. MNR FOSSILS |
| 127.47 | 127.63 | 0.16 | | | SILTSTONE | M.GY.THNB.SLD<br>SHALY INTBS. QTZ VEINS |
| 127.63 | 127.93 | 0.30 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 127.53 | 129.06 | 1.13 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE. 3CM QTZ VEIN IN MIDDLE CUTS B DG |
| 129.06 | 129.95 | 0.89 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE. CORE BRKN AT TOP |
| 129.95 | 130.66 | 0.93 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 130.66 | 131.71 | 0.83 | | | SILTSTONE | M.GY.THNB.BRKN<br>AS ABOVE. CORE VBRKN IN BASAL HALF |
| 131.71 | 132.14 | 0.43 | | | SILTSTONE | M.GY.THNB.BRKN<br>AS ABOVE |
| 132.14 | 132.80 | 0.66 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE. CORE BRKN AT TOP |
| 132.80 | 133.65 | 0.85 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 133.65 | 133.75 | 0.10 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 135.20 | 135.61 | 0.41 | | | SANDSTONE | M.GY.THNB.SLD<br>SHALY INTBS. FOSSIL FRAGS |
| 135.61 | 135.81 | 0.20 | | | QUARTZ | VFG.BF.SLD<br>POSSIBLE MNR FAULTING ZONE |
| 135.81 | 137.68 | 1.87 | | | SILTSTONE | WEL.M.GY.THNB.SLD |
| 137.68 | 138.09 | 0.41 | | | SILTSTONE | M.GY.THNB.SLD<br>MNR SHELL FRAGS |
| 138.09 | 138.29 | 0.20 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 138.29 | 138.32 | 0.03 | | | MUDSTONE | M.GY.VBRKN<br>SOFT |
| 138.32 | 138.38 | 0.06 | | | MUDSTONE | DK.GY.SLD<br>QTZ VEINLETS COMMONLY CONTAINING PYR SU<br>B PARALLEL TO BDG. MUDST COMMONLY PYRIT<br>IZED |
| 138.38 | 138.40 | 0.02 | 04871 | D | COAL LOSS | |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 138.59 | 138.71 | 0.12 | 04870 | D | COAL | C-4.BLK.BRKN |
| 138.71 | 138.76 | 0.05 | 04870 | D | COAL | C-2.BLK.SLD |
| 138.76 | 138.83 | 0.07 | 04870 | D | COAL | C-4.BLK.BRKN |
| 138.83 | 138.88 | 0.05 | 04870 | D | COAL | C-4.BLK.SLD<br>IRREGULAR QTZ VEINING |
| 138.88 | 138.92 | 0.04 | 04870 | D | COAL | C-4.BLK.VBRKN |
| 138.92 | 139.64 | 0.72 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>SUBPARALLEL QTZ VEINLETS |
| 139.64 | 141.24 | 1.60 | | | MUDSTONE | BLK.SLD<br>MNR LT GY SLTY INTBS. MNR QTZ VEINING |
| 141.24 | 141.72 | 0.48 | | | MUDSTONE | BLK.SLD<br>AS ABOVE |
| 141.72 | 141.93 | 0.21 | | | MUDSTONE | BLK.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 143.13 | 143.69 | 0.56 | | | SILTSTONE | DK.GY.SLD<br>MNR LT GY INTDS. MNR PYR |
| 143.69 | 144.21 | 0.52 | | | MUDSTONE | BLK.SLD<br>MNR SHELL FRAGS THROUGHOUT |
| 144.21 | 144.38 | 0.17 | | | MUDSTONE | BLK.SLD<br>AS ABOVE |
| 144.38 | 144.56 | 0.18 | | | BENTONITE | LT.GY.BRKN<br>SOAPY TEXTURE |
| 144.56 | 144.67 | 0.11 | | | MUDSTONE | BLK.SLD<br>SHELL FRAGS THROUGHOUT. DISSEMINATED PY<br>R AT BASE |
| 144.67 | 144.70 | 0.03 | | | SILTSTONE | MUD.LT.GY.SLD |
| 144.70 | 144.77 | 0.07 | | | CLAYSTONE | CARB.DK.GY.SLD<br>GTZ VEIN. MNR BRIGHT COAL BANDS |
| 144.77 | 144.85 | 0.08 | | | COAL | C-3.BLK.VBRKN<br>MNR CLYST INTDS |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL INDICS. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 145.62 | 147.05 | 1.23 | | | SILTSTONE | M.GY.DIDTR.SLD<br>IRREGULAR SHALY INTBS. WRMBURS INDICATE TOP UP |
| 147.05 | 147.37 | 0.32 | | | SANDSTONE | MG.WEL.M.GY.BRKN |
| 147.37 | 147.70 | 0.33 | | | SANDSTONE | MG.WEL.M.GY.BRKN<br>AS ABOVE. MINUTE SHELL FRAGS DEFINE THI N LT GY INTBS |
| 147.70 | 148.03 | 0.33 | | | SANDSTONE | MG.WEL.M.GY.BRKN<br>AS ABOVE |
| 148.03 | 148.40 | 0.37 | | | SANDSTONE | MG-.MOD.M.GY.MB.SLD<br>MNR SHALY INTBS |
| 148.40 | 148.96 | 0.56 | | | MUDSTONE | DK.GY.VTHNB.DIDTR.SLD<br>SANDY INTBS |
| 148.96 | 149.05 | 0.09 | | | SANDSTONE | MG.WEL<br>FINING SLIGHTLY TO BASE. MNR SLTY PARTI NGS. MNR DTZ VEINLETS PARALLEL TO BDG |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 150.44 | 150.46 | 0.04 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>AS ABOVE |
| 150.48 | 151.76 | 1.28 | | | SANDSTONE | FG-.MOD.LT.GY.MB.SLD<br>COARSE GRAINED BEDS UP TO 6CM WIDE INTE<br>RSPERSED THROUGH SECTION |
| 151.76 | 151.91 | 0.15 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>COARSENING TOWARDS BASE |
| 151.91 | 153.60 | 1.69 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE. MNR SHALE CLASTS. MNR QTZ VEI<br>NING. CORE BRKN IN MIDDLE |
| 153.60 | 154.05 | 0.45 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |
| 154.05 | 154.24 | 0.19 | | | SANDSTONE | FG-.MOD.LT.GY.MAS.SLD<br>AS ABOVE |
| 154.24 | 154.70 | 0.46 | | | SILTSTONE | WEL.M.GY.THNB.SLD<br>SHALY INTBS. CUT AND FILL INDICATE TOPS<br>UP. QTZ VEINLETS AT TOP PARALLEL TO BD<br>G |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 155.68 | 156.13 | 0.45 | | | SILTSTONE | WEL.M.GY.THNB.SLD<br>SHALY INTBS |
| 156.13 | 156.68 | 0.55 | | | SILTSTONE | WEL.M.GY.THNB.SLD<br>AS ABOVE |
| 156.68 | 157.41 | 0.73 | | | SILTSTONE | WEL.M.GY.THNB.SLD<br>AS ABOVE. JOINT AT 15 DEGREES. QTZ INFI<br>LLED |
| 157.41 | 158.11 | 0.70 | | | MUDSTONE | LT.GY.VTHNB.SLD<br>MNR SLTY INTBS |
| 158.11 | 158.83 | 0.72 | | | MUDSTONE | LT.GY.VTHNB.SLD<br>AS ABOVE. QTZ VEIN ALONG JOINT AT BASE<br>RESULTING IN BRKN CORE |
| 158.83 | 159.90 | 1.07 | | | MUDSTONE | LT.GY.VTHNB.SLD<br>AS ABOVE |
| 159.90 | 160.29 | 0.39 | | | MUDSTONE | LT.GY.VTHNB.SLD<br>AS ABOVE.RARE SLTY INTBS. CORE BRKN AT<br>TOP |
| 160.29 | 162.51 | 2.22 | | | MUDSTONE | LT.GY.VTHNB.SLD |

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 164.60 | 165.20 | 0.54 | | | MUDSTONE | LT.GY.VTHNB.SLD<br>AS ABOVE |
| 165.20 | 165.97 | 0.77 | | | MUDSTONE | LT.GY.VTHNB.SLD<br>AS ABOVE. CORE BRKN IN TOP HALF. MNR SL<br>IY INTBS TOWARDS BASE |
| 165.97 | 166.00 | 0.03 | 04671 | C | COAL | C-4.BLK.SLD<br>QTZ VEINED |
| 166.00 | 166.30 | 0.30 | 04671 | C | COAL | C-3.BLK.BRKN |
| 166.30 | 166.37 | 0.07 | 04671 | C | COAL | C-4.BLK.SLD<br>BDG FOLDED FROM HORIZONTAL TO NEAR VERT<br>ICAL |
| 166.37 | 166.45 | 0.08 | 04671 | C | COAL | C-4.BLK.VBRKN<br>ROCK BANDS PRESENT, POSSIBLE CORE LOSS |
| 166.45 | 166.66 | 0.21 | 04671 | C | COAL | C-3.BLK.SLD<br>GOOD CLEAVAGE |
| 166.66 | 166.77 | 0.11 | | | CLAYSTONE | CARB.BLK.SLD<br>QTZ STRGS PARALLEL TO BDG |

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 70 | 166.83 > | 168.13 | 1.30 | | | SILTSTONE | M.GY.THNB.SLD<br>MNR SHELL FRAGS TOWARDS BASE |
| 71 | 166.13 | 166.26 | 0.13 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE. CORE BRKN AT TOP. PLANT FOSSILS |
| 72 | 166.26 | 170.40 | 2.14 | | | SILTSTONE | M.GY.THNB.SLD<br>MNR SHALY INTBS. MNR SHELL FRAGS IN MIDDLE SECTION |
| 74 | 170.40 | 171.29 | 0.89 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| * 75 | 171.29 | 172.24 | 0.95 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>SHALE INTBS. GRADATIONAL FROM UPPER SECTION. SHALE BEDS UP TO 4CM THICK AT BASE |
| 75 | 172.24 | 172.46 | 0.22 | | | SANDSTONE | FG.WEL.M.GY.THNB.BIOTR.SLD<br>RIP-UPS. TOP INDEFINITE |
| 75 | 172.46 | 173.21 | 0.75 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>AS ABOVE |
| 75 | 173.21 | 173.43 | 0.22 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>AS ABOVE |

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82002

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 173.43 | 174.57 | 1.14 | | | MUDSTONE | M.GY.VTHNB.SLD<br>MNR SLTY INTBS AT TOP. GRADATIONAL INTO UPPER UNIT. MNR SLTY CLASTS |
| 174.57 | 175.45 | 0.88 | | | MUDSTONE | M.GY.VTHNB.SLD<br>AS ABOVE |
| 175.45 | 175.93 | 0.48 | | | MUDSTONE | BLK.MAS.SLD |
| 175.93 | 177.48 | 1.55 | | | MUDSTONE | BLK.MAS.SLD<br>AS ABOVE. ROTATED CORE AT BASE |
| 177.48 | 178.96 | 1.48 | | | MUDSTONE | BLK.MAS.SLD<br>AS ABOVE. PYR NODULES IN MIDDLE////////<br>///TD IS ACTUALLY 178.92M BUT DRILLERS MARKER READ 181.97 DUE TO THEIR ADDITIO<br>N ERROR AT 90.22M////////////// |

NOTES MEASURED HCA

GR.-Mt. Klappan 84(3) A

695

# MOUNT KLAPPAN
## DRILL HOLE LOG
### DDH 82-002

SCALE : 1:200 1:40

NORTHING : 6345134 N INCLINATION : 90°
EASTING : 515445 E BEARING : —

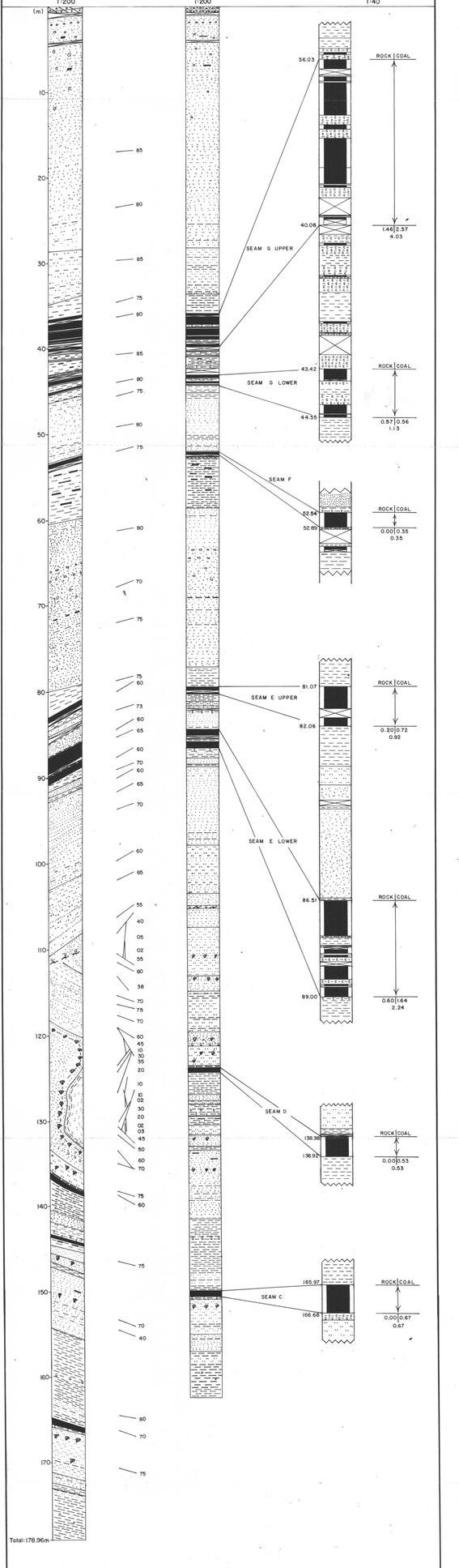
LITHOLOGIC SYMBOLS

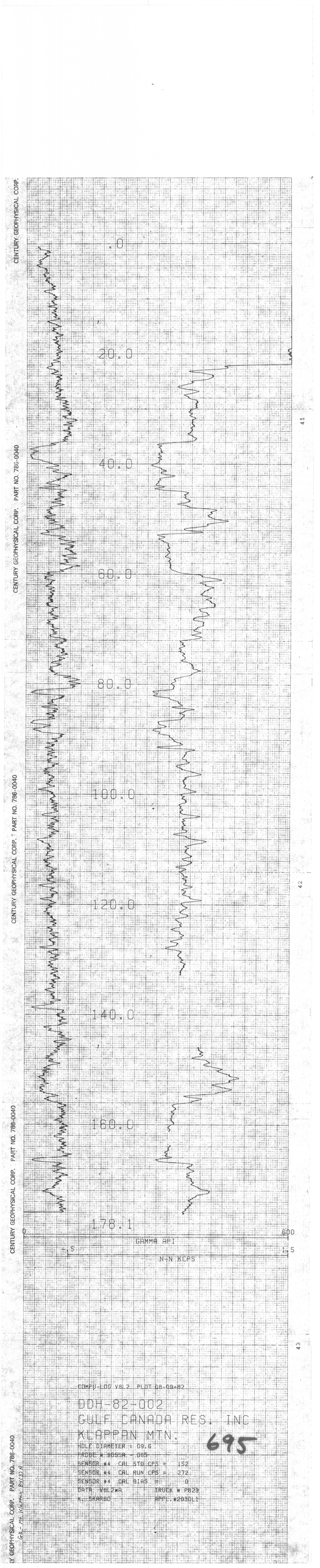
- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL - THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL
- FAULT

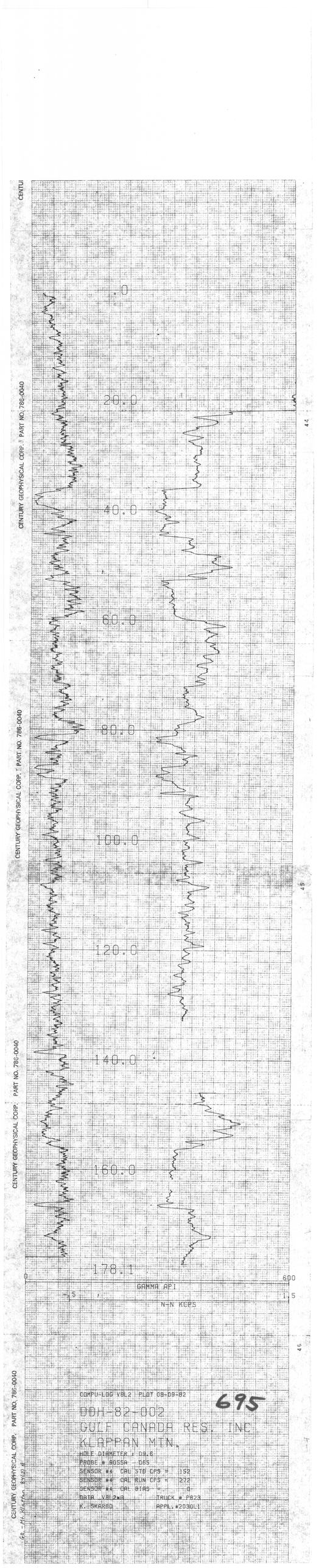
APPARENT THICKNESS 1:200

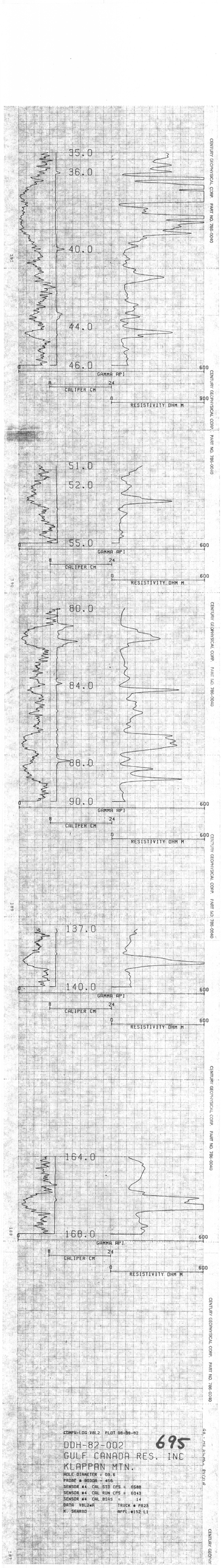
TRUE THICKNESS 1:200

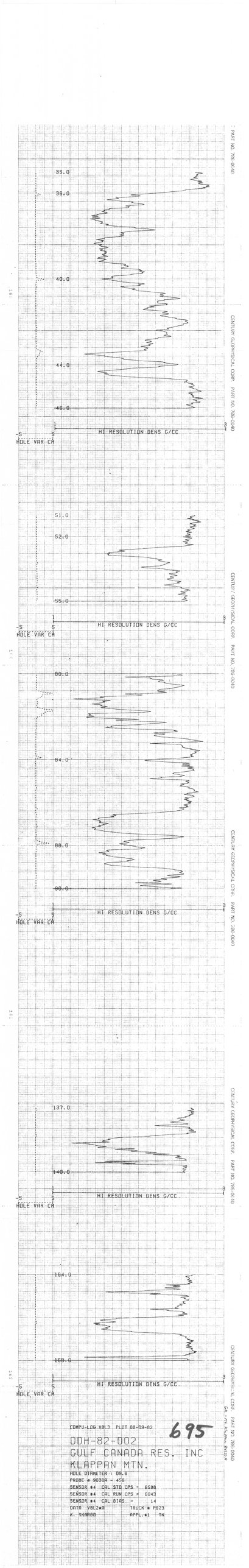
SEAM DETAIL 1:40

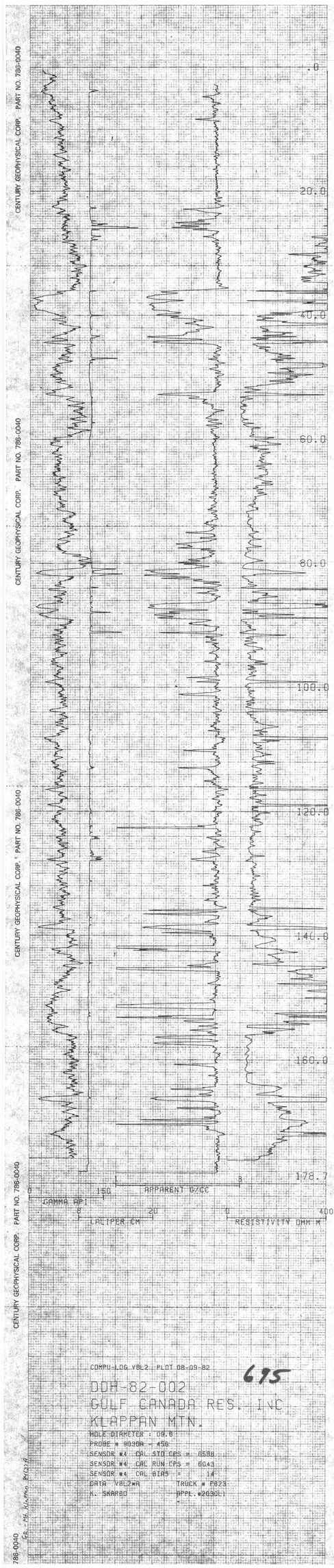



CENTURY GEOPHYSICAL CORP.
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
178.1
0
600
GAMMA API
.5
1.5
N-N KCPS
41
42
43
COMPU-LOG VOL 2 PLOT 08-09-82
DDH-82-002
GULF CANADA RES. INC
KLAPPAN MTN.
695
HOLE DIAMETER : 09.6
PROBE # 9055A - 065
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 272
SENSOR #4 CAL BIAS = 0
DATA VOL2#2 TRUCK # P823
K. SKARBO APPL.#2030L1


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
178.1
600
GAMMA API
5
5
N-N KCPS
COMPU-LOG V8L2 PLOT 08-09-82
695
DDH-82-002
GULF CANADA RES. INC.
KLAPPAN MTN.
HOLE DIAMETER = 09.8
PROBE # 9055A - 065
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 272
SENSOR #4 CAL BIAS = 0
DATA V8L2x8 TRUCK # P823
K. SKARBO APPL.#2030L1


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
35.0
36.0
40.0
44.0
46.0
GAMMA API
0
600
CALIPER CM
8
24
RESISTIVITY OHM M
0
600
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
51.0
52.0
55.0
GAMMA API
0
600
CALIPER CM
8
24
RESISTIVITY OHM M
0
600
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
80.0
84.0
88.0
90.0
GAMMA API
0
600
CALIPER CM
8
24
RESISTIVITY OHM M
0
600
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
137.0
140.0
GAMMA API
0
600
CALIPER CM
8
24
RESISTIVITY OHM M
0
600
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
164.0
168.0
GAMMA API
0
600
CALIPER CM
8
24
RESISTIVITY OHM M
0
600
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
COMPU-LOG V8L2 PLOT 08-08-82
DDH-82-002
695
GULF CANADA RES. INC
KLAPPAN MTN.
HOLE DIAMETER # 09.6
PROBE # 8050R - 456
SENSOR #4 CAL STD CPS # 6588
SENSOR #4 CAL RUN CPS # 6043
SENSOR #4 CAL BIAS = 14
DATA V8L2#R TRUCK # P823
K-SKAR80 APPL.#152 L1
CENTURY GEOPHY


PART NO. 786-0040
35.0
36.0
40.0
44.0
46.0
HI RESOLUTION DENS G/CC
HOLE VAR CM
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
51.0
52.0
55.0
HI RESOLUTION DENS G/CC
HOLE VAR CM
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
80.0
84.0
88.0
90.0
HI RESOLUTION DENS G/CC
HOLE VAR CM
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
137.0
140.0
HI RESOLUTION DENS G/CC
HOLE VAR CM
164.0
168.0
HI RESOLUTION DENS G/CC
HOLE VAR CM
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
COMPU-LOG VOL 3 PLOT 08-09-82
695
DDH-82-002
GULF CANADA RES. INC
KLAPPAN MTN.
HOLE DIAMETER : 09.8
PROBE # 9030A - 456
SENSOR #4 CAL STD CPS = 6508
SENSOR #4 CAL RUN CPS = 6043
SENSOR #4 CAL BIAS = 14
DATA VOL:#A TRUCK # M823
K. SKARBO APPL.#1 TN


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
786-0040
26
27
26
.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
178.7
0
150
GAMMA API
APPARENT G/CC
3
8
20
CALIPER CM
0
400
RESISTIVITY OHM M
COMPU-LOG V8L2 PLOT 08-09-82
695
DDH-82-002
GULF CANADA RES. INC
KLAPPAN MTN.
HOLE DIAMETER : 08.8
PROBE # 9030A - 456
SENSOR #4 CAL STD CPS = 6598
SENSOR #4 CAL RUN CPS = 6043
SENSOR #4 CAL BIAS = 14
DATA V8L2AA TRUCK # F823
K. SHARBO APPL. #2030L1

# VERTICAL DEVIATION

695

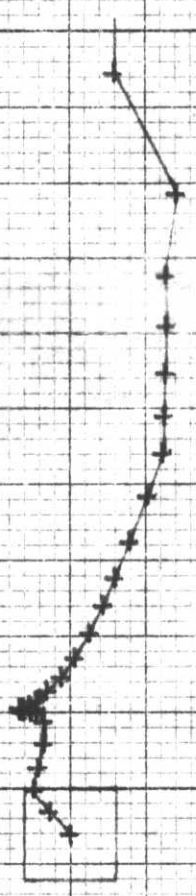
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

CLIENT : GULF CANADA RES. INC
LOCATION : KLAPPAN MIN.
HOLE ID : DDH-82-002
DATE OF LOG : 08-09-82
PROBE : 9055A 0065

SCALE: .10 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 144.0 M
AZIMUTH: 3.2
DISTANCE: 1.07 M

+ = 5.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑



GR. - Mt. Klappan 84(3)A

CENTURY GEOPHYSICAL CORPORATION GR. Mt. Klappan 84(3)A

695

* * * * * * * * VERTICAL DEVIATION * * * * * * * *

COMPU-LOG V8L1 DEVIATION

CLIENT : GULF CANADA RES, INC HOLE ID : DDH-82-002

LOCATION : KLAPPAN MTN. DATE OF LOG : 08-09-82

DATA FROM : V8L2*A PROBE : 9055A 0065

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

| | DEPTH | TRUE DEPTH | NORTH DEV | EAST-DEV | DISTANCE | AZIMUTH | SA | SAB |
|---|---|---|---|---|---|---|---|---|
| | .00 | .00 | .00 | .00 | .00 | 0 | 0 | 1.0 |
| | 5.00 | 4.99 | .08 | -.02 | .04 | 317.7 | .4 | 312.6 |
| | 10.00 | 9.99 | .05 | -.04 | .07 | 321.0 | .4 | 324.2 |
| | 15.00 | 14.99 | .08 | -.04 | .09 | 334.4 | .3 | 11.5 |
| | 20.00 | 19.99 | .12 | -.03 | .12 | 344.0 | .3 | 18.2 |
| | 25.00 | 24.99 | .14 | -.03 | .15 | 346.7 | .3 | 358.8 |
| | 30.00 | 29.99 | .16 | -.04 | .17 | 344.8 | .2 | 328.9 |
| | 35.00 | 34.99 | .16 | -.05 | .17 | 342.1 | .0 | 252.3 |
| | 40.00 | 39.99 | .16 | -.06 | .17 | 339.4 | .0 | 269.5 |
| | 45.00 | 44.99 | .16 | -.06 | .17 | 338.0 | .0 | 284.3 |
| | 50.00 | 49.99 | .16 | -.06 | .17 | 338.3 | .0 | 351.9 |
| | 55.00 | 54.99 | .16 | -.06 | .17 | 339.5 | .0 | 96.3 |
| | 60.00 | 59.99 | .16 | -.05 | .17 | 342.4 | .1 | 71.8 |
| | 65.00 | 64.99 | .17 | -.04 | .18 | 345.9 | .1 | 52.1 |
| | 70.00 | 69.99 | .18 | -.02 | .19 | 351.1 | .2 | 48.1 |
| | 75.00 | 74.99 | .26 | -.01 | .20 | 356.9 | .2 | 45.4 |
| | 80.00 | 79.99 | .23 | .00 | .23 | 1.7 | .3 | 46.0 |
| | 85.00 | 84.99 | .26 | .02 | .26 | 5.7 | .4 | 31.0 |
| | 90.00 | 89.99 | .30 | .04 | .30 | 8.4 | .4 | 26.5 |
| | 95.00 | 94.99 | .33 | .05 | .34 | 10.0 | .4 | 22.8 |
| | 100.00 | 99.99 | .38 | .07 | .39 | 11.6 | .5 | 21.9 |
| | 105.00 | 104.99 | .44 | .10 | .45 | 13.0 | .7 | 21.8 |
| | 110.00 | 109.99 | .50 | .12 | .51 | 13.8 | .6 | 19.5 |
| | 115.00 | 114.99 | .55 | .12 | .56 | 12.7 | .5 | 1.6 |
| | 120.00 | 119.99 | .60 | .12 | .61 | 11.8 | .6 | 2.0 |
| | 125.00 | 124.99 | .66 | .12 | .68 | 10.8 | .7 | .9 |
| | 130.00 | 129.99 | .73 | .12 | .74 | 9.8 | .7 | 359.2 |
| | 135.00 | 134.99 | .84 | .14 | .85 | 9.5 | 1.2 | 8.0 |
| | 140.00 | 139.96 | 1.00 | .05 | 1.00 | 3.4 | 2.0 | 332.4 |
| TD | 144.00 | 143.96 | 1.07 | .06 | 1.07 | 3.2 | 1.8 | 1.1 |

GULF CANADA RESOURCES INC.

## - D A T A  S O U R C E  S U M M A R Y -

DATA SOURCE - KPNHCDDH82003 DATE - 02/06/85

### - H I S T O R Y -

START DATE - 08/10/82
END DATE - 08/13/82

CONTRACTOR - J.T.THOMAS
GEOLOGIST - SEVE
OPERATOR - GCRI
SURVEYOR -

REMARKS - VERTICAL HOLE , GEOPHYSICAL LOG MEASURED FROM GROU
ND LEVEL + APPROX. 0.6M

### - L O C A T I O N -

PROVINCE - BC
ELEVATION - 1271.00
ZONE - 9
NORTHING - 6343325.00
EASTING - 515540.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571405
LONGITUDE - 1284433

### - O R I E N T A T I O N -

LENGTH - 215.48
INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 95.8

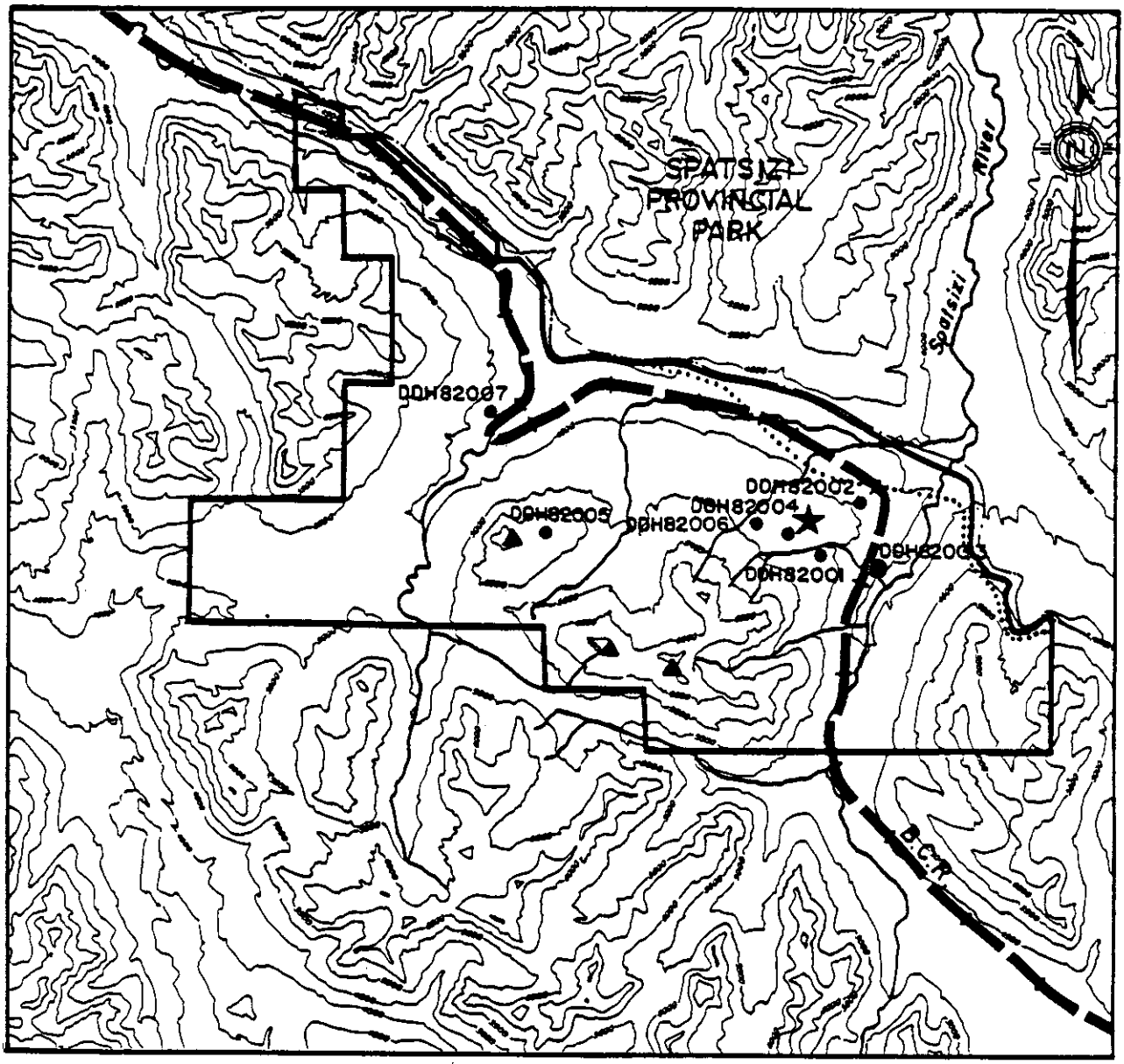
CEMENT -
PLUG - Y
PIEZ -

CASING DEPTH (M) - 19.51
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

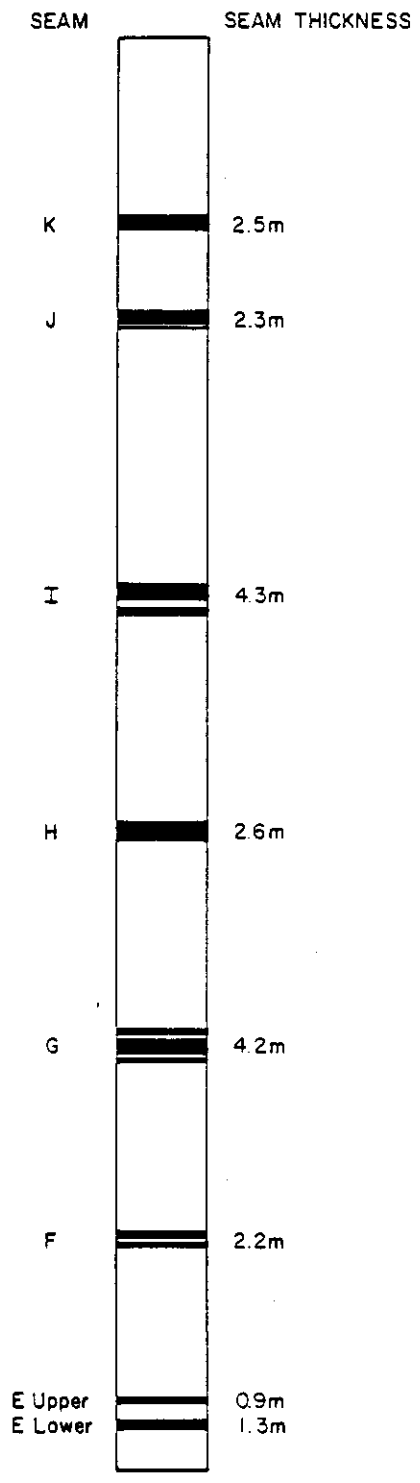
# MT. KLAPPAN COAL PROPERTY

## DIAMOND DRILL HOLES

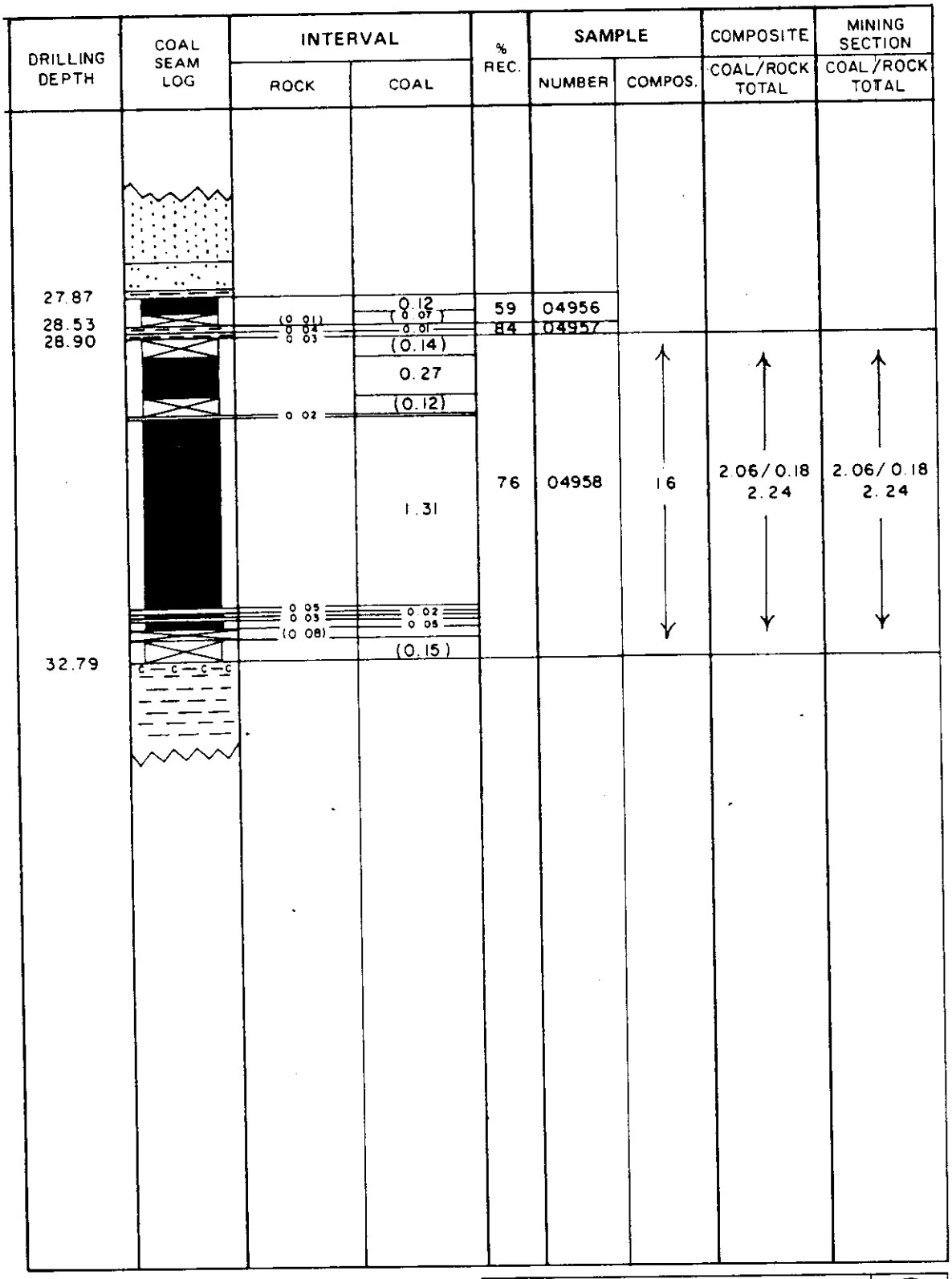


# MT. KLAPPAN COAL PROPERTY

## DDH82003




SCALE - 1:1000




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-003
## SEAM K

| | |
|---|---|
| PREPARED BY: C L. | SCALE 1:40 |
| APPROVED BY: J M D. DATE: NOV. 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

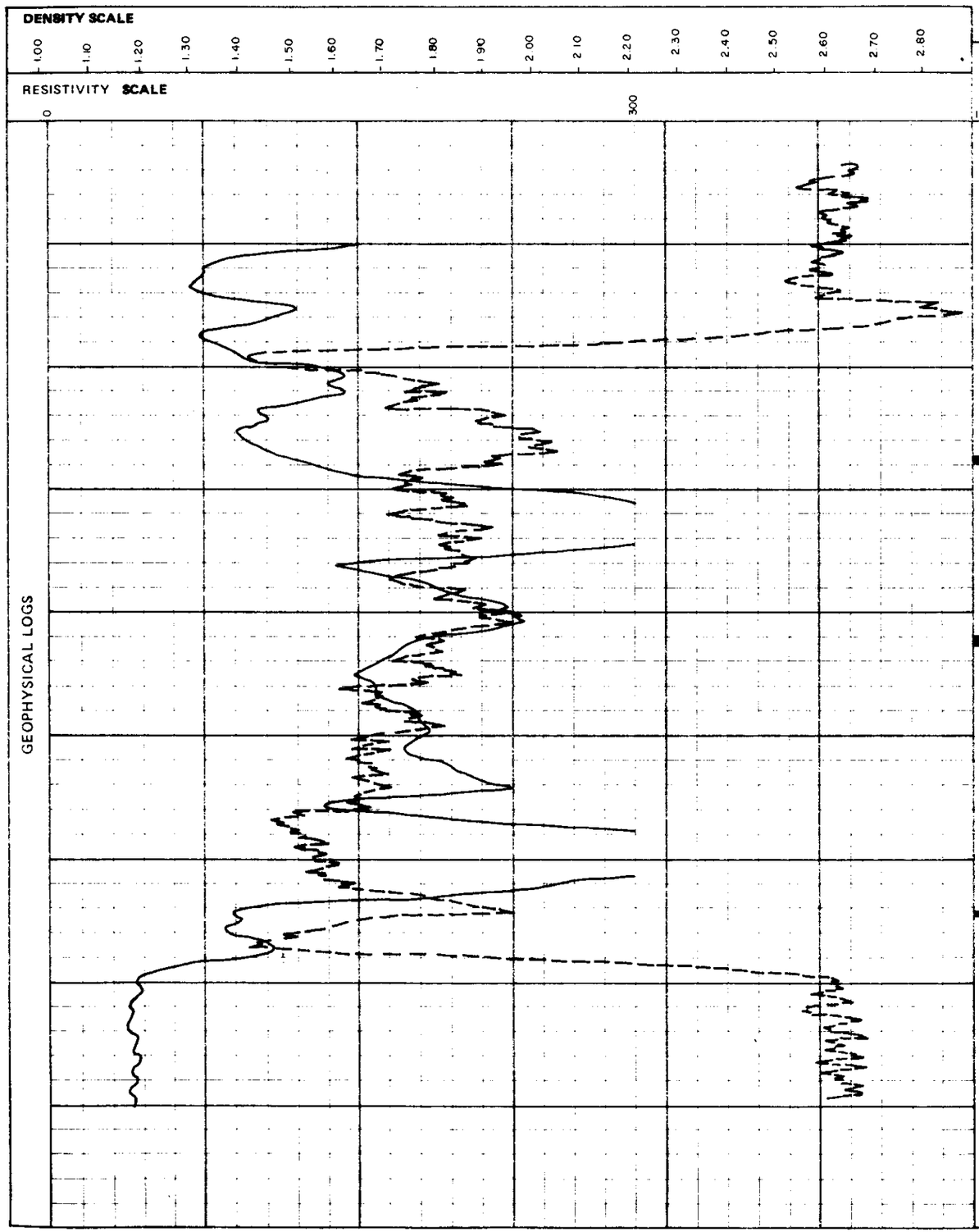
P-267 (12-80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

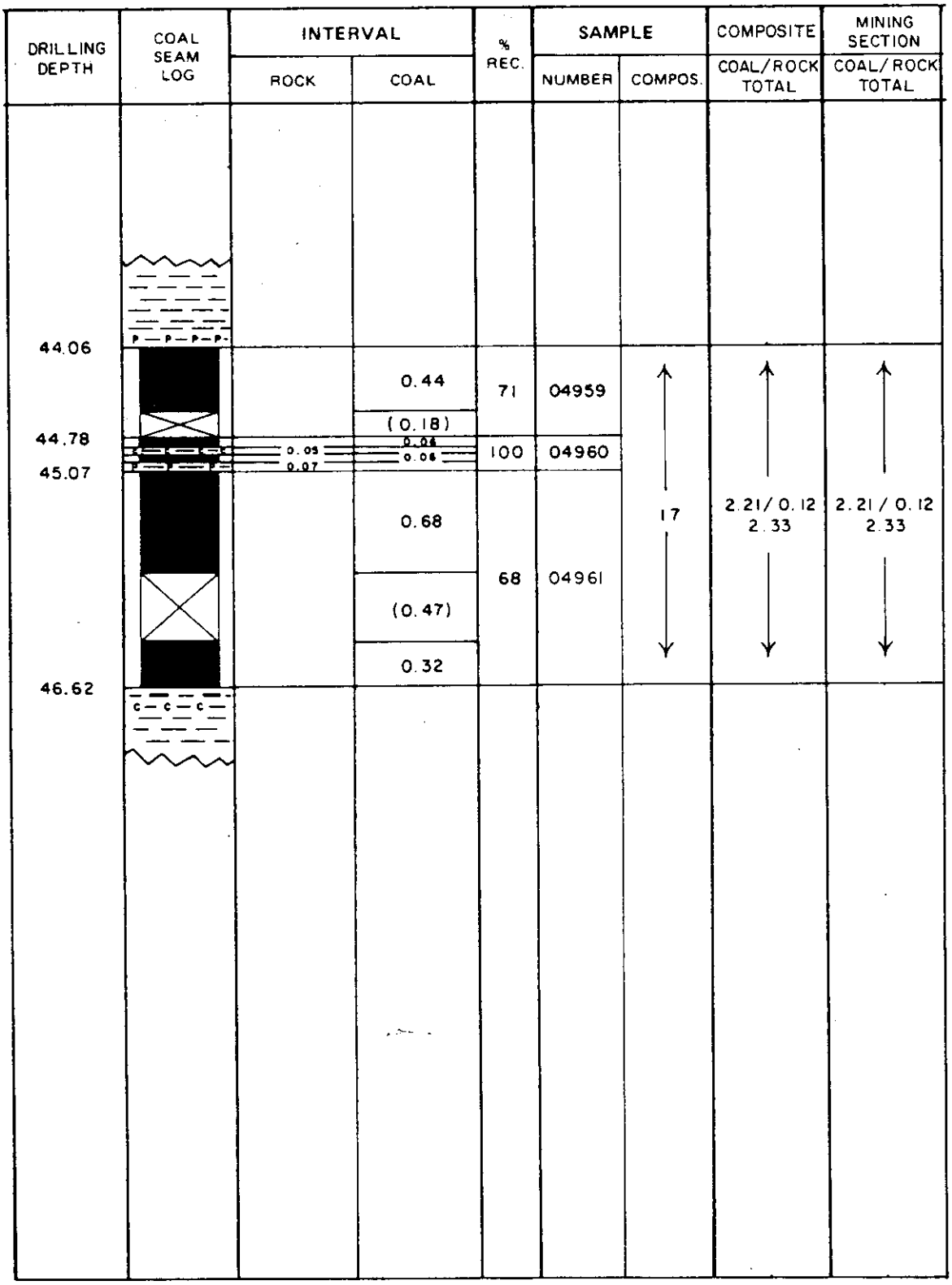
DRILL NO. DDH - 82 - 003 SEAM K SEAM INTERVAL

SCALE 1:40




| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 27.87 | | | 0.39 | | | | | | | | | | |
| | | | | ( 0.27 ) | 59 | 04956 | | | | | | | | |
| | 28.53 | | 0.06 | | | | | | | | | | | |
| | | | 0.16 | | 83.8 | 04957 | | | | | | | | |
| | 28.90 | | 0.08 | 0.07 | | | | | | | | | | |
| | | | | ( 0.38 ) | | | | | | | | | | |
| | | | | 0.61 | | | | | | | | | | |
| | | | | ( 0.25 ) | | | | | | | | | | |
| | | | 0.03 | | | | | | | | | | | |
| | | | | | 76.4 | 04958 | 16 | 1.67 | 35.46 | 7.80 | 55.07 | | 20.93 | |
| | | | | 2.14 | | | | | | | | | | |
| | | | 0.07 | 0.02 | | | | | | | | | | |
| | | | 0.04 | 0.06 | | | | | | | | | | |
| | | | (0.10) | | | | | | | | | | | |
| | 32.79 | | | ( 0.19 ) | | | | | | | | | | |

Seam Interval (m): 27.87 - 32.79
Seam True Thickness (Coal/Rock): 2.26/0.26
Total 2.52




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-003
SEAM J

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D DATE: NOV 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

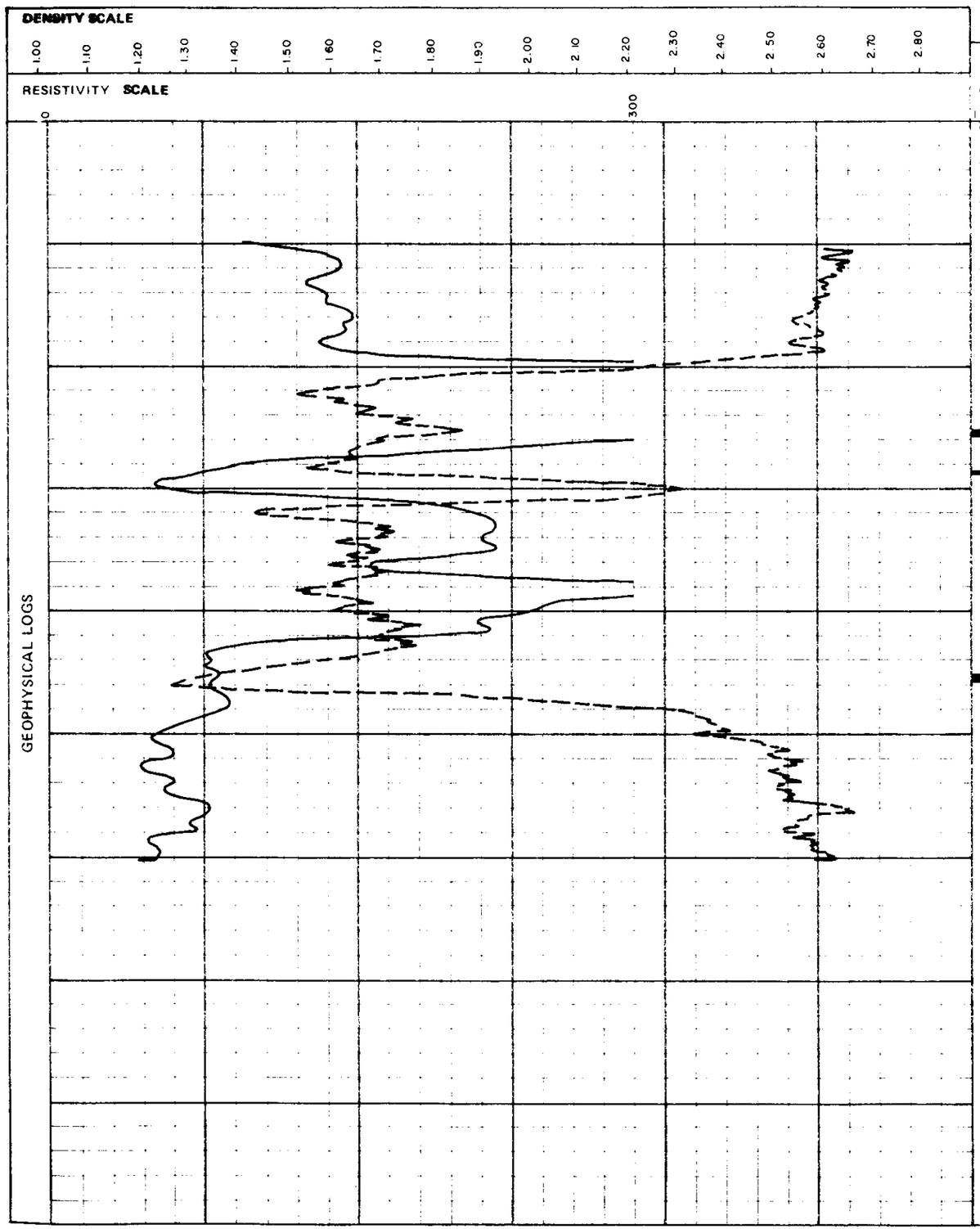
P–267 (12-80)

DENSITY — — —  RESISTIVITY ———

DRILL NO. DDH - 82 - 003  SEAM J  SEAM INTERVAL

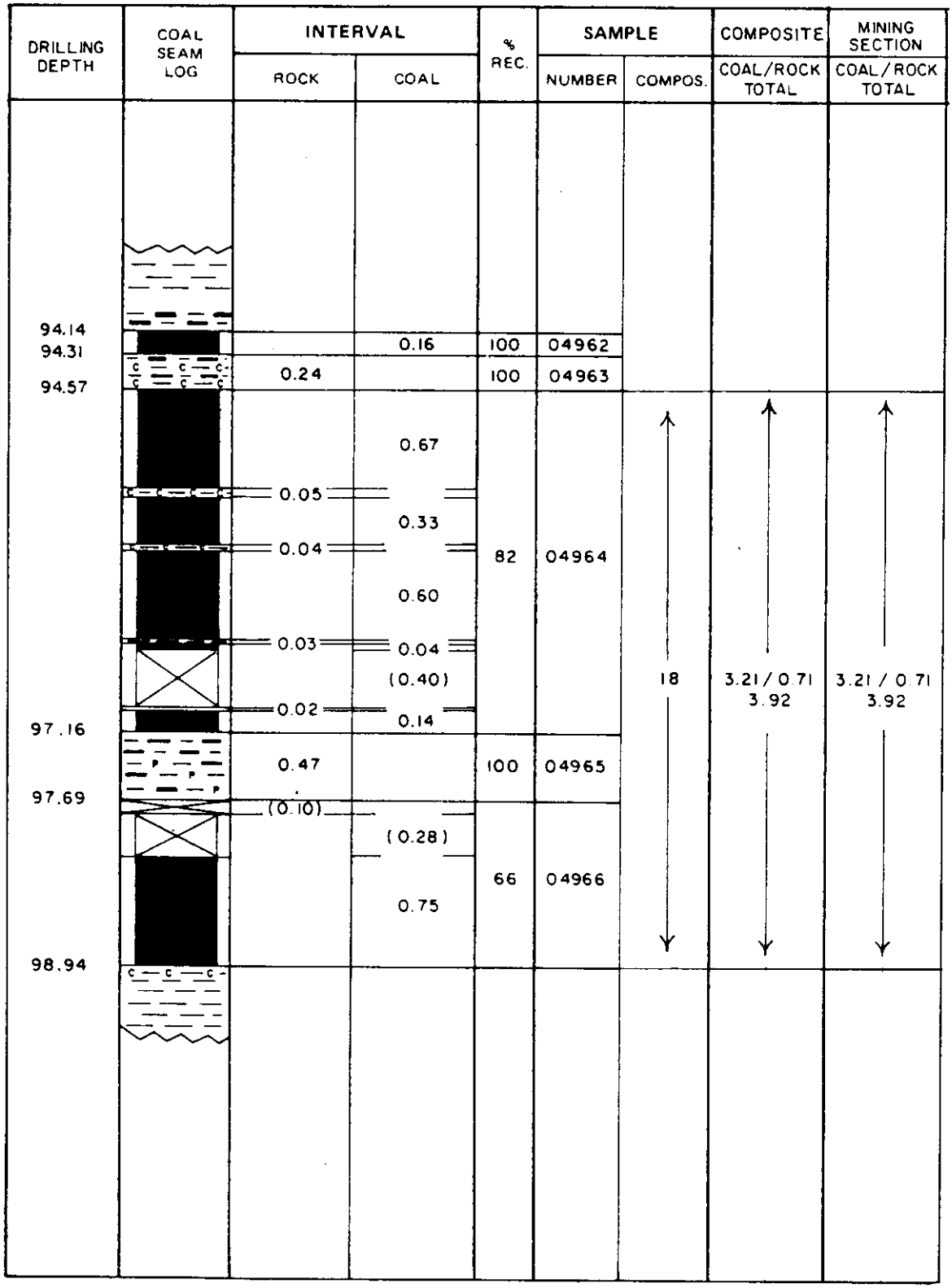
SCALE 1:40

Apparent Thickness




| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 44.06 | | | 0.51 | 70.8 | 04959 | | | | | | | | |
| | 44.78 | | | (0.21) | | | | | | | | | | |
| | 45.07 | | 0.06 | 0.08 | 100 | 04960 | | | | | | | | |
| | | | 0.08 | 0.07 | | | | | | | | | | |
| | | | | 0.71 | | | 1.7 | 1.31 | 26.53 | 8.64 | 63.52 | | 24.90 | |
| | | | | 0.50 | 67.7 | 04961 | | | | | | | | |
| | 46.62 | | | 0.34 | | | | | | | | | | |

Seam Interval (m): 44.06 - 46.62
Seam True Thickness (Coal/Rock): 2.21/0.12
Total 2.33




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

Gulf

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-003
SEAM I

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D | DATE: NOV. 82 |
| | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

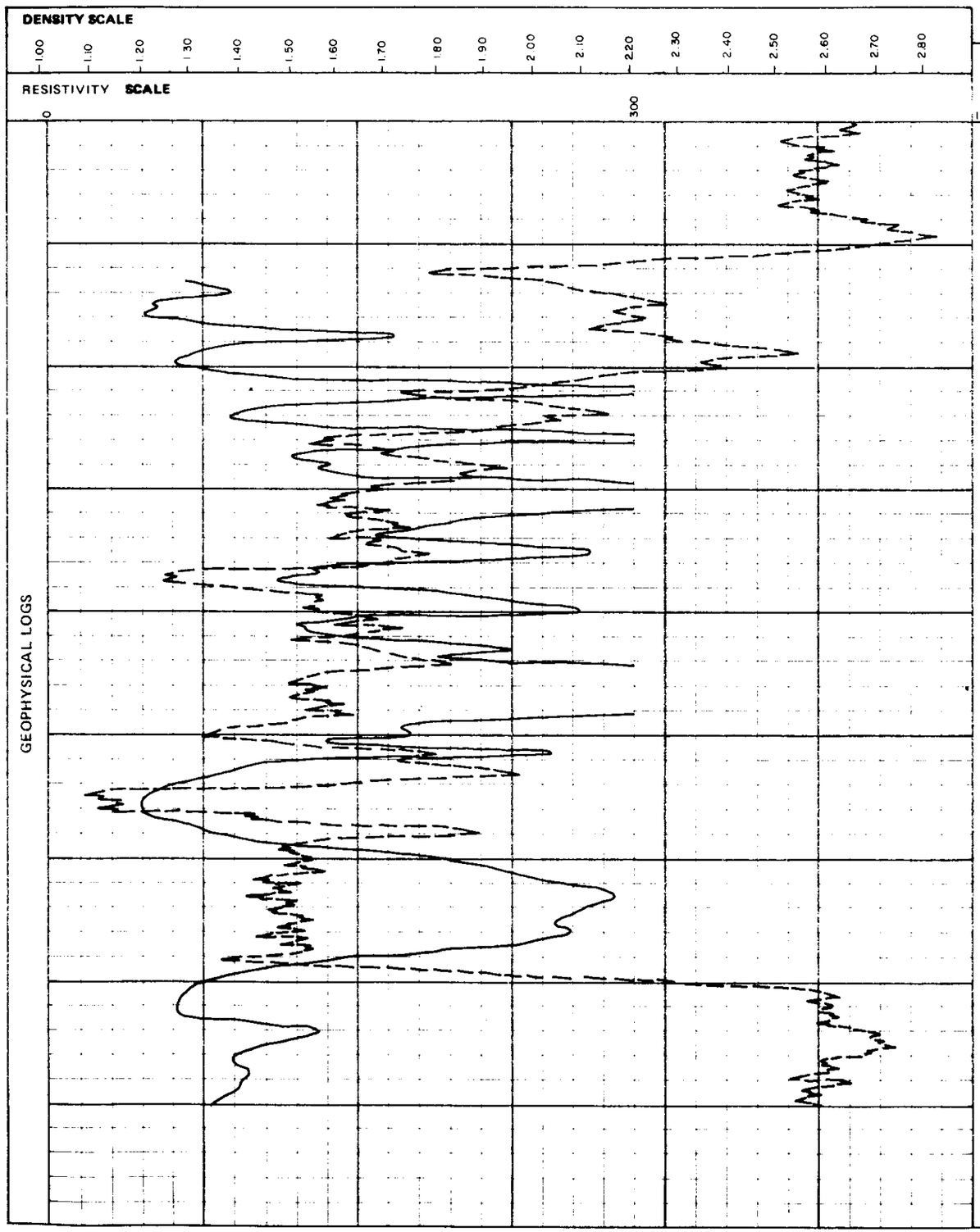
P-267 (12-80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 003 SEAM 1 SEAM INTERVAL

SCALE 1:40




| SEAM COMP. 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 94.14 | | | 0.17 | 100 | 04962 | | | | | | | | |
| | 94.31 | | 0.26 | | 100 | 04963 | | | | | | | | |
| | 94.57 | | | 0.73 | | | | | | | | | | |
| | | | 0.05 | | | | | | | | | | | |
| | | | | 0.36 | | | | | | | | | | |
| | | | 0.05 | | 82.2 | 04964 | | | | | | | | |
| | | | | 0.69 | | | | | | | | | | |
| | | | 0.03 | 0.05 | | | | | | | | | | |
| | | | | (0.46) | | | | | | | | | | |
| | | | 0.02 | | | | | | | | | | | |
| | 97.16 | | | 0.15 | | | | | | | | | | |
| | | | 0.53 | | 100 | 04965 | | | | | | | | |
| | 97.69 | | 0.11 | | | | | | | | | | | |
| | | | | 0.31 | | | | | | | | | | |
| | | | | | 66.4 | 04966 | | | | | | | | |
| | | | | 0.83 | | | | | | | | | | |
| | 98.94 | | | | | | 18 | 1.50 | 34.27 | 7.82 | 56.41 | | 21.60 | |

Seam Interval (m): 94.14 - 98.94
Seam True Thickness (Coal/Rock): 3.37/0.95
Total 4.32

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 127.24 | | | 0.32<br>(0.10)<br>0.46 | 87 | 04967 | 19 | 2.23/0.34<br>2.57 | 2.23/0.34<br>2.57 |
| 128.12 | | 0.05<br>0.02<br>0.03<br>0.02<br>0.03 | 0.04<br>0.06<br>0.29<br>0.32<br>0.45 | 100 | 04968 | | | |
| 129.43 | | 0.19 | 0.19 | 100 | 04969 | | | |
| 129.81 | | | | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-003
SEAM H

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D | DATE: NOV. '82 DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 003 SEAM H SEAM INTERVAL

SCALE 1:40

Apparent Thickness

**DENSITY SCALE**

1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

**RESISTIVITY SCALE**

0 300

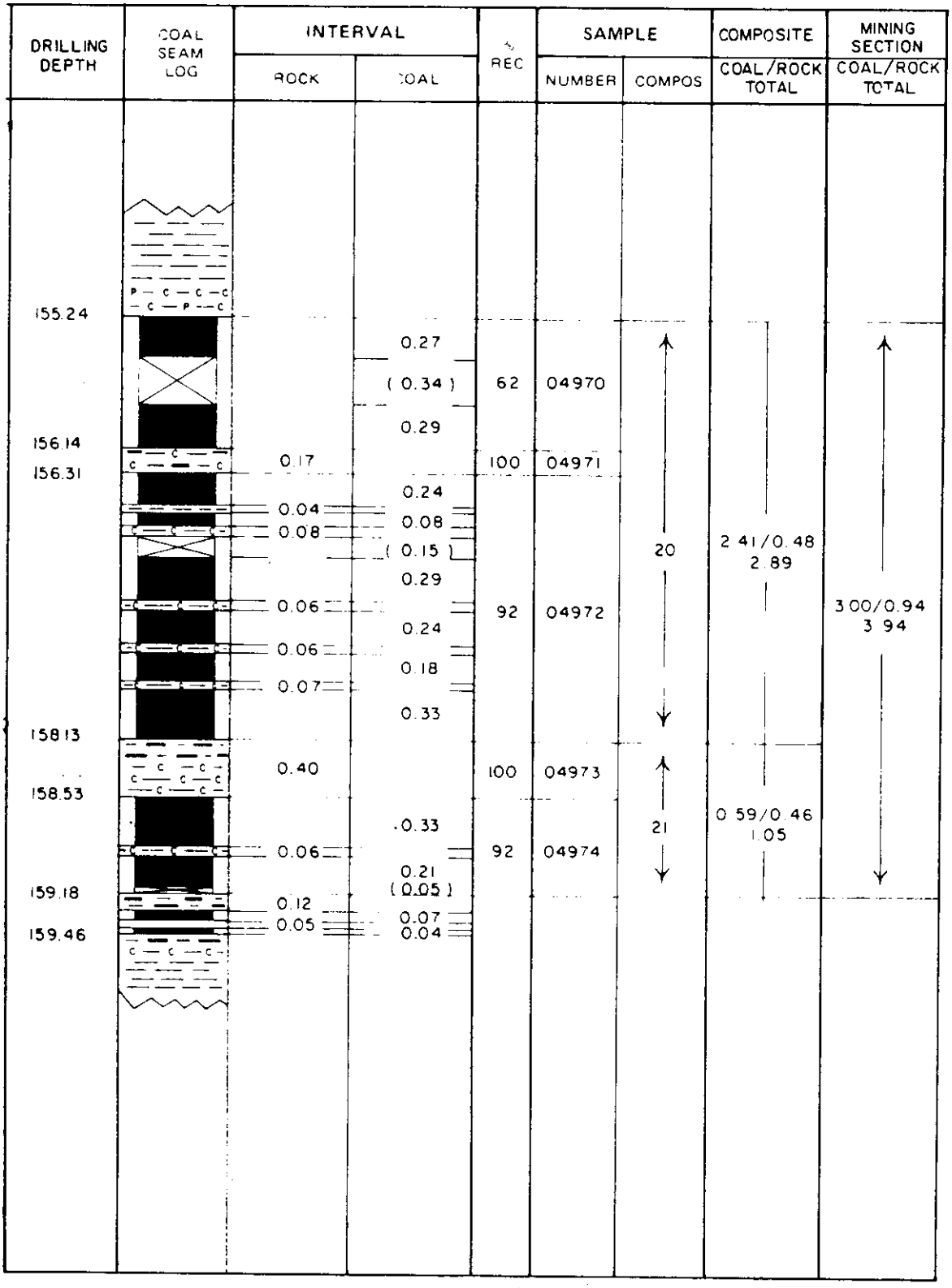
GEOPHYSICAL LOGS

| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 127.24 | | | 0.32 | | | | | | | | | | |
| | | | | (0.10) | 88.6 | 04967 | | | | | | | | |
| | | | | 0.46 | | | | | | | | | | |
| | 128.12 | | 0.05 0.04 0.02 0.06 0.03 | | | | | | | | | | | |
| | | | | 0.29 | | | 1.9 | 1.39 | 38.87 | 9.31 | 50.43 | | 19.67 | |
| | | | 0.02 | | | | | | | | | | | |
| | | | | 0.32 | 100 | 04968 | | | | | | | | |
| | | | 0.05 | | | | | | | | | | | |
| | | | | 0.45 | | | | | | | | | | |
| | 129.43 | | | | | | | | | | | | | |
| | | | 0.19 | | | | | | | | | | | |
| | 129.81 | | | 0.19 | 100 | 04969 | | | | | | | | |

Seam Interval (m): 127.24 - 129.81

Seam True Thickness (Coal/Rock): 2.33/0.34

Total 2.57




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
## DDH-82-003
## SEAM G

| | |
|---|---|
| PREPARED BY: C L | SCALE 1 40 |
| APPROVED BY: J. M. D | DATE: NOV. 82 DRAWING No. |

# COAL SEAM DATA SHEET

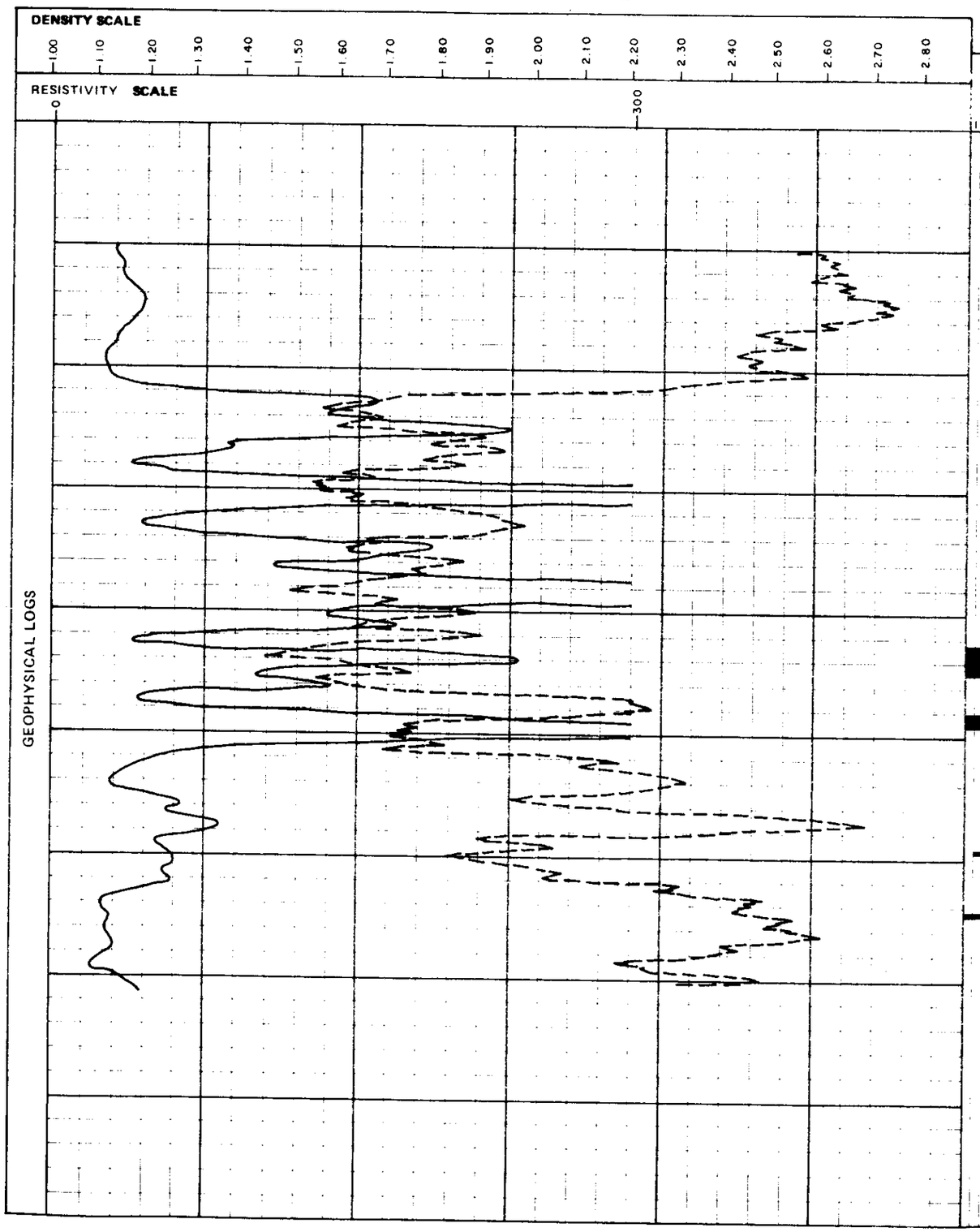
GULF CANADA RESOURCES INC.
COAL DIVISION

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 003 SEAM G SEAM INTERVAL

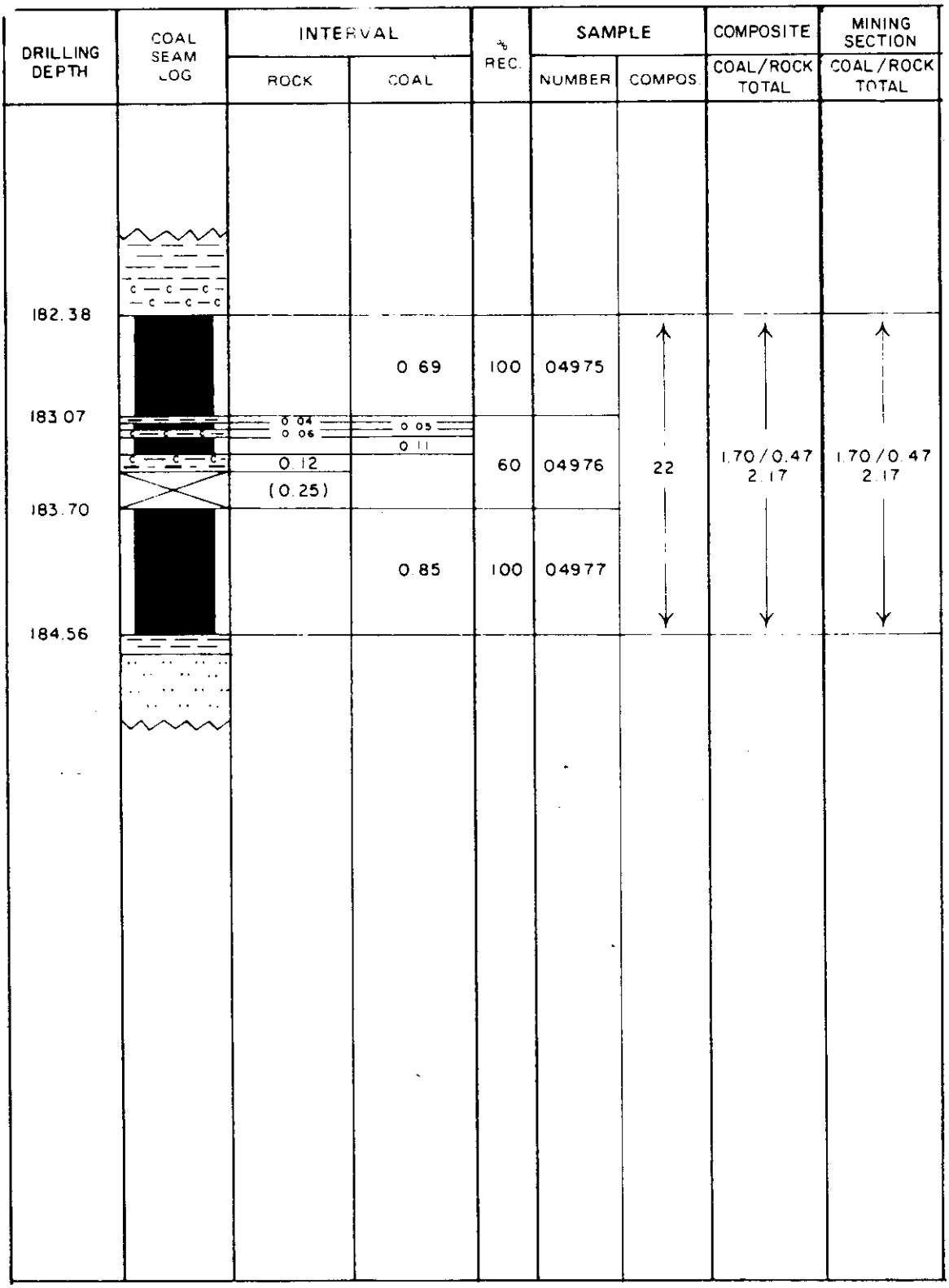
SCALE 1:40

Apparent Thickness




| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | 155.24 | | | 0.27 | | | | | | | | | | |
| | | | | 0.34 | 62.2 | 04970 | | | | | | | | |
| | | | | 0.29 | | | | | | | | | | |
| | 156.14 | | | | | | | | | | | | | |
| | 156.31 | | 0.17 | | 100 | 04971 | | | | | | | | |
| | | | | 0.24 | | | | | | | | | | |
| | | | 0.04 | 0.08 | | | | | | | | | | |
| | | | 0.08 | (0.15) | | | 20 | 1.41 | 33.19 | 8 04 | 57.36 | | 21.66 | |
| | | | | 0.29 | | | | | | | | | | |
| | | | 0.06 | | 91.8 | 04972 | | | | | | | | |
| | | | | 0.24 | | | | | | | | | | |
| | | | 0.06 | | | | | | | | | | | |
| | | | | 0.18 | | | | | | | | | | |
| | | | 0.07 | | | | | | | | | | | |
| | | | | 0.33 | | | | | | | | | | |
| | 158.13 | | | | | | | | | | | | | |
| | | | 0.40 | | 100 | 04973 | | | | | | | | |
| | 158.53 | | | 0.33 | | | | | | | | | | |
| | | | 0.06 | | 92.3 | 04974 | 21 | 1.72 | 48.51 | 8.54 | 41.23 | | 15.86 | |
| | | | | 0.21 | | | | | | | | | | |
| | 159.18 | | | (0.05) | | | | | | | | | | |
| | | | 0.12 | | | | | | | | | | | |
| | 159.46 | | 0.05 | 0.07 | | | | | | | | | | |
| | | | | 0.04 | | | | | | | | | | |

Seam Interval (m): 155.24 - 159.46
Seam True Thickness (Coal/Rock) : 3.11/1.11
Total 4.22




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-003
SEAM F

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12.80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 003 SEAM F SEAM INTERVAL

SCALE 1:40

DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE 0 — 300

GEOPHYSICAL LOGS

| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 182.38 | | | 0.69 | 100 | 04975 | | | | | | | | |
| | 183.07 | | 0.04 | 0.05 | | | | | | | | | | |
| | | | 0.06 | 0.11 | | | | | | | | | | |
| | | | 0.12 | | 63.0 | 04976 | 22 | 1.42 | 37.18 | 10.56 | 50.81 | | 20.72 | |
| | | | (0.25) | | | | | | | | | | | |
| | 183.70 | | | 0.86 | 100 | 04977 | | | | | | | | |
| | 184.56 | | | | | | | | | | | | | |

Seam Interval (m) : 182.38 - 184.56
Seam True Thickness (Coal/Rock) : 1.70/0.47
Total 2.17

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS. | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 205.28 | | | 0.24 | | | | | |
| | | | (0.08) | | | | | |
| | | | 0.54 | 91 | 04978 | 23 | 0.86/0.00<br>0.86 | 0.86/0.00<br>0.86 |
| 206.14 | | | | | | | | |
| | | 2.01 | | | | | | |
| 208.17 | | 0.02 | 0.07 | | | | | |
| | | | 0.60 | | | | | |
| | | | (0.17) | 87 | 04979 | 24 | 1.16/0.12<br>1.28 | 1.16/0.12<br>1.28 |
| | | | 0.09 | | | | | |
| 209.45 | | | | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-003
SEAM E

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1 : 40 |
| APPROVED BY: J. M. D. DATE: NOV. '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12 80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 003 SEAM E SEAM INTERVAL

SCALE 1:40

DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE 0 300

GEOPHYSICAL LOGS

| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |

Seam Interval (m): 205.28 - 206.14
Seam True Thickness (Coal/Rock): 0.86/0.00
Total 0.86

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 205.28 | | | 0.24 | | | | | | | | | | |
| | | | | 0.08 | | | | | | | | | | |
| | 206.14 | | | 0.54 | 90.7 | 04978 | 23 | 1 | 37 | 33.87 | 10 | 94 | 53.82 | 21.23 |
| | | | 2.03 | | | | | | | | | | | |
| | 208.17 | | | 0.02 | | | | | | | | | | |
| | | | | 0.07 | | | | | | | | | | |
| | | | | 0.60 | | | | | | | | | | |
| | | | | 0.17 | 86.7 | 04979 | 24 | 1 | 23 | 23.11 | 10 | 98 | 64.68 | 25.67 |
| | | | | 0.09 | | | | | | | | | | |
| | | | | 0.10 | | | | | | | | | | |
| | 209.45 | | | 0.23 | | | | | | | | | | |

Seam Interval (m): 208.17 - 209.45
Seam True Thickness (Coal/Rock): 1.16/0.12
Total 1.28

GULF CANADA RESOURCES INC. - COAL DIVISION

22/DEC/82 SIMPLE SAMPLE SUMMARY PAGE 1

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|
| DDH82003 | | | | | | | | | | |
| | K | 4956 | 27.67 | 28.53 | 0.39 | 59.09 | 0.39 | 0.00 | 0.27 | 0.00 |
| | K | 4957 | 28.53 | 28.90 | 0.31 | 83.78 | 0.07 | 0.24 | 0.00 | 0.06 |
| | K | 4958 | 28.90 | 32.79 | 2.97 | 76.35 | 2.63 | 0.14 | 0.62 | 0.10 |
| | J | 4959 | 44.06 | 44.78 | 0.51 | 70.83 | 0.51 | 0.00 | 0.21 | 0.00 |
| | J | 4960 | 44.78 | 45.07 | 0.29 | 100.00 | 0.15 | 0.14 | 0.00 | 0.00 |
| | J | 4961 | 45.07 | 46.62 | 1.65 | 67.74 | 1.65 | 0.00 | 0.50 | 0.00 |
| | I | 4962 | 94.14 | 94.31 | 0.17 | 100.00 | 0.17 | 0.00 | 0.00 | 0.00 |
| | I | 4963 | 94.31 | 94.57 | 0.26 | 100.00 | 0.00 | 0.26 | 0.00 | 0.00 |
| | I | 4964 | 94.57 | 97.16 | 2.13 | 82.24 | 1.98 | 0.15 | 0.46 | 0.00 |
| | I | 4965 | 97.16 | 97.69 | 0.53 | 100.00 | 0.00 | 0.53 | 0.00 | 0.00 |
| | I | 4966 | 97.69 | 98.94 | 0.83 | 66.40 | 0.83 | 0.00 | 0.31 | 0.11 |
| | H | 4967 | 127.24 | 128.12 | 0.76 | 86.64 | 0.76 | 0.00 | 0.10 | 0.00 |
| | H | 4968 | 128.12 | 129.43 | 1.51 | 100.00 | 1.16 | 0.15 | 0.00 | 0.00 |
| | H | 4969 | 129.43 | 129.61 | 0.38 | 100.00 | 0.19 | 0.19 | 0.00 | 0.00 |
| | G | 4970 | 155.24 | 156.14 | 0.56 | 62.22 | 0.56 | 0.00 | 0.34 | 0.00 |
| | G | 4971 | 156.14 | 156.31 | 0.17 | 100.00 | 0.00 | 0.17 | 0.00 | 0.00 |
| | G | 4972 | 156.31 | 158.13 | 1.67 | 91.76 | 1.36 | 0.31 | 0.15 | 0.00 |
| | G | 4973 | 156.13 | 158.53 | 0.40 | 100.00 | 0.00 | 0.40 | 0.00 | 0.00 |
| | G | 4974 | 158.53 | 159.18 | 0.60 | 92.31 | 0.54 | 0.06 | 0.05 | 0.00 |
| | F | 4975 | 182.30 | 183.07 | 0.69 | 100.00 | 0.69 | 0.00 | 0.00 | 0.00 |
| | F | 4976 | 183.07 | 183.70 | 0.38 | 60.32 | 0.16 | 0.22 | 0.00 | 0.25 |
| | F | 4977 | 183.70 | 184.56 | 0.86 | 100.00 | 0.86 | 0.00 | 0.00 | 0.00 |
| | E UPPER | 4978 | 205.28 | 206.14 | 0.76 | 90.70 | 0.76 | 0.00 | 0.08 | 0.00 |
| | E LOWER | 4979 | 208.17 | 209.45 | 1.11 | 88.72 | 0.99 | 0.12 | 0.17 | 0.00 |

GULF CANADA RESOURCES INC. - COAL DIVISION

02/DEC/82 COMPOSITE SAMPLE SUMMARY PAGE 1

| ATA URCE | SEAM | SAMPLE ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 182003 | | | | | | | | | | | | |
| | K | 16 | 4956 | 4958 | 28.90 | 32.79 | 2.97 | 76.35 | 2.83 | 0.14 | 0.82 | 0.10 |
| | J | 17 | 4959 | 4961 | 44.06 | 46.62 | 1.65 | 72.27 | 1.71 | 0.14 | 0.71 | 0.00 |
| | I | 18 | 4964 | 4966 | 94.57 | 96.94 | 3.49 | 79.66 | 2.81 | 0.68 | 0.77 | 0.11 |
| | H | 19 | 4967 | 4969 | 127.24 | 129.61 | 2.47 | 96.11 | 2.13 | 0.34 | 0.10 | 0.00 |
| | G | 20 | 4970 | 4972 | 155.24 | 158.13 | 2.40 | 83.04 | 1.92 | 0.48 | 0.49 | 0.00 |
| | G | 21 | 4973 | 4974 | 158.13 | 159.18 | 1.00 | 95.24 | 0.54 | 0.46 | 0.05 | 0.00 |
| | F | 22 | 4975 | 4977 | 182.38 | 184.56 | 1.93 | 88.53 | 1.71 | 0.22 | 0.00 | 0.25 |
| | E | UPPER 23 | 4976 | 4978 | 205.28 | 206.14 | 0.78 | 96.70 | 0.76 | 0.00 | 0.08 | 0.00 |
| | E | LOWER 24 | 4979 | 4979 | 208.17 | 209.45 | 1.11 | 86.72 | 0.99 | 0.12 | 0.17 | 0.00 |

AXX

02/12/02 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC ,DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 05 | 0.00 | 0.71 | 0.71 | | | OVERBURDEN | FIRST CASING DRIVEN TO 22'-6.7M//CASING DRIVEN TO FINAL DEPTH 64'-19.5M AFTER FIRST CORE RUN WAS ATTEMPTED |
| 65 | 0.71 | 0.77 | 0.06 | | | GRAVEL | |
| 65 | 0.77 | 10.77 | 4.00 | | | ROCK LOSS | |
| 65 | 10.77 | 11.18 | 0.41 | | | MUDSTONE | CARB.BLK.VBRKN |
| 65 | 11.18 | 11.65 | 0.47 | | | COAL | VBRKN |
| 65 | 11.65 | 11.76 | 0.11 | | | MUDSTONE | CARB.BLK.BRKN<br>COALY STRGS |
| 65 | 11.76 | 12.10 | 0.34 | | | COAL | PWRD<br>MNR CLYST FRAGS IN COAL |

* DENOTES MEASURED DCA

PROJECT: KPN BLOCK: HC ,DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 65 | 12.10 | 12.18 | 0.08 | | | SANDSTONE | VFG-.WEL.M.GY.BRKN<br>SLIGHTLY CALC. GRADING TO VERY FINE GRA<br>INED. HEAVY QTZ VEINING |
| 65 | 12.18 | 13.08 | 0.90 | | | MUDSTONE | CARB.DK.GY.SLD<br>MNR COAL STRGS. MNR SLTY STRGS |
| 65 | 13.08 | 13.14 | 0.06 | | | GRAVEL | |
| 65 | 13.14 | 14.32 | 1.18 | | | ROCK LOSS | |
| 65 | 14.32 | 14.56 | 0.24 | | | COAL | VBRKN<br>MIXED WITH SS FRAGS |
| 65 | 14.56 | 14.66 | 0.10 | | | MUDSTONE | CARB.DK.GY.BRKN<br>SLTST BANDS. COAL STRGS. MOD QTZ VEININ<br>G |
| 65 | 14.66 | 15.55 | 0.89 | | | MUDSTONE | CARB.VBRKN<br>AS ABOVE. CORE DROPPED FROM BARREL ON D<br>RILL FLOOR. NOT CONSIDERED TO BE IN PRO<br>PER SEQUENCE. |
| 65 | 15.55 | 17.37 | 1.82 | | | ROCK LOSS | |

* DENOTES MEASURED BCA

XXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH62003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 65 | 17.37 | 18.46 | 1.09 | | | SANDSTONE | FG.WEL.M.GY.BRKN<br>INTBS SLTST TO 3CM, DECREASING IN THICKNESS DOWN SECTION, MODERATE QTZ VEINING, CORE VBRKN AT BASE |
| 62 | 18.46 | 19.21 | 0.75 | | | SANDSTONE | FG-.LT.GY.VBRKN<br>HEAVY QTZ VEINING, NONCALC, NUMEROUS CORED PIECES FROM OUT OF SECTION MIXED IN. |
| 60 | 19.21 | 19.53 | 0.32 | | | ROCK LOSS | |
| * 55 | 19.53 | 22.43 | 2.90 | | | SANDSTONE | FG-.LT.GY.BRKN<br>AS ABOVE |
| 50 | 22.43 | 22.96 | 0.53 | | | SANDSTONE | MG-.M.GY.BRKN<br>MNR COAL INCLUSIONS, CLYST CLASTS IN PART, QTZ VEINING MODERATE |
| * 46 | 22.96 | 25.06 | 2.10 | | | SANDSTONE | MG.MOD.S-P.GY.THKB.BRKN<br>MOD QTZ VEINING, NONCALC |
| 36 | 25.06 | 25.14 | 0.08 | | | SANDSTONE | MG.MOD.S-P.GY.THKB.BRKN<br>AS ABOVE |

* DENOTES MEASURED BCA

XXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 20 | 25.14 | 27.19 | 2.05 | | | SANDSTONE | MG.M.GY.SLD<br>GRIT FIRST 30CM AT TOP. MOD QTZ VEINING S. NONCALC SS. MNR COAL LAMINATIONS IN PART |
| 21 | 27.19 | 27.79 | 0.60 | | | SILTSTONE | CLYY.M-DK.GY.BRKN<br>GRADES TOWARDS MUDST AT BASE. INCREASIN GLY CARB |
| * 19 | 27.79 | 27.87 | 0.08 | | | MUDSTONE | BLK.VBRKN<br>COALY |
| 18 | 27.87 | 27.97 | 0.10 | 04956 | K | COAL | C-4.BLK.SLD<br>DULL AND BRIGHT, MUDST BAND |
| * 17 | 27.97 | 28.06 | 0.09 | 04956 | K | COAL | C-4.BLK.SLD<br>BRIGHT BANDED. MUDST BAND. BCA SWINGS C OMPLETELY AROUND. SAME BED FROM 27.79 T O 28.26 |
| 16 | 28.06 | 28.26 | 0.20 | 04956 | K | COAL | C-5.BLK.SLD<br>DULL AND BRIGHT. MUDST BAND |
| 15 | 28.26 | 28.53 | 0.27 | 04956 | K | COAL LOSS | |
| 14 | 28.53 | 28.59 | 0.06 | 04957 | K | ROCK LOSS | |
| 13 | 28.59 | 28.75 | 0.16 | 04957 | K | MUDSTONE | BLK.BRKN<br>COALY |

* DENOTES MEASURED BCA

xxx



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM IL | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 12 | 28.75 | 28.82 | 0.07 | 04957 | K | COAL | C-1.BLK.BRKN<br>INTBD WITH COALY MUDST |
| * 20 | 28.82 | 28.90 | 0.08 | 04957 | K | MUDSTONE | BLK.VBRKN<br>COALY |
| 22 | 28.90 | 29.26 | 0.36 | 04956 | K | COAL LOSS | |
| 25 | 29.26 | 29.61 | 0.35 | 04956 | K | COAL | C-4.BLK.BRKN<br>MUDST BANDS THROUGHOUT |
| 27 | 29.61 | 29.79 | 0.18 | 04956 | K | COAL | C-3.BLK.BRKN |
| 28 | 29.79 | 29.89 | 0.10 | 04956 | K | COAL | C-3.BLK.BRKN |
| 30 | 29.89 | 30.14 | 0.25 | 04956 | K | COAL LOSS | |
| 31 | 30.14 | 30.17 | 0.03 | 04956 | K | MUDSTONE | BLK.BRKN<br>COALY |
| * 31 | 30.17 | 30.20 | 0.03 | 04956 | K | COAL | C-4.BLK.BRKN |
| * 36 | 30.21 | 30.29 | 0.09 | 04956 | K | COAL | C-1.BLK.BRKN<br>INTBD WITH MUDST |

* DENOTES MEASURED BCA

AXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| | ECA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| | 36 | 30.29 | 30.52 | 0.23 | 04956 | K | COAL | C-3.BLK.VBRKN<br>INTBD WITH MUDST. LISTRIC SURFACES THRO<br>UGHOUT, CORE PULVERIZED |
| | 34 | 30.52 | 30.63 | 0.11 | 04956 | K | COAL | C-4.BLK.VBRKN<br>LISTRIC SURFACES THROUGHOUT |
| | 34 | 30.63 | 30.75 | 0.12 | 04956 | K | COAL | C-3.BLK.VBRKN<br>CORE PULVERIZED |
| | 32 | 30.75 | 31.21 | 0.46 | 04956 | K | COAL | C-4.BLK.VBRKN<br>MNR MUDST INTBS, COALY, CORE PULVERIZED |
| * | 30 | 31.21 | 31.60 | 0.39 | 04956 | K | COAL | C-4.BLK.VBRKN<br>MNR PYRITIC INCLUSIONS, SOME BRIGHT BAN<br>DS AND MNR MUDST STRGS, LISTRIC SURFACE<br>S |
| | 46 | 31.61 | 31.72 | 0.12 | 04956 | K | COAL | C-4.BLK.VBRKN<br>MNR QTZT VEINING |
| * | 50 | 31.72 | 32.08 | 0.36 | 04956 | K | COAL | C-3.BLK.BRKN<br>MNR PYR |
| | 56 | 32.08 | 32.31 | 0.23 | 04956 | K | COAL | C-4.BLK.BRKN<br>MNR PYR, MNR MUDST STRGS |
| | 50 | 32.31 | 32.38 | 0.07 | 04956 | K | MUDSTONE | BLK.BRKN<br>CARB, LISTRIC SURFACES |

* DENOTES SEASONED ECA

xxx



PROJECT: KPN BLOCK: HC DATA SOURCE: GDH82003

| DCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 50 | 32.38 | 32.40 | 0.02 | 04956 | K | COAL | C-2.BLK.BRKN |
| 50 | 32.40 | 32.44 | 0.04 | 04956 | K | MUDSTONE | BLK.BRKN<br>LISTRIC SURFACES. MNR QTZ VEINING |
| 50 | 32.44 | 32.50 | 0.06 | 04956 | K | COAL | C-1.BLK.BRKN |
| 50 | 32.50 | 32.60 | 0.10 | 04956 | K | ROCK LOSS | |
| 50 | 32.60 | 32.79 | 0.19 | 04956 | K | COAL LOSS | CORE RECOVERY FOR ABOVE SEAM 75% |
| * 50 | 32.79 | 32.82 | 0.03 | | | MUDSTONE | BLK.BRKN<br>COALY |
| 51 | 32.82 | 33.07 | 0.25 | | | MUDSTONE | BLK.SLD<br>COAL BANDS THROUGHOUT. LISTRIC SURFACES |
| 54 | 33.07 | 33.95 | 0.88 | | | MUDSTONE | BLK.SLD<br>CARB. COLOUR RANGES BLK-DK GY |
| * 52 | 33.95 | 35.63 | 1.68 | | | MUDSTONE | DK.GY.SLD<br>CALC BANDS IN PART |
| 52 | 35.63 | 36.64 | 1.01 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |

* DENOTES MEASURED DCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| | BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| | 62 | 38.64 | 38.65 | 2.01 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE. MNR PYR INCLUSIONS. MNR CALCT VEINING. LISTRIC SURFACES |
| | 62 | 38.65 | 39.35 | 0.70 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| | 62 | 39.35 | 41.81 | 2.46 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE. CALC BANDING NOT PRESENT. SLIGHTLY CARB |
| | 62 | 41.81 | 42.18 | 0.37 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| | 62 | 42.18 | 44.01 | 1.83 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| | 62 | 44.01 | 44.06 | 0.05 | | | MUDSTONE | PYR.DK.GY.SLD<br>DISSEMINATED PYR THROUGHOUT. MOD TO HEAVY GTZ VEINING. SLIGHTLY CALC |
| * | 62 | 44.06 | 44.28 | 0.22 | 04959 | J | COAL | C-3.BLK.BRKN<br>DISSEMINATED PYR THROUGHOUT. LISTRIC SURFACES. SOME SHEARING. LAMINATIONS OF PYR |
| | 60 | 44.28 | 44.52 | 0.24 | 04959 | J | COAL | C-4.BLK.BRKN<br>PYR LAMELLAE. SHEARED SURFACES |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH02003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| | 44.52 | 44.57 | 0.05 | 04959 | J | COAL | C-1.BLK.VBRKN<br>PULVERIZED CORE |
| | 44.57 | 44.76 | 0.21 | 04959 | J | COAL LOSS | |
| * 56 | 44.76 | 44.83 | 0.05 | 04960 | J | COAL | C-3.BLK.SLD |
| | 44.83 | 44.88 | 0.05 | 04960 | J | COAL | C-1.BLK.SLD<br>INTBS OF MUDST. COALY |
| | 44.88 | 44.92 | 0.04 | 04960 | J | MUDSTONE | BLK.SLD<br>COAL LAMINATIONS |
| * 55 | 44.92 | 44.99 | 0.07 | 04960 | J | COAL | C-2.BLK.VBRKN<br>CORE PULVERIZED |
| | 44.99 | 45.07 | 0.08 | 04960 | J | MUDSTONE | PYR.BLK.SLD<br>DISSEMINATED PYR THROUGHOUT. QTZ VEININ<br>G THROUGHOUT |
| | 45.07 | 45.12 | 0.05 | 04961 | J | COAL | C-4.BLK.SLD<br>MUDST INTBS (MNR). MNR QTZ VEINING |
| * 75 | 45.12 | 45.29 | 0.17 | 04961 | J | COAL | C-4.BLK.BRKN<br>DULL BANDED. PYR INCLUSIONS MNR PYR LAM<br>INATION |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 74 | 45.29 | 45.56 | 0.27 | 04961 | J | COAL | C-3.BLK.BRKN |
| 72 | 45.56 | 45.78 | 0.22 | 04961 | J | COAL | C-4.BLK.VBRKN |
| 70 | 45.78 | 46.26 | 0.50 | 04961 | J | COAL LOSS | |
| 67 | 46.26 | 46.52 | 0.24 | 04961 | J | COAL | C-3.BLK.BRKN<br>SOME MUDST BANDING TOWARD BASE |
| 66 | 46.52 | 46.57 | 0.05 | 04961 | J | COAL | C-1.BLK.VBRKN |
| * 66 | 46.57 | 46.62 | 0.05 | 04961 | J | COAL | C-3.BLK.SLD<br>CORE RECOVERY ON ABOVE SEAM 72% |
| 66 | 46.62 | 47.84 | 1.22 | | | MUDSTONE | DK.GY.LAM.SLD<br>COAL LAMINATIONS INCREASING TOWARDS BAS<br>E. MNR QTZ VEINING. MNR LISTRIC SURFACE<br>S |

* DENOTES REASONED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 66 | 47.24 | 46.32 | 0.48 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE. COAL LAMINATIONS INCREASING T<br>OWARDS BASE. MNR QTZ VEINING. LISTNIC S<br>URFACES /////DRILLERS ADDITION ERROR ON<br>MARKERS. 50.90 SHOULD READ 47.85. ALL<br>MARKERS FROM HERE ON SHOULD BE 3.05M LE<br>SS THAN AS READS///// |
| * 66 | 48.21 | 49.29 | 0.97 | | | MUDSTONE | CARB.DK.GY.XBDG.SLD<br>SLTY BANDS TOWARDS BASE. XBDG MNR |
| * 74 | 49.29 | 50.86 | 1.57 | | | SANDSTONE | FG-.MOD.LT-M.GY.THNB.XBDG.BRKN<br>INTBD WITH SLTST. COARSENS DOWN. LESS F<br>REQUENT SLT BANDS. ABUNDANT QTZ VEINING<br>NEAR TOP. MNR COAL INCLUSIONS IN PART.<br>CORE BRKN AT TOP. XBDG MNR |
| 73 | 50.86 | 51.16 | 0.30 | | | SANDSTONE | FG-.MOD.LT-M.GY.THNB.XBDG.SLD<br>AS ABOVE. XBDG MNR |
| 73 | 51.16 | 53.31 | 2.15 | | | SANDSTONE | FG-.MOD.LT-M.GY.THNB.SLD<br>AS ABOVE. INCREASED COAL INCLUSIONS AND<br>LAMINATIONS. THICK QTZ VEINING IN PART<br>. SHALE RIP-UP CLASTS IN PART |
| * 72 | 53.31 | 54.89 | 0.58 | | | SILTSTONE | CLYY.M.GY.THNB.XBDG.SLD<br>SANDY IN PART. TOPS UP |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL INTSEC | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 72 | 53.89 | 54.02 | 0.13 | | | SANDSTONE | FG.MOD.M.GY.VTHNB.SLD<br>NONCALC. MUDST INTBS |
| * 72 | 54.02 | 56.93 | 2.91 | | | SANDSTONE | FG.MOD.M.GY.VTHNB.XBDG.SLD<br>AS ABOVE. COAL INCLUSIONS IN PART. MNR QTZ VEINING. BECOMES FINER GRAINED TOWARDS BASE. CORE BROKEN AT BASE. TOPS UP. MNR FAULT FEATURES. UP TO 1CM MOVEMENT. XBDG MNR. BEDDING RANGES VTHNB-THNB |
| 44 | 56.93 | 57.06 | 0.13 | | | SILTSTONE | CLYY.DK.GY.VTHNB.BRKN<br>MUDST INTBS. HEAVY QTZ VEINING. CARB. LISTRIC SURFACE POSSIBLE AXIS OF MNR FOLD |
| * 40 | 57.06 | 57.36 | 0.30 | | | SILTSTONE | DK.GY.VTHNB.BRKN<br>AS ABOVE. MOD CALCT VEINING |
| * 63 | 57.36 | 59.40 | 2.04 | | | SANDSTONE | MG.MOD.M.GY.THNB.SLD<br>BRECCIATED IN PART. MOD QTZ VEINING. MNR ROCK CLASTS. QTZ BAND NEAR BASE |
| * 64 | 59.40 | 59.77 | 0.37 | | | SILTSTONE | CLYY.M-DK.GY.VTHNB.SSD.SLD<br>MUDST INTBS. TOPS UP. SANDY IN PART |
| * 61 | 59.77 | 60.06 | 0.29 | | | SILTSTONE | M-DK.GY.VTHNB.BRKN<br>AS ABOVE. LAMINATED BDG. QTZ VEINS IN PART |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 69 | 60.16 | 62.44 | 2.28 | | | SANDSTONE | VFG-.MOD.LT-M.GY.VTHNB.SSD.SLD SLTST INTBS. MNR MUDST BANDING. MNR COAL STRGS TOWARDS BASE. MNR QTZ VEINIG. LISTRIC SURFACES. MNR XBDG. BDG RANGES VTHNB-THNB |
| * 63 | 62.44 | 63.09 | 0.65 | | | SANDSTONE | VFG-.MOD.M.GY.VTHNB.SSD.SLD AS ABOVE. MNR COAL LAMINATIONS. MUDST RIP-UP CLASTS. XBDG |
| * 57 | 63.09 | 65.11 | 2.02 | | | SANDSTONE | VFG-.MOD.M.GY.VTHNB.SLD AS ABOVE. TOPS UP. MUDST RIP-UP CLASTS IN PART.MNR QTZ VEINING |
| 61 | 65.11 | 66.04 | 0.93 | | | SANDSTONE | VFG-.MOD.M.GY.VTHNB.SLD AS ABOVE. SLTST AND MUDST INTBS INCREASING TOWARDS BASE. MNR QTZ VEINING |
| * 65 | 66.04 | 67.66 | 1.62 | | | SILTSTONE | M-DK.GY.VTHNB.XBDG.BRKN MUDST AND SS INTBS. MOD QTZ VEINING. TOPS UP. MNR FRACTURE DISPLACEMENT |
| * 75 | 67.66 | 69.19 | 1.53 | | | SANDSTONE | VFG-.MOD.M.GY.VTHNB.XBDG.SLD INTBS OF SLTST AND MUDST. QTZ VEINING IN PART. TOPS UP |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH BDUM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 70 | 69.19 | 70.69 | 1.50 | | | SANDSTONE | FG.PR.LT-M.GY.VTHNB.XBDG.SLD<br>AS ABOVE. QTZ VEINING IN PART. TOPS UP. MNR COAL INCLUSIONS TOWARDS BASE. XBDG MNR. BDG RANGES VTHNB-THNB. GRAIN SIZE RANGES VFG-FG-MG |
| * 74 | 70.69 | 71.09 | 0.40 | | | SILTSTONE | M-DK.GY.VTHNB.SLD<br>SS INTDS. HEAVY QTZ VEINING AT BASE. BDG RANGES VTHNB-THNB |
| * 11 | 71.09 | 72.16 | 1.07 | | | SANDSTONE | FG.WEL.LT-M.GY.THNB.BRKN<br>HEAVY QTZ VEINING AT TOP INDICATES AXIS OF FOLD. MNR MUDST LAMINATIONS |
| * 13 | 72.16 | 73.39 | 1.23 | | | SANDSTONE | VFG-.MUD.LT-M.GY.VTHNB.XBDG.SLD<br>AS ABOVE. MNR SLTST BANDS. XBDG MNR |
| * 15 | 73.39 | 75.14 | 1.75 | | | SANDSTONE | VFG-.MUD.LT-M.GY.VTHNB.XBDG.SLD<br>AS ABOVE. SLTST BANDS INCREASING TOWARD BASE. TOPS INDICATE OVERTURNED. MUDST RIP-UP CLASTS IN PART. (FINING DOWNWARD SEQUENCE). XBDG MNR |
| * 16 | 75.14 | 76.05 | 0.91 | | | SILTSTONE | M-DK.GY.VTHNB.SLD<br>INTDS OF MUDST AND SS |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 25 | 76.05 | 76.12 | 2.07 | | | SILTSTONE | LT-M.GY.VTHNB.XBDG.SLD<br>AS ABOVE. BECOMES SANDY TOWARDS BASE. B<br>EDS INDICATE OVERTURNED. MNR BIOTURB. M<br>NR FRACTURE DISPLACEMENT (2CM). SCOURS |
| * 30 | 76.12 | 76.75 | 0.63 | | | SILTSTONE | M-DK.GY.VTHNB.XBDG.SLD<br>MUDST INTBS. SS TOWARDS BASE. MNR QTZ V<br>EINING. XBDG MNR |
| * 27 | 76.75 | 81.09 | 2.34 | | | SILTSTONE | M-DK.GY.VTHNB.XBDG.SLD<br>INTBS OF SS AND MUDST. BEDS INDICATE OV<br>ERTURNED. SCOURS. CONVOLUTED BDG |
| * 22 | 81.09 | 81.40 | 0.31 | | | SILTSTONE | M-DK.GY.VTHNB.SLD<br>AS ABOVE. CONVOLUTED BDG. SCOURS |
| * 22 | 81.40 | 84.00 | 2.60 | | | MUDSTONE | DK.GY.LAM.SLD<br>INTBS OF SLTST. SLIGHTLY CARB. BECOMES<br>SANDY TOWARDS BASE. TOPS INDICATE OVERT<br>URNED. SCOURS |
| 22 | 84.00 | 84.12 | 0.12 | | | SANDSTONE | FG-.M.GY.VTHNB.SLD<br>MUDST RIP-UP CLASTS. SLTST INTBS THINLY<br>BEDDED |
| * 25 | 84.12 | 86.54 | 2.62 | | | SANDSTONE | VFG-.MOD.M.GY.VTHNB.XBDG.SLD<br>MUDST RIP-UP CLASTS IN PART.MNR CARB LA<br>MINATIONS. LISTRIC SURFACES |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 45 | 86.94 | 87.24 | 0.30 | | | SILTSTONE | M-DK.GY.VTHNB.SLD<br>AS ABOVE |
| * 51 | 87.24 | 88.36 | 1.12 | | | SILTSTONE | M-DK.GY.VTHNB.SSD.SLD<br>MUDST INTBS. SS IN PART. FINELY BEDDED. QTZ BAND AT TOP.MNR BIOTURB |
| * 42 | 88.36 | 89.26 | 0.90 | | | SANDSTONE | FG-.MOD.M.GY.VTHNB.SLD<br>MNR SLTST BANDS. CORE VBRKN AT TOP. HEA VY QTZ VEINING AT TOP. MUDST RIP-UP CLA STS |
| 43 | 89.26 | 89.62 | 0.36 | | | MUDSTONE | M-DK.GY.VTHNB.SSD.BRKN<br>SSD MNR. SLTST INTBS. CARB. LISTRIC SUR FACES. MNR QTZ VEINING |
| * 44 | 89.62 | 90.32 | 0.70 | | | SANDSTONE | VFG-.MOD.M-DK.GY.VTHNB.SLD<br>COAL INCLUSIONS. LAMINATIONS. QTZ VEINS NEAR TOP. BDG RANGES VTHNB-THNB |
| * 51 | 90.32 | 90.52 | 0.20 | | | SANDSTONE | VFG-.WEL.M-DK.GY.VTHNB.BRKN<br>QTZ VEINING IN PART |
| 52 | 90.52 | 91.45 | 0.92 | | | MUDSTONE | M-DK.GY.LAM.SLD<br>SLTST INTBS VERY FINELY BEDDED.QTZ VEIN ING IN PART. SLUMP FEATURES |
| 52 | 91.45 | 92.22 | 0.77 | | | MUDSTONE | DK.GY.LAM.BRKN<br>CARB PLANT FRAGS |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 58 | 92.22 | 93.30 | 1.08 | | | MUDSTONE | DK.GY.LAM.BRKN<br>AS ABOVE. MOD QTZ VEINING. COAL STRGS I NCREASING TOWARDS BASE |
| 62 | 93.30 | 94.14 | 0.84 | | | MUDSTONE | DK.GY.LAM.BRKN<br>AS ABOVE. 2CM CLY BAND AT TOP. COAL LAM TO COAL BANDS IN PART. COLOUR RANGES D K GY-BLK |
| * 66 | 94.14 | 94.18 | 0.04 | 04962 | 1 | COAL | C-4.BLK.SLD<br>QTZ VEINING |
| 66 | 94.18 | 94.31 | 0.13 | 04962 | 1 | COAL | C-3.BLK.SLD<br>MNR MUDST LAM AT BASE |
| 66 | 94.31 | 94.57 | 0.26 | 04963 | 1 | MUDSTONE | BLK.SLD<br>COAL LAM INCREASING TOWARDS BASE. MNR C ALCT VEINING |
| 66 | 94.57 | 94.82 | 0.25 | 04964 | 1 | COAL | C-4.BLK.SLD |
| 66 | 94.82 | 94.92 | 0.10 | 04964 | 1 | COAL | C-3.BLK.VBRKN |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 65 | 94.92 | 95.08 | 0.16 | 04964 | 1 | COAL | C-4.BLK.VBRKN<br>LAM OF MUDST, PYR LAM, BAND OF BRIGHT A<br>ND DULL COAL |
| 65 | 95.08 | 95.18 | 0.10 | 04964 | 1 | COAL | C-4.BLK.SLD |
| 65 | 95.18 | 95.26 | 0.08 | 04964 | 1 | COAL | C-4.BLK.BRKN<br>INTBD WITH MUDST |
| 65 | 95.26 | 95.30 | 0.04 | 04964 | 1 | COAL | C-2.BLK.VBRKN |
| 65 | 95.30 | 95.35 | 0.05 | 04964 | 1 | MUDSTONE | BLK.LAM.SLD<br>COAL LAMINATIONS |
| 65 | 95.35 | 95.47 | 0.12 | 04964 | 1 | COAL | C-3.BLK.VBRKN<br>CORE SHEARED AND PULVERIZED. LISTRIC SU<br>RFACES |
| * 65 | 95.47 | 95.71 | 0.24 | 04964 | 1 | COAL | C-2.BLK.SLD |
| 64 | 95.71 | 95.76 | 0.05 | 04964 | 1 | MUDSTONE | BRKN<br>MNR PYR |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 62 | 96.76 | 96.10 | 0.34 | 04964 | 1 | COAL | C-4.BLK.VBRKN<br>CORE PULVERIZED. PROBABLE C-4 |
| * 60 | 96.10 | 96.31 | 0.21 | 04964 | 1 | COAL | C-4.BLK.SLD |
| 60 | 96.31 | 96.40 | 0.09 | 04964 | 1 | COAL | C-5.BLK.SLD<br>MUDST LAM |
| 60 | 96.40 | 96.45 | 0.05 | 04964 | 1 | COAL | C-3.BLK.BRKN |
| 60 | 96.45 | 96.48 | 0.03 | 04964 | 1 | MUDSTONE | BLK.BRKN |
| 61 | 96.48 | 96.53 | 0.05 | 04964 | 1 | COAL | C-3.BLK.VBRKN<br>CORE PULVERIZED |
| 61 | 96.52 | 96.99 | 0.46 | 04964 | 1 | COAL LOSS | |
| 61 | 96.99 | 97.01 | 0.02 | 04964 | 1 | MUDSTONE | BLK.BRKN |
| 62 | 97.01 | 97.12 | 0.11 | 04964 | 1 | COAL | C-4.BLK.SLD |
| 62 | 97.12 | 97.16 | 0.04 | 04964 | 1 | COAL | C-4.BLK.SLD<br>MNR MUDST BANDS TOWARDS BASE |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH02003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 62 | 97.16 | 97.39 | 0.23 | 04965 | 1 | MUDSTONE | PYR.BLK.LAM.SLD<br>COAL LAM |
| 62 | 97.39 | 97.69 | 0.30 | 04965 | 1 | MUDSTONE | BLK.LAM.VBRKN<br>COAL LAM, SHEARED, LISTRIC SURFACES, CO RE PULVERIZED |
| 63 | 97.69 | 97.80 | 0.11 | 04966 | 1 | ROCK LOSS | |
| 63 | 97.80 | 98.11 | 0.31 | 04966 | 1 | COAL LOSS | |
| 64 | 98.11 | 98.34 | 0.23 | 04966 | 1 | COAL | C-S.BLK.VBRKN<br>SHEARED, MNR MUDST BANDS |
| 64 | 98.34 | 98.94 | 0.60 | 04966 | 1 | COAL | C-S.BLK.VBRKN<br>CORE PULVERIZED AT BASE, DULL BANDED AT BOTTOM, CORE RECOVERY FOR ABOVE SEAM 6 2% |
| 65 | 98.94 | 99.43 | 0.49 | | | MUDSTONE | DK.GY.SLD |
| 67 | 99.43 | 100.96 | 1.53 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE, BECOMING SLTY TOWARDS BASE, S LIST LAM |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 70 | 100.90 | 102.49 | 1.53 | | | SILTSTONE | M-DK.GY.VTHNB.BIOTR.SLD<br>MUDST INTBS. TOPS UP. XBDG |
| * 81 | 102.49 | 103.88 | 1.39 | | | MUDSTONE | DK.GY.VTHNB.BIOTR.SLD<br>SLTST INTBS. SLTY TOWARDS BASE |
| * 82 | 103.88 | 105.58 | 1.70 | | | SILTSTONE | M-DK.GY.VTHNB.BIOTR.SLD<br>MUDST INTBS. TOPS INDICATE UP. SSD FEAT<br>URES. BRECCIATED QTZ INFILL ZONE TOWARD<br>S BASE |
| 84 | 105.58 | 106.76 | 1.18 | | | SILTSTONE | M-DK.GY.VTHNB.SSD.SLD<br>AS ABOVE. BIOTURB |
| * 85 | 106.76 | 107.57 | 0.81 | | | SILTSTONE | M-DK.GY.VTHNB.BIOTR.SLD<br>AS ABOVE. CORE BRKN AT BASE. MNR FRACTU<br>RE DISPLACEMENT. BIOTURB MNR |
| 83 | 107.57 | 107.75 | 0.18 | | | SILTSTONE | LT.GY.VTHNB.SSD.SLD<br>MUDST INTBS. CALCITIC |
| * 82 | 107.75 | 108.14 | 0.39 | | | SILTSTONE | M-DK.GY.VTHNB.BIOTR.BRKN<br>SLIGHTLY CALC IN PART. MUDST INTBS. BIO<br>TURB MNR |
| 80 | 108.14 | 108.50 | 0.36 | | | SILTSTONE | M-DK.GY.VTHNB.BIOTR.VBRKN<br>AS ABOVE |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 77 | 108.50 | 109.50 | 1.00 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>MNR SLTST LAM. MNR CALCT VEINING |
| 79 | 109.50 | 109.78 | 0.22 | | | MUDSTONE | DK.GY.SLD<br>FEATURELESS |
| 79 | 109.78 | 109.86 | 0.08 | | | BENTONITE | LT.GY.BRKN |
| 81 | 109.86 | 110.91 | 1.05 | | | MUDSTONE | DK.GY.SLD<br>FEATURELESS |
| 84 | 110.91 | 112.52 | 1.61 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE.CALC IN PART. MNR PYR INCLUSIO<br>NS. MNR BENTONITE BAND NEAR MIDDLE |
| * 89 | 112.52 | 114.64 | 2.12 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE. CORE BRKN NEAR BASE |
| 86 | 114.64 | 114.95 | 0.31 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| 88 | 114.95 | 115.22 | 0.27 | | | BENTONITE | WH.SLL |
| 85 | 115.22 | 115.36 | 0.14 | | | MUDSTONE | DK.GY.BRKN<br>FEATURELESS |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 82 | 115.20 | 117.04 | 1.84 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| 80 | 117.04 | 118.30 | 1.26 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| 76 | 118.30 | 120.21 | 1.91 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE, MNR PYR INCLUSIONS, SLIGHTLY CALC |
| * 73 | 120.21 | 121.28 | 1.07 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| * 88 | 121.28 | 123.36 | 2.08 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE, PYR INCLUSIONS THROUGHOUT |
| 87 | 123.36 | 124.25 | 0.89 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE, MNR PYR INCLUSIONS |
| 86 | 124.25 | 126.52 | 2.27 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE, CORE BRKN IN PART |
| 85 | 126.52 | 127.15 | 0.63 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 85 | 127.15 | 127.24 | 0.09 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| ECA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 85 | 127.24 | 127.30 | 0.06 | 04967 | H | COAL | C-6.BLK.SLD<br>HEAVY QTZ VEINING. PYR INCLUSIONS |
| 85 | 127.30 | 127.34 | 0.04 | 04967 | H | COAL | C-5.BLK.SLD<br>PYR INCLUSIONS |
| 85 | 127.34 | 127.39 | 0.05 | 04967 | H | COAL | C-3.BLK.SLD<br>PYR INCLUSIONS |
| 85 | 127.39 | 127.56 | 0.17 | 04967 | H | COAL | C-3.BLK.VBRKN |
| 85 | 127.56 | 127.66 | 0.10 | 04967 | H | COAL LOSS | |
| 85 | 127.66 | 127.80 | 0.14 | 04967 | H | COAL | C-5.BLK.VBRKN<br>CORE POWDERED. MNR PYR |
| 85 | 127.80 | 127.95 | 0.15 | 04967 | H | COAL | C-1.BLK.SLD<br>MNR QTZ VEINING THROUGHOUT |
| 84 | 127.95 | 128.12 | 0.17 | 04967 | H | COAL | C-4.BLK.VBRKN<br>CORE PULVERIZED. BECOMES MUDDY TOWARDS BASE |
| 84 | 128.12 | 128.17 | 0.05 | 04966 | H | MUDSTONE | CARB.BLK.VBRKN<br>CORE PULVERIZED. |
| 84 | 128.17 | 128.21 | 0.04 | 04966 | H | COAL | C-6.BLK.SLD |

* DENOTES MEASURED ECA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 64 | 125.21 | 125.23 | 0.02 | 04966 | H | MUDSTONE | PYR.BLK.BRKN |
| 64 | 125.23 | 125.29 | 0.06 | 04966 | H | COAL | C-5.BLK.BRKN |
| 64 | 125.29 | 125.32 | 0.03 | 04966 | H | MUDSTONE | BLK.VBRKN<br>CORE PULVERIZED |
| 64 | 125.32 | 125.45 | 0.13 | 04966 | H | COAL | C-5.BLK.VBRKN<br>CORE PULVERIZED. MUDST LAM. PROBABLE C-5 |
| 64 | 125.45 | 125.48 | 0.03 | 04968 | H | COAL | C-6.BLK.BRKN |
| 64 | 125.48 | 126.01 | 0.13 | 04966 | H | COAL | C-4.BLK.VBRKN<br>CORE PULVERIZED. PROBABLE C-4. MNR QTZ VEINING |
| 64 | 126.01 | 126.03 | 0.02 | 04966 | H | MUDSTONE | BLK.SLB |
| * 64 | 125.03 | 125.73 | 0.10 | 04966 | H | COAL | C-5.BLK.BRKN |

* DENOTES REASOPED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 84 | 126.73 | 126.80 | 0.07 | 04966 | H | COAL | C-4.BLK.SLD |
| 84 | 126.80 | 126.96 | 0.16 | 04966 | H | COAL | C-3.BLK.SLD |
| 85 | 126.90 | 126.95 | 0.05 | 04966 | H | COAL | C-5.BLK<br>MUDST LAM |
| 85 | 126.95 | 126.98 | 0.03 | 04966 | H | MUDSTONE | DK.GY.SLD |
| 85 | 126.98 | 129.09 | 0.11 | 04966 | H | COAL | C-5.BLK.VBRKN<br>SHEARED. LISTRIC SURFACES |
| 85 | 129.09 | 129.31 | 0.22 | 04966 | H | COAL | BLK.SLD<br>MUDST INTBS |
| 86 | 129.31 | 129.39 | 0.08 | 04966 | H | COAL | C-3.BLK.SLD |
| 86 | 129.39 | 129.43 | 0.04 | 04966 | H | COAL | C-6.BLK.SLD |
| * 86 | 129.43 | 129.62 | 0.19 | 04969 | H | MUDSTONE | BLK.SLD<br>COAL LAM THROUGHOUT |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 86 | 129.02 | 129.67 | 0.65 | 04969 | H | COAL | C-5.BLK.SLD<br>MNR MUDST BANDS |
| 86 | 129.67 | 129.75 | 0.08 | 04969 | H | COAL | C-3.BLK.SLD |
| 86 | 129.75 | 129.81 | 0.06 | 04969 | H | COAL | C-6.BLK.SLD<br>CORE RECOVERY FOR ABOVE SEAM 96% |
| 86 | 129.81 | 129.91 | 0.10 | | | MUDSTONE | CARB.DK.GY.SLD |
| 86 | 129.91 | 130.00 | 0.09 | | | MUDSTONE | DK.GY.SLD<br>COAL LAM |
| 86 | 130.00 | 130.03 | 0.03 | | | MUDSTONE | BLK.BRKN<br>COALY |
| 87 | 130.03 | 130.14 | 0.11 | | | MUDSTONE | M.GY.BRKN<br>COAL LAM. COALY |
| 88 | 130.14 | 132.19 | 2.05 | | | MUDSTONE | DK.GY.SLD<br>COAL LAM THROUGHOUT. DECREASING TOWARDS BASE. BECOMING SLTY TOWARDS BASE |
| * 89 | 132.19 | 132.92 | 0.73 | | | SILTSTONE | M.GY.VFNG<br>SS INTBS VERY FINELY BEDDED |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 67 | 132.92 | 133.05 | 0.13 | | | SILTSTONE | M.GY.VTHNB.SLD<br>AS ABOVE |
| * 82 | 133.05 | 135.76 | 2.71 | | | SANDSTONE | FG-.PR.LT-M.GY.THNB.SLD<br>MUDST RIP-UP CLASTS, COAL INCLUSIONS TH<br>ROUGHOUT, BECOMES PEBBLY TOWARDS BASE (<br>CHERT PEBBLES UP TO 0.5CM CLASTS) |
| 80 | 135.76 | 136.12 | 0.36 | | | SANDSTONE | FG-.PR.LT-M.GY.THNB.SLD<br>AS ABOVE, SCATTERED CHERT PEBBLES THROU<br>GHOUT |
| 79 | 136.12 | 137.89 | 1.77 | | | SANDSTONE | MG-.LT-M.GY.THNB.SLD<br>AS ABOVE, SCATTERED CHERT PEBBLES THROU<br>GHOUT, COAL INCLUSIONS IN PART, MUDST R<br>IP-UP CLASTS |
| 77 | 137.89 | 138.46 | 0.57 | | | CONGLOMERATE | LT.GY.THKB.SLD<br>MATRIX SUPPORTED, CHERT PEBBLES, MAX CL<br>AST SIZE 1.5CM |
| 76 | 138.46 | 138.63 | 0.17 | | | SANDSTONE | MG-.PR.LT.GY.THNB.SLD<br>MNR CHERT PBLS |
| * 78 | 138.63 | 139.20 | 0.57 | | | SANDSTONE | MG-.MOD.LT.GY.THKB.SLD<br>AS ABOVE, CHERT PBLS AT TOP ONLY |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 82 | 139.20 | 141.20 | 2.00 | | | SANDSTONE | MG-.PR.LT.GY.THKB.SLD<br>AS ABOVE. COAL STRGS IN PART. MNR CHERT PBLS IN PART |
| 87 | 141.20 | 141.48 | 0.28 | | | MUDSTONE | DK.GY.VTHNB.BRKN |
| 87 | 141.48 | 141.58 | 0.10 | | | ROCK LOSS | |
| * 89 | 141.58 | 142.25 | 0.67 | | | MUDSTONE | DK.GY.LAM.BRKN<br>AS ABOVE. MNR QTZ VEINS |
| * 78 | 142.25 | 144.39 | 2.14 | | | MUDSTONE | DK.GY.LAM.XBDG.SLD<br>AS ABOVE. MNR SLTY LAM. XBDG MNR |
| * 88 | 144.39 | 145.40 | 1.01 | | | MUDSTONE | DK.GY.LAM.BIOTR.SLD<br>AS ABOVE |
| 84 | 145.40 | 147.26 | 1.86 | | | MUDSTONE | DK.GY.LAM.SSD.SLD<br>AS ABOVE |
| 82 | 147.26 | 147.47 | 0.21 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTST LAM |
| 81 | 147.47 | 147.52 | 0.05 | | | BRECCIA | SLD<br>MUDST CLASTS. INFILLED WITH QTZ. DISPLA CEMENT ALONG MNR FRACTURES |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 86 | 147.52 | 148.52 | 1.00 | | | MUDSTONE | DK.GY.LAM.SLD<br>MOD QTZ VEINING AT TOP.MNR SLTST LAM THROUGHOUT |
| * 86 | 148.52 | 150.15 | 1.63 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE. MNR SLTST BANDS. NO QTZ VEINING |
| * 85 | 150.15 | 151.54 | 1.39 | | | MUDSTONE | DK.GY.LAM.XBDD.SLD<br>AS ABOVE. TOPS INDICATE UP |
| 86 | 151.54 | 153.04 | 1.50 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| * 87 | 153.04 | 154.59 | 1.55 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 86 | 154.59 | 155.24 | 0.65 | | | MUDSTONE | PYR.DK.GY.LAM.SLD<br>AS ABOVE. COAL LAM TOWARDS BASE. DISSEMINATED PYR AT BASE |
| 86 | 155.24 | 155.29 | 0.05 | 04970 | G | COAL | C-D.BLK.BRKN |
| 86 | 155.29 | 155.51 | 0.22 | 04970 | G | COAL | C-4.BLK.VBRKN<br>CORE PULVERIZED. MNR MUDST LAM |
| 85 | 155.51 | 155.65 | 0.14 | 04970 | G | COAL LOSS | |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 85 | 155.85 | 156.14 | 0.29 | 04970 | 6 | COAL | C-3.BLK.BRKN |
| 85 | 156.14 | 156.31 | 0.17 | 04971 | 6 | MUDSTONE | BLK.VBRKN<br>CORE PULVERIZED. COAL LAM THROUGHOUT |
| 85 | 156.31 | 156.33 | 0.02 | 04972 | 6 | COAL | C-5.BLK.SLD |
| 85 | 156.33 | 156.55 | 0.22 | 04972 | 6 | COAL | C-3.BLK.SLD |
| 85 | 156.55 | 156.59 | 0.04 | 04972 | 6 | MUDSTONE | BLK.SLD<br>COAL LAM THROUGHOUT |
| 85 | 156.59 | 156.67 | 0.08 | 04972 | 6 | COAL | C-3.BLK.SLD<br>MNR MUDST LAM |
| 85 | 156.67 | 156.75 | 0.08 | 04972 | 6 | MUDSTONE | BLK.LAM.SLD<br>COAL LAM |
| 85 | 156.75 | 156.90 | 0.15 | 04972 | 6 | COAL LOSS | |
| 84 | 156.90 | 157.19 | 0.29 | 04972 | 6 | COAL | C-5.BLK.SLD<br>MUDST LAM THROUGHOUT |
| 84 | 157.19 | 157.25 | 0.06 | 04972 | 6 | MUDSTONE | BLK.LAM.SLD<br>COAL LAM |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| | BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| | 84 | 157.25 | 157.49 | 0.24 | 04972 | 6 | COAL | C-1.BLK.SLD |
| * | 84 | 157.49 | 157.55 | 0.06 | 04972 | 6 | MUDSTONE | BLK.LAM<br>SLTST INTBS. COAL LAM |
| | 84 | 157.55 | 157.73 | 0.18 | 04972 | 6 | COAL | C-5.BLK.SLD<br>MUDDY TOWARDS BASE |
| | 84 | 157.73 | 157.80 | 0.07 | 04972 | 6 | MUDSTONE | BLK.SLD<br>COAL LAM |
| | 84 | 157.80 | 157.90 | 0.10 | 04972 | 6 | COAL | C-1.BLK.SLD |
| | 84 | 157.90 | 157.99 | 0.09 | 04972 | 6 | COAL | C-5.BLK.SLD |
| | 84 | 157.99 | 158.04 | 0.05 | 04972 | 6 | COAL | C-4.BLK.SLD |
| | 84 | 158.04 | 158.13 | 0.09 | 04972 | 6 | COAL | C-5.BLK.SLD<br>FOSSIL PLANT REMAINS |
| | 83 | 158.13 | 158.53 | 0.40 | 04973 | 6 | MUDSTONE | BLK.SLD<br>COAL LAM, MNR QTZ VEINING |
| | 83 | 158.53 | 158.77 | 0.24 | 04974 | 6 | COAL | C-5.BLK.SLD |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82063

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK* | SAMP* ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 83 | 156.77 | 156.86 | 0.09 | 04974 | G | COAL | C-5.BLK.SLD<br>MUDST LAM INCREASING TOWARDS BASE |
| 83 | 156.86 | 156.92 | 0.06 | 04974 | G | MUDSTONE | BLK.LAM.SLD<br>COAL LAM |
| 83 | 156.92 | 156.94 | 0.02 | 04974 | G | COAL | C-2.BLK |
| 83 | 156.94 | 159.13 | 0.19 | 04974 | G | COAL | C-3.BLK.SLD<br>MUDST INTBS |
| 83 | 159.13 | 159.18 | 0.05 | 04974 | G | COAL LOSS | CORE RECOVERY FOR ABOVE SEAM 86% |
| 83 | 159.18 | 159.30 | 0.12 | | G | MUDSTONE | DK.GY.SLD<br>COAL LAM |
| 83 | 159.30 | 159.37 | 0.07 | | G | COAL | C-5.BLK.SLD<br>MUDST LAM |
| 83 | 159.37 | 159.42 | 0.05 | | G | MUDSTONE | BLK.LAM.SLD<br>COAL LAM |
| 83 | 159.42 | 159.46 | 0.04 | | G | COAL | C-1.BLK.SLD |
| 83 | 159.46 | 159.64 | 0.18 | | | MUDSTONE | BLK.LAM.SLD<br>COALY |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 82 | 159.64 | 161.22 | 1.58 | | | MUDSTONE | DK.GY.LAM.SLD<br>COAL INCLUSIONS AND LAM. CARB PLANT FRAGS |
| 82 | 161.22 | 161.97 | 0.75 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 82 | 161.97 | 163.06 | 1.09 | | | MUDSTONE | DK.GY.LAM.SLD<br>COAL LAM THROUGHOUT, SLTST BANDS IN PART |
| * 82 | 163.06 | 164.17 | 1.11 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>SALT AND PEPPER. MNR MUDST LAM THROUGHOUT |
| 84 | 164.17 | 164.70 | 0.53 | | | SANDSTONE | FG-.LT.GY.THNB.XBDG.SLD<br>AS ABOVE. GRADES INTO SS AT BASE. XBDG MNR |
| * 86 | 164.70 | 166.11 | 1.41 | | | SANDSTONE | FG-.LT.GY.THNB.XBDG.SLD<br>AS ABOVE. MUDST LAM. XBDG MNR |
| 85 | 166.11 | 166.38 | 0.27 | | | SS GRIT | PR.LT.GY.SLD<br>POLY. CLASTS UP TO 2CM. COAL INCLUSIONS THROUGHOUT |

* DENOTES MEASURED BCA

xxxxx



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| | BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| * | 84 | 166.38 | 167.39 | 1.01 | | | SANDSTONE | MG.PR.M.GY.THNB.XBDG.SLD<br>COAL LAM THROUGHOUT. SHALE RIP-UP CLAST<br>S TOWARDS BASE |
| | 82 | 167.39 | 167.44 | 0.05 | | | SANDSTONE | PR.M.GY.THNB.SLD<br>AS ABOVE |
| | 81 | 167.44 | 167.92 | 0.48 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>CARB LAM. MUDST RIP-UP CLASTS |
| | 80 | 167.92 | 168.16 | 0.24 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.SLD<br>NUMEROUS MUDST RIP-UP CLASTS. SLIGHTLY<br>CALC. COALIFIED PLANT FRAGS |
| * | 77 | 168.16 | 170.05 | 1.89 | | | SANDSTONE | FG-.MOD.LT.GY.THNB.XBDG.SLD<br>BANDS OF MUDST RIP-UP CLASTS. COAL INCL<br>USIONS IN PART. XBDG MNR |
| | 80 | 170.05 | 170.23 | 0.18 | | | SANDSTONE | FG.MOD.LT.GY.THNB.SLD<br>AS ABOVE |
| * | 84 | 170.23 | 173.01 | 2.78 | | | SANDSTONE | MG-.PR.M.GY.THKB.SLD<br>AS ABOVE. MNR CHERT-GRIT BANDS IN PART.<br>MUDST RIP-UP CLASTS |
| | 86 | 173.01 | 173.11 | 0.10 | | | SANDSTONE | MG-.PR.M.GY.THKB.SLD<br>AS ABOVE |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 86 | 175.11 | 175.67 | 0.56 | | | SANDSTONE | MG-.PR.M.GY.THKB.SLD<br>AS ABOVE. FINING TOWARDS BASE |
| * 86 | 175.67 | 175.74 | 2.07 | | | SILTSTONE | DK.GY.LAM.XBDG.SLD<br>SANDY IN PART. MUDST LAM. TOPS INDICATE UP. COAL LAM TOWARDS BASE |
| 86 | 175.74 | 175.98 | 0.24 | | | MUDSTONE | DK.GY.SLD<br>FEATURELESS |
| * 87 | 175.98 | 178.87 | 2.89 | | | SILTSTONE | M-DK.GY.LAM.XBDG.SLD<br>AS ABOVE. TOPS UP.INTBS OF MUDST AND SS . MUDST RIP-UP CLASTS IN PART |
| 84 | 178.87 | 179.02 | 0.15 | | | SILTSTONE | M-DK.GY.LAM.XBDG.SLD<br>AS ABOVE. XBDG MNR |
| * 81 | 179.02 | 181.80 | 2.78 | | | SILTSTONE | M-DK.GY.LAM.XBDG.SLD<br>AS ABOVE. COAL LAM IN PART. CORE BRKN N EAR BASE. UNIT FINES TOWARDS BASE. MNR SHALE RIP-UP CLASTS |
| * 88 | 181.80 | 182.08 | 0.28 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY IN PART. MNR QTZ VEINING |
| 87 | 182.08 | 182.38 | 0.30 | | | MUDSTONE | DK.GY.LAM.BRKN<br>AS ABOVE. BECOMES COALY TOWARDS BASE. M NR QTZ VEINING |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| SEA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 86 | 182.38 | 182.45 | 0.07 | 04975 | F | COAL | C-5.BLK.VBRKN<br>CORE PULVERIZED. MUDST INTBS |
| 84 | 182.45 | 183.07 | 0.62 | 04975 | F | COAL | C-3.BLK.SLD<br>MNR MUDST LAMS THROUGHOUT |
| 82 | 183.07 | 183.11 | 0.04 | 04976 | F | MUDSTONE | BLK.BRKN |
| * 82 | 183.11 | 183.16 | 0.05 | 04976 | F | COAL | C-5.BLK.SLD |
| 82 | 183.16 | 183.22 | 0.06 | 04976 | F | MUDSTONE | BLK.LAM.SLD<br>COAL LAM |
| 82 | 183.22 | 183.33 | 0.11 | 04976 | F | COAL | C-4.BLK.SLD |
| 81 | 183.33 | 183.45 | 0.12 | 04976 | F | MUDSTONE | BLK.LAM.BRKN<br>COAL LAM |
| 81 | 183.45 | 183.70 | 0.25 | 04976 | F | ROCK LOSS | |
| 86 | 183.70 | 184.56 | 0.86 | 04977 | F | COAL | C-4.BLK.VBRKN<br>PROBABLE DULL BANDED. MUDST LAM THROUGH OUT. CORE PULVERIZED. CORE RECOVERY FOR ABOVE SEAM 86.5% |

* DENOTES MEASURED DCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 78 | 184.56 | 184.70 | 0.14 | | | MUDSTONE | DK.GY.BRKN |
| 76 | 184.70 | 185.12 | 0.42 | | | SILTSTONE | DK.GY.VTHNB.BRKN<br>MUDST LAM |
| * 74 | 185.12 | 187.52 | 2.40 | | | SILTSTONE | M-DK.GY.LAM.SSD.SLD<br>AS ABOVE, MUDST INTBS, XBDG |
| 75 | 187.52 | 187.67 | 0.15 | | | SILTSTONE | M-DK.GY.LAM.SLD<br>AS ABOVE |
| 75 | 187.67 | 188.06 | 0.39 | | | SANDSTONE | FG-.PR.M.GY.THNB.SLD<br>COAL LAM AND INCLUSIONS IN PART |
| 76 | 188.06 | 190.35 | 2.29 | | | SANDSTONE | FG.WEL.LT-M.GY.THNB.SLD<br>AS ABOVE, MUDST RIP-UP CLASTS, COARSENS DOWN |
| 77 | 190.35 | 191.06 | 0.71 | | | SANDSTONE | FG-.PR.M-DK.GY.VTHNB.SSD.SLD<br>MUDST INTBS INCREASING TOWARDS BASE, COAL LAM AND INCLUSIONS THROUGHOUT |
| 78 | 191.06 | 191.72 | 0.64 | | | SANDSTONE | MG-.PR.LT.GY.THKB.SLD<br>MNR CHERT-GRIT FRAGS, SS VERY FRIABLE AT TOP |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 79 | 191.72 | 193.25 | 1.53 | | | CONGLOMERATE | PBLY.LT.GY.MAS.SLD<br>MNR SS BEDS. CHERT PBLS UP TO 2CM. MAINLY MATRIX SUPPORTED |
| 80 | 193.25 | 194.09 | 0.84 | | | CONGLOMERATE | PBLY.PK.LT.GY.MAS.SLD<br>AS ABOVE. MNR QTZ VEINING |
| 80 | 194.09 | 194.62 | 0.53 | | | CONGLOMERATE | LT.GY.SLD<br>AS ABOVE |
| * 81 | 194.62 | 196.15 | 1.53 | | | SANDSTONE | CG.PK.LT.GY.THKB.SLD<br>CHERT PBLS AND GRIT. BECOMING SPARSE TOWARDS BASE |
| 80 | 196.15 | 196.65 | 0.50 | | | SANDSTONE | MG-.PK.LT.GY.THKB.SLD<br>AS ABOVE. SCATTERED CHERT PBLS |
| 79 | 196.65 | 197.27 | 0.62 | | | CONGLOMERATE | PBLY.LT.GY.BRKN<br>CLASTS UP TO 2.5CM. MATRIX AND PBL SUPPORTED. COAL BANDS IN PART |
| 77 | 197.27 | 198.32 | 1.05 | | | CONGLOMERATE | LT.GY.VBRKN<br>AS ABOVE |
| 76 | 198.32 | 198.64 | 0.32 | | | SANDSTONE | MG.MOD.M.GY.THNB.SLD<br>GRIT BANDS. COAL LAM. FINES TOWARDS BASE |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| * 78 | 198.04 | 198.96 | 0.92 | | | SILTSTONE | M.GY.XBDG.SLD<br>MUDST INTBS |
| 80 | 198.96 | 200.20 | 1.24 | | | SILTSTONE | M.GY.XBDG.SLD<br>AS ABOVE. MNR XBDS |
| * 86 | 200.20 | 201.83 | 1.63 | | | SILTSTONE | LT.GY.LAM.XBDG.SLD<br>AS ABOVE. MUDST INTBS. COAL LAM AND INC LUSIONS IN PART. INCREASING MUDST CONTE NT. MNR XBDG |
| * 82 | 201.83 | 203.15 | 1.32 | | | MUDSTONE | M.GY.LAM.SLD<br>MNR SLTST LAM. COAL INCLUSIONS MNR. TOP S UP |
| 82 | 203.15 | 204.67 | 1.52 | | | MUDSTONE | M.GY.LAM.SLD<br>AS ABOVE. BECOMING INCREASINGLY CARB. C OAL INCLUSIONS THROUGHOUT |
| 82 | 204.67 | 205.28 | 0.61 | | | MUDSTONE | M.GY.LAM.SLD<br>AS ABOVE |
| 82 | 205.28 | 205.52 | 0.24 | 04978 | E UPPER | COAL | C-S.BLK.SLD |
| 83 | 205.52 | 205.80 | 0.28 | 04978 | E UPPER | COAL LOSS | |
| 83 | 205.80 | 206.07 | 0.27 | 04978 | E UPPER | COAL | BLK.VBRKN<br>MUDST BANDS. OUT OF PLACE |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDHB2003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 83 | 205.87 | 206.14 | 0.27 | 04976 | E UPPER | COAL | C-4.BLK.VBRKN<br>PROBABLE C-4. CORE RECOVERY FOR ABOVE SEAM 91% |
| 83 | 206.14 | 206.22 | 0.08 | | | MUDSTONE | SLD<br>MNR COAL LAM |
| 83 | 206.22 | 207.39 | 1.17 | | | MUDSTONE | PYR.DK.GY.LAM.SLD<br>AS ABOVE, MNR QTZ VEINING, PYR AT BOTTOM. COLOUR RANGES DK GY-BLK |
| 83 | 207.39 | 208.14 | 0.75 | | | MUDSTONE | DK.GY.LAM.SLD<br>COAL LAM TOWARDS BASE |
| 83 | 208.14 | 208.17 | 0.03 | | | MUDSTONE | DK.GY.SLD<br>AS ABOVE |
| 83 | 208.17 | 208.24 | 0.07 | 04979 | E LOWER | COAL | C-5.BLK.SLD |
| 83 | 208.24 | 208.26 | 0.02 | 04979 | E LOWER | MUDSTONE | DK.GY.BRKN |
| 83 | 208.26 | 208.49 | 0.23 | 04979 | E LOWER | COAL | C-4.BLK.BRKN |
| * 83 | 208.49 | 208.54 | 0.05 | 04979 | E LOWER | COAL | C-5.BLK.SLD |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 83 | 208.54 | 208.72 | 0.18 | 04979 | E LOWER | COAL | C-4.BLK.BRKN |
| 83 | 208.72 | 208.86 | 0.14 | 04979 | E LOWER | COAL | C-3.BLK.VBRKN<br>CORE PULVERIZED |
| 83 | 208.86 | 209.03 | 0.17 | 04979 | E LOWER | COAL LOSS | |
| 83 | 209.03 | 209.12 | 0.09 | 04979 | E LOWER | COAL | C-2.BLK.BRKN |
| 83 | 209.12 | 209.22 | 0.10 | 04979 | E LOWER | MUDSTONE | DK.GY.BRKN<br>COAL BANDING. COLOUR RANGES DK GY-BLK |
| 83 | 209.22 | 209.45 | 0.23 | 04979 | E LOWER | COAL | C-3.BLK<br>MNR MUDST LAMS. CORE RECOVERY FOR ABOVE SEAM 87% |
| 83 | 209.45 | 209.47 | 0.02 | | | MUDSTONE | BLK.BRKN<br>COAL LAMS |
| 83 | 209.47 | 209.67 | 0.20 | | | MUDSTONE | BLK.BRKN<br>COAL LAMS AND INCLUSIONS. QTZ VEINING THROUGHOUT |
| 83 | 209.67 | 210.00 | 0.33 | | | MUDSTONE | BLK.SLD<br>AS ABOVE. COAL LAMS |

* DENOTES MEASURED BCA

XXXXX



PROJECT: KPN BLOCK: HC DATA SOURCE: DDH82003

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 83 | 210.00 | 210.62 | 0.62 | | | CLAYSTONE | BN.SLD |
| 83 | 210.62 | 211.84 | 1.22 | | | MUDSTONE | DK.GY.BRKN<br>COAL LAMS DECREASING TOWARDS BASE. LISTRIC SURFACES. COLOUR RANGES DK GY-BLK |
| 83 | 211.84 | 213.61 | 1.77 | | | SILTSTONE | M.GY.THNB.VBRKN<br>MUDST INTBS. LISTRIC SURFACES. MOD QTZ VEINING |
| 83 | 213.61 | 215.48 | 1.87 | | | SILTSTONE | M.GY.THNB.VBRKN<br>AS ABOVE. HEAVY QTZ VEINING. LISTRIC SURFACES.////////////////END OF CORE. DRILLERS MARKERS 218.53. TD ACTUALLY 215.48. 216.53 REPORTED BY DRILLERS PROPOGATED ERROR FROM A 10' ADDITION ERROR AT 157'//////////////// |

* DENOTES MEASURED BCA

GR-Mt. Klappan 84(3) A

695

# MOUNT KLAPPAN
## DRILL HOLE LOG
### DDH 82-003

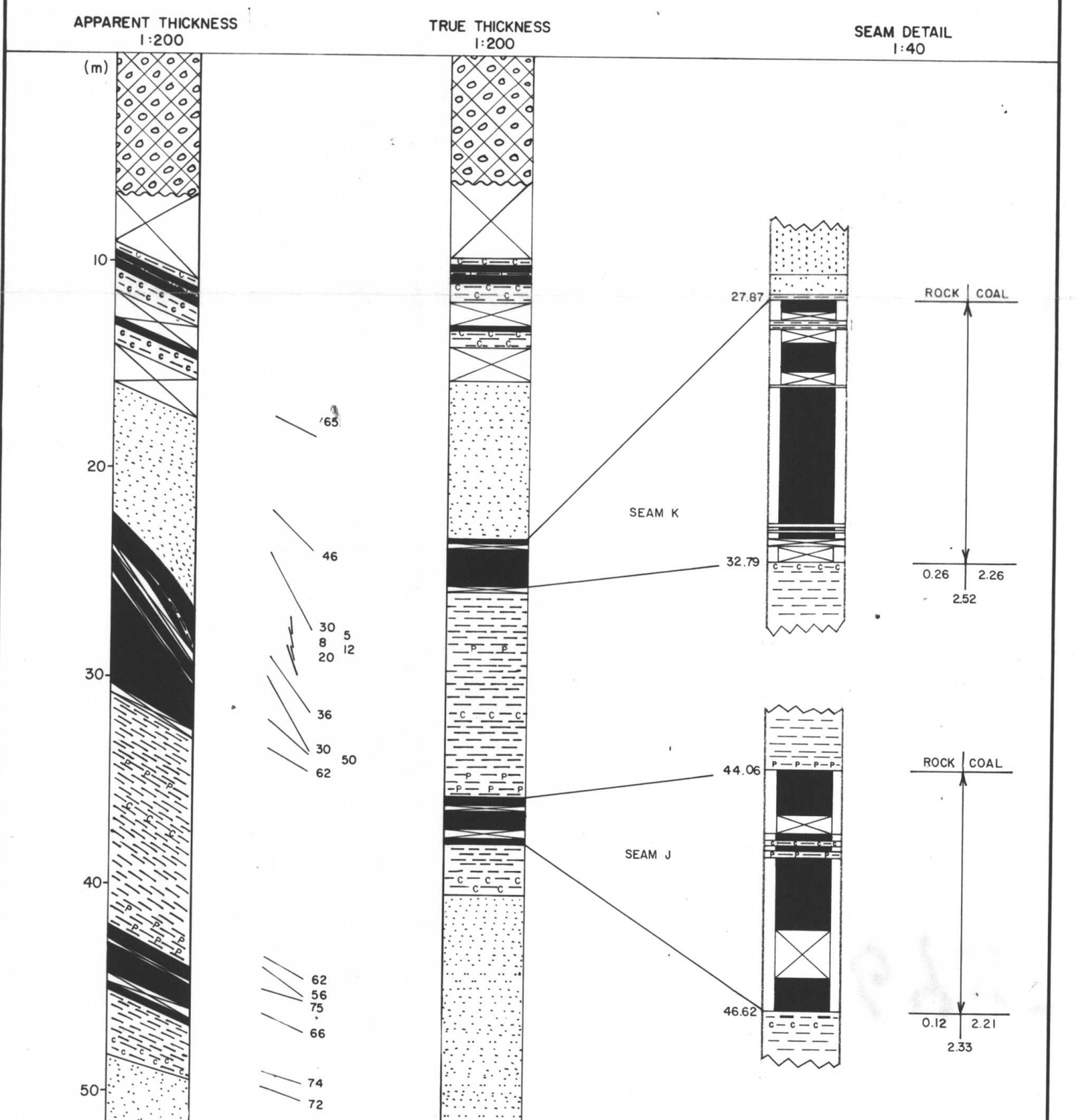
SCALE : 1:200 (0 – 5 (m)) 1:40 (0 – 0.5 – 1 (m))

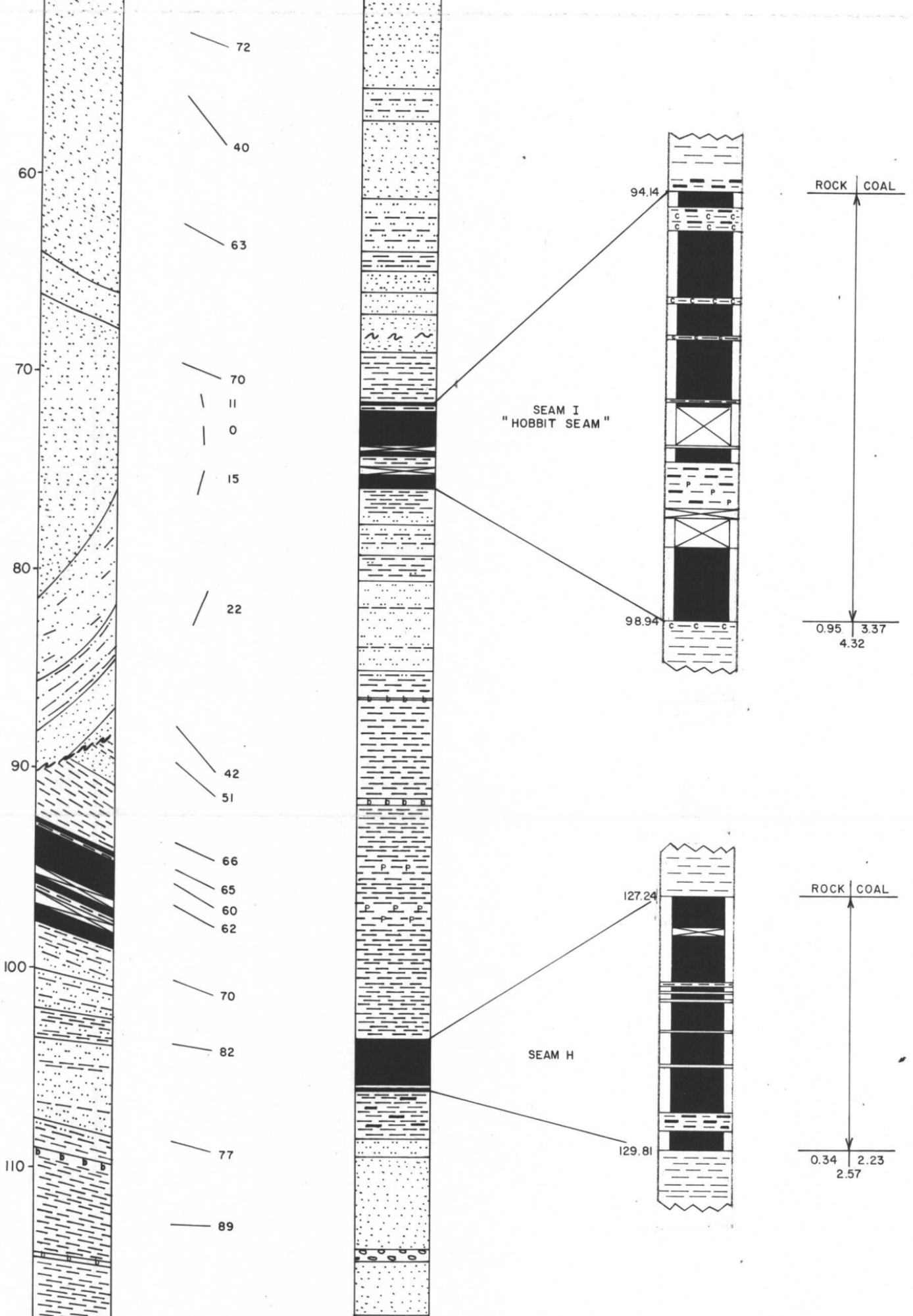
NORTHING: 6343267 N
EASTING: 515540 E

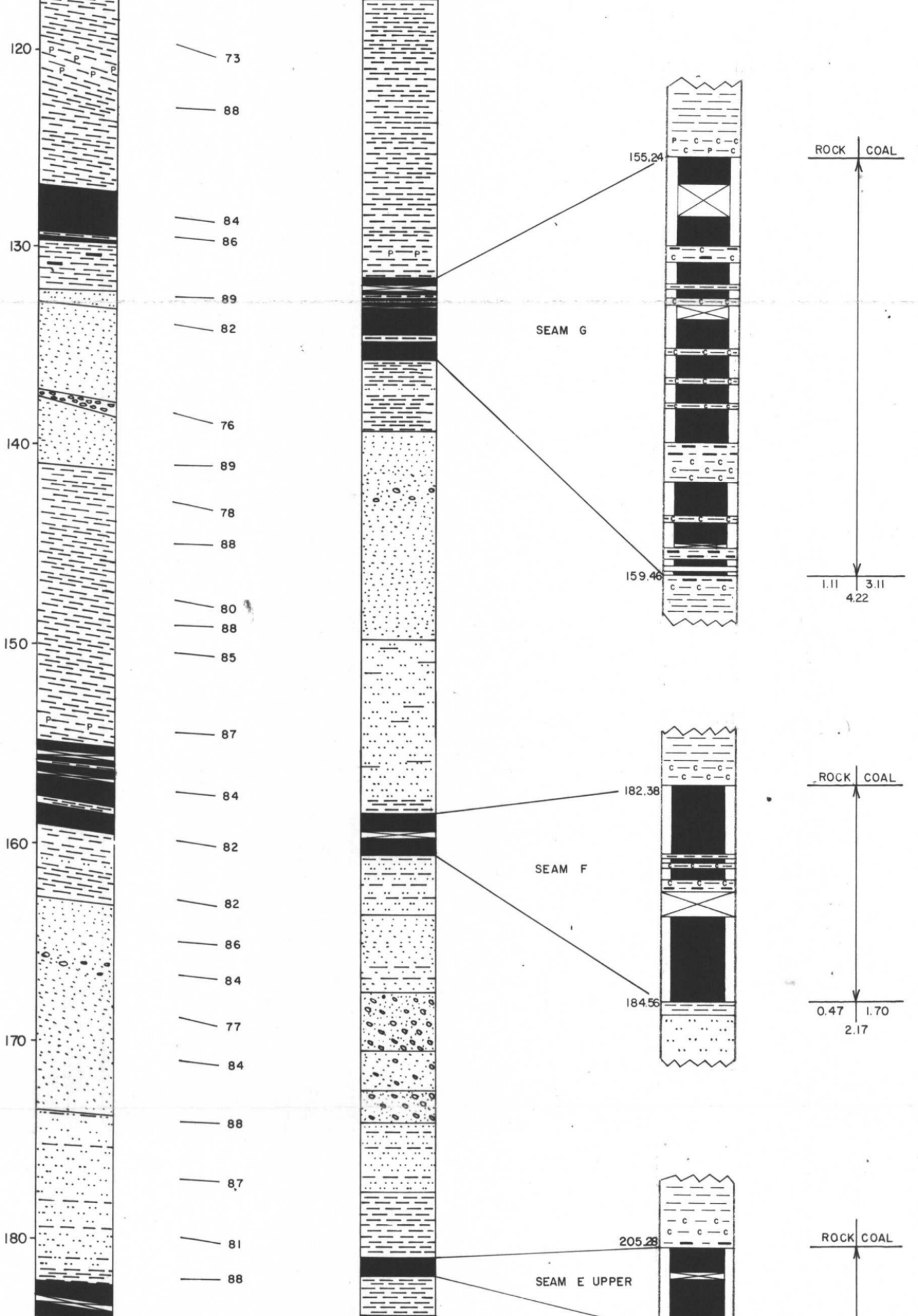
INCLINATION: 90°
BEARING: —

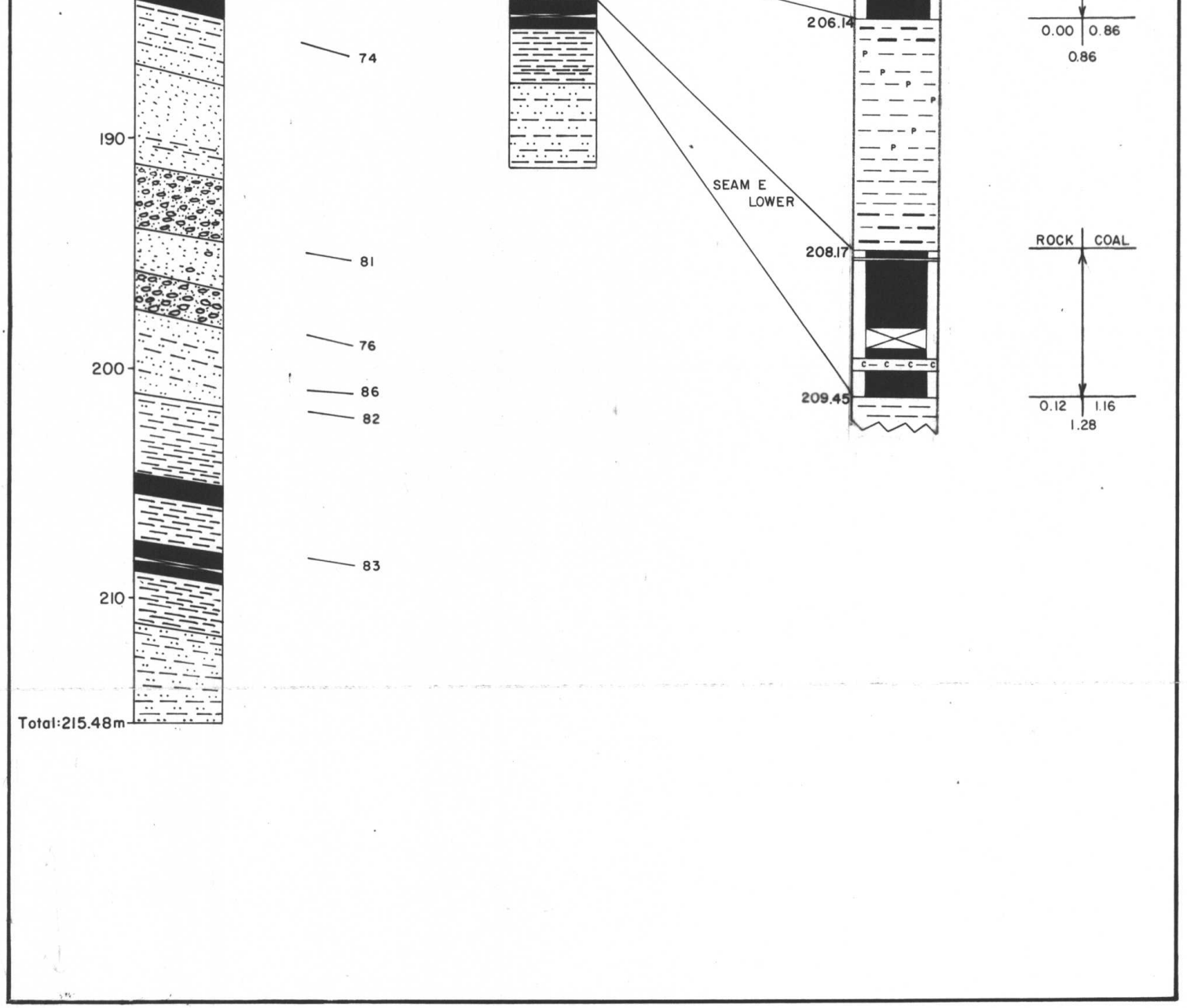
LITHOLOGIC SYMBOLS

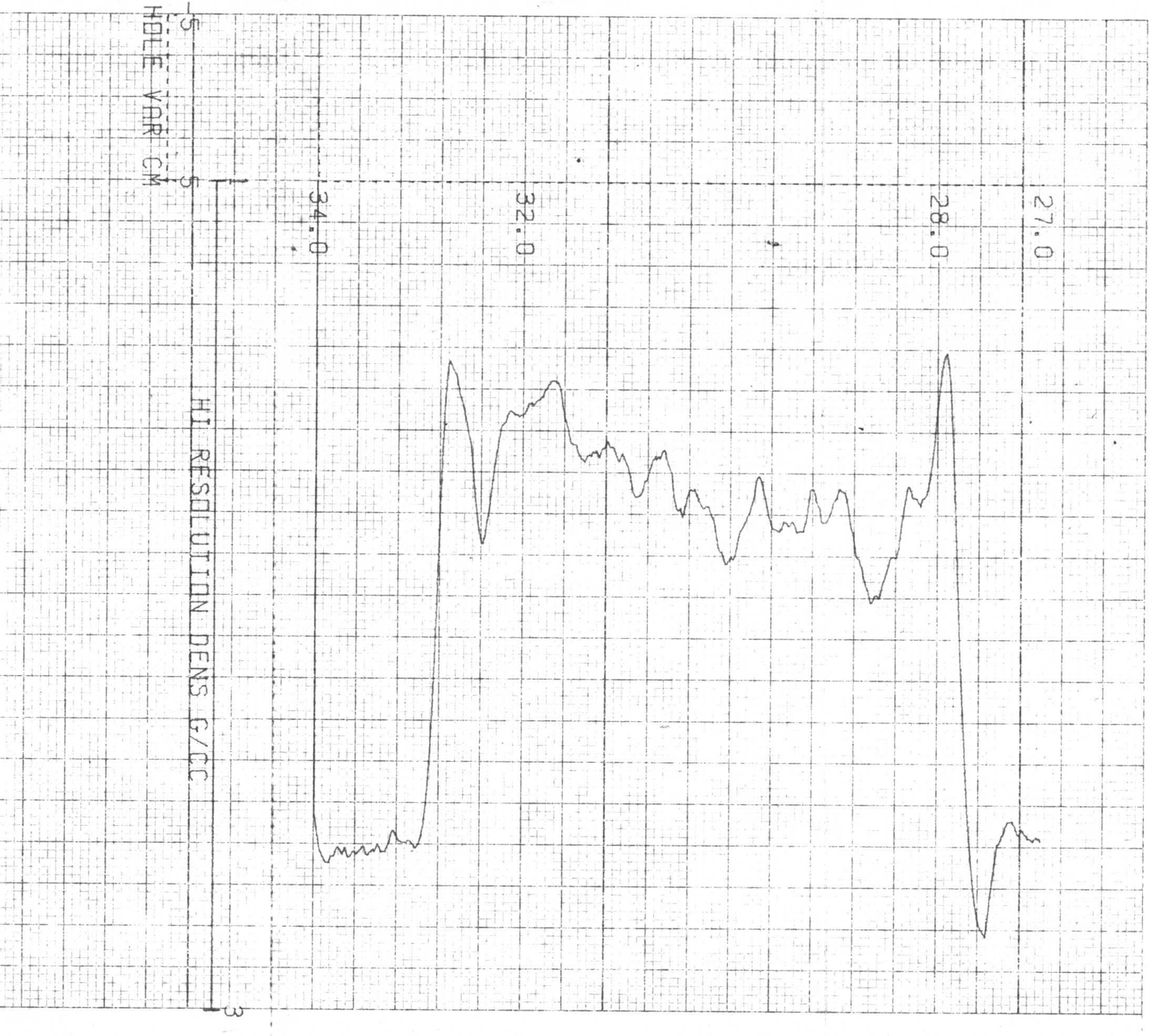
- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL - THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL
- FAULT



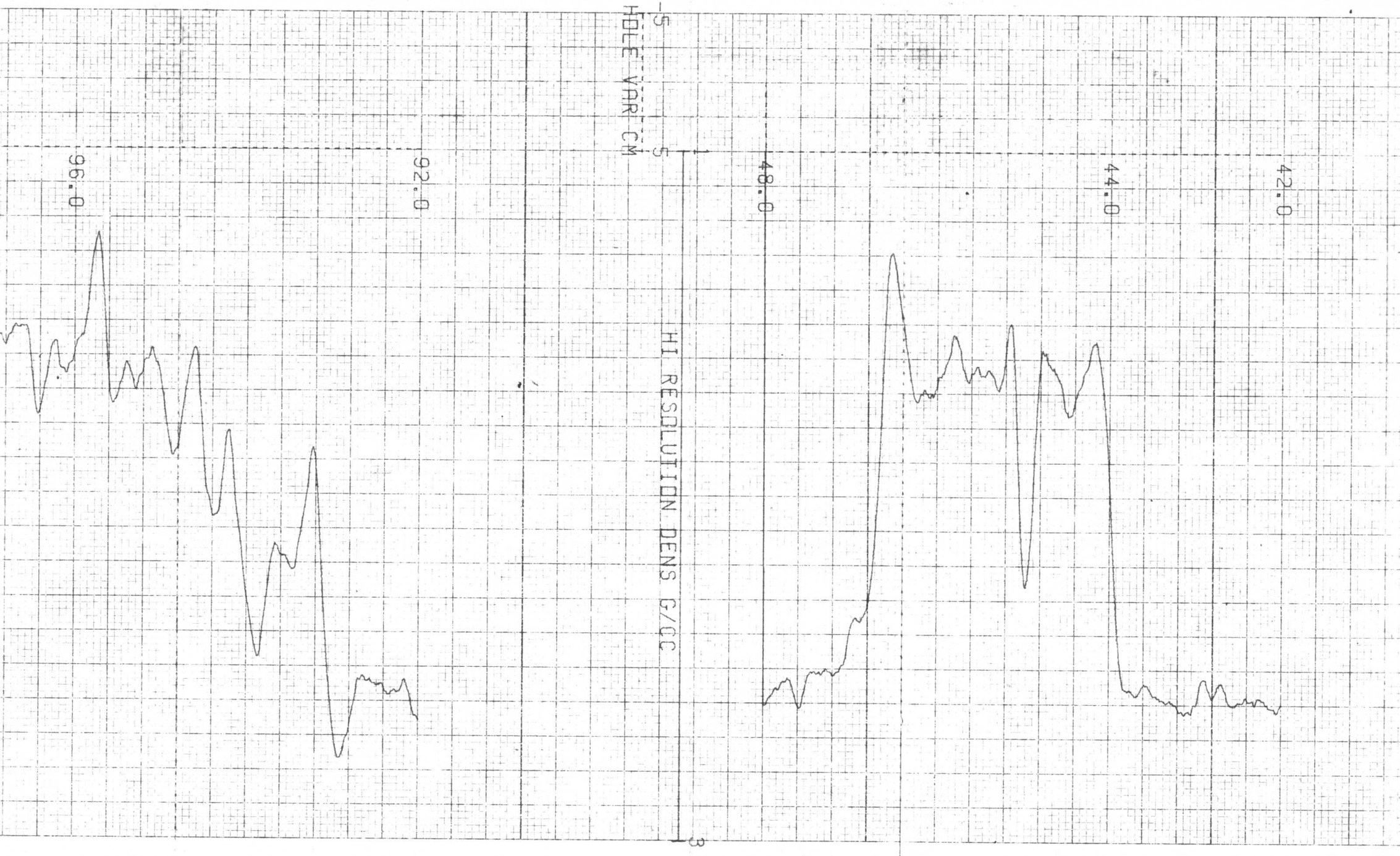

60
70
80
90
100
110
72
40
63
70
11
0
15
22
42
51
66
65
60
62
70
82
77
89
SEAM I
"HOBBIT SEAM"
94.14
98.94
ROCK
COAL
0.95
3.37
4.32
SEAM H
127.24
129.81
ROCK
COAL
0.34
2.23
2.57

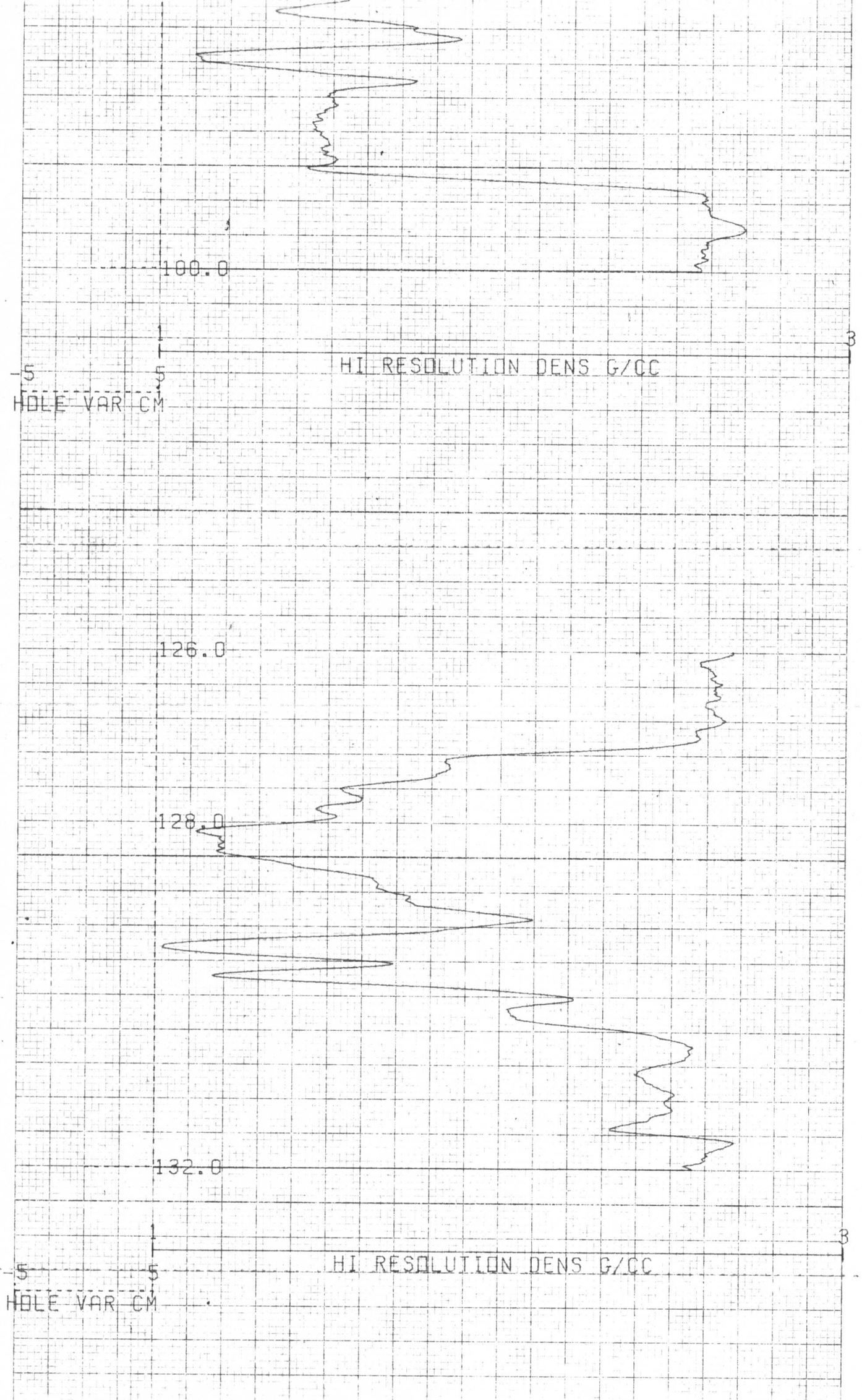

120
130
140
150
160
170
180
73
88
84
86
89
82
76
89
78
88
80
88
85
87
84
82
82
86
84
77
84
88
87
81
88
SEAM G
155.24
159.46
ROCK
COAL
1.11
3.11
4.22
SEAM F
182.38
184.56
ROCK
COAL
0.47
1.70
2.17
SEAM E UPPER
205.28
ROCK
COAL


190
200
210
Total:215.48m
74
81
76
86
82
83
206.14
SEAM E
LOWER
208.17
209.45
0.00
0.86
0.86
ROCK
COAL
0.12
1.16
1.28


27.0
28.0
32.0
34.0
HI RESOLUTION DENS G/CC
3
HOLE VOR CW
5
5

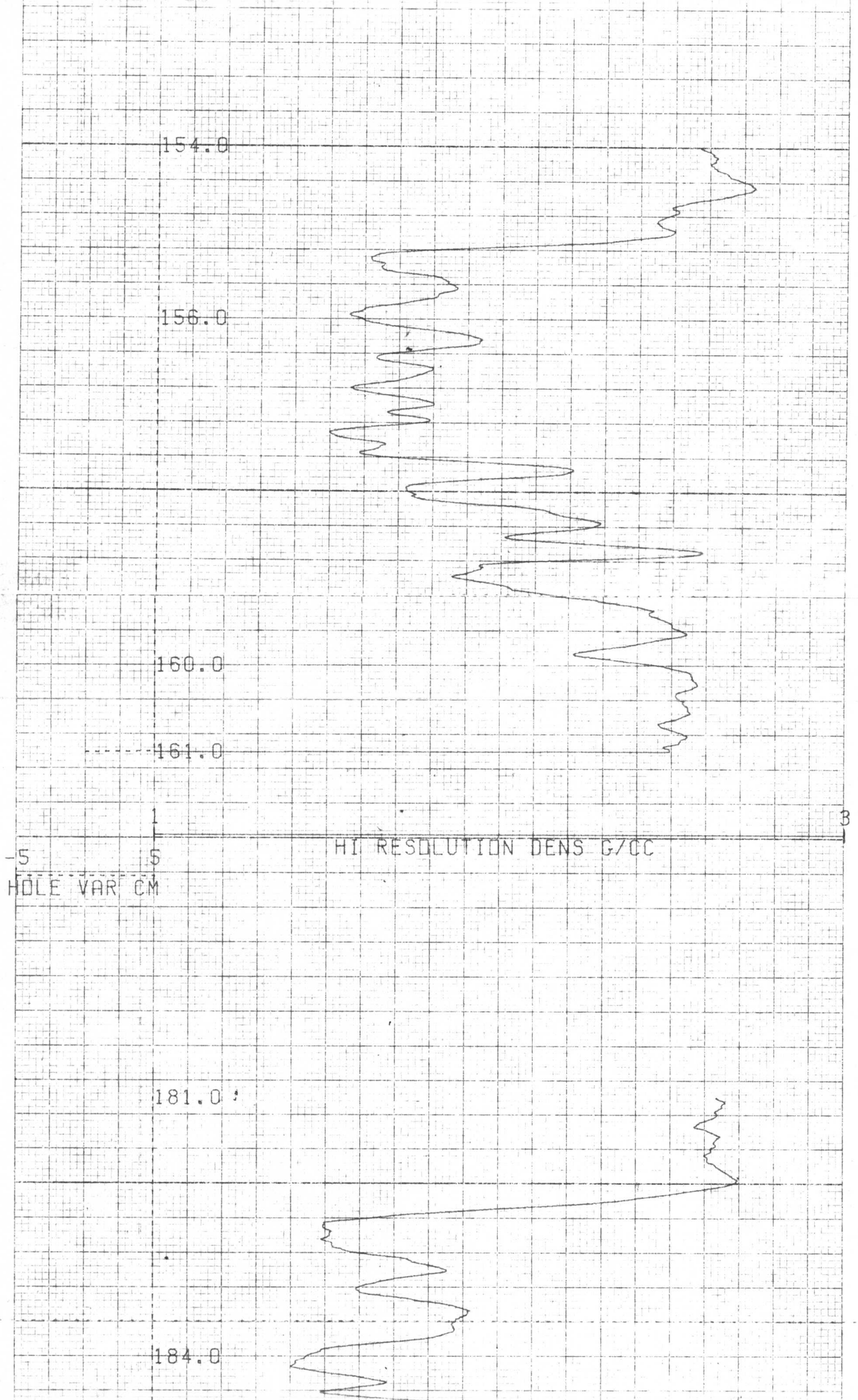
CENTURY GEOPHYSICAL CO






CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

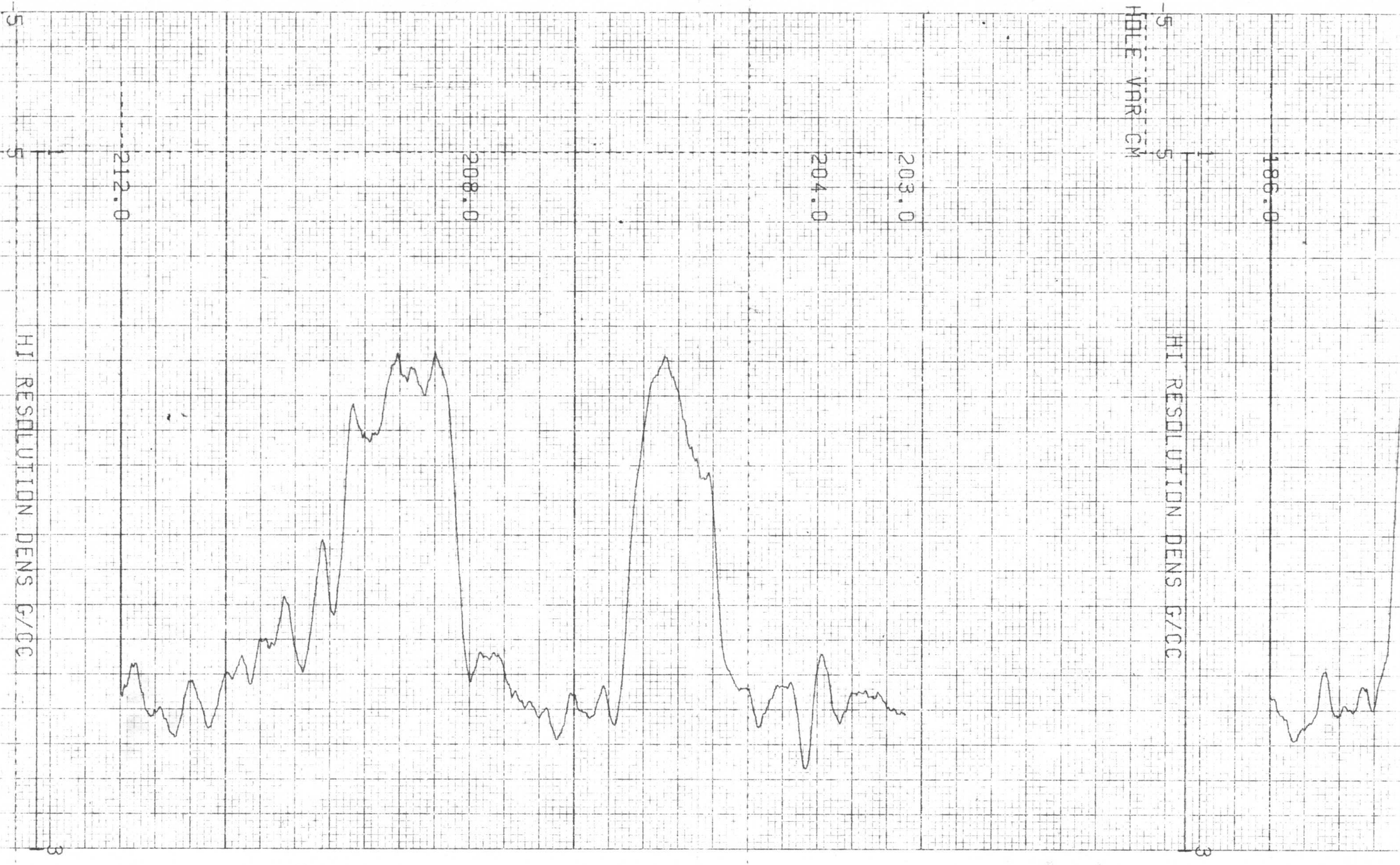
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040






AL CORP. PART NO. 786-0040

CENTURY GEOPHYSIC



HOLE VAR CM

695

COMPU-LOG V8L2 PLOT 08-14-82

DDH-82-003

GULF CANADA RES. INC

KLAPPAN MTN.

HOLE DIAMETER : 09.6

PROBE # 9030A - 456

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 6043

SENSOR #4 CAL BIAS = 14

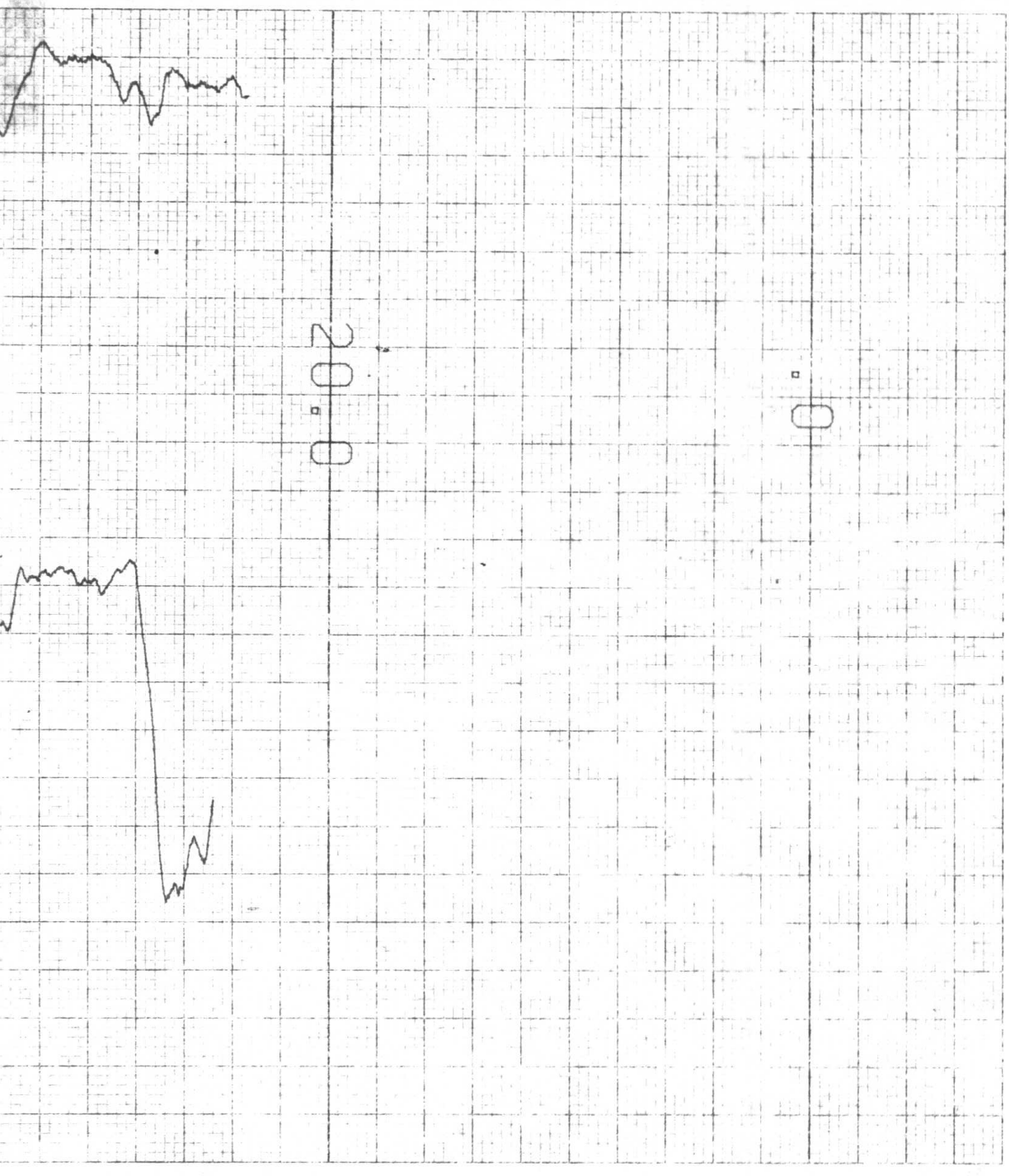
DATA V8L2*A TRUCK # P823

K. SKARBO APPL.#1 TN

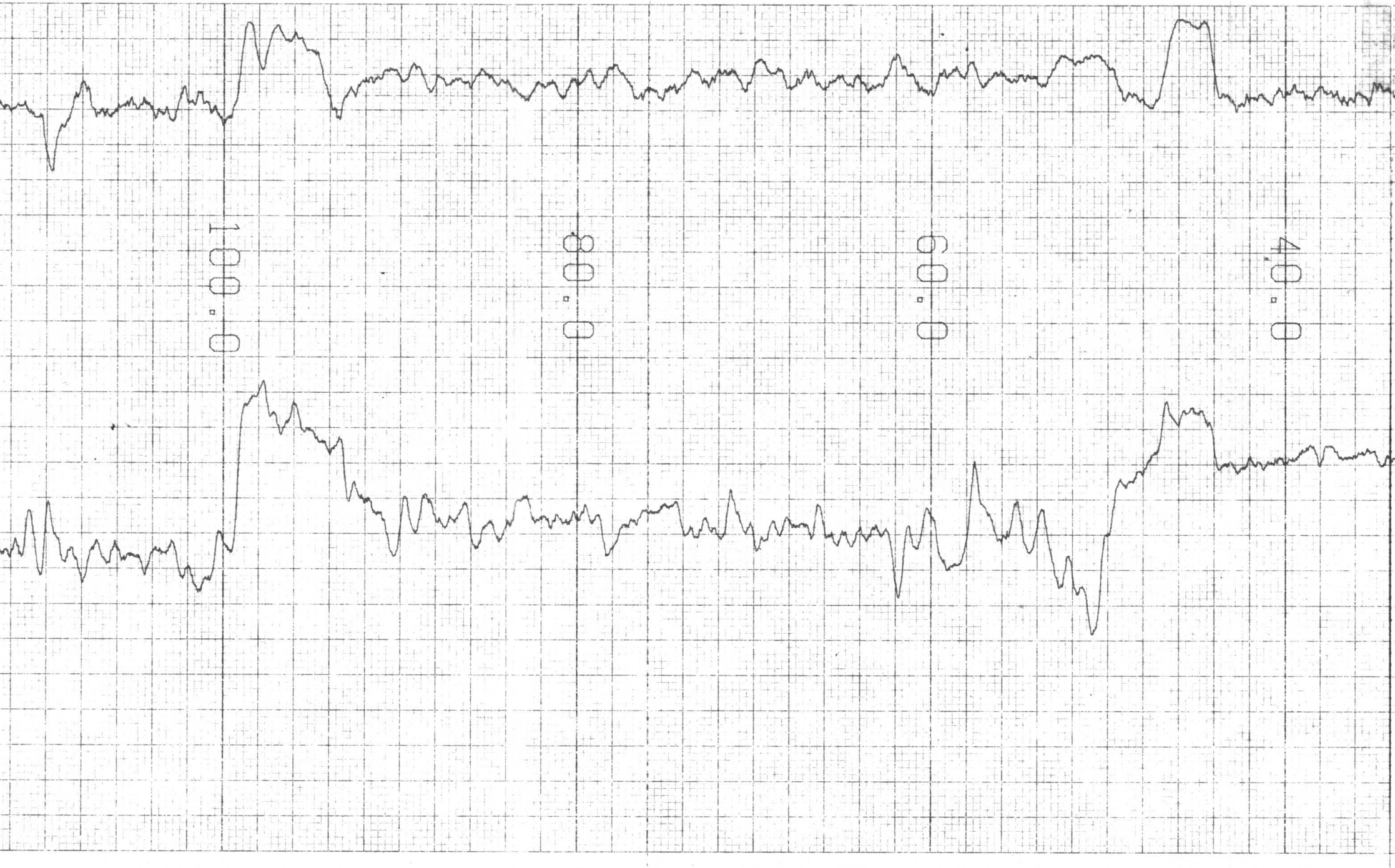
ICAL CORP. PART NO. 786-0040

Gr.-Mt. Klappan 84(3) A

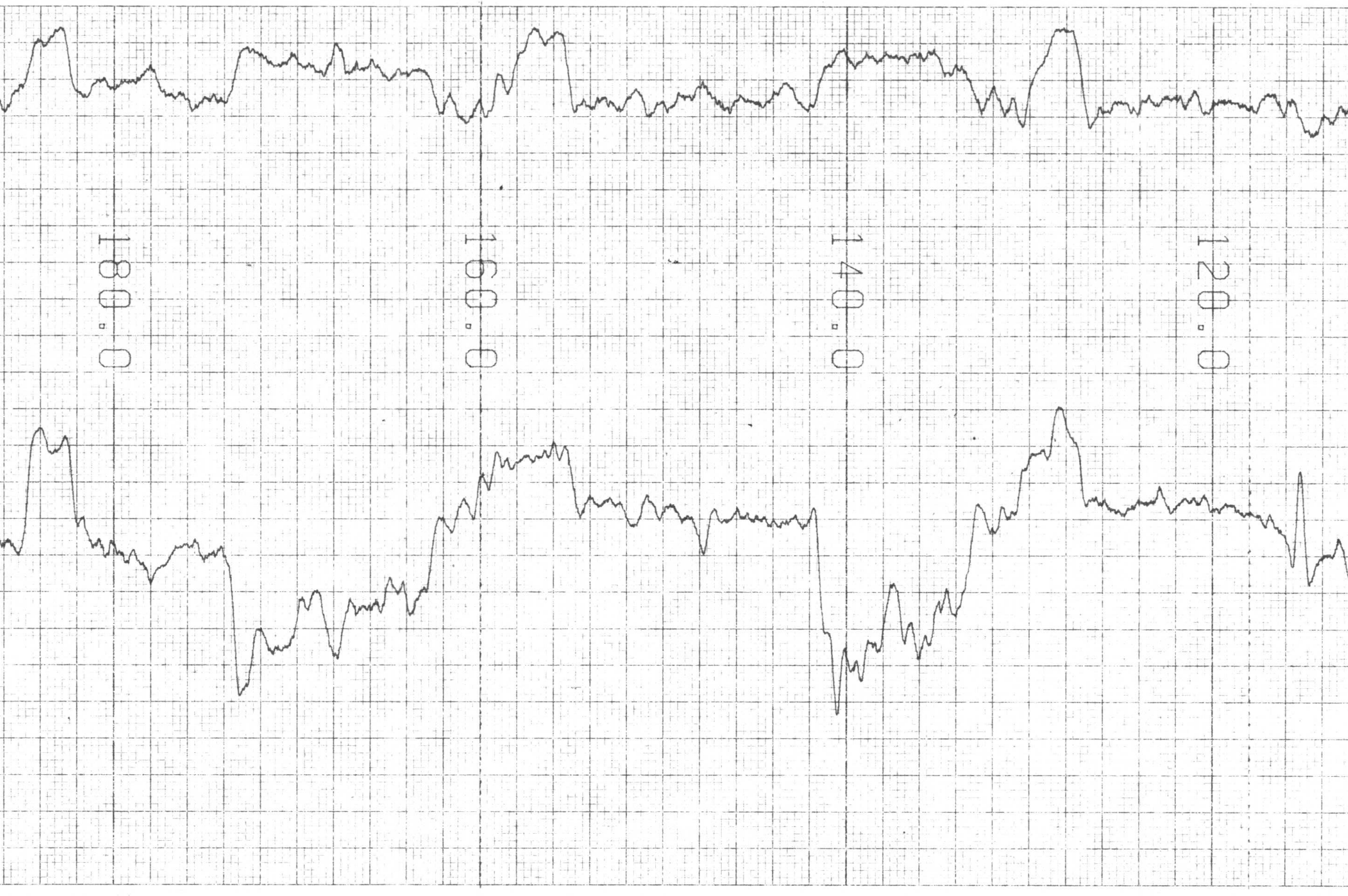
ICAL CORP. PART NO. 786-0040



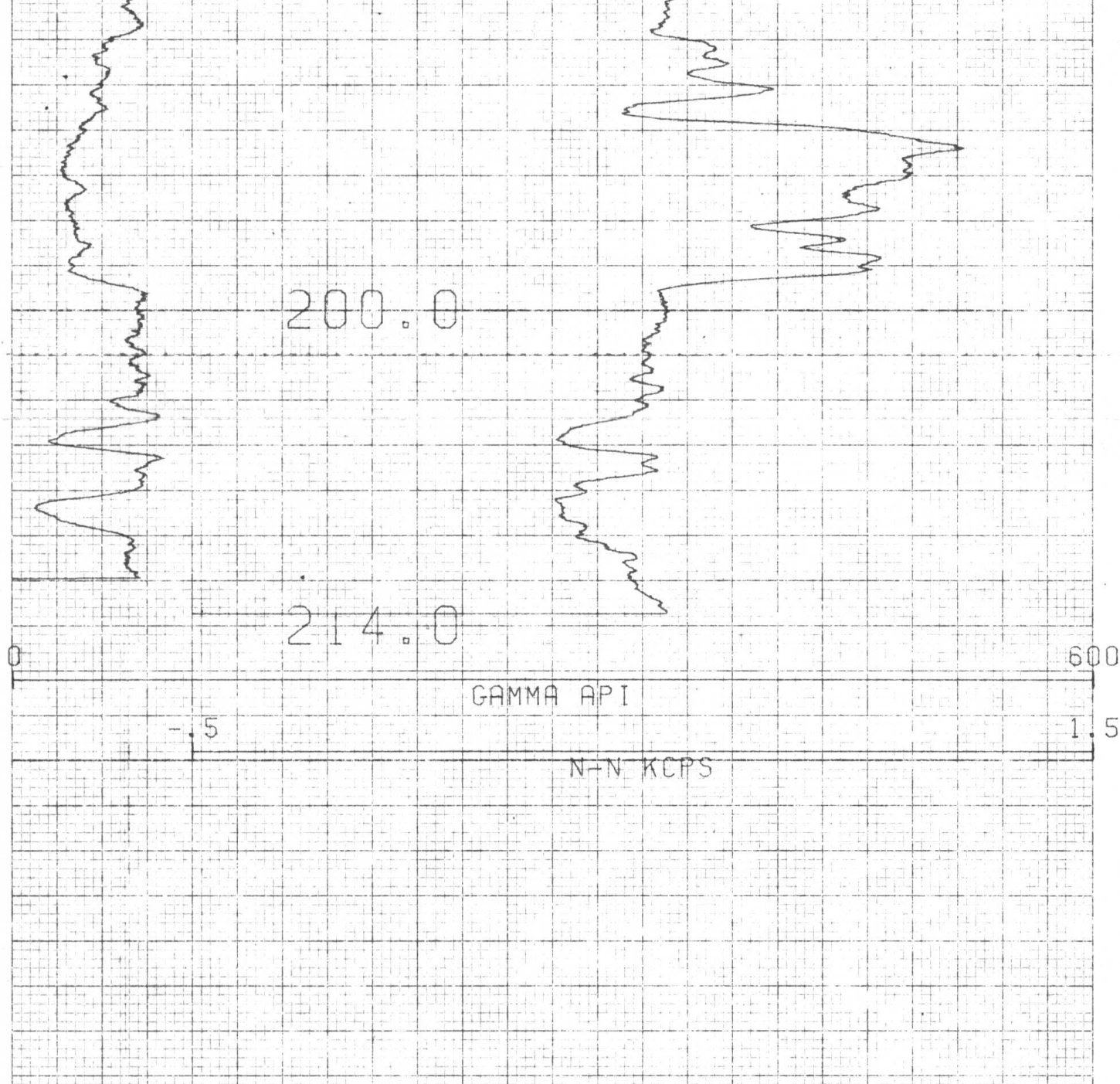
CENTURY GEOPHYS



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




64

COMPU-LOG V8L2 PLOT 08-14-82

695

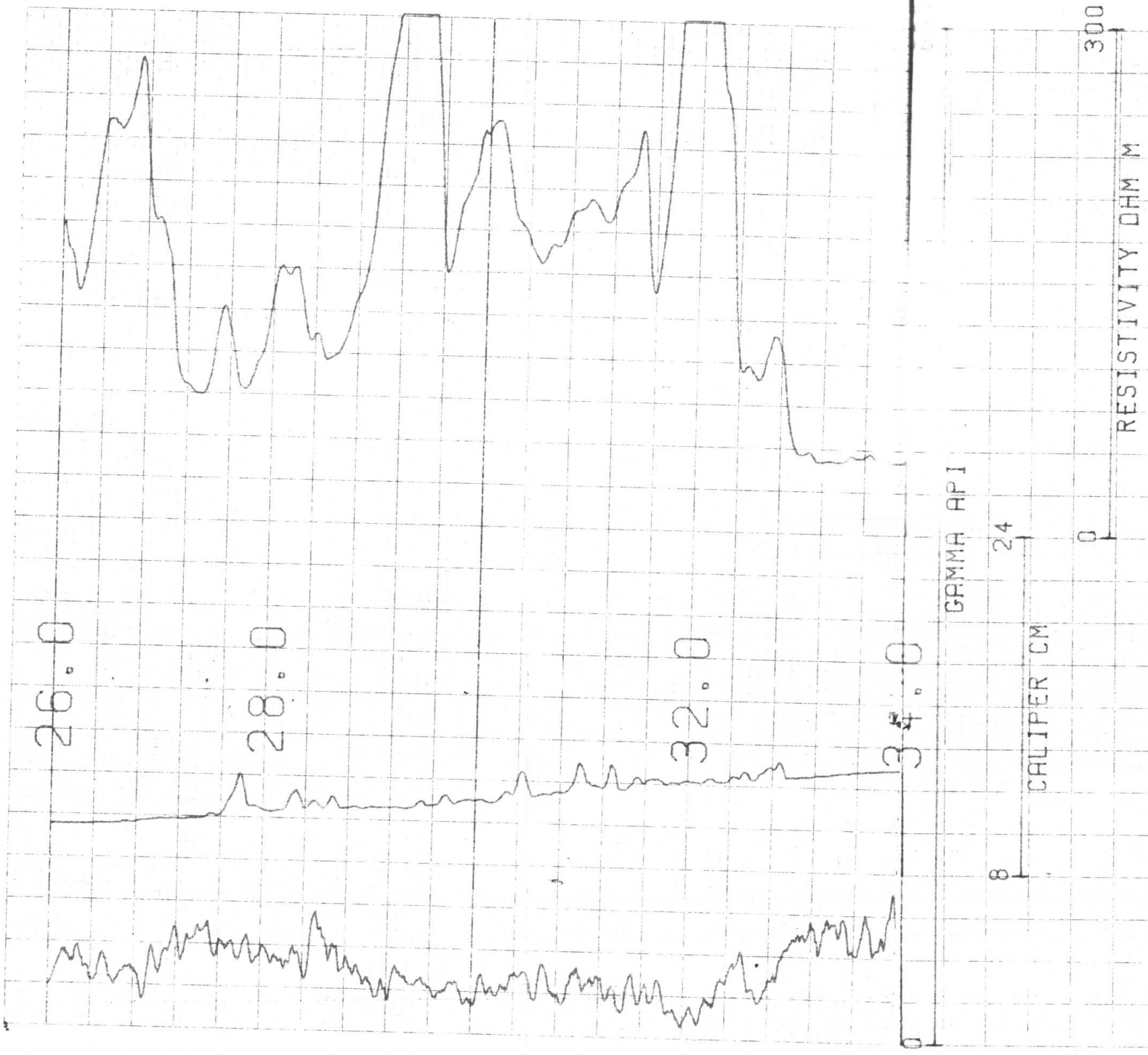
DDH-82-003
GULF CANADA RES. INC
KLAPPAN MTN.

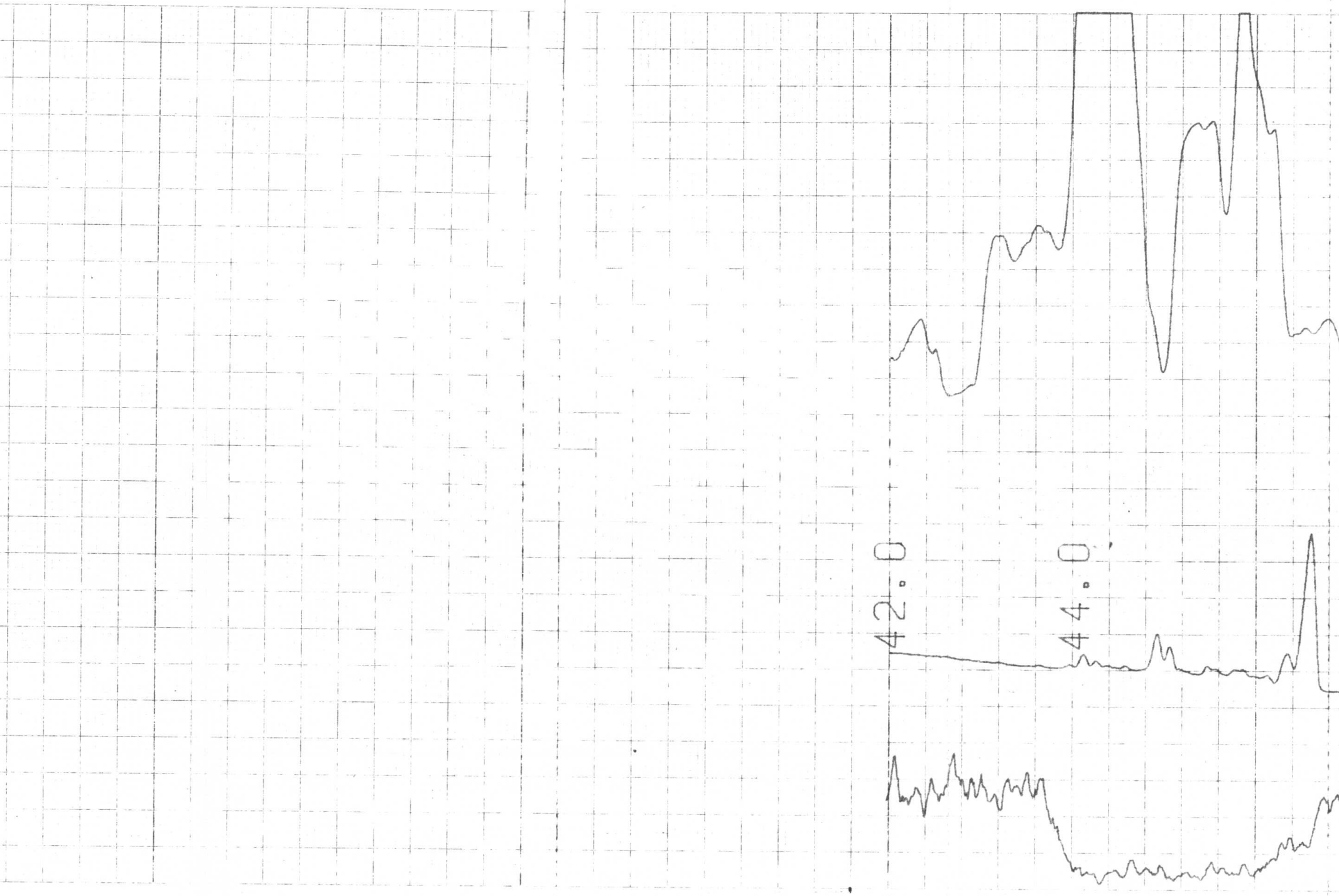
HOLE DIAMETER : 09.6
PROBE # 9055A - 065
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 272
SENSOR #4 CAL BIAS = 0
DATA V8L2*A TRUCK # P823
K. SKARBO APPL.#1007L1

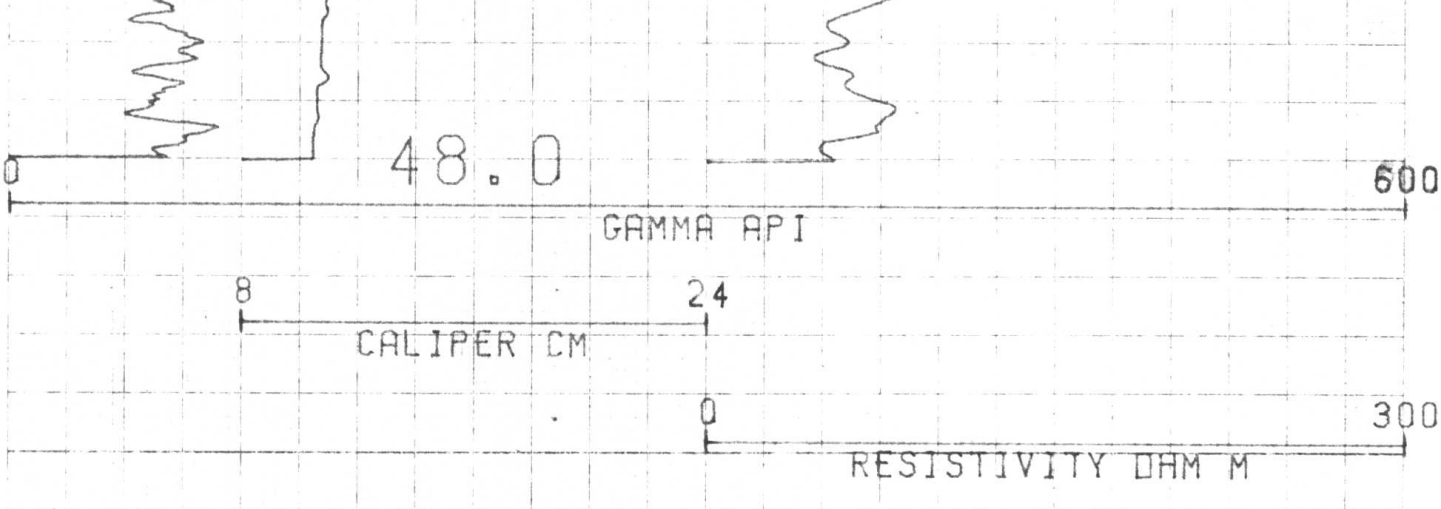
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

Gr. - Mt. Klappan 84(3) A

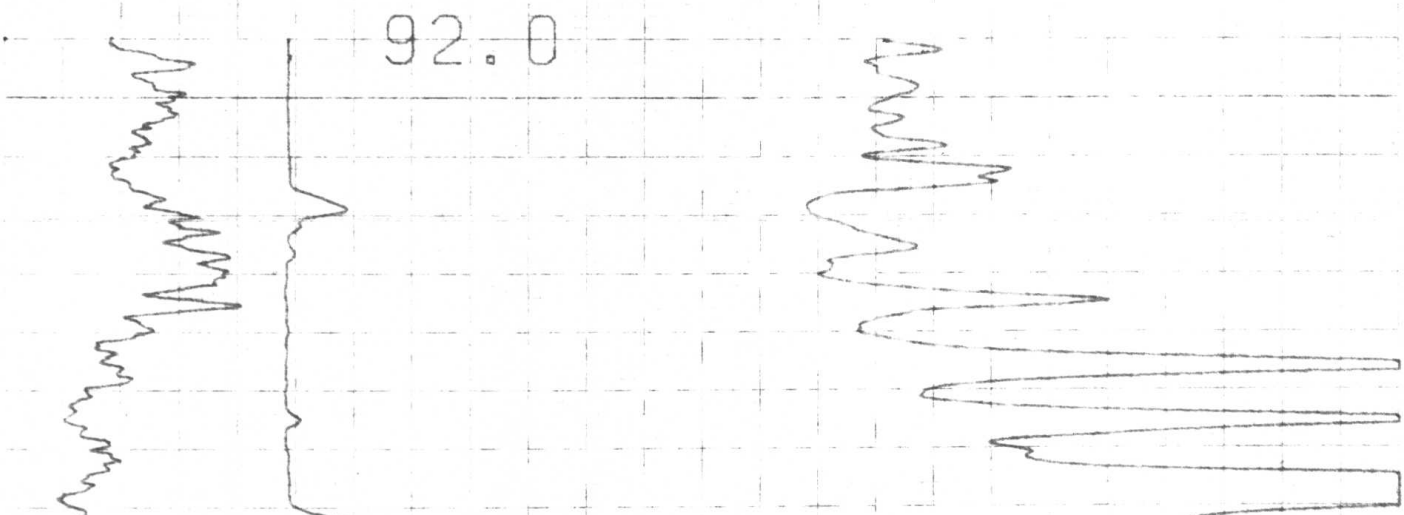
CENTURY GEOPHYSICAL CORP. PART NO. 78 640

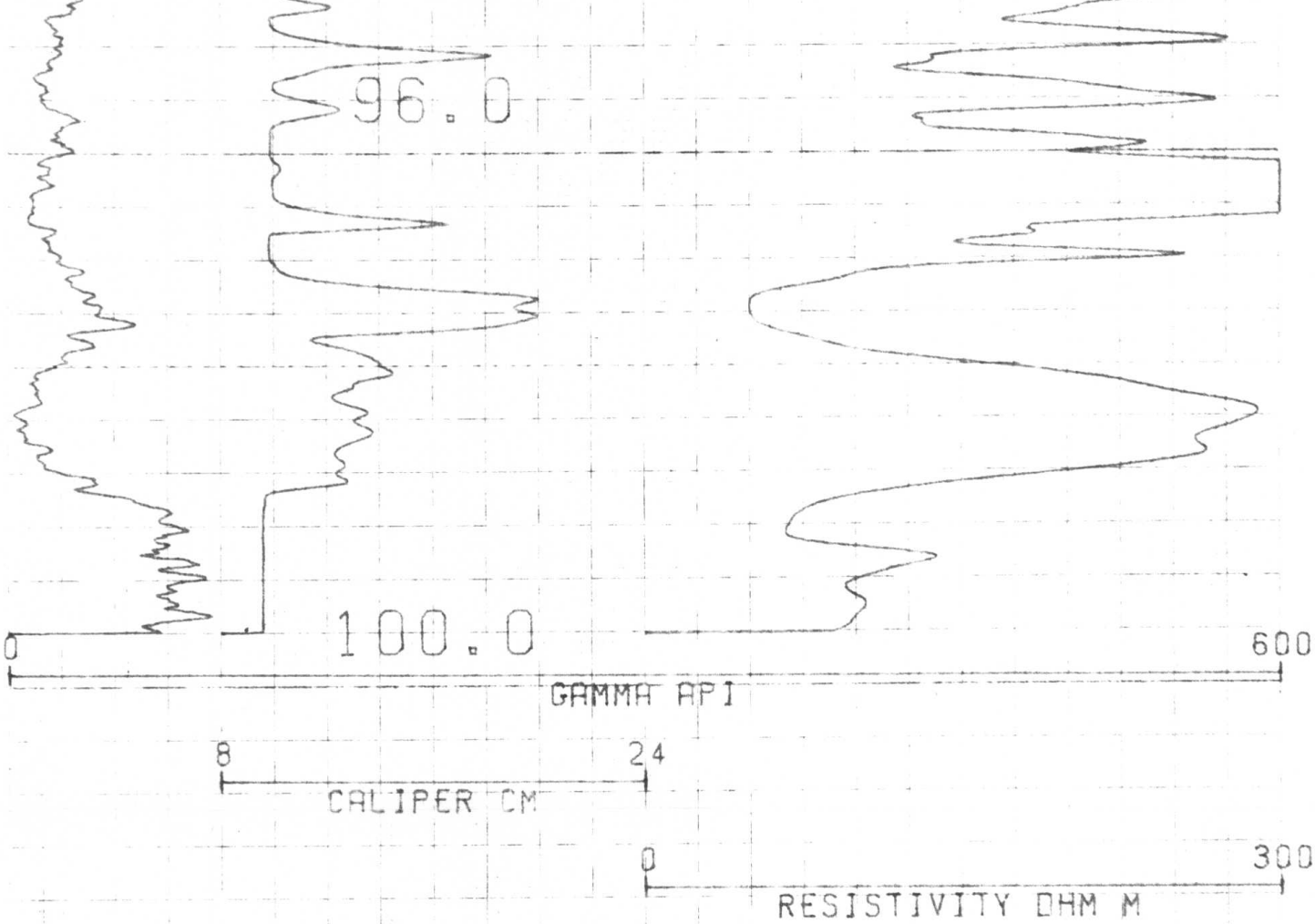



42.0
44.0

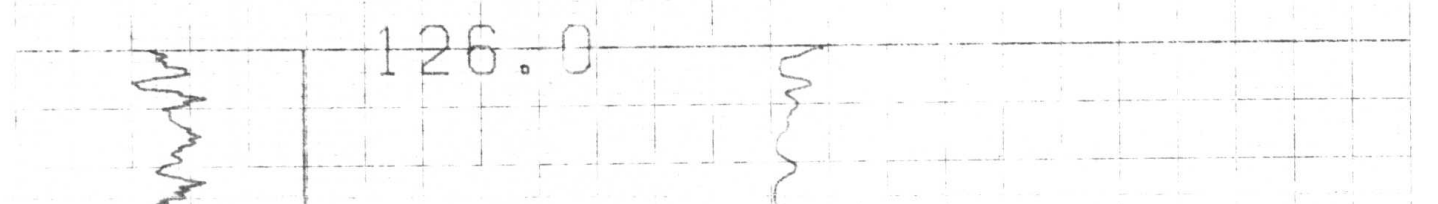



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

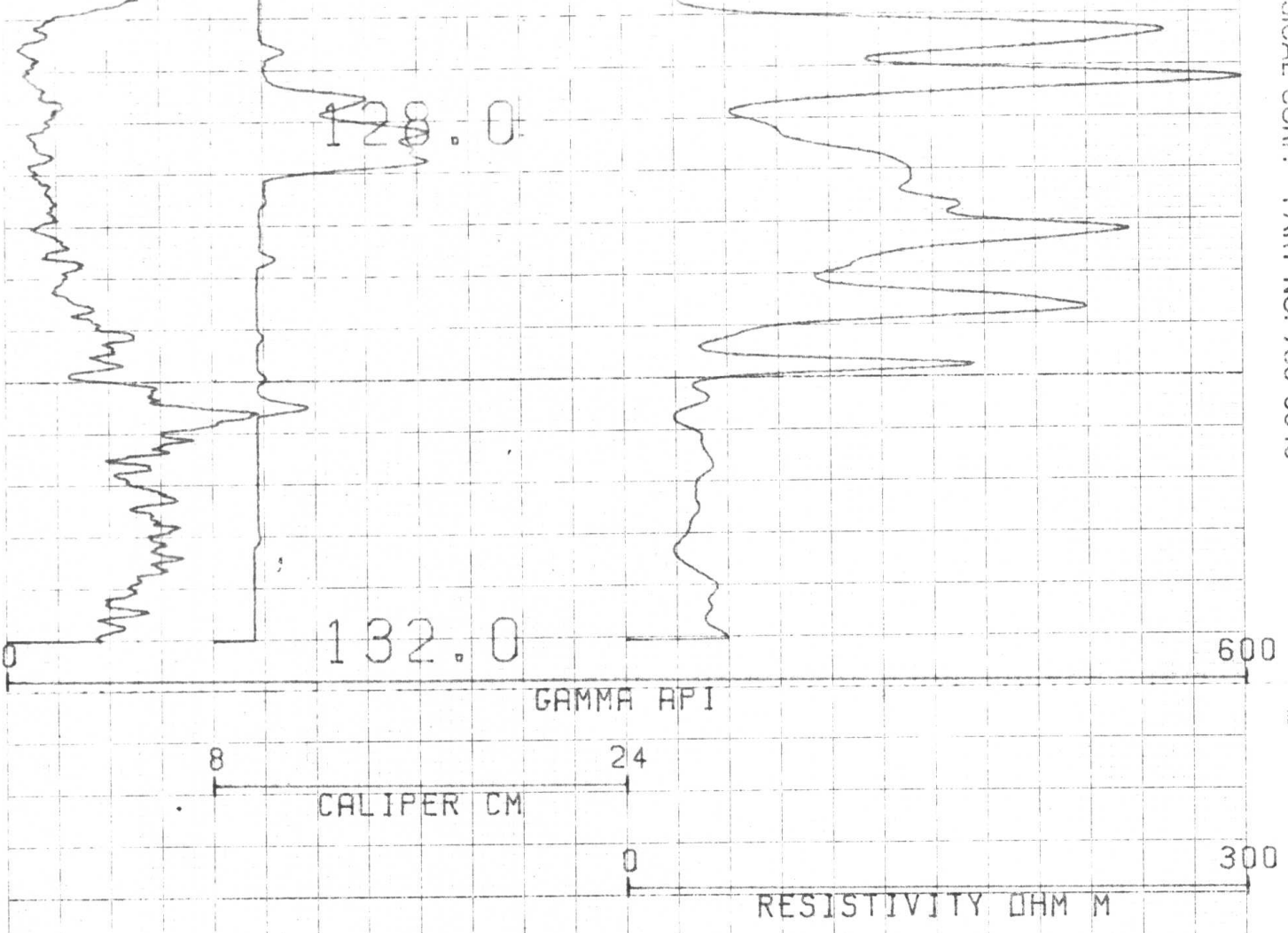





CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

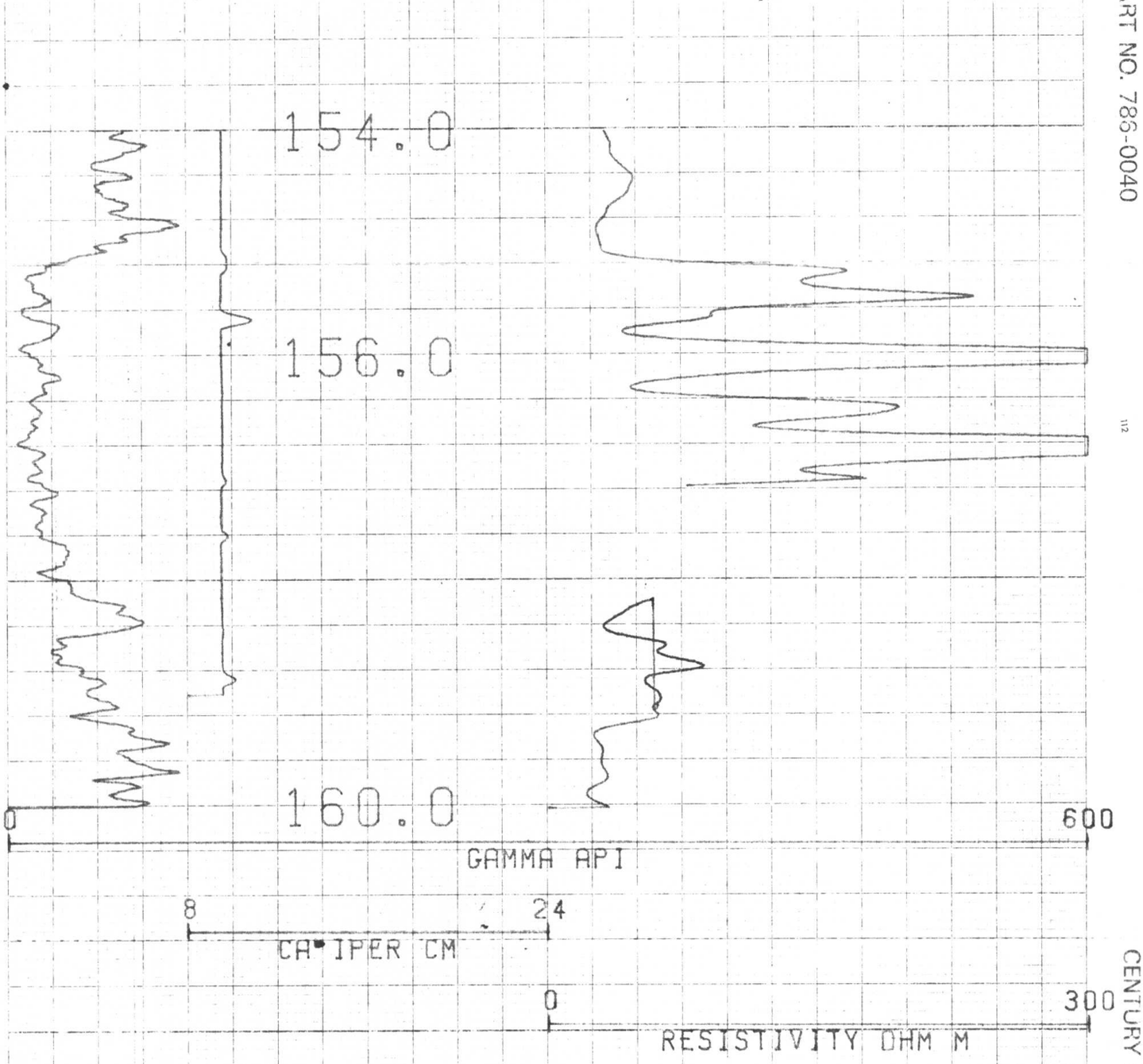



CENTURY GEOPHY

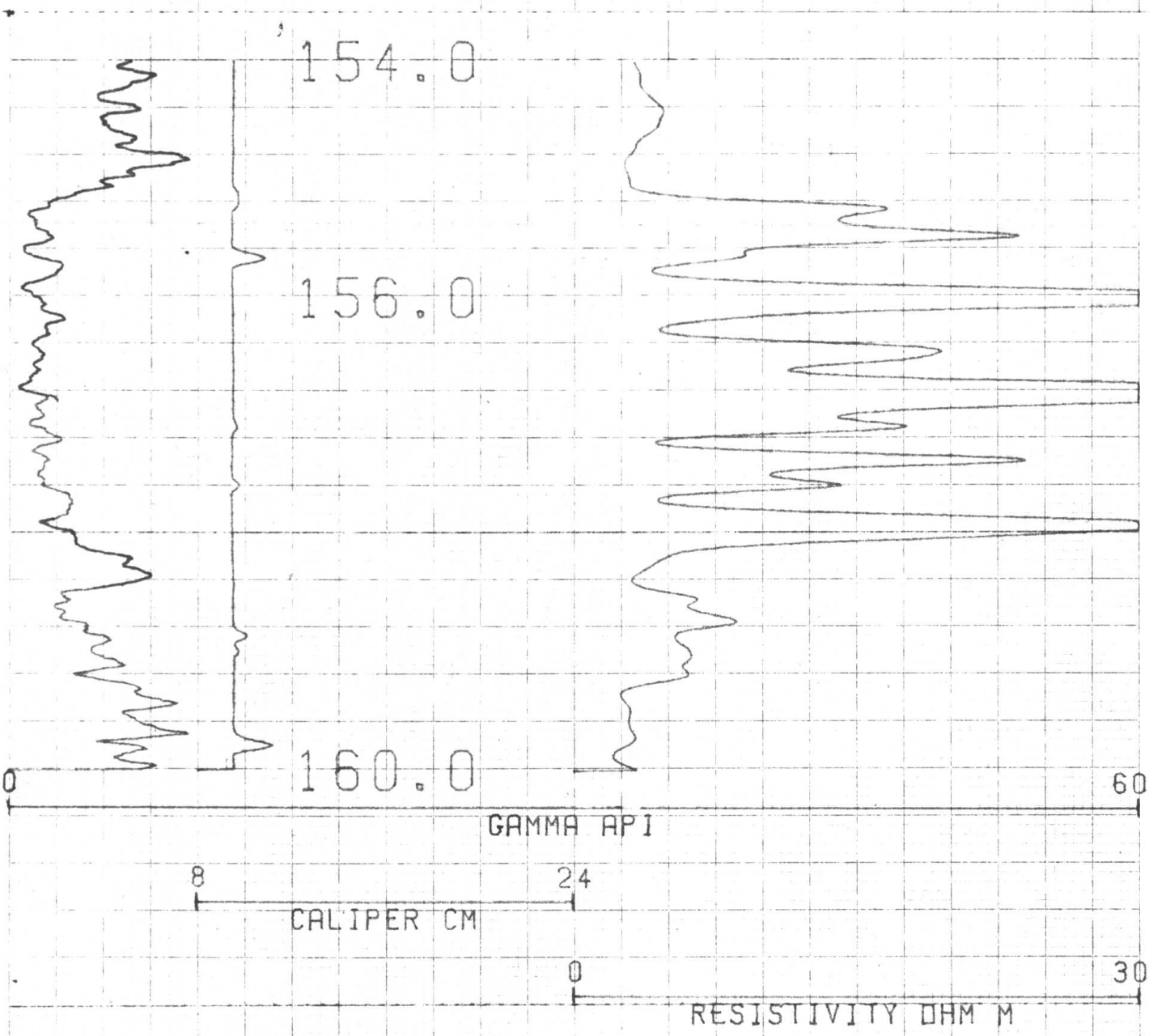



SICAL CORP. PART NO. 786-0040

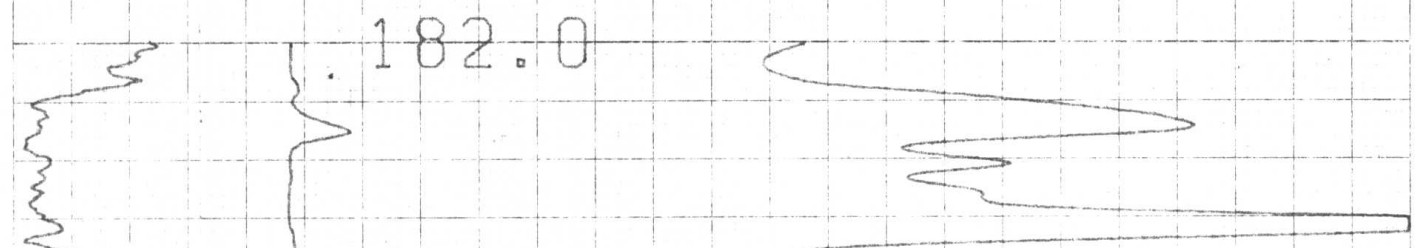
CENTURY GEOPHYSICAL CORP. PA

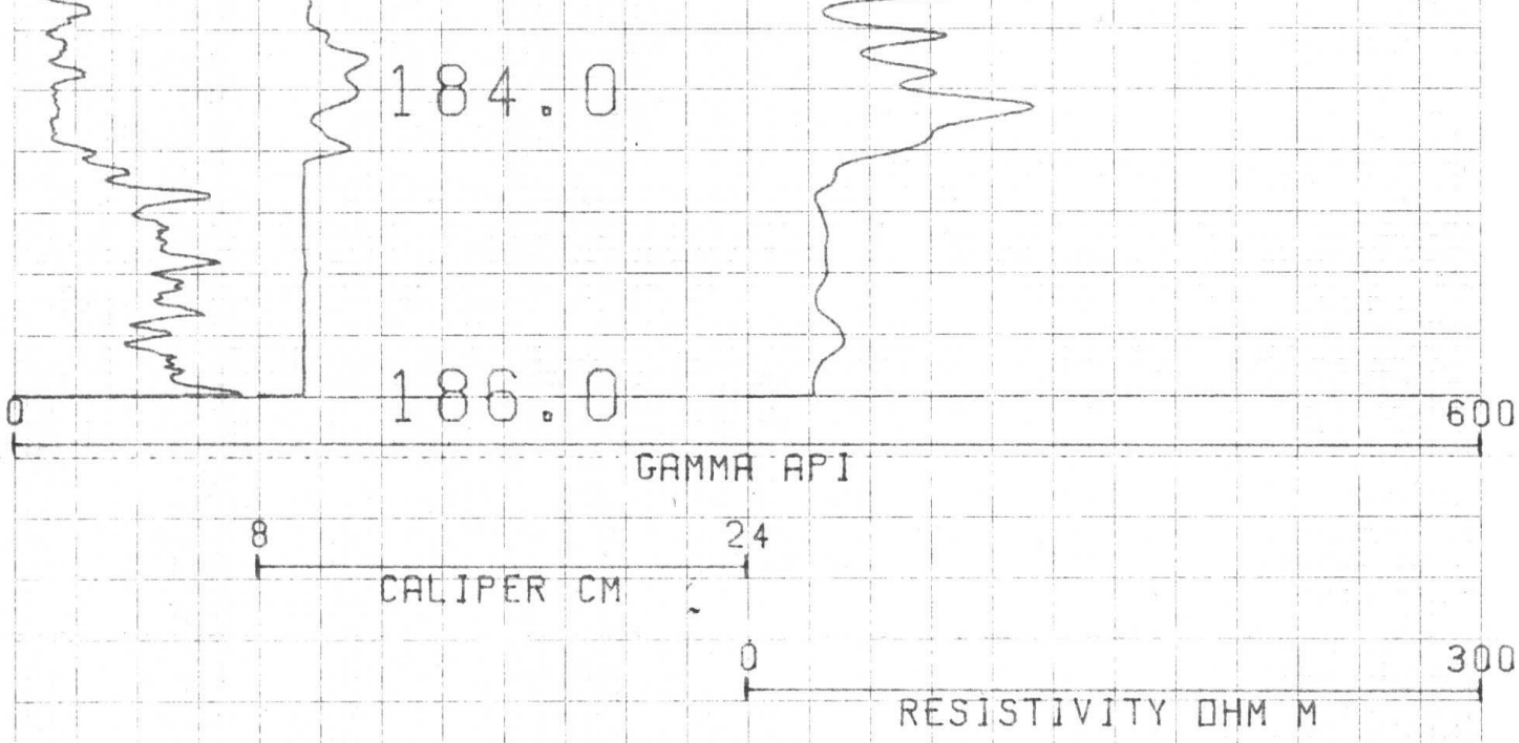



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
RT NO. 786-0040

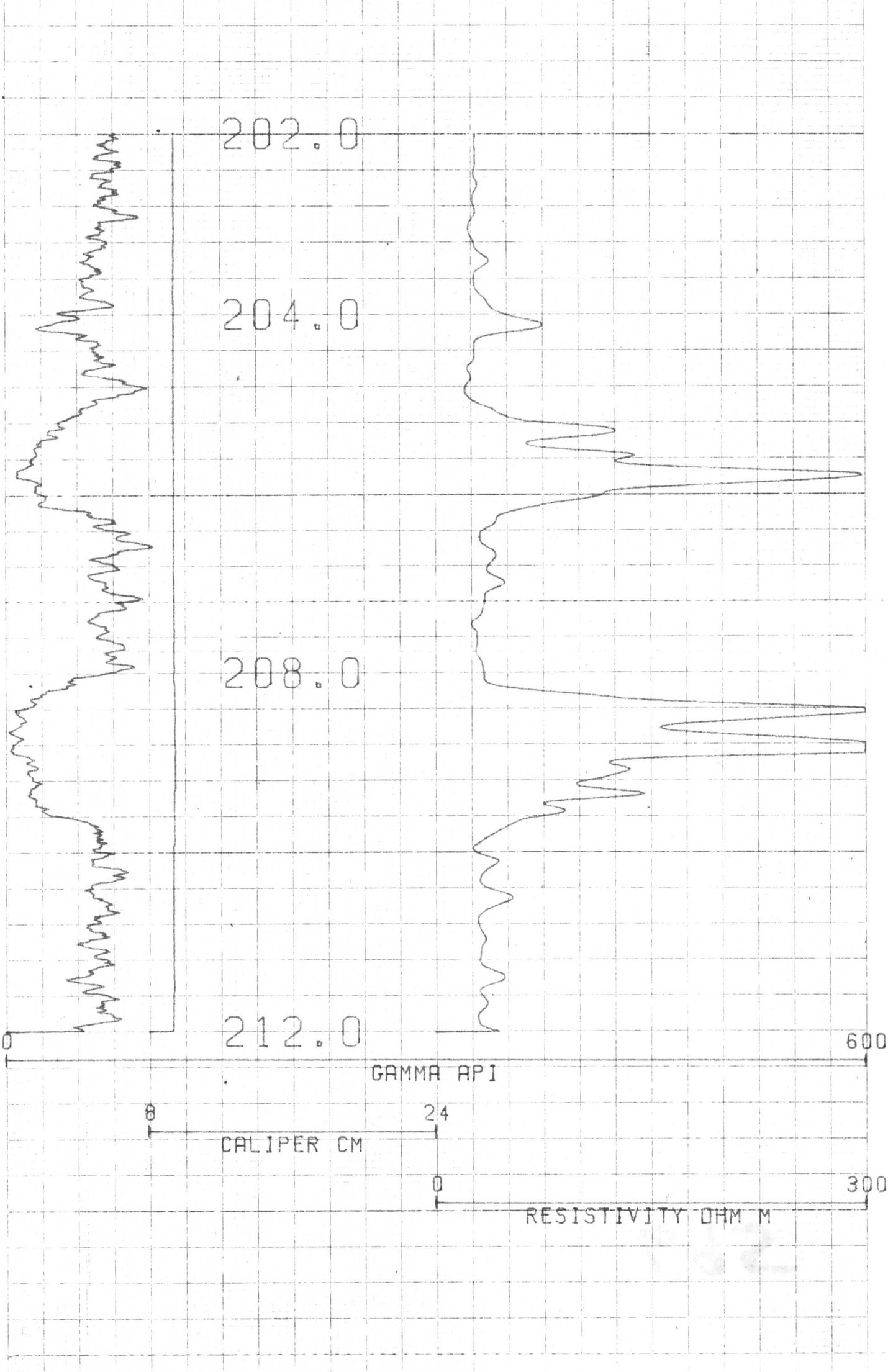



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040






CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL

COMPU-LOG V8L2 PLOT 08-14-82

695

DDH-82-003

GULF CANADA RES. INC

KLAPPAN MTN.

HOLE DIAMETER : 09.6

PROBE # 9030A - 456

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 6043

SENSOR #4 CAL BIAS = 14

DATA V8L2*A TRUCK # P823

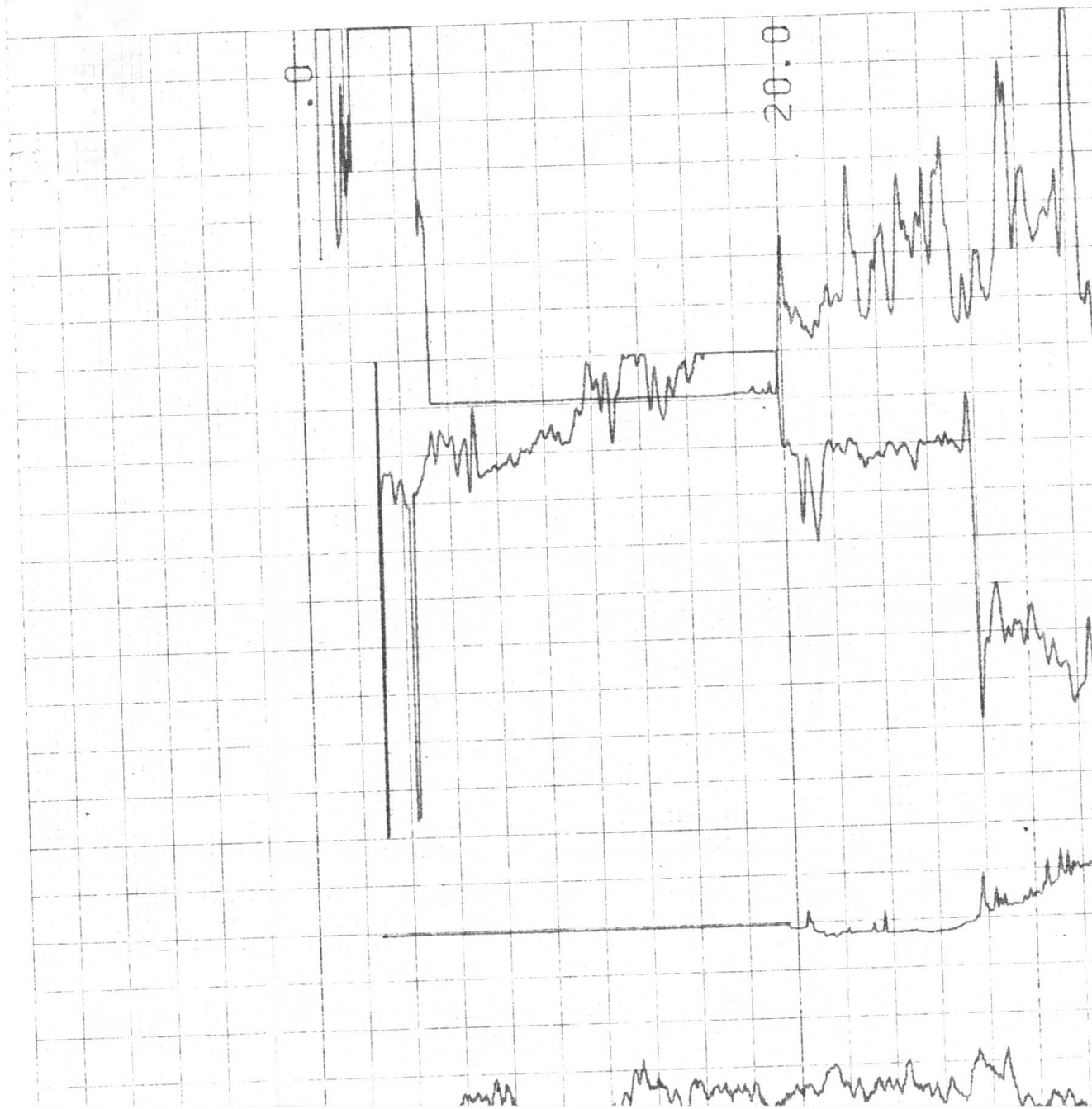
K. SKARBO APPL.#1152L1

CORP. PART NO. 786-0040

GR. - Mt. Klappan 84(3) A

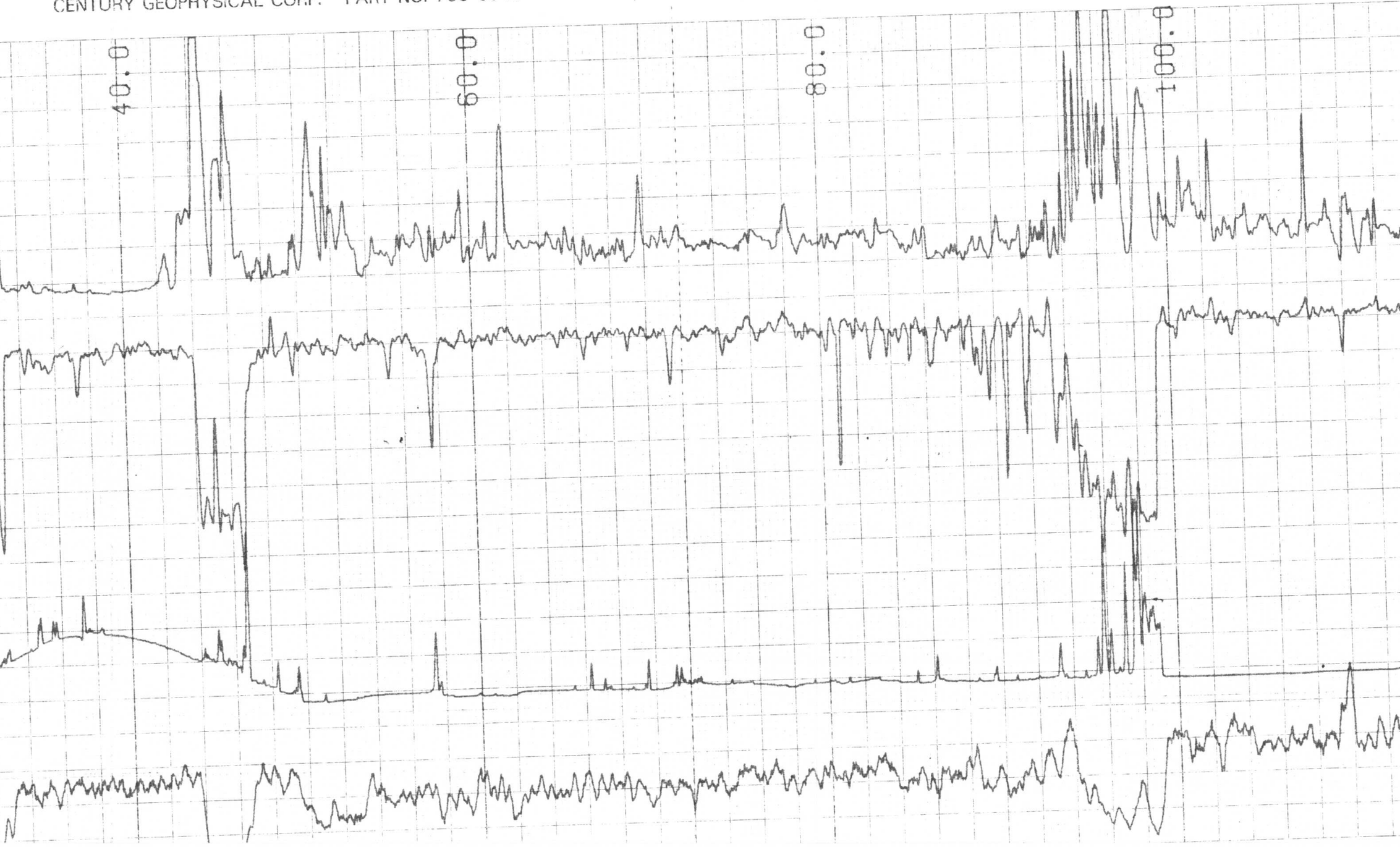
112

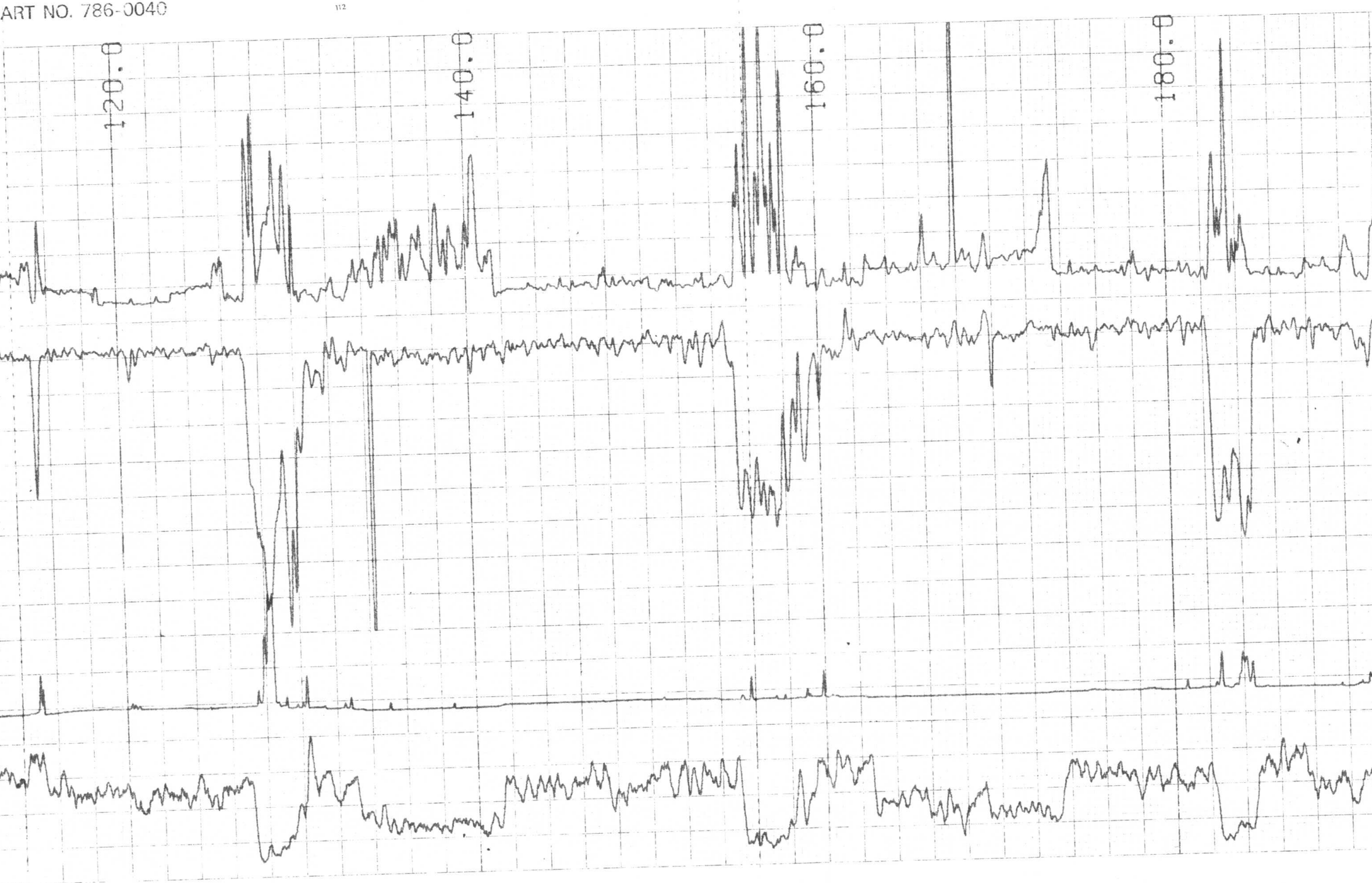
L CORP. PART NO. 786-0040

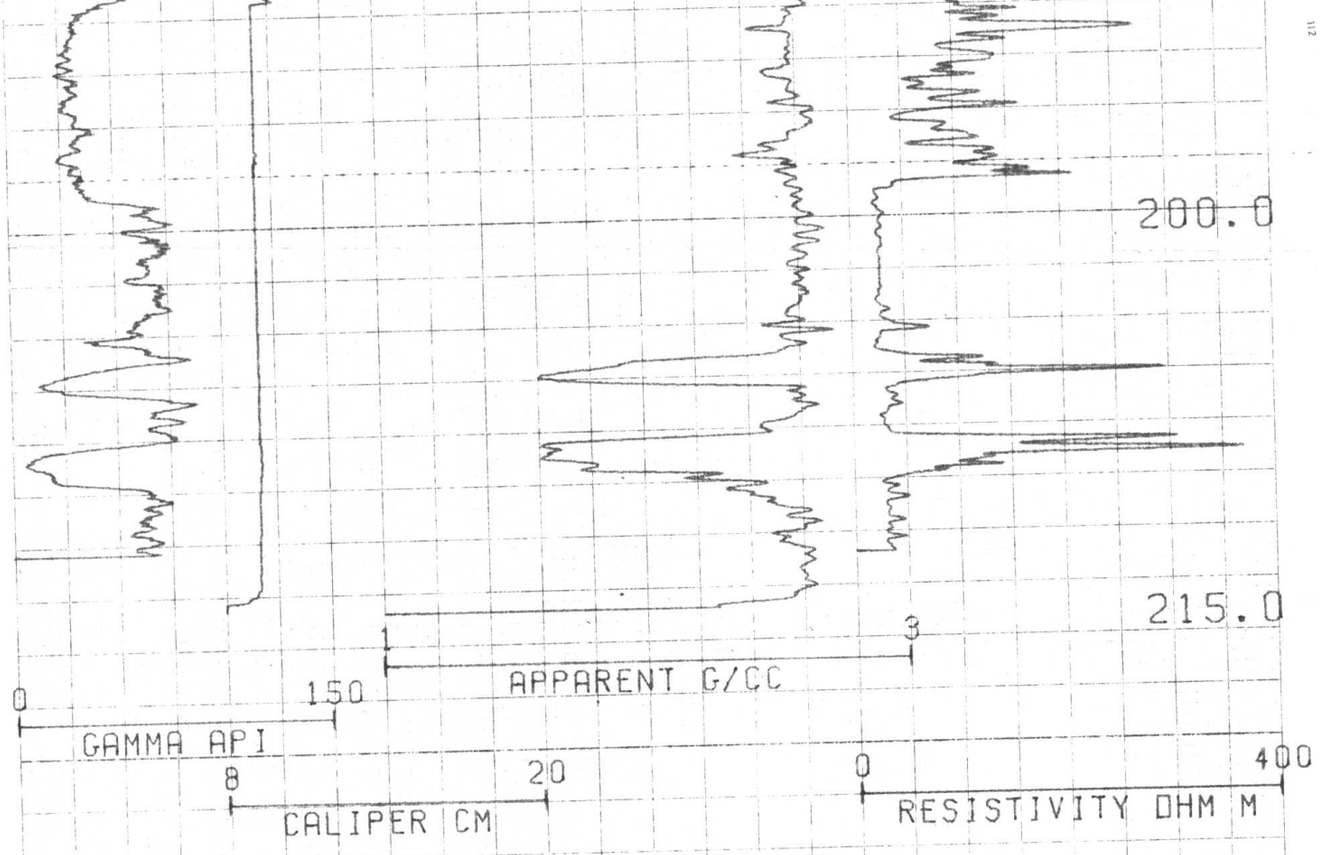


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. P




120.0
140.0
160.0
180.0




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

COMPU-LOG V8L2 PLOT 08-14-82

695

DDH-82-003
GULF CANADA RES. INC
KLAPPAN MTN.

HOLE DIAMETER : 09.6
PROBE # 9030A - 456
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 6043
SENSOR #4 CAL BIAS = 14
DATA V8L2*A TRUCK # P823
K. SKARBO APPL.#2030L1

GR. - Mt. Klappan 84(3)A

CENTURY (

GEOPHYSICAL CORP. PART NO. 786-0038
CENTURY GEOPHYSICAL CORP. PART NO. 786-0038
CENTURY GEOPHYSICAL CORP. PART NO. 786-0038
DDH-82-003
GULF CANADA RES. INC
KLAPPAN MTN.
DDH-82-003
GULF CANADA RES. INC
KLAPPAN MTN.
GAMMA API
APPARENT RES
GAMMA API
695

# VERTICAL DEVIATION

695

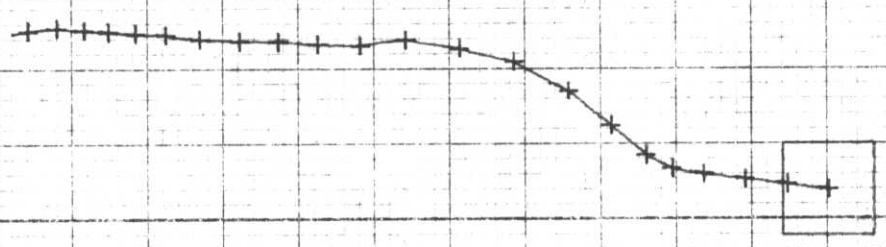
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

CLIENT : GULF CANADA RES. INC
LOCATION : KLAPPAN MTN.
HOLE ID : DDH-82-003
DATE OF LOG : 08-14-82
PROBE : 9055A 0065

SCALE: .25 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 214.0 M
AZIMUTH: 281.0
DISTANCE: 2.74 M

+ = 10.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH



CENTURY GEOPHYSICAL CORP. TAPE # 2 TRACK # 1 OPEN HOLE

GR.-Mt. Klappan 84(3)A

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

682

GR.-Mt. Klappan 84(3) A

695

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG V8L1 DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : DDH-82-003

LOCATION : KLAPPAN MTN. DATE OF LOG : 08-14-82

DATA FROM : V8L2*A PROBE : 9055A 0065

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|---|---|---|---|---|---|---|---|
| .00 | .00 | .00 | .00 | .00 | 0 | 0 | 0 |
| 10.00 | 9.99 | .01 | -.13 | .13 | 277.1 | .8 | 277.1 |
| 20.00 | 19.99 | .03 | -.27 | .27 | 277.1 | .8 | 277.1 |
| 30.00 | 29.99 | .05 | -.41 | .41 | 277.1 | .7 | 277.1 |
| 40.00 | 39.99 | .06 | -.54 | .54 | 277.6 | .6 | 277.4 |
| 50.00 | 49.99 | .11 | -.60 | .61 | 280.8 | .5 | 278.1 |
| 60.00 | 59.98 | .21 | -.71 | .74 | 286.6 | .8 | 280.8 |
| 70.00 | 69.89 | .32 | -.85 | .91 | 290.9 | 1.0 | 308.7 |
| 80.00 | 79.99 | .42 | -1.03 | 1.12 | 292.5 | 1.1 | 295.8 |
| 90.00 | 89.98 | .47 | -1.22 | 1.30 | 291.1 | 1.0 | 293.5 |
| 100.00 | 99.98 | .49 | -1.39 | 1.48 | 289.6 | 1.0 | 292.1 |
| 110.00 | 109.98 | .48 | -1.54 | 1.62 | 287.3 | .8 | 290.1 |
| 120.00 | 119.98 | .48 | -1.69 | 1.75 | 286.0 | .6 | 287.9 |
| 130.00 | 129.98 | .49 | -1.81 | 1.88 | 285.2 | .7 | 286.8 |
| 140.00 | 139.98 | .49 | -1.94 | 2.01 | 284.3 | .7 | 285.6 |
| 150.00 | 149.98 | .50 | -2.07 | 2.13 | 283.6 | .7 | 284.9 |
| 160.00 | 159.98 | .51 | -2.19 | 2.25 | 283.3 | .5 | 284.0 |
| 170.00 | 169.98 | .52 | -2.29 | 2.35 | 282.9 | .6 | 283.6 |
| 180.00 | 179.98 | .52 | -2.38 | 2.43 | 282.5 | .5 | 283.2 |
| 190.00 | 189.98 | .53 | -2.46 | 2.52 | 282.3 | .4 | 282.8 |
| 200.00 | 199.97 | .54 | -2.55 | 2.61 | 282.0 | .5 | 282.6 |
| 210.00 | 209.97 | .53 | -2.64 | 2.70 | 281.4 | .5 | 282.2 |
| TD 214.00 | 213.97 | .52 | -2.69 | 2.74 | 281.0 | .7 | 282.5 |

GULF CANADA RESOURCES INC.

## - D A T A  S O U R C E  S U M M A R Y -

DATA SOURCE - KPNBCDDH82004 DATE - 02/06/85

### - H I S T O R Y -

START DATE - 08/15/82
END DATE - 08/18/82

CONTRACTOR - J.T.THOMAS
GEOLOGIST - LOUIE
OPERATOR - GCRI
SURVEYOR -

REMARKS - GEOPHYSICAL LOG MEASURED FROM GROUND LEVEL + APPRO X. 0.6M

### - L O C A T I O N -

PROVINCE - BC
ELEVATION - 1470.00
ZONE - 9
NORTHING - 6344510.00
EASTING - 513515.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571443
LONGITUDE - 1284634

### - O R I E N T A T I O N -

LENGTH - 157.58
INCLINATION - 60.0
AZIMUTH - 40.0

CORE SIZE - 95.8

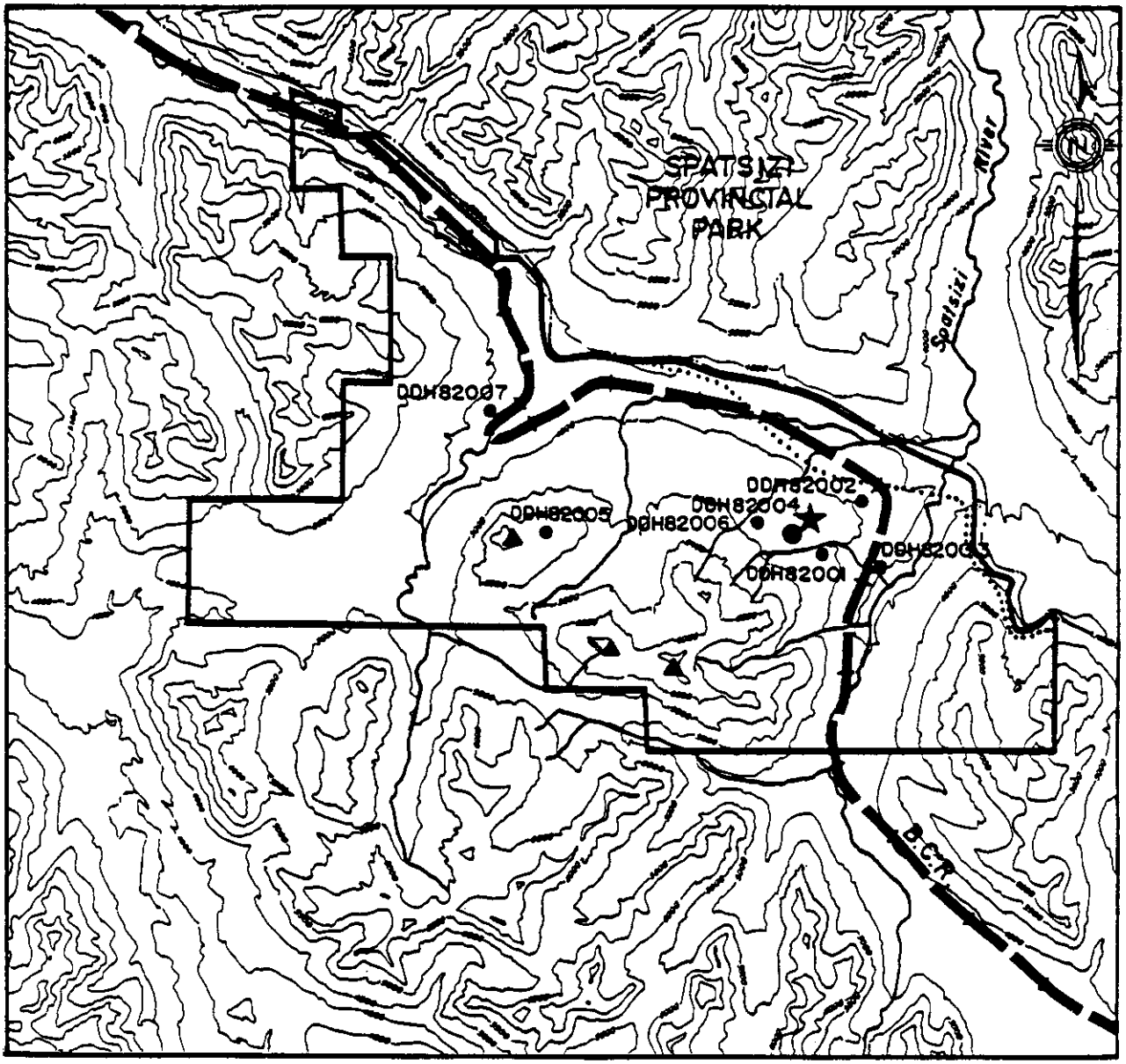
CEMENT -
PLUG - Y
PIEZ -

CASING DEPTH(M) - 13.65
AQUIFER DEPTHS(M) - 0.00
0.00
LOST CIRC. DEPTHS(M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

# MT. KLAPPAN COAL PROPERTY

## DIAMOND DRILL HOLES

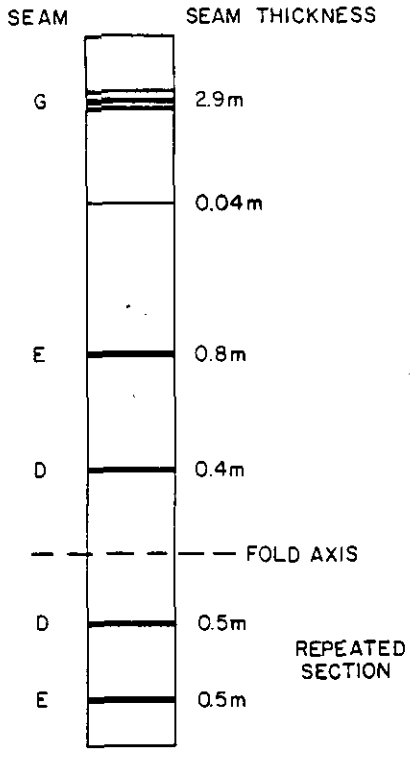



0 1 2 3 4 5 Km

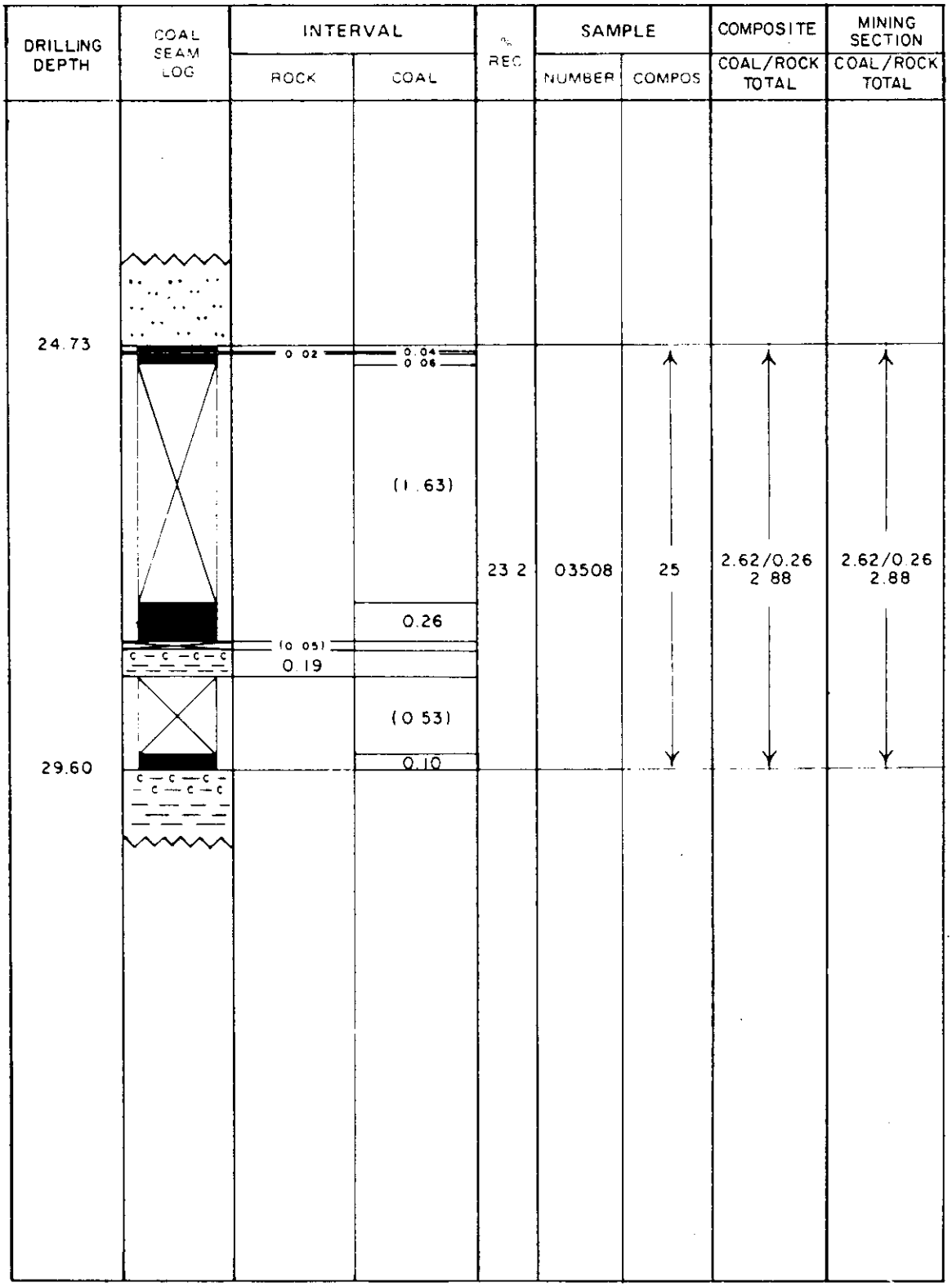
- Prepared Rail Bed
- Provincial Park Boundary
- Camp
- Diamond Drill Hole
- Redefined Property Boundary
- Peaks

# MT. KLAPPAN COAL PROPERTY

**DDH82004**




SCALE - 1:1000




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
## DDH-82-004
## SEAM G

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

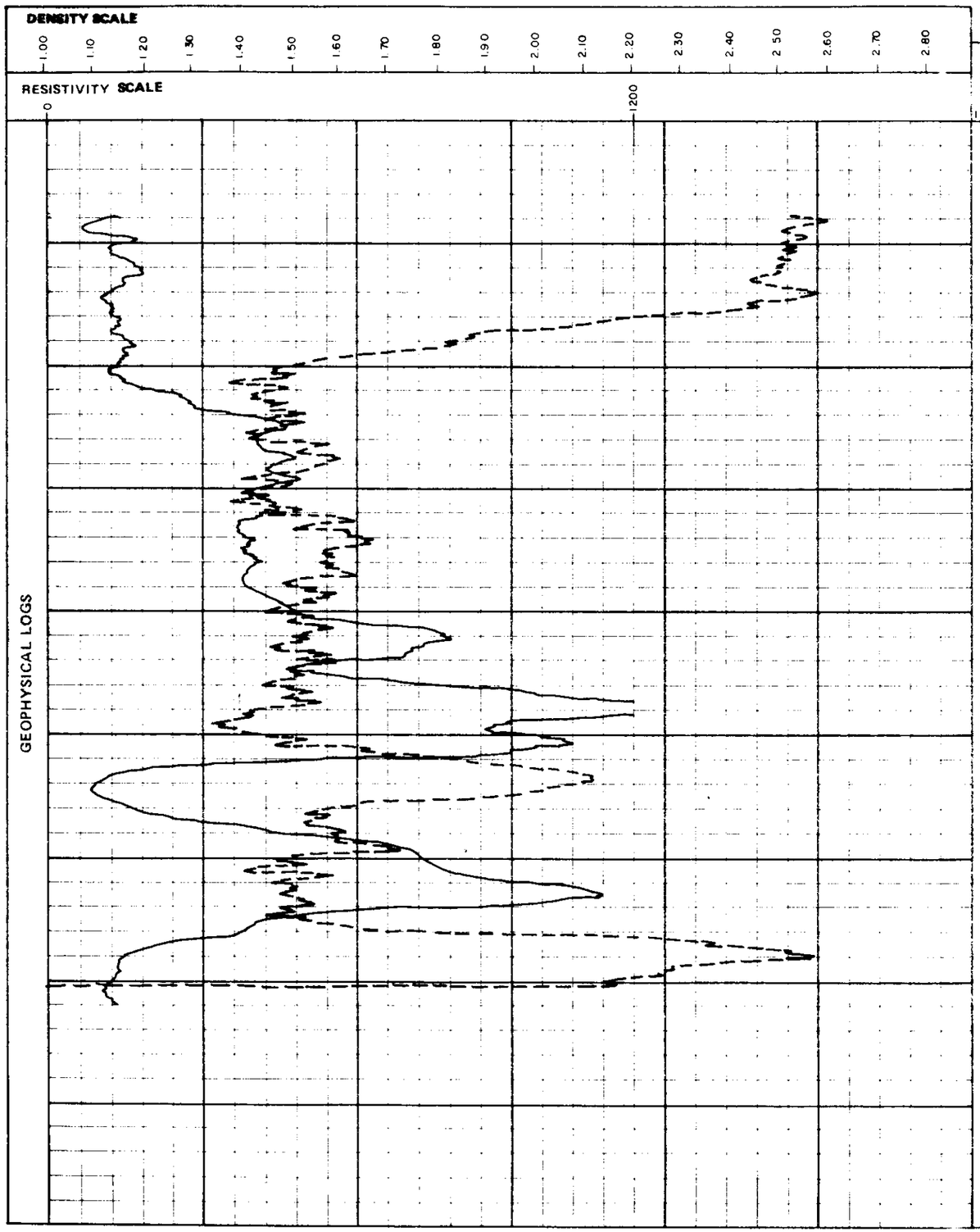
P-267 (12 80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH-82-004 SEAM G SEAM INTERVAL

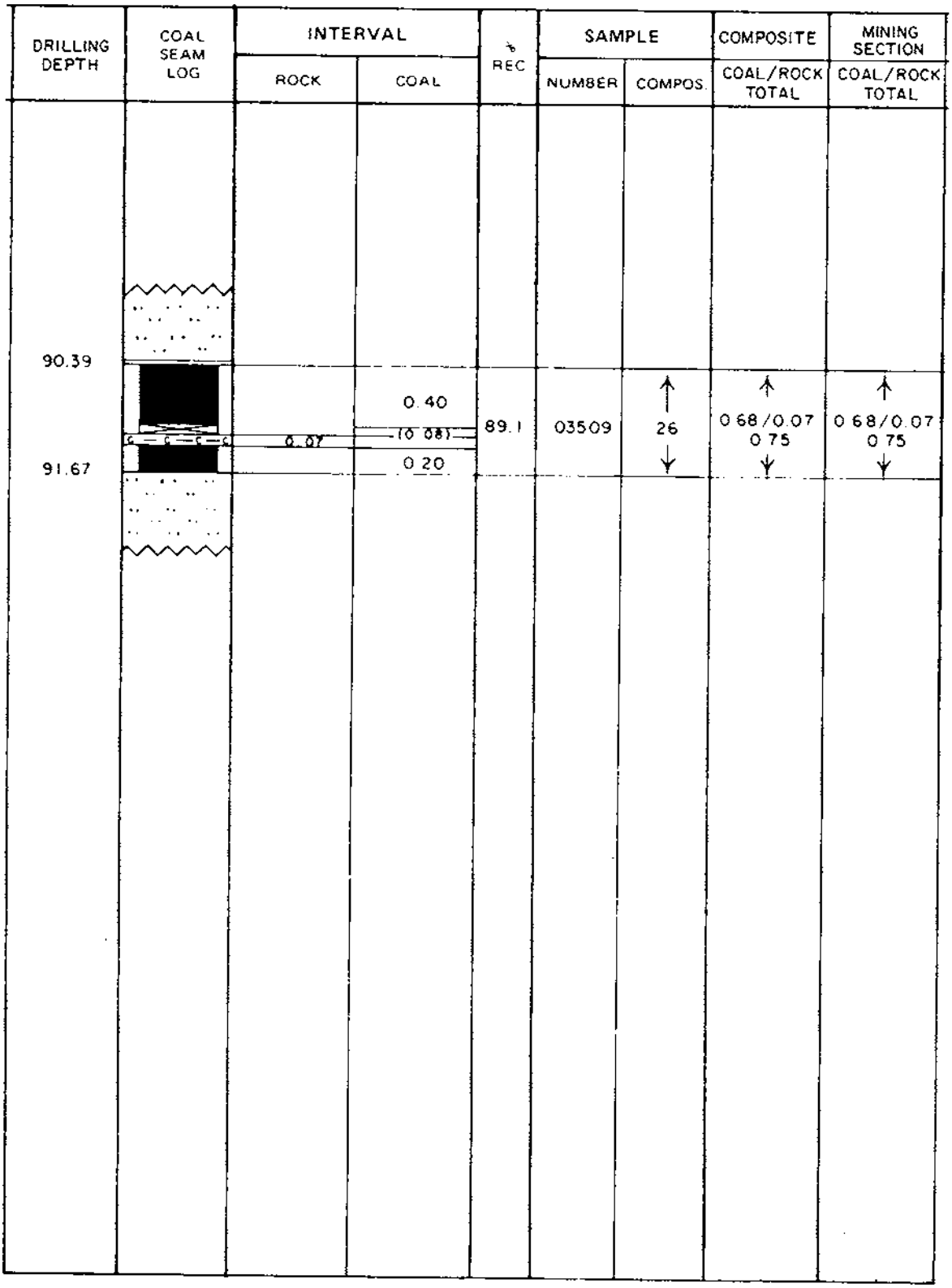
SCALE 1:40

Apparent Thickness




| SEAM COMP. 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24.73 | | | | | | | | | | | | | |
| | | | 0.05 | 0.09 | | | | | | | | | | |
| | | | | 0.12 | | | | | | | | | | |
| | | | | (2.75) | | | | | | | | | | |
| | | | | | 23.2 | 03508 | 25 | 1.63 | 42.48 | 12.65 | 43.24 | | 15.59 | |
| | | | | 0.41 | | | | | | | | | | |
| | | | (0.10) | | | | | | | | | | | |
| | | | | 0.31 | | | | | | | | | | |
| | | | | (0.89) | | | | | | | | | | |
| | 29.60 | | | 0.15 | | | | | | | | | | |

Seam Interval (m): 24.73 - 29.60
Seam True Thickness (Coal/Rock) : 2.62/0.26
Total 2.88




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

Gulf

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-004
## SEAM E

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D | DATE: NOV 82 DRAWING No. |

## COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12 80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 004 SEAM E SEAM INTERVAL Apparent Thickness
SCALE 1 : 40 Logged Through Drill Rods

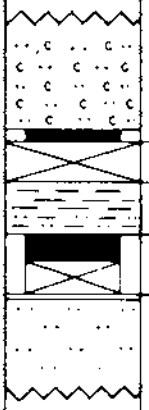
**DENSITY SCALE** 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.00 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY **SCALE** Density Scale Does Not Apply

GEOPHYSICAL LOGS

| SEAM COMP 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL VAL. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90.39 | | | 0.67 | | | | | | | | | | |
| | | | | (0.14) | 89.1 | 03509 | 26 | 1.34 | 27.16 | 7.94 | 63.96 | | 24.93 | |
| | | | 0.12 | | | | | | | | | | | |
| | 91.67 | | | 0.35 | | | | | | | | | | |

Seam Interval (m): 90.39 - 91.67
Seam True Thickness (Coal/Rock): 0.68 /0.07
Total 0.75

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS. | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 113.65 |  | | 0.07 | | | | | |
| | | (0.23) | | | | | | |
| | | 0.28 | | | | | | |
| 114.46 | | | 0.15 | 43.8 | 03510 | 27 | 0.35/0.00 0.35 | 0.35/0.00 0.35 |
| 114.96 | | | (0.20) | | | | | |

| GULF CANADA RESOURCES INC. Coal Division | |
|---|---|
| CALGARY | ALBERTA |
| MT. KLAPPAN COAL PROJECT | |
| SEAM DETAIL | |
| TRUE THICKNESS | |
| DDH-82-004 | |
| SEAM D | |
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J. M. D DATE: NOV 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

P -267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 004 SEAM D SEAM INTERVAL Apparent Thickness
SCALE 1:40 Logged Through Drill Rods

DENSITY SCALE
1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE Density Scale Does Not Apply

GEOPHYSICAL LOGS

| SEAM COMP 123456 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 113.65 | | | 0.10 | | | | | | | | | | |
| | | | (0.32) | | | | | | | | | | | |
| | | | 0.39 | | | | | | | | | | | |
| | 114.46 | | | 0.21 | 44 | 03510 | 2.7 | 1 25 | 35.82 | 8.92 | 54.01 | | 21.14 | |
| | 114.96 | | | (0.29) | | | | | | | | | | |

Seam Interval (m): 114.46 - 114.96
Seam True Thickness (Coal/Rock): 0.35/0.00
Total 0.35

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS | COAL/ROCK TOTAL | COAL/ ROCK TOTAL |
| 139.84 |  | 0.03 | 0.11 | 96 | 03511 | 28 | 0.41 / 0.09 0.50 | 0.41 /0.09 0.50 |
| | | | 0.26 | | | | | |
| 140.34 | | 0.06 | 0.02 | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-004
## SEAM D REPEAT

| | |
|---|---|
| PREPARED BY: C L | SCALE 1:40 |
| APPROVED BY: J M D | DATE: NOV. 82 DRAWING No. |

# COAL SEAM DATA SHEET

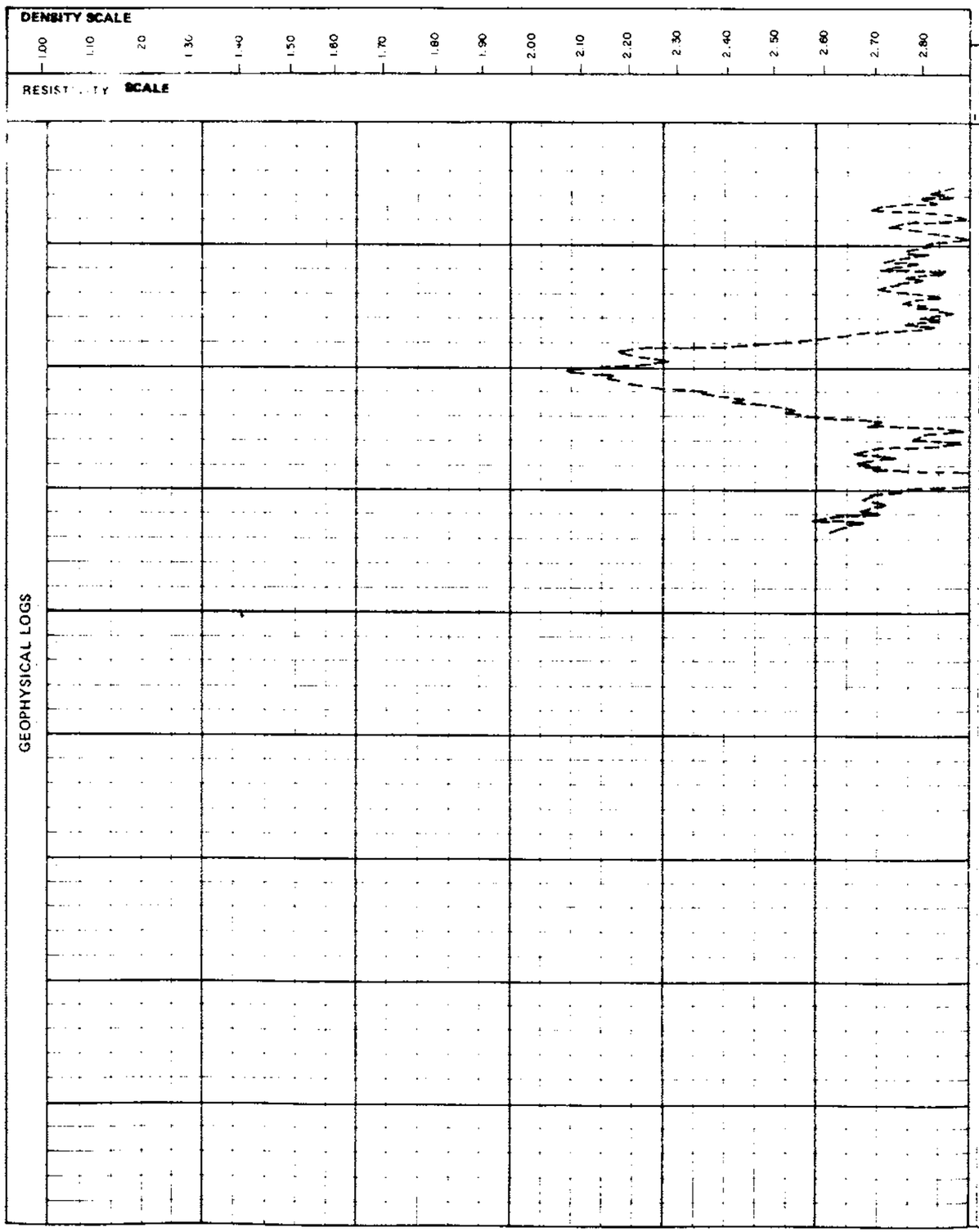
GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO. DDH - 82 - 004 SEAM D Repeat SEAM INTERVAL
SCALE 1:40 Logged Through Drill Rods

Apparent Thickness




| SEAM COMP. 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. % | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 139.84 | | 0.03 | 0.11 | | | | | | | | | | |
| | | | | 0.26 | 96 | 03511 | 2.8 | 1.47 | 38.69 | 8.03 | 51.81 | | 19.25 | |
| | 140.34 | | 0.06 | (0.02) 0.02 | | | | | | | | | | |

Seam Interval (m): 139.84 - 140.34
Seam True Thickness (Coal/Rock): 0.41/0.09
Total 0.50

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC. | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS. | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 150.36 |  | | 0.18<br>(0.08)<br>0.19 | 82 | 03512 | 29 | 0.45/0.00<br>0.45 | 0.45/0.00<br>0.45 |
| 150.81 |  | | | | | | | |

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-004
SEAM E REPEAT

PREPARED BY: C L — SCALE : 40
APPROVED BY: J M D — DATE: NOV 82 — DRAWING No.

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P-267 (12-80)

Apparent Thickness

DENSITY ---  RESISTIVITY ———

DRILL NO DDH-82-004  SEAM E Repeat  SEAM INTERVAL

SCALE 1:40  Logged Through Drill Rods

**DENSITY SCALE**

1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

**RESISTIVITY SCALE**

GEOPHYSICAL LOGS

| SEAM COMP. 1 2 3 4 5 6 | DEPTH metres | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC. | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | CAL. VAL MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 150.36 | | | 0.18 | | | | | | | | | | |
| | | | | (0.08) | 82 | 03512 | 29 | 1.10 | 28.37 | 9.34 | 61.19 | | 24.11 | |
| | 150.81 | | | 0.19 | | | | | | | | | | |

Seam Interval (m): 150.36 - 150.81

Seam True Thickness (Coal/Rock): 0.45/0.00

Total 0.45

GULF CANADA RESOURCES INC. - COAL DIVISION

02/DEC/82 SIMPLE SAMPLE SUMMARY PAGE 1

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|
| DDH82004 | | | | | | | | | | |
| | G | 3508 | 24.73 | 29.60 | 1.13 | 23.20 | 0.77 | 0.36 | 3.64 | 0.10 |
| | E | 3509 | 90.39 | 91.67 | 1.14 | 89.06 | 1.02 | 0.12 | 0.14 | 0.00 |
| | D | 3510 | 114.46 | 114.96 | 0.21 | 42.00 | 0.21 | 0.00 | 0.29 | 0.00 |
| | D REPEAT | 3511 | 139.64 | 140.34 | 0.48 | 96.00 | 0.39 | 0.09 | 0.02 | 0.00 |
| | E REPEAT | 3512 | 150.36 | 150.81 | 0.37 | 82.22 | 0.37 | 0.00 | 0.08 | 0.00 |

GULF CANADA RESOURCES INC. - COAL DIVISION

02/DEC/82 COMPOSITE SAMPLE SUMMARY PAGE 1

| | SEAM | SAMPLE ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | | | | | | | | | | | | |
| | G | 25 | 3508 | 3508 | 24.73 | 29.60 | 1.13 | 23.20 | 0.77 | 0.36 | 3.64 | 0.10 |
| | F | 26 | 3509 | 3509 | 90.39 | 91.67 | 1.14 | 89.00 | 1.02 | 0.12 | 0.14 | 0.00 |
| | D | 27 | 3510 | 3510 | 114.46 | 114.96 | 0.21 | 42.00 | 0.21 | 0.00 | 0.29 | 0.00 |
| | D REPEAT | 28 | 3511 | 3511 | 139.84 | 140.34 | 0.48 | 96.00 | 0.39 | 0.09 | 0.02 | 0.00 |
| | E REPEAT | 29 | 3512 | 3512 | 150.36 | 150.81 | 0.37 | 82.22 | 0.37 | 0.00 | 0.08 | 0.00 |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 5 | 0.00 | 16.70 | 16.70 | | | OVERBURDEN | |
| 5 | 16.70 | 17.69 | 0.99 | | | SANDSTONE | MG.PK.M.GY.THNB.BRKN<br>SLTST INTBS 1-5CM, FRIABLE |
| 5 | 17.69 | 18.34 | 0.65 | | | SANDSTONE | MG.PK.M.GY.THNB.BRKN<br>AS ABOVE |
| 5 | 18.34 | 18.63 | 0.29 | | | SANDSTONE | MG.PK.M.GY.THNB.VBRKN<br>AS ABOVE |
| 5 | 18.63 | 18.79 | 0.16 | | | SANDSTONE | MG.PK.M.GY.THNB.VBRKN<br>AS ABOVE |
| 5 | 18.79 | 20.42 | 1.63 | | | SANDSTONE | MG.PK.M.GY.THNB.VBRKN<br>AS ABOVE |
| 6 | 20.42 | 20.68 | 0.26 | | | SANDSTONE | MG.PK.M.GY.THNB.VBRKN<br>AS ABOVE |
| 7 | 20.68 | 21.66 | 0.98 | | | SANDSTONE | MG.PK.M.GY.THNB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 6 | 21.66 | 22.85 | 1.19 | | | SANDSTONE | FG.MOD.GY.VTHNB.VBRKN<br>CORE STATE BRKN TO VBRKN. SLTST LAMS |
| 0 | 22.85 | 23.08 | 0.23 | | | SANDSTONE | FG.MOD.GY.THNB.SLD<br>AS ABOVE |
| 9 | 23.08 | 24.51 | 1.43 | | | SILTSTONE | WEL.DK.GY.VTHNB.SLD<br>FINE SS LAMS. COLOUR RANGES DK GY TO BL K |
| 0 | 24.51 | 24.73 | 0.22 | | | SILTSTONE | WEL.DK.GY.VTHNB.SLD<br>AS ABOVE. QTZ AND CALCT VEINS. PYR VEIN S. THN MNR COAL STRGS LESS THAN 1CM. VE INS AND COAL STRGS ARE CONTORTED |
| 7 | 24.73 | 24.82 | 0.09 | 82508 | 6 | COAL | C-2.BLK.VTHNB.SLD<br>MAINLY BRIGHT WITH SOME DULL BANDS AT T OP |
| 6 | 24.82 | 24.87 | 0.05 | 82508 | 6 | MUDSTONE | CARB.BLK.SLD<br>C-2 COAL BANDS WITH QTZ VEINS ASSOCIATE D |
| 6 | 24.87 | 24.99 | 0.12 | 82508 | 6 | COAL | C-3.BLK.BRKN<br>BRIGHT WITH DULL BANDS. MNR ROCK BANDS LESS THAN 1CM |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 26.51 | 27.74 | 1.23 | 03506 | 6 | COAL LOSS | |
| 5 | 27.74 | 28.07 | 0.33 | 03508 | 6 | COAL | C-2.BLK.VBRKN<br>MAINLY BRIGHT, SOME ROCK BANDS |
| 2 | 28.07 | 28.15 | 0.08 | 03509 | 6 | COAL | C-4.BLK.SLD<br>MAINLY COALY ROCK |
| 1 | 28.15 | 28.25 | 0.10 | 03510 | 6 | ROCK LOSS | |
| 5 | 28.25 | 28.41 | 0.16 | 03511 | 6 | MUDSTONE | CARB.DK.GY.VBRKN<br>MANY COAL STRGS WITH QTZ VEINS ASSOCIATED |
| 3 | 28.41 | 28.56 | 0.15 | 03512 | 6 | CLAYSTONE | DK.GY.SLD<br>COAL LENSES, C-2; QTZ VEINING ASSOCIATED |
| 6 | 28.56 | 29.45 | 0.89 | 03513 | 6 | COAL LOSS | |
| 6 | 29.45 | 29.60 | 0.15 | 03514 | 6 | COAL | C-2.BLK.BRKN<br>MAINLY COAL BANDS, MNR ROCK BANDS, QTZ VEINS ASSOCIATED |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH62004

| A | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 6 | 30.37 | 30.41 | 0.04 | | | MUDSTONE | CARB.DK.GY.SLD<br>AS ABOVE |
| 6 | 30.41 | 30.49 | 0.08 | | | MUDSTONE | CARB.DK.GY.SLD<br>AS ABOVE |
| 7 | 30.49 | 30.78 | 0.29 | | | MUDSTONE | DK.GY.SLD<br>COAL BANDS. QTZ VEINING. VERY HARD |
| 7 | 30.78 | 30.94 | 0.16 | | | MUDSTONE | DK.GY.VTHNB.BRKN<br>AS ABOVE |
| 5 | 30.94 | 31.88 | 0.94 | | | ROCK LOSS | |
| 0 | 31.88 | 32.83 | 0.95 | | | MUDSTONE | CARB.DK.GY.VTHNB.SLD<br>CRUMBLY. ARG. SLTY AT BASE |
| 8 | 32.83 | 32.98 | 0.15 | | | ROCK LOSS | |
| 3 | 32.98 | 33.42 | 0.44 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>CRUMBLY. LESS SLTY AT BASE |
| 4 | 33.42 | 34.02 | 0.60 | | | SILTSTONE | DK.GY.THNB.SLD<br>VMNR QTZ VEIN. VTHN LAM. CRSE ON TOP |
| 4 | 34.02 | 34.17 | 0.15 | | | MUDSTONE | CLYY.LT.GY.VTHNB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| CA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 44 | 34.17 | 34.50 | 0.33 | | | BENTONITE | LT.GY.VTHNB.SLD<br>SOFT, SLTST LAM LESS THAN 1CM, MNR WARPING, UNCONSOLIDATED, POWDERY |
| 43 | 34.50 | 34.67 | 0.17 | | | MUDSTONE | CLYY.LT.GY.VTHNB.SLD<br>SOFT |
| 43 | 34.67 | 35.13 | 0.46 | | | SANDSTONE | VFG.WEL.LT.GY.THKB.BIOTR.SLD<br>YELLOW TINGE, VMNR QTZ VEINING |
| 43 | 35.13 | 35.57 | 0.44 | | | SANDSTONE | VFG.WEL.M.GY.THKB.SLD<br>VMNR FRAC, VMNR QTZ VEINING, VMNR SLICKENSLIDED, MNR BIOTURB, SOFT |
| 42 | 35.57 | 36.04 | 0.47 | | | SANDSTONE | FG.LT.GY.VTHNB.SLD<br>BRKN IN PART, DK GY SLTST INTBS UP TO 5 CM |
| 42 | 36.04 | 36.29 | 0.25 | | | BENTONITE | LT.GY.VTHNB.BRKN<br>CLY STRGS, POWDERED |
| 42 | 36.29 | 36.37 | 0.08 | | | BENTONITE | LT.GY.VTHNB.BRKN<br>AS ABOVE |
| 41 | 36.37 | 37.91 | 1.54 | | | SANDSTONE | VFG.WEL.LT.GY.VTHNB.BIOTR<br>VMNR QTZ VEINING, YELLO TINGE, MRM BUR |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH62004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 0 | 37.91 | 39.69 | 1.78 | | | SANDSTONE | FG-.WEL.M.GY.VTHNB.SLD<br>BIOTURB AT TOP, MNR XBDS INDICATE TOPS UP, MNR QTZ AND CALCT VEINING, MNR CLY NODULES |
| 4 | 39.69 | 40.04 | 0.36 | | | SANDSTONE | FG-.WEL.M.GY.VTHNB.SLD<br>AS ABOVE |
| 5 | 40.04 | 40.42 | 0.38 | | | SILTSTONE | M.GY.VTHNB.SLD<br>FINE SS LAMS |
| 4 | 40.42 | 42.13 | 1.71 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>SLIST INTBS UP TO 1CM, MNR CLY NODS, MNR BIOTURB, MNR YELLOW TINGE, MNR QTZ VEINING, LITTLE TO NO LAMS AT BASE, THICKER TOWARDS BASE |
| 6 | 42.13 | 42.34 | 0.21 | | | SANDSTONE | CLYY.LI.GY.VTHNB.SLD<br>AS ABOVE |
| 7 | 42.34 | 44.27 | 1.93 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>VMNR QTZ VEINS, VERY FINE LAMS, POSSIBLE XBDS, CUT AND FILL INDICATE TOPS UP, MNR BIOTURB |
| | 44.27 | 45.42 | 1.15 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.BIOTR.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82064

| A | DEPTH FROM | DEPTH TO | INTRVAL THICKS | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 9 | 45.42 | 46.47 | 1.05 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE, VMNR CALCT AND QTZ VEINING, M DRK SLTY THAN ABOVE |
| 2 | 46.47 | 46.22 | 1.75 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE, BRKN IN PART, BECOMING FG AT BASE |
| 2 | 48.22 | 48.56 | 0.34 | | | SANDSTONE | FG.WLL.DK.GY.VTHNB.SLD<br>AS ABOVE |
| 9 | 48.56 | 50.74 | 2.18 | | | SANDSTONE | VFG-.WEL.DK.GY.VTHNB.SLD<br>MNR CLY BANDS, VMNR BIOTRUB, SILTIER AT BASE |
| 3 | 50.74 | 50.87 | 0.13 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>BANDED, DK GY-BLK; MNR SS LAM |
| 3 | 50.87 | 50.90 | 0.03 | | | BENTONITE | CLYY.LT.GY.SLD |
| 3 | 50.90 | 50.97 | 0.07 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE |
| 3 | 50.97 | 51.78 | 0.81 | | | SILTSTONE | DK.GY.THKB.SLD<br>AS ABOVE, VERY FINE SS IN PART.VMNR BIO |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH62004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 3 | 51.71 | 51.80 | 0.09 | | | CLAYSTONE | LT.GY.SLD<br>SOFT |
| 3 | 51.80 | 51.87 | 0.07 | | | CLAYSTONE | M.GY.THKB.SLD<br>SOFT |
| 3 | 51.87 | 52.71 | 0.84 | | | SILTSTONE | DK.GY.THKB.SLD<br>AS ABOVE. NO BANDS OR BIOTURB |
| 4 | 52.71 | 53.06 | 0.35 | | | CLAYSTONE | M.GY.THKB.SLD<br>SOFT |
| 4 | 53.06 | 53.26 | 0.20 | | | SILTSTONE | M.GY.THNB<br>MNR QTZ AND CALCT VEINING |
| 4 | 53.26 | 53.32 | 0.06 | | | SILTSTONE | M.GY.THNB.SLD<br>AS ABOVE |
| 4 | 53.32 | 53.34 | 0.02 | | | CLAYSTONE | CARB.M.GY.SLD<br>SOFT |
| 4 | 53.34 | 54.18 | 0.84 | | | SILTSTONE | CARB.DK.GY.THNB.BRKN<br>MNR SLICKENSLIDES. VMNR QTZ VEINING. MN<br>R CLY BANDS. THN COAL BANDS LESS THAN 1<br>CM |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH62004

| | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 4 | 54.22 | 54.43 | 0.21 | | | SILTSTONE | M.GY.VTHNB.VBRKN<br>LIGHTER COLOURED CLYST INTBS |
| 4 | 54.43 | 54.51 | 0.08 | | | SILTSTONE | M.GY.THNB.SLD<br>HARD. MNR FRAC. MNR SLICKENSLIDES |
| 4 | 54.51 | 55.35 | 0.84 | | | SILTSTONE | CARB.DK.GY.THNB.SLD<br>MNR CLY BANDS LESS THAN 1CM. MNR SLICKE<br>NSLIDES. BRKN IN PART. CLEAVES WELL |
| 4 | 55.35 | 57.04 | 1.69 | | | SILTSTONE | DK.GY.THNB.SLD<br>CLY BANDS APPEAR TO BE GREATER THAN 1 C<br>M BUT NOT POSSIBLE TO DETERMINE DUE TO<br>BRKN CORE STATE. PLANT FOSSILS |
| 5 | 57.04 | 57.37 | 0.33 | | | SILTSTONE | DK.GY.THNB.SLD<br>AS ABOVE |
| 5 | 57.37 | 57.42 | 0.05 | | | SILTSTONE | DK.GY.THNB.SLD<br>AS ABOVE |
| 5 | 57.42 | 57.46 | 0.04 | | | CLAYSTONE | WEL.GY.SLD<br>SOFT. UNCON |
| 5 | 57.46 | 57.70 | 0.24 | | | SILTSTONE | DK.GY.THNB.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| CA | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 55 | 58.07 | 58.10 | 0.03 | | | CLAYSTONE | CARB.BLK.SLD<br>MNR COAL STRGS |
| 45 | 58.10 | 58.12 | 0.02 | | F | COAL | C-2.BLK.SLD |
| 55 | 58.12 | 58.17 | 0.05 | | F | COAL | C-3.BLK.SLD<br>BRIGHT WITH DULL BANDS |
| 35 | 58.17 | 58.25 | 0.08 | | | CLAYSTONE | CARB.BLK.SLD<br>VMNR QTZ VEINING. COAL STRGS |
| 75 | 58.25 | 58.31 | 0.06 | | | CLAYSTONE | GY.SLD<br>VMNR QTZ VEINING. VMNR COAL STRGS. SLIG<br>HTLY WARPED |
| 35 | 58.31 | 58.40 | 0.09 | | | SILTSTONE | CARB.WEL.DK.GY.VTHNB.SLD<br>M-HD. COALY IN PARTS. MNR QTZ FRAC |
| 55 | 58.40 | 59.42 | 1.02 | | | SILTSTONE | M.GY.VTHNB.SLD<br>VERY FINE LAM. MNR QTZ FRAC. HD. VMNR B<br>IOTURB. CUT AND FILL INDICATE TOPS UP |
| 13 | 59.42 | 59.79 | 0.37 | | | SILTSTONE | M.GY.VTHNB.SLD<br>LAM. MNR BIOTURB |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 7 | 60.62 | 61.54 | 0.92 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>LAM. SLTY TOWARDS TOP. VMNR BIOTURB. CU<br>T AND FILL INDICATE TOPS UP |
| 4 | 61.54 | 62.39 | 0.85 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE.CUT AND FILL INDICATE TOPS UP.<br>MNR QTZ AND CALCT VEINING. MNR BIOTURB |
| 5 | 62.39 | 62.68 | 0.29 | | | SANDSTONE | MG.WEL.LT.GY.THKB.SLD<br>MNR BIOTURB. THN SLT BANDS |
| 1 | 62.68 | 63.66 | 0.98 | | | SANDSTONE | MG.WEL.LT.GY.THKB.WRMBU.SLD<br>AS ABOVE. WRM BURS INDICATE TOPS UP |
| 7 | 63.66 | 65.59 | 1.93 | | | SANDSTONE | MG.MOD.GY.THKB.SLD<br>SLIGHT BIOTURB. COARSENING AT BASE. S&P<br>AT BASE. V HD |
| 5 | 65.59 | 65.68 | 0.09 | | | SANDSTONE | MG.MOD.GY.THKB.SLD<br>AS ABOVE |
| 2 | 65.68 | 67.66 | 1.98 | | | SANDSTONE | MG.MOD.M.GY.THKB.WRMBU.SLD<br>AS ABOVE. MNR QTZ VEINING. S&P. BIOTURB<br>IN PART. WRM BURS INDICATE TOPS UP |
| 0 | 67.66 | 67.81 | 0.15 | | | SANDSTONE | MG.MOD.M.GY.THKB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 6 | 67.61 | 69.31 | 1.50 | | | SANDSTONE | MG.MOD.M.GY.THKB.SLD<br>AS ABOVE. MORE CG AT BASE. VMNR QTZ FRA<br>C. V HD |
| 5 | 69.31 | 69.66 | 0.35 | | | SANDSTONE | CG.MOD.M.GY.THKB.SLD |
| 5 | 69.66 | 71.60 | 1.94 | | | SANDSTONE | MG.LT.GY.VTHKB.VBRKN<br>MNR QTZ VEINING |
| 4 | 71.60 | 71.97 | 0.37 | | | SANDSTONE | MG.LT.GY.VTHKB.SLD<br>AS ABOVE |
| 3 | 71.97 | 73.79 | 1.82 | | | SANDSTONE | MG.LT.GY.VTHKB.SLD<br>AS ABOVE |
| 2 | 73.79 | 75.87 | 2.08 | | | SANDSTONE | MG.LT.GY.VTHKB.SLD<br>AS ABOVE. FINING TOWARDS BASE. MNR LAM<br>TOWARDS BASE. MNR QTZ VEINS PARALLEL TO<br>BDG. QTZ STRGS INTERMINGLED WITH BDS A<br>T BASE |
| 1 | 75.87 | 77.69 | 1.82 | | | SANDSTONE | FG.M.GY.VTHKB.SLD<br>MNR QTZ VEINS. MNR FLOW FEATURES. VMNR<br>PYR FLECKS. MNR SLICKENSLIDES |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02004

| A | DEPTH FROM | DEPTH TO | INTRVAL THICK | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 77.69 | 79.83 | 2.14 | | | SANDSTONE | FG.M.GY.VTHKB.SLD<br>AS ABOVE, CUT AND FILL INDICATE TOPS UP<br>, MNR BIOTURB, VMNR QTZ STRGS PARALLEL<br>TO BDG |
| 8 | 79.83 | 80.82 | 0.99 | | | SANDSTONE | FG.M.GY.VTHNB.SLD<br>AS ABOVE, MNR CUT AND FILL FEATURES |
| 9 | 80.82 | 81.91 | 1.09 | | | SANDSTONE | FG.M.GY.VTHNB.SLD<br>AS ABOVE |
| 1 | 81.91 | 83.67 | 1.76 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE, CUT AND FILL FEATURES, TOPS U<br>PRIGHT, LESS BIOTURB, SLT LAM UP TO 1CM |
| 1 | 83.67 | 85.87 | 2.10 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE, WKMBUR, CRACK INFILLING, FLAM<br>L FEATURES INDICATE TOPS UP, HARD SLTST<br>INTBS |
| 0 | 85.97 | 86.95 | 0.98 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE, MNR CRACK FILLS, MNR SCOUR FI<br>LLS, WKMBUR INDICATE TOPS UP, MNR FLAME<br>STRUCTURES, HARD |
| | | | | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH92004

| A | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 9 | 88.11 | 89.68 | 1.57 | | | SANDSTONE | FG.WELL.M.GY.VTHNB.SLD<br>AS ABOVE. CUT AND FILL INDICATE TOPS UP<br>. QTZ VEIN 1 CM THICK PARALLEL TO BDG.<br>COAL STRIPS INVOLVED WITH QTZ |
| 4 | 89.68 | 90.25 | 0.57 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>V MNR SLICKENSLIDES. SSY TOWARDS TOP. B<br>DS THICKEN TOWARDS BASE. M-HD. CLEAVES<br>ALONG BDG |
| 6 | 90.25 | 90.36 | 0.11 | | | SILTSTONE | M.GY.THNB.SLD<br>V HARD |
| 8 | 90.36 | 90.39 | 0.03 | | | CLAYSTONE | CARB.BLK.SLD<br>V COALY. QTZ VEINS. CALCT VEINING |
| 7 | 90.39 | 90.56 | 0.17 | 03509 | L | COAL | C-B.BLK.SLD |
| 7 | 90.56 | 91.08 | 0.52 | 03509 | E | COAL | C-2.BLK.SLD<br>CONTORTED. V ASHY. LIGHT. SOFT. MNR ROC<br>K BANDS. CORE BRKN AT BOTTOM |
| 6 | 91.08 | 91.20 | 0.14 | 03509 | E | COAL LOSS | |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| EA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 90 | 91.32 | 91.67 | 0.35 | 03009 E | | COAL | C-C.BLK.SLD<br>MNR ROCK BANDS |
| 65 | 91.67 | 92.40 | 0.73 | | | SILTSTONE | DK.GY.THKB.SLD<br>COALY STRGS AT TOP. V MNR QTZ VEINING.<br>V HD. STRGS ARE CONTORTED. CARB AT TOP |
| 66 | 92.40 | 93.07 | 0.67 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE. MNR QTZ AND CALCT VEINING. V<br>MNR FRACTURE FEATURES |
| 66 | 93.07 | 94.56 | 1.49 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE. COAL LENSES. VF LAMS |
| 80 | 94.56 | 96.16 | 1.60 | | | SANDSTONE | FG-.M.GY.VTHNB.BIOTR.SLD<br>VF LAMS AT TOP. V MNR QTZ STRGS PARALLE<br>L TO BDG. CRACK AND BURROW FILL INDICAT<br>E TOPS UP |
| 93 | 96.16 | 96.66 | 0.50 | | | SANDSTONE | FG-.M.GY.VTHNB.SLD<br>AS ABOVE. QTZ VEIN. VUGGY. V MNR FRAC.<br>SLICKENSLIDES |
| 97 | 96.66 | 99.78 | 2.12 | | | SANDSTONE | FG-.M.GY.VTHNB.BIOTR.SLD<br>AS ABOVE. BANDS SLIGHTLY CONTORTED AT T<br>OP. TOPS UP. MNR QTZ VEINING. SILTIER A |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 4 | 98.78 | 99.08 | 0.30 | | | SANDSTONE | FG-.M.GY.VTHNB.SLD<br>AS ABOVE. FINER TOWARDS BASE |
| 3 | 99.08 | 99.26 | 0.18 | | | SANDSTONE | FG-.M.GY.VTHNB.SLD<br>AS ABOVE |
| 0 | 99.26 | 101.13 | 1.87 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>SSY AT TOP. SLIGHTLY BIOTURB INDICATE T<br>OPS UP. PYR NODS. HD |
| 7 | 101.13 | 101.72 | 0.59 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE. HD |
| 6 | 101.72 | 101.79 | 0.07 | | | SANDSTONE | FG.WEL.GY.VTHNB.SLD<br>SOFT. CRUMBLY |
| 7 | 101.79 | 102.26 | 0.47 | | | SANDSTONE | VFG-.WEL.M-DK.GY.VTHNB.SLD<br>MNR FLOW FEATURES. VFG SS INTBD WITH FG<br>SS |
| 0 | 102.26 | 103.31 | 1.05 | | | SANDSTONE | VFG-.WEL.GY.VTHNB.SLD<br>AS ABOVE. V MNR PYR STRGS AND LENSES. L<br>LSS LAMS TOWRDS BASE. SOFT |
| 2 | 103.31 | 104.70 | 1.39 | | | SANDSTONE | VFG.WEL.DK.GY.THNB.SLD<br>CRUMBLY. FG SSY PATCHES. MNR PYR NODS F |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 3 | 104.70 | 104.82 | 0.12 | | | SILTSTONE | DK.GY.THNB.SLD<br>M-HD. PYR. OVERALL GREENISH TINGE |
| 3 | 104.82 | 105.05 | 0.23 | | | CLAYSTONE | CARB.BLK.THNB.SLD<br>COALY IN PART. PYR NODS. MNR QTZ VEININ<br>G. FISSILE |
| 3 | 105.05 | 105.07 | 0.02 | | | CLAYSTONE | GY<br>SOFT |
| 3 | 105.07 | 105.25 | 0.18 | | | SILTSTONE | DK.GY.THNB.SLD<br>CRUMBLY. PYR NODS |
| 3 | 105.25 | 105.47 | 0.22 | | | SILTSTONE | DK.GY.THNB.SLD<br>AS ABOVE |
| 5 | 105.47 | 107.68 | 2.21 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>CRUMBLY. M-HD. PYR |
| 7 | 107.68 | 108.25 | 0.57 | | | MUDSTONE | CLYY.DK.GY.VTHNB.SLD<br>PYR. M-HD. CRUMBLY |
| 6 | 108.25 | 109.89 | 1.64 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>V MNR CLY BANDS AND CLY NODS. GRADES FR<br>OM AR ARG MUST TO SLTST. MNR QTZ VEININ<br>G |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 0 | 109.89 | 110.50 | 0.61 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>M-HD. MORE FREQUENT QTZ VEINING WITH CO<br>AL STRGS INVOLVED. CLYY IN PART |
| 1 | 110.50 | 111.23 | 0.73 | | | SILTSTONE | CARB.DK.GY.SLD<br>QTZ VEINING THROUGHOUT. PYR VEINS. HIGH<br>LY CONTORTED. COALY. CONCHOIDAL FRAC. C<br>OAL STRGS. INVOLVED WITH QTZ VEINING. G<br>REENISH TINGE |
| 6 | 111.23 | 111.87 | 0.64 | | | CLAYSTONE | CARB.BLK.VTHNB.SLD<br>BRKN IN PARTS. MNR CLY BANDS. SOFT. QTZ<br>VEINING THROUGHOUT. COAL BANDS UP TO 1<br>CM INVOLVED IN QTZ VEINING. WARPING |
| 9 | 111.87 | 112.33 | 0.46 | | | CLAYSTONE | GY.THKB.SLD<br>MNR QTZ VEIN. MNR COAL STRGS. CARB IN P<br>ART. HARDER AT BASE |
| 1 | 112.33 | 112.61 | 0.28 | | | MUDSTONE | CARB.DK.GY.VTHNB.SLD<br>MNR CLY BANDS |
| 2 | 112.61 | 112.74 | 0.13 | | | CLAYSTONE | GY.SLD<br>VV MNR QTZ VEINS. V HD |
| 4 | 112.74 | 113.02 | 0.28 | | | SILTSTONE | CARB.DK.GY.VTHNB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| 26 | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 5 | 113.02 | 113.65 | 0.63 | | | SILTSTONE | GY.VTHNB.SLD<br>MD. COAL AND QTZ STRGS |
| 5 | 113.65 | 113.75 | 0.10 | | | COAL | C-3.BLK.BRKN<br>INTBD THIN ROCK BANDS. DULL WITH BRIGHT BANDS |
| 6 | 113.75 | 114.07 | 0.32 | | | ROCK LOSS | |
| 7 | 114.07 | 114.34 | 0.27 | | | CLAYSTONE | DK.GY.SLD<br>MNR COAL STRGS |
| 6 | 114.34 | 114.43 | 0.09 | | | MUDSTONE | CLYY.DK.GY.THNB.SLD<br>MANY COAL STRGS WITH QTZ VEINS ASSOCIATED |
| 6 | 114.43 | 114.46 | 0.03 | | | MUDSTONE | CLYY.DK.GY.THNB.SLD<br>AS ABOVE |
| 5 | 114.46 | 114.67 | 0.21 | 03516 | D | COAL | C-2.BLK.VBRKN<br>MAINLY BRIGHT WITH DULL BANDS. MNR ROCK STRGS |
| 4 | 114.67 | 114.96 | 0.29 | 03516 | D | COAL LOSS | |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDHB2004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 4 | 115.01 | 116.52 | 1.51 | | | SILTSTONE | M.GY.VTHNB.SLD<br>BRKN IN PART. M HD. CLY IN PARTS. SSY T<br>OWARDS BASE. PYR LENSES |
| 5 | 116.52 | 116.64 | 0.12 | | | SANDSTONE | MG.LT.GY.THNB.SLD |
| 5 | 116.64 | 117.21 | 0.57 | | | SANDSTONE | MG.MOD.LT.GY.VTHNB.SLD<br>INTBD CLYY SS. V SOFT. UP TO 4CM THICK.<br>SLTST BANDS. SS IS HD |
| 6 | 117.21 | 117.56 | 0.35 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>INTBD CLYY SS AS ABOVE. GTZ PARALLEL TO<br>BDG 2CM THICK |
| 6 | 117.56 | 118.00 | 0.44 | | | ROCK LOSS | |
| 0 | 118.00 | 119.18 | 1.18 | | | SANDSTONE | CG.S-P.GY.VTHNB.SLD<br>INTBD DK GY SLTST. HD. MNR CLY STRGS |
| 7 | 119.18 | 120.97 | 1.79 | | | SANDSTONE | CG.S-P.GY.THNB.SLD<br>AS ABOVE. FEWER SLTST BANDS. MORE CLY-S<br>S BANDS. UP TO .7CM. SLTIER AT BASE. V<br>HD. CLYST INCLUSIONS INDICATE TOPS UP |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02004

| | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. FROM | SEAM TO | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 6 | 120.97 | 121.23 | 0.26 | | | SANDSTONE | CG.S-P.GY.THNB.SLD<br>AS ABOVE. CLY BANDS UP TO 4CM. MNR QTZ VEINING |
| 6 | 121.23 | 122.09 | 0.86 | | | SANDSTONE | CG.S-P.GY.THNB.SLD<br>AS ABOVE. MNR QTZ VEINING |
| 5 | 122.09 | 122.55 | 0.46 | | | SANDSTONE | VFG-.M.GY.VTHNB.SLD<br>V FINE DK GY BANDS. CUT AND FILL INDICATE TOPS UP. MNR QTZ VEINING PARALLEL TO BDG |
| 4 | 122.55 | 123.48 | 0.93 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>V FINE SS LAM. MNR CLY BANDS. MNR QTZ VEINING ALONG BDG. HD |
| 4 | 123.48 | 123.52 | 0.04 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>AS ABOVE |
| 4 | 123.52 | 123.64 | 0.12 | | | SANDSTONE | VFG.DK.GY.VTHNB.SLD<br>SLIGHTLY LAM. M-HD |
| 4 | 123.64 | 124.12 | 0.48 | | | SILTSTONE | DK.GY.VTHNB<br>V HD. SLIGHTLY LAM |
| 3 | 124.12 | 124.37 | 0.25 | | | SILTSTONE | DK.GY.VTHNB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02004

| A | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 3 | 124.37 | 124.51 | 0.14 | | | SANDSTONE | FG.M.GY.VTHNB.BRKN<br>QTZ VEINING PARALLEL TO BDG. MNR CARB STRGS |
| 3 | 124.51 | 125.56 | 1.05 | | | SANDSTONE | VFG.DK.GY.THNB<br>M HD. CRUMBLY |
| 2 | 125.56 | 126.15 | 0.59 | | | SANDSTONE | VFG.DK.GY.THNB |
| 3 | 126.15 | 126.21 | 0.06 | | | SILTSTONE | M.GY.THNB.SLD<br>V HD |
| 4 | 126.21 | 126.57 | 0.36 | | | SILTSTONE | DK.GY.SLD<br>CRUMBLY. M-HD. CLY BAND AT BASE 1CM THICK |
| 0 | 126.57 | 127.67 | 1.10 | | | MUDSTONE | DK.GY.THKB.SLD<br>CRUMBLY. M-HD. SLIGHTLY ARG |
| 8 | 127.67 | 128.06 | 0.39 | | | MUDSTONE | DK.GY.THKB.SLD<br>AS ABOVE |
| 9 | 128.06 | 128.51 | 0.45 | | | SANDSTONE | VFR.DK.GY.VTHNB.SLD<br>SPECKLED WITH QTZ. MORE TOWARDS BASE. SLT LAND |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL (METRES) | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 1 | 128.51 | 129.04 | 0.53 | | | SANDSTONE | MG.DK.GY.THNB.SLD<br>GRAIN SIZE RANGES FG TO CG. V SPECKLED WITH QTZ AND PERHAPS FELDSPAR. V MNR FLOW STRUCTURES. MORE COARSE AT BASE |
| 2 | 129.04 | 129.09 | 0.05 | | | SANDSTONE | MG.LT.GY.THKB.SLD<br>SLIGHTLY BIOTURB. COARSER IN PARTS |
| 3 | 129.09 | 131.05 | 1.96 | | | SANDSTONE | FG.LT.GY.THKB.SLD<br>COARSENS TOWARDS BASE. MORE BIOTURB TOWARDS BASE. MNR QTZ VEINING |
| 8 | 131.05 | 131.26 | 0.23 | | | SANDSTONE | MG.M.GY.VTHNB.SLD<br>COARSE AT TOP. INTBD FINER SS WITH MNR QTZ VEINING. MNR SLICKENSLIDES. HD |
| 9 | 131.26 | 131.74 | 0.48 | | | SANDSTONE | MG.DK.GY<br>GRAIN SIZE RANGES FG TO CG. V SPECKLED WITH QTZ AND PERHAPS FELDSPAR. V MNR FLOW STRUCTURES. MORE COARSE AT TOP |
| 0 | 131.74 | 132.35 | 0.61 | | | SANDSTONE | PBLY.PR.DK.GY.THNB.SLD<br>SPECKLED WITH QTZ. MORE AT TOP-FINER BANDS. VERGING CONGLOMERATIC |
| 2 | 132.35 | 132.62 | 0.27 | | | MUDSTONE | BLK |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02064

| | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 3 | 132.72 | 133.35 | 0.73 | | | MUDSTONE | BLK.THKB.SLD<br>AS ABOVE. M-HD. QTZ VEINING PARALLEL TO BDG. INTBD WITH HARDER SLTST BANDS. NOT CRUMBLY |
| 4 | 133.35 | 133.45 | 0.08 | | | SILTSTONE | DK.GY.SLD<br>V HD |
| 5 | 133.43 | 133.79 | 0.36 | | | SILTSTONE | M.GY.VTHNB.SLD<br>M-HD. MNR MDST BANDS. THINLY LAM |
| 6 | 133.79 | 134.54 | 0.75 | | | SILTSTONE | M.GY.VTHNB.SLD<br>AS ABOVE. QTZ VEIN 2CM THICK. MNR QTZ VEINING. HD |
| 0 | 134.54 | 134.61 | 0.07 | | | MUDSTONE | CLYY.DK.GY.THKB.SLD<br>V MNR QTZ VEINING |
| 3 | 134.61 | 135.60 | 0.99 | | | SILTSTONE | M.GY.VTHNB.SLD<br>M-HD TO HD. SSY LAM |
| 6 | 135.60 | 135.87 | 0.27 | | | SILTSTONE | M.GY.VTHNB.SLD<br>INTBD F-MG SS |
| 5 | 135.87 | 135.94 | 0.07 | | | SANDSTONE | FG.MOD.M.GY.VTHNB.SLD<br>MNR QTZ VEINING WITH CALC STRGS ASSOCIA |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 2 | 135.94 | 136.50 | 0.56 | | | SANDSTONE | MG-.WEL.LT.GY.VTHNB.SLD<br>INTBD FINER SS AND SLTST. COARSER GRAIN<br>ED AT BASE. V MNR QTZ VEINING. FEW COAL<br>STRGS |
| 3 | 136.50 | 137.62 | 1.12 | | | SILTSTONE | M.GY.VTHNB.SLD<br>INTBD CLYY SAND LESS THAN 1CM |
| 0 | 137.62 | 137.96 | 0.34 | | | SANDSTONE | MG.M.GY.VTHNB.SLD<br>QTZ VEINED. INTBD DK GY SLTST. MNR CLAY<br>BAND 2CM AT BASE. SOFT |
| 1 | 137.96 | 138.06 | 0.10 | | | SILTSTONE | M.GY.VTHNB.SLD<br>INTBD CLYY SS |
| 2 | 138.06 | 138.54 | 0.48 | | | SANDSTONE | FG-.GY.VTHNB.SLD<br>INTBD SLTST AND V FG SS. SS IS HD. SLTS<br>T IS V HD |
| 2 | 138.54 | 138.65 | 0.15 | | | SANDSTONE | VFG.PR.LT.GY.VTHNB.SLD<br>FG IN PARTS. INTBD SLTST. CUT AND FILL<br>INDICATE TOPS OVERTURNED. SS V V HD |
| 2 | 138.65 | 138.80 | 0.11 | | | SILTSTONE | GY.VTHNB.SLD<br>INTBD F-MG SS. SLTST IS HD. SS SLIGHTLY<br>FRIABLE |

PROJECT: KFN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 2 | 138.80 | 139.57 | 0.77 | | | SANDSTONE | VFG.MOD.DK.GY.VTHNB.SLD<br>THINLY LAM. FLAME STRUCTURES INDICATE T<br>OPS OVERTURNED |
| 4 | 139.57 | 139.68 | 0.11 | | | CLAYSTONE | WEL.BLK.SLD<br>SOFT. CRUMBLY. SLIGHTLY CARB |
| 4 | 139.68 | 139.84 | 0.16 | | | SILTSTONE | WEL.DK.GY.VTHNB.SLD<br>INTBD MDST. BLK AND BN-GY AND CLYST STR<br>GS. PYR LENSES AND FLECKS. V MNR QTZ ST<br>RGS PARALLEL TO BDG. COAL STRGS |
| 5 | 139.84 | 139.95 | 0.11 | 03511 | D REPEAT | COAL | C-3.BLK.BRKN<br>QTZ VEINED. V MNR CLY BANDS. BRIGHT WIT<br>H DULL BANDS. CRUMBLY |
| 5 | 139.95 | 139.98 | 0.03 | 03511 | D REPEAT | CLAYSTONE | CARB.DK.BN.SLD<br>V SOFT. MNR COAL STRGS |
| 4 | 139.98 | 140.03 | 0.05 | 03511 | D REPEAT | COAL | C-2.BLK.BRKN<br>BRIGHT. CRUMBLY |
| 3 | 140.03 | 140.18 | 0.15 | 03511 | D REPEAT | COAL | C-2.BLK.SLD<br>MAINLY BRIGHT WITH DULL BANDS. V MNR QT<br>Z VEINING |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDMS2004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 0 | 140.24 | 140.30 | 0.06 | 03511 | D REPEAT | MUDSTONE | CARB.BLK.SLD<br>V MNR COAL STRGS. MNR QTZ VEINS AND SLI<br>CKENSIDES ASSOCIATED. BRKN AT BASE |
| 9 | 140.30 | 140.32 | 0.02 | 03511 | D REPEAT | COAL LOSS | |
| 9 | 140.32 | 140.34 | 0.02 | 03511 | D REPEAT | COAL | C-2.BLK.SLD<br>BRIGHT WITH DULL BANDS |
| 9 | 140.34 | 140.40 | 0.06 | | | CLAYSTONE | CARB.DK.GY.SLD<br>MD. COAL STRGS |
| 7 | 140.40 | 140.46 | 0.06 | | | CLAYSTONE | CARB.DK.GY.SLD<br>V COALY. COAL BANDS UP TO 1.5CM THICK.<br>QTZ VEINING |
| 4 | 140.46 | 140.83 | 0.35 | | | CLAYSTONE | CARB.BLK.SLD<br>COAL STRGS. CLEAVES WELL. SOFT. VV MNR<br>QTZ VEINING |
| 0 | 140.83 | 140.97 | 0.14 | | | MUDSTONE | DK.GY.VFHNB.SLD<br>MD. INTBD VFHN CARB MDST. |
| 0 | 140.97 | 141.37 | 0.40 | | | CLAYSTONE | CARB.BLK.VFHNB.SLD<br>LAM. MNR QTZ VEINING. V MNR LAM OF GY C |

XXX



PROJECT: KPN BLOCK: BC DATA SOURCE: DDHB2004

| BCA | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 71 | 141.37 | 141.52 | 0.15 | | | MUDSTONE | CARB.BLK.THNB.SLD<br>MNR QTZ VEINING, MEDIUM HD |
| 71 | 141.52 | 141.67 | 0.15 | | | CLAYSTONE | CARB.BLK.VTHNB.SLD<br>INTBD GY CLY, V MNR QTZ VEINING, BREAKS ALONG CLEAVAGE |
| 71 | 141.67 | 141.98 | 0.31 | | | MUDSTONE | CLYY.DK.GY.VTHNB.SLD<br>ARG, M-HD, QTZ VEINED IN PART, CLEAVES |
| 71 | 141.98 | 142.20 | 0.22 | | | CLAYSTONE | DK.GY.THNB.SLD<br>BREAKS ALONG CLEAVAGES, M-HD |
| * 73 | 142.20 | 144.44 | 2.24 | | | MUDSTONE | CLYY.DK.GY.VTHNB.SLD<br>ARG, BANDS OF HARDER CLYST CLEAVE DIFFERENTLY FROM MUDST, MUDST CLEAVES ON BDG SURFACE, M-HD |
| 64 | 144.44 | 144.49 | 0.05 | | | MUDSTONE | CLYY.DK.GY.VTHNB.SLD<br>ARG, AS ABOVE |
| * 67 | 144.49 | 145.09 | 0.60 | | | SANDSTONE | VFG.DK.GY.VTHNB.SLD<br>LAM, INTBD VFG SS AND FG SS, CRUMBLY |
| 67 | 145.09 | 145.27 | 0.18 | | | SANDSTONE | VFG.DK.GY.VTHNB.SLD<br>AS ABOVE, CUT AND FILL INDICATE TOPS OV |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 7 | 145.27 | 146.62 | 1.35 | | | SILTSTONE | DK.GY.VTHNB.SLD<br>FINELY LAM. MD. DEFINITE GRIT |
| 7 | 146.62 | 147.13 | 0.51 | | | SILTSTONE | M.GY.VTHNB.SLD<br>LAM. CUT AND FILL INDICATE TOPS OVERTUR<br>NED. LAMS OF FG SS AND SLTST |
| 8 | 147.13 | 147.38 | 0.25 | | | SANDSTONE | FG.LT.GY.THNB.SLD<br>V SLIGHT BIOTURB |
| 9 | 147.38 | 147.83 | 0.45 | | | SANDSTONE | FG.LT.GY.VTHNB.BIOTR.SLD<br>SLTST LAM. CUT AND FILL AND FLAME STRUC<br>TURES INDICATE TOPS OVERTURNED. MORE SL<br>TY AT BASE |
| 9 | 147.83 | 148.15 | 0.32 | | | SANDSTONE | FG.LT.GY.THNB.BIOTR.SLD |
| 8 | 148.15 | 148.74 | 0.59 | | | SANDSTONE | FG.LT.GY.THNB.SLD<br>AS ABOVE. SLTY IN PART. V FINE LAM |
| 8 | 148.74 | 150.32 | 1.58 | | | SILTSTONE | M.GY.VTHNB.SLD<br>VFG SS LAM. LESS SAND AT BASE. VF QTZ S<br>TRGS |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| A | DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 7 | 151.32 | 150.96 | 0.04 | | | SILTSTONE | M.GY.VTHNB.SLD<br>QTZ VEINED WITH COAL STRGS. COAL IS BRI<br>GHT |
| 6 | 150.96 | 150.43 | 0.07 | 03512 E | REPEAT | COAL | C-2.BLK.BRKN<br>CRUMBLY |
| 4 | 150.43 | 150.54 | 0.11 | 03512 E | REPEAT | COAL | C-2.BLK.BRKN<br>BRIGHT WITH DULL BANDS. V MNR QTZ VEINS |
| 3 | 150.54 | 150.62 | 0.08 | 03512 E | REPEAT | COAL LOSS | |
| 0 | 150.62 | 150.81 | 0.19 | 03512 E | REPEAT | COAL | C-3.BLK.SLD<br>50/50-DULL/BRIGHT. MNR QTZ VEIN |
| 7 | 150.81 | 151.02 | 0.21 | | | SILTSTONE | CARB.M.GY.VTHNB.SLD<br>FINE LAM. V MNR COAL STRGS |
| 6 | 151.02 | 151.12 | 0.10 | | | SILTSTONE | CARB.M.GY.VTHNB.SLD<br>AS ABOVE. F SS LAM |
| 9 | 151.12 | 153.31 | 2.19 | | | SANDSTONE | FG.M.GY.VTHNB.SLD<br>CUT AND FILL AND FLAME STRUCTURES INDIC<br>ATE TOPS OVERTURNED. F SLTST LAM |
| 5 | 153.31 | 154.17 | 0.10 | | | SANDSTONE | FG.M.GY.VTHNB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82004

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SLAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 154.17 | 154.27 | 0.10 | | | SANDSTONE | FG.GY.VTHNB.SLO<br>LAM NOT AS FREQUENT. TOPS OVERTURNED. M<br>NR QTZ VEIN |
| 154.27 | 155.58 | 1.31 | | | SANDSTONE | FG.M.GY.VTHNB.SLO<br>VF LAM OF SLTST AND VF SAND. CUT AND FI<br>LL INDICATE TOPS OVERTURNED. M HD. FRIA<br>BLE IN PARTS. V MNR QTZ VEIN |
| 155.58 | 157.32 | 1.74 | | | SANDSTONE | FG.M.GY.THKB.SLO<br>LAM AT TOP. MNR FLOW FEATURES. COARSENS<br>TOWARDS BASE. VV MNR QTZ FILL ALONG CR<br>ACKS |
| 157.32 | 157.60 | 0.28 | | | ROCK LOSS | ////////////END OF CORE. DRILLERS MARKE<br>R 157.6M////////////// |

ENOTES MEASURED DCA

GR.-Mt. Klappan 84(3) A

695

# MOUNT KLAPPAN
## DRILL HOLE LOG
DDH 82-004

SCALE : 1:200 (0 – 5 m) 1:40 (0 – 0.5 – 1 m)

NORTHING : 6344510 N
EASTING : 513515 E

INCLINATION : 60°
BEARING : 040°

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL – THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL

APPARENT THICKNESS 1:200

TRUE THICKNESS 1:200

SEAM DETAIL 1:40

(m)

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

15 15 19 24 37 36 28 44 40 45 44 27 32 29 50 50 34 37 34 22 36 32 33 31 28 31 31 36 32 29 34 35 40 47 40 36 40 45 47 46 46 36 42 47 43 45 50 47 45 42 65 76 72 78 82 84 70 73 87 87 89 87 77 89 82 90

Total: 1576.0m

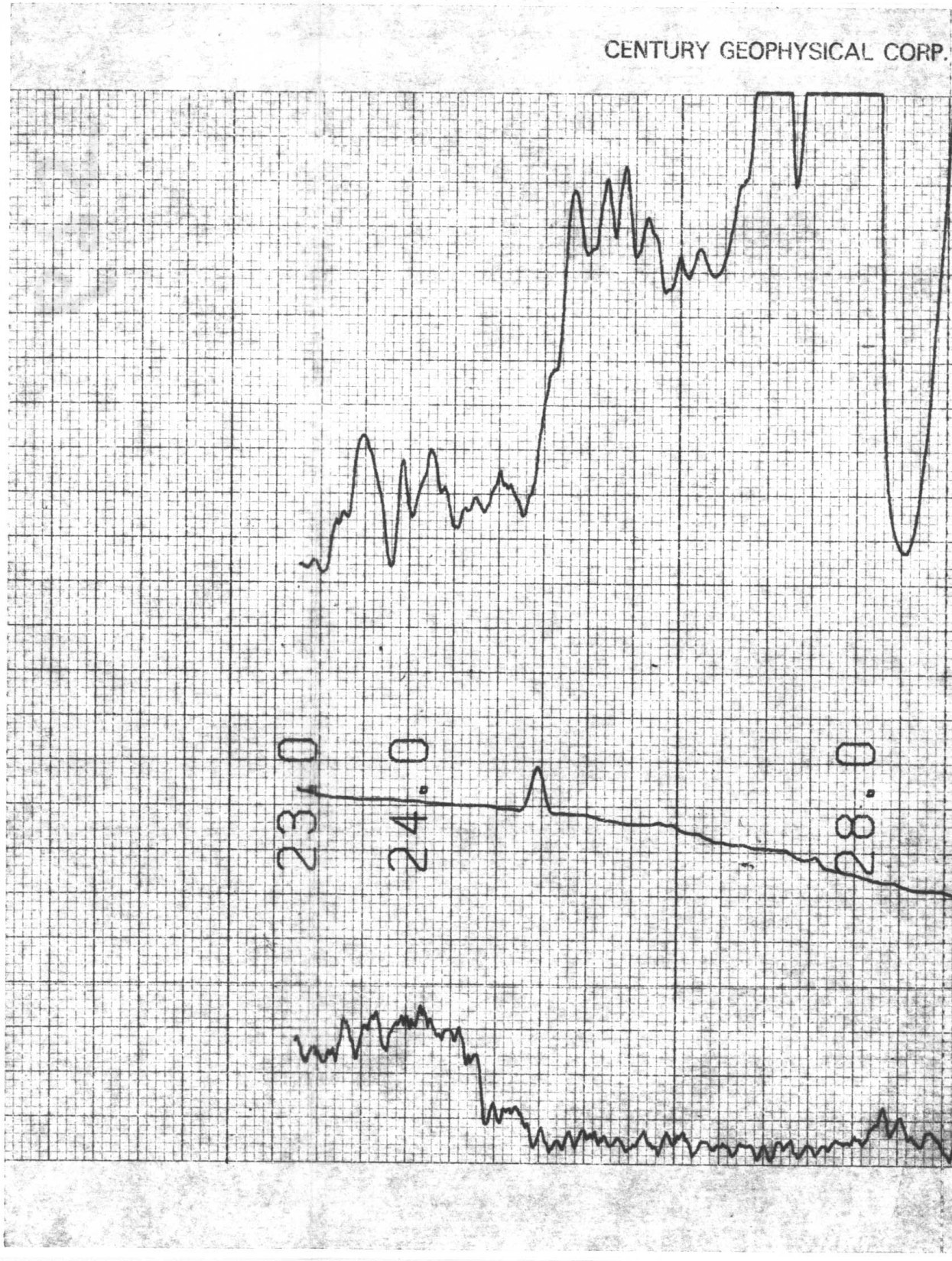
SEAM G — 24.73 / 29.60 — ROCK | COAL — 0.26 | 2.62 — 2.88

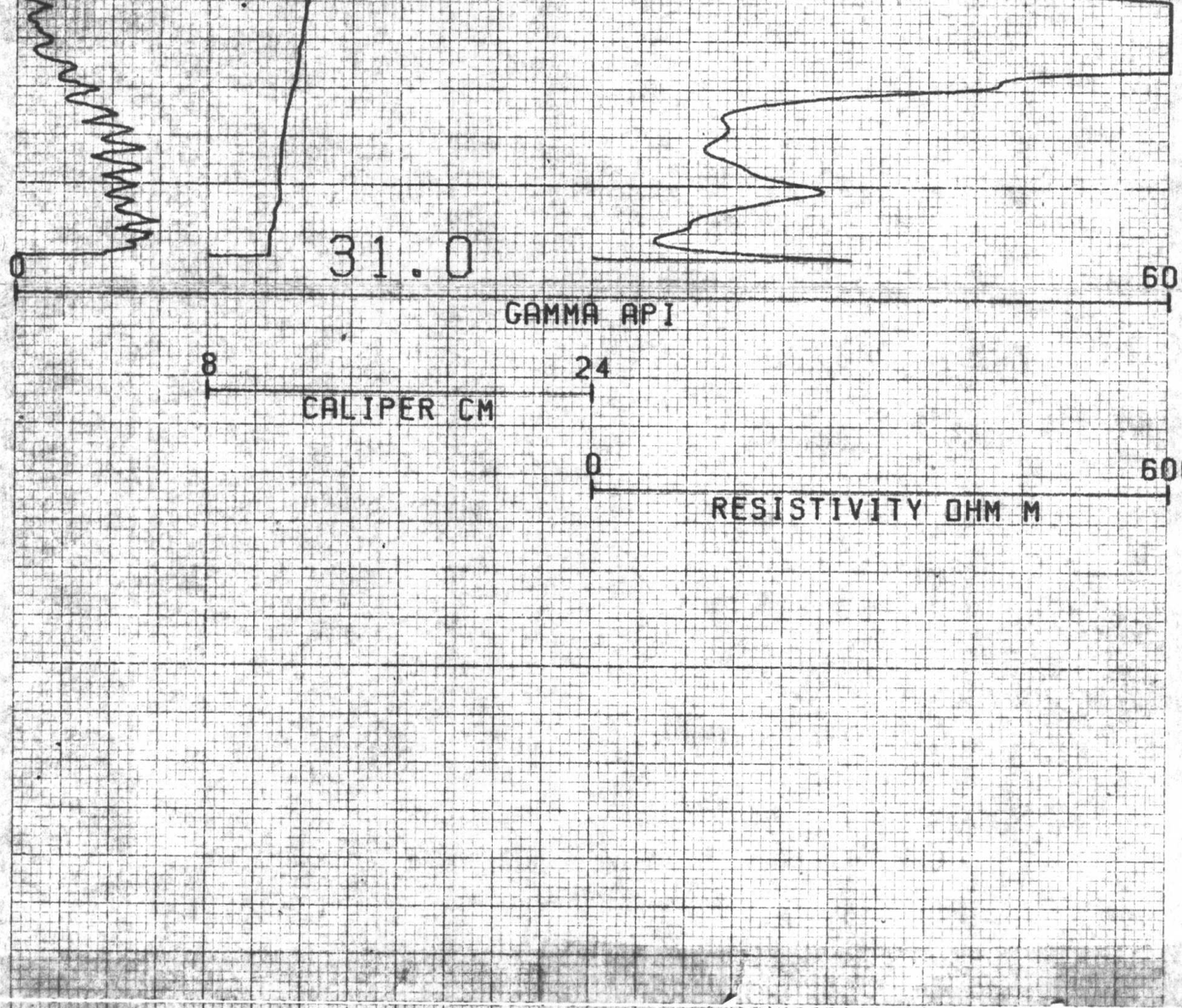
SEAM E — 90.39 / 91.67 — ROCK | COAL — 0.07 | 0.68 — 0.75

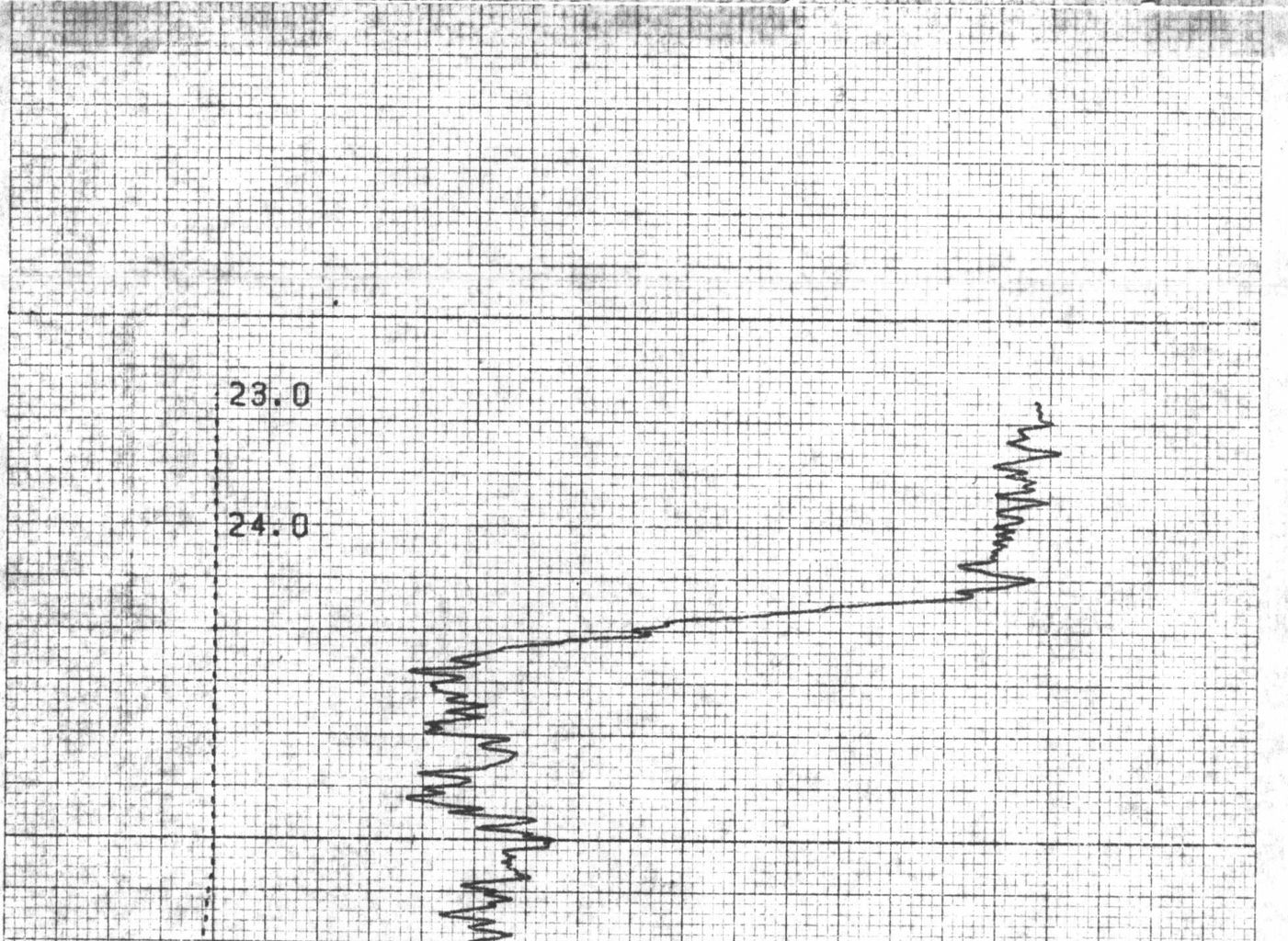
SEAM D — 114.48 / 114.98 — ROCK | COAL — 0.00 | 0.35 — 0.35

SEAM D REPEAT — 139.84 / 140.34 — ROCK | COAL — 0.09 | 0.41 — 0.50

SEAM E REPEAT — 150.36 / 150.81 — ROCK | COAL — 0.00 | 0.45 — 0.45

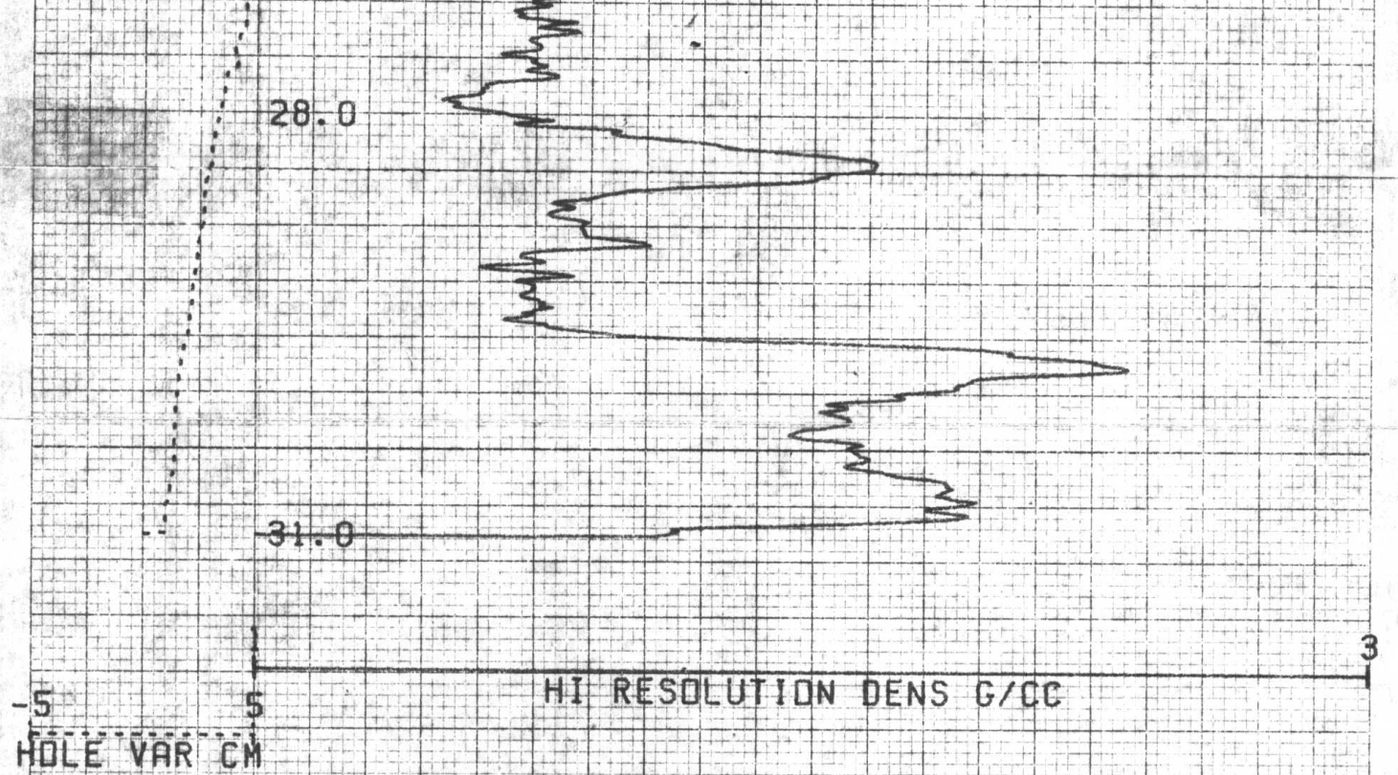

CENTURY GEOPHYSICAL CORP.
23.0
24.0
28.0

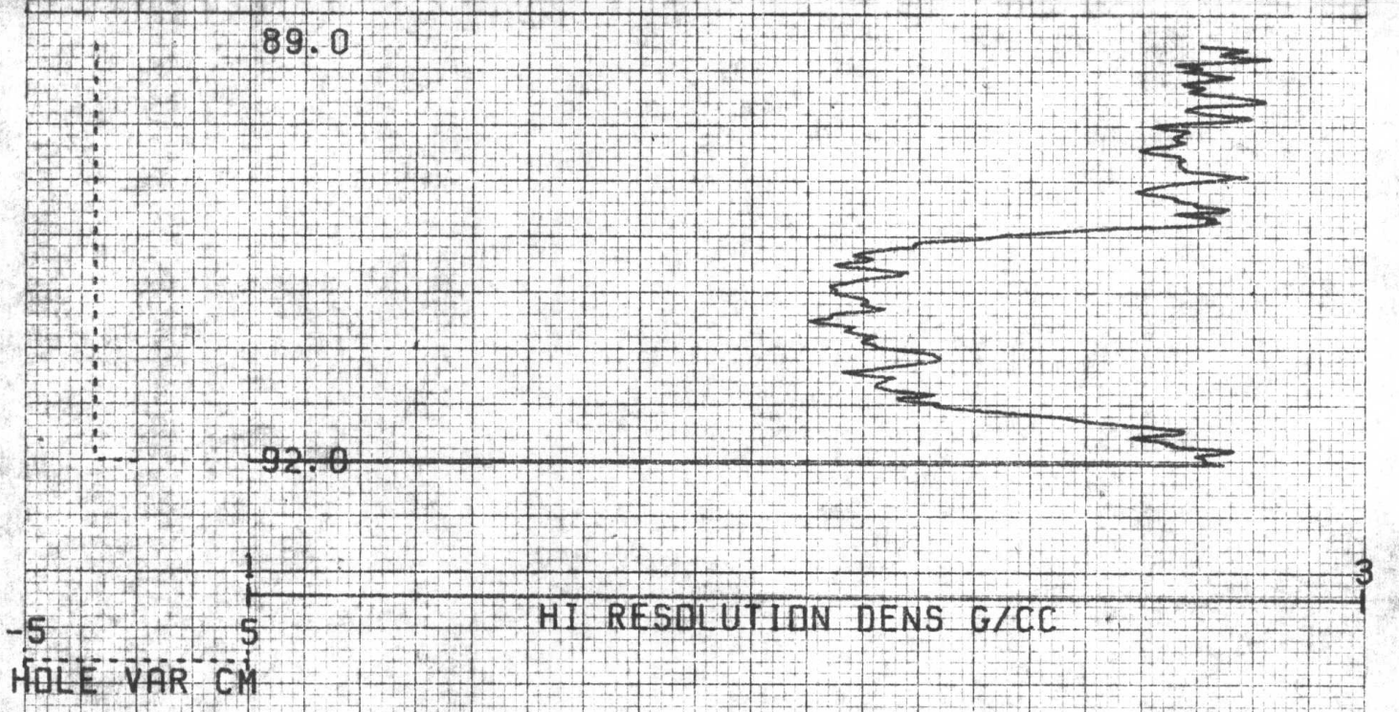


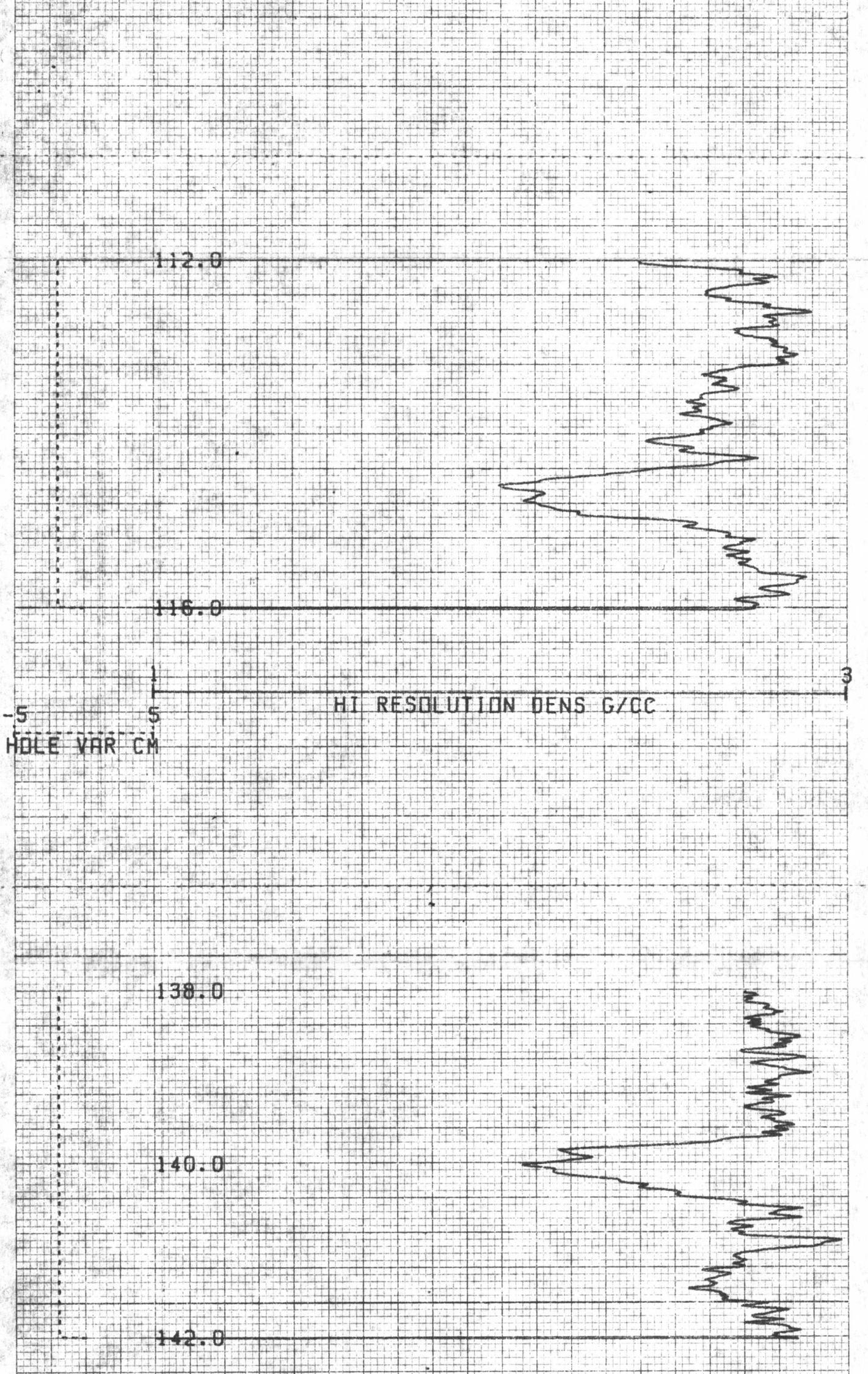

PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



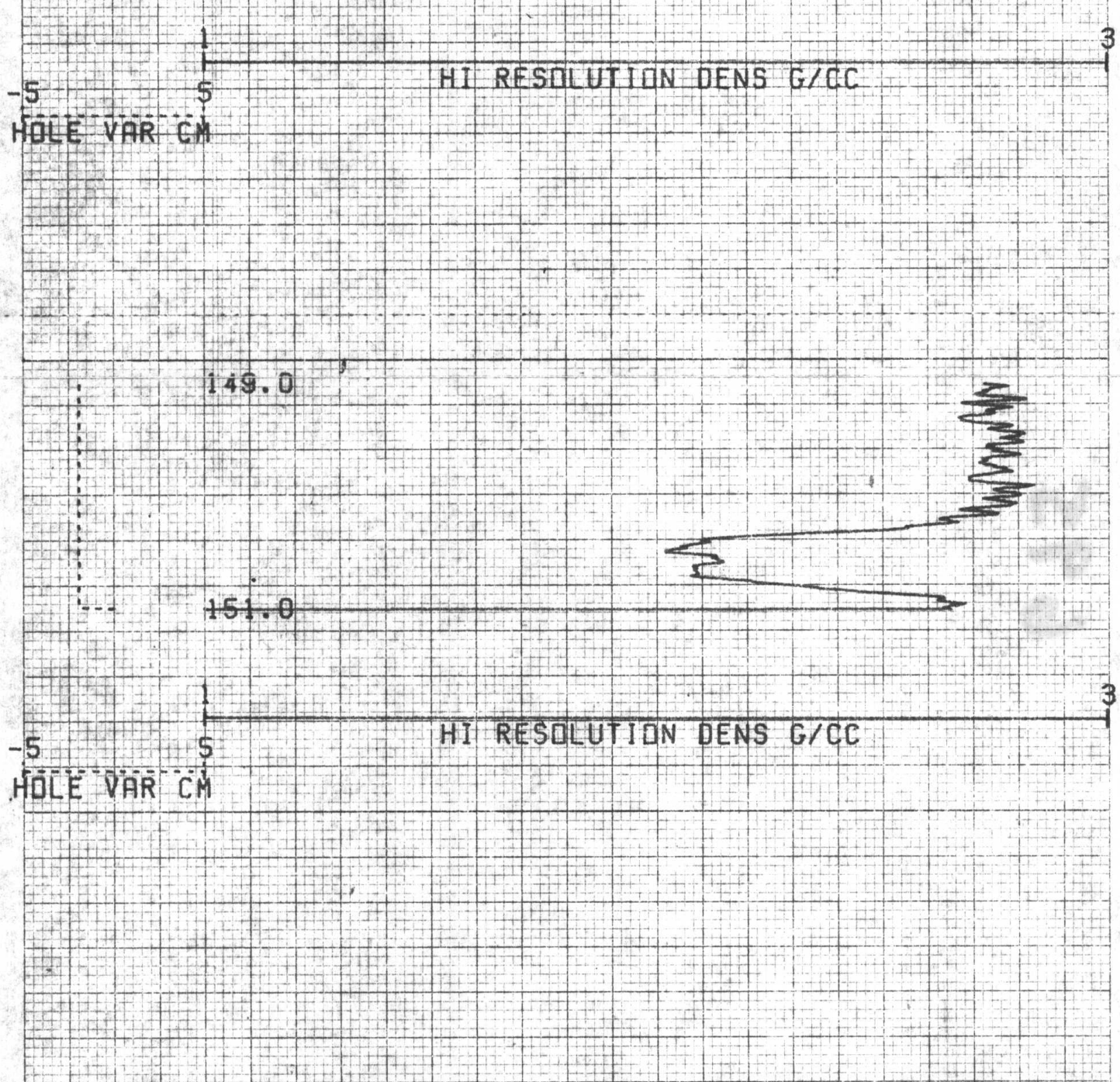




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOP




COMPU-LOG V8L3 PLOT 08-18-82

DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.

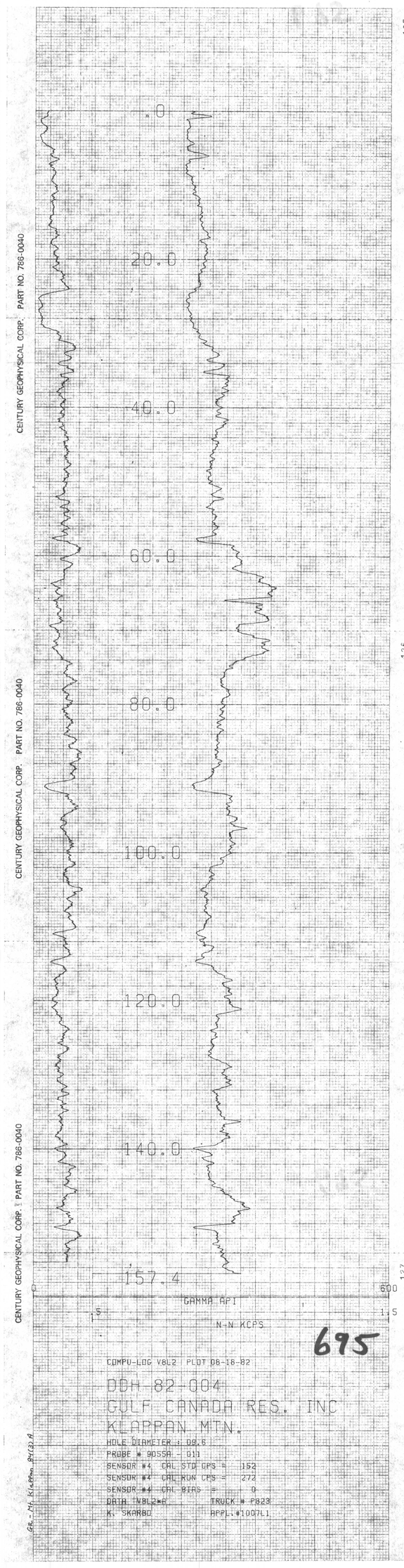
HOLE DIAMETER : 09.6
PROBE # 9030A - 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 31
DATA V8L2*A TRUCK # P823
K. SKARBO APPL. #1 TN

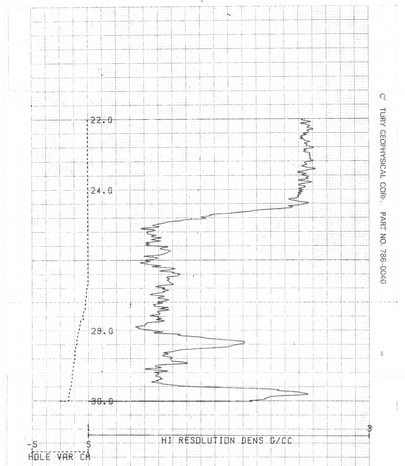
* LOGGED INSIDE DRILLPIPE, EXCEPT TOP ZONE.

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

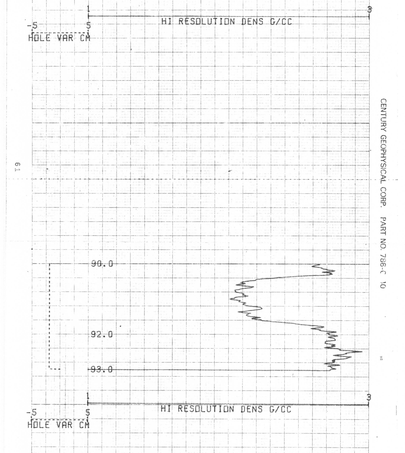
GR. - Mt. Klappan 84(3)A

695

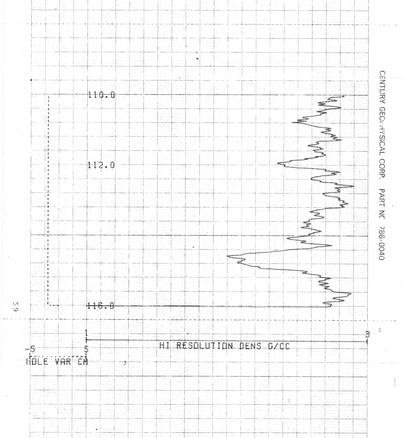

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
157.4
125
126
127
0
500
GAMMA API
15
15
N-N KCPS
695
COMPU-LOG V8L2 PLOT 08-18-82
DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.
HOLE DIAMETER = 09.6
PROBE # 9055A - 011
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 272
SENSOR #4 CAL BIAS = 0
DATA V8L2#F TRUCK # P823
K. SKARBO APPL.#1007L1
GR-N, Klappan, BY(3).A



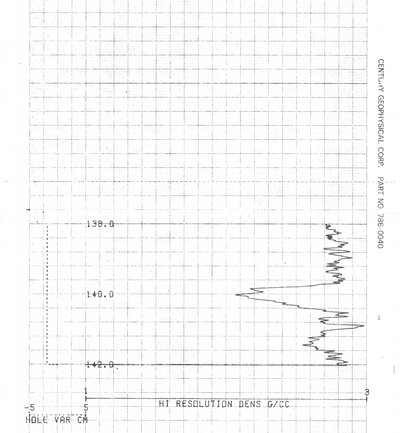

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



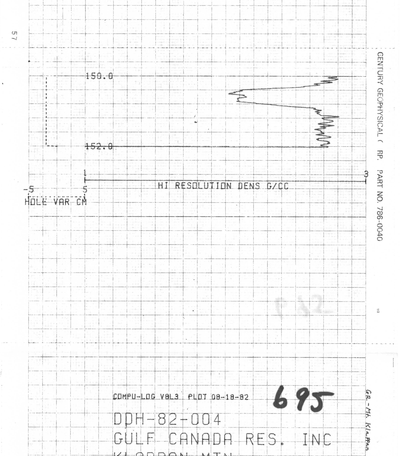

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

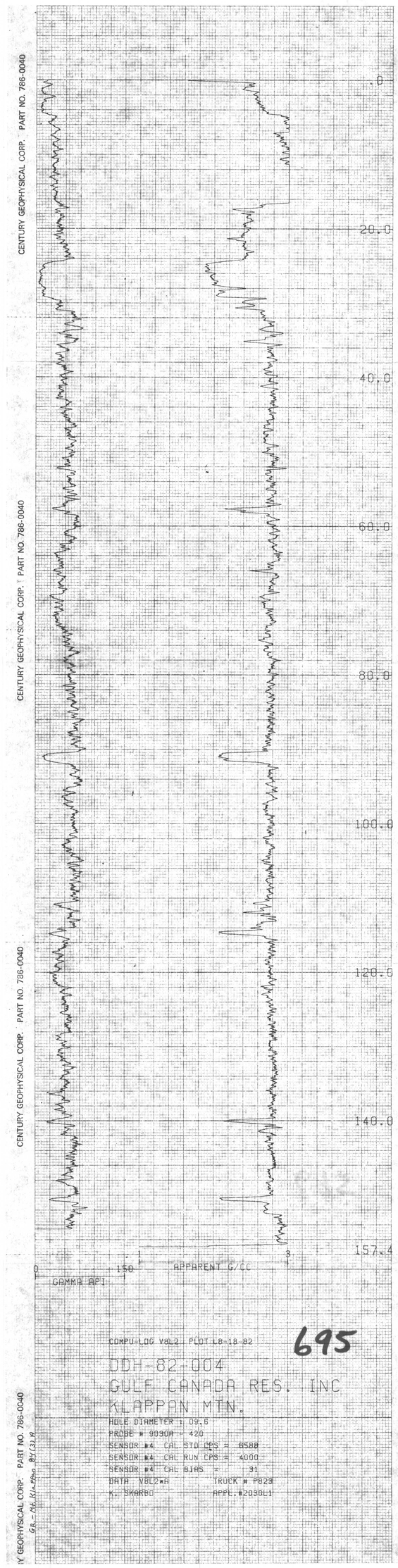
COMPU-LOG V8L3 PLOT 08-18-82

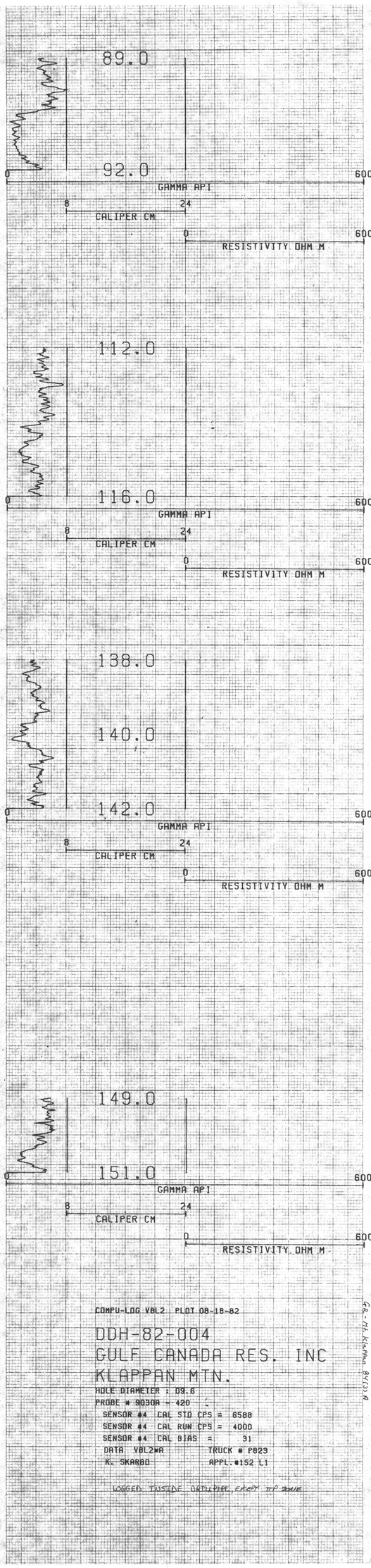
695

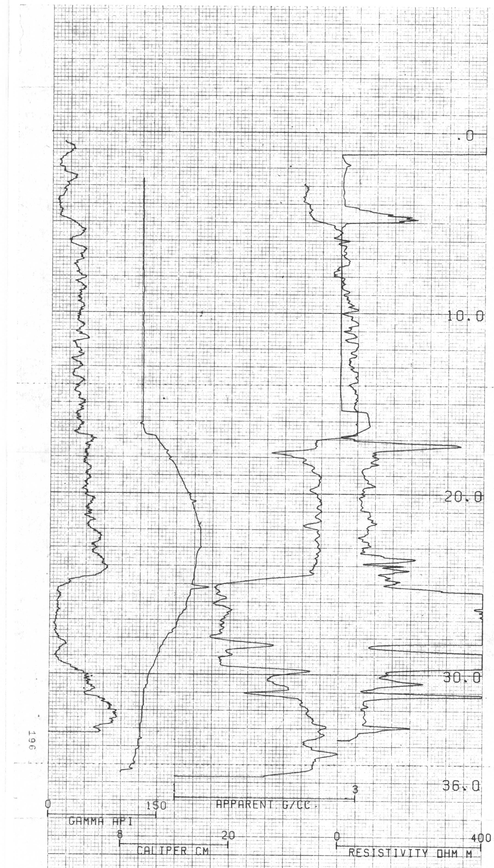
DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.

HOLE DIAMETER = 03.8
PROBE # 9030A = 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 31
DATA V8L2MA TRUCK # P823
M. SKARBO APPL.#1 TN

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
131
132
133
.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
157.4
0
150
GAMMA API
3
APPARENT G/CC
COMPU-LOG V8L2 PLOT 18-18-82
695
DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.
HOLE DIAMETER = 09.6
PROBE # 9030A - 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 31
DATA V8L2*A TRUCK # P828
K. SKARBO APPL.#2030L1

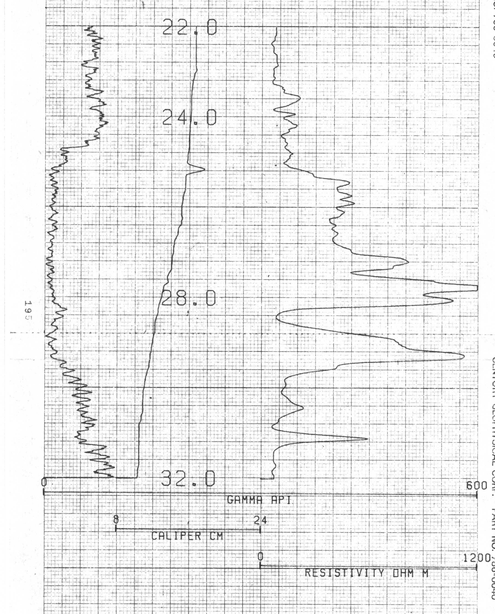

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
89.0
92.0
0
600
GAMMA API
8
24
CALIPER CM
0
600
RESISTIVITY OHM M
112.0
116.0
0
600
GAMMA API
8
24
CALIPER CM
0
600
RESISTIVITY OHM M
138.0
140.0
142.0
0
600
GAMMA API
8
24
CALIPER CM
0
600
RESISTIVITY OHM M
149.0
151.0
0
600
GAMMA API
8
24
CALIPER CM
0
600
RESISTIVITY OHM M
COMPU-LOG V8L2 PLOT 08-18-82
DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.
HOLE DIAMETER : 09.6
PROBE # 9030A - 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 4000
SENSOR #4 CAL BIAS = 31
DATA V8L2WA TRUCK # P823
K. SKAARD APPL. #152 L1
LOGGED INSIDE CALIPER, CASE TO BASE
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




COMPU-LOG V8L2 PLOT 08-19-82

DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.

HOLE DIAMETER : 09.6
PROBE # 9030A - 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 6043



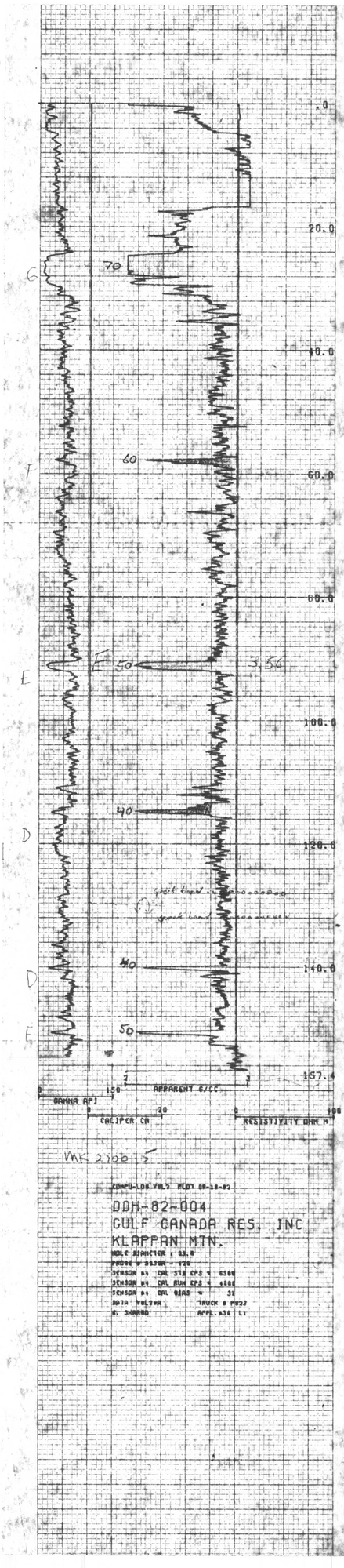

COMPU-LOG V8L2 PLOT 08-19-82

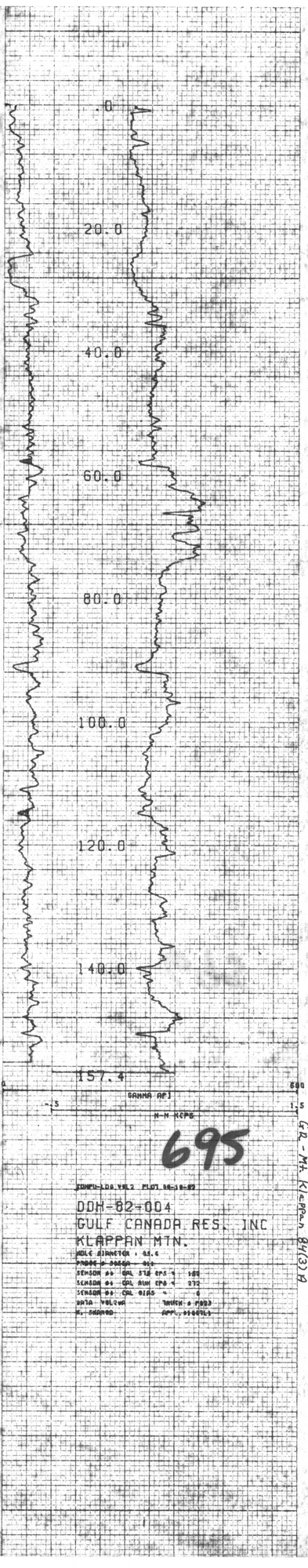
695

DDH-82-004
GULF CANADA RES. INC
KLAPPAN MTN.

HOLE DIAMETER : 09.6
PROBE # 9030A - 420
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 6043
SENSOR #4 CAL BIAS = 31
DATA V8L2#A TRUCK # P823
K. SKARBO APPL.#152 L1

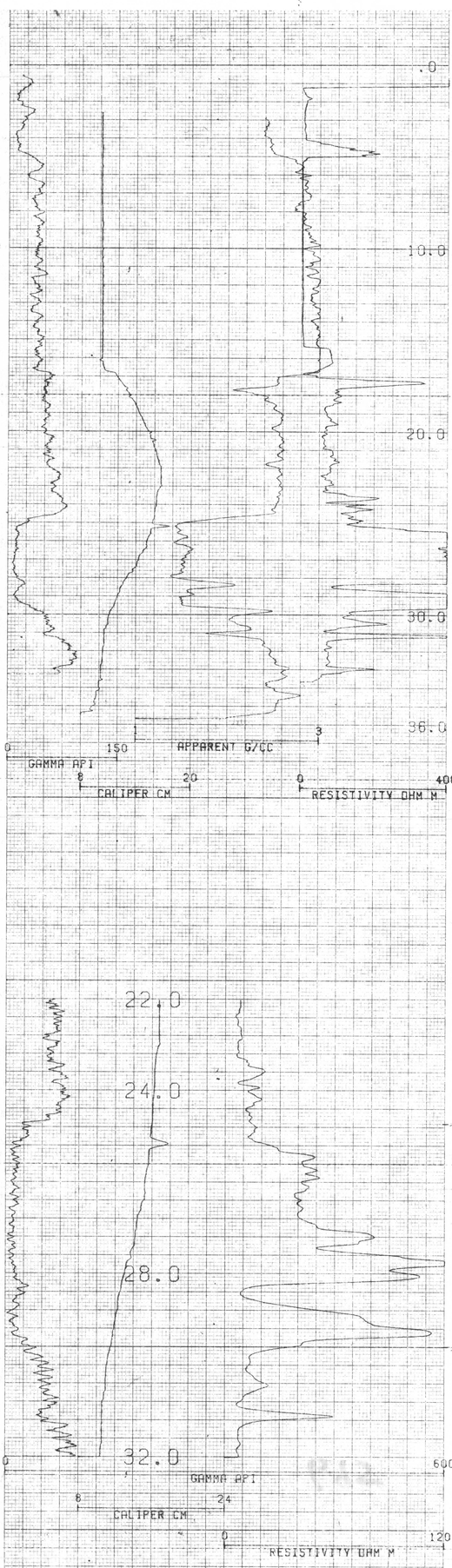
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 786-0038

CENTURY GEOPHYSICAL CORP. PART NO. 786-0038







COMPU-LOG V8L2 PLOT 08-19-82

695

DDH-82-004

GULF CANADA RES. INC

KLAPPAN MTN.

HOLE DIAMETER : 08.6

PROBE # 9030A - 420

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 6043

SENSOR #4 CAL BIAS = 31

DATA V8L2*A TRUCK # P823

K. SWARBO APPL.#152 L1

GR - Mk Klappan 8K(2)A

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

# VERTICAL DEVIATION

COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

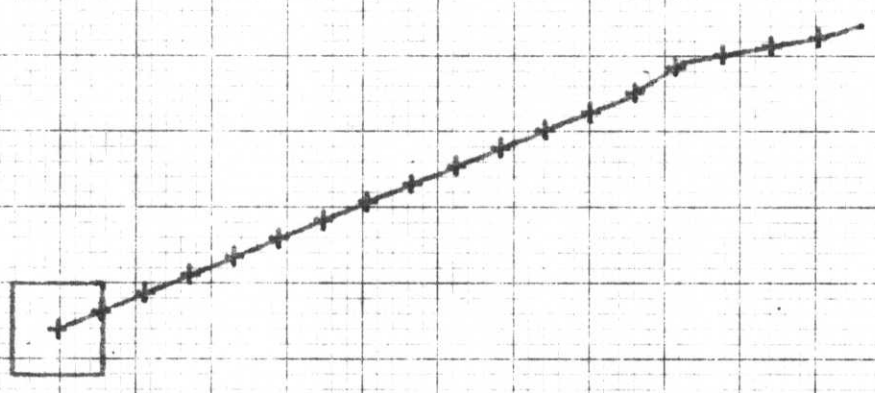
CLIENT : GULF CANADA RES. INC
LOCATION : KLAPPAN MTN.
HOLE ID : DDH-82-004
DATE OF LOG : 08-19-82
PROBE : 9055A 0011

SCALE: 1.50 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 31.5 M
AZIMUTH: 69.1
DISTANCE: 17.13 M

+ = 2.0 M INCR
△ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑

95



GR.-Mt. Klappan 84(3) A

695

287-1140

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG VSL1 DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : DDH-82-004

LOCATION : KLAPPAN MTN. DATE OF LOG : 08-19-82

DATA FROM : VSL2*A PROBE : 9055A 0011

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

final

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|---|---|---|---|---|---|---|---|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 2.00 | 1.78 | .36 | .88 | .95 | 67.7 | 28.4 | 67.6 |
| 4.00 | 3.51 | .72 | 1.76 | 1.90 | 67.7 | 28.4 | 67.6 |
| 6.00 | 5.27 | 1.08 | 2.64 | 2.85 | 67.7 | 28.4 | 67.6 |
| 8.00 | 7.03 | 1.44 | 3.52 | 3.81 | 67.7 | 28.4 | 67.6 |
| 10.00 | 8.79 | 1.81 | 4.40 | 4.76 | 67.7 | 28.4 | 67.6 |
| 12.00 | 10.54 | 2.17 | 5.29 | 5.71 | 67.7 | 28.4 | 67.6 |
| 14.00 | 12.30 | 2.53 | 6.17 | 6.67 | 67.7 | 28.4 | 67.6 |
| 16.00 | 14.06 | 2.89 | 7.05 | 7.62 | 67.7 | 28.4 | 67.6 |
| 18.00 | 15.82 | 3.25 | 7.93 | 8.57 | 67.7 | 28.4 | 67.6 |
| 20.00 | 17.58 | 3.62 | 8.81 | 9.53 | 67.7 | 28.4 | 67.6 |
| 22.00 | 19.34 | 3.98 | 9.69 | 10.48 | 67.7 | 28.4 | 67.6 |
| 24.00 | 21.09 | 4.33 | 10.59 | 11.44 | 67.6 | 28.7 | 66.7 |
| 26.00 | 22.84 | 4.72 | 11.46 | 12.40 | 67.6 | 28.7 | 65.6 |
| 28.00 | 24.60 | 5.24 | 12.20 | 13.35 | 66.9 | 29.0 | 67.7 |
| 30.00 | 26.33 | 5.49 | 13.22 | 14.32 | 67.5 | 29.1 | 75.2 |
| 32.00 | 28.07 | 5.66 | 14.18 | 15.27 | 68.2 | 29.2 | 79.5 |
| 34.00 | 29.82 | 5.84 | 15.13 | 16.22 | 68.9 | 28.7 | 79.6 |
| TD 35.90 | 31.49 | 6.09 | 16.01 | 17.13 | 69.1 | 28.8 | 73.5 |

GULF CANADA RESOURCES INC.

## - D A T A  S O U R C E  S U M M A R Y -

DATA SOURCE - KPNBCDDH82006 DATE - 02/06/85

### - H I S T O R Y -

START DATE - 08/30/82
END DATE - 09/01/82

CONTRACTOR - J.T.THOMAS
GEOLOGIST - SWANBERGSON
OPERATOR - GCRI
SURVEYOR -

REMARKS - ANGLED HOLE AT 060

### - L O C A T I O N -

PROVINCE - BC
ELEVATION - 1489.00
ZONE - 9
NORTHING - 6344865.00
EASTING - 512650.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571455
LONGITUDE - 1284725

### - O R I E N T A T I O N -

LENGTH - 172.98
INCLINATION - 60.0
AZIMUTH - 345.0

CORE SIZE - 95.8

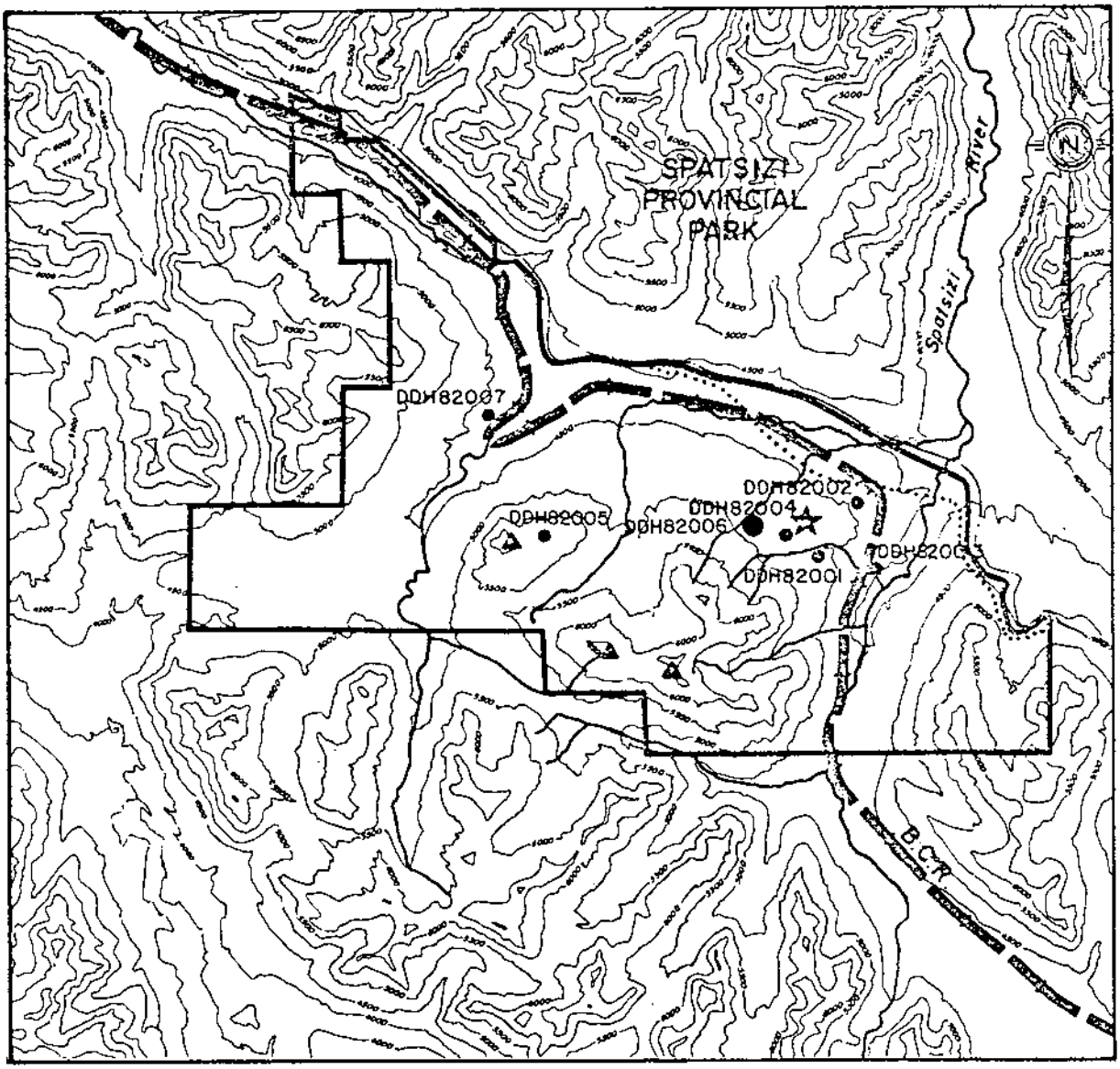
CEMENT -
PLUG - Y
PIEZ -

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

# MT. KLAPPAN COAL PROPERTY

## DIAMOND DRILL HOLES



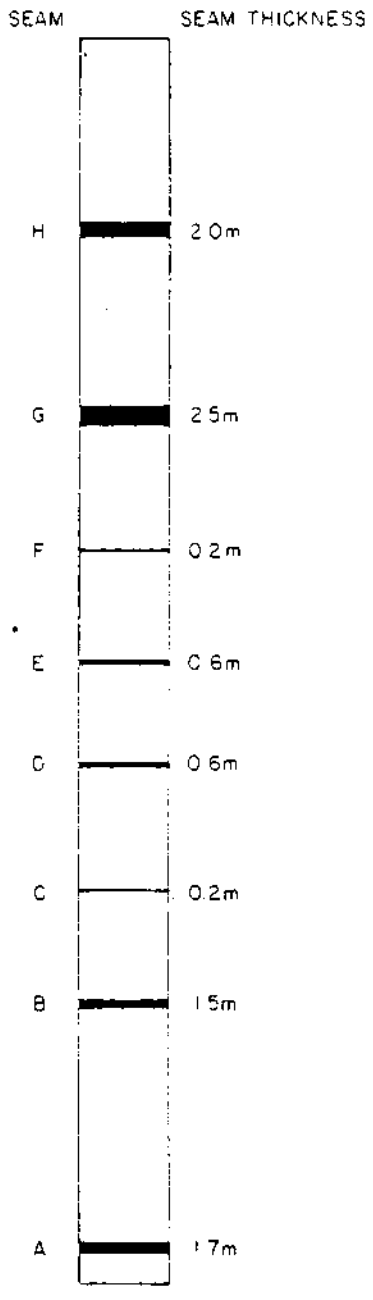

0 1 2 3 4 5 Km

FIGURE 3.4

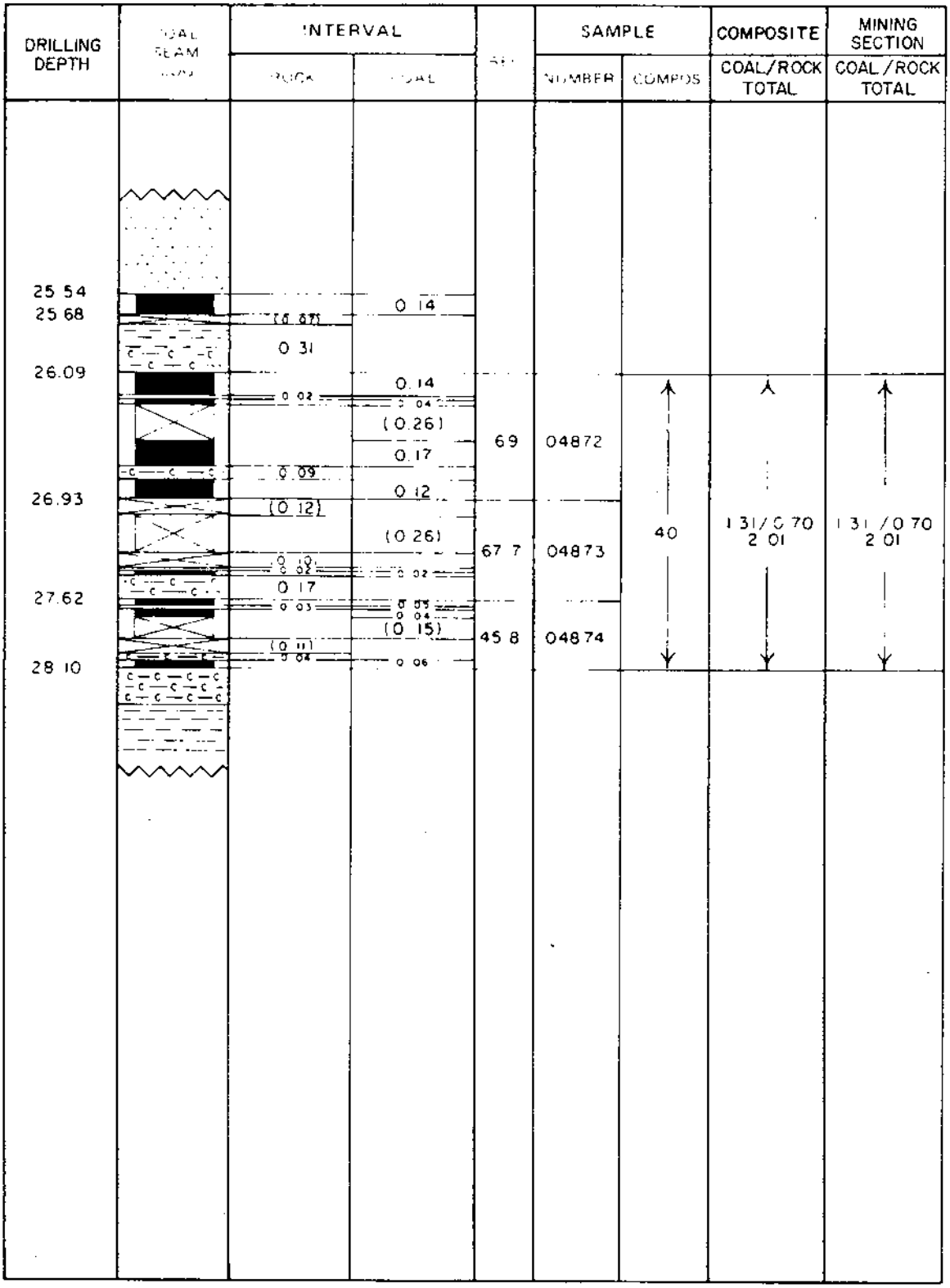
- Prepared Rail Bed
- Provincial Park Boundary
- Camp
- Diamond Drill Hole
- Redefined Property Boundary
- Peaks

# MT. KLAPPAN COAL PROPERTY

## DDH82006




SCALE-1:1000




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-006
SEAM H

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. | DATE: NOV. '82 DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12-80)

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 006 SEAM H SEAM INTERVAL Apparent Thickness

SCALE 1:40

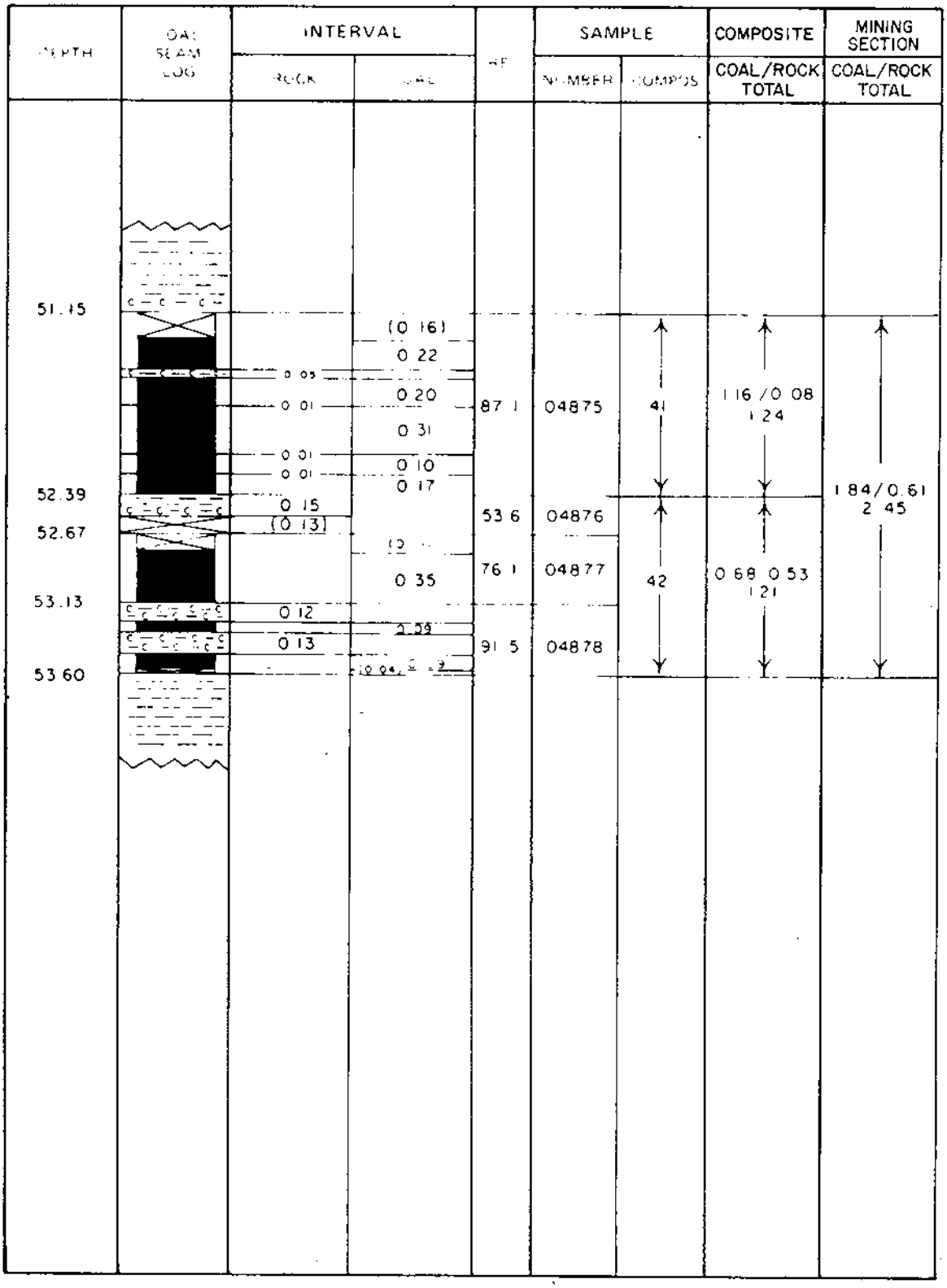
DENSITY SCALE 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE 0 300

GEOPHYSICAL LOGS

| SEAM COMP 1 2 3 4 5 6 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25.54 | | | 0.14 | | | | | | | | | | |
| | | | (0.07) | | | | | | | | | | | |
| | | | 0.34 | | | | | | | | | | | |
| | 26.09 | | | 0.14 | | | | | | | | | | |
| | | | 0.02 | 0.04 | | | | | | | | | | |
| | | | | (0.26) | | | | | | | | | | |
| | | | | 0.17 | 69 | 04872 | | | | | | | | |
| | | | 0.09 | 0.12 | | | | | | | | | | |
| | 26.93 | | (0.12) | | | | | | | | | | | |
| | | | | (0.26) | | | 40 | | | | | | | |
| | | | 0.10 | | 67.7 | 04873 | | 0.71 | 45.68 | 9.46 | 44.15 | | 17.16 | |
| | | | 0.02 | 0.02 | | | | | | | | | | |
| | 27.62 | | 0.17 | | | | | | | | | | | |
| | | | 0.03 | 0.05 | | | | | | | | | | |
| | | | | 0.04 | | | | | | | | | | |
| | | | | (0.15) | | | | | | | | | | |
| | | | (0.11) | | 45.8 | 04874 | | | | | | | | |
| | 28.10 | | 0.04 | 0.06 | | | | | | | | | | |

Seam Interval (m) 26.09 - 28.10
Seam True Thickness (Coal/Rock): 1.31/0.70
Total 2.01




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-006
SEAM G

| | | |
|---|---|---|
| PREPARED BY: C. L | | SCALE 1 : 40 |
| APPROVED BY: J. M. D. | DATE: NOV 82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

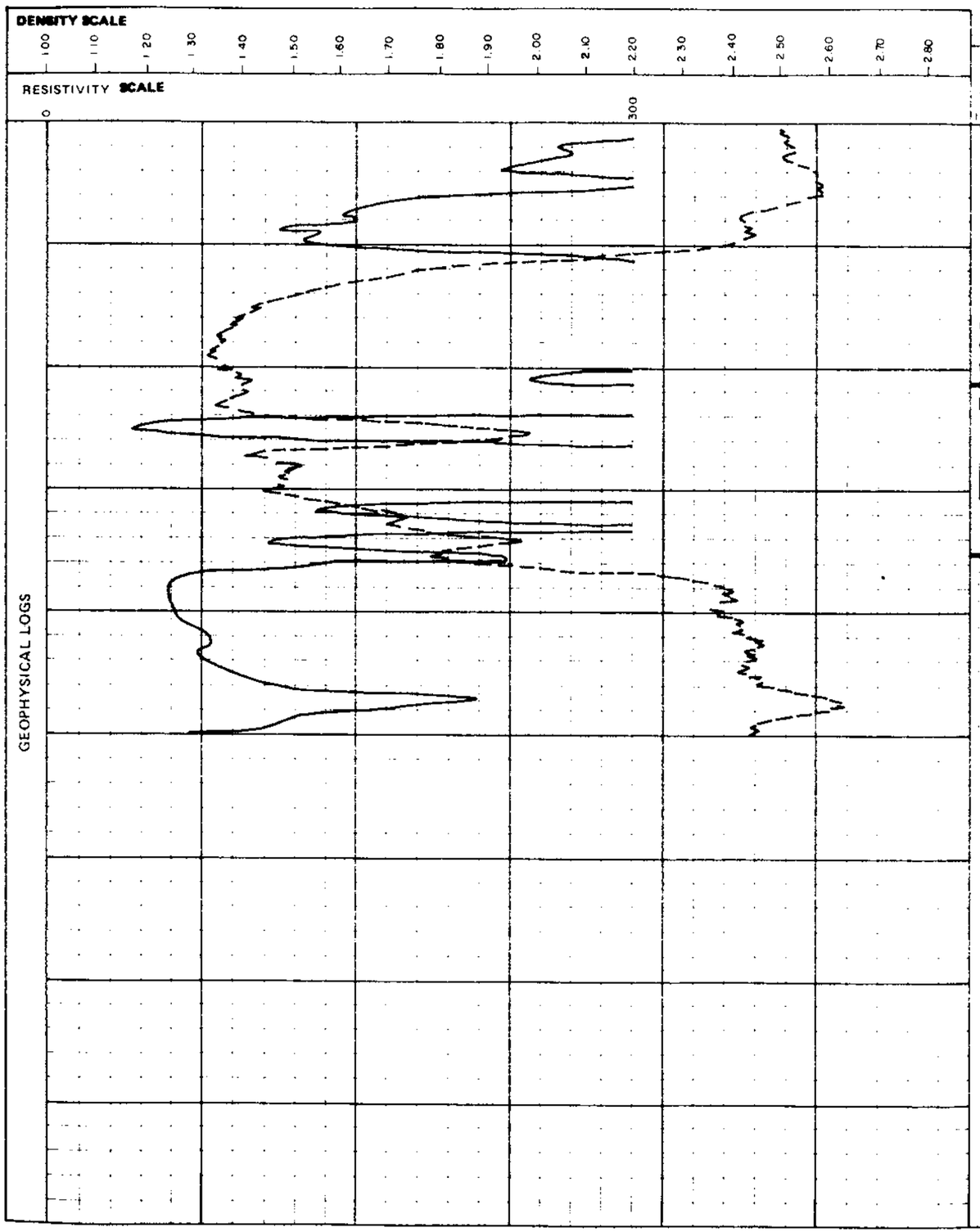
P-267 (12 80)

DENSITY ——— RESISTIVITY ———

Apparent Thickness

DRILL NO DDH - 82 - 006 SEAM G SEAM INTERVAL

SCALE 1:40




| SEAM COMP 1 2 3 4 5 6 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC. | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 51.15 | | | (0.16) | | | | | | | | | | |
| | | | | 0.22 | | | | | | | | | | |
| | | | 0.05 | | | | | | | | | | | |
| | | | 0.01 | 0.20 | 87.1 | 04875 | 41 | 0.97 | 18.48 | 6.65 | 43.90 | | 28.37 | |
| | | | | 0.31 | | | | | | | | | | |
| | | | 0.01 | 0.10 | | | | | | | | | | |
| | | | 0.01 | 0.17 | | | | | | | | | | |
| | 52.39 | | 0.15 | | 53.6 | 04876 | | | | | | | | |
| | 52.67 | | (0.13) | | | | | | | | | | | |
| | | | | (0.11) | | | | | | | | | | |
| | | | | 0.35 | 76.1 | 04877 | 42 | 1.26 | 41.16 | 9.81 | 47.77 | | 18.64 | |
| | 53.13 | | 0.12 | | | | | | | | | | | |
| | | | 0.13 | 0.09 | 91.5 | 04878 | | | | | | | | |
| | 53.60 | | | 0.09 (0.04) | | | | | | | | | | |

Seam Interval (m): 51.15 - 53.60

Seam True Thickness (Coal/Rock): 1.84/0.61
Total 2.45

| DEPTH | COAL SEAM LOG | INTERVAL | | REC | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 69.75 | | | | | | | | |
| 69.91 | | | 0.16 | 100 | 04746 | | | 0.16/0.00 0.16 |
| | | 0.46 | | | | | | |
| | | | 0.03 | | | | | |
| | | 0.14 | | | | | | |
| | | 0.04 | 0.02 | | | | | |
| 70.76 | | (0.02) | 0.14 | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-006
SEAM F

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. '82 | DRAWING No. |

## COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

P 267 (12 80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 006 SEAM F SEAM INTERVAL

SCALE 1:40

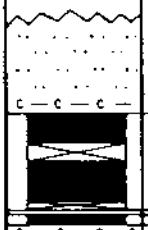
DENSITY SCALE
1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE
0 300

GEOPHYSICAL LOGS

| SEAM COMP 123456 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 69.75 | | | 0.16 | 100 | 04746 | | | | | | | | |
| | 69.91 | | 0.46 | | | | | | | | | | | |
| | | | | 0.05 | | | | | | | | | | |
| | | | 0.14 | 0.02 | | | | | | | | | | |
| | | | 0.04 | 0.14 | | | | | | | | | | |
| | 70.76 | | | | | | | | | | | | | |

Seam Interval (m): 69.75 - 69.91
Seam True Thickness (Coal/Rock): 0.16/0.00
Total 0.16

| DEPTH | COAL SEAM LOG | INTERVAL | | % REC | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 85.88 |  | | 0.16<br>(0.11)<br>0.21 | 74.6 | 04879 | 43 | 0.61/0.02<br>0.63 | 0.61/0.02<br>0.63 |
| 86.51 | | 0.02 | (0.03<br>0.08) | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-006
## SEAM E

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

P-267 (12 80)

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 006 SEAM E SEAM INTERVAL Apparent Thickness
SCALE 1:40

DENSITY SCALE
1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE
0 300

GEOPHYSICAL LOGS

| SEAM CODE 1 2 3 4 5 6 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 85.88 | | | 0.16 | | | | | | | | | | |
| | | | | (0.11) | | | | | | | | | | |
| | | | | 0.21 | 74.6 | 04879 | 43 | 0.96 | 30.94 | 8.62 | 59.48 | | 23.17 | |
| | | | 0.02 | 0.05 | | | | | | | | | | |
| | 86.51 | | | 0.98 | | | | | | | | | | |

Seam Interval (m): 85.88 - 86.51
Seam True Thickness (Coal/Rock): 0.61/0.02
Total 0.63

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL | | % REC | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 99.38 | | | (0.06) 0.19 | 89.8 | 04880 | 44 | 0.52/0.07 0.59 | 0.52/0.07 0.59 |
| | | 0.03 | 0.21 | | | | | |
| 99.97 | | 0.03 0.01 | 0.02 0.04 | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

Gulf

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-006
SEAM D

| | | |
|---|---|---|
| PREPARED BY: C. L. | | SCALE 1:40 |
| APPROVED BY: J.M.D | DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

P 267 (12 80)

DENSITY ——— RESISTIVITY ———

Apparent Thickness

DRILL NO DDH - 82 - 006 SEAM D SEAM INTERVAL
SCALE 1:40

GEOPHYSICAL LOGS

DENSITY SCALE
1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE
0 300

| SEAM COMP. 123456 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 99.38 | | | (0.06) 0.19 | | | | | | | | | | |
| | | | 0.03 | 0.21 | 89.8 | 04880 | 44 | 1.57 | 35.78 | 7.40 | 55.25 | | 21.06 | |
| | 99.97 | | 8.87 | 8.87 | | | | | | | | | | |

Seam Interval (m): 99.38 - 99.97
Seam True Thickness (Coal/Rock): 0.52/0.07
Total 0.59

| DEPTH | COAL SEAM LOG | INTERVAL | | % REC | SAMPLE | | COMPOSITE | MINING SECTION |
|---|---|---|---|---|---|---|---|---|
| | | ROCK | COAL | | NUMBER | COMPOS | COAL/ROCK TOTAL | COAL/ROCK TOTAL |
| 117.15 | | | 0.19 | 100 | 04747 | | | 0.19 / 0.00 0.19 |
| 117.34 | | | | | | | | |

| GULF CANADA RESOURCES INC. Coal Division | |
|---|---|
| CALGARY | ALBERTA |

MT. KLAPPAN COAL PROJECT
SEAM DETAIL
TRUE THICKNESS
DDH-82-006
SEAM C

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV '82 | DRAWING No. |

# COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

P 267 (12 80)

DENSITY ——— RESISTIVITY ———

Apparent Thickness

DRILL NO DDH - 82 - 006 SEAM C SEAM INTERVAL

SCALE 1:40

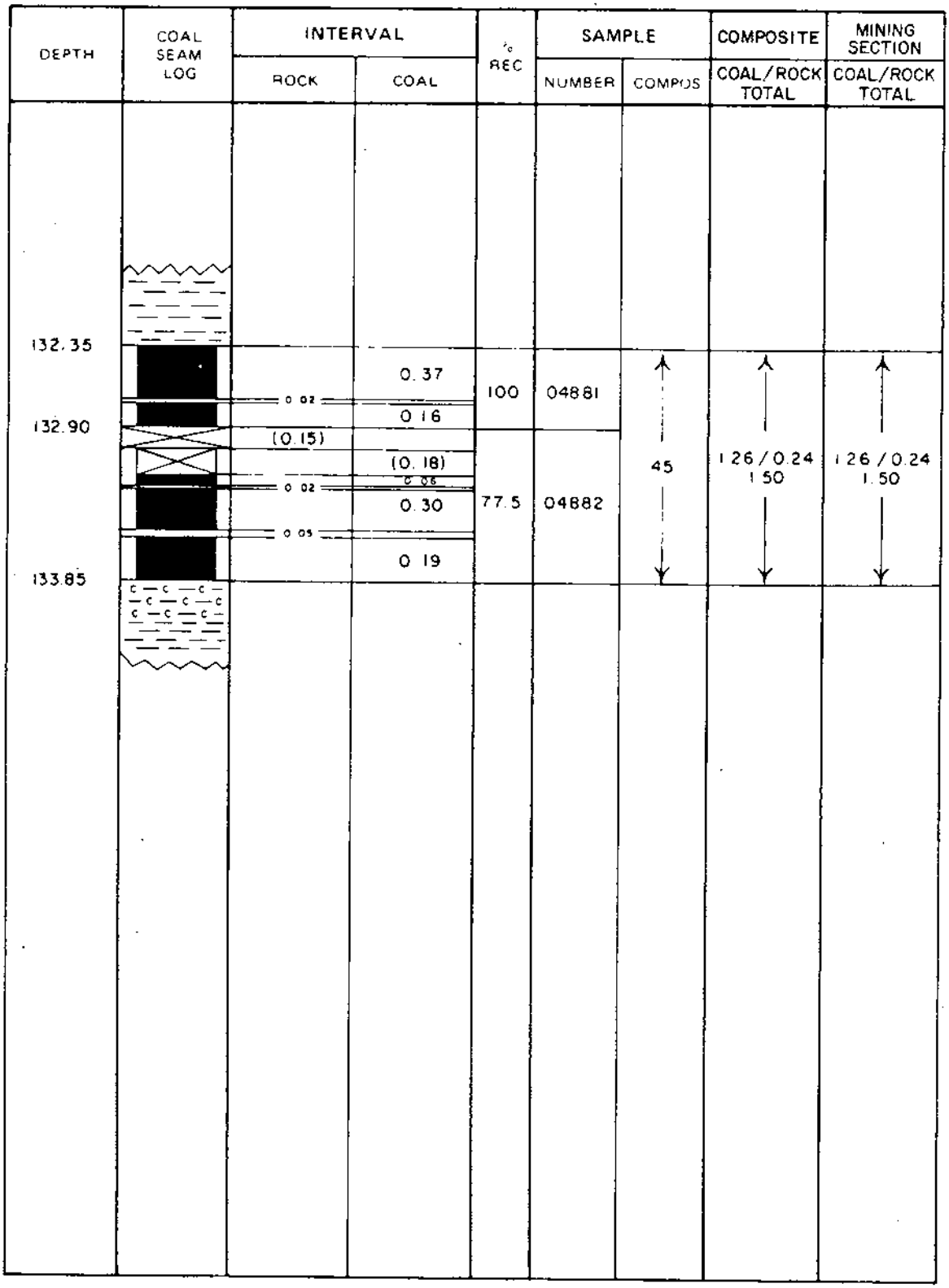
DENSITY SCALE
1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80

RESISTIVITY SCALE
0 300

GEOPHYSICAL LOGS

| SEAM COMP 1 2 3 4 5 6 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | PSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 117.15<br>117.34 | | | 0.19 | 100 | 04747 | | | | | | | | |

Seam Interval (m) : 117.15 - 117.34
Seam True Thickness (Coal/Rock) : 0.19/0.00
Total 0.19




**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
TRUE THICKNESS
DDH-82-006
SEAM B

| | |
|---|---|
| PREPARED BY: C. L. | SCALE 1:40 |
| APPROVED BY: J. M. D. DATE: NOV. '82 | DRAWING No. |

## COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

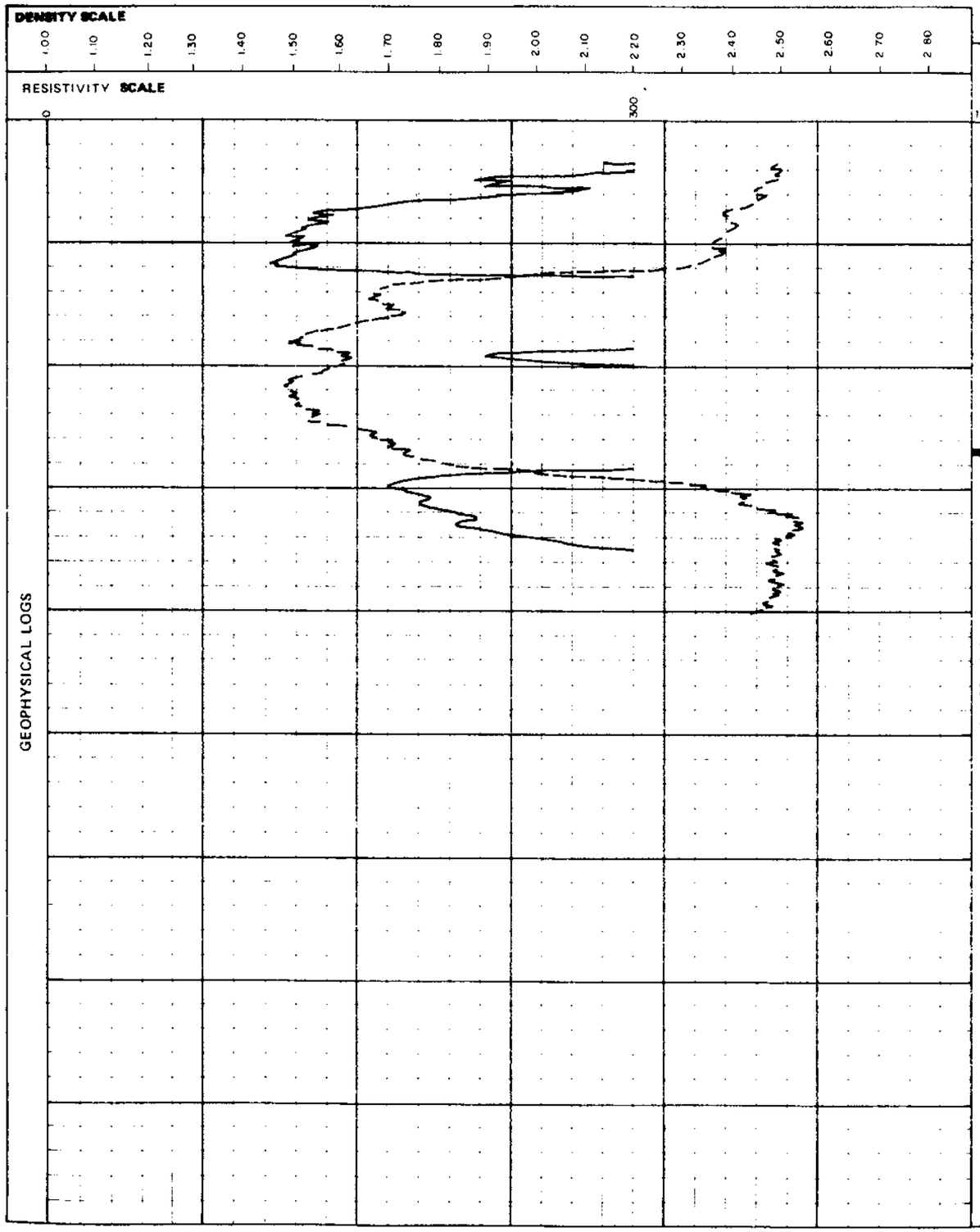
P-267 (12 80)

Apparent Thickness

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 006 SEAM B SEAM INTERVAL

SCALE 1:40




| SEAM COMP 123456 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 132.35 | | | 0.37 | | | | | | | | | | |
| | | | | 0.02 | 100 | 04881 | | | | | | | | |
| | 132.90 | | | 0.16 | | | | | | | | | | |
| | | | (0.15) | | | | | | | | | | | |
| | | | | (0.18) | | | | | | | | | | |
| | | | | 0.06 | | | 45 | 0.86 | 28.83 | 7.39 | 62.92 | | 24.15 | |
| | | | | 0.02 | 65.3 | 04882 | | | | | | | | |
| | | | | 0.30 | | | | | | | | | | |
| | | | | 0.05 | | | | | | | | | | |
| | 133.85 | | | 0.19 | | | | | | | | | | |

Seam Interval (m): 132.35-133.85
Seam True Thickness (Coal/Rock): 1.26/0.24
Total 1.50

| DRILLING DEPTH | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | % REC | SAMPLE NUMBER | SAMPLE COMPOS | COMPOSITE COAL/ROCK TOTAL | MINING SECTION COAL/ROCK TOTAL |
|---|---|---|---|---|---|---|---|---|
| 166.31 | | 0.04 | 0.13 | 100 | 04883 | 46 | 1.62/0.05 1.67 | 1.62/0.05 1.67 |
| | | 0.01 | 0.28 | | | | | |
| | | | 1.21 | | | | | |
| 168.37 | | | | | | | | |

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

# MT. KLAPPAN COAL PROJECT
## SEAM DETAIL
## TRUE THICKNESS
## DDH-82-006
## SEAM A

| | | | |
|---|---|---|---|
| PREPARED BY: | C.L | | SCALE 1:40 |
| APPROVED BY: | J.M.D. | DATE: NOV. '82 | DRAWING No. |

# COAL SEAM DATA SHEET

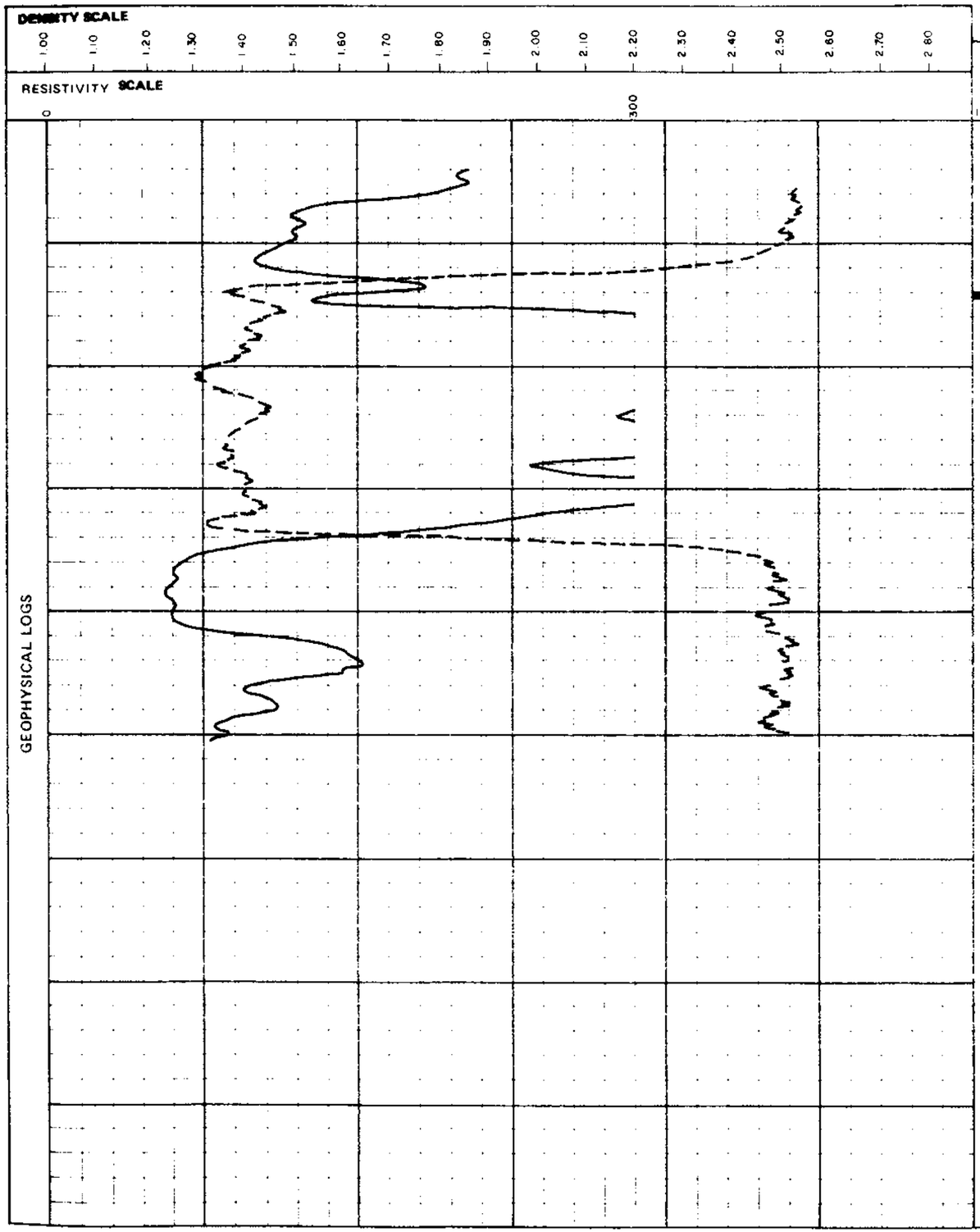
GULF CANADA RESOURCES INC
COAL DIVISION

P 267 (12 80

DENSITY ——— RESISTIVITY ———

DRILL NO DDH - 82 - 006 SEAM A SEAM INTERVAL Apparent Thickness

SCALE 1:40




| SEAM COMP 123456 | DEPTH meters | COAL SEAM LOG | INTERVAL ROCK | INTERVAL COAL | REC | SAMPLE NUMBER | SAMPLE COMPOS. | PROXIMATE ANALYSIS MOIST | ASH | VM | FC | S | Cal. Val. MJ/kg | FSI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 166.31 | | | 0.14 | | | | | | | | | | |
| | | | 0.04 | 0.31 | | | | | | | | | | |
| | | | 0.01 | | | | | | | | | | | |
| | | | | 1.56 | 100 | 04883 | 46 | 0.75 | 17.19 | 8.54 | 73.52 | | 28.33 | |
| | 168.37 | | | | | | | | | | | | | |

Seam Interval (m): 166.31 - 168.37
Seam True Thickness (Coal/Rock): 1.62/0.05
Total 1.67

GULF CANADA RESOURCES INC. - COAL DIVISION

24/JAN/83 SIMPLE SAMPLE SUMMARY PAGE 1

| DATA SOURCE | SEAM | SAMPLE ID | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|
| DH82006 | | | | | | | | | | |
| | H | 4872 | 26.09 | 26.93 | 0.58 | 69.05 | 0.47 | 0.11 | 0.26 | 0.00 |
| | H | 4873 | 26.93 | 27.62 | 0.21 | 30.43 | 0.02 | 0.19 | 0.26 | 0.22 |
| | H | 4874 | 27.62 | 28.10 | 0.22 | 45.83 | 0.15 | 0.07 | 0.15 | 0.11 |
| | G | 4875 | 51.15 | 52.39 | 1.08 | 87.10 | 1.00 | 0.08 | 0.16 | 0.00 |
| | G | 4876 | 52.39 | 52.67 | 0.15 | 53.57 | 0.00 | 0.15 | 0.00 | 0.13 |
| | G | 4877 | 52.67 | 53.13 | 0.35 | 76.09 | 0.35 | 0.00 | 0.11 | 0.00 |
| | G | 4878 | 53.13 | 53.60 | 0.43 | 91.49 | 0.18 | 0.25 | 0.04 | 0.00 |
| | E | 4879 | 85.86 | 86.51 | 0.47 | 74.60 | 0.45 | 0.02 | 0.16 | 0.00 |
| | D | 4880 | 99.36 | 99.97 | 0.53 | 89.83 | 0.46 | 0.07 | 0.06 | 0.00 |
| | B | 4881 | 132.35 | 132.90 | 0.55 | 100.00 | 0.53 | 0.02 | 0.00 | 0.00 |
| | B | 4882 | 132.90 | 133.65 | 0.62 | 65.26 | 0.55 | 0.07 | 0.18 | 0.15 |
| | A | 4883 | 166.31 | 168.37 | 2.06 | 100.00 | 2.01 | 0.05 | 0.00 | 0.00 |

GULF CANADA RESOURCES INC. - COAL DIVISION

25/JAN/83 COMPOSITE SAMPLE SUMMARY 

| SEAM | SAMPLE ID | SAMPLE FROM | SAMPLE TO | DEPTH FROM | DEPTH TO | REC CORE | PERCENT REC | RECOVERED COAL | RECOVERED ROCK | MISSING COAL | MISSING ROCK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H | 40 | 4872 | 4874 | 26.09 | 28.10 | 1.01 | 50.25 | 0.64 | 0.37 | 0.67 | 0.33 |
| G | 41 | 4875 | 4875 | 51.15 | 52.39 | 1.08 | 87.10 | 1.00 | 0.08 | 0.16 | 0.00 |
| G | 42 | 4876 | 4878 | 52.39 | 53.60 | 0.93 | 76.86 | 0.53 | 0.40 | 0.15 | 0.13 |
| E | 43 | 4879 | 4879 | 85.88 | 86.51 | 0.47 | 74.60 | 0.45 | 0.02 | 0.16 | 0.00 |
| D | 44 | 4880 | 4880 | 99.38 | 99.97 | 0.53 | 89.83 | 0.46 | 0.07 | 0.06 | 0.00 |
| B | 45 | 4881 | 4882 | 132.35 | 133.85 | 1.17 | 78.00 | 1.08 | 0.09 | 0.18 | 0.15 |
| A | 46 | 4883 | 4883 | 166.31 | 168.37 | 2.06 | 100.00 | 2.01 | 0.05 | 0.00 | 0.00 |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 0.00 | 3.66 | 3.66 | | | OVERBURDEN | |
| 3.66 | 4.43 | 0.77 | | | SILTSTONE | DK.GY.LAM.SSD.BRKN<br>THN SSY INTBS. LOAD CASTS |
| 4.43 | 5.23 | 0.80 | | | MUDSTONE | DK.GY.LAM.VBRKN<br>MNR SSY INTBS. CARB CLYST INTBS |
| 5.23 | 5.72 | 0.49 | | | SILTSTONE | DK.GY.LAM.VBRKN<br>CLYST CLASTS |
| 5.72 | 5.77 | 0.05 | | | SILTSTONE | DK.GY.LAM.VBRKN<br>AS ABOVE. CLYST CLASTS |
| 5.77 | 6.52 | 0.75 | | | SANDSTONE | FG.PR.DK.GY.BRKN<br>MUDST RIP-UP CLASTS. SLTY INTBS |
| 6.52 | 6.99 | 0.47 | | | SANDSTONE | MG.MUD.S-P.GY.LAM.SLD<br>CALC SS. CALCT IN FRACTURES. SLTY LAMS |
| 6.99 | 7.11 | 0.12 | | | SILTSTONE | DK.GY.VBRKN |

NOTES MEASURED BGA

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH2006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 7.11 | 7.83 | 0.72 | | | SANDSTONE | MG.PK.S-P.GY.THNB.SLD<br>PBL SIZED LENTICULAR SHALE CLASTS. MNR COALY INCLUSIONS AND PARTINGS. MNR PYR INCLUSIONS |
| 7.83 | 8.59 | 0.76 | | | SANDSTONE | MG.PK.S-P.GY.LAM.BRKN<br>SHALY CLASTS |
| 8.59 | 8.65 | 0.06 | | | SANDSTONE | VFG.DK.GY.VBRKN<br>CLYST INTBS |
| 8.65 | 10.06 | 1.41 | | | SANDSTONE | MG.PK.S-P.GY.LAM.SLD<br>SHALY RIP-UP CLASTS. MNR COAL FRAGS. GRADED BDG |
| 10.06 | 10.33 | 0.27 | | | SANDSTONE | MG.PK.S-P.GY.LAM.BRKN |
| 10.33 | 11.01 | 0.68 | | | SANDSTONE | MG.PK.S-P.GY.LAM.SSD.SLD |
| 11.01 | 11.66 | 0.65 | | | SANDSTONE | FG.M-DK.GY.LAM.SLD<br>SLTST STRGS. MNR SHALY CLASTS. GRANULE SIZE FRAGS |

NOTES MEASURED BGR

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 11.61 | 12.21 | 0.35 | | | SANDSTONE | PBLY.MG.PR.GY.SLD<br>SHALY INTBS. GRADED BDS. BANDED. CONGLO<br>MERATIC. GRANULE TO PBL SIZE CLASTS |
| 12.21 | 13.43 | 1.22 | | | SANDSTONE | PBLY.MG.PR.GY.THNB.SLD<br>GRANULE TO PBL SIZE CLASTS. MUDST INTBS<br>. COALY FRAGS. CONGLOMERATE BANDS |
| 13.43 | 14.25 | 0.82 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SSD.BRKN<br>AS ABOVE. CHERT PBLS. SUBANGULAR TO SUB<br>ROUNDED |
| 14.25 | 16.43 | 2.18 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SSD.SLD<br>SLT INTBS. GRANULE TO PBL SIZE CLASTS.<br>MNR QTZ VEINING |
| 16.43 | 17.72 | 1.29 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>SLT INTBS. GRANULE TO PBL SIZE CLASTS.<br>MNR QTZ VEINING |
| 17.72 | 18.20 | 0.48 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>AS ABOVE. GRANULE TO PBL SIZE CLASTS. C<br>OAL INCLUSIONS |
| 18.20 | 18.54 | 0.34 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>AS ABOVE. GRANULE TO PBL SIZE CLASTS. C<br>OAL INCLUSION |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 18.54 | 19.89 | 1.35 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>AS ABOVE. GRANULE TO PBL SIZE CLASTS. C<br>OAL INCLUSIONS |
| 19.89 | 20.59 | 0.70 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>CALC VEINING. COAL INCLUSIONS. GRANULE<br>TO PBL SIZE CLASTS |
| 20.59 | 20.73 | 0.14 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>AS ABOVE. COAL INCLUSIONS |
| 20.73 | 21.25 | 0.52 | | | SANDSTONE | MG.PR.S-P.GY.SLD<br>HOMOGENOUS. THN MUDST STRGS |
| 21.25 | 22.75 | 1.40 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.THNB.SLD<br>GRANULE TO PBL SIZE CLASTS. THN MUDST B<br>ANDS. BANDS OF NON PBLY SS. MNR COAL IN<br>CLUSIONS |
| 22.75 | 23.06 | 0.30 | | | SANDSTONE | FG.PR.S-P.GY.LAM.SLD |
| 23.06 | 24.72 | 1.64 | | | SANDSTONE | FG-.PR.S-P.GY.THNB.SSD.BRKN<br>MUDST INTBS. CALCT VEINING. COL SS BAND<br>S. TOPS UPRIGHT. MNR COAL INCLUSIONS |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 24.72 | 24.87 | 0.15 | | | SANDSTONE | PBLY.MG-.PR.S-P.GY.BRKN<br>CHERT PEBS, SUBANGULAR, GRANULE TO PBL SIZE CLASTS |
| 24.87 | 25.54 | 0.67 | | | SANDSTONE | PBLY.MG.PR.S-P.GY.BRKN<br>GRANULE TO PBLE SIZE CLASTS, CALCT VEINING, BRECCIATED |
| 25.54 | 25.58 | 0.04 | | | COAL | C-5.BLK.VBRKN<br>MNR CARB CLYST BANDS |
| 25.58 | 25.68 | 0.10 | | | COAL | C-3.BLK.VBRKN<br>MNR CARB CLYST BANDS |
| 25.68 | 25.75 | 0.07 | | | ROCK LOSS | |
| 25.75 | 26.05 | 0.30 | | | MUDSTONE | DK.GY.BRKN<br>LISTRIC SURFACES, MNR COAL BANDS |
| 26.05 | 26.09 | 0.04 | | | CLAYSTONE | CARB.BLK.VBRKN |
| 26.09 | 26.23 | 0.14 | 04672 | H | COAL | C-4.BLK.VBRKN<br>CARB CLYST BANDS, LISTRIC SURFACES |
| 26.23 | 26.25 | 0.02 | 04672 | H | CLAYSTONE | CARB.BLK.VBRKN<br>COAL STRKS |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 26.25 | 26.29 | 0.04 | 04872 | H | COAL | C-3.BLK.VBRKN |
| 26.29 | 26.55 | 0.26 | 04872 | H | COAL LOSS | |
| 26.55 | 26.72 | 0.17 | 04872 | H | COAL | C-3.BLK.VBRKN<br>MNR CARB CLYST INTBS |
| 26.72 | 26.81 | 0.09 | 04872 | H | CLAYSTONE | CARB.BLK.VBRKN<br>LISTRIC SURFACES.MNR COAL BANDS. PYRITI<br>C |
| 26.81 | 26.83 | 0.02 | 04872 | H | COAL | C-3.BLK.VBRKN<br>CARB CLYST INTBDS |
| 26.83 | 26.93 | 0.10 | 04872 | H | COAL | C-3.BLK.BRKN |
| 26.93 | 27.05 | 0.12 | 04873 | H | ROCK LOSS | |
| 27.05 | 27.31 | 0.26 | 04873 | H | COAL LOSS | |
| 27.31 | 27.41 | 0.10 | 04873 | H | ROCK LOSS | |
| 27.41 | 27.43 | 0.02 | 04873 | H | CLAYSTONE | CARB.DK.GY.SLD |
| 27.43 | 27.45 | 0.02 | 04873 | H | COAL | C-3.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: LDH62006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 27.45 | 27.49 | 0.04 | 04873 | H | CLAYSTONE | CARB.DK.GY.SLD |
| 27.49 | 27.60 | 0.11 | 04873 | H | MUDSTONE | M.BN.SLD<br>SOFT. CARB AT TOP |
| 27.60 | 27.62 | 0.02 | 04873 | H | CLAYSTONE | CARB.BLK.SLD |
| 27.62 | 27.67 | 0.05 | 04874 | H | COAL | C-3.BLK.SLD |
| 27.67 | 27.70 | 0.03 | 04874 | H | CLAYSTONE | CARB.BLK.SLD |
| 27.70 | 27.74 | 0.04 | 04874 | H | COAL | C-3.BLK.VBRKN<br>MNR ROCK SPLIT |
| 27.74 | 27.89 | 0.15 | 04874 | H | COAL LOSS | |
| 27.89 | 28.00 | 0.11 | 04874 | H | ROCK LOSS | |
| 28.00 | 28.04 | 0.04 | 04874 | H | CLAYSTONE | CARB.BLK.SLD<br>COALY AT BASE |
| 28.04 | 28.10 | 0.06 | 04874 | H | COAL | C-2.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 28.10 | 28.32 | 0.22 | | | CLAYSTONE | CARB.BLK.VBRKN<br>COALY AT TOP |
| 28.32 | 29.12 | 0.80 | | | MUDSTONE | DK.GY.BRKN |
| 29.12 | 29.61 | 0.49 | | | SILTSTONE | M.GY.BRKN |
| 29.61 | 29.87 | 0.26 | | | SANDSTONE | M.GY.LAM.XBDG.SLD<br>SLTST INTBS |
| 29.87 | 31.72 | 1.85 | | | SANDSTONE | MG.MOD.S-P.GY.LAM.XBDG.SLD<br>SLTST INTBS. SHALE RIP-UP CLASTS |
| 31.72 | 31.95 | 0.23 | | | SANDSTONE | MG.MOD.S-P.GY.LAM.XBDG.SLD<br>AS ABOVE |
| 31.95 | 32.68 | 0.73 | | | SANDSTONE | MG-.MOD.M.GY.MB.SLD<br>MNR PBLY BANDS IN PART |
| 32.68 | 33.72 | 1.04 | | | SANDSTONE | MG-.MOD.M.GY.MB.SLD<br>AS ABOVE. COALY BANDS AT BASE. MNR PBLY BANDS. CORE BRKN IN MIDDLE |
| 33.72 | 35.53 | 1.81 | | | SANDSTONE | MG.SEL.M.GY.MB.SLD<br>SUBROUNDED MUDST RIP-UP CLASTS TOWARDS BASE, QTZ VEIN AT TOP AT 5 DEGREES |

PROJECT: KPN BLOCK: GC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL (METRES) | SAMP. FROM | SAMP. TO | SEAM | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| 35.53 | 35.72 | 0.19 | | | | SANDSTONE | MG.WEL.M.GY.MB.SLD<br>RIP-UP CLASTS MORE ABUNDANT |
| 35.72 | 36.17 | 0.45 | | | | SANDSTONE | MG.WEL.M.GY.MB.SLD<br>AS ABOVE |
| 36.17 | 37.58 | 1.41 | | | | SANDSTONE | MG-.WEL.M.GY.THNB.SLD<br>CORE BRKN IN MIDDLE. FINE SLTY INTBS. M NR COALIFIED FRAGS. CG AT TOP |
| 37.58 | 38.43 | 0.85 | | | | SANDSTONE | MG-.WEL.M.GY.THNB.BRKN<br>AS ABOVE. COALY BANDS AT BASE. MNR QTZ VEIN |
| 38.43 | 39.61 | 1.18 | | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>AS ABOVE. MNR SUBROUNDED MUDST RIP-UP C LASTS |
| 39.61 | 39.74 | 0.13 | | | | SANDSTONE | MG.WEL.M.GY.MB.SLD |
| 39.74 | 39.97 | 0.23 | | | | SANDSTONE | MG.WEL.M.GY.MB.SLD<br>MUDST INTBS |
| 39.97 | 41.33 | 1.36 | | | | SANDSTONE | FG.WEL.M.GY.THNB.WRMBD.SLD<br>SLTST INTBS. TOPS UP |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH92006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 41.33 | 41.71 | 0.38 | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>MUDST INTBS |
| 41.71 | 42.23 | 0.52 | | | SANDSTONE | MG.WEL.M.GY.MB.SLD<br>MNR SLTY INTBS |
| 42.23 | 43.17 | 0.94 | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>MUDST INTBS |
| 43.17 | 43.91 | 0.74 | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>MNR SLTY INTBS |
| 43.91 | 44.45 | 0.56 | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>AS ABOVE |
| 44.49 | 45.66 | 1.11 | | | SANDSTONE | MG.WEL.M.GY.THNB.SLD<br>AS ABOVE. RARE ROUNDED MUDST RIP-UP CLA<br>STS. MORE SLTY IN MIDDLE |
| 45.66 | 46.10 | 0.50 | | | SANDSTONE | MG.WEL.M.GY.THNB.BRKN<br>SLTY AT TOP |
| 46.10 | 47.46 | 1.36 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>RARE SLTY INTBS |
| 47.46 | 48.24 | 0.78 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82008

| DEPTH FROM | DEPTH TO | INTERVAL INTRS. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 48.24 | 48.78 | 0.54 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>AS ABOVE |
| 48.78 | 49.82 | 1.04 | | | SANDSTONE | MG.WEL.LT.GY.MG.SLD<br>SLTY INTBS. MNR RIP-UP CLASTS |
| 49.82 | 50.44 | 0.62 | | | SILTSTONE | DK.GY.LAM.SLD<br>SSY INTBS |
| 50.44 | 50.56 | 0.12 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS |
| 50.56 | 51.09 | 0.53 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 51.09 | 51.15 | 0.06 | | | CLAYSTONE | CARB.BLK.VBRKN |
| 51.15 | 51.31 | 0.16 | 04675 | 6 | COAL LOSS | |
| 51.31 | 51.53 | 0.22 | 04675 | 6 | COAL | C-S.LLK.VBRKN |
| 51.53 | 51.58 | 0.05 | 04675 | 6 | CLAYSTONE | CARB.BLK.SLD |
| 51.58 | 51.62 | 0.04 | 04675 | 6 | COAL | C-S.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82066

| DEPTH FROM | DEPTH TO | INTRVAL INTCK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 51.62 | 51.66 | 0.04 | 04875 | 6 | COAL | C-2.BLK.BRKN |
| 51.66 | 51.75 | 0.09 | 04875 | 6 | COAL | C-3.BLK.SLD |
| 51.75 | 51.78 | 0.03 | 04875 | 6 | COAL | C-3.BLK.SLD |
| 51.78 | 51.79 | 0.01 | 04875 | 6 | CLAYSTONE | CARB.BLK.SLD |
| 51.79 | 51.82 | 0.03 | 04875 | 6 | COAL | C-2.BLK.SLD |
| 51.82 | 51.92 | 0.10 | 04875 | 6 | COAL | C-3.BLK.SLD |
| 51.92 | 51.97 | 0.05 | 04875 | 6 | COAL | C-3.BLK.BRKN |
| 51.97 | 52.01 | 0.04 | 04875 | 6 | COAL | C-2.BLK.SLD |
| 52.01 | 52.10 | 0.09 | 04875 | 6 | COAL | C-3.BLK.SLD |
| 52.10 | 52.11 | 0.01 | 04875 | 6 | CLAYSTONE | CARB.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH6200

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 52.11 | 52.13 | 0.02 | 04875 | 6 | COAL | C-1.BLK.SLD<br>PYRITIC |
| 52.13 | 52.18 | 0.05 | 04875 | 6 | COAL | C-4.BLK.SLD |
| 52.18 | 52.21 | 0.03 | 04875 | 6 | COAL | C-3.BLK.SLD<br>MNR ROCK SPLITS |
| 52.21 | 52.22 | 0.01 | 04875 | 6 | CLAYSTONE | CARB.BLK.SLD |
| 52.22 | 52.30 | 0.08 | 04875 | 6 | COAL | C-2.BLK.SLD<br>PYRITIC AT TOP |
| 52.30 | 52.32 | 0.02 | 04875 | 6 | COAL | C-3.BLK.SLD |
| 52.32 | 52.39 | 0.07 | 04875 | 6 | COAL | C-3.BLK.BRKN |
| 52.39 | 52.51 | 0.12 | 04876 | 6 | MUDSTONE | BLK.SLD<br>SOFT |
| 52.51 | 52.54 | 0.03 | 04876 | 6 | CLAYSTONE | CARB.BLK.BRKN |
| 52.54 | 52.67 | 0.13 | 04876 | 6 | ROCK LOSS | |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDHB2006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 52.67 | 52.78 | 0.11 | 04677 | 6 | COAL LOSS | |
| 52.78 | 52.84 | 0.06 | 04677 | 6 | COAL | C-3.BLK.SLD |
| 52.84 | 52.87 | 0.03 | 04677 | 6 | COAL | C-2.BLK.SLD |
| 52.87 | 53.06 | 0.19 | 04677 | 6 | COAL | C-2.BLK.SLD |
| 53.06 | 53.13 | 0.07 | 04677 | 6 | COAL | C-3.BLK.SLD<br>FRIABLE |
| 53.13 | 53.25 | 0.12 | 04678 | 6 | CLAYSTONE | CARB.BLK.SLD<br>COAL BANDS AT BASE |
| 53.25 | 53.34 | 0.09 | 04678 | 6 | COAL | C-3.BLK.SLD<br>MNR ROCK SPLITS |
| 53.34 | 53.47 | 0.13 | 04678 | 6 | CLAYSTONE | CARB.BLK.SLD |
| 53.47 | 53.51 | 0.04 | 04678 | 6 | COAL | C-3.BLK.SLD<br>PYRITIC |
| 53.51 | 53.53 | 0.02 | 04678 | 6 | COAL | C-1.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH&2006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 53.53 | 53.56 | 0.03 | 04876 | G | COAL | C-S.BLK.BRKN |
| 53.56 | 53.60 | 0.04 | 04876 | G | COAL LOSS | |
| 53.60 | 54.63 | 1.03 | | | MUDSTONE | DK.GY.LAM.SLD<br>MNR COAL STRGS AT TOP |
| 54.63 | 55.07 | 0.44 | | | SILTSTONE | M.GY.VTHNB.SLD<br>MNR BIOTURB. JOINT AT 60 DEGREES |
| 55.07 | 55.37 | 0.30 | | | MUDSTONE | SLTY.M.GY.LAM.SLD<br>MNR BENTONITE LAMS IN MIDDLE |
| 55.37 | 55.52 | 0.15 | | | BENTONITE | LT.GY<br>SLTY AT TOP |
| 55.52 | 56.54 | 1.02 | | | SANDSTONE | FG-.M.GY.LAM.SLD<br>MUDST INTBS. BIOTURB IN MIDDLE |
| 56.54 | 56.62 | 0.08 | | | SANDSTONE | FG-.M.GY.THNB<br>MNR MUDST INTBS |
| 56.62 | 57.29 | 0.67 | | | SANDSTONE | FG-.M.GY.THNB.SLD<br>AS ABOVE |
| 57.29 | 58.32 | 1.03 | | | SANDSTONE | FG-.M.GY.THNB.SLD<br>AS ABOVE. CALC FOSSIL FRAGS IN MIDDLE O<br>VER A 10CM INTERVAL |

PROJECT: APN BLOCK: BC DATA SOURCE: DDH82C06

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 58.32 | 59.56 | 1.24 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS. CUT AND FILL INDICATE TOPS UP |
| 59.56 | 59.60 | 0.04 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD |
| 59.60 | 59.76 | 0.16 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>AS ABOVE. MNR BIOTURB |
| 59.76 | 60.41 | 0.65 | | | SANDSTONE | FG-.WEL.LT.GY.MB.BIOTR.SLD |
| 60.41 | 61.82 | 1.41 | | | SANDSTONE | FG.WEL.LT.GY.VTHNB.WRMBD.SLD<br>MUDST AND SLTY INTBS. TOPS UP. BIOTURB IN PART |
| 61.82 | 62.81 | 0.99 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>MNR MUDST INTBS. LAM IN PART |
| 62.81 | 64.07 | 1.26 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE |
| 64.07 | 64.45 | 0.38 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>AS ABOVE |
| 64.45 | 65.78 | 1.33 | | | MUDSTONE | DK.GY.LAM.SLD<br>COLOUR RANGES DK GY TO BLK. SLTY AT TOP |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82066

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 66.78 | 66.09 | 0.31 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 66.09 | 66.32 | 0.23 | | | SILTSTONE | LT.GY |
| 66.32 | 66.37 | 0.05 | | | SILTSTONE | LT.GY.SLD<br>AS ABOVE |
| 66.37 | 66.41 | 2.04 | | | MUDSTONE | DK.GY.LAM.SLD<br>CALC. FOSSIL FRAGS IN MIDDLE AND LOWER SECTION |
| 66.41 | 66.53 | 0.12 | | | SILTSTONE | M.GY.THNB.SLD |
| 66.53 | 66.94 | 0.41 | | | MUDSTONE | DK.GY.LAM.SLD |
| 66.94 | 69.75 | 0.81 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE. PYRITIC AND PLANT ROOTLETS AT BASE. CARB IN BASAL 4CM |
| 69.75 | 69.84 | 0.09 | 04746 | F | COAL | C-S.BLK.SLD<br>PYRITIC IN PART |

PROJECT: KPN LEDGE: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 69.64 | 69.91 | 0.27 | 64746 | F | COAL | C-3.BLK.VBRKN |
| 69.91 | 70.02 | 0.11 | | | MUDSTONE | DK.GY.VTHNB.SLD<br>SOFT, THN COAL LAMS |
| 70.02 | 70.37 | 0.35 | | | MUDSTONE | BLK.SLD<br>LENTICULAR PYRITIC LENSES AT BASE. GRIG HT COAL STRGS |
| 70.37 | 70.39 | 0.02 | | | COAL | C-4.BLK.SLD |
| 70.39 | 70.42 | 0.03 | | | COAL | C-1.BLK.SLD<br>MNR ROCK PARTING |
| 70.42 | 70.56 | 0.14 | | | CLAYSTONE | CARB.BLK.BRKN<br>FEWER COAL STRGS TOWARDS BASE |
| 70.56 | 70.58 | 0.02 | | | COAL | C-2.BLK.SLD |
| 70.58 | 70.62 | 0.04 | | | CLAYSTONE | CARB.BLK.SLD |
| 70.62 | 70.64 | 0.02 | | | COAL | C-1.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDHB2006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 70.64 | 70.76 | 0.12 | | | COAL | C-1.BLK.BRKN<br>SOFT. LISTRIC SURFACES. MNR ROCK PARTINGS |
| 70.76 | 70.78 | 0.02 | | | ROCK LOSS | |
| 70.78 | 71.39 | 0.61 | | | MUDSTONE | SLTY.M.GY.LAM.SLD |
| 71.39 | 71.87 | 0.48 | | | SANDSTONE | SLTY.FG.WEL.M.GY.LAM.SLD<br>CUT AND FILL INDICATE TOPS UP |
| 71.87 | 72.21 | 0.34 | | | SANDSTONE | SLTY.FG.WEL.M.GY.LAM.SLD<br>AS ABOVE |
| 72.21 | 72.85 | 0.64 | | | SANDSTONE | MG.WEL.LT.GY.THNB.SLD<br>VBRKN AT BASE. SLTY INTBS |
| 72.85 | 74.02 | 1.17 | | | SANDSTONE | MG.WEL.LT.GY.THNB.BIOTR.SLD<br>BRKN AT TOP. AS ABOVE. WRMBUR INDICATE TOPS UP |
| 74.02 | 74.62 | 0.60 | | | SANDSTONE | FG-.WEL.M.GY.MB.SLD<br>COARSENING TOWARDS BASE. MAS IN PART |
| 74.62 | 75.06 | 0.44 | | | SANDSTONE | MG.WEL.M.GY.MB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82066

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 75.60 | 77.01 | 1.95 | | | SANDSTONE | MG.WEL.M.GY.MB.SLD<br>AS ABOVE. BRKN AT BASE. JOINTING AT 5 D EGREES. RARE SLTY INTBS |
| 77.01 | 77.16 | 0.15 | | | SANDSTONE | MG.WEL.M.GY.MB.VBRKN<br>AS ABOVE |
| 77.16 | 77.69 | 0.53 | | | SANDSTONE | MG.WEL.M.GY.MB.SLD<br>AS ABOVE |
| 77.69 | 79.39 | 1.70 | | | SANDSTONE | FG-.WEL.M.GY.MB.SLD<br>AS ABOVE. FINING TOWARDS BASE. MNR SLTY INTBS. CORE BRKN IN MIDDLE |
| 79.39 | 80.06 | 0.67 | | | SANDSTONE | FG-.WEL.M.GY.LAM.SLD<br>AS ABOVE. COARSENING TOWARDS BASE |
| 80.00 | 80.00 | 0.74 | | | SANDSTONE | FG.WEL.M.GY.LAM.WRMBU.SLD<br>MUDST INTDS. TOPS UP |
| 80.00 | 81.54 | 0.74 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>MNR SLTY INTDS. CUT AND FILL INDICATE T OPS UP |
| 81.54 | 81.68 | 0.14 | | | SANDSTONE | MG.WEL.M.GY.MB.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82066

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 81.00 | 83.78 | 2.78 | | | SILTSTONE | M.GY.LAM.SLD<br>MODST INTBS. MNR BIOTURB AT TOP |
| 83.78 | 84.93 | 0.15 | | | SILTSTONE | M.GY.LAM.SLD<br>AS ABOVE |
| 84.93 | 85.85 | 1.92 | | | SILTSTONE | M.GY.LAM.SLD<br>AS ABOVE. CUT AND FILL INDICATE TOPS UP |
| 85.85 | 85.88 | 0.03 | | | CLAYSTONE | CARB.BLK.BRKN |
| 85.88 | 85.94 | 0.06 | 04879 | E | COAL | C-2.BLK.BRKN |
| 85.94 | 86.01 | 0.07 | 04879 | E | COAL | C-2.BLK.SLD |
| 86.01 | 86.04 | 0.03 | 04879 | E | COAL | C-2.BLK.VBRKN |
| 86.04 | 86.15 | 0.11 | 04879 | E | COAL LOSS | |
| 86.15 | 86.20 | 0.05 | 04879 | E | COAL | C-3.BLK.SLD |
| 86.20 | 86.23 | 0.03 | 04879 | E | COAL | C-1.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 80.23 | 80.30 | 0.07 | 04879 | L | COAL | C-3.BLK.SLD |
| 80.30 | 80.36 | 0.06 | 04879 | L | COAL | C-2.BLK.BRKN |
| 80.36 | 80.41 | 0.05 | 04879 | E | COAL LOSS | |
| 80.41 | 80.43 | 0.02 | 04879 | E | CLAYSTONE | CARB.BLK.SLD |
| 80.43 | 80.45 | 0.02 | 04879 | L | COAL | C-1.BLK.SLD |
| 80.45 | 80.51 | 0.06 | 04879 | E | COAL | C-4.BLK.SLD |
| 80.51 | 80.53 | 0.02 | | | CLAYSTONE | CARB.BLK.SLD<br>BRIGHT COAL STRGS |
| 80.53 | 80.62 | 0.09 | | | MUDSTONE | M.GY.MAS.SLD |
| 80.62 | 80.64 | 0.02 | | | CLAYSTONE | CARB.BLK.SLD |
| 80.64 | 87.08 | 6.44 | | | MUDSTONE | DK.GY.LAM.SLI<br>SLTY INTBS. CLAY STRGS AT TOP |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH02006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 87.02 | 88.23 | 1.15 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 88.23 | 88.37 | 0.14 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 88.37 | 88.93 | 0.56 | | | SILTSTONE | M.GY.LAM.BIOTR.SLD |
| 89.93 | 90.11 | 1.18 | | | MUDSTONE | DK.GY.LAM.SLD<br>CUT AND FILL INDICATE TOPS UP. SLTY INT BS |
| 90.11 | 90.30 | 0.19 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |
| 90.30 | 90.76 | 0.46 | | | MUDSTONE | DK.GY.LAM.BIOTR.SLD<br>AS ABOVE |
| 90.76 | 91.79 | 1.03 | | | SANDSTONE | MG-.MOD.M.GY.MAS.SLD<br>SLTY AT TOP. MNR SLTY BANDS AT BASE |
| 91.79 | 92.29 | 0.50 | | | SILTSTONE | DK.GY.LAM.BIOTR.SLD<br>MUDST INTBS |
| 92.29 | 92.63 | 0.34 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS |

PROJECT: KPR BLOCK: BC DATA SOURCE: DDH8208

| DEPTH FROM | DEPTH TO | INTERVAL (METRES) | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 92.65 | 93.29 | 0.66 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS |
| 93.29 | 94.77 | 1.48 | | | MUDSTONE | BLK.LAM.SLD<br>MNR PYR LENSES |
| 94.77 | 95.01 | 0.24 | | | MUDSTONE | BLK.LAM.SLD<br>AS ABOVE |
| 95.01 | 96.46 | 1.45 | | | MUDSTONE | BLK.LAM.SLD<br>AS ABOVE |
| 96.46 | 96.83 | 0.37 | | | MUDSTONE | BLK.LAM.SLD<br>AS ABOVE |
| 96.83 | 98.17 | 1.34 | | | MUDSTONE | BLK.LAM.SLD<br>AS ABOVE. 4CM QTZ VEIN NEAR BASE AT 67 DEGREES |
| 98.17 | 99.01 | 0.84 | | | MUDSTONE | BLK.LAM.SLD<br>MNR COAL STRGS COMMON THROUGHOUT. COALI FIED FRAGS |
| 99.01 | 99.38 | 0.37 | | | MUDSTONE | BLK.LAM.BRN<br>AS ABOVE. COAL BANDING IN MIDDLE SECTIO N |
| 99.38 | 99.44 | 0.06 | 84026 | D | COAL LOSS | |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82008

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 99.44 | 99.49 | 0.05 | 04880 | D | COAL | C-3.BLK.VBRKN |
| 99.49 | 99.54 | 0.05 | 04881 | D | COAL | C-3.BLK.SLD |
| 99.54 | 99.57 | 0.03 | 04882 | D | COAL | C-2.BLK.SLD |
| 99.57 | 99.63 | 0.06 | 04883 | D | COAL | C-3.BLK.SLD |
| 99.63 | 99.66 | 0.03 | 04884 | D | CLAYSTONE | CARB.BLK.SLD HARD |
| 99.66 | 99.69 | 0.03 | 04885 | D | COAL | C-3.BLK.VBRKN |
| 99.69 | 99.87 | 0.18 | 04886 | D | COAL | C-3.BLK.SLD |
| 99.87 | 99.90 | 0.03 | 04887 | D | MUDSTONE | BLK.MAS.SLD |

PROJECT: KPM BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL (DISP.) | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 99.90 | 99.92 | 0.02 | 04880 | D | COAL | C-2.BLK.SLD |
| 99.92 | 99.93 | 0.01 | 04880 | D | MUDSTONE | BLK.MAS.SLD |
| 99.93 | 99.97 | 0.04 | 04880 | D | COAL | C-2.BLK.SLD |
| 99.97 | 100.93 | 0.96 | | | MUDSTONE | BLK.LAM.BIOTR.SLD<br>MNR CALCT VEINING |
| 100.92 | 101.04 | 0.11 | | | SILTSTONE | LT.GY.MAS.SLD |
| 101.04 | 101.55 | 0.51 | | | SILTSTONE | M.GY.BIOTR.SLD<br>MUDSTONE INTBS |
| 101.55 | 102.38 | 0.83 | | | SANDSTONE | FG-.M.GY.VTHNB.SLD<br>SLTY INTBS. MNR PYR. BIOTURB IN PART. C<br>ORE BRKN IN MIDDLE |
| 102.38 | 103.11 | 0.73 | | | SANDSTONE | FG-.M.GY.VTHNB.SLD<br>AS ABOVE. BIOTURB IN PART |
| 103.11 | 105.31 | 2.20 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>MOIST INTBS. MUDST RIP-UP CLASTS IN MID<br>DLE SECTION. RARE QTZ VEINLETS |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82C06

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 105.31 | 105.50 | 0.19 | | | SILTSTONE | M.GY.DIDTR.SLD<br>SANDSTONE INTBS |
| 105.50 | 107.04 | 1.54 | | | SILTSTONE | M.GY.DIDTR.SLD<br>AS ABOVE |
| 107.04 | 107.48 | 0.44 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>SLTY INTBS |
| 107.48 | 107.76 | 0.28 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>MNR SLTY INTBS |
| 107.76 | 108.25 | 0.55 | | | SILTSTONE | DK.GY.LAM.SLD<br>MUDST INTBS |
| 108.25 | 108.50 | 0.15 | | | MUDSTONE | BLK.MAS.SLD |
| 108.50 | 109.50 | 1.00 | | | MUDSTONE | BLK.MAS.SLD<br>AS ABOVE |
| 109.50 | 110.25 | 0.75 | | | MUDSTONE | BLK.MAS.SLD<br>AS ABOVE. SANDY GRANULES AT BASE |
| 110.25 | 110.55 | 0.30 | | | SANDSTONE | FG-.PR.SLD<br>FINE TO COARSE GRAINED INTERMIXED WITH MUDST. SUBANGULAR GRAINS --- CURRELATABLE TO DDH82C04 |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 110.55 | 111.08 | 0.53 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.SLD<br>CUT AND FILL INDICATE TOPS UP |
| 111.08 | 111.66 | 0.58 | | | SANDSTONE | MG-.VPR.LT-M.GY.MAS.SLD<br>PBLY IN MIDDLE SECTION. S-P TEXTURE. MN<br>R QTZ VEINING |
| 111.66 | 113.85 | 2.19 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.WRMBU.SLD<br>MODST INTBS. CUT AND FILL INDICATE TOPS<br>UP. BIOTURB IN PART |
| 113.85 | 114.19 | 0.34 | | | SANDSTONE | MG.WEL.M.GY.MAS.SLD<br>MNR MODST INTBS |
| 114.19 | 114.51 | 0.32 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS. BRKN AT BASE |
| 114.51 | 114.63 | 0.12 | | | ROCK LOSS | |
| 114.63 | 116.14 | 1.51 | | | MUDSTONE | BLK.THNB.SLD<br>MNR SLTY INTBS AT TOP |
| 116.14 | 117.10 | 0.96 | | | MUDSTONE | BLK.MAS.SLD<br>COALIFIED FRAGS AT BASE |
| 117.10 | 117.15 | 0.05 | | | MUDSTONE | BLK.MAS.SLD<br>DOMINANTLY PYRITIZED AND CUT BY QTZ VEIN<br>LETS. GOLD. BUFF AND DK GY IN COLOUR |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 117.15 | 117.24 | 0.09 | 04747 | C | COAL | C-3.BLK.SLD |
| 117.24 | 117.28 | 0.04 | 04747 | C | COAL | C-4.BLK.SLD |
| 117.28 | 117.34 | 0.06 | 04747 | C | COAL | C-3.BLK.SLD |
| 117.34 | 117.49 | 0.15 | | | CLAYSTONE | CARB.BLK.BRKK |
| 117.49 | 117.53 | 0.04 | | | MUDSTONE | BLK.MAS.SLD |
| 117.53 | 117.68 | 0.15 | | | CLAYSTONE | CARB.BLK.SLD<br>BRIGHT COAL STRGS |
| 117.68 | 117.74 | 0.06 | | | CLAYSTONE | CARB.BLK.SLD |
| 117.74 | 117.93 | 0.19 | | | MUDSTONE | BLK.MAS.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH2606

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SAMP. ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 117.93 | 118.19 | 0.26 | | | SANDSTONE | MG.WEL.M.GY.LAM.SLD<br>MNR SLTY INTBS, BRKN AT TOP |
| 118.19 | 118.91 | 0.72 | | | SANDSTONE | MG.WEL.M.GY.LAM.SLD<br>AS ABOVE, BIOTURB IN PART |
| 118.91 | 120.41 | 1.50 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>PBLY BAND TOWARDS BASE, SLTY BANDS IN M IDDLE SECTION |
| 120.41 | 120.60 | 0.19 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD |
| 120.60 | 121.82 | 1.22 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>AS ABOVE, MNR QTZ VEINLETS AND ROUNDED RIP-UP MUDST CLASTS UP TO 5CM LONG |
| 121.72 | 122.51 | 0.79 | | | SANDSTONE | FG.WEL.M.GY.VTHNB.WRMED.SLD<br>SLTY INTBS |
| 122.51 | 123.61 | 1.10 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>SLTY INTBS |
| 123.61 | 124.60 | 0.99 | | | SANDSTONE | FG.WEL.M.GY.THNB.XBDG.SLD<br>AS ABOVE, TOPS UP |

OTES MEASURED DCA

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH2006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 124.00 | 126.00 | 2.00 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>AS ABOVE, BRKN IN MIDDLE, SUBROUNDED MU<br>DST RIP-UP IN MIDDLE UP TO 4CM LONG |
| 126.00 | 126.72 | 2.12 | | | SANDSTONE | FG.WEL.M.GY.THNB.SLD<br>AS ABOVE |
| 126.72 | 129.48 | 0.76 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS, CUT AND FILL INDICATE TOPS<br>UP |
| 129.48 | 130.12 | 0.64 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE, FRAC AT 40 DEGREES, CALCT INF<br>ILLING |
| 130.12 | 130.25 | 0.13 | | | SILTSTONE | LT.GY.LAM.SLD |
| 130.25 | 130.67 | 0.42 | | | SILTSTONE | LT.GY.LAM.SLD<br>MUDST INTDS, DISTURB IN PART, CUT AND F<br>ILL INDICATE TOPS UP |
| 130.67 | 131.34 | 0.67 | | | MUDSTONE | DK.GY.LAM.SLD<br>SLTY INTBS. |
| 131.34 | 132.35 | 1.01 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 132.05 | 132.63 | 0.58 | 04881 | B | COAL | C-3.BLK.SLD<br>PYRITE DEPOSITS ALONG CLEAVAGE |
| 132.63 | 132.68 | 0.05 | 04881 | B | COAL | C-3.BLK.VBRKN |
| 132.68 | 132.72 | 0.04 | 04881 | B | COAL | C-3.BLK.SLD |
| 132.72 | 132.74 | 0.02 | 04881 | B | MUDSTONE | DK.GY.SLD |
| 132.74 | 132.83 | 0.09 | 04881 | B | COAL | C-2.BLK.SLD |
| 132.83 | 132.90 | 0.07 | 04881 | B | COAL | C-3.BLK.BRKN |
| 132.90 | 133.05 | 0.15 | 04882 | B | ROCK LOSS | |
| 133.05 | 133.12 | 0.07 | 04882 | B | COAL LOSS | |
| 133.12 | 133.23 | 0.11 | 04882 | B | COAL LOSS | |
| 133.23 | 133.29 | 0.06 | 04882 | B | COAL | C-3.BLK.SLD |
| 133.29 | 133.31 | 0.02 | 04882 | B | CLAYSTONE | CARB.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82C06

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 133.31 | 133.56 | 0.25 | 04862 | B | COAL | C-3.BLK.SLD |
| 133.56 | 133.61 | 0.05 | 04862 | B | COAL | C-2.BLK.BRKN |
| 133.61 | 133.66 | 0.05 | 04862 | B | CLAYSTONE | CARB.BLK.SLD |
| 133.66 | 133.70 | 0.04 | 04862 | B | COAL | C-1.BLK.SLD |
| 133.70 | 133.77 | 0.07 | 04862 | B | COAL | C-2.BLK.SLD<br>PYRITIZED |
| 133.77 | 133.81 | 0.04 | 04862 | B | COAL | C-3.BLK.SLD |
| 133.81 | 133.85 | 0.04 | 04862 | B | COAL | C-4.BLK.SLD<br>ROCK SPLITS |
| 133.85 | 134.17 | 0.32 | | | CLAYSTONE | CARB.BLK.SLD |
| 134.17 | 134.42 | 0.25 | | | MUDSTONE | DK.GY.SLD<br>THN COAL STRGS & PYRITE LENSES AND MNR<br>QTZ VEINLETS AT TOP |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDHB2000

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 134.42 | 135.86 | 1.44 | | | SANDSTONE | FG.WEL.LT.GY.MG.SLD<br>MORE SLTY AT TOP. MNR SLTY INTBS THROUG<br>HOUT |
| 135.86 | 136.17 | 0.31 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>MNR SLTY INTBS. MNR BIOTURB |
| 136.17 | 138.04 | 1.87 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 138.04 | 138.11 | 0.07 | | | SANDSTONE | FG.WEL.LT.GY.THNB.SLD<br>AS ABOVE |
| 138.11 | 139.22 | 1.11 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>COARSENING NEAR BASE |
| 139.22 | 139.73 | 0.51 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD |
| 139.73 | 139.93 | 0.20 | | | SANDSTONE | MG.WEL.LT.GY.MAS.VBRKN<br>AS ABOVE |
| 139.93 | 140.12 | 0.19 | | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN<br>AS ABOVE |
| 140.12 | 140.41 | 0.29 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM > | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 140.41 | 141.66 | 1.25 | | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN<br>AS ABOVE. VBRKN IN PART. RARE ROUNDED M<br>UDST RIP-UP CLASTS AND QTZ VEINLETS |
| 141.66 | 141.96 | 0.32 | | | SANDSTONE | MG.WEL.LT.GY.MAS.BRKN<br>AS ABOVE |
| 141.96 | 142.13 | 0.15 | | | ROCK LOSS | |
| 142.13 | 142.26 | 0.13 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.VBRKN<br>QTZ VEINLETS |
| 142.26 | 142.56 | 0.30 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>AS ABOVE |
| 142.56 | 142.64 | 0.08 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.VBRKN<br>AS ABOVE |
| 142.64 | 142.74 | 0.10 | | | ROCK LOSS | |
| 142.74 | 143.17 | 0.43 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>AS ABOVE. CORE BRKN AT TOP |
| 143.17 | 143.27 | 0.11 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.VBRKN<br>AS ABOVE |
| 143.27 | 143.52 | 0.25 | | | ROCK LOSS | |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 143.52 | 144.33 | 0.81 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>CORE BRKN IN MIDDLE |
| 144.33 | 145.40 | 1.07 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>AS ABOVE |
| 145.40 | 146.45 | 1.05 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>AS ABOVE |
| 146.45 | 146.65 | 0.20 | | | MUDSTONE | SLTY.M.GY.SLD |
| 146.65 | 148.49 | 1.84 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>RARE SLTY INTBS. CORE BRKN AT BASE |
| 148.49 | 148.60 | 0.11 | | | SANDSTONE | MG.WEL.LT.GY.MAS.SLD<br>AS ABOVE |
| 148.60 | 148.76 | 0.16 | | | MUDSTONE | SLD |
| 148.76 | 149.05 | 0.29 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>RNR MUDST INTBS |
| 149.05 | 150.11 | 0.46 | | | SANDSTONE | MG.MOD.LT.GY.MAS.SLD<br>RARE PEBS |
| 150.11 | 150.65 | 0.54 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>RARE MUDST |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH2006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 150.65 | 151.21 | 0.56 | | | SANDSTONE | FG.WLL.LT.GY.MAS.SLD<br>AS ABOVE |
| 151.21 | 151.37 | 0.16 | | | MUDSTONE | DK.GY.LAM.SLD |
| 151.37 | 151.47 | 0.10 | | | ROCK LOSS | |
| 151.47 | 151.58 | 0.11 | | | MUDSTONE | DK.GY.LAM.SLD<br>AS ABOVE. CORE BRKN AT TOP |
| 151.58 | 152.13 | 0.55 | | | SANDSTONE | FG.MOD.LT.GY.MAS.SLD<br>2CM SUBANGULAR PBL BAND AT BASE AND RAR<br>E ROUNDED MUDST CLASTS IN MIDDLE |
| 152.13 | 152.32 | 0.19 | | | MUDSTONE | DK.GY.SLD<br>CUT BY 5CM QTZ VEIN |
| 152.32 | 152.93 | 0.61 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>SLTY INTBS AT TOP |
| 152.93 | 153.07 | 0.14 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>AS ABOVE. BUFF COLOUR IN BASAL HALF |
| 153.07 | 153.43 | 0.36 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>AS ABOVE |
| 153.43 | 154.13 | 0.70 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>AS ABOVE. WINKS TO BUFF |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82C06

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 154.13 | 154.37 | 0.24 | | | SANDSTONE | FG.PK.LT.GY.BIOTR.SLD<br>SUBROUNDED MODST RIP-UP THROUGHOUT. COA<br>LIFIED FRAGS |
| 154.37 | 154.59 | 0.02 | | | SANDSTONE | FG.WEL.LT.GY.SLD |
| 154.59 | 157.10 | 2.11 | | | SANDSTONE | FG.WEL.LT.GY.VTHNB.SLD<br>AS ABOVE. MNR SLTY INTBS |
| 157.10 | 157.16 | 0.06 | | | SANDSTONE | FG.WEL.LT.GY.VTHNB.SLD<br>AS ABOVE |
| 157.16 | 159.07 | 1.85 | | | SANDSTONE | FG.WEL.LT.GY.LAM.SLD<br>AS ABOVE. PYRITIZED AT TOP |
| 159.07 | 160.23 | 1.16 | | | SANDSTONE | FG.WEL.M.GY.LAM.SLD<br>SLTY INTBS. CORE VBRKN AT BASE |
| 160.23 | 161.02 | 0.79 | | | SANDSTONE | FG-.WEL.LT.GY.MAS.SLD<br>SLTY LAMS IN UPPER PORTION |
| 161.02 | 163.12 | 2.10 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>SLTY INTBS IN MIDDLE |
| 163.12 | 163.28 | 0.16 | | | SANDSTONE | FG.WEL.LT.GY.MAS.SLD<br>AS ABOVE |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82066

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 165.28 | 165.97 | 0.69 | | | SANDSTONE | FG.WEL.M.GY.LAM.SLD<br>SLTY INTBS |
| 165.97 | 165.11 | 1.14 | | | SILTSTONE | M.GY.LAM.SLD<br>SSY INTBS. JOINTING AT 25 DEGREES |
| 165.11 | 165.82 | 0.71 | | | SILTSTONE | M.GY.LAM.SLD<br>MUDST INTBS |
| 165.82 | 166.20 | 0.38 | | | MUDSTONE | M.GY.LAM.VBRKN<br>LISTRIC SURFACES |
| 166.20 | 166.31 | 0.11 | | | ROCK LOSS | |
| 166.31 | 166.41 | 0.10 | 04863 | A | COAL | C-2.BLK.VBRKN<br>LISTRIC SURFACES |
| 166.41 | 166.45 | 0.04 | 04863 | A | COAL | C-1.BLK.SLD |
| 166.45 | 166.49 | 0.04 | 04863 | A | CLAYSTONE | CARB.BLK.BRKN<br>ABUNDANT COAL FLECKS. VERY SOFT |
| 166.49 | 166.69 | 0.20 | 04863 | A | COAL | C-2.BLK.VBRKN |
| 166.69 | 166.80 | 0.11 | 04863 | A | COAL | C-2.BLK.SLD |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDHC2006

| DEPTH FROM | DEPTH TO | INTRVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 166.80 | 166.81 | 0.01 | 04663 | A | CLAYSTONE | CARB.BLK.SLD |
| 166.81 | 166.90 | 0.09 | 04663 | A | COAL | C-2.BLK.VBRKN |
| 166.90 | 166.96 | 0.06 | 04663 | A | COAL | C-2.BLK.SLD |
| 166.96 | 167.05 | 0.09 | 04663 | A | COAL | C-3.BLK.VBRKN |
| 167.05 | 167.09 | 0.04 | 04663 | A | COAL | C-2.BLK.SLD |
| 167.09 | 167.34 | 0.25 | 04663 | A | COAL | C-3.BLK.SLD<br>CORE BRKN AT TOP AND BASE |
| 167.34 | 167.44 | 0.10 | 04663 | A | COAL | C-3.BLK.SLD<br>CORE BRKN AT TOP |
| 167.44 | 167.56 | 0.12 | 04663 | A | COAL | C-2.BLK.VBRKN |
| 167.56 | 167.68 | 0.12 | 04663 | A | COAL | C-2.BLK.VBRKN |
| 167.68 | 168.14 | 0.46 | 04663 | A | COAL | C-3.BLK.VBRKN |

PROJECT: KPN BLOCK: BC DATA SOURCE: DDH82006

| DEPTH FROM | DEPTH TO | INTERVAL THICK. | SAMP. ID | SEAM ID | LITHOLOGY | DESCRIPTION |
|---|---|---|---|---|---|---|
| 166.14 | 166.29 | 0.15 | 04866 | A | COAL | C-2.BLK.VBRKN |
| 166.29 | 166.37 | 0.08 | 04866 | A | COAL | C-3.BLK.BRKN |
| 166.37 | 166.42 | 0.05 | | | CLAYSTONE | CARB.BLK.BRKN |
| 166.42 | 166.69 | 0.27 | | | MUDSTONE | M.GY.LAM.BRKN |
| 166.69 | 170.65 | 3.96 | | | SANDSTONE | M.GY.VTHNB.BRKN<br>SLTST INTBS. MNR QTZ VEINING |
| 170.65 | 170.76 | 0.11 | | | SANDSTONE | BF.BRKN<br>AS ABOVE. QTZ VEINED CONTAINING BRECCIA<br>TED HOST ROCK |
| 170.76 | 171.46 | 0.70 | | | SILTSTONE | M.GY.LAM.BRKN<br>INTBD SS |
| 171.46 | 172.82 | 1.36 | | | SILTSTONE | M.GY.LAM.BRKN<br>MNR MUDST INTES |
| 172.82 | 172.98 | 0.16 | | | SILTSTONE | M.GY.LAM.SLD<br>AS ABOVE ////////////////END OF CORE. ORI<br>ENTS MARKER 173.43M//////////////// |

GR-Mt. Klappan 84(3) A

695

# MOUNT KLAPPAN
## DRILL HOLE LOG
DDH 82-006

SCALE : 1:200 (0, 5 m) 1:40 (0, 0.5 m)

NORTHING : 6344790 N
EASTING : 512605 E

INCLINATION : 60°
BEARING : 345°

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL - THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL

APPARENT THICKNESS 1:200 | TRUE THICKNESS 1:200 | SEAM DETAIL 1:40

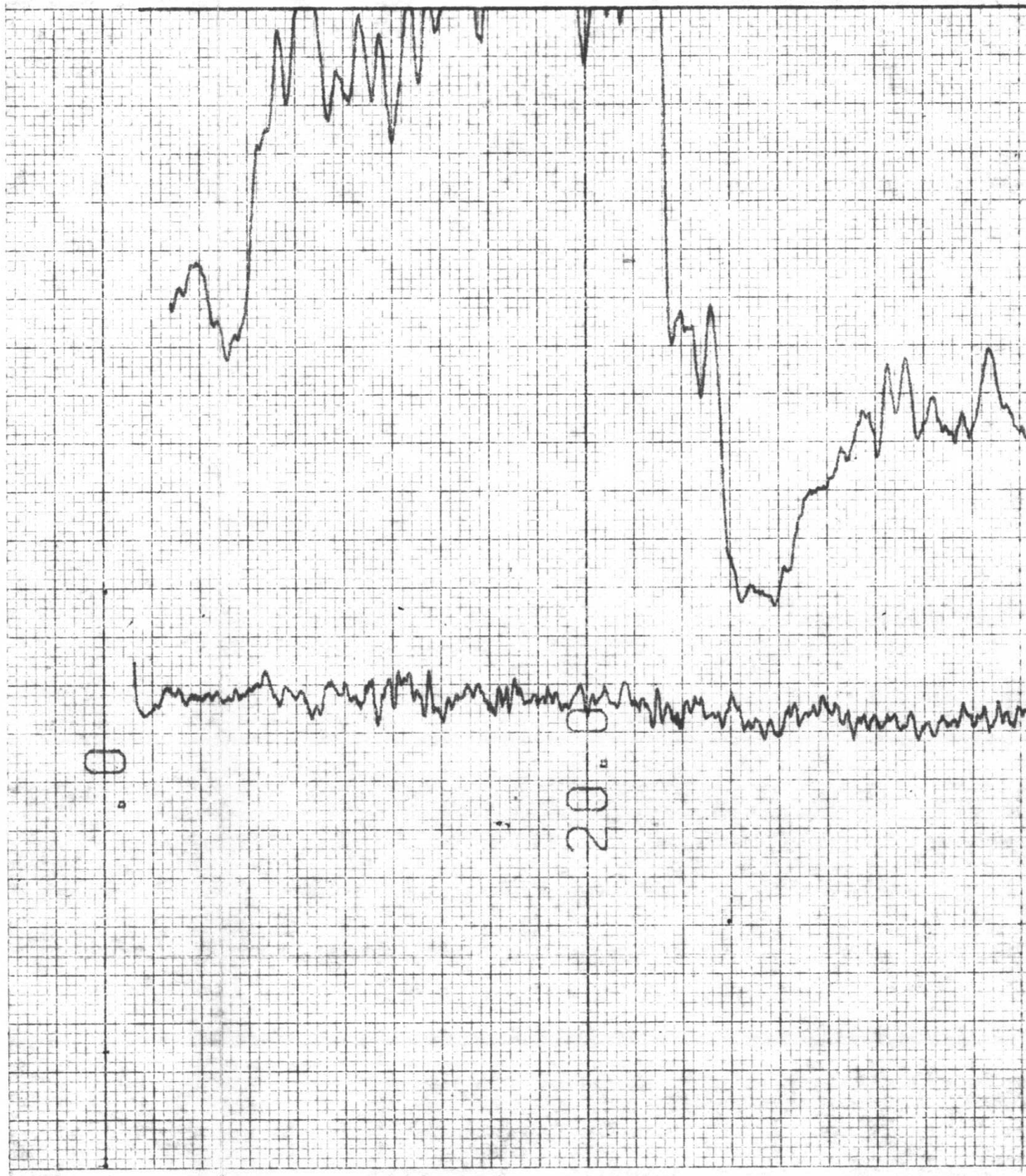
(m)

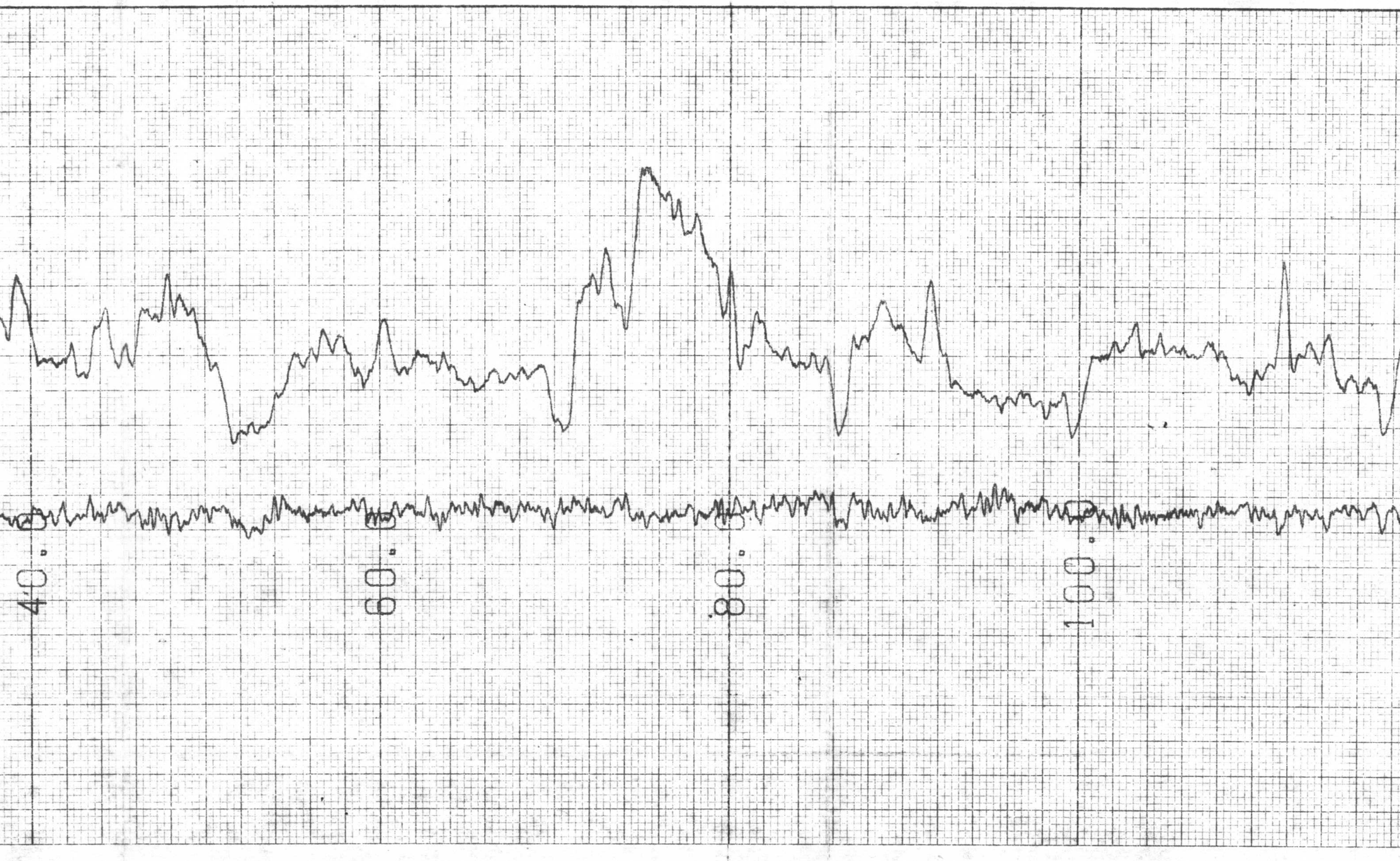
10: 85, 85, 88, 75, 82
20: 87, 77, 89, 77, 79, 86, 80
30: 75, 83
40: 80, 70, 80
50: 85, 85, 85, 82, 88
60: 85
70: 85, 90, 85, 80
80: 84, 85, 78, 77, 82
90: 85, 83
100: 80, 88
110: 85, 80, 80
120: 82, 77, 72, 65, 87, 90, 90
130: 90
140: 86, 80, 89, 88, 60, 70
150: 70, 73, 72, 75, 80, 60, 60
160: 70, 71, 60
170

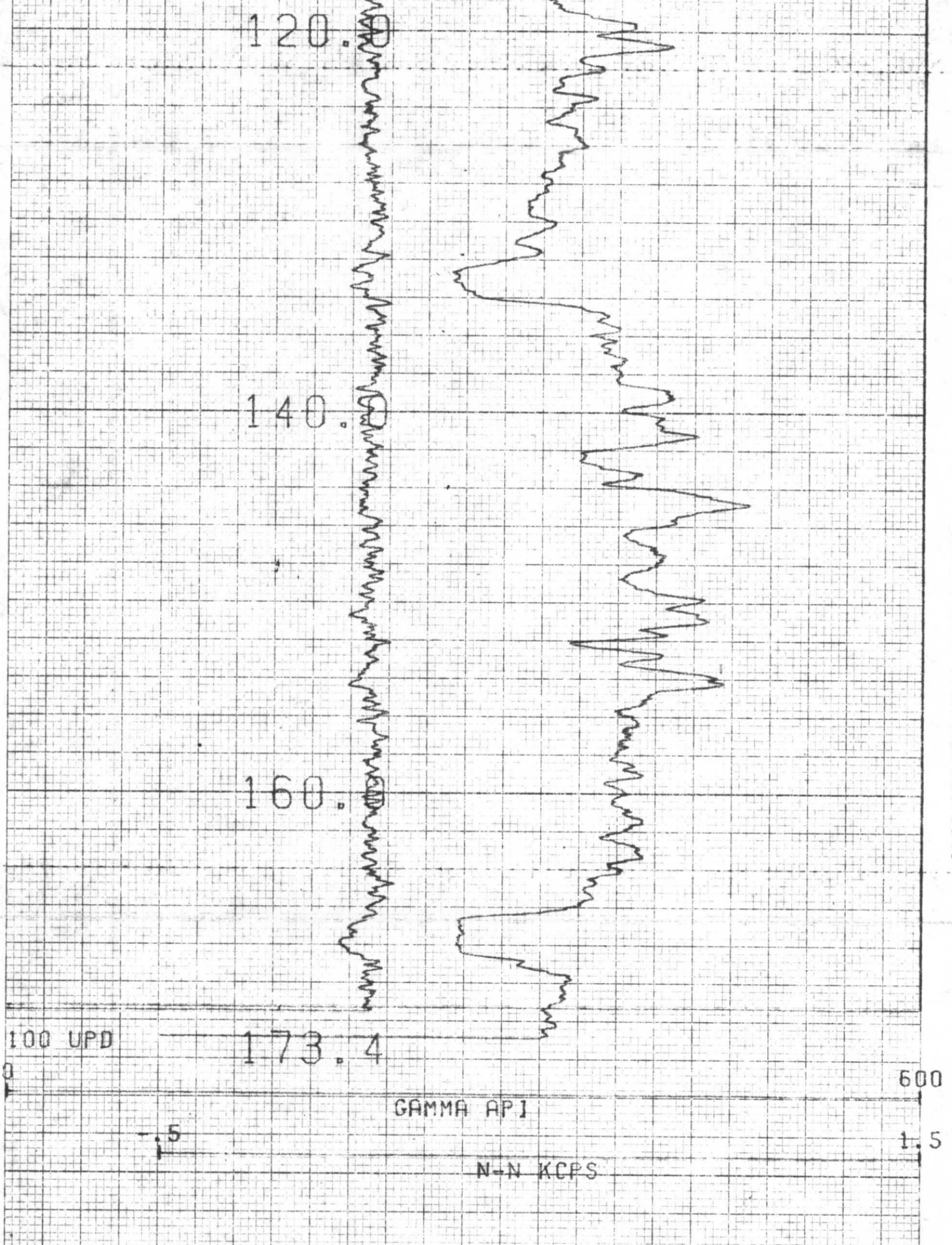
Total: 172.98 m

SEAM H — 26.09 / 28.10
SEAM G — 51.15 / 53.60
SEAM F — 69.75 / 69.91
SEAM E — 85.88 / 86.51
SEAM D — 99.38 / 99.97
SEAM C — 117.15 / 117.34
SEAM B — 132.35 / 133.85
SEAM A — 166.31 / 168.37

| SEAM | ROCK | COAL | |
|---|---|---|---|
| H | 0.70 | 1.31 | 2.01 |
| G | 0.61 | 1.84 | 2.45 |
| F | 0.00 | 0.16 | 0.16 |
| E | 0.02 | 0.61 | 0.63 |
| D | 0.07 | 0.52 | 0.59 |
| C | 0.00 | 0.19 | 0.19 |
| B | 0.24 | 1.26 | 1.50 |
| A | 0.05 | 1.62 | 1.67 |


0
20


40°
60°
80°
100°




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

GR. - Mt. Klappan 84(3) A

695

COMPU-LOG V8L2 PLOT 08-01-82

DDH-82-006

GULF CANADA RES. INC

KLAPPAN MTN.

HOLE DIAMETER : 09.6

PROBE # 9055A - 008

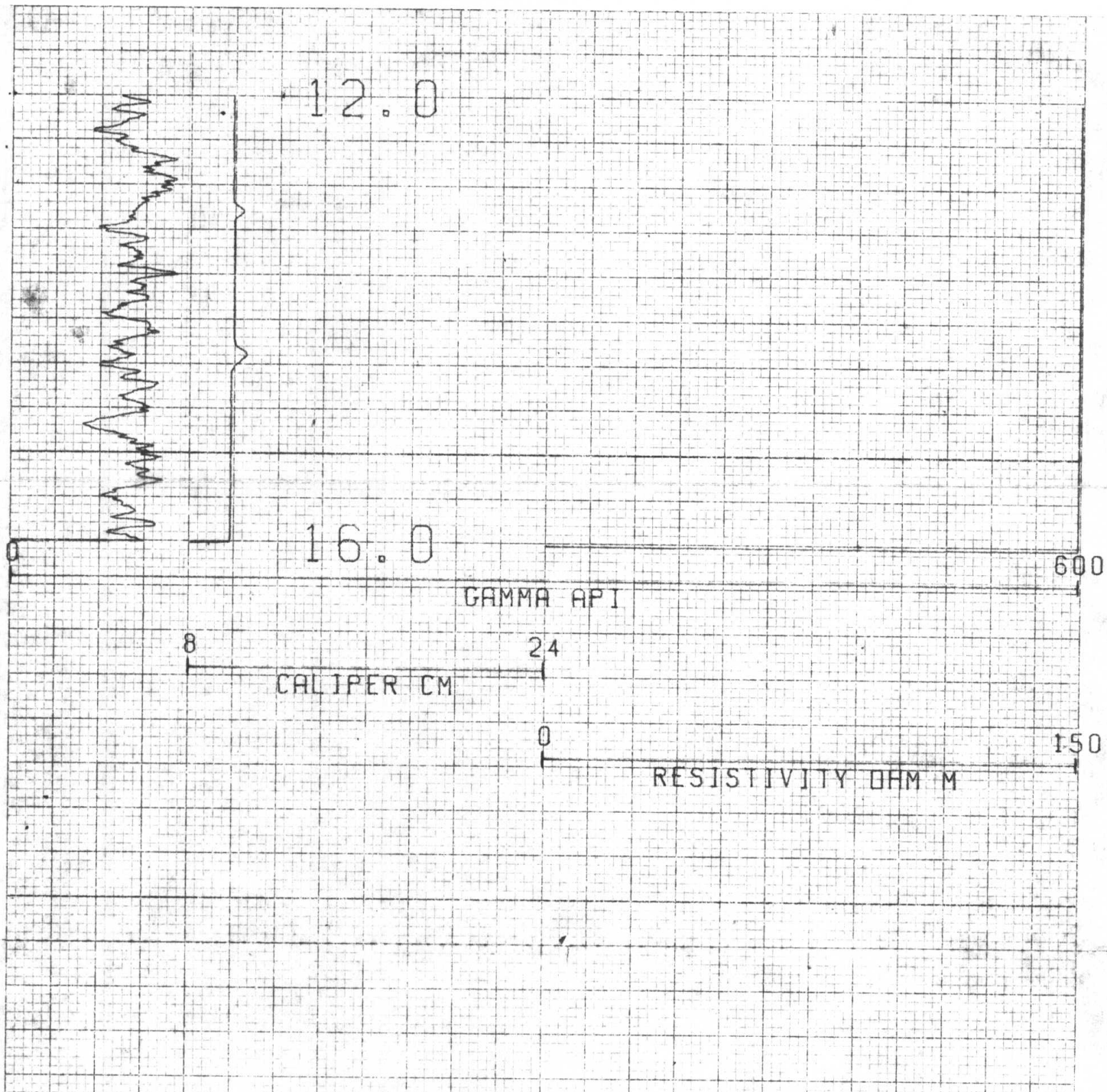
SENSOR #4 CAL STD CPS = 152

SENSOR #4 CAL RUN CPS = 272

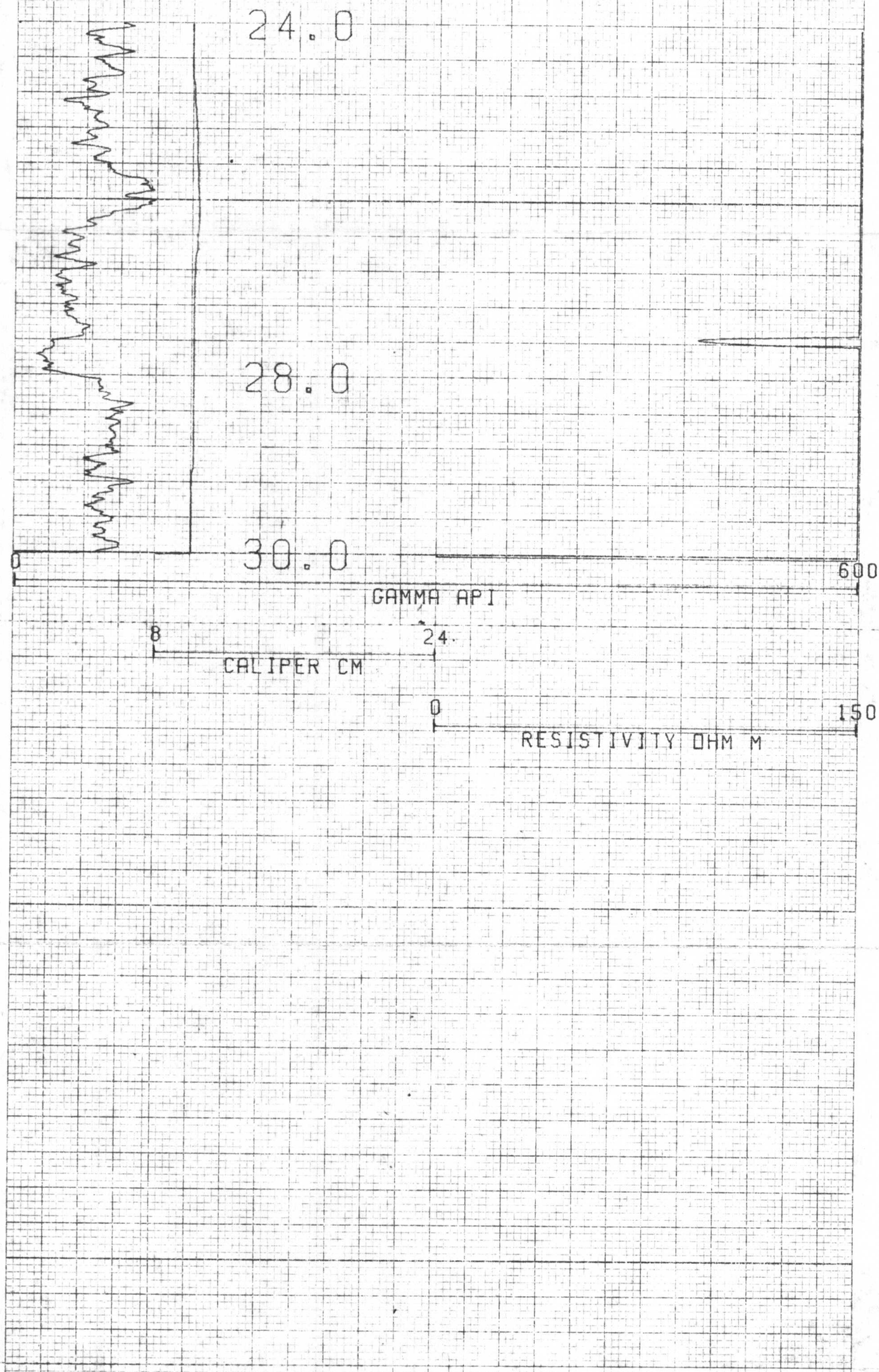
SENSOR #4 CAL BIAS = 0

DATA V8L2*A TRUCK # P823

D. BOMBACK APPL.#1087L1

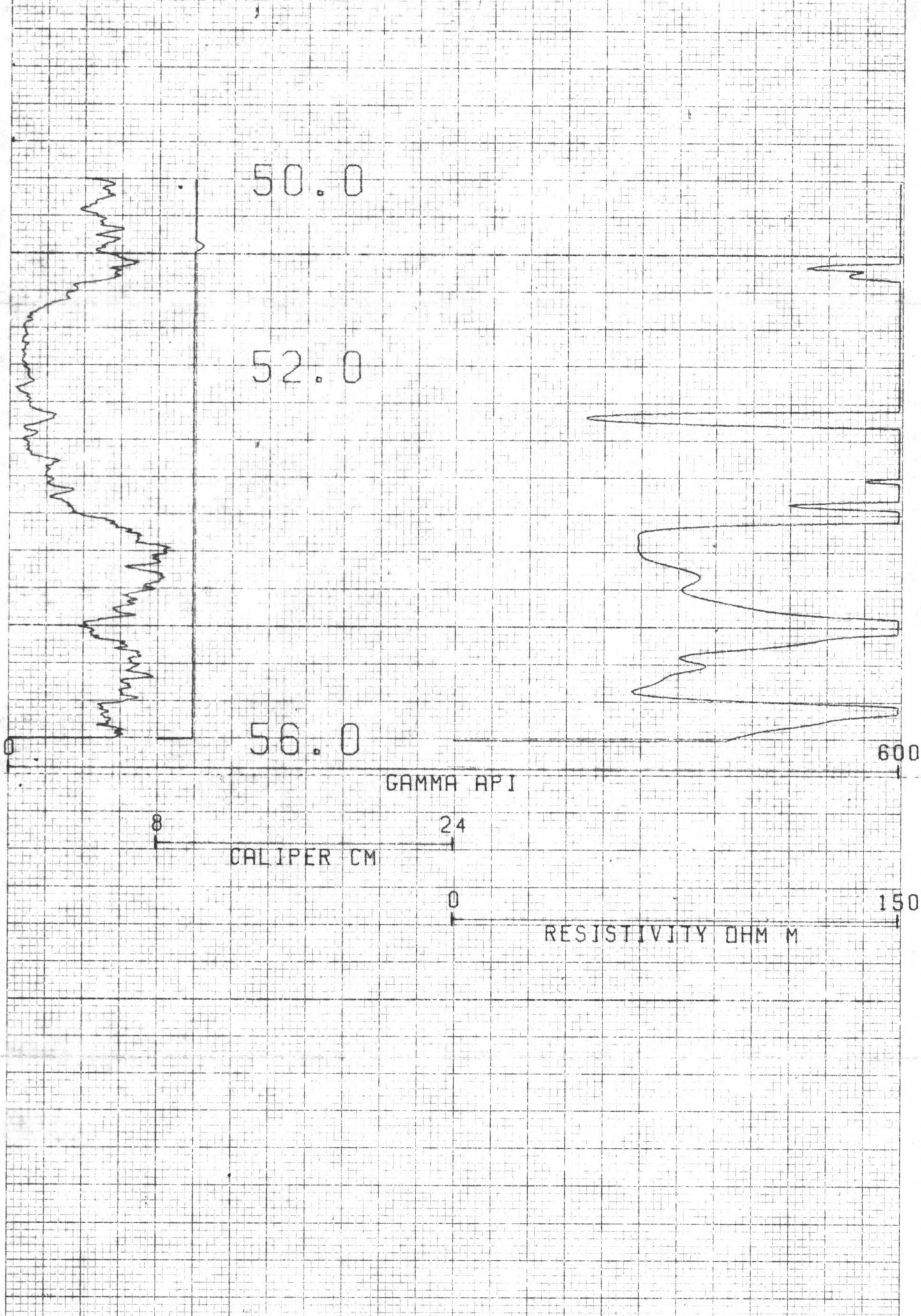



RY GEOPHYSICAL CORP. PART NO. 786-0040

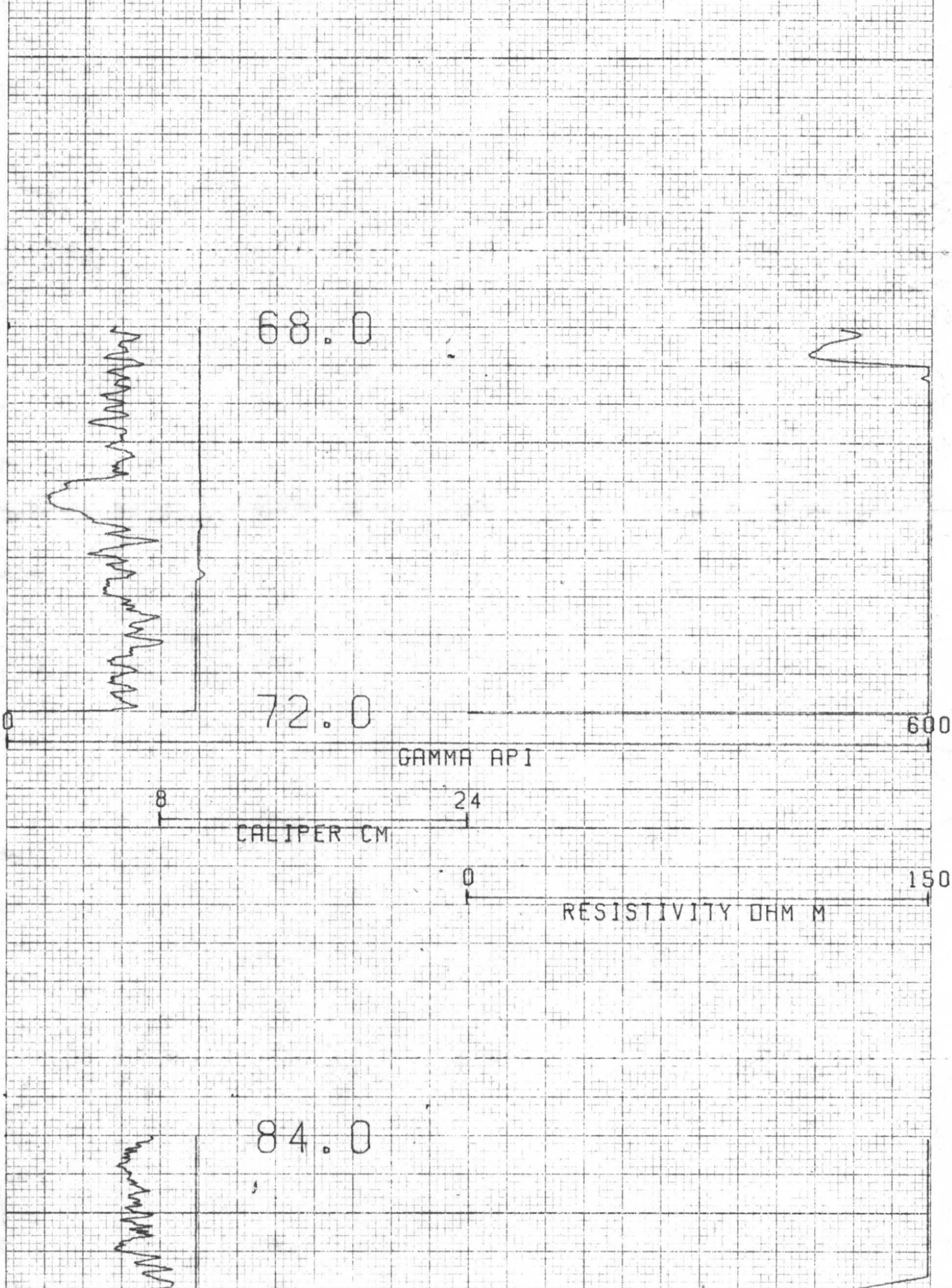



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

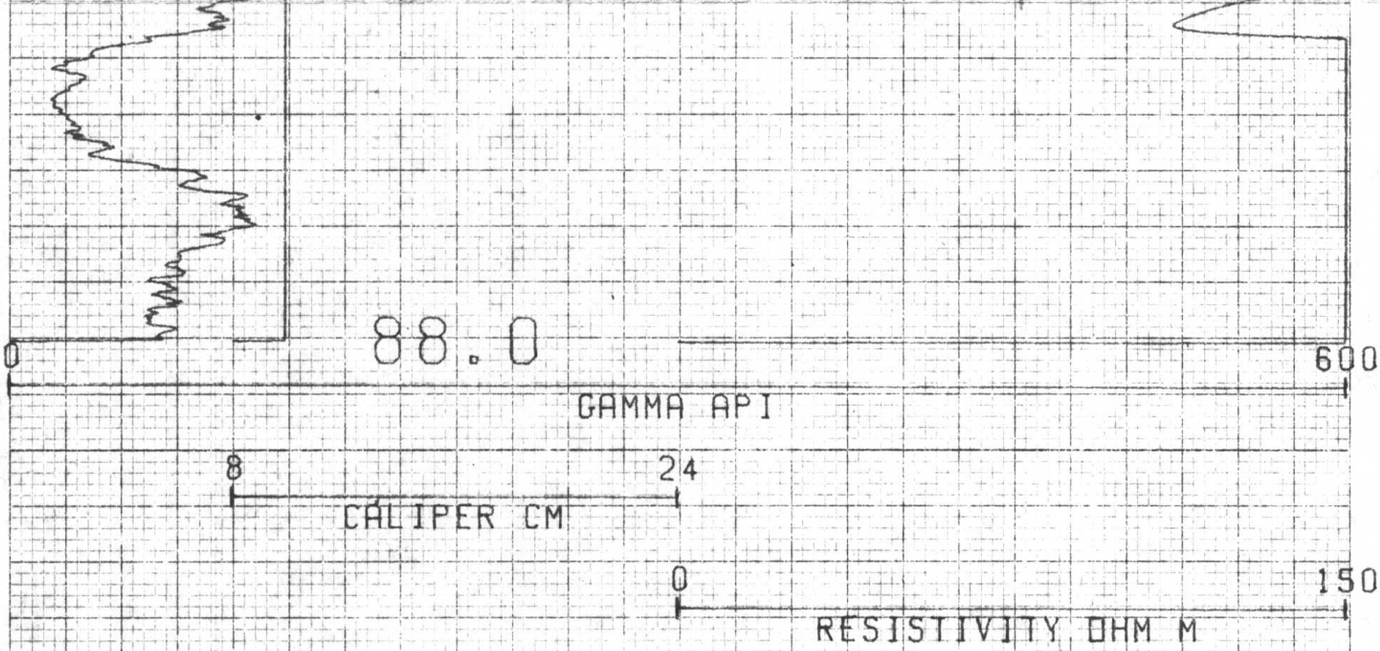
CENTURY GEOPHYS

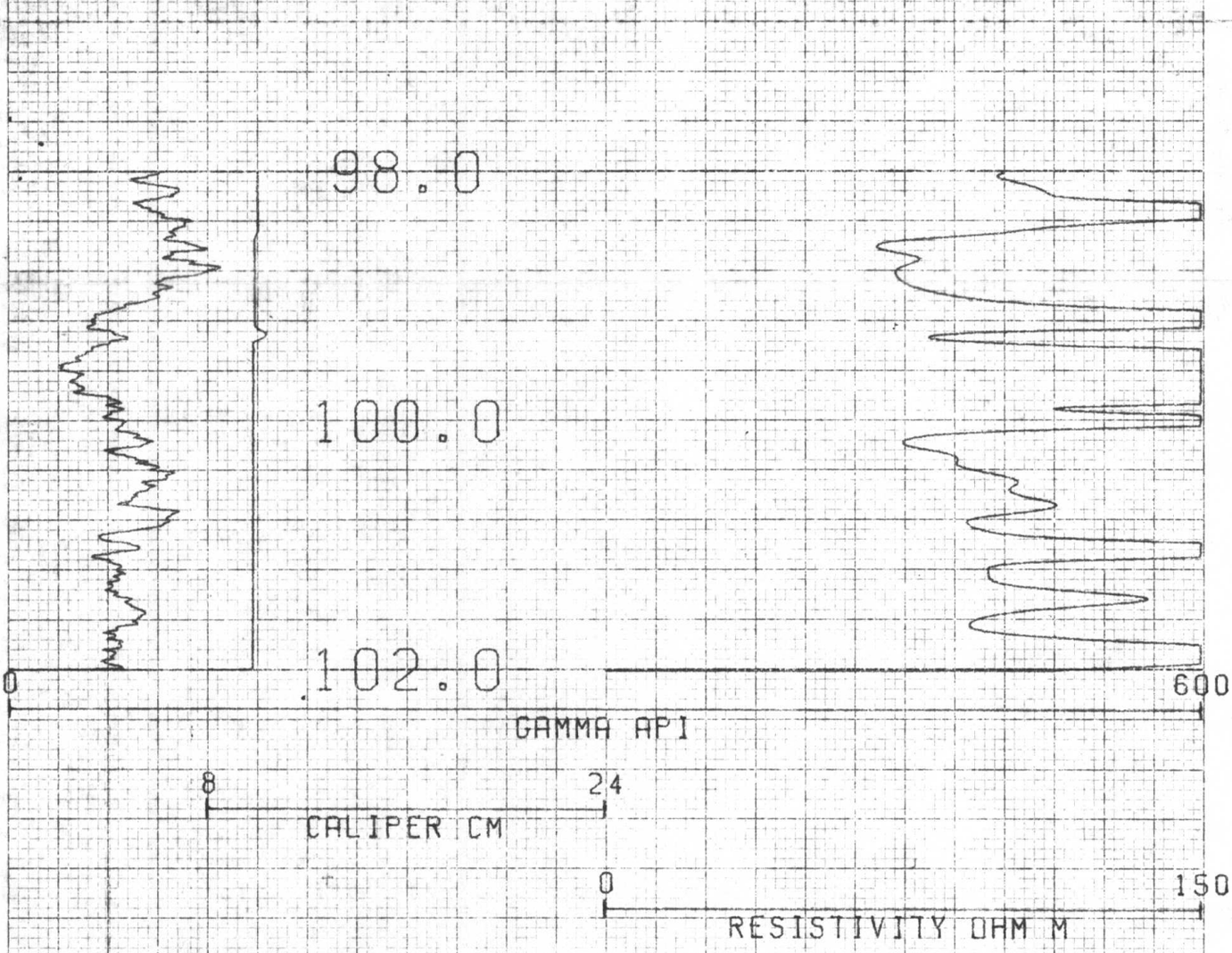



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



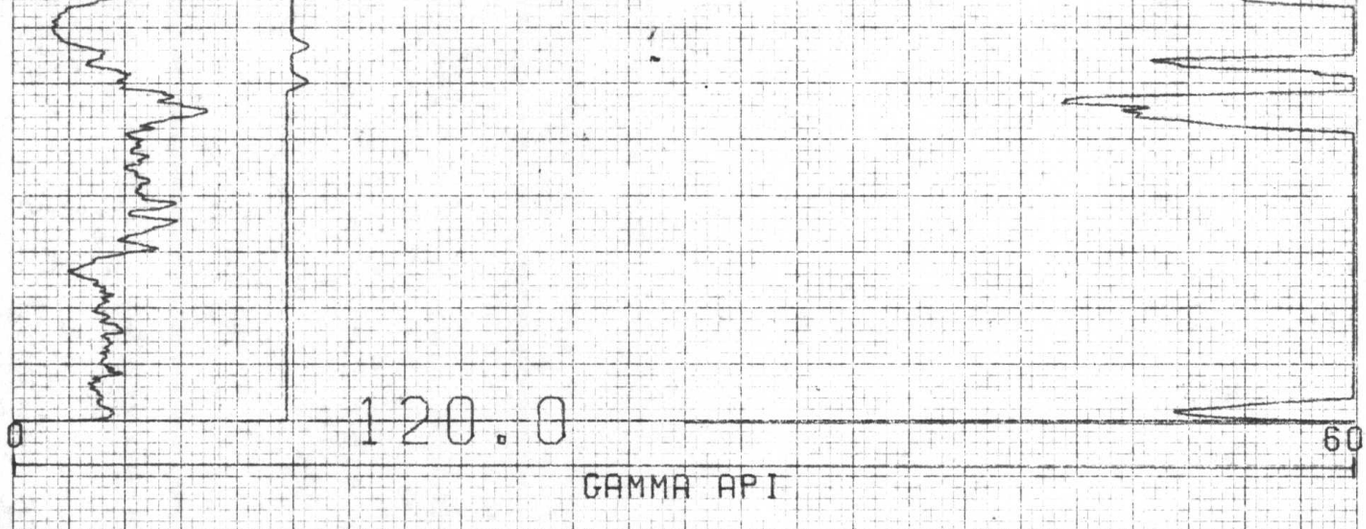

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040



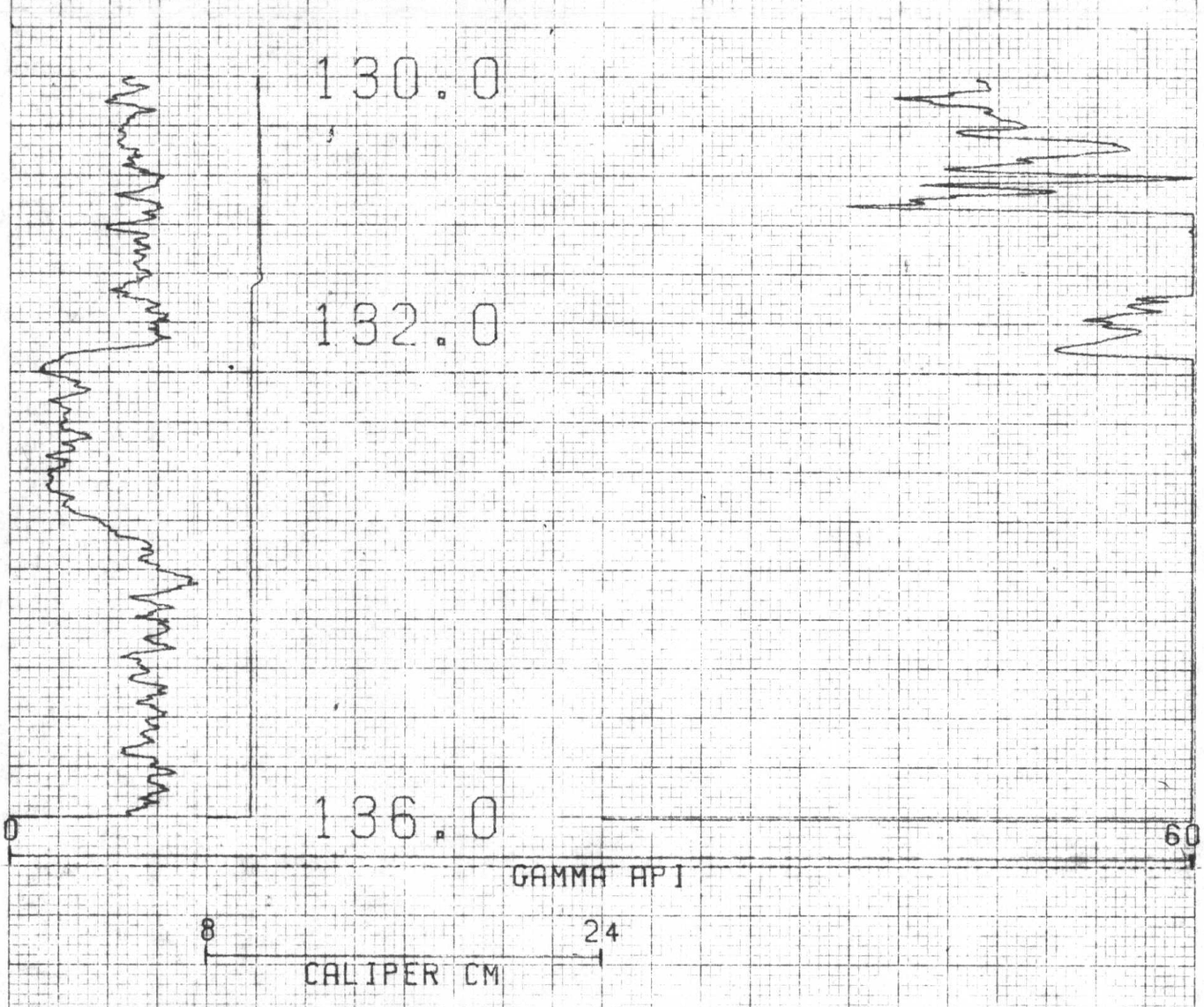


CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

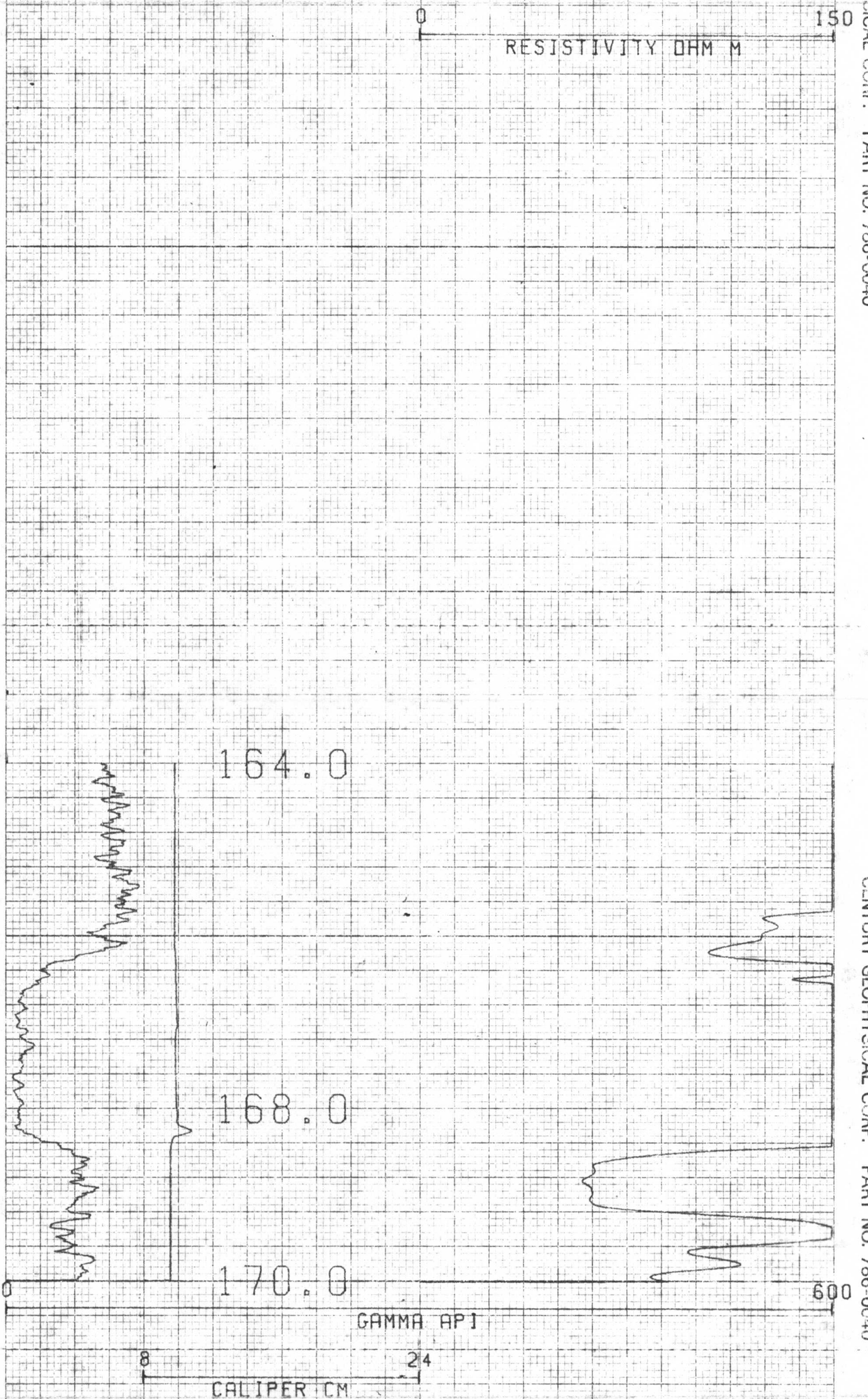



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040






CENTURY GEOPHY




SICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

0 150

RESISTIVITY OHM M

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

GR.-Mt. Klappan 84(3) A

COMPU-LOG V8L2 PLOT 09-02-82

695

DDH-82-006

GULF CANADA RES. INC

KLAPPAN MTN.

HOLE DIAMETER : 09.6

PROBE # 9030A - 406

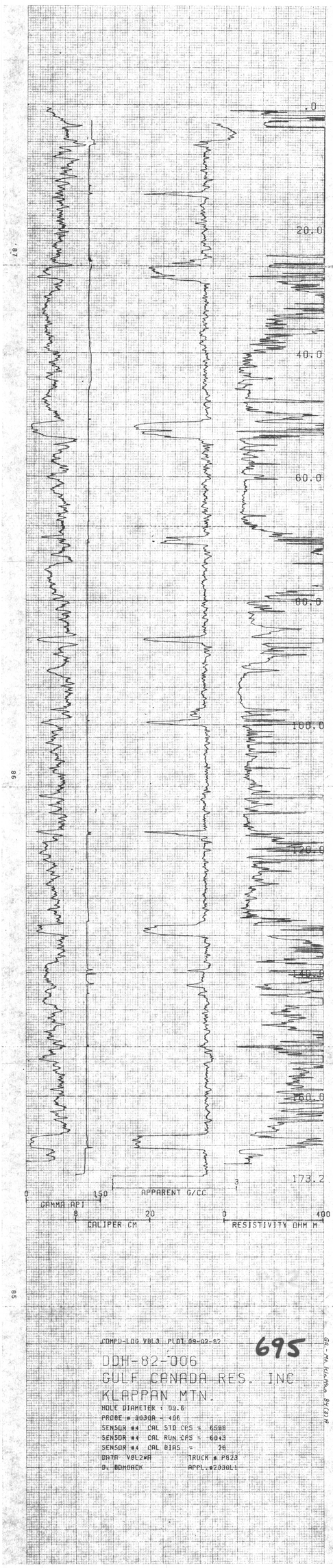
SENSOR #4 CAL STD CPS = 6588

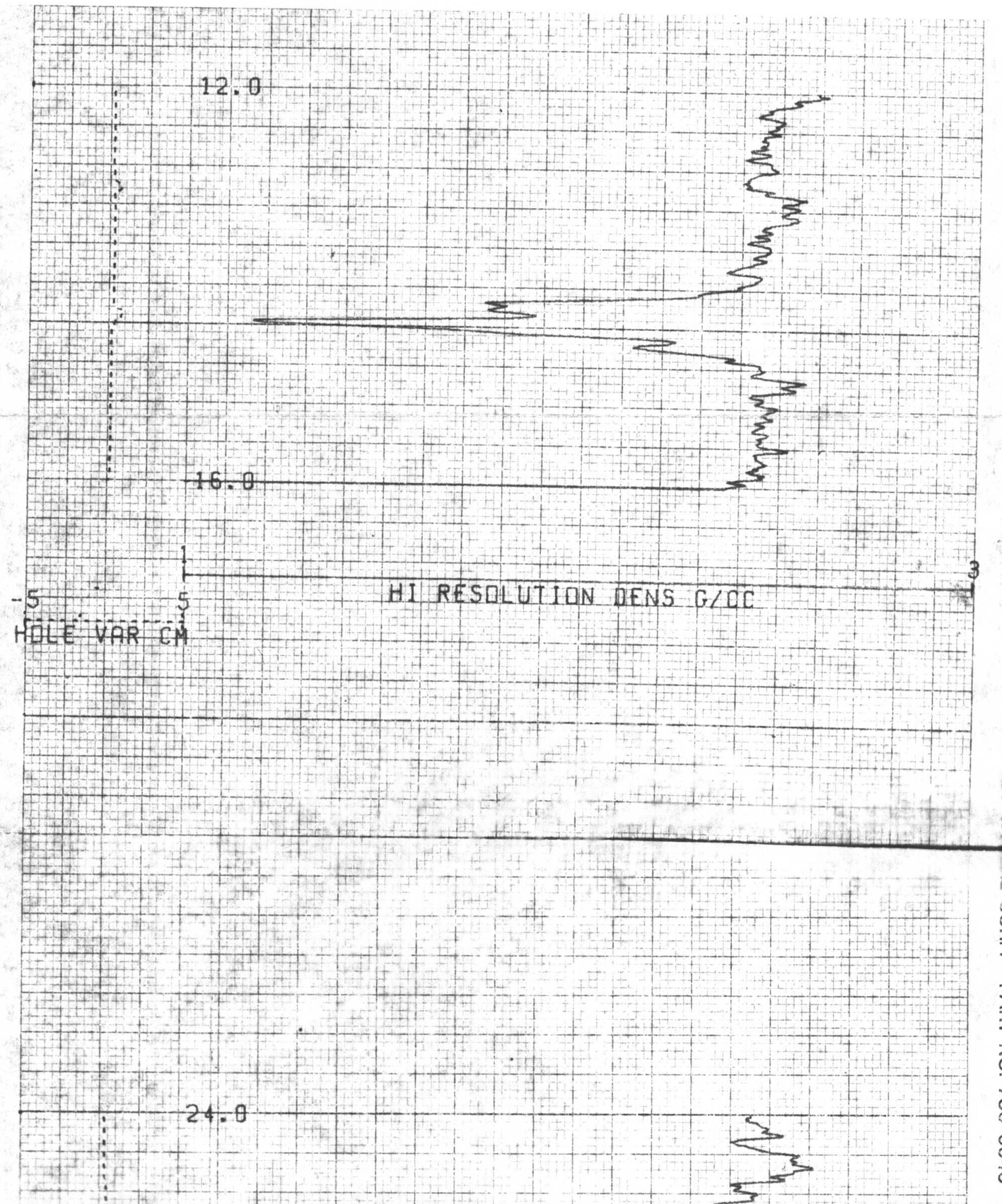
SENSOR #4 CAL RUN CPS = 6043

SENSOR #4 CAL BIAS = 28

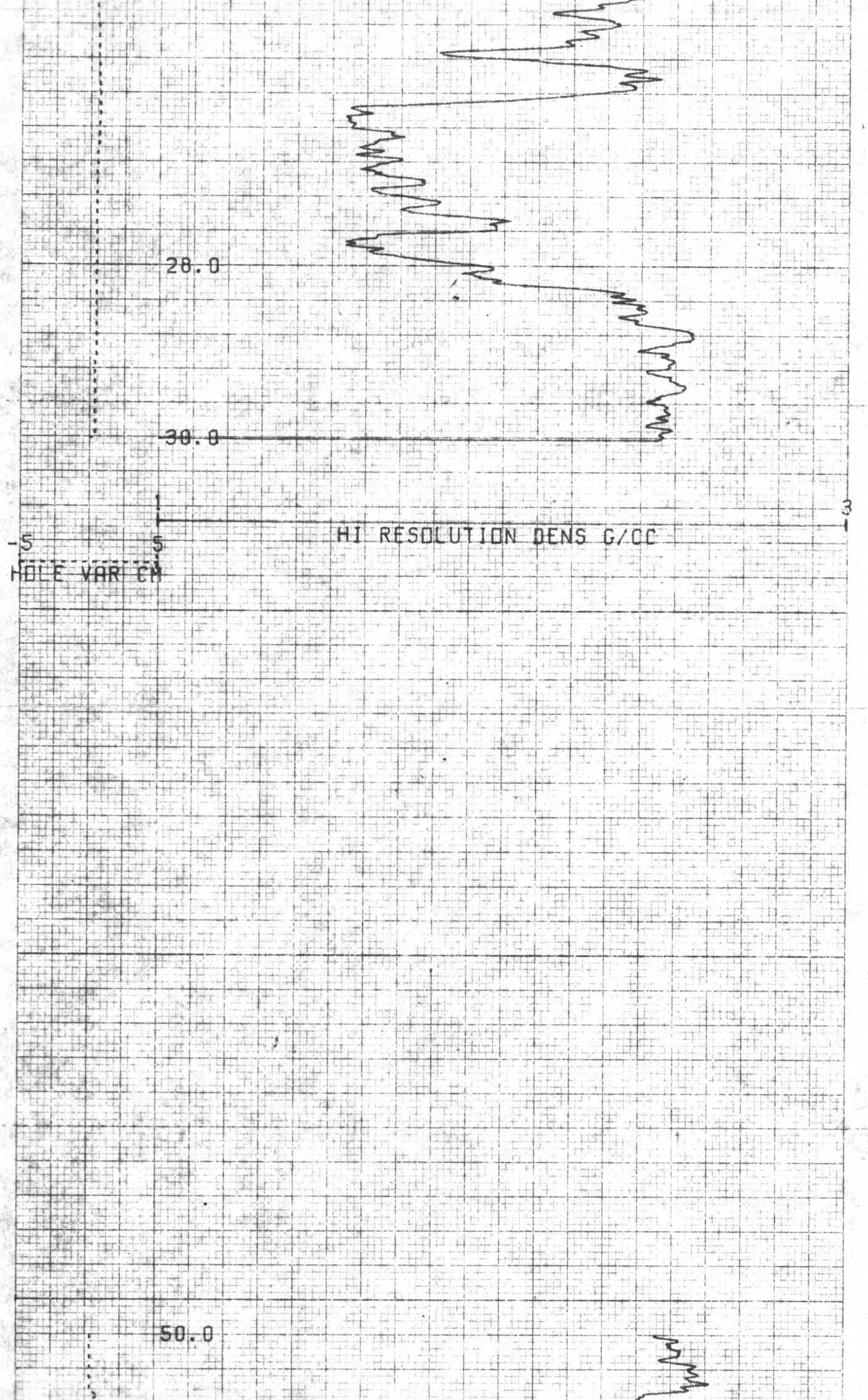
DATA V8L2*A TRUCK # P823

D. BOMBACK APPL.#3152L1

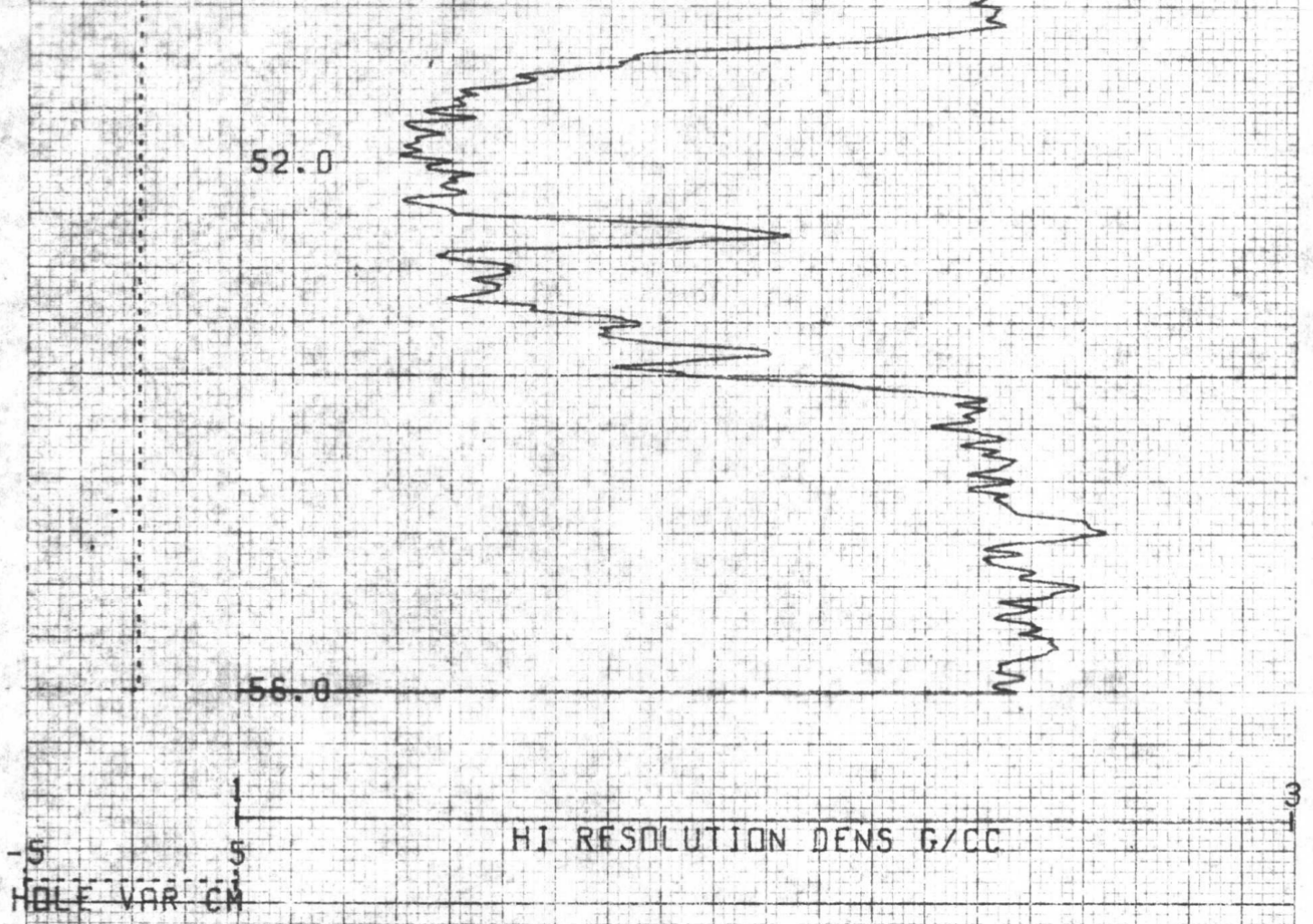

.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
173.2
0
150
GAMMA API
APPARENT G/CC
3
8
20
CALIPER CM
0
400
RESISTIVITY OHM M
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040
COMPU-LOG V8L3 PLOT 09-02-82
695
ODH-82-006
GULF CANADA RES. INC.
KLAPPAN MTN.
HOLE DIAMETER = 09.6
PROBE # 9030A - 406
SENSOR #4 CAL STD CPS = 6588
SENSOR #4 CAL RUN CPS = 6043
SENSOR #4 CAL BIAS = 20
DATA V8L2#A TRUCK # P823
D. BOHMACK APPL.#2030L1



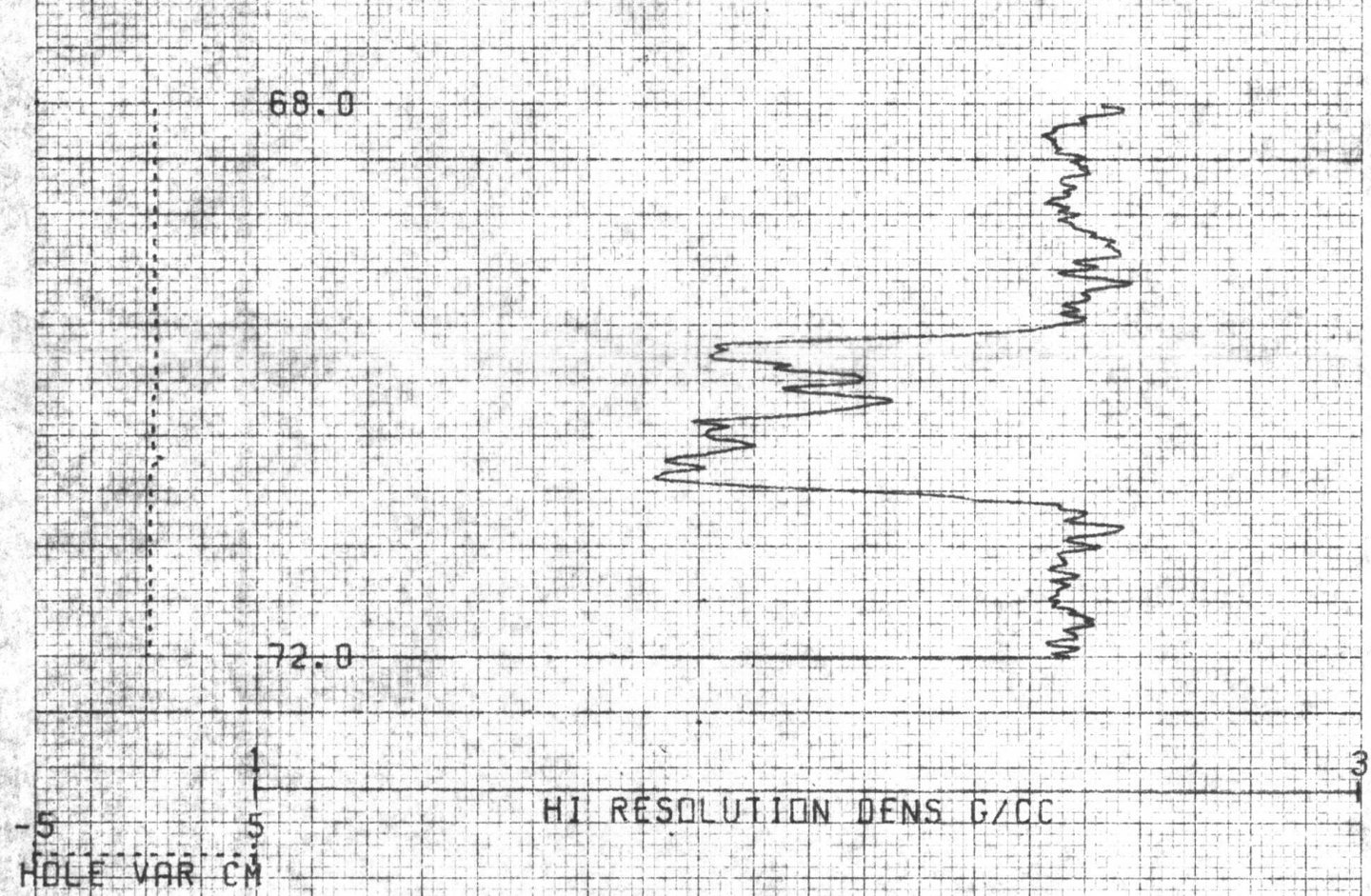

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

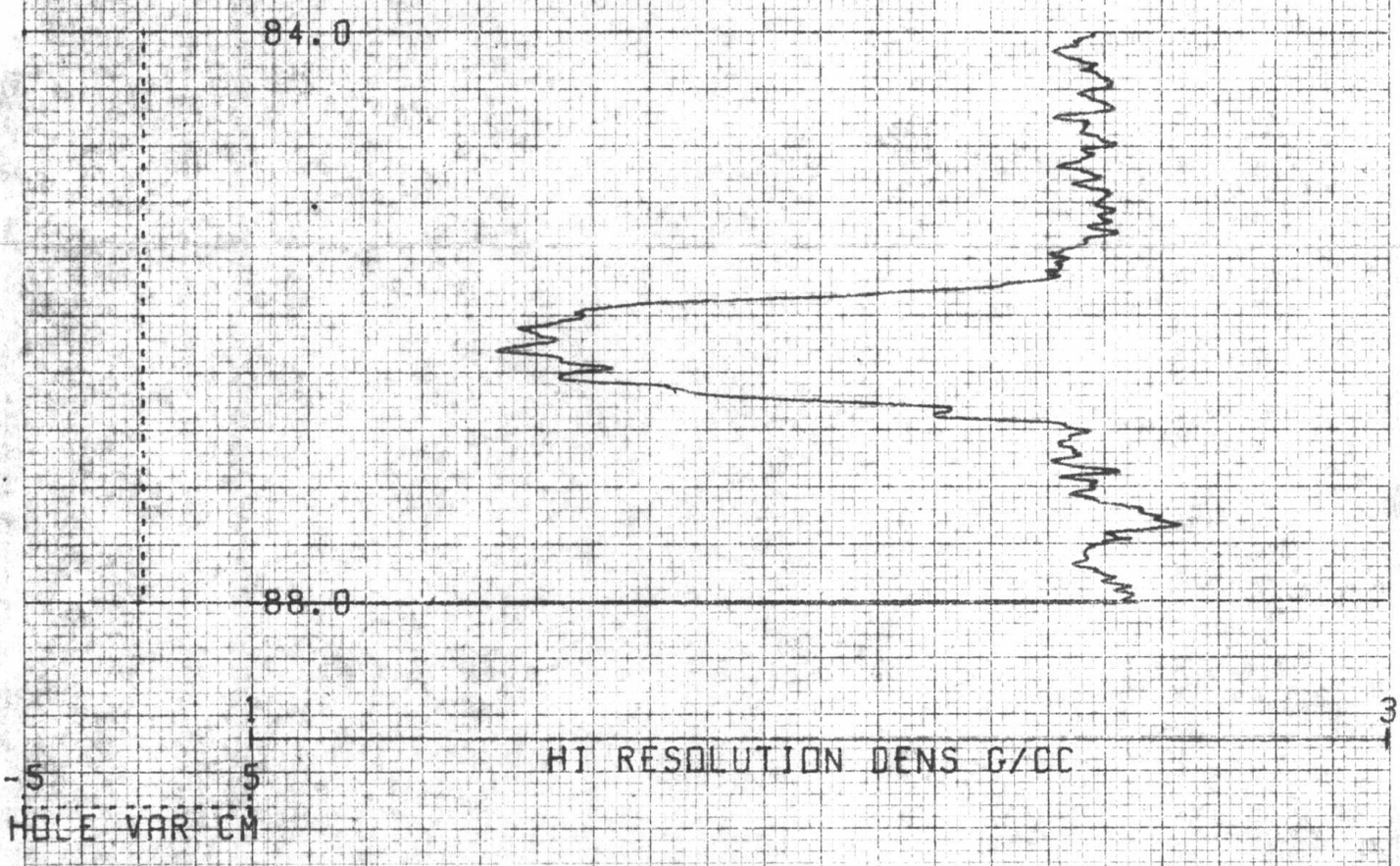



CENTURY GEOPHYSICAL CORP. PART NO. 786-0040




CENTURY GEOPHYSICAL CORP. PART NO. 736-0040

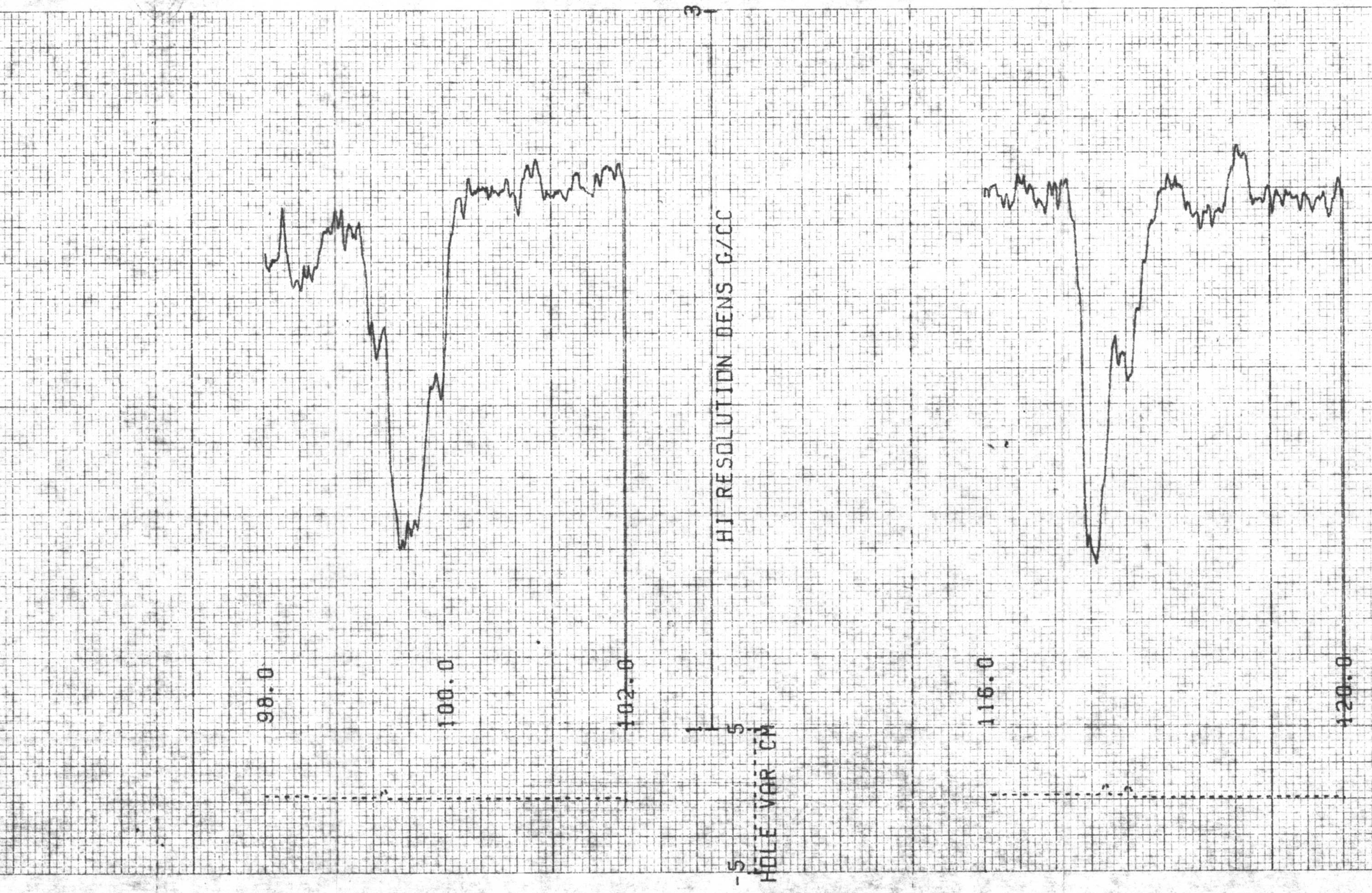


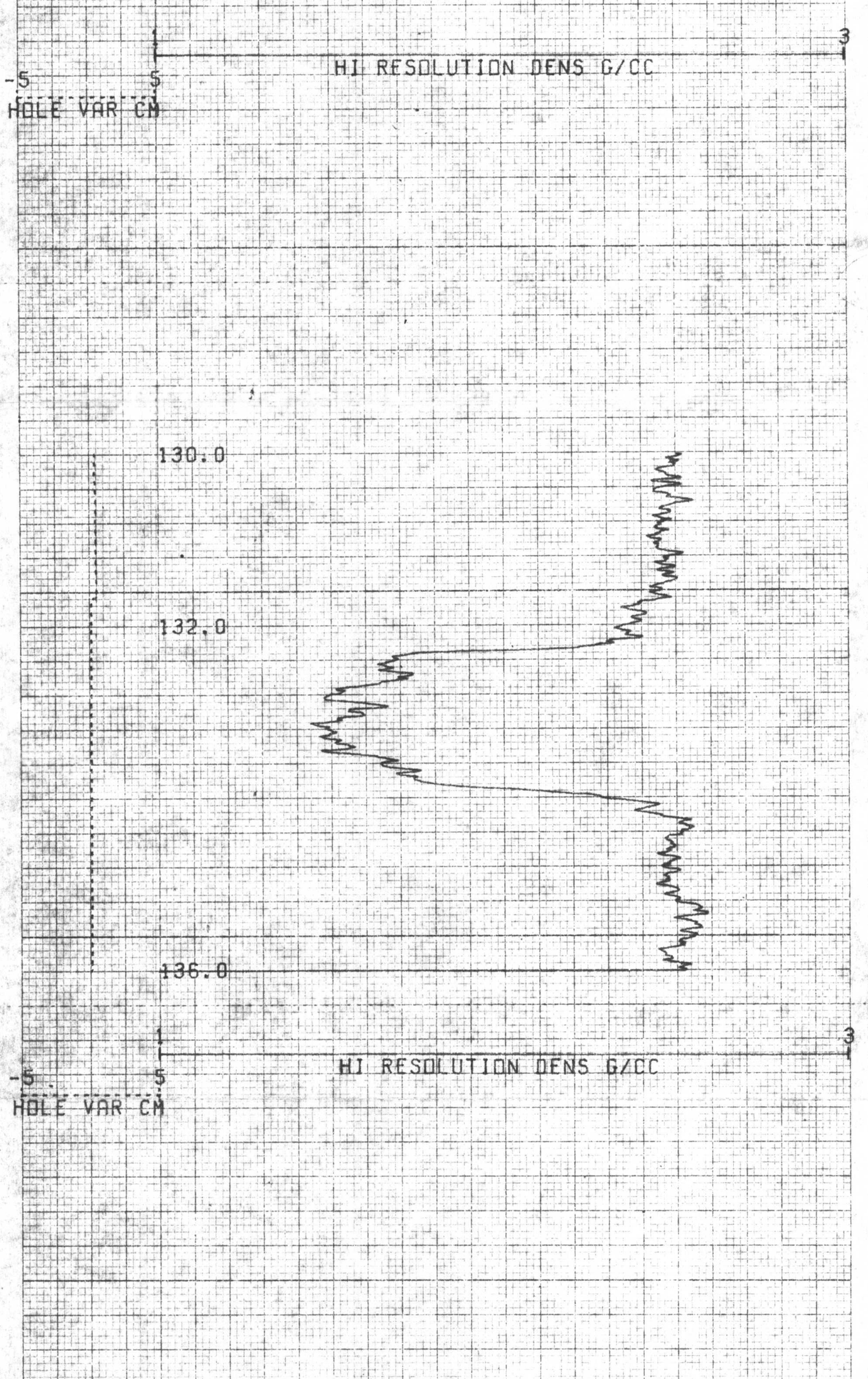




CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

CENTURY GEOPHYSICAL C

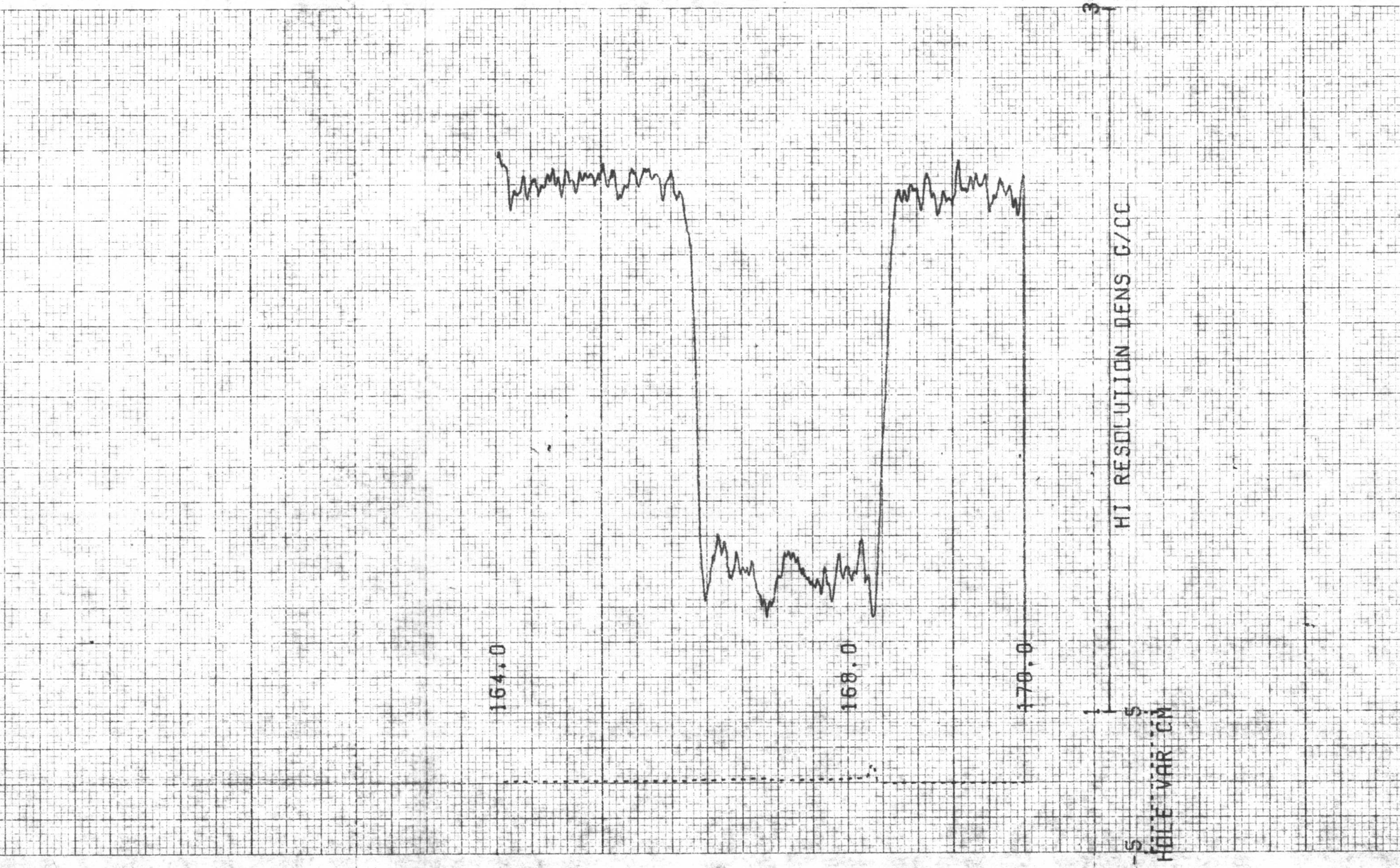
CENTURY GEOPHYSICAL CORP. PART NO. 786-0040








CENTURY GEOPHYSICAL CORP. PART NO. 736-0040


3
HI RESOLUTION DENS G/CC
1
5
-5
HOLE VAR CM
164.0
168.0
170.0

COMPU-LOG V8L3 PLOT 09-02-82

695

DDH-82-006

GULF CANADA RES. INC

KLAPPAN MTN.

HOLE DIAMETER : 09.8

PROBE # 9030A - 406

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 6043

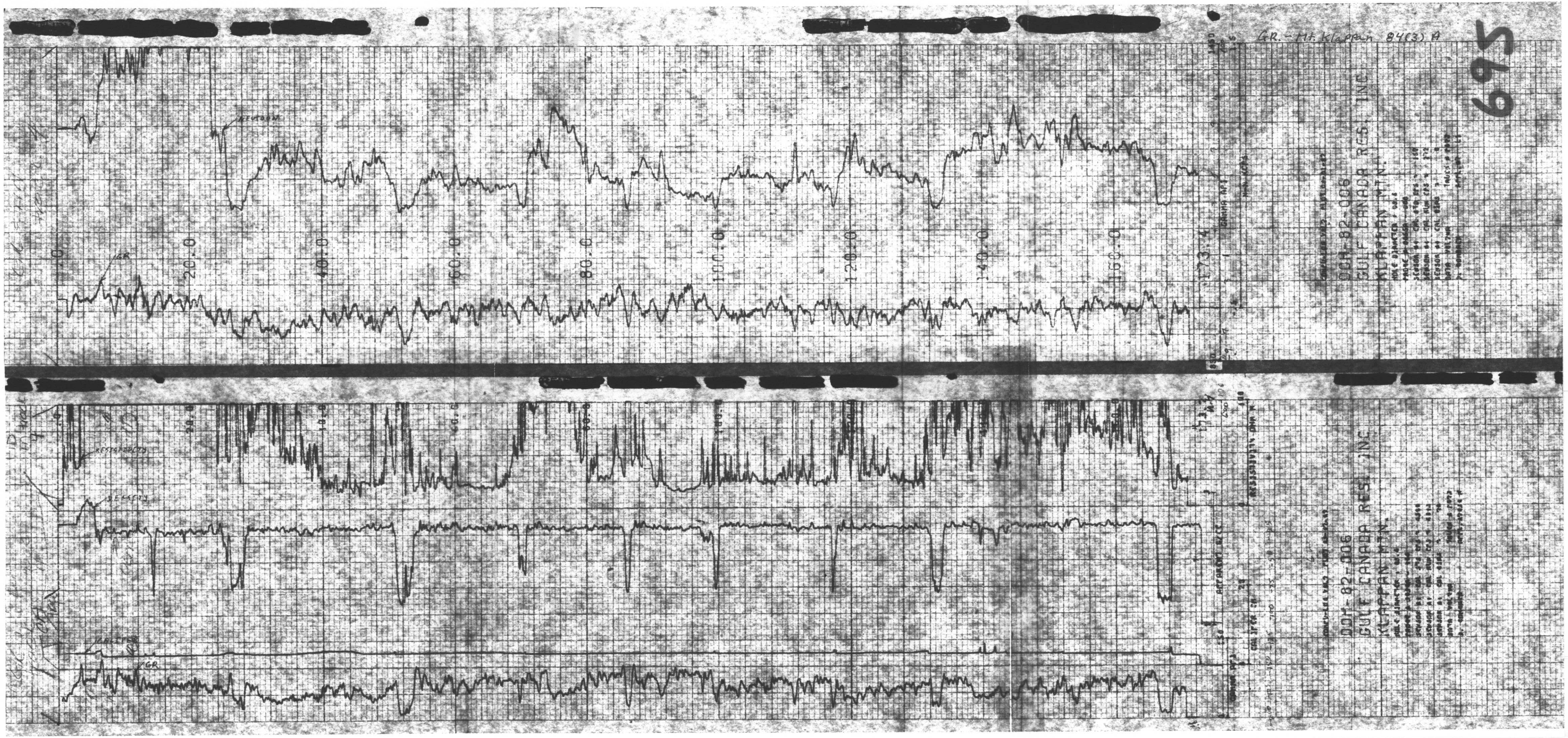
SENSOR #4 CAL BIAS = 28

DATA V8L2*A TRUCK # P823

D. BOMBACK APPL.#1 TN

GR. - Mt. Klappan 84(3)B

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040


GR. - Mt. Klappan 8403) A
695
RESTIVITY
GR
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
DOH-82-006
GULF CANADA RES. INC
KLAPPAN MTN.
RESISTIVITY
DEPTH
GR

GR. - Mt. Klappan 84(3) H

# VERTICAL DEVIATION

675

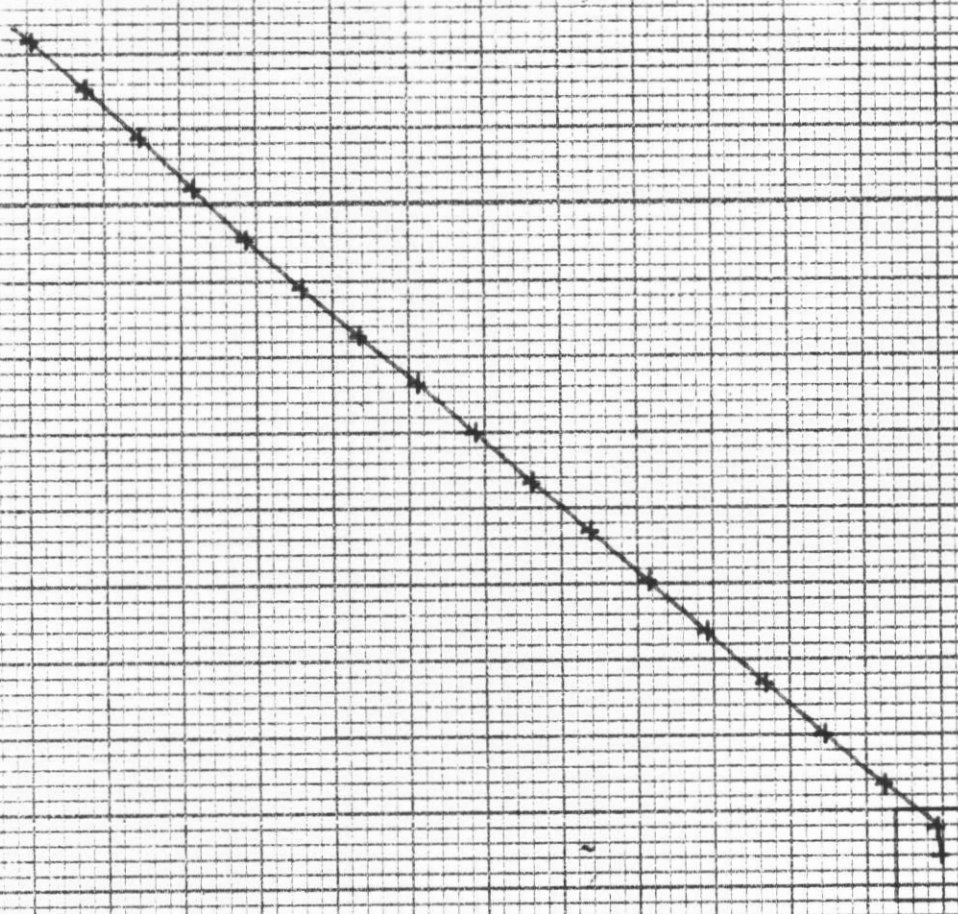
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

CLIENT : GULF CANADA RES. INC
LOCATION : KLAPPAN MIN.
HOLE ID : DDH-82-006
DATE OF LOG : 09-01-82
PROBE : 9055A 0008

SCALE: 5.00 M/DIV
MAG DECL: 29.5
TRUE DEPTH: 150.0 M
AZIMUTH: 311.9
DISTANCE: 82.08 M

+ = 10.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑



CENTURY GEOPHYSICAL CORP.

695

GR. - Mt. Klappan 84(3)A

DIRECTIONAL SURVEY

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG VSLI DEVIATION

CLIENT : GULF CANADA RES. INC — HOLE ID : DDH-82-006

LOCATION : KLAPPAN MTN. — DATE OF LOG : 09-01-82

DATA FROM : VSL2*B — PROBE : 9055A 0008

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|---|---|---|---|---|---|---|---|
| .00 | .00 | .00 | .00 | .00 | 0 | 0 | 0 |
| 10.00 | 8.53 | 3.33 | -4.01 | 5.21 | 309.7 | 31.4 | 309.7 |
| 20.00 | 17.06 | 6.66 | -8.02 | 10.43 | 309.7 | 31.4 | 309.7 |
| 30.00 | 25.58 | 10.23 | -11.27 | 15.60 | 311.8 | 31.2 | 312.6 |
| 40.00 | 34.14 | 13.72 | -15.55 | 20.74 | 311.4 | 30.9 | 312.6 |
| 50.00 | 42.75 | 17.10 | -19.36 | 25.84 | 311.5 | 30.6 | 311.6 |
| 60.00 | 51.37 | 20.45 | -23.16 | 30.90 | 311.3 | 30.4 | 311.3 |
| 70.00 | 60.01 | 23.76 | -26.96 | 35.94 | 311.4 | 30.2 | 311.4 |
| 80.00 | 68.66 | 27.05 | -30.74 | 40.95 | 311.4 | 30.0 | 310.9 |
| 90.00 | 77.33 | 30.31 | -34.52 | 45.93 | 311.3 | 29.9 | 310.7 |
| 100.00 | 86.01 | 33.53 | -38.29 | 50.90 | 311.2 | 29.7 | 310.4 |
| 110.00 | 94.70 | 36.72 | -42.06 | 55.84 | 311.1 | 29.5 | 310.2 |
| 120.00 | 103.42 | 39.90 | -45.80 | 60.74 | 311.1 | 29.3 | 310.3 |
| 130.00 | 112.14 | 43.09 | -49.48 | 65.62 | 311.1 | 29.1 | 310.9 |
| 140.00 | 120.88 | 46.32 | -53.09 | 70.46 | 311.1 | 28.9 | 311.8 |
| 150.00 | 129.63 | 49.42 | -56.79 | 75.29 | 311.0 | 28.9 | 309.9 |
| 160.00 | 138.41 | 52.48 | -60.46 | 80.06 | 311.0 | 28.5 | 309.6 |
| 170.00 | 147.13 | 55.91 | -63.98 | 84.91 | 311.2 | 29.1 | 314.9 |
| TD 173.10 | 149.85 | 56.91 | -65.00 | 86.40 | 311.2 | 28.5 | 312.3 |

LEGEND

RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
SWAMP
WATER LEVEL — EL 3051
TREE LINE
CONTOURS, INDEX — 1750
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION — 7654

SCALE 1:10,000

0 0.25 0.5 0.75 1.00 MILES

100 0 100 200 300 400 500 600 700 800 900 1 KM METRES

HOBBIT - BROATCH RESOURCE AREA
INDEX MAP




LEASE BOUNDARY

GEOLOGICAL LEGEND

FIELD CONTROL POINT ⊕ CP 155
DIAMOND DRILL HOLE ⊙ DDH82002
TRENCH LOCATION ⋊

GR. - Mt. Klappan 94(2) N

695

**GULF CANADA RESOURCES INC.**
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY

HOBBIT - BROATCH

TRENCH & DRILL HOLE LOCATION MAP

| | |
|---|---|
| PREPARED BY: G.S., E.L. | SCALE 1:10,000 |
| APPROVED BY: G.S. | DATE: JAN. 1985 — DWG. No. KPN84HB-C03 |