BOOK 1 OF 4

K-ELK RIVER 77(3) B

DIAMOND DRILL
CORE
LOGGING
DH-1 to DH-29

276

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 1 Size of core: HQ Total depth: 702 ft
214 m

Location: EMGS co-ordinates - N 5582318.702
E 649431.655

Baseline co-ordinates - N 149+93.8
E 34+ 95.7

Elevation - ft 5758.9
m 1755.313

Date of starting : March 1/77
Date of completion : March 12/77

Logging by : Rob G. Wilson
on : March 12, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
61	200	87 "	N 36 Degrees E

Recovery of coal : $\frac{21.0}{34.1}$ ft = 62%

Remarks :

GEOLOGICAL BRANCH
ASSESSMENT REPORT

NO 276

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-1

Footage		Recovery		Description
from	to	feet	%	
0	60			Overburden (No core)
60	171			Sandstone: Grey to dark grey, fine grained, cross-bedded, interbedded siltstone. Core highly broken to rubbled. Zones of possible fault gouge or coal seams. Bedding 20° to core axis at 70'. Fault gouge? at 61' to 63'. Bedding 0 - 5° to core axis at 77'. 79 - 96 Core rubbled - 4' core recovery. 94 - 97' - Fault gouge? = coal seam. Bedding 0 - 4° to core axis at 98' Bedding 0 - 2° to core axis at 106'. Bedding 0° to core axis with slight syn? - antiformal structure at 115'. Clay cemented breccia at 120 - 121. (Fault gouge?) 122 - 123 clay cemented breccia along a bedding plant (thrust gouge?) Bedding 0-4° to core axis at 129'. Very fine grained sandstone 108 - 129' (almost siltstone) 129 - 131 Medium to fine grained sandstone. 131 - 132 Rubbled core. 132 - Core moderately broken to good condition (mainly good) Bedding 24° to core axis at 133' Bedding 48° to core axis at 138' " 42° " " " " 142' " 23° " " " " 147' " 35° " " " " 151' " 35° " " " " 155' Rock is a grey to dark grey, fine to occasionally medium grained sandstone. Siltstone interbeds, from 1" to 1' common. Crossbedded, with wavy bedding and fairly marked bedding changes. Bedding 43° to core axis at 158' Bedding 45° to core axis at 170'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-1

Footage		Recovery		Description
from	to	feet	%	
171	180.4			Siltstone: Dark grey, very fine grained, minor interbeds of sandstone, interbeds of mudstone. Plant fragments, thin coal seams and stringers. ? Fault Gouge?: Clay cemented breccia 177.0 - 177.9 Bedding 28° to core axis at 176'.
180.4	191.0	6.0 10.6	57	Coal Seam: Sampled (DH1-1) No partings.
191.0	218.7			Sandstone: Dark grey, fine grained interbedded siltstone and shale. Plant fragments and thin coal stringers. Bedding 48° to core axis at 195' " 41° " " " " 209' " 42° " " " " 216' Top 3' of unit is mainly siltstone.
218.7	222.0	3.3 3.3	100	Coal Seam: Sampled (DH1-2) No partings.
222	332.6			Siltstone: Dark grey, very fine grained, interbedded mudstone and sandstone and shale. Coal seams (minor) Bedding 50° to core axis at 226' " 47° " " " " 233' " 40° " " " " 246' " 26° " " " " 267' 272 - 292 Core rubbled. Gouge Zones? 273, 278, 281, 284 Clay matrix, siltstone breccia. 292 - 314: Core highly broken to rubbled 292 - 294.5 - Core highly fractured and some clay matria breccia. No bedding distinguishable 300 - 307 Core highly fractured Clay matrix breccias. Minor coal seams. Bedding 40° to core axis at 308. 309 - 312 Clay matrix breccia 312 - 332 Sandstone increased to 45%. 314 - 332 Core moderately to highly broken. Bedding 64° to core axis at 314' Bedding 44° to core axis at 327'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-1

Footage		Recovery		Description
from	to	feet	%	
332.6	337.2			Coaly Shale: Dark grey to black, highly fractured miature of shale, coal, dirt? and minor clay and mudstone.
337.2	343.7	5.7/6.5	88	Coal Seam: Sampled (DH-1-3) Partings 339.0 - 339.2 Coal is generally not pure dirt and/or clay.
343.7	466			Sandstone: Dark grey, very fine grained, interbedded siltstone, mudstone, shale and thin coal seams. Coal seams at 351.3 - 351.6 352.5 - 352.6 Mostly siltstone to 352' Bedding 60° to core axis at 345' Bedding 55° to core axis at 354' Bedding 61° to core axis at 365' Bedding 40° to core axis at 375' 364 - 372 mostly siltstone 377 - 387 mostly siltstone Bedding 53° to core axis at 387' Bedding 55° to core axis at 393' 396 - 410 - Less siltstone- almost a clean sandstone still fine grained, but lt. grey to grey. Bedding 58° to core axis at 404' Bedding 60° to core axis at 413' Bedding 64° to core axis at 421' 410 - 421 slight increase in amount of siltstone 421 - Clean, light grey to grey, 466 medium grained sandstone Thin coal seam at 424 425.7 - 425.8 Band of pyrite sandstone is generally banded lighter and darker on an average every 1/8 - 1/2". No set pattern for spacings. Contains more pyrite at random intervals than seen before. Bedding 65° to core axis at 427' Bedding 60° to core axis at 435' Bedding 58° to core axis at 447' Bedding 70° to core axis at 453' Bedding 55° to core axis at 465' Sandstone is salt and pepper in appearance cross bedding does occur but is not common. Most fracture in core are at very thin shaly layers. ? Shale in Basal SST?

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-1

Footage		Recovery		Description
from	to	feet	%	
				Watch for clean fine grain sst preceeding and short section of interbedded sand and siltstone just before this unit.
466	471	2.6/5.0	52	Coal seam: sampled (DH-1-4) No partings.
471	497			Siltstone: Dark grey, very fine grained, quite shaly with some sandstone interbeds. Plant fragments and thin coal. Stringers, some broken core 477 - 478. Bedding 59° to core axis at 472' Bedding 60° to core axis at 483' Bedding 60° to core axis at 492'
497	505			Sandstone: Grey to light grey, fine to medium grained crossbedded, interbedded siltstone and shale. 497 - 501 Clean - salt and pepper sandstone. Heavily cross bedded. Bedding 64° to core axis at 500' Bedding 55° to core axis at 504'
505	513.7	3.4/8.7	39	Coal seam: Sampled (DH-1-5) No partings.
513.7	591			Sandstone: Grey to dark grey, fine grained, occasionally crossbedded, interbedded siltstone & shale. Siltstone 45 - 50% 513.7 - 527 Siltstone 10% 527 Bedding 56° to core axis at 517' Bedding 55° to core axis at 529' Bedding 52° to core axis at 539' Bedding 49° to core axis at 549' Bedding 50° to core axis at 559' Bedding 42° to core axis at 568' Bedding 44° to core axis at 578' Bedding 60° to core axis at 588' Below 532, sandstone grain size increases slightly to fine medium grained. Bedding becomes more regular, with less cross bedding.
591	609			Sandstone & Siltstone: Interbedded (syclic sedimentation) siltstone and sandstone (60% - 40%) and shows possible violent and/or ?bioturbation? like bedding features - "Pebbles" of sandstone appear in silty layers, lenses of sandstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-1

Footage		Recovery		Description
from	to	feet	%	
				Bedding 57° to core axis at 599' Bedding 62° to core axis at 607' 601.7 - 602.0 - Clay (mud) in core like form. Either natural? or from drilling. Occurs just at the end of a run.
609	702			Sandstone: Light grey, medium grained, only occasiona crossbedding, clean "salt & pepper" sandstone. Bedding, (bands of more "pepper") 1/8" to 3' thick. Bedding 63° to core axis at 617' Bedding 55° to core axis at 622' Bedding 61° to core axis at 633' Bedding 65° to core axis at 643' Bedding 50° to core axis at 651' Siltstone band 646.3 - 647.4 Bedding 51° to core axis at 663' Becomes slightly fine grained below 656 Bedding 54° to core axis at 671' 680 - 689 core moderately to some highly broken sections. Bedding 55° to core axis at 683' Bedding 51° to core axis at 693' Bedding 54° to core axis at 702' Sandstone is still finer grained than above 656. Clean, infrequent cross bedding, Bedding bands are not as sharply define even than in the section above 656'. End of Hole 702' March 12/77 Rob G. Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 2 Size of core: HQ Total depth: 1158 ft
353 m

Location: EMGS co-ordinates - N 5582288.813
E 649283.055

Baseline co-ordinates - N 150 + 13.7
E 29 + 98.8

Elevation - ft 5689.6
m 1734.190

Date of starting : March 13/77
Date of completion : March 31/77

Logging by : G.C. Singhai
on : March 31/77

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	88 "	N 13 degrees E
460	140	86 "	N 9 " W
690	210	86.4 "	N 10 " E
920	280	87.1 "	N 10 " E
1116	340	87.3 "	N 21 " E

Recovery of coal : $\frac{65.7}{131.7}$ ft = 50%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
0	86			Overburden : No core
86	316			Siltstone: Dark grey, very fine grained, carbonaceous laced with plant fragments. Bedding 29° to core axis at 87' 86 - 107 core highly broken Mudstone and shale interbeds. 92 - 93 highly fractured shale Bedding: 0° to core axis at 94' 95 - 103 highly fractured, shaly rock. 100 - 101 random, tiny coal stringers in a clay matrix 105 - 105.5 minor coal? stringers in a clay matrix as at 100 - 101 107 - 127 moderately broken core Bedding 26° to core axis at 110' Bedding 28° to core axis at 115' 120 - 121.5 highly fractured rock with some clay matrix. Bedding 24° to core axis at 122' 127 - 127.5 clay matrix breccia Bedding 34° to core axis at 130 Sandstone increases past 132' 127 + good core Bedding 55° to core axis at 134' Bedding 59° to core axis at 140' core is slightly shaly throughout Bedding 56° to core axis at 146' Bedding 50° to core axis at 155' 156 - 158 highly broken core Bedding 55° to core axis at 161' Fractures, near parallel, at 10° to core axis at 161. Movement 1/2" Bedding 59° to core axis at 168' 169 - 182 highly broken to rubbled core. 176 - 181 sandstone near 50% of rock 174 - 175.3 cement core 172 - 173 Breccia + clay (dirt) Bedding 55° to core axis at 176 Bedding 44° to core axis at 178 174.1 - 174.4 179 - 179.5 - Clay matrix breccia (Fault gouge?)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
				181 - 186 core in good condition Bedding 50° to core axis at 183' 186 - 241 core highly broken to rubbled 191.5 - 198.6 highly fractured shale. 198.6 - 199.3 Coal 199.3 - 200.0 mudstone 200.0 - 200.9 Coal 200.9 - 202.0 Coal & Shale Bedding 35° to core axis at 203' 212 - 213 calcite healed ("solution collapse breccia) 213 - 215 clay matrix breccia NOTE: 216 - 230.5 core missing. Cave in and used tricone bit to drill thru. 230.5 - Core in moderate to good condition with some rubbled sections 246 - 248 highly broken Bedding 43° to core axis at 231' Bedding 49° to core axis at 236' Bedding 40° to core axis at 244' Bedding 43° to core axis at 257' Bedding 35° to core axis at 266' Highly broken to rubbled core 266 - 272 Clay 278.0 - 278.4 278.0 - 278.6 highly broken core also 274 - 275.5 Bedding 42° to core axis at 276 Bedding 43° to core axis at 280 Core highly broken to rubbled 282 - 286 Bedding 40° to core axis at 287 Bedding 40° to core axis at 295 286 - 312 core moderately broken to good condition Bedding 45° to core axis at 302 Bedding 50° to core axis at 312 1.5 recovery 307 - 312' 312 - 313.2 cemented zone. 2.3' recovery (including cement between 312 + 317.
308.7	350.0	17.2 42.6	40	Coal Seam: Sampled (DH-2-1) Exact start of coal seam difficult to tell due to cemented zone - poor recovery suggest use geop. logs to determine *(308.7' is from density log)* G.P. Log indicates parting @ 327.1 - 328.8 329.7 - 335.3 341.9 - 342.9

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
				? - 317 parting o, total recover = 1.0 317 - 322 parting.3, total recovery = 3.0 322 - 328 " 0, " " = 0 328 - 331.6 " 0, " " = 2.6 331.6 - 337 " .5, " " = 1.0 337 - 342 " 0, " " = 3.0 342 - 347 " 0, " " = 4.5 347 - 350.0 " 0, " " = 2.1
350.0	377			Siltstone: 350 - 358 very carbonaceous, coaly siltstone and mudstone, thin coal seams (356.4 - 357.9) 358+ Dark grey, very gine grained, slightly carbonaceous and slightly shaly. Bedding 33° to core axis at 360'. Bedding 20° to core axis at 372'.
377	397			Sandstone: Grey, fine grained, interbedded siltstone. 382 - 387 core moderately to highly broken. Bedding 29° to core axis at 380' Bedding 39° to core axis at 390' 387 - 397 core moderately broken.
397	442			Siltstone:*Dark grey, very fine grained, interbedded sandstone clay matrix breccia at contact. ? Tectonic contact? Bedding 24° to core axis at 401' 397 - 402 core moderately broken 402 - 412 core moderately to highly broken, some rubbled core. 410 - 410.6 clay matrix breccia also 411.0 - 411.5 and 418 - 418.5 412 - 417 core rubbled & extensive clay matrix breccias 417 - 468 core moderately to highly broken to rubbled. Bedding 23° to core axis at 423' Bedding 29° to core axis at 432' 437 - 439 - Possible coal seam .3' recovered of near sand type material.
442	464	$\frac{0}{22}$	0	Coal: driller triconed through seam (see G.P. logs)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
464	468			Siltstone: core moderately to lightly broken * - (see description above)
468	523			Sandstone: Grey, fine grained, interbedded siltstone (40-45%). Cross bedded, minor shale. Bedding 53° to core axis at 469' Bedding 54° to core axis at 482' Bedding 36° to core axis at 490' Bedding 56° to core axis at 498' Bedding 45° to core axis at 507' Bedding 35° to core axis at 517' 522.5 - 522.8 Possible fault clay gouge. Possible tectonic contact with below. 519 - 523 slightly coarser grained.
523	534.3			Siltstone: Dark grey, very fine grained, interbedded sandstone. Bedding 45° to core axis at 524' Bedding 37° to core axis at 530'
534.3	545.8	9.7 / 11.5	84	Coalseam: Sampled (DH-2-2) Partings: Mudstone: - 534.7 - 534.8, 535.7 - 536.7 543.4 - 543.6
545.8	556.0			Mudstone: Dark grey, fragments of coal, numerous thin coal seams. Bedding 45° to core axis at 552.0.
556.0	561.6	4.0 / 5.6	71	Coalseam: Sampled (DH-2-3)
561.6	564.3			Mudstone: Dark grey, slightly carbonaceous thin coal seams. Fragments of plants.
564.3	587.4			Sandstone: Grey to light grey, fine grain, cross bedded, occasionally pieces of coal. Bedding 40° to core axis. at 571', and 41° at 588.0, coal seam at 571.8 - 572.0.
587.4	595.0			Mudstone: Dark grey, slightly carbonaceous, fragments of plants, broken core.
595.0	600.0	4.8 / 5.0	96	Coalseam: Sampled (DH-2-4) No partings.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
600.0	610.4			Mudstone: Dark grey, fragments of plants and pieces of coal and numerous thin coal seams. core badly broken coalseam: 609.0 - 609.6.
610.4	620.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone. Crossbedded, pieces of coal and thin coal seams. Coal seam: 614.0 - 615.0, Bedding 52° to core axis at 611.0.
620.0	627.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams, core broken.
627.0	633.8	5.0/6.8	74	Coalseam: Sampled (DH-2-5) no parting.
633.8	648.5			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, occasionally pieces of coal and fragments of plants. Bedding 35° to core axis at 642.0'
648.5	661.5			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, occasionally thin coal seams. Bedding 31° to core axis at 660.0'
661.5	670.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, fragments of plant, pieces of coal.
670.0	687.8			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding 22° to core axis at 674 Core broken. Bedding 38° to core axis at 684'.
687.8	690.8			Siltstone: Grey, very fine grain, interbeds of mudstone, fragments of plants, pieces of coal.
690.8	698.0	6.0/7.2	83	Coal Seam: Sampled (DH-2-6) Parting of mudstone: 694.1 - 695.8
698.0	706			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal, interbeds of sandstone, bedding 44° to core axis at 705.0'.
706	715.0			Mudstone: Dark grey, fragments of plants and pieces of coal, numerous thin coal seams. Core broken.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
715.0	742.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plants, pieces of coal, numerous thin coal seams core broken, (logs of core 720.6 - 731.0 bit broken) coal seams: 734.0 - 734.5, 740.0 - 740.5
742.0	762.0			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. core broken.
762.0	770.5			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal and occasionally thin coal seams.
770.5	774.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone. Crossbedded, pieces of coal, bedding 42° to core axis.
774.0	804.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, fragments of plants, pieces of coal, core badly broken, Bedding 40° to core axis at 792'
804.0	809			Mudstone: Dark grey, fragments of plants. pieces of coal, slightly carbonaceous.
809.0	815			Siltstone: Grey, very fine grain, interbeds of sandstone, pieces of coal. Bedding 67° to core axis at 812.0'.
815.0	817.0			Mudstone: Dark grey, fragments of plants, pieces of coal, core badly broken.
817.0	836.0	12 / 19.0	63	Coalseam: Sampled (DH-82-7) Parting Mudstone: 819.8 - 820.0, 830.0 - 830.2
836.0	843.0			Sandstone: Dark grey, fine grain, interbeds of siltstone, crossbedded, Bedding 42° to core axis at 841.0'.
843.0	852.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plants, pieces of coal.
852.0	870.0			Sandstone: Dark grey, fine grain, massive interbeds of siltstone and mudstone, occasionally pieces of coal. Bedding 20° to core axis at 867.0' core broken.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-2

Footage		Recovery		Description
from	to	feet	%	
870.0	884.4			Siltstone: Dark grey, very fine grain, interbeds of shale, fragments of plants, pieces of coal.
884.4	902.0			Sandstone: Grey to dark grey, fine grain, interbeds of siltstone, pieces of coal, core badly broken. Bedding 19° to core axis at 901.0'.
902.0	926.0			Siltstone: Dark grey, very fine grain, slightly shaly, fragments of plants, and occasionally pieces of coal. core very badly broken.
926.0	966.0			Sandstone: Grey, fine grain, crossbedded, interbeds of silt and mudstone, occasionally thin coal seams. Bedding 54° to core axis at 930' and 32° to core axis at 932.0 and 38° at 940.0'.
966.0	977.5			Siltstone: Dark grey- very fine grain, interbeds of shale and mudstone, fragments of plants, occasionally pieces of coal, bedding 58° to core axis at 973.0. Bedding 60° to core axis at 977.0
977.5	1002.5			Sandstone: Grey, fine grain,crossbedded, interbeds of siltstone, pieces of coal. Bedding 52° to core axis at 979.0 Bedding 50° to core axis at 985.0 Bedding 50° to axis axis at 1000.0 coal seam 998.0 - 999.0.
1002.5	1037.0			Siltstone: Dark grey, very fine grain, interbeds of shale, bedding 58 degrees to core axis at 1012. and 60 degrees at 1034.0. Coal seam 1034.5 - 1034.8.
1037.0	1094.7			Sandstone: Dark grey to light grey, fine grain, crossbedded, interbeds of siltstone, occasionally thin coal seams. Bedding 54 degrees to core axis at 1048.0' 52 " " " " " 1058.0' 50 " " " " " 1067.0' 44 " " " " " 1084.0'
1094.7	1111.0	7.0 16.3	43	Coalseam: sampled (DH-2-8)

DIAMOND DRILL CORE LOGGING SHEET

DDH No.
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Footage		Recovery		Description
from	to	feet	%	
1111.0	1158.0			Sandstone: Grey to light grey, fine to coarse grain, crossbedded, interbeds of siltstone. Bedding 50 degrees to core axis at 1119 " 50 " " " " " 1129 " 54 " " " " " 1138 (Basal Sandstone 1138.5 - 1158) Bedding 50 degrees to core axis at 1155.0' End of Hole at 1158.0' G.C. Singhai March 31, 1977.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage		Recovery		Description
from	to	feet	%	
0	30			Overburden: No core
30	64			Siltstone: Dark grey, very fine grained, interbedded sand stone, slightly shaly. Plant fragments & thin coal seams. Bedding 65 degrees to core axis at 34' Bedding 49 degrees to core axis at 44' Bedding 52 degrees to core axis at 53' Coal Seam: 56.6 - 57.9 57.9 - 64 Shaly siltstone and coal seams under 4"
64.0	74.0	7.4 10.0	74%	Coal Seam: Sampled (DH 3-1) Partings: Shaly siltstone 65.4 - 66.0 70.6 - 71.0 67.0 - 67.4 71.3 - 71.4 70.0 - 70.3 72.0 - 72.4 Coal is generally quite shaly.
74.0	82.8			Siltstone: Dark grey, very fine grained, interbedded mudstone & shale. Carbonaceous, plant fragments and coal seams. Coal Seam 78.5 - 80.1
82.8	86.2	3.2 3.4	94%	Coal Seam: Sampled (DH-3-2) Partings: Shaly siltstone 83.5 - 83.7
86.2	106			Siltstone: Dark grey, very fine grained, carbonaceous, interbedded sandstone & shale. Thin coal seams & plant fragments Bedding 74 degrees to core axis at 88' Bedding 78 degrees to core axis at 102' 103 - 106 core highly broken.
106	149			Sandstone: Grey to dark grey, fine to medium fine grained, occasionally cross bedded, interbedded siltstone. Bedding 66 degrees to core axis at 109' Bedding 58 degrees to core axis at 118' Bedding 64 degrees to core axis at 128'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage from	Footage to	Recovery feet	Recovery %	Description
				133 - 133.3 clay cemented breccia 146 thin coal seam. Bedding 64 degrees to core axis at 140' Bedding 62 degrees to core axis at 148' 149 - 156 moderately broken core 149+ Siltstone 45-55% of core
149	182			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded sandstone & shale. Plant fragments & thin coal seams. Bedding 55 degrees to core axis at 158' Moderately broken core 162 - 167. Bedding 64 degrees to core axis at 168' Bedding 58 degrees to core axis at 178'
182	187			Coaly Shale: Dark grey to black, mixture 60 - 40 shale - coal.
187.0	194.0	3.6/7.0	51	Coal Seam: Sampled (DH 3-3) slightly shaly.
194.0	198.6			Mudstone: Dark grey, carbonaceous thin coal seams.
198.6	200.9	2.3/2.3	100	Coal seam: sampled (DH3-4) no partings
200.9	225.0			Siltstone: Dark grey, very fine grained, interbedded sandstone, mudstone & shale. Plant fragments & thin coal seams. Bedding 52 degrees to core axis at 208' Bedding 49 degrees to core axis at 217' Bedding 46 degrees to core axis at 222'
225	237.9	5.9/12.9	46	Coal Seam: Sampled (DH3-5) Slightly shaly throughout 222 - 225 core highly broken to rubbled. Difficult to tell exact start coal quite broken up.
237.9	259			Sandstone: Grey, fine grained interbedded siltstone & shale. Bedding 43 degrees to core axis at 237' 60 : 40 sandstone: siltstone Bedding 58 degrees to core axis at 248' Bedding 46 degrees to core axis at 258'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage		Recovery		Description
from	to	feet	%	
259	275.8			Siltstone: dark grey, very fine grained, carbonaceous, shaly, some sandstone interbeds, and thin coal seams, Plant fragments Bedding 54 degrees to core axis at 270 degrees core highly broken 273 to start of coal seam. Difficult to tell exact start.
275.8	289.5	9.7 13.7	71	Coal Seam: Sampled (DH3-6) slightly coaly shale 274 - 275.8 Partings: Net texture (Pyrite & coal) 278.1 - 278.3 Coal in solid condition
289.5	304			Sandstone: Grey, fine grained, some cross bedding, interbedded siltstone (60:40) Some vugs, and calcite filled vugs 301 - 304' Bedding 55 degrees to core axis at 290' Bedding 48 degrees to core axis at 301'
304	(319) 317.4			Siltstone: Dark grey, very fine grained, minor sandstone interbeds and some shale. Broken core 305 - 306' Bedding 64 degrees to core axis at 315'
(319)	324.0	4.6 6.6	70	Coal seam: sampled (DH3-7) Partings: Slightly shaly 1st 6" 1/2" Pyrite band 320.6 core mostly broken up.
324.0	365.5			Sandstone: Grey, fine grained, interbedded siltstone. 1/2" pyrite band at 330' Bedding 49 degrees to core axis at 329' Coaly Shale: 333-336.5 Bedding 55 degrees to core axis at 338' Bedding 62 degrees to core axis at 348' Bedding 60 degrees to core axis at 360'
365.5	380.3	12.7 14.8	86	Coal Seam: Sampled (DH 3-8) Partings 365.9 - 366.0 368.2 - 368.3 369.0 - 369.6 370.7 - 370.8 Coal mixed solid and broken.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage		Recovery		Description
from	to	feet	%	
380.3	451.5			Siltstone: Dark grey, very fine grained, interbedded mudstone shale and sandstone. 1st 3 feet from contact is a shaly mudstone. Bedding 63 degrees to core axis at 384' Coal & Mudstone: 390.3 - 392 Not sampled Bedding 56 degrees to core axis at 393' mainly siltstone: sandstone (55:45) after 394 Bedding 52 degrees to core axis at 404' Bedding 48 degrees to core axis at 413' Bedding 65 degrees to core axis at 423' Bedding 57 degrees to core axis at 433' Bedding 53 degrees to core axis at 443' Bedding 53 degrees to core axis at 447' Shaly coal seam 448.5 - 449.0
451.5	463.6	10.4 12.1	86	Coal Seam: Sampled (DH-3-9) Partings (Shaly mudstone) 452.2 - 452.7 455 - 456 461 - 462.7
463.6	471.4			Siltstone: Dark grey, very fine grained, slightly carbonaceous. Interbedded mudstone & shale. Plant fragments and thin coal seams Bedding 50 degrees to core axis at 467'
471.4	481.5	10.1 10.1	100	Coal Seam: Sampled (DH3-10) Partings (Shaly mudstone) 472.3 - 472.6 472.8 - 473.3
481.5	589.5			Siltstone: Dark grey, very fine grained, interbedded mudstone & shale. Plant fragments and thin coal seams. Bedding 50 degrees to core axis at 483' Coal & broken core 487.9 - 488.6 Highly broken core 491 - 494.5 Bedding 60 degrees to core axis at 495' " 45 " " " " " 504' " 60 " " " " " 514'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage from	Footage to	Recovery feet	Recovery %	Description
				increase in sandstone 516 - 522' Bedding 46 degrees to core axis at 523' " 60 " " " " " 535' " 55 " " " " " 543' " 55 " " " " " 553' " 54 " " " " " 563' " 50 " " " " " 572' Coal seam 580.7 - 582.6 1.6' recovery Not sampled Bedding 59 degrees to core axis at 585'
589.5	598.2	8.0/8.7	92	Coal Seam: Sampled (DH 3-11) Partings : Mudstone: 593.6 - 594.0 596.4 - 596.6 597.0 - 597.7 core condition: highly broken to solid
598.2	613			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded sandstone, mudstone and shale. Plant fragments & thin coal seams. Bedding 54 degrees to core axis at 600' Bedding 55 degrees to core axis at 606'
613	621			Sandstone: Light grey to grey, fine grained, cross and distorted bedding. Some siltstone interbeds. Bedding 56 degrees to core axis at 617'
621	650.3			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded mudstone and some sandstone. 621 - 630 fairly shaly (core also moderately to highly broken over this section) 632 - 638 core moderately broken. Bedding 58 degrees to core axis at 632' 642 - 643 core highly broken. Bedding 46 degrees to core axis at 643'
650.3	654.6	4.1/4.3	95	CoalSeam: Sampled (DH 3-12) Parting (Mudstone) 651.8 - 653.2
654.6	723.5			Siltstone: Dark grey, very fine grained, inter bedded sandstone. Plant fragments . Bedding 66 degrees to core axis at 659' slightly coaly 659 - 660

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage from	Footage to	Recovery feet	Recovery %	Description
				Bedding 79 degrees to core axis at 668' Mostly sandstone 665 - 671.
671.9	676.1	3.8/4.2	90	Coal Seam: Sampled (DH 3-13) Partings - none Core condition: solid chunks 1/2" - 2" several half chunks
676.1	689.5			Sandstone: Grey, fine grained, crossbedded, interbedded siltstone and shale. Occasional thin coal seam. Bedding 37 degrees to core axis at 679' " 56 " " " " " 681' " 44 " " " " " 688'
689.5	709.5	15.3/20.0	77	Coal Seam: Sampled (DH 3-14) Partings (Mudstone) 693.7 - 693.8 701.5 - 701.6 695.3 - 695.5 705.1 - 705.2 696.0 - 696.2 698.8 - 698.9
709.5 -	723.5			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded mudstone and shale. 715 - 717 core mod. broken Bedding 64 degrees to core axis at 714.
723.5	734			Shale: Black core highly broken, (siltstone shale Bedding 60 degrees to core axis at 727.5'.
734	841.5			Siltstone: Dark grey, very fine grained, interbedded mudstone, sandstone & shale. Occasional plant fragments and thin coal seams. Bedding 56 degrees to core axis at 737' " 56 " " " " " 745' " 58 " " " " " 755' " 53 " " " " " 765' " 57 " " " " " 774' " 50 " " " " " 785' 787 - 790 Highly broken core. 805.5 - 809 Moderately to highly broken core. Bedding 53 degrees to core axis at 796' " 64 " " " " " 810' " 63 " " " " " 820' " 48 " " " " " 834'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-3

Footage		Recovery		Description
from	to	feet	%	
841.5	870.0	8.0 28.5	28	Coal Seam: Sampled (DH 3-15) Partings: Mudstone Between: 841.5 - 844- .4' Parting .9' Total recove " 844.0 - 849.0-.3' " .4' " " " 849 - 854.0-.0' " 2.4' " " " 854 - 859.0-.3' " 1.8 " " " 859.0 - 864.0-.4' " 1.2 " " " 864.0 - 869.0-.0' " 1.3 " " " 869.0 - 870 0' " 0' " " Note: Between 874 to 869 TAGS, there is 4.0' of carbonaceous siltstone. Core moderately to highly broken hence unable to determing exact end of coal seam. Suggest use GEOP logs to determing. Coal for most part is near mush or broken chips.
870.0	889.0			Siltstone: Dark grey, very fine grained, carbonaceous , interbedded sandstone, mudstone and shale. Thin coal seams and plant fragments. Bedding 56 degrees to core axis at 870' " 60 " " " " " 880' " 58 " " " " " 888' End of Hole 889' March 18, 1977 Rob G. Wilson

DIAMOND DRILL CORE LOGGING SHEET

DDH No.: DH-4 Size of core: HQ mm Total depth: 974 ' m

Location: N
W
Elevation of collar: '
m

Dip of Hole: o
Bearing " : N o

Date of starting:
Date of completion:

Logging by: G.C. Singhai & Rob Wilson
Logging on: March 29, 1977

Remarks:

Recovery: $= \frac{124.4}{145.9} \times 100 = 85$

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 4 Size of core: HQ Total depth: 974 ft
296.9m

Location: EMGS co-ordinates - N 5582175.847
E 648837.805

Baseline co-ordinates - N 149 + 98.7
E 14 + 91.8

Elevation - ft 5168.9
m 1575.481

Date of starting : March 19/77
Date of completion : March 26/77

Logging by : G-C. Singhai & Rob Wilson
on : March 29/77

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	89 "	S 69 degrees E
460	140	86.8 "	N 86 " E
690	210	84.3 "	N 76 " E
920	280	81.5 "	N 80 " E

Recovery of coal : $\frac{124.4}{145.9}$ ft = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-4

Footage		Recovery		Description
from	to	feet	%	
0	30			Overburden: No core
30 (Estimate)	104.3			Siltstone: Dark grey, very fine grained, frequent interbedded sandstone (35-45% of rock) Highly occasional shale and thin coal seams Broken core 30-34' Bedding 54° to core axis at 36' " 49° " " 46' " 57° " " 55' " 39° " " 64' " 42° " " 74' " 43° " " 84' " 50° " " 94' " 47° " " 104'
104.3	120.6	14.4/16.3	88	Coal Seam: Sampled (DH4-1) Partings (Mudstone) 106.7 - 106.9 119.0 - 119.2 Core Condition: Solid to highly broken
120.6	126.8			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbeds of sandstone, shale and thin coal seams. Bedding 51° to core axis at 124'
126.8	138.8	9.5/12.0	79	Coal Seam: Sampled (DH4-2) Partings (Mudstone) 134 - 134.4 135.0 - 136.7
138.8	287.6			Siltstone: Dark grey, very fine grained, slightly carbonaceous, occasional sandstone interbed and coal stringers and seams Bedding 56° to core axis at 145' " 50° " " 154' " 40° " " 164' " 38° " " 174' " 38° " " 184' " 45° " " 194' " 40° " " 202' " 39° " " 214' " 48° " " 224' 228.1 - 229.3 Coal Seam 233.5 - 234.3 Coal Seam Bedding 47° to core axis at 235' " 51° " " 244' " 42° " " 255' " 49° " " 265'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-4

Footage		Recovery		Description
from	to	feet	%	
				Bedding 46° to core axis at 275' " 46° " " 284'
287.6	294.0	6.4/6.4	100	Coal Seam: Sampled (DH4-3) Partings (Mudstone) 288.5 - 288.9 289.5 - 289.9 292.2 - 293.1
294.0	297.7			Siltstone: Dark grey, very fine grained, carbonaceous, interbedded mudstone Bedding 49° to core axis at 296'
297.7	304.5	6.2/6.8	91	Coal Seam: Sampled (DH4-4) no partings
304.5	344.7			Siltstone: Dark grey, very fine grained, slightly shaly Bedding 45° to core axis at 306' " 52° " " 314' 322-324 quite carbonaceous thin coal seams Bedding 55° to core axis at 324' " 36° " " 333' " 50° " " 338' Coal Seam: 339-339.9 339.9-344.7 - very carbonaceous thin coal seams
344.7	353.5	7.6/8.8	86	Coal Seam: Sampled (DH4-5) Partings (Mudstone) 350-6-350.9
353.5	357.7			Siltstone: Dark grey, very fine grained. 353.5-357.7 very carbonaceous, thin coal seams and shale interbedded mudstone Bedding 55° to core axis at 355'
357.7	360.3	2.6/2.6	100	Coal Seam: Sampled (DH4-6) no partings
360.3	409			Siltstone: Dark grey, very fine grained, slightly carbonaceous, plant fragments and thin coal seams. Interbedded sandstone and occasionally mudstone and shale.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
				Bedding 51° to core axis at 364' " 48° " " 373' " 35° " " 383' " 54° " " 393' " 56° " " 399' " 42° " " 407'
409	444			Sandstone: Grey, fine grained, cross bedded, interbedded siltstone, occasionally shale and thin coal stringers Bedding 52° to core axis at 418' " 55° " " 428' " 60° " " 438'
444	475.5			Siltstone: Dark grey, very fine grained, interbedded sandstone and shale Bedding 54° to core axis at 449' " 60° " " 457' Coal Seam: 460.4-462.4 Partings .6' therefore not sampled Siltstone now quite carbonaceous several small coal stringers Coal Seam: 471.3-472.0
475.5	480.3	2.3/4.8	48	Coal Seam: Sampled (DH4-7) Partings: None found Core very broken
480.3	488.7			Shaly Mudstone: Quite carbonaceous, thin coal seams Coal Seam: 486.8-488.7 Not sampled
488.7				Siltstone: Dark grey, very fine grained, interbedded sandstone Plant fragments Bedding 58° to core axis at 490' " 46° " " 502'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-4

Footage from	Footage to	Recovery feet	Recovery %	Description
509.4-524.5		12.5/15.1	83	Coal Seam: Sampled (DH4-8) Partings: 516.7-519.3 521.0-521.5 522.2-522.9
524.5	569.8			Siltstone: Dark grey, very fine grained, interbedded sandstone Bedding 53° to core axis at 525' " 47° " " 536' " 60° " " 544' " 48° " " 555' " 60° " " 564'
569.8	587.8	17.0/18.0	94	Coal Seam: Sampled (DH4-9) Partings (Pyrite) 583.6-583.7
587.8				Siltstone: Dark grey, very fine grained, carbonaceous in areas, interbedded mudstone and shale. Coal seams and plant fragments Shaly Coal Seam: 599.9-602.3 Not sampled Bedding 39° to core axis at 592' " 60° " " 603' " 50° " " 614' Broken core 619'-623' 1/2 pyrite band at 621' Bedding 60° to core axis at 624' " 62° " " 634' " 60° " " 639'
640.3	655.9	15.0/15.6	96	Coal Seam: Sampled (DH4-10) Partings (Mudstone) 3 < 1"
655.9	687.0			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded mudstone. Plant fragments and thin coal seams. Bedding 56° to core axis at 657' " 56° " " 665' " 58° " " 672' " 43° " " 682'

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
687.0	703.0			Sandstone: Dark grey to grey, fine grained, crossbedded, interbedded siltstone Bedding 70° to core axis at 692' " 64° " " 702' 1/4" pyrite band at 702.5
703.0	716.0			Siltstone: Dark grey, very fine grained, slightly carbonaceous, plant fragments, thin coal seams and stringers Coal shale + coal 710-711 Bedding 49° to core axis at 712'
716.0	724.0	6.8 8.0	85	Coal Seam: Sampled (DH4-11) Partings (Mudstone) 718.8-719.0 719.5-719.9
724.0	739.7			Siltstone: Dark grey, very fine grained, interbedded sandstone and shale. Slightly carbonaceous in spots. Plant fragments and thin coal stringers. Bedding 59° to core axis at 726' " 56° " " 735'
739.7	746.3	5.9 6.6	89	Coal Seam: Sampled (DH4-12) No partings
746.3	814.0			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded sandstone and shale. Thin coal stringers and plant fragments Bedding 65° to core axis at 748' " 70° " " 758' " 50° " " 768' " 60° " " 778' " 52° " " 788' " 57° " " 798' " 54° " " 806' " 50° " " 812'
814.0	820.7			Sandstone: Light grey, fine grain, interbeds of shale and siltstone Bedding 62° to core axis at 817.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
820.7	822.8			Siltstone: Dark grey, very fine grain, thin interbeds of sandstone
822.8	847.8			Mudstone: Dark grey, slightly shaly, occasionally thin coal seams, and fragments of plants.
847.8	855.9	3.2 8.1	40	Coal Seam: Sampled (DH-4-13) Parting: Carbonaceous 852.8-852.8-852.6 855.1-855.3
855.9	863.1			Mudstone: Dark grey, slightly carbonaceous, numerous thin coal seams, and fragments of plants
863.1	866.7			Sandstone: Light grey, fine grain, crossbedded, bedding 60° to core axis at 864.5
866.7	908.0			Shale: Dark grey, slightly laminated, and occasionally interbeds of siltstone and sandstone, numerous thin coal seams and fragments of plants. Bedding 70° core axis at 869 and 64° at 890; carbonaceous shale 893.0-895, coal seam 892.5-893.0, 895.0-895.5, 898.0-898.3.
908.0	922.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale, cross bedded. Bedding 58° to core axis at 916.0
922.0	925.0			Mudstone: Dark grey, slightly carbonaceous, numerous thin coal seams, fragments of plants. Coal seam 923.0-923.6
925.0	935.2			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal, occasionally thin coal seams, bedding 58° to core axis at 929.0' (3' core ground at 932.3)
935.2	952	15.0 16.8	89	Coal seam: sampled (DH-4-14) Partings Mudstone: 949.7-950.2
952.0	974.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, occasionally thin coal seams and fragments of plants bedding 68° to core axis at 961.0'. End of Hole at 974 G.C. Singhai March 29, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 5 Size of core: HQ Total depth: 858 ft
261.5 m

Location: EMGS co-ordinates - N 5582140.468
E 648693.332

Baseline co-ordinates - N 149 + 97.9
E 10 + 03.8

Elevation - ft 5148.2
m 1569.171

Date of starting : March 27, 1977
Date of completion : April 2, 1977

Logging by : G.C. Singhai
on : April 3, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
213	65	87 "	N 67 degrees E
426	130	86 "	N 70 " E
639	195	84 "	N 71 " E
837	255	83 "	N 74 " E

Recovery of coal : $\frac{69.5}{81.5}$ ft. = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-5

Footage from	Footage to	Recovery feet	Recovery %	Description
0	44.0			Overburden: No core
44.0	46.0	2.0 / 2.0	100	Coal seam: Sampled (DH-5-1)
46.0	52.0			Shale: Dark grey, fragments of plants, pieces of coal
52.0	63.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone pieces of coal bedding 50 to core axis at 52.0' and 55° at 62.1'
63.0	73.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone fragments of plant, numerous thin coal seams, bedding 54° to core axis at 72.0
73.0	82.2			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding 62° to core axis at 78.0'
82.2	92.5	8.0 / 10.3	78	Coal seams: Sampled (DH-5-2) Parting shale: 84.3-84.5, 88.0-88.6, 89.3-89.5
92.5	109.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, fragments of plants, pieces of core bedding 54° to core axis Coal seam 105.8 - 106.9
109.0	127.0			Sandstone: Grey, fine grain, cross bedded, interbeds of siltstone, bedding 53° to core axis at 117.0
127.0	155.5			Shale: Dark grey, slightly laminated, interbeds of siltstone and sandstone, fragments of plant, numerous thin coal seams, coal seam 148.0-149.0 Bedding 55° to core axis at 131.0, core badly broken
155.5	201.0			Siltstone: Dark grey, very fine grain, interbeds of shale, and sandstone, fragments of plant, pieces of coal, numerous thin coal seams, bedding 57° to core axis at 170.0', bedding 56° to core axis at 186.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-5

Footage		Recovery		Description
from	to	feet	%	
201.0	210.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding - 55° to core axis at 202.0 58° " " 209.0
210.0	213.7	3.3/3.7	89	Coal seam: Sampled (DH-5-3)
213.7	257.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plants, occasionally thin coal seams, bedding 57° to core axis at 240.0
257.0	260.0			Sandstone: Light grey, fine grain, crossbedded, pieces of coal bedding 52° to core axis at 258.0
26.0	270.4	8.6/10.4	83	Coal seam: Sampled (DH-5-4)
270.4	311.0			Sandstone: Grey, fine grain, crossbedded interbeds of siltstone and shale, numerous thin coal seams, bedding 48° to core axis at 271.0' " 50° " " 282.0' " 52° " " 299.0'
311.0	333.1			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, bedding 68° to core axis at 322.0
333.1	338.9	5.0/5.3	94	Coal seam: Sampled (DH-5-5) Parting mudstone: 336.8-337.8
338.4	342.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, numerous thin coal seams, fragments of plants, bedding 60° to core axis at 340.0
342.0	384.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, and shale, bedding - 70° to core axis at 351.0' 58° " " 360.0' 70° " " 381.0'
384.0	392.0			Shale: Dark grey, slightly laminated, fragments of plants

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-5

Footage		Recovery		Description
from	to	feet	%	
392.0	403.0			Sandstone: Dark grey to grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone and shale, bedding 60° to core axis at 397.0, 68° at 402.0
403.0	426.0	21.2/23.0	92	Coal seam: Sampled (DH-5-6) Parting of sandstone: 420.3-420.6, 421.1-422.8, 425.2-425.5
426.0	442.0			Mudstone: Dark grey, fragments of plants pieces of coal, occasionally thin coal seams
442.0	448.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, fragments of plants, bedding 65° to core axis at 447.0
448.0	455.0			Sandstone: Light grey, to grey, fine grain, crossbedded, interbeds of mudstone and siltstone, bedding 55° to core axis at 454.0
455.0	476.			Siltstone: Dark grey, very fine grain, interbeds of shale and siltstone, fragments of plants, bedding 60° to core axis at 476.0
477.0	588.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone, crossbedded pieces of coal, numerous thin coal seams Bedding 64° to core axis at 482.0' 54° " " 500.0' 45° " " 511.0' 48° " " 533.0' 62° " " 564.0' 64° " " 566.0'
588.0	598.5			Siltstone: Dark grey, very fine grain, occasionally fragments of plants, pieces of coal
598.5	610.			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, occasionally thin coal seams. Bedding 50° to core axis at 604.0'
610.0	625.2			Shale: Dark grey, fragments of plant, pieces of coal, slightly laminated, coal seam 615.4-615.8, 616.5, 617.4, 618.0-619.0, 621.3-622.3, bedding 50° to core axis at 620.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-5

Footage		Recovery		Description
from	to	feet	%	
625.2	630.9	5.7/5.7	100	Coal seam: Sampled (DH-5-7)
630.9	654.5			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, numerous thin coal seams, bedding 50° to core axis at 646.0, carbonaceous shale 648.0-649.2
659.5	660.0			Sandstone: Grey, fine grain, crossbedded, bedding 56° to core axis at 659.0
660.0	663.0			Shale: Dark grey, laminated, numerous thin coal seams and slightly carbonaceous
663.0	671.6	6.4/8.6	74	Coal seam: Sampled (DH-5-8)
671.6	735.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, numerous thin coal seams and fragments of plants, bedding 55° to core axis at 683.0 and 60° to core axis at 692.0' 68° " " 723.0' Coal seam: 724.3-724.8
735.0	759.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal Bedding 56° to core axis at 739.0 " 53° " " 758.0
759.0	771.0			Siltstone: Dark grey, very fine grain, interbeds of shale, slightly muddy, fragments of plants, occasionally pieces of coal
771.0	773.5	2.0/2.5	80	Coal seam: Sampled (DH-5-9) Parting shale, 772.5-772.8, 773.0-773.5
773.5	780.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, occasionally thin coal seams bedding 62° to core axis at 779.0
780.0	787.3			Mudstone: Dark grey, fragments of plants, thin coal seams, slightly carbonaceous

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-5

Footage		Recovery		Description
from	to	feet	%	
787.3	789.6	2.3 / 2.3	100	Coal seam: Sampled (DH-5-10)
789.6	803.3			Sandstone: Dark grey, to grey, fine grain, interbeds of shale and siltstone, crossbedded, thin coal seams and pieces of coal Bedding 52° to core axis at 795.5 55° " " 801.0
803.3	810.5	6.0 / 7.2	83	Coal seam: Sampled (DH-5-11)
810.5	822.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding 64° to core axis at 812.0 (From 813.0-818.0 core ground only 1 foot core, 0.5 feet coal)
822.0	849.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, fragments of plants, and occasionally thin coal seams Bedding 65° to core axis at 829.0 60° " " 837.0
849.0	858.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, bedding 64° to core axis at 850' bedding 68° to core axis at 56.0 End of Hole at 858.0 G.C. Singhai April 3, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 6 Size of core: HQ Total depth: 840 ft
256 m

Location: EMGS co-ordinates - N 5582069.226
E 648395.687

Baseline co-ordinates - N 150 + 01.5
W 0 + 00.3

Elevation - ft 5064.5
m 1543.660

Date of starting : April 3/77
Date of completion : April 9/77

Logging by : G. C. Singhai
on : April 9/77

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
262	80	86.8 "	N 69 degrees E
541	165	84.5 "	N 81 " E
820	250	80 "	N 85 " E

Recovery of coal : $\frac{53.7}{62.0}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-6

Footage		Recovery		Description
from	to	feet	%	
0	39			Overburden: No core
39.0	41.7			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal
41.7	66.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone, occasionally thin coal seams Bedding 62° to core axis at 43.0' 60° " " 53.0' 58° " " 64.0'
66.0	69.9			Siltstone: Dark grey, very fine grain, numerous thin coal seams, fragments of plant
69.9	73.0	3.1/3.1	100	Coal seam: Sampled (DH-6-1)
73.0	81.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams
81.0	108.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seam Bedding 54° to core axis at 83.0 60° " " 94.0 60° " " 108.0
108.0	111.1			Mudstone: Dark grey, fragments of plants, pieces of coal
111.1	113.5	2.4/2.4	100	Coal seam: Sampled (DH-6-2)
113.5	121.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal, occasionally thin coal seam Bedding 64° to core axis.
121.5	128.0			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seam

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-6

Footage		Recovery		Description
from	to	feet	%	
128.0	141.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal bedding 60° to core axis at 137.0
141.5	145.0			Coal seam: Sampled (DH-6-3) Parting of shale: 143.5-143.8
145.0	195.5			Siltstone: Dark grey, very fine grain, fragments of plants, interbeds of sandstone, pieces of coal, bedding 58° to core axis at 170.0 50° " " 179.0 54° " " 195.0 Coal seams: 179.5-180.0, 188.5-189.0
195.5	205.0			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams, coal seams 200.5-201.0, 204.0-204.8
205.0	270.3			Sandstone: Dark grey to grey, fine grain, crossbedded, interbeds of shale and siltstone, carbonaceous shale 110-113.0 bedding 72° to core axis at 208.0 54° to core axis at 220.0 66° " " 238.0 50° " " 248.0 52° " " 254.0 58° " " 264.0
270.3	273.0	2.7/2.7	100	Coal seam: Sampled (DH-6-4)
273.0	275.5			Sandstone: Light grey, fine grain, crossbedded, bedding, 55° to core axis at 274.0
275.5	279.8			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams
279.8	284.7	3.5/4.9	71	Coal seam: Sampled (DH-6-5)
284.7	288.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-6

Footage		Recovery		Description
from	to	feet	%	
288.0	295.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, bedding 60° to core axis at 289.0
295.0	319.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, pieces of coal, fragments of plants Bedding 58° to core axis at 302.0 55° " " 318.0
319.0	338.0			Sandstone: Grey, fine grain crossbedded, interbeds of shale and siltstone, occasionally thin coal seams. Coal seams 321.5-323.0, 333.0-332.7 Bedding 60° to core axis at 327. 55° " " 335.0
338.0	354.0			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams Coal seams 341.5-341.7, 342.7-342.9, 349-8-350.6, Bedding 60° to core axis at 351.0
354.0	381.0			Sandstone: Grey, fine grain, cross bedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams Bedding 60° to core axis at 356.0 65° " " 378.0
381.0	403.0			Mudstone: Dark grey, fragments of plants pieces of coal, and numerous thin coal seams interbeds of sandstone Bedding 60° to core axis at 401.0
403.0	413.0			Siltstone: Dark grey, very fine grain, fragments of plants, occasionally pieces of coal
413.0	421.3			Sandstone: Grey to light grey, fine grain, interbeds of siltstone, crossbedded thin coal seams, pieces of coal Bedding 58° to core axis at 414 64° " " 421.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-6

Footage		Recovery		Description
from	to	feet	%	
421.3	442.5			Mudstone: Dark grey, fragments of plants, interbeds of siltstone and shale, numerous thin coal seams, bedding 53° to core axis at 430.0
442.5	456.7	11.6/14.2	82	Coal seam: Sampled (DH-6-6)
456.7	551.0			Sandstone: Grey to light grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal, coal seam 463.0-464.2, 469.7-470.0 Bedding 50° to core axis at 461.0 52° " " 473.0 60° " " 485.0 60° " " 503.0 60° " " 520.0 58° " " 536.0 65° " " 550.0
551.0	562.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants, interbeds of sandstone bedding 65° to core axis at 554.0
562.0	585.5			Sandstone: Light grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal bedding 65° to core axis at 567.0 62° " " 581.0 (Core ground 561-565)
585.5	591.5			Siltstone: Dark grey, very fine grain, interbeds of shale, and fragments of plants, pieces of coal Coal seam: 590.5-591.
591.5	612.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, occasionally thin coal seams, pieces of coal Bedding 63° to core axis at 601.0 70° " " 611.0
612.0	619.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants, pieces of coal, coal seam 616.8-617.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-6

Footage		Recovery		Description
from	to	feet	%	
619.0	626.8	6.3/7.8	81	Coal seam: Sampled (DH-6-7)
626.8	634.7			Sandstone: Dark grey, fine grain, crossbedded, interbeds of siltstone, bedding 55° to core axis at 634.0
634.7	642.8	8.1/8.1	100	Coal Seam: Sampled (DM-6-8)
642.8	658.7			Siltstone: Dark grey, very fine grain, interbeds of sandstone, and shale, pieces of coal, bedding 55° to core axis at 647.0
658.7	664.0	3.5/5.3	66	Coal Seam: Sampled (DH-6-9)
664.0	683.8			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, occasionally fragments of plants, pieces of coal and thin coal seams Coal Seams 675.3-678.0, 681.6-683.0 Bedding 55° to core axis at 665.0
683.8	693.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding 63° to core axis at 684.0
693.0	698.7	5.7/5.7	100	Coal Seam: Sampled (DH-6-10)
698.7	710.7			Siltstone: Dark grey, very fine grain, bedding 60° to core axis at 702.0 56° to core axis at 707.0 Coal Seam; 709.0-709.5
710.0	728.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal Bedding 65° to core axis at 727.0 60° " " 727.0
728.0	743.7			Siltstone: Dark grey, very fine grain, numerous thin coal seams, occasionally interbeds of shale and sandstone, bedding 65° to core axis at 733.0 core broken

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-6

Footage		Recovery		Description
from	to	feet	%	
743.7	748.0	4.3 / 4.3	100	Coal seam: Sampled (DH-6-11) parting of shale
748.0	756.5			Siltstone: Dark grey, very fine grain, numerous thin coal seams, bedding 65° to core axis at 749.0
756.5	798.5			Sandstone: Grey to light gray, fine grain cross-bedded, pieces of coal Bedding 64° to core axis at 769.0 65° " " 781.0 45° " " 791.0
798.5	801.5			Siltstone: Dark grey, very fine grain, occasionally pieces of coal and fragments of plants core broken Coal seam: not sampled
802.5	807.0			Sandstone: Grey, fine grain, crossbedded, bedding 64° to core axis at 804.0
807.0	840.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants, interbeds of sandstone and shale Bedding 64° to core axis at 818.0 66° " " 847.0 End of Hole at 840.0' G.C. Singhai April 9, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 7 Size of core: HQ Total depth: 792 ft
241.4 m

Location: EMGS co-ordinates - N 5582033.274
E 648247.306

Baseline co-ordinates - N 150 + 01.9
W 5 + 01.2

Elevation - ft 5037.1
m 1535.308

Date of starting : April 10, 1977
Date of completion : April 15, 1977

Logging by : G.C. Singhai
on : April 15, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	
262	80	89.8 "	N 21 degrees E
524	160	87.2 "	N 88 " E
771	235	83.7 "	N 90 " E

Recovery of coal : $\frac{36.4}{39.9}$ = 91%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-7

Footage		Recovery		Description
from	to	feet	%	
0	33.0			Overburden (no core) boulders of limestone, sandstone and shale 32-33
33	47.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, thin coal seams, bedding 61° to core axis at 34.0 57° " " 45.0
47.0	55.5			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams
55.5	72.5			Sandstone: Grey, fine grain, crossbedded, bedding 65° to core axis at 60.0' 60° " " 69.0'
72.5	78.0			Mudstone: Dark grey, carbonaceous, fragments of plants, pieces of coal, and numerous thin coal seams, coal seams 72.5-73.0, 76.5-76.9
78.0	114.3			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams, bedding 55° to core axis at 81.0 62° to core axis at 107.0
114.3	116.0	1.7/1.7	100	Coal seam: Not sampled
116.0	189.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams, bedding - 60° to core axis at 125.0 55° " " 142.0 50° " " 160.0 65° " " 171.0 63° " " 188.0 Coal seam: 134-135.0
189.0	196.6			Siltstone: Dark grey, very fine grain, interbeds of mudstone, occasionally fragments of plants
196.6	199.2	2.6/2.6	100	Coal seam: Sampled (DH-7-1)
199.2	222.0			Siltstone: Dark grey, very fine grain, pieces of coal, interbeds of mudstone, and sandstone, bedding 55° to core axis at 201.0 62° " " 212.0 occasionally thin coal seams

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-7

Footage		Recovery		Description
from	to	feet	%	
222.0	232.5			Sandstone: Grey, fine grain, crossbedded, bedding 58° to core axis at 231.0'
232.5	240.0			Shale: Dark grey, slightly silty and laminated, fragments of plants, pieces of coal, and thin coal seams Coal seams 238.9-239.8
240.0	270.			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal, and thin coal seams Bedding 65° to core axis at 243.1 63° " " 258.0 55° " " 268.0
270.0	273.5			Mudstone: Dark grey, fragments of plants slightly carbonaceous, pieces of coal
273.5	290.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 56° to core axis at 276.0 65° " " 286.0
290.0	297.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants, pieces of coal Coal seam 290.5-291.0
297.0	330.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal Bedding 65° to core axis at 311.0 52° " " 325.0 Coal seam: 328.7-329.0
330.5	365.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants, pieces of coal, interbeds of sandstone and shale Coal seam: 335.3-336.2, 340.9-342.2 Bedding 52° to core axis at 337.0 65° " " 354.0 Coal seam: 355.5-356.8, 359.4-359.6
365.0	367.7			Mudstone: Dark grey, slightly carbonaceous, fragments of coal, coal seam 366.2-366.4

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-7

Footage		Recovery		Description
from	to	feet	%	
367.7	372.5	4.8/4.8	100	Coal seam: Sampled (DH-7-2)
372.5	397.0			Shale: Dark grey, laminated, fragments of plants, pieces of coal, interbeds and siltstone and sandstone, bedding 63° to core axis at 376.0
397.0	409.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone Bedding 55° to core axis at 400.0 60° " " 408.0
409.0	433.0			Siltstone: Dark grey, very fine grain, fragments of plants, coal seam 414.0-414.7, 415.4-416.0
433.0	435.5			Sandstone: Grey, fine grain, crossbedded, bedding 60° to core axis at 434.0
435.5	439.8	3.5/4.3	81	Coal seam: Sampled (DH-7-3)
439.8	483.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone, thin coal seams Coal seam 441.9-442.5 Bedding 70° to core axis at 445.0 58° " " 459.0 50° " " 473.0 62° " " 482.0
483.0	490.0			Siltstone: Dark grey, very fine grain, fragments of plant, coal seam 489.5-490.0
490.0	501.5			Mudstone: Dark grey, slightly carbonaceous, numerous thin coal seams, fragments of plants, coal seam 494.0-495.0, 500.5-501.0
501.5	555.7			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, occasionally thin coal seams, pieces of coal Bedding 57° to core axis at 508.0 58° " " 530.0 58° " " 545.0 Breccia zone 553.4-559.4 Coal seams 512.0-512.5, 520.0-521.0, core broken

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-7

Footage		Recovery		Description
from	to	feet	%	
555.7	559.0			Sandstone: Dark grey, numerous thin coal seams, slightly carbonaceous
559.0	561.0	2.0 / 2.0	100	Coal Seam: Sampled (DH-7-4)
561.0	567.2			Siltstone: Dark grey, very fine grain, numerous thin coal seams, carbonaceous 564.7-566.2
567.2	572.3	3.0 / 5.1	59	Coal Seam: Sampled (DH-7-5)
572.3	577.3			Siltstone: Dark grey, very fine grain, pieces of coal
577.3	604.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal, thin coal seams, bedding - 60° to core axis at 582.0 55° to core axis at 604.0
604.5	609.5			Mudstone: Dark grey, slightly carbonaceous, fragments of plants, numerous thin coal seams Coal seams: 605.8-607.5
609.5	623.0			Sandstone: Grey, fine grain, crossbedded, bedding 60° to core axis at 613.0
623.0	650.0			Shale: Dark grey, slightly laminated, fragments of plants, numerous thin coal seams Coal seams: 625.1-625.4, 626.3-626.8, 628.0-628.5, 630.0-631.0, 645.7-646.0, carbonaceous 644-650.0 bedding 60° to cove axis at 632.0'
650.0	672.8			Sandstone: Grey to light grey, fine grain, crossbedded, bedding 64° to core axis at 660.0 bedding 65° to core axis at 672.0
672.8	693.0			Siltstone: Dark grey, very fine grain, numerous thin coal seams, coal seam: 673.5-674.0 carbonaceous shale 679.5-681.6, 682.5-683.7, 691.4-692.4

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-7

Footage		Recovery		Description
from	to	feet	%	
693.0	703.0			Sandstone: Grey, fine grain crossbedded, bedding 65° to core axis at 878.0
703.0	728.0			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal, interbeds of sandstone, bedding 65° to core axis at 718.0'
728.0	757.7			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal Bedding 68° to core axis at 743.0 56° " " 755.0
757.7	773.3	15.0/15.6	96	Coal seam: Sampled (DH-7-6)
773.3	778.5			Sandstone: Grey, fine grain, crossbedded, bedding 53° to core axis at 775.0 coal seam 776.5-777.1
778.5	782.0	3.5/3.5	100	Coal seam: Sampled (DH-7-7)
782.0	784.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 65° to core axis at 783.0
784.0	786.0	2.0/2.0	100	Coal seam: Sampled (DH-7-8)
786.0	792.0			Sandstone: Grey, fine grain crossbedded, bedding 65° to core axis at 790.0'
				End of Hole at 792 G.C. Singhai
				April 15, 1977

DIAMOND DRILL CORE LOGGING SHEET - G.P. Log Coal Intersections

DDH No. DH-7

Footage		Recovery		Description
from	to	feet	%	
71.0	73.2	2.2		
74.5	76.1	1.6		
113.8	115.8	2.0		
132.2	134.5	2.3		
195.9	198.8	2.9		
238.2	239.8	1.6		
328.4	329.4	1.0		
335.3	336.6	1.3		
341.9	342.9	1.0		
354.1	356.3	2.2		
366.8	372.1	5.3		
413.4	415.4	2.0		
415.7	416.7	1.0		
435.2	439.0	3.8		
442.0	443.6	1.6		
489.2	490.8	1.6		
493.8	495.8	2.0		
500.5	501.7	1.2		
511.5	512.8	1.3		
520.0	521.7	1.7		
558.8	561.0	2.2		
567.0	571.9	4.9		
605.7	608.0	2.3		
637.3	639.1	1.8		
645.0	646.0	1.0		
678.8	680.8	2.0		
682.8	685.4	2.6		
690.6	692.3	1.7		
757.6	773.5	15.9		
779.2	782.2	3.0		
784.5	786.5	2.0		

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 8 Size of core: HQ Total depth: 730 ft
222.5 m

Location: EMGS co-ordinates - N 5581978.004
E 648025.673

Baseline co-ordinates - N 149 + 97.5
W 12 + 50.6

Elevation - ft 5038.6
m 1535.765

Date of starting : April 15, 1977
Date of completion : April 19, 1977

Logging by : G.C. Singhai
on : April 20, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	85.6 "	N 89 degrees E
460	140	82.8 "	N 84 " E
705	215	80 "	N 86 " E

Recovery of coal : $\frac{22.0}{23.2}$ = 95%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-8

Footage		Recovery		Description
from	to	feet	%	
0	57.5			*Overburden (No core)*
57.5	65.0			Mudstone: Dark grey, fragments of plants, interbeds of sandstone, broken core
65.0	68.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, bedding 70° to core axis, broken core
68.0	78.5			Mudstone: Dark grey, fragments of plants, numerous thin coal seams, interbeds of sandstone, bedding 60° to core axis at 73.0 carbonaceous shale 74.3-77.0
78.5	80.8	2.3 / 2.3	100	Coal seam: Sampled (DH-8-1)
80.8	82.5			Mudstone: Dark grey, carbonaceous fragments of plants, numerous thin coal seams
82.5	318.2			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams, bedding 62° to core axis at 36.0' bedding 58° to core axis at 90.0' 63° " " 108.0' Coal seam: 94.3-95.0, 104.2-104.7, 140.5-141.0, 187.0-188.5, 211.5-212.5, 218.2-218.6, 235.5-236.0 bedding 58° to core axis at 132.0' 65° " " 150.0' 65° " " 170.0' 65° " " 192.0' 60° " " 207.0' 60° " " 219.0' 55° " " 243.0' 63° " " 262.0' 60° " " 284.0' 65° " " 295.0' 60° " " 314.0'
318.2	319.9	1.7 / 1.7		Coal seam

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-8

Footage from	Footage to	Recovery feet	Recovery %	Description
319.9	355.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal and numerous thin coal seams, coal seam 323.0-324.0, 329.0-329.7 Bedding 60° to core axis at 331.0 65° " " 337.0 64° " " 353.0
355.5	358.7			Siltstone: Dark grey, very fine grain, carbonaceous, numerous thin coal seams, fragments of plants, coal seam 356.5-357.3
358.7	365.0	5.6 6.3	89	Coal seam: Sampled (DH-8-2) Parting of mudstone: 361.3-361.7, 362.0-363.0
365.0	389.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, occasionally, interbeds of siltstone and shale, bedding 65° to core axis at 375.0
389.0	391.8	2.3 2.8	82	Coal seam: Sampled (DH-8-3)
391.8	401.0			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, bedding 60° to core axis
401.0	407.0			Siltstone: Dark grey, very fine grain, pieces of coal, fragments of plants, coal seam 404.0-405.0
407.0	465.0			Sandstone: Grey, fine grain crossbedded, pieces of coal, bedding 63° to core axis at 412.0 65° " " 430.0 64° " " 446.0 50° " " 456.0
465.0	466.3			Mudstone: Dark grey, carbonaceous and numerous thin coal seams, fragments of plants
466.3	468.7	2.4 2.4	100	Coal seam: Sampled (DH-8-4)
468.7	476.8			Mudstone: Dark grey, carbonaceous, numerous thin coal seams, fragments of plants Coal seam: 474.0-475.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-8

Footage		Recovery		Description
from	to	feet	%	
476.8	479.8	3.0 / 3.0	100	Coal seam: Sampled (DH-8-5)
479.8	503.3			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, thin coal seams bedding 60° to core axis at 482.0' 55° " " 502.0'
503.3	515.0			Shale: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams, bedding 60° to core axis at 512.0'
515.0	521.6			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, bedding 60° to core axis at 520.0
521.6	523.0			Mudstone: Dark grey, carbonaceous, numerous thin coal seams, fragments of plants
523.0	527.4			Siltstone: Dark grey, very fine grain, occasionally pieces of coal and interbeds of sandstone bedding 60° to core axis at 526.0'
527.4	529.7	2.3 / 2.3	100	Coal seam: Sampled (DH-8-6) Parting of mudstone 528.4-529.0
529.7	547.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, coal seams Bedding 58° to core axis at 539.0
547.5	549.6	2.1 / 2.1	100	Coal seam: Sampled (DH-8-7) Parting of mudstone 548.4-588.8
549.6	624.2			Sandstone: Grey, fine grain, crossbedded, pieces of coal, thin coal seams Bedding 60° to core axis at 555.0' 60° " " 572.0' 63° " " 594.0' 56° " " 607.0' 55° " " 622.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-8

Footage		Recovery		Description
from	to	feet	%	
624.2	626.2	2.0 2.0	100	Coal seam: Sampled (DH-8-8)
626.2	707.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal and thin coal seams Bedding 68° to core axis at 630.0' 63° " " 651.0' 60° " " 673.0' 65° " " 680.0' 60° " " 693.0'
707.0	714.2			Siltstone: Dark grey, very fine grain, pieces of coal, and occasionally fragments of plants
714.2	730.0			Sandstone: Grey, fine grain, crossbedded, occasionally pieces of coal, bedding 72° to core axis at 718.0 End of Hole at 730.0' G.C. Singhai April 20, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 9 Size of core: HQ Total depth: 802 ft
244.4 m

Location: EMGS co-ordinates - N 5582877.633
E 649139.509

Baseline co-ordinates - N 170 + 02.1
E 29 + 97.6

Elevation - ft 5691.9
m 1734.891

Date of starting : February 27, 1977
Date of completion : March 13, 1977

Logging by : Rob G. Wilson
on : March 13, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
295	90	87.7 "	N 31 degrees E
787	240	87 "	N 68 " W

Recovery of coal : $\frac{56.2}{65.7}$ ft = 86%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-9

Footage		Recovery		Description
from	to	feet	%	
0	22			Overburden: No core
22	36			Sandstone: Grey, fine grained, interbedded siltstone and shale, 22-23' broken core 23-26.5 bedding 0° to core axis Bedding 18° to core axis at 27' " 33° " " 31' " 40° " " 33' Broken core 33.5-43' Coal seam: 34.3-35.5
36	254			Siltstone: Very fine grained, dark grey, interbedded sandstone, plant fragments, thin clay cemented, rock frogs at 41.8-52.0' Bedding 20° to core axis at 51' Core is mostly sandstone 51'-55' 57'-64' core highly broken 62.5-63' fault breccia? Clay cemented breccia zone 63.4-64.3? coal seam? (Clayey) Bedding 15° to core axis at 54' " 24° " " 57' " 22° " " 66' 67.2' thin clay layer (1") Bedding 26° to core axis at 69' 71-72.2' core highly broken Bedding 21° to core axis at 73' 74.3-74.6 clay interbed (stiff but not rock) Bedding 21° to core axis at 74.9 Core highly broken 75.2-87' Appears to be a very fine grained siltstone 87-95 good core, siltstone, dark grey, very fine grained, interbedded 40% with sandstone Bedding 19° to core axis at 87' " 14° " " 93' Possible thin gauge zone at 91' Broken core from 95-100 siltstone with some coal, thin coal, thin coal seam 95.7-96.0 Moderately broken core 102'-107', 107-112 rubbled core - appears to have some coal in it, near 112 113 - thin coal seam 112-117 - moderately broken core No bedding seen 118 - Bedding? 13° to core axis 117-132 Rubbled core

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-9

Footage		Recovery		Description
from	to	feet	%	
				Possible coal seam at 121-122 and 131-132 May actually be larger but core so badly rubbled there is no way to tell 132-158 core highly broken Rock is still a fine grained siltstone with sandstone interbeds Bedding 13° to core axis at 140' 25° " " 156' 153-155 many randomly oriented coal stringers Bedding 21° to core axis at 161' 40° " " 164' 158-200 core rubbled to highly broken 169.5-171 coal seam? Bedding 40° tp core axis at 175' Past 158 siltstone grain size increases. Some plant fragments noted Bedding 27° to core axis at 196' 200-217 core rubbled to highly broken. Some 1' solid pieces Bedding 10° to core axis at 203' clay cemented breccia (fault gauge?) at 204 Bedding 15° to core axis at 211' 25° " " 217' 217-227 fairly good core, siltstone as before Bedding 8° to core axis at 222 227-240 core highly broken to rubbled Bedding 0° -4° to core axis at 240 240-254 core highly broken and some rubble Gouge zone 246-250 ½ core is siltstone, other half is a clay containing many tiny breccia particles 254-337 core in good condition
254	501			Sandstone & Siltstone: Grey to dark grey, fine to very fine grained interbedded siltstone and sandstone showing lateral changes approximate facies changes (also of siltstone and sandstone) due to low bedding angle to core axis. Thin coal stringers and shale occasionally 254-269 Mainly siltstone 269-284 Mainly sandstone 284-303 Mainly siltstone 303-326 Mainly sandstone 326-338 Mainly siltstone

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-9

Footage		Recovery		Description
from	to	feet	%	
				338-342 Mainly sandstone 342-435 Mainly siltstone Bedding 0° to core axis at 254' 24° " " 258' 16° " " 270' 0-4° " " 274' 11° " " 279' 20° " " 283' 19° " " 288' 19° " " 303' 0-14° " " 307' 22° " " 312' 10-35° " " 316' 26° " " 322' 22° " " 326' 0-5° " " 339' 0-4° " " 342' 392-396 lost core and clay cemented breccia 337-357 moderately to highly broken core 344-347 zones clay cemented breccia (Fault Gouge)? 357-370 Rubbled core Bedding 23° to core axis at 354' 358-363 fault gouge zone 367 clay matrix, siltstone breccia (Fault Gouge)? 370-374 Moderately broken core 374-382 core rubbled to powdered 375-377 & 378-381 Clay matrix, siltstone breccia (Fault gouges)? Rock fracture 11 to core axis and unfilled with clay matrix, siltstone, breccia from 384.2-386.2, 382-387, 391-392 382-393 core rubbled to highly broken Also contains coal fragments 393-432 core good condition, 432 core excellent condition 413 fracture 21° to core axis, calcite healed, movement Bedding 58° to core axis at 395 393-412 Frequent thin coal seams Rock is still a very fine grained, dark grey siltstone, minor sandstone interbeds and thin coal seams and shale, plant fragments

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-9

Footage		Recovery		Description
from	to	feet	%	
				Bedding 46° to core axis at 405' " " 413' 39° " " 423' 42° " " 433' 435-481 mostly sandstone (Siltstone 45%) Bedding 42° to core axis at 436' 46° " " 446' 40° " " 451' 40° " " 460' 42° " " 470' 44° " " 480' 481-501 mostly siltstone and mudstone Bedding 48° to core axis at 494'.
501.0	527.0	22/26	86	Coal Seam: Sampled (DH9-1) Partings (Mudstone) 503.7-507.8 507.8-508.0 508.6-508.9 521.2-521.4
527	548			Siltstone: Dark grey, very fine grained, lst 3' is sandstone and sandstone is interbedded as well. Plant fragments, pieces of coal, thin coal seams Coal seams: 531.8-532.7 534.0-534.2 536.0-537.0 538.8-538.9 539.5-539.8 Bedding 53° to core axis at 528' 52° " " 545'
548	568			Sandstone: Grey, fine grained, interbedded siltstone, minor crossbedding. Bedding 46° to core axis at 557' 58° " " 567'
568	586			Siltstone: Dark grey, very fine grained, slightly shaly, interbedded sandstone. Plant fragments, thin coal seams

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-9

Footage		Recovery		Description
from	to	feet	%	
				Bedding 51° to core axis at 575' 40° " " 585'
586	590			Mudstone: Dark grey to black, slightly carbonaceous, interbeds of siltstone and shale Bedding 52° to core axis at 588'
590	617			Shale: Black, slightly laminated, carbonaceous, containing thin coal seams, sand and siltstone interbeds 599.5-602.6 sandstone interbed Bedding 42° to core axis at 601' 607.5-609.0 Siltstone interbed Bedding 34° to core axis at 610'
617	625.6			Sandstone: Dark grey to grey, fine grained, interbedded siltstone and shale, plant fragments, thin coal seams Bedding 30° to core axis at 618' 60° " " 624'
625.6	643.5	17.9 17.9	100%	Coal Seam: Sampled (DH-9-2) Partings 626.2-626.4
643.5	685.3			Shaly Sandstone: Grey to black, fine grained, interbedded sandstone, siltstone, shale, shaly sand and siltstone. Shaly mudstone near coal contact Bedding 35° to core axis at 649' 40° " " 656' 657-663 mainly shaly siltstone Bedding 34° to core axis at 666' 50° " " 678' Becomes less shaly past 672', by 679 is a light grey, fine to med. grained sandstone, some siltstone and shale (minor) interbeds. Bedding 49° to core axis at 681, some thin coal seams just before contact
685.3	700.6	11.5 15.3	75	Coal Seam: Sampled (DH9-3) Partings 694.0-694.5 698.0-698.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-9

Footage from	Footage to	Recovery feet	Recovery %	Description
700.6	744.2			Sandstone: Light grey to grey, fine to medium grained, occasionally crossbedded, interbedded siltstone and occasionally shale and thin coal stringer, mostly siltstone and fine grained sandstone from contact to 712'. 712' mostly medium grained sandstone. Bedding 44° to core axis at 702 40° " " 713 49° " " 722 40° " " 733 712+ sandstone is medium grained, light grey to grey, salt and pepper appearance similar to basal sandstone. Rock is fairly clean, i.e. low percentage siltstone and shale. Evenly bedded with occasional crossbeds. Contains some calcite healed fractures. 740-741 wavy bedding from 20° to core axis to 65° to core axis Bedding 49° to core axis at 743'
744.2	747.0	2.2/2.8	79	Coal Seam: Sampled (DH9-4) Slightly shaly 746.7-747.0 Coal is slightly dirty
747	757.3			Shale: Black, carbonaceous, slightly laminated pieces of coal, relic sand grains visible 750.5-751.8 bedding - shaly laminations 0° to core axis 755.8 to contact, slightly less shaly
757.3	761.0	2.6/3.7	70	Coal Seam: Sampled (DH9-5) Slightly shaly last 6", coal is slightly muddy (dirty)
761.0	802			Sandstone: light grey to grey, medium grained, salt and pepper, some minor and very thin shale and siltstone interbeds 766-768 core moderately broken Bedding 50° to core axis at 765' 42° " " 773' 55° " " 780' 50° " " 791' 72° " " 802' End of Hole 802' Rob G. Wilson March 13, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 10 Size of core: HQ Total depth: 701 ft
213.7 m

Location: EMGS co-ordinates - N 5582829.758
E 648955.256

Baseline co-ordinates - N 169 + 92.3
E 23 + 73.1

Elevation - ft 5441.6
m 1658.600

Date of starting : March 5, 1977
Date of completion : March 9, 1977

Logging by : Rob G. Wilson
on : March 10, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	89 "	N 63 degrees E
460	140	85.5 "	N 69 " E
656	200	82 "	N 81 " E

Recovery of coal : $\frac{69.7}{84.6}$ ft = 82%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-10

Footage		Recovery		Description
from	to	feet	%	
0	19			Overburden: No core
19	22.5			Siltstone: Dark grey, very fine grained, interbedded sandstone, some calcite stringers Bedding 55° to core axis at 20'
22.5	27.0	2.2/4.5	49	Coal Seam: Sampled (DH10-1) Core highly broken and difficult to tell partings Some shaly coal noticed
27.0	48.2			Siltstone: Dark grey, very fine grained, interbedded sandstone and shale, plant fragments, thin coal stringers Bedding 50° to core axis at 28' 45° " " 26' 47° " " 43'
48.2	58.0	7.0/9.8	71	Coal seam: Sampled (DH10-2) No partings
58.0	109			Mudstone: Dark grey, interbedded sandstone, shale and siltstone, some shaly siltstone beds plant fragments and thin coal seams Bedding 60° to core axis at 68' 57° " " 78' 48° " " 85' 49° " " 104'
109.0	124.3			Siltstone: Dark grey, very fine grained, interbeds of mudstone and very minor sandstone, occasional plant fragment, coal stringer and shale parting Bedding 56° to core axis at 114' 50° " " 122'
124.3	131.4			124.3-130 Coal zone Core highly broken and missing. Distances and measures only approximate. Not sampled. 124.3-126.0 coal seam + 4' parting mudstone 126-128 some coal and some parting but only 5' recovery 128-129.5 mostly siltstone/mudstone 129.5-131.0 coal seam 131.0-131.4 coaly siltstone

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-10

Footage		Recovery		Description
from	to	feet	%	
131.4	162			Siltstone: Dark grey, very fine grained, interbedded with sandstone and shale. Plant fragments thin coal seams, esp. 144-150 and 136-137 Bedding 44° to core axis at 134' 52° " " 143' 60° " " 153'
162	180.4			Sandstone: Grey to dark grey, fine grained, occasionally crossbedded, interbedded siltstone and shale, occasional thin coal seams Bedding 52° to core axis at 163' 50° " " 177' 58° " " 180'
180.4	181.6			Coal Seam: 180.4-181.6 Not sampled
181.6	194.3			Siltstone: Dark grey, very fine grained, interbedded shale and mudstone and some sandstone, plant fragments and numerous thin coal seams
194.3	206.3			Sandstone: Grey, fine grained, crossbedded, interbedded siltstone and shale, thin coal seams and plant fragments Bedding 44° to core axis at 195' 60° " " 204'
206.3	209.8	3.0/3.5	86	Coal seam: Sampled (DH10-3) No partings
209.8	234.5			Sandstone: Grey to dark grey, fine grained, crossbedded, interbedded siltstone and shale Bedding 45° to core axis at 211' 60° " " 222' 68° " " 227' 35° " " 232' 2' to contact is shaly, coaly siltstone
234.5	251.8	16.2/17.3	94	Coal seam: sampled (DH10-4) Partings 241.1-241.2, 241.8-242, 242.9-243.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-10

Footage		Recovery		Description
from	to	feet	%	
251.8	363.			Siltstone: Dark grey, very fine grained, interbedded sandstone, mudstone and shale, plant fragments and thin coal seams and stringers common Bedding 48° to core axis at 254' 57° " " 263' Pyrite stringers at 269-270 Frequent shale and mudstone and coal interbeds 265-397 297-315 increase in amount of sandstone Bedding 55° to core axis at 276' 50° " " 290' 50° " " 302' 54° " " 316' 52° " " 325' 42° " " 342' 340-363 sandstone increases to 45% Bedding 50° to core axis at 352' 44° " " 363'
363	397			Sandstone & Siltstone: 50-50 Proportions of each, grey to dark grey, fine to very fine grained, minor shale Bedding 42° to core axis at 366' 50° " " 379' 52° " " 395'
397	411.4	11.6 14.4	81	Coal seam: sampled (DH10-5) Partings (Mudstone) 409.7-410
411.4	413.8			Siltstone: Dark grey, very fine grained, interbedded coal & shale. Plant fragment Bedding 59 degrees to core axis at 412'.
413.8	423.9	9.9 10.1	98	CoalSeam: Sampled (DH 10-6) Partings (Mudstone) 415.5 - 415.7 423.4 - 423.5
423.9	428.0			Shale: Dark grey to black, slightly laminated, containing thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-10

Footage		Recovery		Description
from	to	feet	%	
428.0	485.0			Siltstone: Dark grey, very fine grained, interbedded with sandstone & shale. Plant fragments & thin coal seams. Bedded 53 degrees to core axis at 437' " 42 " " " " " 447' 451 - 453 calcite healed fracture. 4 degrees to core axis. Calcite contains siltstone breccia. Bedding 53 degrees to core axis at 454' 452 - 461 sandstone increases. 461 - 467 - Mudcracks Bedding 45 degrees to core axis at 463' 467 - sandstone increases to 45% Bedding 50 degrees to core axis at 474' " 44 " " " " " 477' " 49 " " " " " 484'
485.0	494.8	6.4 9.8	65%	Coal Seam: Sampled (DH 10-7) Partings Shaly mudstone: 486.5 - 486.9 492.5 - 492.7
494.8	539.7			Sandstone: Grey to dark grey, fine grained, cross bedded, interbedded siltstone & occasionally shale. Bedding 44 degrees to core axis at 496' " 50 " " " " " 508' " 48 " " " " " 516' " 47 " " " " " 526' " 60 " " " " " 540'
539.7	554.6			Siltstone: Dark grey, very fine grained, interbedded sandstone & shale. Plant fragments. Bedding 58 degrees to core axis at 542' " 43 " " " " " 553'
554.6	562.4	6.4 7.8	82	Coal Seam: Sampled (DH 10-8) Partings (Mudstone) 559.2 - 559.4'
562.4	569.6			Siltstone: Dark grey, very fine grained, high percentage of mudstone & shale. Plant fragments & coal stringers. Bedding 45 degrees to core axis at 564' Bedding 42 degrees to core axis at 569'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-10

Footage		Recovery		Description
from	to	feet	%	
569.6	573.2	3.2/3.6	89	Coal Seam: Sampled (DH 10-9) No partings
573.2	595.6			Sandstone: 1st 3' is a siltstone interbed. Grey to to dark grey. fine to very fine grained. occasiona cross bed. Interbedded siltstone & shale. Plant fragments & thin coal seams. Bedding 44 degrees to core axis at 574' " 51 " " " " " 584' " 60 " " " " " 593' Shaly siltstone/mudstone last 4' to coal contact.
595.6	599.4	3.8/3.8	100	Coal Seam: Sampled (DH 10-10) No partings.
599.4	614			Siltstone: Dark grey, very fine grained, interbedded sandstone. Bedding 48 degrees to core axis at 603' " 52 " " " " " 611'
614	701			Sandstone: Dark grey, fine grained, cross bedded, interbedded siltstone & shale. Thin coal stringers & seams. Bedding 53 degrees to core axis at 619' " 54 " " " " " 629' Siltstone interbed 634 - 646 Bedding 52 degrees to core axis at 644' " 58 " " " " " 656' Core broken 657 - 659 659 - 665 Core moderately broken Bedding 56 degrees to core axis at 662' " 60 " " " " " 670' " 62 " " " " " 679' 681 - 701 siltstone 45% of rock. 685 - 688 core highly fractured. Bedding 62 degrees to core axis at 690' " 69 " " " " " 700' End of Hole 701' March 10/77 Rob G. Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 11 Size of core: HQ Total depth: 942 ft
287.1 m

Location: EMGS co-ordinates - N 5582769.702
E 648694.196

Baseline co-ordinates - N 170 + 03.2
E 14 + 94.3

Elevation - ft 5215.8
m 1589.776

Date of starting : March 10, 1977
Date of completion : March 16, 1977

Logging by : Rob G. Wilson
on : March 17, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
328	100	87 "	N 85 degrees E
623	190	80.7 "	N 81 " E
919	280	76 "	N 82 " E

Recovery of coal : $\frac{106.3}{148.4}$ ft = 72%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-11

Footage		Recovery		Description
from	to	feet	%	
0	10			Overburden: No Core
10	27.0			Siltstone: Dark grey, very fine grained, interbedded sandstone. Moderately broken core-mostly broken along the same plane (bedding?) Plant fragments, & pyrite seen replacing? part of a plant fragment. Bedding 38 degrees to core axis at 15' " 50 " " " " " 22' " 52 " " " " " 28'
27.0	37.8	5.0 10.8	46%	Coal Seam: Sampled (DH 11-1) Partings (Mudstone) 28.2 - 28.4 1" band of pyrite 35.6 - 35.8
37.8	52.2			Sandstone: Grey, fine grained, cross bedded, distorted bedding, interbedded with siltstone shale. Thin coal seam lst 2' from coal contact is siltstone. Bedding 45 degrees to core axis at 42' Bedding 47 " " " " " 48' mainly siltstone after 48.5'
52.2	58.0	4.7 5.8	81%	Coal Seam: Sampled (DH 11-2)
58.0	77.0			Mudstone: dark grey, carbonaceous, very shaly. Plant fragments 61.3 - 63.2 Shaly coal & coal. Interbedded siltstone Bedding 50 degrees to core axis at 69'
77.0	135.8			Siltstone: Dark grey, very fine grained, interbedded sandstone & shale. Plant fragments & blobs of pyrite. Bedding 39 degrees to core axis at 84' Bedding 36 degrees to core axis at 97' Py durbell design on core at 97' Bedding 40 degrees to core axis at 108' " 51 " " " " " 117' thin coal stringers

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-11

Footage		Recovery		Description
from	to	feet	%	
				Bedding 30 degrees to core axis at 129' " 49 " " " " " 134' 132.5 - 135 many calcite stringers
135.8	139.5	2.5 3.7	68%	Coal Seam: Sampled (DH-11-3) No partings
139.5	151			Siltstone: Dark grey, very fine grained, interbedded sandstone. Coal Seam: 141.1 - 142.9 Not sampled Bedding 55 degrees to core axis at 145' Bedding 57 " " " " " 151'
151	164			Sandstone: Grey, fine grained, cross & wavy bedded, interbedded siltstone. Thin coal stringers Bedding 35 degrees to core axis at 158'
164	180			Mudstone: Dark grey, interbedded sandstone, siltstone & shale. 170.5 clay matrix breccia 170.8 Bedding 45 degrees to core axis at 168' " 30 " " " " " 180'
180	251.7			Siltstone: Dark grey, very fine grained, slightly carbonaceous. Plant fragments & thin coal seams. Interbedded sandstone, mudstone & shale. Occasional splotch of pyrite. Bedding 60 degrees to core axis at 191' 194 - 207 quite carbonaceous, frequent thin coal stringers, plant fragments throughout. Bedding 54 degrees to core axis at 200' " 64 degrees to core axis at 214' " 59 degrees to core axis at 233' 240 - 243 quite carbonaceous. 242.6 pyrite band (1") 245 - 247 quite carbonaceous almost coal. Bedding 65 degrees to core axis at 248. 250.0 - 250.6 very carbonaceous, some coal.
251.7	258.8	3.9 7.1	55%	Coal Seam : Sampled (DH 11-4) No partings - slightly shaly 258.5 - 258.8

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-11

Footage		Recovery		Description
from	to	feet	%	
258.8	297.9			Siltstone: Dark grey, very fine grained, interbedded sandstone & shale. Plant fragments & coal seams. Almost a shale. Coal Seam 260.6 - 261.9 Not sampled Brecciation & open space filling (calcarious) at 265 - 265.5 Bedding 51 degrees to core axis at 275' Bedding 55 " " " " " 283' " 54 " " " " " 293'
297.9	304.5	4.3 6.6	65%	Coal Seam: Sampled (DH-11-5) No partings
304.5	307.0			Shale: Dark grey to black, carbonaceous
307.0	312.6	2.9 5.6	52%	Coal Seam: sampled (DH 11-6) Partings 310.6 - 310.7 311.2 - 311.3
312.6	328.1			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded sandstone & shale. Plant fragments & thin coal seams. Bedding 55 degrees to core axis at 317' " 64 " " " " " 325' Thin pyrite band at 317'
328.4	337.2	6.7 8.8	76%	Coal Seam: Sampled (DH 11-7) No partings.
337.2	345.8			Siltstone: Dark grey, very fine grained, interbedded sandstone & shale. Slightly carbonaceous, thin coal seams & plant fragments Bedding 61-45 degrees to core axis at 340-341
345.8	352.0	4.7 6.2	76%	Coal Seam: sampled (DH 11-8) No partings.
352.0	355.2			Siltstone: Dark grey, very fine grained, slightly carbonaceous. Interbedded sandstone & shale. Bedding 52 degrees to core axis at 354'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 11

Footage		Recovery		Description
from	to	feet	%	
355.2	358.6	3.4 / 3.4	100%	Coal Seam: Sampled (DH 11-9) Partings (Mudstone) 356.8 - 357.6
358.6	384.6			Siltstone: Dark grey, very fine grained, interbedded sandstone & shale. Sandstone between 25-40% of rock. 363-364 calcite healed brecciation of siltstone. 365.8 - 366.2 core fractured, with open spaces. Bedding 57 degrees to core axis at 368' " 60 " " " " " 378' 378 - 382 mostly sandstone
384.6	388.9	3.2 / 4.3	74	Coal Seam: Sampled (DH 11-10) No partings
388.9	392.5			Sandstone & Siltstone: 50 - 50 mixture. Slightly carbonaceous, plant fragments, pieces of coal, thin coal seams.
392.5	400.6	5.0 / 8.1	62	Coal Seam: Sampled (DH 11-11) No partings
400.6	475.0			Sandstone: 1st 4' is siltstone, dark grey, very fine grained, carbonaceous. Plant fragments & thin coal seams. Sandstone is grey, fine grained, cross bedded, interbedded siltstone (40%) Bedding 56 degrees to core axis at 407' " 55 " " " " " 421' " 56 " " " " " 431' " 64 " " " " " 438' " 64 " " " " " 450' 452 - 459 mostly shaly siltstone Bedding 54 degrees to core axis at 460' " 56 " " " " " 466' " 57 " " " " " 474' 463 - 465 medium grained, light grey, "salt & pepper sandstone" some thin coal stringers.
475	488.5			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded sandstone, mudstone shale. Plant fragments & thin coal seams. Coal Seam: 478.3 - 480.1 No sampled 482.9 - 483.2 - Breccia zone, healed by pyrite 1" band, quartz & calcite in open space filling. Vugs still open. Bedding 65 degrees to core axis at 482'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 11

Footage		Recovery		Description
from	to	feet	%	
488.5	493.4	4.2 4.9	86	Coal seam: sampled (DH 11-12) Partings 3 <.1"
493.4	520			Sandstone: grey, fine grained, wavy bedded, interbedded siltstone & shale. Plant fragments & thin coal seams. Bedding 60 degrees to core axis at 498' " 40 " " " " " 511' " 62 " " " " " 519'
520	530.0			Siltstone: Dark grey, very fine grained, interbedded. mudstone (45%). Slightly carbonaceous, plant fragments & thin coal seams. Bedding 55 degrees to core axis at 529'
530.0	543.5	13.3 13.5	99	Coal Seam: Sampled (DH 11-13) Partings: Mudstone 531.1 - 531.3 coal is quite shaly throughout 531.8 - 532.4 541.3 - 541.6
543.5	567			Mudstone: Dark grey, carbonaceous interbedded siltstone (40-45%). Plant fragments & thin coal seams. Bedding 59 degrees to core axis at 552' Shaly coal seam 557' - 558.0' Bedding 53 degrees to core axis at 563'
567				Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded mudstone & shale Bedding 49 degrees to core axis at 575' Bedding 57 degrees to core axis at 582'
586.9	593.0	6.1 6.1	100	Coal Seam : Sampled (DH 11-14) Partings : Mudstone 590.8 - 591.1 592.2 - 592.4
593.0	676.0			Siltstone: Dark grey, very fine grained, interbedded sandstone. Slightly carbonaceous, plant fragments, thin coal seams. Bedding 70 degrees to core axis at 596' 604 - 646, mainly siltstone & mudstone (60-40%)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 11

Footage		Recovery		Description
from	to	feet	%	
				Bedding 66 degrees to core axis at 610' " 50 " " " " " 623' Coal Seam: 629.0 - 631.1 .4' parting : not sampled 2.0' 2.1 Pyrite blob 1" at 628' Bedding 54 degrees to core axis at 636' " 60 " " " " " 647' 646 - mainly siltstone & sandstone with some occasional shale. 652 - 654 some broken core Bedding 62 degrees to core axis at 658'
676.0	678.7	2.0 2.7	74	Coal Seam: sampled (DH 11-15) Partings: 676.8 - 677.0 Slightly shaly throughout core condition: Broken solid pieces 1-2".
678.7	694.8			Siltstone: Dark grey, very fine grained, slightly carbonaceous occasional thin shaly coal seams. Interbedded sandstone & shale. Plant fragments. Bedding 63 degrees to core axis at 685' Calcite healed fracture at 688' Bedding 55 degrees to core axis at 694.
694.8	712.5	12.9 17.7	73	Coal Seam: Sampled (DH 11-16) Partings (mudstone) 699.9 - 700.0 700.7 - 700.8 708.9 - 709.0 709.2 - 709.3 711.7 - 709.0 Core condition: Broken solid pieces ½" - 4"
712.5	822.1			Siltstone: Dark grey, very fine grained, carbonaceous, interbedded mudstone & shale. Several thin coal seams. Bedding 65 degrees to core axis at 716' minor sandstone interbeds. Bedding 56 degrees to core axis at 732' " 71 " " " " " 749' Past 737 - 770 mostly siltstone & mudstone, quite carbonaceous, thin coal seams, plant fragments Bedding 59 degrees to core axis at 754'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 11

Footage		Recovery		Description
from	to	feet	%	
				Bedding 69 degrees to core axis at 766' 765.5 1" pyrite band 770 Siltstone, sandstone & mudstone interbedded Bedding 65 degrees to core axis at 780' " 60 " " " " " 791' " 63 " " " " " 803' " 65 " " " " " 813' " 70 " " " " " 821'
822.1	845.8	15.5 23.7	65	Coal Seam: Sampled (DH 11-17) Partings (Shaly siltstone) 824.4 - 824.5 834.8 - 836.5 843.7 - 843.9 Core condition: mostly solid or half pieces 1" - 4" long
845.8				Siltstone: Dark grey, very fine grained, carbonaceous, interbedded mudstone & shale. Plant fragments & thin coal stringers. Bedding 66 degrees to core axis at 847 " 58 " " " " " 857 859 - 867 increase in sandstone Bedding 53 degrees to core axis at 866' " 67 " " " " " 876' " 62 " " " " " 887 " 66 " " " " " 897' " 64 " " " " " 907' 872.5 - 873.0 Calcite filled (healed) breccia fracture.
910.9	920.3	6.0 9.4	64	Coal Seam: Sampled (DH 11-18) No partings 3.9' between tag 907 & 912 (at start of coal seam) Core condition: solid chunks ½" - 3" and highly broken sections 3" - 6" in length each.
920.3				Siltstone: Dark grey, very fine grained, interbedded sandstone (45%). First 3' from coal contact is a shaly sandstone. Occasional plant fragments & thin coal stringer. Bedding 69 degrees to core axis at 924' " 63 " " " " " 932' " 58 " " " " " 952' 942' END OF HOLE March 17/77 Rob G. Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH-12 Size of core: HQ Total depth: 902 ft
274.9 m

Location: EMGS co-ordinates - N 5582732.226
E 648549.228

Baseline co-ordinates - N 169 + 96.1
E 10 + 03.1

Elevation - ft 5164.9
m 1574.262

Date of starting : March 19, 1977
Date of completion : March 25, 1977

Logging by : G.C. Singhai & Rob Wilson
on : March 27, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
213	65	87.7 "	N 74 degrees E
426	130	85.4 "	N 79 " E
639	195	83.0 "	N 83 " E
869	265	82.0 "	N 82 " E

Recovery of coal : $\frac{87.1}{112.9}$ ft = 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
0	- 14.0			OVERBURDEN: NO CORE
14.0	- 22.6			RUBBLED SANDSTONE:
22.6	- 27.0			OVERBURDEN?: Core - Dark grey mud with many rock fragments.
27.0	- 32.0			OVERBURDEN?: 6' core recovery. 3' dirt and rock, 3' sandstone.
32.0	- 34.5	2.5		COAL SEAM: NOT SAMPLED. .6' PARTING. 1.4/2.5 RECOVERED
34.5	- 77.6			SILTSTONE: Dark grey, very fine grained, interbedded sandstone. Thin coal seams, plant fragments. Quite carbonaceous. Broken core 45 - 46' 68' - 69' Bedding 52 degrees to core axis at 43'. Bedding 53 degrees to core axis at 58'. Bedding 48 degrees to core axis at 72'. Thin coal seam 72.7 - 73.2'.
77.6	- 80.3	2.7/2.7	100%	COAL SEAM: SAMPLED (DH-12-1) PARTINGS (MUDSTONE) 79.2 - 79.5

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
80.3	155.4			SILTSTONE: Dark grey, very fine grained, interbedded sandstone. Slightly carbonaceous in spots. Broken core 107 - 108. Bedding 55 degrees to core axis at 84'. Bedding 50 degrees to core axis at 95'. Bedding 63 degrees to core axis at 104'. Bedding 60 degrees to core axis at 114'. Bedding 55 degrees to core axis at 123'. Bedding 46 degrees to core axis at 133'. Bedding 50 degrees to core axis at 143'. Bedding 54 degrees to core axis at 152'.
155.4	166.6	8.6 11.2	76.8	COAL SEAM: SAMPLED (DH-12-2) NO PARTINGS
166.6	187.7			SILTSTONE: Dark grey, very fine grained, interbedded sandstone, shale and thin coal stringers. Occasional plant fragments. Bedding 43 degrees to core axis at 167'. Bedding 56 degrees to core axis at 176'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-12

Footage		Recovery		Description
from	to	feet	%	
187.7	196.0	4.3/8.3	52%	Bedding 42 degrees to core axis at 186'. COAL SEAM: SAMPLED (DH-12-3) PARTINGS (MUDSTONE) 194.4 - 194.6
196.0	337.7			SILTSTONE: Dark grey, very fine grained, slightly carbonaceous, slightly shaley, interbedded sandstone and thin coal seams and stringers. Coal Seam: 211.1 - 211.4. Bedding 52 degrees to core axis at 198'. Bedding 40 degrees to core axis at 206'. Bedding 55 degrees to core axis at 215'. Bedding 45 degrees to core axis at 227'. Bedding 60 degrees to core axis at 235'. Bedding 52 degrees to core axis at 247'. Bedding 47 degrees to core axis at 257'. Bedding 58 degrees to core axis at 267'. Bedding 53 degrees to core axis at 277'. Past 282, siltstone becomes slightly more carbonaceous. Thin coal seams. Bedding 55 degrees to core axis at 291'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
				294 - 299.6 Very carbonaceous Zone containing coaly shale, coaly mudstone and siltstone and thin coal seams. Also 302 - 303. Bedding 54 degrees to core axis at 302'. Bedding 62 degrees to core axis at 312'. Past 314, increase amount of sandstone interbeds. Bedding 44 degrees to core axis at 322'. Bedding 58 degrees to core axis at 332'.
337.7	353.8	10.8 16.1	67%	COAL SEAM: SAMPLED (DH-12-4) PARTINGS (MUDSTONE) 338.6 - 338.8 343.0 - 345.6 = 2.6 347.8 - 349.5 = 1.7
353.8	368.0			SILTSTONE: Dark grey, very fine grained, interbedded sandstone, and shale, slightly carbonaceous Bedding 58 degrees to core axis at 357'.
368	452			SANDSTONE: Grey, fine grained, interbedded siltstone and shale and thin coal stringers. Bedding 64 degrees to core axis at 367'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
				Bedding 64 degrees to core axis at 377'. Bedding 73 degrees to core axis at 387'. 392 - 397 mostly siltstone. Bedding 60 degrees to core axis at 397'. Bedding 64 degrees to core axis at 407'. Bedding 56 degrees to core axis at 417'. Fracture Zone 417 - 417.8 calcite and pyrite healed. Bedding 54 degrees to core axis at 427'. Pyrite band at 427.2 (1/2) Bedding 46 degrees to core axis at 437' 645 - 648 - Carbonaceous siltstone. Bedding 53 degrees to core axis at 451'.
452	- 522			SILTSTONE: Dark grey, very fine grained, carbonaceous, thin coal seams, minor sandstone, First 8' is mainly carbonaceous mudstone and coal seams. 452 - 454 carbonaceous mudstone 454 - 455.7 Coal Seam 455.7 - 457 Carbonaceous mudstone 459 - 460.5 Coal Seam Bedding 59 degrees to core axis at 461'. Bedding 60 degrees to core axis at 472'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
				477.5 - 478.0 - Fracture, silica healed with open space quartz crystal growth. Bedding 60 degrees to core axis at 482'. Thin coal seams and stringers and plant fragments abundant. 489.5 - 490.0 Coal Seam. Bedding 36 degrees to core axis at 492'. Bedding 38 degrees to core axis at 502'. 504 - 514 very carbonaceous, close to coal and mudstone interbeds. Bedding 55 degrees to core axis at 514'. Bedding 55 degrees to core axis at 521'.
522 -	531.5			MUDSTONE: Dark grey, quite shaley in sections, also sandstone and siltstone interbeds. Bedding 54 degrees to core axis at 527'.
531.5 -	534.5	2.0 3.0	67%	COAL SEAM: SAMPLED (DH-12-5) QUITE SHALEY THROUGHOUT.
534.5 -	536.8			SILTSTONE: Dark grey, very fine grained, quite carbonaceous. Many plant fragments.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
536.8	539.9	2.5 / 3.1	81%	COAL SEAM: SAMPLED (DH-12-6) NO PARTINGS
539.9	563.2			SILTSTONE: Dark grey, very fine grained, interbedde sandstone (35 - 45%). Minor shale and coal seams. Bedding 56 degrees to core axis at 541'. Bedding 60 degrees to core axis at 550'. Bedding 69 degrees to core axis at 561'.
563.2	566.3	2.5 / 3.1 =	81%	COAL SEAM: SAMPLED (DH-12-7) NO PARTINGS
566.3	572.5			SILTSTONE: Dark grey, very fine grained, slightly carbonaceous interbedded sandstone, shale mudstone, thin coal seams. Bedding 26 degrees to core axis at 668'.
572.5	576.1	3.1 / 3.6 =	86%	COAL SEAM: SAMPLED (DH-12-8) NO PARTINGS
576.1	603.6			SILTSTONE: Dark grey, very fine grained, interbedded sandstone. Bedding 50° to core axis at 578' Bedding 52° to core axis at 588' Bedding 50° to core axis at 598'
603.6	627.6	16.0 / 24.0	67	Coal Seam: Sampled (DH12-9) Partings 616.0 - 617.4 (Mudstone)
627.6	655			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded sandstone and shale . Thin coal seams & stringers & plant fragments. Bedding 52° to core axis at 629' 632 - 635 Coaly shale & coal seam Not sampled Bedding 65° to core axis at 639' Bedding 64° to core axis at 649' Bedding 62° to core axis at 654'
655.0	659.8	4.1 / 4.8	85.4	Coal Seam: Sampled (DH 12-10) Partings (Mudstone) 657.6 - 657.7

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
659.8	667.7			Sandstone: Grey, fine grained, crossbedded, interbedded siltstone. Bedding 66° to core axis at 661' Bedding 66° to core axis at 667'
667.7	676.3	7.0 / 8.6	81.4	Coal Seam; Sampled (DH 12-11) No partings
676.3	722.0			Siltstone & Sandstone: Grey to dark grey, fine to very fine grained. 1st 7' quite carbonaceous, lots of interbedded coal seams. Bedding 45° to core axis at 686' Bedding 56° to core axis at 696' Bedding 50° to core axis at 706' Bedding 65° to core axis at 710' Bedding 63° to core axis at 722'
722.0	737.0			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, bedding 60° to core axis at 724'
737.0	755.0			Shale: Dark grey, slightly laminated, interbeds o siltstone and sandstone. fragments of plants bedding 68° to core axis at 740.0' 66° at 743' numerous thin coal seams. 755 -
755.0	757.0			Mudstone: Dark grey, slightly carbonaceous fragments of plants. Coal seam 755.7 - 756.3.
757.0	760			Mudstone: Dark grey, fragments of plants, thin coal seams.
760.0	777.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, thin coal seams and pieces of coal. Bedding 70° to core axis at 765' and 68° to core axis at 773.0'.
777.0	781.2	4.2 / 4.2	100	Coalseam: Sampled (DH 12-12)
781.2	791.0			Siltstone: Dark grey, very fine grain, interbeds of shale, fragments of plants, occasionally pieces of coal. Bedding 66° to core axis.
791.0	802.5			Sandstone: Grey, fine grain, cross bedded, interbeds of siltstone, occasionally pieces of coal and fragments of plants. Bedding 65° to core axis at 798.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
802.5	820.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, numerous thin coal seams. Coal seam: 804.5 - 805.2. 819.7 - 819.9, Bedding 70° to core axis at 812.0
820.0	833.0	12.3 / 13.0	94.6	Coal Seam: Sampled (DH 12-13) Partings of mudstone: 820.8 - 821.9, 830.3 - 830.7, 832.1 - 832.3
820.0	833.0	12.3 / 13.0	94.6	Coal Seam: Sampled (DH 12-13) Partings of mudstone: 820.8 - 821.9, 830.3 - 830.7, 832.1 - 832.3
833.0	840.9			Mudstone: Dark grey, slightly carbonaceous numerous thin coal seams and pieces of coal fragments of plants.
840.9	865.7			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, numerous thin coal seams, fragments of plants. Bedding 66° to core axis at 858.0'
865.7	872.9	7.0 / 7.2	97.2	CoalSeam: Sampled (DH 12-14) Parting mudstone 866.0 - 866.2, 871.6 - 872.4
872.9	902.0			Siltstone: Dark grey, very fine grain interbeds of mudstone and sandstone. numerous thin coal seams and fragments of plants. Bedding 60° to core axis at 877.0 and 60° to core axis at 892.
				End of Hole at 902
				G.C. Singhai
				March 27, 1977

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 12

Footage		Recovery		Description
from	to	feet	%	
32.0	34.8	2.8		Seam 19
77.8	80.4	2.6		Seam 19
155.8	167.0	11.2		Seam 18
188.0	195.9	7.9		Seam 18
295.0	300.2	5.2		Highly carb. shale
337.9	354.7	16.8		Seam 17 mudstone partings @ 343.5 - 345.8 = 2.3 350.4 - 353.0 = 2.6
446.2	448.5	2.3		Seam 16
454.5	456.7	2.3		Seam 16
459.3	461.6	2.3		Seam 16
532.2	535.4	3.2		Seam 14
537.4	540.4	3.0		Seam 14
563.7	566.3	2.6		Seam 13
605.3	627.6	22.3		Seam 12 Mudstone Parting: 616.2 - 618.0 = 1.8'
632.4	635.5	3.1		Seam 12
655.9	660.3	4.4		Seam 11
668.3	676.5	8.2		Seam 11 Parting @ 671.9 - 673.9 = 2.0'
680.5	682.4	1.9		Seam 11
755.3	757.6	2.3		Seam 10
776.3	780.5	4.2		SEam 10 Parting @ 777.9 - 778.6 = 0.7'
818.3	832.4	14.1		Seam 10 Parting @ 819.4 - 821.1 = 1.7' 822.2 - 822.9 = 0.7' 829.1 - 829.8 = 0.7'
844.2	848.1	3.9		Seam 10
865.5	873.4	7.9		Seam 10
877.7	878.7	1.0		

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 13 Size of core: HQ Total depth: 707 ft
215.5 m

Location: EMGS co-ordinates - N 5582696.233
E 648398.378

Baseline co-ordinates - N 169 + 98.3
E 4 + 94.3

Elevation - ft 5145.6
m 1568.379

Date of starting : March 26, 1977
Date of completion : March 30, 1977

Logging by : G.C. Singhai
on : March 30, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	87 "	S 71 degrees E
460	140	83.4 "	S 87 " E
690	210	80.5 "	N 81 " E

Recovery of coal : $\frac{75.4}{82.6}$ = 91%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-13

Footage from	Footage to	Recovery feet	Recovery %	Description
0	9			Overburden (No core)
9	43.0			Sandstone- Grey, fine grain, interbeds of siltstone and shale, crossbedded, occasionally pieces of coal and thin coal seams. Bedding 47° to core axis at 10.0' 56° to core axis at 18.0' 60° to core axis at 42.0'
43.0	58.9			Shale - Dark grey, interbeds of siltstone, occasionally fragments of plant and pieces of coal. Bedding 52° to core axis at 57.0'
58.9	67.6			Sandstone - Light grey to grey, fine grain, cross-bedded, interbeds of siltstone, bedding 52° to core axis at 67.0'.
67.6	76.3	8.7 / 8.7	100	Coal seam - sampled (DH - 13 - 1)
76.3	106.0			Sandstone - Dark grey, fine grain, cross bedded, interbeds of siltstone Bedding 43° to core axis at 79.0' 57° to core axis at 91.0' 52° to core axis at 97.0'
106.0	112.1	6.1 / 6.1	100	Coal Seam - sampled (DH - 13 - 2)
112.1	144.6			Siltstone - Dark grey, very fine grain, interbeds of shale and mudstone, fragments of plants, pieces of coal occasionally thin coal seams. Bedding 60° to core axis at 130.0'
144.6	152.0	7.4 / 7.4	100	Coal Seam - sampled (DH -13-3) Partings - shale - 145.0 - 145.2, 145.5 - 145.6 147.0 - 147.5
152.0	156			Mudstone - Dark grey, fragments of plants, pieces of coal, numerous thin coal seams.
156.0	162.0			Sandstone-Dark grey, fine grain, cross bedded, interbeds of siltstone, Bedding to 56° to core axis at 157.0
162.0	167.5			Siltstone Dark grey, very fine grain, interbeds of sandstone. Bedding 54° to core axis at 166.0
167.5	176.5	7.3 / 9.0	81	Coal Seam - sampled (DH-13-4) Parting: Shale 168.6 - 169.8

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-13

Footage		Recovery		Description
from	to	feet	%	
176.5	192.0			Sandstone - light grey to grey, fine grain, cross bedded, interbeds of siltstone occasionally thin seams of coal, Coal Seam - 193.0 - 193.9 bedding 64° to core axis at 198.0
212.0	220			Sandstone - Dark grey to grey, fine grain interbeds of siltstone and shale, cross bedded. Bedding 55° to core axis at 219.0
220	232.0			Shale - Dark grey, laminated, fragments of plant, pieces of coal and thin coal seams, bedding 55° to core axis at 222.0'
232.0	237	5.0 / 5.0	100	Coal Seam - sampled (DH-13-5)
237.0	242.4			Shale - Dark grey, fragments of plants and pieces of coal, coal seam 237.6 - 237.9
242.4	269.5			Sandstone- Grey to light grey, fine grain, interbeds of siltstone and shale, crossbedded, occasionally thin coal seams. Coal Seam: 272 - 273.0 Bedding 52° to core axis at 283.0
294.2	-311.0			Sandstone - Grey to light grey, fine grain interbeds of siltstone and shale, crossbedded pieces of coal Bedding 65° to core axis at 300 55° to core axis at 310.0'
311.0	322.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants. Coal seam 317.7 - 318.6
322.0	331.6	9.6 / 9.6	100	Coal Seam: Sampled (DH-13-6) Parting Shale: 330.5 - 331.0
331.6	337.0			Sandstone- Grey, fine grain, crossbedded, interbeds of siltstone, bedding 52° to core axis at 334.0
337.0	342.0			Mudstone: Dark grey, fragments of plant, pieces of coal.
342.0	348.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone. Bedding 55° to core axis at 347.0 crossbedded, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 13

Footage		Recovery		Description
from	to	feet	%	
348.0	356			Mudstone: Dark grey, fragments of plant, numerous thin coal seams.
356.0	364.6			Sandstone; Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 55 degrees to core axis at 359.0.
364.6	372.6	6.2 8.0	76	Coalseam: sampled (DH - 13-7) Parting: shale 369.0 - 369.5. 371.5 - 371.9.
372.6	376.0			Sandstone: Grey to light grey, fine grain, crossbedded, interbeds of siltstone. Bedding 50 degrees to core axis at 375.0.
376.0	386.0			Shale: Dark grey, interbeds of mudstone and numerous thin coal seams. Fragments of plant. Coalseam. 379.0 - 379.3, 381.8 - 382.0, 384.5 - 385.0, 385.5 - 386.0.
386.0	394.0			Sandstone: Grey, fine grain, crossbedded. Interbeds of siltstone and shale. Pieces of coal. Bedding 50 degrees to core axis at 389.0.
394.0	412.5			Siltstone: Dark grey, very fine grain. Interbeds of sandstone. Fragments of plant. Bedding 52 degrees to core axis at 402.0. 50 " " " 409.0.
412.5	422.1			Sandstone: Grey to light grey, fine grain, crossbedded, interbeds of siltstone. Bedding 55 degrees to core axis at 421.0.
422.1	425.0	2.3 2.9	79	Coalseam: Sampled (DH - 13-8).
425.0	428.5			Siltstone: Dark grey, very fine grain, occasionally thin coal seams. Fragments of plant.
428.5	449.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Pieces of coal. Numerous thin coal seams. Bedding 53 degrees to core axis at 431.0. 52 " " " 447.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 13

Footage		Recovery		Description
from	to	feet	%	
449.0	475.3			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale. Occasionally fragments of plant and thin coal seams. Bedding 60 degrees to core axis at 451.0.
475.3	498.0			Sandstone: Light grey to grey, fine grain, cross-bedded, interbeds of siltstone and shale. Bedding 62 degrees to core axis at 478.0. 52 " " " 492.0.
498.0	509.2			Siltstone: Dark grey, very fine grain, interbeds of sandstone. Bedding 60 degrees to core axis.
509.2	529.6			Sandstone: Very light grey to grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal. Bedding 56 degrees to core axis at 515.0. 55 " " " 529.0.
529.6	532.7			Mudstone: Dark grey, fragments of plant.
532.7	546.7	12.5 14.0	89	Coalseam: Sampled (DH - 13-9).
546.7	576.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Bedding 55 degrees to core axis at 573.0.
576.0	614.2			Siltstone: Dark grey, very fine grain, fragments of plant and pieces of coal, occasionally thin coal seams. Interbeds of sandstone. Bedding 54 degrees to core axis at 590.0. 52 " " " 599.0. 60 " " " 611.0.
614.2	616.5	1.8 2.3	78	Coalseam: Sampled (DH - 13-10).
616.5	627.5			Mudstone: Dark grey, fragments of plant, numerous thin coal seams.
627.5	636.0			Siltstone: Dark grey, very fine grain, interbeds of shale, occasionally thin coal seams. Bedding 50 degrees to core axis at 629.5.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 13

Footage		Recovery		Description
from	to	feet	%	
636.0	661.5			Sandstone: Dark grey to grey, fine grain, crossbedded, interbeds of siltstone. Bedding 54 degrees to core axis at 643.5. 55 " " " 659.0.
661.5	665.6	4.1 / 4.1	100	Coalseam: Sampled (DH - 13-11). Parting - Shale: 662.1 - 662.2, 663.0 - 663.4.
665.6	669.3			Shale: Dark grey, laminated, occasionally fragments of plant and numerous thin coal seams. Bedding 54 degrees to core axis at 666.0.
669.3	674.8	4.4 / 5.5	80	Coalseam: Sampled (DH - 13-12).
674.8	681.0			Shale: Dark grey, laminated, fragments of plant, numerous thin coal seams. Bedding 57 degrees to core axis at 680.0.
681.0	704.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, fragments of plant, pieces of coal. Bedding 54 degrees to core axis at 697.0.
704.0	707.0			Sandstone: Light grey, fine grain, crossbedded, pieces of coal. Bedding 45 degrees to core axis at 706.0.
				END OF HOLE AT 707. G. C. Singhai March 30/77

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 13

G.P. Log coal intersections

Footage		Recovery		Description
from	to	feet	%	
27.6	28.9	1.3		
66.4	75.1	8.7		
105.0	110.9	5.9		
144.4	153.4	9.0		
166.7	175.9	9.2		Shale Partings at 168.3 - 169.8 = 1.5.. 173.1 - 174.5 = 1.4.
192.3	193.9	1.6		
206.0	207.4	1.4		
222.4	224.1	1.7		
230.6	236.6	6.0		
268.7	272.3	3.6		
316.6	317.6	1.0		
320.7	330.1	9.4		
350.1	352.4	2.3		
363.9	372.1	8.2		Shale Parting at 368.4 - 369.4 = 1.0.
376.6	386.2	9.6		Carbonaceous Shale, or Coaly Shale.
421.6	424.2	2.6		
532.2	545.6	13.4		Partings at 533.8 - 534.8 = 1.0. 539.1 - 540.7 = 1.6.
613.9	615.8	1.9		
617.8	619.1	1.3		
625.4	626.3	0.9		
660.8	673.9	13.1		Partings at 664.7 - 666.0 = 1.3. 667.0 - 668.5 = 1.5.
676.5	678.1	1.6		
686.4	688.0	1.6		

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 14 Size of core: HQ Total depth: 778 ft
237.1 m

Location: EMGS co-ordinates - N 5582663.377
E 648250.845

Baseline co-ordinates - N 170 + 07.9
W 0 + 01.5

Elevation - ft 5110.1
m 1557.558

Date of starting : April 1, 1977
Date of completion : April 6, 1977

Logging by : G.C. Singhai
on : April 7, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
246	75	87.3 "	N 48 degrees E
492	150	85.0 "	N 57 " E
755	230	82.8 "	N 61 " E

Recovery of coal : $\frac{74.6}{77.0}$ ft = 97%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 14

Footage		Recovery		Description
from	to	feet	%	
0	25			OVERBURDEN (No Core).
25	39.6			Sandstone: Light grey, fine grain, crossbedded, pieces of coal. Bedding 53 degrees to core axis at 01.0. 70 " " " 39.0.
39.6	44.0	4.4 / 4.4	100	Coalseam: Sampled (DH - 14-1).
44.0	50			Shale: Dark grey, laminated, numerous thin coal seams. Bedding 54 degrees to core axis at 45.0.
50.0	117.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 65 degrees to core axis at 51.0. Carbonaceous shale at 55.0 - 56.0, numerous thin coal seams, coalseam 74.3 - 75.0. Bedding 58 degrees to core axis at 57.0. 47 " " " 70.0. 56 82.0. 48 " " " 92.0. 60 " " " 111.0.
117.5	128.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Coalseam 118.5 - 119.4, 121.4 - 122.2, 123.0 - 123.5, 124.3 - 125.2, 126.7 - 126.8.
128.0	149.4			Sandstone: Dark grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal. Bedding 50 degrees to core axis at 131.0. 48 " " " 147.0.
149.4	160			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plant and numerous thin coal seams. Bedding 50 degrees to core axis at 155.0.
160.0	243.8			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams. Bedding 55 degrees to core axis at 161.0. 60 " " " 169.0. 65 " " " 187.0. 64 " " " 197.0. Coalseam 183.6 - 183.9, 192.3, 194.0. Bedding 50 degrees to core axis at 220.0. 67 " " " 242.0.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 14

Footage		Recovery		Description
from	to	feet	%	
243.8	259.2	15.4 / 15.4	100	Coalseam: Sampled (DH - 14-2).
259.2	263			Siltstone: Dark grey, very fine grain, occasionally fragments of plant.
263.0	323.0			Sandstone: Grey to light grey, fine grain, crossbedded, interbeds of shale and siltstone, occasionally thin coal seams. Coal seams 272.7 - 273.3, 276.0 - 277.2, 277.7 - 277.9. Bedding 54 degrees to core axis at 267.0. 57 " " " 287.0. 58 " " " 307.0. 60 " " " 322.0.
323.0	331.0			Siltstone: Dark grey, very fine grain, fragments of plant, pieces of coal.
331.0	347.8			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, occasionally thin coal seams, pieces of coal. Bedding 60 degrees to core axis at 336.0. 52 " " " 346.0.
347.8	352.0			Shale: Dark grey, interbeds of siltstone and mudstone, slightly laminated, pieces of coal, fragments of plant.
352.0	412.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal. Bedding 55 degrees to core axis at 354.0. 55 " " " 367.0. 52 " " " 378.0. 56 " " " 398.0. 55 " " " 409.0.
412.5	419.5			Coalseam: Sampled (DH - 14-3).
419.5	430.1			Siltstone: Dark grey, very fine grain, interbeds of sandstone, fragments of plant. Bedding 46 degrees to core axis at 420.0. 52 " " " 426.0.
430.1	436.8	6.9 / 6.9	100	Coalseam: Sampled (DH - 14-4).

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 14

Footage		Recovery		Description
from	to	feet	%	
436.8	454.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, fragments of plant. Bedding 48 degrees to core axis at 439.0. 48 " " " 450.0
454.0	467.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 50 degrees to core axis at 455.0.
467.0	485.4			Siltstone: Dark grey, very fine grain, interbeds of shale, pieces of coal, occasionally fragments of plant, and thin coal seams. Bedding 55 degrees to core axis at 471.0. 57 " " " 481.0.
485.4	492.5	7.1 / 7.1	100	Coalseam: Sampled (DH - 14-5).
492.5	495.5			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams.
495.5	501.6			Sandstone: Grey, fine grain, crossbedded, bedding 58 degrees to core axis at 498.0.
501.6	506.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plant.
506.0	515.2	8.8 / 9.2	96	Coalseam: Sampled (DH - 14-6). Parting, Mudstone: 507.0 - 507.8.
515.2	556.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal. Bedding 62 degrees to core axis at 518.0. 65 " " " 533.0. 56 " " " 541.0.
556.0	566.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Core badly broken.
566.0	572.0	6.0 / 6.0	100	Coalseam: Sampled (DH - 14-7).

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 14

Footage		Recovery		Description
from	to	feet	%	
572.0	588.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, numerous thin coal seams. Bedding 62 degrees to core axis at 583.0.
588.0	591.0	2.5 / 3.0	83	Coalseam: Sampled (DH - 14-8).
591.0	643.5			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone. Bedding 54 degrees to core axis at 597.0. 70 " " " 617.0. 67 " " " 626.0. 59 " " " 641.0.
643.5	648.6			Siltstone: Dark grey, very fine grain, occasionally fragments of plant. Coal seam 646.0 - 646.5.
648.6	656.5	7.9 / 7.9	100	Coalseam: Sampled (DH - 14-9).
656.5	667.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, pieces of coal, occasionally fragments of plant.
667.0	671.3			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 65 degrees to core axis at 670.0.
671.3	679.7			Mudstone: Dark grey, fragments of plant, pieces of coal, occasionally thin coal seams. Coal seam 677.5 - 678.0.
679.7	696.0			Sandstone: Dark grey, fine grain, crossbedded, interbeds of siltstone. Bedding 64 degrees to core axis at 684.0. 61 " " " 691.0.
696.0	703.5	6.5 / 7.5	87	Coalseam: Sampled (DH - 14-10). Parting, Mudstone: 697.2 - 697.9, 698.8 - 699.5.
703.5	713.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, numerous thin coal seams. Coal seams: 707.6 - 707.9, 708.3 - 709.0, 711 - 711.3. Bedding 60 degrees to core axis at 705.0.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 14

Footage		Recovery		Description
from	to	feet	%	
713.0	716.0			Mudstone: Dark grey, fragments of plant, numerous thin coal seams. Slightly carbonaceous coal seam 715.5 - 716.0.
716.0	727.0			Sandstone: Grey to light grey, fine grain, cross-bedded, interbeds of siltstone, numerous thin coal seams. Bedding 58 degrees to core axis at 722.0.
727.0	737.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, fragments of plant. Bedding 58 degrees to core axis at 730.0.
737.0	753.8			Sandstone: Dark grey to light grey, fine grain, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 739.0. 64 " " " 748.0.
753.8	756.6	2.6 2.8	93	Coalseam: Sampled (DH - 14-11).
756.6	778.0			Sandstone: Dark grey to light grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams. Bedding 43 degrees to core axis at 763.0. 64 " " " 771.0. 60 " " " 777.0.
				END OF HOLE AT 778.0 G. C. Singhai April 7/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH 15 Size of core: HQ Total depth: 620.5 ft
189.1 m

Location: EMGS co-ordinates - N 5582625.009
E 648103.240

Baseline co-ordinates - N 170 + 00.0
W 5 + 01.8

Elevation - ft 5077.1
m 1547.50

Date of starting : April 7, 1977
Date of completion : April 10, 1977

Logging by : G.C. Singhai
on : April 11, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
197	60	88.1 "	S 71 degrees E
394	120	85.8 "	N 71 " E
607	185	82.9 "	N 74 degrees E

Recovery of coal : $\frac{48.4}{48.9}$ ft = 99%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-15

Footage		Recovery		Description
from	to	feet	%	
o	29			Overburden (no core)
29.0	30.0			Boulders of sandstone, limestone & shale
30.0	108.5			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone and shale, pieces of coal and ocassionally thin coal seams, Bedding: 55° to core axis at 33.0' 52° " " " " 53.0' 54° " " " " 68.0' 55° " " " 30.0' 60° " " " 96.0 52° " " 108.0 Carbonecous shale 54 - 57.0, Boulder of sandstone at 37.0 - 38.0
108.5	117.5			Siltstone: Dark grey, very fine grain, interbeds of shale and mudstone, ocassionally fragments of shale and thin coal seams.
117.5	119.5			Mudstone: Dark grey, carbonaceaous, numerous thin coal seams, fragments of plants.
119.5	122.1	2.6/2.6	100	Coal Seam: sampled (DH 15 1)
122.1	125.0			Mudstone: Dark grey, carbonaceous, numerous thin coal seams, fragments of coal, coal seam 124.0 - 124.7
125.0	139.0			Sandstone: Grey to light grey, fine grain interbeds of siltstone, crossbedded, bedding 55° to core axis at 136.0'
139.0	150.3	11.3/11.3	100	Coal Seam: sampled (DH 15 2) parting siltstone 142.3 - 143.3, 144.0 - 144.6, 145.4 - 146.7
150.3	155.0			Mudstone: Dark grey, carboneceous, numerous thin coal seams fragments of coal, badly broken core.
155.0	201.0			Sandstone: Grey, fine grain, crossbedded, Bedding 55° to core axis at 160.0' 49° 178.0' 48° 192.0' 52° 198.0'
201.0	204.0	3.0/3.0	100	Coal Seams: sampled(DH-15-3) Parting of sandstone 202.0 - 202.6
204.0	228.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, ocassionally thin coal seams, bedding 53° to core axis at 206' 64° " " " " 226'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 15

Footage from	to	Recovery feet	%	Description
228.0 -	230.7	2.7/2.7	100	Coal seam: Sampled (DH-15-4)
230.0 -	237.0			Sandstone: Grey fine grain, cross-bedded, pieces of coal, interbeds of siltstone bedding 50° to core axis at 233.0'
237.0 -	239.0	2.0/2.0	100	Coal Seams: Sampled (DH 15-5) partings of shale 238.1 - 238.3
239.0 -	273.6			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, interbeds of shale and siltstone, beddings 63° to core axis at 243.0' 60° 254.0' 60° 272.0
273.6 -	275.6			Mudstone: Dark grey, fragments of plants, pieces of coal
275.6 -	279.6	4.0/4.0	100	Coal Seam: Sampled (DH -15-6) Parting: coaly shale 298.3 - 299.1
279.6 -	284.8			Shale: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams.
284.8 -	313.5			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, and siltstone, pices of coal, ocassionally thin coal seams Bedding 62° to core axis at 293.0' 60° 301.0' 65° 313.0'
313.5 -	333.0			Siltstone: Dark grey, very fine grain, fragments of plants, numerous thin coal seams, coal seam: 315.7 - 316.2, 321.0 - 321.7, 323.9-323.6
333.0 -	343.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal and interbeds of siltstone, bedding 45° to core axis at 337.0'
343.0 -	345.0			Mudstone: Dark Grey, fragments of plant, slightly carbonaceous
345.0 -	347.0	1.5/2.0	75	Coal Seam: sampled(DH-15-7)
347.0 -	348.7			Siltstone: dark grey, very fine grain, thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 15

Footage from	to	Recovery feet	%	Description
348.7	369.0			Sandstone: Grey to light grey, fine grain, cross-bedded interbeds of shale and siltstone, pieces of coal, ocassionally thin cola seams. Bedding 65° to core axis at 360.0'
369.0	371.5			Shale: Dark grey, slightly laminated, fragments of plants, pieces of coal.
371.5	375.4	3.9/3.9	100	Coal Seam: Sampled (DH-15-8)
375.4	381.0			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal, bedding 50° to core axis at 380.0'
381.0	387.0			Sandstone: Grey, fine grain, crossbedded, bedding 55° to core axis at 384.0'
387.0	399.5			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal, ocassionally thin coal seams.
399.5	335.0			Sandstone; Grey to light grey, fine grain cross bedded, pieces of coal, ocassionally thin coal seams, Bedding 56° to core axis at 407.0' 60° 425.0' 60° 434.0'
435.0	441.0			Shale: Dark grey, fragments of plants, slightly silty, pieces of coal, numerous thin coal seams.
441.0	450.0			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, interbeds of siltstone, thin coal seams. Bedding 58° to core axis at 448.0
450.0	452.5	2.5/2.5	100	Coal Seam: Sampled (DH 15-9)
452.5	481.0			Sandstone: Grey to light grey, fine grain, cross-bedded, interbed of siltstone and shale, pieces of coal, ocassionally thin coal seams, Bedding 65° to core axis at 454.0' 60° 467.0' 63° 476.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 15

Footage from	to	Recovery feet	%	Description
481.0 -	528.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, pieces of coal, thin coal seams, Bedding 67° to core axis at 494.0' 68° 505.0' 57° 515.0' 60° 526.0' Coal Seams: 496.0 - 496.5, 497.5 - 498.5, 501.0 - 501.5, carbonaceous shale 507.0-509.0
528.0 -	552.0			Sandstone: Grey to light grey, fine grain, cross-bedded, interbeds of siltstone Bedding: 63° to core axis at 540.0' 68° to core axis at 550.0'
552.0 -	560.8			Siltstone: Dark grey, very fine grain, ocassionally fragments of plants, pieces of coal, bedding 63° to core axis at 587.0'
560.8 -	570.5			Sandstone: Grey, fine grain, crossbedded, bedding 56° to core axis at 565.0
570.5 -	571.5			Mudstone: Slightly carbonaceous
571.5 -	583.4	11.9/11.9	100	Coal Seam: sampled (DH 15-10)
583.4 -	595.4			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, ocassionally pieces of coal Bedding at 62° to core axis at 588.0'
595.4 -	598.6			Mudstone: Dark grey, fragments of plants, pieces of coal
598.6 -	601.6	3.0/3.0	100	Coal Seam: sampled (DH 15-11)
601.0 -	620.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, ocassionally thin coal seams, Bedding 75° to core axis at 610.0 65° to core axis at 617.0 END OF HOLE AT 620.5 "G.C.Singhai" April 11.77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 16 Size of core: HQ Total depth: 552.0 ft
168.2 m

Location: EMGS co-ordinates - N 5582611.387
E 648044.632

Baseline co-ordinates - N 170 + 02.0
W 6 + 99.2

Elevation - ft 5070.3
m 1545.427

Date of starting : April 11, 1977
Date of completion : April 14, 1977

Logging by : G.C. Singhai
on : April 15, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
180	55	87 "	N 73 Degrees E
361	110	84.7 "	N 76 " E
532	162	83.1 "	N 79 " E

Recovery of coal : $\frac{26.2}{27.0}$ ft = 97%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 16

Footage		Recovery		Description
from	to	feet	%	
0	42.0			OVERBURDEN (No Core).
42.0	88.8			Sandstone: Grey to light grey, fine-grained, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 58 degrees to core axis at 50.0. 76 " " " 61.0 63 " " " 80. 59 " " " 88.
88.8	91.5	2.7/2.7	100	Coalseam: Sampled (DH - 16-1).
91.5	236.0			Sandstone: Grey to light grey, fine grain, crossbedded, pieces of coal, interbeds of shale. Bedding 60 degrees to core axis at 94.0 65 " " " 106.0. 60 " " " 120.0. Coal seams: 112.5 - 113.0, 116.0 - 116.5, 122.0 - 122.5, 126.5 - 126.7, 140.0 - 140.2, 147.6 - 148.0, 169.5 - 170.0. Bedding 56 degrees to core axis at 142.0. 58 " " " 162.0. 62 " " " 177.0. 60 " " " 192.0 58 " " " 205. 50 " " " 221.0.
236.0	247.3			Mudstone: Dark grey, slightly carbonaceous, interbeds of siltstone and sandstone, fragments of plant, pieces of coal, numerous thin coal seams Coal seams: 242.2 - 243.5, 246.1 - 247.0. Bedding 65 degrees to core axis at 243.0.
247.3	255.5			Sandstone: Grey to dark grey, fine grain, crossbedded, pieces of coal. Bedding 67 degrees to core axis at 249.0.
255.5	257.5	1.8/2.0	90	Coalseam: Sampled (DH - 16-2).
257.5	259.7			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale. Bedding 60 degrees to core axis at 258.9.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 16

Footage		Recovery		Description
from	to	feet	%	
259.7	261.7	2.0/2.0	100	Coalseam: Sampled (DH - 16-3). Parting, Mudstone: 260.4 - 260.8.
261.7	267.2			Siltstone: Dark grey, very fine grain, interbed of sandstone. Bedding 54 degrees to core axis at 265.0.
267.2	269.7	2.3/2.5	92	Coalseam: Sampled (DH - 16-4).
269.7	273.3			Siltstone: Dark grey, very fine grain, interbeds of carbonaceous shale.
273.3	275.4	2.1/2.1	100	Coalseam: Sampled (DH - 16-5).
275.4	280.0			Shale: Dark grey, fragments of plant, pieces of coal.
280.0	316.2			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 52 degrees to core axis at 284.0. 60 " " " 301.0. 60 " " " 315.0.
316.2	318.0	1.8		Coalseam: Not sampled.
318.0	339.6			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams. Bedding 63 degrees to core axis at 325.0. 65 " " " 334.0.
339.6	346.5	6.9/6.9	100	Coalseam: Sampled (DH - 16-6). Parting, Shale: 342.6 - 343.4, 344.8 - 345.2.
346.5	380.4			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal. Bedding 58 degrees to core axis at 348.0. 67 " " " 367.0. 70 " " " 378.0.
380.4	384.0	3.6/3.6	100	Coalseam: Sampled (DH - 16-7).

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 16

Footage		Recovery		Description
from	to	feet	%	
384.0	398.0			Siltstone: Dark grey, very fine grain, interbeds of carbonaceous shale 385.5 - 387.4, occasionally fragments of plant.
398.0	425.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 60 degrees to core axis at 409.0. 60 " " " 420.0. Coalseam: 418.3 - 418.7.
425.0	441.0			Siltstone: Dark grey, very fine grain, pieces of coal, occasionally thin coal seams: 430.8 - 432.2, 438.0 - 438.4, interbeds of mudstone, fragments of plant.
441.0	452.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 60 degrees to core axis at 445.0. Mudstone 450.6 - 452.5.
452.5	454.5	2.0 2.0	100	Coalseam: Sampled (DH - 16-8).
454.5	475.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 65 degrees to core axis at 457.0. 63 " " " 472.0.
475.0	477.0			Mudstone: Dark grey, highly carbonaceous, numerous thin coal seams.
477.0	480.2	2.8 3.2	88	Coalseam: Sampled (DH - 16-9). Parting, Shale: 478.8 - 479.0.
480.2	488.0			Siltstone: Dark grey, very fine grain, numerous thin coal seams, fragments of plant.
488.0	552.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, occasionally thin coal seams. Bedding 66 degrees to core axis at 494. 65 " " " 509.0. 65 " " " 523.0. 60 " " " 537.0. 64 " " " 548.0.

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DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 16

Footage		Recovery		Description
from	to	feet	%	
488.0	552.0			(CONTINUED FROM PREVIOUS PAGE): Coal seams: 519.6 - 520.4, 521.5 - 521.7, 542.5 - 543.0, 544.0 - 544.5, 545.6 - 546.3. END OF HOLE AT 552.0 G. C. Singhai April 15/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 17 Size of core: HQ Total depth: 287 ft
87.5 m

Location: EMGS co-ordinates - N 5583488.154
E 649085.732

Baseline co-ordinates - N 189 + 90.1
E 32 + 99.4

Elevation - ft 5768.0
m 1758.086

Date of starting : February 24, 1977
Date of completion : February 26, 1977

Logging by : Rob Wilson
on : Feb. 27, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
131	40	88.5 "	S 54 degrees W
262	80	90 "	-

Recovery of coal : $\frac{57.7}{75.8}$ ft = 76%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 17

Footage from	Footage to	Recovery feet	Recovery %	Description
0	24			OVERBURDEN: (no core)
24	34.7			SANDSTONE:Grey, fine grain, interbedded siltstone, and shale, pieces of coal, thin coal seams, plant fragments. Core highly broken, Bedding 55° to core axis at 26' Difficult to tell exact start of coal due to core breakage.
34.7	72.0	26.6/37.3	69	COAL SEAM: Sampled (DH 17-1) Partings:(Mudstone) bags 1 & 2 45.0 - 45.6 67.5 - 68.0
72	82			SHALY MUDSTONE: Core extremely broken. Dark grey, shale and mudstone. Coal pieces, plant fragments.
82	99			SANDSTONE: Dark grey, fine grained, interbeds of siltstone 45%. Minor shale and thin coal seams Bedding 45° to core axis at 83' 46° to core axis at 98'
99	131			SILTSTONE:Dark grey, very fine grain, interbedded sandstone and shale. Plant fragments, pieces of coal, thin coal seams fairly frequent over this section (128.8-129.4) Bedding 50° to core axis at 110' 52° to core axis at 120'
131	157.1			SANDSTONE:Dark grey, fine grain, interbedded siltstone, and shale, Thin frequent coal seams. 145.4-145.9 coal seam Bedding 51° to core axis at 133' 51° 143' 55° 156'
157.1	171.7	11.3/14.6	77	Coal Seam: sampled (DH 17-2) No partings
171.7	218.2			SANDSTONE:Dark grey, fine grain, ocassional cross-beds, interbeds of siltstone and shale and minor coal seams. Bedding 40° to core axis at 177' 55° 190' 50° 201' 54° 210' 54° 214'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 17

Footage		Recovery		Description
from	to	feet	%	
218.2	- 232.0	10.4 / 13.8	75	COAL SEAM:Sample (DH 17-3) No partings
232.0	- 237.3			COALY MUDSTONE/SILTSTONE: Dark grey to black, interbedded siltstone, mudstone, coal and shale
237.3	- 239.5	2.2 / 2.2	100	COAL SEAM: Sample (DH 17-4) No partings
239.5	- 261.1			SILTSTONE: Dark grey, very fine grained, interbedded sandstone. Plant fragments and ocassional thin coal stringers. Bedding 45° to core axis at 246' 45° 259
261.1	- 267.0	5.2 / 5.9	88	Coal Seam: Sample (DH 17 -5) No partings
267.0	- 274.1			SANDSTONE:Grey to light grey, fine to medium grained, interbedded siltstone (mainly siltstone first 2' of unit) Bedding 62° to core axis at 269' 66° 273'
274.1	- 287.0			SANDSTONE:Grey to light grey, fine to medium grained Bedding 55° to core axis at 277.0' 55° 284.0'
				END OF HOLE 287.0' "Rob Wilson" Feb. 27/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 18 Size of core: HQ Total depth: 652 ft
198.7 m

Location: EMGS co-ordinates - N 5583433.152
E 648869.586

Baseline co-ordinates - N 189 + 82.3
E 25 + 67.7

Elevation - ft 5521.0
m 1682.801

Date of starting : February 28, 1977
Date of completion : March 4, 1977

Logging by : Rob Wilson
on : March 5, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
213	65	89.5 "	N 61 degrees E
426	130	87.2 "	S 89 " E
623	190	85.0 "	N 81 " E

Recovery of coal : $\frac{65.2}{106.6}$ ft = 61%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 18

Footage		Recovery		Description
from	to	feet	%	
0	- 6			OVER BURDEN: (NO CORE)
6	- 37.5			SANDSTONE: 50% - 50% Sandstone/ Siltstone: 6-16.1 Core highly broken. Sandstone: Grey to dark grey, fine grained. Siltstone: Dark grey, very fine grained. 11' - 16' Gouge zone - Fault breccia in a clay matrix. Bedding 50 degrees to core axis at 17'. Bedding 50 degrees to core axis at 20'. 17.6 - 18.6 Core highly broken. 22 - 24' Core moderately broken. Bedding 54 degrees to core axis 26'. Bedding 43 degrees to core axis at 33'.
37.5	- 55.0	8.3 / 17.5	47%	COAL SEAM: SAMPLED (DH-18-1) 37.5 - 39.5 Core missing. 52.0 - 53.5 Core missing. PARTINGS (MUDSTONE) 40.0 - 40.3 53.7 - 53.8

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 18

Footage		Recovery		Description
from	to	feet	%	
55.0	59.0			MUDSTONE: Dark grey, many thin coal seams and stringers. Carbonaceous (plant fragments)
59.0	70.5	10.0 11.5	87%	COAL SEAM: SAMPLED (DH-18-2) PARTINGS (MUDSTONE) 64.5 - 64.8
70.5	113.0			SILTSTONE: Dark grey, very fine grained, interbedded sandstone, plant fragments, thin coal stringers. 70.5 - 76 interbedded coal and siltstone. Bedding 47 degrees to core axis at 82'. Bedding 46 degrees to core axis at 97'. Bedding 53 degrees to core axis at 111'.
113.0	123.3	6.4 10.3	62%	COAL SEAM: SAMPLED (DH-18-3) PARTINGS (MUDSTONE) CORE HIGHLY BROKEN SO DIFFICULT TO TELL. NO PARTINGS FOUND.
123.3	131.0			SILTSTONE: Dark grey, very fine grained, interbedded sandstone and thin shale layers. Plant fragments and thin coal stringers. Bedding 46 degrees to core axis at 128'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-18

Footage		Recovery		Description
from	to	feet	%	
131.0	159.7			SANDSTONE: Grey to dark grey fine grained, interbedded siltstone (40 - 45%). Occasional shale layer and calcite stringer. Bedding 40 degrees to core axis at 132'. Bedding 58 degrees to core axis at 143'. 144 - 144.7 coal seams - core broken. Bedding 55 degrees to core axis at 151'. Bedding 28 degrees to core axis at 157'.
159.7	168.8			SILTSTONE: Dark grey, very fine grained, interbedded sandstone (40 - 45%) Plant fragments. Bedding 48 degrees to core axis at 164'.
168.8	177.0			SANDSTONE: Dark grey, fine grained, crossbedded, interbedded with siltstone. Calcite stringers common. Bedding 50 degrees to core axis at 173'.
177	185.4			SILTSTONE: Dark grey, very fine grained, interbedded with sandstone, and shale. Bedding 45 degrees to core axis at 182'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-18

Footage from	to	Recovery feet	%	Description
185.4 -	189.0	1.7/3.6	47%	COAL SEAM: NOT SAMPLED DUE TO LACK OF CORE.
189.0 -	191.7			SILTSTONE: Dark grey, very fine grained, interbedded sandstone, thin coal stringers and plant fragments Bedding 55 degrees to core axis at 190'.
191.7 -	194.5	2.4/2.8	86%	COAL SEAM: SAMPLED (DH-18-4) Core highly broken. No partings noted.
194.5 -	203.4			SILTSTONE: Dark grey, very fine grained, some sandstone interbeds. Bedding 50 degrees to core axis at 200'.
203.4 -	208.2	4.6/4.8	96%	COAL SEAM: SAMPLED (DH-18-5) PARTINGS (MUDSTONE) 207.7 - 207.9
208.2 -	241			SANDSTONE: Dark grey to grey, fine grained, interbedded siltstone, and coal seams (minor). 212 - 218 - Medium grained grey to light grey sandstone. Bedding 48 degrees to core axis at 214'. Bedding 42 degrees to core axis at 223'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 18

Footage		Recovery		Description
from	to	feet	%	
				Bedding 46 degrees to core axis at 232'.
241	247.9			SILTSTONE: Dark grey, very fine grained, interbedded with sandstone. Bedding 43 degrees to core axis at 246'.
247.9	251	2.0 3.1	65%	COAL SEAM: NOT SAMPLED PARTINGS (SHALEY MUDSTONE) COALY SHALE 249 - 249.7 TOO MUCH ROCK PARTING NOT SAMPLED
251	406.9			SILTSTONE: Dark grey, very fine grained. Interbedded sandstone, in places near 45% of rock occasional plant fragments and coal stringer. Bedding 56 degrees to core axis at 255'. Bedding 50 degrees to core axis at 270'. Bedding 55 degrees to core axis at 284'. Bedding 60 degrees to core axis at 300'. Bedding 55 degrees to core axis at 317'. Bedding 65 degrees to core axis at 332'. Bedding 55 degrees to core axis at 351'. Bedding 55 degrees to core axis at 365'. Bedding 46 degrees to core axis at 380'. 262 - 267 mostly sandstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-18

Footage		Recovery		Description
from	to	feet	%	
				381 - 388 mostly sandstone Bedding 56 degrees to core axis at 388'. Bedding 48 degrees to core axis at 400'.
406.9	435.3	20.2 28.4	71%	COAL SEAM: SAMPLED (DH-18-6) PARTINGS (MUDSTONE) 407.4 - 407.5 416.0 - 416.7 430.0 - 430.6
435.3	458			SANDSTONE: Grey to dark grey, fine grained, interbedded siltstone. (siltstone 435.3 - 444) Bedding 47 degrees to core axis at 447'. Bedding 49 degrees to core axis at 457'.
458	507.3			SHALE: Black, slightly carbonaceous, interbedded mudstone and siltstone. Bedding 55 degrees to core axis at 473'. 479.9 - 480.3 Coal Seam. Sandstone interbed 482-486 Bedding 42 degrees to core axis at 484. 486 - 495 Shale - mudstone interbeds.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-18

Footage		Recovery		Description
from	to	feet	%	
				495 - 502 Mainly Sandstone. Bedding 62 degrees to core axis at 502'. 502 - 507 carbonaceous shaley mudstone.
507.3 -	518.5	3.5 11.2	31%	COAL SEAM: Sampled (DH-18-7) No partings, core highly broken.
518.5 -	524			SHALEY MUDSTONE: Dark grey to black. Some siltstone interbeds.
524 -	581.3			SANDSTONE: Grey, fine grained, crossbedded, interbedded siltstone. Fairly calcarious. Bedding 42 degrees to core axis at 531'. Several calcite fracture fillings, reaching 5" wide. Some shaley sandstone and shaley siltstone interbeds esp 542 - 547. Bedding 54 degrees to core axis at 538'. Bedding 62 degrees to core axis at 552'. Bedding 56 degrees to core axis at 569'. Bedding 48 degrees to core axis at 579'. Last 2 is shaley mudstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH- 18

Footage		Recovery		Description
from	to	feet	%	
581.3	590.0	3.7/8.7	43%	COAL SEAM: SAMPLED (DH-18-8) NO PARTINGS
590.0	591.6			COALY MUDSTONE: Black to dark grey, mainly interbedded coal and mudstone (the latter cominating).
591.6	601.4	4.4/9.8	52%	COAL SEAM: SAMPLED (DH-18-9) NO PARTINGS NOTE: 598.5 - 601.5 FELL OUT OF CORE TUBE. NO RECOVERY. END OF COAL SEAM SOMEWHERE IN THAT 3'.
601.4	615.2			SANDSTONE: Grey, to light grey, fine to medium grained clear sandstone. Occasional crossbedding. Minor, rare, thin siltstone interbeds (Basal sandstone) Bedding 42 degrees to core axis at 602'. Bedding 58 degrees to core axis at 614'. 600 - 601.5 - lost core.
615.2	616.1			COAL SEAM: NOT SAMPLED SEAM number 1

DIAMOND DRILL CORE LOGGING SHEET

DDH No.
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Footage		Recovery		Description
from	to	feet	%	
616.1	- 652			SANDSTONE: Grey to light grey, fine to medium grained clean sandstone. Occasional crossbedding Basal sandstone. Bedding 61 degrees to core axis at 618'. Bedding 75 degrees to core axis at 632'. Bedding 62 degrees to core axis at 643'. Bedding 70 degrees to core axis at 648'. 652 ' END OF HOLE MARCH 5, 1977 Rob Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 19 Size of core: HQ Total depth: 717 ft
218.5 m

Location: EMGS co-ordinates - N 5583302.996
E 648313.772

Baseline co-ordinates - N 189 + 98.2
E 6 + 94.9

Elevation - ft 5206.4
m 1586.911

Date of starting : March 1, 1977
Date of completion : March 6, 1977

Logging by : Rob Wilson
on : March 7, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	86 "	N 71 degrees E
460	140	82.5 "	N 69 " E
690	210	81.1 "	N 65 " E

Recovery of coal : $\frac{48.7}{74.0}$ ft = 66%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
0	- 18			OVERBURDEN (NO CORE)
18	- 28.2			SILTSTONE: Dark grey, very fine grained. Bedding 55 degrees to core axis at 22'.
28.2	- 55.6			SANDSTONE: Grey, fine grained, occasionally cross-bedded. Interbedded with siltstone, mudstone and shale. Pieces of coal, thin coal stringers and seams, plant fragments. Bedding 50 degrees to core axis at 32'. Bedding 45 degrees to core axis at 43'. Coal Seam: 52.8-53.1 Bedding 46 degrees to core axis at 55 '.
55.6	- 78.0			SILTSTONE: Dark grey, very fine grained; carbonaceous. Interbeds of sandstone and shale. Plant fragments, thin coal stringers and seams. Bedding 45 degrees to core axis at 59'. Coal Seam: 66.5 - 67.9 Bedding 60 degrees to core axis at 67'. Bedding 60 degrees to core axis at 75'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH- 19

Footage		Recovery		Description
from	to	feet	%	
78.0	89.9	9.6 / 11.9	81%	COAL SEAM: Sampled (DH -19-1) Partings (Mudstone) 80.2 - 81.1
89.9	171.6			SANDSTONE: Grey, fine grained, crossbedded, interbedded siltstone 40% and shale. Thin coal seams and stringers. Mainly siltstone three (3) feet from contact with coal seam occasional medium grained. Sandstone esp. 117 - 221 - In this one, many coal stringers. Bedding 42 degrees to core axis at 93'. Bedding 40 degrees to core axis at 102'. Bedding 62 degrees to core axis at 117'. Bedding 58 degrees to core axis at 128'. Bedding 58 degrees to core axis at 134'.
171.6	196.0			SILTSTONE: Dark grey, very fine grained slightly carbonaceous, interbedded with sandstone and shale. Plant fragments, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
				Thin coal seams and stringers Bedding 55 degrees to core axis at 170'. Bedding 53 degrees to core axis at 182'. Bedding 52 degrees to core axis at 192'.
196.0	- 213			MUDSTONE: Dark grey, slightly carbonaceous, plant fragments, thin coal stringers. Interbedded siltstone. Bedding 56 degrees to core axis at 200'. Bedding 49 degrees to core axis at 208'.
213	- 258.6			SILTSTONE: Dark grey, fine grained, interbedded sandstone and mudstone occasional plant fragments. Bedding 53 degrees to core axis at 222'. Bedding 39 degrees to core axis at 233'. Past 237' sandstone increases to 40%. Bedding 47 degrees to core axis at 240'. Bedding 63 degrees to core axis at 254'. 254 ' Calcite and pyrite filled fractures.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
258.6	- 340			SANDSTONE: Grey to dark grey, fine grained, occasionally crossbedded. Interbedded siltstone, Coal and Calcite stringers. Minor coal seams esp. 292 - 297 and 312 - 322. Bedding 44 degrees to core axis at 264'. Bedding 50 degrees to core axis at 280'. Bedding 42 degrees to core axis at 295'. Bedding 40 degrees to core axis at 308'. Bedding 58 degrees to core axis at 318'. Siltstone is 45% after 332'. Shale interbeds 330 - 332 Bedding 70 degrees to core axis at 328' Bedding 56 degrees to core axis at 339'.
340	- 355.8			SILTSTONE: Dark grey, very fine grained, interbeds of sandstone, shale. Thin coal stringers and plant fragments. Bedding 45 degrees to core axis at 346'. Bedding 62 degrees to core axis at 353'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage from	to	Recovery feet	%	Description
355.8	361.3	3.9/5.5	71%	COAL SEAM: Sampled (DH - 19 - 2) No partings found. Core highly broken and difficult to distinguish partings.
361.3	385.6			SANDSTONE: Grey to dark grey, fine grained, in places crossbedded, interbedded siltstone (45%). Calcite stringers fairly numerous. Bedding 59 degrees to core axis at 370'. Bedding 51 degrees to core axis at 380'.
385.6	393.3	3.4/7.7	44%	COAL SEAM: Sampled (DH -19-3) No partings found.
393.3	401			SANDSTONE: Grey, fine grained, interbedded siltstone. Bedding 65 degrees to core axis at 397'.
401	411.2			SILTSTONE: Dark grey, very fine grained, some sandstone interbeds. Occasional plant fragments. Bedding 58 degrees to core axis at 403'. Bedding 60 degrees to core axis at 410'.
411.2	420.6	5.0/9.4	53%	COAL SEAM: Sampled (DH -19-4) No partings.
4206	432			SANDSTONE: Grey, fine grained crossbedded, and interbedded with siltstone and shale. Thin coal seams, plant fragments and calcite stringers. Bedding 64 degrees to core axis at 422'. Bedding 62 degrees to core axis at 431'.
432	480			SILTSTONE: Dark grey, very fine grained, interbeds of sandstone coaly mudstone and coaly shale esp. 433.3-434.8. Bedding 62 degrees to core axis at 438'. Bedding 64 degrees to core axis at 447'. COAL SEAM: 451.6-453.4 Not sampled. Bedding 55 degrees to core axis at 455'. Bedding 61 degrees to core axis at 466'. Coaly Shale: 467.8-468.9, 469-480 -Sandstone 45% of core.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
				Bedding 63 degrees to core axis at 471'. Bedding 68 degrees to core axis at 480'.
480 -	490.2			SHALE MUDSTONE: Dark grey to black, carbonaceous, containing plant fragments and thin coal seams. Interbeds of shale.
490.2 -	495.0	4.6 4.8	96%	COAL SEAM: Sampled (DH-19-5) Slightly shaley throughout.
495.0 -	542			SILTSTONE: Dark grey, very fine grained. First (3) three feet is a shaley mudstone. Interbeds of mudstone, shale, shaley mudstone and occasional sandstone. Plant fragments and thin coal seams common. Bedding 50 degrees to core axis at 506'. 506 - 512' core highly broken. 515 - 520 1st three lost one (1) foot. Coal Seam: Where recovery starts not sampled. Bedding 53 degrees to core axis at 527'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
542	547	5.0 / 5.0	100%	COAL SEAM: Sampled (DH-19-6) No partings.
547	552			SANDSTONE - SILTSTONE: 50% - 50% interbeds. Plant fragments, pieces of coal, thin coal seams. Bedding 60 degrees to core axis at 551'.
552	555	3.0 / 3.0	100%	COAL SEAM: Sampled (DH-19-7) No partings.
555	584.0			SILTSTONE: Dark grey, very fine grained, interbedde sandstone plant fragments and occasional thin coal stringers. 557 - 562 mostly sandstone. Bedding 53 degrees to core axis at 560'. Bedding 54 degrees to core axis at 505'. Bedding 58 degrees to core axis at 575'. Bedding 56 degrees to core axis at 581'. Interbeds of shale just prior to contact with coal seam.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
584.0	592.2	3.0 / 8.2	37%	COAL SEAM: Sampled (DH - 19-8) No partings.
592.2	606.6			SANDSTONE: Grey to dark grey fine grained, cross-bedded, interbeds of siltstone and shale (interbeds form half of rock). Bedding 63 degrees to core axis at 594'. Bedding 63 degrees to core axis at 604'.
606.6	612.6	4.4 / 6.0	73%	COAL SEAM: Sampled (DH - 19-9) Partings (Shaley Mudstone) 607.8 - 608.1 609.3 - 609.7
612.6	671			SANDSTONE: Dark grey, fine grained, crossbedded, interbedded siltstone, mudstone and shale. 612-630 is mainly a shaley sandstone. Plant fragments, thin coal seams calcite stringers at 637and 642. Bedding 66 degrees to core axis at 621'. Bedding 50 degrees to core axis at 637'. Bedding 60 degrees to core axis at 650'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 19

Footage		Recovery		Description
from	to	feet	%	
				Bedding 55 degrees to core axis at 657'. Bedding 62 degrees to core axis at 662'. Bedding 62 degrees to core axis at 670'.
671 -	683.5	6.8 12.5	54%	COAL SEAM: Sampled (DH -19-10) No partings.
683.5 -	717			SILTSTONE: Dark grey, very fine grained, interbedded mudstone and sandstone. Plant fragments, thin coal seams. Bedding 52 degrees to core axis at 688'. COAL SEAM: 691.3 - 692.8 1.2' coal recovered so not sampled. COAL SEAM: 694.1 - 694.7 Not sampled. COAL SEAM: 697.1 - 698.0 Not sampled. This coal seam at 710'. Bedding 64 degrees to core axis at 712'. END OF HOLE 717'. Rob Wilson March 7, 1977.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 20 Size of core: HQ Total depth: 709 ft
216.1 m

Location: EMGS co-ordinates -

Baseline co-ordinates -

Elevation - ft
m

Date of starting : March 7, 1977
Date of completion : March 11, 1977

Logging by : Rob G. Wilson
on : March 12, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
230	70	86.5 "	N 84 degrees E
460	140	84.0 "	N 73 " E
656	200	82.0 "	N 73 " E

Recovery of coal : $\frac{46.8}{54.2}$ = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No.: DH 20 Size of core: HQ mm Total depth: 709 ' m

Location: N
W
Elevation of collar: '
m

Dip of Hole: °
Bearing " : N °

Date of starting: Mar. 7/77
Date of completion: Mar. 11/77

Logging by: Rob G. Wilson
Logging on: Mar. 12/77

Remarks:
Recovery: $\frac{46.8}{54.2}$ = 87%

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-20

Footage		Recovery		Description
from	to	feet	%	
0	- 27			OVERBURDEN: (NO CORE)
27	- 65.5			SANDSTONE: Grey to dark grey, fine to very fine grained, interbedded shale and siltstone. Cross-bedded plant fragments, pieces of coal, thin coal seams. Bedding 46 degrees to core axis at 28'. Bedding 54 degrees to core axis at 43'. Bedding 50 degrees to core axis at 55'. Coal Seam: 53.0 - 53.3 Bedding 50 degrees to core axis at 58'
65.5	- 71.5	4.9 6.0	82%	COALY SHALE: Dark grey to black, saley coal and coaly shale and shale and good coal. Sampled (DH-20-1)
71.5	- 185.0			SANDSTONE: Dark grey, fine grained, crossbedded interbedded siltstone and shale. Plant fragments thin coal stringers and coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.
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Footage		Recovery		Description
from	to	feet	%	
				Coal Seam: 94.5 - 95.2 Bedding 50 degrees to core axes at 73'. Bedding 49 degrees to core axis at 80'. Bedding 55 degrees to core axis at 89'. Broken core and minor coal 97 - 99'. Bedding 38 degrees to core axis at 105'. Bedding 53 degrees to core axis at 116'. Coal seams 122.8 - 123.4. Bedding 50 degrees to core axis at 134'. Bedding 52 degrees to core axis at 144'. Bedding 45 degrees to core axis at 151'. Bedding 40 degrees to core axis at 159'. Bedding 46 degrees to core axis at 169'. Bedding 45 degrees to core axis at 177'. Bedding 43 degrees to core axis at 187'.
185 -	192.5			SILTSTONE: Dark grey very fine grained interbedded sandstone. Bedding 54 degrees to core axis at 192'.
192.5 -	205.5	11.8 13.0	91%	COAL SEAM: Sampled (DH-20-2) 199.4-200.0 Parting (Mudstone). Bedding 50 degrees to core axis at 199'.
205.5 -	216			SANDSTONE: Grey, fine grained, crossbedded, interbedded siltstone and shale. Bedding 47 degrees to core axis at 207'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
				Bedding 45 degrees to core axis at 214'.
216 -	218.3	2.3 / 2.3	100%	COAL SEAM: Sampled (DH-20-3) No partings.
218.3 -	332.0			SANDSTONE: Grey, fine grained, occasionally crossbedded, interbedded siltstone, and shale. Bedding 46 degrees to core axis at 220'. 227.6 - 230.0' COAL SEAM NOT OVER 2' total length Not sampled. Bedding 50 degrees to core axis 230'. Bedding 55 degrees to core axis 240'. 249 - 262 Siltstone increases to 45%. 255-257 Broken core. Bedding 55 degrees to core axis at 247'. Bedding 57 degrees to core axis at 257'. Bedding 55 degrees to core axis at 268'. Bedding 64 degrees to core axis at 278'. 285.0 - 286.1 COAL SEAM Bedding 59 degrees to core axis at 291'. Bedding 60 degrees to core axis at 302'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
				Siltstone and minor coal at 297 - 298 308 - 309 COAL SEAM. Bedding 49 degrees to core axis at 312'. Bedding 59 degrees to core axis at 322'. Bedding 58 degrees to core axis at 332'.
332.0	337.5	4.8 5.5	87%	COAL SEAM: Sampled (DH-20-4) No partings.
337.5	392			SANDSTONE: Grey, fine grained crossbedded, interbedded siltstone and shale. Bedding 63 degrees to core axis at 338'. Bedding 45 degrees to core axis at 348'. Bedding 54 degrees to core axis at 358'. Bedding 55 degrees to core axis at 368'. Bedding 54 degrees to core axis at 378'. COAL SEAMS 382 - 383.5 & 384.6 - 386.0. Bedding 56 degrees to core axis at 388'.
392	417			SILTSTONE: Dark grey, very fine grained, carbonaceous, many thin coal seams, plant fragments. minor sandstone interbeds and some mudstone interbeds 404-407 quite broken core. Bedding 53 degrees to core axis at 399'. Bedding 51 degrees to core axis at 415'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
417	421.2	3.8/4.2	90%	COAL SEAM: Sampled (DH -20-5) No Partings.
421.2	441			SANDSTONE: Grey, fine grained crossbedded, interbedded siltstone and shale. Siltstone 35 - 45% in places. Bedding 61 degrees to core axis at 427'. Bedding 56 degrees to core axis at 440'.
441	457			SILTSTONE: Dark grey, very fine grained, interbedded sandstone and shale. Carbonaceous and some coal seams and plant fragments. Bedding 56 degrees to core axis at 448'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
457	470			SANDSTONE: Grey, fine grained, interbedded siltstone and shale. Thin coal stringers. Bedding 57 degrees to core axis at 457'. Bedding 55 degrees to core axis at 468'.
470	475			SILTSTONE: Dark grey very fine grained, carbonaceous, interbeds of sandstone, mudstone and shale. Plant fragments and thin coal seams.
475	478.7	3.7 3.7	100%	COAL SEAM: Sampled (DH -20-6) Partings. 477.1 - 477.8 (Mudstone) 478.1 - 478.2
478.7	516.2			SILTSTONE: Dark grey, very fine grained, interbedded sandstone and mudstone and shale. Broken core 480.2 - 481.5. Bedding 66 degrees to core axis at 480'. Bedding 59 degrees to core axis at 493'. Bedding 64 degrees to core axis at 505'. 505 - 514 Sandstone 45%.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
				Bedding 66 degrees to core axis at 514'.
516.2 -	523.7	6.6 / 7.5	88%	COAL SEAM: Sampled (DH-20-7) 521.1 - 521.7 521.6 - 522.0 Partings
523.7 -	542.3			SILTSTONE: Dark grey, very fine grained, carbonaceous. Interbedded sandstone, shale mudstone. Plant fragments and thin coal seams. 526.6 - 529.0 COAL SEAM. Not sampled due to less than 2' recovery. Bedding 69 degrees to core axis at 525'. Bedding 60 degrees to core axis at 535'. Bedding 61 degrees to core axis at 542'.
542.3 -	554.3	8.9 / 12.0	74%	COAL SEAM: Sampled (DH-20-8) No Partings.
554.3 -				SILTSTONE: Dark grey, very fine grained, carbonaceous, interbedded sandstone, mudstone and shale.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
				Plant fragments, thin coal seams Coal Seams: 564.4 - 564.8. Bedding 64 degrees to core axis at 562'. Bedding 68 degrees to core axis at 574'. Bedding 65 degrees to core axis at 585'. Bedding 75 degrees to core axis at 592'. Bedding 56 degrees to core axis at 603'. Bedding 69 degrees to core axis at 613'. Bedding 66 degrees to core axis at 625'. 627.3 - 629.7 SHALEY COAL NOT SAMPLED (UNDER 2' RECOVERY) Bedding 62 degrees to core axis at 631'. 632.8 - 638.2 Coaly and Shaley siltstone - Some coal seams all under 1'. Bedding 57 degrees to core axis at 643'. Bedding 66 degrees to core axis at 651'. 646 - 652 mainly sandstone. Bedding 64 degrees to core axis at 659'. 664 - 670 increase in sandstone. Bedding 54 degrees to core axis at 669'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 20

Footage		Recovery		Description
from	to	feet	%	
				677.8 - 679.2 COAL SEAM NOT SAMPLED Bedding 63 degrees to core axis at 670'. 683 - 683.4 -open space filling containing a large amount of pyrite, also quartz crystals up to 1/4 " long and open spaces (Vugs)lined with calcite. 683.7 - 685.6 COAL SEAM NOT SAMPLED Bedding 53 degrees to core axis at 687'. Bedding 65 degrees to core axis at 698'. Bedding 63 degrees to core axis at 708'. END OF HOLE 709' MARCH 12, 1977 Rob G. Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 21 Size of core: HQ Total depth: 550 ft
167.6 m

Location: EMGS co-ordinates - N 5583186.443
E 647832.098

Baseline co-ordinates - N 190 + 00.0
W 9 + 31.0

Elevation - ft 5113.0
m 1558.442

Date of starting : January 20, 1977
Date of completion : January 24, 1977

Logging by : G. C. Singhai
on : January 25,1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	
180	55	86.1 "	N 37 degrees E
361	110	85.0 "	N 45 " E
525	160	81.4 "	N 57 " E

Recovery of coal : $\frac{20.5}{24.6}$ ft = 83%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-21

Footage		Recovery		Description
from	to	feet	%	
0 -	34.0			Overburden (No Core).
34.0 -	70.0			Sandstone: Grey, fine grain interbeds of shale and siltstone. Crossbedded pieces of coal bedding 60 degrees to core axis at 37.
70.0 -	86.0			Mudstone: Dark grey interbeds of shale and siltstone, and segments of plants. Pieces of coal, occasionally thin coal seams. Coal seam:- 71.7 - 72.4.
86.0 -	125.3			Sandstone: Grey fine grain, interbeds of siltstone, and shale, crossbedded pieces of coal. Bedding 60 degrees to core axis at 107'. Occasionally thin coal seams.
125.3 -	132.0			Shale: Dark grey, laminated interbeds of siltstone, pieces of coal, gragments of plants.
132.0 -	136.4			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal.
136.4 -	141.1	3.8 4.7	81	Coal Seam: Sampled, (DH-21-1) partings:-Mudstone, 140.0-140.7.
141.1 -	147.3			Mudstone: Dark grey, gragments of plants, pieces of coal.
147.3 -	157.0			Sandstone: Grey, fine grain crossbedded, interbeds of shale and siltstone bedding 60 degrees to core axis at 154 ' .

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 21

Footage		Recovery		Description
from	to	feet	%	
152.0	164.0			Shale: Dark grey, Laminated, interbeds a siltstone, gragments of plants, occasionally very thin coal seams.
164.0	177.0			Sandstone: Grey fine grain, interbeds of siltstone and shale, crossbedded, bedding 60 degrees to core axis at 172, pieces of coal.
177.0	180.0			Mudstone: Dark grey, fragments of plants, pieces of coal, occasionally thin coal seams.
180.0	183.3	2.5 / 3.3	76	Coal Seam: Sampled, (DH-21-2) parting:-Mudstone:-180.3-180.6.
183.3	193			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal.
193.0	195.0			Mudstone: Dark grey, fragments of plants, pieces of coal.
195.0	197.2	2.0 / 2.2	91	Coal Seam: Sampled (DH-21-3) .
197.2	198.4			Mudstone: Grey, fragments of plants carbonaceous.
198.4	242.8			Sandstone: Grey, fine grain crossbedding, interbeds of siltstone, pieces of coal, bedding 65 degrees to core axis at 204 ', occasionally thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 21

Footage from	Footage to	Recovery feet	Recovery %	Description
242.8	246.7	3.7/3.9	95	Coal Seam: Sampled (DH-21-4) parting:-Mudstone:-246.2 - 246.5, 247.6 - 248.6.
246.7	251.1			Mudstone: Slightly carbonaceous.
251.1	301.0			Sandstone: Dark grey, fine grain, interbeds of siltstone and shale pieces of coal, bedding 60 degrees to core axis at 253'. Coal seam:-269-27.0, bedding 60 degrees to core axis at 292.0.
301.0	304.4			Shale: Dark grey, slightly carbon eons, fragments of plants, numerous thin coal seams.
304.4	309.7			Sandstone: Grey, fine grain crossbedded, occasionally pieces of coal.
304.7	314.5			Shale: Dark grey, interbeds of sandstone fragments of plants, pieces of coal.
330.5	339.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone, pieces of coal. Bedding 60 degrees to core axis at 332, occasionally thin coal seams.
339.0	341.5	2.0/2.5	80	Coal Seam: Sampled, (DH-21-5)
341.5	408.5			Sandstone: Grey to light grey, fine grain, cross-bedded, interbeds of siltstone and shale, pieces of coal, occasionally thin coal seams, bedding 65 degrees to core axis at 352'. Coal seam:-363.3-364.0, 385.3-385.6, 386.7-387.0, bedding 60 degrees to core axis at 406'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 21

Footage from	to	Recovery feet	%	Description
408.5	429.7			Shale: Dark grey, fragments of plants laminated, pieces of coal, numerous thin coal seams. Carbonaceous Shale 425.5 - 429.7.
429.7	432.7	2.5/3.0	83	Coal Seam: Sampled (DH-21-6).
432.7	461.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedding, pieces of coal, bedding 60 degrees to core axis at 459'.
461.0	466.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
466.0	480			Sandstone: Grey fine grain, interbeds of siltstoen and shale, crossbedded pieces of coal, occasionally thin coal seams, bedding 60 degrees to core axis at 468'.
480.0	487.0			Siltstone: Dark grey, very fine grain interbed of shale, fragments of plants. Occasionally thin coal seams.
487.0	496.0			Sandstone: Grey fine grain, interbeds of siltstone, pieces of coal and fragments of plants.
496.0	522.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, fragments of plants occasionally thin coal seams.
522.0	527.0	4.0/5.0	80	Coal Seam: Sampled (DH-21-7)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 21

Footage		Recovery		Description
from	to	feet	%	
527.0	- 550			Sandstone: Grey to light grey interbeds of shale and siltstone, crossbedded, pieces of coal. Occasionally thin coal seams, bedding 50 degrees to core axis at 534'.
				End of Hole at 550'.
				G. C. Singhai
				January 25, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 22 Size of core: HQ Total depth: 745 ft
227.1 m

Location: EMGS co-ordinates - N 5583991.288
E 648563.079

Baseline co-ordinates - N 209 + 99.2
E 20 + 23.2

Elevation - ft 5442.8
m 1658.96

Date of starting : February 23, 1977
Date of completion : February 28, 1977

Logging by : Rob Wilson
on : March 1, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
246	75	88.0 "	N 21 degrees E
492	150	88.4 "	N 21 " E
722	220	88.2 "	N 51 " E

Recovery of coal : $\frac{104.0}{138.4}$ ft = 75%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 22

Footage		Recovery		Description
from	to	feet	%	
0	- 6			OVERBURDEN (NO CORE)
6	- 32			SILTSTONE: Dark grey, very fine grained, interbeds of sandstone, shale and coal. Plant fragments and thin coal seams. Bedding 48 degrees to core axis at 23'. Core quite highly broken. EXACT START OF COAL SEAM DIFFICULT TO PINPOINT DUE TO BROKEN CORE
32	- 33.5			COAL SEAM: NOT SAMPLED
33.5	- 78.0			SANDSTONE: Grey, fine grained, crossbedded, interbedded with siltstone, and shaley coal. Fragments of plants. Bedding 60 degrees to core axis at 46'. Bedding 51 degrees to core axis at 56'. 72 - 82 Core highly broken and missing.
78.0	-102.1	22.4 24.1	93%	COAL SEAM: SAMPLED (DH-22-1) START OF COAL SEAM AND PARTINGS DIFFICULT TO TELL DUE TO BROKEN CORE.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 22

Footage		Recovery		Description
from	to	feet	%	
				PARTINGS (MUDSTONE) 84.2 - 84.4 LOCATIONS (86.3- 86.5) APPROX. 91.0 - 91.5) DUE TO (98.6- 98.8) BROKEN 99.3 - 99.7 CORE 101.5 - 101.8
102.1	- 117			SILTSTONE: Dark grey, very fine grained, interbedded with mudstone, sandstone, shale and coal. Fragments of plants and thin coal seams, especially 106 - 116.
117	- 135.5			SANDSTONE: Grey, fine grained, crossbedded, interbedded with siltstone. Plant fragments, thin shale beds. 118 - 118.8 - Thin calcite stringers at random orientation. Bedding 50 degrees to core axis at 127'.
135.5	- 232			SILTSTONE: Dark grey, very fine grained, interbedded with sandstone, coal, mudstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 22

Footage		Recovery		Description
from	to	feet	%	
				Fragments of plants, thin coal seams, especially 137 - 144. 144 - 151 mainly sandstone. Coal Seam: 151 - 151.3 152 - 156 Coaly siltstone Bedding 62 degrees to core axis at 160'. Bedding 55 degrees to core axis at 173'. Past 174, granularity (size) increases slightly, almost a sandstone. Bedding 54 degrees to core axis at 176'. Bedding 52 degrees to core axis at 188'. Bedding 47 degrees to core axis at 200'. Bedding 41 degrees to core axis at 212'.
232	249.1	12.8 17.1	75%	COAL SEAM: SAMPLED (DH-22-2) PARTINGS (MUDSTONE) 247.0 - 247.4
249.1	254.2			SILTSTONE: Dark grey, very fine grained, interbeds of coal and sandstone. Core highly broken.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 22

Footage		Recovery		Description
from	to	feet	%	
254.2	- 265	8.2 10.8	76%	COAL SEAM: SAMPLED (DH-22-3) PARTINGS (MUDSTONE) 255.6 - 255.7 260.5 - 260.7 263.8 - 264.0
265	- 317.6			SILTSTONE: Dark grey, very fine grained, interbedde sandstone and shale. Fragments of plants, pieces of coal, thin coal seams. 302 - 312 increase in amount of sandstone. Bedding 53 degrees to core axis at 279'. Bedding 62 degrees to core axis at 293'. Bedding 62 degrees to core axis at 312'.
317.6	- 330	12.4 12.4	100%	COAL SEAM: SAMPLED (DH-22-4) PARTINGS (MUDSTONE) NONE FOUND
330	- 366			SANDSTONE: Dark grey, fine grained, interbeds of siltstone coal and shale. Thin coal seams and plant fragments. Bedding 50 degrees to core axis at 334'. Bedding 56 degrees to core axis at 344'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 22

Footage		Recovery		Description
from	to	feet	%	
				Bedding 53 degrees to core axis at 357'. Bedding 51 degrees to core axis at 365'.
366.0	372.3	6.3 / 6.3	100%	COAL SEAM: SAMPLED (DH-22-5) NO PARTINGS
372.3	376.3			SANDSTONE: Very fine grained, dark grey, interbedded with siltstone. Bedding 50 degrees to core axis at 375'.
376.3	380.6	4.2 / 4.3	98%	COAL SEAM: SAMPLED (DH-22-6) PARTINGS (MUDSTONE) 378.4 - 378.8
380.6	389.9			SILTSTONE: Dark grey, very fine grained, interbedded shale and sandstone. Plant fragments, pieces of coal, thin coal stringers. Bedding 47 degrees to core axis at 386'.
389.9	395.3	4.9 / 5.4	91%	COAL SEAM: SAMPLED (DH-22-7) NO PARTINGS.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-22

Footage		Recovery		Description
from	to	feet	%	
395.3	493.8			SANDSTONE: Grey, fine grained, interbedded siltstone and shale. Occasional plant fragments,, pieces of coal and thin coal stringers. Bedding 48 degrees to core axis at 398'. Bedding 47 degrees to core axis at 415'. Bedding 46 degrees to core axis at 428'. Bedding 43 degrees to core axis at 443'. Bedding 34 degrees to core axis at 448'. Bedding 48 degrees to core axis at 451'. Bedding 43 degrees to core axis at 464'. Bedding 47 degrees to core axis at 476'. 467.9 - 468.3 coal seam Past 482 becomes much more fine grained, almost a siltstone. Fragments of plants.
493.8	498.2	4.4 4.4	100%	COAL SEAM: SAMPLED (DH-22-8) NO PARTINGS
498.2	525.9			SILTSTONE: Dark grey, very fine grained, interbedded sandstone. Thin coal seams especially between 499 and 507. Coal seam 506.5 - 507. Bedding 45 degrees to core axis at 501'. Bedding 50 degrees to core axis at 510'. Bedding 55 degrees to core axis at 520'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 22

Footage		Recovery		Description
from	to	feet	%	
525.9	557.9	22.5 32.0	70%	COAL SEAM: SAMPLED (DH-22-9) NO PARTINGS BAG 1
557.9	631.5			SILTSTONE: Dark grey, very fine grained, interbedded sandstone. Thin coal stringers and plant fragments. 566 - 575 Core highly broken Bedding 53 degrees to core axis at 567'. Bedding 50 degrees to core axis at 577'. 583 - 611 Core highly broken. 592 - 595 Core missing. 595 - 597 Mush, but appears to have been a coal seam. Not sampled. Bedding 50 degrees to core axis at 614'. 611 - 626 increase in amount of sandstone interbeds to 45%. 620 - 624 minor coal seams. Bedding 62 degrees to core axis at 624'. 626 SANDSTONE interbed to coal contact.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-22

Footage		Recovery		Description
from	to	feet	%	
631.5	645.0	6.3 / 13.5	43%	COAL SEAM: SAMPLED (DH-22-10) NO PARTINGS
645.0	702			SANDSTONE: Grey to dark grey, fine to occasionally medium grained, crossbedded and interbedded with siltstone. Bedding 55 degrees to core axis at 650'. Bedding 62 degrees to core axis at 659'. Bedding 49 degrees to core axis at 664'. Bedding 60 degrees to core axis at 677'. 677 - 692 Increase in amount of siltstone to 45%. Bedding 60 degrees to core axis at 688'. Bedding 57 degrees to core axis at 699'.
702	708.8			SILTSTONE: Dark grey, very fine grained, interbedded sandstone and mudstone. Thin coal seams, and plant fragments.
708.8	728.3	12.0 / 19.5	62%	COAL SEAM: SAMPLED (DH-22-11) PARTINGS (MUDSTONE) 720.9 - 721.1

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-22

Footage		Recovery		Description
from	to	feet	%	
728.0	- 745			SANDSTONE: First three (3) feet are a carbonaceous siltstone. Sandstone is grey to light grey, fine to medium grained, with infrequent and minor siltstone interbeds. Bedding 46 degrees to core axis at 733'. Bedding 44 degrees to core axis at 743'. END OF HOLE 745'. MARCH 1, 1977 Rob Wilson.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 23 Size of core: HQ Total depth: 776.0 ft
236.5 m

Location: EMGS co-ordinates - N 5583957.339
E 648425.001

Baseline co-ordinates - N 209 + 98.0
E 15 + 56.7

Elevation - ft 5329.1
m 1624.31

Date of starting : January 20, 1977
Date of completion : January 26, 1977

Logging by : G.C. Singhai'
on : January 26, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
246	75	88.2 "	S 79 degrees E
492	150	86.6 "	S 85 " E
722	220	84.7 "	N 76 " E

Recovery of coal : $\frac{147.4}{168.9}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 23

Footage		Recovery		Description
from	to	feet	%	
0	20			OVERBURDEN (No Core).
20	72.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale, crossbedded, occasionally pieces of coal. Bedding 60 degrees to core axis at 26. 70 " " " 67.0.
72.0	95.6			Siltstone: Dark grey, very fine grain, interbeds of mudstone, sandstone. Occasionally fragments of plant and pieces of coal. Bedding 60 degrees to core axis at 87. Coal seam 94.0 - 94.3.
95.6	127.0	29.7 31.4	95	Coalseam: Sampled (DH - 23-1). Parting, Mudstone: (95.9 - 96.0), 96.6 - 97.0, 105.3 - 105.7, (108.5 - 108.7), 113.2 - 113.7, 114.6 - 115.6.
127.0	138.8			Shale: Dark grey, interbeds of siltstone, laminated. Bedding 60 degrees to core axis at 135. Fragments of plant.
138.8	140.8	1.7 2.0	85	Coalseam: Sampled (DH - 23-2).
140.8	143.0			Mudstone: Dark grey, carbonaceous, fragments of plant.
143.0	144.6			Coalseam
144.6	164.0			Shale: Dark grey, laminated, fragments of plant, interbeds of siltstone, pieces of coal, occasionally thin coal seams.
164.0	263.5			Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale, crossbedded. Bedding 50 degrees to core axis at 195. 60 " " " 237. Pieces of coal, occasionally thin coal seams, 222 - 248. Medium grain sandstone.
263.5	274.0			Shale: Dark grey, slightly laminated, fragments of plant, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 23

Footage		Recovery		Description
from	to	feet	%	
274.0	276.3	1.7/2.3	74	Coalseam: Sampled (DH - 23-3).
276.3	278.5			Mudstone: Dark grey, fragments of plant.
278.5	323.1			Sandstone: Grey to light grey, fine grain, cross-bedded, interbeds of shale and siltstone. Bedding 60 degrees to core axis at 289. Coal seams 304.8 - 305, 306.1 - 307.0. Bedding 60 degrees to core axis at 318.
323.1	352.5	29.0/29.4	98.6	Coalseam: Sampled (DH - 23-4). Parting, Mudstone: 346.2 - 347.1, (347.9 - 348.0), 348.9 - 349.8, 350.0 - 351.0, 351.3 - 352.0.
352.5	360.9			Mudstone: Dark grey, fragments of plant, pieces of coal, thin coal seams, slightly carbonaceous, coal seam: 356.8 - 357.7.
360.9	370.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 70 degrees to core axis at 368.
370.0	443.2			Shale: Dark grey, laminated, interbeds of mudstone and siltstone, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 379.0 - 379.7, 383.1 - 384.4, 395.4 - 396.2, 399.6 - 399.7. Bedding 70 degrees to core axis at 442.
443.2	460.1	15.9/16.9	94	Coalseam: Sampled (DH - 23-5). Partings, Carbonaceous Mudstone: 445.5 - 445.7. " Mudstone: 457.7 - 457.9.
460.1	468.7			Mudstone: Dark grey, fragments of plant, pieces of coal, occasionally thin coal seams. Coal seam 462.2 - 462.9.
468.7	482.0	13.2/13.3	92	Coalseam: Sampled (DH - 23-6). Parting, Mudstone (Carbonaceous): 468.9 - 469.2.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 23

Footage		Recovery		Description
from	to	feet	%	
482.0	492.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 483.0 - 483.6, 484.0 - 484.2, 485.1 - 485.6.
492.0	511.5			Siltstone: Dark grey, very fine grain, interbeds of sandstone. Bedding 50 degrees to core axis at 501.
511.5	528.5			Sandstone: Grey, fine grain, interbeds of siltstone, pieces of coal. Bedding 60 degrees to core axis at 526.
528.5	552.6			Siltstone: Dark grey, very fine grain, interbeds of shale and mudstone, fragments of coal.
552.6	563.5	10.2 / 10.9	94	Coalseam: Sampled (DH - 23-7).
563.5	588.1			Mudstone: Dark grey, fragments of plant, stringers of coal, thin coal seams. Coal seams: 564.7 - 564.8, 566.4 - 566.5.
588.1	597.0	8.0 / 8.9	90	Coalseam: Sampled (DH - 23-8).
597.0	607.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 599.5 - 599.9, 600.3 - 601.3, 602.0 - 603.0, 604.0 - 604.5.
607.0	615.4			Siltstone: Dark grey, very fine grain, occasionally fragments of plant.
615.4	621.7	5.7 / 6.3	90	Coalseam: Sampled (DH - 23-9). Parting, Mudstone: 620.3 - 620.5.
621.7	626.0			Mudstone: Dark grey, fragments of plant, numerous thin coal seams.
626.0	694.8			Sandstone: Grey to light grey, fine grain, pieces of coal, bedding 60 degrees to core axis at 637.0, crossbedded, interbeds of siltstone and shale, bedding 60 degrees to core axis at 691.
694.8	697.6			Mudstone: Dark grey, fragments of plant, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 23

Footage		Recovery		Description
from	to	feet	%	
697.6	704.0	4.3/6.4	69	Coalseam: Sampled (DH - 23-10). Parting, Mudstone (Carbonaceous): 701.5 - 702.4.
704.0	706			Mudstone: Dark grey, fragments of plant, stringers of coal.
706	717.0			Sandstone: Grey to light grey, fine grain to medium grain, crossbedded, pieces of coal. Bedding 60 degrees to core axis at 715.
717.0	724.2			Mudstone: Dark grey, fragments of plant, pieces of coal, interbeds of siltstone.
724.2	764.3	28.0/40.1	70	Coalseam: Sampled (DH - 23-11). Partings, Mudstone (Carbonaceous): 731.0 - 733.0, (740.4 - 741.1), (744.5 - 744.8), 749.2 - 750.0.
764.3	768.5			Sandstone: Grey, fine grain, crossbedded, interbeds of shale. Bedding 60 degrees to core axis at 768.
768.5	776.0			Shale: Dark grey, fragments of plant, thin coal seams.

END OF HOLE AT 776.0

G. C. Singhai
Jan. 26/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 24 Size of core: HQ Total depth: 591 ft
180.1 m

Location: EMGS co-ordinates - N 558 3881.560
E 648123.661

Baseline co-ordinates - N 209 + 90.0
E 5 + 37.3

Elevation - ft 5231.3
m 1594.50

Date of starting : January 16, 1977
Date of completion : January 19, 1977

Logging by : G.C. Singhai
on : January 20, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	86.8 "	N 66 degrees E
394	120	85.0 "	N 61 " E
574	175	83.9 "	N 61 " E

Recovery of coal : $\frac{81.5}{106.1}$ ft = 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 24

Footage		Recovery		Description
from	to	feet	%	
0	12			OVERBURDEN (No Core).
12	22.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 16.
22.0	40.3			Mudstone: Dark grey, fragments of plant, pieces coal, numerous thin coal seams: 24.6 - 25.5, 32.1 - 33.4, 39.0 - 39.6.
40.3	47.6	6.0 / 7.3	82	Coalseam: Sampled (DH - 24-1). Partings, Mudstone: 41.0 - 41.5, 46.0 - 47.0.
47.6	51.5			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams.
51.5	60.5	6.5 / 9.0	72	Coalseam: Sampled (DH - 24-2) (One foot - ground core).
60.5	69.5			Shale: Dark grey, interbeds of siltstone, fragments of plant. Bedding 60 degrees to core axis at 66.
69.5	72.0	1.3 / 2.5	52	Coalseam: Sampled (DH - 24-3) (One foot - ground core).
72.0	81.0			Mudstone: Dark grey, fragments of plant, pieces of coal.
81.0	117.0			Sandstone: Grey, fine to medium grain, crossbedded, interbeds of shale and siltstone, occasionally thin coal seams. Bedding 60 degrees to core axis at 88.
117.0	122.0			Mudstone: Dark grey, fragments of plant, pieces of coal.
122.0	127.0	5.0 / 5.0	100	Coalseam: Sampled (DH - 24-4).
127.0	129.0			Sandstone: Grey, fine grain, interbeds of mudstone. Bedding 60 degrees to core axis at 128.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 24

Footage		Recovery		Description
from	to	feet	%	
129.0	134.0			Mudstone: Dark grey, fragments of plant, thin coal seams. Coal seam: 131.1 - 132.0.
134.0	140.7			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 135.
140.7	146.1	4.0/5.4	74	Coalseam: Sampled (DH - 24-5).
146.1	148.0			Mudstone: Dark grey, fragments of plant, interbeds of siltstone.
148.0	151.4			Sandstone: Grey, fine grain, interbeds of siltstone. Bedding 60 degrees to core axis at 149.
151.4	180.0			Mudstone: Dark grey, interbeds of siltstone and and sandstone, fragments of plant, numerous thin coal seams. Coal seams: 152.5 - 153.0, 153.2 - 153.5, 177.6 - 178.8. Bedding 60 degrees to core axis at 174.0.
180	189.0	7.5/9.0	83	Coalseam: Sampled (DH - 24-6). Partings, Mudstone: 181.9 - 182.2, 186.0 - 187.5.
189.0	202.0			Mudstone: Dark grey, fragments of plant, numerous thin coal seams. Coal seam: 200.3 - 201.5.
202.0	203.8			Sandstone: Grey, fine grain, crossbedded, pieces of coal.
203.8	206.5	2.2/2.7	81	Coalseam: Sampled (DH - 24-7).
206.5	215.0			Sandstone: Dark grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 210.
215.0	240.0			Mudstone: Dark grey, interbeds of siltstone and sandstone, fragments of plant and pieces of coal, numerous thin coal seams. Coal seams: 235.8 - 236.4, 237.7 - 238.0.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 24

Footage		Recovery		Description
from	to	feet	%	
240	242			Sandstone: Grey, fine grain, crossbedded. Bedding 70 degrees to core axis at 241.0.
242.0	262.6			Mudstone: Dark grey, fragments of plant, interbeds of siltstone, pieces of coal, occasionally thin coal seams.
262.6	265.6	2.2/3.0	73	Coalseam: Sampled (DH - 24-8).
265.6	281.1			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 267.3 - 268.0, 268.8 - 268.9.
281.1	286.8	3.7/5.7	69	Coalseam: Sampled (DH - 24-9).
286.8	294.0			Mudstone: Dark grey, interbeds of siltstone and sandstone, fragments of plant, pieces of coal. Bedding 60 degrees to core axis at 291.
294.0	304.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale, pieces of coal, crossbedded.
304.0	308.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, fragments of plant. Bedding 60 degrees to core axis at 307.
308.0	329.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 308.8 - 309.4, 312.6 - 312.8, 326. Core from 308 - 327 carbonaceous.
329.0	332			Sandstone: Grey, fine grain, crossbedded. Bedding 60 degrees to core axis at 331.
332.0	337.8			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams.
337.8	341.5	2.4/3.7	65	Coalseam: Sampled (DH - 24-10).
341.5	398.5			Sandstone: Grey to light grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 345.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 24

Footage		Recovery		Description
from	to	feet	%	
398.5	423.3	16.2/24.8	65	Coalseam: Sampled (DH - 24-11). Partings, Mudstone: 411.6 - 411.8, 417.0 - 417.3, 421.6 - 421.7, 421.9 - 422.5. Core ground 2 feet at 406, 3 feet at 410, 1 foot at 416, 1.5 feet at 420.
423.3	451.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 429.1 - 429.8, 432.0 - 432.6, interbeds of silt and sandstone.
451.0	472			Sandstone: Dark grey to grey, fine grain, interbeds of siltstone and shale, crossbedded, bedding 60 degrees to core axis at 451.5.
472	496			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, fragments of plant and occasionally pieces of coal.
496.0	503.5			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, bedding 60 degrees to core axis at 503.
503.5	519.0			Siltstone: Dark grey, very fine grain, fragments of plant, occasionally pieces of coal.
519.0	547.0	24.5/28.0	88	Coalseam: Sampled (DH - 24-12). Partings, Mudstone: 520.3 - 520.9, 528.0 - 528.1, 530.7 - 530.8, 536.0 - 536.7. Core ground 1 foot at 540, and 1 foot at 544.
547.0	565.0			Siltstone: Dark grey, very fine grain, pieces of coal, interbeds of sandstone. Bedding 60 degrees to core axis at 553.
565.0	591			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal and occasionally thin coal seams. Bedding 70 degrees to core axis at 572.

END OF HOLE AT 591.0

G. C. Singhai
Jan. 20/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 25 Size of core: HQ Total depth: 567.6 ft
173.0 m

Location: EMGS co-ordinates - N 5583849.297
E 647980.782

Baseline co-ordinates - N 209 + 97.9
E 0 + 56.8

Elevation - ft 5185.2
m 1580.45

Date of starting : January 10, 1977
Date of completion : January 15, 1977

Logging by : G.C. Singhai
on : January 16, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	
180	55	87.0 "	N 55 degrees E
360	110	86.5 "	N 62 " E
540	165	84.8 "	N 71 " E

Recovery of coal : $\frac{43.6}{50.1}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 25

Footage		Recovery		Description
from	to	feet	%	
0	24			OVERBURDEN (No Core).
24	45			Sandstone: Light grey, fine grain, crossbedded, pieces of coal, numerous thin coal seams. Bedding 60 degrees to core axis at 32.
45	51.2			Mudstone: Dark grey, fragments of plant, numerous thin coal seams.
51.2	54.1	2.1 / 2.9	72	Coalseam: Sampled (DH - 25-1). Parting, Mudstone: 52.9 - 53.4.
54.1	61.0			Shale: Dark grey, fragments of plant, interbeds of siltstone, occasionally thin coal seams. Bedding 65 degrees to core axis at 57. Coal seam: 55.3 - 55.6.
61.0	65.1	4.0 / 4.1	98	Coalseam: Sampled (DH - 25-2).
65.1	71.0			Sandstone: Dark grey to grey, fine grain, interbeds of shale. Bedding 60 degrees to core axis at 69.5.
71.0	78.6			Mudstone: Dark grey, fragments of plant, coal seam: 76.7 - 77.2.
78.6	124.6			Sandstone: Grey to dark grey, fine grain, crossbedded, interbeds of shale, pieces of coal, bedding 60 degrees to core axis at 122, occasionally thin coal seams. Mudstone 104.4 - 112.
124.6	150.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams. Coal seams: 126.0 - 127.9, 130.1 - 131.1, interbeds of siltstone.
150.0	153.3	2.9 / 3.3	88	Coalseam: Sampled (DH - 25-3).

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 25

Footage		Recovery		Description
from	to	feet	%	
153.3	168.1			Mudstone: Dark grey, fragments of plant, occasionally pieces of coal, numerous thin coal seams Coal seams: 156.1 - 156.3, 156.5 - 157.2, 159.0 - 159.5, 160.3 - 160.7, 161.3 - 161.4, 163.4 - 164.5.
168.1	187.0			Siltstone: Dark grey, very fine grained, interbeds of shale and mudstone. Bedding 60 degrees to core axis about 184.
187.0	194.8			Mudstone: Dark grey, fragments of plant, pieces of coal, occasionally thin coal seams. Coal seam: 191.9 - 192.0.
194.8	197.8			Sandstone: Grey, fine-grained, crossbedded, pieces of coal.
197.8	200.7			Mudstone: Dark grey, interbeds of siltstone, lightly carbonaceous.
200.7	203.9	2.3 3.2	72	Coalseam: Sampled (DH - 25-4).
203.9	218.0			Mudstone: Dark grey, fragments of plant, occasionally thin coal seams. Coal seam: 204.3 - 204.5.
218.0	233.0			Sandstone: Light grey to grey, fine-grained, interbeds of shale and siltstone, pieces of coal. Bedding 60 degrees to core axis at 218.0.
233.0	244.2			Mudstone: Dark grey, fragments of plant, numerous thin coal seams, interbeds of sandstone.
244.2	249.0			Sandstone.
249.0	264.1			Mudstone: Dark grey, fragments of plant, occasionally thin coal seams, interbeds of sandstone. Coal seams: 258.5 - 259.0, 259.3 - 259.6.
264.1	280.1	15.5 16.0	97	Coalseam: Sampled (DH - 25-5). Partings, Mudstone: 275.0 - 276.2, 279.0 - 279.4.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 25

Footage		Recovery		Description
from	to	feet	%	
280.1	288.5			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams.
288.5	294.0			Sandstone: Grey, fine-grained, massive.
294.0	335.5			Mudstone: Dark grey, fragments of plant, occasionally pieces of coal, thin coal seams. Coal seam: 300.0 - 300.5. Interbeds of siltstone and sandstone, bedding 50 degrees to core axis about 330.
333.5	340.0			Sandstone: Dark grey, fine grain, crossbedded, pieces of coal.
340.0	348.2			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone.
348.2	353.6			Mudstone: Dark grey, fragments of plant, pieces of coal, interbeds of siltstone.
353.6	390.2			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, numerous thin coal seams. Bedding 65 degrees to core axis at 384.
390.2	393.7			Mudstone: Dark grey, fragments of plant, interbeds of siltstone and sandstone.
393.7	395.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal.
395.0	401.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, occasionally fragments of plant.
401.0	437.5			Sandstone: Grey, fine grain, slightly massive, pieces of coal, occasionally thin coal seams.
437.5	461.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams, interbeds of siltstone. Coal seams: 441.0 - 441.1, 446.5 - 447.4, 456.0 - 456.9. Bedding 60 degrees to core axis at 459.
461.0	464.3	3.0/3.3	91	Coalseam: Sampled (DH - 25-6). Parting, Mudstone: 461.4 - 461.9.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 25

Footage		Recovery		Description
from	to	feet	%	
464.3	468.3			Mudstone: Dark grey, fragments of plant, pieces of coal. Coal seams: 466.5 - 466.9, 467.0 - 467.1
468.3	472.7			Sandstone: Grey, fine grain, interbeds of siltstone, pieces of coal. Bedding 60 degrees to core axis at 469.
472.7	481.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, occasionally pieces of coal.
481.0	484.7			Mudstone: Dark grey, fragments of plant, occasionally thin coal seams.
484.7	493.8	8.1 9.1	89	Coalseam: Sampled (DH - 25-7). Parting, Mudstone: 491.3 - 492.4.
493.8	514.6			Mudstone: Dark grey, fragments of plant, pieces of coal. Coal seam: 495.6 - 495.9. Interbeds of sandstone. Bedding 50 degrees to core axis at 500. Coal seam: 508.5 - 509.
514.6	521.1	4.2 6.5	65	Coalseam: Sampled (DH - 25-8) Core ground 2½ feet.
521.1	534.4			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal. Bedding 50 degrees to core axis at 523.
534.4	550.0			Mudstone: Dark grey, fragments of plants, interbeds of sandstone, occasionally thin coal seams.
550.0	552.1			Sandstone: Grey, fine grain, interbeds of mudstone. Bedding 55 degrees to core axis at 550.
552.1	555.5			Mudstone: Dark grey, fragments of plant.
555.5	557.8	1.5 2.3	65	Coalseam: Sampled (DH - 25-9).
557.8	560.6			Mudstone: Dark grey, fragments of plant, pieces of coal.
560.6	567.6			Sandstone: Grey, fine grain, pieces of coal.
				END OF HOLE AT 567.6 G. C. Singhai Jan. 16/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 26 Size of core: HQ Total depth: 510 ft
155.4 m

Location: EMGS co-ordinates - N 5583826.725
E 647883.947

Baseline co-ordinates - N 210 + 01.0
W 2 _ 62.6

Elevation - ft 5162.6
m 1573.56

Date of starting : January 6, 1977
Date of completion : January 9, 1977

Logging by : David Thacker
on : January 12, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
164	50	88.6 "	N 32 degrees E
328	100	86.5 "	N 68 " E
492	150	83.9 "	N 66 " E

Recovery of coal : $\frac{26.0}{29.6}$ ft = 88%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 26

Footage		Recovery		Description
from	to	feet	%	
0	47.0			OVERBURDEN
47.0	53.5			Carbonaceous shale.
53.5	66.4			Sandstone: Medium grained, carbonaceous.
66.4	68.8			Carbonaceous shale. Bedding 53 degrees to core axis at 67.
68.8	70.0			Shaly coal.
70.0	89.8			Carbonaceous shale, occasional siltstone.
89.8	92.6			Coaly shale.
92.6	113.3			Shale: Occasionally carbonaceous, occasionally fine-grained, interbeds of sandstone.
113.3	113.9			Breccia zone: Clasts of shale - country rock broken off main rock body lying within calcite fracture filling.
113.9	150.7			Shale: Occasionally carbonaceous, occasional fine-grained sandstone interbeds. Bedding 53 degrees to core axis at 146.
150.7	153.2			Coaly shale.
153.2	169.0			Interbedded shale and sandstone, sandstone fine-grained.
169.0	171.0			Shaly coal.
171.0	204.5			Shale: Occasional fine-grained sandstone interbeds, occasionally carbonaceous. Bedding 52 degrees to core axis at 196.
204.5	211.8	7.3 / 7.3	100	Coalseam: Sampled (DH - 26-1).
211.8	214.7			Carbonaceous shale.
214.7	216.4			Coal.
216.4	217.0			Carbonaceous shale.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 26

Footage		Recovery		Description
from	to	feet	%	
217.0	217.4			Coal.
217.4	226.5			Carbonaceous shale: Occasional fine-grained sandstone interbeds.
226.5	267.0			Sandstone: Medium-grained, crossbedded, occasionally carbonaceous, rare shale interbeds. Bedding 55 degrees to core axis at 256.
267.0	268.5			Carbonaceous shale.
268.5	272.0	3.4/3.5	97	Coalseam: Sampled (DH - 26-2).
272.0	275.8			Sandstone: Fine-grained.
275.8	282.0	4.9/6.2	79	Coalseam: Sampled (DH - 26-3).
282.0	297.5			Carbonaceous shale.
297.5	327.1			Sandstone: Medium-grained, crossbedded, occasional carbonaceous shale interbeds. Bedding 65 degrees to core axis at 304.
327.1	329.1			Carbonaceous shale.
329.1	330.1			Coal.
330.1	353.4			Shale: Partly carbonaceous.
353.4	366.7			Coaly shale.
366.7	396.1			Shale: Occasionally carbonaceous, occasional fine-grained sandstone interbeds. Bedding 51 degrees to core axis at 378.
396.1	398.8	2.7/2.7	100	Coalseam: Sampled (DH - 26-4).
398.8	417.8			Sandstone: Medium-grained, crossbedded.
417.8	422.3			Shale.
422.3	423.1			Coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 26

Footage		Recovery		Description
from	to	feet	%	
423.1	455.0			Sandstone: Medium-grained, crossbedded, occasional shale interbeds, occasional carbonaceous partings. Bedding 53 degrees to core axis at 424.
455.0	490.4			Shale: Occasional medium-grained sandstone interbeds, rarely carbonaceous. Bedding 58 degrees to core axis at 475.
490.4	500.3	7.7/9.9	78	Coalseam: Sampled (DH - 26-5) High ash content.
500.3	503.4			Carbonaceous shale.
503.4	503.9			Coal.
503.9	510.0			Carbonaceous shale.

END OF HOLE AT 510.0

David Thacker
Jan. 12/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 27 Size of core: HQ Total depth: 612 ft
204.8 m

Location: EMGS co-ordinates - N 5583777.886
E 647685.406

Baseline co-ordinates - N 209 + 99.2
W 9 + 40.2

Elevation - ft 5102.5
m 1555.24

Date of starting : Jan. 6/1977
Date of completion : Jan. 13/77

Logging by : G.C. Singhai
on : Jan. 14/77

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	88.0 "	S 74 degrees E
392	120	84.5 "	S 84 " E
584	178	82.3 "	S 83 " E

Recovery of coal : $\frac{20.4}{21.8}$ ft = 94%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 27

Footage		Recovery		Description
from	to	feet	%	
0	19			OVERBURDEN (No Core).
19	24.0			Sandstone: Grey, fine grain, occasionally pieces of coal. Bedding 50 degrees to core axis.
24.0	31.3			Shale: Dark grey, pieces of coal and fragments of plant, occasionally bands of sandstone, numerous thin coal seams: 26.4 - 26.8.
31.3	34.8			Sandstone: Light grey to grey, fine-grained, crossbedded, occasionally pieces of coal.
34.8	35.6			Shale.
35.6	37.4	1.8 / 1.8	100	Coal: Parting, shale: 36.2 - 36.4.
37.4	44.2			Mudstone: Dark grey, pieces of coal and fragments of plant, numerous thin coal seams.
44.2	45.2			Coalseam.
45.2	49.0			Sandstone: Thin bands of siltstone and mudstone, pieces of coal and numerous thin coal seams.
49.0	62.5			Siltstone: Dark grey, very fine-grained, numerous thin coal seams and bands of mudstone and sandstone. Bedding 60 degrees to core axis about 59.
62.5	72.0			Sandstone: Grey to light grey, fine-grained, crossbedded, some pieces of coal.
72.0	73.4	1.4 / 1.4	100	Coalseam.
73.4	74.6			Mudstone: Fragments of plant, pieces of coal.
74.6	122.8			Sandstone: Grey to light grey, fine-grained, crossbedded, occasionally pieces of coal. Bedding 50 degrees to core axis about 84. Interbeds of siltstone and shale.
122.8	134.8			Siltstone: Dark grey, very fine-grained, interbeds of shale and mudstone, occasionally thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 27

Footage		Recovery		Description
from	to	feet	%	
134.8	147.6			Mudstone: Very dark grey, fragments of plant, thin coal seams. Coal seams: 140.2 - 141.0, 142.6 - 143.8.
147.6	164.5			Sandstone: Grey to light grey, fine-grained, crossbedded, pieces of coal, interbeds of siltstone. Bedding 70 degrees to core axis about 155.
164.5	172.5			Siltstone: Dark grey, very fine-grained, interbeds of sandstone and mudstone, numerous coal seams, occasionally fragments of plant.
172.5	192.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plant, numerous thin coal seams.
192.0	216.0			Siltstone: Dark grey, very fine-grained, interbeds of sandstone, occasionally pieces of coal. Bedding 50 degrees to core axis about 201.
216.0	268.8			Sandstone: Fine-grained, interbeds of siltstone, pieces of coal. Bedding 45 degrees to core axis.
268.8	274.1	4.5 / 5.3	85	Coal: Sampled (DH - 27-1).
274.1	286.7			Sandstone: Light grey, fine-grained, crossbedded, interbeds of siltstone, pieces of coal. Bedding 50 degrees to core axis about 286. Coal seam: 281.0 - 282.0.
286.7	297.0			Shale: Interbeds of sandstone, numerous thin coal seams.
297.0	299.5			Sandstone: Light grey, fine-grained, crossbedded, pieces of coal.
299.5	302.0	2.3 / 2.5	92	Coal: Sampled (DH - 27-2).
302.0	312.7			Mudstone: Grey, fine-grained, crossbedded, pieces of coal. Bedding 60 degrees to core axis about 305.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 27

Footage		Recovery		Description
from	to	feet	%	
312.7	315.4	2.6 / 2.7	96	Coalseam: Sampled (DH - 27-3).
315.4	350.4			Sandstone: Light grey, fine-grained, interbeds of siltstone and mudstone, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 70 degrees to core axis about 325.
350.4	359.1			Siltstone: Dark grey, very fine-grained, interbeds of sandstone and mudstone. Coal seam: 352.0 - 352.4. Carbonaceous shale 357.5 - 358.3.
359.1	408.1			Sandstone: Light grey, fine-grained, interbeds of siltstone and sandstone, crossbedded, pieces of coal. Bedding 50 degrees to core axis about 367. 60 " " " 402.
408.1	412.0	3.9 / 3.9	100	Coalseam: Sampled (DH - 27-4).
412.0	447.0			Sandstone: Light grey, fine-grained, crossbedded, pieces of coal, interbeds of siltstone and shale. Bedding 60 degrees to core axis about 416.
447.0	452.3			Mudstone: Dark grey, fragments of plant, pieces of coal.
452.3	492.0			Sandstone: Light grey, fine-grained, interbeds of siltstone, pieces of coal, numerous coal seams. Bedding 60 degrees to core axis about 476.
492.0	503.9			Mudstone: Dark grey, fragments of plant, thin coal seams from 500 - 503.9. Coal seams: 501.2 - 502.0, 502.5 - 502.6.
503.9	511.3			Siltstone: Dark grey, very fine-grained, interbeds of mudstone.
511.3	516.6			Sandstone: Grey, fine-grained, crossbedded, pieces of coal, interbeds of siltstone. Bedding 60 degrees to core axis at 515.
516.6	518.8			Mudstone: Dark grey, fragments of plant, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 27

Footage		Recovery		Description
from	to	feet	%	
518.8	520.5	1.7 / 1.7	100	Coalseam.
520.5	521.5			Mudstone: Dark grey, fine-grained, fragments of plant.
521.5	562.0			Sandstone: Dark grey to grey, fine-grained, cross-bedded, pieces of coal, interbeds of shale, occasionally thin seams of coal. Bedding 70 degrees to core axis at 542.
562.0	571.0			Mudstone: Dark grey, interbeds of sandstone.
571.0	573.5	2.2 / 2.5	88	Coalseam: Sampled (DH - 27-5).
573.5	574.0			Shale.
574.0	592.0			Sandstone: Light grey to grey, fine-grained, interbeds of shale and siltstone, occasionally pieces of coal, crossbedded. Bedding 70 degrees to core axis at 581.
592.0	609.2			Mudstone: Dark grey, fragments of plant, pieces of coal, thin coal seams.
609.2	612.0			Sandstone: Grey, fine-grained, crossbedded, pieces of coal.

END OF HOLE AT 612.0

G. C. Singhai
Jan. 14/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 28 Size of core: HQ Total depth: 515 ft
157.0 m

Location: EMGS co-ordinates - N 5584647.828
E 648684.502

Baseline co-ordinates - N 229 + 98.1
E 29 + 19.2

Elevation - ft 6106.2
m 1861.17

Date of starting : Feb. 23/ 77
Date of completion : Feb. 27/77

Logging by : Rob Wilson
on : Feb. 28/77

Drill hole deviations:

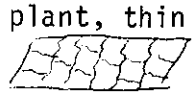
Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
164	50	89.0 "	N 21 degrees E
328	100	87.0 "	S 89 " E
492	150	85.0 "	N 86 " E

Recovery of coal : 57.5
73.9 ft = 78%

Remarks :

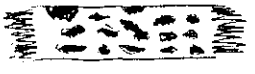
DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 28

Footage		Recovery		Description
from	to	feet	%	
0	21			OVERBURDEN (No Core).
21	26?			Sandstone: Grey, fine-grained, interbeds of siltstone and mudstone. Core highly broken. Bedding 50 degrees to core axis at 22. Measurement of contact difficult to assess due to broken core.
26?	34,0	4.6 / 8	58	Coalseam: Sampled (DH - 28-1). Parting, Mudstone: 29.0 - 29.2.
34.0	39			Mudstone: Dark grey to black, interbeds of coal and siltstone.
39	43.2			Siltstone: Grey, very fine-grained, interbeds of sandstone, plant fragments and thin coal seams.
43.2	67			Sandstone: Grey, fine-grained, interbedded 45-50% with siltstone, fragments of plant. Bedding 64 degrees to core axis at 46. 58 " " " 65.
67	75.5			Siltstone: Dark grey, very fine-grained, interbeds of sandstone, fragments of plant, thin coal stringers. Mudcracks as shown:  Bedding 55 degrees to core axis at 68.
75.5	80	3.7 / 4.5	82	Coalseam: Sampled (DH - 28-2). No partings.
80	104.2			Siltstone: Dark grey, very fine-grained, interbeds of sandstone and coal. Coal seam: 84 - 85.3. Bedding 45 degrees to core axis at 88. 55 " " " 96.
104.2	106.8	2.3 / 2.6	88	Coalseam: Sampled (DH - 28-3). No parting.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 28

Footage		Recovery		Description
from	to	feet	%	
106.8	236			Sandstone: Grey, fine-grained, occasionally crossbedded. Interbedded with siltstone and shale. Mostly siltstone after coal seam for 4 feet. Calcite stringers 117 - 120, 155 - 161, 169 - 172. Shaly interbeds 200.0 - 200.5. Bedding 63 degrees to core axis at 119. 50 " " " 123. 47 " " " 137. 47 " " " 146. 35 " " " 156. 60 " " " 166. 55 " " " 176. 56 " " " 180. 58 " " " 189. 53 " " " 196. 50 " " " 207. 54 " " " 215. 61 " " " 225. 52 " " " 234.
236	268.4			Siltstone: Contact gradual. Dark grey, very fine-grained, interbedded siltstone. Bedding 55 degrees to core axis at 245. Interbeds of shale become more common after 245. Pieces of coal, thin coal seams, occasional plant fragments. Coal seams 252.8 - 253.8, 254 - 255. Spectacular carbonate infilling, crackle breccia. Most fragments unrotated:  Bedding 60 degrees to core axis at 260.
268.4	306.3	32.0 37.9	84	Coalseam: Sampled (DH - 28-4). Partings, Mudstone: 282.0 - 282.6, (284.2 - 284.4), 288.5 - 288.9, 289.3 - 289.9, 292.6 - 293.6, (297.6 - 297.9).
306.3	340			Siltstone: Dark grey, very fine-grained, interbedded sandstone 40-45% and shale. Fragments of plant, pieces of coal, thin coal seams. Coal seams (small) 327 - 333. Core quite broken 318 - 327. Bedding 56 degrees to core axis at 312. 55 " " " " 326.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 28

Footage from	Footage to	Recovery feet	Recovery %	Description
340	381			Sandstone: Grey to dark grey, fine-grained, crossbedded, interbedded siltstone and shale. Bedding 60 degrees to core axis at 347. 53 " " " 354. 52 " " " 366. 55 " " " 380.
381	389.0	4.3/8.0	54	Coalseam: Sampled (DH - 28-5). No partings.
389.0	444			Sandstone: Grey, fine to very fine-grained, crossbedded occasionally and interbedded with siltstone often. Occasional shale, plant fragments, and thin coal stringers. Rock becomes siltstone just before contact with coal seam below. Bedding 46 degrees to core axis at 395. 45 " " " 400. 51 " " " 412. 55 " " " 424. 55 " " " 431. 57 " " " 440.
444	457.1	10.6/13.1	82	Coalseam: Sampled (DH - 28-6). Partings, Mudstone: 453.0 - 453.6, 454.2 - 454.8.
457.1	515			Sandstone: Grey to dark grey, fine to medium-grained. Interbedded siltstone. Siltstone makes up first 4 feet of unit and is interbedded with shale, mudstone, and coal. Sandstone highly crossbedded and contains a high percentage of siltstone. Bedding 50 degrees to core axis at 463. Most interesting sandstone structure at 469 - 471. "Floating" bedded sand-siltstone in a bedded (same orientation) more massive sandstone* : Bedding 55 degrees to core axis at 474. 50 " " " 486. 58 " " " 501. 56 " " " 512.

* NOTE: Never see a basal sandstone becomes light to medium grey, medium-grained. becomes a true sandstone. Often "floating" siltstone structure, though

END OF HOLE AT 515.

Rob Wilson
Feb. 28/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 29 Size of core: HQ Total depth: 782 ft
238.4 m

Location: EMGS co-ordinates - N 5584577.031
E 648388.945

Baseline co-ordinates - N 230 + 01.5
E 19 + 22.1

Elevation - ft 5617.4
m 1712.18

Date of starting : Feb. 15, 1977
Date of completion : Feb. 22, 1977

Logging by : Rob Wilson
on : Feb. 23, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90 degrees	-
266	81	88.0°	S 69° E
528	161	84.5°	S 11° W
758	231	81.8°	N 76° E

Recovery of coal : $\frac{99.4}{127.1}$ ft = 78%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No.: DH - 29 Size of core: HQ mm Total depth: 782 ' m

Location: N
W
Elevation of collar: '
m

Dip of Hole: o
Bearing " : N o

Date of starting:
Date of completion:

Logging by: Rob Wilson
Logging on: Feb. 23/77

Remarks:

RECOVERY: $\frac{99.4}{127.1} \times 100 = 78\%$

SURVEYS

81 M	EAST	2.0 degrees
161 M	S 10 E	5.5 "
231 M	N 55 E	8.2 "

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 29

Footage		Recovery		Description
from	to	feet	%	
0	13.0			OVERBURDEN (No Core).
13.0	128.0			Sandstone: Grey, fine-grained, crossbedded, interbedded with siltstone. Bedding 57 degrees to core axis at 14. 45 " " " 22. 57 " " " 32. 46 " " " 46. 58 " " " 54. 57 - 62 -- Several thin coal stringers. Bedding 54 degrees to core axis at 76. 77 - 81 -- Core highly broken. Bedding 40 degrees to core axis at 83. 52 " " " 99. Plant fragments begin to appear. Bedding 56 degrees to core axis at 120. 55 " " " 126.
128.0	149.7	20.4 21.7	94	Coalseam: Sampled (DH - 29-1). Partings, Shaly coal-Mudstone: 129.2 - 129.5, 130.6 - 131.0, (133.1 - 133.3), (133.9 - 134.1), 147.1 - 147.6. NOT GOOD COAL.
149.7	153.2			Shaly mudstone: Dark grey, carbonaceous, interbedded shale, coal seams and siltstone. Plant fragments, pieces of coal.
153.2	164.1			Siltstone: Dark grey, very fine-grained, several minor coal seams (?) : 152.7 - 152.8, 153.8 - 154.2, 157.4 - 157.6, 159.7 - 159.9, 162.7 - 162.9, 163.6 - 164.0.
164.1	186.0			Sandstone: Grey, fine-grained, crossbedded. Interbeds of siltstone and shale. Thin coal seams. Bedding 50 degrees to core axis at 165. 58 " " " 175. 45 " " " 183.
186.0	191.7			Siltstone: Dark grey, very fine-grained, interbedded sandstone and shale. Plant fragments, thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 29

Footage		Recovery		Description
from	to	feet	%	
191.7	200.4			Coaly Shale: Dark grey to black, carbonaceous, slightly laminated, frequent thin coal seams, plant fragments, pieces of coal.
200.4	210			Sandstone: Dark grey, fine-grained, interbedded siltstone and shale. Bedding 56 degrees to core axis at 204. After 210 becomes fine-grained, could be siltstone.
210	267			Siltstone: Dark grey, very fine-grained, frequent interbeds of sandstone. Some shale interbeds. Bedding 46 degrees to core axis at 221. 42 " " " 239. 58 " " " 254. 48 " " " 264. Becomes a mudstone very close to change in lithology.
267	282	12.2/15	81	Coalseam: Sampled (DH - 29-2). Partings, Mudstone.
282	287.5			Sandstone: Dark grey, fine-grained, interbeds of siltstone, mudstone, and shale. Bedding 52 degrees to core axis at 285.
287.5	300.5	12.2/13.0	94	Coalseam: Sampled (DH - 29-3). Partings, Mudstone: 289.2 - 289.3, (295.8 - 295.9), 297.3 - 297.7, 298.1 - 298.5, 299.2 - 299.7.
300.5	332			Siltstone: Dark grey, very fine-grained, interbedded sandstone and shale. Fragments of plant, thin coal seams. Major sandstone interbed 319 - 325. Bedding 56 degrees to core axis at 323. 45 " " " 328.
332	342.2	5.6/10.2	55	Coalseam: Sampled (DH - 29-4). Parting, Mudstone: 334.0 - 334.3.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 29

Footage		Recovery		Description
from	to	feet	%	
342.2	373.6			Sandstone: Grey, fine-grained, slightly carbonaceous, few plant fragments, thin coal seams. Frequent siltstone interbeds, some shale interbeds. Bedding 58 degrees to core axis at 344. 58 " " " 350. 356 - 368 -- Some calcite filled fractures (?), veinlets (?). Bedding 55 degrees to core axis at 363. Sandstone past this point is very fine-grained, almost a siltstone.
373.6	378.0	3.2 4.4	73	Coalseam: Sampled (DH - 29-5). No partings.
378.0	382.5			Siltstone: Grey, very fine-grained, interbedded shale. Plant fragments. Bedding 50 degrees to core axis at 381.
382.5	384			Coalseam: Not sampled.
384	405.8			Siltstone: Grey, very fine-grained, interbedded mudstone, shale, and sandstone. Fragments of plants, thin coal seams as at 386.7 - 387.2. Bedding 50 degrees to core axis at 392. 402.3 - 405.8 Coalseam: Not sampled (Too many rock partings).
405.8	496			Sandstone: Grey, fine-grained, crossbedded, interbeds of siltstone and shale. Small coal seams 410.7 - 411.2. Bedding 67 degrees to core axis at 410. 59 " " " 417. 53 " " " 426. 66 " " " 430. 55 " " " 444. 64 " " " 459. 63 " " " 472. 62 " " " 485. 57 " " " 495. Calcite veinlets at 490 - 494.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 29

Footage		Recovery		Description
from	to	feet	%	
496	548.6			Siltstone: Grey, very fine-grained, numerous interbeds of sandstone, occasional shale interbeds and plant fragments. Bedding 49 degrees to core axis at 506. 56 " " " 514. 57 " " " 521. 54 " " " 531. 52 " " " 540. 63 " " " 548.
548.6	553			UNKNOWN: (5 foot core in tube stuck in barrel) No lithology known.
553	553.4			Mudstone: Dark grey, carbonaceous, fragments of plant.
553.4	579.7	20.7/26.3	79	Coalseam: Sampled (DH - 29-6). Partings, Mudstone: 570.8 - 571.1, 571.5 - 571.8, 572.2 - 573.0, (576.2 - 576.3), (576.5 - 576.6).
579.7	582.8			Siltstone: Dark grey, interbedded siltstone and and shale. Plant fragments, thin coal seams. Bedding 52 degrees to core axis at 580.
582.8	594.3	7.9/11.5	69	Coalseam: Sampled (DH - 29-7). Partings, Mudstone: None found.
594.3	611			Sandstone: Fine-grained, grey, frequent interbeds of siltstone. Some shale interbeds. Sandstone sometimes crossbedded and shows soft sediment deformation. Bedding 51 degrees to core axis at 599.
611	633			Mudstone: Dark grey, interbeds of siltstone. Occasional plant fragments and thin coal stringers. Bedding 64 degrees to core axis at 615. 625.7 - 626.0 Coal seam. 628.2 - 628.6 " " .

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 29

Footage		Recovery		Description
from	to	feet	%	
633	671.8			Sandstone: Grey, fine grained, crossbedded, crossbedded, interbedded with siltstone. occasionally fragments of plants. Bedding 57° to core axis at 643' Bedding 54° " " " " 656' " 55° " " " " 662' 632-645 several calcite stringers
671.8	679.4	7.4 / 7.6	97%	Coal Seam: Sampled (DH 29-8) Partings (Mudstone) None
679.4	687			Siltstone: Dark grey, very fine grained, interbedded with shale & sandstone. Fragments of plants, pieces of coal, thin coal seams. Bedding 55° to core axis at 684'
687	749			Sandstone: Grey, fine grained, in places crossbedded, containing from 687-728 an unusually high number of carbonate veinlet & fracture fillings. Interbedded siltstone & shale. Occasional thin coal seams, plant fragments. Bedding 72° to core axis at 689' " 46° " " " " 700' 708 - 708.6 Zone of shine faced rock, dark, crystocrystalline (look similar to obsedian) rock. Bedding 65° to core axis at 712 722.5 - 723.5 zone of dark soft rock, possibly coal. Bedding 70° to core axis 726 728 - 756 core fairly broken, in places a coarse medium grained sandstone. Bedding 54° to core axis at 739' 745' - 749' - 4' of core lost.
749	766.4	9.8 / 17.4	56	Coal Seam: Sampled (DH 29-9) No partings
766.4	769.3			Shaly Mudstone: Dark grey, with thin coal seams & plant fragments
769.3	782			Sandstone: Grey, fine grained, in places cross bedded Bedding 53° to core axis at 771' Bedding 50° to core axis at 781' 782' End of Hole Feb. 23/77 Rob Wilson

BOOK 2 OF 4

K-ELK RIVER 77(3)

DIAMOND DRILL
CORE
LOGGING

DH 30 TO [illegible]

276

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH-30 Size of core: HQ Total depth: 912 ft
278.0m

Location: EMGS co-ordinates - N 5584539.992
E 648237.001

Baseline co-ordinates - N 230+01.2

Elevation - ft 5410.7
m 1649.18

Date of starting : Feb. 16, 1977
Date of completion : Feb. 23, 1977

Logging by : Rob Wilson
on : Feb. 24, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90°	-
197	60	86°	N 88° E
427	130	81.5°	N 79° E
656	200	79.0°	N 73° E
886	270	75.0°	N 76° E

Recovery of coal : 159.0 ft = 83%
191.1

Remarks :

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 276

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 30

Footage		Recovery		Description
from	to	feet	%	
0	12			Overburden: No core
12	70			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & shale. Bedding 62° to core axis at 15' " " 55° " " " " 29' " 50° " " " " 37' Soft sediment deformation at 38' Bedding 48° to core axis at 46' " 53° " " " " 61' " 56° " " " " 70'
70	87			Siltstone: Dark grey, very fine grained, interbedded with some sandstone.
87	111.4			Sandstone: Grey, fine grained, interbedded with siltstone. Bedding 54° to core axis at 88' " 60° " " " " 93' " 53° " " " " 103' " 50° " " " " 110'
111.4	119.5			Mudstone: Dark grey, carbonaceous, interbeds of siltstone & shale. Thin coal seams, pieces of coal fragments of plants. 115.3 - 115.9 Coal seam 118.1 - 118.4 " " 118.6 - 119.2 Coal Seam.
119.5	147.0	22.0/27.5	80%	CoalSeam: Sampled (DH 30-1) Partings (Mudstone - Coaly shale) 127.5 - 127.7 (133.0 - 133.2) (144.4 - 144.5) 142.8 - 143.1
147.0	150.6			Mudstone: Dark grey, carbonaceous interbedded with siltstone & shale Plant fragments & thin coal stringers & seams Bedding 55° to core axis at 149'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH -30

Footage		Recovery		Description
from	to	feet	%	
150.6	155.6	4.6/5	92	Coal Seam: Sampled (DH 30-2) Partings (Mudstone 155.2 - 155.3
155.6	157.0			Mudstone: Dark grey, carbonaceous with thin coal stringers & plant fragments.
157.0	158.8			Coal Seam: Interbedded mudstone & shale. Bedding 53° to core axis at 158.0
158.8	216			Siltstone: Dark grey, carbonaceous, interbedded with sandstone & mudstone Plant fragments & occasional coal stringers. Thin coal seams 164 - 167 Mainly sandstone 192 - 197 Bedding 65° to core axis at 195.
216	312			Sandstone: Grey, fine grained, cross bedded, interbedded with siltstone. Few thin coal stringers Bedding 65° to core axis at 217 " 90° " " " " 227' " 50° " " " " 231' " 74° " " " " 240' " 65° " " " " 251' " 70° " " " " 260' 240 - 262 thin coal seams increase in frequency Bedding 70° to core axis at 273' " 65° " " " " 282' " 65° " " " " 292' " 38° " " " " 301' " 73° " " " " 311' 307.6 - 308.3 thin shaly coal seam
312	338.0	24.3/26	93	Coal Seam: Sampled (DH 30-3) Rock Partings (Mudstone) (317.9 - 318.1) 332.0 - 332.5 (333.1 - 333.2) (333.8 - 334.0) 334.2 - 334.8 336.1 - 336.5 (337.2 - 337.6)
338.0	372.5			Siltstone: Dark grey, very fine grained, frequently interbedded with crossbedded sandstone. Many shale & coal seams. Fragments of plants, pieces of coal. Soft sediment deformation prevelent in sandstone interbeds. - Flame structures. Bedding 55° to core axis at 342' " 60° to " " " 353'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-30

Footage		Recovery		Description
from	to	feet	%	
				Coal seams at 349.2 - 349.4 Shaly coal seams at 362.0 - 362.4 " " " " 363.1 - 363.3 " " " " 366.4 - 366.7 Coal seam: 367.4 - 369.3 containing .4" rock parting (not sampled) coal seam 370.5 - 370.9 371.7 - 371.9 Open space with several calcite vienlets surrounding it.
372.5	377	4.3 4.5	96	Coal Seam: Sampled (DH 30-4) Partings (Mudstone) None defineite but coal is heavy
377	378.9			Coal Shale: Dark grey, carbonaceous, with interbeds of coal, mudstone. Plant fragments.
378.9	404.0			Siltstone: Dark grey, very fine grained, slightly carbonaceous, interbedded with sandstone & shale. Fragments of plants, pieces of coal, thin coal seams. Bedding 59° to core axis at 391 Bedding 74° to core axis at 402'
404.0	419.2	13.5 15.2	89	Coal Seam: Sampled (DH 30-5) Partings (mudstone) 406.3 - 406.5
419.2	439			Siltstone: Dark grey, carbonaceous, interbeds of sandstone & shale. Fragments of plants, thin coal seams. Bedding 67° to core axis at 422' 423.3 - 423.5 Coal Seam 429 - 435 Sandstone interbed Bedding 70° to core axis at 431 443 - 439 Several small coal seams.(7) Aug. :1-.3"
439	453.8	14.0 14.8	95	Coal Seam: Sampled (DH 30-6) Partings (Mudstone) 439.9 - 439.3 (451.6 - 451.9) 450.2 - 450.5 451.9 - 452.2
453.8	457.7			Coaly Mudstone: Dark grey to black carbonaceous, partly shaly, many thin .1" coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 30

Footage		Recovery		Description
from	to	feet	%	
457.7	487.2			Siltstone: Dark grey, carbonaceous interbeds of shale & coal. Fragments of plants, pieces of coal. Bedding 62° to core axis at 470' Sandstone interbed 476 - 481 Bedding 64° to core axis at 478'
487.2	498.0	8.7/10.8	81	Coal Seam: Sampled (DH 30-7) Partings (Mudstone) 488.2 - 488.5 490.0 - 490.3
498	511.2			Siltstone: Dark grey, very fine grained, several interbeds (small) of coal to 504. Interbeds of shal & sandstone. Plant fragments, pieces of coal. Bedding 56° to core axis at 506'.
511.2	518.2	5.3/7.0	76	Coal Seam: Sampled (DH 30-8) No partings
518.2	538.8			Siltstone: Dark grey, very fine grained, several interbeds of coal (small) & sandstone Coal seam 521.8 - 523.0 Bedding 70° to core axis at 520. Bedding 70° to core axis at 537'.
538.8	542.5	2.9/3.7	78	Coal Seam: Sampled (DH 30-9) No partings
542.5	623			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & shale. Occasional plan fragments, thin coal stringers. Larger portion of siltstone near coal contact. Bedding 90° to core axis at 543 " 65° to core axis at 553' Bedding 50° to core axis at 561' Bedding 56° to core axis at 571' Bedding 80° to core axis at 580' Bedding 65° to core axis at 590' Bedding 68° to core axis at 600' Bedding 60° to core axis at 604' Bedding 62° to core axis at 612' Bedding 60° to core axis at 620' Calcite veinlets & frac. filling at 546 554, 592 - 605, 612, 618, 620

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 30

Footage		Recovery		Description
from	to	feet	%	
623	637			Siltstone: Grey, fine grained, interbedded with sandstone, occasional plant fragments. Bedding 61° to core axis at 625' Bedding 64° to core axis at 633'
637	654			Sandstone: Grey, fine grained, in places medium grained, interbedded with siltstone. Occasional thin coal seams. Bedding 58° to core axis at 646'
654	663.5			Siltstone: Grey, very fine grained, interbedded with sandstone. Fragments of plants, thin coal stringers.
663.5	706.2	34.2 42.7	80	Coal Seam; Sampled (DH 30-10) Partings (Mudstone) (694.6 - 694.9) 701.4 - 702.0 (705.4 - 705.8)
706.2	714.1			Siltstone: Dark grey, very fine grained, interbedded with coal, sandstone & mudstone. Plant fragments. Bedding 70° to core axis at 712' 707.9 - 708.8 Coal Seam
714.1	722.9	6.4 8.8	73	Coal Seam: Sampled (DH 30 - 11) Partings (Mudstone) 717.0 - 717.4
722.9	726			Shaly Mudstone: Dark grey, carbonaceous, fragments of plants, thin coal seams.
726	742			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & shale. Occasional thin coal seam. Bedding 70° to core axis at 726' Bedding 64° to core axis at 736'
742	761			Siltstone: Dark grey very fine grained, interbedded sandstone, shale & coal. Plant fragments, thin coal seams. Several thin coal seams 756 - 780.
761	796.1			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone shale & coal. Occasional plant fragments, pieces of coal thin coal seams. Bedding 62° to core axis at 773' Bedding 56° to core axis at 789' Bedding 72° to core axis at 795'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 30

Footage		Recovery		Description
from	to	feet	%	
796.1	802.3	4.8/6.2	77	Coal SEaM: Sampled (DH 30-12) No Partings
802.3	822			Siltstone: Dark grey, very fine grained, frequent sandstone interbeds. Fragments of Plants, thin coal seams. Bedding 67° to core axis at 805' Bedding 60° to core axis at 815' Past 822, sandstone beds become more frequent than siltstone. No definite unit change.
822	872			Sandstone: Grey, fine grained, crossbedded, frequent interbeds of siltstone, Some interbeds of shale. 832 - 841 mostly siltstone Bedding 60° to core axis at 822' Bedding 58° to core axis at 842' Bedding 70° to core axis at 862' Bedding 70° to core axis at 871'
872	890.9	14.0/18.9	74	Coal Seam; Sampled (DH 30-13) Partings (Mudstone) 872.3 - 872.4 885.2 - 885.3 Some parts of core are quite broken up.
890.9	912			Sandstone: Grey, fine grained, interbedded with siltstone & mudstone. 1st 2' is mudstone Bedding 62° to core axis at 894' Bedding 48° to core axis at 904' Bedding 65° to core axis at 911'
				912' END OF HOLE February 24/77 Rob Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 31 Size of core: HQ Total depth: 702 ft
213.0 m

Location: EMGS co-ordinates - N 5584512.915
E 648097.127

Baseline co-ordinates - N 230 + 23.3
E 9 + 42.1

Elevation - ft 5323.3
m 1622.54

Date of starting : Dec. 4/76
Date of completion : Dec. 7/76

Logging by : G.C. Singhai
on : Dec. 8, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
230	70	86.4°	N 86° E
460	140	82.6°	N 85° E
690	210	78.3°	N 85° E

Recovery of coal : 92.4 ft = 91%
101.0

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 31

Footage		Recovery		Description
from	to	feet	%	
0	31			Overburden (No core)
31	35.0			Shale: Dark grey, fragments of plants and occasional thin coal seams.
35.0	53.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Interbeds of shale and siltstone, Bedding 60° to core axis at 52'
53.0	67.0			Shale: Dark grey, interbeds of siltstone, and sandstone, fragments of plants, numerous thin coal seams. Coalseams 60.9 - 61.1, 61.5 - 62.0 64.9 - 65.5
67.0	70.0	2.5/3.0	83	CoalSeam: Sampled DH - 31-1 Partings of shale 68.6 - 68.9
70.0	142.9			Sandstone: Dark grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone and shale numerous thin coal seams. Bedding 60° to core axis at 81.5'
142.4	147.4	4.6/5.0	92	CoalSeam; Sampled, DH -31-2
147.4	158.0			Sandstone: Grey, fine grain, pieces of coal, numerous thin coal seams. interbeds of shale, Bedding 70° to core axis at 148.0' Coal seam: 149.9 - 150.3, 151.5 - 152.0
158.0	162.4	4.0/4.4	91	Coal Seam: Sampled DH - 31-3
162.4	185.4			Sandstone: Dark grey, fine grain, fragments of plants, interbeds of siltstone. Bedding 50° to core axis at 164'
185.4	192			Siltstone: Dark grey, very fine grain, bedding at 191' - 70° to core axis.
192.0	205.2			Shale: Grey fragments of plants, pieces of coal. interbeds of siltstone.
205.7	230.7	22.0/25.0	88	Coal Seam; Sampled DH-31-4 Partings - Shale, carbonaceous 209-209.4, 222.2 - 222.5

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 31

Footage		Recovery		Description
from	to	feet	%	
230.7	247.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, pieces of coal numerous thin coal seams 230.7 - 237.0
247.0	324.3			Sandstone: Dark grey, fine grain, crossbedded, interbeds of siltstone. pieces of coal. Bedding at 250' 60° to core axis and bedding 70° to core axis at 323'
324.3	335.0			Shale: DArk grey, fragments of plants, numerous thin coal seams.
335.0	360.5	23.6 / 25.5	93	Coalseams: Sampled DH - 31-5 Partings:- Shale 339.0 - 339.5, (341.2 - 341.4) 346.6 - 347.0 (348.0 - 349.2) Shaly coal) 354.9 355.4, 359.0 - 359.5
360.5	375.0			Shalet Dark grey, fragments of plants carbonaceous, numerous thin coal seams. Coal seam 366.3 - 367 interbeds of siltstone.
375.0	380			Sandstone: Grey, fine grain, pieces of coal, occasionally thin coal seams.
380.0 -	404			Siltstone: in dark grey, very fine grain, interbeds of sandstone. Coal seam 382.0 - 382.2 occasionally thin coal coal seams.
404	508.2			Sandstone: Dark grey, fine to medium grain, interbeds of shale and siltstone, occasionally thin coal seams pieces of coal. coal seam: 431.8 - 432.0, 436.8 - 437.0 Bedding 55° to core axis. at 439' and bedding at 65° core axis at 497.5'
508.2	527.8	18.7 / 19.6	95	Coal Seam: Sampled DH - 31-6 partings. shaly coal 511.4 - 512.6, (514.0 - 514.3), (514.8 - 515.0) Shaly coal 516.7 - 517 Shale 520.3 - 520.7 (522.0 - 522.3) 526.6 - 527.0
527.8	532.0			Shale: DArk grey, slightly carbonaceous numerous thin coal seams. Coal seams. 530.5 - 531.4.
532.0	557			Siltstone: Dark grey, very fine grain, interbeds of sandstone. occasionally thin coal seams Bedding 50° to core axis at 533'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 31

Footage		Recovery		Description
from	to	feet	%	
551.0	556			Sandstone: Grey, fine grain, pieces of coal, crossbedded.
556.0	561.0			Shale: Dark grey, fragments of plants and thin seams of coal.
561.0	566.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal , interbeds of siltstone and shale. Bedding 70° to core axis at 562'
566.0	592			Shale: Dark grey, interbeds, of siltstone and shale fragments of plants, numerous thin coal seams. highly carbonaceous. 573.3 - 576.8 , Coal seam 579.0 - 580'.
592.0	595.0			Sandstone: Dark grey, fine grain, interbeds of siltstone.
595.0	602			Shale: DArk grey, fragments of plants, pieces of coal. Bedding 60° to core axis at 600
602	612.2	9.5 / 10.2	93	Coalseam:Sampled DH - 31-7
612.2	614.0			Shale: Dark grey, fragments of plants, occasionally thin coal seams.
614	617.0			Sandstone: Dark grey to grey, fine grain, cross bedded, pieces of coal. bedding 70° to core axis at 615.5'
617.0	624.3			Siltstone: DArk grey, very fine grained, interbeds of shale, thin coal seams and fragments of plants.
624.3	632.0			Sandstone: Grey to light grey, fine grain, cross bedded interbeds of shale and siltstone.
632.0	641.0			Shale: Dark grey, fragments of plants, occasionally pieces of coal and thin coal seams. Bedding 60° to core axis at 438' interbeds of siltstone.
641.0	648			Sandstone:Grey, fine grain, crossbedded.
648.0	677.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 31

Footage		Recovery		Description
from	to	feet	%	
677.0	685.3	7.5/8.3	90	Coalseam: Sampled DH - 31-8 Partings Shale (coaly) 678.2 - 678.5, 682.0 - 683.0
685.3	691			Shale: Dark grey, fragments of plants, numerous thin coal seams.
691	702			Siltstone: Dark grey, very fine grain occasionally thin coal seam, bedding 60° to core axis at 700' END OF HOLE AT 702; Logged by G.C. Singhai Dec. 8/76

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 32 Size of core: HQ Total depth: 521 ft
158.8 m

Location: EMGS co-ordinates - N 5584463.623
E 647937.749

Baseline co-ordinates - N 229 + 89.7
E 3 + 95.8

Elevation - ft 5214.8
m 1589.47

Date of starting : Dec. 8/76
Date of completion : Dec. 10/76

Logging by : G.C. Singhai
on : Dec. 11/76

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90,0°	-
164	50	88.5°	N 69° E
328	100	86.5°	N 71° E
482	152	82.9°	N 78° E

Recovery of coal : $\frac{52.3}{62.2}$ ft = 84%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 32

Footage		Recovery		Description
from	to	feet	%	
0	11			Overburden (No Core)
11	26.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale.
26.0	42.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone pieces of coal.
42.0	67.0			Mudstone: Dark grey, fragments of plants, interbed of shale and siltstone, numerous thin coal seams.
67.0	106			Sandstone: Grey, fine grain, crossbedded, occasionally interbeds of shale. pieces of coal and thin coal seams. Coal seam 77.5 - 78.6 Bedding 70° to core axis at 75'
106	109.4			Mudstone: Dark grey, interbeds of shale and siltstone. Fragments of plants and numerous thin coal seams.
109.4	111.2	1.8		CoalSeam: Shaly coal
		1.8		
111.2	120.1			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams.
120.1	128.5	7.9	9.4	Coalseam: Sampled DH - 32-1 Partings: 125.7 - 125.9, 126.2 - 126.7
		8.4		
128.5	137.0			Mudstone: Dark grey, fragments of plants numerous thin coal seams.
137.0	139.0	1.9	95	Coalseam: Sampled DH- 32-2
		2.0		
139.0	147.0			Sandstone: Grey, fine grain interbeds of shale and siltstone Bedding 60° to core axis at 145'
147.0	166.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale. occasionally thin coal seams.
166.0	169.7	3.5	95	Coalseam: sampled DH -32-3
		3.7		
169.7	178.4			Siltstone: Dark grey, very fine grain. interbeds of mudstone and sandstone numerous thin coal seams.
178.4	189.7			Sandstone: Dark grey fine grain, interbeds of siltstone and shale. Bedding 60° to core axis at 181'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 32

Footage		Recovery		Description
from	to	feet	%	
189.7	193	3.0/3.3	91	Coalseam: Sampled DH - 32-4
193.0	197.0			Mudstone: Dark grey fragments of plants, thin coal seams.
197.0	210.7			Sandstone: Grey, fine grain interbeds of shale and siltstone. Bedding 60° to core axis at 200'.
210.7	216.2			Mudstone: Dark grey, fragments of plants, interbeds of siltstone, thin coal seams.
216.2	219.0	2.0/2.8	71	Coalseam: Sampled DH - 32-5
219.0	224.0			Mudstone: Dark grey, fragments of plants, slightly carbonaceous, coal seam 222.7 - 223.0 223.7 - 224.0
224.0	229.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale.
229.0	268.0			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, occasionally thin coal seams. Bedding 50° to core axis at 260'
268.0	277.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seam, interbeds of siltstone, Coalseam 275.2 - 276.3
277.0	290.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale. Bedding 60° to core axis at 288.0
290.0	297.0			Mudstone: Dark grey, fragments of plants, inter beds of siltstone, numerous thin coal seams.
297.0	302.2	3.2/5.2	62	Coal Seam: Sampled DH - 32-6
302.2	307.0			Siltstone: Dark grey, very fine grain, fragments of plants.
307.0	322.0			Sandstone: Grey, fine grain, cross bedded, interbeds of shale and siltstone. pieces of coal, occasionall thin coal seams. Bedding 50° to core axis at 312
322.0	337.0			Siltstone: Dark grey, very fine grain, interbeds of shale, occasionally thin coal seams and fragments of plants.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 32

Footage		Recovery		Description
from	to	feet	%	
337.0	340			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 60° to core axis at 339'
340	342.0			Mudstone: Dark grey fragments of plants. thin coal seams.
342.0	345.3	2.3/3.3	70	Coalseam: Sampled DH - 32-7
345.3	353.6			Mudstone: Dark grey, fragments of plants, carbonaceous and occasionally thin coal seams Coal seam: 346.0 - 346.6
353.6	357.2	2.5/3.6	69	Coalseam: Sampled DH - 32-8
357.2	366.0			Mudstone: Dark grey fragments of plants, numerous thin coal seams.
366.0	411.3			Sandstone: Grey fine grain, interbeds of siltstone pieces of coal, cross bedded. Bedding 60° to core axis at 372' occasionally thin coal seams, bedding 60° to core axis at 410'.
411.3	413.6			Mudstone: Dark grey, fragments of plants, thin coal seams.
413.6	420.2	4.5/6.6	68	Coal Seams: Sampled, DH - 32-9 Parting - shale 417.7 - 417.8
420.2	439.0			Siltstone: DArk grey, very fine grain, numerous thi coal seams. interbeds of carbonaceous shale, coal seam - 428.7 - 429.1, 430.0 - 430.9 Bedding 60° to core axis at 434'
439.0	490.7			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 60° to core axis at 472'
490.7	512.2	19.7/21.5	92	Coal Seam: Sampled DH - 32-10 Parting - shale 491.0 - 491.1, 507.6 - 507.8 511.8 - 511.9

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 32

Footage		Recovery		Description
from	to	feet	%	
512.2	517.3			Shale: Dark grey, fragments of plants, carbonaceous numerous thin coal seams.
513.3	521.0	52.3 62.2	84	Sandstone: Grey fine grain, crossbedded, Bedding 70° to core axis
				END OF HOLE at 521'
				Logged by G.C. Singhai
				Dec. 11/76

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 33 Size of core: HQ Total depth: 521 ft / 158.8 m

Location: EMGS co-ordinates - N 5584412.062
E 647704.015

Baseline co-ordinates - N 230 + 06.5
W 3 + 89.3

Elevation - ft 5127.2
m 1562.77

Date of starting : January 6, 1977
Date of completion : January 9, 1977

Logging by : David Thacker
on : Jan. 11, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
164	50	88.2°	N 66° E

Recovery of coal : $\frac{44.6}{44.6}$ ft = 100%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 33

Footage		Recovery		Description
from	to	feet	%	
0	23.0			Overburden
23.0	44.5			Sandstone: fine grained, carbonaceous, occasional shale interbeds Bedding to core axis angle @ 28' = 68°
44.5	59.3			Carbonaceous shale occasional siltstone interbeds
59.3	68.2			Sandstone: medium grained, rare shale interbeds
68.2	92.6			Shale: occasional medium grained sandstone interbeds
92.6	102.0			Sandstone: medium grained, crossbedded, bottom 2 ft transitional into next unit Bedding to core axis angle @ 101' = 55°
102.0	106.4			Coaly shale
106.4	117.3			Sandstone: medium grained, crossbedded, occasional shale lenses
117.3	125.0			Interbedded siltstone and shale:
125.0	142.5			Carbonaceous shale
142.5	148.7	6.2 6.2	100	Coal: high ash content DH - 33-1 148.4 - 148.5 - carbonaceous shale
148.7	157.0			Shale: occasional fine grained sandstone interbeds Bedding core axis angle @ 152' = 52°
157.0	157.5			Coal
157.5	203.6			Shale: occasional siltstone or fine grained sandstone interbeds, occasionally carbonaceous Bedding to core axis angle @ 203' = 50°
203.6	213.3	9.7 9.7	100	Coal: DH - 33-2 204.3 - 204.4 - carbonaceous shale 207.0 - 207.8 - carbonaceous shale
213.3	214.4			Coaly shale

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 33

Footage		Recovery		Description
from	to	feet	%	
214.4	221.0			Interbedded sandstone and shale sand is fine grained
221.0	255.0			Shale: occasional fine grained sandstone interbeds Bedding to core angle @ 251' = 55°
255.0	255.9			Coal
255.9	275.2			Shale: occasionally silty
275.2	284.1	8.9 8.9	100	Coal: DH 33-3 276.1 - 276.2 - coaly shale 277.0 - 277.1 - carbonaceous shale 278.4 - 278.6 - carbonaceous shale 281.3 - 282.6 - " "
284.1	304.2			Carbonaceous shale - thin coal lenses common Bedding to core angle @ 299' = 58°
304.2	318.8			Sandstone: fine grained, occasional shale interbed
318.8	325.3			Shale: occasionally carbonaceous, rare sandstone lenses
325.3	331.4	6.1 6.1	100	Coal: DH - 33-4
331.4	342.5			Sandstone: fine grained
342.0	397.3			Shale; occasional fine grained sandstone interbeds, occasionally carbonaceous Bedding to core angle @ 344' = 50° 395' = 63°
397.3	398.2			Shaly coal
398.2	405.8			Carbonaceous shale
405.8	412.0			Sandstone: medium grained, crossbedded
412.0	427.0			Carbonaceous shale
427.0	462.3			Shale: bedding to core angle @ 443' = 55°

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
462.3	476,0	13.7 / 13.7	100	Coal: DH - 33-5 471.3 - 471.5 - carbonaceous shale 472.0 - 473.0 473.0 - 475.6 - shaly coal
476.0	480.4			CArbonaceous shale
480.4	481.0			Coal
481.0	486.0			Carbonaceous shale
486.0	486.4			Coal
486.4	494.4			Carbonaceous shale
494.4	514.9			Sandstone: fine grained, occasional carbonaceous shale interbeds. Bedding to core angle @ 503' = 60°
514.9	521.0			Carbonaceous shale
				END OF HOLE

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 34 Size of core: HQ Total depth: 552 ft
168.2 m

Location: EMGS co-ordinates - N 5584364.235
E 647512.348

Baseline co-ordinates - N 230 + 02.6
W 10 + 37.4

Elevation - ft 5153.9
m 1570.91

Date of starting : Dec. 10, 1976
Date of completion : Dec. 13, 1976

Logging by : G.C. Singhai
on : Dec. 14, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
180	55	85.5°	N 86° E
360	110	81.8°	N 86° E
540	165	76.7°	S 83° E

Recovery of coal : $\frac{26.2}{29.8}$ ft = 88%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 34

Footage		Recovery		Description
from	to	feet	%	
0	30.4			Overburden (No core)
30.4	42.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone
42.0	57.0			Sandstone: Grey, fine grain, crossbedded interbeds of siltstone and shale, pieces of coal numerous coal seams. Coal seam 53.4 - 54.2 Bedding 48° to core axis at 48'
57.0	78.5			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plants, numerous thin coal seams. Coal seam 68.9 - 70.3, 76.8 - 77.0
78.5	83.7	4.2/5.2	81	Coal seam: Sampled DH - 34-1
83.7	87.5			Shale: Dark grey carbonaceous and slightly coaly shale.
87.5	98.3			Sandstone: Grey, fine grain, pieces of coal, occasionally thin coal seams 60° to core axis at 94
98.3	110.5			Mudstone: Dark grey, fragments of plants, interbeds of siltstone and shale numerous thin coal seams coal seam 100.3 - 100.6, 107.8 - 108.2, 109.4 - 110.5
110.5	135.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone, pieces of coal, occasional thin coal seams. Bedding 60° to core axis at 116'.
135.0	168.0			Mudstone: Dark grey, interbeds of shale, and siltstone, fragments of plants. pieces of coal, numerous thin coal seams coal seam 166.0 - 167.5
168.0	181.0			Sandstone: Grey, fine grain crossbedded, interbeds of shale, coal pieces, and numerous thin coal seams, coal seam 169.7 - 170.2, 170.9 - 172.5, Bedding 60° to core axis at 169'
181.0	189.5			Mudstone: DArk grey, fragments of plants, numerous thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 34

Footage		Recovery		Description
from	to	feet	%	
189.5	228.1			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal, numerous thin coal seams. Coal seam 197.0 - 198.0, 207 - 208.3 Bedding 50° to core axis at 210'
228.1	230.0	1.8 1.9	95	Coalseam: Sampled DH - 34-2
230.0	243.7			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and mudstone, pieces of coal numerous thin coal seams. Coalseam 233.5 - 235.0, 238.0 239.3 Bedding 60° to core axis at 235'
243.7	246.2	2.2 2.5	88	Coalseam: sampled DH - 34-3
246.2	269.7			Sandstone: Grey, fine grain, crossbedded interbeds of shale, coal pieces, numerous thin coal seams bedding at 268, 65° to core axis, coal seam 251.0 - 252.4, 261.4 - 261.8
269.7	274.0			Siltstone: Grey, very fine grain, interbeds of mudstone, bedding 60° to core axis at 271'
274.0	277.3			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Coal seam: 275.4 - 276.0
277.3	282.0			Siltstone: Grey, very fine grain, thin interbeds of sandstone. Coal seam 281.8 - 282
282.0	362.0			Sandstone: Grey to light grey, fine grain, interbeds of shale and siltstone, pieces of coal, crossbedded, occasionally thin coal seams Coalseam 290.0 - 291.0, 353.8 - 354.2 carbonaceous shale 352.8 - 353.8 Bedding 60° to core axis at 349'
362.0	365.5	2.5 3.5	71	Coalseam: Sampled DH-34-4
365.5	367.5			Mudstone: dark grey, fragments of plants coalseam 366.2 - 366.5
367.5	369.2			Sandstone: grey, fine grain, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-34

Footage		Recovery		Description
from	to	feet	%	
369.2	370.4	1.2		Coalseam:
370.4	422.0			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, interbeds of shale and mudstone, numerous thin coal seams. bedding 60° to core axis at 414'.
422.0	425.6			Mudstone: Dark grey, fragments of plants.
425.6	434.5	8.0 8.9	90	Coalseam: Sampled, DH-34-5 Parting of shale: 426.3 - 426.9, 427.3 - 429.3 433.0 - 433.6
434.5	436.9			Shale: Dark grey, fragments of plants.
436.9	441.7	4.5 4.8	94	Coal : Sampled DH-34-6
441.7	448.5			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, pieces of coal, thin coal seams Bedding 70° to core axis at 445'
448.5	467.5			Mudstone: Dark grey, interbeds of siltstone and sandstone fragments of plants. pieces of coal, thin coal seams. Bedding 70° to core axis Coalseam 459.4 - 460.4 466.5-467.5
467.5	497.7			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone and shale, pieces of coal, numerous thin coal seams. Bedding 70° to core axis at 493'.
497.7	500.7	3.0 3.0	100	Coalseam: sampled DH-34-7
500.7	513.5			Sandstone: Grey to light grey, fine grain, crossbedded, pieces of coal bedding 70° to core axis at 512'.
513.5	528.0			Shale: dark grey fragments of plants slightly carbonaceous thin coal seams.
528.0	552			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 70° to core axis at 534'.
				End of hole at 552' Logged by G.C. Singhai - Dec. 14/76

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 35 Size of core: HQ Total depth: 450 ft
137.2 m

Location: EMGS co-ordinates - N 5585256.518
E 648602.939

Baseline co-ordinates - N 250 + 01.8
E 31 + 31.0

Elevation - ft 6290.8
m 1917.44

Date of starting : Jan. 27, 1977
Date of completion : Feb 2, 1977

Logging by : G.C. Singhai
on : Feb. 3, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
No tests			

Recovery of coal : $\frac{45.3}{54.6}$ ft = 83%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-35

Footage		Recovery		Description
from	to	feet	%	
0	15			Overburden (No core)
15	27.0	10.0/12.0	83.3	Coalseam: Sampled (DH-35-1) Parting of mudstone - 23.7 - 23.8
27.0	31.8			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal
31.8	35.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal, Bedding 60° to core axis at 34.0'
35.0	36.7			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Coal Seam 35.7 - 36.0
36.7	40.0	1.4/3.3	42.4	Coalseam: Sampled (DH - 35-2)
40.0	49.2			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, pieces of coal.
49.2	59.7	8.0/10.5	76.19	Coalseam: Sampled (DH - 35-3) Parting: Mudstone 57.9 - 58.0'.
59.7	90.0			Mudstone: Dark grey, fragments of plants, pieces of coal, interbeds of siltstone and shale.
90.0	105.3			Siltstone: DArk grey , very fine grain, slightly muddy, occasionally fragments of plants.
105.3	177.0			Sandstone: Light grey to grey, fine to medium grain, interbeds of siltstone and shale. Cross bedded, pieces of coal. Bedding 60° to core axis at 113'. Bedding 75° to core axis at 155.0'.
177.0	188.0	9.2/11.0	83.6	Coalseam: Sampled (DH - 35-4) core groune 1.0' at 186.0'
188.0	194.3			Siltstone: Dark grey, very fine grain, fragments of plants, bedding 60° to core axis at 189.0' Coalseam: 191 - 192.5 carbonaceous shale 192.3 - 194.3
194.3	215.0			Sandstone: Light grey to grey, fine grain, inter beds of siltstone, crossbedded, pieces of coal, bedding 60° to core axis at 212.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH -35

Footage		Recovery		Description
from	to	feet	%	
215.0	225.5			Siltstone: Dark grey, very fine grain, interbeds of shale, and sandstone, fragments of plants.
225.5	239.5			Sandstone: grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal, bedding 50° to core axis at 238.5'.
239.5	245.7			Shale: Dark grey, laminated, fragments of plants.
245.7	263.5	16.7 17.8	93.8	Coalseam: Sampled (DH-35-5) parting Mudstone 253.0 - 253.5, 255.2 - 255.5, 255.8 - 256.0
263.5	265.5			Shale: Dark grey, fragments of plants.
265.5	450.0			Sandstone: Light grey to grey, fine to medium grain, pieces of coal, crossbedded, coalseam 286.3 - 287.0, bedding 60° to core axis at 271.0' Shale: 332.0 - 334.0, 335.7 - 337.0, Bedding 55° to core axis at 342.5' , and 60° to core axis at 371.5, 60° to core axis at 398.0' Bedding 60° to core axis at 449'. End of Hole at 450.0' G.C. Singhai Feb. 3/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 36 Size of core: HQ Total depth: 520 ft / 158.5 m

Location: EMGS co-ordinates - N 5585218.285
E 648443.632

Baseline co-ordinates - N 250 + 03.4
E 25 + 93.5

Elevation - ft 5930.5
m 1807.62

Date of starting : Feb. 4/77
Date of completion : Feb. 12, 1977

Logging by : Rob Wilson
on : Feb. 13, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	
148	45	86.5°	N 81°E
296	90	84.9°	N 79° E
492	150	81.6°	N 78° E

Recovery of coal : $\frac{63.5}{72.7}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-36

Footage		Recovery		Description
from	to	feet	%	
0	15.0			Overburden (No core)
15.0	23.0			Sandstone: Grey, fine grain, interbeds of siltstone crossbedded, occasionally pieces of coal, bedding 60° to core axis at 18.0'.
23.0	27.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants.
27.0	56.7			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, bedding 60° to core axis.
56.7	67.3			Mudstone: Dark grey, interbeds of sandstone, fragments of plants.
67.3	89.5	21.2 / 22.2	95	Coalseam: Sampled (DH - 36-1) Parting: carbonaceous mudstone 75.0 - 75.2
89.5	93.6			Mudstone: Dark grey, fragments of plants carbonaceous, thin coal seams.
93.6	99.0	4.9 / 5.4	91	Coalseam: Sampled (DH - 36-2)
99.0	107.2			Mudstone: Dark grey, slightly laminated, bedding 60° to core axis at 103.0, pieces of coal, fragments of plants, thin coal seams.
107.2	120	11.0 / 12.8	86	Coalseam: sampled (DH - 36-3) 107.2 - 107.8 shaly coal.
120	138			Mudstone: Dark grey, pieces of coal and plants, numerous thin coal seams.
138	151			Siltstone: DArk grey, very fine grained occasionall fragments of plants, pieces of coal and thin coal seams, Coalseam 142.0 to 142.2 Bedding 70° to core axis at 150'.
151	224.7			Sandstone: Light grey to grey, fine grained, interbedded, interbeds of siltstone and shale. Bedding 65° to core axis at 173' Bedding 60° to core axis at 218'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH- 36

Footage		Recovery		Description
from	to	feet	%	
224.7	238.0	9.4 13.3	71	Coal Seam: Sampled (DH 36 - 4) Parting 235.9 - 236.1
238.0	242.2			Siltstone: Dark grey, very fine grained, fragments of plants, pieces of coal. Bedding 60° to core axis at 239'.
242.2	260.6			Sandstone: Light grey to grey crossbedded, pieces of core, pieces of coal. Bedding 60° to C.A. at 247°.
260.6	281			Shale: Dark grey, slightly laminated fragments, pieces of coal, interbeds of siltstone Bedding 60° to C.A. at 280.0'.
281	297			Sandstone: Grey to light grey, interbeds of shale and siltstone, occasionally pieces of coal. Bedding 60° to C.A. at 296'.
297	298.7			Mudstone: Dark grey, fragments of plants, slightly carbonaceous
298.7	317.7	17.0 19.0	89	Coal seam: Sampled (DH 36-5) Partings (Shale) - 307 to 307.3 308 to 308.5 Shale - 312.8 to 313.1 316.8 to 317 Fine to medium grained
317.7	520			Sandstone: grey to light grey, crossbedded interbeds of siltstone and mudstone Bedding 60° to C.A. at 321. Carbonaceous shale at 342.0' to 342.3' Bedding 60° to C.A. at 341' " 70° to C.A. at 385' " 60° to C.A. at 414' " 60° to C.A. at 439' " 60° to C.A. at 446' " 58° to C.A. at 462' Pieces of coal near 512' - core highly broken Bedding 63° to C.A. at 485' " 60° to C.A. at 515' END OF HOLE Rob Wilson - Feb. 14/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH-37 Size of core: HQ Total depth: 840 ft
275.6 m

Location: EMGS co-ordinates - N 5585143.019
E 648146.338

Baseline co-ordinates - N 249 + 93.9
E 15 + 87.4

Elevation - ft 5455.7
m 1662.90

Date of starting : Feb. 13, 1977
Date of completion : Feb. 21, 1977

Logging by : Rob Wilson
on : Feb. 23, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
666	203	86.4°	N 76° E
824	251	85.6°	N 86° E

Recovery of coal : $\frac{76.5}{117.4}$ ft = 65%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 37

Footage		Recovery		Description
from	to	feet	%	
0	16			Overburden: No core
16	43.5			Mudstone: Dark grey, very fine grained, interbedded with siltstone. Frequent fragments of plants. Some shale interbeds, core highly broken. Occasional coal stringers. Bedding 45° to core axis at 42'
43.5	48.0			Sandstone: Light grey to grey, fine grained cross bedded, interbedded siltstone and shale. Occasional plant fragments.
48.0	82.0			Siltstone: Dark grey, very fine grained, frequent plant fragments & shale interbeds, occasional sandstone interbeds. Bedding 56° to core axis at 75' calcite stringers at 78'. Becomes more carbonaceous around 80'. 54.8 - 55.2 Coal Seam 57.5 - 57.8 Coal Seam 58.3 - 58.6 Coal SEam 59.5 - 59.6 71.8 - 72.3
82.0	98.3			Mudstone: Dark grey, carbonaceous, abundant plant fragments, pieces of coal & coal seams Bedding 54° to core axis at 97'
98.3	112	8.9 / 13.7	65	Coal Seam: Sampled (DH 37-1) Partings (Shaly Coal) 99.4 - 99.8 100.3 - 100.8 102.0 - 102.3 108.6 - 108.8
112	115			Shale: Core lost (.6' recovered)
115	117.2			Mudstone: Dark grey, interbeds of shale, fragments of plants, pieces of coal Bedding to core axis at 116'
117.2	129.6	9.4 / 12.4	76	Coal Seam; Sampled (DH 37-2) Partings (Shaly Coal & mudstone) 117.8 - 118.2 , 120.0 - 120.2 121.8 - 122.6

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 37

Footage		Recovery		Description
from	to	feet	%	
129.6	131.4			Coaly Shale: DArk grey, frequent plant fragments, minor coal seams & pieces of coal.
131.4	132.8			Coal Seam; Not sampled
132.8	141			Shale: Dark grey to black slightly laminated carbonaceous, interbeds of mudstone, plant fragments , pieces of coal, coal seams. Bedding: 57° to core axis at 140'
141	144.7			Mudstone: Dark grey to black, carbonaceous, interbedded with siltstone & shale. Plant fragments coal stringers.
144.7	157.2			Siltstone: Dark grey, carbonaceous, interbedded with mudstone, plant fragments, coal stringers. Bedding 40° to core axis at 144'
157.2	173.6			Sandstone: Light grey to grey, interbedded with siltstone & mudstone. Crossbedded Bedding 60° to core axis at 160' Bedding 56° to core axis at 168'
173.6	181.4			Mudstone: Dark grey, carbonaceous, crumbles when hit (highly fractured?) Thin coal seams, occasional plant, fragments. Bedding 42° to C.A. at 174'.
181.4	195.2	10.0 13.8	72	Coal Seam: Sampled (DH 37-3) Partings - mudstone 183.4 - 183.7 191.7 - 192.0 192.6 - 193.0 193.3 - 193.6 193.9 - 194.4
195.2	202.5			Siltstone: Dark grey, very fine grained interbedded siltstone. Plant fragments thin coal stringers. Bedding 1 to core axis at 196'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 37

Footage		Recovery		Description
from	to	feet	%	
202.5	234.0			Sandstone: Light grey to grey, fine grained, crossbedded , interbedded with siltstone & shale. Occasional plant fragments, pieces of coal, minor occasional coal seams. Bedding 54° to core axis at 206' Bedding 50° to core axis at 219' Bedding 44° to core axis at 230'
234.0	238.6	4.6 4.6	100	Coal Seam; Sampled (DH 37-4) Partings (Coaly shale) 235.3 - 235.5 236.5 - 236.9
238.6	265			Siltstone: Dark grey , very fine grained, carbonaceous, interbeds of mudstone. Numerous plant fragments. Sandstone & shale interbeds soft sediment deformation. Bedding 58° to core axis at 241' Coal Seam: 243.1 - 243.5 Coal seam 244.0 - 244.4 Several coal seams between 246 - 248 and between 251 & 255 (aug.4" long) Bedding 55° to core axis at 259'
265 -	276			Mudstone: Dark grey, carbonaceous occasional fragments of plants, small coal stringers, interbedded with siltstone Coal seam: 268.4 - 269.4 Coal Seam; 273.2 - 274.4
276	370			Sandstone: Light grey to grey, fine grained, crossbedded, interbedded with siltstone & shale. Bedding 46° to core axis at 278' occasional plant fragments & thin coal stringers. Bedding 58° to core axis at 278' Bedding 62° to core axis at 295' Bedding 57° to core axis at 302' Bedding 61° to core axis at 312' Bedding 60° to core axis at 324' Bedding 74° to core axis at 338' Bedding 90° to core axis at 343' Bedding 60° to core axis at 351' Crossbedded Bedding 65 - 90° to core axis at 358' Bedding 60° to core axis at 365' Several thin coal seams 360 - 365'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 37

Footage		Recovery		Description
from	to	feet	%	
370	382.2			Siltstone: Dark grey, very fine grained, interbedded with mudstone sandstone. Core extremely muddy. Most core lost 371-376'. Bedding 40° to core axis at 377'
382.2	415.2	21.0 33.0	64	Coalseams: Sampled (DH 37-5) Partings (Coaly shale - mudstone) 390 - 390.2 391.0 - 391.3 404.8 - 405.1 411.9 - 412.3
415.2	432.5			Sandstone: Grey, fine grained, interbedded with siltstone & shale. Thin coal seams, pieces of coal. Occasional plant fragments Bedding? 55° to core axis at 417. Not a good measurement crossbedded at 421 422.7 - 424.6 Thin coal seams Bedding 60° to core axis at 420'
432.5	441.0	5.7 8.5	67	Coal Seam: Quite poor quality but sampled anyway (DH 37-6) Partings (Mudstone) 435.3 - 435.5 440.3 - 440.6
441	450			Sandstone: Dark grey, often interbedded with siltstone with shaly beds. Numerous plant fragments, thin coal seam, pieces of coal. Cross bedded Bedding 60° to core axis at 448'
450	472.2			Siltstone: Dark grey, very fine grained, interbedded with sandstone & shale. Bedding 60° to core axis at 453' Some mudstone & coal seams 462 - 471 Coal seam 464.0 - 464.5 467.0 - 467.8
472.2	543.2			Sandstone: Grey, fine grained, in places cross bedded, interbedded with siltstone & shale. Bedding 55° to core axis at 480' Bedding 56° to core axis at 491' Bedding 60° to core axis at 502' Bedding 52° to core axis at 509' Bedding 69° to core axis at 512'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DJ - 37

Footage		Recovery		Description
from	to	feet	%	
				512 - Start of zone of high fracturing & several calcite veinlets Bedding 69° to core axis at 517' Bedding 65° to core axis at 527' Bedding 56° to core axis at 534' 527 - 532 - Repeat of calcite veinlets 537 - 542 Core moderately broken.
543.2	550.1	3.7 6.9	54	Coal SEam; Sampled (DH 37-7) No partings
550.1	616			Sandstone: Grey, fine grained, interbedded with siltstone & shale. Crossbedded Bedding 55° to core axis at 556' Bedding 59° to core axis at 567' Amount of siltstone increases 567' - 572' Bedding 40° to core axis at 574' Bedding 56° to core axis at 585' Bedding 55° to core axis at 601' Bedding 55° to core axis at 610'
616	640.5	13.2 24.5	54	Coal Seam: Sampled (DH 37-8) No rock partings
640.5	840			Sandstone: Light grey to grey, fine to medium grained, crossbedded. Clean sandstone, only a few siltstone interbeds. Bedding 66° to core axis at 648' Bedding 50° to core axis at 651' Bedding 60° to core axis at 662' 662.5 - 663.4 Coal Seam Bedding 50° to core axis at 672' Bedding 55° to core axis at 680' Bedding 61° to core axis at 693' Bedding 62° to core axis at 701' 701 - 707 core quite broken 707 - 712 med. coarse grained sandstone Bedding 65° to core axis at 708 Bedding 58° to core axis at 719' Bedding 57° to core axis at 729'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 37

Footage		Recovery		Description
from	to	feet	%	
				Bedding 58° to core axis at 736' 737 - 740.5 core missing Bedding 51° to core axis at 744' Bedding 53° to core axis at 753' Bedding 55° to core axis at 761' From 761 - 840, all fine grained, light to medium grey. Crossbeds uncommon, interbedding with siltstone rare. Bedding 63° to core axis at 763' Bedding 58° to core axis at 773' Bedding 55° to core axis at 783' Bedding 56° to core axis at 796' Bedding 56° to core axis at 805' Bedding 62° to core axis at 813' Bedding 64° to core axis at 823' Bedding 61° to core axis at 833' Bedding 56° to core axis at 838' END OF HOLE - 840' February 23/77 ROB WILSON

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 38 Size of core: HQ Total depth: 457 ft
139.3 m

Location: EMGS co-ordinates - N 5585109.117
E 647997.490

Baseline co-ordinates - N 250 + 01.2
E 10 + 86.6

Elevation - ft 5310.5
m 1618.64

Date of starting : Dec. 10, 1976
Date of completion : Dec. 13, 1976

Logging by : G.C. Singhai
on : Dec. 13, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
151	46	88.8°	N 87° E
302	92	87.6°	N 85° E
443	135	85.0°	N 76° E

Recovery of coal : $\frac{79.2}{93.8}$ ft = 84%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 38

Footage		Recovery		Description
from	to	feet	%	
0	36			Overburden (No core)
36	43.6			Mudstone: Dark grey, Fragments of plants, pieces of coal, interbeds of siltstone and sandstone numerous thin coal seams.
43.6	57.7			Sandstone:Grey, fine grain., crossbedded, interbeds of siltstone. Bedding 55° to core axis at 46'.
57.7	63.6			Mudstone: Grey, fragments of plants, pieces of coal with thin coal seams.
63.6	99.0	32.6 35.4	92	Coal Seam: Sampled DH - 38-1 Parting: (71.5 - 71.6) Core Ground 76.0 - 77.5 84.7 - 85.0, 87.7 - 88.1, 92.5 - 94.4 97.4 - 98.0
99.6	106.0			Mudstone: Dark grey, fragments of plants, interbeds of siltstone and numerous thin coal seams. Coal seam 104.3 - 104.8'
106.0	111.0			Sandstone: Grey, fine grain, interbedded with shale pieces of coal, bedding 60° to core axis at 109'
111.0	124.2			Siltstone: Dark grey, very fine grain, fragments of plants, interbeds of shale and sandstone, numerous thin coal seams.
124.2	126.0	1.8		Coal Seam: Mostly, shaly coal
126.0	132			Mudstone: Dark grey, fragments of plants, occasionally thin coal seams.
132	197			Sandstone: Light grey, fine grain,interbeds of siltstone and shale,pieces of coal, bedding 60° to coreaxis at 136', occasionally thin coal seams bedding 70° to core axis at195'
197.0	200.3			Mudstone: Dark grey fragments of plants, numerous thin coal seams.
200.3	219.2	17.2 18.9	91	CoalSeam: Sampled DH-38-2 Parting: Shale (carbonaceous) 205.6 - 206.3 217.7 - 217.9

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 38

Footage		Recovery		Description
from	to	feet	%	
219.2	272.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams 222.0 - 222.4 Interbeds of siltstone and sandstone. Bedding 60° to coal axis at 236' slightly carbonaceous 247 - 258, Bedding 60° to core axis at 269.5'.
272.0	285.6	12.1 13.6	89	Coal Seam: Sampled DH- 38-3
285.6	305.4			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone. Occasionally thin coal seams. Bedding 50° to core axis at 304.5'.
305.5	312			Sandstone: Dark grey, fine grain, interbeds of mudstone, occasionally thin coal seams.
312.0	322.8			Mudstone: Dark grey, interbeds of siltstone, fragments of plants. numerous thin coal seams.
322.8	329.8	6.8 7.0	97	Coalseam: Sampled DH - 38-4
329.8	358.8			Mudstone: Dark grey, fragments of plants, numerous thin coal seams, slightly carbonaceous 329.8 - 336.0 interbeds of siltstone light
358.8	362.8			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 60° to core axis at 359'
362.8	376.0			Mudstone: Dark grey, interbeds of siltstone and sandstone, occasionally thin coal seams. Bedding 60° to core axis at 369'
376.0	386.1	3.2 10.1	29.3	Coalseam: Sampled DH - 38-5 Core ground, 376 - 377, 381.0 - 383.5 , 384.0 - 386.0
386.1	400.0			Shale: Dark grey, interbeds of sandstone, pieces of coal, occasionally thin coal seams Bedding 70° to core axis at 390'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 38

Footage		Recovery		Description
from	to	feet	%	
400.0	411.5			Sandstone: Grey, fine grain, interbeds of siltstone crossbedded, pieces of coal, Bedding 60° to core axis at 407'.
411.5	417.5	5.4/6.0	90	Coalseam: Sampled DH-38-6
417.5	446.0			Shale: Dark grey, interbeds os siltstone, thin coal seams. Bedding 60° to core axis at 420.0 numerous thin coal seams.
446.0	448.0	1.9/2.0	95	Coalseam: Sampled DH-38-7
448.0	457.0			Sandstone: Grey, fine grain, interbeds shale, numerous thin coal seams, pieces of coal.
				END OF HOLE AT 457.0'
				Logged by G.C. Singhai
				Dec. 13/76

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 39 Size of core: HQ Total depth: 572 ft
174.3 m

Location: EMGS co-ordinates - N 5585072.985
E 647849.404

Baseline co-ordinates - N 250 + 00.8
E 5 + 86.5

Elevation - ft 5221.7
m 1591.57

Date of starting : Dec. 5, 1976
Date of completion : Dec. 9, 1976

Logging by : G.C. Singhai
on : Dec. 10, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
187	57	88.0°	S 85°E
374	114	86.6°	N 88°E
558	170	84.2°	N 83° E

Recovery of coal : $\frac{93.8}{101.0}$ ft = 93%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 39

Footage		Recovery		Description
from	to	feet	%	
0	31.0			Overburden (No core)
31.0	43.2	11.2/12.2	90%	CoalSeam: Sampled DH-39-1 Parting: Shale - 35.3 - 35.5, 35.7 - 36.1
43.2	102.6			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, pieces of coal, numerous thin coal seams. Bedding 50° to core axis at 45' Coal seam: 60.8 - 62.0 Bedding 60° to core axis at 99.0'
102.6	126.0	22.4/23.4	96.0	Coalseam: Sampled DH - 39-2 Parting: Shale - 121.0 - 121.3 , 123.8 - 124.4 Shaly coal 125.1 - 126.0
126.0	131.0			SHale: Dark grey, fragments of plants, interbeds of siltstone Bedding 70° to core axis at 133' thin coalseams.
131.0	270			Sandstone: Dark grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal, Bedding 60° to core axis at 200' Bedding 65° to core axis at 252'.
271.0	302.9			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, fragments of plants, occasionally thin coal seams.
302.9	337.3	33.2/34.4	97	Coalseam: Sampled DH - 39-3 Shaly coal 305.0 - 306, Shale(312.3 - 312.6) (314.5 - 315.0) , 315.7 - 316.0(318.5 - 318.7) 324.0 - 324.3 (329.1 - 329.4) (330.1 - 330.4) (332.0 - 332.5), 335.7 - 336.2
337.3	346.0			Shale: DArk grey, highly carbonaceous numerous thin coal seams and fragments of plants.
346.0	369.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, fragments of plants, pieces of coal and numerous thin coal seams. Bedding 50° to core axis at 347', Coal seam 367.7 - 368.7

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-39

Footage		Recovery		Description
from	to	feet	%	
369.0	428.0			Sandstone: Grey, fine grain, pieces of coal, crossbedded, occasionally interbeds of shale and thin coal seams. Bedding 60° to core axis at 427'.
428.0	445.0	17.0 / 17.0	100	Coalseam: Sampled DH -39-4 Parting shale: 232.0 - 232.2
445.0	469.2			Shale: Dark grey, slightly carbonaceous and numerous thin coal seams. interbeds of sandstone and silt. Bedding 70° to core axis at 459'
469.2	476.0			Sandstone: Grey, fine grain, pieces of coal, interbeds of shale, and siltstone Bedding 60° to core axis at 472'.
476.0	512			Shale: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams, interbeds of siltstone.
512	526.0	10.0 / 14.0	71	Coalseam: Sampled DH - 39-5
526.0	538			Siltstone: Dark grey, very fine grain, interbeds of shale, fragments of plants and occasionally thin coal seams.
538.0	542			Shale
542	551.0			Sandstone: Light grey, fine grain, crossbedded pieces of coal, Bedding 50° to core axis at 548'
551.0	572			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, occasionally thin coal seams, fragments of plants.
				END OF HOLE AT 572'
				Logged by G.C. Singhai
				Dec. 10, 1976

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 40 Size of core: HQ Total depth: 447 ft
136.2 m

Location: EMGS co-ordinates - N 5585036.539
E 647701.959

Baseline co-ordinates - N 249 + 98.9
E 0 + 88.2

Elevation - ft 5170.4
m 1575.94

Date of starting : Dec. 1, 1976
Date of completion : Dec. 4, 1976

Logging by : G.C. Singhai
on : Dec. 6, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
148	45	88.0°	N 74° E
296	90	86.5°	N 73° E
433	132	84.5°	N 71° E

Recovery of coal : $\frac{80.9}{90.8}$ ft = 89%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-40

Footage		Recovery		Description
from	to	feet	%	
0	37.5			Overburden (No core)
37.5	41			Shale: Dark grey, fragments of plants
41.0	51.0	7.5 / 10.5	75.0	Coalseam: Sampled DH 40-1 Parting shale: 43.5 - 45.0 (46.1 - 46.5)
51.0	58.3			Siltstone: Dark grey, very fine grain, fragments of plants, coal seam 54.6 - 55
58.3	71.5	11.2 / 13.3	84.0	Coalseam: Sampled DH-40-2 Parting Shale slightly carbonaceous 59.0 - 60.2 (61.5 - 61.9)
71.6	87.0			Sandstone: Grey, fine grain, pieces of coal, Bedding 60° to core axis at 75' Coalseam: 82.5 - 82.6, 83.3 - 83.5
87.0	106.5	18.2 / 19.5	93	Coalseam: DH-40-3 Parting shale: 92.8 - 93.6, 95.8 - 97.8
106.5	111.8			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 80° to core axis at 111.0'
111.8	113.4			Shale: Dark grey
113.4	117.0	2.9 / 3.6	81	Coalseam: Sampled DH-40-4
117.0	124.5			Shale: Dark grey, numerous thin coal seams.
124.5	130.8			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding to core axis 70° to core axis at 127'
130.8	139.1			Shale: Dark grey, interbeds of siltstone and sandstone, numerous thin coal seams.
139.1	141.6	2.2 / 2.5	88	Coalseam: Sampled DH-40-5
141.6	199.0			Sandstone: Dark grey, fine grain, crossbedded, pieces of coal, occasionally in coal seams, Coal seam 148.5 - 150, Bedding at 176.5 - 70° to core axis.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-40

Footage		Recovery		Description
from	to	feet	%	
199.0	202.2			Shale: Dark grey, fragments of plants, numerous thin coal seams.
202.2	206.0	3.5 / 3.8	92	Coalseam: Sampled DH - 40-6 Parting of shale: 204.6 - 205.6
206.0	209.5			Shale: Dark grey, fragments of plants, numerous thin coal seams.
209.5	212.6	2.7 / 3.1	87	Coalseam: Sampled DH - 40-7
212.6	218.0			Shale: Dark grey, interbeds of siltstone Bedding 50° to core axis at 217'
218.0	224.0	4.9 / 6.0	82	Coalseam: Sampled DH-40-8 Parting shale: 220.8 - 220.2
224.0	247.7			Shale: Dark grey, interbeds of siltstone, occasionally thin coal seams.
247.7	302.0			Sandstone: Light grey, to grey, fine grain, interbeds of shale and siltstone, pieces of coal Bedding 60° to core axis at 265'
302.0	310.0			Shale: DArk grey, numerous thin coal seams Coal seam 303.8 - 305.5
310.0	329.8	17.4 / 19 8	88	Coalseam: Sampled DH - 40 - 9 Parting Shale: 312.0 - 312.8, 323.1 - 324.6
329.8	344.8			Shale: Dark grey, fragments of plants, interbeds of siltstone and sandstone.
344.8	376.0			Sandstone: Dark grey to grey, fine grain, interbeds of shale and siltstone. Bedding 70° to core axis at 349.0
376.0	395.2	17.9 / 19.2	93	Coalseam: Sampled DH - 40-10 Parting Shale 393.2 - 393.5
395.2	447.0			Sandstone: Dark grey, fine grain, interbeds of shale and siltstone, Bedding 50° to core axis at 399'
				End of Hole at 447' G.C. Singhai Dec. 6/76

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 41 Size of core: HQ Total depth: 600 ft / 182.9 m

Location: EMGS co-ordinates - N 5585005.647
E 647559.687

Baseline co-ordinates - N 250 + 10.7
W 3 + 89.3

Elevation - ft 5154.0
m 1570. 94

Date of starting : Jan. 16,1977
Date of completion : Jan. 18, 1977

Logging by : G.C. Singhai
on : Jan. 19,1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
197	60	88.1°	N 79° E
394	120	83.5°	N 74° E
574	175	81.0°	N 74° E

Recovery of coal : $\frac{61.5}{70.2}$ ft = 88%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 41

Footage		Recovery		Description
from	to	feet	%	
0	21			Overburden (No core)
21	26.4			Mudstone: Dark grey, fragments of plants , pieces of coal, Numerous thin coal seams. Bedding 40° to core axis at 25'.
26.4	34.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone. occasionally thin coal seams.
34.0	63.0			Mudstone: Dark grey, fragments plants, pieces of coal, numerous thin coal seams. Occasionally interbeds of siltstone.
63.0	67.4			Sandstone: Grey, fine grain, interbeds of siltstone and shale. Bedding 60° to core axis at 67'
67.4	88.3			Shale: Dark grey, laminated, fragments of plants, interbeds of siltstone, occasionally thin coal seams.
88.3	94.8	6.0 6.5	92.3	Coalseam: Sampled (DH 41-1) Parting mudstone 91.4 - 92.1, 93.8 - 93.9
94.8	106.6			Mudstone: Dark grey, fragments of plants, pieces of coal, and numerous thin coal seams.
106.6	109.2			Sandstone: Grey, fine grain, crossbedded, interbeds of thin siltstone, Bedding 55° to core axis.
109.2	126.8			Siltstone: Dark grey, very fine grain, interbeds of sandstone and mudstone, occasionally fragments of plant.
126.8	132.1	5.3 5.3	100	Coalseam: Sampled (DH 41-2)
132.1	155.5			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Coalseam 136.4 -137.2. occasionally thin interbeds of sandstone. Bedding 60° to core axis at 148.5
155.5	158.7			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-41

Footage		Recovery		Description
from	to	feet	%	
158.7	164.9			Mudstone: Dark grey, fragments of plants and pieces of coal.
164.9	166.1			Coalseam:
166.1	170.0			Sandstone: Grey, fine grain, interbeds of mudstone, crossbedded, pieces of coal. Bedding 50° to core axis at 169'.
170.0	175			Mudstone: Dark grey, fragments of plants, occasionally thin coal seams.
175.0	198.0			Sandstone: Dark grey to grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal Bedding 70° to core axis at 197'.
198.0	209.3	9.5 / 11.3	84	Coalseam: Sampled (DH 41-3)
209.3	233.3			Sandstone: Grey, fine grain, interbeds of siltstone, Crossbedded, pieces of coal, Bedding 60° to core axis at 220'.
233.3	236.6	3.3 / 3.3	100	Coalseam: SAmpled (DH 41-4) Parting: Mudstone: 234.1 - 234.3
236.6	241.0			Sandstone: Dark grey, grey fine grain, crossbedded interbeds of siltstone and shale. Bedding 60° to core axis at 237'.
241.0	254.3			Shale; Dark grey, laminated, interbeds of siltstone, fragments of plants occasionally thin coal seams.
254.3	292			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal. Occasionally thin coal seam. Bedding 60° to core axis at 289'
292.0	308.0			Siltstone: DArk grey, very fine grain, interbeds of mudstone and sandstone. Fragments of plants.
308.0	312			Mudstone: Dark grey, fragments of plants. Numerous thin coal seams Coal Seam 308.5 - 309.0, 309.8 - 310.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 41

Footage		Recovery		Description
from	to	feet	%	
312.0	320.5	7.1/8.5	83.5	Coalseam: Sampled (DH 41-5) Partings Mudstone 313.6 - 314.8, 316.8 - 317.8
320.5	328.3			Shale: Dark grey, laminated interbeds of sandstone. Numerous thin coal seams. Coalseam: 324.0 - 324.1, 324.2 - 324.4, 326.0 - 326.2, Bedding 60° to core axis at 322'.
328.3	338.3	8.5/10.0	85	Coalseam: Sampled (DH 41-6) Partings, Mudstone (331.5 - 331.8) 333.4 - 333.7
338.3	347.5			Mudstone: Dark grey, interbeds of sandstone, fragments of plants, occasionally thin coalseams. Coalseam. 346.3 - 346.9, Bedding 50° to core axis at 346'
347.5	376.8			Sandstone: Grey, fine grain, interbeds of shale, crossbedded, pieces of coal , occasionally thin coal seams.
376.8	385.4	8.3/8.6	96.5	Coalseam: Sampled (DH 41-7)
385.4	391.2			Mudstone: Dark grey, interbeds of Sandstone fragments of plants and numerous thin coal seams Bedding 60° to core axis at 390'
391.2	398.0	6.0/6.8	88.2	Coalseam: Sampled (DH 41-8) Parting coaly shale 394.8 - 395.6
398.0	399.2			Mudstone: Dark grey, fragments of plants.
399.2	401.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 70° to core axis.
401.0	404.5			Shale: DArk grey, laminated, interbeds of siltstone, pieces of coal, fragments of plants.
404.5	406.8	2.0/2.3	87	Coalseam: Sampled (DH 41-9)
406.8	413.0			Mudstone: Grey, fragments of plants, pieces of coal, thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 41

Footage		Recovery		Description
from	to	feet	%	
413.0	426.0			Sandstone: Grey to light grey, fine grain, crossbedded, pieces of coal. Bedding 60° to core axis at 419'
426.0	435.3			Mudstone: Dark grey, fragments of plants pieces of coal.
435.3	437.0			Coalseam:
437.0	520.0			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal occasionally thin coal seams. Bedding 60° to core axis at 457'. Bedding 60° to core axis at 500'.
520.0	529.0			Mudstone: Dark grey, fragments of plant, pieces of coal, occasionally thin coal seams.
529.0	532.6	2.3 / 3.6	63.9	Coalseam: Sampled (DH 41-10)
532.6	543.0			Mudstone: Dark grey, fragments of plants, interbeds of siltstone. Pieces of coal, occasionally thin coal seams Coal seam 542.0 - 542.4
543.0	547	3.2 / 4.0	80	Coalseam: Sampled (DH 41-11)
547.0	578.8			Mudstone: Dark grey, fragments of plants, interbeds of sandstone, pieces of coal, thin coal seams. Bedding 50° to core axis at 576'.
578.8	600.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone, pieces of coal, crossbedded. Bedding 60° to core axis at 598'.
				END OF HOLE
				G.C. Singhai
				Jan. 19/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 42 Size of core: HQ Total depth: 472 ft
143.9 m

Location: EMGS co-ordinates N 5584964.796
E 647406.255

Baseline co-ordinates N 249 + 99.4
W 9 + 10.1

Elevation - ft 5161.2
m 1573.1

Date of starting : Nov. 27, 1976
Date of completion : Nov. 30, 1976

Logging by : G.C. Singhai
on : Dec. 2, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
131	40	89.0°	N 46° E
295	90	87.0°	N 59° E
459	140	85.0°	N 61° E

Recovery of coal : $\frac{26.2}{34.1}$ ft = 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-42

Footage		Recovery		Description
from	to	feet	%	
0	16.6			Overburden (no core)
16.6	20			Sandstone: Grey, fine grain; cross bedded. Bedding 60° to core axis at 19'.
20.0	42.9			Mudstone: Grey, interbeds of silt and sandstone. Coal seas 25.5-25.9. Bedding 60° core axis at 31.5.
42.9	75.0			Sandstone: Dark grey to grey, fine grain. Cross bedded, pieces of coal, interbeds of siltstone. Occassionally thin coal seam.
75.0	85.5			Siltstone: Grey, very fine grain. Fragments of plants and numerous thin coal seams.
85.5	87.5			Sandstone: Dark grey, fine grain. Pieces of coal. Bedding 60° to core axis at 87'.
87.5	100.1			Mudstone: Dark grey interbeds of sandstone, pieces of coal, fragments of plants. Numerous thin coal seams 92.6 - 95.5. Bedding 60° to core axis at 98'.
100.1	102.5	2.4 / 2.4	100	Coalseam: Sampled HD-42-1

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
102.5	103.2			Shale: Fragments of plant and pieces of coal.
103.3	125.4			Sandstone: Dark grey to grey, fine to medium grain, cross bedded , pieces of coal, bedding 60° to core axis at 113' intersects of shall occasionally thin coal seams.
125.4	128.0	2.6 / 2.6	100	Coalseams: DH 42-2
128.0	153.9			Sandstone: Dark grey to grey, fine grain, cross bedded. Interbeds of silt stone and shale. Pieces of coal. Coalseam 131 - 131.4, 131.6 - 132.0, bedding 70° to coal axis at 153'.
153.9	162.0	4.5 / 8.1	55.5	Coal Seam sampled DH 42-3 Coaly shale. 155.0 - 155.7, 157.5 - 157.9. Carbonaceous shale 160.4 - 161.0.
162.0	163.0			Carbonaceous shale
163.0	168			Shale: slightly carbonaceous fragments of plants.
168.0	171			Carbonaceous Shale: coal seam 168.0 - 168.7.
171.0	233.3			Sandstone: light grey to grey, fine grain to medium grain, interbeds of siltstone, pieces of coal and occasionally thin seams of coal. Bedding 65° to core axis at 206'. Numerous thin coal seams 227 - 231.
233.3	233.6			Shale: Carbonaceous
233.6	235.8	2.0 / 2.2	91	Coalseam: sampled DH 42-4
235.8	244.5			Shale: Grey interbed of siltstone and sandstone. 238.0 - 240.0. Numerous thin coal seams. Coal seam 239.4 - 240.0.
244.5	256			Sandstone: Light grey, fine grain crossbedded, pieces of coal. Bedding 70° to core axis 249.0.
256.0	263			Mudstone: Dark grey.
263.0	331.4			Sandstone: Grey, fine grained intersects of

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
				siltstone and shale, occasionally pieces of coal. Bedding 55° to core axis at 275.5'. Occasionally fine coal seams, numerous thin coal seams. 315' - 317.8. Bedding at 329' 55° to core axis.
331.4 -	335.5	3.0/4.1	73	Coalseam: Sampled DH 42-5
335.5 -	342			Sandstone: Grey fine grain, pieces of coal. Bedding 55° to core axis at 340'.
342 -	350			Shale: Grey, interbeds of siltstone. Numerous thin coal seams 342 - 346. Fragments of plants.
350 -	361			Sandstone: Grey fine grain, pieces of coal. Bedding 70° to core axis at 359'.
361 -	371.7			Shale: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams 361' - 363'.
371.7 -	378.0	4.8/6.3	76	Coal seam: Samples DH 42-6 coaly shale 375.7 - 376.1.
378.0 -	389.0			Sandstone: Grey, fine grain , pieces of coal. Bedding at 388.0', 70° to core axis.
389.0 -	395			Shale: Grey, numerous thin coal seams and fragments of plants. Carbonaceous shale 390 - 391.
395 -	409			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Numerous thin coal seams 403.5 - 409.0. Bedding 60° to core axis at 407'.
409 -	443.1			Siltstone: Very fine grain. Grey,interbeds of sandstone and siltstone.
443.1 -	451.5	6.9/8.4	82	Coalseam: Sampled DH-42-7 Parting shale: 444.8 - 445.4, 447.8 - 447.9, 449.0 - 449.5 Carbonaceous shale: 450.5 - 451.3.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
451.5	457.5			Shale: Dark grey, numerous thin coal seams, fragments of plant.
457.5	472			Sandstone: Grey, fine grain, interbeds of silt stone. Bedding 70° to core axis at 470'.
				End of hole at 472'. Logged by G. C. Singhai December 7, 1976.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 43 Size of core: HQ Total depth: 462 ft
140.8 m

Location: EMGS co-ordinates - N 5584928.534
E 647257.762

Baseline co-ordinates - N 249 + 98.9
W 14 + 11.6

Elevation - ft 5167.6
m 1575.08

Date of starting : Nov. 24, 1976
Date of completion : Nov. 28, 1976

Logging by : G.C. Singhai
on : Dec. 3, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
328	100	87.2°	N 49° E

Recovery of coal : $\frac{12.8}{14.1}$ ft = 91%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH Nc. DH-43

Footage		Recovery		Description
from	to	feet	%	
0	38			Overburden (No core)
38	43.7			Siltstone: Grey, very fine grain, occasionally thin coal seam.
43.7	113.3			Sandstone: Grey, fine grain to medium grain. Crossbedded, pieces of coal, occasionally thin coal seams. Bedding 60° to core axis at 43'. Interbeds of shale. Core broken 72' - 98'. Bedding 60° to core axis at 111.0.
113.3	123.4			Siltstone: Grey, very fine grain, interbeds of shale.
123.4	125.6	2.0 / 2.4	83	Coalseam: sampled DH-43-1
125.8	126.7			Shale:
126.7	148			Sandstone: Dark grey fine grain. Crossbedded, pieces of coal, occasionally, thin coal seams. Bedding 60° to core axis at 139'.
148	161.5			Shale: Grey, interbeds of sandstone. Pieces of coal, gragments of plants. Coal seam: 157.5 - 157.9, 159.7 - 160.2.
161.5	171.5			Sandstone: Grey to dark grey, fine grained, bedding 50° to core axis at 167'.
171.5	177.8			Shale: Dark grey, pieces of coal, fragments of plants and numerous thin coal seams.
177.8	189.5	10.8 / 11.7	92	Coalseam: Sampled DH-43-2 Parting shale 181.2 - 182.0.
189.5	198.8			Shale: Grey, interbeds of sandstone and silt, fragments of plants and numerous coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No

Footage		Recovery		Description
from	to	feet	%	
198.8	213			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, occasionally thin coal seams. Core broken, bedding 70° to core axis at 202'.
213.0	227.0			Sandstone: Grey, fine grain, interbeds of siltstone. Broken core.
227.0	234.5			Shale: Dark grey, interbeds of siltstone and sandstone. Numerous thin coal seams. Broken core.
234.5	242'			Sandstone: Grey, fine grain. Bedding 60° at 240'.
242	257.6			Shale: Dark grey, fragments of plants and pieces of coal, thin coal seams.
257.6	260.0			Sandstone: Grey, fine grain.
260.0	265			Shale: Dark grey, fragments of plants, pieces of coal. Coalseam: 262.9 - 263.5.
265.0	350			Sandstone: Light grey fine grain, interbeds of shale. Crossbedded, pieces of coal. Coalseams 282.0 - 282.8, Occasionally thin coal seams. Bedding 65° to core axis at 287'. Coalseam: 324.3 - 325.5, 328.0 - 328.4, Carbonaceous shale: 335.5 - 336.5, bedding 70° to core axis at 343'.
350	353			Siltstone: Dark grey, very fine grain, occasionally thin coal seams.
353	369			Sandstone: Grey to light grey, fine grain, crossbedded, pieces of coal. Bedding 60° to core axis at 361.
369	373			Siltstone: Dark grey. Very fine grain.
373.0	377			Shale: Dark grey, fragments of plants and pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
377.0	398			Sandstone: Grey, fine grain, crossbedded, interbeds of shale . Coalseam: 383.6 - 384.8, bedding 60° to core axis at 388'.
398.0	398.2			Coalseam
398.2	415			Shale: Dark grey, interbeds of siltstone and sandstone.
415	429.0			Sandstone: Grey to light grey, fine grain; crossbedded, pieces of coal. Coal seam 416.5 - 416.7. Bedding 70° to core axis at 421.
429.0	431.6			Shale: Dark grey, fragments of plants.
431.6	432.9	1.3		Coalseam
432.9	462.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, bedding 65° to core axis at 449.0'. End of Hole at 462. Logged by G. L. Singhai December 3, 1976.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 44 Size of core: HQ Total depth: 542 ft
165.2 m

Location: EMGS co-ordinates - N 5585761.97
E 648089.977

Baseline co-ordinates - N 270 + 10.8
E 18 ± 87.5

Elevation - ft 5520.3
m 1682.59

Date of starting : Nov. 30, 1976
Date of completion : Dec. 3, 1976

Logging by : G.C. Singhai
on : Dec. 5, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
No tests			

Recovery of coal : $\frac{24.1}{36.6}$ ft = 80%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
0	51			Overburden (No Core)
51	52			Shale: Dark grey
52.0	62.0	5.2/10	52%	Coalseams: Sampled DH-44-1 Dirty Coal.
62	82			Shale: Dark grey interbeds of sandstone, fragments of plants, pieces of coal, numerous thin coal seams. Bedding 50 degrees to core axis st 67' Coal seam 81.0 - 82.0.
82.0	169.5			Sandstone: Grey, fine to medium grain, cross-bedded, pieces of coal. Bedding 50 degrees to core axis at 100' and bedding at 162' 60 degrees to core axis.
169.5	173.5	3.7/4.0	93%	Coalseams: Sampled DH-44-2
173.5	221.5			Sandstone: Dark grey, fine grain. Crossbedded, pieces of coal, occasionally thin coalseams. Coalseam 178.7 - 179.0 Bedding 60 degrees to core axis at 174.0.
221.5	228.5			Siltstone: Dark grey, very fine grain.
228.5	241.5			Sandstone: Grey fine grain pieces of coal, interbeds of siltstone and shale. Bedding at 238' 55 degrees to core axis.
241.5	244.1			Shale: Dark grey, fragments of plants.
244.1	266.7	20.2/22.6	89%	Coalseam: Sampled, DH-44-3 Parting: Shaly coal: 254.0 - 254.6
266.7	542'			Sandstone: Light grey, medium grain pieces of coal, cross bedded, bedding 45 degrees to core axis at 271, coal seam, 291 - 291.4, 293.1 - 294.5, Bedding 70 degrees to core axis, at 323, bedding 60 degrees to core axis at 492.
				End of Hole at 452'
				Logged by - G.C. Singhai
				December 5th, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 45 Size of core: HQ Total depth: 542 ft
165.2 m

Location: EMGS co-ordinates - N 5585673.64
E 647740.873

Baseline co-ordinates - N 269 + 99.8
E 7 + 06.1

Elevation - ft 5257.3
m 1602.42

Date of starting : Nov. 21, 1976
Date of completion : Nov. 24, 1976

Logging by : G.C. Singhai
on : Dec. 2, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
164	50	88.0°	N 50° E
328	100	84.5°	N 73° E
525	160	80.8°	N 83° E

Recovery of coal : $\frac{49.9}{56.5}$ ft = 88%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-45

Footage		Recovery		Description
from	to	feet	%	
0	96			Overburden (No core)
96	97.6			Mudstone: Dark grey, fragmants of plants of plants thin coal seams.
97.6	130.6			Sandstone: Grey to light grey, fine to medium grain, occassionally thin coal seams bedding 70 degrees to core axis at 106'.
130.6	132.0			Carboneceons Shale: Dark grey, with numerous thin coal seams and coaly material.
132.0	151.2	19.2	92%	Coal Seam: Sampled DH-45-1 Very dirty coal 80% shaly coal Parting of shale. 185.5 - 150.5.
515.2	152.5			Carboneceons Shale: numerous thin coal seams.
152.5	159.9			Siltstone: Very fine grained.
159.9	155.0			Sandstone: Grey, fine grain. Bedding 55 degrees to core was at 161'
165.0	249.6			Sandstone: Dark grey, fine to medium grain, cross bedded, occassionally pieces of coal and thin coal seams. Bedding 60 degrees to core axis at 202' and 60 degrees to core axis at 229'.
249.6	257			Siltstone: Dark grey, very fine grain, fragments of plants occassionally thin coal seams. Coal seam 251.0 - 251.8.
257	272			Mudstone: Dark grey, fragments of plants occassionally thin coal seams. Coal seam 259.4 - 259.7 263.8 - 264.
272	273.8			Sandstone: Light grey, fine grain bedding 60 degrees to core axis at 272.5.
273.8	275.0			Shale

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DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-45 - Continued

Footage		Recovery		Description
from	to	feet	%	
275.0	290.5	14.3/15.5	92%	Coal Seam: Sampled DH-45-2 Parting shale: 275.8 - 276.2, Coal Shale (281.8-281.9) 286.8 - 287.2, 287.4 - 287.8 Shale, 288.8 - 290.3.
290.5	302			Shale: Dark grey, fragments of plants, thin coal seams. Coal seams 298.3 - 298.6 300.0 - 300.5.
302	312.8			Sandstone: Grey, fine grain, cross bedded, Bedding 60 degrees to core axis at 311.0.
312.8	320.9	7.8/8.1	96%	Coal Seam: Sampled, DH-45-3 parting of shale 313.4 - 313.6 Shaly coal 315.0 - 317.0.
320.9	332			Shale: Dark grey, numerous thin coal seams. Coal seam 324.1 - 324.7 fragments of plants.
332.0	384.3			Sandstone: Dark grey, fine to medium grey, interbeds of shale. Crossbedded. Bedding 70 degrees to core axis at 342.5 occassionally pieces of coal.
384.3	394.7	6.8/10.4	65%	Coalseam: Sampled DH-45-4
394.7	403.2			Mudstone: Dark grey, interbeds of siltstone and sandstone, Numerous thin coal seams. Fragments of plants. Bedding 60 degrees to core axis at 396'.
403.2	440.5			Sandstone: Light grey, fine grain, Crossbedded, pieces of coal, occassionally thin coal seams. Bedding 70 degrees to core axis at 426'.
440.5	443.8	3.3/3.3	100	Coal Seam: Sampled, DH-45-5
443.8	446.6			Mudstone: Dark grey, pieces of coal and fragments of plants.
446.6	453.0			Sandstone: Grey, fine grain
453.0	462			Siltstone: Dark grey, very fine grain pieces of coal, fragments of plant.

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DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-45....Continued

Footage		Recovery		Description
from	to	feet	%	
462.0	471.5			Mudstone: Dark grey, pieces of coal and fragments of plants.
471.5	497			Sandstone: Dark grey, fine grain cross bedded, pieces of coal, interbeds of siltstone. Bedding 80 degrees to core axis at 482'.
497.0	519.0			Shale: Dark grey, occassionally pieces of coal, and fragments of plants, slightly carboneceous shale. 514.8 - 516.6, with numerous thin coal seams. Coalseam 516.6 - 517.1.
519.0	533.0			Sandstone: Grey- fine grain. Occassionally pieces of coal, bedding 70 degrees to core axis at 526.
533.0	534.8			Shale: Dark grey, fragments of plants.
534.8	542.0			Sandstone: Grey fine grain cross bedded. Bedding 70 degrees to core axis at 540.5.
				End of Hole at 542'
				Logged by G.C. Singhai
				Dec. 2, 1976.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 46 Size of core: HQ Total depth: 560 ft
170.7 m

Location: EMGS co-ordinates - N 5585597.89
E 647431.023

Baseline co-ordinates - N 269 + 98.5
W 3 + 40.4

Elevation - ft 5191.6
m 1582.40

Date of starting : Dec. 4, 1976
Date of completion : Dec. 9, 1976

Logging by : G.C. Singhai
on : Dec. 10, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
180	55	88.0°	N 71°E
360	110	83.0°	N 71°E
546	164	75.5°	N 74° E

Recovery of coal : $\frac{91.2}{123.3}$ ft = 74%

Remarks : Core barrel broke up in this hole causing grinding problems.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-46

Footage		Recovery		Description
from	to	feet	%	
0	21.5			Overburden, (No core)
21.5	36.5			Sandstone: Light-grey, fine grain, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 33'.
36.5	47.8	9.5 / 11.3	84%	Coalseam: Sampled, DH46-1
47.8	76.4			Sandstone: Grey, fine grain, crossbedded, pieces of coal, occassionally thin coal seams. Bedding 60 degrees to core axis at 54'.
76.4	79.0			Shale: Dark grey, fragments of plants, thin coal seams.
79.0	80.9	1.9 / 1.9	100	Coalseams: Sampled - DH-46-2.
80.9	122.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, bedding 60 degrees to core axis at 94' pieces of coal.
122.0	126.0			Shale: Dark grey, fragments of plants, bedding 60 degrees to core axis at 123'.
126.0	130			Sandstone: Grey, fine grain, interbeds of shale.
130.0	152.0			Shale: Grey, fragments of plants, Interbeds of siltstone and sandstone.
152.0	157			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 70 degrees to core axis at 154'.
157.0	164.5			Shale: Dark grey, fragments of plants, thin coal seams. Coalseams 161.5 - 162.0.
164.5	169.5			Sandstone: Dark grey, fine grain interbeds of shale and siltstone. Bedding 60 degrees to core axis at 166'.
169.5	182.5			Shale: Dark grey, interbeds of sandstone, and siltstone.

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DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-46 ..... Continued

Footage		Recovery		Description
from	to	feet	%	
182.5	205.1	20.8 / 22.6	92%	Coalseam: Sampled, DH-46-3 Partings of shale: - 188.5 - 189.2, 189.7 - 190.5, (191.1 - 192.2), (192.7 - 192.9) 193.0 - 193.7, (195.7 - 196.0), 200.8 - 201.4
205.1	215.0			Shale: Dark grey interbeds of sandstone and silt stone. Occassionally thin coal seams. Bedding 50 degrees to core axis at 209.
215.0	225.0			Sandstone: Grey fine grain, pieces of coal, interbeds of shale. Coal seams 220.7 - 221.8, Shale: 224.3 - 225.0
225.0	232.9	7.0 / 7.9	89%	Coalseam: Sampled DH-46-4 partings: Shale: 225.7 - 226.0, 230.7 - 231.0.
232.9	235.9			Shale: Dark grey, fragments of plants.
235.9	252.0			Sandstone: Grey, fine grain, interbeds of shale, bedding 60 degrees to core axis.
252.0	261.1			Siltstone: Dark grey, very fine grain.
261.1	268.8	4.6 / 7.7	60%	Coalseam: Sampled, DH-46.5
268.8	271			Shale: Dark grey, fragments of plants, numerous thin coal seams.
271.0	276.6			Sandstone: Grey, fine grain, interbeds of shale. pieces of coal. bedding 60 degrees to core axis at 275'.
276.6	280.8	3.5 / 4.2	83%	Coalseam: Sampled DH-46-6 parting shale: 280 - 280.2.
280.8	306.8			Shale: Dark grey, fragments of plants, interbeds of sandstone and siltstone, occasionally thin coal seams.
306.8	317.0			Sandstone: Grey, fine grain, interbeds of stiltone and shale, pieces of coal, bedding 60 degrees to core axis at 315'.
317.0	342.0			Siltstone: Dark grey, very fine grain, fragments of plants, interbeds of sandstone, occassionally thin coal seams.

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DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-46 ..... Continued

Footage		Recovery		Description
from	to	feet	%	
342.0	354.7	11.7/12.7	92%	Coalseam: Sampled, DH-46-7 Parting Shale: 344.3 - 344.7, 349.4 - 350.3, 350.9 - 351.3, Shaly coal 351.4 - 353.1.
354.7	358.8			Sandstone: Grey, fine grain, pieces of coal, Bedding 70 degrees to core axis at 356.
358.8	372			Shale: Grey, fragments of plants and pieces of coal, numerous thin coal seams, interbeds of sandstone; 367-372 highly carboneceous. bedding 70 degrees to core axis at 366'.
372	376.8	3.5/4.8	73%	Coalseam: Sampled DH-46-8
376.8	382.3			Shale: Dark grey, fragments of plants, occasionally thin coal seam.
382.3	390			Sandstone: Grey, fine grain, interbeds of shale and siltstone. bedding 50 degrees to core axis at 387.
390.0	396			Shale: Dark grey, interbeds of siltstone and sandstone. occasionally thin coal seams.
396	457.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. bedding 50 degrees to core axis at 443.5' interbeds of siltstone.
457.0	477			Mudstone: Dark grey, fragments of plants, interbeds of shale and siltstone, occasionally thin seams of coal.
477.0	279.0	2.0/2.0	100%	Coalseam: Sampled DH-46-9
479.0	483.7			Mudstone: Dark grey, carboneceous, fragments of plants and numerous thin coal seams.
483.7	510.3	11.8/26.6	44%	Coalseam: Sampled, DH-46-10 Shale: 502.0 - 502.6 Core ground.
510.3	514.8			Mudstone: Dark grey, fragments of plants and thin coal seams.
514.8	518.7			Sandstone: Grey, fine grain, pieces of coal, interbeds of shale, Bedding 70 degrees to core axis at 516.5.

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DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-46 .... Continued

Footage		Recovery		Description
from	to	feet	%	
518.9	520.3			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
520.3	543.5	16.8 23.2	71%	Coalseams: Sampled, DH-46-11 Parting: Shale. 521.7 - 522.1, 527.0 - 527.5
543.5	547.0			Siltstone: Dark grey, very fine grain, fragments of plants.
547.0	551.0			Sandstone: Grey, fine grain, Crossbedded, pieces of coal. Bedding 70 degrees to core axis at 550 degrees.
551.0	557			Mudstone: Dark grey, interbeds and siltstone fragments and plants, pieces of coal.
557	562	91.2 123.3	74%	Sandstone: Grey fine grain. Crossbedded, Pieces of Coal.
				End of hole at 562'
				Logged by G.C. Singhai
				December 10/76

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 47 Size of core: HQ Total depth: 650 ft
198.1 m

Location: EMGS co-ordinates - N 5585554.55
E 647252.758

Baseline co-ordinates - N 269 + 98.5
W 9 + 42.3

Elevation - ft 5184.9
m 1580.36

Date of starting : Nov. 29, 1976
Date of completion : Dec. 3, 1976

Logging by : G.C. Singhai
on : Dec. 5, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
213	65	87.0°	N 74° E
426	130	78.5°	N 79° E
633	193	73.0°	N 76° E

Recovery of coal : $\frac{73.2}{82.4}$ ft = 89%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-47

Footage		Recovery		Description
from	to	feet	%	
0	- 32			Overburden (No core)
32	- 42.3			Shale: Dark grey, fragments of plants. Coalseam 37.7 - 38.0, Broken core.
42.3	- 47.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 60 degrees to core axis at 42.5
47.5	- 48.6			Shale:
48.6	- 51.7	2.6 / 3.1	84	Coalseams: Sampled, DH-47-1 Parting shale 49.8 - 50.2, (50.7 - 50.8) most of the seam is shaly.
51.7	- 55.0			Shale: Dark grey, Carboneceous, fragments of plants.
55.0	- 59.5	3.8 / 4.9	76	Coalseam: Sampled, DH-47-2 Parting:-Shale: 56.0 - 56.8, 58.0 - 58.3.
59.9	- 122.0			Sandstone: Grey to light grey, fine to medium grain, pieces of coal. occassionally thin coal seams. Crossbedded, Bedding 65 degrees to core axis at 90'.
122.0	- 130.6			Shale: Dark grey, fragments of plants and pieces of coal, numerous thin coal seams, shale is slightly caboneceous, coalseam: 122.8 - 123.9 , 129.6 - 129.9
130.6	- 139.2			Sandstone: Light grey, fine grain, crossbedded pieces of coal, bedding 60 degrees to core axis at 133'.
139.2	- 150.1	10.3 / 10.9	94	Coalseam: Sampled DH-47-3 Parting: Sandstone: 140.9 - 142.7 Shale: 146.0 - 147.8
150.1	- 239.0			Sandstone: Grey to light grey, fine to medium grain, pieces of coal. Crossbedded, Coalseam: 153.8 - 154.6, 176.3 - 177.1, (178.7 - 178.8) (179.2 - 179.4) 189.3 - 189.6, bedding 60 degrees to core axis at 196.5, and bedding at 229' 65 degrees to core axis.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-47 .... Continued

Footage		Recovery		Description
from	to	feet	%	
239.0	240.0			Shale: Grey, slightly carboneceous, fragments of plants.
240.0	247.1	6.8/7.1	96%	Coalseam: Sampled DH-47-4 Parting Shale: 241.7-242.1, 245.2-245.7.
247.1	248.7			Shale: Dark grey, slightly carboneceous.
248.7	263.8			Sandstone: Dark grey, fine grain. pieces of coal and occassionally thin coalseams. Coalseam 263.7-263.8
263.8	269.3			Shale: Dark grey, fragments of plants and slightly carboneceous, interbeds of siltsone.
269.3	278.6			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 70degrees to core axis at 274'.
278.6	282.5			Shale: Dark grey, pieces of coal.
282.5	284.0	1.5/1.5	100%	Coalseam:
284.0	297.0			Shale: Dark grey, interbeds of sandstone and siltstone, bedding 60 degrees to core axis at 287'.
297.0	314.2			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale fragments of plants.
314.2	318.9	4.4/4.7	94%	Coalseam: Sampled DH-47-5 Parting: - Shale: - 317.7 - 317.9, 317.9 - 318.4.
318.9	327.8			Shale: Dark Grey, fragments of plants, numerous thin coal seams. Coalseam: 324.8 - 325.5, 326.0 - 326.6.
327.8	333.0			Sandstone: Grey to light grey, fine grain. Bedding 70 degrees to core axis at 329'.
333	324.7			Shale: Dark grey, interbeds of siltstone. Coalseams 337.4 - 337.8.
342.7	367.0			Sandstone: light grey, to grey, fine grain, crossbedded, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-47

Footage		Recovery		Description
from	to	feet	%	
367.0	372.5			Siltstone: Dark grey, very fine grain,
372.5	382.2	7.2/9.7	74%	Coalseam: Sampled, DH-47-6 Parting: Shale: 377.0 - 378.8, 380.1 - 381.0.
382.2	402.3			Sandstone: Dark grey, fine grain, interbeds of shale. and sandstone, Bedding 65 degrees to core axis at 395.0.
402.3	412.6	8.9/9.7	92%	Coalseam: sampled, DH-47-7
412.0	437.9			Sandstone: Grey to light grey, fine grain, pieces of coal, crossbedded, bedding 75 degrees to core axis at 427.5.
437.9	440.2	1.8/2.3	78%	Coalseam: Sampled DH-47-8
440.2	442.5			Sandstone: light grey, medium grain, pieces of coal, Crossbedded, Bedding 75 degrees to core axis at 442.5'.
442.5	44.93			Shale: Dark grey, fragments of plants.
449.3	459.7			Sandstone: Grey, fine grain, cross bedded, pieces of coal Bedding 70 degrees to core axis at 452'.
459.7	477.0			Shale: Dark grey, interbeds of siltstone and sandstone.
477.0	482.0			Sandstone: Grey, fine grain.
482.0	512			Siltstone: Dark grey, vary fine grain, interbeds of shale and sandstone. Occassionally thin seams of coal. Coalseam 505.6 - 506.0.
512.0	517.7	5.6/5.7	98%	Coalseam: Sampled DH-47-9 Partings Shale 515.0 - 515.3
517.7	521.0			Shale: Dark grey, numerous thin coal seams.
521.0	532.0	9.5/11.0	86%	Coalseam: Sampled DH-47-10 Parting: Shale 521.6 - 521.8, 523.4 - 524.0

DIAMOND DRILL CORE LOGGING SHEET
DDH No. DH-47 ..... Continued

Footage from	Footage to	Recovery feet	Recovery %	Description
532.0	537			Sandstone: Dark grey, fine grain. Interbeds of shale . Bedding 70 degrees to core axis at 537'.
537.0	545			Shale: Dark grey, interbeds of siltstone, pieces of coal, occassionally thin coal seams Coalseam: 542.1 - 542.5.
545.0	573.7			Sandstone: Grey to light grey, fine grain, Crossbedded, pieces of coal, interbeds of Shale and siltstone. Bedding 50 degrees to core axis at 576.5.
573.7	575.2			Shale: Grey, fragments of plants.
575.2	582.0	6.1/6.8	90%	Coalseam: Sampled, DH-47-11.
582.0	607			Sandstone: Grey to light grey, fine to medium grain, crossbedded, pieces of coal. Bedding 70 degrees to core axis at 593.0.
607	611.0			Siltstone: Dark grey, very fine grain.
611.0	623.0			Sandstone: Grey, fine grain, Bedding 75 degrees to core axis at 621.0'.
623.0	639.6			Siltstone: Dark grey, very fine grain.
629.6	636.0	6.2/6.4	97%	Coalseam: Sampled DH-47-12 Shale: 633.6 - 634.0.
636.0	650.0			Sandstone: Light grey , fine grain, crossbedded pieces of coal. Bedding 80 degrees to core axis at 644.5.
				End of Hole at 650'
				Logged by G.C. Singhai
				December 5th, 1976

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 48 Size of core: HQ Total depth: 522 ft
159.1 m

Location: EMGS co-ordinates - N 5585497.37
E 647021.613

Baseline co-ordinates - N 269 + 95.4
W 17 + 23.5

Elevation - ft 5157.6
m 1572.04

Date of starting : Nov. 19, 1976
Date of completion : Nov. 23, 1976

Logging by : David Thacker
on : Nov. 30, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
164	50	88.7°	S 62° E
328	100	87.0°	N 85° E
492	155	83.9°	N 81° E

Recovery of coal : $\frac{10.7}{10.7}$ ft = 100%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-48

Footage		Recovery		Description
from	to	feet	%	
0	37.4			Overburden.
37.4	44.1			Shale.
44.1	55.6			Sandstone: medium grained, grading downwards into fine. Occasional shale interbeds. Bedding to core axis angle @ 46 = 49°.
55.6	67.9			Shale: occasionally carbonaceous.
67.9	70.9			Coal: 68.8 - 68.9. Shale DH 48-1.
70.9	92.0			Shale: occasional fine grained sandstone. Occasionally carbonaceous.
92.0	92.6			Coal.
92.6	131.7			Sandstone: Bedding to core axis. Angle @ 93 = 61° @ 131 = 55° Numerous shale interbeds, fine grained.
131.7	139.4			Carbonaceous shale.
139.4	147.9	8.5/8.5	100	Coal: 142.3 - 143.9, carbonaceous shale 145.7 - 146.5 DH 48-2.
147.9	148.6			Shale.
148.6	151.2			Coaly shale.
151.2	160.6			Sandstone: medium grained, occasional shale. interbeds, carbonaceous partings, minor crossbedding.
160.6	179.5			Sandstone: coarse grained, mainly massive.
179.5	186.3			Shale: occasionally carbonaceous, grading downward into siltstone .
186.3	192.5			Sandstone: fine grained within top 2' grading downward into medium grained, bedding to core axis angle @ 188' = 60°.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 48

Footage		Recovery		Description
from	to	feet	%	
192.5	205.9			Interbedded sandstone and carbonaceous shale. Sand is fine grained.
205.9	238.0			Shale: rare fine grained sandstone interbeds.
238.0	256.5			Sandstone: fine grained, grading downwards to medium occasional shale interbeds. Bedding to core axis angle @ 239' = 54°.
256.5	257.0			Shaly coal.
257.0	277.6			Shale: numerous fine grained sandstone interbeds, carbonaceous zones, 275.6 - 275.8, shaly coal.
277.6	289.7			Shale : occasional fine grained sandstone lenses, bedding to core axis angle @ 283' = 58°.
289.7	290.1			Coal
290.1	291.0			Carbonaceous shale.
291.0	318.8			Sandstone: fine grained, occasional carbonaceous partings. 308.7 - 309.7 - shale.
318.8	326.8			Shale: occasional carbonaceous partings.
326.8	327.2			Shaly coal.
327.2	337.4			Shale, occasional fine grained sandstone lenses, occasionally carbonaceous. Bedding to core axis angle @ 336' = 63°.
337.4	345.0			Sandstone: medium grained, crossbedded, shale interbeds near base.
345.0	346.1			Shale (coaly).
346.1	418.7			Shale: occasional fine grained sandstone lenses, rarely carbonaceous. Bedding to core axis angle @ 388' = 59°.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 48

Footage		Recovery		Description
from	to	feet	%	
418.7	420.9	2.2 / 2.2	100	Coal: DH 49-3.
420.9	446.1			Interbedded sandstone and shale: sand is fine grained. Bedding to core axis @ 437' = 56°.
446.1	447.0			Coal.
447.0	448.0			Sandstone: fine grained.
448.0	451.0			Shale.
451.0	452.5			Coal.
452.5	483.0			Interbedded sandstone; shale; and is fine grained.
483.0	490.5			Carbonaceous shale.
490.5	491.2			Coal.
491.2	522.0			Shale: occasional fine graine sandstone interbeds. 510.0 - 512.5 = coaly shale. Bedding to core axis angle @ 505' = 56°.
				End of Hole.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 49 Size of core: HQ Total depth: 522 ft
159.1 m

Location: EMGS co-ordinates - N 5586285.598
E 647678.153

Baseline co-ordinates - N 289 + 99.3
E 9 + 80.5

Elevation - ft 5322.9
m 1622.42

Date of starting : Nov. 25, 1976
Date of completion : Nov. 30, 1976

Logging by : G.C. Singhai
on : Dec. 3, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
No tests			

Recovery of coal : $\frac{36.4}{47.6}$ ft = 76%

Remarks :

ELCO MINING LIMITED

PAGE

DIAMOND DRILL CORE LOGGING SHEET

DDH No.: DH-49 Size of core: HQ 63.5 mm Total depth: 522 ' 159.1 m

Location: N 289+99
XX E 9+80
Elevation of collar: ' 5326
m 1623.4

Dip of Hole: o
Bearing " : N o

Date of starting: November 25/76
Date of completion: November 30/76

Logging by: G.C. Singhai
" on: December 3, 1976

Remarks:

$$\text{Total rec} = \frac{36.4}{47.6} = 76\%$$

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-49

Footage from	Footage to	Recovery feet	Recovery %	Description
0	35			Overburden (No core)
35	38			Sandstone: Grey fine grain.
38	43.7			Shale: Dark grey, fragments of plants, pieces of coal, numerous coal seams.
43.7	67			Sandstone: Grey, fine grain. Crossbedded, interbeds of siltstone, occassionally thin seams of coal, coal seam 43.9 - 44.2, bedding 55 degrees to core axis at 45.5'.
67.0	72			Siltstone: Dark grey, very fine grain, pieces of coal, fragments of plants, occasionally thin seams of coal.
72	87			Sandstone: Dark grey, fine grained, pieces of coal.
87	115.0			Siltstone: Dark grey, very fine grain interbeds of sandstone, and shale, pieces of coal, Bedding 50 degrees to core axis at 102' occasionally thin coal seam. Coalseam 115.0 - 115.7
116.0	164.2			Sandstone: Dark grey fine grain. occasionally thin coal seams, Coalseam 120.6 - 121.5. Cross bedded, bedding 45 degrees to core axis at 148.5.
164.2	174.7			Shale: Dark grey, numerous thin seams, fragments of plant.
174.7	192.0	11.5 / 17.3	66.4	Coalseam: Sampled, DH-49-1 Partings shaly coal 181.0 - 181.3, 182.2 - 182.3
192.0	204.7			Shale: Dark grey, interbeds of sand stone, pieces of coal, fragments of plants, numerous thin coal seams. Coal seam: 200.3 - 200.8.
204.7	254.9			Sandstone: Dark grey, fine grey, pieces of coal, occasionally thin coalseams. Coal seam: 220.0 - 220.5. Bedding 50 degrees to core axis at 230'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-49

Footage from	Footage to	Recovery feet	Recovery %	Description
254.9 -	258.6	2.8/3.7	75.6	Coalseam: Sampled DH-49-2
258.6 -	265.5			Siltstone: Dark grey, very fine grain.
265.5 -	277			Sandstone: Grey, fine grain, interbeds of siltstone. pieces of coal, bedding 50 degrees to core axis at 268.5'.
277 -	293.5			Shale: Dark grey, interbeds of siltstone and sandstone. Coalseam 289 - 289.8, 292.9 - 293.3.
293.5 -	328			Sandstone: Grey, fine grain, interbeds of shale, pieces of coal. crossbedded, coalseam: 305.6 - 306.0, bedding 60 degrees to core axis at 313'. occasionally thin coal seams.
328 -	333.8			Shale: Dark grey, fragments of plants, pieces of coal, slightly carboneceous.
333.8 -	333.8			Sandstone: Grey, fine grain, bedding 60 degrees to core axis at 336'.
338.8 -	349.7	8.4/10.9	77	Coalseam: Sampled, DH-49-3 Partings shale: 342.0 - 343.5
349.7 -	427.0			Sandstone: Dark grey, fine grain, interbeds of shale, bedding 70 degrees to core axis at 366.0', bedding at 422'. 65 degrees to core axis.
427.0 -	432.0			Shale: Dark grey, interbeds of siltstone.
432.0 -	447.7	13.7/15.7	87	Coalseam: Sampled, DH-49-4 parting, shale 436.5 - 436.8, 437.5 - 437.9, 442.2 - 442.7
447.7 -	522'			Sandstone: light grey, medium to fine grain Cross bedded, pieces of coal, bedding, 60 degrees to core axis at 457.5.
				End of Hole at 522'
Total rec =		36.4/47.6 x100	76%	Logged by G.C. Singhai
				December 3, 1976

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 50 Size of core: HQ Total depth: 548 ft
167.0 m

Location: EMGS co-ordinates - N 5586252.501
E 647538.550

Baseline co-ordinates - N 290 + 02.0
E 5+ 09.8

Elevation - ft 5218.8
m 1590.61

Date of starting : Dec. 5, 1976
Date of completion : Dec. 8, 1976

Logging by : G.C. Singhai
on : Dec. 9, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
180	55	86.8°	N 74° E
360	110	83.2°	N 71° E
540	162	80.0°	N 71° E

Recovery of coal : $\frac{49.2}{72.1}$ ft = 68%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-50

Footage		Recovery		Description
from	to	feet	%	
0	- 30			Overburden (No core).
30	- 57.0			Sandstone: Light grey, fine to medium grain, crossbedded, pieces of coal, occasionally thin coal seams. bedding 50 degrees to core axis at 37'.
57.0	- 68.0			Shale: Dark grey, fragments of plants. interbeds of siltstone, numerous thin coalseams.
68.0	- 109.0			Sandstone: Dark grey, fine grain, interbeds of siltstone , shale, pieces of coal. bedding 55 degrees to core axis at 94'.
109.0	- 116.8			Shale: Dark grey, fragments of plants, interbeds of siltstone, coalseam 110.0 - 110.9'
116.8	- 126.3	8.0 9.5	84	Coalseam: Sampled, DH-50-1, Parting: Shale: 124.0 - 124.2, 127.0 - 127.2
126.3	- 133.0			Sandstone: Dark grey, fine grain, pieces of coal, bedding 60 degrees to core axis at
133.0	- 157.0	14.0 24.0	58	Coalseam: Sampled, DH-50-2 parting: Shale: 134.0 - 134.1, 140 - 141.0. 151.4 - 151.8, 156.5 - 156.8.
157.0	- 172.8			Shale: Dark grey, fragments of plants, numerous thin coat seams.
172.8	- 201			Sandstone: Grey, fine grain, pieces of coal, interbeds of siltstone and shale; bedding 60 degrees to core axis at 186'
201.0	- 205.0	3.2 4.0	80	Coalseams: Sampled, DH-50-3, parting shale: 201.5 - 201.8
205.0	- 334.9			Sandstone: Grey, to light grey, fine to medium grain, crossbedded, interbeds of siltstone, pieces of coal, numerous thin coal seams. bedding 40 degrees to core axis at 209' and 50 degrees to core axis at 282' and bedding 50 degrees to core axis at 330'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-50

Footage from	Footage to	Recovery feet	Recovery %	Description
334.9 -	338.0	3.0 / 3.1	73	Coalseam: Sampled, DH-50-4
338.0 -	347.0			Shale: Dark grey, interbeds os siltstone fragments of plants. occasionally thin coal seams.
347 -	352.0			Sandstone: Grey, fine grain, pieces of coal, interbeds of siltstone.
352.0 -	379.5			Shale: Dark grey, interbeds of siltstone and mudstone. fragments of plants, thin coal seams. bedding 60 degrees to core axis at 367, Highly carboneceous 378.0 - 379.5
379.5 -	443.0			Sandstone: Grey to light grey, fine to medium grain, cross bedded, pieces of coal occasional thin coal seams. Coalseam 381 - 381.9, Bedding 60 degrees to core axis.at 434'
443.0 -	449			Siltstone: Dark grey, very fine grain, fragments of plants, interbeds of shale and sandstone, occasionally thin coal seams.
449.0 -	469.8	15.5 / 20.8	74.5	Coalseam: Sampled, DH-50-5 parting: Shale (carboneceous) 449.6 - 450.1
469.8 -	471.6			Shale: Dark grey, fragments of plants carboneceous numerous thin coalseams.
471.6 -	473.2			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60 degrees to core axis.
473.2 -	481.1			Shale: Dark grey, fragments of plants, carboneceous numerous thin coalseams - coalseam, 473.2 - 473.7
481.1 -	516.0			Sandstone: Grey, fine to medium grain, cross-bedded, interbeds of siltstone and shale. pieces of coal, bedding 70 degrees to core axis at 513.
516.0 -	517.3			Shale: Dark grey, carboneceous.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-50

Footage		Recovery		Description
from	to	feet	%	
517.3 -	527.0	5.5 / 9.7	57	Coalseam: Sampled, DH-50-6, partings: Shale: 579.7 - 520.0
527.0 -	548			Sandstone: Grey, fine grain, crossbedded Crossbedding 60 degrees to core axis at 544.0'
				End of hole at 548'
				Logged by G.C. Singhai
				December 9, 1976
Total recovery:		49.2 / 72.1 =	68%	

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 51 Size of core: HQ Total depth: 656 ft
199.9 m

Location: EMGS co-ordinates - N 5586215.741
E 647386.973

Baseline co-ordinates - N 290 + 02.3
W 0 + 01.9

Elevation - ft 5212.8
m 1588.86

Date of starting : Dec. 9, 1976
Date of completion : Dec. 13, 1976

Logging by : G.C. Singhai
on : Dec. 13, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
217	66	89.0°	N 71° E
434	132	87.5°	N 69° E
640	195	85.8°	N 86° E

Recovery of coal : $\frac{94.4}{111.5}$ ft = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-51

Footage from	Footage to	Recovery feet	Recovery %	Description
0	54			Overburden (No cores)
54.0	59.0			Mudstone: Dark grey, fragments of plants, pieces of coal. interbeds of siltstone.
59.0	69.0			Sandstone: Grey, fine grain, interbeds of shale, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 45 degrees to core axis at 65'.
69.0	92.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, thin coal seams.
92.0	98.7	5.7 / 5.7	85	Coalseam: Sampled DH-51-1
98.7	101.0			Mudstone: Dark grey, fragments of plants, carboneceous.
101.0	123.2	16.9 / 22.2	76	Coalseams: Sampled, DH-51-2 Partings Shale - 102.0 - 103.0, 104.4 - 104.8, 108.0 - 108.4
123.2	185.0			Shale: Dark grey, fragments of plants, interbeds of sandstone, siltstone and mudstone. Bedding 50 degrees to core axis at 126', occasionally thin coal seams.
185.0	190			Sandstone: Grey, fine grain, interbeds of siltstone. Crossbedded, pieces of coal, bedding 70 degrees to core axis at 190'.
190	199.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, fragments of plants.
199.0	236.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, bedding 60 degrees to core axis at 207
236.0	281.7			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, occasionally fragments of plants. bedding 50 degrees to core axis at 262'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-51

Footage		Recovery		Description
from	to	feet	%	
281.7 -	317.0	32.1/35.3	91	Coalseams: Sampled, DH-51-3 Parting shale: 282.8 - 283.1, 287.0 - 287.3 299.6 - 299.3, 302.2 - 302.4
317.0 -	344.0			Sandstone: Grey fine grain, interbeds of siltstone and shale. pieces of coal, bedding 60 degrees to core axis occasionally thin coal seams, bedding 50 degrees to core axis at 342'.
344.0 -	353.5			Mudstone: Dark grey, slightly, carboneceous, numerous thin coal seams, fragments of plants.
353.5 -	376.1	19.7/22.6	87	Coalseams: Sampled, DH-51-4 Parting : Shale: 356.4 - 356.5, 359.6 - 360.0, Coaly shale, 361.8 - 362.1, 364.6 - 365.0, 368.0 - 368.4, 372.8 - 274.0, 375.6 - 375.8
376.1 -	401.2			Shale: Dark grey, interbeds of siltstone and mudstone, fragments of plants. number of thin coal seams. bedding 40 degrees to core axis.
401.2 -	417			Sandstone: Dark grey, fine grain, pieces of coal, occasionally thin coal seams interbeds of shale. Bedding 40 degrees to core axis at 413.
417.0 -	428			Shale: Dark grey, interbeds of siltstone numerous thin coal seams.
428.0 -	542.4			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding 60 degrees to core axis at 443', and 50 degrees to core axis at 498' and 60 degrees to core axis at 533'.
542.4 -	552.0	6.7/9.6	70	Coalseam: Sampled DH-51-5 core from 549 to 551 missing. Parting: Shale. 551 - 551.4
552.0 -	576.6			Shale: Dark grey, interbeds of siltstone, numerous thin coal seams coalseam 556.3 - 556.7, 558.3 - 558.7, 559.8 - 560.2
576.6 -	584.5	7.0/7.9	87	Coalseam: Sampled, DH-51-6 Parting Shale: 576.9 - 577.4
584.5 -	588.3			Shale:

Please check with G.P. log.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-51

Footage		Recovery		Description
from	to	feet	%	
588.3 -	591.2	2.8/2.9	96.5	Coalseam: Sampled, DH-51-7 Parting: Shale 588.8 - 589.2, 590.0 - 590.2
591.2 -	601			Shale: Dark grey, interbeds of siltstone and mudstone, numerous coalseams.
601 -	616.5			Sandstone: Grey fine grain, interbeds of shale, crossbedded, Bedding 60 degrees to core axis at 609'
616.5 -	629.0			Shale: Dark grey, interbeds of siltstone and sandstone, numerous thin coal seams. Coalseam 620.3 - 620.8, 625.7 - 626.2
629.0 -	640.4			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone. Bedding 70 degrees to core axis at 640'.
640.21-	644.7	3.5/4.3	81	Coalseam: Sampled, DH-51-8
644.7 -	650.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 40 degrees to core axis at 650'.
650.5 -	656			Shale: Dark grey fragments of plants. thin coal seams
				End of hole at 656'
				Logged by G.C. Singhai
				December 13, 1976

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 52 Size of core: HQ Total depth: 552 ft
168.2 m

Location: EMGS co-ordinates - N 5586178.462
E 647237.916

Baseline co-ordinates - N 289 + 99.0
W 5 + 06.0

Elevation - ft 5210.0
m 1588.01

Date of starting : Jan. 5, 1977
Date of completion : Jan. 9, 1977

Logging by : David Thacker
on : Jan. 11, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
295	90	81.3°	N 76° E
443	135	79.5°	N 81° E

Recovery of coal : $\frac{108.5}{118.0}$ ft = 92%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-52

Footage from	to	Recovery feet	%	Description
0	14.4			Overburden
14.4	19.7			Sandstone: fine grained, occasional shale lenses
19.2	67.8			Shale: occasional fine grained sandstone or siltstone lenses Bedding to core axis angle @ 29' = 50 degrees @ 67' = 56 degrees
67.8	71.0			Carboneceous shale
71.0	95.0	22.7/24.0	95	Coal: DH-52-1 80.1- 30.9 Carboneceous shale 81.5- 83.1 " "
95.0	111.2			Carboneceous shale, rare fine grained sand interbeds. Bedding to core axis angle @ 105' = 52 degrees
111.2	121.0	9.8/9.8	100	Coal: DH-52-2 119.0 - 119.4 , carboneceous shale
121.0	127.6			Shale: plant fragments common
127.6	131.5			Sandstone: fine grained, carboneceous
131.5	135.6			Interbedded sandstone and shale = sand is fine grained
135.6	136.0			Shaly coal.
136.0	153.0			Carboneceous shale: occasional fine grained sandstone lenses bedding to core axis angle @ 149' = 60 degrees
153.0	162.5	9.1/9.5	96	Coal - DH-52-3
162.5	167.7			Shale: partly carboneceous, occasional fine grained. Sandstone lenses
167.7	168.5			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-52

Footage		Recovery		Description
from	to	feet	%	
168.5	171.1			Coaly shale
170.1	171.2			Coal
171.2	172.0			Coaly shale
172.0	227.8			Shale: plant fragments common occasional fine grained sandstone lenses. Bedding to core axis angle @ 198' = 56 degrees.
227.8	237.5	8.5/9.7	88	Coal: DH-52-4
237.5	263.1			Shale: occasionally carboneceous, becoming silty downwards, occasional fine grained sandstone lenses. coal bands: 242.3 - 242.4 , 244.1 - 244.3, 255.3 - 255.5, 256.3 - 256.5, 257.0 - 257.1 Bedding to core axis angle @ 250' = 58 degrees
263.1	264.8			Shaly coal
264.8	279.6			Siltstone: occasional shale interbeds, occasionally carboneceous
279.6	280.5			Shaly coal
280.5	292.0			Shale: occasionally silty, occasionally carboneceous
292.0	293.2			Coal
293.2	296.0			Siltstone = bedding to core axis angle @ 294' = 58 degrees
296.0	296.5			Coal
296.5	383.4			Shale: rarely carboneceous, occasional fine grained sandstone interbeds. Bedding to core axis angle @ 348' = 55 degrees.
383.4	384.1			Coal
384.1	390.9			Shale: partly carboneceous , occasional fine grained sandstone lenses.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-52

Footage		Recovery		Description
from	to	feet	%	
390.9 -	394.4	3.5 / 3.5	100	Coal: badly ground DH-52-5
394.4 -	400.6			Carboneceous shale
400.6 -	427.0	24.7 / 26.4	94	Coal DH-52-6 404.7 - 405.0 = Carboneceous shale 405.8 - 405.9 " " 417.8 - 420.7 - Carboneceous Siltstone (Bedding to core angle - 65 degrees
427.0 -	475.7			Shale: occasional fine grained sandstone lenses Bedding to core angle @ 470' = 55 degrees
476.3 -	512.0	30.3 / 35.7	85	Coal - DH-52-7 Partings. 476.6 - 477.0 Carboneceous Shale 485.0 - 487.0 " " 487.4 - 488.4 " " 501.2 - 501.5 " "
512.0 -	527.6			Carboneceous shale
527.6 -	552.0			Sandstone: fine grained, occasional shale interbeds, increasingly shaly downwards Bedding to core axis angle @ 529' = 65 degrees
				EOH

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 53 Size of core: HQ Total depth: 462 ft
140.8 m

Location: EMGS co-ordinates - N 5586142.198
E 647089.647

Baseline co-ordinates - N 289 + 98.3
W 10 + 06.7

Elevation - ft 5214.3
m 1587.32

Date of starting : Nov. 25, 1976
Date of completion : Nov. 28, 1976

Logging by : G.C. Singhai
on : Nov. 30, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
295	90	81.3°	N 77° E
443	135	79.5°	N 81° E

Recovery of coal : $\frac{63.0}{70.8}$ ft = 89%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-53

Footage		Recovery		Description
from	to	feet	%	
0	14			Overburden (No core)
14	20.3			Sandstone: Light grey, fine grained cross bedded, pieces of coal, bedding 70° to core axis at 18'.
20.3	30			Mudstone: dark grey, interbeds of siltstone fragments of plants, coal seam: 23.0 - 23.4.
30.0	32	1.7/2.0	85	Coal Seam: Sampled DH 53-1 Parting of shale 30.9 - 31.3
32.0	44.8			Siltstone: Grey, fine grained, interbeds of sandstone and shale, fragments of plants, coal seam 39.8 - 40.2.
44.8	54.0			Sandstone: light grey to grey, fine grained crossbedded. Pieces of coal.
54.0	64			Shale: Dark grey, fragments of plants, thin coal seams. Coal seam 58.0 - 58.8, 62.7 - 62.9, 63.7 - 64.3.
64.0	84.3			Sandstone: Light grey and fine to medium grained crossbedded pieces of coal. bedding 60° to core axis at 76.5'.
84.3	93.7			Shale: Dark gray, interbeds of silt. Number of thin coal seams, coal seam 91.0 - 91.7 broken core.
93.7	99.9	5.7/6.2	92	Coal Seam: Sampled, DH 53-2 Partings of shale 96.5 - 96.8, 97.5 - 98.5.
99.9	112			Shale: Dark grey, with interbeds of sandstone and sliftstone. Fragments of plants, number of thin coal seams.
112	120.5			Sandstone: Dark grey, fine grained, bedding 60° to core axis at 117'.
120.5	132			Shale: Dark grey, with fragments of plants, thin coal seams, coal seam 122.2 - 122.6, 122.8 - 123.8, 130.0 - 130.5.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
132.0	145.5	11.7 / 13.5	87	Coal seam: Sampled DH 53-3 Partings of shale: 143.7 - 145, 145.9 - 150.9.
145.5	152.2			Sandstone: Dark grey, fine grained, interbeds of shale, pieces of coal, bedding 55° to core axis at 147. Coal seam 151.7 - 151.8.
152.2	159.9	6.0 / 6.8	88	Coal Seam: Sampled DH-53-4 Parting of sandstone 153.3 - 155.3, shale 155.8 - 156.3, 157.5 - 157.6
159.0	165.6			Shale: Dark grey, fragments of plants, interbeds of sandstone.
165.5	166.7	1.1		Coalseam:
166.7	171			Shale: Dark grey, interbeds of sandstone. Coal seams 167.3 - 167.5.
171	187			Sandstone: Dark grey, fine grained, interbeds of siltstone and shale.
187	195.5			Shale: Dark grey, fragments of plants, interbeds of siltstone.
195.5	199.0			Sandstone: Grey, fine grained, pieces of coal bedding 60° to core axis at 197'
199	202.4			Siltstone: Dark grey, very fine grained, pieces of coal.
202.4	207.1	4.4 / 4.7	94	Coal Seam: Sampled DH-53-3 Shaly coal 205.1 - 205.4
207.1	215			Sandstone: Light grey to grey crossbedded, pieces of coal and occasionally thin coal seams. Bedding 55° to core axis at 210.5'.
215	220			Mudstone: Dark grey, fragments of plants, interbeds of siltstone.
220	262			Sandstone: Light grey, to grey, fine grain, interbedded with mudstone and siltstone, pieces of coal, bedding 60° to core axis at 232.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
262	263.4			Shale: Dark grey, fragments of plants.
263.4	274.0	8.2 / 10.6	77	Coal Seam: Sampled DH 53-6 272 - 274 no core, partings of shale 263.6 - 263.8, shaly coal, 270.4 - 270.6.
274.0	281.6			Mudstone: Dark grey, interbeds of siltstone, fragments of plants and occasionally pieces of coal.
281.6	286.0			Sandstone: Grey, fine grained, with interbeds of siltstone. Bedding 60° to core axis at 281.
286	301.4			Shale: Dark grey, fragments of plants, interbeds of siltstone and sandstone, bedding 60° to core axis at 297'.
301.4	303.3	1.9 / 1.9	100	Coal Seam: Sampled DH 53-7
303.3	317			Siltstone: Dark grey, very fine grained, interbeds of shale and sandstone, number of thin coal seams and fragments of plants. Bedding 55° to core axis at 311'.
317	332			Sandstone: Dark grey, fine grained, interbeds of siltstone, occasionally pieces of coal and fragments of plants.
332	334			Siltstone: Dark grey, very fine grained.
334	376.5			Sandstone: Dark grey to grey fine grained, crossbedded, pieces of coal bedding, 60° to core axis at 352'.
376.5	422.4			Shale: Dark grey interbeds of siltstone and sandstone, fragments of plants and coal pieces in sandstone, bedding 70° to core axis at 408', occasionally thin coal seams.
422.4	427.0			Sandstone: Dark grey, fine grain, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.
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Footage		Recovery		Description
from	to	feet	%	
427.0	447.0	18.8 20.0	94	Coal Seam: Sampled DH 53-8 Parting, shaly coal: 427.2 - 427.3, 430.6 - 431.1, shale: 433.4 - 434.6, 436.1 - 437.0. Shaly coal 440.6 - 441.3
447.0	451			Shale: Dark grey, fragments of plants, occasionally thin coal seams.
451	462.0			Sandstone: Light grey, fine grained, interbeds of siltstone, crossbedded, pieces of coal, bedding 70° to core axis at 452'. End of Hole at 462.0

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 54 Size of core: HQ Total depth: 640 ft / 195.1 m

Location: EMGS co-ordinates - N 5586107.674
E 646954.653

Baseline co-ordinates - N 289 + 92.9
W 14 + 63.9

Elevation - ft 5168.7
m 1575.42

Date of starting : Jan. 10, 1977
Date of completion : Jan. 14, 1977

Logging by : G.C. Singhai
on : Jan. 15, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
210	64	87.4°	N 52° E
420	128	85.5°	N 62° E
630	192	83.0°	N 63° E

Recovery of coal : $\frac{48.2}{56.9}$ ft = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-54

Footage		Recovery		Description
from	to	feet	%	
0 -	60			Overburden (No core) Note: Bedrock @ 55
60 -	88			Sandstone: Grey, fine to medium grain, crossbedded pieces of coal, numerous thin coal seams. bedding 60 degrees to core axis at 87'.
88.0 -	89.7			Mudstone: Dark grey, fragments of plant, occasionally thin coal seams.
89.7 -	93.6	2.3 3.9	59	Coalseam: Sampled (DH-54-1).
93.6 -	97.8			Mudstone: Dark grey, fragments of plants, pieces of coal.
97.8 -	99.8	2.0 2.0	100	Coalseams: Sampled (DH-54-2)
99.8 -	129.0			Sandstone: Grey, fine grain, crossbedded. interbeds of shale and siltstone. pieces of coal, bedding 50 degrees to core axis at 110'.
129.0 -	147.5			Siltstone: Dark grey, very fine grain, interbeds of mudstone. Coalseam - 137.8 - 138.0, 142.3 - 142.5. Interbeds of sandstone bedding 60 degrees to cove axis at 145'.
147.5 -	161.3	12.1 13.8	88	Coalseam: Sampled (DH-54-3) Partings. Mudstone 155.6 - 156.4, 160.4 - 160.6.
161.3 -	183.6			Mudstone: Dark grey, fragments of plant, pieces of coal and numerous thin coal seams.
183.6 -	189.2	5.6 5.6	100	Coalseams: Sampled (DH-54-4) Partings of mudstone 186.4 - 186.5. 188.6 - 188.8.
189.2 -	196.0			Mudstone: Dark grey, fragments of plant, pieces of coal, numerous thin coal seams.
196.0 -	211.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 60 degrees to core axis at 205'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-54

Footage		Recovery		Description
from	to	feet	%	
211.5 -	213.7	2.2 / 2.2	100	Coalseam: Sampled (DH-54-5) Parting mudstone 212.8 - 212.9.
213.7 -	222.0			Siltstone: Dark grey, very fine grain, occassionally thin coal seams, interbeds & mudstone
222 -	260.0			Sandstone: Grey, fine grain, interbeds & siltstone, bedding 60 degrees to core axis at 225' pieces of coal.
260.0 -	261.0			CoalSeam:
261.0 -	275.0			Siltstone: Dark grey, very fine grained, interbeds of mudstone, occasionally fragments of plants, thin coal seams.
275.0 -	280.0			Sandstone: Dark grey, fine grained interbeds of siltstone; bedding 60 degrees to core axis - 278'.
280.0 -	291.7			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams, slightly carboneceous. interbeds of siltstone and sandstone. Coalseam: 283.7 - 284.0 Coalseam: 284.3 - 285.8.
291.7 -	294.3			Sandstone: Dark grey and fine grained, interbeds of siltstone and mudstone, cross bedded, occasionally thin coal seams.
294.3 -	301.5			Mudstone: Dark grey, with fragments of plants, pieces of coal.
301.5 -	306.0			Sandstone: Grey, fine grained, interbeds of siltstone, bedding 70 degrees to core axis at 303 ft.
306.0 -	311.4			Mudstone: Dark grey, fragments of plants.
311.4 -	315.1	2.2 / 3.7	59	Coal seam: 306.8 - 308.3 Coalseam: Sampled (DH-54-6)
315.1 -	359.0			Sandstone: Dark grey to grey, fine grained interbeds of siltstone, crossbedded, occasionally thin coal seams, coal seam 379.6 - 320.4 50 degrees to core axis 354'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-54

Footage		Recovery		Description
from	to	feet	%	
359.0 -	365.5			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous coal seam. Globs of pyrite at 365.0 ft. Coal seam: 360.4 - 367.7 Coal seam: 365.0 - 365.5
365.5 -	370.0			Sandstone: Light grey, fine grained, cross bedded, pieces of coal.
370.0 -	434.2			Mudstone: Dark grey, fragments of plants, interbeds of sandstone and siltstone, numerous coal seams. Coal seam 372.6 - 273.6 Coal seam 380.0 - 381.0 Globs of pyrite at 380.5 Coal seam 420.2 - 421.2 Coal seam 423.2 - 423.4 Coal seam 423.7 - 424.7
434.2 -	437.4	2.5 3.2	78	Coal seam: 434.2 - 437.4 Sampled (DH-54-7)
437.4 -	441.0			Mudstone: Dark grey, pieces of coal Coal seam 439.8 - 439.9
441.0 -	443.9	2.3 2.9	79	Coal seam: Sampled (DH-54-8) Parting 442.9 - 443.1
443.9 -	453.9			Mudstone: Coal seam 444.6 - 445.0 Coal seam 446.8 - 447.2
453.9 -	455.9	1.7 2.0	85	Coal Seam Sampled (DH-54-9)
455.9 -	458.0			Mudstone
458.0 -	462.0			Sandstone: Grey, fine grained, interbeds of shale. pieces of coal, bedding 70 degrees to core axis 462 ft.
462.0 -	485.2			Mudstone: interbeds of siltstone and sandstone Coal seam 480.1 - 481.3 Coal seam 482.0 - 485.0
485.2 -	495.4			Sandstone: Dark grey, fine grained, cross bedded, pieces of coal, interbeds of siltstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. *DH-54*

Footage		Recovery		Description
from	to	feet	%	
495.4 - 501.7		4.4 6.3	70	Coal seam: Sampled (DH-54-10) Parting 496.2 - 496.6 Parting 497.8 - 498.1
501.7 -	565.5			Sandstone: Grey, fine grained, cross bedded, pieces of coal occasionally thin coal seams Coal seam: 505.8 - 505.9 Interbeds of shale bedding 70 degrees to core axis at 556'.
565.5 - 574.5		9.0 9.0	100	Coalseam: Sampled (DH-54-11)
574.5 - 598.2				Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale. occassionally pieces of coal. Bedding 60 degrees to core axis at 578.5.
598.2 - 604.5				Siltstone: Dark grey, very fine grain. interbeds of sandstone. bedding 60 degrees to core axis at 602'.
604.5 - 606.8		1.9 2.3	83	Coalseam: Sampled (DH-54-12)
606.8 - 612.3				Mudstone: Dark grey, fragments of plants, interbeds of siltstone, pieces of coal.
612.3 -	640.0			Sandstone: Dark grey to grey, fine grain, interbeds of siltstone, cross bedded, pieces of coal. Bedding 60 degrees to core axis at 613'.
				End of Hole: at 640'
				G.C. Singhai
				January 15, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 55 Size of core: HQ Total depth: 392 ft
119.5 m

Location: EMGS co-ordinates - N 5586078.888
E 646832.134

Baseline co-ordinates - N 289 + 96.1
W 18 + 76.8

Elevation - ft 5178.8
m 1578.50

Date of starting : Nov. 16, 1976
Date of completion : Nov. 18, 1976

Logging by : G.C. Singhai
on : Nov. 29, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
115	35	88.0°	N 24° E
246	75	87.2°	N 51° E
361	110	86.4°	N 59° E

Recovery of coal : $\frac{14.4}{18.2}$ ft = 79%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
0	32			Overburden (No Core)
32	34.5			Shale: Dark grey, occasionally thin coal seams.
34.5	63			Sandstone: Light grey, to grey fine grained, with interbeds of siltstone and shale, occasionally thin coal seams. Bedding 40^{0} to core axis at 59'.
62	72			Shale: Dark grey, fragments of plants, number of thin core seams.
72	76			Sandstone: Dark grey, fine grained crossbedded.
76	83.8			Mudstone: Dark grey, fragments of plants, number of thin coal seams.
83.8	86.8	2.4/5.0	48	Coal Seam: Sampled DH-55-1.
86.8	89.0			Shale: Dark grey, fragments of plants, slightly carbonaceous.
89.0	91.7	2.1/2.7	77	Coal Seam: Sampled DH-55-2
91.7	93.0			Shale: Dark grey, fragments of plants. Coal seam 92.3 - 92.7
93.0	142			Sandstone: Dark grey, fine grained with interbeds of shale, pieces of coal. Bedding 45^{0} to core axis. Coal seam 141.7 - 142.0.
142	148			Mudstone: Dark grey, number of thin coal seams and pieces of coal.
148	159			Sandstone: Light grey to grey, fine to medium grained crossbedded, occasionally pieces of coal. Bedding 55^{0} to core axis at 157.
159	170.5			Mudstone: Dark grey, occasionally thin seams of coal, coal seam 166.6 - 167.5.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
170.5	221			Sandstone: Grey to light grey, fine grained, interbeds of siltstone and shale, pieces of coal and thin coal seams, coal seam 175.9 - 176.1, bedding 40° to core axis at 199'.
221	222			Coal seam
222	226			Siltstone: Dark grey, very fine grained carbonaceous 227.1 - 227.5.
226	232.4			Sandstone: Grey, fine grained, crossbedded, pieces of coal, bedding 60° to core axis at 228'.
232.4	237			Mudstone: Dark grey, pieces of coal and fragments of plants.
237	239.0	1.9 2.0	95	Coal Seam: Sampled DH-55-3 Sandstone: Light grey, fine grained, crossbedded, pieces of coal, bedding 50° to core axis at 240'
239.0	247.0	4.7 5	94	Coal Seam: Sampled DH-55-4 Parting of shale: 243.5 - 243.9, 245.5 - 245.2.
247.0	286.6			Sandstone: Light grey to grey, fine grained, interbeds of shale, pieces of coal, occasionally thin coal seams. Coal seam 266.6 - 266.7, bedding 60° to core axis at 283'.
286.6	290.3			Shale: Dark grey, occasionally thin coal seams.
290.3	301			Sandstone: Light grey to grey, fine grained, pieces of coal, carbonaceous shale 292.5 - 293.9, bedding 60° to core axis at 300.
301	307.5			Shale: Dark grey, pieces of coal and thin coal seams. Coal seam at 306.5 - 306.9.
307.5	314.5			Sandstone: Light grey, fine grained, crossbedded.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 56 Size of core: HQ Total depth: 623 ft
189.9 m

Location: EMGS co-ordinates - N 5586780.647
E 647135.664

Baseline co-ordinates - N 309 + 98.0
W 3 + 65.2

Elevation - ft 5230.7
m 1594.32

Date of starting : Dec. 1, 1976
Date of completion : Dec. 4, 1976

Logging by : G.C. Singhai
on : Dec. 7, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
197	60	90.0°	-
394	120	88.5°	N 67° E
591	185	86.5°	N 67° E

Recovery of coal : $\frac{88.0}{98.3}$ ft = 90%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-56

Footage from	Footage to	Recovery feet	Recovery %	Description
0	52			Overburden: (No core)
52	56			Sandstone: Grey, fine grain, Crossbedded, Bedding 60 degrees to core axis at 54'.
56	70			Shale: Dark grey, interbeds of siltstone and sandstone.
70.0	113.0			Sandstone: Light grey to grey, fine to medium grain, pieces of coal, crossbedded. Bedding 60 degrees to core axis at 112'.
113.0	116.7			Shale: Dark grey, Lightly carboneceous numerous thin coal seams.
116.7	134.0	13.2 17.3	76	Coalseam: Sampled DH-56-1 Parting: Shale: 119.4 - 120.2, 129.9 - 130.2 131.1 - 131.5.
134.0	140.0			Shale: Dark grey fragments of plants and numerous thin coal seams.
140.0	178.0			Sandstone: Dark grey, fine grain, pieces of coal, occasionally thin coal seams. Bedding 50 degrees to core axis. interbeds of shale.
178.0	180.5	2.5 2.5	100	Coalseams: Sampled, DH-56-2 Partings shale 179.2 - 179-5.
180.5	183.7			Shale: Dark grey, fragments of plants, pieces of coal.
183.7	203.0			Sandstone: Grey fine grain, interbeds of shale and siltstone.
203.0	223			Shale: Dark grey, fragments of plants, thin coal seams. bedding 45 degrees to core axis at 215'.
223.0	286.9			Sandstone: Grey, fine grain, cross bedded, interbeds of siltstone and shale. Pieces of coal. Bedding 60 degrees to core axis and bedding at 285.0 50 degrees to core axis.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-56

Footage		Recovery		Description
from	to	feet	%	
286.9 -	322.9	33.1/36.0	92	Coalseam: Sampled DH-56-3 Parting of shale: 288.8 - 289.2. 293.6 - 293.9 , 294.4 - 294.7, 302.5 - 302.9.
332.9 -	368.0			Sandstone: Grey, fine grain, cross bedded, pieces of coal, occasionally thin coal seams. Bedding 60 degrees to core axis at 326'.
368.0 -	382			Siltstone: Dark grey, very fine grain fragments of plants. occasionally thin coal seams.
382 -	385.0			Shale: Dark grey, slightly carboneceous and numerous thin coalseams.
385.0 -	399.4	13.1/14.4	91	Coalseams: Sampled, DH-56-4 Shale: - 395.6 - 398.0.
399.4 -	471.0			Sandstone: Light grey, to grey fine grain. Cross-bedded, interbeds of shale, and siltstone, pieces of coal. Bedding 65 degrees to core axis at 415' Coal seam 469.5 - 470.
471.0 -	474.3			Shale: Dark grey, fragments of plants, pieces of coal and numerous thin coal seams.
474.3 -	546.0			Sandstone: Dark grey, fine grain, pieces of coal, occasionally thin coal seams. Bedding 60 degrees to core axis. at 495'. Thin coal seams 496.6 - 497 , 498 - 498.5
546.0 -	558.0			Shale: Dark grey, fragments of plants Bedding 50 degrees to core axis at 557.5'.
558.0 -	564.9			Siltstone: Dark grey, very fine grain, interbeds of shale. Fragments of plants.
564.9 -	584.5	18.6/19.6	95	Coalseam: DH-56-5 sampled. Parting of shale 580.1 - 580.2 , 581.2 - 582.3. 582.4 - 582.7, 583.2 - 583.5
584.5 -	591.0			Sandstone:Dark grey, fine grain, interbeds of shale and sandstone. Bedding 65degrees to core axis at 589.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-56

Footage		Recovery		Description
from	to	feet	%	
591.0 -	594.5			Shale:Dark grey, fragments of plants, numerous thin coal seams.
594.5 -	603.0	7.5 8.5	88	Coalseam: Sampled, DH-56-6 Parting of shale: 594.8 - 595.0.
603 -	621.6			Shale: Dark grey, fragments of plants, numerous thin coal seams Coalseam: 606.8 - 607.2
621.6 -	623.0			Sandstone: Grey fine grain, pieces of coal. Bedding 60 degrees to core axis at 622.5'
				End of Hole at 623'.
				Logged by G.C. Singhai
				December 7, 1976.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 57 Size of core: HQ Total depth: 560 ft
170.7 m

Location: EMGS co-ordinates - N 5586748.608
E 647002.862

Baseline co-ordinates - N 309 + 98.8
W 8 + 13.4

Elevation - ft 5230.0
m 1594.10

Date of starting : Nov. 20, 1976
Date of completion : Nov. 24, 1976

Logging by : G.C. Singhai
on : Dec. 11, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
180	55	86.5°	N 48° E
360	110	82.8°	N 76° E
540	165	77.0°	N 73° E

Recovery of coal : $\frac{113.3}{118.7}$ ft = 95%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
0	25			Overburden (No core)
25	39.5			Sandstone: Dark gray to grey, fine to medium grain, crossbedded, pieces of coal. Bedding 50° to core axis at 33'.
39.5	53.3			Shale: Dark grey, interbeds of sandstone and siltstone, fragments of plants and occationally thin coal seams.
53.3	76.0	22.0 22.7	97	Coalseam: Sampled DH-57-1 Parting of coaly shale 61.8 - 62.2, 63.0 - 63.3, shale; 64.0 - 64.5, shaly coal 66.0 - 66.4, shale 72.7 - 73.4.
76.0	82.5			Sandstone: Grey to dark grey, fine grain, pieces of coal, bedding 55° to core axis at 80.5.
82.5	85.2			Shale: Dark grey, fragments of plants and thin coal seams, coal seam 84.4 - 84.9.
85.2	87.5			Sandstone: Grey, fine grain. Coalseam: Sampled DH-57-2.
90.4	99.5			Shale: Dark grey, fragments of plants, bedding 60° to core axis at 94'.
99.5	124.5	24.1 25.0	96.4	CoalSeam: Sampled DH-57-3 Parting Shale 99.8 - 100.5, shaly coal 101.2 - 101.5, 102.5 - 102.9, 107.0 - 107.2, 111.2 - 111.7, 112.0 - 113.8, 115.0 - 116.3, coaly shale: 120.6 - 122.2.
124.5	127.5			Shale: Dark grey; fragments of plants.
127.5	132.0			Sandstone: Dark grey fine grained.
132.0	133.4	1.4 1.4	100	Coal Seam

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
133.4	139.5			Sandstone: Light grey, fine to medium grain, crossbedded, pieces of coal. Bedding 60° to core axis at 136'.
139.5	143.5			Shale: Dark grey, fragments of plants, thin coal seams.
143.5	182			Sandstone: Light grey, fine to medium grain, crossbedded, pieces of coal. Bedding 45° to core axis at 157'.
182	208			Mudstone: Dark, interbeds of siltstone.
208	213			Shale: Dark grey with number of thin coal seams.
213	221.5			Sandstone: Dark grey, fine grain, interbeds of siltstone. Bedding 40° to core axis at 219.
221.5	259.6			Shale: Dark grey, interbeds of siltstone and sandstone, occasionally thin coal seams. Bedding 55° to core axis at 255'.
259.6	274.3	14.3 14.7	97	Coal Seam: Sampled DH-57-4 Parting of shaly coal 261.7 - 262.0, 264.0 - 264.4, shale 266.6 - 266.7, 268.3 - 269.3, 269.9 - 270.1, coaly shale 271.8 - 272.2.
274.3	283.3			Sandstone: Light grey, fine grain, interbedded, pieces of coal.
286.3	297			Shale: Dark grey, occasionally pieces of coal.
297	318.8			Sandstone: Dark grey, fine to medium grain, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 55° to core axis at 305'.
318.8	327			Shale: Grey, fragments of plants, pieces of coal and numerous thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.
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Footage		Recovery		Description
from	to	feet	%	
327	337			Siltstone: Grey, very fine grain, interbeds of sandstone and shale.
337	340.5			Sandstone: Dark grey, fine grain.
340.5	347			Shale: Dark grey, pieces of coal and numerous thin coal seams.
347.0	348.3	1.3 / 1.3	100	Coal Seam
348.3	350.7			Shale: Fragments of plants and thin coal seams.
350.7	353.0			Sandstone: Grey, fine grain, bedding 60° to core axis at 352'.
353.0	356.2	2.9 / 3.2	90.6	Coal Seam: Sample DH-57-5 Parting coaly shale 353.5 - 353.7.
356.2	361.6			Shale: Dark grey numerous thin coal seams.
361.6	384.4	21.2 / 22.8	93	Coal Seam: Sampled DH-57-6 Shaly coal 365.2 - 365.5, 380.3 - 380.8. Shale parting 381.5 - 381.9.
384.4	389.6			Shale: Dark grey, fragments of plants.
389.6	393			Sandstone: Grey, fine grain, bedding 60° to core axis at 390'.
393	397.5			Shale: Grey, fragments of plants.
397.5	405.1			Sandstone: Grey, fine grain.
405.1	406.3			Shale: Slightly carbonaceous. Numerous thin coal seams.
406.3	413.7	7.4 / 7.4	100	Coal seam: Sampled DH-57-7 Parting of shale carbonaceous, 409.6 - 412.5.
413.7	418.4			Shale: Grey, numerous thin coal seams. Coal seam 415.3 - 416.0, 417.3 - 417.5.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
418.4	475.9			Sandstone: Light grey to grey. Fine to medium grain, crossbedded, pieces of coal. Bedding 65° to core axis at 431.5, 459 - 466. Mudstone, bedding at 472', 60° to core axis.
475.9	493.2	15.8 17.3	91	Coal Seam: Sampled DH-57-8 Parting of shale 477.2 - 478.3, carbonaceous shale 480.2 - 380.8, shaly coal 492.0 - 492.8.
493.2	507			Siltstone: Dark grey, very fine grain interbeds of shale and sandstone, fragments of plants, occasionally thin coal seams.
507	532			Shale: Dark grey, interbeds of sandstone and siltstone, occasionally thin coal seams. Coal seam 522.2 - 523.7.
532	560			Sandstone: Dark grey, fine grain, pieces of coal, bedding 50° to core axis at 538'. Interbedds of siltstone, fragments of plants and pieces of coal, occasionally thin coal seam.
				End of Hole at 560'.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 58 Size of core: HQ Total depth: 452 ft
137.8 m

Location: EMGS co-ordinates - N 5586724.094
E 646827.735

Baseline co-ordinates - N 310 + 56.4
W 13 + 90.7

Elevation - ft 5197.4
m 1584.17

Date of starting : Nov. 16, 1976
Date of completion : Nov. 19, 1976

Logging by : David Thacker
on : Dec. 1, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
131	40	88.5°	586° E
279	85	86.0°	589° E
427	130	83.0°	588° E

Recovery of coal : $\frac{24.4}{26.9}$ ft = 91%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 58

Footage		Recovery		Description
from	to	feet	%	
0	63.0			Overburden
63.0	72.0			Interbedded sandstone and shale, sand is medium grained. Bedding to core axis angle at 71' = 50°.
72.0	72.3			Coal
72.3	79.2			Interbedded sandstone and shale: sand is fine grained.
79.2	80.4			Coal
80.4	89.7			Shale
89.7	93.9	3.1/4.2	73	Coal: 91.0 - 91.9 Carbonaceous shale DH-58-1
93.9	134.3			Shale: rare: fine grained sandstone interbeds Bedding to core axis angle @ 129' = 48°.
134.3	148.0	12.6/13.7	93	Coal: DH-58-2
148.0	151.6			Sandstone: fine grained.
151.6	155.0			Shale
155.0	156.3			Coal
156.3	176.5			Shale: occasional fine grained,sandstone interbeds. Bedding to core axis angle @ 173' = 65°.
176.5	177.0			Coal
177	178.1			Coaly shale
178.1	202.0			Interbedded siltstone and shale. Occasional fine grained sandstone.
202.0	202.5			Coaly shale

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
202.5	204.6			Coal: DH-58-3
204.6	231.5			Sandstone: medium grained, crossbedded, rare shale lenses. Bedding to core axis angle @ 224' = 49°.
231.5	254.9			Shale: occasional interbedded medium grained sandstone.
254.9	261.2			Shale
261.2	261.6			Coal
261.6	262.0			Shale
262.0	262.9			Coal
262.9	272.5			Sandstone: fine grained, occasional shale lenses. Bedding to core axis angle @ 272' = 61°.
272.5	291.0			Shale and rare fine grained sandstone interbeds.
291.0	300.1			Shale: occasional fine grained sandstone interbeds.
300.1	307.0	6.6/6.9	96	Coal: DH-58-4
307.0	311.3			Sandstone: fine grained
311.3	312.0			Coal
312.0	332.2			Shale: occasional fine grained sandstone interbeds. Bedding to core axis angle @ 328' = 55°.
332.2	333.1			Coal
333.1	338.8			Shale: occasional fine grained sandstone interbeds.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
338.8	352.1			Sandstone: medium grained
352.1	398.5			Shale: occasional fine grained sandstone interbeds, proportion of sandstone decreases downward. Bedding to core axis angle @ 370' = 62°.
398.5	452.0			Shale: rare fine grained sandstone interbeds. Bedding to core axis angle @ 429' = 60°.
				E.O.H.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 59 Size of core: HQ Total depth: 475 ft
144.8 m

Location: EMGS co-ordinates - N 5587416.526
E 647173.276

Baseline co-ordinates - N 329 + 96.0
E 2 + 47.6

Elevation - ft 5310.6
m 1618.67

Date of starting : Nov. 4, 1976
Date of completion : Nov. 7, 1976

Logging by : David Thacker
on : Nov. 13, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
459	140	83.6°	S 84° E

Recovery of coal : $\frac{74.8}{85.7}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-59

Footage from	to	Recovery feet	%	Description
0	79.5			Overburden
79.5	164.0			Shale: occasional fine grained sand lenses, occasional plant fragments Bedding to core axis angle @ 107' = 44° @ 149' = 57°
164.0	203.0	36.5 39.0	94	Coal: sample DH-59-1 164.6 - 165.2 carb shale
203.0	214.0			Shale: numerous carbonaceous intervals, occasionally silty Bedding to core axis angle @ 207' = 56°
214.0	214.8			Coal
214.8	226.9			Shale: slightly carbonaceous
226.9	227.7			Coal
227.7	257.0			Shale: occasional siltstone lense
257.0	270.0	9.0 13.0	69	Coal: sample DH - 59.2
270.0	284.0			Shale: carbonaceous near top. Bedding to core axis angle @ 280 = 45°
284.0	289.5	2.1 5.5	38	Coal: crushed sample DH-59-3
289.5	305.1			Shale: occasional fine grained sandstone interbeds, plant fragments Bedding to core axis angle @ 301' = 36°
305.1	312.0	5.9 6.9	86	Coal: sample DH-59-4 307.0 - 308.1 - carb shale
312.0	315.7			Shale: bedding to core axis angle @ 314' = 54°
315.7	317.2			Coal: broken
317.2	334.5			Shale: occasional fine grained sandstone interbeds
334.5	338.1			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 59

Footage		Recovery		Description
from	to	feet	%	
336.1 -	410.5			Shale: numerous fine grained sandstone interbeds Bedding to core axis angle @ 377' = 59°
410.5 -	428.0	17.5 17.5	100	Coal: sample DH-59-5
428.0 -	452.2			Sandstone: coarse grained, cross-bedded rare carbonaceous partings Bedding to core axis angle @ 434' = 61°
452.2 -	456.0	3.8 3.8	100	Coal: sample DH-59-6 badly crushed
456.0 -	475.0			Sandstone: coarse grained, crossbedded Bedding to core axis angle @ 474' = 60°

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 60 Size of core: HQ Total depth: 618 ft
188.4 m

Location: EMGS co-ordinates - N 5587343.015
E 646877.783

Baseline co-ordinates - N 329 + 90.7
W 7 + 51.4

Elevation - ft 5253.9
m 1601.39

Date of starting : Nov. 7, 1976
Date of completion : Nov. 10, 1976

Logging by : David Thacker
on : Nov. 16, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
607	185	81.3°	N 76° E

Recovery of coal : $\frac{56.3}{63.6}$ ft = 89%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-60

Footage		Recovery		Description
from	to	feet	%	
0	95.0			Overburden
95.0	196.2			Shale: occasional fine grained sandstone lense 118.0-128.0 carbonaceous shale Bedding to core axis angle @ 102'=58° @ 154'=44° @ 191'=55°
196.2	212.3	16.0 16.1	99	Coal: clean fine grained sandstone 211.2-211.6 Sample DH-60-1
212.3	217.2			Shale: occasional fine grained sand interbeds
217.2	217.8			Coal: broken
217.8	220.1			Shale
220.1	232.0	11.2 11.9	94	Coal: 220.6-221.0 carbonaceous shale Sample DH-60-2
232.0	241.3			Carbonaceous shale 235.0 - 235.5 - Coal 235.9 - 236.1 - Coal 236.4 - 237.1 " 237.9 - 238.0 " 239.3 - 239.5 " 239.7 - 240.0 " 240.8 - 241.0 "
241.3	266.5			Shale: rarely carbonaceous, rare interbedded sandstone Bedding to core axis angle @ 245' = 48°
266.5	267.2			Coal
267.2	289.1			Shale: rare fine grained sand lenses, carbonaceous at base.
289.1	289.8			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-60

Footage		Recovery		Description
from	to	feet	%	
289.8	327.6			Shale: occasional fine grained, sandstone interbed Bedding to core axis angle @ 292' = 53°
327.6	354.2			Interbedded siltsone and sandstone: sand is fine grained Bedding to core axis angle @ 348' = 45°
354.2	392.0			Sandstone: coarse grained, crossbedded, carbonaceous from 381.5 - 386.3
392.0	394.9			Siltstone
394.9	399.5			Sandstone: coarse grained, carbonaceous
399.5	407.3			Shale: interbedded fine grained sandstone, bedding to core axis angle @ 404' = 48°
407.3	413.5			Sandstone: Coarse grained, carbonaceous
413.5	423.2			Shale: occasional sandstone interbeds plant fragments
423.2	426.1	2.4 2.9	83	Coal: sample DH-60-3
426.1	432.5			Shale: occasionally carbonaceous
452.2	452.5			Coal
452.5	518.0			Shale: rare fine grained sandstone lenses Bedding to core axis angle @ 457'=51° @ 513'=54°
518.0	553.0			Shale: fine grained sandstone lenses common
553.0	563.9			Shale: bedding to core axis angle @ 554' = 59°
563.9	594.0	26.7 30.1	89	Coal: sample DH-60-4 (note: 593.0-594.0 lost) 566.0 - 567.6 - carbonaceous shale 568.0 - 568.3 " "
594.0	605.6			Shale: slightly carbonaceous, occasional interbedded sandstone. Bedding to core axis angle @ 602' - 47°

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-60

Footage		Recovery		Description
from	to	feet	%	
605.6	- 608.0	2.6	100	Coal sample DH-60-5 606.8 - 607.3 carbonaceous shale
608.0	- 618.0			Carbonaceous shale: interbedded fine grained sandstone E.O.H.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. DH-60

Overburden: 95.0'

Footage		REMARKS
From to	Thickness	
116.8 - 124.7	7.9	----------Shaly
192.9 - 209.3	16.4	
215.2 - 216.5	1.3	
220.5 - 232.0	11.5	
234.3 - 235.9	1.6	
285.4 - 288.4	3.0	----------Shaly
422.3 - 424.6	2.3	
428.2 - 429.5	1.3	
562.0 - 563.3	1.3	
565.3 - 591.6	26.3	
603.7 - 606.7	3.0	
		T.D. 618'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 61 Size of core: HQ Total depth: 537 ft
163.7 m

Location: EMGS co-ordinates - N 5587343.015
E 646877.783

Baseline co-ordinates - N 329 + 90.7
W 7 + 51.4

Elevation - ft 5253.9
m 1601.39

Date of starting : Nov. 12, 1976
Date of completion : Nov. 17, 1976

Logging by : G.C. Singhai
on : Nov. 27, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
525	160	86.4°	N 71° E

Recovery of coal : $\frac{67.6}{72.3}$ ft = 93%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-61

Footage		Recovery		Description
from	to	feet	%	
0	106.3			Overburden (No core)
106.3	118			Mudstone: Dark grey, interbeds of silt stone and sandstone. Fragments of plants occasionally pyrite bedding 50° to core axis at 113.
118	118.8			Carbonaceous Shale: dark grey.
118.8	126.8	7.1 8.0	89	Coalseam - sampled DH-61-1 Dirty coal, Parting 120.9 - 122.2 of carbonaceous shale, and 123.0 - 123.8 coaly shale.
126.8	129.2			Carbonaceous Shale: Dark grey fragments of plants and number of thin coal seams.
129.2	144.7			Shale: Dark grey with interbed of silt and and some fragments of plants and a number of thin coal seams. Coalseam 130.0 - 130.6' 136.5 - 137.4
144.7	162.5			Sandstone: Light grey to grey, fine grained interbeds of shale and siltstone, occasionally pieces of coal.
162.5	173			Siltstone: Grey very fine grained interbeds of shale and stones.
173	178.4			Sandstone - dark grey, fine grained interbeds of siltstone. Fragments of plants.
178.4	179.2			Coalseam
179.2	198.4			Shale: Dark grey, interbeds of siltstone and sandstone. Number of thin coalseams and pieces of coal. Coalseams 185.5 - 186.0, 186.4 - 187.1, 191.7 - 192.0, 193.8 - 194.0, 196.0 - 196.8.
198.4	214.0	15.0 15.6	96	Coalseam: DH-61-2 Sampled. Parting of shale 200.0 - 200.9 204.9 - 205.1, 211.00 - 211.2 Coaly shale 212.5 - 213, shale 213.7 - 214.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
214.0	247.0			Mudstone: Dark grey, interbeds of siltstone fragments of plants, number of thin coalseams Coal seam 221.0 - 221.8.
247.0	254.4			Siltstone: Dark grey, very fine grained, bands of sandstone and shale, thin seams of coal. Bedding 50° to core axis.
				Sandstone: Grey to light grey, fine to medium grained, bands of siltstone pieces of coal crossbedding, bedding 55° to core axis.
278	298			Siltstone: Grey, very fine grained, bands of siltstone and mudstone, fragments of plants and pieces of coal, occasionally thin coal seams.
298	318.3			Sandstone: Light grey to grey fine grained interbedded with siltstone and shale with fragments of plants, bedding 50° to core axis.
318.3	325.8			Siltstone: Dark grey, very fine grained, interbedded sandstone.
325.8	333.0			Sandstone: Grey, fine grained, with bands of siltstone, bedding 50° to core axis.
333.0	347.0			Siltstone: Dark grey, very fine grained, thin interbeds of sandstone.
347.0	362.5			Sandstone: Grey, fine grained with thin interbeds of silt and mudstone, bedding 55° to core at 351'.
362.5	368.0			Siltstone: Dark grey, very fine grained, interbeds of sandstone.
368.0	385.4			Mudstone: Dark grey interbeds of shale and siltstone, occasionally sandstone, fragments of plants.
385.4	419.0	30.6 / 33.6	91	Coal Seam: Sampled DH-61-3 Parting coaly shale, 392.0 - 392.3, 396.3 - 396.7, shaly coal 397.4 - 397.5 shale 399.3 - 399.6, shaly coal 406 - 406.6, 408.7 - 411.2, 414.6 - 416.6

DIAMOND DRILL CORE LOGGING SHEET

DDH No

Footage		Recovery		Description
from	to	feet	%	
419.0	424.5			Sandstone: Grey, fine ground, coal pieces and fragments of plants.
424.5	429.2			Mudstone: Dark grey, with interbeds of sandstone, number of thin coal seams.
429.2	451.6			Sandstone: Grey, fine grained, interbeds of mudstone and siltstone, fragments of plants, number of thin coal seams.
451.6	464.0			Shale: Dark grey with bands of sandstone and siltstone. Pieces of coal and fragments of plant, occasionally thin seams of coal. Bedding 55^{0} to core axis.
464.0	483.3			Sandstone: Grey fine grained interbeds of siltstone. Pieces of coal. Bedding 60^{0} to core axis at 479.
483.3	498.4	14.9 / 15.1	99	Coal Seam: Sampled DH-61-4 Very dirty coal and numerous beds of shale, carbonaceous shale and shaley coal and coaly shale. Good coal 490.1 - 493.0
498.4	500.4			Shale: Dark grey with number of thin coal seams.
500.4	500.9			Coal Seam
500.9	503.9			Shale: Dark grey, with fragments of plants.
503.9	520.2			Sandstone: Light grey to grey, fine grained interbedded with siltstone and shale. Cross bedded pieces of coal, bedding 40^{0} to core axis at 508.
520.2	537			Siltstone: grey, very fine ground interbeds of sandstone and shale, fragments of plants, and pieces of coal, occasionally thin coal seams.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. DH-61

Overburden: 106.3'

Footage		REMARKS
From to	Thickness	
113.9 - 121.7	7.8	
178.5 - 179.5	1.0	
195.5 - 213.3	17.8	
227.4 - 229.7	2.3	
243.5 - 246.7	3.2	
384.9 - 418.0	33.1	
483.0 - 498.1	15.1	
		T.D. 537'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 62 Size of core: HQ Total depth: 550 ft
167.6 m

Location: EMGS co-ordinates - N 5587310.737
E 646729.418

Baseline co-ordinates - N 330 + 02.8
W 12 + 49.4

Elevation - ft 5239.9
m 1597.12

Date of starting : Nov. 17, 1976
Date of completion : Nov. 20, 1976

Logging by : David Thacker
on : Nov. 26, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
345	105	84.4°	N 76° E
525	160	82.8°	N 75° E

Recovery of coal : $\frac{67.6}{80.2}$ ft = 84%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-62

Footage		Recovery		Description
from	to	feet	%	
0	30.8			Overburden
30.8	56.5			Interbedded shale and sandstone. Sand is fine grained, increasing proportion of shale downward. Bedding to core axis angle @ 41' = 58°.
56.5	63.4			Shale
63.4	81.7	15.3/18.3	84	Coal: DH-62-1 Partially broken 71.8 - 73.6 - carbonaceous shale
81.7	98.2			Interbedded sandstone and shale. Sand is fine grained. Bedding to core axis angle @ 86' = 44°.
98.2	120.0			Shale: some fine grained sandstone interbeds.
120.0	160.0			Shale: Bedding to core axis angle @ 133' = 52°. 153.6 - 154.9 = fine grained sandstone.
160.0	170.4	9.7/10.4	93	Coal: DH-62-2 168.0 - 168.7 - carbonaceous shale
170.4	185.5			Sandstone: medium grained, occasional shale interbeds. Bedding to core axis angle @ 185' = 53°.
185.5	193.6			Shale
193.6	198.7	4.2/5.1	82	Coal: DH-62-3
198.7	223.3			Interbedded sandstone and shale: sand is fine grained, sandstone more frequent downards. 214.5 - 214.7 coal
223.3	263.2			Shale: occasional fine grained sandstone interbeds, rarely carbonaceous.
263.2	267.6			Sandstone: fine grained, occasional shale lenses. Bedding to core axis angle @ 264' = 60°.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
267.6	273.0			Shale
273.0	275.5	2.5/2.5	100	Coal: DH-62.4
275.5	304.5			Shale: occasionally carbonaceous.
304.5	314.0			Shale: occasional medium grained sandstone interbeds.
314.0	320.1			Sandstone: medium grained, occasional shale lenses.
320.1	343.0			Interbedded sandstone and shale. Sandstone is medium grained. Bedding to core axis angle @ 322' = 50°.
343.0	359.6			Shale: rare sandstone lenses carbonaceous zones more frequent downwards. Bedding to core axis angle @ 358 = 52°.
359.6	382.0	17.2/22.4	77	Coal: 374.4 - 375.9 - carbonaceous shale. Sample DH-62-5 Sampled in detail by Roke´
382.0	385.7			Shale: slightly carbonaceous
385.7	386.6			Coal
386.6	389.8			Carbonaceous shale
389.8	393.0	1.9/3.2	59	Coal: ground DH-62-6
393.0	397.3			Carbonaceous shale
397.3	397.5			Coal
397.5	401.1			Carbonaceous shale
401.1	4-2.7			Coal
402.7	405.1			Carbonaceous shale
405.1	406.1			Coal
406.1	407.7			Carbonaceous shale

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DIAMOND DRILL CORE LOGGING SHEET

DDH No.
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Footage		Recovery		Description
from	to	feet	%	
407.7	411.5	3.6/3.8	95	Coal: DH-62-7 Top half broken
411.5	423.5			Carbonaceous shale
423.5	426.9	2.0/3.4	59	Coal: lower half is ground DH-62-8
426.9	451.0			Shale: fine grained sandstone interbeds common. Bedding to core axis angle @ 431' = 52°.
451.0	483.0			Interbedded sandstone and shale: sandstone is fine grained. Bedding to core axis angle @ 478 = 56°.
483.0	486.8	3.8/3.8	100	Coal: 483.7 - 484.0 - shale DH-62-9 Coal badly ground.
486.8	492.8			Shale: plant fragments
492.8	494.0			Coal
494.0	502.0			Shale
502.1	509.4	7.2/7.3	99	Coal: 503.1 - 503.2 - carb. shale 508.3 - 508.4 " " Partially broken DH-62-10
509.4	550.0			Shale: occasionally carbonaceous, occasional fine grained, sandstone lenses. Bedding to core axis angle @ 514' = 50°. E.O.H.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. DH-62

Overburden: 30.8'

Footage		REMARKS
From to	Thickness	
63.7 - 71.5	7.8	
73.8 - 80.1	6.3	
142.4 - 143.4	1.0	
159.8 - 170.0	10.2	
193.6 - 198.5	4.9	
252.6 - 253.9	1.3	
271.3 - 274.9	3.6	
291.3 - 292.7	1.4	
359.6 - 374.0	14.4	
376.7 - 380.3	3.6	
384.9 - 386.5	1.6	
369.5 - 392.1	2.3	
399.6 - 402.3	2.7	
404.2 - 410.8	6.6	
423.2 - 426.5	3.3	
482.3 - 485.9	3.6	
491.2 - 492.8	1.6	
492.8 - 508.9	16.1	
		T.D. 550'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 63 Size of core: HQ Total depth: 520 ft
158.5 m

Location: EMGS co-ordinates - N 5587273.605
E 646581.606

Baseline co-ordinates - N 329 + 99.0
W 17 + 49.4

Elevation - ft 5216.3
m 1589.93

Date of starting : Nov. 21, 1976
Date of completion : Nov. 23, 1976

Logging by : G.C. Singhai
on : Nov. 28, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90,0°	-
165	50	87.4°	N 81° E
328	100	84.6	N 77° E
509	155	81.7°	N 78° E

Recovery of coal : $\frac{42.7}{50.4}$ ft = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-63

Footage		Recovery		Description
from	to	feet	%	
0	17			Overburden (No Core)
17	21.6			Shale: Dark grey, fragments of plants, broken core.
21.6	54.0			Sandstone: Grey, fine grained, interbedded with shale and siltstone. Pieces of coal, bedding 50° to core axis.
54.0	67			Shale: Dark grey, interbeds of mudstone and siltstone fragments of plants, number of thin coal seams. Coal seam 60.4 - 61.4.
67	86.1			Sandstone: Grey, fine grained with interbeds of shale and siltstone, occasionally pieces of coal. Bedding 50° to core axis at 67.
86.1	95.4			Siltstone: Grey, very fine grained, interbeds of thin sandstone.
95.4	96.8	1.4 / 1.4	100	Coal Seam - 92.0 - 92.2, 92.6 - 92.7
96.8	99.0			Siltstone: Grey, very fine grained.
99.0	114.6			Sandstone: Grey, fine grained, interbeds of siltstone, crossbedded, bedding 50° to core axis at 101.
114.6	150.8			Siltstone: Grey, very fine grained with interbeds of sandstone and mudstone. Occasionally fragments of plants, bedding 50° to core axis at 142'.
150.8	156.3			Sandstone: Grey, fine grained, thin interbeds of siltstone and mudstone, crossbedded.
156.3	161			Siltstone: Grey, very fine grained, occasionally fragments of plants.
161	163.5			Sandstone: Light grey, fine grained interbeds of siltstone, crossbedded, bedding 55° to core axis at 163'.
163.5	168.6			Siltstone: Grey, very fine grained.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
168.6	189.6	16.4 20.7	79.6	Coal Seam: Sampled DH 63-1 at places dirty coal.
189.3	193			Sandstone: Grey, fine grained, crossbedded, pieces of coal.
193	196			Shale: Dark grey with fragments of plants and number of thin coal seams.
196	248			Sandstone: Grey fine grained, interbeds of siltstone, pieces of coal, occasionally thin coal seams, bedding 60° to core axis at 228'.
248	265			Siltstone: Dark grey, very fine grained, interbeds of sandstone, occasionally pieces of coal and thin seams of coal.
265	268.5			Shale: Dark grey, fragments of plants and occasionally thin coal seams. Coal seam 265.2 - 265.6.
268.5	295.5			Sandstone: Grey, fine grained, crossbedded, shale with thin seams of coal, 273 - 275.4, interbeds of siltstone. Bedding 55° to core axis at 292'.
295.5	300.6			Mudstone: Grey, occasionally fragments of plants.
300.6	302.6			Sandstone: Grey, fine grained,crossbedded, bedding 60° to core axis at 302.
302.6	310.9			Mudstone: Dark grey, interbeds of sandstone and siltstone.
310.9	313.1	2.1 2.2	95	Coal Seam sampled DH 63-2
313.1	318			Siltstone: Dark grey, very fine grained, interbeds of sandstone.
318	334			Mudstone: Dark grey, interbeds of sandstone, fragments of plants, occasionally thin seams of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
334.0	339.6	5.3 5.6	95	Coal Seam: Sampled DH 63-3 Parting of mudstone 335.5 - 335.9
339.6	341			Sandstone: Grey, fine grained.
341	349.8			Shale: Dark grey, fragments of plants, coal seam 341.4 - 341.9, 346.8 - 347.2.
349.8	354.0	3.8 4.2	90	Coal Seam: Sampled DH 63-4
354.0	367.0			Shale: Dark grey with fragments of plants interbeds of sandstone, number of thin coal seams.
367.0	387			Sandstone: Dark grey, fine grained, interbeds of shale and siltstone, crossbedded, pieces of coal. Bedding 65° to core axis at 375.5'.
387.0	411.7			Shale: Dark grey, fragments of plants, pieces of coal and occasionally thin coal seams.
411.7	451.5			Sandstone: Grey, fine to medium grained, interbeds of siltstone, crossbedding, occasionally pieces of coal. Bedding 55° to core axis at 439.
451.5	453			Shale: Dark grey, fragments of plants.
453.0	461.4	8.4 8.4	100	Coal Seam: sampled DH 63-5 Parting 459.9 - 460.3, 461.7 - 461.0, carbonaceous shale.
461.4	464.6			Shale: Dark grey, fragments of plants.
464.6	472.5	5.3 7.9	67	Coal Seam: sampled DH 63-1 parting of shale 471.8 - 472.2.
472.5	474.8			Shale: Dark grey, with number of thin coal seams.
474.8	520			Sandstone: Light grey to grey, fine grained, interbeds of shale and siltstone, crossbedded, occasionally thin coal seams and pieces of coal. Bedding 60° to core axis at 501'.
				End of Hole at 520'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. DH-63

Overburden: 17'

Footage		REMARKS
From to	Thickness	
58.7 - 61.0	2.3	
94.8 - 96.5	1.7	
171.9 - 189.3	17.4	
265.1 - 266.4	1.3	
309.1 - 312.7	3.6	
333.3 - 338.9	5.6	
346.5 - 347.1	0.6	
348.8 - 358.6	9.8	
361.9 - 363.9	2.0	
452.4 - 460.3	7.9	
467.2 - 471.2	4.0	
		T.D. 520'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 64 Size of core: HQ Total depth: 502 ft
153.0 m

Location: EMGS co-ordinates - N 5587178.789
E 646352.524

Baseline co-ordinates - N 328 + 74.3
W 25 + 53.2

Elevation - ft 5230.7
m 1594.32

Date of starting : Nov. 13, 1976
Date of completion : Nov. 16, 1976

Logging by : G.C. Singhai
on : Nov. 27, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
164	50	90.0°	
328	100	87.4°	N 65° E

Recovery of coal : $\frac{25.5}{29.3}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 64

Footage		Recovery		Description
from	to	feet	%	
0	16			Overburden (No Core)
16	35.2			Sandstone: Grey, fine grained with interbeds of siltstone, pieces of coal ocrasionaly thin seams oc coal. Coal seam 27.0 - 27.2, 31.0 - 31.5. Bedding 50° to core axis at 31'.
35.2	41.0			Siltstone: Grey, fine grained, with interbeds of sandstone, pieces of coal and fragments of plants.
41.0	61.0			Sandstone: Grey, fine grained with interbeds of siltstone, crossbedded.
61.0	74.0			Siltstone: Grey, fine grained, interbeds of
74.0	77.0			Sandstone : Grey, fine grained with interbeds of siltstone, pieces of coal.
77.0	83.6			Siltstone: Grey, very fine ground, fragments of plants and pieces of coal. Core broken from 79 to 82.3.
83.6	93.8	10.2 / 10.2	100	Coaly Shale: Dark grey, fragments of plants and bands of carbonaceous shale. Coal seam 92.6 - 93.4 broken core.
93.8	100.4			Sandstone: Light grey to grey, fine grained crossbedded, pieces of coal, bedding 45° to core axis at 96. Broken core.
100.4	101			Shale dark grey.
101	102			Coalyshale: Dark grey, fragments of plants.
102	105.3			Shale: Grey, fine ground, fragments of plants and pieces of coal.
105.3	111.5			Sandstone: Light grey to grey, fine grained, interbeds of siltstone and fragments of plants.
111.5	121			Siltstone: Dark grey, very fine grained, interbeds of sandstone, fragments of plants. Coal seam 117.4 - 117.8, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 64

Footage		Recovery		Description
from	to	feet	%	
121	121.7			Coal Seam
121.7	123.6			Mudstone: Dark grey, pieces of coal, fragments of plants, shaly coal 122.5 - 123.4.
123.6	125.0	1.3 1.4	90	Coal Seam: Dirty coal.
125	127			Shale: Dark grey, with fragments of plants.
129	138			Siltstone: Dark grey, very fine grained interbeds of sandstone. Number of thin coal seams 132 - 133, 136 - 137.
138	143.7			Sandstone: Light grey to dark grey, fine grained ? beds of mudstone and siltstone and occasionally pieces of coal.
143.7	151.0			Siltstone: Dark grey, very fine grained interbeds of ? occasionally thin seams of coal.
151.0	154.7	2.4 3.7	65	Coal Seam: Shaly coal 152.9 - 153.3, coaly shale 154.4 - 154.7. Sampled DH 64-1.
154.7	159			Shale: Dark grey, fragments of coal, thin seams of coal. Broken core.
159	169½			Sandstone: Grey, fine grained, pieces of coal.
169½	174			Siltstone: Dark grey, very fine grained. Number of thin coal seams and fragments of plants. Core broken.
174	191.7			Sandstone: Light grey, fine grained, interbeds of shale, number of thin coal seams. Bedding 55° to core axis.
191.7	192			Coal seam.
192	195.5			Shale: Dark grey, pieces of coal, fragments of plants and occasionally thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
195.5	216.8			Siltstone: Dark grey, very fine grained with fragments of plants, interbeds of sandstone and shale. Occasionally thin coal seams.
216.8	219.5			Sandstone: Light grey to grey fine grained, lower contact graduational, bedding 55° to core axis at 218'.
219.5	224			Shale: Dark grey with thin coal seams.
224	232.2			Sandstone: Grey fine grained interbeds of siltstone.
232.3	253			Mudstone: Dark grey with interbeds of siltstone and sandstone, fragments of plants, number of thin coal seams 242-247.
253	296			Lower contact graduational. Sandstone: Dark grey to light grey, interbeds of siltstone, crossbedded, pieces of coal, bedding 50° to core axis at 288', occasionally thin coal seams.
296	303			Mudstone: Dark grey, fragments of plants, number of thin coal seams.
303	379			Sandstone: Light grey to grey, crossbedded interbeds of mudstone, fine to medium grained, pieces of coal throughout section. Bedding 45° to core axis at 334½. Occasionally thin seams of coal, lower contact sharp at 60° to core axis. This contact is with fine grained, grey colour sandstone.
379	386.9			Mudstone: Dark grey interbeds of shale 383 - 386.9, number of thin coal seams.
386.9	393.4	5.2 6.5	80	Coal Seam: Sampled DH-64-2 Parting of coaly shale 389.7 - 389.9. Mudstone 392 - 393. Core broken, partly dirty coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
393.4	395.2			Shale: Dark grey, fragments of plants and pieces of coal.
395.2	401.5			Mudstone: Dark grey with interbeds of sandstone, occasionally thin seams of coal. Coalseam 400.2 - 401.
401.5	415.2			Sandstone: Light grey to grey fine grained interbeds of shale, occasionally thin coal seams. Bedding 45° to core axis.
415	418.5			Shale: Dark grey, very fine grained, interbeds of sandstone.
418.5	432.5			Sandstone: Light grey to grey, fine to medium grained interbeds of siltstone. Pieces of coal, bedding 50° to core axis.
432.5	437			Shale: Dark grey, coaly shale 435.2 - 436.0. Carbonaceous shale 436 - 437.
437	455.5			Sandstone: Light grey, fine grained, interbeds of siltstone. Crossbedded, bedding 60° to core axis at 452.5.
455.5	458.5	2.1 3.0	70	Coal Seam: Sampled DH 64-3
458.5	464.3			Sandstone: Light grey, fine grained, crossbedded, occasionally pieces of coal.
464.3	467.4	3.0 3.1	96	Coal Seam: Sampled DH 64-4 Dirty coal, broken core.
467.4	470.4			Sandstone: Light grey, fine grained, number of thin coal seams.
470.4	470.9			Coal Seams:
470.9	476.8			Sandstone: Light grey, fine grained, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
476.8	478			Siltstone: Grey, very fine grained.
478.0	479.4	1.3 1.4	96	Coal Seam: Dirty coal, broken.
479.4	482.1			Sandstone: Light grey to grey with interbeds of shale and siltstone.
482.1	484.4			Carbonaceous Shale: Dark grey with pieces of coal and number of thin coal seams.
484.4	501.8			Shale: Grey with interbeds of siltstone and sandstone. Bedding 60° to core axis at 493'.
501.8	502.0			Sandstone: Light grey, fine grained.
				End of Hole at 502'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. DH-64

Overburden: 16'

Footage				REMARKS
From	to	Thickness		
44.6 -	48.2	3.6		
78.7 -	79.6	0.9)		
81.0 -	82.0	1.0)		
82.8 -	84.3	1.5)	14.5'	
86.0 -	87.3	1.3)		
88.9 -	93.2	4.3)		
97.8 -	99.7	1.9		
114.0 -	115.5	1.5		
118.1 -	118.8	0.7)		
119.8 -	120.6	0.8)	4.6'	
122.0 -	123.4	1.4)		
128.8 -	130.2	1.4		
146.7 -	150.9	4.2		
320.6 -	322.8	2.2		
381.4 -	382.2	0.8)		
384.5 -	389.1	4.6)	9.8'	
390.1 -	391.2	1.1)		
397.3 -	398.6	1.3		
420.6 -	423.9	3.3		
442.9 -	445.4	2.5		
451.8 -	454.7	2.9		
465.1 -	466.9	1.8		
469.0 -	471.5	2.5		
				T.D. 502'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 65 Size of core: HQ Total depth: 507 ft
154.5 m

Location: EMGS co-ordinates - N 5587198.436
E 646286.517

Baseline co-ordinates - N 329 + 88.1
W 27 + 48.4

Elevation - ft 5286.6
m 1611.36

Date of starting : Nov. 7, 1976
Date of completion : Nov. 12, 1976

Logging by : David Thacker
on : Nov. 27, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0°	-
486	148	85.2°	N 67° E

Recovery of coal : $\frac{9.9}{10.3}$ ft = 96%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-65

Footage		Recovery		Description
from	to	feet	%	
0	18.4			Overburden
18.4	57.0			Shale: occasionally carbonaceous, occasional fine grained sandstone interbeds. Bedding to core axis angle @ 26' = 53°. Coal at 30.4 - 30.6'
57.0	57.7			Coal
57.7	80.6			Shale: numberous fine grained sandstone lenses. Coal at 69.5 - 69.8' Bedding to core axis angle @ 78' = 58°.
80.0	162.0			Interbedded sandstone and shale: sand is fine grained, shale is occasionally carbonaceous, minor sandstone crossbedding. Bedding to core axis angle @ 147' = 50°.
162.0	165.4	3.4/3.4	100	Coal: DH-65-1
165.4	170.0			Shale: occasionally carbonaceous.
170.0	170.7			Sandstone: medium grained, occasional shale interbeds.
179.7	232.7			Shale: occasional fine grained sandstone interbeds, shale is occasionally carbonaceous. Bedding to core axis angle @ 197' = 60°.
234.5	236.8	1.9/2.3	87	Coal DH-65-2
236.8	238.2			Carbonaceous shale
238.2	239.6			Shaly coal
239.6	240.9			Shale: slightly carbonaceous
240.9	242.1			Coal
242.1	245.2			Shale
245.2	245.9			Coal
245.9	248.9			Coaly shale

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
248.9	249.8			Coal
249.8	250.8			Shale
250.8	257.5			Sandstone: medium grained, crossbedded, occasional shale lenses. Bedding to core axis angle @ 253' = 50°.
257.5	260.5			Coaly shale
260.5	266.9			Sandstone: fine grained, occasional shale lenses.
266.9	276.0			Shale: interbedded siltstone.
276.0	276.6			Coal
276.6	282.8			Interbedded sandstone and shale: sand is fine ground, shale is occasionally carbonaceous.
282.8	284.2			Coal
284.2	306.1			Shale: occasional fine grained sandstone interbeds. Bedding to core axis angle @ 301' = 60°.
306.1	310.7	4.6 / 4.6	100	Coal: broken DH-65-3
310.7	320.5			Sandstone: medium grained, occasional shale lenses.
320.5	326.7			Shale
326.7	349.0			Interbedded sandstone and shale: sand is medium ground, shale is occasionally carbonaceous.
349.0	416.8			Shale: rarely carbonaceous, rare fine grained sandstone interbeds. Bedding to core axis angle @ 353' = 48° @ 405' = 48°.
416.8	426.0			Interbedded sandstone and shale: sand is fine grained.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
426.0	445.7			Sandstone: medium grained, occasional carbonaceous partings. Bedding to core axis angle @ 440' = 62°.
445.7	450.4			Carbonaceous shale
450.4	451.3			Shaly coal
451.3	452.0			Carbonaceous shale
452.0	480.5			Sandstone: medium grained, carbonaceous partings.
480.5	507.0			Shale: occasional fine grained sandstone interbeds, plant fragments. Bedding to core axis angle @ 496' = 52°.
				E.O.H.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. DH-65

Overburden: 18.4'

Footage		REMARKS
From to	Thickness	
23.0 - 24.3	1.3	
26.2 - 28.5	2.3	
41.7 - 43.0	1.3	
54.8 - 56.4	1.6	
65.0 - 68.9	3.9	
89.9 - 93.2	3.3	
116.1 - 118.1	2.0	
149.9 - 152.6	2.7	
159.1 - 162.1	3.0	
200.1 - 203.4	3.3	
232.3 - 233.9	1.6	
238.5 - 240.2	1.7	
243.6 - 246.7	3.1	
255.6 - 256.9	1.3	
272.3 - 275.6	3.3	
281.2 - 282.8	1.6	
291.0 - 292.3	1.3	
302.8 - 309.8	5.0	
447.9 - 449.2	1.3	
		T.D. 507'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 66 Size of core: HQ Total depth: 450 ft / 137.2 m

Location: EMGS co-ordinates - N 5587973.474
E 646881.235

Baseline co-ordinates - N 349 + 97.9
W 2 + 51.7

Elevation - ft 5308.9
m 1618.15

Date of starting : Oct. 26, 1976
Date of completion : Oct. 30, 1976

Logging by : G. Lawrence & D. Thacker
on : Nov. 10, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
No tests			

Recovery of coal : $\frac{37.1}{41.7}$ ft = 89%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 66

Footage		Recovery		Description
from	to	feet	%	
0	- 103.0			Glacial till; clay, gravel & boulders
103.0	- 137.3			Dark grey siltstone; dip @ 105.0' = 56° from C. Axi 124.0' = 50° " " 135.0' = 34° " "
137.3'	- 140.0'			Carb shale
140.0'	- 148.0'			f.g. sandy siltstone dip @ 147.5'
148.0	- 161.0'	12.7 13.0	98	Coal. Carb shale parting @ 165.7' - 166.0' (DH 66-1)
161.0	- 164.0			Dark grey muddy siltstone dip from c. axis @ 163=50
164.0	- 165.5			Black carb shale w/ coal partings.
165.5	- 172.0			Med. grey f.g. sandy siltstone; fractured from 169.5 - 172.0' dip from bore axis @ 168' - 50°
172.0	- 174.0			Mudstone; crushed
174.0	- 177.5			Siltstone with minor coal partings (1"-2")
177.5	- 178.5			Coal
178.5	- 209.4			Siltstone, slightly sandy; broken coal bands @ 201' - 202' 206' - 207' dips from bore axis @ 187' = 40° 199' = 45°
209.4	- 236.0			Shale: occasional plant fragments coal @ 214.2 - 214.7' dip @ 210' = 50° to core axis 226' = 49°
236.0	- 248.8	11.5 12.8	90	Coal: shale beds present but impossible to locate due to highly ground nature of core (DH 66-2)
248.8	- 269.6			Shale: plant fragments, occasionally carbonaceous, rare fine grained sand lenses. Bedding to core axis angle @ 260' = 50°.
269.6	- 271.0			Coal: broken

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 66

Footage		Recovery		Description
from	to	feet	%	
271.0	- 305.0			Shale: interbedded siltstone, occasionally carbonaceous coal at 283.0 - 283.3', Bedding to core axis angle @ 273' = 44° @ 287' = 19°
305.0	- 310.5			Interbedded shale and sandstone Sand is fine grained, crossbedded Bedding to core axis angle @ 307' = 48°
310.5	- 344.5			Shale: occasional fine grained sand interbeds Bedding to core axis angle @ 333' = 56°.
344.5	- 349.5			Sandstone: medium grained, crossbedded, rare shale interbeds, transitional into underlying unit Bedding to core axis angle @ 347' = 60°.
349.5	- 358.7			Shale: Bedding to core axis angle @ 358' = 50°.
358.7	- 364.9			Coaly Shale
364.9	- 377.0	9.3 12.1	77	Coal: shale interbeds @ 366.8 - 368' @ 372.5 - 373.7' Coal is highly broken (DH 66-3)
377.0	- 380.0			Shale: carbonaceous
380.0	- 383.8	3.6 3.8	95	Coal: hard, (high ash content?) (DH 66-4)
383.8	- 420.1			Sandstone: medium grained, crossbedded, slightly carbonaceous Bedding to core axis angle @ 393' - 50° @ 408' - 49° @ 420' - 56°
420.1	- 420.8			Coal: shaly
420.8	- 450.0			Sandstone: medium grained, crossbedded Bedding to core axis angle @ 438' = 62° @ 449' = 62° End of Hole at 450.0'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 67 Size of core: HQ Total depth: 500 ft
152.4 m

Location: EMGS co-ordinates - N 5587938.121
E 646733.901

Baseline co-ordinates - N 349 + 99.4
W 7 + 48.8

Elevation - ft 5267.5
m 1605.53

Date of starting : Oct. 31, 1976
Date of completion : Nov. 3, 1976

Logging by : G. Lawrence & D. Thacker
on : Nov. 5, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
476	145	85.2 "	N 86 degrees E

Recovery of coal : $\frac{34.5}{35.0}$ ft = 99%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-67

Footage		Recovery		Description
from	to	feet	%	
0	120			Overburden
120	159.5			Siltstone well jointed, muddy, slightly sandy @ 138.0 - 143.0' - dip from bore axis @ 128' = 46 degrees 133' = 45 " 145' = 50 " 156' = 42 "
159.5	162.0			Black mudstone
162.0	197.0	34.5 35.0	99	Coal, Carboneceous Shale bonds @ 182.2 - 184.0' Core excellant condition, well jointed, 185.2 - 185.4' priable from 159.5 - 172.0 (DH-67-1) 196.7 - 197.0
197.0	199.0			Siltstone - dip from core axis @ 197.5 = 45 degrees
199.0	206.0			Carboneceous Shale with minor coal bands (2"-3"); crushed.
206.0	217.0			Siltstone: dip from bore axis @ 217' = 45 degrees.
217.0'	223.0			Mudstone: core crushed from 218.5' - 220.0'.
223.0	245.7			Siltstone; muddy, - dip from core axis @ 230 = 50 degrees 245 = 47 degrees
245.4	254.7			Black mudstone with a coal band from 250.1 - 251.4'.
254.7	256.0			Light grey, fine grain sandstone
256.0	257.5			Black mudstone
257.5	283.7			Dark grey siltstone, muddy with lenses of light grey f.g. sand.
283.7	289.2			Sandstone: medium grained, shale chips.
289.2	301.7			Siltstone: lenses of medium and fine grained sand present, dip from core axis @ 300' = 44 degrees.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-67

Footage		Recovery		Description
from	to	feet	%	
301.7 -	384.0			Sandstone - light grey, medium grained occasional shale lenses or chips, occasionally carbonaceous Core to bedding axis @ 333' = 65 degrees 343' = 60 degrees 358' = 60 degrees
384.0 -	392.9			Shale - black Coal @ 388.3 - 388.8', high ash content.
392.9 -	500.0			Shale : occasional siltstone lenses, plant fragments, coal at 403.6' - 404.2' Bedding to core axis angle @ 397' = 52 degrees 418' = 63 degrees 426' = 53 degrees 447' = 56 degrees 464' = 59 degrees 485' = 50 degrees EOH = 500'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 68 Size of core: HQ Total depth: 530 ft
161.5 m

Location: EMGS co-ordinates - N 5587901.938
E 646585.733

Baseline co-ordinates - N 349 + 98.9
W 12 + 49.2

Elevation - ft 5232.5
m 1594.87

Date of starting : Nov. 28, 1976
Date of completion : Nov. 30, 1976

Logging by : David Thacker
on : Dec. 2, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
164	50	86.2 "	N 61 degrees E
328	100	81.5 "	N 59 " E
518	158	77.5 "	N 61 " E

Recovery of coal : $\frac{71.9}{93.3}$ = ft 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-68

Footage		Recovery		Description
from	to	feet	%	
0	33.0			Overburden
33.0	76.7			Shale: occasional fine grained sandstone lenses, bedding to core axis angle @ 42' = 38°.
76.7	86.0			Sandstone: fine grained, occasional shale interbeds.
86.0	101.7	13.7/15.7	87	Coal: DH-68-1
101.7	113.0			Shale: bedding to core axis angle @ 107' = 48°.
113.0	119.6	5.6/6.6	85	Coal: DH-68-2 broken
119.6	122.1			Carbonaceous shale
122.1	122.8			Coal
122.8	193.1			Shale: occasional fine grained sandstone interbeds, occasionally carbonaceous coal 172.5 - 172.8'. Bedding to core axis angle @ 158' = 52°.
193.1	221.2			Shale: bedding to core axis angle @ 205' = 50°.
221.2	269.2			Shale: occasional fine grained sandstone interbeds. Bedding to core axis angle @ 263' = 51°.
269.2	320.5			Shale: rare sandstone interbeds. Bedding to core axis angle @ 318' = 50°.
320.5	320.9			Coal
320.9	321.5			Carbonaceous shale
321.5	323.0			Coal: .2'interbedded shale
323.0	324.8			Carbonaceous shale
324.8	351.6	18.8/36.8	70	Coal: partially broken 329.6 - 331.0 - carbonaceous shale 337.3 - 338.0 " " 341.5 - 343.6 " " 348.9 - 349.2 " "

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
351.6	364.0			Shale: Bedding to core axis angle @ 358' = 54°.
364.0	377.1	7.7 / 13.1	59	Coal: broken 370.3 - 371.3 - carbonaceous shale 375.6 - 375.9 " " DH-68-4 (Note: most of the core loss is at the top of the seam.)
377.1	385.0			Carbonaceous Shale
385.0	430.7			Shale: occasional carbonaceous zones, rare fine grained sandstone lenses, bedding to core axis angle @ 411' = 57°.
430.7	449.2	14.1 / 18.5	76	Coal: 431.5 - 431.6 - carbonaceous shale 433.0 - 433.8 " " 435.2 - 435.3 " " 437.3 - 437.4 " " DH-68-5
449.2	484.3			Interbedded sandstone and shale: sand is fine grained, bedding to core axis angle @ 458' = 45°.
484.3	502.1			Shale: occasionally carbonaceous
502.1	514.7	12.0 / 12.6	95	Coal: 505.0 - 505.2 - carbonaceous shale 508.4 - 508.5 " " 512.1 - 512.2 " " Coal from 502.1 - 506.5 - has a probable high ash content DH-68-6
514.7	517.8			Coaly shale
517.8	530.0			Carbonaceous shale Bedding to core axis angle @ 524' = 58°. E.O.H.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 69 Size of core: HQ Total depth: 558 ft
170.1 m

Location: EMGS co-ordinates - N 5587867.165
E 646437.818

Baseline co-ordinates - N 350 + 02.7
W 17 + 47.7

Elevation - ft 5229.0
m 1593.80

Date of starting : Nov. 24, 1976
Date of completion : Nov. 27, 1976

Logging by : David Thacker
on : Nov. 28, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	85.0 "	N 52 degrees E
361	110	87.6 "	N 44 " E
541	165	85.0 "	N 52 " E

Recovery of coal : $\frac{48.7}{63.1}$ ft = 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-49

Footage		Recovery		Description
from	to	feet	%	
0	37.0			Overburden
37.0	47.2			Carbonaceous shale
47.2	56.2	7.2/9.0	80	Coal: DH-69-1
56.2	72.6			Carbonaceous shale
72.6	113.0			Shale: occasional fine grained sandstone interbeds, rarely carbonaceous. Bedding to core axis angle @ 74' = 47°.
113.0	163.0			Sandstone: medium grained, occasional shale interbeds, occasional carbonaceous partings. Bedding to core axis angle @ 128' = 48°.
163.0	183.6			Shale: rare fine grained sandstone lenses. Bedding to core axis angle @ 174' = 50°.
183.6	253.3			Sandstone: medium grained, occasional carbonaceous partings, bedding to core axis angle @ 224' = 48°, small crossbeds.
253.3	265.6			Sandstone: fine grained, occasional shale lenses, carbonaceous partings.
265.6	268.0			Carbonaceous shale
268.0	291.5	18.8/23.5	80	Coal: 275.0 - 275.4 - carbonaceous shale 278.9 - 279.1 - coaly shale 285.5 - 286.2 - carbonaceous shale Coal is partially broken HG-69-2
291.5	297.2			Carbonaceous shale: 293.2 - 295.5: gine grained sandstone Bedding to core axis angle @ 295' = 43°.
297.8	302.7	3.9/4.9	80	Coal: 299.0 - 299.5' - carbonaceous shale 300.1 - 300.4 " " DH-69-3
302.7	311.0			Carbonaceous shale.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
311.0	367.6			Shale: occasional fine grained sandstone lenses, occasional carbonaceous partings. Bedding to core axis angle @ 344' = 50°.
367.6	380.7	11.2/13.1	85	Coal: DH-69-4
380.7	415.5			Interbedded sandstone and shale: sandstone is fine grained, shale is often carbonaceous. 403.4 - 403.7 - coal bedding to core axis angle @ 407' = 50°.
415.5	460.9			Sandstone - fine grained, grading downwards to medium to coarse at base, rare shale interbeds, carbonaceous partings.
460.9	532.0			Shale: occasional fine grained sandstone interbeds, occasionally carbonaceous, bedding to core axis angle @ 464' = 45° @ 517 = 53°
532.0	544.6	7.6/12.6	60	Coal = DH-69.5
544.6	558.0			Shale: rare fine grained sandstone lenses, bedding to core axis angle @ 555' = 63°.
				E.O.H.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 70 Size of core: HQ Total depth: 522 ft
159.1 m

Location: EMGS co-ordinates - N 5587831.264
E 646 289.519

Baseline co-ordinates - N 350 + 03.2
W 22 + 48.3

Elevation - ft 5254.3
m 1601.51

Date of starting : Nov. 1, 1976
Date of completion : Nov. 6, 1976

Logging by : David Thacker
on : Nov. 11, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
492	150	83.3 "	N 6° E

Recovery of coal : $\frac{37.3}{51.7}$ ft = 72%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-70

Footage		Recovery		Description
from	to	feet	%	
0	18.4			Overburden
18.4	29.6			Shale - silty interbeds. Bedding to core axis angle @ 26' = 39 degrees.
29.6	42.0			Sandstone = fine grained, interbedded siltstone, occasionally carbonaceous . Bedding to core axis angle @ 38' = 31 degrees.
42.0	67.0			Sandstone: medium grained, occasional silty interbeds, occasionally carbonaceous Bedding to core axis angle @ 59' = 62 degrees.
67.0	84.3			Sandstone: fine grained, numerous siltstone interbeds, carbonaceous shale intervals Bedding to core axis angle @ 75' = 49 degrees.
84.3	100.0			Siltstone: occasionally shaly
100.0	122.0			Shale: rare carbonaceous particles.
122.0	154.2			Siltstone: numerous shale interbeds bedding to core axis angle @ 123' = 49 degrees 153' = 50 degrees.
154.2	175.7	16.6 21.5	77	Coal = (DH-70-1)
175.7	238.4			Shale: Coal intervals @ 176.5 - 177' 183.3 - 185.0' 186.8 - 187.2' Occasionally silty intervals Bedding to core axis angle @ 188' = 52 degrees 233' = 54 degrees
238.4	240.2			Carbonaceous shale
240.2	262.2			Sandstone: fine grained, calcite (?) veining occasional shale parting Bedding to core axis angle @ 254' = 45 degrees.
262.2	272.0			Carbonaceous shale: rare sandstone lenses.
272.0	275.2			Sandstone: medium grained, crossbedded. Bedding to core axis angle @ 273' = 45 degrees.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-70

Footage		Recovery		Description
from	to	feet	%	
275.2 -	295.7			Interbedded sandstone and shale . Sand is fine grained. Bedding to core axis angle @ 292' = 50 degrees.
295.7 -	318.9			Shale: rare fine grained sand lenses Bedding to core axis angle @ 314' = 49 degrees.
318.9 -	341.2	15.7 22.3	70	Coal: (DH-70-2) Broken
341.2 -	377.3			Sandstone: fine grained, occasional shale interbedding, occasionally carbonaceous. Bedding to core axis angle @ 355' = 45 degrees.
377.3 -	449.0			Siltstone: numerous shale or sandstone interbeds, carbonaceous . Bedding to core axis angle @ 415' = 49 degrees @ 444' = 56 degrees
449.0 -	452.5	3.5 3.5	100	Coal: broken (DH-70-3)
452.5 -	504.6			Sandstone: fine grained, with interbedded shale. Bedding to core axis angle @ 456' = 51 degrees 499' = 42 degrees.
504.6 -	509.0	1.5 4.4	34	Coal (DH-70-4)
509.0 -	522.0			Shale
				E.O.H.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 71 Size of core: HQ Total depth: 511 ft
155.8 m

Location: EMGS co-ordinates - N 5587792.680
E 646139.864

Baseline co-ordinates - N 349 + 96.2
W 27 + 55.3

Elevation - ft 5324.6
m 1622.94

Date of starting : Oct. 30, 1976
Date of completion : Nov. 1, 1976

Logging by : David Thacker
on : Nov. 14, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
492	150	83.2 "	N 67 degrees E

Recovery of coal : $\frac{18.7}{26.2}$ ft = 71%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-71

Footage		Recovery		Description
from	to	feet	%	
0	20.5			Overburden
20.5	23.5			Sandstone: fine grained, interbedded shale
23.5	25.5	2.0/2.0	100	Coal: sample DH-71-1
25.5	44.8			Shale: occasional fine grained sandstone interbeds @ 28' = 47 degrees bedding to core axis angle @ =
44.8	45.2			Coal
45.2	49.1			Sandstone: fine grained, crossbedded
49.1	59.0			Shale: occasionally carbonaceous, occasional fine grained sandstone interbed.
59.0	60.2			Coal: hard
60.2	64.5			Shale
64.5	66.0	1.4/1.5	93	Coal: sample DH-71-2
66.0	125.7			Shale: occasionally carbonaceous rare sandstone interbeds. Bedding to core axis angle @ 70'= 56 degrees.
125.7	154.6			Sandstone: medium grained, crossbedded, occasional carbonaceous partings. Bedding to core axis angle @ 126' = 61 degrees.
154.6	263.5			Shale: occasional fine grained sandstone interbeds occasionally carbonaceous. Plant fragments. Bedding to core axis angles @ 190' = 50 degrees 247' = 50 degrees.
263.5	300.8			Interbedded sandstone and shale: Sandstone is fine grained. Bedding to core axis angle @ 296' = 48 degrees.
300.8	301.6			Coal: shaly
301.6	316.7			Shale: occasionally carbonaceous

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-71

Footage from	Footage to	Recovery feet	Recovery %	Description
316.7 -	325.7			Sandstone: medium grained Bedding to core axis angle @ 325 = 44 degrees.
325.7 -	326.2			Shale
326.2 -	330.0	1.0/3.8	26	Coal: sample DH-71-3
330.0 -	335.0			Shale: occasionally carbonaceous, Occasional sandstone. Bedding to core axis angle @ 334' = 53 degrees.
335.0 -	335.8			Shaly coal:
335.8 -	347.0			Shale: interbedded fine grained sandstone.
347.0 -	348.3			Shaly coal.
348.3 -	363.6			Shale: occasional fine grained sandstone interbeds. rare carbonaceous partings Bedding to core axis angle @ 357' = 52 degrees.
363.6 -	373.3	7.6/9.7	78	Coal: sample DH-71-4 370.7 - 372.2 - Sandstone, crossbedded.
373.3 -	379.1			Interbedded sandstone and shale: Sand is fine grained, shale is partially carbonaceous. Bedding to core axis angle @ 378' = 53 degr
389.1 -	391.9	2.1/2.8	75	Coal: sample DH-71-5 Sandstone: 389.9 - 390.3
391.9 -	404.8			Sandstone: medium grained.
404.8 -	454.6			Shale: rare sandstone lenses, occasional plant fragments. Bedding to core axis angle @ 428' = 47 degrees.
454.6 -	458.2	3.0/3.6	83	Coal: sample DH-71-6
458.2 -	469.4			Shale: interbedded sandstone present.
469.4 -	470.4			Coal: Shaly
4704 -	483.2			Shale: interbedded sandstone Bedding to core axis angle @ 478' = 52 degrees.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-71

Footage		Recovery		Description
from	to	feet	%	
483.2 -	486.0	1.6 / 2.8	57	Coal: sample DH-71-7
486.0 -	511.0			Sandstone: medium grained
				EOH

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 72 Size of core: HQ Total depth: 458 ft
139.6 m

Location: EMGS co-ordinates - N 5587765.433
E 646022.899

Baseline co-ordinates - N 350 + 00.0
W 31 + 49.3

Elevation - ft 5429.2
m 1654.82

Date of starting : Oct. 26, 1976
Date of completion : Oct. 29, 1976

Logging by : D. McKelvie & D. Thacker
on : Nov. 23, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
427	130	85.2 degrees	N 58 degrees E

Recovery of coal : $\frac{15.0}{17.1}$ ft = 88%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-72

Footage		Recovery		Description
from	to	feet	%	
0	- 20.7			Overburden
20.7	- 35.6			Shale: rare: sandstone interbed. Bedding to core axis angle @ 27' = 53 degrees.
35.6	- 40.2			Sandstone: fine grained.
40.2	- 103.8			Shale: rare sandstone lenses, rare carbonaceous intervals Bedding to core axis angle @ 83' = 46 degrees.
103.8	- 127.4			Sandstone: medium grained, cross bedded.
127.4	- 142.8			Interbedded sandstone and shale: Sand is fine grained. Shale is rarely carbonaceous. Bedding to core axis angle @ 140' = 52 degrees.
142.8	- 144.5			Coal
144.5	- 171.1			Interbedded sandstone and shale: sand is fine grained.
171.1	- 171.8			Coal
171.8	- 178.8			Sandstone : fine grained.
178.8	- 199.0			Shale: common fine grained Sandstone interbeds Bedding to core axis angle @ 193' = 55 degrees.
199.0	- 207.0			Carbonaceous shale.
207.0	- 207.4			Coal
207.4	- 212.6			Shale
212.6	- 221.0			Sandstone: fine grained, thinly bedded interbedded shale.
221.0	- 229.0			Carbonaceous shale: 224.9 - 225.6 : Shaly coal.
229.0	- 235.0			Interbedded sandstone and shale: sand is fine grained, occasional carbonaceous partings.
235.0	- 236.5			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-72

Footage		Recovery		Description
from	to	feet	%	
236.5 -	253.6			Shale: occasional thinly bedded sandstone interbed Bedding to core axis angle @ 242' = 57 degrees.
253.6 -	257.5			Sandstone: medium grained, occasional shale interbe
257.5 -	265.0			Shale: occasionally carbonaceous
265.0 -	286.4			Siltstone: occasional sandstone or shale interbeds.
286.4 -	289.5	2.9/3.1	94	Coal: Sample DH-72-1
289.5 -	305.6			Sandstone: medium grained, occasional shale interbeds, bedding to core axis angle @ 303' = 56 degree
305.8 -	314.3			Carbonaceous shale, occasional siltstone interbeds.
314.3 -	317.7	2.8/3.4	82	Coal: sample DH-72-2
317.7 -	344.0			Shale: occasional siltstone interbeds sandstone interbeds common.
344.0 -	349.0	4.1/5.0	82	Coal: sample DH-72-3 Very small shale bands 346.9 - 347.3 Carbonaceous shale 348.1 - 349.0 Shaly coal
349.0 -	350.6			Carbonaceous shale
350.6 -	355.0			Sandstone: fine grained, occasional thinly bedded shale Bedding to core axis angle @ 354' = 55 degree
355.0 -	359.0	3.4/4.0	85	Coal: sample DH-72-4
359.0 -	382.1			Shale: occasionally carbonaceous, sandstone interbeds common.
382.1 -	384.0			Coal: shaly towards bottom.
384.0 -	387.6			Shale
387.6 -	388.1			Coal
388.1 -	389.2			Carbonaceous shale
389.2 -	394.8			Sandstone: fine grained, crossbedded.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-72

Footage from	Footage to	Recovery feet	Recovery %	Description
394.8 -	412.0			Shale: rare sandstone interbeds carbonaceous at base. Bedding to core axis angle @ 391' = 52 degre
412.0 -	414.0	1.7/2.0	85	Coal: sample DH-72-5
414.0 -	436.4			Sandstone: medium grained, thin. Shale interbeds, becoming shalier towards base.
436.4 -	437.5			Shaly coal.
437.5 -	444.0			Interbedded sandstone and shale: Sand is fine grained.
444.0 -	445.2			Shaly coal
445.2 -	448.5			Carbonaceous shale
448.5 -	449.0			Coal
449.0 -	458.0			Sandstone: medium grained, becoming shaly towards base. Bedding to core axis angle @ 453' = 54 degrees.
				E O H

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 73 Size of core: HQ Total depth: 472 ft
143.9 m

Location: EMGS co-ordinates - N 5588527.27
E 646564.77

Baseline co-ordinates - N 370 + 08.7
W 8 + 31.3

Elevation - ft 5287.7
m 1611.69

Date of starting : Nov. 3, 1976
Date of completion : Nov. 9, 1976

Logging by : David Thacker
on : Nov. 17, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
453	138	82.5 "	N 81 degrees E

Recovery of coal : $\frac{47.9}{51.3}$ ft = 93%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-73

Footage		Recovery		Description
from	to	feet	%	
0	- 114.6			Overburden
114.6	- 127.4			Shale: occasionally carbonaceous, occasionally silty. Bedding to core axis angle @ 125' = 37 degree
127.4	- 129.7	2.3 / 2.3	100	Coal: Sample DH-73-1 Broken
129.7	- 159.1			Shale: occasional fine grained sandstone interbed Bedding to core axis angle @ 155' = 51 degrees.
159.1	- 164.3	5.2 / 5.2	100	Coal: partially broken - Sample DH-73-2
164.3	- 188.9			Shale: occasional fine grained sandstone interbed, occasionally carbonaceous.
188.9	- 189.9			Coal: broken
189.9	- 200.3			Sandstone: fine grained.
200.3	- 201.0			Coal
201.0	- 225.0			Shale: Bedding to core axis angle @ 207' = 44 degree
225.0	- 225.6			Coal
225.6	- 244.9			Shale: Bedding to core axis angle @ 244 = 37 degree
244.9	- 259.0	14.0 / 14.1	99	Coal: broken sample DH-73-3
259.0	- 261.5			Carbonaceous shale.
261.5	- 262.0			Coal
262.0	- 266.8			Carbonaceous shale.
266.8	- 276.4			Siltstone: bedding to core axis angle @ 268' = 48 degrees.
279.4	- 315.3			Shale: occasional fine grained sandstone lenses, rarely carbonaceous.
315.3	- 319.0			Sandstone: fine grained. Bedding to core axis angle @ 318' = 45 degrees.

DIAMOND DRILL CORE LOGGING SHEET

DDH No DH-73

Footage		Recovery		Description
from	to	feet	%	
319.0 -	322.2			Shale
322.2 -	323.1			Coal
323.1 -	336.9			Shale: occasionally carbonaceous
335.9 -	338.8	2.9 / 2.9	100	Coal: ground Sample DH-73-4
338.8 -	343.3			Siltstone; bedding to core axis angle @ 343' - 45 degrees.
343.3 -	355.5			Sandstone: fine grained.
355.5 -	359.0			Siltstone
359.0 -	390.0			Shale: occasional fine grained sandstone interbeds
390.0 -	407.0			Sandstone: medium and coarse grained, interbedded shale.
407.0 -	417.8			Shale: bedding to core axis angle @ 410' = 49 degree
417.8 -	421.8	3.5 / 4.0	87	Coal: 409.1 - 419.3 - carbonaceous shale 420.0 - 420.4 - Carbonaceous shale. Sample: DH-73-5 Coal badly ground.
421.8 -	435.4			Shale
435.4 -	441.8	6.4 / 6.4	100	Coal: ground sample = DH-73-6
441.8 -	445.6			Shale
445.6 -	462.0	13.6 / 16.4	83	Coal: ground Sample DH-73-7 453.0 - 454.3 - Carbonaceous shale 456.5 - 459.2 - shale
462.0 -	472.0			Sandstone: medium grained Bedding to core axis angle @ 467' = 52 degrees E O H

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 74 Size of core: HQ Total depth: 510 ft
155.6 m

Location: EMGS co-ordinates - N 5588491.395
E 646413.331

Baseline co-ordinates - N 370 + 11.7
W 13 + 41.9

Elevation - ft 5252.3
m 1600.90

Date of starting : October 26, 1976
Date of completion : Nov. 2, 1976

Logging by : G. Lawrence
on : Nov. 4, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
492	150	84.7 "	N 38 degrees E

Recovery of coal : $\frac{76.1}{85.4}$ ft = 89%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-74

Footage		Recovery		Description
from	to	feet	%	
0	- 102			Overburden
102	- 102.3			Light grey , f.g. sandstone.
102.3	- 117.8	13.0/15.5	84	Coal: crushed, oxidized (DH-74-1)
117.8	- 118.0			Silty sandstone
118.0	- 118.8			Black carb - shale.
118.8	- 131.6			f.g. sandstone; 45 degrees @ 125' (dip from core axis)
131.6	- 140.0			Siltstone
140.0	- 144.0			f.g. silty sandstone
144.0	- 145.2			Siltstone
145.2	- 146.0			Coal with carb shale; crushed
146.0	- 147.2			Siltstone w/ carb - mudstone bands
147.2	- 147.7			Carb - shale and coal, crushed
147.7	- 150.0			Siltstone; dip from core axis; 45 degrees @ 148.5'
150.0	- 151.5			Mudstone
151.5	- 152.8			Sandstone; jointing w/ calsite infilling
152.8	- 154.0			Siltstone
154.0	- 155.0			f.g. silty sandstone; minor jointing
155.0	- 156.7			Siltstone w/ carb partings
156.7	- 158.4			Mudstone
158.4	- 180.0			Carb shale and coal; crushed.
160.0	- 162.0			Siltstone
162.0	- 169.0			Mudstone w/ coal partings @ 162.2 - 162.4 163.0 - 163.4 164.1 - 164.3 165.1 - 165.4

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-74

Footage from	Footage to	Recovery feet	Recovery %	Description
169.0 -	189.7	20.0/20.7	97	Coal. carb shale partings @ 174.3 - 174.5 182.0 - 182.2 187.0 - 187.5 187.8 - 188.3 dip @ 172' = 35 degrees CA (DH74-2) Coal 188.3 - 189.7 is crushed.
189.7 -	197.6			Massive mudstone
197.6 -	232			Siltstone: minor jointing & bedding plane fractures. dip @ 200' = 50 degrees from core axis dip @ 207' = 40 degrees from core axis dip @ 230' = 42 degrees from core axis
232' -	233.8			Mudstone
233.8 -	244.2	7.6/10.4	73	Coal - carb shale partings @ 240.6 - 241.1 242.0 - 242.3 (DH-74-3)
244.2 -	246.5			Carb shale; crushed
246.5 -	276.5			Siltstone; muddy dip @ 248 = 38 degrees from C.A. Broken 268' - 276.5 dip @ 251 = 38 degrees from C.A. dip @ 261 = 38 degrees from C.A. dip @ 273 = 38 degrees from C.A.
276.5 -	283.0			Black carb shale; broken
283.0 -	319.6	3.5/36.6	96	Coal, crushed carb shale partings @ 302 - 304' (DH-74-4)
319.6 -	320.7			Black carb shale
320.7 -	321.7	0.2/1.0	20	Coal, crushed
321.7 -	322.0			Carb shale; broken
322.0 -	322.4			Coal; crushed
322.4 -	322.8			Carb shale
322.8 -	323.1			Coal crushed
323.1 -	323.8			Carb shale, broken

DIAMOND DRILL CORE LOGGING SHEET

DDH No.DH-74

Footage		Recovery		Description
from	to	feet	%	
323.8 -	324.2			Coal, crushed
324.2 -	324.5			Carb shale; broken
324.5 -	327.0			Coal; crushed. Carb shale parting @ 325.7 - 326.3
327.0 -	328.0			Carb shale
328.0 -	328.6			Coal crushed
328.6 -	329.5			Carb shale
329.5 -	340.0			Black, muddy siltstone; broken dip @ 331' = 50 degrees from C.A dip @ 339' = 55 degrees from C.A
340.0 -	341.1			Medium f.g. sandstone
341.1 -	342.4			Black muddy siltstone; dip @ 341.5' = 48 degrees f/C
342.4 -	343.3			Carb shale, broken
343.3 -	345.0			Coal - crushed
345.0 -	346.5			Black carb-shale
346.5 -	347.0			Coal, crushed
347.0 -	348.8			Black muddy siltstone
348.8 -	350.0			Coal, shaley, crushed
352.0 -	352.0			Muddy siltstone; broken
352.0 -	352.5			Carb shale
352.5 -	353.0			Coal; crushed
353.0 -	353.8			Mudstone
353.8 -	354.4			Coal, crushed
354.4 -	355.3			Mudstone
355.3 -	357.0			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-74

Footage		Recovery		Description
from	to	feet	%	
357.0 -	357.8			Siltstone; broken
357.8 -	358.4			Sandstone
358.4 -	361.6			Siltstone; dip @ 361' = 33 degrees from C.A.
361.6 -	363.6			Sandstone; f.g., med. grey, fractured w/calcite cementation; slickensided.
363.6 -	383.0			Siltstone; dip @ 372' = 45 degrees f/C.A. dip @ 377' = 43 degrees f/C.A.
383.0 -	385.4			Black mudstone
385.4 -	385.7			Coal
385.7 -	386.0			Mudstone
386.0 -	396.7			Medium grey, f.g. sandstone. massive from 386-391 dip @ 391' = 32 degrees f/ C.A. dip @ 393' = 15 degrees f/ C.A. dip @ 395' = 50 degrees f/C.A.
396.7 -	397.8			Siltstone
397.8 -	398.3			Coal, crushed
398.3 -	403.7			Siltstone, sandy from 400' - 401.5
403.7 -	410.0			Black carb shale, broken
410.0 -	420.0			medium grey, f.g. sandstone, dip @ 415' = 47 degrees f/C.A.
420.0 -	420.4			Carb shale, crushed
420.4 -	432.8			Siltstone; minor jointing infilled with calcite Broken
432.8 -	433.0			Coal, crushed
433.0 -	434.8			Carb shale
434.8 -	437.0			Sandstone, f.g. med. grey, coal stringer @ 435.9 - 436.1'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-74

Footage		Recovery		Description
from	to	feet	%	
437.0 -	439.8			Siltstone
439.8 -	440.3			Carb shale
440.3 -	441.5	0.3/1.2	25	Coal, crushed, poor recovery
441.5 -	442.6			Carb shale, broken
442.6 -	448.0			Siltstone
448.0 -	451.6			Sandstone; f.g., med. grey, dip @ 449.0' = 35 degrees f/ C.A.
451.6 -	453.9			Siltstone
453.9 -	455.1			Carb shale
455.1 -	466.0			Siltstone, slightly sandy dip @ 451' = 55 degrees from C.A.
466.0 -	468.0			Carb shale
468.0 -	471.1			Siltstone
471.1 -	471.4			Coal, crushed
471.4 -	507.9			Sandstone dip @ 476' = 57 degrees from C.A. dip @ 491' = 50 degrees from C.A. dip @ 506' = 50 degrees from C.A.
507.9 -	510.0			Black carb mudstone
				T.D. @ 510.0

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 75 Size of core: HQ Total depth: 602 ft
183.5 m

Location: EMGS co-ordinates - N 5588454.081
E 646261.674

Baseline co-ordinates - N 370 + 10.3
W 18 + 54.3

Elevation - ft 5249.2
m 1599.96

Date of starting : Nov. 10, 1976
Date of completion : Nov. 15, 1976

Logging by : David Thacker
on : Nov. 25, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
200	61	86.5 "	N 61 degrees E
400	122	82.6 "	N 72 " E
584	178	88.5 "	N 69 " E

Recovery of coal : $\frac{103.4}{110.1}$ ft = 94%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No DH-75

Footage from	to	Recovery feet	%	Description
0 -	62.0			Overburden
62.0 -	71.2			Carbonaceous shale: bedding to core axis angle @ 67' = 58 degrees.
71.2 -	101.0	29.0/29.8	97	Coal: DH-75-1 88.5 - 90.0 Shaly coal
101.0 -	105.8			Shale
105.8 -	117.0	10.7/11.2	96	Coal: DH-75-2 108.4 - 111.0 Siltstone 112.9 - 113.2 Siltstone
117.0 -	120.0			Shale: bedding to core axis angle @ 119' = 60 degrees
120.0 -	120.9			Coal
120.9 -	165.0			Shale: siltier at top
165.0 -	217.0			Shale: occasional fine grained sandstone interbeds, rare carbonaceous partings Bedding to core axis angle @ 171' = 40 degrees @ 205' = 60 degrees
217.0 -	221.0	4.0/4.0	100	Coal: DH-75-3 Hard, shaly
221.0 -	233.0			Interbedded sandstone and shale: sandstone is fine grained.
233.0 -	239.0	4.9/6.0	77	Coal: DH-75-4
239.0 -	236.5			Sandstone: fine grained, shale interbeds, shale becomes more predominent towards base Bedding to core axis angle @ 247' = 40 degrees
256.5 -	278.4	19.6/21.9	89	Coal: DH-75-5 263.0 - 263.7 : siltstone
278.4 -	281.8			Shale
281.8 -	282-0			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-75

Footage		Recovery		Description
from	to	feet	%	
282.0 -	295.0			Shale: interbedded fine grained sand lenses
295.0 -	295.5			Coal
295.5 -	314.3			Shale: occasional sandstone interbed, occasionally carbonaceous Bedding to core axis angle @ 304' = 51 degrees.
314.3 -	315.4			Coal
315.4 -	347.5			Shale: occasionally carbonaceous, occasionally silty Bedding to core axis angle @ 341' = 54 degrees.
347.5 -	380.5			Sandstone: fine grained, cross bedded numerous shale interbeds.
380.5 -	384.0			Shale: bedding to core axis angle @ 382' = 53 degre plant fragments.
384.0 -	387.9	3.9 3.9	100	Coal: DH-75-6 386.3 - 387.0 - Siltstone
387.9 -	394.8			Siltstone
394.8 -	415.0	19.1 20.2	95	Coal: DH-75-7 409.5 - 410.3 - siltstone
415.0 -	418.9			Shale
418.9 -	430.0	10.2 11.1	92	Coal: DH-75-8 425.0 - 426.0 - siltstone 426.5 - 427.2 - siltstone
430.0 -	432.0			Shale: plant fragments
432.0 -	432.7			Coal
432.7 -	438.9			Carbonaceous shale
438.9 -	439.3			Coal
439.3 -	466.0			Shale: rare sandstone lense, becoming silty towards base. Bedding to core axis angle @ 441' - 57 degrees

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-75

Footage		Recovery		Description
from	to	feet	%	
466.0 -	476.4			Sandstone: fine grained grading to medium towards base.
476.4 -	484.2			Shale: occasionally carbonaceous
484.2 -	491.0			Sandstone: fine grained, minor crossbedding silty lenses
491.0 -	507.5			Interbedded sandstone and shale. Sand is fine grained, shale becomes more frequent downwards Bedding to core angle @ 495' = 45 degrees.
507.5 -	519.5			Shale: rare sandstone lenses
519.5 -	562.0			Shale: occasionally carbonaceous 549' - 561' - fine grained sandstone Bedding to core, axis angle @ 550' = 61 degrees.
562.0 -	564.0	2.0 / 2.0	100	Coal: DH-55-9
564.0 -	6020'			Interbedded sandstone and shale sand is medium grained, shale is occasionally carbonaceous Bedding to core axis angle @ 598' = 61 degrees.
				E O H

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 76 Size of core: HQ Total depth: 535.5ft
163.6 m

Location: EMGS co-ordinates - N 5588417.477
E 646106.613

Baseline co-ordinates - N 370 + 13.8
W 23 + 77.0

Elevation - ft 5295.4
m 1614.04

Date of starting : Nov. 4, 1976
Date of completion : Nov. 9, 1976

Logging by : D. Thacker & D. McKelvie
on : Nov. 24, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
509	155	88.4 "	N 76 degrees E

Recovery of coal : $\frac{95.9}{101.1}$ ft = 95%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-76

Footage		Recovery		Description
from	to	feet	%	
0	47.8			Overburden
47.8	55.7			Shale: with thinly bedded siltstone. Bedding to core axis angle @ 54' = 48 degrees.
55.7	57.0	1.3		Coal
57.0	59.1			Shale
59.1	60.5	1.4		Coal
60.5	69.3			Shale: occasional fine grained sandstone interbeds.
69.3	90.4	19.6/21.1	93	Coal - DH-76-1 top 2' crushed
90.4	102.0			Shale: occasional carbonaceous partings Bedding to core axis angle @ 100' = 39 degrees.
102.0	103.3			Coaly shale
103.3	127.7			Siltstone: occasional fine grained sandstone interbeds.
127.7	142.0			Sandstone: coarse grained, lacks bedding features.
142.0	147.0			Shale: with thinly bedded sandstone.
147.0	147.6	0.6		Coal
147.6	182.0			Shale: occasional thinly bedded fine grained sandstone. Bedding to core axis angle @ 152' = 53 degrees.
182.0	182.5	0.5		Coal
182.5	191.0			Shale: occasionally carbonaceous
191.0	267.1			Sandstone: medium grained, occasional shale beds, Minor crossbedding. Bedding to core axis angle @ 198' = 50 degrees @ 259' = 59 degrees
267.1	285.0	17.9/17.9	100	Coal: DH-76-2 275.6 - 276.1 Carbonaceous shale 279.8 - 282.5 Mudstone

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-76

Footage		Recovery		Description
from	to	feet	%	
285.0	287.6			Carvonaceous shale.
287.6	307.0			Shale: fine grained sand lenses common
307.0	312.0			Sandstone: medium grained
312.0	321.0			Shale: occasional fine grained sandstone lenses Bedding to core axis angle @ 315' = 52 degrees.
321.0	324.7			Coaly shale
324.7	363.0			Sandstone: fine grained, occasionally medium grained numerous shale interbeds, amount of shale increases downwards. Bedding to core axis angle @ 362' = 60deg
363.0	412.4			Shale: occasional fine grained. Sand interbeds Sand becomes more frequent and coarser grained downwards. Bedding to core axis angle @ 410' = 51 de
412.4	414.9	2.5 2.5	100	Coal: DH-76-3
414.9	423.3			Sandstone: fine grained, occasional shale interbeds.
423.3	424.8			Shale
424.8	426.3	1.5		Coal
426.3	427.0			Carbonaceous shale
427.0	453.0	25.0 26.0	96	Coal: DH-76-4 432.0 - 433.9 Mudstone 437.0 - 438.3 Coaly shale 442.0 - 443.5 Mudstone 446.0 - 446.3 Mudstone 447.0 - 448.0 Mudstone Several minor (less than 0.1') shaly sections
453.0	458.2			Shale: slightly carbonaceous
458.2	464.1	5.6 5.9	95	Coal: DH-76-5 Shaly towards bottom @ 466.0 = .1" Marcasite

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-76

Footage from	Footage to	Recovery feet	Recovery %	Description
464.1	473.8			Shale: carbonaceous at top, sandy at base. Bedding to core axis angle @ 473' = 60 degrees.
473.8	476.0	2.2 / 2.2	100	Coal: DH-76-6
476.0	482.3			Shale: rare fine grained sandstone lenses, bottom 2' is carbonaceous
482.3	478.0	4.5 / 4.7	94	Coal: DH-76-7 Shaly
487.0	493.0			Carbonaceous shale
493.0	496.3			Shale: occasional fine grained sandstone interbeds.
496.3	516.5	18.5 / 20.2	92	Coal: DH-76-8 badly crushed, minor marcasite at 500.9' . 497.0 - 498.3 Carbonaceous shale 500.2 - 500.7 " " 505.8 - 506.6 " " 508.0 - 510.2 " "
516.5	527.5			Carbonaceous shale: Bedding to core axis angle @ 526' = 57 degrees.
527.5	535.5			Sandstone: fine and medium grained
				E O H

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 77 Size of core: HQ Total depth: 552 ft
168.2 m

Location: EMGS co-ordinates - N 5588381.826
E 645963.084

Baseline co-ordinates - N 370 + 11.4
- W 28 + 62.2

Elevation - ft 5346.6
m 1629.64

Date of starting : Oct. 27, 1976
Date of completion : Nov. 3, 1976

Logging by : D. McKelvie & D. Thacker
on : Nov. 12, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
541	165	80.0 "	N 83 degrees E

Recovery of coal : $\frac{64.1}{70.2}$ ft = 92%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-77

Footage		Recovery		Description
from	to	feet	%	
0	- 12.0			Overburden
12.0	- 24.0			Shale: occasional fine grained sandstone interbeds Bedding to core axis angle @ 14' = 45 degrees.
24.0	- 31.6	6.0/7.6	79	Coal: sample DH-77-1 27.9 - 28.4 Carb Shale 29.1 - 29.5 " " 30.1 - 30.3 " "
31.6	- 44.0			Sandstone: fine grained, interbedded shale, carbonaceous partings.
44.0	- 47.0	3.0/3.0	100	Coal: sample DH-77-2
47.0	- 50.0			Shale
50.0	- 50.8			Coal: Shaly
50.8	- 69.1			Shale: silty lenses, bedding to core axis angle @ 63' = 50 degrees.
69.1	- 70.5			Coaly shale
70.5	- 72.9			Shale
72.9	- 77.7	3.9/4.8	81	Coal: sample DH-77-3
77.7	- 99.0			Shale: occasional carbonaceous partings
99.0	- 107.0			Sandstone: fine grained, interbedded shale.
107.0	- 112.0	3.9/5.0	77	Coal: sample DH-77-4
112.0	- 119.0			Carbonaceous shale: occasional fine grained sand interbeds.
119.0	- 127.8	7.8/8.1	96	Coal: sample DH-77-5
127.8	- 166.0			Siltstone: Bedding to core axis angle @ 137' = 53 degrees. occasionally shaley or carbonaceous
166.0	- 171.1	3.9/5.1	76	Coal: sample DH-77-6

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-77

Footage		Recovery		Description
from	to	feet	%	
171.1	202.5			Sandstone: fine grained, occasional shale interbeds crossbedded. Bedding to core axis angle @ 173' = 47 degrees.
202.5	222.0			Siltstone
222.0	231.3			Shale: abundant plant fragments
231.3	236.4			Sandstone: medium grained, cross bedded. Bedding to core axis angle @ 233' = 58 degrees.
236.6	244.4			Carbonaceous shale: interbedded fine grained sandstone
244.4	247.0			Coal
247.0	254.5			Sandstone: fine grained interbedded with carbonaceous shale
254.5	258.3	3.5 3.8	92	Coal: sample DH-77-7 256.0 - 256.5 mudstone
258.3	273.5			Sandstone: fine grained, occasional shale interbeds
273.5	281.0			Shale
281.0	281.7			Coal: shaly
281.7	297.7			Siltstone: with occasional thinly bedded sandstone or shale. Bedding to core axis angle @ 296 ' = 58 degrees.
297.7	302.0	4.3 4.3	100	Coal: sample DH-77-8
302.0	308.4			Shale: carbonaceous laminae
308.4	308.9			Coal
308.9	312.3			Shale: occasionally carbonaceous
312.3	313.2			Coal
313.2	325.0			Shale: occasionally carbonaceous

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-77

Footage		Recovery		Description
from	to	feet	%	
325.0	352.4			Siltstone: Bedding to core axis angle @ 342' = 49 degrees.
352.4	421.1			Shale: occasionally carbonaceous. occasional fine grained sand or siltstone interbed Bedding to core axis angle @ 403' = 45 degrees @ 416' = 42 degrees.
421.1	449.2	27.5 / 28.1	98	Coal: sample DH-77-9 421.1 - 426.5 , Badly crushed
449.2	459.0			Interbedded sandstone and shale Sand is fine grained. Bedding to core axis angle @ 453' = 55 degrees.
459.0	481.8			Shale: occasional carbonaceous or snady intervals.
481.8	482.7			Coal: broken
482.7	517.0			Sandstone: fine grained, cross bedded, rare shale interbeds. Bedding to core axis angle @ 516' = 49 degrees.
517.0	552.0			Shale: occasional sandstone interbed, occasional plant fragment.
				E O H

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 78 Size of core: HQ Total depth: 632 ft
193 m

Location: EMGS co-ordinates - N 5588345.449
E 645818.507

Baseline co-ordinates - N 370 + 07.5
W 33 + 51.3

Elevation - ft 5428.3
m 1654.55

Date of starting : Nov. 9, 1976
Date of completion : Nov. 16, 1976

Logging by : D. McKelvie
on : Nov. 18, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	83.6 "	N 81 degrees E
394	120	79.5 "	N 83 " E
617	188	74.8 "	N 79 " E

Recovery of coal : $\frac{20.6}{25.5}$ ft = 81%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No DH-78

Footage		Recovery		Description
from	to	feet	%	
0	- 16.0			Casing
16.0	- 60.0			Siltstone: variable grey to dark grey 35.0 - 36.0 coarse sandstone. - indistinct bedding 44 degrees C.A.
60.0	- 63.5	3.5/3.5	100	Coal: solid core Sample DH-78-1 60.0 - 62.1 Shaly 62.5 - 63.1 siltstone
63.5	- 136.3			Siltstone: sandy between 90.5 and 115.0 @ 90.5 - 40 degrees C.A. 98.5 - 3" cool 106.2 - 6" cool 114.2 - 6" cool
135.3	- 142.0	3.7/5.7	65	Coal: Sample DH-78-2 minor shaly partings 140 - 142 lost core
142.0	- 236.0			Siltstone: some sandstone interbeds average core angle 48 degrees C.A. @ 144.0 - 6" cool 147.9 - 149.0 Cool becomes massive @ 164.0 184.3 - 186.5 carb shale and coal 191.5 - 192.0 carb shale 226.5 - 227.0 cool
236.0	- 237.8	1.8/1.8	100	Coal
237.8	- 252.0			Sandstone: light grey, well cross bedded some narrow siltstone beds - 45 degrees C.A. 242.0 - 242.8 cool 242.8 - 243.6 mudstone 243.6 - 244.2 cool 248.0 - 249.0 cool
252.0	- 276.0			Siltstone: massive, indistinct bedding 268.5 - 269.7 sandy, well bedded
276.0	- 308.0			Sandstone: well banded - 27 degrees C.A. - silty @ 293.0 - 4" cool 297.2 - 298.3 cool
308.0	- 323.0			Siltstone: sandy sections 311.0 - 311.8 cool

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-78

Footage		Recovery		Description
from	to	feet	%	
323.0	332.6			Sandstone: well banded
332.6	403.0			Siltstone with sandstone interbeds - some black siltstone beds.
403.0	425.0			Sandstone: light grey, well banded, cross bedded, 45 degrees - 60 degrees C.A.
425.0	442.0			Siltstone: with sandstone interbeds
442.0	457.0			Sandstone: medium grained, massive, blocky - becomes more shaly @ 452.0.
457.0	471.0			Siltstone: with sandstone interbeds - 40 degrees C.A. - some minor shaly coal.
471.0	485.2			Sandstone: light grey, well banded
485.2	507.0			Siltstone: minor sandy sections - badly crushed core 492.5 - 496.0
507.0	558.9			Siltstone with sandstone interbeds 43 degrees CA
558.9	563.4	2.0 / 4.5	44	Coal: badly broken - 10% shale frags. sample DH-78-3
563.4	576.8			Siltstone: dark grey, some carbonaceous sections.
576.8	584.2	7.0 / 7.4	95	Coal: sample DH-78-4 578.2 - 579.1 siltstone
584.2	604.4			Siltstone with sandstone interbeds 592.7 - 593.7 cool 597.0 - 597.8 cool
604.4	607.0	2.6 / 2.6	100	Coal - sample DH-78-5
607.0	632.0			Sandstone - some silty bands 40 degrees C.A. 612.5 - 613.3 cool 616.0 - 617.0 cool 620.1 - 620.9 cool End of hole - 632.0

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 79 Size of core: HQ Total depth: 522 ft
159.1 m

Location: EMGS co-ordinates - N 5588313.505
E 645672.163

Baseline co-ordinates - N 370 + 19.1
W 38 + 42.6

Elevation - ft 5521.0
m 1682.80

Date of starting : Nov. 17, 1976
Date of completion : Nov. 20, 1976

Logging by : G.C. Singhai
on : Nov. 25, 1976

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
164	50	88.0 "	N 86 degrees E
328	100	85.0 "	N 78 " E
492	150	82.0 "	N 79 " E

Recovery of coal : $\frac{22.4}{25.7}$ ft = 87%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. 79

Footage		Recovery		Description
from	to	feet	%	
0	12			Overburden (No Core)
12	21.5			Sandstone: Light grey, medium grained, occasionally streaks of coal and fragments of plants, bedding 45° to core axis at 21'.
21.5	29.3			Shale: Grey, very fine grained with stringer of coal. Coaly shale at 25.3 - 25.6. Thin interbeds of sandstone. Coal seam: 28.5 - 27.9
29.3	42.6			Sandstone: Grey to light grey, fine to medium grained with thin streaks of coal, coal seam 37.0 - 37.15, coaly shale 41.4 - 41.6.
42.6	46.3	2.7/3.7	72.9	Coal Seam: Parting of carbonaceous shale 43.6 - 44, and shale 44.7 - 44. Sampled DH-79-1
46.3	87.0			Sandstone: Light grey, fine to medium grained with pieces of coal throughout the section and fragments of plants, interbeds of shale, thin coal seam 46.9 - 47, 49.4 - 50.1, 70.4 - 71.1. Bedding 50° to core axis at 62'.
87.0	92.6			Siltstone: Grey, very fine grained, with thin interbeds of shale and sandstone, fragments of plants.
92.8	100.6	5.5/7.8	70.5	Coal Seam: Sampled DH 79-2 Broken core, parting of coaly shale 47.3 - 48.2, 99.6 - 100.
100.6	102.4			Siltstone: Dark grey, fine grained with fragments of plants, lower contact graduational.
102.4	109.2			Sandstone: Grey coloured, fine to medium grained with thin interbeds of siltstone occasionally pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
109.2	113			Siltstone: Dark grey, very fine grained with with fragments of plants.
113	125.8			Sandstone: Light grey, medium grained cross-bedded, and pieces of coal, bedding 40° to core axis.
125.8	128			Siltstone: Dark grey, very fine grained and interbeds of sandstone.
128	138.2			Sandstone: Grey, fine to medium grained with interbeds of siltstone, bedding 40° to core axis, lower contact sharp at 60° to core axis.
138.2	142.2			Siltstone: Dark grey, very fine grained.
142.2	157			Sandstone: Grey, fine grained with interbeds of siltstone and mudstone. A thin coal seam at 144.65 - 144.7, pieces of coal bedding 50° at 152.
157	161			Shale: Dark grey, very fine grained, fragments of plants, occasionally thin seams of coal.
161	199.5			Sandstone: Grey to light gray fine to medium grained with interbeds of shale and siltstone. Small pieces of coal and occasionally thin seams of coal, crossbedded. Bedding 40° at 195.
199.5	201.6	1.9 1.9	100	Coal Seam: Sampled DH 79-3 Dirty coal, shaly coal 200.7 - 201.2.
201.6	217			Sandstone: Grey to light grey, fine to medium grained, interbedded with silt and mudstone, occasionally thin seams of coal, pieces of coal throughout section, bedding 45° to core axis at 216.5.
217	217.7			Mudstone: Grey, with fragments of plants.
217.7	219.7	2 2	100	Coal Seam: Dirty coal, shaly coal 217.7 - 218.2, and parting of mudstone: 218.7- 219.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
219.7	253.5			Sandstone: Light grey, medium grained crossbedded interbeds of siltstone and sandstone, occasionally smally pieces of coal bedding 55° to core axis at 242'. Lower contact sharp and 50° to core axis.
253.4	261.1			Mudstone: Dark grey carbonaceous shale 254.6 - 255.2, coaly shale 258.7 - 260.0.
261.1	297			Sandstone: Light grey to grey, fine to medium grained with interbeds of siltstone and shale, pieces of coal, crossbedded, bedding 40° to core axis at 287.
297	298			Coal Seam: Broken core.
298	302			Siltstone: Dark grey, with fragments of plants, slightly carbonaceous, broken core.
302	311			Sandstone: Light grey to grey, fine to medium grained with interbeds of siltstone and sandstone, occasionally small pieces of coal.
311	313.5			Mudstone: Dark grey with fragments of plants carbonaceous 313.00 to 313.5.
313.5	319.8	6.3 6.3	100	Coal Seam: Sampled DH 79-4 Shale coal 310.5 - 313.8, mudstone 314.0 - 314.2, 316 - 317.1, Broken core.
319.8	323			Siltstone: Dark grey, very fine grained with interbeds of mudstone. Pieces of coal and thin seams of coal fragments of coal.
323	328.9			Sandstone: Light grey, medium grained, small pieces of coal bedding 45° to core axis.
328.9	330.2	1.3 1.3	100	Coal Seam: Core broken.
330.2	331.8			Shale: Dark grey, very fine grained, fragments of plants.

DIAMOND DRILL CORE LOGGING SHEET

DDH No

Footage		Recovery		Description
from	to	feet	%	
331.8	344			Sandstone: Grey to dark grey, fine to medium grained, with interbeds of mudstone and siltstone. Crossbedded, pieces of coal.
344	346			Shale: Dark grey, very fine grained, fragments of plants and number of thin coal seams.
346	348.2			Sandstone: Grey, fine grained with fragments of plants.
348.2	350	1.75 / 1.8	97	Coal Seam: Broken core, shaly coal 349.7 - 350.
350	361.8			Sandstone: Light grey to grey, fine grained with interbeds of shale and siltstone, occasionally thin coal seams, crossbedded.
361.8	362.9	1.1 / 1.1	100	Coal Seam: Dirty coal, mostly shaly coal.
362.9	388.0			Sandstone: Light grey, fine grained, crossbedded. Pieces of coal and occasionally thin coal seams.
388	397			Shale: Dark grey, very fine grained with fragments of plants. Numerous thin coal seams from 392 - 395.5.
397	424			Sandstone: Light grey, fine grained with interbeds of shale, crossbedded, bedding 40° to core axis.
424.0	429.2			Mudstone: Dark grey, interbeds of thin sandstone, fragments of plants and numerous coal seams.
429.2	432.5			Sandstone: Light grey, fine grained interbeds of shale, pieces of coal.
432.5	437			Shale: Dark grey, slightly carbonaceous with fragments of plants and numerous thin coal seams.
437	444.5			Sandstone: Light grey to grey, fine grained with interbeds of siltstone. Pieces of coal, coal seam 442.0 - 442.3, bedding to core axis at 446.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
444.5	454			Siltstone: Grey, very fine grained, lower lower contact sharp to core axis.
454	471.5			Sandstone: Light grey to grey fine grained interbeds of siltstone, crossbedded, small pieces of coal, occasionally thin coal seams, bedding 57° to core axis.
471.5	473			Siltstone: Grey, very fine grained.
473	477			Carbonaceous Shale: Dark grey, numerous thin coal seams, fragments of plants. Broken core.
477	480			Shale: Grey, interbeds of of sandstone.
480	483.5			Sandstone: Light grey, fine grained with pieces of coal.
483.5	493.8			Shale: Dark grey, with a number of thin coal seams, interbeds of sandstone and siltstone. Coal seam 492.2 - 492.7
493.8	522			Sandstone: Light grey to grey, fine grained, interbeds of shale, crossbedded, occasionally pieces of coal, coal seam 500.5 - 500.7, bedding 50° to core axis at 498'.
				End of Hole at 522'

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 80 Size of core: HQ Total depth: 587.0 ft
178.9 m

Location: EMGS co-ordinates - N 5588719.703
E 646014.997

Baseline co-ordinates - N 380 + 48.3
W 24 + 34.8

Elevation - ft 5304.9
m 1616.93

Date of starting : Jan. 21, 1977
Date of completion : Jan 25, 1977

Logging by : G.C. Singhai
on : Jan. 26, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	86.0 "	S 79 degrees E
394	120	83.1 "	N 81 " E
558	170	80.4 "	N 81 degrees E

Recovery of coal : $\frac{96.5}{126.0}$ ft = 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-80

Footage		Recovery		Description
from	to	feet	%	
0	10.8			Overburden (No core)
10.8	20.3			Siltstone: Dark grey, very fine grain interbeds of sandstone and shale. Bedding 60° to core axis at 15.4'
20.3	22.0			Sandstone: Grey, medium grain, crossbedded, pieces of coal
22.0	23			Mudstone: Dark grey, fragments of plants, pieces of coal.
23.0	25.2	2.2 / 2.2	100	Coalseam: Sampled (DH 80-1)
25.2	32.0			Sandstone: Grey, fine grain, interbeds of siltstone, bedding 50° to core axis at 30'.
32.0	42.0			Shale: Dark grey, liminated, interbeds of siltstone, coalseam 36.2-37.8
42.0	46.0			Sandstone: Dark grey, fine grain interbeds of shale and siltstone.
46.0	52			Siltstone: Dark grey, very fine grain, fragments of plants.
52.0	68.6			Sandstone: Grey, fine grain, interbeds of siltstone and shale, pieces of coal, occasionally thin coal seams. Coal seam 61.7 - 62.0 Bedding 40° to core axis at 68'.
68.6	76.0			Siltstone: Dark grey, very fine grain, fragments of plants, coalseam 74.5 - 75.5
76.0	137.0			Sandstone: Grey to dark grey, fine grain, interbeds of shale and siltstone, pieces of coal crossbedding, Bedding 50° to core axis at 112'.
137.0	154.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, pieces of coal, and fragments of plants.
154.0	164.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal, Bedding 50° to core axis at 157'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 80

Footage		Recovery		Description
from	to	feet	%	
164.0	180.2	14.5/16.2	90	CoalSeam; Sampled, (DH-80-2) Partings Mudstone: 171.9 - 172.0, 174.0 - 176.0
180.2	206.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal. Coalseam: 182.3 - 183.2, Bedding 40° to core axis at 181.5
206.0	216.8			Shale: Dark grey, liminated, fragments of plants, interbeds of siltstone and sandstone. Bedding 50° to core axis at 211'.
216.8	231.7			SAndstone: Grey, fine grain, interbeds of shale and sandstone. Crossbedded, pieces of coal,' Bedding 60° to core axis.
231.7	260.0	15.5/28.3	55	Coalseam: Sampled (DH 80-3) Parting Mudstone 241.8 - 242.0, 246.6 - 248.6, 252.5 - 252.9 254.1 - 256.7
260.0	262.8			Mudstone: Dark grey, carbonaceous, Sandstone 261 - 262
262.8	265.0	1.8/2.2	82	Coalseam: Sampled (DH 80-4)
262.8	268.7			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams.
268.7	271.7	2.7/3.0	90	Coalseam: Sampled (DH 80-5) Parting mudstone: 270.0 - 270.3
271.7	274.8			Sandstone: Dark grey, fine grain, interbeds of shale and siltstone, Bedding 50° to core axis at 273'.
274.8	279.4	3.9/4.6	85	Coalseam: Sampled (DH 80-6)
279.4	289.8			Mudstone: Dark grey, interbeds of sandstone, fragments of plants, pieces of coal, numerous thin coal seams. Coal seam 289 - 289.7
289.8	295.6			Sandstone: Grey, fine grain, interbeds of siltstone, pieces of coal, Bedding 50° to core axis at 291'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 80

Footage		Recovery		Description
from	to	feet	%	
295.6	310.4			Mudstone: Dark grey, interbeds of sandstone, fragments of plants, numerous thin coal seams.
310.4	315.0	4.0 4.6	87	Coalseam: Sampled (DH 80-7) Parting: mudstone : 313.0 - 313.5
315.0	318.3			Mudstone: Dark grey, carbonaceous, fragments of plants, numerous thin coal seams.
318.3	332.0	11.0 13.7	80	Coalseam: Sampled (DH 80-8) Parting: Mudstone 320.7 - 321
332.0	339			Mudstone: Dark grey, fragments of plants. Coalseam: 333.3 - 333.8, 335.8 - 337.0
339.0	363.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal, Bedding 60° to core axis at 354'
363.0	385.7			Shale: Dark grey, liminated, interbeds of siltston and sandstone, fragments of plants. Bedding 60° to core axis at 381.0 occasionally thin coal seams.
385.7	393.1	5.9 7.4	80	Coalseam: Sampled (DH 80-9)
393.1	399.5			Siltstone: Dark grey, very fine grain, interbeds of shale, fragments of plants, pieces of coal.
399.5	422.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal, Bedding 50° to core axis at 418.0'
422.0	439.6	14.2 17.6	81	Coalseam: Sampled (DH 80-10) Parting Mudstone (426.4 - 426.5) 433.7 - 435.2 , 437.0 - 437.9
439.6	534.0			Sandstone: Grey, to dark grey, fine grain, interbeds of siltstone and shale. Crossbedded, pieces of coal, Bedding 60° to core axis at 466' and bedding 65° to core axis at 500' core broken 153 - 534')

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 80

Footage		Recovery		Description
from	to	feet	%	
534.0	539.4			Mudstone: Dark grey, fragments of plants, interbeds of shale. Bedding 60° to core axis at 538.5'
539.4	576.8	23.0 28.4	81	Coalseam: Sampled (DH 80-11) Partings Mudstone: 553.0 - 553.1, 554.3 - 556.0
567.8	583.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, pieces of coal and thin seams of coal, Bedding 55° to core axis at 583.0'
583.0	587.0			Mudstone: Dark grey, fragments of plants, stringers of coal, coalseam 584.8 - 585.3, 586.0 - 586.3
				END OF HOLE AT 587.0
				G.C. Singhai
				Jan. 26/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 81 Size of core: HQ Total depth: 715 ft
217.9 m

Location: EMGS co-ordinates - N 5588670.362
E 645872.444

Baseline co-ordinates - N 380 + 01.5
W 29 + 27.5

Elevation - ft 5328.3
m 1624.07

Date of starting : Jan. 21, 1977
Date of completion : Jan. 26, 1977

Logging by : G.C. Singhai
on : Feb. 2, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
230	70	86.0 "	N 66 degrees E
460	140	83.5 "	N 67 " E
690	210	77.4 "	N 74 " E

Recovery of coal : $\frac{43.1}{55.0}$ ft = 78%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 81

Footage		Recovery		Description
from	to	feet	%	
0	30.0			Overburden (No core)
30.0	43			Siltstone: Dark grey, very fine grain, interbeds of sandstone. Coalseam 32.0 - 33.0
43.0	47.8	3.0/4.8	63	Coalseam: Sampled (DH - 81-1) Parting Mudstone - 44.0 - 44.5
47.8	48.7			Sandstone: Grey, fine grain, crossbedded, pieces of coal, numerous thin coal seams. Bedding 60° to core axis at 75' interbeds of shal and siltstone. Coalseam 79.0 - 80.0, 88.5 - 89.2, Bedding 50° to core axis at 134'.
148.7	154.7	3.9/6.0	65	Coalseam: Sampled (DH 81-2) Parting - Mudstone - 151.8 - 152
154.7	188.2			Sandstone: Grey to light grey, fine grain, interbeds of shale and siltstone, Bedding 60° to core axis at 187, pieces of coal.
188.2	210.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone. pieces of coal, fragments of plants, bedding 60° to core axis at 198'
210.0	215.0	3.6/5.0	72	Coalseam: Sampled (DH - 81-3)
215.0	219.0			Mudstone: Carbonaceous and numerous thin coal seams.
219.0	244.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal Bedding 60° to core axis at 238'
244.0	252.5			Mudstone: Dark grey, fragments of plants, pieces o coal, numerous thin coal seams.'
252.5	254.5	1.5/2.0	75	Coalseam: Sampled (DH - 81-4)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 81

Footage		Recovery		Description
from	to	feet	%	
254.5	260.0			Mudstone: Dark grey, fragments of plants numerous thin coal seams.
260.0	287.0			Sandstone: Grey, fine grain, interbeds of siltstone, pieces of coal, occasionally thin coal seams, cross bedded, bedding 60° to core axis at 268'
287.0	294.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams 288.7 - 289.5
295.0	296.0	1.5 / 2.0	75	Coalseam: Sampled (DH 81-5)
296.0	310.0			Sandstone:Grey, fine grain, interbeds of shale, core badly broken.
310.0	316			Mudstone: Dark grey, numerous thin coal seams. Coal seam 313 - 314 core badly broken.
316.0	347.0			Sandstone: Grey, fine grain, to medium grain, pieces of coal, occasionally thin coal seams. core badly broken.
347.0	371.5			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. Coalseam 354.7 - 355.2 and 359.5 - 359.7 core badly broken.
371.5	398.7			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60° to core axis at 372.5' and Bedding 30° to core axis at 398', core badly broken.
398.7	403.5			Mudstone: Dark grey, fragments of plants, pieces of coal, core broken.
403.5	411.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale, pieces of coal, Bedding 60° to core axis at 405.0'.
411.0	417.0			Shale: Dark grey, laminated, fragments of plants.
417.0	427.0	8.3 / 10.0	83	Coalseam: Sampled (DH 81-6)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 81

Footage		Recovery		Description
from	to	feet	%	
427.0	442.0			Mudstone: DArk grey, fragments of plants, interbeds of siltstone, pieces of coal.
442.0	466.0			Sandstone: Grey, fine to medium grain, pieces of coal, bedding 60° to core axis at 457.0, occasionally thin coal seams.
466.0	472			Mudstone: Dark grey, fragments of plants, occasionally stringers of coal.
472.0	492.0			Sandstone: Grey, fine to medium grain, crossbedd interbeds of siltstone, pieces of coal, bedding 60° to core axis at 475, coal seam 482.8 - 484.0
492.0	513.4			Mudstone: Dark grey, fragments of plants, interbeds of siltstone, bedding 50° to core axis at 495', laminated.
513.4	516.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal.
516.0	535.0			Shale: Dark grey, interbeds of mudstone (carbonaceous) and sandstone numerous thin coal seams. Coal seam 532.4 - 543.0 core badly broken.
535.0	560.0			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone and shale, pieces of coal, Bedding 60° to core axis at 542.0' occasionally thin coal seams.
560.0	569.5			Mudstone: Dark grey, interbeds of siltstone and sandstone, fragments of plants, pieces of coal.
569.5	576.0			Sandstone: Light grey, fine grain, crossbedded, pieces of coal, bedding 60° to core axis at 574.0'
576.0	579.0			Shale: Dark grey, laminated interbeds of sandstone, slightly carbonaceous, thin coal seams core badly broken.
579.0	588.0	8.0 9.0	89	Coalseam: Sampled (DH 81-7)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 81

Footage		Recovery		Description
from	to	feet	%	
588.0	640.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coa seams. Bedding 60° to core axis at 617'
640.0	647.0			Siltstone: Dark grey, very fine grain, interbeds of shale, fragments of plants, occasionally pieces of coal. and thin coal seams. Bedding 40° to core axis at 639'
647.0	666.5			Shale: Dark grey, laminated, fragments of plants, pieces of coal and occasionally thin pieces of coal seams.
666.5	686.5			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal bedding 60° to core axis at 685.0'
686.5	688.5			Shale: Dark grey, fragments of plants, pieces of coal.
688.5	704.7	13.3 16.2	82	Coalseam: Sampled (DH 81-8) Parting: Mudstone - 695.1 - 695.4 698.0 - 699.3, 704.0 - 704.1
704.7	710.0			Shale: Dark grey, fragments of plants, laminated Bedding 60° to core axis at 707.0, Badly broken cor
710.0	715.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, occasionally pieces of coal badly broken.
				END OF HOLE AT 715.0
				G.C. Singhai
				Jan. 27/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 82 Size of core: HQ Total depth: 832.0 ft
253.6 m

Location: EMGS co-ordinates - N 5588634.542
E 645724.094

Baseline co-ordinates - N 380 + 02.3
W 34 + 28.2

Elevation - ft 5363.2
m 1634.70

Date of starting : Jan. 27, 1977
Date of completion : Feb. 1, 1977

Logging by : G.C. Singhai
on : Feb. 2, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
262	80	83.8 "	N 75 degrees E
535	160	76.5 "	N 75 " E
245	245	less than 70 D	N 74 " E

Recovery of coal : $\frac{61.3}{71.7}$ ft = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 82

Footage from	Footage to	Recovery feet	Recovery %	Description
0	20			Overburden (No core)
20.0	31.2			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 50° to core axis at 27.0, occasionall thin coal seams. Coal seam 20.0 - 20.7.
31.2	33.7	1.2 / 2.5	48	Coalseam: Sampled (DH 82-1).
33.7	37.5			Sandstone: Light grey, fine grain, crossbedded, pieces of coal, thin coal seams.
37.5	40.0	2.6 / 2.5	80	Coalseam: Sampled (DH 82-2)
40.0	42.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
42.0	102.5			Sandstone: Light grey to grey, fine grain, interbed of siltstone, and shale, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 40° to core axis at 55.0' and 60° to core axis at 74.0'
102.5	119.0			Mudstone: Dark grey, fragments of plants, pieces of coal , thin coal seams. Coal seam. 105.5 - 106. interbeds of silt and sandstone, bedding 60° to core axis at 109.0'.
119.0	130.2	10.0 / 11.2	89	Coalseam: Sampled (DH 82-3) Parting Mudstone: 121.2 - 121.4, 123.5 - 123.9, 126.5 - 126.8
130.2	207.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal, Bedding 60° to core axis at 142.0, coal seam: 133.0 - 134 0, Bedding 60° to core axis at 188.
207.0	212.0			Shale: Dark grey, laminated, interbeds of siltstone pieces of coal and fragments of plants, thin coal seams.
212.0	356.5			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces ofcoal , occasional thin coal seams. Bedding 60° to core axis at 214' and at 280.0'. Coal seam 255.5 - 256.5, 260.4 - 260 Bedding 70° to core axis at 282.0 and 60° at 322.0 and 65° to core axis at 352.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 82

Footage		Recovery		Description
from	to	feet	%	
365.5	362.5			Siltstone: Dark grey, very fine grain, fragments of plants, interbeds of shale, occasionally thin coal seams. Coal seam 361.5 - 362 (core ground).
362.5	405.0			Sandstone: Light grey, fine grain, interbeds of siltstone and shale, crossbedded, Bedding 60° to core axis at 373.0. pieces of coal, occasionally thin coal seams. Coal seam
405.0	409.2	2.8 4.2	67	Coal seam: Sampled (DH 82-4) Parting - Mudstone: 407.0 - 207.6, 408.6 - 408.7
409.2	412.6			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Coal seam 410.2 - 410.7
412.6	421.4	7.6 8.8	86	Coalseam: Sampled (DH 82-5) Parting: Mudstone, 415.0 - 415.1, 416.0 - 417.1
421.4	424.0			Mudstone: Dark grey, slightly carbonaceous numerous thin coal seams, fragments of plants.
424.0	427.2			Sandstone: Grey, fine grain, interbeds of mudstone, slightly silty, crossbedded, pieces of coal.
427.2	427.9			Coalseam:
427.9	433.4			Mudstone: Dark grey, carbonaceous, numerous thin coal seams.
433.4	440.0	5.9 6.6	89.3	Coalseam: Sampled (DH 82-6) Parting - Mudstone 434.6 - 435.3, 440.
440.0	444.0			Mudstone: Dark grey, fragments of plants (core broke
444.0	452.8	7.6 8.8	86	Coalseam: Sampled (DH 82-7) Parting - Mudstone - 445.5 - 446.8, 448.5 - 449.8
452.8	457.2			Siltstone: Dark grey, very fine grain, interbeds of shale, (carbonaceous shale 456.0 - 457.0)
457.2	474.2			Sandstone: Dark grey, fine grain, interbeds of siltstone and mudstone, crossbedded, pieces of coal, occasionally thin coal seams, bedding 60° to core axis at 459.0', Coal seam 468.0 - 469.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 82

Footage		Recovery		Description
from	to	feet	%	
474.2	477.0	2.6/2.8	92.8	Coalseam: Sampled (DH 82-8)
477.0	485.2			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, pieces of coal, minor thin coa seams, coal seam 478.7 - 478.9, 480.0 - 480.3
485.2	495.2			Sandstone: Grey, fine grain, crossbedded, interbed of shale and siltstone, Bedding 60° to core axis at 486.0, carbonaceous shale 490.0 - 492.3
495.2	502.3			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. Slightly carbonaceous, Coal seam: 496.8 - 497.2
502.3	532.0			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of ocal, Bedding 60° to core axis at 503.5' Coal seam 515.8 - 516.0 Bedding 50° to core axis at 510.0'
532.0	539.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, occasionally pieces of coal and fragments of plants.
539.0	569.2			Sandstone: Grey to fine grain, interbeds of siltsto crossbedded, pieces of coal, Bedding 60° to core axis at 549.0' Coal seam :564.7 - 565.7
569.2	573.0	3.2/3.8	84	Coalseam: Sampled (DH 82-9) Parting: Carbonaceous mudstone 571 - 572.0
573.0	622.7			Sandstone: Grey to light grey, fine grain, cross-bedded, pieces of coal bedding 61° to core axis at 576.0 and 60° to core axis at 592.0' interbeds of siltstone and shale.
622.7	642.0			Siltstone: Dark grey, very fine grain, occasionally fragments of plants. carbonaceous shale 640.5 - 642.0
642.0	645.7	3.6/3.7	97.2	Coalseam: Sampled (DH 82-10)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 82

Footage		Recovery		Description
from	to	feet	%	
645.7	652.0			Shale: Dark grey, slightly laminated, fragments of plants, pieces of coal.
652.0	671.0			Sandstone: Grey, to light grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal, Bedding 60° to core axis at 658'
671.0	687.0			Siltstone: Dark grey, very fine grain, interbeds of shale, occasionally fragmentsof plants.
687.0	706.0			Shale: Dark grey, slightly liminated, interbeds of siltstone and sandstone, fragments of plants, thin coal seams. Bedding 60° to core axis at 701'
706.0	720.0			Sandstone: Grey fine grain, interbeds of siltston and shale, crossbedded, Bedding 60° to core axis at 714.'
720	730.0			Shale: Dark grey, interbeds of siltstone, fragments of plants, occasionally thin coal seams. Coal seams 728.7 - 728.8, 729.5 - 729.7
730.0	733.2			Siltstone: Dark grey, very fine grain, fragments of plants.
733.2	737.5			Shale: Dark grey, laminated, pieces of coal, thin coal seams.
737.5	751.3	12.8 / 13.8	93	Coalseam: Sampled (DH 82-11)
751.3	763.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, thin coal seams. Bedding 60° to core axis at 753.0'.
763.0	777.9			Siltstone: Dark grey, very fine grain, interbeds & shale. thin coal seams.
777.9	784.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone. Bedding 70° to core axis at 784.0'
784.0	792.5			Shale: Dark grey, liminated, thin coal seams fragments of shale, coal seam: 785.5 - 786.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 82

Footage		Recovery		Description
from	to	feet	%	
792.5	801.5			Sandstone: Dark grey to grey, fine grain, crossbedded, pieces of coal, Bedding 70° to core axis at 796.0°
801.5	804.5	2.0/3.0	66.6	Coalseam: Sampled (DH 82-12)
804.5	815.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60° to core axis at 811.0'
815.5	832.0			Mudstone: Dark grey, interbeds of siltstone and sandstone, fragments of plants. Thin coal seams. Coal seam 818.0 - 818.1 , 826.0 - 827.0 Bedding 60° to core axis at 828.0'.
				END OF HOLE AT 832.0'
				G.C. Singhai
				Feb. 2/77

K-ELK RIVER 77(3)B

DIAMOND DRILL

CORE

LOGGING

DH 102 to DH 138

276

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 102 Size of core: HQ Total depth: 452 ft
137.8 m

Location: EMGS co-ordinates - N 5580983.869
E 650384.014

Baseline co-ordinates - N 100 + 00.2
E 54 + 97.1

Elevation - ft 6477.4
m 1974.31

Date of starting : March 31, 1977
Date of completion : April 5 , 1977

Logging by : G.C. Singhai
on : April 6, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
148	45	89.0 "	N 75 degrees W
296	90	89.5 "	N 01 " E
427	130	88.3 "	N 64 " E

Recovery of coal : $\frac{62.0}{73.2}$ ft = 85%

Remarks :

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 276

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 102

Footage		Recovery		Description
from	to	feet	%	
0	16			Overburden (No core)
16	95.0			Sandstone: Grey fine grain, crossbedded, interbeds of siltstone and mudstone, occasionally pieces of coal and thin coal seams. Bedding 48° to core axis at 20' " 47° " " " " 42.0' " 47° " " " " 55.0' " 48° 62.0 " 50° " " " " 80.0 " 45° " " " " 94.0
95.0	103.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plants.
103.0	143.5	35.5 40.5	88	Coalseam: Sampled (DH 102-1) Parting of mudstone - 108.2 - 108.3
143.5	164.5			Sandstone: Dark grey, fine grain crossbedded, interbeds of mudstone and siltstone, numerous thin coal seams. Bedding 52° to core axis at 140.(
164.5	173.0			Siltstone: Dark grey, very fine grain, occasional interbeds of sandstone, pieces of coal and fragments of plants. Bedding 50° to core axis at 172.6'
173.0	184.1			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Core badly broken.
184.1	189.5	2.5 5.4	46	Coalseam: Sampled (DH -102-2)
189.5	197.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Core badly broken.
197.0	212.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone. Bedding 54° to core axis at 202' Bedding 52° to core axis at 211.0'
212.0	240.6			Mudstone: Dark grey, fragments of plants, pieces of coal numerous thin coal seams. Core badly broken.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 102

Footage		Recovery		Description
from	to	feet	%	
240.6	250.3	7.8/9.7	80	Coalseam: Sampled (DH 102-3)
250.3	253.5			Mudstone: Dark grey, fragments of plants, pieces of coal.
253.5	303.3			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, pieces of coal, Bedding 64° to core axis at 255.0' " 55° " " " " 274.0 " 56° " " " " 288.0' " 54° " " " " 301.0'
303.3	316.5	12.6/13.2	95	Coalseam: Sampled (DH 102-4)
316.5	330.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, occasionally fragments of plants, Pieces of coal. Bedding 60° to core axis at 381.0
330.0	377.5			Sandstone: Grey, fine grain, crossbedded, interbed of siltstone, pieces of coal, numerous thin coal seams. Bedding 47° to core axis at 338.0' " 49' " " " " 359.0' " 58' " " " " 371.0'
377.5	381.9	3.6/4.4	82	Coal Seam: Sampled (DH 102-5)
381.9	392.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 59° to core axis at 385.0'
392.0	404.5			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, pieces of coal, fragments of plants. Bedding 58° to core axis at 395.0'
404.5	452.0			Sandstone: Grey, fine grain, interbeds of siltston crossbedded, Bedding 60° to core axis at 415.0' Bedding 60° to core axis at 430.0' Bedding 55° to core axis at 448.0'
				END OF HOLE AT 452.0' G.C. SINGHAI APRIL 6/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 122 Size of core: HQ Total depth: 615 ft
187.4 m

Location: EMGS co-ordinates - N 5588420.935
E 646165.215

Baseline co-ordinates - N 369 + 79.4
W 21 + 87.5

Elevation - ft 5268.7
m 1605.90

Date of starting : Jan. 11, 1977
Date of completion : Jan. 15, 1977

Logging by : G.C. Singhai
on : Jan. 16, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	87.0 "	N 90 degrees E
394	120	82.6 "	N 74 " E
607	185	88.2 "	N 69 " E

Recovery of coal : $\frac{90.8}{106.1}$ ft = 86%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-122

Footage		Recovery		Description
from	to	feet	%	
0	- 11			Overburden (No core)
11	- 11.8			Mudstone: Dark grey, fragments of plants. pieces of coal.
11.8	- 17.0			Sandstone: Grey, fine grain, cross bedded, interbed of mudstone and siltstone, pieces of coal. Bedding 50 degrees to core axis at 17.
17.0	- 24.0			Mudstone: Dark grey, fragments of plant, occasional pieces of coal, interbeds of siltstone.
24.0	- 31			Sandstone: Grey, fine grain, cross bedded, interbed of mudstone.
31	- 36.0			Mudstone: Dark grey, fragments of plants, interbeds of sandstone.
36.0	- 79.6			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60 degrees at 42' occasionally thin coal seams.
79.6	- 70.0	9.8/10.4	94	Coalseam: sampled (DH-122-1) partings of mudstone 80.0 - 82.3
90.0	- 92.4			Mudstone: dark grey with fragments of plant, lower part lightly carbonaceous.
92.4	- 95.7	3.3/3.3	100	Coal seam: sampled (DH-122-2)
95.7	- 98.4			Mudstone: dark grey with fragments of plants, occasionally thin coal seams.
98.4	- 102.0	3.5/3.6	97	Coal seam: sampled (DH-122-3) parting, carbonaceous shale to coaly shale 100.5 - 100.7 ft.
102.0	- 108.2			Siltstone, dark grey, very fine grained some thin coal seams 107.0 - 107.2
108.2	- 143.3			Sandstone: light grey, fine grained, cross bedded interbeds of siltstone, pieces of coal; bedding 50 degrees to core axis - 109 ft. Bedding 60 degrees to core axis - 142

DIAMOND DRILL CORE LOGGING SHEET

DDH No
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Footage		Recovery		Description
from	to	feet	%	
143.3	149.2			Mudstone: dark grey, with fragments of plants. coalseam 146.7
149.2	158.2			Sandstone: grey, fine grained, cross bedded, interbeds of siltstone and mudstone, occasionally pieces of coal.
158.2	167.0			Mudstone: dark grey, with interbeds of siltstone, fragments of plants.
161.0	171.0			Sandstone: grey, fine grained, interbeds of mudstone, pieces of coal, crossbedded.
171.0	186.0			Mudstone: dark grey with interbeds of siltstone and sandstone, fragments of plants, occasionally th coal seams.
186.0	194.3			Sandstone: grey, fine grained interbeds of siltstone, bedding 50 degrees to core axis = 186'.
194.3	199.6			Mudstone: dark grey, with fragments of plants, pieces of coal seam 195.0 - 195.2 coal seam 195.5 - 197.0
199.6	212.4			Sandstone: grey to dark grey, fine grained, cross bedded, interbeds of mudstone, pieces of coal.
212.4	215.6			Siltstone, dark grey, very fine grained.
215.6	217.4			Coal seam
217.4	222.0			Shale: dark grey, with fragments of plant, pieces of coal, numerous thin coal seam, lightly carbonaceous 217.0 - 218.5
222.0	239.6			Sandstone: grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal. Coalseam 231.6 - 232.0. Bedding 50 degrees to core axis at 229.7'.
239.6	244.5			Mudstone: Dark grey, fragments of plant. numerous thin coal seams. Coal seam 239.6 - 240.0, 241.6 - 241.8

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-122

Footage		Recovery		Description
from	to	feet	%	
244.5	251.5	6.0/7.0	86	Coal seam: sampled (DH-122-4) parting - Mudstone 246.2 - 246.4
251.5	262.0			Mudstone: dark grey, fine grain, fragments of plant pieces of coal, numerous thin coal seams. Coal seam - (254.1 - 254.2), 254.6 - 255.2, 260.0 - 262.0 slightly carbonaceous shale (Recovery 0.6/2.0).
262.0	270.0			Siltstone: Dark gryy, very fine grain, interbeds of mudstone, fragments of plants. occasionally thin coal seams.
270.0	274.6	4.1/4.6	89	Coalseam: Sampled (DH-122-5)
274.6	283.7			Mudstone: Dark grey, fragments of plants, interbeds of siltstone, pieces of coal and thin coal seams Bedding 50degrees to core axis at 281'.
283.7	286.5	2.5/2.8	89	Coalseam: Sampled (DH-122-6)
286.5	292.0			Sandstone: Grey, fine grain, crossbedded pieces of coal. bedding 60 degrees to core axis at 289.5.
292.0	296.6			Mudstone: Dark grey, fragments of plant, interbeds of siltstone, numerous thin coal seams. Coalseams 292.3 ,- 292.6
296.6	307.0	8.0/10.4	77	Coalseam: Sampled, (DH-122-7) parting of mudstone 300.7 - 300.8, 301.4 - 301.9, 302.6 - 303.6
307.0	311.4			Mudstone: Grey fragments of plant pieces and coal, numerous thin coal seams.
311.4	320.6	7.0/9.2	76	Coalseam: Sampled (DH-122-8)
320.6	321.5			Mudstone: Dark grey, fragments of plants.
321.5	324			Sandstone: light grey, fine grain, cross bedded, pieces of coal, bedding 45 degrees to core axis at 323.
324.0	333.0	8.3/9.0	92	Coalseam: sampled (DH-122-9) parting: mudstone - 324.4 - 324.8 , 325.2 - 325.3

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-122

Footage		Recovery		Description
from	to	feet	%	
333.0	345.0			Mudstone: Dark grey, fragments of plant, slightly carbonaceous, coal seam 341.2 - 342.0 343.0 - 343.8
345.0	347.5	1.9/2.5	76	Coalseam: Sampled, (DH-122-10)
347.5	388.2			Sandstone: Grey, fine grain, interbedded with siltstone and shale, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 350'.
388.2	396.5			Mudstone: Dark grey, fragments of plants , pieces of coal.
396.5	400.5	3.5/4.0	88	Coalseam: Sampled (DH-122-11)
400.5	416.7			Mudstone: Dark grey, fragments of plants, pieces of coal, occasionally thin coal seams.
416.7	430.2	12.3/13.5	91	Coalseams: sampled (DH-122-12) Parting: Mudstone: 421 - 422.0.
430.2	452.8			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Interbeds of siltstone and sandstone. Bedding 50 degrees to core axis at 452.5. Coalseams: 437.2 - 437.4 438.8 - 439.4 446.5 - 447.5
452.8	506.5			Sandstone: light grey to grey, fine grain, interbeds of siltstone and shale, crossbedded pieces of coal, occasionally thin coal seams Bedding 60 degrees to core axis at 503'.
506.5	510.5			Siltstone: Grey, very fine grain, interbeds of mudstone and sandstone
510.5	513.0			Mudstone: Dark grey, fragments of plants. badly broken core.
513.0	543.0			Sandstone: Grey, to dark grey, fine grain, interbeds of mudstone and siltstone. Crossbedded pieces of coal. Bedding 65 degrees to core axis at 538.
543.0	568.8	20.5/25.8	79	Coalseam: sampled (DH-122-13) Parting: mudstone 555.8 - 557.6, 562.6 - 562.7, 565.4 - 567.0 567.7 - 567.9

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-122

Footage		Recovery		Description
from	to	feet	%	
568.8	572.0			Mudstone: Dark grey, fragments of plants and numerous thin coal seams.
572.0	581.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone. Bedding 60 degrees to core axis at 574'.
581.5	599.4			Mudstone: Dark grey, fragments of plants interbeds of siltstone, pieces of coal, numerous thin coal seams Coalseam 591.2 - 591.8
599.4	602.0			Sandstone: Grey, fine grain, crossbedded- pieces of coal bedding 65 degrees to core axis at 601'.
602.0	615.0			Mudstone: Dark grey, fragments of plants, interbeds of siltstone, numerous thin coal seams.
				End of Hole at 615'
				G.C. Singhai
				January 16, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 123 Size of core: HQ Total depth: 753.5 ft
229.7 m

Location: EMGS co-ordinates - N 5588389.708
E 646039.368

Baseline co-ordinates - N 369 + 77.4
W 26 + 12.9

Elevation - ft 5332.8
m 1625.44

Date of starting : Jan 14, 1977
Date of completion : Jan. 20, 1977

Logging by : G.C. Singhai
on : Jan. 21, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
246	75	88.2 "	N 76 degrees E
492	150	83.0 "	N 74 " E
738	225	76.2 "	N 76 " E

Recovery of coal : $\frac{126.7}{147.2}$ ft = 86%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No DH-123

Footage		Recovery		Description
from	to	feet	%	
0	- 19.0			Overburden (No core)
19.0	- 20.2			Sandstone: light grey, fine grain. Crossbedded pieces of coal.
20.2	- 22.6	1.5/2.4	62.5	Coalseam: sampled (DH-123-1)
22.6	- 26.1			Mudstone: Dark grey, fragments of plants, interbeds of sandstone.
26.1	- 35.7	5.3/9.6	55.2	Coalseam: sampled (DH-123-2) Parting of mudstone: (29.0 - 29.6), 30.5 - 30.9 (31.1 - 31.4) Parting Mudstone: 32.0 - 33.4 (33.6 - 33.8)
35.7	- 39.5			Mudstone: Dark grey, fragments of coal, numerous thin coal seams. Coalseam 39 - 39.5
39.5	- 60.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, bedding 60 degrees to core axis at 43'
60.5	- 63.3			Siltstone: Dark grey, very fine grain.
63.3	- 64.8	1.5/1.5		Coalseam:
64.8	- 68.2			Mudstone: Dark grey , fragments and plants interbeds of siltstone.
68.2	- 74.4	5.5/6.2	88.7	Coalseam: Sampled (DH-123-3)
74.4	- 77.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
77.0	- 79.0			Sandstone: Grey, fine grain, cross bedded, pieces of coal. Bedding 60 degrees to core axis at 78.0
79.0	- 86.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Coalseam 81.5 - 82.1, 82.5 - 83.0, 83.5 - 84.5
86.0	- 89.0			Sandstone: Grey, fine grain, interbeds of siltstone Bedding 70 degrees to core axis at 87'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-123

Footage		Recovery		Description
from	to	feet	%	
89.0	- 96.6			Mudstone: Dark grey, fragments of plants and numerous thin coal seams.
96.6	- 113.7			Sandstone: Grey, fine grain interbeds of mudstone pieces of coal and occasionally thin coal seams. Bedding 40 degrees to core axis at 102'.
113.7	- 118.4	3.4/4.7	72.3	Coalseam: sampled (DH-123-4) Parting of mudstone: 117.0 - 117.5
118.4	- 132.0			Mudstone: Dark grey, fragments of plants. occasionally thin coal seams. Coalseam 130.3 - 130.5
132.0	- 143.7			Sandstone: Grey, fine grain, interbeds of mudstone pieces of coal, coal seam, 135.9 - 136.8
143.7	- 151.0			Mudstone: Dark grey, interbeds of siltstone and sandstone, fragments of plants. occasionally thin coal seams.
151.0	- 174.0			Siltstone: Dark grey, very fine grain. interbeds of mudstone. numerous thin coal seams. Bedding 60 degrees to core axis at 158'.
174.0	- 193.4	18.3/19.4	94.3	Coalseam: Sampled (DH-123-5) Parting of mudstone 192.5 - 192.7
193.4	- 207.4			Sandstone: Grey, fine grain, cross bedded, interbed of shale and siltstone, pieces of coal, bedding 50 degrees to core axis at 202'.
207.4	- 210.5	2.9/3.1	93.5	Coalseam: Sampled (DH-123-6.)
'210.5	- 222.2			Sandstone: Grey, fine grain, interbeds of siltstone crossbedded, pieces of coal. Bedding 40 degrees to core axis at 221'.
222.2	- 224.7	2.3/2.5	92	Coalseam: Sampled (DH-123-7) Parting: Mudstone:222.5 - 222.7 , 223.2 - 223.5
224.7	- 234.3			Shale: Dark grey, interbeds and siltstone. Liminated, pieces of coal and fragments of plants. Occasionally thin coal seams. Bedding 40 degrees to, core axis at 230'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No DH-120

Footage		Recovery		Description
from	to	feet	%	
234.3	266.5			Sandstone: Grey, fine grain, cross bedded, pieces of coal, occasionally thin coal seams. Bedding 50 degrees to core axis at 245'.
266.5	291.0			Mudstone: Dark grey interbeds of siltstone pieces of coal and fragments of plants occasionally thin coal seams. Coal seam. 288.6 - 289.8.
291.0	324.2			Sandstone: Grey to light grey, fine grain, cross-bedded, pieces of coal, bedding 60 degrees to core axis at 323'.
324.2	325.8			Mudstone: Grey fragments of plants, pieces of coal
325.8	328.8	1.7/3.0	56.6	Coalseam: Sampled (DH-123-8)
328.8	336.2			Sandstone: Grey, fine grain, crossbedded, pieces of coal.
336.2	338.7	1.7/2.5	68	Coalseam: Sampled (DH-123-9) Parting: Mudstone: 337.8 - 338.0
338.7	345.5			Mudstone: Dark grey, fragments of plants and pieces of coal.
345.5	350.5	4.1/5.0	82	Coalseam: Sampled (DH-123-10) Parting: Mudstone: 347.0 - 348.1
350.5	355.0			Sandstone: Grey, fine grain, interbeds of shale. Pieces of coal. Bedding 60 degrees to core axis at 351.
355.0	386.0	29.2/31.0	94.2	Coalseam: Sampled (DH-123-11)
386.0	393.7			Mudstone: Dark grey, interbeds of sandstone; fragments of plants, pieces of coal. Numerous thin coal seams. Coalseams: 390.4 - 390.8, 393.0 - 393.7
393.7	433.0			Sandstone: Dark grey to grey, fine grain, interbeds of siltstone, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 60 degrees to core axis at 396'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-123

Footage		Recovery		Description
from	to	feet	%	
433.0	447.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, occasionally thin coalseams. Coal seam: 436.6 - 437.0
441.0	515.6			Sandstone: Dark grey, fine grain, interbeds of shale, pieces of coal . Coalseam 444.9 - 446. Bedding 50 degrees to core axis at 443 and 60 degrees to core axis
515.6	519.7			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal. Interbeds of sandstone.
519.7	533.5	11.7/13.8	84.8	Coalseam: Sampled (DH-123-12) Parting: Mudstone: 528.4 - 528.5
533.5	537.6			Mudstone: Dark grey, fragments of plants pieces of coal.
537.6	541.4	3.2/3.8	84.2	Coalseam: Sampled (DH-123-13)
541.4	546.3			Mudstone: Dark grey, fragments of plants, pieces of coal interbeds of siltstone. Occasionally thin coal seams.
546.3	681.2			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal bedding 50 degrees to core axis at 557'. Coalseam 570.4 - 571.0, 571.2 - 572.5; bedding at 610' 60 degrees to core axis . Bedding 60 degrees to core axis at 670'.
681.2	694.6	11.9/13.4	88.8	Coalseam: Sampled (DH-123-14) Parting: Mudstone: 682.3 - 682.6, 683.0 - 683.3, 688.0 - 688.9
694.6	699.0			Mudstone: Dark grey, fragments of plants. pieces of coal.
699.0	702.9	3.5/3.9	89.7	Coalseam: Sampled (DH-123-15)
702.4	707.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, coal seam: 706.1 - 706.7
707.0	709.6			Mudstone: Dark grey, fragments of plants, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-123

Footage		Recovery		Description
from	to	feet	%	
709.6	729.5	18.5/20.5	90.2	Coalseam: Sampled, (DH-123-16) Parting mudstone: 710.4 - 711.6, 711.9 - 712.3, (715.0 - 715.1)(716.0 - 716.1) 718.5 - 719.0 725.3 - 725.6
729.5	732.7			Mudstone: Dark grey, fragments of plants, pieces of coal.
732.7	735.1	2.0/2.4	83.3	Coalseam: Sampled (DH-123-17)
735.1	748.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal, bedding 70 degrees to core axis at 748'.
748.0	753.5			Mudstone: Dark grey, fragments of plants.
				End of hole at 753.5'
				G.C. Singhai
				January 21, 1977.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 124 Size of core: HQ Total depth: 726 ft
221.3 m

Location: EMGS co-ordinates -

Baseline co-ordinates -

Elevation - ft
m

Date of starting : Jan. 16, 1977
Date of completion : Jan. 20, 1977

Logging by : G.C. Singhai
on : Jan. 21, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
230	70	88.0 "	N 56 degrees E
460	140	83.2 "	N 73 " E
705	215	75.5 "	N 77 degrees E

Recovery of coal : $\frac{57.5}{66.9}$ ft = 86%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-124

Footage		Recovery		Description
from	to	feet	%	
0	- 11.0			Overburden (No Core)
11.0	- 23.7			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale. occasionally thin coal seams. Bedding 50 degrees to core axis at 19'.
23.7	- 35.0			Mudstone: Dark grey, fragments of plants, pieces of coal.
35.0	- 140.3			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, occasionally thin coal seams. Coalseam 50.0 - 50.5 , bedding 50 degrees to core axis at 64, coal seam 66.5 - 67.0. Bedding 60 degrees to core axis at 118'.
140.3	- 147.0			Mudstone: Dark grey, fragments of plants, pieces of coal, occasionally thin coal seam. Coalseam 144.8 - 146.0
147.0	- 293.6			Sandstone: Grey, fine grain, interbeds of siltstone crossbedded, pieces of coal, bedding 60 degrees to core axis at 152'. and 60 degrees at 184, occasionally thin coal seams. Bedding 40 degrees to core axis at 227'. Carbonaceous shale 270.0 - 272.0, bedding 60 degrees at 287.5.
293.6	- 294.9			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
294.9	- 299.5	3.4/4.6	74	Coalseam: Sampled (DH-124-1) Parting mudstone 297.4 - 298.5
299.5	- 303.0			Siltstone: Dark grey, very fine grain,
303.0	- 305.0	1.3/2.0	65	Coalseams: Sampled (DH-124-2)
305.0	- 311.1			Sandstone: Grey, fine grain interbeds of shale, crossbedded, pieces of coal. Bedding 50 degrees to core axis at 310'.
311.1	- 315.6	4.0/4.5	89	Coalseam: Sampled (DH-124-3)
315.6	- 318.5			Sandstone: Dark grey, fine grain. pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-124

Footage from	to	Recovery feet	%	Description
318.5	320.4	1.9 / 1.9	100	Coalseam: Sampled (DH-124-4) Parting. Mudstone: 319.7 - 320.0
320.4	323.4			Mudstone: Dark grey, fragments of plants slightly carbonaceous.
323.4	333.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 60 degrees to core axis at 329.0' 332.5 - 333.6, Carbonaceous mudstone.
333.6	340.8	5.6 / 7.2	78	Coalseam: Sampled, (DH-124-5) Parting: Mudstone 334.8 - 335.8.
340.8	363.5			Sandstone: Grey, fine grain, interbeds of siltstone crossbedded, pieces of coal. Coalseam: 344 - 345.0 , 346.5 - 347.0 351.0 - 351.3 Bedding 60 degrees to core axis at 350'.
363.5	366.3	1.0 / 2.8	36	Coalseam: Sampled (DH-124-6)
366.3	373.4			Mudstone: Dark grey, fragments of plants.
373.4	375.5	2.0 / 2.1	95	Coalseam: Sampled (DH-124-7)
375.5	430.3			Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale. crossbedded , pieces of coal, occasionally thin coal seams. Coalseam 380.7 - 381.3. Bedding 60 degrees to core axis at 398'.
430.3	433.8	3.1 / 3.5	88.6	Coalseam: Sampled (DH-124-8)
433.8	442.2			Sandstone: Grey, fine grain, interbeds of siltstone and shale. Crossbedded, pieces of coal, bedding 70 degrees to core axis at 439'. Coalseam: 436.8 - 437.5
442.2	445.5	3.0 / 3.3	91	Coalseam: Sampled (DH-124-9)
445.5	473.2			Sandstone: Grey to light grey, fine grain, interbeds of shale, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 50 degrees to core axis at 465'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH-124

Footage		Recovery		Description
from	to	feet	%	
473.2	- 477.0			Mudstone: Dark grey, fragments of plants, pieces of coal, coalseam 473.2 - 473.5, 476.7 - 477.0
477.0	- 494.5			Sandstone: Grey to light grey, fine grain. Interbeds of siltstone, crossbedded , pieces of coal, bedding 60 degrees to core axis at 494.0'
494.5	- 505.0			Shale: Dark grey, liminated, fragments of plants, interbeds of mudstone.
505.0	- 508.8			Sandstone: Grey, fine grain, interbeds of shale and siltstone; pieces of coal, crossbedded, Bedding 50 degrees to core axis at 506'.
508.8	- 512.0	1.9 / 3.2	59	Coalseam: Sampled (DH-124-10)
512.0	- 543.7			Sandstone: Grey to light grey, fine grain, interbeds of shale and siltstone, crossbedded pieces of coal, coalseam. 515.5 - 517. Bedding 60 degrees to core axis at 540'.
543.7	- 569.8			Shale: Dark grey, liminated, interbeds of mudstone and siltstone, occasionally pieces of coal. Bedding 60 degrees to core axis at 567.
569.8	- 573.4	3.6 / 3.6	100	Coalseam: Sampled (DH-124-11)
573.4	- 583.6			Shale: Dark grey, liminated, interbeds of mudstone, pieces of coal, occasionally thin coalseams. Bedding 60 degrees to core axis at 582.
583.6	- 592.0			Sandstone: Grey, fine grain, interbeds of shale, crossbedded, pieces of coal.
592.0	- 597.4			Mudstone: Dark grey, fragments of plants, pieces of coal.
597.4	- 631.7			Sandstone: Light grey, fine grain, pieces of coal Interbeds of shale and mudstone. Bedding 50 degrees to core axis at 625'.
631.7	- 663.0			Mudstone: Dark grey, fragments of plants, pieces of coal, interbeds of siltstone.

DIAMOND DRILL CORE LOGGING SHEET

DDH No.DH-124

Footage		Recovery		Description
from	to	feet	%	
663.0	- 667			Sandstone: Dark grey, fine grain, interbeds of shale and siltstone, bedding 50 degrees to core axis.
667.0	- 682.8			Siltstone: Dark grey, very fine grain interbeds of shale and mudstone, fragments of plants, occasional thin coal seams. Bedding 55 degrees to core axis at 680'.
682.8	- 711.0	26.7 / 28.2	95	Coalseam: Sampled (DH-124-12)
711.0	- 726			Sandstone: Grey, fine grain, crossbedded, occasionally pieces of coal. Bedding 85 degrees to core axis at 725'.
				End of Hole at 726'
				G.C. Singhai
				January 21, 1977.

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 125 Size of core: HQ Total depth: 321 ft
97.8 m

Location: EMGS co-ordinates - N 5589104.296
E 646372.307

Baseline co-ordinates - N 386 + 97.4
W 9 + 97.6

Elevation - ft 5355.4
m 1632.33

Date of starting : Feb. 16, 1977
Date of completion : Feb. 19, 1977

Logging by : Rob Wilson
on : Feb. 20, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
148	45	86.7 "	N 73 degrees E
296	90	85.5 "	N 76 " E

Recovery of coal : $\frac{12.4}{17.6}$ ft = 70%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 125

Footage		Recovery		Description
from	to	feet	%	
0	69			Overburden: 69' - rea,ed casomg tp 76' (No core) Casing 76'
69	122			Sandstone: Grey, fine grained, interbeds of siltstone. Bedding 30° to core axis at 83' Core highly broken 85 - 97' Bedding 27° to core axis at 101' Core highly broken 103 - 122 Occasional plant fossil.
122	157.6			Siltstone: Grey, very fine grained, interbeds of mudstone, sandstone and shale. Plant Fragments Bedding 37° to core axis at 141' Bedding 42° to core axis at 153'
157.6	163.8	3.4/6.2	54.8	Coalseam: Sampled (DH 125-1) Core quite broken up, but no partings noticed
163.8	180.6			Sandstone: Grey, fine grained, interbedded with siltstone. Bedding 33° to core axis at 170' Bedding 45° to core axis at 180' Shale (laminated just before contact with coal)
180.6	187.0	4.6/6.4	71.9	Coalseam: Sampled (DH 125-2) Partings (Mudstone) 184.1 - 184.8
187	192			Coaly Mudstone: Dark grey, highly broken, some coa
192	197	4.5/5	90	Coalseam: Sampled (DH 125-3) Partings (Mudstone (coaly)) 194.5 - 194.7
195	321			Sandstone: Light grey to gret, medium to fine grained (mostly medium grained). Interbedded with siltstone. Occasionally crossbedded. Bedding 42° to core axis at 207' Bedding 46° to core axis at 216 Bedding 45° to core axis at 226' Bedding 46° to core axis at 234 Bedding 36° to core axis at 243' Bedding 44° to core axis at 250' Bedding 55° to core axis at 262' Bedding 59° to core axis at 263' Bedding 46° to core axis at 276'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 125

Footage		Recovery		Description
from	to	feet	%	
				278 - 285 Frequent interbeds of siltstone 285 - 288 Coarsest of sandstone unit 288 - 321 Medium Grained but finer than all above in sandstone Bedding 50° to core axis at 286' Bedding 41° to core axis at 297' Bedding 31° to core axis at 305' Bedding 46° to core axis at 314' Bedding 40° to core axis at 321' END OF HOLE Feb. 20/77 ROB WILSON

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 126 Size of core: HQ Total depth: 790.0 ft
219.5 m

Location: EMGS co-ordinates - N 5589068.379
E 646222.914

Baseline co-ordinates - N 389 _ 98.7
W 15 + 01.7

Elevation - ft 5283.2
m 1610.32

Date of starting : Jan. 26, 1977
Date of completion : Feb. 3, 1977

Logging by : G.C. Singhai
on : Feb. 4, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
230	70	85.7 "	N 46 degrees E
460	140	84.2 "	N 63 " E
656	200	82.0 "	N 62 " E

Recovery of coal : $\frac{35.2}{49.5}$ ft = 71%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 126

Footage		Recovery		Description
from	to	feet	%	
0	58			Overburden (No core)
58.0	61.0			Sandstone: Grey, fine grain, crossbedded
61.0	77.5			Siltstone: Dark grey, very fine grain, interbeds of sandstone and shale, pieces of coal, occasional thin coal seams. Bedding 60° to core axis at 68'.
77.5	93.4			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal.
93.4	103.2			Mudstone: Dark grey, interbeds of sandstone and siltstone, fragments of plants, pieces of coal, core broken.
103.2	128.0			Sandstone: Grey , fine grain, interbeds of shale and siltstone, crossbedded, occasionally fragments of plants and pieces of coal. Bedding 60° to core axis at 127'.
128.0	138			Shale: Dark grey, slightly laminated interbeds of siltstone and sandstone, pieces of coal, fragments of plants.
138.0	222.0			Sandstone: Grey fine grain, crossbedded, interbed of siltstone, pieces of coal. occasionally thin coal seams. Bedding 60° to core axis at 142.0' and 50° to core axis at 190'. Bedding 50° to core axis at 219'.
222.0	228.8			Siltstone: Dark grey, very fine grain, interbeds of shale and mudstone.
228.8	262.0	24.0 33.2	72	Coalseam: Sampled (DH 126-1) Partings - Mudstone: 235 - 237.0, 239.5 - 239.7 caved section 239 - 249.
262.0	293.0			Mudstone: Dark grey, fragments of plants, pieces of coal, interbeds of siltstone and shale, occasionally thin coal seams. Bedding 40° to core axis at 286'.
293.0	309.5			Sandstone: Grey, to light grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal, Bedding 60° to core axis at 300'. occasionally thin coal seams. Coal Seam.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 126

Footage		Recovery		Description
from	to	feet	%	
309.5	311.5	1.1 / 2.0	55	Coalseam: Sampled (DH 126-2)
311.5	341.5			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal, Bedding 60° to core axis at 318.0'.
341.5	367.0			Mudstone: Dark grey, interbeds of shale and siltstone, fragments of plants, pieces of coal, Bedding 55° to core axis at 347.
367.0	382.0			Sandstone: Grey, fine grain, interbeds of siltsto and shale. Crossbedded, occasionally, pieces of coal, Bedding 55° to core axis at 376.0'
382.0	398.0			Mudstone: Dark grey, interbeds of shale, siltstor and sandstone, fragments of plants, pieces of coa
398.0	407.0			Sandstone: Grey, fine grain, interbeds of siltsto and shale, crossbedded, pieces of coal.
407.0	420.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, pieces of coal.
420.0	438.0			Sandstone: DArk grey, fine grain, slightly silty interbeds of siltstone, and shale, pieces of coal, occasionally thin coal seams. Coal seam 428.2 - 428.4 core badly broken.
438.0	466.2			Mudstone: Dark grey, interbeds of siltstone and sandstone, slightly laminated, fragments of plants, pieces of coal, occasionally thin coal seams. Bedding 60° to core axis at 456.0'. core badly broken.
466.2	482.3	10.1 / 14.3	71	Coalseam: Sampled (DH 126-3) Partings: Mudstone: 472.1 - 472.9, upper part of seam badly caved.
485.3	488.0			Mudstone: Crushed broken core, (real mud).
488.0	494.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale. Crossbedded, pieces of coal broken core.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 126

Footage		Recovery		Description
from	to	feet	%	
494.0	503.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone numerous thin coal seams, fragments of plants.
503.0	522.0			Sandstone: Dark grey, fine grain, interbeds of siltstone and shale, Bedding 60° to core axis at 511.0' crossbedded.
522.0	541.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, occasionally thin coal seams.
541.0	639.2			Sandstone: Grey to dark grey, fine to medium grain interbeds of shale and siltstone, crossbedded, pieces of coal, bedding 50° to core axis at 564.0' and 60° to core axis at 603.0' and 60° to core axis at 639.0'.
639.2	682.0			Mudstone: Dark grey, fragments of plants, occasionally thin coal seams. core badly broken Core missing (658-662.0) Carbonaceous shale 662 - 672.0 675 - 676
682	790			Sandstone: Light grey, fine to medium grain, crossbedded, occasionally pieces of coal. Bedding 70° to core axis at 703.0' and bedding 60° to core axis at 756'.
				END OF HOLE AT 790.0'
				G.C. Singhai
				Feb. 4/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 127 Size of core: HQ Total depth: 847.0ft
258.2m

Location: EMGS co-ordinates - N 5589036.313
E 646073.745

Baseline co-ordinates - N 390 + 12.1
W 20 + 02.1

Elevation - ft 5276.1
m 1606.75

Date of starting : Feb. 4, 1977
Date of completion : Feb. 12, 1977

Logging by : Rob Wilson
on : Feb. 13, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	87.5 "	S 64 degrees E
394	120	86.0 "	S 84 " E
591	180	83.6 "	N 81 " E
820	250	81.2 "	N 83 " E

Recovery of coal : $\frac{61.1}{93.5}$ ft = 65%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 127

Footage		Recovery		Description
from	to	feet	%	
0	84.0			Overburden
84.0	86.5	2.5/2.5	100	Coal - DH 127 - 1
86.5	103.0			Shale: Slightly carbonaceous
103.0	154.4			Shale: rare fine grained sandstone interbeds, core carbonaceous lenses. Bedding to core angle at 136' = 47°
154.4	189.0			Sandstone; fine grained, grading into coarse downwards. Bedding to core angle at 180' = 48°
189	189.8			Shale
189.8	190.0			Coal
190.0	194.0			Shale
194.0	194.8			Coal - (ground)
194.8	218.7			Shale: occasional carbonaceous partings
218.7	219.2			Coal - (ground)
219.2	219.7			Shale
219.7	220.1			Coal (ground)
220.1	255.0			Carbonaceous shale Bedding to core angle at 241' = 40°
255.0	256.5			Coal
256.5	260.0			Carbonaceous shale
260.0	267.0	6.6/7.0	94	Coal: DH 127-2 262.0 - 262.7 Coaly shale
267.0	267.8			Carbonaceous shale
267.8	276.7			Sandstone: fine grained, occasional shale interbeds.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 127

Footage		Recovery		Description
from	to	feet	%	
276.7	277.3			Carbonaceous shale.
277.3	282.5	3.9/5.2	75	Coal - DH 127-3
282.5	314.3			Sandstone: Fine grained, crossbedded, occasional carbonaceous, shale, rare interbeds. Bedding to core angle @ 290' = 42°
314.3	314.4			Coal
314.4	315.3			Carbonaceous shale
315.3	315.6			Shaly coal
315.6	318.9			Carbonaceous shale
318.9	319.5			Shaly coal
319.5	322.7			Shale
322.7	322.9			Coal
322.9	325.7			Shale - carbonaceous lenses
325.7	326.1			Coal
326.1	327.4			Carbonaceous shale
327.4	327.7			Coal
327.7	331.0			Shale
331.0	346.0	11.3/15.0	75.3	Coal: high ash? DH 127-4
346.0	349.0			Carbonaceous shale
349.0	349.3			Coal
349.3	351.0			Coaly shale
351.0	371.8			Siltstone

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 127

Footage		Recovery		Description
from	to	feet	%	
371.8	375.0			Sandstone: coarse grained
375.0	428.5			Shale: occasional fine grained sandstone or siltstone interbeds. Bedding 70° core angle @ 378' = 52°
428.5	446.6			Sandstone: Fine grained, grading downward into coarse grained, bottom 3' contains numerous thin coal lenses, crossbedding. Bedding to core angle @ 437' = 47°
446.6	447.7			Carbonaceous shale
447.7	448.0			Shaly coal'
448.0	457.0			Carbonaceous shale
457.0	460.3	2.8/3.3	84.8	Coal: shaly DH 127 - 5
460.3	462.0			Carbonaceous shale
462.0	492.0			Shale: occasional fine grained sandstone interbeds Bedding to core angle @ 487' = 43°
492.0	511.0			Sandstone: fine grained, occasional shale interbed
511.0	526			Mudstone: Dark grey, plant fragments slightly carbonaceous
526	551.0	13.3/25	53.2	Coal seam: sample (DH 127-6)
551	556			Carbonaceous shale: Dark grey, recovery only .5' Interbeds of sandstone. Numerous thin coal seams. Bedding 60° to core axis at 555'.
556	560.3	3.5/4.3	81.4	Coal seam: Sampled (DH 127-7) parting carbonaceous shale 556.7 to 557.7
560.3	589.3			Shale: Dark grey, interbeds of siltstone + sandston 560.3 - 563 carbonaceous shale. Fragments of plants numerous thin coal seams. Bedding 60° to core axis at 571'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 127

Footage		Recovery		Description
from	to	feet	%	
589.3	594.6			Sandstone: Grey, fine grained cross bedded, pieces of coal, interbeds of siltstone. Bedding 50° to core axis at 592'.
594.6	597.3			Shale: Dark grey, fragments of plants.
597.3	607			Sandstone: Grey to light grey fine grained crossbedded, interbedded with mudstone + shale, pieces of coal. Bedding 50° to core axis at 605'.
607	619			Mudstone: Dark grey, interbeds of siltstone + sandstone. Fragments of plants, occasionally pieces of coal.
619	640			Siltstone: Dark grey, very fine grey, interbeds of sandstone and shale. Pieces of coal.
640	644.7			Sandstone: Light grey, crossbedded interbeds of siltstone + shale. Bedding 48° to core axis at 644.
644.7	707			Shale: Dark grey, interbeds of sand and siltstone. Laminated, pieces of coal, fragments of plants, thin coal seams. Bedding 48° to core axis at 669' Sandstone increases from 663 - 667 and 682 - 687. small coal seam 697 - 697.5
707	719.5			Sandstone: Light grey, fine grained crossbedded, interbeds of shale and siltstone. Bedding 45° to core axis at 704'. Bedding 55° to core axis at 713' Thin stringers of coal, fragments of plants.
719.5	724.5			Shale: Dark grey, slightly laminated fragments of plants, pieces of coal, thin coal seams.
724.5	775.0			Sandstone: Grey, fine grained, in crossbedded, Interbedded siltstone + shale. Bedding 55° to core axis a 730'. Bedding 50° to core axis at 744'. Pieces of coal + numerous thin coal seams after 765
775.0	792			Mudstone: Dark grey, very fine grained interbeds of sandstone + shale. Plant fragments, pieces of coal, minor coal seams. Bedding 55° to core axis at contact 792' core highly broken.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 127

Footage		Recovery		Description
from	to	feet	%	
792	802			Shale: Dark grey, black, interbeds of mudstone, fragments of plants, pieces of coal. Bedding 58° to core axis at 794'.
802	833.2	17.2 / 31.2	55.1	Coal Seam: Sampled (DH 127-8) Parting (coaly shale 802.5 - 802.6 811.8 - 811.9 819.7 - 819.9 822.0 - 822.5
833.2	847.0			Shale: DArk grey to black, interbedded with mudsto pieces of coal, thin coal seams. Also interbeds o sandstone. Amount of sandstone increases with depth to max. at 844' thin decreases to shale Vuggy calcite vein in last.5' of core. Some brecciation present of shale into clacite. END OF HOLE 847' FEB 14/1977 ROB WILSON

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 128 Size of core: HQ Total depth: 932 ft
284.1 m

Location: EMGS co-ordinates - N 5588987.044
E 645885.690

Baseline co-ordinates - N 390 + 00.8
W 26 + 39.8

Elevation - ft 5158.1
m 1608.15

Date of starting : Jan. 26, 1977
Date of completion : Feb. 2, 1977

Logging by : G.C. Singhai
on : Feb. 3, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
230	70	87.5 "	N 76 degrees E
460	140	85.0 degrees	N 86 " E
690	210	79.2 "	S 89 " E
902	275	72.7 "	N 81 " E

Recovery of coal : $\frac{108.0}{119.5}$ ft = 90%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 128

Footage		Recovery		Description
from	to	feet	%	
0	25.0			Overburden (No core)
25.0	37.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal.
37.5	42.7			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams. Coal seam: 40.0 - 40.4 41.3 - 42.5
42.7	45.5	2.2 / 2.8	78.5	Coalseam: Sampled (DH 128-1) Parting: Mudstone: 44.7 - 45.0
45.5	52.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
52.0	55.0			Siltstone: Dark grey, very fine grain, fragments of plants.
55.0	84.0			Sandstone: Grey, fine grain, occasionally interbeds of shale, bedding 20° to core axis at 79.0'
84.0	93.6			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
93.6	95.6	2.0 / 2.0	100	Coal seam: Sampled (DH 128 - 2) (coaly shale)
95.6	97.6			Mudstone: Dark grey, fragments of plants.
97.6	188.5			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal, Bedding 20° to core axis at 107'. Bedding 60° to core axis at 147.0', Coal seam 157.0 - 158.0 177.5 - 178.0
188.5	195.2			Shale: Dark grey, laminated, fragments of plants, pieces of coal.
195.2	197.0			Coalseam:
197.0	202.6			Sandstone: Grey, fine grain, crossbedded, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 128

Footage		Recovery		Description
from	to	feet	%	
202.6	204.0			Coalseam:
204.0	]07.0			Siltstone: Dark grey , very fine grain, pieces of coal, fragments of plants. sheared.
207	219.0			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. 217 - 219 carbonaceous
219.0	222.8	2.0 / 3.8	52.6	Coalseam; Sampled (DH 128-3)
222.8	226.0			Mudstone: Dark grey, fragments of plants, pieces of coal.
226.0	230.0	3.2 / 4.0	80	Coalseam: Sampled (DH 128-4) Partings - Mudstone 229.0 - 229.4
230.0	233.4			Mudstone: Dark grey, carbonaceous, fragments of plants, pieces of coal.
233.4	248.0			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone and shale. Thin coal seams Bedding 60° to core axis at 235.0' Coal seam: 239.7 - 239.8
248.0	250.0	2.0 / 2.0	100	Coalseam: Sampled (DH 128-5)
250	274			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, pieces of coal . Bedding 50° to core axis at 255.0'.
274.0	292			Shale: Dark grey, slightly silty, fragments of plants, pieces of coal.
292.0	314.5			Sandstone: Dark grey to grey, fine grain, cross bedded, interbeds of siltstone and shale. pieces of coal. Bedding 40° to core axis at 298.0'
314.5	320			Shale: Dark grey, interbeds of siltstone fragments of plants, pieces of coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 128

Footage		Recovery		Description
from	to	feet	%	
320.0	378.0			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone and shale, pieces of coal, occasionally thin coalseams. Bedding 60° to core axis at 351', coal seams: 371.8 - 372.0
378.0	388.8			Mudstone: Dark grey, fragments of plants, interbed of siltstone, pieces of coal.
388.8	408.3	18.0 / 19.5	92.3	Coalseam: Sampled (DH 128-6) Parting: Mudstone: 389.3 - 390.0 , 394.2 - 395.5, 396.3 - 396.5, 406.3 - 407.1 (407.3 - 407.4)
408.3	414.6			Mudstone: Dark grey, fragments of plants, pieces of coal. Coal seam: 411.5 - 412.0
414.6	430.2			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, pieces of coal, fragments of plants.
430.2	442.7			Sandstone: Dark grey to grey, fine grain, interbed of shale and siltstone, crossbedded, pieces of coal. Bedding 50° to core axis at 436.0'.
442.7	450.0			Mudstone: Dark grey, fragments of plants, pieces of coal. slightly carbonaceous Coal seam 442.7-443
450.0	464.7	14.0 / 14.7	95.2	Coalseam: Sampled (DH 128-7) Parting: Mudstone: 462.0 - 462.5 , 463.0 - 463.2
464.7	473.5			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
473.5 - 493.5				Sandstone: Grey, fine grain, interbeds shale and siltstone, crossbedded, pieces of coal, Bedding 60° to core axis at 486.0'
493.5	522.0			Shale: Dark grey, laminated, fragments of plants pieces of coal, interbeds of siltstone and sandstone, Bedding 60° to core axis , occasionally thin coal seams.
522.0	532.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone. Bedding 60° to core axis at 528.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 128

Footage		Recovery		Description
from	to	feet	%	
532.0	550.8			Sandstone: Grey, fine grain, interbeds of shale and siltstone, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 70° to core axis at 547.0'.
550.8	557.2			Shale: Dark grey, laminated, fragments of plants and thin coal seams, interbeds of sandstone.
557.2	573.0	14.0 / 15.8	88.6	Coalseam: Sampled (DH 128-8) Parting Mudstone.
573.0	578.0			Mudstone: Dark grey, fragments of plants, pieces of coal.
578.0	587.0	9.0 / 9.0	100	Coalseam: Sampled (DH 128-9)
587.0	597.9			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, fragments of plants, pieces of coal. Bedding 50° to core axis at 596.
597.0	623.7			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded . pieces of coal Coalseam 599.7 - 600.3
623.7	632.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, pieces of coal, thin coal seams. Coalseam 624.3 - 624.6, 625.6 - 626.4, 630.5 - 630.6
632.0	663.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60° to core axis at 634.0'
663.0	667.7			Siltstone: Dark grey, very fine grain, slightly muddy fragments of coal.
667.7	671.9	3.3 / 4.2	78.6	Coalseam: Sampled (DH 128-10) Parting: Mudstone - 690.4 - 690.6
671.9	685.5			Sandstone: Dark grey to grey, fine grain, cross bedded, interbeds of siltstone, pieces of coal, Bedding 60° to core axis at 683.0'
685.5	709.0	21.7 / 23.5	92.3	Coalseam: Sampled (DH 128-11) Parting: Mudstone; 693.0 - 693.5, 693.9 - 694.2, (695.3-695.5) 697.2 - 697.5) 697.6 - 698.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 128

Footage		Recovery		Description
from	to	feet	%	
709.0	712.3			Sandstone: DArk grey, fine grain, interbeds of siltstone, pieces of coal.
712.3	718.2	4.6/5.9	78	Coalseam: Sampled (DH 128-12)
718.2	719.6			Shale: Dark grey, laminated, thin coalseams slightly carbonaceous. Bedding 60° to core axis at 719.0'
719.6	740.0			Sandstone: Grey to dark grey, fine grain, interbed of shale and siltstone. Bedding 65° to core axis at 735.0'/
740.0	746.0			Siltstone: Dark grey, very fine grain, fragments of plants, occasionally thin coal seams. Coal seam: 744.7 - 745.0
746.0	797.0			Sandstone: Grey, fine grain, interbeds of siltsto crossbedded, pieces of coal. Bedding 70° to core axis at 759.0 and 60° to core axis at 794.0'
797.0	820.0			Siltstone: DArk grey, very fine grain, interbeds of mudstone, fragments of plants, occasionally thin coal seams.
820	876.3			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, occasionally pieces of coal and thin coal seams. Bedding 70° to core axis at 830.0 and 60° to core axis at 837.0' coal seam 871.0 - 872.0'
876.3	885.8	9.5/9.5	100	Coalseam: Sampled (DH 128 - 13)
885.8	897.0			Sandstone: Grey, fine grain, interbeds of siltsto and shale, crossbedded, occasionally coal pieces Bedding 60° to core axis at 892.0'.
897.0	899.8	2.5/2.8	89.3	Coalseam: Sampled (DH 128-14)
899.8	922.5			Sandstone: Dark grey to grey, fine grain, interbeds of siltstone and shale, crossbedded, Bedding 60° to core axis at 903' pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 128

Footage		Recovery		Description
from	to	feet	%	
922.5	932.0			Shale: Dark grey, interbeds of mudstone, laminated, fragments of plant, numerous thin coal seams, coalseam: 924.8 - 925.4, 927.4 - 927.7 929.3 - 930.8 Bedding 70° to core axis at 927.0' END OF HOLE AT 932.0' G.C. Singhai Feb. 3/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 129 Size of core: HQ Total depth: 840 ft
256.0 m

Location: EMGS co-ordinates - N 5588962.228
E 645778.987

Baseline co-ordinates - N 390 + 04.4
W 29 + 99.2

Elevation - ft 5304.3
m 1616.75

Date of starting : Feb. 2, 1977
Date of completion : Feb. 8, 1977

Logging by : G.C. Singhai
on : Feb. 13, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	86.1 "	N 67 degrees E
394	120	87.0 "	N 72 " E
591	180	76.0 "	N 78 " E
804	245	less than 70 deg.	N 83 " E

Recovery of coal : $\frac{73.7}{87.5}$ ft = 84%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 129

Footage		Recovery		Description
from	to	feet	%	
0	14.0			Overburden (No core)
14.0	19.0			Shale: Dark grey, laminated, interbeds of siltstone, occasionally thin coal seams and fragments of plants. Bedding 70° at 17.0'.
19.0	27.0			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, Bedding 60° to core axis at 25.0'.
27.0	30.0	1.5 / 3.0	50	Coalseam: Sampled (DH 129-1)
30.0	46.0			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, Bedding 60° to core axis at 35.0' core broken.
46.0	52.3			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Interbeds of siltstone and sandstone, core broken.
52.3	70.4			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone. BEdding 60° to core axis at 66'.
70.4	71.8			Shale: Dark grey, fragments of plants, thin coalseams.
71.8	77.0			Sandstone: Grey, fine grain, interbeds of shale, crossbedded, pieces of coal shale. 74.0 - 74.8
77.0	80.0			Shale: Grey, interbeds of siltstone and sandstone fragments of plants. Bedding 60° to core axis at 78.0'
80.0	167.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 50° at 845'. occasionally thin coal seams. interbeds siltstone and shale Coal seams 114.2 - 115.0 . Bedding 60° to core axis at 116.0' Coalseam: 124.0 - 124.2, 129.5 - 129.9, 130.8 - 131.3 Bedding 60° to core axis at 157.0, Broken core.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 129

Footage		Recovery		Description
from	to	feet	%	
167.0	173.0			Mudstone: Dark grey, interbeds of siltstone, pieces of coal, fragments of plants. Coal seam 167.8 - 168.4, 170.7 - 171.4 Broken core.
173.0	181.6	5.8/8.6	67	Coalseam: Sampled (DH-129-2)
181.6	191.0			Sandstone: Grey, fine grain, interbeds of mudstone, crossbedded, pieces of coal, thin coal seams. Bedding 60° to core axis, broken core.
191.0	198.0			Mudstone: Dark grey, interbeds of siltstone and sandstone, fragments of plants, pieces of coal, thin coal seams. Coalseam 192 - 192.5 Broken core.
198.0	227.5			Sandstone: Dark grey to grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone and shale. Broken core occasionally th coal seams. Bedding 50° to core axis at 218.0'.
227.5	240.3			Mudstone: DArk grey, fragments of plants, numer thin coal seams. Coal Seam: 228.0 - 228.8, 237.2 - 238.2
240.3	243.6			Sandstone: Grey to light grey, fine grain, cros bedded, pieces of coal.
243.6	248.0	2.6/4.4	59	Coalseam: Sampled (DH 129-3)
248.0	279.6			Sandstone: Grey to light grey, fine grain, crossbedded, pieces of coal. Bedding 60° to core axis at 268.0'/ occasionally thin coal seams.
279.6	281.2			Coalseam:
281.2	284.0			Shale: Dark grey, laminated, highly carbonaceous numerous thin coal seams.
284.0 -	303.0			Siltstone: Dark grey, very fine grain, interbed of shale and sandstone , occasionally fragments of plants. Bedding 60° to core axis at 301.0.
303.0	307.0			Sandstone: Light grey, fine grain, crossbedded, pieces of coal.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 129

Footage		Recovery		Description
from	to	feet	%	
307.0	324.5			Shale: DArk grey, interbeds of siltstone, and sandstone, occasionally pieces of coal and fragments of plants. Coal seams: 309.1 to 310.7 315.3 - 316.4
324.5	331.1	6.6 / 6.6	100	Coalseam: Sampled (DH 129-4)
331.1	334.0			Shale: Dark grey, interbeds of shale, slightly laminated, fragments of plants. pieces of coal.
334.0	337.7			Siltstone: Dark grey, very fine grain, interbeds of sandstone, fragments of plants, pieces of coal Bedding 60° to core axis at 335.0'.
337.7	358.5			Sandstone: Grey, fine grain, interbeds of siltstone, pieces of coal, crossbedded. Bedding 60° to core axis at 357.5'.
358.5	361.8	3.0 / 3.3	91	Coalseam: Sampled (DH 129-5)
361.8	372.0			Sandstone: Grey, fine grain, interbeds of shale and siltstone, bedding 60° to core axis at 363.0 Crossbedded.
372.0	395.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, fragments of plants, pieces of coal, bedding 60° to core axis at 385.0 Coal seam: 381.1 - 381.8.
395.0	481.0			Sandstone: Grey to light grey, fine grain, cross-bedded, interbeds of shale and siltstone, occasionally thin coal seams. Bedding 50° to core axis at 420.0'. Carbonaceous shale. 450.0 - 452.0, 458.0 - 458.5. Bedding 60° to core axis at 464' and 60° to core axis at 472.0'.
481	489.0			Sandstone: fine grained, crossbedded, occasional shale interbeds.
489	499.0			Shale: plant fragments, occasional fine grained sandstone interbeds.
499.0	511.0	11.8 / ~~12.0~~	98	Coal - DH 129-6

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 129

Footage		Recovery		Description
from	to	feet	%	
511.0	518.9			Shale: occasional fine grained sand lenses Bedding to core angle @ 515' = 50°
518.9	520.9	2.0 2.0	100	Coal DH 129-7
520.9	539.0			Interbedded shale and fine grained sandstone Sandstone is crossbedded.
539.0	540.5			Coal
540.5	559.7			Shale: plant fragments, rare carbonaceous lenses
559.7	600.5			Shale: occasional fine grained sandstone interbeds rare carbonaceous lenses. Bedding to core angle @ 562' = 63°
600.5	618.0	14.5 17.5	83	Coal: DH - 129-8 605.5 - 606.7 - carbonaceous shale
618.0	622.0			Carbonaceous shale
622.0	623.7			Coal
623.7	634.7			Interbedded shale and fine grained sandstone Bedding to core angle @ 631' = 58°
634.7	636			Coal
636.1	647.8			Shale
647.8	650.6	2.8 2.8	100	Coal: DH 129-9
650.6	664.4			Shale: occasionally carbonaceous
664.4	667.0	2.4 2.6	92.3	Coal: DH 129-10 666.2 - 666.3, Carbonaceous shale
667.0	696.2			Shale: occasionally carbonaceous, rare fine grained sandstone interbeds. Bedding to core angle @ 677' = 55°
696.2	696.6			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH -129

Footage		Recovery		Description
from	to	feet	%	
696.6	751.2			Shale: occasional fine grained sandstone interbeds decreasing frequency of sandstone down and plant fragments. Bedding to core angle @ 727' = 47°
751.2	756.2	4.5/5.0	90	Coal: DH - 129-11 751.6 - 752.0 - Carbonaceous shale.
756.2	759.2			Carbonaceous shale.
759.2	766.9	6.6/7.7	85.7	Coalseam: Sample (DH 129-12) Partings - mudstone - 761.7 - 762.0
766.9	769.2			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams.
769.2	770.8			Coalseam:
770.8	792.0			Mudstone: Dark grey, slightly carbonaceous fragments of plants, numerous thin coal seams. Interbeds of silt + sandstone. Coal Seam 786.2 - 786.7. Bedding plane 40° to core axis at 790'.
792.0	800.3			Siltstone: Dark grey, very fine grain, Interbeds of sandstone & shale. Bedding 50° to core axis at 799'.
800.3	807			Shale: Dark grey, laminated, fragments of plants, occasional pieces of coal. Carbonaceous shale.
807	813.4	5.0/6.4	78	Coal Seam: Sampled (DH 129-13)
813.4	817.0			Mudstone: Dark grey, carbonaceous, some plants, clayey. (Core is clayey)
817	822.6	4.6/5.6	82	Coal Seam: Sampled (DH 129 - 14) Parting: Mudstone: 819.6 - 820.0
822.6	840.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Badly broken core.
				END OF HOLE AT 840' G.C. Singhai Feb. 12/ 77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 130 Size of core: HQ Total depth: 880.0ft
268.2m

Location: EMGS co-ordinates - N 5588923.509
E 645628.644

Baseline co-ordinates - N 389 + 97.5
W 35 + 08.5

Elevation - ft 5341.2
m 1628.00

Date of starting : Feb. 3, 1977
Date of completion : Feb. 8, 1977

Logging by : Rob Wilson
on : Feb. 13, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
213	65	83.0 "	S 89 degrees E
426	130	73.2 "	N 85 " E
639	195	less than 70 Deg.	N 84 " E
852	260	" " 70 "	N 83 " E

Recovery of coal : $\frac{64.1}{68.8}$ ft = 93%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
0	16			Overburden (No core)
16.0	42.8			Sandstone: Grey, fine grain, interbeds of siltstone, pieces of coal, Bedding 60° to core axis at 37.0'. occasionally thin coal seams. Coal seam 42.6 - 42.8
42.8	51.5			Siltstone: Dark grey, very fine grain, occasional thin coal seams and fragments of plants.
51.5	57.7			Sandstone: Grey to light grey, fine grain, cross-bedded, pieces of coal, occasionally thin coal seams. Bedding 50° to core axis at 53.5'.
57.7	64.5			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams. Coal seam: 61.5 - 62.9
64.5	67.0			Siltstone: Dark grey, very fine grain interbeds of sandstone and shale pieces of coal.
67.0	72.0			Sandstone: Dark grey, fine grain, crossbedded, Bedding 50° to core axis at 71.5'
72.0	82.3			Shale: Dark grey laminated interbeds of mudstone fragments of plants, numerous thin coal seams. Coal seam 75.5 - 75.7
82.3	94.0			Sandstone: Grey, fine grain, crossbedded, Bedding 60° to core axis at 85.0'. interbeds of siltstone and shale.
94.0	99.5			Mudstone: Dark grey, interbeds of shale and siltstone, numerous thin coal seams and fragments of plants. Coal seam 98.0 - 98.2
99.5	129.5			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal, coal seams 100.0 - 100.6, 118.6 - 118.8, 124.9 - 125.3 Bedding 60° to core axis at 124.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
129.5	132.0			Siltstone: Dark grey, very fine grain, interbeds of shale and mudstone, fragments of plants, numerous thin coal seams.
132.0	135.0	2.4 / 3.0	80	Coalseams: Samples (DH 130-1) Partings Mudstone 133.0 - 133.3
135.0	139.7			Mudstone: Dark grey, fragments of plants, occasionally thin coal seams.
319.7	144.5			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, Bedding 50° to core axis at 140.5'.
144.5	152.0			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, thin coal seams. 144.5 - 147.0 Highly carbonaceous shale, Coal seam: 149.4 - 150.1 , 150.7 - 150.8
152.0	168.6			Siltstone: Dark grey, very fine grain interbeds of shale and sandstone, occasionally fragments of plants, bedding 65° to core axis at 159.5 Coal seam: 163.0 - 163.8 , 165.2 - 166.0 167.7 - 168.2
168.6	182.7			Sandstone: Grey to light grey, fine grain, cross-bedded, pieces of coal. Bedding 60° to core axis.
182.7	189.8			Mudstone: Dark grey, interbeds of sandstone, fragments of coal, numerous thin coal seams.
189.8	238.0			Sandstone: Grey to light grey, fine grained, interbeds of shale and siltstone crossbedded, pieces of coal, numerous thin coal seams, Coal seam: 191- 192.0 , 203.4 - 204.5, carbonaceous shale, 213.5 - 217.5. Bedding 70° to core axis at 211.0 and 60° to core axis at 236.0'.
238.0	251.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, fragments of plants.
251.0	266.0	12.6 / 15.0	84	Coalseam: Sampled (DH 130-2) Parting carbonaceous shale 254.8 - 255.4, Shale: (255.8 - 256.0) 257.2 - 258.2, Mudstone 262.4 - 263.6, 264.5 - 265.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
266.0	268.7			Mudstone: Dark grey, fragments of plants, thin coal seams.
268.7	273.3			Sandstone: Light grey to grey, fine grain, crossbedded, pieces of coal, bedding 55° to core axis at 271.5'
273.3	279.6			Mudstone: Dark grey, fragments of plants, pieces of coal. Coal seam 276.0 - 276.8, Carbonaceous shale 277.3 - 278.0
279.6	284.6	4.8 / 5.0	96	Coalseam: Sampled (DH 130-3) Partings Mudstone 280.3 - 280.6, 283.8 - 283.9
284.6	322.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal. Bedding 60° to core axis at 292.0 Bedding 60° to core axis at 292.0 Carbonaceous shale 288.0 - 289.6 coal seam 318.6 - 319.0. Bedding 50° to core axis at 321.0
322.0	325.1			Shale: Dark grey, laminated, interbeds of sandstone, carbonaceous shale 322.4 - 322.7
325.1	327.1	2.0 / 2.0	100	Coalseam: Sampled (DH 130-4)
327.1	334.3			Sandstone: Grey, fine grain crossbedded, interbeds of siltstone, pieces of coal Bedding 55° to core axis at 332.5'.
334.3	337.8	3.2 / 3.5	91.4	Coalseam: Sampled (DH 130-5) Parting - Mudstone: 335.4 - 335.9
337.8	371.2			Sandstone: Light grey to grey, fine grain, interbeds of shale, crossbedded, occasionally pieces of coal, numerous thin coal seams. Coal seam: 362.0 - 362.7 Bedding 60° to core axis at 357.0' . 368.9 - 371.2 Carbonaceous shale.
371.2	376.0	4.3 / 4.8	89.6	Coalseam: Sampled (DH 130-6)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
376.0	379.6			Shale: Dark grey, laminated, slightly carbonaceous bedding 60° to core axis at 377.8, fragments of plants.
379.6	498.3			Sandstone: Grey to light grey, fine grain, crossbedded, pieces of coal. Coal seam 383.1 - 384.0 , interbeds of siltstone and shale. Bedding 70° to core axis at 386.0 and 55° to core axis at 430.0' Coal seam: - 418.0 - 418.1, 420.2 - 420.5, 444.0 - 444.5 , 446.5 - 447.0, carbonaceous shale 443.0 - 444.0, 444.5 - 446.5 Bedding 60° to core axis at 457.5 and 60° to core axis at 469.0'.
498.3	507.7			Mudstone: Dark grey, fragments of plants.
507.7	514.2	6.4 / 6.5	98.5	Coal: hard (high ash?) DH 130-7
514.2	521.4			Shale: occasional fine grained sandstone interbed
521.4	522.9			Coal
522.9	530.0			Carbonaceous shale
528.0	565.2			Sandstone: Fine grained, crossbedded, occasional shale interbeds, Bedding to core angle @ 528.0 = 529.0 - 529.4 - shaley coal
565.2	573.2			Carbonaceous shale
573.2	575.0			Coal
575.0	579.7			Carbonaceous shale
579.7	580.1			Coal
580.1	580.3			Carbonaceous shale
580.3	580.5			Coal
580.5	580.8			Carbonaceous shale
580.8	580.9			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
580.9	583.3			Carbonaceous shale
583.3	589.8			Interbedded shale and fine grained sandstone Bedding to core angle @ 588' = 0°
589.8	611.9	21.7/22.1	98	Coal DH-130-8
611.9	634.6			Shale: occasional fine grained sandstone lenses, rarely carbonaceous Bedding to core angle @ 633' = 59°
634.6	635.0			Coal
635.0	646.9			Carbonaceous shale:
646.9	657.0			Sandstone: medium grained grading downward into siltstone, occasional shale interbeds.
657.0	664.2			Carbonaceous shale
664.2	664.6			Coal
664.6	667.0			Carbonaceous shale
667.0	668.0			Coal
668.0	668.8			Coaly shale
668.8	688.0			Sandstone: fine grained, crossbedded, occasional shale interbeds. Bedding to core angle @ 688 = 62°
688.0	690.1			Carbonaceous shale
690.1	690.5			Coal
690.5	695.0			Carbonaceous shale
695.0	695.8			Coal
695.8	720.3			Sandstone: fine grained, rare shale lenses
720.3	721.2			Coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
721.2	724.0			Carbonaceous shale
724.0	744.5			Shale: plant fragments occasional siltstone, occasional fine grained sandstone. Bedding to core angle @ 724' = 65°
744.5	745.7			Coal
745.7	752.7			Shale: numerous plant fragments, occasional siltstone interbeds.
752.7	753.3			Coal
753.3	766.0			Shale: rare siltstone lenses
766.0	770.7	4.5 / 4.7	95.7	Coal : DH 130-9
770.7	778.0			Mudstone: Dark grey slightly carbonaceous interbeds of sandstone, fragments of plants, numerous thin coal seams.
778.0	783.0			Sandstone: Grey, fine grained interbeds of silt and shale. Crossbedded. Bedding 70° to core axis at 782'
783.0	784.8			Mudstone: Dark grey, fragments of plants, thin coal seams.
784.8	787.0	2.2 / 2.2	100	CoalSeam: Sampled (DH 130-10)
787.0	853.0			Sandstone: Light grey to grey, fine grained, crossbedded, interbeds of siltstone, pieces of coal. Coal Seams. Bedding 70° to core axis at 791' Bedding 60° to core axis at 832'. Medium grained 832 to 836'. Carbonaceous shale 845.7 - 847.4 Bedding 70° to core axis at 852.0'
853.0	873.8			Siltstone: Dark grey, very fine grained interbeds of sandstone and shale. Coal seams 856.5 - 857.5 also at 871.0 - 871.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 130

Footage		Recovery		Description
from	to	feet	%	
873.8	880			Sandstone: Grey to light grey, interbedded pieces of coal. Bedding 70° to core axis at 878.0' END OF HOLE AT 880.0' Rob Wilson Feb. 13/77

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 131 Size of core: HQ Total depth: 877 ft
267.3 m

Location: EMGS co-ordinates - N 5588888.141
E 645476.733

Baseline co-ordinates - N 390 + 02.5
W 40 + 20.2

Elevation - ft 5462.1
m 1664.85

Date of starting : Feb. 9, 1977
Date of completion : Feb. 15, 1977

Logging by : Rob Wilson
on : Feb. 16, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
213	65	85.9 "	N 72 degrees E
426	130	75.2 "	N 76 " E
639	195	73.7 "	N 77 " E
852	260	67.0 "	N 78 " E

Recovery of coal : $\frac{28.3}{35.2}$ ft = 80%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 131

Footage		Recovery		Description
from	to	feet	%	
0	25			Overburden (No core)
25	54.2			Sandstone: Grey to light grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal occasionally thin coal seams. Coal seam: 43.4 - 43.8, Bedding 50° to core axis at 32.0'
54.2	64.3			Mudstone: Dark grey, slightly silty, interbeds of shale and sandstone. fragments of plants and pieces of coal, slightly carbonaceous 54.1 - 56.4
64.3	71.5			Siltstone: Grey, very fine grain, interbeds of shale and mudstone, occasionally fragments of plants and pieces of coal.
71.5	73.5			Mudstone: Dark, fragments of plants, thin coal seams. pieces of coal.
73.5	80.2	3.4 6.7	51	Coalseam: Sampled (DH 131-1) Partings: Mudstone: - 78.7 - 79.0
80.2	82.4			Mudstone: Dark grey, fragments of plants, slightl carbonaceous, pieces of coal.
82.4	136.5			Sandstone: light grey, fine grain, crossbedded, pieces of coal, bedding 45° to core axis at 89.0' interbeds of mudstone and siltstone, mudstone 100.5 - 102.7, coalseam 102.7 - 103.3. Bedding plan 40° to core axis at 129.5'
136.5	149.0			Siltstone: Dark grey, very fine grain, interbeds shale and sandstone, occasionally fragments of plants and coal pieces.
149.0	195.6			Sandstone: Grey, fine grain, crossbedded, interbed. of siltstone and shale, pieces of coal, thin coal seams 156.5 - 157.2 coal seam Bedding 49° to core axis at 173.
195.6	204.5			Shale: Dark grey, slightly carb laminated, numerous thin coal seams, fragments of plants.
204.5	211			Sandstone: Light grey, fine grained crossbedded, interbeds of siltstone and shale. Bedding 50° to core axis.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 131

Footage		Recovery		Description
from	to	feet	%	
211	218			Siltstone: Dark grey, very fine grained. Interbeds of sandstone and shale, fragments of plants coal seam 214.9 - 215.4
218	290.7			Sandstone: Light grey, fine grained, crossbedded, occasionally thin coal seams, pieces of coal. Carbonaceous shale 220 - 221.2 Carbonaceous shale 244.0 - 247.0 Coal Seam 248.2 - 248.8 Bedding 44° to core axis at 219' " 60° to core axis at 242' " 43° to core axis at 285'
290.7	297.5			Shale: Dark grey, interbed of sand and siltstone. Fragments of plants & thin coal seams.
297.5	347			Sandstone: Light grey fine grained crossbedded with interbeds of siltstone & shale. Pieces of coal, occasionally thin coal seams. Bedding 45° to core axis at 299'. Bedding 40° to core axis at 319' 310.0 - 311.3 Coal seam 328.1 - 329.1 Coal seam 332.0 - 332.6 coal seam
347	357			Mudstone: Dark grey, interbedded sandstone and shale. pieces of coal, numerous thin coal seams, fragments of plants.
357	401			Sandstone: Light grey, medium to fine grained, interbedded siltstone & shale. Frequent thin coal seams. plant fragments. crossbedded, core highly broken. Bedding 60° to core axis at 384'.
401	432.7			Mudstone: Dark grey, interbedded sandstone and shale. Plant fragments and thin coal seams. Sandstone increases 411 - 417. Bedding 54° to core axis at 415'
432.7	436.2	3.4 3.5	97	Coalseam: Sample (DH 131-2) Partings: Shaly coal 434 - 434.5, 433.5 - 433.7
436.2	495.5			Sandstone: 1st 2' is a dark grey carbonaceous mudstone interbed. Thin coal seams & pieces of coal. Sandstone is grey, fine grained, cross bedded, interbedded with silt-mudstone & coal shale. Fragments of plants, numerous thin coal

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 131

Footage		Recovery		Description
from	to	feet	%	
				Bedding 62° to core axis at 471' Mudstone interbed, 467 - 471. Bedding 47° to core axis at 446'
495.5	506			Shale: Carbonaceous, dark grey to black plant fragments, pieces of coal, thin coal seams.
507	509.8			Sandstone: Light grey, fine grained. Some thin coal seams. Interbedded shale & siltston Bedding 52° to core axis at 507'
509.8	512.0	2.0 2.2	91	Coalseam: Sample (DH 131-3) Partings (shaly coal) 511.0 - 511.5
512.0	519.2			Shale: Fairly carbonaceous, coaly shale, dark grey to black. Fragments of plants, pieces of coal, thin coal seams.
519.2	527.4			Siltstone: Dark grey, very fine grained, interbeds of sandstone (crossbedded). Fragments of plants, pieces of coal, minor coal seams Coal seam 526.5 - 527.1 Bedding 55° to core axis at 522'
527.4	567			Sandstone: Grey, fine grained, crossbedded, interbeds of siltstone & shale. Shaly coal at 531.8 - 532 , Shaly coal at 546.5 - 546.7 Stringers of coal. Bedding 55° to core axis at 549 Bedding 65° to core axis at 560'
567	580			Siltstone: Dark grey, carbonaceous, interbeds of sandstone & shale. Numerous coal stringers, piece of coal. Bedding 45° to core axis at 574' 577 - 580 shaly siltstone,shale very coaly. Plant fragments , pieces of coal, stringers of coa Bedding 53° to core axis at 576'
580	590.8	9.0 10.8	83	Coalseam: Sampled (DH 131-4) Partings (shaly coal 581.0 - 581.3 582.0 - 582.3 587.0 - 588.0 589.0 - 590.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 131

Footage		Recovery		Description
from	to	feet	%	
590.8	609			Sandstone: Grey, fine grained, crossbedded, interbedded with shale & siltstone, unit quite shaly near coal contact. Bedding 47° to core axis at 593' Bedding 52° to core axis at 599' Plant fragments , coal seams, pieces of coal. Coal seam at 603.9 - 604.2 604.7 - 604.9 Bedding 1 core axis at 602'
609	617			Mudstone: Dark grey, interbedded, with sandstone Plant fragments.
617	674.8			Sandstone: Grey, fine grained cross bedded. Interbedded with siltstone & mudstone Bedding 58° to core axis at 621' Mudstone interbed 627.0' - 631.2' (Plant fragments, dark grey, very fine grained) 632 several small coal stringers core appears vuggy. Bedding 47° to core axis at 632' 745 - 752.5 several small coal stringers. Bedding 72° to core axis at 750' 752.6 - 753 coal seam. Bedding 32°to core axis at 657' 663.4 - 663.8 coal seam 667.8 - 668.5 coal seam Bedding 1 to core axis at 667'
674.8	677.2			Coal seam: Rock parting (coaly shale-mudstone) 675.0 - 675.3 676.0 - 670.3 676.5 - 676.7 677.1 - 677.2 Not Sampled
677.2	696.5			Sandstone: Grey, fine grained, crossbedded, interbeds of mudstone & shale, plant fragments, pieces of coal, thin coal seams. 680.8 - 618.5 Coal seam Bedding 60° to core axis at 680' contact coal seam to sandstone 32° to core axis at 680.8 in opposite sense to to bedding shaly interbed 685.0-688.0 Bedding 53° to core axis at 692'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 131

Footage		Recovery		Description
from	to	feet	%	
696.5	705.5			Siltstone: Dark grey, very fine grained interbeds of sandstone. Fragments of plants. occasional thin coal stringers.
705.5	725.3			Sandstone: Grey, fine grained, interbedded siltstone and shale. Crossbedded. Bedding 58° to core axis at 710' Shaly coal at 712.0 - 712.6 714.3 - 714.5 coal seam Bedding 61° to core axis at 725'
725.3	743.3			Siltstone: Dark grey, very fine grained, interbed of sandstone & shale, pieces of coal, stringers of coal, fragments of plants.
743.3	771			Sandstone: Grey, medium to fine grained, cross bedded, interbedded siltstone & shale. Occasional thin stringers of coal as at 746 and occasional stringers of vuggy calcite as at 755' Bedding 37° to core axis at 752' Bedding 51° to core axis at 745' 762.0 - 764.7 shale interbed Bedding 50° to core axis at 765'
771	782.6			Mudstone: Dark grey, carbonaceous, contains fragments of plants, pieces of coal & thin coal seams. Interbedded with siltstone. Bedding 71° to core axis at 774'
782.6	788.4			Sandstone: Grey, fine grained, interbedded with siltstone & mudstone. Occasional fragments of plants. Bedding 60° to core axis at 785'
788.4	795.8			Shaley Mudstone: Dark grey, carbonaceous, contains fragments of plants, coal seams, pieces of coal. Interbedded with mudstone and shale. 792.9 - 794.5 coal seam Bedding 66° to core axis at 792'
795.8	809.0			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & shale. contains thin coal seams & pieces of coal. Bedding 60° to core axis at 797' 803.6 - 804 coal seam Bedding 70° to core axis at 805' occasional calcite fracture filling 804.5 - 807

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 131

Footage		Recovery		Description
from	to	feet	%	
809.0	821.7			Siltstone: Dark grey, very fine grained, interbedded with sandstone & shale. Occasional plant fragments. Bedding 61° to core axis at 816' Bedding 52° to core axis at 820'
821.7	823.9	2.2 / 2.2	100	Coal seam: Sampled (DH 131-5) All not pure coal
823.9	826.4			Coaly shale (Mudstone) : Dark grey to black. Interbedded thin coal seams (several) and pieces of coal, fragments of plants.
826.4	830.3	3.0 / 3.9	77	Coal Seam; Sampled (DH 131-6) Partings (Mudstone) 827.7 - 838.0
830.3	832.7			Mudstone: Dark grey, carbonaceous, fragments of plants, thin coal seams, pieces of coal.
832.7	834.8	2.1 / 2.1	100	Coal Seam: Sampled (DH 131-7) All not pure coal
834.8	838.6			Mudstone: Dark grey, carbonaceous, interbeds of siltstone& shale. Thin coal seams, pieces of coal, fragments of plants Coal seam: 835.4 - 836.0, 836.3 - 837.0
838.6	850.2			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & shale. Fragments of plants, thin coal seams. Bedding 62° to core axis at 842' Coal seams: at 844.4 - 845.8
850.2	854	3.2 / 3.8	84	Coal Seam Sampled (DH 131-8) Partings: (Shaly coal - mudstone) 850.4 - 850.5 852.4 - 852.8
854	877			Sandstone: Grey, finegrained, crossbedded, interbedded with siltstone & shale. Carbonaceous in pa Fragments of plants, pieces of coal, thin coal seams 857.3 - 858 coal seam 872.9 - 873.6 coal seam

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH 131

Footage		Recovery		Description
from	to	feet	%	
				Bedding 57° to core axis at 859' Bedding 60° to core axis at 870' Bedding 61° to core axis at 876' END OF HOLE FEB. 16/77 Rob Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 132 Size of core: HQ Total depth: 730 ft
222.5 m

Location: EMGS co-ordinates - N 5588705.275
E 646018.098

Baseline co-ordinates - N 379 + 99.9
W 24 + 36.1

Elevation - ft 5305.5
m 1617.12

Date of starting : Feb. 9, 1977
Date of completion : Feb. 14, 1977

Logging by : Rob Wilson
on : Feb. 15, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	45.0 degrees	N 79.9 degrees E
180	55	48.0 "	N 76 " E
705	215	48.5 "	N 68 " E

Recovery of coal : $\frac{86.9}{109.8}$ ft = 79%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH -132

Footage		Recovery		Description
from	to	feet	%	
0	24			Overburden: No core
24	49			Shale: Dark grey, slightly laminated, interbeds of silt and sandstone. Occasionally fragments of plants and thin coal seams. Bedding 80° to core axis at 26' Bedding 80° to core axis at 41°.
49	112.6			Sandstone: Grey to light grey, fine grained, crossbedded, interbeds of siltstone, pieces of coal, occasionally thin coal seams, Bedding 79° to core axis at 68' Bedding 75° to core axis at 80' Bedding 78° to core axis at 110'
112.6	123	10.4 10.4	100	Coal seam: Sampled (DH 132-1) Parting 120 - 120.8
123	125.0			Sandstone: Grey, fine grained, interbeds of siltstone
125.0	127.8			Coal Seam:
127.8	136.4			Siltstone: Dark grey, very fine grained, Interbeds of sandstone and shale. Fragments of plants & pieces of coal. Bedding 76° to core axis at 130'
136.4	141.5			Sandstone: Grey, fine grained, crossbedded, pieces of coal. fragments of plants. Bedding 76° to core axis at 141'.
141.5	160.5			Siltstone: Dark grey, very fine grained with interbeds of sandstone & shale, occasionally fragments of plants & pieces of coal. Bedding 80° to core axis at 151.0'
160.5	172.6			Sandstone: Grey, fine grained, crossbedded, interbeds of siltstones.
172.6	185.4			Siltstone: Dark grey, very fine grey, interbeds of shale & sandstone. Fragments of plants, pieces of coal. Coal seam: 175 - 175.9 " " 185 - 185.9 Bedding 80° to core axis at 171'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 132

Footage		Recovery		Description
from	to	feet	%	
185.4	190.0			Sandstone: Light grey, fine grey crossbedded. Pieces of coal.
190.0	214.1			Siltstone: Dark grey, very fine grained, interbe of sandstone and shale. Fragments of plants and thin coal seams. Coal seam: 212.3 - 213
214.1	220.5	6.4 / 6.4	100	Coal Seam: Sampled (DH 132-2)
220.5	228.0			Mudstone: Dark grey, slightly carbonaceous, fragments of plants, numerous thin coal seams.
228.0	237.6	6.8 / 9.6	70.8	Coal seam: Sampled (DH 132-3) Partings (mudstone) 231.8 - 231.9
237.6	243.8			Mudstone: Dark grey, interbeds of sandstone & shale, fragments of plants, numerous thin coal sea Bedding 70° to core axis at 245'
243.8	249.0			Sandstone: Grey, fine grained cross bedded, interbeds of siltstone and shale. Pieces of coal.
249.0	262			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. Coal seam 260.2 - 260.7
262	280	13.3 / 18	73.8	Coal Seam: Sample (DH 137-4) Parting (Coaly shale) 268.2 to 268.8 Parting 276.2 - 277.0 Parting 277.6 - 278.2
280	307.5			Shale: Dark grey, slightly laminated and carbonaceous, interbedded with siltstone and sandstone, fragments of plants and numerous thin coal seams. Bedding 85° to core axis at 290' Badly broken core.
307.5	313.4	4.0 / 5.9	82	Coal Seam: Sampled (DH 137-5) Parting 312.2 to 313.1 (Mudstone)
314.4	338.0			Sandstone: DArk grey to grey, fine grained, interbeds of silt & shale, cross bedding. Bedding 74° to core axis 317'.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 132

Footage		Recovery		Description
from	to	feet	%	
338.0	340.9			Shale: Dark grey, slightly laminated fragments of plants, pieces of coal.
340.9	344.8	3.2 3.9	94	Coal Seam: (Sample DH 137-6)
344.8	377			Shale: Dark grey, interbeds of sandstone & siltstone Fragments of plants, slightly carbonaceous. Numerous thin coal seams. Core highly broken. Bedding 74° to core axis at 354'
377	390			Siltstone: Dark grey, very fine grained, interbeds of sandstone. Bedding 1 to core axis
390	405			Sandstone: Light grey, fine grained, cross bedded, interbeds of siltstone & shale Bedding 1 to core axis at 402'
405	411.2			Siltstone: Dark grey, fine grained occasionally fragments of plants
411.2	425.0	7.5 13.8	53	Coal Seam: Sampled (DH 137-7) Parting (Coaly shale) 424.2 - 424.4 423.0 - 423.2
425	437.3			Shale: Dark grey to black, fragments of plants, pieces of coal, small seams of coal. Interbedded siltstone &sandstone. Bedding 80° to core axis at 430'
437.3	477			Sandstone: Grey, fine grained, cross bedded, interbeds of shale & siltstone, fragments of plants, seams of coal 3' interbed of shaly coal and coal seams 453: High degree of coaly shale mixed with the sandstone Bedding 1 to core axis at 445' Bedding 80° to core axis at 476
477	480	2.1 3	70	Coal Seam: Sampled (DH 132-8) Parting (shaly coal) 478.0 - 478.2 477.4 - 477.6

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 132

Footage		Recovery		Description
from	to	feet	%	
480	487.4			Sandstone: Grey, fine grained, crossbedded, interbeds of shale & siltstone. Fragments of plants, pieces of coal. Bedding 75° to core axis at 485'.
487.4	500	10.4 / 12.6	83	Coal Seam: Sampled (DH 132-9) Parting (Shaly coal) 488.0 - 488.2 488.0 - 489.6 494.8 - 495.6 496.0 - 496.6 (499.5 - 499.6) 498.0 - 498.4 498.0 - 498.5
500	502.6			Shale: Dark grey, coaly, highly broken, plant fragments, pieces of coal. Bedding 90° to core axis at 501'.
502.6	508.9	5.8 / 6.3	92	Coal Seam: Sampled (DH 132-10) Partings (shaly coal) 503.0 - 503.2 (508.0 - 508.3) 503.0 - 503.5
508.9	599.0			Sandstone: 1st 2 - 3 feet are a very shaly sandstone. SSt is grey, fine grained, cross bedded with interbeds of siltstone and shale. Plant fragments Bedding is 1 to core axis at 517' Bedding is 80° to core axis at 532' Bedding is 80° to core axis at 549' Bedding is 90° to core axis at 560' Bedding is 70° to core axis at 569' Bedding is 74° to core axis at 576' 580 - 590 numerous thin coal seams Bedding is 45° to core axis at 589' Bedding is 72° to core axis at 593' 595 - 600 numerous thin coal seams Bedding is 65° to core axis at 596'
599.0	612			Mudstone: Dark grey, interbedded with shale & sandstone, slightly carbonaceous. Pieces of coal, fragments of plants.
612	667.4			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & mudstone. Fragments of plants. Frequent thin shaley interbeds.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 132

Footage		Recovery		Description
from	to	feet	%	
				Bedding 90° to core axis at 630' Bedding 82° to core axis at 639' Bedding 66° to core axis at 649' Bedding 74° to core axis at 658' Bedding 80° to core axis at 666'
667.4	678	7.5 / 10.6	71%	Coal Seam: Sampled (DH 132-11) Partings (Coaly shale & shale) 668.4 - 669.1 672.5 - 675.7
678	683.5			Siltstone: Dark grey, slightly carbonaceous, interbeds of shale & sandstone. Thin coal seams Pieces of coal, fragments of plants. Bedding 1 to core axis at 680'
683.5	708.4			Sandstone: Light grey to grey , fine grained, crossbedded , interbedded with siltstone & shale. Numerous shaly stringers. Bedding 71° to core axis at 689' Bedding 85° to core axis at 693' Bedding 84° to core axis at 696' Fragments of plants Pieces of coal, thin coal seams Siltstone interbed 697.2 - 699 Shaly coal seam 704.3 - 704.7
708.4	718.8	9.5 / 10.4	91	Coal Seam: Sampled (DH 132-12) Partings (shaly coal) 710.8 - 711.0
718 - 730				Sandstone: Grey, fine grained, almost a siltstone near coal contact, may be an interbed. Fragments of plants. Bedding 85° to core axis at 725'
				End of Hole Feb. 15, 1977 Rob Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 133 Size of core: HQ Total depth: 665 ft
202.7 m

Location: EMGS co-ordinates - N 5587233.665
E 646746.056

Baseline co-ordinates - N 327 + 44.2
W 12 + 56.1

Elevation - ft 5235.5
m 1595.78

Date of starting : Feb. 21, 1977
Date of completion : Feb. 27, 1977

Logging by : Rob Wilson
on : Feb. 27, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	90.0 degrees	-
197	60	88.0 "	N 41 degrees E
394	120	86.0 "	N 69 " E
640	195	83.5 "	N 71 " E

Recovery of coal : $\frac{57.5}{74.7}$ ft = 77%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 133

Footage		Recovery		Description
from	to	feet	%	
0	30			Overburden:(No core)
30	53			Sandstone: Grey, fine grained, crossbedded in pa interbedded with siltstone & shale. Occasional carbonate & coal stringers Bedding 45° to core axis at 36' Bedding 52° to core axis at 50'
53	106.0			Siltstone: Dark grey, fine grained to very fine grained, interbedded with sandstone & shale. Thin coal seams occasionally. From 72' - 106', frequent interbedding between mudstone & siltstone. Sections average 1-2' Fragments of plants, pieces of coal Bedding 43° to core axis at 79' Bedding 43° to core axis at 88' Bedding 50° to core axis at 104'
106.0	115.3	9.1 9.3	98	Coal Seam: Sampled (DH 133-1) Partings (Mudstone) 110.5 - 110.7 114.0 - 114.3
115.3	118.8			Mudstone: Dark grey, carbonaceous, interbeds of siltstone, shale & coal. Several thin coal seams.
118	125.6	4.8 7.6	63	Coal Seam: Sampled (DH 133-2) no partings
125.6	177			Sandstone: Grey, fine grey, frequently interbedded with siltstone. Interbedded with shale. Pieces of coal, thin coal seams Bedding 40° to core axis at 130' Bedding 64° to core axis at 139' Bedding 52° to core axis at 160' NB 151.6 - 156.6 Core missing actually 156.6 should be 151.6 also no core loss (corrected at 177') i.e. 2 177' tags put in 1 after theother. Bedding 52° to core axis at 172' actual 5

DIAMOND DRILL CORE LOGGING SHEET

DDH No.DH - 133

Footage		Recovery		Description
from	to	feet	%	
177.0	218.7			Siltstone: Dark grey, very fine grained, interbedded with sandstone & mudstone. 187.2 - 187.5 Coal seam. Bedding 55° to core axis at 191' Bedding 52° to core axis at 205' 195.5 - 197.2 Coal seam
218.7	229.5	9.1 10.8	84	Coal Seam: Sampled (DH 133-3) Partings (mudstone) none found
229.5	236			Siltstone: Dark grey, very fine grained, interbeds of sandstone & mudstone. Pieces of coal, thin coal seams, fragments of plants Bedding 50° to core axis at 235'
236	248			Sandstone: Grey , fine grained, crossbedded, interbedded with siltstone & shale. Fragments of plants, thin coal stringers. Bedding 46° to core axis at 246'
248	254.3	5.6 6.3	89	Coal Seam: Sampled (DH 133-4) No partings
254.3	313.3			Sandstone: Grey, fine grained, crossbedded, interbedded with siltstone & occasional thin shale Bedding 66° to core axis at 261' Bedding 44° to core axis at 290' 292 - 302 frequency of siltstone interbeds increase 304.5 - 304.9 - several calcite stringers Bedding 42° to core axis at 302' Bedding 56° to core axis at 311'
313.3	315			Coal Seam: Not samples
315	328.5			Siltstone: Grey to dark grey, very fine grained interbedded with sandstone & mudstone. Bedding 45° to core axis at 321'
328.5	331.4	2.0 2.9	69	Coal Seam: Sampled (DH 133-5)
331.4	371			Siltstone: Dark grey, very fine grained, interbeds of sandstone, mudstone, shale & coal. Fragments of plants, thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 133

Footage		Recovery		Description
from	to	feet	%	
				336.2 - 336.5 coal seams 338.3 - 339.3 coaly shale mudstone seam 341.2 - 346.2 coaly shale (mudstone) seam 354.3 - 355 coal seam and other thin coal seams. Bedding 48° to core axis at 359'
371.0	427.8			Sandstone: Grey to light grey, fine grained, crossbedded, interbedded siltstone & shale. occasional fragments of plants, thin coal seams. Bedding 53° to core axis at 375' Bedding 45° to core axis at 388' Bedding 55° to core axis at 397' Past 402, amount of siltstone increases and one gets some mudstone and carbonaceous mudstone interbeds as at 415' - 418' Bedding 45° to core axis at 419'
427.8	431.0			Coaly mudstone: Coal, mudstone & coaly mudstone. too much rock partings to sample
431.0	434.3			Siltstone: Dark grey, very fine grained, interbedded mudstone and sandstone. Bedding 35° to core axis at 433'
434.3	447.3	9.9	76	Coal seam: Sampled (DH 133-6) no partings
		13.0		
447.3	461			Siltstone: Dark grey, very fine grained, interbedded mudstone and coal (shaly) & sandstone Bedding 50° to core axis at 453' Coal seam: 455.4 - 456.5 Coaly shale 457.0 - 461
461	481			Shaly mudstone: Dark grey to black, carbonaceous Plant fragments, thin coal seams, interbeds of siltstone.
481	517.8			Sandstone: Grey, fine grained, interbedded with siltstone and thin shaly beds (numerous) Bedding 45° to core axis at 482' Bedding 47° to core axis at 496' Bedding 43° to core axis at 507' Bedding 43° to core axis at 515'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 133

Footage		Recovery		Description
from	to	feet	%	
517.8	532.2	9.0 / 14.4	63	Coal Seam: Sampled (DH 133-7)
532.2	569.7			Shaly siltstone: Dark grey to black, very fine grained, many thin shale beds & thin coal seams 537 - 537.7 coal seam 552.9 - 553.4 553.8 - 554.4 Bedding 60° to core axis at 535' Bedding 51° to core axis at 549' core quite broken 559 - 560 563.3 - 6 coaly siltstone core quite broken 569 - 572
569.7	631			Sandstone: Grey to dark grey fine grained, interbedded with siltstone & thin shale. bed. Bedding 40° to core axis at 578' Bedding 45° to core axis at 588' Bedding 54° to core axis at 597' Bedding 42° to core axis at 610' 602 - 606 core highly broken carbonaceous beds common Bedding 57° to core axis at 619 623 - 626 lost drill bit & necessary redrilling extremely broken core.
631	632.7			Coal seam: not sampled
632.7	643			Siltstone: Dark grey, very fine grained, interbedd sandstone. Thin coal seams, pieces of coal, plant fragments. 636 - 636.7 coal seam
643	653.4	8.0 / 10.4	77	Coal seam: sampled (DH 133-8) no partings
653.4	665			Siltstone: Dark grey, very fine grained, interbedded sandstone and shale. Plant fragments, pieces of coal, thin coal seams. Bedding 59° to core axis at 654' Bedding 55° to core axis at 662' 665' end of hole Feb. 27/77 Rob Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 134 Size of core: HQ Total depth: 1000 ft
304.8 m

Location: EMGS co-ordinates - N 5584355.139
E 644898.621

Baseline co-ordinates - N 249 + 99.6
W 93 + 76.9

Elevation - ft 6279.9
m 1914.11

Date of starting : March 14, 1977
Date of completion : March 24, 1977

Logging by : Rob G. Wilson
on : March 24, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	45.0 degrees	N 78 degrees E
230	70	48.5 "	N 71 " E
460	140	47.0 "	N 65 " E
755	230	44.6 "	N 66 " E
984	300	45.0 "	N 71 " E

Recovery of coal : $\frac{18.1}{31.3}$ ft = 58%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
0	32.0			Overburden: No core
32	159.0			Sandstone: Light grey to grey, medium grained, salt & pepper sandstone. occasionally crossbedded 32 - 70 (Highly oxidized) strongly rust coloured 70 - 100 mildly rust coloured. Bedding from thin to wide, shown by band of darker "pepper". Grain size at the top of the hole is larger than that of the basal on the other side of the valley. Grains are sub angular to sub rounded, inequisize, mostly quartz, feldspars & mafics. A fairly immatu sandstone. Well weathered, crumbles under hammer blow. Bedding 75° to core axis at 34' Bedding 69° to core axis at 48' 35 - 80 finer grained, slightly calcarious cement (unlike above) 79 - 80 highly fractured, some clay and minor? coal? 75 thin mudstone. bed Bedding 50° to core axis at 70' Bedding 53° to core axis at 82' Bedding 69° to core axis at 89' Bedding 51° to core axis at 102' 105 - 124 Bedding becomes very irregular varying from 0 - 50° to core axis. Bedding 29° to core axis at 106' Bedding 55° - 06°to core axis at 106' Bedding 8° to core axis at 115' Bedding 33° to core axis at 116' Bedding 55° to core axis at 120' 123.8 - 125.9 Frequent 1/2 - 2" Mudstone interbeds 125.9 -127 occasional mudstone clasts. Bedding 39° to core axis at 132' 135 - 145 frequent irregular mudstone clasts, not generally as complete beds, appears to be rip up clasts originating in quiet water & transported to this site & deposited. Bedding 55° to core axis at 144' Bedding 59° to core axis at 152'
159.0	176.4			Siltstone: Dark grey, very fine grained, interbedded sandstone, mudstone & shale. Unit is highly fractured & very weathered (almost to disintigration)

DIAMOND DRILL CORE LOGGING SHEET
DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
				166 - 166.4 very finely laminated shale. 168.0 - 168.3 clay 172.0 - 172.4 thin coal seam 174.0 - 174.4 thin coal seam Bedding 65° to core axis at 173'
176.4	181.3	3.2	65	Coal seam: Sampled (DH 134 - 1) No partings - small band of pyrite.
181.3	189.5			Shale: Very finely laminated and extremely weathered. Some minor coal seams associated.
189.5	234.0			Sandstone: Grey, fine grained, slightly cross-bedded, interbedded siltstone & shale. Rock is very weathered/fractured in some areas. Thin coal seam 203'. Bedding 62° to core axis at 190' Bedding 68° to core axis at 199' Bedding 63° to core axis at 209' Thin coal seam at 212' 214 - Rock is medium grained light grey "salt & pepper sandstone". Many thin bands of shale & siltstone and some thin coal stringers. Bedding 50° to core axis at 216' Bedding 58° to core axis at 228' Bedding 62° to core axis at 234'
234.0	276			Siltstone: Dark grey, very fine grained, interbedde sandstone, occasional mudstone & shale. Minor coal seams & stringers. Bedding 72° to core axis at 240' Bedding 66° to core axis at 250' 255 - 256.3 several small coal stringers 256.3 - 257.5 shaly coal 257.5 - 261 shaly silt & mudstone, Bedding 54° to core axis at 259' Bedding 61° to core axis at 273' 273 - 276 sandstone interbed (medium grained)
276	298.8			Mudstone Dark grey, much shale throughout. Minor coal seams, some siltstone interbeds. 296.8 - 298.8 shale & coal very sharp contact with below in unbroken core secti

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
298.8	474.4			Sandstone: Light grey to grey, fine to medium grained, "salt & pepper sandstone". Interbeds of fine grained sandstone & siltstone. Thin bedded, bedding both silt and increase "pepper" layering. Bedding 64° to core axis at 299' Bedding 56° to core axis at 310' 314 - 323.5 - Mostly fine grained sandstone & siltstone. 323.5 - very sharp contact at break in core between fine grained siltstone/sandstone and medium grained sandstone. Join surfaces were clay covered, and washing revealed a polished surface. TECTONIC CONTACT? 324 - 349 - more medium bedded medium grained sandstone. Bedding 66° to core axis at 320' Bedding 67° to core axis at 330' occasional thin coal stringers Bedding 70° to core axis at 340' Bedding 65° to core axis at 350' 349 - 354 Thin bedded sandstone 354 - 363 medium to thick bedded 363 - 365 Thin bedded 365 - 367 medium bedded Bedding 50° to core axis at 361' 367 - 378 Thin bedded with frequent and abundant thin coal stringers. Only a few are complete beds (1/4") Bedding 63° to core axis at 370' Bedding 41° to core axis at 380' 386.5 - 387.7 Siltstone, containing calcite stringers & 1/2 coaly shale at contact (sharp upper), and bituminous sharp lower contact (holewise). Bedding 61° to core axis at 391' Bedding 67° to core axis at 395' Bedding 70° to core axis at 404' 405 - 413 Interbedded siltstone (1' sections) within the thin bedded sandstone. 410 - 413 mostly siltstone. Bottom contact shaly clay,(Tectonic)? 413 - 422 - All thin bedded, medium grained sandstone

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
				422 - 425 mostly siltstone 425 - 475 thin bedded sandstone, rare siltstone interbed (6" - 1') Bedding 62° to core axis at 415' Bedding 70° to core axis at 425' Bedding 72° to core axis at 435' Past 440 bedding is partly made of very thin shale and coal. Bedding 65° to core axis at 455' Bedding 55° to core axis at 465'
474.4	480.4			Shaly siltstone: DArk grey, very fine grained, shale & siltstone & sandstone. Could be an interbed in above unit Bedding 62° to core axis at 476'
480.4	670.0			Sandstone: Light grey to grey, fine to medium grained, crossbedded occasionally and quite shaly in places. Mostly "salt & pepper" sandstone, but does contain some sections of finer grained sandstone & siltstone. 480.4 - 490 mostly finer grained sandstone & shale. 490 - 505 mostly medium grained "salt & pepper" sandstone. 496.7 - 505 thin coal stringers to 1/4" most not complete beds 504 - 504.6 Coal seam 505 - 510 mostly siltstone with frequent thin sandstone interbeds Bedding 64° to core axis at 494' Bedding 45° to core axis at 507' 510 - 515 mostly medium grained "salt & pepper" sandstone, bedding medium with many vary thin shale & coal layers. 515 - 587 as above but less shale & coal & slightly thinner bedded Bedding 69° to core axis at 515' Bedding 62° to core axis at 525' Bedding 58° to core axis at 533' Bedding 58° to core axis at 540' 504 - 586 slightly coarser grained and clean, rare shale & coal layers. Bedding 42° to core axis at 550' Bedding 62° to core axis at 560' Bedding 50° to core axis at 570' Bedding 56° to core axis at 581'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
				586 - 597 fine grained sandstone, still fairly "clean" as above Bedding 50° to core axis at 590' 597 - 606 - slightly coarser grained with increase coal & shale (thin) Bedding 59° to core axis at 601' Bedding 51° to core axis at 610'
Indefiniteend of Basal				606 - 622 Finer grained sandstone, Bedding 65° to core axis at 620'
Definite end of Basal				622 - 630 fine grained sandstone, near to siltstone size. 630 - 645 Interbeds of fine & medium grained sandstone. Fine grained sandstone is near siltstone size. Bedding 52° to core axis at 630' Bedding 58° to core axis at 640' 645 - mainly fine to very fine grained sandstone/ siltstone Bedding 55° to core axis at 650' Bedding 62° to core axis at 660' Bedding 56° to core axis at 670' contact with below gradual over 4'
670	705			Siltstone: Dark grey, very fine to fine grained, interbedded sandstone. (35 - 45%). Minor shale sections (to 3") at 677, 682, 686 Bedding 62° to core axis at 680' Bedding 70° to core axis at 690' Bedding 72° to core axis at 700' Pyrite at 681.5 Bedding 71° to core axis at 704'
705	724			Sandstone: Grey, fine grained, occasionally crossbedded, interbedded siltstone & occasional shale. Bedding 66° to core axis at 715' Bedding 70° to core axis at 724'
724	760			Siltstone: Dark grey, very fine grained, interbedded sandstone, shale and shaly coal at 725.8 - 726.0, 728.5 - 728.7 729.0 - 729.1, 729.8 - 730.9 740.1 - 740.2, 741.2 - 741.4, 742.0 - 742.7 this whole section carbonaceous

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH -134

Footage		Recovery		Description
from	to	feet	%	
				plant fragments & thin coal stringers not mentioned above. Above 67° to core axis at 736' 740 - 751 core moderately broken, highly fractured in sections & small shaly coal & larger coaly shale sections. Well fractured shaly & coaly shale at 640.5 - 640.7 642.7 - 744.0, 747.2 - 747.9, 749.5 - 750.6 shaly coal & coal sections at 741.5 - 741.8, 748.0 - 749 751.0 return to solid, non fractured, non shaly siltstone. Bedding 64° to core axis at 751'
760	795			Sandstone: Grey, fine grained, interbedded siltstone (45%).& mudstone. Some sections moderately shaly & carbonaceous. 764 - 770 mainly siltstone & shale slightly carbonaceous. Bedding 60° to core axis at 761' Bedding 50° to core axis at 771' 780+ several thin coal stringers Bedding 60° to core axis at 782' 785 - 792 - mainly mudstone & siltstone. Some click sides present Bedding 60° to core axis at 793'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
795	870			Siltstone: Dark grey, slightly carbonaceous, interbedded mudstone , sandstone & shale. Plant fragments and very thin coal seams. Bedding 52° to core axis at 805' Bedding 58° to core axis at 814' 814.5 - 820 broken core & highly sheared shaly mudstone, minor coal 814.5 - 820.0 Bedding 50° to core axis at 824' Bedding 58° to core axis at 836' Bedding 63° to core axis at 844' Bedding 55° to core axis at 854' Bedding 62° to core axis at 864' 865 - carbonaceous mudstone & shale. Highly sheared. Thin coal seams.
870	880			Coal & Mudstone: core highly broken, interbedded carbonaceous mudstone & coal (each interbed avg. 101.5') poor recovery
880 Coke too broken check geop logs	889.2	4.5 9.2	49	Coal Seam: Sampled (DH 134-2) partings - as above only more coal Mudstone: 885.7 - 887.2 - 888.5
889.2	915.5			Mudstone: Dark grey to balck, carbonaceous, shaly Interbeds of siltstone. Coal seams. Bedding 60° to core axis at 896'. 897.3 - 901? Coal seam 1' recovery, not sampled 901 - 915 shale, shaly coal and coaly shale, mudstone, shaly mudstone.
915.5	945			Siltstone: Dark grey, very fine grained, interbedded sandstone (40 - 45%) Thin coal seams and stringers. Bedding 55° to core axis at 919' Bedding 60° to core axis at 928' Bedding 68° to core axis at 936' 937 - 941 Interbedded siltstone & coal seams, each 6' or less Bedding 67° to core axis at 942'
945.0	962.2	10.4 17.2	60	Coal Seam: sampled (DH 134-3) Partings (Mudstone) 958.4 - 960.8

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 134

Footage		Recovery		Description
from	to	feet	%	
962.2	1000			Siltstone: Dark grey, very fine grained, interbedded sandstone (45%) Bedding 60° to core axis at 963' Bedding 68° to core axis at 972' Bedding 65° to core axis at 982' Bedding 65° to core axis at 991' Bedding 70° to core axis at 1000' END OF HOLE 1000' March 24/ 1977 Rob G. Wilson

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 135 Size of core: 0-587' HQ 587-1030' HQ Total depth: 1030.0ft 313.9 m

Location: EMGS co-ordinates - N 5584405.665
E 645106.037

Baseline co-ordinates - N 249 + 99.9
E 86 + 76.5

Elevation - ft 6083.6
m 1854.28

Date of starting : March 25, 1977
Date of completion : April 10, 1977

Logging by : G.C. Singhai
on : April 11, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	45.0 degrees	N 78 degrees E
853	260	39.0 "	N 63 " E
1017	310	37.0 "	N 60 " E

Recovery of coal : $\frac{94.7}{126.5}$ ft = 75%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 135

Footage from	Footage to	Recovery feet	Recovery %	Description
0	45.0			Overburden (No core)
45.0	45.2			Sandstone:
45.2	50.0	4.0 / 4.8	83.33	Coalseam: sampled (DH 135-1) partings Mudstone: 47.4 - 48.7
50.0	86.0			Shale: Dark grey, laminated, slightly carbonaceo fragments of plants, pieces of coal. Bedding 50° to core axis at 52.0' interbeds of sandstone and siltstone. Bedding 25° to core axis at 65.0' Bedding parallel to core axis at 75.0'
86.0	100.0	9.3 / 14	66.42	Coal seam: Sampled (DH 135-2) shaly coal 90-93
100.0	123.0			Shale: Dark grey, laminated, fragments of plant numerous thin coal seams, interbeds of siltstone and sandstone. Bedding 72° to core axis at 101 Bedding 70° to core axis at 112 Bedding 72° to core axis at 118
123.0	179			Sandstone: Grey, fine graine, crossbedded, interbeds of siltstone and mudstone. Bedding 72° to core axis at 127.0 Bedding 70° to core axis at 134.0 Bedding 70° to core axis at 148.0 Bedding 75° to core axis at 165.0 Bedding 66° to core axis at 175.0 Coal seam 177.2 - 177.5
179	182			Shale: Dark grey, laminated, fragments of plants thin coal seams. Bedding 68° to core axis at 181.
182.0	190.0	6.0 / 8.0	75	Coalseam: Sampled (DH 135-3) Parting Mudstone 185 - 186
190.0	205.0			Shale: Dark grey, laminated, interbeds of siltstone, fragments of plants, occasionally thin coal seams. Bedding 60° to core axis at 192.0 and 55° to core axis at 203.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 135

Footage		Recovery		Description
from	to	feet	%	
205.0	236.0			Sandstone: Light grey to grey, fine grain, interbeds of siltstone and shale. crossbedded, Bedding 70° to core axis at 212 and 78° to core at 220.0'
236.0	242.0			Shale: DArk grey, laminated, interbeds of mudstone, fragments of plants, occasionally thin coal seams. broken core
242.0	247.4			Siltstone: Dark grey, very fine grain, fragments of plants, bedding 77° to core axis at 246.0'
247.4	264.5			Mudstone: Dark grey, fragments of plant occasi ally thin coal seams, interbeds of sandstone. Bedding 70° to core axis at 258.0'
264.5	310.0			Sandstone: Grey, fine grained, crossbedded, Bedding 80° to core axis at 265.5' Bedding 51° to core axis at 269.0' Bedding 74° to core axis at 278.0 Bedding 70° to core axis at 290.0' Bedding 78° to core axis at 309.0
310.0	33.0			Shale: Dark grey, laminated, interbeds of mudsto slightly carbonaceous, fragments of plants, occasionally thin coal seams. Bedding 80° to cor axis at 326.0 (lost core 320 - 325.0)
330	337.0	6.0 / 7.0	85.7	Coal Seam: Sampled (DH 135-4) Parting Mudstone 333.0 - 333.9
337.0	362.0			Shale: Dark grey, interbeds of siltstone. fragments of plants bedding 66° to core axis and 60° to core axis at 361.0 Coal seam: 348.0 - 348.2, 348.7 - 349.2 352.7 - 353.1
362.0	383.0			Sandstone: Grey to light grey, fine grain, interbeds of siltstone and shale, crossbedded, pieces of coal. Bedding 72° to core axis at 365' Bedding 75° to core axis at 371.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 135

Footage		Recovery		Description
from	to	feet	%	
383.0	408.0			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. core badly broken.
408	421.4	12.5/13.4	93.28	Coal Seam: Sampled (DH 135-5)
421.4	425.0			Mudstone: Dark grey, fragments of plants and pieces of coal.
425.0	445.1			Sandstone: Grey, fine grain, crossbedded, interbeds of shale and siltstone, numerous thin coal seams. Bedding 60° to core axis at 426.0' . Bedding at 72° to core axis at 44.0'
445.1	449.2	4.1/4.1	100	Coal seam: Sampled (DH 135-6)
449.2	460.0			Mudstone: Dark grey, interbeds of siltstone fragments of plants. Bedding 72° to core axis at 452.0'.
460.0	535.0			Sandstone: Grey fine grain, crossbedded, interbeds of siltstone and shale. Bedding 70° to core axis at 463.0' Bedding 66° to core axis at 475.0' Bedding 72° to core axis at 488.0' Bedding 85° to core axis at 497.0' Bedding 72° to core axis at 522.0'
535.0	539.3	3.3/4.3	76.7	Coalseam: - sampled (DH 135-7)
539.3	541.3			Mudstone: Dark grey, fragments of plants.
541.3	552.2	5.3/10.9	48.6	Coal seam: Sampled (DH 135-8)
552.2	561.1			Mudstone: Dark grey, fragments of plants. numerous thin coal seams.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 135

Footage from	Footage to	Recovery feet	Recovery %	Description
561.1	587.5			Sandstone: Dark grey to grey, fine grain. crossbedded, interbeds of siltstone, pieces of coal. Bedding 60° to core axis at 565.0' Bedding 60° to core axis at 574' Bedding 70° to core axis at 579'
587.5	589.5	1.6/2.0	80	Coalseam: Sampled (DH 135-9)
589.5	595.0			Shale: Dark grey, slightly laminated, fragments of plants, pieces of coal. Core ground only 0.5 is recovered. and core reduced to N.Q. size.
595.0	598.2	0.5/3.2	15.6	Coalseam: Core ground could not be sampled.
598.2	600.8			Siltstone: Dark grey, very fine grain, fragment of plants, pieces of coal.
600.8	690.0			Sandstone: Light grey, fine grain, crossbedded interbeds of siltstone, pieces of coal. Bedding 62° to core axis at 612' Bedding 54° to core axis at 637' Bedding 68° to core axis at 651 Bedding 65° to core axis at 657 Bedding 74° to core axis at 662 Bedding 62° to core axis at 680'
690	700			Mudstone: Dark grey, interbeds of siltstone, fragments of plants, pieces of coal. core badly broken.
700	705			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 65° to core axis at 701'
705	707.5	1.0/2.5	40	Coalseam: Sampled (DH 135-10)
707.5	711.0			Mudstone: Dark grey, fragments of plants, piece of coal.
711.0	726.3			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, Bedding 75° to core axis at 719.0', Coal seam: 721.0 - 721.2, 722.0 - 722.2

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 135

Footage		Recovery		Description
from	to	feet	%	
726.3	728.6	1.2/2.3	52.1	Coalseam: Sampled (DH 135-11)
728.6	735.0			Sandstone: Grey, fine grain, interbeds of siltstone, crossbedded, Bedding 62° to core axis at 734.0
735.0	738.5	2.5/3.5	71.4	Coal seam: Sampled (DH 135-12)
738.5	742.5			Siltstone: Dark grey, very fine grain, interbeds of mudstone. Bedding 60° to core axis at 739.0'
742.5	744.7	2.2/2.2	100	Coalseam: Sampled (DH 13 - 13)
744.7	749.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
749.0	753.2	2.5/4.2	59.5	Coalseam: sampled (DH 13-14) Parting mudstone: 750.0 - 750.3
753.2	796.5			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, numerous thin coal seams. Bedding 75° to core axis at 757' Bedding 70° to core axis at 772' Bedding 76° to core axis at 785
796.5	804.5			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams. Slightly carbonaceous, coal seams. 799.3 - 799.4, 799.5 - 799.6
804.5	812.4			Sandstone: Light grey, fine grain, cross bedded, interbeds of siltstone, Bedding 65° to core axis at 806' core badly broken.
812.4	817.5	2.5/5.1	99	Coalseam: Sampled (DH 135-15)

DIAMOND DRILL CORE LOGGING SHEET

DDH No.

Footage		Recovery		Description
from	to	feet	%	
817.5	820.0			Sandstone: Grey to light grey, fine grain crossbedded, interbeds of siltstone, Bedding 50° to core axis at 819.0, core badly broken.
820	830			Siltstone: Dark grey, very fine grain, fragments of plants, core badly broken.
830	843	10.4 / 13.0	80	Coalseam: Sampled (DH 135-16) Parting of mudstone 837.8 - 839.0
840	849.5			Mudstone: Dark grey, fragments of plants, numerous thin coal seams.
849.5	876.3			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, occasionally thin coal seams Bedding 60° to core axis at 851. Bedding 65° to core axis at 867 Bedding 58° to core axis at 875 coal seam 864 - 865
876.3	890			Shale: Dark grey, laminated, fragments of plants pieces of coal, coal seam 877.3 - 877.4, 880.7 - 881.2
890	892	1.5 / 2.0	75	Coalseam: Sampled (DH 135-17)
892	920			Sandstone: Grey, fine grain, crossbedded interbeds of siltstone and shale, occasionally thin coal seams. Bedding 64° to core axis at 895 Bedding 53° to core axis at 907 Bedding 60° to core axis at 917
920	924	2.3 / 4.0	57.5	Coalseam: Sampled (DH 135-18)
924	980			Sandstone: Grey, fine grain,crossbedded, interbeds of shale and siltstone. Bedding 65° to core axis at 927.0 Bedding 60° to core axis at 936 Bedding 70° to core axis at 954 Bedding 66° to core axis at 970 Bedding 68° to core axis at 980

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 135

Footage		Recovery		Description
from	to	feet	%	
980.0	990/0	10 10.0	100	Coal seam: Sampled (DH 135-19)
990.0	999.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal . Bedding 76 degrees to core axis at 998.0
999.0	1005.0	6.0 6.0	100	Coal seam: Sampled (DH 135-20)
1005.0	1011.5			Shale: Dark grey, fragments of plants, thin coal seams. Bedding 73¼ to core axis Coal seam 1009.5 - 1010.5.
1011.5	1016.5			Sandstone: Grey fine grain, crossbedded, bedding 60 degrees to core axis at 1014.0'.
1016.5	1024.0			Siltstone: Dark grey, very fine grain, pieces of coal, bedding 57 degrees to core axis at 1023.0
1024.0	1030			Sandstone: Grey, fine grain, crossbedded, interbe of shale, thin coal seams. Bedding 63 degrees to core axis at 1029.0 Coal seam 1027.0 - 1028.0
				END OF HOLE AT 1030.0'
				G.C. SINGHAI
				APRIL 11, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 136 Size of core: HQ,NQ Total depth: 1170.0ft
356.6 m

Location: EMGS co-ordinates - N 5584456.204
E 645313.890

Baseline co-ordinates - N 249 + 99.9
W 79 + 74.7

Elevation - ft 5916.2
m 1803.26

Date of starting : April 6, 1977
Date of completion : April 23, 1977

Logging by : G.C. Singhai
on : April 23, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	45.0 degrees	N 78 degrees E
197	60	46.0 "	N 73 " E
394	120	40.8 "	N 71 " E
755	230	40.1 "	N 70 " E
952	290	38.0 "	N 71 " E
1149	350	37.0 "	N 66 " E

Recovery of coal : $\frac{73.3}{87.0}$ ft = 85%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 136

Footage		Recovery		Description
from	to	feet	%	
0	62.0			Overburden (No core).
62	63.5			Boulders of sandstone, shale and siltstone.
63.5	65.5			Sandstone: Grey fine grain, crossbedded, Bedding 62 degrees to core axis at 64.5
65.5	78.0	10.0 12.5	80	Coal seam: Sampled (DH 136-1)
78.0	138.9			Sandstone: Grey, fine grain, interbeds of siltstone and shale, crossbedded, numerous thin coal seams. Bedding 72 degrees to core axis at 79.0' " 60 " " " " 89.0 " 60 " " " " "104.0 " 64 " " " " "119.0' " 58 " " " " "132.0' Coal seams: 106.7 - 107.0, 189.9 - 190.7 Carbonaceous shale 130.4 - 131.7 Core badly broken.
138.9	147.0			Shale: Dark grey, fragments of plants, and numerous thin coal seams.
147.0	175.7			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal and occasionally thin coal seams. Bedding 60 degrees to core axis at 151.0' " 70 " " " " " 166.0 " 70 " " " " " 174.0
175.7	179.0			Mudstone: Dark grey, carbonaceous, numerous thin coal seams and fragments of plants Coal seam 177.7 - 178.0 core broken.
179.0	280.5			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, interbeds of siltstone. Bedding 67 degrees to core axis at 186.0' " 65 " " " " " 198.0' " 58 " " " " " 211.0' " 60 " " " " " 230.0 " 63 " " " " " 247.0 " 67 " " " " " 258.0' " 63 " " " " " 276.0' Coal seam: 216.0 - 217.1, 220.6 - 222.3, 238.5 - 239.2 (Core broken)

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 136

Footage from	Footage to	Recovery feet	Recovery %	Description
280.5	288.5	4.5/8.0	56	Coal seam: Sampled (DH 136-2) parting of shale: 284.7 - 285.7, 287.8 - 288.0 core badly broken.
288.5	334.0			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, interbeds of siltstone and shale, bedding 62 degrees to core axis at 290.0 " 50 " " " " " 315.0 " 60 " " " " " 331.0
334.0	337.0			Mudstone: Dark grey, fragments of plants, pieces of coal, numerous thin coal seams, core badly broke interbeds of siltstone.
337.0	344.0			Siltstone: Dark grey, very fine grain, fragments of plants, core badly broken.
344.0	352.9			Mudstone: Dark grey, fragments of plants, numerous thin coal seams, interbeds of sandstone. Bedding 60 degrees to core axis at 350.0' core broken.
352.8	355.8	2.5/3.0	83	Coal seam: Sampled (DH 136-3)
355.8	363.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60 degrees to core axis at 364.0 core broken.
363.0	365.9			Siltstone: Dark grey, very fine grain, occasional pieces of coal. core broken.
365.9	372.4	6.0/6.5	92	Coal seam: Sampled (DH 136-4) Parting of shale 368.4 - 368.9, 371.3 - 371.5
372.4	395.0			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal. Bedding 33 degrees to core axis at 385.5' " 50 " " " " " 393.0'
395.0	408.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone, pieces of coal and numerous thin coal seams. Core badly broken.
408.0	423.5			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, occasionally thin coal seam Bedding 65 degrees to core axis at 414.0' core badl broken.

DIAMOND DRILL CORE LOGGING SHEET
DDH No. DH - 136

Footage		Recovery		Description
from	to	feet	%	
423.5	427.5			Mudstone: Dark grey, fragments of plants, pieces of coal, core badly broken.
427.5	435.5			Sandstone: Grey, fine grain, crossbedded, interbe of siltstone, bedding 40 degrees to core axis at 4 core badly broken.
435.5	446.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. Coal seam 440.3 - 442.0, 445.4 - 445.8, core broken.
446.0	508.2			Sandstone: Grey, fine grain, interbeds of siltsto and shale, crossbedded, numerous thin coal seams. Bedding 55 degrees to core axis at 451.0 Coal seams: 456.1 - 456.2, 457.5 - 458.0 Bedding 58 degrees to core axis at 466.0 " 50 " " " " " 488.0 " 55 " " " " " 505.0 Coal seams: 501.3 - 502.7, 503.5 - 503.6
508.2	509.0			Shale: Carbonaceous
509.0	515.2	5.2/6.2	84	Coal seam: Sampled (DH 136-5) parting of shale- 511.0 - 511.3, 513.0 - 513.2, 513.6 - 513.8
515.2	518.0			Shale: Dark grey, laminated, slightly carbonaceou fragments of plants, pieces of coal.
518.0	526.4			Sandstone: Grey, fine grain, crossbedded, pieces of coal, bedding 60 degrees to core axis at 526.1'
526.4	532.0			Siltstone: Dark grey, very fine grain, occasional fragments of plants, bedding 62 degrees to core axis at 529.0'
532.0	535.0			Shale: Dark grey, highly carbonaceous, numerous thin coal seams. fragments of plants Coal seam 532.0 - 532.5
535.0	545.8			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, bedding 55 degrees to core axis at 537.0'
545.8	554.5			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. carbonaceous, Coal seams: 545.7 - 546.0 , 548.2 - 549.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 136

Footage		Recovery		Description
from	to	feet	%	
554.5	582.4			Sandstone: Grey to light grey, fine to medium grain, crossbedded, pieces of coal. Bedding 62 degrees to core axis at 555.0' Bedding 63 degrees " " " " 570.0'
582.4	591.7	8.7 9.3	93.5	Coal seam: Sampled (DH 136-6) Parting of mudstone 583.1 - 583.4, 584.1 - 584.6 585.0 - 585.8, 587.9 - 589.1
591.7	623.4			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone, Bedding 60 degrees to core axis at 596.0 " 60 " " " " " 617.0'
623.4	626.4	3.0 3.0	100	Coal seam: Sampled (DH 136-7) Parting mudstone 624.0 - 624.3, 625.0 - 625.3
626.4	641.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, fragments of plants, Bedding 60 degrees to core axis at 633.0'
641.0	646.0			Sandstone: Grey , fine grain, crossbedded, inter beds of siltstone and shale.
646.0	653.2			Mudstone: Dark grey, carbonaceous, numerous thin coal seams, and interbeds of siltstone, fragments of plants, pieces of coal, Coal seams 646.7 - 646.9 650.5 - 650.7,
653.2	655.8	2.2 2.6	84.6	Coal seam: Sampled (DH 136 - 8)
655.8	661.0			Shale: Dark grey, laminated, slightly carbonaceous, fragments of plants. Bedding 58 degrees to core axis at 658.0'.
661.0	675.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone. Bedding 54 degrees to core axis at 670.0'
675.0	693.0			Siltstone: Dark grey, very fine grain, interbeds of shale and sandstone, fragments of plants, Bedding 62 degrees to core axis at 682.0' Bedding 58 degrees to core axis at 691.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 136

Footage		Recovery		Description
from	to	feet	%	
693.0	701.5	8.3 8.5	97.6	Coal seam: Sampled (DH 136-9) parting of shale: 699.8 - 700.0
701.5	715.5			Sandstone: Dark grey to grey, fine grain, cross bedded, interbeds of siltstone. Bedding 65 degrees to core axis at 710. No core from 715.5
715.5	721.0			Mudstone: Dark grey, carbonaceous, numerous thin coal seams.
721.0	724.5			Sandstone: Grey, fine grain, crossbedded, pieces coal. Bedding 55 degrees to core axis at 722.0
724.5	735.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone, numerous thin coal seam pieces of coal. Bedding 40 degrees to core axis at 730'
735.0	795.0			Sandstone: Grey, fine grain, crossbedded, pieces o coal, occasionally interbedsof shale and thin coal seams. Coal seam 738.0 - 739.0, 740.0 - 740.5, Bedding 70 degrees to core axis at 739.5 " 55 " " " " " 755.0' " 40 " " " " " 770.0' " 40 " " " " " 790.0
795.0	814.0			Mudstone: Dark grey, fragments of plants, pieces of coal, interbeds of sandstone. Bedding 50 degrees to core axis at 800.0' core broken.
814.0	843.0			Sandstone: Grey, fine grain, crossbedded, Bedding 45 degrees to core axis at 820.0' Bedding 45 " " " " " 840.0 core broken.
843.0	846.0			Mudstone: Dark grey, fragments of plants, pieces of coal.
846.0	905.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal, thin coal seams. Bedding 48 degrees to core axis at 850.0' " 53 " " " " " 875.0' " 55 " " " " " 894.0' Coal seam 858.0 - 859.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 136

Footage		Recovery		Description
from	to	feet	%	
905	911.7			Mudstone: Dark grey, slightly silty, fragments of plants, interbeds of sandstone. Bedding 43 degrees to core axis at 910 broken core. Coal seam: 905.0 - 906.0
911.7	916.0	4.3 / 4.3	100	Coal seam: Sampled (DH 136-10)
916.0	919.3			Mudstone: Dark grey, fragments of plants.
919.3	926.7			Sandstone: Grey, fine grain crossbedded, interbeds of mudstone, Bedding 54 degrees to core axis at 924
926.7	938.0			Siltstone: Dark grey, very fine grain, interbeds of mudstone and sandstone. Bedding 40 degrees to core axis at 936.0'
938.0	942.4	3.5 / 4.4	79.5	Coalseam: Sampled (DH 136-11) Parting mudstone 939.5 - 940.0
942.4	949.0			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams. broken core.
949.0	959.8			Sandstone: Grey, fine grain, crossbedded, bedding 52 degrees to core axis at 951.0'
959.8	965.5	3.5 / 5.7	61	Coal seam: Sampled (DH 136-12)
965.5	970.8			Mudstone: Dark grey, fragments of plants, numerous thin coal seams, core broken,
970.8	975.0			Sandstone: Grey, fine grain, crossbedded, bedding 55 degrees to core axis at 971.0 core broken.
975.0	983.5	7.1 / 8.5	83.5	Coal seam: Sampled (DH 136-13) Partings of shale 979.8 - 981.0
983.5	987.8			Sandstone: Grey fine grain, crossbedded, pieces of coal, bedding 42 degrees to core axis at 986.0
987.8	992.3	4.5 / 4.5	100	Coalseam: Sampled (DH 136-14) parting of shale 990.0 - 990.7

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 136

Footage		Recovery		Description
from	to	feet	%	
992.3	1076.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal. coal seam 1074.0 - 1074.5 Bedding 52 degrees to core axis at 993.0 " 54 " " " " " 1004.0 " 55 " " " " " 1028.0' " 60 " " " " " 1040.0' " 52 " " " " " 1054.0' " 62 " " " " " 1064.0'
1076.0	1090.0			Siltstone: Dark grey, very fine grain, pieces of coal occasionally fragments of plants, and interbeds of sandstone. Bedding 43 degrees to core axis at 1085.0
1090.0	1109.0			Sandstone: Grey, fine grain, crossbedded, interbe of siltstone, Bedding 45 degrees to core axis at 1100.0'
1109.0	1126.4			Siltstone: Dark grey, very fine grain, interbeds o shale and sandstone, pieces of coal, fragments of plants, and thin coal seams. Broken core.
1126.4	1132.0			Sandstone: Grey, fine grain crossbedded, interbed of shale, Bedding 54 degrees to core axis at 1128.0 broken core.
1132.0	1159.0			Mudstone: Dark grey, fragments of plants, numerous thin coal seams. badly broken core.
1159.0	1170.0			Sandstone: Grey, fine grain, crossbedded, interbed of siltstone, Bedding 40 degrees to core axis at 1164.0' Badly broken core. Coal Seam: 1169.5 - 1170.0' End of hole at 1170.0' G.C. Singhai April 23, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 137 Size of core: HQ Total depth: 1165 ft
355.1 m

Location: EMGS co-ordinates - N 5584508.207
E 645522.736

Baseline co-ordinates - N 250 + 03.8
W 72 + 68.6

Elevation - ft 5772.0
m 1759.31

Date of starting : April 11, 1977
Date of completion : April 25, 1977

Logging by : G.C. Singhai
on : April 25, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	45.0 degrees	N 78 degrees E
197	60	45.4 "	N 73 " E
394	120	41.4 "	N 76 " E
591	180	38.2 "	N 75 " E
788	240	35.0 "	N 74 " E
985	300	31.1 "	N 73 " E
1033	315	30.4 "	N 74 " E

Recovery of coal : $\frac{18.1}{25.3}$ ft = 72%

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 137

Footage		Recovery		Description
from	to	feet	%	
0	17.5			Overburden (No core)
17.5	70.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, (badly broken core 17.5-32.0) Bedding 54 degrees to core axis at 30.0' " 57 " " " " " 44.0' " 50 " " " " " 65.0'
70.0	80.0			Siltstone: Dark grey, very fine grain, occasional thin coal seams. Bedding 52 degrees to core axis at 79.0'
80.0	130.0			Sandstone: Grey, fine to medium grain, crossbedded, pieces of coal, interbeds of siltstone. Bedding 50 degrees to core axis at 91.0 " 60 " " " " " 107.0 " 58 " " " " " 129.0 Coal seam: 84.3 - 85.0
130.0	134.0			Mudstone: Dark grey, carbonaceous, numerous thin coal seams, fragments of plants, pieces of coal Coal seam: 130.7 - 132.0
134.0	146.0			Sandstone: Grey, fine grain, crossbedded, interbed of siltstone and shale, pieces of coal, occasional thin coal seams. Bedding 55 degrees to core axis at 136.0
146.0	150.5			Mudstone: Dark grey, carbonaceous, numerous thin coal seams, fragments of plants, pieces of coal. Coal seam: 147.0 - 147.5
150.5	181.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal. Bedding 52 degrees to core axis at 158.0' Bedding 56 " " " " " 175.0'
181.0	193.0			Siltstone: Dark grey, very fine grain, slightly carbonaceous, numerous thin coal seams. Coal seam: 184.1 - 185.0
193.0	227.0			Sandstone: Grey to light grey, fine grain, cross bedded, pieces of coal, occasionally thin coal seams. Bedding 57 degrees to core axis at 195.0' " 40 " " " " " 205.0' " 40 " " " " " 215.0 " 40 " " " " " 227.0 Coal seams 213.0-214.0, 220.5-221.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 137

Footage		Recovery		Description
from	to	feet	%	
227.0	230.0			Mudstone: Dark grey, carbonaceous, fragments of plants. numerous thin coal seams.
230.0	272.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of shlae and siltstone. occasionally thin coal seams. Bedding 48 degrees to core axis at 232.0' " 65 " " " " " 240.0' " 60 " " " " " 260.0' Coal seams: 234.5 - 235.0, 236.7 - 237.4 270.8 - 271.2
272.0	274.5	0.8/2.5	32	Coal seam: could not be sampled
274.5	281.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal, Bedding 53 degrees to core axis at 281.0'
281.5	285.0	1.6/3.5	46	Coal seam: Sampled (DH 137-1)
285.0	289.8			Sandstone: Grey, fine grain, crossbedded, interbed of siltstone. Bedding 50 degrees to core axis at 288.0'.
289.8	292.0	2.2/2.2	100	Coal seam: Sampled (DH 137-2)
292.0	396.5			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone, pieces of coal. Bedding 42 degrees to core axis at 293.0' Bedding 55 " " " " " 303.0' " 45 " " " " " 318.0' " 60 " " " " " 344.0' " 50 " " " " " 357.0' " 62 " " " " " 373.0' " 50 " " " " " 386.0' Coal seams: 323.8 - 324.3, 340.0 - 340.2 341.0 - 341.3 Carbonaceous shale 352.0-353.5 , 382.0 - 384.0'
396.5	404.0			Mudstone: Dark grey, fragments of plants, pieces of coal, slightly silty.
404.0	482.0			Sandstone: Grey, fine grain, crossbedded, interbeds of siltstone and shale, occasionally thin coal seams. Bedding 50 degrees to core axis at 405.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 137

Footage		Recovery		Description
from	to	feet	%	
				Bedding 54 degrees to core axis at 433.0' Bedding 51 " " " " " 457.0' Coal seams: 412.4 - 413.1, 438.8 - 439.5 Bedding 54 degrees to core axis at 471.0' " 60 " " " " " 480.0'
482.0	484.3	2.3 2.3	100	Coal seam: Sampled (DH 137-3) Parting of shlae 483.0 - 483.2
484.3	497.0			Sandstone: Grey, fine grain, crossbedded interbed of siltstone, pieces of coal, Bedding 50 degrees to core axis at 492.0 Coal seam: 489.3 - 490.0
497.0	503.0	5.5 6.0	92	Coal seam: Sampled (DH - 13704) Parting of mudstone - 499.2 - 500.7
503.0	580.0			Sandstone: Grey,fine to medium grain crossbedded, pieces of coal, core broken, interbeds of siltston Bedding 50 degrees to core axis at 507.0'. " 55 " " " " " 524.0' " 60 " " " " " 548.0' " 60 " " " " " 568.0 " 55 " " " " " 579.0'
580.0	583.0			Mudstone: Dark grey, fragments of plants, pieces of coal, thin coal seams, slightly carbonaceous.
583.0	736.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone and shale numerous thin coal seams. Coal seams: 583.5 - 584.0, 588.7 - 589.0, 597.0 - 598.0, 620.0 - 621.0 Bedding - 47 degrees to core axis at 588.0' " 60 " " " " " 604.0' " 53 " " " " " 622.0' " 57 " " " " " 647.0' " 45 " " " " " 663.0' " 55 " " " " " 675.0' " 53 " " " " " 690.0' " 55 " " " " " 720.0' Coal seams: 641.9 - 642.4, 672.0 - 672.7, 680.3 - 680.6, 683.0 - 683.5, 686.0 - 686.5, 705.0 - 705.4, 732.5 - 733.7, core loss from 705.0 - 707.6 which may be coal seam Bedding 70 degrees to core axis at 730.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 137

Footage		Recovery		Description
from	to	feet	%	
736.0	747.0			Mudstone : Dark grey, highly carbonaceous, numerous thin coal seams, interbeds of siltstone, fragments of plants. coal seams. 739.0 - 741.1, 742.5 743.0 , 744.5 - 745.0 core broken.
747.0	809.5			Sandstone: Grey, fine grain, crossbedded, pieces of coal. Bedding 45 degrees to core axis at 748.0' " 52 " " " " " 760.0' " 55 " " " " " 770.0' " 45 " " " " " 783.0' " 53 " " " " " 799.0' Coal seams: 782.4 - 782.9
809.5	812.6	2.2 / 3.1	71	Coal seam: Sampled (DH 137-5)
812.6	910.5			Sandstone: Grey, fine grain, crossbedded , pieces of coal, occasionally thin coal seams. Bedding 56 degrees to core axis at 814.0' " 50 " " " " " 825.0' " 58 " " " " " 842.0' " 60 " " " " " 854.0' " 54 " " " " " 866.0' " 50 " " " " " 885.0' " 60 " " " " " 897.0' Coal seams: 835.0 - 836.0, 857.8 - 858.2, 884.8 - 885.2, 890.3 - 891.3, 891.5 - 891.8 899.3 - 899.5, 901.5 - 901.8
910.5	916.2	3.5 / 5.7	61	Coal seam: Sampled (DH 137-6)
916.2	970.0			Sandstone: Grey, fine grain, crossbedded, pieces of coal, occasionally thin coal seams. Bedding 50 degrees to core axis at 921.0' " 40 " " " " " 943.0' " 57 " " " " " 955.0' " 50 " " " " " 969.0'
970.0	981.0			Siltstone: Dark grey, very fine grain, interbeds of sandstone, pieces of coal. Bedding 43 degrees to core axis at 973.0'

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 137

Footage		Recovery		Description
from	to	feet	%	
981.0	1030.0'			Sandstone: Grey, fine grain, crossbedded, pieces of coal, interbeds of siltstone , coal seam 984.5 - 985.0, 1029.0 - 1029.4 Bedding 49 degrees to core axis at 988.0' " 65 " " " " " 1010.0' " 63 " " " " " 1027.0'
1030.0	1045.6			Mudstone: Dark grey, fragments of plants, numerou thin coal seams. Highly carbonaceous 1030 - 1039.0 interbeds of siltstone, coal seams. 1031.5 - 1032. 1035.5 - 1035.8, 1038.6 - 1039.0 Bedding 60 degrees to core axis at 1042.0'
1045.6	1142.8			Sandstone: Grey, fine grain, crossbedded, pieces of coal, coarse grained 1083.3 - 1090' Bedding 60 degrees to core axis at 1050.0' " 60 " " " " " 1066.0' " 53 " " " " " 1078.0' " 55 " " " " " 1089.0' " 45 " " " " " 1105.0' " 57 " " " " " 1122.0' " 62 " " " " " 1135.0
1142.8	1149.5			Siltstone: Dark grey, very fine grain, fragments of plants, pieces of coal and thin coal seams, interbeds of sandstone. Coal seam: 1143.2 - 1143.7, 1145.3 - 1145.6
1149.5	1165.0			Sandstone: Grey to light grey, fine grain, cross bedded, interbeds of siltstone, pieces of coal, Coal seam 1154.2 - 1155.0, 1164.4 - 1164.9 Bedding 60 degrees to core axis at 1158.0'
				END OF HOLE AT 1165.0'
				G.C. Singhai
				April 25, 1977

DIAMOND DRILL CORE LOGGING SHEET

Hole No. : DH - 138 Size of core: HQ Total depth: 580 ft
176.8 m

Location: EMGS co-ordinates - N 5584556.597
E 645727.817

Baseline co-ordinates - N 249 + 99.1
W 65 + 77.3

Elevation - ft 5625.6
m 1714.68

Date of starting : April 26, 1977
Date of completion : May 2, 1977

Logging by : David Thacker
on : May 3, 1977

Drill hole deviations:

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination)
0	0	45.0 degrees	N 78 degrees E
197	60	43.5 "	N 76 " E
394	120	39.7 "	N 76 " E
448	170	37.1 "	N 75 " E

Recovery of coal : no samples taken

Remarks :

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 138

Footage		Recovery		Description
from	to	feet	%	
0	46.2			Overburden
46.2	48.2			Shale: carbonaceous
48.2	56.0			Sandstone: Fine grained, grading downwards into medium grained Bedding to core angle @ 51' = 52 degrees
56.0	64.5			Sandstone: coarse grained, crossbedded, numerous coaly lenses.
64.5	75.5			Siltstone: carbonaceous, occasional fined grained sandstone or shale interbeds, coal at 69.0 - 69.3 and 73.8 - 74.0 Bedding to core angle @ 71' = 51 degrees
75.5	76.3			Coal : Shaly
76.3	80.0			Carbonaceous shale.
80.0	83.8			Sandstone: fine grained, occasional carbonaceous shale interbeds
83.8	88.0			Sandstone: medium grained, crossbedded Bedding to core angle @ 85' = 50 degrees
88.0	91.9			Shale: occasional carbonaceous zone
91.9	164.0			Sandstone: coarse grained, occasional zones of medium grained, crossbedded, occasional coaly lense rare shale chips Bedding to core axis @ 95' = 44 degrees " " " " " 114'=.46 " @ 121'=.34 " @ 149'= 42 " " 162'= 44 " Zone of carbonaceous coarse grained sandstone from 128' - 135' (core lost - 135 - 140')
164.0	179.0			Siltstone:
179.0	186.7			Shale: Bedding to core angle @ 181' = 34 degrees

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 138

Footage		Recovery		Description
from	to	feet	%	
186.7	211.1			Sandstone: fine grained, occasional shale or siltstone interbeds, crossbedded Bedding to core angle @ 202' = 36 degrees
211.1	212.0			Coal: shaly
212.0	217.9			Shale: occasional carbonaceous laminated
217.9	221.3			Sandstone: fine grained, occasional siltstone interbeds
221.3	222.1			Shaly: coal
222.1	228.8			Shale: occasional fine grained sandstone interbeds Bedding to core angle @ 223' = 36 degrees
228.8	246.5			Sandstone: medium grained, crossbedded, rare shale interbeds Bedding to core angle @ 245' = 46 degrees
246.5	253.5			Carbonaceous shale
253.5	311.5			Sandstone: medium grained, occasional fine grained sandstone or siltstone interbeds, occasion crossbedding, occasional warm burrows. Bedding to core angle @ 268' = 50 degrees @ 288 = 45 " @ 304 = 23 "
311.5	326.3			Siltstone: occasionally shaly Bedding to core angle @ 324 = 41 degrees Gradational into underlying unit
326.3	348.0			Sandstone: coarse grained, crossbedded, numerous coaly lenses, shale clasts, graditional into underlying unit Bedding to core angle @ 344' = 58 degrees
348.0	363.0			Sandstone: medium grained occasional crossbedding, rare coaly lenses
363.0	413.2			Interbedded sandstone and shale: sand is medium grained, occasionally becoming coarse or fine grained, shale is occasionally carbonaceous. Shaly coal: 394.2 - 395.0 399.4 - 400.0

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 138

Footage		Recovery		Description
from	to	feet	%	
				Bedding to core angle @ 362' = 45 degrees @ 381' = 67 " @ 402' = 47 "
413.2	426.0			Sandstone: coarse grained, crossbedded coaly lenses. Bedding to core angle @ 422' = 35 degrees
426.0	441.6			Sandstone: medium grained, occasionally coarse or fine grained, occasional coaly lenses, crossbeddin Bedding to core angle @ 440' = 59 degrees
441.6	454.6			Sandstone: coarse grained, occasional coaly lenses
454.6	462.7			Sandstone: very coarse grained, top 1.5 feet conglomerate with chart pebbles 1/8" maximum diameter, occasional coaly lenses
462.7	478.2			Sandstone: coarse grained, crossbedded occasional coaly lenses Bedding to core angle @ 466' = 54 degrees
478.2	493.7			Sandstone: medium grained, crossbedded occasional becoming coarse Bedding to core angle @ 483' = 51 degrees
493.7	499.3			Shale
499.3	500.0			Coal
500.0	510.0			Sandstone: medium grained, occasionally becoming fine or coarse grained, occasional interbedded shale Bedding to core angle @ 506' = 43 degrees
510.0	512.1			Carbonaceous shale
512.1	531.6			Interbedded sandstone and shale, sand is mainly medium grained, occasionally coarse or fine graine Bedding to core angle @ 519' = 52 degrees
531.6	556.5			Sandstone: medium grained, occasionally becoming coarse or fine grained, occasional crossbedding occasional shale interbeds Bedding to core angle @ 550' = 43 degrees

DIAMOND DRILL CORE LOGGING SHEET

DDH No. DH - 138

Footage		Recovery		Description
from	to	feet	%	
556.5	557.4			Shaly coal
557.4	561.1			Siltstone
561.1				Base of cadomin fin.
61.1	577.0			Conglomerate: chest pebbles maximum diameter = ½" , average diameter ¼", coarse sand matrix, occasional coarse grained sandstone interbeds which contain coaly lenses and shale chi Bedding to core angle @ 574' = 46 degrees
577.0	580.0			Sandstone: medium grained, crossbedded, coaly lenses
				TD = 580'

DH-1

ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #B

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 1
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR .05 M Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	12 MAR 1977
First Reading	208 M
Last Reading	0
Footage Logged	208
Depth Reached	208.03
Depth Driller	
Casing Roke	
Casing Driller	47
Fluid Type	WATER
Liquid Level	FULL
Min. Diam.	HQ
Operating Time	2 HOURS
Truck No.	36
Recorded By	JOHNSON
Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	208	3.66					3	500	1.8R	24

REMARKS LOGGED THROUGH H CASING (0 - 47)
LOGGED THROUGH HQ DRILL RODS (47 - 208)
DENS TOOL # 457

DEPTHS

CALIPER
(DIAMETER –

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. K-Elk River 72 (3) #8

LSD
SEC
TWP
RGE
W ___ M

COMPANY	ELCO MINING LIMITED
WELL	DH - 1
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA

Other Services: DENS, DEV

276

Permanent Datum GROUND LEVEL Elev. ___ K.B. ___
Log Measured from RIG FLOOR .05 M Above Perm. Datum CSG ___
Well Depths Measured from RIG FLOOR G.L. ___

METRIC

Run. No.	ONE
Date	12 MAR 1977
First Reading	213 M
Last Reading	0
Footage Logged	213
Depth Reached	213.92
Depth Driller	214
Casing Roke	
Casing Driller	47
Fluid Type	WATER
Liquid Level	FULL
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36

Recorded By JOHNSON Witnessed By LAWRENCE

EQUIPMENT DATA

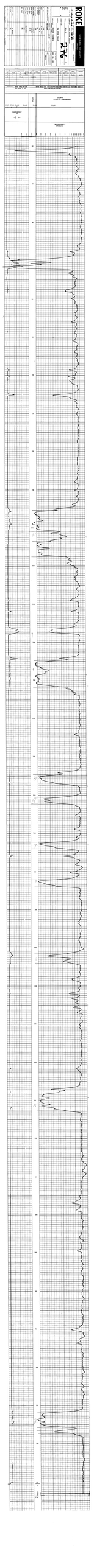
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	213	3.66	4	100	OL	12	3	500	OL	140

REMARKS LOGGED THROUGH H CASING (0 - 47)
LOGGED THROUGH HQ DRILL RODS (47 - 213)

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → 12; 0 – 120		NEUTRON INCREASES → 140; 0 – 1400 – 2800


ROKE
276

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. K-Elk River 77 (3) AB

276

LSD	
SEC	
TWP	
RGE	
W	M
COMPANY	ELCO MINING LIMITED
WELL	DH - 2
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 23 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE			
Date	30 MAR 1977			
First Reading	350.50 M			
Last Reading	0			
Footage Logged	350.50			
Depth Reached	350.80			
Depth Driller	353.19			
Casing Roke	27.5			
Casing Driller				
Fluid Type	MUD/WATER			
Liquid Level	52			
Min. Diam.	HQ			
Rm @ °F				
Operating Time	2½ HOURS			
Truck No.	36			
Recorded By	CARLSON	Witnessed By	LAWRENCE	

EQUIPMENT DATA

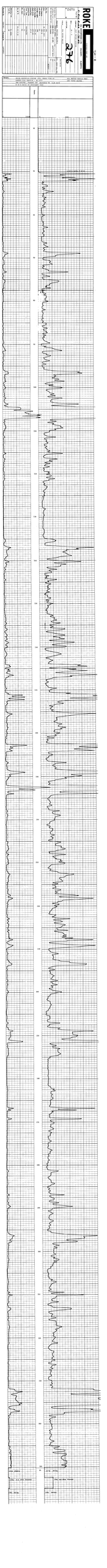
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	48	3.66	4	100	0	16	3	1000	4L	360
2	48	350.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE NOTE: DUE TO A DEPTH ERROR ALL READINGS SHOULD READ ONE METER DEEPER

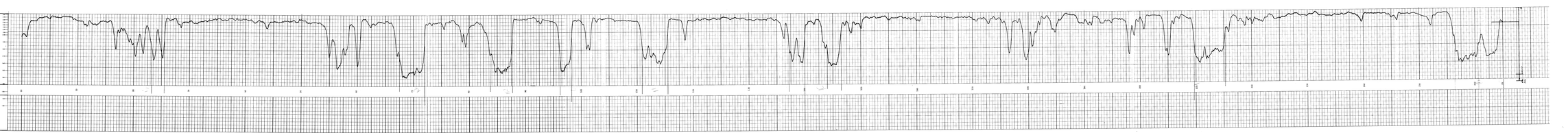
GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
16		360
0 — 160		1440 — 5040 — 8640

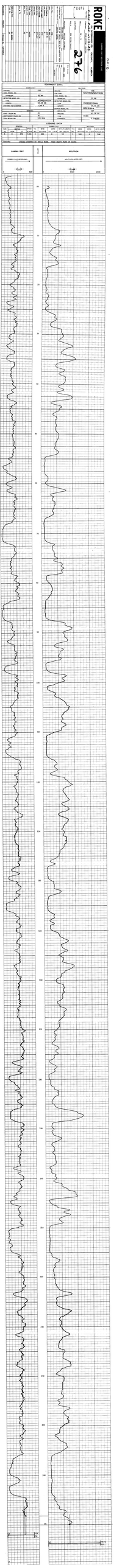

ROKE
3746

ROKE SIDEWALL DENSILOG

ROKE PETROLEUM LTD. CALGARY, ALBERTA

WELL	K-ELK-ROKE 75-C-16-A
FIELD	
COMPANY	ROKE PETROLEUM LIMITED
WELL	276
LOCATION	
FILE	
COUNTY	
PROVINCE	BRITISH COLUMBIA
COUNTRY	CANADA
OTHER SERVICES	
PERMANENT DATUM	GROUND LEVEL
LOG MEASURED FROM	KELLY BUSHING
DRILLING MEASURED FROM	KELLY BUSHING
Elev.	K.B. 1000
	D.F.
	G.L. 987
Date	26 MAR 1975
Run No.	ONE
Depth-Driller	1000
Depth-Logger	1000
Bottom Log Interval	1000
Top Log Interval	SURFACE
Casing-Driller	8 5/8 @ 1000
Casing-Logger	
Bit Size	7 7/8
Type Fluid in Hole	WATER
Dens.	8.4
Visc.	28
Fluid Loss	N/A
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	1.0 @ 60°F
Rmf @ Meas. Temp.	1.0 @ 60°F
Rmc @ Meas. Temp.	1.0 @ 60°F
Rm @ BHT	0.5 @ 100°F
Time Since Circ.	24 HOURS
Max. Rec. Temp.	100°F
Equip. No.	0812
Location	
Recorded By	G. MOSS
Witnessed By	




ROKE
276
GAMMA RAY
NEUTRON
GAMMA RAY NEUTRON
NEUTRON NEAR-FAR
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700
800
900
1000
1100
1200
1300
1400
1500
1600
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1800
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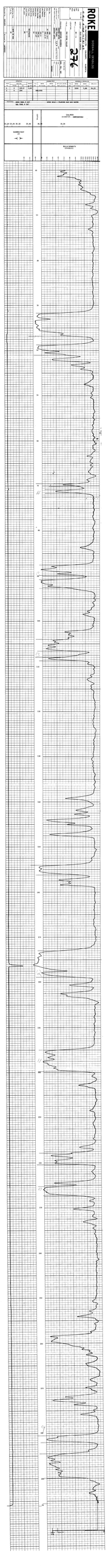
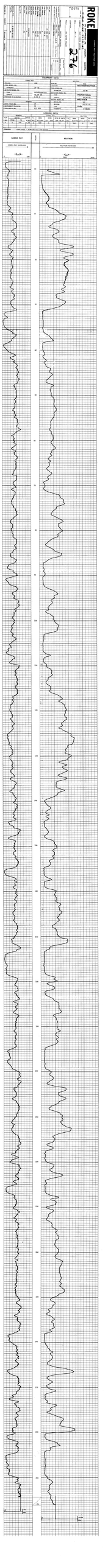
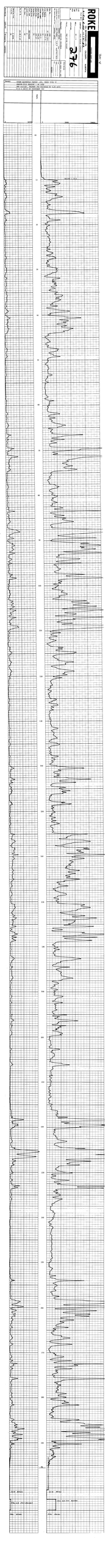

ROKE
276
CALIPER
GAMMA RAY
ROLA DENSITY


ROKE
ROKE OIL COMPANY
SUITE 1000 ROKE BUILDING
HOUSTON, TEXAS 77024
276
EQUIPMENT DATA
GAMMA RAY
NEUTRON
GAMMA RAY INCREASES
NEUTRON INCREASES
LOGGING DATA
GAMMA RAY
NEUTRON


ROKE
276

ROKE

COMPANY
WELL
FIELD
COUNTY
STATE
LOCATION
SECTION
BLOCK
SURVEY
ELEVATION
DATE
API NO.

RUN NO. | DATE | DEPTH DRILLER | DEPTH LOGGER | BTM LOG INTERVAL | TOP LOG INTERVAL | CASING DRILLER | CASING LOGGER | BIT SIZE | TYPE FLUID IN HOLE | DENS VISC | PH FLUID LOSS | SOURCE OF SAMPLE | RM @ MEAS TEMP | RMF @ MEAS TEMP | RMC @ MEAS TEMP | SOURCE RMF RMC | RM @ BHT | TIME CIRC | TIME LOGGER ON BOTTOM | MAX REC TEMP | EQUIP NO LOCATION | RECORDED BY | WITNESSED BY

RUN 1 | 12-JUL-78 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 7.875 | CHEMICAL | 9.2 | 9.0 | 3.2 | FLOWLINE | 1.00 @ 70 | 0.80 @ 70 | 1.20 @ 70 | MEASURED | 0.70 @ 70 | 3 HRS | 4 HRS | 70 | 3609 | 3609 | 3609

EQUIPMENT DATA

RUN NO.	1
TOOL SERIAL NO.	1702
DIAMETER	31 IN
STANDOFF/CENT NO.	
TYPE	DECENTRALIZED
WEIGHT	4.0 LBS/FT
DISTANCE TO R SOURCE	0.25 ft

RUN NO.	1
TOOL SERIAL NO.	1702
TYPE	MULTIDETECTOR
DIAMETER	31 IN
STANDOFF/CENT NO.	
TYPE	DECENTRALIZED
WEIGHT	4.0 LBS/FT
DISTANCE TO R SOURCE	0.25 ft

RUN NO.	1
TOOL SERIAL NO.	1702
TYPE	MULTIDETECTOR
DIAMETER	31 IN
STANDOFF/CENT NO.	
TYPE	DECENTRALIZED
WEIGHT	4.0 LBS/FT
DISTANCE TO R SOURCE	0.25 ft

LOGGING DATA

RUN NO.	1
LOGGING DIRECTION	DOWN
LOGGING SPEED	30 FPM
DEPTH CONTROL	DRILLER
TIE IN LOG	
TIE IN DEPTH	
TIE IN SPEED	
REMARKS	GOOD HOLE

RUN NO.	1
LOGGING DIRECTION	DOWN
LOGGING SPEED	30 FPM
DEPTH CONTROL	DRILLER
TIE IN LOG	
TIE IN DEPTH	
TIE IN SPEED	
REMARKS	GOOD HOLE

RUN NO.	1
LOGGING DIRECTION	DOWN
LOGGING SPEED	30 FPM
DEPTH CONTROL	DRILLER
TIE IN LOG	
TIE IN DEPTH	
TIE IN SPEED	
REMARKS	GOOD HOLE

RUN	INTERVAL FROM	INTERVAL TO	PASS	DATE	TIME	GAIN	SPEED	CASING	BIT SIZE	DEPTH CONTROL
1	3600	0	1	12-JUL-78	1700	1	30	7.875	7.875	DRILLER

RUN	INTERVAL FROM	INTERVAL TO	PASS	DATE	TIME	GAIN	SPEED	CASING	BIT SIZE	DEPTH CONTROL
1	3600	0	1	12-JUL-78	1700	1	30	7.875	7.875	DRILLER

RUN	INTERVAL FROM	INTERVAL TO	PASS	DATE	TIME	GAIN	SPEED	CASING	BIT SIZE	DEPTH CONTROL
1	3600	0	1	12-JUL-78	1700	1	30	7.875	7.875	DRILLER

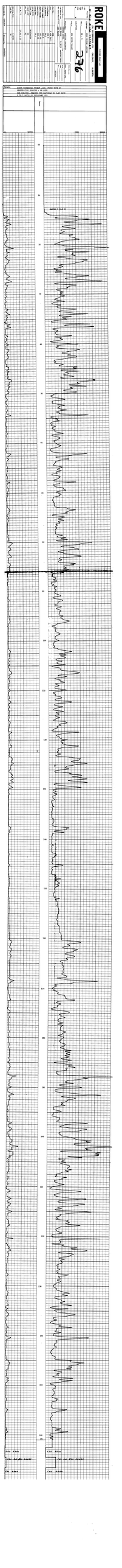
GAMMA RAY

GAMMA RAY (API)

NEUTRON

NEUTRON (LIMESTONE)

DEPTH


ROKE
Roke Manor Research Limited
Roke, Romsey, Hants, SO51 0ZN
Telephone 0794 830000
Telex 47613
Fax 0794 830832
Direct Line 0794 830
Our Ref
Your Ref
Date
Dear
Yours sincerely
Encl
cc
Remarks
ANDOVER ENVIRONMENTAL MONITOR (AEM) - PERIOD TESTING
ANALOGUE OUTPUT FROM MONITOR
ANALOGUE OUTPUT CONNECTED TO CHANNEL 1 ON CHESSELL DATA LOGGER
0 TO 1 VOLTS ON 2500 OHMS
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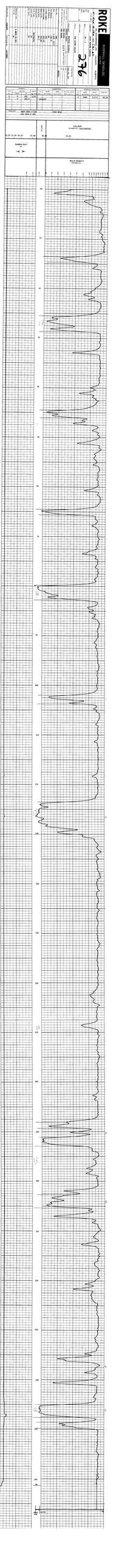

ROKE
BOREHOLE SURVEYS LTD
376
CALIPER
GAMMA RAY
BOREHOLE DEVIATION

DH-6

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. ... - ELK RIVER 77(3)#B

COMPANY	ELCO MINING LIMITED
WELL	DH - 6
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DENS-CAL, DEV

...nent Datum	GROUND LEVEL	Elev.	K.B.
... Measured from	GROUND LEVEL	Above Perm. Datum	CSG
Depths Measured from	GROUND LEVEL		G.L.

METRIC

... No.	ONE
	9 APR 1977
...Reading	250 M
...Reading	12.5
...age Logged	237.5
...h Reached	250.60
...h Driller	
...g Roke	13
...g Driller	
...d Type	MUD/WATER
...id Level	0
... Diam.	HQ
... @ °C	16.00 @ 25
...rating Time	1 HOUR
...ck No.	36
...orded By	JOHNSON
Witnessed By	LAWRENCE

Remarks SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 400 OHMS
500 OHM/DIV. PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO IN SECONDARY PEN

0 — 40000	Depths	0 — 5000 — 10000

ROKE

OIL CORPORATION

DALLAS, TEXAS

COUNTY	
FIELD	
WELL	276
LOCATION	
SURVEY	
DATE	

RUN NO.	BIT SIZE	CASING SIZE	CASING WEIGHT	CASING DEPTH	TOP LOGGED INTERVAL	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE RMF	SOURCE RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
ONE	6 3/4	5 1/2	15.5	1200	SURFACE	WATER	8.4	28	7	NC	PIT	.45 @ 70					.45 @ 70	4 HRS	70			

EQUIPMENT DATA

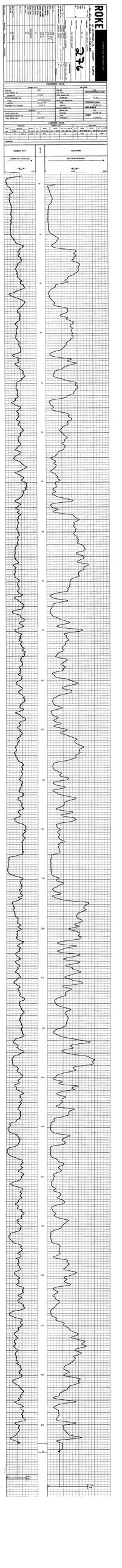
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
DENSITY	91.75	TOOL MODEL NO.	NEUTRON-NEUTRON
TOOL MODEL NO.		DENSITY	91.75
TYPE	SCINTILLATION	NEUTRON MODEL NO.	
SOURCE	91.65 Ra	TYPE	PROPORTIONAL
SOURCE STRENGTH	91.65 Ra	SOURCE	91.65 Ra
		SOURCE STRENGTH	91.65 Ra
GAMMA RAY DETECTOR		SPACING	
SPACING	91	DENSITY	91.75
ABOVE CASING SHOE NO.		PORE	91.75
BELOW CASING SHOE NO.	123.124	SPACING	4 SPACING

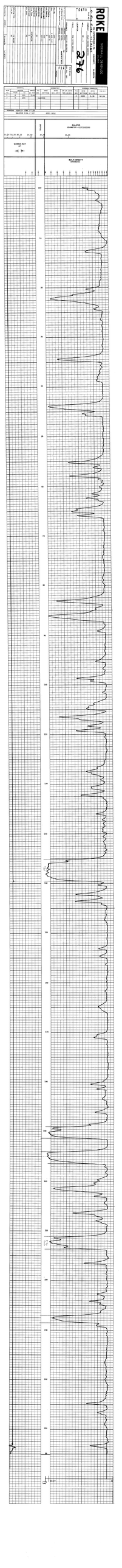
LOGGING DATA

	GAMMA RAY						NEUTRON					
	SPACING						SPACING					
NO.	TYPE	SCALE	TC	SPEED	DEPTH	DEPTH	TYPE	SCALE	TC	SPEED	DEPTH	DEPTH
1												
2												

REMARKS:

GAMMA RAY		NEUTRON
GAMMA RAY-NEUTRON	1	NEUTRON-NEUTRON
0		1000
100		2000




ROKE
SERVICES LTD
274
CALIPER
MILE DIRECTY

ROKE

COMPANY

WELL

FIELD

COUNTY

STATE

Other Services:

Sec. Twp. Rge.

Permanent Datum: Elevation:

Log Measured From: Above Perm. Datum

Drilling Measured From:

Date

Run No.

Type Log

Depth-Driller

Depth-Logger

Bottom Logged Interval

Top Logged Interval

Type Fluid in Hole

Salinity, PPM Cl

Density

Level

Max. Rec. Temp. Deg. F

Operating Rig Time

Recorded By

Witnessed By

Run No.

Bit No.

Type

Size

From

To

Size

Wgt.

Type

Viscosity

pH

Fluid Loss

Source of Sample

Rm @ Meas. Temp.

Rmf @ Meas. Temp.

Rmc @ Meas. Temp.

Source of Rmf & Rmc

Rm @ BHT

Time Since Circ.

Max. Rec. Temp. Deg. F

Equip. No. & Location

Recorded By

Witnessed By

276

EQUIPMENT DATA

Run No.	SONIC RUN
Base Scale Setting	40
Type Log	SONIC
Bottom Logged Interval	40
Top Log Interval	SURFACE CASING
Type Fluid in Hole	SALT GEL
Salinity, P.P.M. Cl	
Density	
Level	
Max. Rec. Temp. Deg. F.	
Operating Rig Time	
Recorded By	
Witnessed By	

Run No.	
Bit No.	
From	
To	
Size	
Type	
Wgt.	
Viscosity	
pH	
Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source of Rmf & Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp. Deg. F.	
Equip. No. & Location	
Recorded By	
Witnessed By	

RUN NO.	
DATE	
TYPE LOG	
DEPTH-DRILLER	
DEPTH-LOGGER	
BTM. LOG INTERVAL	
TOP LOG INTERVAL	
TYPE FLUID IN HOLE	
SALINITY, P.P.M. Cl	
DENSITY	
LEVEL	
MAX. REC. TEMP. DEG. F.	
OPERATING RIG TIME	
RECORDED BY	
WITNESSED BY	

NEUTRON	
RUN NO.	
DATE	
TYPE LOG	NEUTRON/FORMATION
DEPTH-DRILLER	
DEPTH-LOGGER	
BTM. LOG INTERVAL	
TOP LOG INTERVAL	
TYPE FLUID IN HOLE	
SALINITY, P.P.M. Cl	
DENSITY	
LEVEL	
MAX. REC. TEMP. DEG. F.	
OPERATING RIG TIME	
RECORDED BY	
WITNESSED BY	

PROPRIETARY
RUN NO.
DATE
TYPE LOG
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
TYPE FLUID IN HOLE
SALINITY, P.P.M. Cl
DENSITY
LEVEL
MAX. REC. TEMP. DEG. F.
OPERATING RIG TIME
RECORDED BY
WITNESSED BY

MISCELLANEOUS
RUN NO.
DATE
TYPE LOG
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
TYPE FLUID IN HOLE
SALINITY, P.P.M. Cl
DENSITY
LEVEL
MAX. REC. TEMP. DEG. F.
OPERATING RIG TIME
RECORDED BY
WITNESSED BY

LOGGING DATA

GENERAL								NEUTRON			
RUN											
NO.	TIME	TD	LOG INT.	TOP LOG INT.	SCALE SETTING	CSG. @ & WGT.	TYPE FLUID IN HOLE	RUN NO.	TIME	CSG. @ & WGT.	TYPE FLUID IN HOLE
			BOTTOM								

REMARKS: CASING RECORD - SURFACE - 8 5/8" - 1000' - 24 LBS. WEIGHT

GAMMA RAY

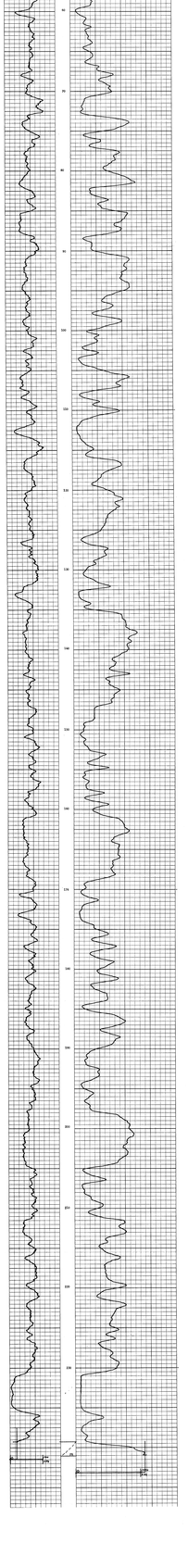
NEUTRON

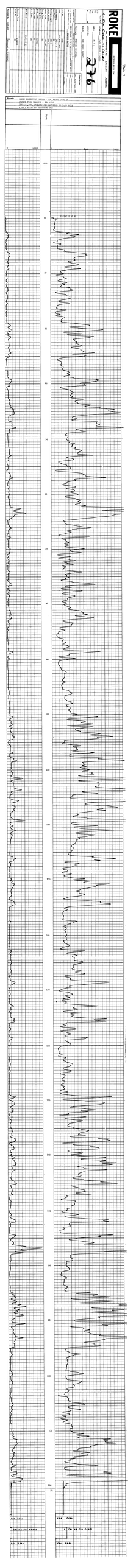
GAMMA RAY INCREASES

NEUTRON INCREASES

0 100

1000 2000




ROKE
276
Zone 4

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

FILE NO. K-ELK RIVER 72 (3) B

276

COMPANY	ELCO MINING LIMITED
WELL	DH - 7
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD	
SEC	
TWP	
RGE	
W	M
Other Services:	GRN, FBL, DEV
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	RIG FLOOR 1.3 M (ADJUSTED). Above Perm. Datum
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE		
Date	15 APR 1977		
First Reading	240.5 M		
Last Reading	0		
Footage Logged	240.5		
Depth Reached	241.42		
Depth Driller	241.56		
Casing Roke	10		
Casing Driller			
Fluid Type	WATER		
Liquid Level	0		
Min. Diam.	HQ		
Operating Time	1¼ HOURS		
Truck No.	36		
Recorded By	CARLSON	Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M /MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	240.5	3.66					3	1000	1.3 R	46.14
2	0	241		CALIPER							

REMARKS DENSITY TOOL # 128 OPEN HOLE, FLOWING GAS AND WATER
CALIPER TOOL # 587

DEPTHS

CALIPER
(DIAMETER – CENTIMETERS

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE

SCHLUMBERGER

276

Company	ROKE OIL & ENERGY CO.
Well	1
Field	WILDCAT
County	HARDIN
State	TEXAS
Location	1980' FSL & 660' FEL
Other Services	
Permanent Datum	GROUND LEVEL
Elev.	K.B. 1000 D.F. 999 G.L. 990
Log Measured From	K.B. 10 Ft. Above Perm. Datum
Drilling Measured From	K.B.
Date	7-4-83
Run No.	ONE
Depth-Driller	10,000
Depth-Logger	9,998
Bottom Logged Interval	9,998
Top Logged Interval	9,000
Type Fluid in Hole	SALT GEL
Salinity, PPM Cl	190,000
Density	10.0
Viscosity	42
Fluid Loss	6.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	.52 @ 70°
Rmf @ Meas. Temp.	.42 @ 70°
Rmc @ Meas. Temp.	.68 @ 70°
Source of Rmf & Rmc	CALC
Rm @ BHT	.28 @ 180°
Time Since Circ.	12 HRS
Max. Rec. Temp.	180°
Equip. No. & Location	1111
Recorded By	J. SMITH
Witnessed By	MR. ROKE

RUN	BIT	FROM	TO	FEET	HOURS
ONE	8 3/4	SURF.	10,000	10,000	24

CASING RECORD	SIZE	WGT.	GRADE	FROM	TO
SURFACE STRING	13 3/8	54.5	K-55	SURF.	1,000
INTERMEDIATE STRING	9 5/8	40	S-95	SURF.	9,000
PRODUCTION STRING					
LINER					

BORE HOLE RECORD	BIT	FROM	TO
	8 3/4	SURF.	10,000

TYPE LOG	DEPTH-DRILLER	DEPTH-LOGGER	BTM. LOG INTERVAL	TOP LOG INTERVAL
DIL	10,000	9,998	9,998	1,000
BHC	10,000	9,998	9,998	9,000
FDC	10,000	9,998	9,998	9,000

EQUIPMENT: 6000 SERIES, 8 INCH — 10000 PSIG
DIL, BHC, & FDC

CALIPER
(DIAMETER — ASSOCIATED)

10.24 10.24 10.32 — 10.40 — 10.48 — 10.56

GAMMA RAY
API

BULK DENSITY
(DENSILOG)

Depth

DH-8

ROKE

PRINTED TIME LOG

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

Roke River 73 (3) 20

FILE NO.	
LOG NO.	
SEC	
TWP	
RGE	
W	
COMPANY	ROKE RESERVE CORPORATION
WELL	30 - 8
LOCATION	276
FIELD	ROKE RESERVE CORPORATION
PROVINCE	BRITISH COLUMBIA
Drilling Contractor	Kelly Bushing
Log Measured From	KBM PLUGS 30 GR Above Rock Station
Log Depth Measured From	KBM PLUGS
Date Run	1998
Time	10 AM 1977
Fluid Density	123.0 M
Fluid Resistivity	13.0
Fluid Level	204.0
Fluid Temperature	217.50
Fluid Weight	221.40
Fluid Viscosity	13.5
Casing Weight	
Casing Type	ACCELERATOR
Casing Type	5
Casing Type	5
Max. Temp.	35
Time at °C	15.75 M 30
Operating Time	5 HOURS
Truck No.	30
Recorded By	GARRETT
Witnessed By	LANTERRA

Other Services: ROKE RESERVE CORPORATION

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

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Date Recorded: 1998 MARCH 1998 - 1977

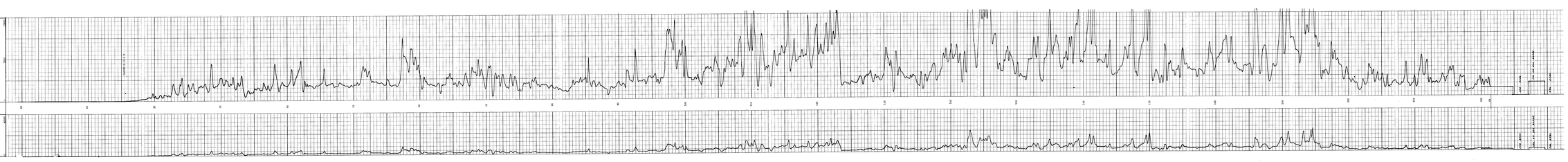
Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Date Recorded: 1998 MARCH 1998 - 1977

Depth



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.	K-Elk River 22 (3) #A
COMPANY	ELCO MINING LIMITED
WELL	DH - 8
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE	W___M
Other Services:	DENS-CAL, FEL, DEV

276

Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR 56 CM Above Perm. Datum
Well Depths Measured from	GROUND LEVEL
Elev. K.B. / D.F. / G.L.	
CSG	
	METRIC

Run No.	ONE
Date	19 APR 1977
First Reading	222 M
Last Reading	0
Footage Logged	222
Depth Reached	222.30
Depth Driller	222.65
Casing Driller	
Casing Roke	17.5
Fluid Type	MUD/WATER
Liquid Level	4
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR 10 MIN
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	127
INSTRUMENT TRUCK NO.		SPACING	43.18 CM
TOOL SERIAL NO.	125 004	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	GR T.C. SEC.	GR SENS SETTINGS	GR ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	N T.C. SEC.	N SENS SETTINGS	N ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	222	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → 16 — 0 to 160		NEUTRON INCREASES → 180 — 0 to 3600

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

DH-9.

K-ELK RIVER 77 (3) #B

276

FILE NO.	
COMPANY	ELCO MINING LIMITED
WELL	DH - 9
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE	W M
Other Services:	DENS. DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 0.5 M Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B. / CSG / G.L.	METRIC

Run. No.	ONE
Date	13 MAR 1977
First Reading	240 M
Last Reading	0
Footage Logged	240
Depth Reached	240.92
Depth Driller	241.5
Casing Roke	
Casing Driller	70
Fluid Type	AIR/WATER
Liquid Level	24
Min. Diam.	HQ
Rm @ °F	
Operating Time	2 HOURS
Truck No.	36
Recorded By	JOHNSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	240	3.66	4	100	OL	12	3	500	OL	140

REMARKS LOGGED THROUGH H CASING (0 - 70)
LOGGED THROUGH HQ DRILL RODS (70 - 240)

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG

FILE NO. K-Elk River 77 (3)

COMPANY: ELCO MINING LIMITED

WELL: DH - 9

LOCATION: 276

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

LSD / SEC / TWP / RGE / W M

Permanent Datum: GROUND LEVEL
Log Measured from: RIG FLOOR, 0.5 M Above Perm. Datum
Well Depths Measured from: RIG FLOOR

Other Services: GRN, DEV

METRIC

Run No.	ONE
Date	13 MAR 1977
First Reading	239.5 M
Last Reading	0
Footage Logged	239.5
Depth Reached	240.42
Depth Driller	241.5
Casing Roke	
Casing Driller	70
Fluid Type	AIR/WATER
Fluid Level	24
Min. Diam.	HQ
Operating Time	2 HOURS
Truck No.	36
Recorded By	JOHNSON
Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	CPS/DIV
1	0	239.5	3.66					3	500	1.8 R	24

REMARKS: LOGGED THROUGH H CASING (0 - 70)
LOGGED THROUGH HQ DRILL RODS (70 - 139.5)
DENS TOOL # 457

GAMMA RAY
API

DEPTHS

CALIPER
(DIAMETER –)

BULK DENSITY
(GRAMS/CC)

DH-10 OPEN HOLE

ROKE

SIDEWALL DENSILOG

CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #8

276

FILE NO.	
COMPANY	ELCO MINING LIMITED
WELL	DH - 10
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W M	
Other Services:	GR, FBL, DEV. GRN, DENS (PIPE)
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 50 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	9 MAR 1977
First Reading	212.5 M
Last Reading	0
Footage Logged	212.5
Depth Reached	213.42
Depth Driller	213.8
Casing Roke	
Casing Driller	
Fluid Type	WATER
Liquid Level	FULL
Min. Diam.	HQ
Operating Time	1 HOUR 40 MIN
Truck No.	36
Recorded By	JOHNSON/CARLSON
Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	212.5	3.66					3	1000	1.8R	54.55
2	0	212.5		CALIPER							

REMARKS DENSITY TOOL # 457 OPEN HOLE
CALIPER TOOL # 587
CALIPER LOGGED 0.5 M HIGH

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ROKE

ROKE OIL INC.
1001 FANNIN, SUITE 1500
HOUSTON, TEXAS 77002

COMPANY ROKE OIL INC.
WELL Tanner Keas #276
FIELD Wildcat
COUNTY Jackson
STATE Texas
LOCATION 330' FSL & 330' FEL
Sec. 36 Blk. Abs. 36 Survey
Other Services: Gamma Ray Neutron

Permanent Datum: Ground Level
Elev.: K.B. 1123
D.F. 1122
G.L. 1113
Log Measured From: K.B. 10 Ft. Above Perm. Datum
Drilling Measured From: K.B.

Date: 7-13-82
Run No.: One
Depth-Driller: 3200
Depth-Logger: 3200
Bottom Logged Interval: 3200
Top Logged Interval: 0
Type Fluid in Hole: Water
Salinity, PPM Cl: 1000
Density: 8.4
Level: Full
Max. Rec. Temp. Deg. F: 120
Operating Rig Time: 6 hrs.
Recorded By: Jerry Hall
Witnessed By: Mr. Tanner

Tanner Keas

276

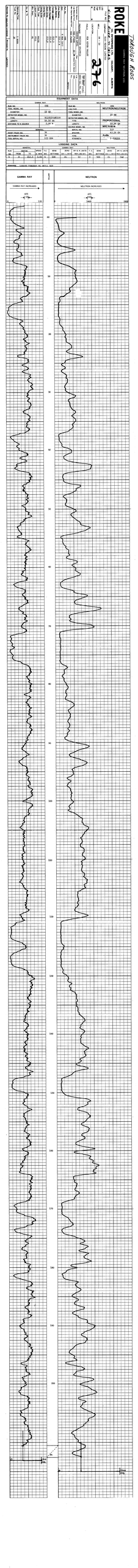
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	One	RUN NO.	One
TOOL MODEL NO.		LOG TYPE	CNL NEUTRON/NEUTRON
DIAMETER	2 5/8	TOOL MODEL NO.	27-50
DETECTOR MODEL NO.		DIAMETER	2 5/8
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	54.63	TYPE	PROPORTIONAL
SENSITIVITY	2.04 V	SOURCE	50 mc Am-Be
		SOURCE MODEL NO.	6CN-A-50 mc
	SERVICE	SERIAL NO.	113
ASSIST TRUCK NO.	36	SPACING	3.5 13.25 IN
ASSISTANCE TRUCK NO.	36		Avg.
TOOL DETAIL NO.	113 DDA	ATTENUATION	1 1 1 1 1 1 1 1 1 1

LOGGING DATA

GAMMA RAY					NEUTRON				
RUN	LOGGING SPEED F/M	TC SETTING	SENS.	MV @ API UNITS	T.C.	SENS.	ZERO SETTING	MV @ API UNITS	MV @ % LIMESTONE
One	30	3	100	40	3	17	0	100	40

REMARKS: LOGGING TOWARDS 90 METER RUN



OPEN HOLE

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

K-ELK RIVER 77 (3) 4B

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 10
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services	GRN, DENS (PIPE) DENS-CAL, GR, DEV
Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR 50 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
Elev. K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	9 MAR 1977
First Reading	212.5 M
Last Reading	7.5
Footage Logged	205
Depth Reached	213.1
Depth Driller	213.8
Casing Roke	
Casing Driller	
Fluid Type	WATER
Liquid Level	FULL
Min. Diam.	HQ
Rm @ °C	12.34 @ 25
Operating Time	1 HOUR
Truck No.	36
Recorded By	JOHNSON/CARLSON
Witnessed By	LAWRENCE

Remarks
SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 48 OHMS
500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

DIGITIZED BY STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL AND GAS

ROKE

COMPANY: ROKE OIL, INC.

WELL: 276

FIELD: KUPARUK RIVER

COUNTY: NORTH SLOPE BOROUGH

STATE: ALASKA

API NO. 50-029-21276

LOCATION: 1,000' FSL, 1,000' FEL

SEC. 36 T12N R10E UM

PERMANENT DATUM: MEAN SEA LEVEL

ELEV.: 0'

LOG MEASURED FROM: RKB 30' ABOVE PERM. DATUM

DRILLING MEASURED FROM: RKB

DATE	10-15-85
RUN NO.	ONE
TYPE LOG	DUAL INDUCTION SFL
DEPTH-DRILLER	8,200'
DEPTH-LOGGER	8,200'
BTM. LOG INTERVAL	8,200'
TOP LOG INTERVAL	SURFACE
CASING-DRILLER	9 5/8" @ 2,500'
CASING-LOGGER	2,500'
BIT SIZE	8 1/2"
TYPE FLUID IN HOLE	LIGNOSULFONATE
DENSITY	9.8
VISCOSITY	40
PH	9.5
FLUID LOSS	6.0
SOURCE OF SAMPLE	FLOWLINE
RM @ MEAS. TEMP.	1.45 @ 70°
RMF @ MEAS. TEMP.	.95 @ 70°
RMC @ MEAS. TEMP.	2.0 @ 70°
SOURCE RMF & RMC	MEASURED
RM @ BHT	.65 @ 160°
TIME SINCE CIRC.	12 HR
MAX. REC. TEMP.	160°
EQUIP. LOCATION	3-C
RECORDED BY	R. MCCOY
WITNESSED BY	MR. MCCOY

REMARKS: CASING & HOLE SIZE

RUN	BOREHOLE RECORD			CASING RECORD			
	BIT SIZE (IN.)	FROM (FT.)	TO (FT.)	SIZE (IN.)	WGT. (LB/FT.)	FROM (FT.)	TO (FT.)
ONE	8 1/2"	SURFACE	8,200'	9 5/8"	36#	SURFACE	2,500'

LOGGING DISTRICT: KUPARUK RIVER, ALASKA

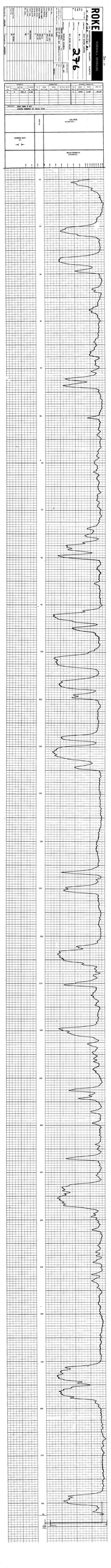
LOGGING ENGINEER: R. MCCOY, MARK

OPERATOR: MR. MCCOY

GAMMA RAY (GAPI) 0 — 100

RESISTIVITY (OHMM) 1 — 1000

DEPTH (FEET) 100 — 8200


ROKE
RESISTIVITY
Type of
376
CASING
SIZE
WEIGHT
DEPTH
BIT SIZE
TYPE FLUID
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RUN
TYPE LOG
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BOTTOM LOG INTERVAL
LOGGING SPEED
DIL
LL8
SGR
CNL
LDT
CALI
DSFL
RES
GR
NEUTRON
DENSITY
MUD
TIME
CIRC.
LOGGED
BOREHOLE RECORD
BIT
FROM
TO
CASING
SIZE
WGT.
FROM
TO
REMARKS
CALIPER
(INCHES)
GAMMA RAY
API
RELATIVE BEARING (DEGREES)
0
90
180
270
360

ROKE

COMPANY

WELL

FIELD

COUNTY

STATE

LOCATION

SEC. TWP. RGE.

OTHER SERVICES

PERMANENT DATUM

ELEV.

LOG MEASURED FROM

DRILLING MEASURED FROM

DATE

RUN NO.

DEPTH-DRILLER

DEPTH-LOGGER

BTM. LOG INTERVAL

TOP LOG INTERVAL

CASING-DRILLER

CASING-LOGGER

BIT SIZE

TYPE FLUID IN HOLE

DENS. VISC.

PH FLUID LOSS

SOURCE OF SAMPLE

RM @ MEAS. TEMP.

RMF @ MEAS. TEMP.

RMC @ MEAS. TEMP.

SOURCE OF RMF

SOURCE OF RMC

RM @ BHT

TIME CIRC. ON BOTTOM

TIME LOGGER ON BOTTOM

MAX. REC. TEMP.

EQUIP. NO. LOCATION

RECORDED BY

WITNESSED BY

EQUIPMENT DATA

GAMMA RAY

RUN NO.	1ST
BOR. REC. NO.	
CASING NO.	10-3/4
CASING-DRILLER	
CASING-LOGGER	
TYPE	SCHLUMBERGER
SERIAL NO.	5-A-R-L
LOCATION & BASED	S.A.R.L.

RECORDED

DEPTH-DRILLER	90
DEPTH-LOGGER	
SCALE	5"/100'

RESISTIVITY

RUN NO.	1ST
BOR. REC. NO.	
CASING NO.	10-3/4
CASING-DRILLER	
CASING-LOGGER	
TYPE	SCHLUMBERGER
SERIAL NO.	5-A-R-L
LOCATION & BASED	S.A.R.L.

RECORDED

DEPTH-DRILLER	90
DEPTH-LOGGER	
SCALE	5"/100'

LOGGING DATA

RUN NO.	BIT SIZE	CASING DRILLER	CASING LOGGER	TOP LOG INTERVAL	BTM. LOG INTERVAL	TYPE FLUID IN HOLE	DENS.	VISC.	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE OF RMF	SOURCE OF RMC	RM @ BHT	TIME CIRC. ON BOTTOM	TIME LOGGER ON BOTTOM	MAX. REC. TEMP.	EQUIP. NO. LOCATION	RECORDED BY	WITNESSED BY
1ST	9-7/8		10-3/4																				

REMARKS: SPEC. DEV. - 4 DEGREES 1000 - 4DEG 4000 - 4DEG

GAMMA RAY

GAMMA RAY (API UNITS)

0 — 100

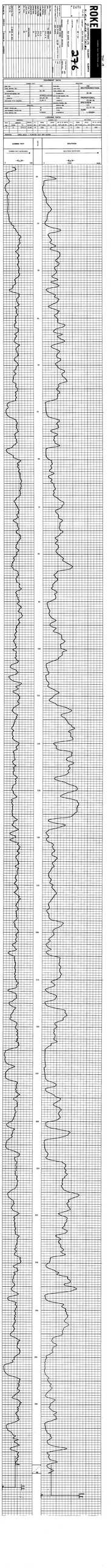
RESISTIVITY

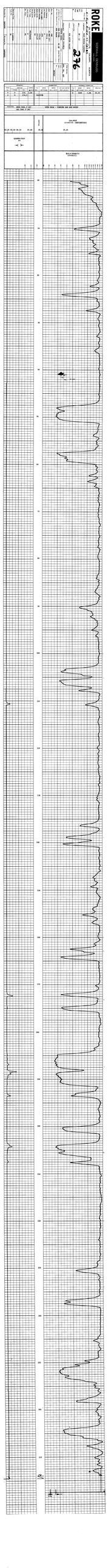
SHORT NORMAL RESISTIVITY

0 — 100 — 200

LONG NORMAL RESISTIVITY

0 — 100 — 200




ROKE
SCHLUMBERGER
276
COMPANY
WELL
FIELD
COUNTY
STATE
LOCATION
OTHER SERVICES
PERMANENT DATUM
ELEV.
LOG MEASURED FROM
DRILLING MEASURED FROM
DATE
RUN NO.
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS.
VISC.
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE OF RMF
SOURCE OF RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RUN
BIT
FROM
TO
SIZE
WEIGHT
GRADE
THREAD
CASING
BORE HOLE RECORD
TYPE
WEIGHT
MAX. REC. TEMP.
EST. CEMENT TOP
EQUIPMENT
LOCATION
RECORDED BY
WITNESSED BY
REMARKS
RUN NO. PASS NO. TIME LOGGER ON BOTTOM
TYPE LOG
DEPTH
SCALE
TIME
MAX. RECORDED TEMP.
EQUIPMENT NUMBER
LOCATION
RECORDED BY
WITNESSED BY
DUAL INDUCTION-LATEROLOG
GAMMA RAY
CALIPER
BOREHOLE COMPENSATED SONIC
GAMMA RAY
CALIPER

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

K- ELK RIVER 77 (3) AB

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 12
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DENS-CAL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 45 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE		
Date	25 MAR 1977		
First Reading	274 M		
Last Reading	10		
Footage Logged	264		
Depth Reached	274.60		
Depth Driller	274.11		
Casing Roke	10		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min Diam.	HQ		
Rm @ °C	17.86 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON | Witnessed By LAWRENCE

Remarks
SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 48 OHMS
500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

Depths

ROKE

SHELL OIL COMPANY

KALE 3 UNIT 3 WELL

SECTION 3 BLOCK 3 UNIT 3

COUNTY HARTLEY STATE TEXAS

API NO. 42-205-30276

LOCATION 1980' FSL & 1980' FEL

ELEV. KB 3111 DF 3109 GL 3101

LOG MEASURED FROM KB 10 FT. ABOVE PERMANENT DATUM

DATE 7-7-78

RUN NO. ONE

DEPTH-DRILLER 5100

DEPTH-LOGGER 5102

BTM. LOG INTERVAL 5100

TOP LOG INTERVAL 1500

CASING-DRILLER 8 5/8 @ 1500

CASING-LOGGER

BIT SIZE 7 7/8

TYPE FLUID IN HOLE GEL CHEMICAL

DENSITY 9.2

VISCOSITY 45

PH 10.5

FLUID LOSS 6.0

SOURCE OF SAMPLE FLOWLINE

RM @ MEAS. TEMP. .75 @ 75 °F

RMF @ MEAS. TEMP. .60 @ 75 °F

RMC @ MEAS. TEMP. .90 @ 75 °F

SOURCE RMF & RMC MEASURED

RM @ BHT .35 @ 150 °F

TIME CIRC. 5 HRS.

MAX. REC. TEMP. 150 °F

EQUIPMENT NO. 2-2

LOCATION HARTLEY, TEXAS

RECORDED BY D. WILLIAMS

WITNESSED BY D. CRAIG

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	GR 100	TOOL MODEL NO.	NEUTRON/INTERPRETATION
DIAMETER	3 1/8	DIAMETER	3 1/8
DETECTOR MODEL NO.	SCINTILLATION	DETECTOR MODEL NO.	PROPORTIONAL
LENGTH	30.14 IN	LENGTH	30.25 IN
DETECTOR TO SHOE	7.25 in	DETECTOR TO SHOE	8.00 in
		SOURCE MODEL NO.	MSC-1 Sb-Be
		SOURCE	50 MC
		SPACING	15.25 IN
SONDE TRACK NO.	24	TYPE	Radio
INSTRUMENT TRACK NO.	21	SONDE	2 OPLIGO
TOOL SERIAL NO.	1323 5015	INSTRUMENT	

GENERAL							

LOGGING DATA																	
RUN NO.	LOGGING DIRECTION		SPEED		TIME CONSTANT		SENSITIVITY						NEUTRON				
	FROM	TO	IN/MIN	DIV/IN	SEC	DIV/IN	MV/DIV	FULL SCALE	DIV/IN	MV/DIV	FULL SCALE	DIV/IN	SPEED	DIV/IN	TIME CONSTANT	DIV/IN	SENSITIVITY
1	5100	1500	30	10	1	10	10	1	5	10	1	5	300	10	1	10	10

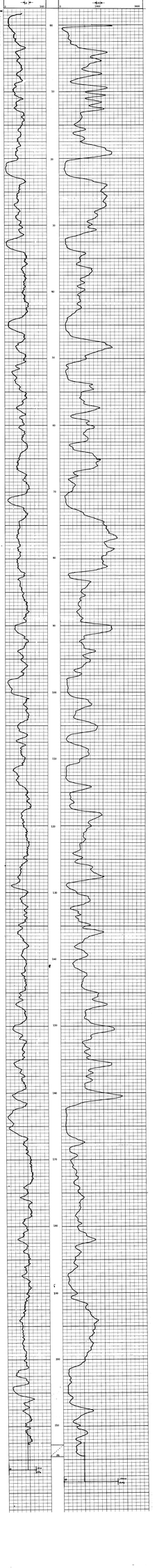
REMARKS	GAMMA RAY AND NEUTRON RECORDED ON 5" SCALE	LOGGING DATA RECORDED ON 2" SCALE

GAMMA RAY

GAMMA RAY INCREASES

NEUTRON

NEUTRON INCREASES



ROKE

SPECIAL ANALYSIS

276

COMPANY	ROKE OIL LIMITED
WELL	No. 1
FIELD	WILDCAT
COUNTY	CALGARY
PROVINCE	ALBERTA
LOCATION	10-24-26-3 W5M
PERMANENT DATUM	GROUND LEVEL
LOG MEASURED FROM	K.B. 10 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM	K.B.
ELEVATION	K.B. 3944 FT.
	D.F.
	G.L. 3934 FT.
DATE	20 - 11 - 72
RUN NO.	ONE
DEPTH-DRILLER	5,400 FT.
DEPTH-LOGGER	5,400 FT.
BTM. LOG INTERVAL	5,400 FT.
TOP LOG INTERVAL	3,000 FT.
CASING-DRILLER	8.5/8" @ 354 FT.
CASING-LOGGER	354 FT.
BIT SIZE	7.7/8"
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	9.8 LB/GAL
VISCOSITY	40 SEC
PH	10.5
FLUID LOSS	8.0 ML
SOURCE OF SAMPLE	FLOWLINE
RM @ MEAS. TEMP.	1.0 @ 70 °F
RMF @ MEAS. TEMP.	1.0 @ 70 °F
RMC @ MEAS. TEMP.	1.0 @ 70 °F
SOURCE OF RMF & RMC	MEASURED
RM @ BHT	0.5 @ 140 °F
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	140 °F
EQUIP. LOCATION	3-5-W5M
RECORDED BY	D. HOLLOWAY
WITNESSED BY	MR. ROKE

GENERAL						GAMMA RAY				GAMMA-GAMMA (DEN)			
RUN NO.	BIT SIZE	FROM	TO	SPEED FT/MIN	FLD	SCALE	SCALE CHANGES	API UNITS DEFLECTION	API UNITS CALIBRATION	FLD	SCALE	SCALE CHANGES	API UNITS
1	7.7/8"	0	354	5,400						1	5000	1,4,5%	17.36

REMARKS: 2000 SPACE F SIO
GEL CHEM F SIO

RUN 1 2000 SPACER 2000GAMMA RAY 2000CALIPER 2000 BULK DENSITY 2000 GAMMA RAY-NEUTRON 2000 CEMENT BOND LOG 2000 VARIABLE DENSITY LOG 2000 CASING COLLAR LOG 2000 PERFORATING RECORD 2000 TUBING PUNCH 2000 PRESSURE BOMB RUN 2000 FLOWING BHP TEMP 2000 SHUT-IN BHP TEMP 2000

CALIPER
(DIAMETER - ADJUSTABLE)

10.14 13.34 31.32 31.40 31.40 31.40

GAMMA RAY
API

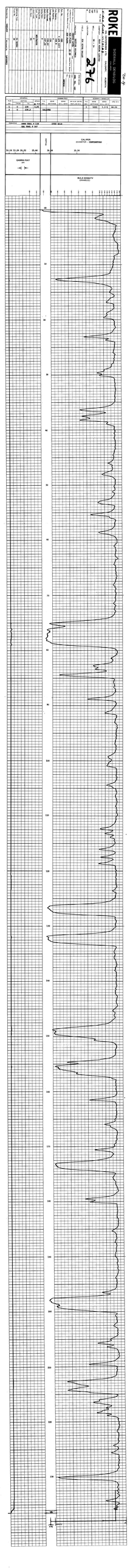
BULK DENSITY
(ADJUSTABLE)

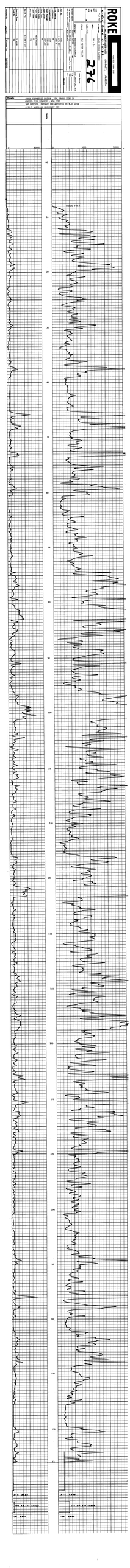
2.65 2.60 2.55 2.50 2.45 2.40 2.35 2.30 2.25 2.20 2.15 2.10 2.05 2.00 1.95 1.90 1.85 1.80 1.75 1.70 1.65 1.60 1.55 1.50

FEET

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250

1" = 100'


ROKE
276
CALIPER
GAMMA RAY
BULK DENSITY
DENSITY CORRECTION
CALIPER
GAMMA RAY
BULK DENSITY
DENSITY CORRECTION


ROKE
276
Remarks
Operator
Rig
Location
Date
Time
Depth
Casing
Bit
Mud
Weather
Temperature
Viscosity
Pump
Liner
Stroke
Speed
Pressure
Hole Dev.
Direction
Dip
Core No.
Recovery
Time
Depth
Lith. Chg.
Drill Rate
Gas
Sample
Time
Depth
Lith. Chg.
Drill Rate
Gas
Sample

ROKE

ROKE OIL INCORPORATED
SUITE 1000, ROKE BUILDING
2339 C STREET, S.W.
CALGARY, ALBERTA, CANADA T2G 3T2

SUN NEUTRON LOG PROBE

276

WELL	ROKE ET AL HZ PEMBINA 10-36-49-7W5
FIELD	PEMBINA
COUNTY/PROVINCE	YELLOWHEAD, ALBERTA
LOCATION	10-36-49-7W5
PERMANENT DATUM	GROUND LEVEL
ELEV.	K.B. 2,000 FT.
LOG MEASURED FROM	K.B. 12 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM	K.B.
DATE	1-JUNE-1978
RUN NO.	ONE
TYPE LOG	GAMMA RAY NEUTRON
DEPTH-DRILLER	5,200 FT.
DEPTH-LOGGER	5,200 FT.
BTM. LOG INTERVAL	5,200 FT.
TOP LOG INTERVAL	1,000 FT.
CASING-DRILLER	9 5/8" @ 1,000 FT.
CASING-LOGGER	1,000 FT.
BIT SIZE	8 3/4"
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	9.8 LB/GAL
VISCOSITY	40 SEC
PH	10.0
FLUID LOSS	8.0 CC
SOURCE OF SAMPLE	FLOWLINE
RM @ MEAS. TEMP.	1.0 @ 70 °F
RMF @ MEAS. TEMP.	0.8 @ 70 °F
RMC @ MEAS. TEMP.	1.2 @ 70 °F
SOURCE OF RMF & RMC	MEASURED
RM @ BHT	0.5 @ 140 °F
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	140 °F
EQUIP. LOCATION	1-49-7
RECORDED BY	R. SMITH
WITNESSED BY	MR. ROKE

EQUIPMENT DATA

GAMMA RAY

RUN NO.	ONE
LOG MODEL NO.	
SERIAL NO.	52
DETECTOR MODEL NO.	
TYPE	SCINTILLATION
SERIAL NO.	2-49-7
LOCATION O.D. (INCHES)	

NEUTRON

TYPE	SNP
LOG MODEL NO.	
SERIAL NO.	52
DETECTOR MODEL NO.	
TYPE	PROPORTIONAL
SERIAL NO.	10-36-49-7W5
LOCATION O.D. (INCHES)	3.625 IN.

GENERAL

ASSAY TRUCK NO.	56
INSTRUMENT TRUCK NO.	53
DATA MEDIA NO.	1-JUN-1978

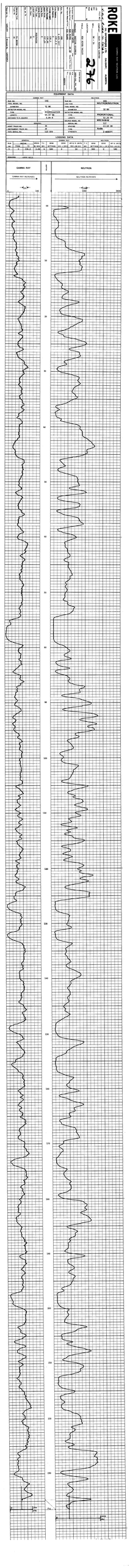
SOURCE

TYPE	RADIUM
STRENGTH	2.25 CURIES

LOGGING DATA

RUN NO.	GAMMA RAY					NEUTRON					
	TIME CONST.	SPEED (FT. PER MIN.)	H.V. (VOLTS)	SENS. (API UNITS)	L.O.C. (API UNITS)	H.V. (VOLTS)	SENS. (API UNITS)	L.O.C. (API UNITS)	TIME CONST.	SPEED (FT. PER MIN.)	L.O.C. (API UNITS)
ONE	3 SEC	30	1,100	1	0	1,100	1	0	3 SEC	30	100

REMARKS: GOOD HOLE



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

DH 15

FILE NO. K-ELK RIVER 77 (3) #B

LSD
SEC
TWP
RGE
W___M

COMPANY ELCO MINING LIMITED
WELL DH - 15
LOCATION
FIELD ELK RIVER VALLEY
PROVINCE BRITISH COLUMBIA

276

Other Services: GRN, FBL, DEV

Permanent Datum GROUND LEVEL Elev.
Log Measured from RIG FLOOR 28 CM Above Perm. Datum
Well Depths Measured from RIG FLOOR

K.B.
CSG
G.L.
METRIC

Run No.	ONE
Date	11 APR 1977
First Reading	188 M
Last Reading	0
Footage Logged	188
Depth Reached	188.92
Depth Driller	189.10
Casing Roke	11.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	00
Min. Diam.	HQ
Operating Time	1 3/4 HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	188	3.66					3	1000	1.3 R	46.14
2	0	188.5		CALIPER							

REMARKS DENSITY TOOL # 128 OPEN HOLE
CALIPER TOOL # 587

CALIPER (DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE

OIL INTERNATIONAL LTD.

PROTECTED DATA

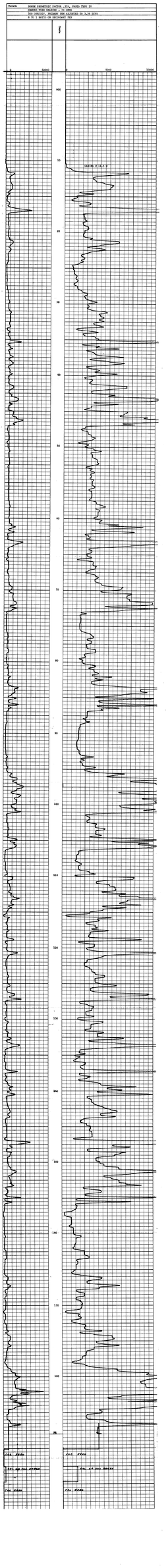
CALGARY ALBERTA

K-ROKE et al. HUSKY et al. WILSON

Field	WILSON
Well	10-15-11-25 W4M
Licence No.	276
Elev.	KB 1 m
Log Date	1 Feb 1978
Log Type	Prod. Interval
Log Interval	1000 to 3100
Scale	1:200
Depth Control	KB
Log Measured From	KB
Drilling Measured From	KB
Permanent Datum	KB
Elevation	1 m
Date Run	1 Feb 1978
Run No.	ONE
Depth Driller	3100 m
Depth Logger	3100 m
Bottom Log Interval	3100 m
Top Log Interval	1000 m
Casing Driller	1000 m
Casing Logger	1000 m
Bit Size	200 mm
Type Fluid in Hole	FRESH WATER
Density	1.0 g/cm³
Viscosity	0.0
Fluid Loss	0.0
Source of Sample	FLOWING
Rm @ Measured Temp	0.0
Rmf @ Measured Temp	0.0
Rmc @ Measured Temp	0.0
Source Rmf / Rmc	MEASURED
Rm @ BHT	0.0
Time Since Circulation	0.0
Max. Rec. Temp.	0.0
Equipment No.	1
Location	10-15-11-25 W4M
Recorded By	KEN
Witnessed By	[illegible]

Company	ROKE OIL INTERNATIONAL LTD.
Well	K-ROKE et al. HUSKY et al. WILSON
Field	WILSON
County	CALGARY
State	ALBERTA
Other Services	
Permanent Datum	KB
Log Measured From	KB 1 m ABOVE PERM. DATUM
Drilling Measured From	KB
Elev.: K.B. 1 m	G.L.
D.F.	
G.L.	

Remarks: BOREHOLE CONDITIONS: 1.25% INFER TYPE IN
MUD CONDITIONS: FRESH WATER
NO CORRECTIONS, PRIMARY PER SACHEBEN DA 7.29 DEPTH
8 TO 1 RATIO ON SECONDARY PER



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77(3)A8

276

FILE NO.	
LSD / SEC / TWP / RGE / W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 15
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	RIG FLOOR 28 CM. Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B. / CSG / G.L.	METRIC

Run. No.	ONE
Date	11 APR 1977
First Reading	188.5 M
Last Reading	0
Footage Logged	188.5
Depth Reached	188.8
Depth Driller	189.1
Casing Roke	11.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR 20 MIN
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAURENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	188.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → 16; 0 – 160		NEUTRON INCREASES → 180; 0 – 1800 – 3600

ROKE
SIDEWALL DENSILOG
CALIPER

DH-16.

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. K-ELK RIVER 77 (3) AB

LSD / SEC / TWP / RGE / W ___ M

COMPANY: ELCO MINING LIMITED

WELL: DH - 16

LOCATION: 276

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum: GROUND LEVEL — Elev. ___ K.B. ___

Log Measured from: RIG FLOOR 53 CM. Above Perm. Datum — CSG ___

Well Depths Measured from: RIG FLOOR — G.L. ___

METRIC

Run. No.	ONE
Date	14 APR 1977
First Reading	167.5 M
Last Reading	0
Footage Logged	167.5
Depth Reached	168.42
Depth Driller	168.32
Casing Roke	14
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	00
Min. Diam.	HQ
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	167.5	3.66					3	1000	1.3R	46.14
2	0	168		CALIPER							

REMARKS: DENS TOOL # 128 OPEN HOLE
CAL TOOL # 587

CALIPER (DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

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

ROKE OIL (1971) LTD.

CANADA 444 MacLEOD TRAIL CALGARY, ALBERTA

COMPANY ROKE OIL (1971) LTD.
WELL No. 2-76
FIELD WILDCAT
COUNTY
STATE
LOCATION 2-76
PERMANENT DATUM GROUND LEVEL
ELEV. 3170 ft.
LOG MEASURED FROM K.B.
DRILLING MEASURED FROM K.B.
DATE 2-76
RUN NO. ONE
TYPE LOG GAMMA RAY NEUTRON
DEPTH-DRILLER 3600
DEPTH-LOGGER 3600
BTM. LOG INTERVAL 3600
TOP LOG INTERVAL 0
CASING-DRILLER 13 3/8 @ 180
CASING-LOGGER 180
BIT SIZE 12 1/4
TYPE FLUID IN HOLE GEL CHEM
DENSITY 9.6
VISCOSITY 40
PH 9.5
FLUID LOSS 8.8
SOURCE OF SAMPLE PIT
RM @ MEAS. TEMP. .5 @ 60°F
RMF @ MEAS. TEMP. .4 @ 60°F
RMC @ MEAS. TEMP. .6 @ 60°F
SOURCE OF RMF & RMC MEASURED
RM @ BHT .3 @ 120°F
TIME SINCE CIRC. 12 HRS.
MAX. REC. TEMP. 120°F
EQUIP. LOCATION 2-76
RECORDED BY
WITNESSED BY

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	27 /8"	DIAMETER	31 /8"
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	10.16 ON	LENGTH	10.16 ON
DISTANCE TO N. SOURCE	7.04 ft	SOURCE MODEL NO.	MEC-18-GN
		SOURCE STRENGTH	1Ci
GENERAL		SPACING	13.18 ON
MONIT.TRACK NO.	96	TYPE	Amda
INSTRUMENT TRUCK NO.		STRENGTH	1 25MCi
TOOL SERIAL NO.	121 004		

LOGGING DATA

GENERAL					GAMMA RAY			NEUTRON			
RUN NO.	SPEED	T.C.	SENS		ZERO	API S. @ UNITS	T. C.	SENS	ZERO	API S. UNITS
NO. FROM TO	F.P.M.	SEC.	SETTING		DIV.	API S. PER DIV.	SEC.	SETTING		API S. PER DIV.
1 0 168	5-10	6	100		0	55	3	300	0	180

REMARKS CASE HOLE

GAMMA RAY | Scale5 | NEUTRON

GAMMA RAY INCREASES → | NEUTRON INCREASES →

0 — 140 | 0 — 3600

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

PB

Log 2-76

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

FILE NO. K-ELK RIVER 77 (3) 4.0

276

COMPANY	ELCO MINING LIMITED
WELL	DH - 16
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD	
SEC	
TWP	
RGE	
W___M	

Permanent Datum	GROUND LEVEL	Elev.	
Log Measured from	RIG FLOOR	53 CM Above Perm. Datum	
Well Depths Measured from	RIG FLOOR		

Other Services: GRN, DENS-CAL, DEV

K.B. ___ CSG ___ G.L. ___

METRIC

Run No.	ONE
Date	14 APR 1977
First Reading	167.5 M
Last Reading	14
Footage Logged	153.5
Depth Reached	168.10
Depth Driller	168.36
Casing Roke	14
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	00
Min Diam.	HQ
Rm @ °C	21.98 @ 25
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

Remarks SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 290 OHMS
500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

0 — 40000	Depths	0 — 5000 — 10000

ROKE

SIDEWALL DENSLOG

Run No. ONE

OIL ENTERPRISES LTD.
CALGARY, ALBERTA

LSD
FILE NO.
SEC.
TWP.
RGE.
W.....M

COMPANY: ROKE OILS (1972) LTD.

WELL: IOC - 17

276

FIELD: SEA RIVER VALLEY

LOCATION:

PROVINCE: BRITISH COLUMBIA

Other Services: CBHC, BHTC, DIFL

Permanent Datum: GL
Log Measured from: KB
Drilling Measured from: KB

Date	26 FEB 1977
Run No.	ONE
Depth Driller	1654.5
Depth Logger	1654.5
Bottom Logged Interval	1654.5
Top Logged Interval	87.45
Casing Driller	12.5
Casing Logger	
Bit Size	
Type Fluid in Hole	MUD/WATER
Salinity, PPM Cl	3
Density	10
Level	
Max. Temp. Recorded	
Operating Time	
Truck No.	36
	1 WORK

Recorded By: CARLSON
Witnessed By: MAYDORCK

GENERAL

RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN.	T.C. SEC.	SENS SETTINGS
1	0	86.5	3.66		
2	0	87			CALIPER

GAMMA RAY

ZERO DIV'L OR R	API G.R. UNITS PER LOG DIV.

SIDEWALL DENSLOG

T.C. SEC.	SENS SETTINGS	ZERO DIV'L OR R	CPS/DIV
3	1000	1.88	54.55

REMARKS: DENSITY TOOL # 557 — OPEN HOLE
CALIPER TOOL # 587

CALIPER
(DIAMETER – CENTIMETERS)

10,16 15,24 20,32 25,40 — DEPTHS — 30,48 35,56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

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 2,90 3,00

00 10 20 30 40 50 60 70 80

FR

1000 CPS — SHIFT

Q

17-74

ROKE

GAMMA RAY NEUTRON LOG

ROKE OILFIELD SERVICES LTD.
CALGARY, ALBERTA

K-ELK E. OIL & GAS UNIT #3 & #9

FILE NO.
SEC
TWP
RGE
M
W

COMPANY ELK VENTURE LOCATED
WELL 88 - 17
LOCATION
FIELD ELK RIVER VALLEY
PROVINCE BRITISH COLUMBIA

276

Permanent Datum
Log Measured from
Drilling Measured from

ELEV.
K.B.
D.F.
G.L.

Other Services
SPECIAL GR-FDL-DIFL-DIFL

Run No.	ONE		
Date	26/3/77		
Time Reading	87 X		
Last Reading	87 -		
Depth Driller	0		
Depth Logger	87.30		
Casing Driller	87.54		
Casing Logger	87.5		
Fluid Type	MUD/WATER		
Min. Diam.	181		
Max. Diam.			
Rm @ °F			
Operating Time	4.40 HRS		
Truck No.			
	36		

Recorded By GRAHAM
Witnessed By LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.26 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	123 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY			NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	87	3.66	4	100	0	16	3	3000	0	180

REMARKS OPEN HOLE

GAMMA RAY | DEPTHS | NEUTRON

GAMMA RAY INCREASES → API 0 160

NEUTRON INCREASES → API 1800 3600

00 10 20 30 40 50 60 70 80

0 200 CPS

0 2000 CPS

ROKE

FOCUSED BEAM LOG

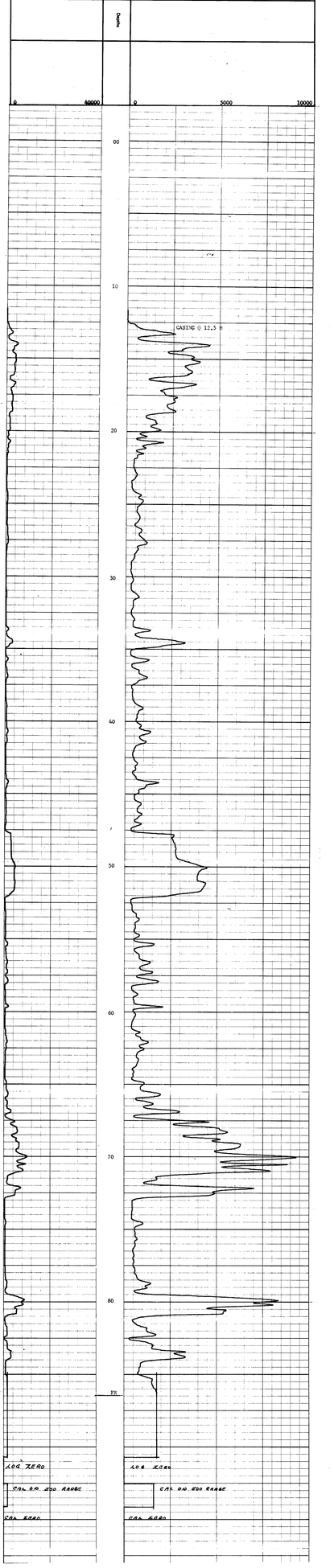
OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-KLK KLUGE 7-7(5)A

LSD	
SEC	
TWP	
RGE	
W	M
COMPANY	ELGO NEXUS LIMITED
WELL	DH - 17
LOCATION	
FIELD	KLK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Permanent Datum	GROUND LEVEL
Log Measured From	KELLY BUSHING
Well Depths Measured From	KELLY BUSHING
Elev.	
Elev.	
Ft. Above Perm. Datum	
Run No.	ONE
Date	26 FEB 1977
First Reading	86.5 M
Last Reading	12.5
Footage Logged	74.0
Depth Reached	87.10
Depth Drilled	87.45
Casing Rules	12.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	3
Max. Dam.	NO
Run @ °C	18.18 @ 25
Operating Time	40 MIN
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAFRENCE
Other Services	GEN. DENS. CAL. DIV
K.B.	
GRD.	
G.L.	
	METERS

276

Remarks: SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 40 OHMS
500 OHM/DIV. PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN



DH - 18

ROKE

SIDEWALL DENSILOG

CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) AB

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ___ M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 18
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV

276

Permanent Datum	GROUND LEVEL	Elev.	
Log Measured from	RIG FLOOR	66 CM Above Perm. Datum	
Well Depths Measured from	RIG FLOOR		
K.B.			
CSG			
G.L.			
			METRIC

Run. No.	ONE		
Date	4 MAR 1977		
First Reading	198 M		
Last Reading	0		
Footage Logged	198		
Depth Reached	198.92		
Depth Driller	198.86		
Casing Roke	7		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	00		
Min. Diam.	HQ		
Operating Time	1 HOUR 35 MIN		
Truck No.	36		

Recorded By CARLSON Witnessed By LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	198	3.66					3	1000	1.8R	54.55
2	0	198.5		CALIPER							

REMARKS DENSITY TOOL # 457 OPEN HOLE
CALIPER TOOL # 587

CALIPER (DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE

PRESSURE 1000 PSI

GEOPHYSICAL CO. CALGARY, ALBERTA

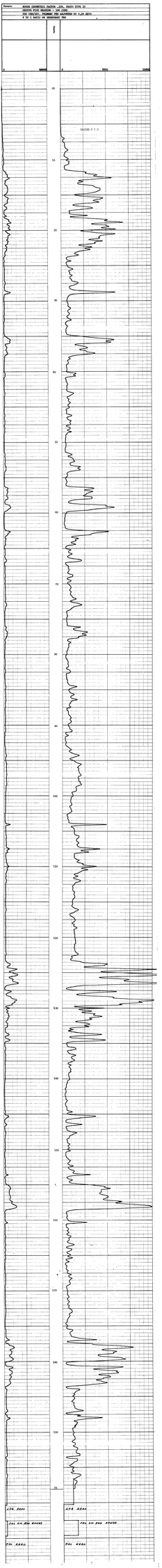
Company: ROKE OIL EXPLORATION LTD.
Field: WILDCAT
Well: 2-2-16-26-W4M
Location: 2-2-16-26-W4M
Date: 1-3-84
Time: 1:45 PM
Elevation: 2276
Depth: 1000
Log Interval: 1000
Casing Size: 8 5/8
Casing Depth: 1000
Bottom Hole Temp.: 80 F
Max. Rec. Temp.: 80 F
Rig: 1
Recorded By: D. JENSEN
Witnessed By: MR. BOB WEBB

Run No.	Bit Size	Type Fluid	Density	Viscosity	Fluid Loss	Source	Rm	Rmf	Rmc	Max. Rec. Temp.	Circ. Time
1	7 7/8	GEL CHEM	9.0	45	10.0					80 F	3 HRS

Equipment	Location
Recorded By	1000 PSI
Witnessed By	1000 PSI

Logging Date	1-3-84	Run Number	ONE
Depth Driller	1000	Depth Logged	1000
Top Log Int.	SURFACE	Bottom Log Int.	1000
Casing Driller	1000	Casing Logged	1000
Bit	7 7/8	Stop Time	3:00 PM
Type Fluid	GEL CHEM	Density	9.0
Viscosity	45	Fluid Loss	10.0
Source		Rm	
Rmf		Rmc	
Max. Rec. Temp.	80 F	Circ. Time	3 HRS
Equipment	1000 PSI	Location	1000 PSI
Recorded By	D. JENSEN	Witnessed By	MR. BOB WEBB

Remarks: ROKE GEOPHYSICAL CALIBRATION - LOG - PRINTS DUPE ZZ
CALIBRATION - 1 SEC. 100 MV. 1 INCH
NEUTRON DENSITY - DENSITY PER GAMMA
4 TO 1 RATIO ON NEUTRON PER



ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #D

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W___M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 18
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS,CAL,FBL,DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 66 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

276

Run. No.	ONE
Date	4 MAR 1977
First Reading	198.5 M
Last Reading	0
Footage Logged	198.5
Depth Reached	198.80
Depth Driller	198.86
Casing Roke	7
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	6
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

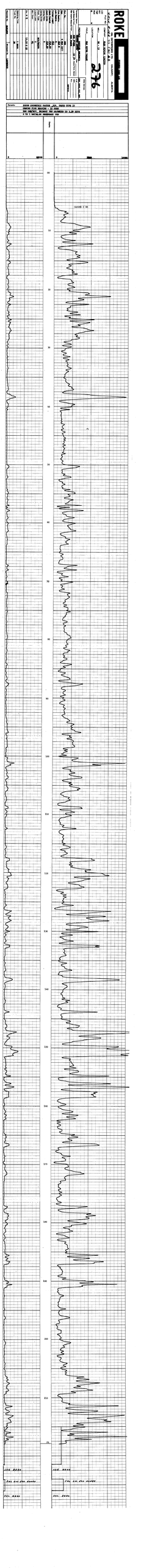
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	~3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	198.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → API 16; 0 – 160		NEUTRON INCREASES → API 180; 0 – 1800 – 3600

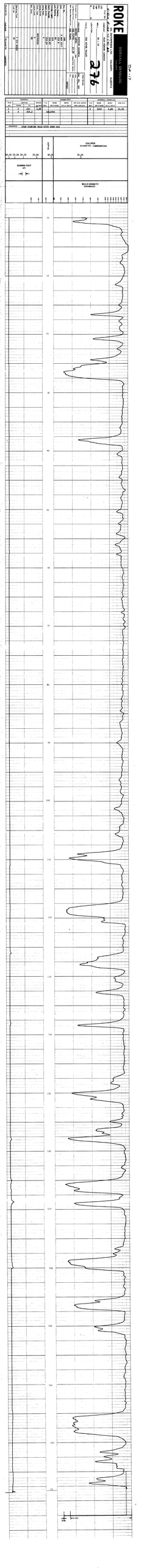

ROKE
LOG
ROKE OIL (UK) LIMITED
CHURCH FARM, EASINGWOLD
YORKSHIRE, YO61 3QR, ENGLAND
TEL: 01347 821 800
FAX: 01347 821 801
WELL: 36/25a-1
FIELD: ROKE
COUNTY: NORTH YORKSHIRE
COUNTRY: UNITED KINGDOM
DATE: 27-Jan-2010
276
Depth
Gamma Ray
0
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
CASING @ 96
LOG: BASE
LOG: TOP
FOL: BASE
FOL: TOP

ROKE

GEOLOGICAL SURVEY

Fig. 17

2276



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. K- ELK RIVER 77 (3) #6

COMPANY	ELCO MINING LIMITED
WELL	DH - 19
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD	
SEC	
TWP	
RGE	
W___M	

276

Other Services: DENS,CAL,FBL,DEV

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	RIG FLOOR	53 CM Above Perm. Datum	CSG
Well Depths Measured from	RIG FLOOR		G.L.

METRIC

Run. No.	ONE
Date	6 MAR 1977
First Reading	218.5 M
Last Reading	0
Footage Logged	218.5
Depth Reached	218.80
Depth Driller	218.69
Casing Roke	6
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Rm @ °F	
Operating Time	1½ HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	218.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE. STRONG FLOW OF WATER AND GAS

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → API 16 — 0 to 160		NEUTRON INCREASES → API 180 — 0, 1800, 3600

DH-20.

ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) 4B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ____ M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 20
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 0.5 M Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE		
Date	12 MAR 1977		
First Reading	215 M		
Last Reading	0		
Footage Logged	215		
Depth Reached	215.04		
Depth Driller	216		
Casing Roke			
Casing Driller	9		
Fluid Type	WATER		
Liquid Level	FULL		
Min. Diam.	HQ		
Operating Time	1 HOUR		
Truck No.	36		
Recorded By	JOHNSON	Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M./MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	215	3.66					3	1000	1.8R	54.55

REMARKS DENS TOOL # 457

CAL TOOL # 587

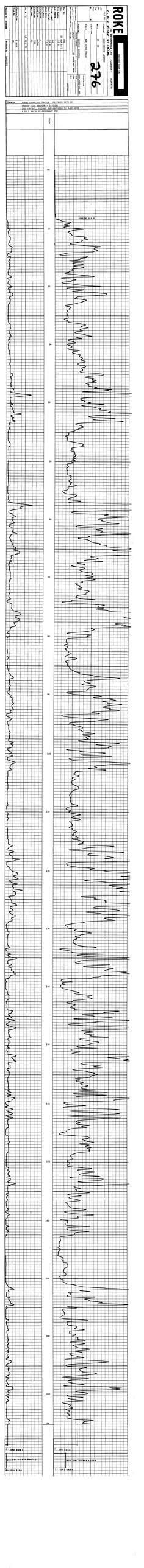
GAMMA RAY API

DEPTHS

CALIPER (DIAMETER CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

BULK DENSITY (GRAMS/CC)


ROKE
276

ROKE

Schlumberger WELL SURVEYING CORPORATION
CALGARY, ALBERTA

276

COUNTRY	CANADA
PROVINCE	ALBERTA
LOCATION	
SEC.	30
TWP.	29
RGE.	25
MERIDIAN	W 4
PERMANENT DATUM	GROUND LEVEL
ELEVATION	2215
LOG MEASURED FROM	KB 10 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM	KB
DATE	8-10-72
RUN NO.	ONE
DEPTH-DRILLER	1,200
DEPTH-LOGGER	1,196
BTM. LOG INTERVAL	1,195
TOP LOG INTERVAL	1,000
CASING-DRILLER	8 5/8 @ 1,000
CASING-LOGGER	8 5/8 @ 1,000
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	9.6
VISCOSITY	40
PH	10.5
FLUID LOSS	8.0
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	1.0 @ 70°F
RMF @ MEAS. TEMP.	1.0 @ 70°F
RMC @ MEAS. TEMP.	1.0 @ 70°F
RM @ BHT	0.5 @ 100°F
TIME CIRC. STOPPED	8:00
TIME LOGGER ON BOTTOM	10:00
MAX. REC. TEMP.	100°F
EQUIPMENT NO.	3
LOCATION	CALGARY
RECORDED BY	R. BOYLE
WITNESSED BY	MR. BOYLE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
MAIN NO.	208	MAIN NO.	208
CABLE MODEL NO.		CABLE MODEL NO.	
DIAMETER	2 1/2	TOOL MODEL NO.	
DETECTOR SERIAL NO.		DIAMETER	2 1/2
TYPE	SCINTILLATION	DETECTOR SERIAL NO.	
LENGTH	10.14 OD	TYPE	PROPORTIONAL
DETECTOR TO 1st SOURCE	3.25 ft	LENGTH	10.14 OD
		SPACING	MIN. 3.25 ft
		SOURCE SERIAL NO.	107
		SPACING	MAJ. 5.25
		ACTIVITY	5 mCi

DIFF. FREQ. NO.	30
TIME CONST. NO.	3
MAG. MEMORY	122.1DN

LOGGING DATA

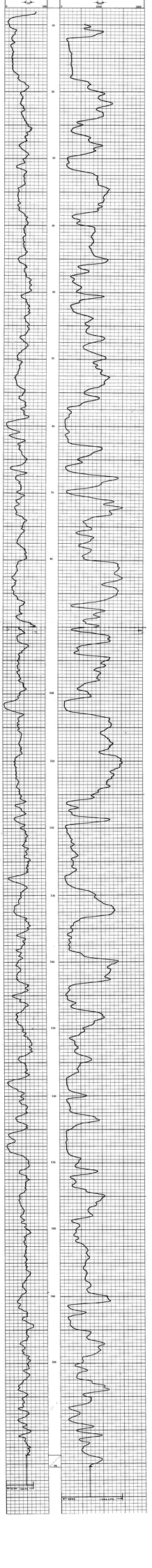
GAMMA RAY					NEUTRON			
GENERAL								
INTERVAL FROM	TO	SPEED FT. MIN.	SPEED FT. MIN.	SPEED FT. MIN.	SPEED FT. MIN.	SPEED FT. MIN.	SPEED FT. MIN.	SPEED FT. MIN.
0	1,195	30	30	30	30	30	30	30

GAMMA RAY

GAMMA RAY INCREASES

NEUTRON

NEUTRON INCREASES



ROKE

SPECIAL DEVELOPED LOG

COMPANY: SOUTHERN NATURAL GAS COMPANY
WELL: C. W. GAS CORP. #1
FIELD: WILDCAT
COUNTY: MOBILE
STATE: ALABAMA
LOCATION: SEC. 22 T. 2 S. R. 1 W.
PERMANENT DATUM: GROUND LEVEL
ELEV.: K.B. 30 D.F. G.L. 0
LOG MEASURED FROM: K.B. 30 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM: K.B.
DATE: 1-27-61
RUN NO.: ONE
DEPTH-DRILLER: 5160
DEPTH-LOGGER: 5165
BTM. LOG INTERVAL: 5165
TOP LOG INTERVAL: 3000
CASING-DRILLER: 13 3/8 @ 1000
CASING-LOGGER: 1000
BIT SIZE: 12 1/4
TYPE FLUID IN HOLE: WATER BASE MUD
DENS.: 10.0
VISC.: 50
PH: 10.5
FLUID LOSS: 6.0
SOURCE OF SAMPLE: CIRCULATION
RM @ MEAS. TEMP.: .65 @ 90°
RMF @ MEAS. TEMP.: .55 @ 90°
RMC @ MEAS. TEMP.: .75 @ 90°
SOURCE: RMF: MEAS. RMC: MEAS.
RM @ BHT: .35 @ 150°
TIME SINCE CIRC.: 12 HRS.
MAX. REC. TEMP.: 150°
EQUIP. NO. & LOCATION: 276 MOBILE
RECORDED BY: R. SMITH
WITNESSED BY: J. JONES

276

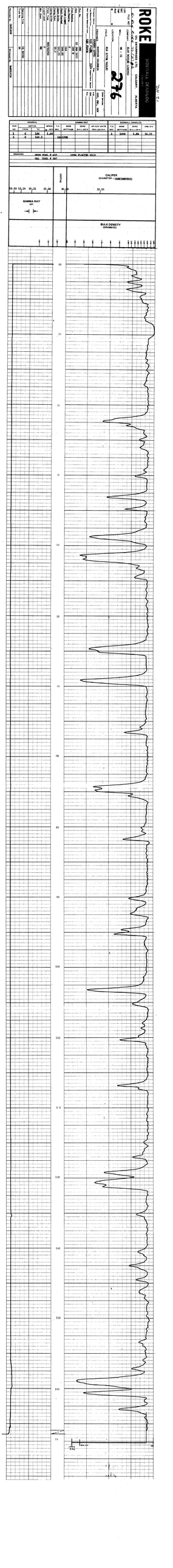
GENERAL RUN NO.	GENERAL FROM	GENERAL TO	GENERAL SPEED	GAMMA RAY T.C. SETTING	GAMMA RAY SCALE	GAMMA RAY API UNITS PER LOG DIV.	NORMAL I. SPHERICAL T.C. SETTING	NORMAL I. SPHERICAL SCALE	NORMAL I. SPHERICAL LONG SPACING
1	0	164	3.00				3000	2.0K	16.16
2	0	164.5		CALIPER					

REMARKS: DENS TOOL # 437 — OPEN HOLE/CSG: OPEN HOLE
CAL TOOL # 587

CALIPER (DIAMETER - CENTIMETERS)

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE

GAMMA RAY & NEUTRON LOG

A. L. & A. L. GOOD, 31 ST AVENUE S.W.
CALGARY, ALBERTA

Company	A. L. & A. L. GOOD, 31 ST AVENUE S.W. CALGARY, ALBERTA
Well	ROKE
Field	ROKE WILD SWAN
Location	NW - 25 - 10 - 12 - W2
County	MILK RIVER LIMITED
State	ALBERTA
Elevation	
Permanent Datum	GROUND LEVEL
Log Measured From	GROUND LEVEL
Drilling Measured From	GROUND LEVEL
Date	12-3-62
Run No.	1
Depth Driller	1000
Depth Logger	1000
Bottom Log Interval	1000
Top Log Interval	0
Casing Driller	13 3/8 @ 165
Casing Logger	
Bit Size	12 1/4
Type Fluid in Hole	WATER
Viscosity	30
Density	
Max. Rec. Temp.	70
Estimated Cement Top	
Time Since Circulation	
Time Since Last Log	
Max. Rec. Temp.	70
Equipment No.	36
Location	
Recorded By	
Witnessed By	

276

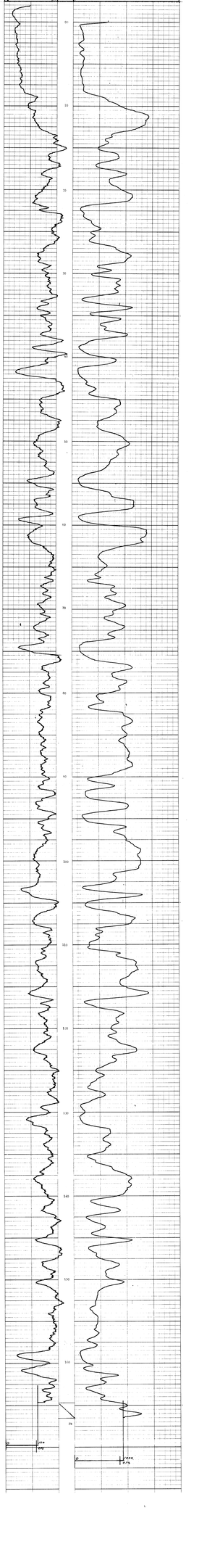
EQUIPMENT DATA

GAMMA RAY			NEUTRON	
RUN NO.	ONE		RUN NO.	ONE
TOOL MODEL NO.			LOG TYPE	NEUTRON/NEUTRON
DIAMETER	4.3 OR		TOOL MODEL NO.	
DETECTOR MODEL NO.			DIAMETER	4.3 OR
TYPE	SCINTILLATION		DETECTOR MODEL NO.	
LENGTH	32.5 OR		TYPE	PROPORTIONAL
DISTANCE TO SOURCE	3.65 ft.		LENGTH	4.25 OR
			SOURCE MODEL NO.	MRC-N-05
GENERAL			SERIAL NO.	181
HEIST TRUCK NO.	36		STRENGTH	11.18 CU
INSTRUMENT TRUCK NO.			TYPE	Americ
LOGGING DISTRICT	169 - 403		STRENGTH	1 CURIES

LOGGING DATA

GAMMA RAY					NEUTRON				
RUN	DEPTH	SPEED	T.C.	SENS	DEAD API & UNITS	T.C.	SENS	DEAD API & UNITS	
NO.	FROM	TO	SECONDS	DIV.	CPS	SEC.	DIV.	SECONDS DIV.	CPS
1	0	100.3	3.36	5	0	1	5	300	0	180

REMARKS: OPEN HOLE FLOWING WATER



ROKE

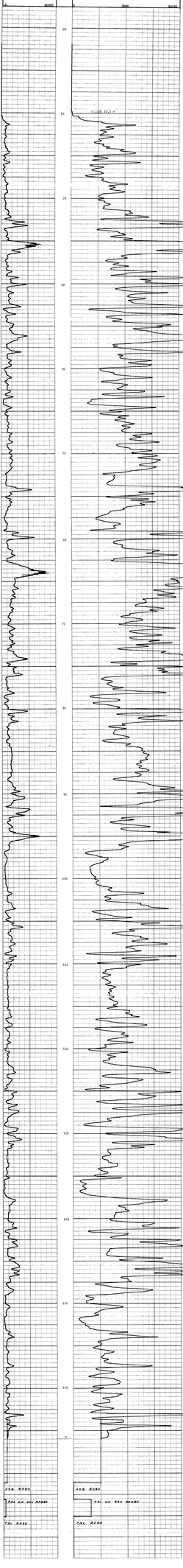
DIVISION OF SCHLUMBERGER OILFIELD SERVICES LIMITED

276

Date Run	20-JAN-1988
Depth Driller	2600
Depth Logger	2600
Bottom Log Interval	2600
Top Log Interval	2000
Casing Driller	13 3/8 @ 1000
Casing Logger	13 3/8 @ 1000
Bit Size	12 1/4
Type Fluid in Hole	GEL CHEM
Density	10.0
Viscosity	40.0
PH	10.0
Fluid Loss	10.0
Source of Sample	FLOWLINE
Rm @ Measured Temp	0.60 @ 70
Rmf @ Measured Temp	0.50 @ 70
Rmc @ Measured Temp	0.80 @ 70
Rm @ BHT	0.30 @ 70
Time Since Circulation	12 HRS
Max Rec Temp	70
Equipment Number	2XL
Location	CALGARY
Recorded By	G.MCKAY
Witnessed By	MR. HOLLOWAY

Company	CONOCO CANADA LIMITED
Well	16-15
Field	BLACK STRIKE
County	
State	ALBERTA
Other Services	
Elev. K.B.	3636
Elev. D.F.	
Elev. G.L.	3622

Remarks: NOISE GEOMETRIC FACTOR -.125 PADDS TYPE IV
CENTER FIRE SPACING - 60 inch
NO CORLOG, PATRAN FOR ANNOTATED TO 3.5 DPIS
2 TO 1 RED RATIO OF SECONDARY PEP



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

DH-22

FILE NO. K-ELK RIVER 77 (3) #8

LSD
SEC
TWP
RGE
W____M

COMPANY ELCO MINING LIMITED
WELL DH - 22
LOCATION
FIELD ELK RIVER VALLEY
PROVINCE BRITISH COLUMBIA

276

Other Services: DENS, CAL, FBL, DEV

Permanent Datum GROUND LEVEL Elev.
Log Measured from RIG FLOOR 56 CM Above Perm. Datum
Well Depths Measured from RIG FLOOR

K.B.
CSG
G.L.
METRIC

Run. No.	ONE
Date	1 MAR 1977
First Reading	226.5 M
Last Reading	0
Footage Logged	226.5
Depth Reached	226.80
Depth Driller	227.28
Casing Roke	2
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	15.5
Min. Diam.	HQ
Rm @ °F	
Operating Time	1½ HOURS
Truck No.	36

Recorded By CARLSON
Witnessed By LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	13.5	3.66	4	100	0	16	3	1000	0	360
2	13.5	226.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

ROKE

SCHLUMBERGER

2776

Company	ROKE OIL INC.
Well	1
Field	WILDCAT
County	GRAHAM
State	TEXAS
Location	1320' FSL & 1320' FEL
Permanent Datum	GROUND LEVEL
Elev.	1,000
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elev. K.B.	1,010
Elev. D.F.	
Elev. G.L.	
Date	10-15-82
Run No.	ONE
Depth-Driller	5,400
Depth-Logger	5,400
Bottom Logged Interval	5,400
Top Logged Interval	1,000
Type Fluid in Hole	SALT GEL
Salinity, PPM Cl	190,000
Density	10.0
Level	FULL
Max. Rec. Temp. Deg. F.	140
Operating Rig Time	12 HRS
Recorded By	D. MCCLAIN
Witnessed By	MR. ROKE

Run No.	Bit No.	Type	Size	From	To
ONE	1	7 7/8	7 7/8	1,000	5,400

Type	Size	Wt.	Grade	From	To
SURFACE	8 5/8	24	K-55	0	1,000
PRODUCTION	5 1/2	15.5	K-55	0	5,400

Run No.	Type	Size	From	To
ONE	DUAL INDUCTION SFL	7 7/8	1,000	5,400
	BHC SONIC GR		1,000	5,400

Run No.	Max. Rec. Temp. Deg. F.	Equip. Location	Recorded By	Witnessed By
ONE	140	1000	D. MCCLAIN	MR. ROKE

RUN ONE

DUAL INDUCTION SFL

BHC SONIC GR

GAMMA RAY (API)

0 100

CALIPER (INCHES) 6 16

BULK DENSITY (GRAMS/CC) 1.95 2.95

SONIC (MICROSECONDS/FOOT) 140 40

RESISTIVITY (OHMS) 0.2 2000

SP (MILLIVOLTS) -100 100

RESISTIVITY (OHMS) 0.2 2000

10.10 10.24 10.32 23.40 8.26 23.26

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540

ROKE

PRODUCED BY: ROKE

Operator: ROKE OIL & GAS PLC
Well: ROKE TEST WELL
Location: ROKE, OXFORDSHIRE, UK

276

Run No. 1 | Run Date: 30-JUL-2014 | Log No. 1

Logging Engineer: J. SMITH
Witnessed By: M. JONES

Bit Size: 8.5 in | Drill Collar: 6.75 in OD, 2.81 in ID, 31.0 m
Drill Pipe: 5.0 in OD, 4.276 in ID, 4.5 in TJ
Hole Size: 8.5 in | Casing: 9.625 in OD, 8.681 in ID, 0.0 - 1200.0 m
Mud Type: WBM | Density: 1.12 SG | Viscosity: 48 s/qt | PH: 9.2
Fluid Loss: 4.8 cc/30min | Resistivity: 0.18 ohm-m @ 21 C
Source of Sample: FLOWLINE | Rm @ BHT: 0.09 ohm-m @ 68 C
Rmf @ BHT: 0.11 ohm-m @ 68 C | Rmc @ BHT: 0.14 ohm-m @ 68 C
Time Since Circ: 6.5 hr | Max Rec Temp: 68 C
Equipment No.: 1 | Location: ROKE

Recorded By: A. BROWN
Witnessed By: M. JONES

Remarks: ROKE CHURCHILL ENGINE -2DL, ENGINE STEN 21
-ENGINE CLAY BLANCH - NAD 1200
-ENGINE CLAY, PRESSURE WAS ADDED BY 0.20 BSPH
W OF 0 WATER OF PRESSURE WAS ADD

MD (m)

0 | 1000 | 2000

CAL (in) 6 16 | GR (gAPI) 0 150 | RES (ohm-m) 0.2 2000

CAL (in) 6 16 | GR (gAPI) 0 150 | RES (ohm-m) 0.2 2000

CAL (in) 6 16 | GR (gAPI) 0 150 | RES (ohm-m) 0.2 2000

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG CALIPER

DH-23

FILE NO. K-ELK RIVER 77 (3) A #8

COMPANY: ELCO MINING LIMITED

WELL: DH - 23

LOCATION:

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

276

LSD / SEC / TWP / RGE / W M

Other Services: GRN, DEV

Permanent Datum: GROUND LEVEL Elev.
Log Measured from: RIG FLOOR 30 CM Above Perm. Datum
Well Depths Measured from: RIG FLOOR
K.B. / CSG / G.L.

Run No.	ONE
Date	26 JAN 1977
First Reading	232 M
Last Reading	0
Footage Logged	232
Depth Reached	232.92
Depth Driller	233.94
Casing Driller	7
Casing Roke	
Fluid Type	MUD/WATER
Fluid Level	0
Liquid Level	
Min. Diam.	HQ
Operating Time	2 HOURS 40 MIN
Truck No.	36

Recorded By: CARLSON
Witnessed By: McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	CPS/DIV
1	0	232	3.66					3	1000	1.8R	54.55
2	0	232.5		CALIPER							

REMARKS: DENS TOOL # 457 FLOWING HOLE
CAL TOOL # 587

CALIPER (DIAMETER – CENTIMETERS): 10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY API

DEPTHS

BULK DENSITY (GRAMS/CC)

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.	K-ELK RIVER 77 (3) #8
COMPANY	ELCO MINING LIMITED
WELL	DH. 23
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	British Columbia

276

Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR 30 cm Above Perm. Datum
Well Depths Measured from	RIG FLOOR
Other Services	DEN, CAL, DEV

Run No.	ONE
Date	26 04 77
First Reading	236 M
Last Reading	00
Footage Logged	236
Depth Reached	236.80
Depth Driller	236.48
Casing Driller	7
Fluid Type	MUD/WATER
Liquid Level	00
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HR. 40 MIN
Truck No.	36
Recorded By	CARLSON
Witnessed By	M. KERVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	48 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 cm
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 cm	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 cm
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	188
INSTRUMENT TRUCK NO.		SPACING	43.18 cm
TOOL SERIAL NO.	169001	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	FROM	TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	236	3.66	4	100	0	16	3	500	0	180

REMARKS FLOWING HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
←16→ 0 — 160		←180→ 0 — 1800 — 3600

ROKE

SCHLUMBERGER OILFIELD SERVICES

BOREHOLE GEOLOGY

COMPANY: ROKE OIL EXPLORATIONS LTD.
WELL: 88 - 24 - 276
FIELD: ELK POINT
COUNTY: ST. PAUL
PROVINCE: ALBERTA

Other Services: BHC, DLL, MSFL, CNL, FDC, CAL, GR

Permanent Datum: GROUND LEVEL
Elev.: K.B. 1,625 ft. D.F. G.L. 1,616 ft.
Log Measured From: K.B. 9 ft. above Perm. Datum
Drilling Measured From: K.B.

Date: 3-JUNE-88
Run No.: ONE
Depth-Driller: 10,000 ft.
Depth-Logger: 9,998 ft.
Bottom Logged Interval: 9,998 ft.
Top Logged Interval: 9,000 ft.
Type Fluid in Hole: SALT WATER
Salinity, PPM Cl: 150,000
Density: 10.0 LB/GAL
Viscosity: 40 SEC/QT
Fluid Loss: 8.0 C.C.
Source of Sample: FLOWLINE
R_m @ Meas. Temp.: 0.08 @ 70 °F
R_mf @ Meas. Temp.: 0.06 @ 70 °F
R_mc @ Meas. Temp.: 0.10 @ 70 °F
Source of R_mf & R_mc: CALC.
R_m @ BHT: 0.05 @ 210 °F
Time Since Circ.: 12 HRS
Max. Rec. Temp. Deg. F: 210 °F
Equipment No. & Location: 5705 EDMONTON
Recorded By: D. BOWLING
Witnessed By: MR. BOB HOOK

276

RUN NO.	BIT SIZE (IN.)	FROM	TO	CASING SIZE (IN.)	WEIGHT (LB/FT.)	GRADE	FROM	TO
1	8	175	9,010	9 5/8	36	K-55	0	175
2	8	9,010	10,000	7	26	K-55	0	9,010

RUN NO.	TYPE	DENSITY (GM/CC)	POROSITY (%)
1	LIMESTONE	2.71	0

RUN NO.	TYPE	MATRIX TRANSIT TIME (μSEC/FT)	FLUID TRANSIT TIME (μSEC/FT)
1	LIMESTONE	47.5	189

RUN NO.	TYPE	MATRIX DENSITY (GM/CC)	FLUID DENSITY (GM/CC)
1	LIMESTONE	2.71	1.1

RUN NO.	TYPE	MATRIX (APPARENT GR)	FLUID (APPARENT GR)
1	LIMESTONE	5.49	34.33

RUN NO.	TYPE	MATRIX (APPARENT GR)	FLUID (APPARENT GR)
1	LIMESTONE	5.49	34.33

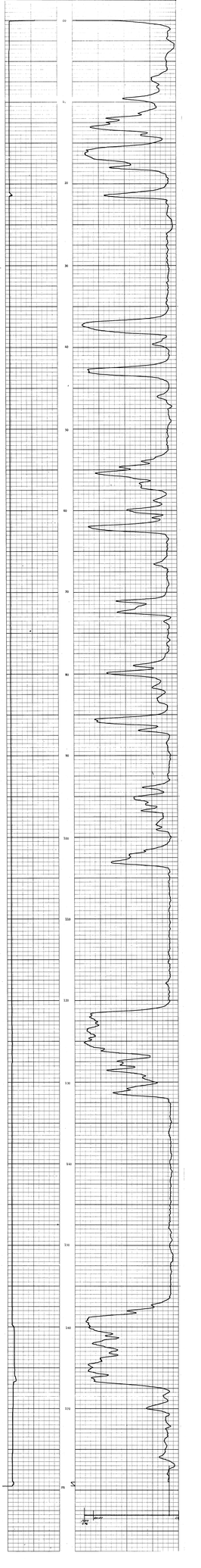
REMARKS: DRESS 350CL @ 8.5/7
GAL 350CL @ 3KT

DRESS FLOWLINE MUD

CALIPER
(DIAMETER - CURVE(S))

BULK DENSITY
(GRAMS/C)

GAMMA RAY
API



ROKE

PRESSED RADIO LOG

OIL INSTRUMENTS LTD. CALGARY, ALBERTA

FILE No.	276
WELL	16-25-47-17 W5
COMPANY	ROCK RESTORE DEVELOPMENT
FIELD	
Date Run	20 DEC 1977
Depth Driller	3208
Depth Logger	3207
Casing Driller	9 5/8
Casing Logger	9 5/8
Bottom Log Interval	3207
Top Log Interval	300
Drilling Fluid	WATER
Fluid Level	FULL
Max. Rec. Temp.	96
Equip. No.	3
Truck No.	3
Operating Time	7.30 A.M. TO 12.30 P.M.
Recorded By	R. WOLFE
Witnessed By	MR. MCCARTHY

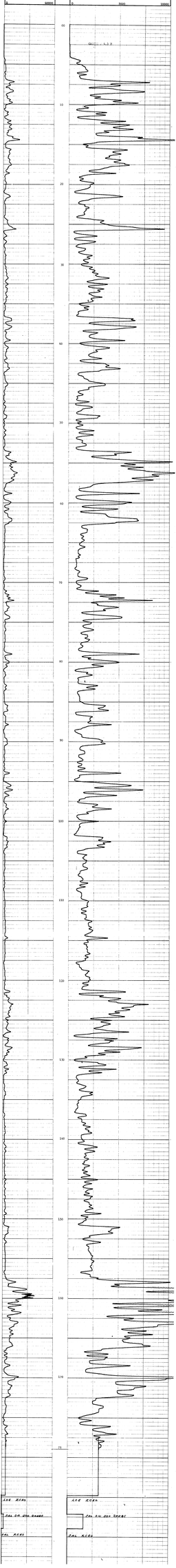
Company	PROVINCE WIDE SERVICES
Address	1000 - 1000 CENTRE STREET S.E. CALGARY, ALBERTA
Phone	243-3000
Operator	
Address	
Phone	
Contractor	
Address	
Phone	
Rig No.	
Type	
Elevation	
Kelly Bushing	
Ground Level	
Permanent Datum	
Log Measured From	
Drilling Measured From	

Run No.	ONE
Depth Driller	3208
Depth Logger	3207
Bottom Log Interval	3207
Top Log Interval	300
Casing Driller	9 5/8
Casing Logger	9 5/8
Bit Size	8 3/4
Type Fluid in Hole	WATER
Dens.	
Visc.	
pH	
Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source Rmf / Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	96
Equip. No.	3
Location	
Recorded By	R. WOLFE
Witnessed By	MR. MCCARTHY

Run No.	ONE
Depth Driller	3208
Depth Logger	3207
Bottom Log Interval	3207
Top Log Interval	300
Casing Driller	9 5/8
Casing Logger	9 5/8
Bit Size	8 3/4
Type Fluid in Hole	WATER
Dens.	
Visc.	
pH	
Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source Rmf / Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	96
Equip. No.	3
Location	
Recorded By	R. WOLFE
Witnessed By	MR. MCCARTHY

Remarks	BOREHOLE CONDITIONS FAIRLY GOOD, TRUE TYPE IV
	CHANGED FILM RECORDER - NO GOOD
	300 SECONDS PRESSURE WAS RAISED TO 3.5 KPSI
	8 TO 3 RATIO ON SECONDARY RUN

Depth	Gamma	Resistivity
	0	50000
	0	5000
	0	10000



ROKE OIL EXPLORATIONS LTD.

CALGARY, ALBERTA

WELL	276
FIELD	
LOCATION	16 - 36 - 1
COUNTY	
PROVINCE	ALBERTA
DRILLING MEASURED FROM	K.B.
ELEVATIONS	K.B. 3170
	D.F.
	G.L. 3160
DATE	1-3-72
RUN NO.	ONE
DEPTH-DRILLER	3600
DEPTH-LOGGER	3600
BTM. LOG INTERVAL	3600
TOP LOG INTERVAL	1400
CASING-DRILLER	8 5/8 @ 1400
CASING-LOGGER	
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	10.2
VISCOSITY	50
PH	10
FLUID LOSS	8.4
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.75 @ 70
RMF @ MEAS. TEMP.	.60 @ 70
RMC @ MEAS. TEMP.	.90 @ 70
SOURCE OF RMF & RMC	CALC
RM @ BHT	.30 @ 140
TIME SINCE CIRC.	4 HRS
MAX. REC. TEMP.	140
EQUIP. LOCATION	3-16-1W
RECORDED BY	
WITNESSED BY	

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
LOG. MODEL NO.		LOG. MODEL NO.	NEUTRON/NEUTRON
SONDE NO.	62 SE	SONDE NO.	
DETECTOR MODEL NO.		DETECTOR MODEL NO.	62 SE
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	10.25 CM	LENGTH	10.25 CM
DISTANCE TO SOURCE	7.25 "	SOURCE	MSC-5 SE-R
		MEASD. MODEL NO.	140
GENERAL		MEASD. NO.	45.15 CM
ASSET TAGS NO.	30	SPACING	Amer.
INSTRUMENT TAG NO.		TYPE	
COIL MODEL NO.	100 -005	STRENGTH	3 CURIES

LOGGING DATA

GAMMA RAY								NEUTRON			
RUN	RECORD	SPEED	F.O.	STAND	ZERO	SPL & R. MKR'S	T.C.	STAND	SCALE	SPL & MKR'S
1	1	1800		0	0	10		0	3600	10
1	2	1800		0	0	10		0	3600	10

REMARKS OPEN FLOWING HOLE

GAMMA RAY

GAMMA RAY INCREASES

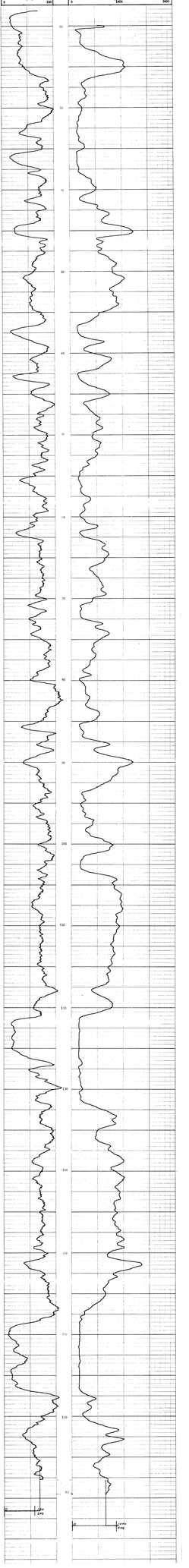
0 — 240 — 160

Records

NEUTRON

NEUTRON INCREASES

0 — 1400 — 3600



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ROKE

SIDEWALL NEUTRON LOG

ROKE OIL & ATLANTIC LTD.

CALGARY ALBERTA

Well	2-27-27-4 W4M
Field	GOOSE RIVER SOUTH
Prov.	ALBERTA
Location	2-27-27-4 W4M
Other Services	DIL SNP
Permanent Datum	GROUND LEVEL
Elev.	K.B. 1176
Log Measured From	K.B. 10 FT. ABOVE PERM. DATUM
Drilling Measured From	K.B.
Date	3-7-74
Run No.	ONE
Depth-Driller	1715
Depth-Logger	1715
Bottom Logged Interval	1715
Top Logged Interval	1000
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1000
Density	10.0
Level	FULL
Max. Rec. Temp. Deg. F.	90
Operating Rig Time	5 HRS
Recorded By	D. SCHMIDT
Witnessed By	MR. BOB

CASING RECORD			
	SIZE	WGT.	GRADE
SURF.	8 5/8"	24	J-55
PROD.	4 1/2"	9.5	J-55

EQUIPMENT	
RUN NO.	ONE
TYPE	SNP
SERIAL NO.	1
DIST. TO SENSOR	10
DIST. TO SOURCE	30
SOURCE STRENGTH	5
SOURCE TYPE	RA-BE

GENERAL							
RUN NO.	BOTTOM DEPTH	TOP	DRILL. FLUID WGT. LB/GAL	T.C.	BASE DEPTH	API G.R. UNITS MFL-LOG G.R.	
1	0	1715	10.0				
2	0	1715					

GAMMA RAY							
RUN NO.	T.C.	BASE DEPTH	DRILL. FLUID WGT. LB/GAL	API G.R. UNITS MFL-LOG G.R.			

SIDEWALL SAMPLES			
RUN NO.	BASE DEPTH	DRILL. FLUID WGT. LB/GAL	CHLORIDES
1	1000	9.8	1000

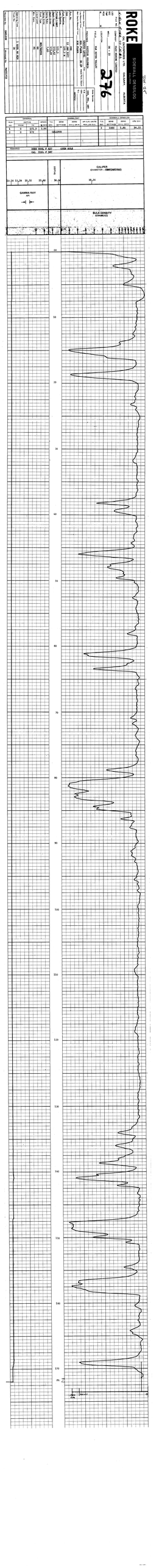
REMARKS: ONE TOOL F.547 ONE TOOL F.547

CORE HOLE

CALIPER (DIAMETER - UNCONSOLIDATED)

GAMMA RAY API

BULK DENSITY (UNCONSOLIDATED)



ROKE

OIL DEVELOPMENTS LTD.
CALGARY ALBERTA

WELL: 16-15
COMPANY: ROKE OILS (1976) LIMITED

276

LOCATION: 16-15-23-5W5M
Elevation: 1135.0 m
Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Date	26-Dec-76	27-Dec-76	
Run No.	ONE	TWO	
Depth-Driller	3 000	3 000	
Depth-Logger	3 000	3 000	
Bottom Logged Interval	2 999	2 999	
Top Logged Interval	1 000	1 000	
Casing-Driller	244.5 @ 0	244.5 @ 0	
Casing-Logger	244.5 @ 0	244.5 @ 0	
Bit Size	200	200	
Type Fluid in Hole	GEL CHEM	GEL CHEM	
Density	1 160	1 160	
Viscosity	50	50	
Fluid Loss	6.0	6.0	
Source of Sample	FLOWLINE	FLOWLINE	
Rm @ Meas. Temp.	0.220 @ 20	0.220 @ 20	
Rmf @ Meas. Temp.	0.180 @ 20	0.180 @ 20	
Rmc @ Meas. Temp.	0.290 @ 20	0.290 @ 20	
Source of Rmf and Rmc	CALC	CALC	
Rm @ BHT	0.110 @ 90	0.110 @ 90	
Time Since Circulation	6 HRS	6 HRS	
Max. Rec. Temp.	90	90	
Equipment Number	1	1	
Location	16-15-23-5W5M	16-15-23-5W5M	
Recorded By	D. SCHMIDT	D. SCHMIDT	
Witnessed By	J. SCHMIDT	J. SCHMIDT	

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.24 CM	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-92.65 M
GENERAL		SERIAL NO.	150
BOREHOLE NO.	30	SPACING	43.18 CM
DISTRICT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	103 - 005	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	LOGGING INTERVAL FROM	TO	SPEED (M/MIN)	F.C. TOTAL (API)	SENS. SETTING	ZERO SPH. & BKG.	API G. R. UNITS PER DIV.	T. C. SEC.	SENS. SETTING	ZERO SPH. & BKG.	API G. R. UNITS PER DIV.
2	0	172	3.66	6	100	0	10	3	1000	0	100

REMARKS: AVON SEAL

GAMMA RAY

GAMMA RAY INCREASES

0 — 100

NEUTRON

NEUTRON INCREASES

0 — 3000

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

ROKE

DIVISION OF DOWNHOLE LOGS

ON INTERPRETATION

CALGARY, ALBERTA

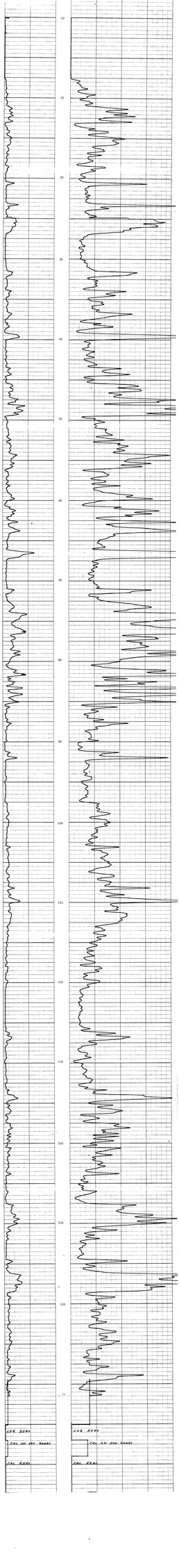
Company	CONOCO CANADA LIMITED
Well	16-23
Field	BEAVER HILL
Location	2-23-27-W4M
Elevation	KB 2420.0 GL 2406.0
Date	12-MAR-85
Log	1

2776

Depth Scale	1:200
Log Interval	2500.0 TO 1500.0
Casing Driller	2500.0
Casing Logger	2500.0
Bit Size	7.875
Type Fluid	WATER
Density	9.0
Viscosity	40
Fluid Loss	N/A
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.85 @ 70
Rmf @ Meas. Temp.	0.85 @ 70
Rmc @ Meas. Temp.	0.85 @ 70
Source Rmf / Rmc	MEASURED
Rm @ BHT	0.45 @ 100
Time Since Circ.	12 HRS
Max. Rec. Temp.	100
Equipment No.	2022
Location	CALGARY
Recorded By	MARTIN
Witnessed By	MR. BOB SCHMIDT

Remarks: NO CORRECTION FACTOR -.25, PROVO TO 1 SANDSTONE FOR MATRIX = 70.0SEC
500 GALLONS, VARIED FROM MATRIX TO 3.29 SPIN
R OK. 1 METER ON HOUSEHOLD PWR

Depth Scale



ROKE

SIDEWALL DENSILOG

COMPANY: ROKE OIL ENTERPRISES LTD.
WELL: 08 - 35
FIELD: JEAN
LOCATION: 08 - 35 - 32 - 5W5
PROVINCE: ALBERTA
COUNTRY: CANADA

Run No. ONE
Date 7-MAY-87
Depth-Driller 2750
Depth-Logger 2747
Bottom Logged Interval 2747
Top Logged Interval 2500
Type Fluid in Hole WATER GEL
Salinity, PPM Cl 1000
Density 9.2
Viscosity 40
Fluid Loss 10
Source of Sample CIRC
Rm @ Meas. Temp. 1.0 @ 20
Rmf @ Meas. Temp. 0.8 @ 20
Rmc @ Meas. Temp. 1.2 @ 20
Source of Rmf & Rmc MEAS
Rm @ BHT 0.6 @ 70
Time Since Circ. 4 HRS
Max. Rec. Temp. Deg. F 70
Equip. No. & Location 1 - 5
Recorded By JAMES
Witnessed By JAMES

RIG: CWS 1
BIT: 8 3/4
CASING: 7" @ 2747
TUBING:
TYPE JOINT:
PACKER SET AT:
PERFORATIONS:
OPEN HOLE: 8 3/4 @ 2747

RUN NO. 1
DATE 7-MAY-87
TYPE LOG DSN
DEPTH-DRILLER 2747
DEPTH-LOGGER 2747
BTM. LOG INTERVAL 2747
TOP LOG INTERVAL 2500
CASING-DRILLER 7" @ 2747
CASING-LOGGER 2747
BIT SIZE 8 3/4
TYPE FLUID IN HOLE WATER GEL
DENSITY 9.2
VISCOSITY 40
PH 10
FLUID LOSS 10
SOURCE OF SAMPLE CIRC
RM @ MEAS. TEMP. 1.0 @ 20
RMF @ MEAS. TEMP. 0.8 @ 20
RMC @ MEAS. TEMP. 1.2 @ 20
SOURCE OF RMF & RMC MEAS
RM @ BHT 0.6 @ 70
TIME SINCE CIRC. 4 HRS
MAX. REC. TEMP. DEG. F 70
EQUIP. NO. & LOCATION 1 - 5
RECORDED BY JAMES
WITNESSED BY JAMES

RIG CWS 1
BIT 8 3/4
CASING 7" @ 2747
TUBING
TYPE JOINT
PACKER SET AT
PERFORATIONS
OPEN HOLE 8 3/4 @ 2747

GENERAL

RUN NO.	DEPTH FROM	DEPTH TO	SPEED (ft/min)	T.C. SEC.	SENS. SETTING	AIR S.N. MUD N. PER LOG SCA.
1	0	134.3	5.45			
2	0	133		CALIPER	-	

REMARKS: BOWL TOOL # 437
CAL TOOL # 367

GAMMA RAY

RUN NO.	T.C. SEC.	SENS. SETTING	AIR S.N. MUD N. PER LOG SCA.
3	1000	9.48	54.93

SIDEWALL DENSILOG

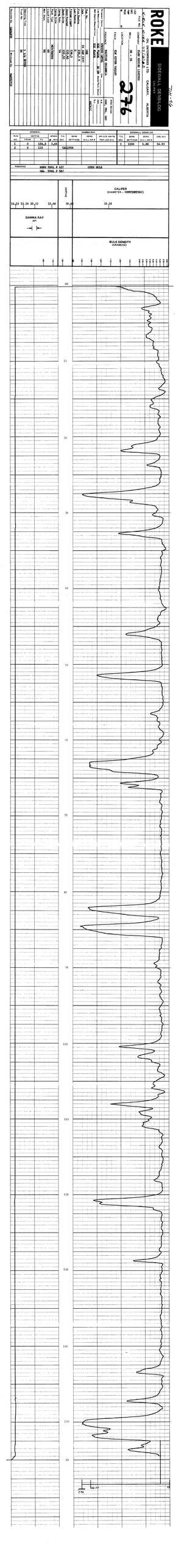
RUN NO.	DENS. SETTING	DENS. CAL. CAL #	CNC SET

OPEN HOLE

CALIPER
(DIAMETER - CENTIMETERS)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)



ROKE

Company: SOUTHERN CO. SERVICES, INC.
Well: 276
Field: JOE PETER GULLY
County: ALBANY
State: GEORGIA
Location: 330' FSL & 330' FWL
Sec. 36 Twp. 16S Rge. 5W
Permanent Datum: GROUND ELEV.
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING
Elev.: K.B. 0 D.F. 0 G.L. 0

Date: 10-14-85
Run No.: ONE
Depth-Driller: 3600
Depth-Logger: 3600
Bottom Logged Interval: 3600
Top Logged Interval: 0
Type Fluid in Hole: WATER
Salinity, PPM Cl: 50
Density: 8.4
Level: FULL
Max. Rec. Temp. Deg. F: 120
Operating Rig Time: 5 HRS
Recorded By: K. WEBB
Witnessed By: MR. BRISSEY

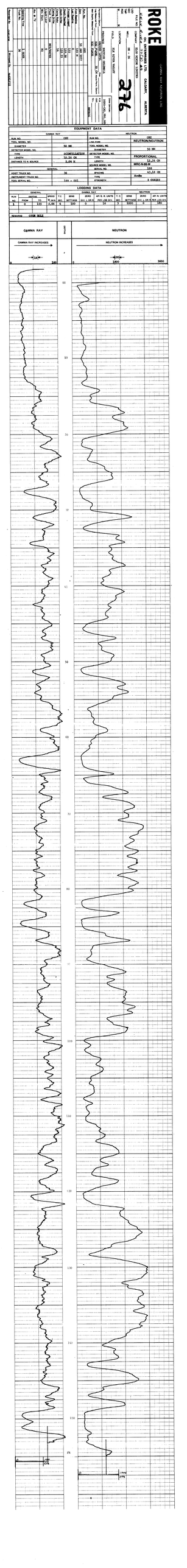
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	5D 38E	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	5D 38E
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
SENSITIVITY	50 AA DE	TYPE	PROPORTIONAL
DISTANCE TO X-SOURCE	3.2IN.	LENGTH	12.2in OD
		SOURCE MODEL NO.	MRSC-A-85-M
GENERAL		SERIAL NO.	108
HOIST TRUCK NO.	36	SPACING	43,19 OD
INSTRUMENT TRUCK NO.		TYPE	Amrb
TOOL SERIAL NO.	146 + 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL						GAMMA RAY					NEUTRON			
RUN	DEPTH		SPEED	T.C.	SENS	CLOCK	T.C.	SENS	TIME	DEAD	LIFE % WITH	
	FROM	TO	M.P.M.	SEC.	SETTINGS	DIV.	SEC.	PER LOG DIV.	SEC.	BETTORE	DIV.	L.OR R. PER LOG DIV.	
1	0	3600	3.48	4	100	3	4	10	8	1000	2	100	

REMARKS: GYRO RUN



ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K ELK-RIVER 77 (3) A.B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ____ M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 26
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DEN-CAL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 30 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE		
Date	10 JAN 1977		
First Reading	154.5 M		
Last Reading	14		
Footage Logged	140.5		
Depth Reached	154.80		
Depth Driller	155.55		
Casing Roke	14		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Rm @ °C	16.13 @ 25		
Operating Time	50 MIN		
Truck No.	36		

Recorded By CARLSON | Witnessed By McKELVIE

Remarks

SONDE GEOMETRIC FACTOR .329 PROTO TYPE III

GROUND FISH READING - 60 OHMS

500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS

8 TO 1 RATIO ON SECONDARY PEN

Depths

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #D

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 27
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA

276

Other Services: GRN, DEN-CAL, DEV

Permanent Datum: GROUND LEVEL Elev.

Log Measured from: RIG FLOOR 50CM Above Perm. Datum

Well Depths Measured from: RIG FLOOR

K.B.

CSG

G.L.

METRIC

Run. No.	ONE		
Date	13 JAN 1977		
First Reading	181.5 M		
Last Reading	6.5		
Footage Logged	175		
Depth Reached	181.80		
Depth Driller	186.66		
Casing Roke	6.5		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Rm @ °C	14.81 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By: CARLSON

Witnessed By: McKELVIE

Remarks:

SONDE GEOMETRIC FACTOR .329 PROTO TYPE IV

GROUND FICH READING - 70 OHMS

500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS

8 TO 1 RATIO ON SECONDARY PEN

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. K. ELK RIVER 77 (3) A.D.

COMPANY	ELCO MINING LIMITED
WELL	DH - 27
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W	M
Other Services:	DENS-CAL, FEL, DEV
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	RIG FLOOR 50 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B. / CSG / G.L.	METRIC

Run No.	ONE		
Date	13 JAN 1977		
First Reading	182 M		
Last Reading	0		
Footage Logged	182		
Depth Reached	182.30		
Depth Driller	186.66		
Casing Driller	6.05		
Casing Bottom			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Rm @ °F			
Operating Time	1 HOUR		
Truck No.	36		
Recorded By	CARLSON	Witnessed By	McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	188
INSTRUMENT TRUCK NO.		SPACING	43.18 CM
TOOL SERIAL NO.	169 - 001	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	GAMMA RAY T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	NEUTRON T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	182	3.66	4	100	0	16	3	1000	0	180

REMARKS OPEN HOLE

ROKE
SPECIAL SERVICES LTD.

COMPANY: C.R.D.C. GULF CANADA RESOURCES LTD.
WELL: GULF ET AL BIG BEND 16-27-37-5
FIELD: BIG BEND
LOCATION: 16-27-37-5
COUNTY: RED DEER
PROVINCE: ALBERTA

276

Recorded By: MOLDER
Witnessed By: MOSSER

Run No.	Date	Depth Driller	Depth Logger	Bottom Logged Interval	Top Logged Interval	Type Fluid in Hole	Salinity PPM Cl	Density LB/GAL	Viscosity	Fluid Loss	Source of Sample	Rm @ Meas. Temp	Rmf @ Meas. Temp	Rmc @ Meas. Temp	Source of Rmf & Rmc	Rm @ BHT	Time Since Circ.	Max. Rec. Temp. Deg. F	Equip. Location	Recorded By	Witnessed By
1	16-11-82	5000	5000	4998	3000	GEL CHEM	1000	10.0	45	8.8	MUD PIT	1.00 @ 68°F				0.70 @ 150°F	12 HRS	150	3-37-5	MOLDER	MOSSER

CASING RECORD

Run No.	Bit From	Bit To	Size Hole	Wt. & Grade	Size Csg.	Wt. & Grade	Csg. Shoe	Csg. Cutter	Csg. Stretch	Csg. Pull	Csg. Weight
1	SURF.	5000	7 7/8		5 1/2	15.5	5000				

REMARKS: GR/BHC RUN# 1 AT 5000
CAL RUN# 1 AT 5000

GR/CAL RUN

RUN NO.	PASS NO.	TOP LOG INTERVAL	BOTTOM LOG INTERVAL	SPEED FT/MIN	GAMMA RAY SCALE API UNITS	CALIPER SCALE INCHES	TYPE FLUID IN HOLE	DENSITY LB/GAL	VISCOSITY
1	1	SURF.	5000	30	0-150	6-16	GEL CHEM	10.0	45
2	1	3000	5000	30	0-150	6-16	GEL CHEM	10.0	45

RECORDED BY: MOLDER
WITNESSED BY: MOSSER

RUN NO. 1 PASS NO. 1 DATE 16-11-82

GAMMA RAY
API

CALIPER
(INCHES) — (CENTIMETRES)
6 7 8 9 10 11 12 13 14 15 16

BULK DENSITY
(GRAMS/CC)
1.95 2.00 2.05 2.10 2.15 2.20 2.25 2.30 2.35 2.40 2.45 2.50 2.55 2.60 2.65 2.70 2.75 2.80 2.85 2.90 2.95 3.00

Depth

0	5.16	15.16	20.32	25.48
			30.48	35.56

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

ROKE

PRINTED BY ROKE LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3)A3

FILE NO.

LSD
SEC
Twp
RGE
M

COMPANY ELAN-TECHNIC LIMITED

WELL 201 - 28 276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services

CBL GR/CCL G-L, DIP

Permanent Datum GROUND LEVEL Elev. K.B.

Log Measured From 1.00 FROM K.B. 2.00 Above Perm. Datum G.L.

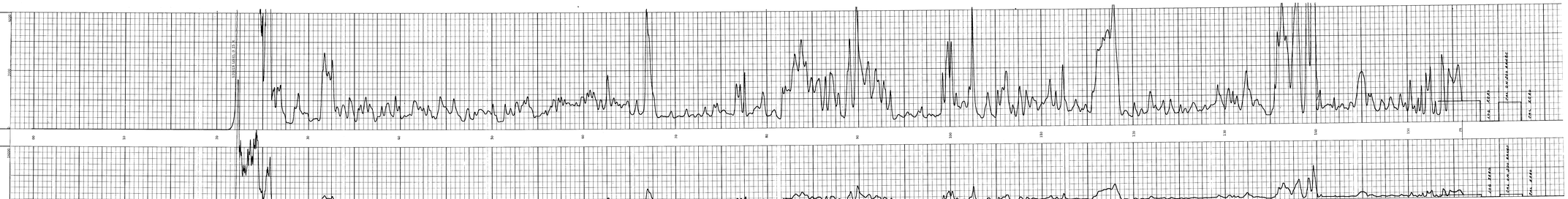
All Depths Measured From 1.00 FROM K.B.

Run. No.	ONE	
Date	27 FEB 1977	
First Reading	156.0	
Last Reading	25	
Footage Logged	131	
Depth Reached	156.00	
Depth Drilled	157.68	
Casing Size	4.5	
Casing Depth		
Fluid Type	NONAQUEOUS	
Liquid Level	25	
Max. Diam.	3.5	
Rm @ M.T.C.	21.76 @ 23	
Operating Time	1 HOUR	
Truck No.	36	

Recorded By GAUDUNT Witnessed By GAUDUNT

Remarks

SONIC DISPLAY 1 INCH = 20 FEET
SONIC 2 FEET SPACE = 200 FEET
CBL 1 INCH = 20 FEET
CBL 2 FEET SPACE = 200 FEET
GR 1 INCH = 20 FEET
GR 2 FEET SPACE = 200 FEET



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K- ELK RIVER 77 (3) #B

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W_____M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 28
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS, CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	RIG FLOOR 57 CM. Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	27 FEB 1977
First Reading	156.5 M
Last Reading	0
Footage Logged	156.5
Depth Reached	156.80
Depth Driller	157.08
Casing Roke	8.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	25.5
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M /MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	24	3.66	4	100	0	16	3	1000	4L	360
2	24	156.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
API 16		API 360
0 — 160		1440 — 5040 — 8640

ROKE
SIDEWALL DENSILOG
ROKE OILFIELD SERVICES LTD.
CALGARY, ALBERTA

WELL: Amoco et al Ricinus 13-25-36-5W5
LOCATION: 13 - 25 - 36 - 5 W5
FIELD: Red River Valley
276
PROVINCIAL REGISTERED NO. 276
RUN NO. ONE
DEPTH DRILLER 7,707
DEPTH LOGGER 7,707
BTM. LOG INTERVAL 7,707
TOP LOG INTERVAL 6,700
CASING DRILLER 9.625 @ 6,700
CASING LOGGER 6,700
BIT SIZE 8.75
TYPE FLUID IN HOLE Gel Chem
DENSITY 10.0
VISCOSITY 50
PH 10.5
FLUID LOSS 7.0
SOURCE OF SAMPLE Pit
RM @ MEAS. TEMP. 0.22 @ 70°F
RMF @ MEAS. TEMP. 0.18 @ 70°F
RMC @ MEAS. TEMP. 0.28 @ 70°F
SOURCE OF RMF Pit
RM @ BHT 0.12 @ 160°F
TIME SINCE CIRC. 5 hrs
MAX. REC. TEMP. 160°F
EQUIP. LOCATION 3-36-5W5
RECORDED BY Ken Bowie
WITNESSED BY Mr. Dale

2H 82

GENERAL: CENTER		SPEED	T.C.	SPAN	ZERO	API G.R. UNITS	T.C.	SPAN	ZERO	CPS/ DIV
RUN NO.	FROM	TO	IN. SEC.	SETTING	FULL SPAN	PER 1,000 PULSES	SEC.	SETTING	FULL SPAN	
1	0	156	5.46				2	3000	1.86	54.93
2	0	124.5		CALIPER						

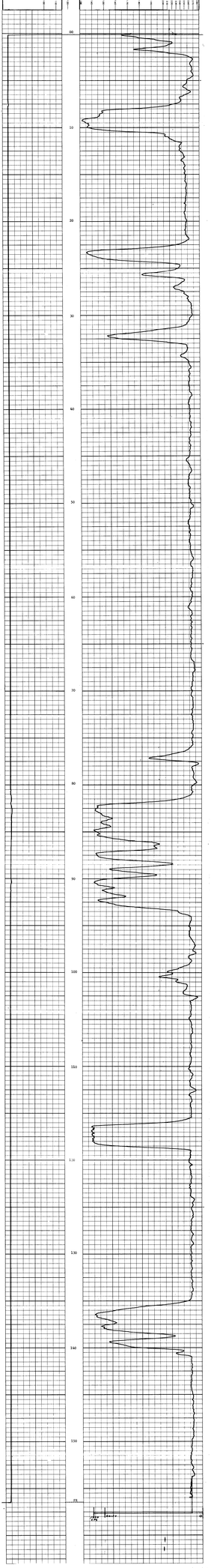
REMARKS: DENSITY TOOL # 457
CALIPER TOOL # 367
OPEN HOLE

Shunted	CALIPER (DIAMETER - CENTIMETERS)	
30.48	30.48	35.56

10.16 15.24 20.32 25.40

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE

GAMMA RAY · NEUTRON

COUNTY	[illegible]
STATE	[illegible]
FIELD	[illegible]
WELL	[illegible]
LOCATION	[illegible]
SEC.	[illegible]
TWP.	[illegible]
RGE.	[illegible]
ELEV.	[illegible]
DATE	[illegible]
RUN NO.	[illegible]
DEPTH DRILLER	[illegible]
DEPTH LOGGER	[illegible]
BTM. LOG INTERVAL	[illegible]
TOP LOG INTERVAL	[illegible]
CASING DRILLER	[illegible]
CASING LOGGER	[illegible]
BIT SIZE	[illegible]
TYPE FLUID IN HOLE	[illegible]
DENSITY	[illegible]
VISCOSITY	[illegible]
PH	[illegible]
FLUID LOSS	[illegible]
SOURCE OF SAMPLE	[illegible]
RM @ MEAS. TEMP.	[illegible]
RMF @ MEAS. TEMP.	[illegible]
RMC @ MEAS. TEMP.	[illegible]
SOURCE RMF / RMC	[illegible]
RM @ BHT	[illegible]
TIME SINCE CIRC.	[illegible]
MAX. REC. TEMP.	[illegible]
EQUIP. LOCATION	[illegible]
RECORDED BY	[illegible]
WITNESSED BY	[illegible]

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	[illegible]	RUN NO.	[illegible]
TOOL MODEL NO.	[illegible]	TOOL MODEL NO.	NEUTRON/NEUTRON
DETECTOR MODEL NO.	[illegible]	DETECTOR MODEL NO.	[illegible]
SPACING	[illegible]	SPACING	[illegible]
DETECTOR TYPE	SCINTILLATION	DETECTOR TYPE	PROPORTIONAL
DETECTOR SIZE	[illegible]	DETECTOR SIZE	[illegible]
		SOURCE TYPE	MEDIUM
		SOURCE SIZE	[illegible]
		SOURCE MODEL NO.	[illegible]
		SOURCE	[illegible]
		STRENGTH	[illegible]

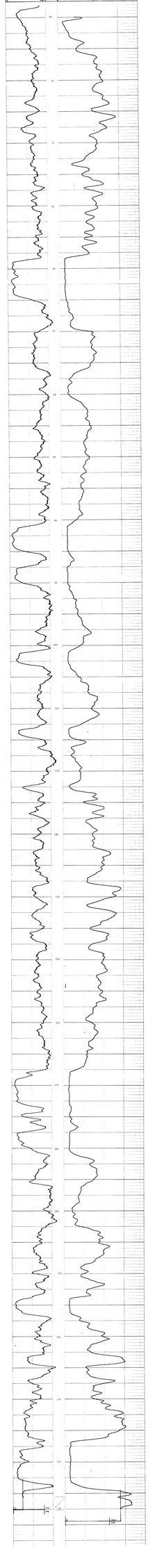
LOGGING DATA

GAMMA RAY					NEUTRON				
RUN	MEDIUM	SPEED	TIME CONST.	GAIN	RUN	MEDIUM	SPEED	TIME CONST.	GAIN
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

GAMMA RAY · NEUTRON

GAMMA RAY INCREASES → 0 — 100

NEUTRON INCREASES → 0.45 — 0.0



ROKE
BOREHOLE SURVEYS LTD.
ROKE HOUSE, ROKE, OXON. RG10 0AA
TEL: 01491 822 800 FAX: 01491 822 808

276

DATE: 1-7-97
RUN No.: 1
TIME: 08:13
DEPTH DRILLER: 1000
DEPTH LOGGER: 1000
BTM LOG INTERVAL: 1000
TOP LOG INTERVAL: 0
CASING DRILLER: 0
CASING LOGGER: 0
BIT SIZE: 0
TYPE FLUID IN HOLE: WATER
DENSITY: 1.0
VISCOSITY: 0
PH: 0
FLUID LOSS: 0
SOURCE OF SAMPLE: 0
RM @ MEAS TEMP: 0
RMF @ MEAS TEMP: 0
RMC @ MEAS TEMP: 0
SOURCE RMF: 0
SOURCE RMC: 0
RM @ BHT: 0
RMF @ BHT: 0
RMC @ BHT: 0
TIME CIRC STOPPED: 0
TIME LOGGER ON BOTTOM: 0
MAX REC TEMP: 0
EQUIP LOCATION: 0
RECORDED BY: 0
WITNESSED BY: 0

RUN NO. 1 | BOREHOLE RECORD | 1ST READING | 2ND READING | LOGGING UNIT NO. 1
BIT SIZE | 0 | 0 | 0
TYPE FLUID | WATER | WATER | WATER
DENSITY | 1.0 | 1.0 | 1.0
LEVEL | 0 | 0 | 0
MAX REC TEMP | 0 | 0 | 0
LOGGER ON BOTTOM | 0 | 0 | 0
UNIT NUMBER | 0 | 0 | 0
LOCATION | 0 | 0 | 0
RECORDED BY | 0 | 0 | 0
WITNESSED BY | 0 | 0 | 0

RUN	GENERAL: CASING DRILLER			GAMMA RAY: BIT SIZE	FLUID	DENSITY	VISCOSITY	GENERAL: LOGGER	BIT SIZE	FLUID	DENSITY	VISCOSITY
1	0	0	0	0	WATER	1.0	0	0	0	WATER	1.0	0

REMARKS: BOREHOLE DRILL F. REF. | LOGGING TOWARDS NO. DRILL HOLE

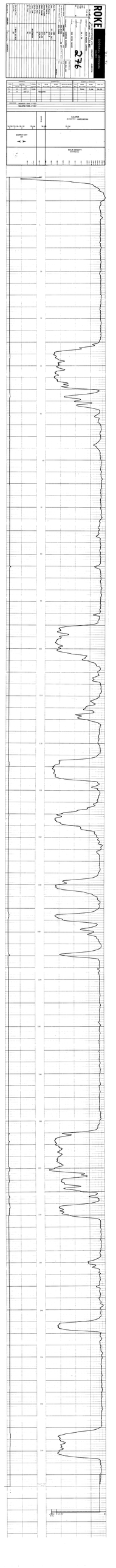
CALIPER
(CLOCKWISE - COMPLIMENTARY)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

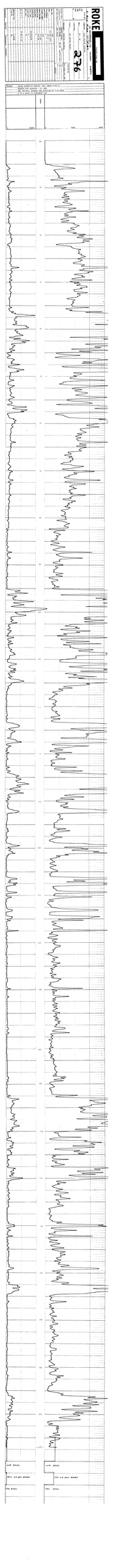
Depth

0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240


ROKE
SCHLUMBERGER
ROKE
276
CALIPER
GAMMA RAY
BULK DENSITY

ROKE

276



ROKE

COMPANY	ROKE OIL INC.
WELL	276
FIELD	WILDCAT
COUNTY	SCOTT
STATE	KANSAS

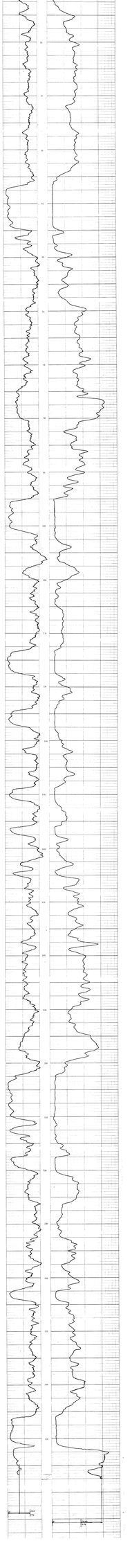
LOCATION	330' FSL & 2310' FEL
SEC.	24
TWP.	18 S
RGE.	31 W
ELEVATION	K.B. 3127
DATE	11-11-80
RUN NO.	ONE
DEPTH-DRILLER	4350
DEPTH-LOGGER	4350
BTM. LOG INTERVAL	4348
TOP LOG INTERVAL	2800
CASING-DRILLER	8 5/8 @ 251
CASING-LOGGER	NONE
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	9.2
VISCOSITY	45
PH	10.5
RM @ MEAS. TEMP.	.75 @ 75°
RMF @ MEAS. TEMP.	.60 @ 75°
RMC @ MEAS. TEMP.	.90 @ 75°
SOURCE OF RMF & RMC	MEASURED
RM @ BHT	.35 @ 130°
TIME CIRC.	5 HRS
MAX. REC. TEMP.	130°
EQUIP. & LOCATION	3 - 4
RECORDED BY	J. HAMMER
WITNESSED BY	MR. CLARK

EQUIPMENT DATA

CASING DATA		RECORDER	
BIT SIZE	7 7/8	NO.	1
TOP DRILL PIPE	4 1/2	CAPACITY	2000
BOTTOM DRILL PIPE		MAKE	DIAL
DRILL COLLAR	6 1/4	MEASURING RANGE	0-2 MV
DRILL COLLAR LENGTH	90	RECORDER SPEED	1
CASING	8 5/8 @ 251	MEASURING MODE	PROPORTIONAL
DEPTH-DRILLER	4350	MEASURE	0-100
DEPTH-LOGGER	4350	RECORDER	
		SPEED	1
		MAKE	DIAL
		NO.	1
		CAPACITY	2000

CASING DATA											
SIZE	WEIGHT	GRADE	THREAD	TOP	BOTTOM	SIZE	WEIGHT	GRADE	THREAD	TOP	BOTTOM
8 5/8	24	J-55		0	251						

GAMMA RAY		NEUTRON	
1		1	
GAMMA RAY INCREASING		NEUTRON INCREASES	
0	100	0	100



84 - 31

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3) #B

FILE NO.	COMPANY	ELCO MINING LIMITED
LSD	WELL	DH - 31
SEC		276
TWP	LOCATION	
RGE	FIELD	ELK RIVER VALLEY
W M	PROVINCE	BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum: GROUND LEVEL Elev.
Log Measured from: RIG FLOOR 72 CM Above Perm. Datum
Well Depths Measured from: RIG FLOOR

K.B.
CSG
G.L.

Run No.	ONE
Date	8 DEC 1976
First Reading	212.5 M
Last Reading	0
Footage Logged	212.5
Depth Reached	213.42
Depth Driller	213.81
Casing Roke	9.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Operating Time	2 HOURS
Truck No.	36

Recorded By: CARLSON Witnessed By: McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	212.5	3.66					3	1000	2 R	68.43

REMARKS: DENS TOOL # 420 CAL TOOL # 587 OPEN HOLE - FLOWING AT A HIGH RATE

CALIPER (DIAMETER - CENTIMETERS)
10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE

OIL CORPORATION LTD.

WELL	276
FIELD	ROKE
COUNTY	RED DEER
PROVINCE	ALBERTA
LOCATION	6-35-37-27 W4M
COMPANY	ROKE OIL CORPORATION LTD.
	CALGARY, ALBERTA

PERMANENT DATUM	G.L.
ELEVATION	2788
LOG MEASURED FROM	K.B.
10 FT. ABOVE PERM. DATUM	
DRILLING MEASURED FROM	K.B.
DATE	1-6-62
RUN NO.	ONE
DEPTH-DRILLER	3000
DEPTH-LOGGER	3000
BTM. LOG INTERVAL	2998
TOP LOG INTERVAL	1500
CASING-DRILLER	8 5/8 @ 1500
CASING-LOGGER	1500
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	GEL CHEM
DENS. VISC.	10.0 50
PH FLUID LOSS	9.5 6.4
SOURCE OF SAMPLE	CIRC
RM @ MEAS. TEMP.	.45 @ 70°
RMF @ MEAS. TEMP.	.35 @ 70°
RMC @ MEAS. TEMP.	.60 @ 70°
SOURCE OF RMF & RMC	MEAS
RM @ BHT	.20 @ 120°
TIME SINCE CIRC.	3 HRS
MAX. REC. TEMP.	120°
EQUIP. LOCATION	3 DRAYER
RECORDED BY	R. MOORE
WITNESSED BY	MR. BOYD

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON-NEUTRON
DIAMETER	2 1/2	DIAMETER	
TOOL MODEL NO.		TOOL MODEL NO.	10 BB
SPACING		SPACING	
DETECTOR-LOGGER		DETECTOR-LOGGER	PROPORTIONAL
DEPTH	50 3/8 @ 1500	DEPTH	50 3/8 @ 1500
SOURCE-LOGGER		SOURCE-LOGGER	
SOURCE STR. SOURCE	4.25 G.	SOURCE STR.	500 G. 4.5 @ 70
		TOOL MODEL NO.	570
		SPACING	4.5, 15, 20
GENERAL		GENERAL	
ARMY TRUCK NO.	36	ARMY TRUCK NO.	36
MERCURY TRUCK NO.		MERCURY TRUCK NO.	
RECORDING NO.	103 - 353	RECORDING NO.	2 103/353

LOGGING DATA

GAMMA RAY								NEUTRON							
RUN NO.	FROM	TO	SPEED F/M	TC SEC.	MPD	SENS.	API & M. UNITS	F-S	MPD	SENS.	API & M. UNITS				
ONE	1500	3000	30	3	1	8	100		1	8	100				

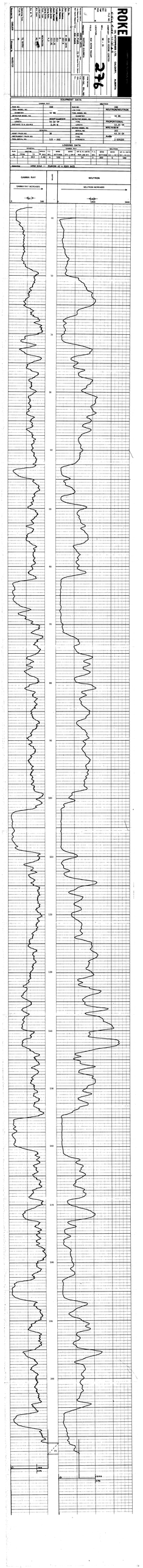
REMARKS: 1500 SCALE - PLOTTED AT 4 INCHES MADE

GAMMA RAY

GAMMA RAY INCREASES

NEUTRON

NEUTRON INCREASES



ROKE

Schlumberger

Company	ROKE OIL (U.S.A.) INC.
Well	GALEA, ALASKA, OCS-Y-0138 #1
Field	WILDCAT
County	
State	ALASKA
Location	2276 FSL & 2276 FEL
Permanent Datum	MSL
Elev.	0
Log Measured From	RT
Drilling Measured From	RT
Elev. K.B.	0
Elev. D.F.	0
Elev. G.L.	0
Date	11-Dec-1979
Run No.	ONE
Depth-Driller	11,000
Depth-Logger	11,000
Bottom Log Interval	11,000
Top Log Interval	10,000
Casing-Driller	10 3/4 @ 2,000
Casing-Logger	
Bit Size	9 7/8
Type Fluid in Hole	SEA WATER
Dens.	8.5
Visc.	35
pH	10
Fluid Loss	10
Source of Sample	
Rm @ Meas. Temp.	0.25 @ 70
Rmf @ Meas. Temp.	0.25 @ 70
Rmc @ Meas. Temp.	0.25 @ 70
Source Rmf / Rmc	MEASURED / MEASURED
Rm @ BHT	0.25 @ 70
Time Since Circ.	12 HRS
Max. Rec. Temp.	70
Equip. Location	2276
Recorded By	WILLIAMS
Witnessed By	[illegible]

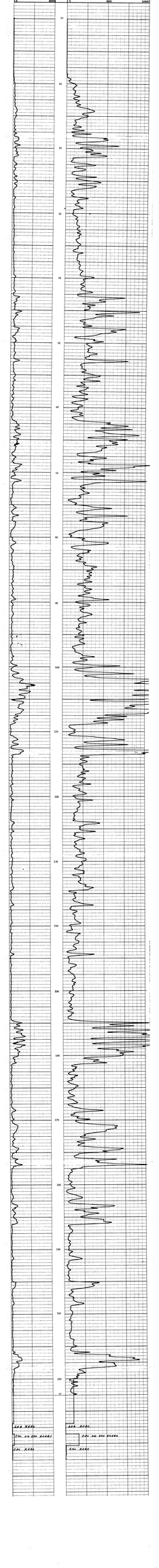
Run No.	ONE	Run No.	
Depth-Driller	11,000	Depth-Driller	
Depth-Logger	11,000	Depth-Logger	
Bottom Log Interval	11,000	Bottom Log Interval	
Top Log Interval	10,000	Top Log Interval	
Casing-Driller	10 3/4 @ 2,000	Casing-Driller	
Casing-Logger		Casing-Logger	
Bit Size	9 7/8	Bit Size	
Type Fluid in Hole	SEA WATER	Type Fluid in Hole	
Dens.	8.5	Dens.	
Visc.	35	Visc.	
pH	10	pH	
Fluid Loss	10	Fluid Loss	
Source of Sample		Source of Sample	
Rm @ Meas. Temp.	0.25 @ 70	Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	0.25 @ 70	Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	0.25 @ 70	Rmc @ Meas. Temp.	
Source Rmf / Rmc	MEASURED / MEASURED	Source Rmf / Rmc	
Rm @ BHT	0.25 @ 70	Rm @ BHT	
Time Since Circ.	12 HRS	Time Since Circ.	
Max. Rec. Temp.	70	Max. Rec. Temp.	
Equip. Location	2276	Equip. Location	
Recorded By	WILLIAMS	Recorded By	
Witnessed By	[illegible]	Witnessed By	

Remarks:

ARRAY INDUCTION FOCUSED LOG - PROCESSED LOG
DENSITY FULL WAVEFORM - 1 SPC SONIC
GR-CALIPER - PLEASE CALIBRATE IN 3.5 DEG
4 1/2 & 6 NOTCH AT SECONDARY REF - FACTOR MUST AT HIGH NOTE

Scale

MAGNETIC FIELD (NANOTESLA)	MAGNETIC FIELD (NANOTESLA)
0	5000



CH-82

ROKE

SCHLUMBERGER

OIL ENTERPRISES LTD.

COMPANY: ROE MOTION LIMITED

WELL: 10L - 32

LOCATION: FIELD: BIG STEEN VALLEY

276

Permanent Datum:	GROUND LEVEL
Log Measured From:	KELLY BUSHING
Drilling Measured From:	KELLY BUSHING
Elev.: K.B.	1312.5 ft
Elev.: D.F.	1311.5 ft
Elev.: G.L.	1305.5 ft
Date	13 FEB 87
Run No.	ONE
Depth-Driller	1500
Depth-Logger	1498
Bottom Log Interval	1498
Top Log Interval	SURFACE
Casing-Driller	9 5/8 @ 1500
Casing-Logger	NONE
Bit Size	8 3/4
Type Fluid in Hole	WATER
Dens.	8.4
Visc.	40
pH	10
Fluid Loss	NONE
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.4 @ 75
Rmf @ Meas. Temp.	0.4 @ 75
Rmc @ Meas. Temp.	0.4 @ 75
Source: Rmf / Rmc	MEASURED / MEASURED
Rm @ BHT	0.4 @ 75
Time Since Circ.	5 HRS
Max. Rec. Temp.	75
Equip. No.	2
Location	10-32
Recorded By	MORRISON
Witnessed By	MORRISON

GENERAL			GAMMA RAY					BOREHOLE RECORD			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN	T.C. SEC.	SENS. SETTINGS	SENS. DOLL/CM/H	API UNITS PER DOLL/CM	B.S. NO.	BIT SIZE	CASING SETTINGS	CASING DOLL/CM
1	0	1506.5	5.66					3	1500	9 5/8	68.43
2	0	137		CALIPER							

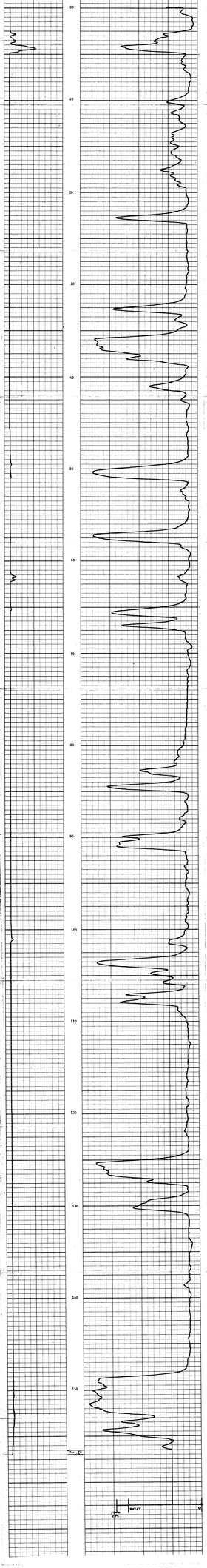
REMARKS		
	RUN TOOL # 520	OPEN HOLE. FLOWING WATER AND GAS AT A
	CAL. TOOL # 387	RUN VOLUME

CALIPER (DIAMETER - CENTIMETERS)

10.16 13.34 20.32 15.40 — 30.48 — 35.56

GAMMA RAY API

BULK DENSITY (GRAM/CC)



ROKE

C. Roke Oil & Petroleum Ltd.
400 - 4th Ave. S.W.
CALGARY, ALBERTA

Recorded By	GRIFFITH
Witnessed By	MACKAY
Run No.	ONE
Date	12-6-74
Depth Driller	3600
Depth Logger	3600
Bottom Logged Interval	3600
Top Logged Interval	1400
Type Fluid in Hole	WATER
Salinity, PPM Cl	3000
Density	8.34
Level	FULL
Max. Rec. Temp.	98
Equip. No. & Location	3 SEDAL
Recorded By	12
Witnessed By	8

LOCATION: 16-25-5W5M
FIELD: WILDCAT
COUNTY: RED DEER COUNTY
PROVINCE: ALBERTA
WELL: C. ROKE ET AL HARRIS 16-25-5W5M
Other Services: GR-CCL-PERF. REC.

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATOR	DETECTOR MODEL NO.	
LENGTH	51.18 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	7.06 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-85 B
GENERAL		SOURCE STRENGTH	351
RIGHT TRACK NO.	36	SPACING	43.18 CM
INSTRUMENT TRACK NO.		TYPE	Amble
TOOL SERIAL NO.	123 - 002	STRENGTH	7 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON		
RUN NO.	DEPTH FROM	DEPTH TO	SPEED FT/MIN	T.C. SEC.	SENS SETTING	ZERO API & UNITS	API & UNITS PER DIV.	T.C. SEC.	SENS SETTING	ZERO API & UNITS
1	0	137	3.46	4	100	0	14	1	300	0
										180

REMARKS: GREEN MUD + PLUGGING WATER AND GAS + MUDD VOLUME

GAMMA RAY

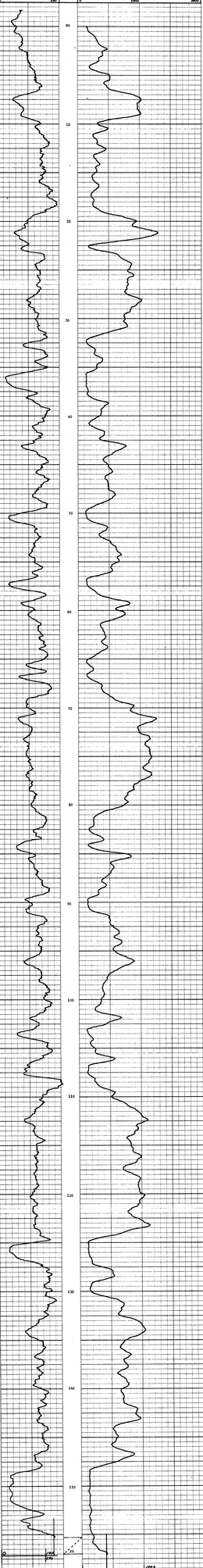
GAMMA RAY INCREASES

1400 — 160

NEUTRON

NEUTRON INCREASES

0 — 1400 — 3600



ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER M (2) AD

FILE NO.

LSD
SEC
TWP
RGE
W ____ M

COMPANY: ELCO HOUSING LIMITED

WELL: IN - 32

276

LOCATION:

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

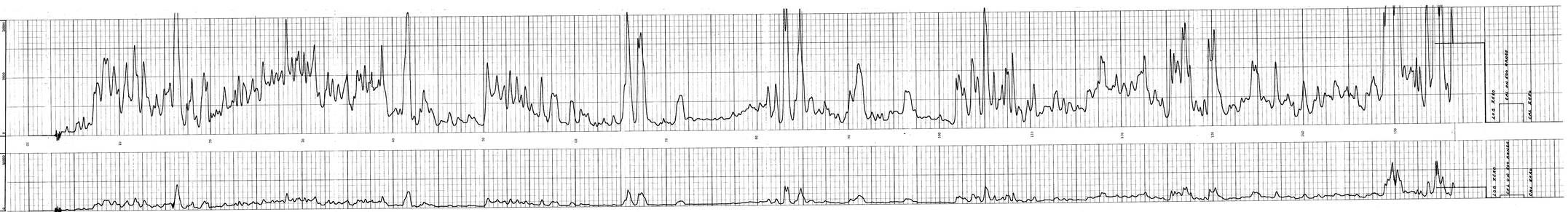
Other Services: CAD
SEN-GAL, SBM

Permanent Datum: GROUND LEVEL
Log Measured From: GROUND LEVEL
Max Depth Measured From: GROUND LEVEL
Above Perm. Datum: N.A.
GRD
G.L.

Run No.	ONE		
Date	12 DEC 1976		
First Reading	154.3 M		
Last Reading	0		
Footage Logged	150.5		
Depth Reached	154.41		
Depth Driller	156.93		
Casing Rate	6		
Casing Driller			
Fluid Type	WATER		
Liquid Level	0		
Min. Diam.	HQ		
Rec. @ °C	23.66 @ 23		
Operating Time	2 HOURS		
Truck No.	36		

Recorded By: CARLSON
Witnessed By: NUKELVIE

Remarks: SONIC CONTROL FACTOR 1.00 FROM TOP 221
GROUND LEVEL PLACING - 2 FROM GARDEN
SAN GUIDE: PRIMARY 1000 ADJUSTED 3.33 ACT
8 TO 1 RATIO ON BOTTOMHOLE TRIP, PLACING ROLE, 100 VOLUME OF GAS AND WATER



DH-38

ROKE

OIL DEVELOPMENT CO. CALGARY, ALBERTA

COMPANY: ROKE OIL DEVELOPMENT LIMITED

WELL: BLUE BIRD NO. 1

FIELD: WILDCAT

LOCATION: 10-24-25-W4

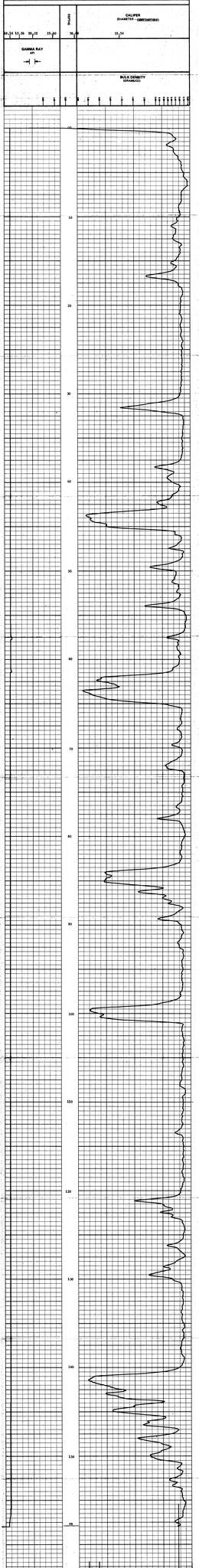
276

Elev. Perm. Datum:	GROUND LEVEL
Log Measured From:	KELLY BUSHING
Drilling Measured From:	KELLY BUSHING
Date:	12-Mar-75
Run No.	1
Depth-Driller:	1500
Depth-Logger:	1494
Bottom Log Interval:	1492
Top Log Interval:	0
Casing-Driller:	8 5/8 @ 137
Casing-Logger:	8 5/8 @ 137
Bit Size:	7 7/8
Type Fluid in Hole:	GEL CHEM
Dens. Visc.:	9.6 lb/gal 45 s
pH:	9.5
Fluid Loss:	10.0 ml
Source of Sample:	FLOWLINE
Rm @ Meas. Temp.:	0.7 @ 60 F
Rmf @ Meas. Temp.:	0.6 @ 60 F
Rmc @ Meas. Temp.:	0.9 @ 60 F
Source: Rmf Rmc:	M M
Rm @ BHT:	0.3 @ 140 F
Time Since Circ.:	5 hrs
Max. Rec. Temp.:	140 F
Equip. No.:	1
Location:	10-24-25-W4
Recorded By:	R. DUNN
Witnessed By:	MR. FRY

GENERAL				GAMMA RAY				DIFFERENTIAL THERMOMETER			
RUN NO.	CASING DEPTH	DRILLER TD	BOTTOM LOGGED	T.D. DRILLER	BORE HOLE RECORD	CASING RECORD	MIN. & MAX. TEMP. RECORDED	T.D. DRILLER	BORE HOLE RECORD	CASING RECORD	CALC. BHT
1	0	1500	1492	1500				1	1500	1.05	54.15

REMARKS: GAMMA RAY AT 137 CASING SHOE

CAL. TRUN. # 1537



ROKE

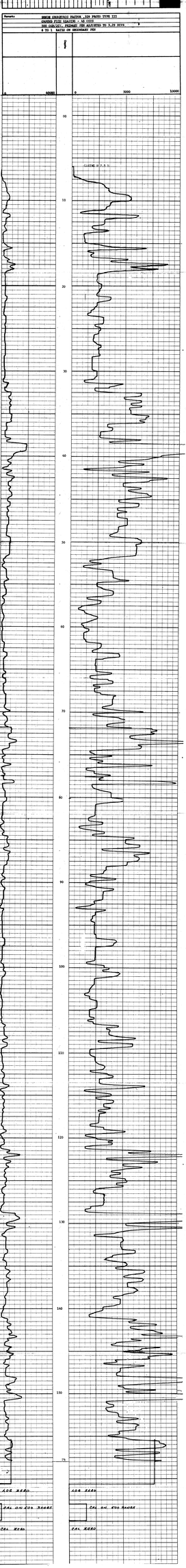
PROCESSED RAW LOG

ROKE OIL INTERPRETATION LTD.
CALGARY, ALBERTA

FILE NO.	
COMPANY	MOBIL OIL CORPORATION
WELL	NO. 33
LOCATION	
FIELD	PELICAN WEST VALLEY
Elev.	
Log Measured From	
Drilling Measured From	
Date	
Run No.	
Depth Driller	1777
Depth Logger	1776
Bottom Log Interval	1776
Top Log Interval	1300
Casing Driller	13 3/8
Casing Logger	13 3/8
Bit Size	12 1/4
Type Fluid in Hole	NON
Dens. / Visc.	
PH / Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source: Rmf / Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	
Equipment No.	
Location	
Recorded By	
Witnessed By	

276

Remarks: NORCO CORRECTED FACTOR .320 PROTO TYPE III
GAMMA FILE SAMPLER - 48 CUCS
306 CUCS/FT. PRINTED FOR ADJUSTED TO 3.29 DEVS
6 TO 1 RATIO ON SECONDARY PEN



Company: ROKE OIL (1979) LTD.
Well: 16-14-36-27W4
Field: ROCK ISLAND
Province: ALBERTA
Location: 16-14-36-27W4
Permanent Datum: GROUND LEVEL
Elevation: 1000 m
Log Measured From: K.B.
Drilling Measured From: K.B.
K.B.: 1005 m
D.F.: m
G.L.: 1000 m
Date: 26 Nov 79
Run No.: ONE
Depth Driller: 3600 m
Depth Logger: 3600 m
Bottom Logged Interval: 3600 m
Top Logged Interval: 1000 m
Casing Driller: 244.5 mm @ 1000 m
Casing Logger: 244.5 mm @ 1000 m
Bit Size: 200 mm
Type Fluid in Hole: GEL CHEM
Density: 1.10 kg/m³
Viscosity: 50 s
Fluid Loss: 6.0 cc
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 0.22 @ 20 °C
Rmf @ Meas. Temp.: 0.18 @ 20 °C
Rmc @ Meas. Temp.: 0.30 @ 20 °C
Source of Rmf & Rmc: CALC
Rm @ BHT: 0.12 @ 110 °C
Time Since Circulation: 24 HRS
Time Since Circ.: 24 HRS
Max. Rec. Temp.: 110 °C
Equip. Location: 3 KM SOUTH ROCK ISLAND
Recorded By: D. SPENCER
Witnessed By: MR. BOOKS

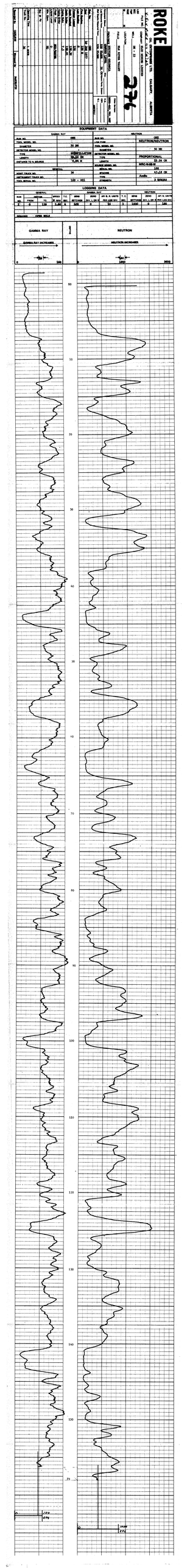
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	50 MM	DIAMETER	50 MM
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	76.2 MM	LENGTH	22.2 CM
DISTANCE TO N. SOURCE	0.4M M	SOURCE MODEL NO.	MRC-N-2E-M
GENERAL		MODEL NO.	14E
HEART TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Am/Be
TOOL SERIAL NO.	169 - 001	STRENGTH	2 SRCES

LOGGING DATA

GAMMA RAY										NEUTRON			
GENERAL													
RUN NO.	MEDIA		SPEED M. MIN.	T.C. SEC.	GAIN SETTING	CAL. DEV.	m m. m. UNITS PER GAM. DIV.	T.C. SEC.	SPAN	SETTING	m m. m. UNITS PER GAM. DIV.	T.C. SEC.	
	FROM	TO											
ONE	0	1150	3.66	5	1000		0	10	5	1000	0	10	
REMARKS: OPEN HOLE													

GAMMA RAY		NEUTRON
GAMMA RAY INCREASES →		← NEUTRON INCREASES
0	100	0
		3600



DH-34

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) AB

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 34
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA

276

Other Services: GRN, FBL, DEV

Permanent Datum	GROUND LEVEL	Elev.	
Log Measured from	RIG FLOOR 42 CM Above Perm. Datum	K.B.	
Well Depths Measured from	RIG FLOOR	CSG	
		G.L.	

Run No.	ONE		
Date	14 DEC 1976		
First Reading	167		
Last Reading	0		
Footage Logged	167		
Depth Reached	167.92		
Depth Driller	168.36		
Casing Roke	10		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	9		
Min. Diam.	HQ		
Operating Time	2 HOURS		
Truck No.	36		

Recorded By CARLSON Witnessed By McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	167	3.66					3	1000	2 R	68.43
2	0	167.5		CALIPER							

REMARKS DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587

CALIPER (DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE

ROKE OIL ATLANTIC LTD.
1600 ROYAL CENTRE
CALGARY, ALBERTA

Company ROKE OIL ATLANTIC LTD.
Well 276
Field WILDCAT
County, Parish or Block
State or Province ALBERTA
Location 30 - 14 W5
Other Services
Permanent Datum GROUND LEVEL
Elevation 1134 ft.
Log Measured From K.B.
Drilling Measured From K.B.
Elev.: K.B. 1144 ft.
D.F. ft.
G.L. 1134 ft.

Date	1-12-74		
Run No.	ONE		
Depth-Driller	3,500		
Depth-Logger	3,500		
Bottom Logged Interval	3,500		
Top Logged Interval	SURFACE		
Type Fluid in Hole	GEL CHEM		
Salinity, P.P.M. Cl	1,500		
Density	9.5		
Level	FULL		
Max. Rec. Temp. Deg. F.	90		
Operating Rig Time	5 HRS		
Recorded By	M. SCHMIDT		
Witnessed By	MR. ROSS		

Run No.	ONE		
Bit No.	1		
Size	7 7/8"		
Type	STEEL TOOTH		
From	SURFACE		
To	3,500		

Size	9 5/8"		
Wgt.	36.0		
Grade	J-55		
Type Joint	ST&C		
Set At	500		

Type Fluid	GEL CHEM		
Density	9.5		
Viscosity	40		
Fluid Loss	8.0		
Source of Sample	MUD PIT		
R @ Meas. Temp.	.5 @ 70°F		
R_mf @ Meas. Temp.	.4 @ 70°F		
R_mc @ Meas. Temp.	.6 @ 70°F		
Source R_mf / R_mc	MEASURED		
R @ BHT	.3 @ 90°F		
Time Since Circ.	5 HRS		
Max. Rec. Temp.	90°F		
Equip. Location	1600		
Recorded By	M. SCHMIDT		
Witnessed By	MR. ROSS		

276

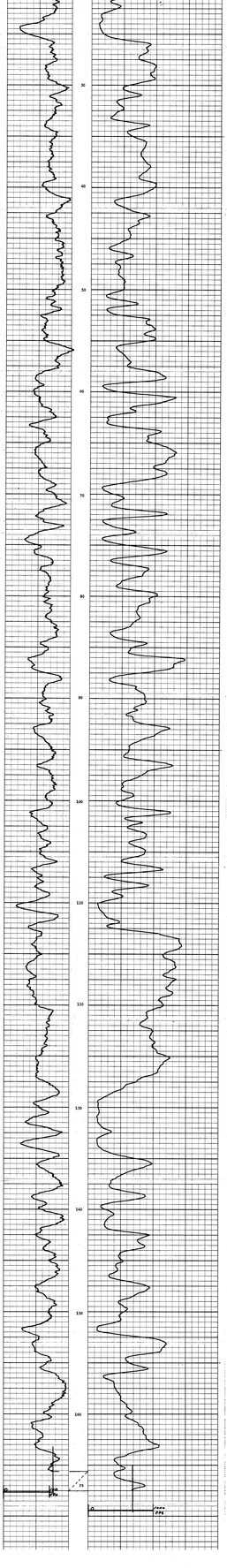
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
SONDE No.	30 581	TOOL MODEL NO.	
DETECTOR MODEL NO.		SONDE No.	30 580
LENGTH	10.54 OH	DETECTOR MODEL NO.	
DISTANCE TO N. SOURCE	7.64 ft	TYPE	PROPORTIONAL
		LENGTH	11.46 OH
		SOURCE MODEL NO.	MNC 30 B
GENERAL		SERIAL NO.	1
HEIGHT ABOVE RM	56	SPACING	16.12 OH
CALIBRATION BLOCK NO.		STRENGTH	Amrille
TOOL SERIAL No.	133 - 302	STRENGTH	5 CURIES

LOGGING DATA

RUN NO.	GAMMA RAY: BOTTOM		SPEED FT/MIN	T.C. SEC.	SONDE SETTING	GAMMA RAY: SCALE DIV. / LIN. FT.	GAMMA RAY: API N. UNITS PER LOG DIV.	NEUTRON: T.C. SEC.	NEUTRON: SONDE SETTING	NEUTRON: SCALE DIV. / LIN. FT.	NEUTRON: API N. UNITS PER LOG DIV.
	FROM	TO									
1	0	3,500	30	3	500	4	10	3	500	4	10

REMARKS GAMMA RAY & NEUTRON



ROKE

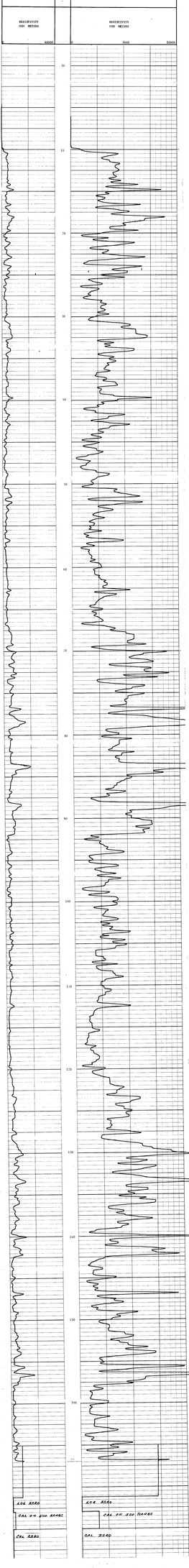
ROKE OIL INTERNATIONAL LTD.
CALGARY, ALBERTA

PROBED RADIO LOG

FILE NO.	276
WELL	2
COMP.	1
RUN	1

COMPANY: ROKE OIL INTERNATIONAL LIMITED
WELL: BIG - 36
LOCATION: BIG RIVER GRAPE
FIELD: BIG RIVER GRAPE
PROVINCE: SASKATCHEWAN
Date Drilled: 12 DEC 1974
Date Completed: 13 DEC 1974
Date Logged: 13 DEC 1974
Elev. Kelly Bush: 1500
Elev. Ground: 1491
Elev. Log Datum: 1500
Elevation Corrected: NO
Total Depth Driller: 1500
Total Depth Log: 1500
Casing Driller: 8 5/8 @ 1500
Casing Logged: 8 5/8 @ 1500
Bottom Log Interval: 1500
Top Log Interval: 1000
Drilling Fluid: WATER
Max. Rec. Temp.: 90 DEG. F
Equipment No.: 1
Recorded By: WHITE
Witnessed By: BAKER

Remarks: SONDE GEOMETRIC FACTOR = .5737 PROBE TYPE III
SENSOR FULL RANGE = 5 OHM
200 OHM-M SCALE: PRIMARY REF RAPPRESTED TO 3.39 DEVE
0 TO 1 WATTS ON PRESCALAR REF



ROKE

PROCESSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK COAL PROJECT

COMPANY: ESSO MINERALS LIMITED

WELL: DH - 35

LOCATION:

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

LSD / SEC / TWP / RGE / M:

FILE NO: 276

Permanent Datum: KB FLOOR — Elev.: 2024

Log Measured from: KB FLOOR — Above Perm. Datum

Depth Driller: 82.61

Depth Logger: 82.5

Bottom Log Interval: 81.8

Top Log Interval: 53

Casing Driller: 53

Casing Logger: 53

Bit Size: 7 7/8"

Type Fluid in Hole: MUD/WATER

Density: 10.1 — Viscosity: 50

pH: — Fluid Loss: —

Source of Sample: —

Rm @ °C: 23.53 @ 25

Rmf @ °C: —

Rmc @ °C: —

Source of Rmf and Rmc: —

Rm @ BHT: —

Time Since Circ.: —

Time on Bottom: —

Max. Rec. Temp. °C: —

Equip. Location: —

Recorded By: GAULSON

Witnessed By: MCELVAINE

Run No.: ONE

Date: 31 JAN 1977

First Reading: 81.5 M

Last Reading: 53 M

Edge Logged: 62.5

Depth Reached: 81.8

Depth Driller: 82.61

Casing Driller: 53

Casing Logger: 53

Fluid Type: MUD/WATER

Fluid Level: FULL

Max. Rec. Temp.: 80

Equipment No. & Location: 23.53 @ 25

Operating Time: 1 HOUR

Truck No.: 36

Crew Name:

Engineer: DEDIS / CAL / CERN

Rig No.: —

Other Services: —

Remarks: SONDE GEOMETRIC FACTOR .329 PROTO TYPE IV
GROUND FISH READING - 90 OHMS
200 OHM/DIV. PRIMARY PEN ADJUSTED TO 3,29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

TEST HOLE; AREA - 53 - 57 M COAL SEAM
WAS CEMENTED OFF AND RE-DRILLED

Depths

0 16000 | 0 2000 4000

00

10

CASING 19 METERS

20

30

40

50

60

70

80

FR

LOG ZERO

CAL 20 000 RANGE

CAL ZERO

LOG ZERO

CAL 20 000 RANGE

CAL ZERO

ROKE

DIL SERVICES LTD.
CALGARY, ALBERTA

FILE NO.

COMPANY: ESSO RESOURCES LIMITED
WELL: 36 - 35
FIELD: ESSO RIVER VALLEY
LOCATION:
PROVINCE: NORTH WEST TERRITORIES
Permanent Datum: MEAN SEA LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING
Elev.: K.B. 1,000 / D.F. 998 / G.L. 970

Other Services: CBL

Date	31 JAN 1972		
Run No.	ONE		
Depth Driller	8214 M		
Depth Logger	8214 M		
Bottom Logged Interval	8214 M		
Top Logged Interval	1500 M		
Casing Driller	244.5 @ 1500 M		
Casing Logger	244.5 @ 1500 M		
Bit Size	222.25 MM		
Type Fluid in Hole	GEL CHEM		
Density	1.20		
Viscosity	53		
pH	10.5		
Fluid Loss	3.6 ML		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp.	0.22 @ 21°C		
Rmf @ Meas. Temp.	0.18 @ 21°C		
Rmc @ Meas. Temp.	0.28 @ 21°C		
Source of Rmf and Rmc	MEASURED		
Rm @ BHT	0.12 @ 82°C		
Time Since Circ.	36 HRS		
Max. Rec. Temp.	82°C		
Equip. Location	1 MILE		
Recorded By	G. MARTIN		
Witnessed By	MACLEOD		

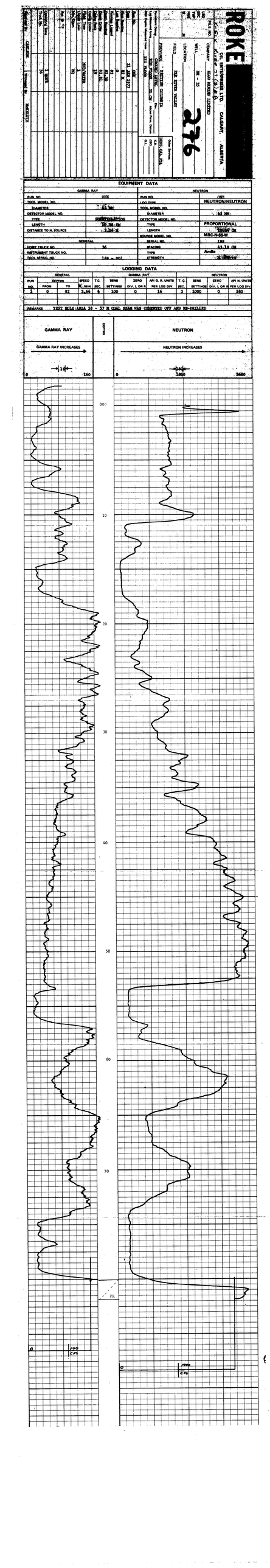
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	CDX	TOOL TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	44 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	39.96 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	1.524 M	LENGTH	39.96 CM
GENERAL		SOURCE MODEL NO.	MRC-N-55-W
HOIST TRUCK NO.	36	SERIAL NO.	168
INSTRUMENT TRUCK NO.		SPACING	43.18 CM
TOOL SERIAL NO.	168 - 001	TYPE	AmBe
		STRENGTH	2 CURIES

LOGGING DATA

RUN NO.	GENERAL FROM	GENERAL TO	SPEED M/MIN	T.C. SEC.	GAMMA RAY SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R.	GAMMA RAY API G. R. UNITS PER LOG DIV.	NEUTRON T.C. SEC.	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L OR R	NEUTRON API N. UNITS PER LOG DIV.
1	0	82	3.66	4	100	0	16	3	1000	0	160

REMARKS: TEST HOLE:AREA 38 - 57 M GRAY SHALE WAS CHECKED OFF AND RE-DRILLED



ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER-2-(A)-6

FILE NO.
SEC
TWP
RGE
W. M

COMPANY ELCO MINING LIMITED

WELL DH - 35

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL
Elev.
Log Measured From: RAD FLOOR 20 CM Above Perm. Datum
Well Depth Measured From: RAD FLOOR

Other Services:
GRN, TEL.
K.B.
CSG.
G.L.

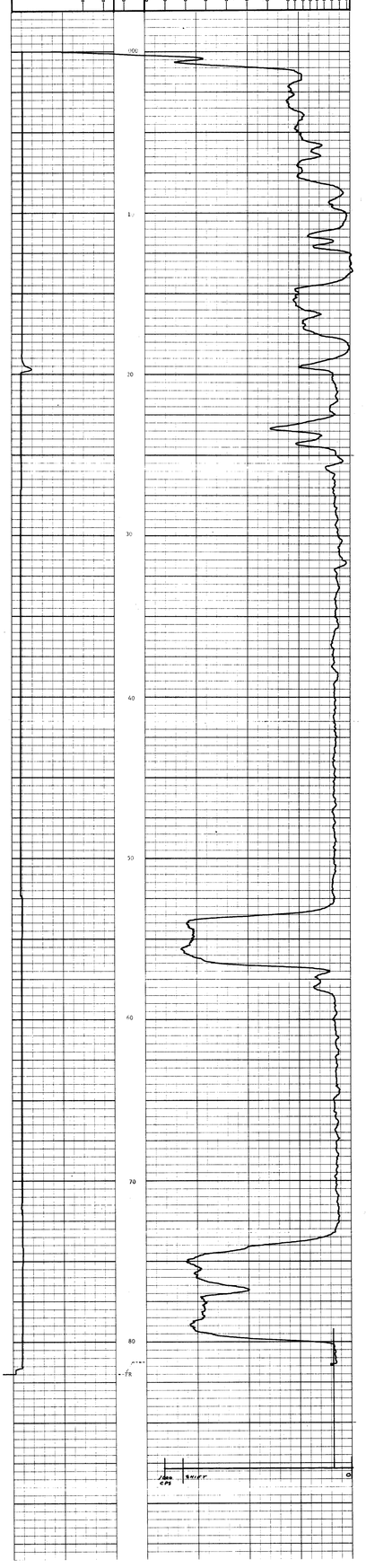
276

DH-35

Run No.	ONE
Date	31 JAN 1977
First Reading	81.5 M
Last Reading	0
Footage Logged	81.5
Depth Reached	82.42
Depth Driller	82.81
Casing Bottom	19
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	
Max. Chain	HQ
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	MACKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	81.5	3.66		CALIPER			3	1000	1.8R	54.55
2	0	82									

REMARKS: DENS TOOL # 457 TEST HOLE : AREA 53 - 57M COAL SEAM WAS CEMENTED OFF
CAL. TOOL # 587 AND RE-DRILLED



ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD.

CALGARY, ALBERTA

COMPANY: K-ELK KUFF 7-7-23-6 OIL ENTERPRISES LTD.

WELL: 7-7-23-6

FIELD: KEG RIVER, WEST

LOCATION: SEC. 7 TWP. 23 RGE. 6 W4M

PERMANENT DATUM: KB ELEV. 2276

LOG MEASURED FROM: KB 14 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: KB

ELEV.: K.B. 2276 D.F. G.L.

API SERIAL NO.

FILE NO.

Recorded By: GARNER

Witnessed By: MESSER

Run No.: ONE

Depth-Driller: 1001

Depth-Logger: 1001

Bottom Logged Interval: 994.3

Top Logged Interval: 300

Casing-Driller: 5 @ 300

Casing-Logger:

Bit Size: 7 7/8

Type Fluid in Hole: GEL CHEM

Dens.: 9.8

Visc.: 37

pH: 9.5

Fluid Loss: 8.0

Source of Sample: FLOWLINE

Rm @ Meas. Temp.: .80 @ 70°F

Rmf @ Meas. Temp.: .67 @ 70°F

Rmc @ Meas. Temp.: 1.00 @ 70°F

Source: Rmf: MEAS. Rmc: MEAS.

Rm @ BHT: .37 @ 120°F

Time Since Circ.: 3 HRS.

Max. Rec. Temp.: 120°F

Equip. No. & Location: 36 RED DEER

Recorded By: GARNER

Witnessed By: MESSER

GENERAL RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED IN FEET/MIN.	T.C. SEC.	GAMMA RAY SEND SETTINGS	GAMMA RAY ZERO DIV'S. OR #.	GAMMA RAY API G.R. UNITS PER LOG DIV.	SIDEWALL DENSILOG T.C. SEC.	SIDEWALL DENSILOG SEND SETTINGS	SIDEWALL DENSILOG ZERO DIV'S. OR #.	SIDEWALL DENSILOG CPS/ DIV
1	0	99.3	3.66								
2	0	100						3	1000	1.88	54.55

CALIPER

REMARKS: DENSITY TOOL # 457
CALIPER TOOL # 597

DEPTHS

CALIPER
(DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

00 10 20 30 40 50 60 70 80 90 00

END OF LOG

ROKE
GAMMA RAY NEUTRON LOG

ROKE OILFIELD SERVICES LTD.
FILE NO.
COMPANY ESSO RESOURCES LIMITED
WELL 1H - 56
LOCATION
FIELD ESS RIVER VALLEY
PROVINCE WESTERN CANADA
Other Services
SEC
TWP
RGE
M
Permanent Datum
Log Measured From
Drilling Measured From
Elev.: K.B.
D.F.
G.L.
Date
Run No.
Depth-Driller
Depth-Logger
Bottom Logged Interval
Top Logged Interval
Casing-Driller
Casing-Logger
Bit Size
Type Fluid in Hole
Dens. Visc.
pH Fluid Loss
Source of Sample
Rm @ °F
Rmf @ °F
Rmc @ °F
Source of Rmf & Rmc
Rm @ BHT
Time Circ. Stopped
Time Logger on Bottom
Max. Rec. Temp. °F
Equip. No. & Location
Recorded By CARLSON
Witnessed By MCKELVEY

CALGARY, ALBERTA

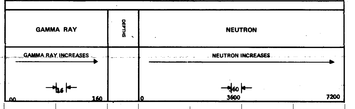
EQUIPMENT DATA

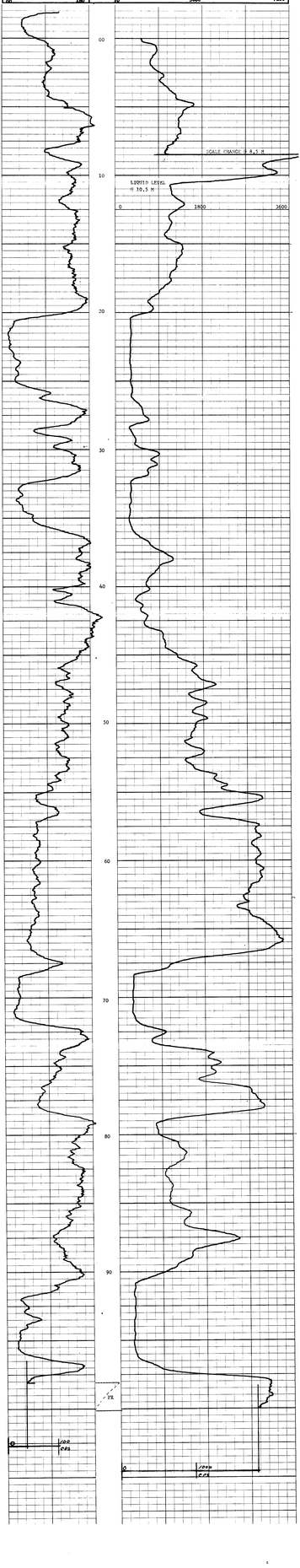
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	12.14 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.06 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-85-M
HOIST TRUCK NO.	36	SERIAL NO.	148
INSTRUMENT TRUCK NO.	36	SPACING	63.18
TOOL SERIAL NO.	146.001	TYPE	Amibe
		STRENGTH	1 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED 30M/M	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	8.5	3.66	4	100	0	16	3	1000	0	360
2	8.5	100	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE





DH-36

ROKE GAMMA RAY – RESISTANCE LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3) A.B

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY ELCO MINING LIMITED

WELL DH - 36

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: GRN, DENS, CAL, DEV

Permanent Datum GROUND LEVEL Elev.

Log Measured from RIG FLOOR 35 CM Above Perm. Datum

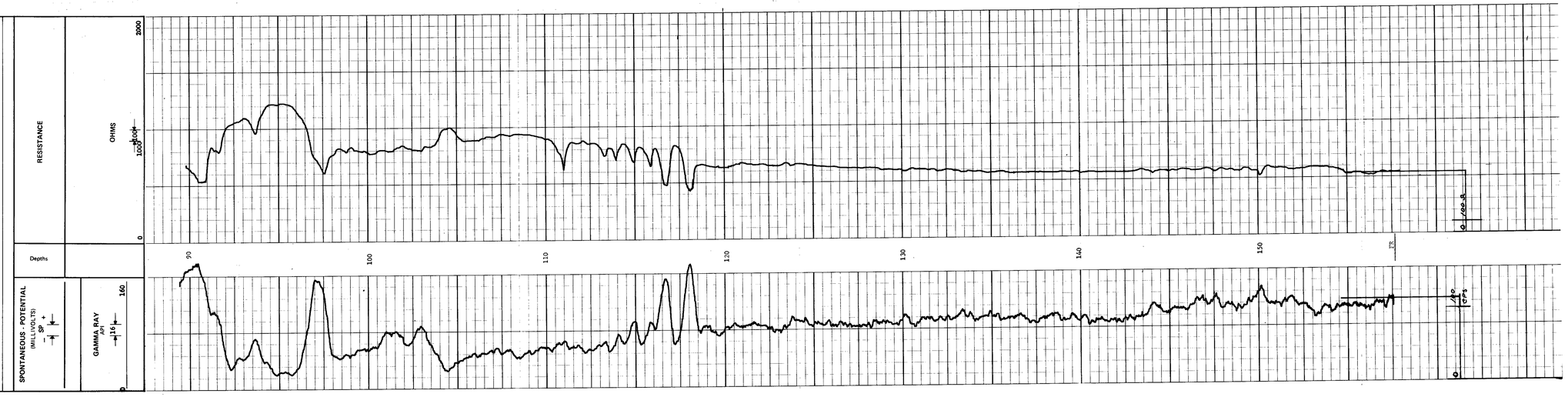
Well Depths Measured from RIG FLOOR

K.B.
CSG
G.L.
METRIC

Run. No.	ONE		
Date	11 FEB 1977		
First Reading	158 M		
Last Reading	100		
Footage Logged	58		
Depth Reached	158.10		
Depth Driller	158.60		
Casing Roke	5		
Casing Driller			
Fluid Type	REVERT/WATER		
Liquid Level	10.5		
Min. Diam.	HQ		
Rm @ °C	21.74 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON Witnessed By McKELVIE

Remarks GR/RES TOOL # 282 TEST RUN FOR GOLDER BRAWNER ASSOCIATES



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. K-ELK RIVER 77 (3) #8

COMPANY	ELCO MINING LIMITED
WELL	DH - 37
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W__M	
Other Services:	DENS

276

Permanent Datum	GROUND LEVEL	Elev.
Log Measured from	RIG FLOOR 27 CM Above Perm. Datum	K.B.
Well Depths Measured from	RIG FLOOR	CSG
		G.L.
		METRIC

Run. No.	ONE
Date	19 FEB 1977
First Reading	197.5 M
Last Reading	0
Footage Logged	197.5
Depth Reached	197.80
Depth Driller	198.25
Casing Roke	9
Casing Driller	
Fluid Type	WATER
Liquid Level	0
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR 10 MIN
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	169 001	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	GAMMA RAY T.C. SEC.	GAMMA RAY SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	NEUTRON T. C. SEC.	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	197.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE, PRODUCING HIGH VOLUME OF WATER

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → 16 (0 – 160)		NEUTRON INCREASES → 180 (0 – 1800 – 3600)

ROKE
SPECIAL DIVISION

C.S.G. SUPER SYCAMORE
CANADIAN SUPERIOR OIL OF CANADA LTD.

WELL	276
FIELD	ESO SOUR GAS UNIT
LOCATION	16 - 30 - 5 W 5
COUNTY	CALGARY
PROVINCE	ALBERTA

Elevations: K.B. 3,534 | D.F. | G.L. 3,519

Drilling Measured From: K.B.

Permanent Datum: SEA LEVEL

Date: 1-2-57 | Run No. ONE | Depth-Driller 10,000 | Depth-Logger 10,000 | Bottom Logged Interval 9,999 | Top Logged Interval 1,470

Type Fluid in Hole: GEL CHEM | Salinity, PPM Cl: 1,000 | Density: 10.0 | Level: FULL

Max. Rec. Temp. Deg. F: 180 | Estimated Bottom Hole Temp.: 180

Operating Rig Time: 12 HRS | Recorded By: R. MITCHELL | Witnessed By: MR. MOORE

Source of Sample: CIRC. | Rm @ Meas. Temp.: 0.50 @ 70°F | Rmf @ Meas. Temp.: 0.40 @ 70°F | Rmc @ Meas. Temp.: 0.75 @ 70°F

Source: Rmf: CALC. | Rmc: CALC. | Rm @ BHT: 0.30 @ 180°F

Time Since Circ.: 12 HRS | Time Logger at Bottom: 1 HR | Max. Rec. Temp. Deg. F: 180 | Equipment Number: 1 | Location: 16-30-5 W 5

Recorded By: R. MITCHELL | Witnessed By: MR. MOORE

Run No. | Bit | From | To | Size | Wt. | Grade | Thread | Type Fluid in Hole | Density | Viscosity | pH | Fluid Loss | Source of Sample | Rm @ Meas. Temp. | Rmf @ Meas. Temp. | Rmc @ Meas. Temp. | Source: Rmf | Source: Rmc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. Deg. F | Equipment Number | Location | Recorded By | Witnessed By

Run No.	Bit	From	To	Size	Wt.	Grade	Thread	Type Fluid in Hole	Density	Viscosity	pH	Fluid Loss	Source of Sample	Rm @ Meas. Temp.	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Source: Rmf	Source: Rmc	Rm @ BHT	Time Since Circ.	Max. Rec. Temp. Deg. F	Equipment Number	Location	Recorded By	Witnessed By
ONE	8 3/4"	SURF.	10,000	7"	23	J-55	8 RD	GEL CHEM	10.0				CIRC.	0.50 @ 70°F	0.40 @ 70°F	0.75 @ 70°F	CALC.	CALC.	0.30 @ 180°F	12 HRS	180	1	16-30-5 W 5	R. MITCHELL	MR. MOORE

CASING RECORD

	Size	Wt.	Grade	Thread	From	To
SURF.	7"	23	J-55	8 RD	SURF.	10,000

BIT RECORD

No.	Size	Make	Type
ONE	8 3/4"		

GENERAL

RUN NO.	FROM	TO	SPEED IN FEET PER HR.
1	0	100	2,00

GAMMA RAY

SCALE SET	FROM	TO	API IN UNITS PER 100 ACU.

RESISTIVITY (RESISTIVITY)

SCALE SET	FROM	TO
1	0	1,000
2	1,000	2,000
3	2,000	10,000

REMARKS

DENSITY RUN # 401 - - - HOLDING OPEN LOG WAS RUNNING OPEN TO TOOL USING CASED 10 OR AT 10' ABOVE. - CASED HOLE DEN AND NEUTRONS RAN INSIDE OF CASING DETAIL. - 4" PORTION ATTACHED RAN IN OPEN HOLE. - PASSING LOG WAS CARRIED THROUGH TO INTIAL SET.

CALIPER
(DIAMETER - CENTIMETERS)

10,14 11,34 10,32 10,40 10,18 10,14

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3.0

FEET

10,000
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200

END OF LOG

ROKE

ROKE OIL DEVELOPMENTS LTD.
CALGARY
ALBERTA

PRODUCTION LOGGING SERVICES

276

FILE NO.
WELL
COMPANY: ROKE OILS LTD.
LOCATION: PEACE RIVER AREA
FIELD: BEAR FLAT VALLEY
PROVINCE: ALBERTA
Other Services: DUAL INDUCTION LATEROLOG - MICRO SFL - BOREHOLE COMPENSATED SONIC - GAMMA RAY - CALIPER
Permanent Datum: GROUND LEVEL
Elev.: K.B. 1,970 ft. / D.F. ft. / G.L. 1,970 ft.
Log Measured From: K.B. 6 ft. above Perm. Datum
Drilling Measured From: K.B.
Date: 24-03-72
Run No.: ONE
Depth-Driller: 11,130 ft.
Depth-Logger: 11,130 ft.
Bottom Logged Interval: 11,122 ft.
Top Logged Interval: 11,000 ft.
Type Fluid in Hole: SALT WATER GEL
Salinity, PPM Cl: 70,000
Density: 10.0
Viscosity: 70
Fluid Loss: 10 cc/30 min
Source of Sample: CIRCULATION
R_m @ Meas. Temp.: 0.20 @ 70°F
R_mf @ Meas. Temp.: 0.15 @ 70°F
R_mc @ Meas. Temp.: 0.30 @ 70°F
Source of R_mf & R_mc: CALCULATED
R_m @ BHT: 0.13 @ 180°F
Time Since Circ.: 3 HRS.
Time on Bottom: 4 HRS.
Max. Rec. Temp.: 180°F
Equip. No. & Location: 1009 - 1009
Recorded By: GOODSON
Witnessed By: SWEETMAN

Remarks: BOREHOLE GEOMETRIC CALIPER - 32R - CENTRALIZER TYPE 1/3
CORRECTED FIELD SCALE(S): R - 2000 OHMS
SONIC CORRECTED FOR HOLE SIZE - RAYMER-HUNT-GARDNER
R TO S RATIO ON BOREHOLE FREE, FLUSHED ZONES AND GAS

Tension

RESISTIVITY OHMS METERS

RESISTIVITY OHMS METERS

0.2 | 2 | 20 | 200 | 2000

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

LOG ZERO
CAL 64 .200 RANGE
CAL ZERO

LOG ZERO
CAL ON .500 RANGE
CAL ZERO

ROKE OIL ENTERPRISES LTD.
GAMMA RAY NEUTRON LOG
CALGARY ALBERTA

FILE NO. 2224-C2-W4
Amended
WELL NO. 1
FIELD KEG RIVER
LOCATION 16 - 35 - 6 - W4
COUNTY/PROV. BIG VALLEY
COMPANY ROKE OIL ENTERPRISES LTD.

276

Other Services: GAMMA RAY NEUTRON

Permanent Datum: GROUND LEVEL
Elev.: K.B. 1745
Log Measured From: K.B. 9 FT. ABOVE PERM. DATUM
Drilling Measured From: K.B.

Date: 1-3-72
Run No.: ONE
Depth-Driller: 1800
Depth-Logger: 1800
Bottom Logged Interval: 1800
Top Logged Interval: 1745
Casing-Driller: 8 5/8 @ 1745
Casing-Logger: 1745
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Dens. Visc.: 9.2 50
pH: 9.5
Fluid Loss: 8.4
Source of Sample: MUD PIT
R_m @ Meas. Temp.: .95 @ 70°F
R_mf @ Meas. Temp.: .75 @ 70°F
R_mc @ Meas. Temp.: .45 @ 70°F
Source: R_mf: MEASURED R_mc: CALCULATED
R_m @ BHT: .45 @ 120°F
Time Since Circ.: 8 HRS.
Max. Rec. Temp.: 120°F
Equip. Location: 3 - 6 - W4
Recorded By: GRIFFITH
Witnessed By: MR. ROOK

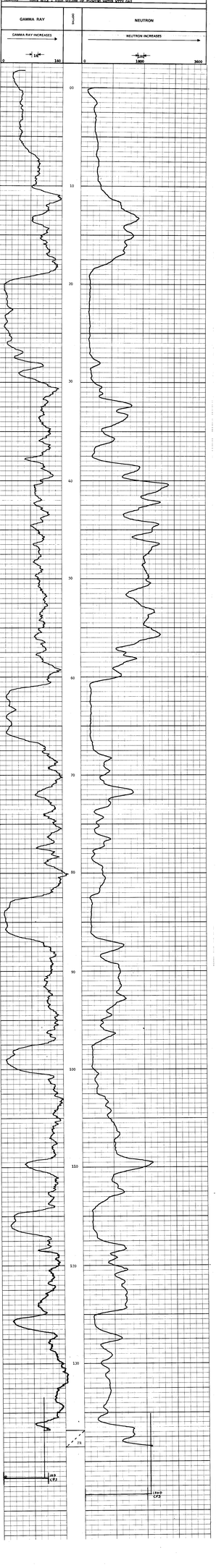
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	16.14 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	1.04 M	LENGTH	16.14 CM
		SOURCE MODEL NO.	MRC-N-50-M
GENERAL		SERIAL NO.	353
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Amills
TOOL SERIAL NO.	325 - 002	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTH FROM	DEPTH TO	SPEED FPM	T.C. SEC	GAMMA RAY SENS SETTING	ZERO DIV'S	API G. R. UNITS PER DIV.	T.C. SEC	NEUTRON SENS SETTING	ZERO DIV.	API N. UNITS PER DIV.
1	0	139.5	3.66	1	100	0	16	3	500	0	100

REMARKS OPEN HOLE + 9500 VOLUME OF FLUID'NG WATER WITH GAS



ROKE

ROKE HOLDINGS LTD.
SIDEWALL DENSILOG
CALGARY, ALBERTA

FIELD	SEE ROKE VALLEY
COUNTY	
LOCATION	
WELL	276
COMPANY	ROKE HOLDINGS LTD.
SEC 36	TWP 33
RGE W5M	

Other Services: CBL, VDL, GR

Elev. KB 3976 GL 3966 DF 3975

Date Run: 13 DEC 1976
Time Log Started: 1:30 AM
Time Log Finished: 1:30 AM
Depth Driller: 1138.5
Depth Logger: 1138.5
Bottom Log Interval: 1136.30
Top Log Interval: 0
Casing Driller: 0
Casing Logger: 0
Bit Size: 7.875
Type Fluid in Hole: FRESH WATER
Density: 8.4
Viscosity: 30
Fluid Loss: 0
Source of Sample: FLOWING
Rm @ Meas. Temp.: 0.6 @ 60
Rmf @ Meas. Temp.: 0.4 @ 60
Rmc @ Meas. Temp.: 0.3 @ 60
Source: Rmf Rmc: MEASURED
Rm @ BHT: 0.4 @ 60
Time Circ. Stopped: 1:00 AM
Equip. No. Location: 2 ROKE
Recorded By: GARDEN
Witnessed By: NEFFLETT

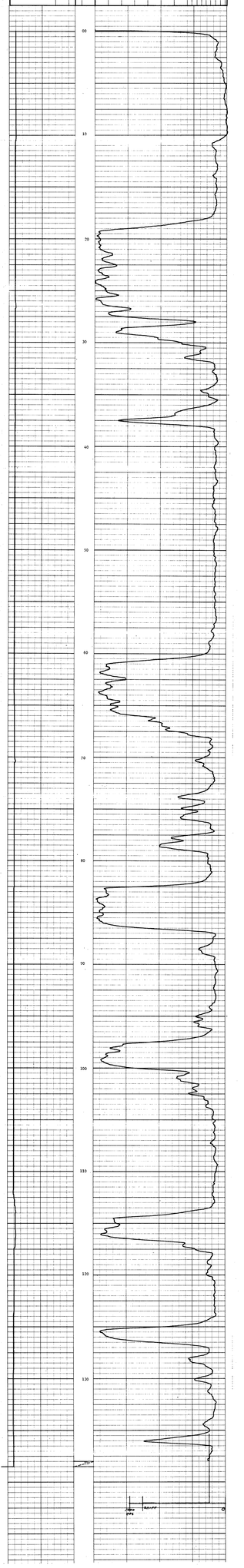
GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN	T.C. SECS	ZERO DIV'S OR A	API-GR. UNITS PER CALIBR. DIV		T.C. SECS	SENS. DIV'S OR A	ZERO DIV'S OR A	CPS/DIV
1	0	138	5.66					3	1000	2 R	68.43
2	0	138.5		CALIPER							

REMARKS: DENS TOOL # 420 FLOWING WATER AND GAS AT A HIGH VOLUME
CAL TOOL # 587

CALIPER (DIAMETER - CENTIMETERS)
30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

DH-39

FILE NO. K-ELK RIVER 77 (3) A-B

LSD / SEC / TWP / RGE / W ___ M

COMPANY: ELCO MINING LIMITED
WELL: DH - 39
LOCATION: 276
FIELD: ELK RIVER VALLEY
PROVINCE: BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum: GROUND LEVEL Elev. ___ K.B. ___
Log Measured from: RIG FLOOR 70 CM Above Perm. Datum CSG ___
Well Depths Measured from: RIG FLOOR G.L. ___

Run. No.	ONE
Date	9 DEC 1976
First Reading	173 M
Last Reading	0
Footage Logged	173
Depth Reached	173.92
Depth Driller	174.46
Casing Roke	11
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Operating Time	1 HOUR
Truck No.	36

Recorded By: CARLSON Witnessed By: McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	CPS/DIV
1	0	173	3.66					3	1000	2 R	68.43
2	0	173.5			CALIPER						

REMARKS: DENS TOOL # 420
CAL TOOL # 587 OPEN HOLE

CALIPER (DIAMETER - CENTIMETERS)
10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY API

DEPTHS

BULK DENSITY (GRAMS/CC)

ROKE OIL ENTERPRISES LTD.

GAMMA RAY-NEUTRON LOG

GRAHAM NO. 2 SOUTH WATER

GRAHAM FIELD

ALBERTA

Other Services	
Permanent Datum	GROUND LEVEL
Elevation	2,276
Log Measured From	K.B.
Drilling Measured From	K.B.
Elevation K.B.	2,276
Elevation D.F.	
Elevation G.L.	2,265
Date	3-6-74
Run No.	ONE
Depth-Driller	3,105
Depth-Logger	3,101
Bottom Logged Interval	3,101
Top Logged Interval	1,800
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1,000
Density	9.5
Level	FULL
Max. Rec. Temp. Deg. F.	95
Operating Rig Time	6 HRS
Recorded By	D. SCHMIDT
Witnessed By	MR. BOYCE

Sec. 2 Twp. 30 N Rge. 3 W

Permanent Datum: GROUND LEVEL Elev. 2,276 ft. above Perm. Datum

Log Measured From: K.B. 11 ft. above Perm. Datum

Drilling Measured From: K.B.

276

Other Services

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
SONDE NO.	32 YC	LOG TYPE	
DETECTOR MODEL NO.		TOOL MODEL NO.	
TYPE	SCINTILLATION	SONDE NO.	30 YC
LENGTH	16.54 CM	DETECTOR MODEL NO.	
DISTANCE TO N. SOURCE	7.05 M	TYPE	PROPORTIONAL
		LENGTH	53.34 CM
		SOURCE MODEL NO.	SRSC-N-59
		SERIAL NO.	453
SPEED TRACK NO.	96	SPACING	43.18 CM
INSTRUMENT TRACK NO.		Am Be	
TOOL SERIAL NO.	125 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY			NEUTRON			
RUN	DATE	SPEED	T.C.	SONDE	ZERO	API % A UNITS	T.C.	SONDE	ZERO	API % UNITS
NO.	TIME	M/MIN. FT/MIN.	SETTING	SETTING	POS. LOG RT.	NEG. LOG RT.	SEC.	SETTING	POS. LOG RT.	NEG. LOG RT.
1	3-6-74	7.62 25	100	0	16		2	300	0	180
1	3-6-74	7.62 25	100	0	16		2	300	0	180

REMARKS: CORE SLB

GAMMA RAY

GAMMA RAY INCREASES

0 150

NEUTRON

NEUTRON INCREASES

1400 3000

FEET

60

70

80

90

100

110

120

130

140

150

160

170

ROKE

ROCKY MOUNTAIN LTD.

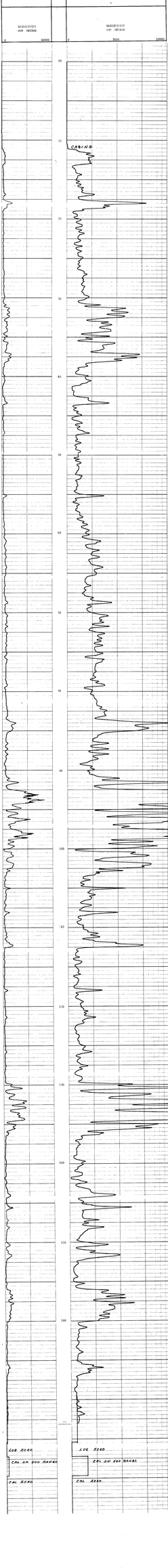
CALGARY, ALBERTA

WELL	30 - 7H
FIELD	GLEN ROSS
LOCATION	
PROVINCE	ALBERTA
COUNTRY	CANADA
DATE	30 - 7 - 79
RUN	1
MAX. DEPTH	276
LOG INTERVAL	0 - 276
CASING	9 5/8 @ 13
BIT	8
MUD	
RIG	
Time Log Started	
Time Log Finished	
Recorded By	
Witnessed By	

Elev. Perm. Datum		Elev. K.B.	
Log Measured From		Elev. D.F.	
Drill Measured From		Elev. G.L.	
Date	30 - 7 - 79	Depth Driller	276
Depth Logger	276	Depth Logged	276
Bottom Log Interval	276	Top Log Interval	0
Casing Driller	9 5/8 @ 13	Casing Logger	
Bit Size	8	Type Fluid in Hole	
Dens. / Visc.			
Max. Rec. Temp.			
Equip. Location			
Recorded By		Witnessed By	

Remarks

SONIC CEMENT BOND LOG , RUN 1 , PROG TYPE 111
GAMMA RAY RUNNING AT ABANDONED TO 3.75 DEGS
NO COLLARS , PRIMARY GO ABANDONED TO 3.75 DEGS
0 TO 1 MCS/ 50 DEGS/MM FPD



ROKE

POOHEED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK Roke 77(3)B

FILE NO.

COMPANY ELCO MINING LIMITED

WELL DE - 40

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: GRN, NGR-CAL, DRY

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	KBM 25.0 ft	40 CM Above Perm. Datum	DEG.
Total Depth Measured from	KBM 25.0 ft		G.L.

Run. No.	ONE
Date	6 DEC 1976
First Reading	138.36
Last Reading	11
Passage Legend	125
Depth Reached	136.92
Depth Driller	137.25
Spring Rate	11
Spring Driller	
Bend Type	NEW/WATER
Upward Level	1
Min. Diam.	30
Bm @ °C	16.67 @ 25
Operating Time	1 HOUR
Trace No.	36

Recorded By CARLSON Witnessed By MARKETTE

Remarks: SCALE CHANGES: 1 INCH = 25 FOOD TYPE 111 & 1 INCH = 100 FOOD TYPE 1 INCH = 1 INCH = 100 HEADER PRIMARY FOR ADDED TO 3 1/2 DIVE & 20 1 METER OF BOUNDARY FOR

Depths

RESISTIVITY OHM METERS

4000

3000

0

CASING

LOG XCRR

CAL. 200 200 MAGNE

CAL. XCRR

00 10 20 30 40 50 60 70 80 90 100 110 120 130 75

RESISTIVITY OHM METERS

14000

0

LOG XCRR

CAL. 200 200 MAGNE

CAL. XCRR

ROKE

Other Services: GAMMA RAY

Formation Tested: NONE

Permanent Datum: GROUND LEVEL — Elev.: K.B. 2744 ft. — D.F. — G.L. 2731 ft.

Log Measured From: K.B. 13 ft. Above Perm. Datum — Rig: 26

Drilling Measured From: K.B.

	No. 1	No. 2
Date	4-JAN-74	
Run No.	ONE	
Depth-Driller	2744	
Depth-Logger	2744	
Bottom Logged Interval	2744	
Top Logged Interval	1350	
Type Fluid in Hole	WATER	
Salinity, PPM Cl	11,000	
Density	8.9	
Level	FULL	
Max. Rec. Temp. Deg. F.	98	
Operator's Max. Rec. Temp.		
Equipment No. & Location	1 SEDALIA	
Recorded By	K. SMITH	
Witnessed By	MR. BOWER	

CASING RECORD

	Size	Wgt.	From	To
Surface String	9 5/8"	36#	0	1350
Prod. String	7"	23#	0	2744
Liner				
Liner				

Run No. ONE — Type Log GAMMA RAY NEUTRON — Depth-Driller 2744 — Depth-Logger 2744 — Bottom Logged Interval 2744 — Top Logged Interval 1350 — Type Fluid in Hole WATER — Salinity, PPM Cl 11,000 — Density 8.9 — Level FULL — Max. Rec. Temp. Deg. F. 98 — Equipment No. & Location 1 SEDALIA — Recorded By K. SMITH — Witnessed By MR. BOWER

Run No. ONE — Bit From 0 — Bit To 2744 — Size 7 7/8" — Type Fluid in Hole WATER — Dens. 8.9 — Visc. 38 — pH 10 — Fluid Loss — Source of Sample CIRC. — R_m @ Meas. Temp. — R_mf @ Meas. Temp. — R_mc @ Meas. Temp. — Source of R_mf & R_mc — R_m @ BHT — Time Since Circ. 4 HRS — Max. Rec. Temp. Deg. F. 98 — Equipment No. & Location 1 SEDALIA — Recorded By K. SMITH — Witnessed By MR. BOWER

Location: K-5-C, 6-11-W5M, 7-7-23-W5M — Well: ROKE ET AL HZ ROKE 16-7-23-5 — Field: GADSBY — County: — State: ALBERTA

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10-3/4 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.05 M	LENGTH	13.34 CM
		SOURCE MODEL NO.	MRC-N-66-M
GENERAL		SERIAL NO.	261
JOINT TRUCK NO.	34	SPACING	43.18 CM
DIETHERIST TRUCK NO.		TYPE	Amrb
TOOL SERIAL NO.	133,002	STRENGTH	5 CURIES

LOGGING DATA

RUN NO.	GENERAL FROM	TO	SPEED M/MIN.	F.C. SETTING	SENS. SETTING	GAMMA RAY ZERO	API G. R. UNITS DIV. L.CHK	RES. LOG DIV.	T.C. SEC.	NEUTRON SENS. METHANE	NEUTRON ZERO	NEUTRON API N. UNITS DIV. L.CHK	RES. LOG DIV.
1	0	137	5.66	4	100	0	16		3	500	0	180	

REMARKS: OPEN HOLE

GAMMA RAY — NEUTRON

GAMMA RAY INCREASES → 0 — 14 — 140

NEUTRON INCREASES → 0 — 1350 — 3600

METRES

00 10 20 30 40 50 60 70 80 90 100 110 120 130

75

0 — 100 — CPS

0 — 1000 — CPS

DH-40

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3)B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ___ M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 40 **276**
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV

Permanent Datum	GROUND LEVEL	Elev.	
Log Measured from	RIG FLOOR	40 CM Above Perm. Datum	
Well Depths Measured from	RIG FLOOR		
K.B.		CSG	
G.L.			

Run. No.	ONE		
Date	4 DEC 1976		
First Reading	136 M		
Last Reading	0		
Footage Logged	136		
Depth Reached	136.92		
Depth Driller	137.25		
Casing Roke	11		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	1		
Min. Diam.	HQ		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON | Witnessed By McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	136	3.66					3	1000	2R	68.43
2	0	136.5			CALIPER						

REMARKS DENS TOOL # 420
CAL TOOL # 587
OPEN HOLE

CALIPER (DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG

CALIPER

FILE NO. K-ELK RIVER 77(3) #8

LSD
SEC
TWP
RGE
W M

COMPANY ELCO MINING LIMITED

WELL DH - 41

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

276

Other Services: GRN, FBL, DEV

Permanent Datum GROUND LEVEL Elev.
Log Measured from GROUND LEVEL Above Perm. Datum
Well Depths Measured from GROUND LEVEL

K.B.
CSG
G.L.

METRIC

Run. No.	ONE
Date	19 JAN 1977
First Reading	181.5 M
Last Reading	0
Footage Logged	181.5
Depth Reached	182.42
Depth Driller	183
Casing Roke	6.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	00
Min. Diam.	HQ
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	181.5	3.66					3	1000	1.8R	54.55
2	0	182			CALIPER						

REMARKS DENS TOOL # 457 OPEN FLOWING HOLE
CAL TOOL # 587

CALIPER
(DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

DH-41

FILE NO. K-ELK RIVER 77 (3) #8

276

COMPANY	ELCO MINING LIMITED
WELL	DH - 41
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W M	
Other Services:	DEN-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B. / CSG / G.L.	
	METRIC
Run No.	ONE
Date	19 JAN 1977
First Reading	182 M
Last Reading	0
Footage Logged	182
Depth Reached	182.30
Depth Driller	183
Casing Roke	6.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	169 - 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	182	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN FLOWING HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
16		180
0 — 160		0 — 1800 — 3600

ROKE

POSTED BANK LAG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

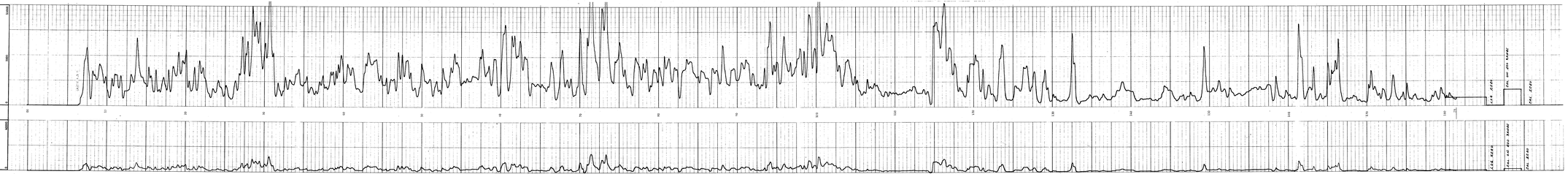
KLEIN CREEK 75 (3) 88

FILE NO.	
LAG	
BAG	
PAGE	
BY	
TO	
COMPANY	ELGO MEDICAL LIMITED
WELL	36 - 42
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	WESTERN COLUMBIA
Elevation Datum	GROUND LEVEL
Log Measured From	GROUND LEVEL
Well Depths Measured From	GROUND LEVEL
Other Services	GAM, MEM-CAL, MEV
Drill Rate	
Drill Rate Scale	
Drill Rate Scale	
	METRIC

Run No.	ONE
Date	19 JAN 1977
Final Depth	151.5 M
Last Depth	5.5
Formed Length	173
Depth Sampled	147.11
Depth Drilled	143
Casing Rate	5.5
Casing Drilled	
Fluid Type	MUD/WATER
Mud Level	0
Min. Depth	20
Run # 5	18.18 M 22
Operating Time	1 MIN
Truck No.	36
Recorded By CARLSON	Witnessed By NUEBLITER

Results

SURGE CHAMBER DRAWN AND PRESSURE TO ENGINE
ENGINE FILL MAINTAINED AT 1/2 HOUR
SOIL TOOL CHAMBER DRAWN AND PRESSURE TO 3/4 HOUR
& TO 1 HOUR ENGINE FILL



ROKE

SIDEWALL DENSILOG

COMPANY

K. E. K. OIL ENTERPRISES LTD.

CALGARY, ALBERTA

WELL: 2 - 24 - 32 - 2W4

FIELD: REDWATER

COUNTY, PROV.: STRATHCONA, ALBERTA

LOCATION: SE 24 - 52 - 20 W4

OTHER SERVICES: RESISTIVITY, MICROLOG

PERMANENT DATUM: GROUND LEVEL

ELEV.: K.B. 2176 D.F. G.L. 2171

LOG MEASURED FROM: K.B. 5 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: K.B.

DATE: 7-24-82

RUN NO.: ONE

DEPTH-DRILLER: 2345

DEPTH-LOGGER: 2345

BTM. LOG INTERVAL: 2343

TOP LOG INTERVAL: 1900

CASING-DRILLER: 8 5/8 @ 1900

CASING-LOGGER: 1900

BIT SIZE: 7 7/8

TYPE FLUID IN HOLE: GEL CHEM

DENSITY: 9.5

VISCOSITY: 45

PH: 9.5

FLUID LOSS: 5.4

SOURCE OF SAMPLE: MUD PIT

RM @ MEAS. TEMP.: 1.1 @ 70°F

RMF @ MEAS. TEMP.: .55 @ 70°F

RMC @ MEAS. TEMP.: 1.65 @ 70°F

SOURCE: RMF: MEAS. RMC: MEAS.

RM @ BHT: .55 @ 120°F

TIME SINCE CIRC.: 5 HRS.

MAX. REC. TEMP.: 120°F

EQUIP. NO. & LOCATION: 3376 - 3378

RECORDED BY: K. BOWEN

WITNESSED BY: MR. RUSSELL

RUN NO.	GENERAL DEPTH FROM	GENERAL DEPTH TO	SPEED M/MIN	T.C. M SEC	GAMMA RAY SENS SETTING	GAMMA RAY ZERO API U.R. / DIV.	GAMMA RAY API U.R. UNITS PER LOG DIV.	SIDEWALL DENSILOG T.C. SEC.	SIDEWALL DENSILOG SENS SETTING	SIDEWALL DENSILOG ZERO DIV. / DIV.
1	0	1423	3.66					3	1000	2 R

REMARKS: RUN TOOL # 420
CAL TOOL # 349

OPEN HOLE

CALIPER
(DIAMETER = CENTIMETERS)

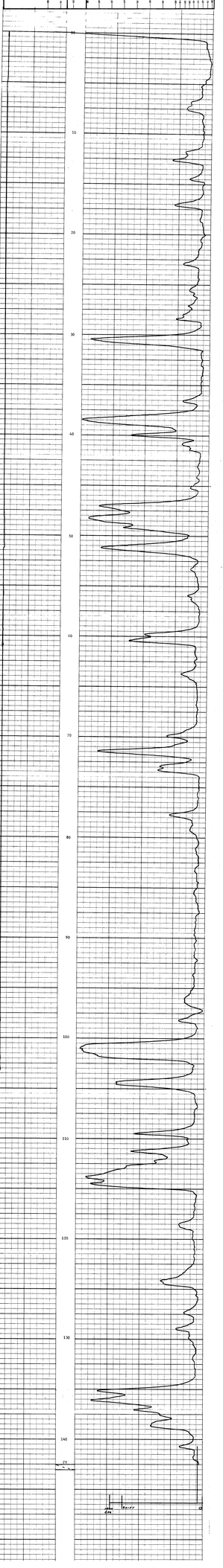
6 1/4 | 6 1/2 | 6 3/4 | 7 | 7 1/4 | 7 1/2 | 7 3/4 | 8 | 8 1/4 | 8 1/2 | 8 3/4 | 9

GAMMA RAY
API

0 | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150

BULK DENSITY
(GRAMS/CC)

2.95 | 2.90 | 2.85 | 2.80 | 2.75 | 2.70 | 2.65 | 2.60 | 2.55 | 2.50 | 2.45 | 2.40 | 2.35 | 2.30 | 2.25 | 2.20 | 2.15 | 2.10 | 2.05 | 2.00 | 1.95 | 1.90 | 1.85 | 1.80 | 1.75 | 1.70 | 1.65 | 1.60 | 1.55 | 1.50 | 1.45 | 1.40 | 1.35 | 1.30 | 1.25 | 1.20 | 1.15 | 1.10 | 1.05 | 1.00 | .95 | .90 | .85 | .80 | .75 | .70 | .65 | .60 | .55 | .50 | .45 | .40 | .35 | .30 | .25 | .20 | .15 | .10 | .05 | 0



ROKE OIL (ENTERPRISES) LTD.
CALGARY, ALBERTA

F.C.P.L. OIL TOOLS LTD.

FILE NO. 922

COMPANY: GULF OILS (CANADA) LIMITED
WELL: No. 43
FIELD: BEAVERHILL LAKE
LOCATION: SW. 4-57-19-W4M
PROVINCE: ALBERTA
COUNTY: STRATHCONA
Other Services: NONE
Permanent Datum: GROUND LEVEL
Elev.: K.B. 2175
D.F.
G.L.
Log Measured From: K.B. 10 FT. ABOVE PERM. DATUM
Drilling Measured From: K.B.
Date: 3-DEC-1975
Run No.: ONE
Depth-Driller: 2134
Depth-Logger: 2134
Bottom Logged Interval: 2134
Top Logged Interval: 1400
Type Fluid in Hole: GEL CHEM
Salinity, PPM Cl: 1,500
Density: 9.5
Level: FULL
Max. Rec. Temp. Deg. F.: 90
Equipment No.: 36
Recorded By: GARVIN
Witnessed By: MERRITT

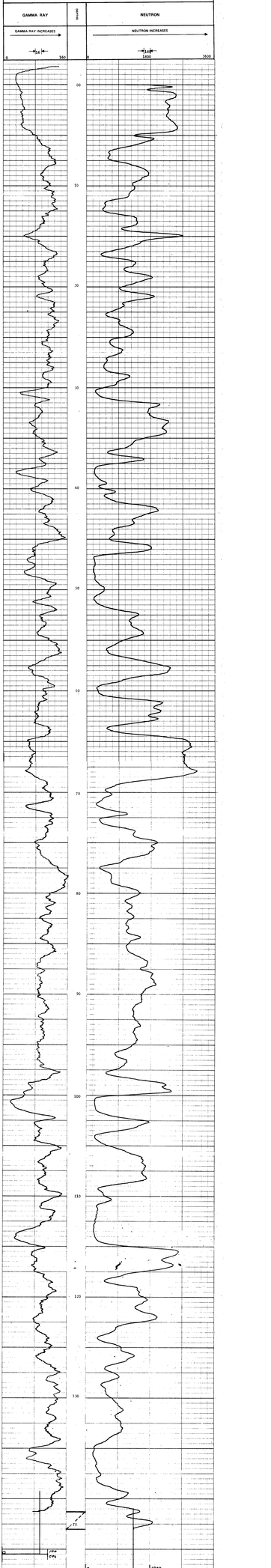
EQUIPMENT DATA

GAMMA RAY	ONE	NEUTRON	ONE
RUN NO.		RUN NO.	
TOOL, MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	52.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC N-65-M
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	45.18 CM
INSTRUMENT TRUCK NO.		TYPE	Amba
TOOL SERIAL NO.	123 - 002	STRENGTH	3 CURIES

LOGGING DATA

Run No.	GENERAL — DEPTHS FROM	TO	SPEED M./HR.	T.C. SEC.	GAMMA RAY — SENS SETTINGS	BIAS	API G. R. UNITS PER LOG DIV.	NEUTRON — T.C. SEC.	SENS SETTINGS	BIAS	API N. UNITS PER LOG DIV.
1	0	1143	1,400	6	100	0	16	6	500	0	100

REMARKS: 2ND'S GR/LP



ROKE

PROPOSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (a) 08

FILE NO.

LSD
SEC
TWP
RGE
W M

COMPANY ELGO MINING LIMITED

WELL DH - 42

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: BHV, CAL, CRV, DEV

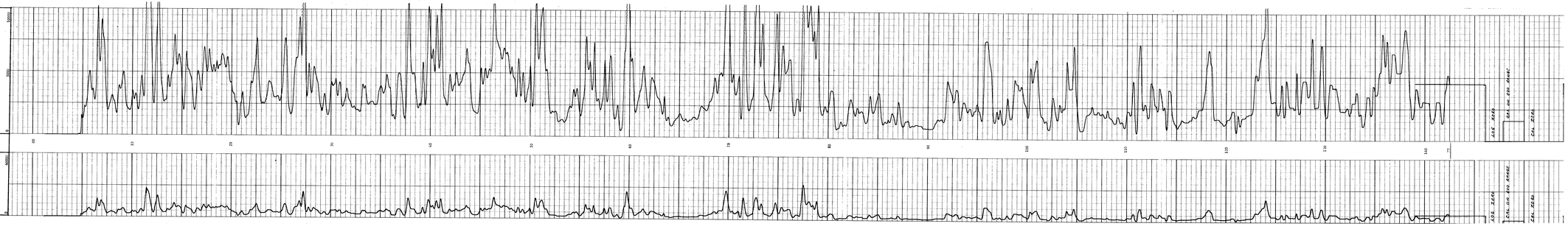
Permanent Datum GROUND LEVEL Elev.
Log Measured from RIG FLOOR 42 ON Above Perm. Datum
Drill Depth Measured from RIG FLOOR

K.B.
GRD
G.L.

Run. No.	ONE
Date	30 NOV 1976
First Reading	142.3 M
Last Reading	5
Footage Logged	137.5
Depth Reached	142.81
Depth Driller	143.96
Casing Rake	5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	5
Min. Diam.	HQ
Rm. @ °C	25.0 @ 25
Operating Time	1 HOUR
Truck No.	36

Recorded By CARLSON Witnessed By NAKELVIE

Remarks: SCIENCE GEOPHYSICAL PARTNER 4325 PROVO TYPE III
GROUND LEVEL BLANCE 1500 LINE
500 GAMMA/CM BLANCE FOR ASSISTED 20 3.29 KEV
8 TO 1 MATCH OF GEOPHYSICAL PROV



ROKE

SIDEWALL DENSILOG

CALIPER

CALGARY, ALBERTA

Recorded By: GARAGHTY

Witnessed By: MERRITT

Run No.	1
Date	3-4-75
Type Log	DENSILOG
Depth Driller	139
Depth Logger	139.2
Bottom Logged Interval	139
Top Logged Interval	33
Casing Driller	9 5/8 @ 33
Casing Logger	33
Bit Size	7 7/8
Type Fluid in Hole	GEL CHEM
Density	10.2
Viscosity	50
Fluid Loss	7.2
Source of Sample	CIRC
Rm @ Measured Temp	.91 @ 70°F
Rmf @ Measured Temp	.76 @ 70°F
Rmc @ Measured Temp	.95 @ 70°F
Source of Rmf and Rmc	CALC
Rm @ BHT	.61 @ 120°F
Time Since Circ.	12 HRS
Max. Rec. Temp. Deg. F	120°F
Equipment Number	3
Location	5-36-27-W4
Recorded By	GARAGHTY
Witnessed By	MERRITT

COMPANY: ELDO OCCID. LIMITED

WELL: 16-5-43

FIELD: RED RIVER VALLEY

LOCATION:

COUNTY, PROVINCE: WESTERN CANADA

Permanent Datum	GROUND LEVEL
Elevation	2976
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elevation	K.B. 2976
	D.F.
	G.L.

LOG: FILE NO.

API: SEC. TWP. RGE.

2976

GENERAL				GAMMA RAY			SIDEWALL DENSILOG		
RUN NO.	DEPTH FROM	DEPTH TO	SPEED FT/MIN	T.C. SECS	SENS SETTINGS	ZERO DIVS. ON R	T.C. SECS	SENS SETTINGS	ZERO DIVS. ON R
1	0	139	3.46			API G.R. UNITS PER DIVISION	3	1000	2 R
2	0	139.2		CALIPER					

CPS/DIV: 68.43

REMARKS: RUN1 TOOL # 420 OPEN HOLE
CAL TOOL # 387

CALIPER (DIAMETER - CENTIMETERS)

10.16	15.24	20.32	25.40

DRIFT: 30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	.9

00
10
20
30
40
50
60
70
80
90
100
110
120
130
-EOL-

RUN 1
RUN 2

ROKE

GAMMA RAY NEUTRON LOG

K-ELK ENERGY LTD.
OIL DEVELOPMENTS LTD.
CALGARY, ALBERTA

COMPANY: ROKE KETCH CREEKED
WELL: 16-19
FIELD: DEEP RIVER VALLEY
LOCATION: 16-19
PROVINCE: NORTH WEST TERRITORIES
FILE NO.
LOG NO.
RUN NO.
PERM. DATUM
ELEV.
K.B.
D.F.
G.L.

276

Recorded By: CARLSON
Witnessed By: MCKEATES

Depth Control Tie Line No.	
Log Measured From	K.B. 16.00 M
Drilling Measured From	K.B.
Bit No. & Type	1
Mud Type	GEL
Mud Density	1.10
Mud Viscosity	40
Mud Resistivity	2.7 OHM 33°F
Mud Cake Resistivity	2.2 OHM 33°F
Source Strength	130 MC
Source Serial No.	11
Date	12-3-74
Time	1:30 P.M.
Max. Rec. Temp.	33°F
Equipment No.	36
Location	115 - 002
Recorded By	CARLSON
Witnessed By	MCKEATES

RUN 1 — 1800 RPM — 1000 CPS

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATOR	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO R. SOURCE	2.06 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC N-58-W
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	41.18 CM
INSTRUMENT TRUCK NO.		TYPE	Amilo
TOOL SERIAL NO.	115 - 002	STRENGTH	1 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTHS FROM	TO	SPEED M/MIN	T.C. SEC	GAMMA RAY SENS SETTINGS	ZERO API G. R. UNITS DIV. L.OR.R.	NEUTRON T.C. SEC	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L.OR.R.	NEUTRON API N. UNITS PER LOG DIV.
1	0	139.3	3.66	4	100	0	16	3	500	0	100

REMARKS: OPEN HOLE

GAMMA RAY — SCALE — NEUTRON

GAMMA RAY INCREASES → 0 — 160

NEUTRON INCREASES → 1800 — 0 — 3600

00 10 20 30 40 50 60 70 80 90 100 110 120 130

FS

100 CPS

1000 CPS

ROKE

PROCESSED SEPT 1985

K-B-K OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. 2215-A

COMPANY ZEUS ACCESS LIMITED

WELL K-BIER 2-1-43

LOCATION 1A - 43

FIELD EL RIVER VALLEY

Permanent Datum: GROUND LEVEL

Log Measured From: KELLY BUSHING 0.00 Above Perm. Datum

Drilling Measured From: KELLY BUSHING

Date: 12 OCT 1978

Run No.: ONE

Depth Driller: 1378 M

Depth Logger: 1378 M

Bottom Log Interval: 1376 M

Top Log Interval: 1100 M

Casing Driller: 244.5 M @ 1378 M

Casing Logger: 1376 M

Bit Size: 7.875 IN

Type Fluid in Hole: WATER

Density: 1.03 G/CC

Viscosity: 38 S

Fluid Loss: 10 C3

Source of Sample: FLOWING

Rm @ °F: 0.73 @ 25

Rmf @ °F: 1.1 @ 25

Rmc @ °F: 1.5 @ 25

Source: Rmf, Rmc: MEASURED

Rm @ BHT: 0.25 @ 25

Time Circ.: 3 HRS

Max. Rec. Temp.: 25 C

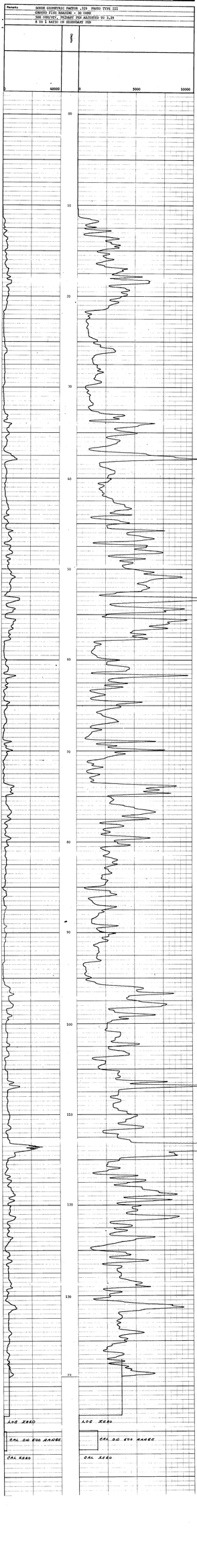
Equip. No.: 2215 CSU

Location: 2

Recorded By: MARCOTTE

Witnessed By: GARAGON

Remarks: SONDE GEOMETRIC FACTOR .329 PROD TYPE III
GROSS FIELD RANGE - 30 OHMS
500 OHM/MV, PRIMARY FOR ADJUSTED TO 3.29
8 TO 1 RATIO OR SECONDARY FOR
8 TO 1 RATIO OR SECONDARY FOR



ROKE RESOURCES LTD.

SIDEWALL GR/RES LOG

COLVILLE
CALGARY ALBERTA

276

WELL	16-14-32-6W4
FIELD	
LOCATION	660 FSL 660 FEL
SEC	14
TWP	32
RGE	6W4
PERM. DATUM	GL
ELEV.	2,995
LOG MEAS. FROM	KB
DRL. MEAS. FROM	KB
ELEV. K.B.	3,000
ELEV. D.F.	
ELEV. G.L.	2,995

DATE	7-Jan-99
RUN NO.	ONE
DEPTH DRILLER	3,195
DEPTH LOGGER	3,194.5
BTM. LOG INTERVAL	3,194.5
TOP LOG INTERVAL	2,995
CASING DRILLER	244.5 @ 3,195
CASING LOGGER	244.5 @ 3,194.5
BIT SIZE	7.875
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	10.2
VISCOSITY	50
PH	9.5
FLUID LOSS	4.8
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	0.35 @ 20
RMF @ MEAS. TEMP.	0.28 @ 20
RMC @ MEAS. TEMP.	0.45 @ 20
SOURCE RMF & RMC	MEAS
RM @ BHT	0.16 @ 110
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	110
EQUIP. LOCATION	3-3
RECORDED BY	D. MCKAY
WITNESSED BY	J. CAIRNS

RUN NO. ONE

RUN NO.	BOTTOM	TOP	CASING	BIT SIZE
ONE	3,195	2,995	244.5 @ 3,195	7.875

RUN NO.	BOREHOLE RECORD BIT NO.	FROM	TO	SIZE
ONE	ONE	2,995	3,195	7.875

RUN NO.	CASING RECORD	SIZE	WEIGHT	GRADE	FROM	TO
ONE	SURFACE	9.625	36	J-55	0	244.5

RUN NO.	EQUIPMENT NO.	LOCATION
ONE	TOOL NO. 420	3-3
	SONDE NO. 387	
	GAMMA RAY NO. 387	
	CALIPER NO. 387	
	BULK DENSITY NO. 387	
	SPACING	5 FT.

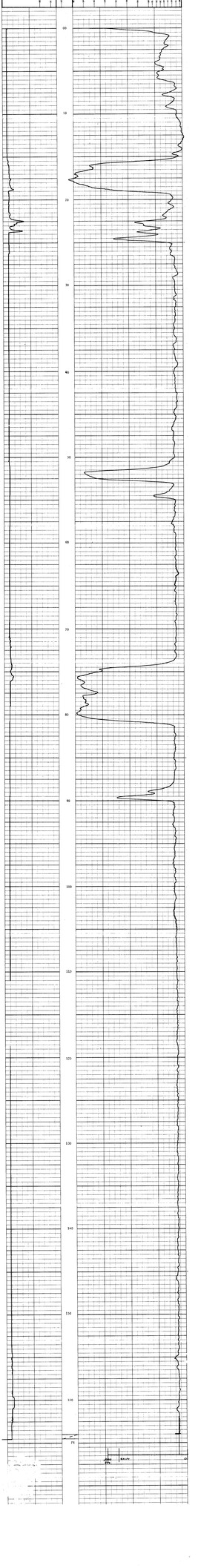
RUN NO.	GENERAL				GAMMA RAY				SIDEWALL SAMPLES			
	FROM	TO	SPEED M./HR.	T.C.	SENS. SETTINGS	API U.N. UNITS SCALE/DIV.	MEAS. LOG S.N.	T.C. SEC.	FROM SETTINGS	TO SCALE/DIV.	LOG S.N.	TYPE SHT.
1	0	116	3,195					1	3200	2 ft.		60-45
2	0	3194.5			CALIPER							

REMARKS: RERUN TOOL # 420 OPEN PUNCHE HOLE
CAL. TOOL # 387

CALIPER
(DIAMETER - CENTIMETERS)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)



ROKE
OIL & GAS LIMITED

CORPORATE AND MARKETING OFFICE
1400, 400 - 5th AVENUE S.W.
CALGARY, ALBERTA
T2P 0L6
PHONE: (403) 262-7311

WELL NO.	16-34-32-14W5
FIELD	
LOCATION	
LSD	16
SEC.	34
TWP.	32
RGE.	14
MER.	W5
PROVINCE	ALBERTA

276

Date Run	1980-04-05
Depth Driller	2376
Depth Logger	2376
Bottom Log Interval	2374
Top Log Interval	1400
Casing Driller	244.5 @ 0
Casing Logger	
Bit Size	7.875
Type Fluid in Hole	GEL CHEM
Dens.	1.12
Visc.	50
Ph	9.5
Fluid Loss	10.0
Source of Sample	CIRCULATED
Rm @ Meas. Temp.	0.90 @ 70
Rmf @ Meas. Temp.	0.71 @ 70
Rmc @ Meas. Temp.	1.12 @ 70
Rm @ BHT	0.60 @ 100
Time Since Circ.	12 HRS
Max. Rec. Temp.	100
Equip. Location	0
Recorded By	
Witnessed By	

PRODUCING ZONES: ABOVE BASE OF SPIRIT RIVER FORMATION

Remarks: RUN NO. ONE

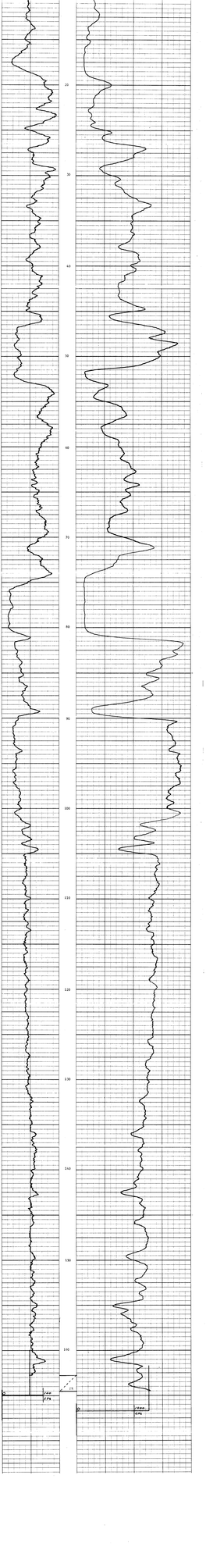
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL TYPE	NEUTRON/NEUTRON
DIAMETER	32 OD	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 OD
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.34 OD	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	2.04 OD	LENGTH	10.34 OD
		SOURCE MODEL NO.	MNC-CS-88
GENERAL		SERIAL NO.	153
HOIST TRUCK NO.	36	STRENGTH	4.5 CS
HOIST TRUCK NO.		TYPE	Amdex
TOOL SERIAL NO.	125 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DETAIL FROM	DETAIL TO	SPEED M/MIN	T.C. SECS	SENS SETTINGS	ZERO DIV. + LOG DIV.	API & UNITS PER LOG DIV	T.C. SECS	SENS SETTINGS	ZERO DIV. + LOG DIV.	API & UNITS PER LOG DIV
1	0	164.5	3.66	4	100	0	16	3	500	0	100

REMARKS: CASING CF:WATER GELF



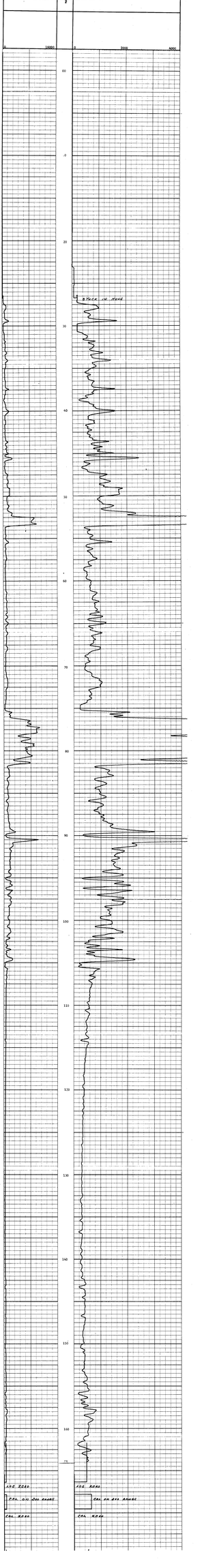
ROKE

PROCESSED BY GAMMA LOG

OIL ENTERPRISES LTD.
SUITE 1000, 1000 - 6th AVENUE S.W.
CALGARY ALBERTA

LIC. NO.	276
FILE NO.	
COMPANY	ROKE OIL ENTERPRISES LTD.
WELL	36 - 44
LOCATION	ELK VALLEY
FIELD	ELK VALLEY
Date Run	1-Dec-78
Log Interval	1500 - 5000
Casing Driller	1500
Casing Logger	1500
Bottom Log Int.	5000
Top Log Int.	1500
Type Fluid in Hole	MUD
Dens.	10.0
Visc.	50
Fluid Level	0
Max. Rec. Temp.	90°C
Equip. No.	3
Location	3 - 20 W 5
Witnessed By	McKENZIE

Remarks: SONDE GEOMETRIC FACTOR .325, PROD TYPE III
SONDE TYPE SAGEMA - 58 GR03
ZOO CORRECT. PERFORMED FOR ANSWERED TO 3.29 DEVS
SONDE CENTRALIZED
NOTE: SONDE WAS 8 FT FROM BOTTOM WHICH IT LEANS BUT IT WOULD NOT LAY FURTHER AND TO DAMAGE INSULATION. UNABLE TO USE INTERVAL FROM 5000 TO 5010 OBSTRUCTION.



ROKE

SIDEWALL DENSILOG

Roke Petroleum Ltd.
Suite 1000, 736 - 6th Ave. S.W.
CALGARY, ALBERTA

WELL: 16-19
LOCATION: 16-19-24-W4M
FIELD: RED DEER VALLEY
PROVINCE: ALBERTA

276

Permanent Datum	G.L.
Log Measured From	K.B.
Drilling Measured From	K.B.
Elevation	K.B. 2,695
	G.L. 2,691
Date	30-11-78
Run No.	ONE
Depth-Driller	3,300
Depth-Logger	3,301
Bottom Logged Interval	3,301
Top Logged Interval	2,000
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1,500
Density	10.0
Viscosity	50
Fluid Loss	8.0
Source of Sample	CIRC
R_m @ Meas. Temp.	1.10 @ 70°F
R_mf @ Meas. Temp.	0.88 @ 70°F
R_mc @ Meas. Temp.	1.32 @ 70°F
Source R_mf / R_mc	MEAS / CALC
R_m @ BHT	0.60 @ 150°F
Time Since Circ.	5 HRS
Max. Rec. Temp.	150°F
Equip. Location	3-1-A
Recorded By	R. SCHULTZ
Witnessed By	MR. BOOTH

RUN NO. ONE | DATE 30-11-78 | TYPE LOG DENSILOG

1	0	344	7,470						
2	0	344							

CALIPER

REMARKS: BRKS TOOL # 430 — CIRC MUD + FLUSH@ 344
CAL TOOL # 387

1	2000	3	97.43						

CALIPER (CHARACTER - CONDITIONS)

10.16 11.16 10.32 10.40 — 10.16 — 10.24

GAMMA RAY API

BULK DENSITY (GRAM/CC)

2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80 2.90 3.00

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

Run 1 at 3301 ft

ROKE

PROCESSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K - ELK RIVER 77 (2) 26

FILE NO.
LSD
SEC
TWP
RGE
W ____ M

COMPANY ELGO MINING LIMITED

WELL 88 - 45

LOCATION 276

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

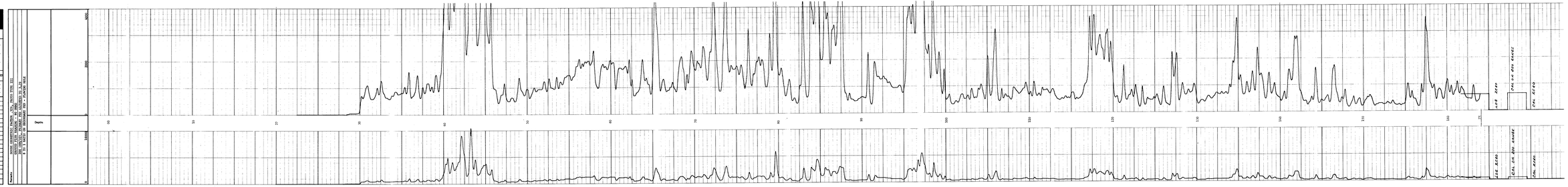
Other Services: CBN-CDN
SONIC-CAL. SHOT

Permanent Datum: GROUND LEVEL
Log Measured From: RIM PLACE 90 CM
Max Depths Measured From: RIM PLACE
Elev. Perm. Datum: 0 m
Elev. Log Measured From: 0 m
Above Perm. Datum: 0 m

Run No.	ONE
Date	24 NOV 1976
First Reading	166.9
Last Reading	30
Footage Logged	134
Depth Reached	166.92
Depth Driller	165.31
Casing Bore	30
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Rec. @ °C	17.39 @ 25
Operating Time	1 HOUR
Truck No.	36

Recorded By CARLSON Witnessed By NAGEYATIE

Remarks



ROKE

GAMMA RAY NEUTRON LOG

CALGARY, ALBERTA

276

Company	ROKE OIL (1974) LTD.
Well	5-5-47-7-W5M
Field	GILBY
County	YELLOWHEAD
Province	ALBERTA
Location	5-5-47-7-W5M
Permanent Datum	GROUND LEVEL
Elevation	2,500 FT.
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elevation	K.B. 2,509 FT.
	D.F.
	G.L. 2,500 FT.
Date	3-JUNE-74
Run No.	ONE
Depth-Driller	1,500
Depth-Logger	1,500
Bottom Logged Interval	1,500
Top Logged Interval	500
Casing-Driller	8 5/8 @ 500
Casing-Logger	8 5/8 @ 500
Bit Size	7 7/8
Type Fluid in Hole	GEL CHEM
Density	9.6
Viscosity	38
pH	10.5
Fluid Loss	10.4
Source of Sample	MUD PIT
Rm @ Meas. Temp.	1.65 @ 70°F
Rmf @ Meas. Temp.	1.32 @ 70°F
Rmc @ Meas. Temp.	2.2 @ 70°F
Source of Rmf & Rmc	MEASURED
Rm @ BHT	1.1 @ 120°F
Time Since Circ.	12 HRS.
Max. Rec. Temp.	120°F
Equip. Location	3-47-7-W5M
Recorded By	R. SCHMIDT
Witnessed By	MR. R. BERG

RUN NO. ONE | TYPE LOG GAMMA RAY NEUTRON | DEPTH-DRILLER 1,500 | DEPTH-LOGGER 1,500 | BTM. LOG INTERVAL 1,500 | TOP LOG INTERVAL 500 | CASING-DRILLER 8 5/8 @ 500 | CASING-LOGGER 8 5/8 @ 500 | BIT SIZE 7 7/8 | TYPE FLUID IN HOLE GEL CHEM | DENS. 9.6 | VISC. 38 | PH 10.5 | FLUID LOSS 10.4 | SOURCE OF SAMPLE MUD PIT | RM @ MEAS. TEMP. 1.65 @ 70°F | RMF @ MEAS. TEMP. 1.32 @ 70°F | RMC @ MEAS. TEMP. 2.2 @ 70°F | SOURCE OF RMF & RMC MEASURED | RM @ BHT 1.1 @ 120°F | TIME SINCE CIRC. 12 HRS. | MAX. REC. TEMP. 120°F | EQUIP. LOCATION 3-47-7-W5M | RECORDED BY R. SCHMIDT | WITNESSED BY MR. R. BERG

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MC	TOOL MODEL NO.	
SOURCE MODEL NO.		DIAMETER	32 MC
TYPE	MODERATION	SOURCE MODEL NO.	
LENGTH	10.14 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	7.62 M	LENGTH	53.34 CM
		SOURCE MODEL NO.	MRC-N-66-M
GENERAL		SERIAL NO.	243
HOIST TRUCK NO.	36	SPACING	45.19 CM
TRANSPORT TRUCK NO.		Amtrol	
TOOL SERIAL NO.	123 - 902	STRENGTH	1 074214

LOGGING DATA

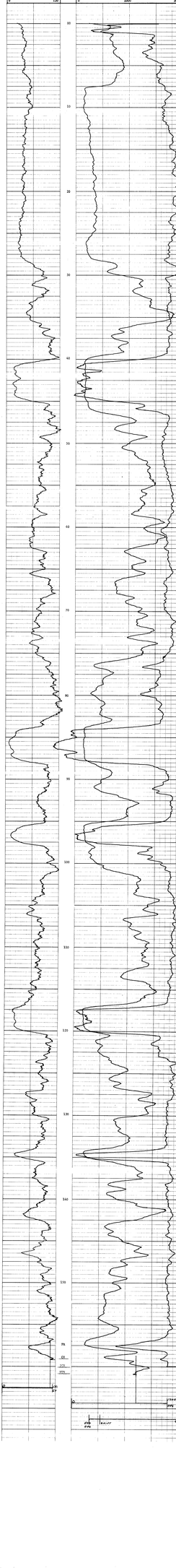
GENERAL					GAMMA RAY			NEUTRON			
RUN NO.	LOGGING FROM	LOGGING TO	SPEED FPM	T.C. SEC.	SENS. SETTINGS	API TL IN UNITS PER 1.00 IN	T.C. SEC.	SENS. SETTINGS	API TL IN UNITS PER 1.00 IN
1	500	1,500	30	1	10	10	1	100	2 0
2	0	500	3,48		VERTICAL		3	100	2 0

REMARKS: LOGGED THROUGH OIL DRILL PIPE. FLUSHED HOLE WITH 200BBL FRESH WATER.

GAMMA RAY (API UNITS) | NEUTRON

GAMMA RAY INCREASES → | NEUTRON INCREASES →

0 — 120 | 0 — 2000



DH - 46.

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3)Ab

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 46
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA

276

Other Services: GRN, FBL, DEV

Permanent Datum	GROUND LEVEL	Elev.
Log Measured from	RIG FLOOR 40 CM Above Perm. Datum	K.B.
Well Depths Measured from	RIG FLOOR	CSG
		G.L.

Run. No.	ONE		
Date	10 DEC 1976		
First Reading	167.5		
Last Reading	0		
Footage Logged	167.5		
Depth Reached	168.42		
Depth Driller	170.80		
Casing Roke	8		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON

Witnessed By McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	167.5	3.66					3	1000	2R	68.43
2	0	166.5			CALIPER						

REMARKS

DENS TOOL # 420 OPEN HOLE

CAL. TOOL # 587

DENS LOGGED THROUGH RODS ALSO

CALIPER (DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE

CALGARY, ALBERTA

Recorded By: [illegible]
Witnessed By: [illegible]

Run No.	Bit From	Bit To	Csg. Size	Csg. Wgt.	Csg. From	Csg. To	Bit Size
ONE	SURFACE	1134	8 5/8	24	SURFACE	1134	7 7/8

Type Fluid in Hole: WATER GEL
Density: 9.2
Viscosity: 40
pH: 9.5
Fluid Loss: 8.0
Source of Sample: MUD TANK
Rm @ Meas. Temp.: 1.0 @ 20°C
Rmf @ Meas. Temp.: 0.8 @ 20°C
Rmc @ Meas. Temp.: 1.2 @ 20°C
Source: Rmf: MEASURED Rmc: CALCULATED
Rm @ BHT: 0.6 @ 50°C
Time Since Circ.: 12 HRS
Max. Rec. Temp.: 50°C
Equip. Location: 276
Recorded By: [illegible]
Witnessed By: [illegible]

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
SOURCE MODEL NO.		SONDE NO.	32 MM
TYPE	ACTIVATION	DETECTOR MODEL NO.	
LENGTH	50.58 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	5.075 M	LENGTH	53.34 CM
		SOURCE MODEL NO.	MRC-N-88-99
CENTRAL		SERIAL NO.	1
		SPACING	61.24 CM
HEAD TRACE NO.	36	STRENGTH	Am/Be
INSTRUMENT TRUCK NO.			
TOOL SERIAL NO.	122 - 002	STRENGTH	5 curies

LOGGING DATA

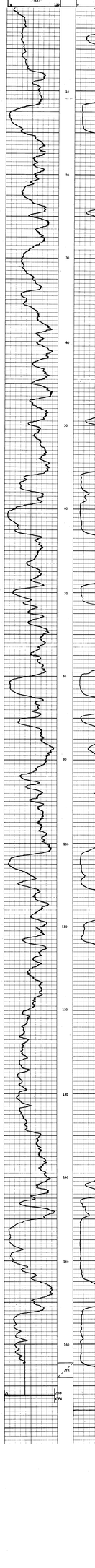
RUN NO.	GAMMA RAY DATE	SPEED FT./MIN.	T.C. SEC.	SENS. SETTING	API & N. UNITS PER LOG DIV.	F.C. SEC.	NEUTRON DATE	SPEED FT./MIN.	API & UNITS PER LOG DIV.
ONE	13-JUL-78	30	3	540	20	3	13-JUL-78	30	500
	TYPE RUN	30	3	0	10	3	BEFORE CSG.	0	500
	1134	1,484	3		10	3	AFTER CSG.		500

REMARKS

GAMMA RAY | Parallel | NEUTRON

GAMMA RAY INCREASES → | NEUTRON INCREASES →

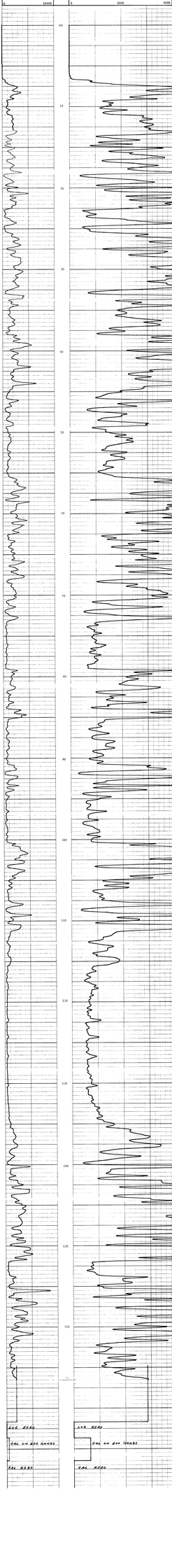
0 — 120 | 1000 — 2000



ROKE

Remarks: ROKE CALIBRATED FACTOR .329 PROVO TYPE III
ROKE CALIBRATED FACTOR .329 ALBERTA
ROKE CIRCUIT: TALBOT RES ALBERTO 30 TJP 30TH
30 L 5AC20 09 RESHOOT PEN

276



DH - 47

ROKE

SIDEWALL DENSILOG

CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3)#B

FILE NO.	
LSD	COMPANY: ELCO MINING LIMITED
SEC	WELL: DH - 47 **276**
TWP	LOCATION
RGE	FIELD: ELK RIVER VALLEY
W ___ M	PROVINCE: BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum: GROUND LEVEL Elev. ______

Log Measured from: RIG FLOOR 54 CM . Above Perm. Datum

Well Depths Measured from: RIG FLOOR

K.B. ______
CSG ______
G.L. ______

Run. No.	ONE
Date	4 DEC 1976
First Reading	197 M
Last Reading	0
Footage Logged	197
Depth Reached	197.92
Depth Driller	198.25
Casing Roke	10.50
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	2
Min. Diam.	HQ
Operating Time	1 HOUR
Truck No.	36

Recorded By CARLSON Witnessed By McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	197	3.66					3	1000	2R	68.43
2	0	197.5		CALIPER							

REMARKS: DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587

CALIPER (DIAMETER - CENTIMETERS)

BULK DENSITY (GRAMS/CC)

DEPTHS

GAMMA RAY API

ROKE

OIL WELL SERVICES LTD.

CALGARY ALBERTA

COMPANY: [illegible]

WELL: 16-27

FIELD: [illegible]

COUNTY: [illegible]

PROVINCE: ALBERTA

LOCATION: [illegible]

OTHER SERVICES: [illegible]

PERMANENT DATUM: [illegible]

LOG MEASURED FROM: [illegible]

DRILLING MEASURED FROM: [illegible]

RUN NO. ONE

DATE: [illegible]

DEPTH-DRILLER: [illegible]

DEPTH-LOGGER: [illegible]

BTM. LOG INTERVAL: [illegible]

TOP LOG INTERVAL: [illegible]

CASING-DRILLER: [illegible]

CASING-LOGGER: [illegible]

BIT SIZE: [illegible]

TYPE FLUID IN HOLE: [illegible]

DENSITY: [illegible]

VISCOSITY: [illegible]

PH: [illegible]

FLUID LOSS: [illegible]

SOURCE OF SAMPLE: [illegible]

RM @ MEAS. TEMP.: [illegible]

RMF @ MEAS. TEMP.: [illegible]

RMC @ MEAS. TEMP.: [illegible]

SOURCE OF RMF: [illegible]

SOURCE OF RMC: [illegible]

RM @ BHT: [illegible]

TIME SINCE CIRC.: [illegible]

MAX. REC. TEMP.: [illegible]

EQUIP. NO. [illegible]

LOCATION: [illegible]

RECORDED BY: [illegible]

WITNESSED BY: [illegible]

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	10.00	DIAMETER	
DETECTOR MODEL NO.		DETECTOR MODEL NO.	TC 1W
TYPE	INTEGRATION	TYPE	
LENGTH	2.00 M	LENGTH	PROPORTIONAL
DISTANCE TO X-RAYS	2.00 M	DISTANCE TO X-RAYS	10.5 IN CN
		SOURCE MODEL NO.	MNC-2.5 C
		SERIAL NO.	243
		STRENGTH	10.5 IN CN
SONDE TRACK NO.	30	TYPE	AmBe
DETECTABLE TRACK NO.		STRENGTH	5 curies
TOOL SERIAL NO.	535 + 603		

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
RUN NO.	LOGGING FROM	TO	SPEED F/M	MODE	SCALE	SP IN % UNITS	T.C.	SENS.	LEVEL	LOW RES. LOG		
ONE					0 - 100							

RECORDED JOHN WOLF

GAMMA RAY

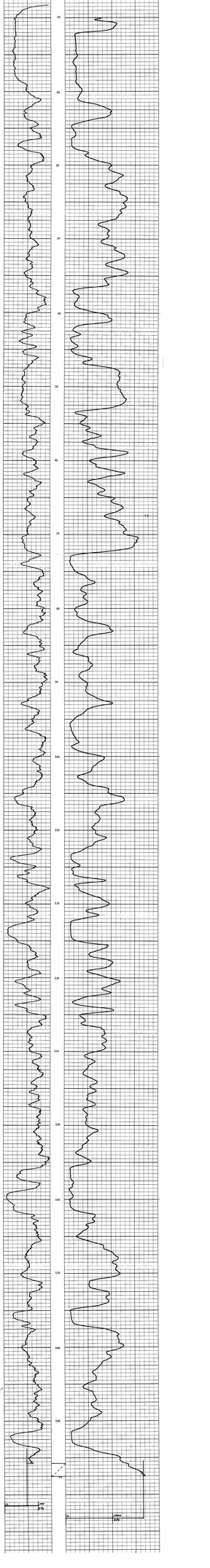
GAMMA RAY INCREASES

0 100

NEUTRON

NEUTRON INCREASES

3600 2400



ROKE

DIL INDUCTION SFL
SONIC
CALIPER
GAMMA RAY

276

Company	ROKE OIL INC.
Well	KAUL #1-11
Field	WILDCAT
County	GRAHAM
State	KANSAS
Location	1980' FSL & 1980' FEL
Sec.	11
Twp.	9 S
Rge.	21 W
Elevation	KB 2255'
Permanent Datum	GROUND LEVEL
Log Measured From	KB 10 FT. ABOVE PERM. DATUM
Drilling Measured From	KB
Date	10-23-2012
Run No.	ONE
Depth Driller	3800
Depth Logger	3798
Bottom Log Interval	3798
Top Log Interval	2800
Casing Driller	8 5/8 @ 224
Casing Logger	NONE
Bit Size	7 7/8
Type Fluid in Hole	CHEMICAL
Dens. / Visc.	9.2 / 50
Max. Rec. Temp.	120
Est. Cement Top	2800
Equipment	10-11
Recorded By	DAVID
Witnessed By	MR. KAUL

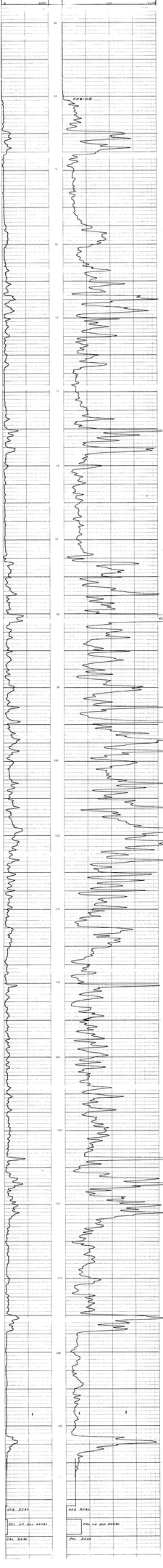
Run No.	ONE
Depth Driller	3800
Depth Logger	3798
Bottom Log Interval	3798
Top Log Interval	2800
Casing Driller	8 5/8 @ 224
Casing Logger	NONE
Bit Size	7 7/8
Type Fluid in Hole	CHEMICAL
Dens. / Visc.	9.2 / 50
Max. Rec. Temp.	120
Est. Cement Top	2800
Equipment	10-11
Recorded By	DAVID
Witnessed By	MR. KAUL

Remarks: RECORDED DIGITALLY USING DIGITAL PRO-PLUS LOG UNIT
CENTER FEED MAGNETIC - 20 GAUGE
DIL/SFL/SONIC - CENTERED - RECORDED IN 2.5" GRID
4 1/2 X 2 1/2 - 10 CYCLES PER INCH

Depth Scale: 1:240

MAGNETICITY
OHM MILLIMHO

MAGNETICITY
OHM MILLIMHO



LOG RCRD
CAL. ON GOO BOREC
CAL. RCRD

ROKE

SIDEWALL RESILOG

COMPANY: ROKE OILS LTD.

WELL: 10-35-49-21-W4

FIELD: BEAVERHILL LAKE

COUNTY: STRATHCONA

PROVINCE: ALBERTA

LOCATION: 10-35-49-21-W4

DRILLING MEASURED FROM: K.B.

ELEV.: K.B. 2154 D.F. G.L.

PERMANENT DATUM: SEA LEVEL

ELEV.: 2154

LOG MEASURED FROM: K.B.

ABOVE PERM. DATUM

RUN NO. 1

DATE: 5-8-75

DEPTH-DRILLER: 2750

DEPTH-LOGGER: 2750

BTM. LOG INTERVAL: 2750

TOP LOG INTERVAL: 1500

CASING-DRILLER: 9.625 @ 1500

CASING-LOGGER: 1500

BIT SIZE: 8.75

TYPE FLUID IN HOLE: GEL CHEM

DENSITY: 9.5

VISCOSITY: 50

PH: 10

FLUID LOSS: 6.4

SOURCE OF SAMPLE: MUD PIT

RM @ MEAS. TEMP.: 1.1 @ 70

RMF @ MEAS. TEMP.: .9 @ 70

RMC @ MEAS. TEMP.: 1.4 @ 70

SOURCE: RMF: MEAS. RMC: MEAS.

RM @ BHT: .5 @ 120

TIME CIRC. STOPPED: 0400

TIME LOGGER ON BOTTOM: 0600

MAX. REC. TEMP.: 120

EQUIP. NO. LOCATION: 276 EDM

RECORDED BY: WATSON

WITNESSED BY: MR. HARRIS

276

204-9C

GENERAL				GAMMA RAY				SIDEWALL RESISTIVITY			
RUN NO.	BOTTOM LOG INTERVAL	TOP LOG INTERVAL	HOLE SIZE	SCALE	API UNITS CALIBRATED OVER	TIE-IN READING	SCALE	SPACING	CALIBRATED OVER		
1	2750	1500	8.75	0-100	0-100		0-100	16	0-100		
2	2750	1500						64	0-100		

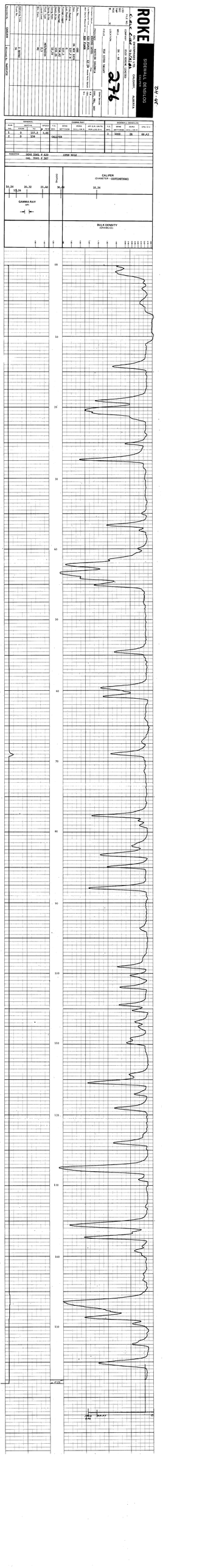
REMARKS: DENS TOOL # 620 CAL TOOL # 287

CENTR. RUN 2

CALIPER (DIAMETER - CENTIMETRES)

BULK DENSITY (GRAMS/CC)

GAMMA RAY (API)



ROKE

GAMMA RAY NEUTRON LOG

Recorded By: GRIGORY

Witnessed By: MARTIES

Run No.	ONE
Date	12 DEC 78
Depth Driller	1600
Depth Logger	1600
Bottom Logged Interval	1600
Top Logged Interval	0
Casing Driller	9 5/8 @ 30
Casing Logger	9 5/8 @ 30
Bit Size	8 1/2
Type Fluid in Hole	WATER
Density	10.1
Viscosity	50
pH	10
Fluid Loss	10
Source of Sample	CIRC.
Rm @ Meas. Temp.	1.2 @ 70
Rmf @ Meas. Temp.	1.0 @ 70
Rmc @ Meas. Temp.	1.4 @ 70
Source of Rmf & Rmc	CALC.
Rm @ BHT	1.0 @ 120
Time Since Circ.	12 HRS
Max. Rec. Temp.	120
Equip. Location	276
Recorded By	GRIGORY
Witnessed By	MARTIES

Run No. ONE
Date 12 DEC 78
Type Log NEUTRON/NEUTRON

COMPANY: ESSO RESOURCES CANADA LIMITED
WELL: ESSO ROKE A-57
FIELD: RED DEER SOUTH
LOCATION: 10-35-38-27 W4M
PROVINCE: ALBERTA

Other Services: NONE

Permanent Datum: GROUND LEVEL
Elev.: K.B. 3 M, D.F. 3 M, G.L. 0 M
Log Measured From: K.B. 3 M Above Perm. Datum
Drilling Measured From: K.B.

COMPANY: ESSO RESOURCES CANADA LIMITED
WELL: ESSO ROKE A-57
FIELD: RED DEER SOUTH
LOCATION: 10-35-38-27 W4M
PROVINCE: ALBERTA

276

EQUIPMENT DATA

GAMMA RAY

RUN NO. ONE
TOOL MODEL NO. 32 VSL
DIAMETER 3 3/8
DETECTOR MODEL NO. SCINTILLATOR
LENGTH 10.16 CM
DISTANCE TO N. SOURCE 2.54 M

GENERAL
HOIST TRUCK NO. 36
INSTRUMENT TRUCK NO.
TOOL SERIAL NO. 115 - 002

NEUTRON

RUN NO. ONE
TOOL MODEL NO. 32 NH
DIAMETER 3 3/8
DETECTOR MODEL NO. PROPORTIONAL
LENGTH 12.68 CM
SOURCE MODEL NO. MNC-AIBE-99
SERIAL NO. 163
SPACING 43.18 CM
TYPE Am-Be
STRENGTH 3 CURIES

LOGGING DATA

GAMMA RAY

RUN	INTERVAL FROM	INTERVAL TO	SPEED M/MIN	T.C. SEC	SENS. SETTINGS
1	0	1598	4.88	4	100

ZERO DIV.	API G. UNITS PER 1.00 DIV.	T.C. SEC	SENS. SETTINGS	API G. UNITS PER 1.00 DIV.
0	10	3	100	5

NEUTRON

ZERO DIV.	API N. UNITS PER 1.00 DIV.
0	100

REMARKS: OPEN HOLE

GAMMA RAY | SCALE | NEUTRON

GAMMA RAY INCREASES →

← NEUTRON INCREASES

0 — 150 | 0 — 1600

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150

10 — 1000 CPS

17 — 1000 CPS

ROKE

RECORDED TODAY FOR

OIL DEVELOPMENTS LTD.
CALGARY, ALBERTA

Well: 2-26-46-5 W5M
Location: NE 26-46-5 W5M
Field: EDSON
Latitude: 53° 24' 00" N
Longitude: 116° 28' 00" W

276

Elevations: K.B. 2707 D.F. G.L. 2697

Permanent Datum: GROUND Elev. 2697

Log Measured From: K.B. 10 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Run No.	One	Two	Three
Date	5-6-70		
Depth-Driller	9,870		
Depth-Logger	9,870		
Bottom Logged Interval	9,870		
Top Logged Interval	8,000		
Type Fluid in Hole	GEL CHEM		
Salinity, P.P.M. Cl	1,000		
Density	10.0		
Viscosity	54		
Fluid Loss	10.4		
Source of Sample	CIRC		
Rm @ Meas. Temp.	.74 @ 70°		
Rmf @ Meas. Temp.	.62 @ 70°		
Rmc @ Meas. Temp.	.93 @ 70°		
Source of Rmf & Rmc	CALC		
Rm @ BHT	.37 @ 170°		
Time Since Circ.	12 HRS.		
Max. Rec. Temp. Deg. F.	170°		
Equipment Number	5		
Location	EDSON		
Recorded By	CARLSON		
Witnessed By	MURPHY		

Run No. One — Date 5-6-70

Type Log: DUAL INDUCTION LATEROLOG
Depth-Driller: 9,870
Depth-Logger: 9,870
Bottom Logged Interval: 9,870
Top Logged Interval: 8,000
Casing-Driller: 9 5/8 @ 8,000
Casing-Logger: 8,000
Bit Size: 8 3/4
Type Fluid in Hole: GEL CHEM
Salinity, P.P.M. Cl: 1,000
Density: 10.0
Viscosity: 54
Fluid Loss: 10.4
Source of Sample: CIRC
Rm @ Meas. Temp.: .74 @ 70°
Rmf @ Meas. Temp.: .62 @ 70°
Rmc @ Meas. Temp.: .93 @ 70°
Source of Rmf & Rmc: CALC
Rm @ BHT: .37 @ 170°
Time Since Circ.: 12 HRS.
Max. Rec. Temp. Deg. F.: 170°
Equipment Number: 5
Location: EDSON
Recorded By: CARLSON
Witnessed By: MURPHY

Remarks

RUN#1 RECORDED PASSES .25" PM/DD TYPE III
SMOOTH TYPE MARKING : 1.0000
500 CORRIDOR PASSMAY FOR ADJUSTED TO 3.29
8 TO 1 RATIO ON SECONDARY PIP

Depths: 0 — 4000 — 8000 — 10000

CASING

LOG READ

CAL 20 LOG READS

CAL READ

LOG READ

CAL 24 LOG READS

CAL READ

ROKE

SIDEWALL DENSILOG
Gamma Ray

COMPANY ROKE OIL LTD.
WELL 14-4-69-5 W5
FIELD WILDCAT
LOCATION 30 - 69 - 5 W5
COUNTY CLEAR HILLS
PROVINCE ALBERTA

276

Permanent Datum	GROUND
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elev. Perm. Datum	1114.40
Elev. K.B.	1119.40
Elev. D.F.	
Elev. G.L.	1114.40
Date	30 DEC 82
Run No.	ONE
Depth Driller	1170
Depth Logger	1170
Bottom Logged Interval	1170
Top Logged Interval	100
Casing Driller	9 5/8 @ 98
Casing Logger	98
Bit Size	8 3/4
Type Fluid in Hole	POLYMER
Density	1100
Viscosity	28
Fluid Loss	10.0
Source of Sample	CIRC
Rm @ Meas. Temp.	0.45 @ 20
Rmf @ Meas. Temp.	0.35 @ 20
Rmc @ Meas. Temp.	0.60 @ 20
Source of Rmf and Rmc	CALC
Rm @ BHT	0.30 @ 30
Time Since Circulation	4 HRS
Max. Rec. Temp.	30
Equipment Number	276
Location	
Recorded By	MACKAY
Witnessed By	MASTERS

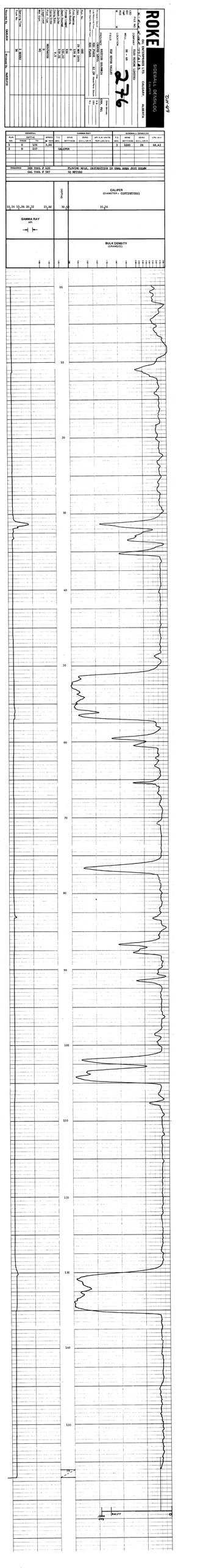
RUN NO.	GENERAL DEPTH FROM	DEPTH TO	SPEED M/MIN	GAMMA RAY T.C.	GAMMA RAY SENS ATTENUA	GAMMA RAY ZERO API-G.R. UNITS PER DIV.	SIDEWALL DENSILOG T.C. SEC	SIDEWALL DENSILOG SENS ATTENUA	SIDEWALL DENSILOG ZERO G/CC-1.95	SIDEWALL DENSILOG CPS-DIV
3	0	126	5.48				3	1000	26	68.43
2	0	117								
				CALIPER						

REMARKS: DEN TOOL # 420 — PLOTTED BULK DENSITIES IN OPEN AREA JUST RIGHT
GAL TOOL # 387 — 30 METERS

CALIPER (DIAMETER - CENTIMETERS)
15.11 15.24 20.32 25.40 30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE

ROKE OIL & REFINERIES LTD.
CALGARY ALBERTA

WELL NAME AND NUMBER: 276
FIELD: WILDCAT
WELL: 276
LOCATION: 16-4-5-W4M
COUNTY OR DISTRICT: MD OF ROCKY VIEW
PROVINCE: ALBERTA

Permanent Datum: GROUND LEVEL | Elev.: 1,268.0 m
Log Measured From: K.B. | 4.5 m Above Perm. Datum
Drilling Measured From: K.B.

Date	1-6-76				
Run No.	ONE				
Depth-Driller	1,200 m				
Depth-Logger	1,200 m				
Bottom Logged Interval	1,200 m				
Top Logged Interval	1,000 m				
Type Fluid in Hole	WATER GEL				
Salinity, PPM Cl	1,000				
Density	1.10				
Level	FULL				
Max. Rec. Temp. Deg. C.	30 °C				
Operating Rig Time	4 HRS				
Recorded By	D. SMITH				
Witnessed By	MR. KLEIN				

CASING RECORD

Surface String	244.5 mm	9.63 kg/m	1,000 m
Prod. String	177.8 mm	34.23 kg/m	1,200 m
Liner			
Liner			

BOREHOLE RECORD

Bit No.	1	2
Type	7 7/8	
From	SURF.	1,000 m
To	1,000 m	1,200 m

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	91.44 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	0.46 M	NEUTRON SOURCE	53.34 CM
GENERAL		GROUND MODEL NO.	MISC-N-66-M
		SERIAL NO.	355
HOIST TRUCK NO.	96	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	135 - 002	STRENGTH	3 Ci/Yr2222

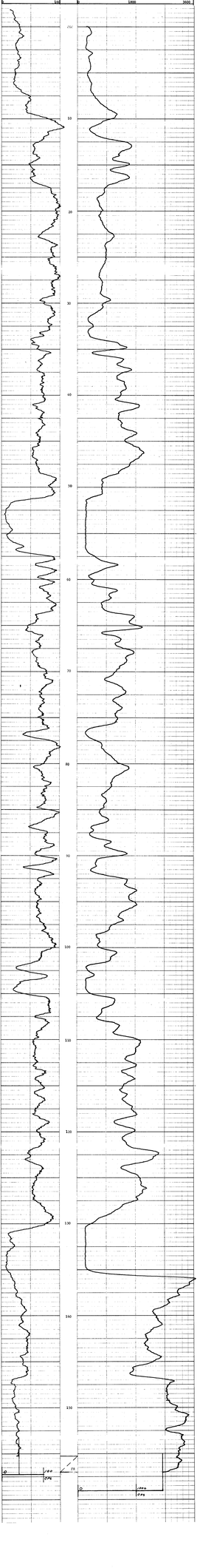
LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	LOGGED FROM	LOGGED TO	SPEED M. (MIN. SEC.)	T.C. SETTINGS	ZERO DIV. L. OR R.	API G. R. UNITS PER 1/20 DIV.	T.C. SETTINGS	ZERO DIV. L. OR R.	API N. UNITS PER 1/20 DIV.
1	0	1133	4.66	3.36	0	54	3	500	0	180

REMARKS: ZERO DATUM AREA TOPO DATUM 50 METRES VERY DIFFICULT TO GET THROUGH

PLOTTING SCALE

GAMMA RAY		NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
0 — 150		0 — 1000 — 2000



ROKE

PROVED BASIS 100

OIL ENTERPRISES LTD.
CALGARY, ALBERTA

COMPANY: ELCO NORTHWEST LIMITED

WELL: NO. - 58

LOCATION: SEC. 25 TWP. 72 RGE. 21 W4

FIELD: ROE RIVER, SASKATCHEWAN

276

PROVINCE: SASKATCHEWAN
Permanent Datum: GROUND LEVEL
Log Measured From: KB 2.74m
Drilling Measured From: KB 2.74m

Other Services
CNL - FDC - GR
G.R.
DIPM.

Date	29 NOV 1976
Run No.	ONE
First Reading	1826
Last Reading	154
Bit Size	7 7/8
Casing Size	139.7
Casing Depth	152.25
Drill Type	NON-WATER
Max. Temp.	50
Rm @ °C	15.5 @ 22
Operating Time	3 HOURS
Truck No.	36

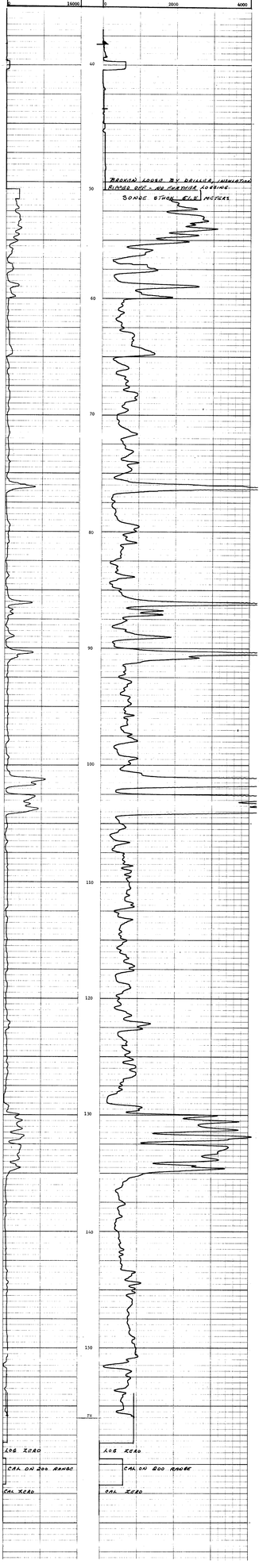
Recorded By: CARSON

Witnessed By: MCKEVITT

Remarks: SONDE GEOMETRIC FACTOR ,329, PHOTO TYPE III
GROUND FIRM HOLDING - 2 OHMS
200 OHMS/M, PRIMARY FOR ADJUSTED TO 3.29 DEVS
8 TO 1 RATIO ON SECONDARY FOR

Depths

16000 — 0 — 2000 — 4000



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

D4-50

K-ELK RIVER 77 (3) B.B

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 50
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV
Permanent Datum	GROUND LEVEL
Log Measured from	GROUND LEVEL
Depths Measured from	GROUND LEVEL
Elev.	
Above Perm. Datum	
K.B.	
CSG	
G.L.	

Run No.	ONE			
Date	8 DEC 1976			
First Reading	166 M			
Last Reading	0			
Footage Logged	166			
Depth Reached	166.92			
Depth Driller	167.14			
Casing Roke	9			
Casing Driller				
Fluid Type	MUD/WATER			
Liquid Level	0			
Min. Diam.	HQ			
Operating Time	2 HOURS			
Truck No.	36			
Recorded By	CARLSON	Witnessed By	McKELVIE	

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	CPS/ DIV
1	0	166	3.66					3	1000	2 R	68.43
2	0	166			CALIPER						

REMARKS DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587

	DEPTHS	CALIPER (DIAMETER - CENTIMETERS)
10.16 15.24 20.32 25.40	30.48	35.56
GAMMA RAY API		
1.00 1.10	1.20	BULK DENSITY (GRAMS/CC) 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

ROKE

GAMMA RAY NEUTRON LOG

COMPANY	ROKE OIL INC.
WELL	KRAUSE #1-23 B-3
FIELD	WILDCAT
COUNTY	GOSPER
STATE	NEBRASKA
LOCATION	1320' FSL & 1320' FEL
SEC.	23
TWP.	7N
RGE.	20W
PERMANENT DATUM	GROUND LEVEL
ELEV.	2276
LOG MEASURED FROM	KELLY BUSHING
ELEV.	2286
DRILLING MEASURED FROM	KELLY BUSHING
ELEV.	2286
DATE	10-30-82
RUN NO.	ONE
DEPTH DRILLER	3600
DEPTH LOGGER	3600
BTM. LOG INTERVAL	3600
TOP LOG INTERVAL	0
CASING DRILLER	8 5/8 @ 320
CASING LOGGER	320
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	CHEMICAL
DENSITY	9.2
VISCOSITY	38
PH	9.5
FLUID LOSS	10 ML
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.55 @ 70°
RMF @ MEAS. TEMP.	.44 @ 70°
RMC @ MEAS. TEMP.	.66 @ 70°
SOURCE: RMF / RMC	MEAS / MEAS
RM @ BHT	.22 @ 130°
TIME SINCE CIRC.	4 HRS
MAX. REC. TEMP.	130°
EQUIP. LOCATION	3 MILES SOUTH
RECORDED BY	K. BOWEN
WITNESSED BY	MR. ROKE

276

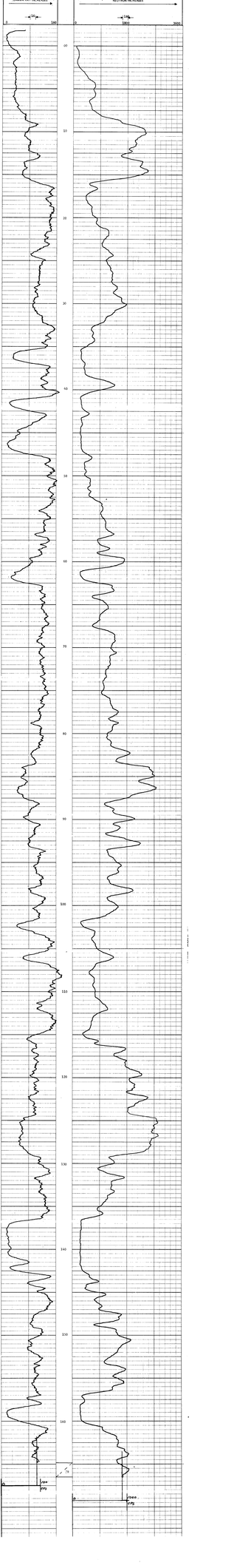
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3½ IN.	DIAMETER	3½ IN.
DETECTOR MODEL NO.	SCINTILLATOR	SOURCE NUMBER	
TYPE		DETECTOR MODEL NO.	PROPORTIONAL
LENGTH	10.14 OH	TYPE	
DISTANCE TO SOURCE	7.49 ft	LENGTH	12.14 OH
		SOURCE MODEL NO.	MSC-N-88
GENERAL		STRENGTH	
MUDT TRUCK NO.	36	SPACING	13.33 OH
INSTRUMENT TRUCK NO.		TYPE	Amb
TOOL SERIAL NO.	125 - 302	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL DATA		SPEED FT/MIN	T.C. SETTING	GAMMA RAY DATA SENS	API & UNITS	T.C. SETTING	NEUTRON DATA SENS	API & UNITS
	FROM	TO		SEC.	DIV. = API	API & LOG SCL	SEC.	DIV. = API	API & LOG SCL
1	0	3600	4	3	0	16	3	500	0 - 160

REMARKS: OPEN HOLE



ROKE

CANADIAN WELL LOGGING LTD.
CALGARY, ALBERTA

COMPANY: ROKE OILS LTD.
WELL: 16-36
FIELD: BIG ROCK CREEK
COUNTY: FOOTHILLS
PROVINCE: ALBERTA

276

Permanent Datum	GROUND LEVEL
Log Measured From	K.B. 10 FT. ABOVE PERM. DATUM
Drilling Measured From	K.B.
Elevation	K.B. 4,178 FT.
	G.L. 4,168 FT.
Date	14 OCT 82
Run No.	ONE
Depth-Driller	9,000 FT.
Depth-Logger	8,998 FT.
Bottom Logged Interval	8,998 FT.
Top Logged Interval	3,000 FT.
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1,000 PPM
Density	9.2 LB/GAL
Viscosity	40 SEC
Fluid Loss	8.0 C.C.
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	1.14 @ 70 °F
Rmf @ Meas. Temp.	0.91 @ 70 °F
Rmc @ Meas. Temp.	1.52 @ 70 °F
Source of Rmf & Rmc	CALCULATED
Rm @ BHT	0.61 @ 170 °F
Time Since Circ.	5 HRS
Max. Rec. Temp.	170 °F
Equip. No. & Location	5201
Recorded By	D. MOSS
Witnessed By	MR. MACKAY

RUN NO. ONE
DATE 14 OCT 82
TYPE LOG DIL/BHC/GR
DEPTH-DRILLER 9,000 FT.
DEPTH-LOGGER 8,998 FT.
BTM. LOG INTERVAL 8,998 FT.
TOP LOG INTERVAL 3,000 FT.
CASING-DRILLER 9 5/8" @ 3,000 FT.
CASING-LOGGER 3,000 FT.
BIT SIZE 8 1/2"
TYPE FLUID IN HOLE GEL CHEM
DENSITY 9.2 LB/GAL
VISCOSITY 40 SEC
PH 9.5
FLUID LOSS 8.0 C.C.
SOURCE OF SAMPLE FLOWLINE
RM @ MEAS. TEMP. 1.14 @ 70 °F
RMF @ MEAS. TEMP. 0.91 @ 70 °F
RMC @ MEAS. TEMP. 1.52 @ 70 °F
SOURCE OF RMF & RMC CALCULATED
RM @ BHT 0.61 @ 170 °F
TIME SINCE CIRC. 5 HRS
MAX. REC. TEMP. 170 °F
EQUIP. NO. & LOCATION 5201
RECORDED BY D. MOSS
WITNESSED BY MR. MACKAY

Remarks: BOREHOLE GEOMETRY: FACTOR .333 FACTO TYPE III
CALIPER PIPE READING = 9.00 INCHES
DEN.DENSITY, PRIMARY PIP ALIGNED TO 2.24 GM/CC
& TO 1 RATIO ON TELEMETRY TOO

RESISTIVITY OHMS METRES
0 1000

RESISTIVITY OHMS METRES
0 2000 5000

CASING

LOG ZERO
CAL DIA 6in RANGE
CAL ZERO

LOG ZERO
CAL DIA 6in RANGE
CAL ZERO

ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3) #B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ___ M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 51
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DEN-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	

Run. No.	ONE		
Date	13 DEC 1976		
First Reading	199 M		
Last Reading	0		
Footage Logged	199		
Depth Reached	199.31		
Depth Driller	200.08		
Casing Roke	17		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	1		
Min. Diam.	HQ		
Rm @ °F			
Operating Time	1 HOUR 15 MIN		
Truck No.	36		

Recorded By CARLSON | Witnessed By McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	125 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	199	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
16		180
0 — 160		0 — 1800 — 3600

ROKE
OIL EXPERIMENTS LTD.
CALGARY ALBERTA

276

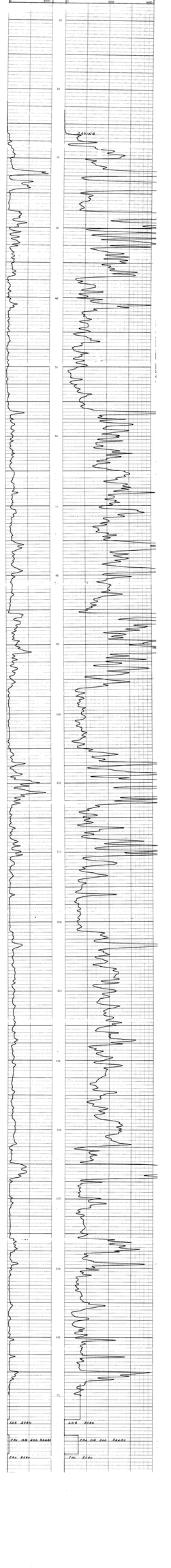
Company	
Well	
Field	
County	
Province	
Location	
Other Services	
Permanent Datum	
Log Measured From	
Drilling Measured From	
Elev.	K.B. D.F. G.L.
Date	
Run No.	
Depth-Driller	
Depth-Logger	
Bottom Logged Interval	
Top Logged Interval	
Type Fluid in Hole	
Salinity, PPM Cl	
Density	
Level	
Max. Rec. Temp. Deg. F	
Operating Rig Time	
Recorded By	
Witnessed By	

Run No.	Bit From	To	Size	Type
Run No.	Casing-Driller	Casing-Logger	Size	Wgt.
Run No.	Type	Density	Viscosity	Fluid Loss
Run No.	Source	Strength	Rm @ Meas. Temp.	Rmf @ Meas. Temp.
Run No.	Rmc @ Meas. Temp.	Source of Rmf & Rmc	Rm @ BHT	Time Since Circ.
Run No.	Max. Rec. Temp. Deg. F	Equip. Location	Recorded By	Witnessed By

Run No.	
Service Order	
Depth-Driller	
Depth-Logger	
Bottom Logged Interval	
Top Logged Interval	
Casing-Driller	
Casing-Logger	
Bit Size	
Type Fluid in Hole	
Density	
Viscosity	
Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source of Rmf & Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp. Deg. F	
Equip. Location	
Recorded By	
Witnessed By	

Remarks: ROKE GEOMETRIC PATCH 32R (WELL SITE 32)
GROUND FIRE READING = 2 UNITS
DRY HOLE-NIL PRESENT NIL ABANDONED 31 JULY 1974
W 32 X RATIO 60 MICROAMP PER

	SP	
MILLIRESISTIVITY FROM IMPEDANCE		MILLIRESISTIVITY FROM IMPEDANCE
0	5MV+	0
		5000
		10000



Dhi-57

ROKE

SIDEWALL DENSILOG
CALIPER

ROKE ENTERPRISES LTD. CALGARY, ALBERTA

V. Kelly Rice 77 (3) 85

LEG NO.	
LEG	
MAP	
NO.	
R.	

COMPANY: ROKE ENTERPRISES LTD.

WELL: DH - 57

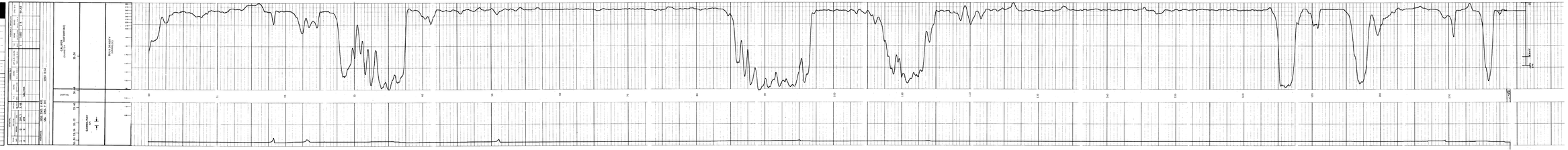
LOCATION: 276

FIELD: ICA RIVER VALLEY

PROVINCE: WESTERN CANADA

Date Drilled	
Date Run	
Elev. Rotary	1141.5 ft
Elev. Ground	1141.5 ft
Elev. Ground	1141.5 ft
Depth Reached	1140.45
Depth Drilled	1140.45
Casing Drilled	1140.45
Casing Drilled	1.7
Casing Drilled	
Fluid Type	MUD/WATER
Fluid Level	1
Rig Type	RC
Operating Time	3 HOURS 20 MIN
Time Run	30

Recorded By: GAGLAND Witnessed By: NARDUTTI



DH-5E

ROKE

SCHLUMBERGER

OIL FIELD SERVICES

FIELD	ROKE
COUNTY	SUFFOLK COUNTY
STATE	NEW YORK
COMPANY	SHELL OIL COMPANY
WELL	SC 8
API NO.	50-103-20276

276

Elev. Perm. Datum	
Log Measured From	
Drilling Measured From	
Date	10-11-77
Run No.	1
Depth-Driller	5600
Depth-Logger	5597
Bottom Log Interval	5596
Top Log Interval	1000
Casing-Driller	10 3/4 @ 1000
Casing-Logger	
Bit Size	9 7/8
Type Fluid in Hole	LIGHT MUD
Dens.	9.2
Visc.	40
pH	9.5
Fluid Loss	10
Source of Sample	
Rm @ Meas. Temp.	1.5 @ 65
Rmf @ Meas. Temp.	1.2 @ 65
Rmc @ Meas. Temp.	1.8 @ 65
Source Rmf / Rmc	MEASURED / CALC.
Rm @ BHT	1.0 @ 150
Time Since Circ.	12 HRS
Max. Rec. Temp.	150
Equip. Location	8
Recorded By	SCHLUMBERGER
Witnessed By	

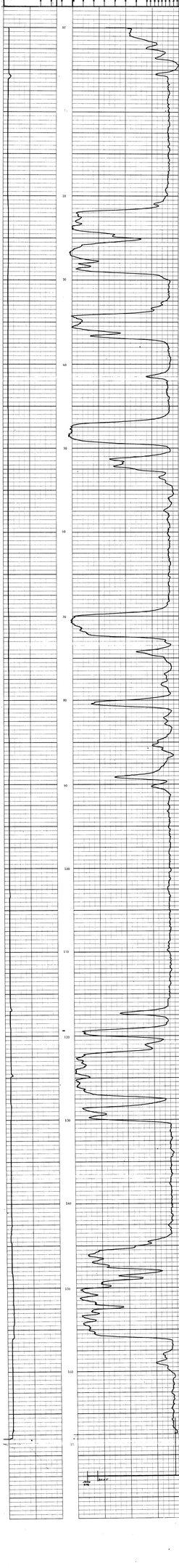
Run No.	1
Date	10-11-77
Depth-Driller	5600
Depth-Logger	5597
Bottom Log Interval	5596
Top Log Interval	1000
Casing-Driller	10 3/4 @ 1000
Casing-Logger	
Bit Size	9 7/8
Type Fluid in Hole	LIGHT MUD
Dens.	9.2
Visc.	40
pH	9.5
Fluid Loss	10
Source of Sample	
Rm @ Meas. Temp.	1.5 @ 65
Rmf @ Meas. Temp.	1.2 @ 65
Rmc @ Meas. Temp.	1.8 @ 65
Source Rmf / Rmc	MEASURED / CALC.
Rm @ BHT	1.0 @ 150
Time Since Circ.	12 HRS
Max. Rec. Temp.	150
Equip. Location	8
Recorded By	SCHLUMBERGER
Witnessed By	

RUN NO.	GENERAL DATUM		GAMMA RAY				BOREHOLE CORRECTION			
	DEPTH		T.C.	GAIN	ZERO	ATT. & N. LENGTH	T.C.	GAIN	ZERO	CPM/API
	FROM	TO								
1	0	1000	1	10	10	10	3	1000	1.25	50.55
2	0	5600	CALIPER							

REMARKS: DRILL PIPE @ 1000 CASING SHOE

CAL. TOOL @ 5597 OPEN HOLE

10,16 11,26 20,12 25,40	30,40 35,56
GAMMA RAY API	CALIPER (DIAMETER - CENTIMETRES)
	BULK DENSITY (GRAMS/CC)



ROKE

K-C-L OIL ENTERPRISES LTD.
CALGARY, ALBERTA

WELL 16-7-30-3
COMPANY ROKE OILS LTD.
LOCATION SE 7-30-3 W4
FIELD BIG STICK VALLEY
PROVINCE ALBERTA

276

Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Elev. 1241
Elev. 1247.5
Elev. 1247.5

Date: 26-JUL-1971
Run No.: ONE
Depth-Driller: 3145
Depth-Logger: 3145
Bottom Log Interval: 3145
Top Log Interval: 1400
Casing-Driller: 8 5/8 @ 1400
Casing-Logger: 1400
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Density: 9.4
Viscosity: 40
pH: 9.5
Fluid Loss: 6.4
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.55 @ 70
Rmf @ Meas. Temp.: 1.24 @ 70
Rmc @ Meas. Temp.: 1.86 @ 70
Source of Rmf & Rmc: MEASURED
Rm @ BHT: 1.03 @ 120
Time Since Circ.: 24 HRS
Max. Rec. Temp.: 120
Equip. Location: 3-30-3
Recorded By: BERGEN
Witnessed By: MORRIS

Run No. ONE
Type Log: DUAL INDUCTION LATEROLOG
Depth-Driller: 3145
Depth-Logger: 3145
Bottom Log Interval: 3145
Top Log Interval: 1400
Type Fluid in Hole: GEL CHEM
Salinity: 1400 PPM CL
Density: 9.4
Viscosity: 40
Fluid Loss: 6.4
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.55 @ 70
Rmf @ Meas. Temp.: 1.24 @ 70
Rmc @ Meas. Temp.: 1.86 @ 70
Source of Rmf & Rmc: MEASURED
Rm @ BHT: 1.03 @ 120
Time Since Circ.: 24 HRS
Max. Rec. Temp.: 120
Equip. Location: 3-30-3
Recorded By: BERGEN
Witnessed By: MORRIS

Remarks: 3MODE GEOMETRIC FACTOR .125 PHOTO TYPE III
CROSSED PIER HEATER = 8 DEGS.
NO6.GAIN/ATT. PRIMARY PEN ALTERED TO 3.25 MVH
8.75 % RATIO ON SECONDARY PEN

Scale: 1:240

Header: 40000 | 0 | 5000 | 10000

Depth markers: 00, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 178

LOG READ
CAL DU ENG RANGE
CAL READ

LOG READ
CAL DU ENG RANGE
CAL READ

ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77(3) #B

FILE NO.	276
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 52
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE		
Date	9 JAN 1977		
First Reading	168 M		
Last Reading	0		
Footage Logged	168		
Depth Reached	168.30		
Depth Driller	168.36		
Casing Roke	5.5		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Rm. @ °F			
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON   Witnessed By McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	50 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	50 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	169 - 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	168	3.66	4	100	0	16	3	1000	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
16		180
0 160		0 1800 3600

ROKE

SIDEWALL DENSILOG

Company: ROKE PETROPHYSICS LTD.
Well: 276
Field: RED RIVER AREA
County, Province: CHAUVIN, ALBERTA
Location: 2-25-43-5 W4M
Other Services: CAL, DIL, SDL
Permanent Datum: GROUND
Elevation: K.B. 1000 / D.F. / G.L. 996
Log Measured From: K.B. 4 Ft. Above Perm. Datum
Drilling Measured From: K.B.
Date: 25-Feb-82
Run No.: ONE
Depth-Driller: 1395
Depth-Logger: 1395
Bottom Logged Interval: 1395
Top Logged Interval: 0
Type Fluid in Hole: GEL CHEM
Salinity, PPM Cl: 2000
Density: 10.0
Viscosity: 45
Fluid Loss: 7.0
Source of Sample: FLOWLINE
Rm @ Meas. Temp: 0.77 @ 24°C
Rmf @ Meas. Temp: 0.62 @ 24°C
Rmc @ Meas. Temp: 1.2 @ 24°C
Source: Rmf: MEAS. Rmc: MEAS.
Rm @ BHT: 0.37 @ 50°C
Time Since Circ.: 4 HRS
Max. Rec. Temp. Deg. C: 50°C
Equip. No. & Location: 1302 DRAYTON VALLEY
Recorded By: GORDON
Witnessed By: MCKAYER

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
Run No.	DEPTHS FROM	DEPTHS TO	SPEED FPM	T.C. SEC	SEND SETTINGS	ZERO DIVS. ON R	API U.A. UNITS PER DIV.	T.C. SEC.	SEND SETTINGS	ZERO DIVS. ON R	CPS/ DIV
1	0	139.5	7.46					3	1000	28	68.43
2	0	139.5		CALIPER							

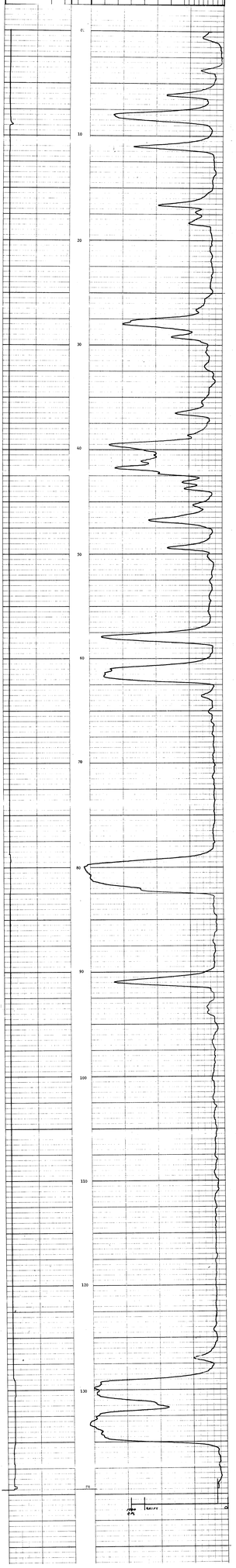
REMARKS: HOLE TOOL # 420 — OVER HOLE
CAL TOOL # 587

CALIPER (DIAMETER - CENTIMETERS)
30.16 31.24 32.32 33.40 34.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140



ROKE OIL INTERPRETERS LTD.
1001 1000, 144 - 4th AVENUE S.W.
CALGARY, ALBERTA T2P 3N4

Company: ROKE OIL INTERPRETERS LTD.
Well: COMPANY 08-45-5-3
Field: 03 SIXES WATER
County/Municipal District: PROVINCIAL DISTRICT
Province: ALBERTA
Location: 08-45-5-3 W5M
Other Services: BHC GR-CCL-FDL-MEL
Permanent Datum: GROUND Elev.: K.B. 1570
Log Measured From: K.B. 5.5 M Above Perm. Datum
Drilling Measured From: K.B.
Elev.: K.B. 1570, G.L. 1565

Date	1-3-73	1-3-73	1-3-73
Run No.	ONE	TWO	THREE
Depth-Driller	1530 M	1530 M	
Depth-Logger	1532.1	1532.1	
Bottom Logged Interval	1532.1	1530.0	
Top Logged Interval	1530.0	1400.0	
Casing-Driller	244.5 @ 1530		
Casing-Logger	244.5		
Bit Size	7.9		
Type Fluid in Hole	WATER GEL		
Density	1.1		
Viscosity	50		
Fluid Loss	10.0		
Source of Sample	MUD PIT		
Rm @ Meas. Temp.	0.3 @ 17°C		
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf and Rmc			
Rm @ BHT			
Time Since Circ.	3 HRS		
Max. Rec. Temp.	17°C		
Equip. No.	276		
Location			
Recorded By	LEONARD		
Witnessed By	MR. ROOKE		

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	COOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	30.34 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MHC-N.50.M
HOIST TRUCK NO.	36	SERIAL NO.	243
INSTRUMENT TRUCK NO.		STRENGTH	45.38 CM
COOL SERIAL NO.	123 - 002	TYPE	Amite
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GAMMA RAY SPEED FROM	TO	M/MIN	T.C. SEC	SENS SETTINGS	MV @ ¼ UNITS DEFLECTION DIV'L ON R	PER LOG DIV	T.C. SEC	NEUTRON SENS SETTINGS	DEFL DIV'L ON R	% PER LOG DIV
1	0	139.5	3.66	4	100	0	16	3	300	0	180

REMARKS: JUNK REF.F

GAMMA RAY | NEUTRON

GAMMA RAY INCREASES ← 16 → 160

NEUTRON INCREASES ← 1800 → 3600

0 10 20 30 40 50 60 70 80 90 100 110 120 130

100 CPS

1000 CPS

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

KIELK RIVER 77 (3)

FILE NO.

LSD
SEC
TWP
RGE
W.....M

COMPANY ELCO MINING LIMITED

WELL DH - 925 3

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: CSN, DSN, CAL, DIV

Permanent Datum GROUND LEVEL Elev.

Log Measured From RBG PEACHE 6.7 CM Above Perm. Datum

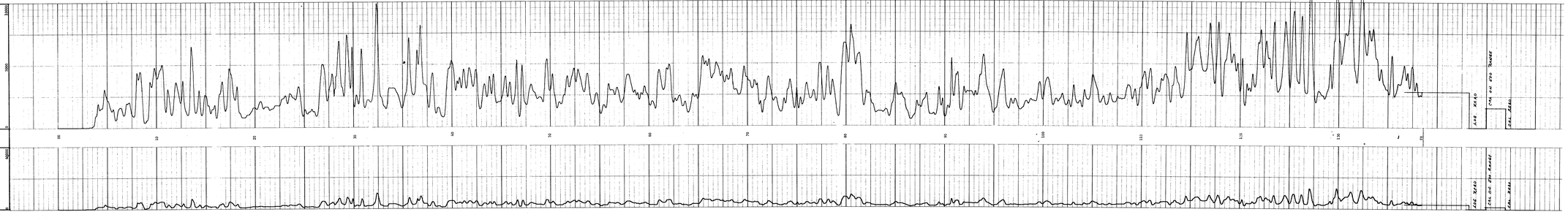
Mud Depth Measured From RBG PEACHE

K.B.
GRD.
G.L.

Run. No.	ONE
Date	29 NOV 1976
First Reading	138.5 M
Last Reading	3.5
Footage Logged	135
Depth Reached	139.62
Depth Driller	140.91
Casing Rake	3.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	3
Min. Diam.	NQ
Rm. @ °C	20.0 @ 25
Operating Time	1 HOUR
Truck No.	56

Recorded By CARLSON Witnessed By SUCKLEYE

Remarks: SHORE GRAPHITE FACTOR .125, PHOTO TYPE 111
GROUND FIRE RANGE 40 CPS
200 CPS/FULL FRONT FOR ADJUSTED TO 3.29
8 TO 1 RATIO ON EQUIPMENT 100



ROKE

ESSO PETROLEUM CO., LIMITED

WELL NO. 276

FIELD OR AREA ROKE

COUNTY OR PARISH OXFORDSHIRE

STATE ENGLAND

COMPANY ESSO PETROLEUM CO., LIMITED

LOCATION

ELEVATIONS: K.B. 276 ft. D.F. G.L.

PERMANENT DATUM: GROUND LEVEL

LOG MEASURED FROM: K.B. 276 ft. ABOVE PERM. DATUM

DRILLING MEASURED FROM: K.B.

DATE: 1-7-65

RUN NO.: 1

TYPE LOG: GAMMA RAY NEUTRON

DEPTH—DRILLER: 3000

DEPTH—LOGGER: 3000

BTM. LOG INTERVAL: 3000

TOP LOG INTERVAL: 1400

CASING—DRILLER: 13⅜ @ 1400

CASING—LOGGER: 1400

BIT SIZE: 12¼

TYPE FLUID IN HOLE: WATER BASE MUD

DENSITY: 10.0

VISCOSITY: 40

PH: 10.5

FLUID LOSS: 6.0

SOURCE OF SAMPLE: CIRCULATION

RM @ MEAS. TEMP.: 0.35 @ 70°F

RMF @ MEAS. TEMP.: 0.30 @ 70°F

RMC @ MEAS. TEMP.: 0.45 @ 70°F

SOURCE OF RMF: MEASURED

SOURCE OF RMC: MEASURED

RM @ BHT: 0.20 @ 200°F

TIME SINCE CIRC.: 12 HRS

MAX. REC. TEMP.: 200°F

EQUIP. LOCATION: ABINGDON

RECORDED BY: A. SMITH

WITNESSED BY: J. JONES

REMARKS: RUN NO. 1 SET @ 1400 CEMENTED WITH 1000 SACKS

RUN NO. 1 | FROM: 3000 | TO: 1400 | SPEED: 30 FT./MIN. | DEN. | NEU. | SON. | CAL. | GR. | TEN. | MSFL | DIL | BHC | CBL | VDL | SIG. | OTHER

EQUIPMENT: RUN NO. 1 | TYPE | SERIAL NO. | LOCATION

SUMMARY: RUN NO. 1 | TYPE LOG | DEPTH DRILLER | DEPTH LOGGER | BTM. LOG INTERVAL | TOP LOG INTERVAL | CASING—DRILLER | CASING—LOGGER | BIT SIZE | TYPE FLUID IN HOLE | DENSITY | VISCOSITY | PH | FLUID LOSS | SOURCE OF SAMPLE | RM @ MEAS. TEMP. | RMF @ MEAS. TEMP. | RMC @ MEAS. TEMP. | SOURCE OF RMF | SOURCE OF RMC | RM @ BHT | TIME SINCE CIRC. | MAX. REC. TEMP. | EQUIP. LOCATION | RECORDED BY | WITNESSED BY

TYPICAL OPERATING: RUN NO. | DATE | DEPTH DRILLER | DEPTH LOGGER | CASING—DRILLER | CASING—LOGGER | OPEN HOLE

1 | 1000 | 1.4ft | 14.5?

REMARKS: 2000 Shot. F 427 CBL Shot. F 300

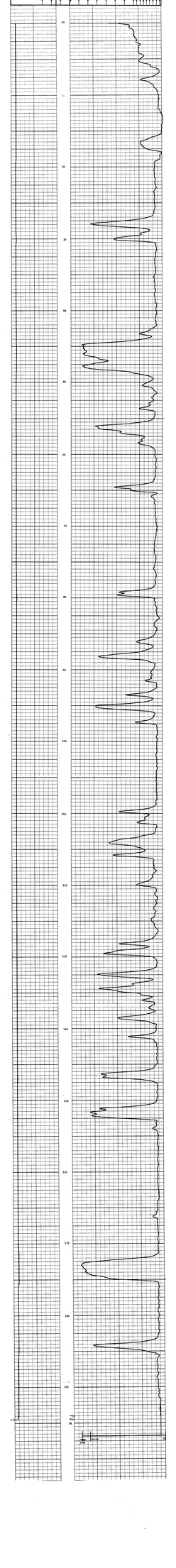
OPEN HOLE

CALIPER (DIAMETER—UNCORRECTED)

32,16 32,24 32,32 32,40 30,48 30,56 30,64

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE

Rotary Table Elevation

Kelly Bushing

Ground Elevation

Permanent Datum

Elevation

Log Measured From

Drilling Measured From

Date

Run No.

Depth-Driller

Depth-Logger

Bottom Logged Interval

Top Logged Interval

Type Fluid in Hole

Salinity

Density

Level

Max. Rec. Temp.

Equip. No. & Location

Recorded By

Witnessed By

276

EQUIPMENT DATA			
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	4.5 OD	DIAMETER	4.5 OD
SOURCE MODEL NO.		SOURCE MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
STRENGTH	50 CUT OM	STRENGTH	1.5 CE OM
DETECTOR TO SOURCE	9.69 ft.	DETECTOR TO SOURCE	10'6"/3.20 M
		SERIAL NO.	105
	GENERAL	STRENGTH	1.5 CE OM
HOLE TRACK NO.	20	FILLER	WATER
INSTRUMENT TRACK NO.		STRENGTH	1 CE/BBL
TOOL SERIAL NO.	165 + 005		

LOGGING DATA												
RUN NO.	LOGGED INTERVAL FROM	TO	SCALE 1 IN. =	TIME CONSTANT SECONDS	SPEED FPM	GR TO NEUTRON SPACING FEET	TIE-IN LOG RUN NO.	TIE-IN LOG INTERVAL FROM	TO	NEUTRON SCALE 1 IN. =	NEUTRON TIME CONSTANT SECONDS	GR TO NEUTRON SPACING FEET
1	1,140 ft.	100	100	1	30	0						

REMARKS LONG SPACE

GAMMA RAY

GAMMA RAY INCREASES

0 API 120

NEUTRON

NEUTRON INCREASES

1000 2000

Depth

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300 8310 8320 8330 8340 8350 8360 8370 8380 8390 8400 8410 8420 8430 8440 8450 8460 8470 8480 8490 8500 8510 8520 8530 8540 8550 8560 8570 8580 8590 8600 8610 8620 8630 8640 8650 8660 8670 8680 8690 8700 8710 8720 8730 8740 8750 8760 8770 8780 8790 8800 8810 8820 8830 8840 8850 8860 8870 8880 8890 8900 8910 8920 8930 8940 8950 8960 8970 8980 8990 9000 9010 9020 9030 9040 9050 9060 9070 9080 9090 9100 9110 9120 9130 9140 9150 9160 9170 9180 9190 9200 9210 9220 9230 9240 9250 9260 9270 9280 9290 9300 9310 9320 9330 9340 9350 9360 9370 9380 9390 9400 9410 9420 9430 9440 9450 9460 9470 9480 9490 9500 9510 9520 9530 9540 9550 9560 9570 9580 9590 9600 9610 9620 9630 9640 9650 9660 9670 9680 9690 9700 9710 9720 9730 9740 9750 9760 9770 9780 9790 9800 9810 9820 9830 9840 9850 9860 9870 9880 9890 9900 9910 9920 9930 9940 9950 9960 9970 9980 9990 10000

1 FPM

5 FPM

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 54
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DEN-CAL, DEV

276

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	GROUND LEVEL	Above Perm. Datum	CSG
Well Depths Measured from	GROUND LEVEL		G.L. METRIC

Run. No.	ONE		
Date	15 JAN 1977		
First Reading	194 M		
Last Reading	19		
Footage Logged	175		
Depth Reached	194.92		
Depth Driller	195.20		
Casing Roke	19		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Rm @ °C	21.74 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON

Witnessed By McKELVIE

Remarks

SONDE GEOMETRIC FACTOR .329 PROTO TYPE IV

GROUND FISH READING - 55 OHMS

500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS

8 TO 1 RATIO ON SECONDARY PEN

Depths

ROKE

SIDEWALL DENSILOG

CALIBRATED

OIL ENTERPRISES LTD.

CALGARY ALBERTA

LOG: KELLY BUSHING
FROM: GL
TO: TD
RUN: 1
DATE: 11-6-80
M: M

COMPANY: BHP - SS
WELL: DH - 55
FIELD: BEA RIVER VALLEY
LOCATION: 276

PROVINCE: BRITISH COLUMBIA
COUNTY: PEACE RIVER DISTRICT
Other Services: CDDL, FDL, DIFF
Casing Driller: 13 3/8" @ 52.00'
Casing Logged: 13 3/8" @ 52.00'
Bit Size: 12 1/4"
Type Fluid in Hole: GEL CHEM
Density: 9.2
Viscosity: 40
Fluid Loss: 5.25
pH: 10.5
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.25 @ 70°F
Rmf @ Meas. Temp.: 1.0 @ 70°F
Rmc @ Meas. Temp.: 1.5 @ 70°F
Rm @ BHT: 0.95 @ 170°F
Time Circ. Stopped: 18:00 HRS 17-6-80
Time Logger on Bottom: 23:00 HRS 17-6-80
Max. Rec. Temp.: 170°F
Equipment No.: 3-1 NORTH
Location: 1 MILE SOUTH
Recorded By: BRANDT
Witnessed By: MCKENZIE

Operator Name: CDOIL, FDL, DIFF
Casing Driller: 13 3/8" @ 52.00'
Casing Logged: 13 3/8" @ 52.00'
Bit Size: 12 1/4"
Type Fluid in Hole: GEL CHEM
Density: 9.2
Viscosity: 40
Fluid Loss: 5.25
pH: 10.5
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.25 @ 70°F
Rmf @ Meas. Temp.: 1.0 @ 70°F
Rmc @ Meas. Temp.: 1.5 @ 70°F
Rm @ BHT: 0.95 @ 170°F
Time Circ. Stopped: 18:00 HRS 17-6-80
Time Logger on Bottom: 23:00 HRS 17-6-80
Max. Rec. Temp.: 170°F
Equipment No.: 3-1 NORTH
Location: 1 MILE SOUTH
Recorded By: BRANDT
Witnessed By: MCKENZIE

GENERAL				GAMMA RAY			SIDEWALL DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L.OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L.OR R	CPS/DIV
1			3.66					3	1000	2R	68.63

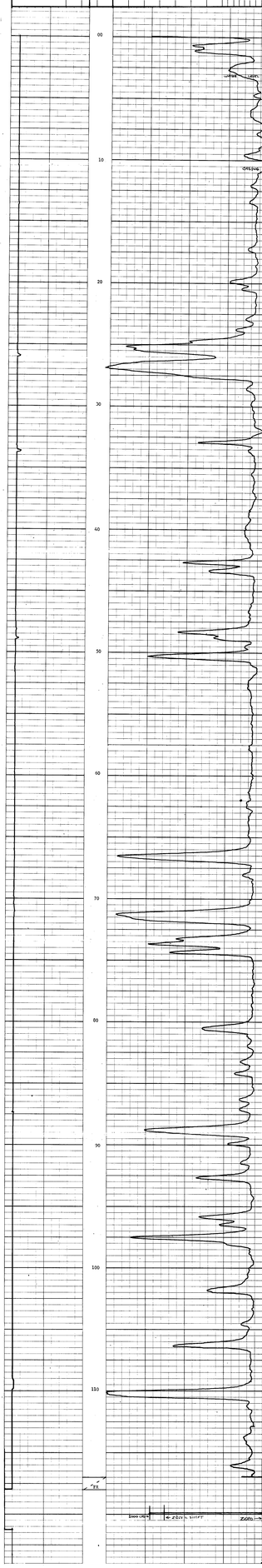
REMARKS: DENS TOOL # 420 OPEN HOLE s.f. UNITS
CAL. TOOL # 587

CALIPER (DIAMETER – CENTIMETERS)

10.41 15.24 20.32 25.40 30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD.
CALGARY, ALBERTA

K-6-E-E

FILE NO.

COMPANY: ROKE OIL ENTERPRISES LTD.

WELL: No. 15

FIELD: ELBOW RIVER VALLEY

LOCATION: SEC 12 TWP 23 RGE 3 W5M

276

Permanent Datum: GROUND LEVEL
Log Measured from: KELLY BUSHING
Drilling Measured from: KELLY BUSHING

Elevation: 3825 ft
K.B.: 3834 ft
D.F.: 3832 ft
G.L.: 3825 ft

Date: 18 NOV 1976
Run No.: ONE
Depth-Driller: 3600
Depth-Logger: 3600
Bottom Logged Interval: 3600
Top Logged Interval: 3150
Casing-Driller: 314 @ 3150
Casing-Logger: 314 @ 3150
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Density: 10.1
Viscosity: 38
pH: 10.5
Fluid Loss: 12
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.65 @ 70°F
Rmf @ Meas. Temp.: 1.32 @ 70°F
Rmc @ Meas. Temp.: 2.2 @ 70°F
Source: Rmf: MEASURED Rmc: CALCULATED
Rm @ BHT: 1.1 @ 120°F
Time Since Circ.: 12 HOURS
Max. Rec. Temp.: 120°F
Equipment No. & Location: 36 EDMONTON
Recorded By: DENNIS
Witnessed By: MACKAY

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	SCI 115	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 IN	TOOL MODEL NO.	SCI 125
DETECTOR MODEL NO.		DIAMETER	32 IN
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	12.26 CM
		SOURCE MODEL NO.	MRCA 66 M
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	Am Be
TOOL SERIAL NO.	115 - 002	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTHS FROM	TO	SPEED M/MIN	T.C. SEC	GAMMA RAY SENS SETTINGS	ZERO DIV. L. OR M.	API G. R. UNITS PER LOG DIV.	T.C. SEC	NEUTRON SENS SETTINGS	ZERO DIV. L. OR M.	API N. UNITS PER LOG DIV.
1	0	3.25	3.66	6	100	0	16	3	1000	0	360
1	3.25	118	3.66	6	100	0	16	3	500	0	180

REMARKS: OPEN HOLE

S. I. UNITS

GAMMA RAY

GAMMA RAY INCREASES

0 — 16 — 160

DEPTH

NEUTRON

NEUTRON INCREASES

0 — 1800 — 3600 — 7200

SCALE CHANGE

CASING

00
10
20
30
40
50
60
70
80
90
100
110

ZERO 100 CPS

ZERO 2000 CPS

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (2)88

FILE NO.

LSD
SEC
TWP
RGE
W ____ M

COMPANY ELCO MINING LIMITED

WELL DH - 55

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: GRN, DENS-CAL, DEV

Permanent Datum GROUND LEVEL Elev. ____ K.B. ____

Log Measured from GROUND LEVEL Ft. Above Perm. Datum ____ GRD ____

Well Depths Measured from ____ G.L. ____

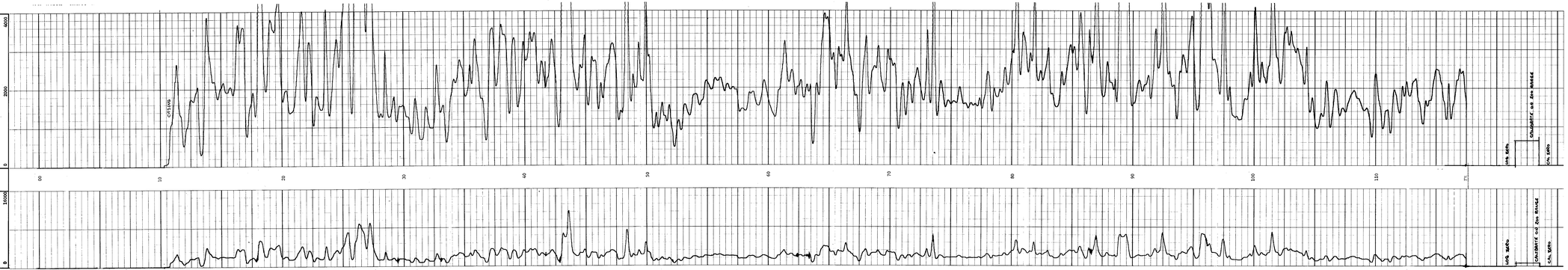
RIG FLOOR = 5 M ABOVE GROUND LEVEL

Run. No.	ONE	
Date	18 NOV 1976	
First Reading	117.50M	
Last Reading	10.75	
Footage Logged	106.75	
Depth Reached	118.50	
Depth Driller	119.51	
Casing Rake	10.75	
Casing Driller		
Fluid Type	MUD	
Liquid Level	3.25	
Min. Diam.	HQ	
Rm. @ °C	18.18 @ 25	
Operating Time	14 HOURS	
Truck No.	36	

Recorded By EDWARDS Witnessed By McKELVIE

Remarks

SOUTH GEOPHYSIC FACTOR .329 PROTO TYPE III, S.P. UNITS
GROUND MED FISH READING = 340 OHMS
2000 OHM/DIV. PREAMP FOR ADJUSTED TO 1.25 DIV
8 TO 1 RATIO ON SIGNBARE FOR



DH. 56

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

K-ELK RIVER 77(3) B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 56
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV

276

Permanent Datum	GROUND LEVEL	Elev.
Log Measured from	GROUND LEVEL	Above Perm. Datum
Well Depths Measured from	GROUND LEVEL	
K.B.		
CSG		
G.L.		

Run. No.	ONE
Date	5 DEC 1976
First Reading	189 M
Last Reading	0
Footage Logged	189
Depth Reached	189.92
Depth Driller	190.02
Casing Roke	16.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Operating Time	2½ HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	189	3.66					3	1000	2 R	68.43
2	0	189		CALIPER							

REMARKS DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587

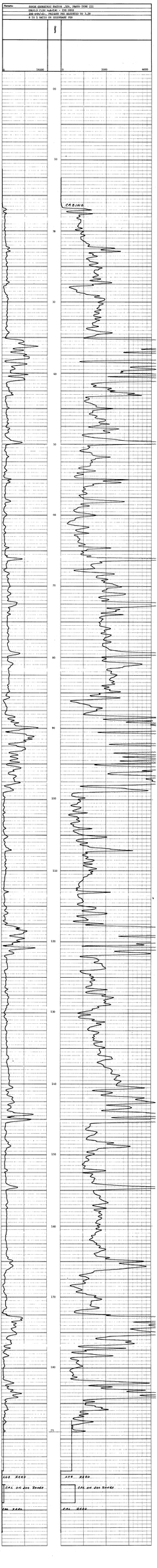
ROKE

OIL & GAS LTD.

CALGARY, ALBERTA

Company	ROKE OIL & GAS LTD.
Well	102/06-26-026-26W4
Field	[illegible]
Location	102/06-26-026-26W4
Province	ALBERTA
Country	CANADA
Log Date	1-Jul-1976
Log Number	1
Run Number	1
Depth Driller	1600.00
Depth Logger	1600.00
Bottom Log Interval	1600.00
Top Log Interval	0.00
Casing Driller	8.625 @ 0.00
Casing Logger	
Bit Size	7.875
Type Fluid in Hole	WATER
Density	1.00
Viscosity	0.00
Fluid Loss	0.00
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.000 @ 0.00
Rmf @ Meas. Temp.	0.000 @ 0.00
Rmc @ Meas. Temp.	0.000 @ 0.00
Source Rmf / Rmc	
Rm @ BHT	0.000 @ 0.00
Time Since Circ.	0.00
Max. Rec. Temp.	0.00
Equipment Number	0
Location	0
Recorded By	[illegible]
Witnessed By	[illegible]

Remarks: HIGH RESOLUTION DENSITY LOG, TWIN TYPE CCL
SINGLE FLOW NARROW - CCL GRAPH
DOB SINGLE, PRINTER PEN ADJUSTED TO 3.29
TO 1 METER ON GEOGRAPH PEN



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77(3)#B

276

FILE NO.	
LSD / SEC / TWP / RGE / W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 56
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DEN, CAL, FBL, DEV
Permanent Datum	GROUND LEVEL, Elev.
Log Measured from	GROUND LEVEL, Above Perm. Datum
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	

Run. No.	ONE
Date	5 DEC 1976
First Reading	189.5 M
Last Reading	0
Footage Logged	189.5
Depth Reached	189.31
Depth Driller	190.02
Casing Roke	16.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Rm @ °F	
Operating Time	1½ HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	125 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	189.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → 16; 0 – 160		NEUTRON INCREASES → 180; 0 – 1800 – 3600

ROKE

SUBSURFACE GEOLOGY LTD.

CALGARY, ALBERTA

Company: ROKE OIL & ENTERPRISES LTD.

Well: 2-27

Field: WILDCAT

Province: ALBERTA

Location: 2-27-30-19 W4M

Elevation: K.B. 3298 G.L. 3288

Drilling Fluid Type: GEL CHEM

Rig No.: 2

Spud Date: 7-JUL-77

Date Logged: 8-JUL-77

Depth-Driller: 3300

Depth-Logger: 3300

Bottom Logged Interval: 3300

Top Logged Interval: 1000

Type Fluid in Hole: GEL CHEM

Salinity: 2.5 PPM CL

Density: 9.2 LB/GAL

Viscosity: 45 SEC

Fluid Loss: 7.4 CC

Source of Sample: FLOWLINE

R_m @ Measured Temp: 1.1 @ 70 °F

R_mf @ Measured Temp: 0.88 @ 70 °F

R_mc @ Measured Temp: 1.32 @ 70 °F

Source of R_mf & R_mc: CALCULATED

R_m @ BHT: 0.7 @ 130 °F

Time Since Circulation: 12 HRS

Max. Rec. Temp. Deg. F: 130

Equipment No. & Location: 1001 CALGARY

Recorded By: K. WARD

Witnessed By: M. SMITH

Run No.: ONE

Service Order No.: 276

Permanent Datum: K.B.

Elevation: 3298

Log Measured From: K.B. 10 FT ABOVE PERM. DATUM

Drilling Measured From: K.B.

RUN	GENERAL BOTTOM	GENERAL TOP	SPEED	T.C.	GAMMA RAY SCALE	GAMMA RAY API S.N. LN-75	GAMMA RAY API S.N. LN-75	NORMAL DENSITY SCALE	NORMAL DENSITY SCALE	CAL DIA
NO.	DEPTH	DEPTH	FT/MIN	SEC	0 TO 200	0 TO 100	100 TO 200	1.95 TO 2.95	2.95 TO 1.95	
1	0	1000	1,800					1000	0	66.43
2	0	1000	1,800		CALIPER					

REMARKS: SHORT TOOL # 420 LONG HOLE

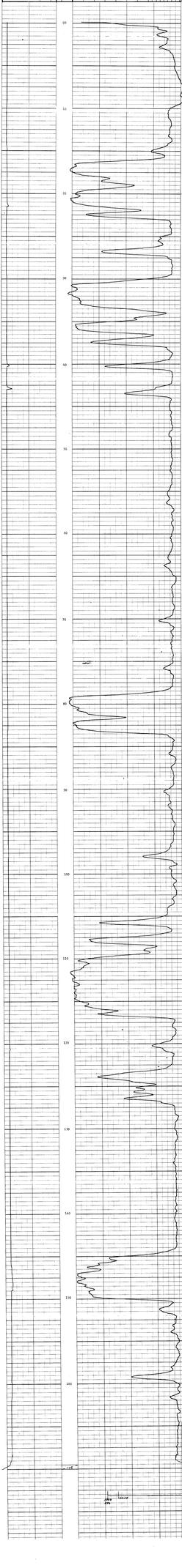
CAL. INCL. # 387

CALIPER (DIAMETER — CENTIMETERS)

10.16 12.70 20.32 27.40 30.48 35.56

GAMMA RAY (API)

BULK DENSITY (GRAMS/CC)



ROKE OIL (ALBERTA) LTD.

CALGARY, ALBERTA

WELL	2-14 HZ
FIELD	WILDCAT
COUNTY	RED DEER
LOCATION	14 - 37 - 27 - W4
DATE	23 FEB 1989
RUN NO.	ONE
DEPTH DRILLER	3600
DEPTH LOGGER	3600
BTM. LOG INTERVAL	3600
TOP LOG INTERVAL	3000
CASING SIZE	244.5
CASING WEIGHT	59.53
CASING DEPTH	3000
TYPE FLUID IN HOLE	WATER
DENSITY	1.00
VISCOSITY	50
PH	10
FLUID LOSS	10
SOURCE OF SAMPLE	CIRC.
RM @ MEAS. TEMP.	0.5 @ 20
RMF @ MEAS. TEMP.	0.4 @ 20
RMC @ MEAS. TEMP.	0.6 @ 20
SOURCE RMF & RMC	MEAS.
RM @ BHT	0.3 @ 90
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	90
EQUIP. LOCATION	3 CRTES
RECORDED BY	J. LEWIS
WITNESSED BY	MR. ROKE

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	32 MM	DIAMETER	32 MM
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	10.34 CM	LENGTH	10.34 CM
DISTANCE TO N. SOURCE	7.09 M	SOURCE MODEL NO.	MISC N-SO-M
GENERAL		STRENGTH	45 MCI
LOGGE TRUCK NO.	26	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Amba
TOOL SERIAL NO.	125 - 202	STRENGTH	5 CURIES

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
RUN NO.	LOGGED FROM	LOGGED TO	SPEED M./MIN.	T.C. SETTINGS	SPEED (CPS @ 1.00 V)	API GA. R. UNITS (CPS @ 1.00 V)	T.C. SETTINGS	SPEED (CPS @ 1.00 V)	API GA. R. UNITS (CPS @ 1.00 V)
1	0	170	1.68	5	500	0	10	3	500	0	160

REMARKS: OPEN HOLE

GAMMA RAY	Metres	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
0	180	3600
	00	
	10	
	20	
	30	
	40	
	50	
	60	
	70	
	80	
	90	
	100	
	110	
	120	
	130	
	140	
	150	
	160	
	170	
0		3600

ROKE

POWERED BY SCHLUMBERGER

COMPANY: ROKE OIL LIMITED

WELL: KIMBERLY 2-3-17-28-W4M

FIELD: WILDCAT

LOCATION: 2-3-17-28-W4M

276

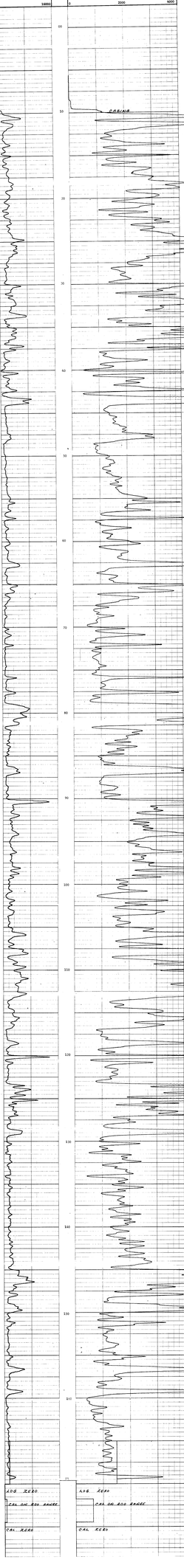
PROVINCE: ALBERTA

COUNTRY: CANADA

Log Measured From	KB 1.5 m Above Permanent Datum
Drilling Measured From	KB
Permanent Datum	GL
Elevation	GL 1010.5 KB 1012.0
Elev. K.B.	1012.0
Elev. D.F.	
Elev. G.L.	1010.5
Date	14-JUN-93
Run No.	ONE
Depth-Driller	2 400.00
Depth-Logger	2 396.00
Bottom Log Interval	2 395.00
Top Log Interval	1 143.00
Casing-Driller	244.5 @ 143.00
Casing-Logger	244.5 @ 143.00
Bit Size	152.4
Type Fluid in Hole	NON-DISPERSED
Density	1.10
Viscosity	40
Fluid Loss	10.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.700 @ 20.0
Rmf @ Meas. Temp.	0.500 @ 20.0
Rmc @ Meas. Temp.	0.900 @ 20.0
Rm @ BHT	0.300 @ 80.0
Time Since Circ.	5.00
Max. Rec. Temp.	80.0
Equip. Location	1 143.00 - 2 400.00
Recorded By	14-JUN-93
Witnessed By	14-JUN-93

Equipment	1 143.00 - 2 400.00
Recorded By	14-JUN-93
Witnessed By	14-JUN-93

Remarks: GAMMA RADIOACTIVE FACTOR .1 TYPE PAPER TYPE III
CONNECTOR TYPE CABLE
DIFFERENTIAL TEMPERATURE CALIBRATED BY 7.19
DIFFERENTIAL TEMPERATURE CALIBRATED BY 7.19
0 TO 2 RATIO CV RECORDING PEN



ROKE

SIDEWALL DENSLOG

ROKE OIL INTERPRETERS LTD.
CALGARY ALBERTA

Recorded By: [illegible]
Witnessed By: [illegible]

Permanent Datum	GL
Log Measured From	KB
Drilling Measured From	KB
Elev.	K.B. 1000
	G.L. 996
	D.F. [illegible]

COMPANY: [illegible]
WELL: [illegible]
FIELD: [illegible]
COUNTY: [illegible]
PROVINCE: [illegible]

Location	10-35-19-W4
Other Services	
Permanent Datum	GL
Log Measured From	KB
Drilling Measured From	KB
Elev.	K.B. 1000
	G.L. 996
	D.F. [illegible]

Date	3-5-83
Run No.	ONE
Depth-Driller	137.0
Depth-Logger	136.90
Bottom Logged Interval	136.90
Top Logged Interval	30.00
Casing-Driller	114.30 @ 30.00
Casing-Logger	114.30 @ 30.00
Bit Size	7.78
Type Fluid in Hole	GEL CHEM
Density	1.60
Viscosity	70
Fluid Loss	7.5
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.30 @ 24
Rmf @ Meas. Temp.	0.23 @ 24
Rmc @ Meas. Temp.	0.45 @ 24
Source of Rmf & Rmc	CALC
Rm @ BHT	0.15 @ 49
Time Since Circ.	4 HRS
Max. Rec. Temp.	49
Equip. No. & Location	1008
Recorded By	[illegible]
Witnessed By	[illegible]

RECEIVED
MAR 08 1983
ROKE OIL INTERPRETERS LTD.

RUN NO. ONE
DATE 3-5-83
TYPE LOG DENSLOG
DEPTH-DRILLER 137.0
DEPTH-LOGGER 136.90
BTM. LOG INTERVAL 136.90
TOP LOG INTERVAL 30.00
CASING-DRILLER 114.30 @ 30.00
CASING-LOGGER 114.30 @ 30.00
BIT SIZE 7.78
TYPE FLUID IN HOLE GEL CHEM
DENSITY 1.60
VISCOSITY 70
FLUID LOSS 7.5
SOURCE OF SAMPLE FLOWLINE
RM @ MEAS. TEMP. 0.30 @ 24
RMF @ MEAS. TEMP. 0.23 @ 24
RMC @ MEAS. TEMP. 0.45 @ 24
SOURCE OF RMF & RMC CALC
RM @ BHT 0.15 @ 49
TIME SINCE CIRC. 4 HRS
MAX. REC. TEMP. 49
EQUIP. NO. & LOCATION 1008
RECORDED BY [illegible]
WITNESSED BY [illegible]

276

Run No.	ONE
Date	3-5-83
Depth-Driller	137.0
Depth-Logger	136.90
Bottom Logged Interval	136.90
Top Logged Interval	30.00
Casing-Driller	114.30 @ 30.00
Casing-Logger	114.30 @ 30.00
Bit Size	7.78
Type Fluid in Hole	GEL CHEM
Density	1.60
Viscosity	70
Fluid Loss	7.5
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.30 @ 24
Rmf @ Meas. Temp.	0.23 @ 24
Rmc @ Meas. Temp.	0.45 @ 24
Source of Rmf & Rmc	CALC
Rm @ BHT	0.15 @ 49
Time Since Circ.	4 HRS
Max. Rec. Temp.	49
Equip. No. & Location	1008
Recorded By	[illegible]
Witnessed By	[illegible]

GENERAL				GAMMA RAY				SIDEWALL DENSLOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN.	T.C. SECS	ZERO DIV./.04 A	API G.R. UNITS PER LOG DIV.		T.C. SECS	ZERO SETTINGS	ZERO DIV./.04 A	CPS/DIV
1	0	137.0	3.66					1	1000	28	68.43
1	0	137.0	4.6	CALIPER							

REMARKS: SONDE TOOLS # 630. OPEN HOLE, M.R. ENDS
GAL TOOLS # 567

CALIPER
(DIAMETER - CENTIMETRES)

30.16 | 28.32 | 25.40
15.24

30.48 | 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

WATER LEVEL

CASING

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140

1000 CPS | F.E.D.C. SHIFT | 2000

OIL & GAS CONSERVATION BOARD
FILE NO. 276
DATE RECEIVED MAR 08 1983
DATE RELEASED
MAY 08 1984
CONFIDENTIAL

ROKE

COMPANY OIL LTD.

WELL NO. 276

FIELD REX ESTES STAFF

COUNTY/PARISH

STATE/PROVINCE ALBERTA

LOCATION 5-35-27-4W4

OTHER SERVICES

CBL/VDL/GR/CCL

DATE 27-JAN-76

RUN ONE

GAMMA RAY NEUTRON LOG

Recorded By: JENSEN

Witnessed By: MCKENZIE

Drilling Fluid Type: WATER BASE

Fluid Loss: 11.2 cc

Rm @ °C: 1.30 @ 20

Rmf @ °C: 1.10 @ 20

Rmc @ °C: 3.50 @ 20

Source: Rmf Rmc

Rm @ BHT: 1.30 @ 20

Time Since Circ.: 36 HOURS

Max. Rec. Temp. °C: 30

Equip. No.: 3

Location: 5-35-27-4W4

Recorded By: JENSEN

Witnessed By: MCKENZIE

Run No.: ONE

Depth-Driller: 1600

Depth-Logger: 1597

Bottom Logged Interval: 1597

Top Logged Interval: SURFACE

Casing-Driller: 139.7 @ 0

Casing-Logger: 139.7 @ 0

Bit Size: 222.2

Type Fluid in Hole: WATER BASE

Density: 1.00

Viscosity: 32

pH: 10

Fluid Loss: 11.2 cc

Source of Sample: CIRCULATION

Rm @ Measured Temp: 1.30 @ 20

Rmf @ Measured Temp: 1.10 @ 20

Rmc @ Measured Temp: 3.50 @ 20

Source of Rmf and Rmc: Rmf Rmc Measured

Rm @ BHT: 1.30 @ 20

Time Since Circulation: 36 HOURS

Max. Rec. Temp. Deg. C: 30

Equipment No.: 3

Location: 5-35-27-4W4

Recorded By: JENSEN

Witnessed By: MCKENZIE

EQUIPMENT DATA

GAMMA RAY

	CODE
RUN NO.	NGS 125
TOOL MODEL NO.	32 GR
DIAMETER	
DETECTOR MODEL NO.	
TYPE	SCINTILLATION
LENGTH	10.16 CM
DISTANCE TO N. SOURCE	9.84 M

GENERAL

HOIST TRUCK NO.	36
INSTRUMENT TRUCK NO.	36
TOOL SERIAL NO.	125 -002

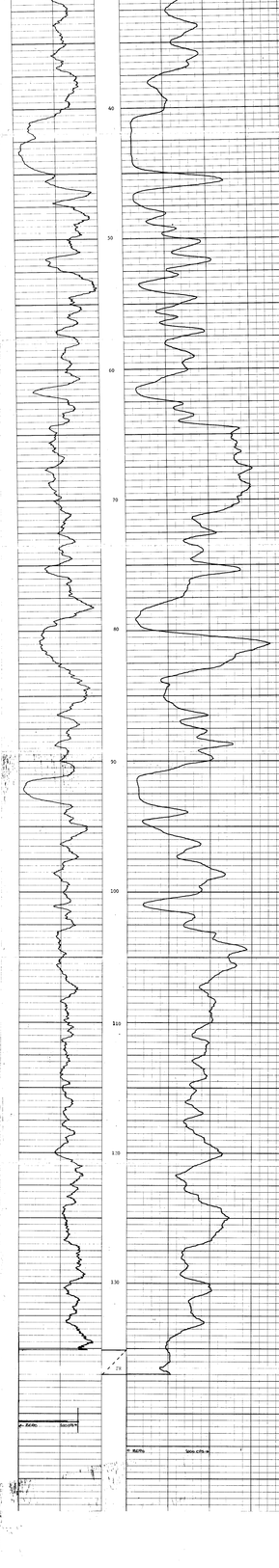
NEUTRON

	CODE
RUN NO.	NEUTRON/NEUTRON
LOG TYPE	NGS 133
TOOL MODEL NO.	32 NN
DIAMETER	
DETECTOR MODEL NO.	
TYPE	PROPORTIONAL
LENGTH	23.25 CM
SOURCE MODEL NO.	MRC-N-55-W
SERIAL NO.	255
SPACING	43.18 CM
TYPE	Am-Be
STRENGTH	5 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTHS FROM	TO	SPEED M/MIN	T.C. SEC.	GAMMA RAY SENS SETTING	ZERO DIV. = 5M.R.	API G. R. UNITS M.R./I.CPS DIV.	T.C. SEC.	NEUTRON SENS SETTING	ZERO DIV. = 5M.R.	API N. UNITS M.R./I.CPS DIV.
1	0	137	3.65	4	100	0	16	3	1000	0	180

REMARKS: CCL/GR RUN & LOGGED



ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) 8D

FILE NO.
LSD
SEC
TWP
RGE
W M

COMPANY KLOD MINING LIMITED

WELL IHI - 58

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: HDSI-CAL,GRN,DEV

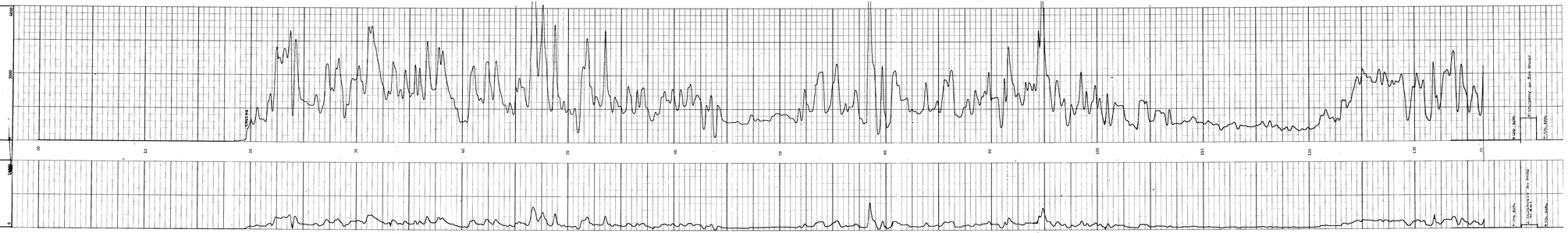
Permanent Datum GROUND LEVEL Elev.
Log Measured from GROUND LEVEL Ft. Above Perm. Datum
Mud Depth Measured from

K.B.
GSG
G.L.

Run No.	ONE		
Date	20 NOV 1976		
First Reading	136.50 M		
Last Reading	19.20		
Footage Logged	116.80		
Depth Reached	137.50		
Depth Driller	137.80		
Casing Rake	19.70		
Casing Driller			
Fluid Type	MUD		
Liquid Level	5.25		
Min. Diam.	30		
Rm. @ °C	13.89 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By EDWARDS Witnessed By MARKEVIX

Remarks: ROKE CORRECTED FACTOR .329 PROVO TYPE III, 8.7 UNITS
GROUND FLOW FACTOR .300 GRN
300 GRN/CAL FREQUENCY RES ADJUSTED TO 1.29
8 TO 1 RATIO ON SIGNATURE PER



ROKE

SIDEWALL DENSILOG
Form 9

ROKE OILFIELD SERVICES (1978) LTD. CALGARY, ALBERTA

COMPANY: ROCK RIDGE ENERGY
WELL: 16-35-32-5W5
FIELD: ROCK RIDGE
LOCATION: 16 - 35 - 32 - 5 W5
PROVINCE: ALBERTA
COUNTRY: CANADA

276

Other Services: GAMMA RAY - CALIPER

Permanent Datum: GROUND LEVEL
Elevation: 1,276
K.B.: 1,289
D.F.: 1,287
G.L.: 1,276

Log Measured From: K.B. 13 Ft. Above Perm. Datum
Drilling Measured From: K.B.

Date: 1-JUL-87
Run No.: ONE
Depth-Driller: 3,300
Depth-Logger: 3,300
Bottom Logged Interval: 3,300
Top Logged Interval: 3,000
Type Fluid in Hole: GEL CHEM
Salinity, PPM Cl: 1,500
Density: 10.0
Viscosity: 50
Fluid Loss: 6.0
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.24 @ 77°F
Rmf @ Meas. Temp.: 1.10 @ 77°F
Rmc @ Meas. Temp.: 1.80 @ 77°F
Source of Rmf & Rmc: MEAS
Rm @ BHT: 0.61 @ 150°F
Time Since Circ.: 4 HRS
Max. Rec. Temp. Deg. F: 150°F
Equipment No. & Location: 1301 - 1304 - 1311
Recorded By: R. SCHMIDT
Witnessed By: MR. DUNN

GENERAL				GAMMA RAY			SIDEWALL DENSILOG			
RUN NO.	CASING FROM	CASING TO	SPACING & WT/FT	T.D. DRILLER	T.D. LOGGER	BTM. LOG INTERVAL	SCALE SETTINGS	PERM. DATUM ELEV.	LOG MEAS. FROM	DRLG MEAS. FROM
1	0	344.	7,66				3	1000	K B	68,43

REMARKS: 8000 TOOL # 420
GAL TOOL # 582

OPER. RIG #

CALIPER
(DIAMETER - CENTIMETRES)
10,16 15,24 20,32 25,40
30,48
35,56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)
-.25 0 .25

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140

ROKE OIL ENTERPRISES LTD.

CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

Recorded By	GARVER
Witnessed By	MCKELLAR
Location	16-35-29-W4M
Field	EAR RIVER WATER
County	
Province	ALBERTA
Well No.	276
Permanent Datum	GROUND LEVEL
Elevation	2329.5
Log Measured From	K.B. 5.5 ft.
Drilling Measured From	K.B.
Date	3-3-59
Run No.	ONE
Depth-Driller	1650
Depth-Logger	1650
Bottom Logged Interval	1650
Top Logged Interval	0
Type Fluid in Hole	WATER
Salinity, P.P.M. Cl	
Density	
Level	FULL
Max. Rec. Temp.	90
Operating Rig Time	
Recorded By	GARVER
Witnessed By	MCKELLAR

Run No.	ONE
Type Log	GAMMA RAY NEUTRON
Depth-Driller	1650
Depth-Logger	1650
Bottom Logged Interval	1650
Top Logged Interval	0
Casing-Driller	8 5/8 @ 163
Casing-Logger	163
Bit Size	7 7/8
Type Fluid in Hole	WATER
Dens.	
Visc.	
pH	
Fluid Loss	
Source of Sample	
R_m @ Meas. Temp.	
R_mf @ Meas. Temp.	
R_mc @ Meas. Temp.	
Source of R_mf & R_mc	
R_m @ BHT	
Time Since Circ.	
Max. Rec. Temp.	90
Equip. Location	3-3-59
Recorded By	GARVER
Witnessed By	MCKELLAR

276

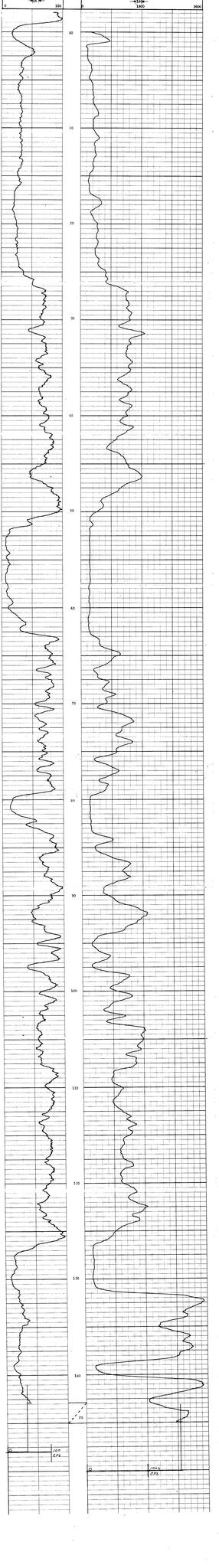
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		GUN TYPE	NEUTRON/NEUTRON
DIAMETER	32 IN.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 IN.
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM.	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M.	LENGTH	15.24 CM.
		SOURCE MODEL NO.	MRC-N-50 M
GENERAL		SERIAL NO.	201
HOIST TRUCK NO.	36	STRENGTH	15 MC.
INSTRUMENT TRUCK NO.		TYPE	Amba
TOOL SERIAL NO.	115 - 002	STRENGTH	5 CURIES

LOGGING DATA

RUN NO.	GENERAL FROM	GENERAL TO	SPEED FT/MIN	T.C. SEC.	GAMMA RAY SENS. SETTINGS	GAMMA RAY ZERO DIV.	GAMMA RAY API G. R. UNITS PER LOG DIV.	NEUTRON T.C. SEC.	NEUTRON SENS. SETTINGS	NEUTRON ZERO DIV.	NEUTRON API N. UNITS PER LOG DIV.
1	0	163	5.68	4	100	0	16	3	300	0	160

REMARKS: OPEN HOLE



04-59

ROKE

ROKE OIL INTERPRETATION CO. CALGARY, ALBERTA

K.B. 4.5 ABOVE GROUND LEVEL

FILE NO.	
COMPANY	SEAR SOUTH INDUSTRY
WELL	276
FIELD	SEA KEITH VANART
LOCATION	
PROVINCE	ALBERTA
COUNTRY	CANADA

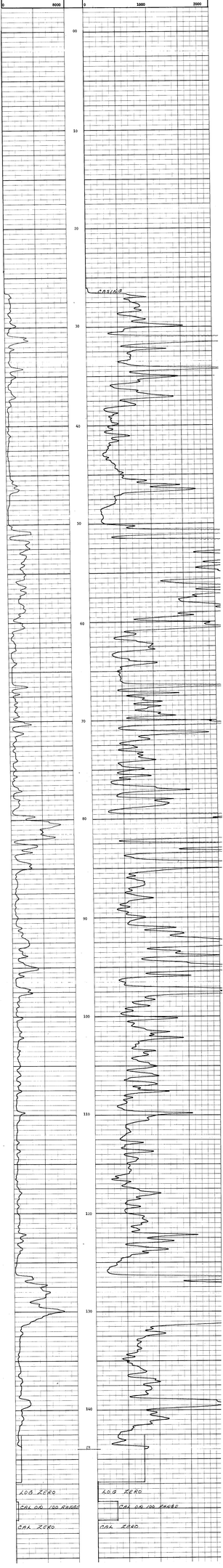
Reference Datum: GROUND LEVEL

Measured from Kelly Bushing: 4.5 ft. Above Ground Level

Measured from Casing Flange: 1.50 ft. Above Ground Level

Date Run	1 NOV 1976
Log No.	1
Depth Driller	2366 M
Depth Logger	2365 M
Bottom Log Interval	2364 M
Top Log Interval	1184 M
Casing Driller	1184 M
Casing Logger	1184 M
Bit Size	200 MM
Type Fluid in Hole	WATER
Dens.	1.00
Visc.	50
Max. Rec. Temp. °C	95
Equip. No.	3418 & 2 JD
Location	
Recorded By	J. NOOR
Witnessed By	

Remarks: SONIC GEOMETRIC PACKER ,325 PHOTO TYPE III
GROUND FLUID READING - 115 OHMS
LOG QUALITY, PRIMARY PMP RADIATED TO 3.29
8 TO 1 RATIO ON SECONDARY PMP



ROKE

SCHLUMBERGER OILFIELD SERVICES

CALGARY, ALBERTA

276

Run No. 69

Company	ROKE OILS LTD.
Well	16-35-27-5W5
Field	KEHO
County	
Province	ALBERTA
Location	
Other Services	
Permanent Datum	GROUND LEVEL
Elev.	K.B. 3545
Log Measured From	K.B. 9 FT. ABOVE PERM. DATUM
Drilling Measured From	K.B.
Date	1-6-69
Run No.	ONE
Depth—Driller	3545
Depth—Logger	3545
Bottom Logged Interval	3545
Top Logged Interval	0
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1000
Density	9.5
Viscosity	45
Fluid Loss	8.8
Source of Sample	FLOWLINE
R_m @ Meas. Temp.	.85 @ 70°F
R_mf @ Meas. Temp.	.65 @ 70°F
R_mc @ Meas. Temp.	.95 @ 70°F
Source of R_mf & R_mc	CALC.
R_m @ BHT	.45 @ 130°F
Time Since Circ.	12 HRS.
Max. Rec. Temp.	130°F
Equip. No. & Location	1301
Recorded By	R. KEEN
Witnessed By	MR. TAL

RUN NO. ONE — DATE 1-6-69

	BIT	CASING	WEIGHT	FROM	TO	
1	12¼"	8⅝"	24	0	147	
2	7⅞"			147	3545	

TYPE LOG: DUAL INDUCTION LATEROLOG — GAMMA RAY — BOREHOLE COMPENSATED SONIC — CALIPER

RECORDED BY: R. KEEN — WITNESSED BY: MR. TAL

RUN NO. ONE — DATE 1-6-69

	BIT	CASING	WEIGHT	FROM	TO	
1	12¼"	8⅝"	24	0	147	
2	7⅞"			147	3545	

TYPE LOG: DUAL INDUCTION LATEROLOG — GAMMA RAY — BOREHOLE COMPENSATED SONIC — CALIPER

RECORDED BY: R. KEEN — WITNESSED BY: MR. TAL

GENERAL					GAMMA RAY					SONIC/SONIC DENSITY				
RUN NO.	CASING	DEPTH DRILLER	DEPTH LOGGER	BTM. LOG INTERV.	T.D. DRILLER	T.D. LOGGER	TOP LOG INTERV.	API G.R. UNITS PER LOG SCALE	T.C. MAX. RECORDED	SONIC ATTENUATION	SONIC TRANSIT TIME	T.C. MAX. RECORDED	BULK DENSITY	CALIPER
1	0	147	3.151						1550	2.5	0.5			69.53
2	0	147	CALC.TD3											

REMARKS: USED DUAL 6 AXIS CAL. USED 7 3/8"

CASE SIZE

REMARKS: USED DUAL 6 AXIS CAL. USED 7 3/8"

CASE SIZE

CALIPER (DIAMETER — CENTIMETRES)

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

1.95 2.00 2.05 2.10 2.15 2.20 2.25 2.30 2.35 2.40 2.45 2.50 2.55 2.60 2.65 2.70 2.75

90 100 110 120 130 140 150 160 170 180 190

78

CAL 8477

ROKE

Company	C. Roke et al. et al. 7-26-23-5 W5
Well	C. ROKE ET AL 7-26-23-5 W5
Field	WILDCAT
County/Parish	
State/Province	ALBERTA
Country	CANADA
Location	7-26-23-5 W5
Permanent Datum	GROUND LEVEL
Log Measured From	K.B.
Drilling Measured From	K.B.
Elevation	K.B. 1,276 ft.
	D.F. ft.
	G.L. 1,267 ft.
Date	23-11-82
Run No.	ONE
Depth-Driller	3,600
Depth-Logger	3,600
Bottom Logged Interval	3,600
Top Logged Interval	1,000
Casing-Driller	13 3/8 @ 1,000
Casing-Logger	
Bit Size	8 1/2
Type Fluid in Hole	GEL CHEM
Density	10.0
Viscosity	50
pH	10.5
Fluid Loss	6.0
Source of Sample	CIRC.
Rm @ Meas. Temp.	0.35 @ 68°F
Rmf @ Meas. Temp.	0.28 @ 68°F
Rmc @ Meas. Temp.	0.45 @ 68°F
Source of Rmf and Rmc	CALC.
Rm @ BHT	0.18 @ 140°F
Time Since Circ.	12 HRS.
Max. Rec. Temp. Deg. F	140°F
Equip. Location	3-26-23-5 W5
Recorded By	J. SWEET
Witnessed By	

276

Service Order	
Permanent Datum	GROUND LEVEL
Log Measured From	K.B.
Drilling Measured From	K.B.
Elevation	K.B. 1,276 ft.
	D.F. ft.
	G.L. 1,267 ft.
Date	23-11-82
Run No.	ONE
Depth-Driller	3,600
Depth-Logger	3,600
Bottom Logged Interval	3,600
Top Logged Interval	1,000
Casing-Driller	13 3/8 @ 1,000
Casing-Logger	
Bit Size	8 1/2
Type Fluid in Hole	GEL CHEM
Density	10.0
Viscosity	50
pH	10.5
Fluid Loss	6.0
Source of Sample	CIRC.
Rm @ Meas. Temp.	0.35 @ 68°F
Rmf @ Meas. Temp.	0.28 @ 68°F
Rmc @ Meas. Temp.	0.45 @ 68°F
Source of Rmf and Rmc	CALC.
Rm @ BHT	0.18 @ 140°F
Time Since Circ.	12 HRS.
Max. Rec. Temp. Deg. F	140°F
Equip. Location	3-26-23-5 W5
Recorded By	J. SWEET
Witnessed By	

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3½ IN.	DIAMETER	
DETECTOR MODEL NO.		DETECTOR MODEL NO.	32 MM
TYPE	SCINTILLATOR	TYPE	
LENGTH	10.34 CM	LENGTH	PROPORTIONAL
DISTANCE TO N. SOURCE	1.66 ft.	DISTANCE TO N. SOURCE	1.66 ft.
		SOURCE NO.	MBC-5.0 E
	GENERAL	SOURCE MFG. NO.	243
HOSE TRUCK NO.	76	SPACING	43.38 CM
INSTRUMENT TRUCK NO.		TYPE	Amble
FINAL SERIAL NO.	113 - 002	WITNESS	J. SWEET

LOGGING DATA

GAMMA RAY							NEUTRON					
RUN	METHOD	SPEED	T.C.	BASE	ZERO	API & API UNITS	T.C.	BASE	ZERO	API & API UNITS		
NO.	TYPE	F.P.M.	SECONDS	SETTING	SET & CHK	PER LOG DIV.	SEC.	SETTING	SET & CHK	PER LOG DIV.		
1	0	30	3.00	100	0	25	3	300	0	100		

REMARKS: OPEN HOLE

GAMMA RAY | NEUTRON

GAMMA RAY INCREASES → 0 — 100

NEUTRON INCREASES → 0 — 3600

1 in = 100 ft

1 in = 100 ft

1000 ft

1000 ft

ROKE SCHLUMBERGER LTD. CALGARY, ALBERTA

COMPANY: C.A.P. COMPANY LTD.
WELL: 16-35-23-4W4
FIELD: ROSEMARY
LOCATION: 16-35-23-4W4
PERMANENT DATUM: GROUND LEVEL
LOG MEASURED FROM: K.B.
DRILLING MEASURED FROM: K.B.
ELEV.: K.B. 2276 D.F. G.L.

276

Run No. ONE
Date 7-12-65
Depth-Driller 3000
Depth-Logger 3000
Bottom Log Interval 3000
Top Log Interval SURFACE
Casing-Driller 9 5/8 @ 1000
Casing-Logger 1000
Bit Size 8 3/4"
Type Fluid in Hole GEL CHEM
Density 9.6
Viscosity 50
Fluid Loss 10.0
Source of Sample FLOWLINE
R_m @ Meas. Temp. .95 @ 70°F
R_mf @ Meas. Temp. .75 @ 70°F
R_mc @ Meas. Temp. .95 @ 70°F
Source of R_mf & R_mc MEASURED
R_m @ BHT .60 @ 120°F
Time Since Circ. 12 HRS
Max. Rec. Temp. Deg. F 120°F
Equip. Location 4-1
Recorded By GUSTAFSON
Witnessed By MARTIN

RUN NO. ONE @ 3000 FT. — TYPE LOG DUAL INDUCTION LATEROLOG
RUN NO. ONE @ 3000 FT. — TYPE LOG BOREHOLE COMPENSATED SONIC

Primary Depth Control (This Run) DRILLERS
Type Log DUAL INDUCTION LATEROLOG
Depth-Driller 3000
Depth-Logger 3000
Bottom Log Interval 3000
Top Log Interval 1000
Casing-Driller 9 5/8 @ 1000
Casing-Logger 1000
Bit Size 8 3/4"
Type Fluid in Hole GEL CHEM
Density 9.6
Viscosity 50
Fluid Loss 10.0
Source of Sample FLOWLINE
R_m @ Meas. Temp. .95 @ 70°F
R_mf @ Meas. Temp. .75 @ 70°F
R_mc @ Meas. Temp. .95 @ 70°F
Source of R_mf & R_mc MEASURED
R_m @ BHT .60 @ 120°F
Time Since Circ. 12 HRS
Max. Rec. Temp. Deg. F 120°F
Equip. Location 4-1
Recorded By GUSTAFSON
Witnessed By MARTIN

Primary Depth Control (This Run) DRILLERS
Type Log BOREHOLE COMPENSATED SONIC
Depth-Driller 3000
Depth-Logger 3000
Bottom Log Interval 3000
Top Log Interval 1000
Casing-Driller 9 5/8 @ 1000
Casing-Logger 1000
Bit Size 8 3/4"
Type Fluid in Hole GEL CHEM
Density 9.6
Viscosity 50
Fluid Loss 10.0
Source of Sample FLOWLINE
R_m @ Meas. Temp. .95 @ 70°F
R_mf @ Meas. Temp. .75 @ 70°F
R_mc @ Meas. Temp. .95 @ 70°F
Source of R_mf & R_mc MEASURED
R_m @ BHT .60 @ 120°F
Time Since Circ. 12 HRS
Max. Rec. Temp. Deg. F 120°F
Equip. Location 4-1
Recorded By GUSTAFSON
Witnessed By MARTIN

Remarks

RUNNING GEOMETRIC FACTOR, 1ST PASS TYPE 101.
CHANGED FILE READING - 1700-1000
TAN CORRECTION, FOLLOWED TRM ALGORITHM IN 3.2ST SETS
R TO 1 FOR RATIOS ON RECORDMARY PSD - DEPTH ERRORS OF ONE METER

Scale 1" = 100'

1000 2000 3000

DASING

LOG ZERO
CAL ON 100 RANGE
CAL ZERO

LOG ZERO
CAL ON 100 RANGE
CAL ZERO

ROKE

SIDEWALL SIDEWALL SIDEWALL SIDEWALL

Sec. Twp. Rge. Meridian

Permanent Datum: GROUND LEVEL Elev.: K.B. 1,761 D.F. G.L.

Log Measured From: K.B. 16 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Date	6-7-67
Run No.	ONE
Depth—Driller	2,000
Depth—Logger	1,999
Bottom Logged Interval	1,999
Top Logged Interval	1,000
Type Fluid in Hole	WATER BASE
Salinity, PPM Cl	30,000
Density	9.1
Level	FULL
Max. Rec. Temp. Deg. F.	120°
Operating Rig Time	3 HRS
Recorded By	[illegible]
Witnessed By	[illegible]

Run No.	ONE
Type Log	SWC
Depth—Driller	1,999
Depth—Logger	1,999
Bottom Logged Interval	1,999
Top Logged Interval	1,000
Type Fluid in Hole	WATER BASE
Salinity, PPM Cl	30,000
Density	9.1
Level	FULL
Max. Rec. Temp. Deg. F.	120°
Operating Rig Time	3 HRS
Recorded By	[illegible]
Witnessed By	[illegible]

EQUIPMENT

Rec. No.	36
Location	N. MEX.
Recorded By	[illegible]
Witnessed By	[illegible]

Run No.	ONE
Type Log	CAL.
Depth—Driller	1,999
Depth—Logger	1,999
Bottom Logged Interval	1,999
Top Logged Interval	1,000
Type Fluid in Hole	WATER BASE
Salinity, PPM Cl	30,000
Density	9.1
Level	FULL
Max. Rec. Temp. Deg. F.	120°
Operating Rig Time	3 HRS
Recorded By	[illegible]
Witnessed By	[illegible]

Run No.	ONE
Type Log	GR
Depth—Driller	1,999
Depth—Logger	1,999
Bottom Logged Interval	1,999
Top Logged Interval	1,000
Type Fluid in Hole	WATER BASE
Salinity, PPM Cl	30,000
Density	9.1
Level	FULL
Max. Rec. Temp. Deg. F.	120°
Operating Rig Time	3 HRS
Recorded By	[illegible]
Witnessed By	[illegible]

Source of Sample

Rm @ Meas. Temp.

Rmf @ Meas. Temp.

Rmc @ Meas. Temp.

Source of Rmf and Rmc

Rm @ BHT

Time Since Circ.

Max. Rec. Temp. Deg. F.

Equip. Location

Recorded By

Witnessed By

COMPANY ROKE PETROLEUM INC.

WELL Roke Unit Co. No. 2

FIELD

COUNTY CHAVES STATE NEW MEXICO

LOCATION 1980 FT. FROM SOUTH LINE & 1980 FT. FROM EAST LINE

SEC. 36 TWP. 8S RGE. 31E

OTHER SERVICES

276

6-7-67

RUN NO.	GENERAL FROM	GENERAL TO	SPEED IN FEET/MIN.	GAMMA RAY SCALE SETTINGS	GAMMA RAY API UNITS WHITE PER LINE BLK.	NORMAL I SWELLED SCALE SETTINGS	NORMAL I SWELLED API UNITS WHITE PER LINE BLK.
1	0	1813	2.46			2 5000	2 5 40 45
2	0	163		CALIPER			

REMARKS

GR&N TOOL # 221

CAL. TOOL # 587

OPEN HOLE

Shallow

CALIPER (DIAMETER - CENTIMETERS)

30.16 33.36 30.32 30.40 30.48 30.16

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

End 1999.97

ROKE

ROCKY MOUNTAIN LASER

OIL INTERPRETATION & PROCESSING LTD.

Field: [illegible]
Well: [illegible]
Date: [illegible]
Run No.: [illegible]

COMPANY: [illegible] OIL CO. OF CANADA LIMITED
WELL: [illegible] 32 - 21
LOCATION: [illegible] - 43 - [illegible] - W5M
FIELD: [illegible]

Elev. Perm.: [illegible]
Log Measured From: [illegible]
Drilling Measured From: [illegible]

Type Fluid: [illegible]
Density: [illegible]
Viscosity: [illegible]
Fluid Loss: [illegible]
Source of Sample: [illegible]
Rm @ Meas. Temp.: [illegible]
Rmf @ Meas. Temp.: [illegible]
Rmc @ Meas. Temp.: [illegible]
Source Rmf / Rmc: [illegible]
Rm @ BHT: [illegible]
Time Since Circ.: [illegible]
Max. Rec. Temp.: [illegible]
Equipment No.: [illegible]
Location: [illegible]
Recorded By: [illegible]
Witnessed By: [illegible]

Run No. 1
Depth Driller: [illegible]
Depth Logger: [illegible]
Bottom Log Interval: [illegible]
Top Log Interval: [illegible]
Casing Driller: [illegible]
Casing Logger: [illegible]
Bit Size: [illegible]
Type Fluid in Hole: [illegible]
Density: [illegible]
Viscosity: [illegible]
Fluid Loss: [illegible]
Source of Sample: [illegible]
Rm @ Meas. Temp.: [illegible]
Rmf @ Meas. Temp.: [illegible]
Rmc @ Meas. Temp.: [illegible]
Source Rmf / Rmc: [illegible]
Rm @ BHT: [illegible]
Time Since Circ.: [illegible]
Max. Rec. Temp.: [illegible]
Equipment No.: [illegible]
Location: [illegible]
Recorded By: [illegible]
Witnessed By: [illegible]

Run No. 2
Depth Driller: [illegible]
Depth Logger: [illegible]
Bottom Log Interval: [illegible]
Top Log Interval: [illegible]
Casing Driller: [illegible]
Casing Logger: [illegible]
Bit Size: [illegible]
Type Fluid in Hole: [illegible]
Density: [illegible]
Viscosity: [illegible]
Fluid Loss: [illegible]
Source of Sample: [illegible]
Rm @ Meas. Temp.: [illegible]
Rmf @ Meas. Temp.: [illegible]
Rmc @ Meas. Temp.: [illegible]
Source Rmf / Rmc: [illegible]
Rm @ BHT: [illegible]
Time Since Circ.: [illegible]
Max. Rec. Temp.: [illegible]
Equipment No.: [illegible]
Location: [illegible]
Recorded By: [illegible]
Witnessed By: [illegible]

Run No. 3
Depth Driller: [illegible]
Depth Logger: [illegible]
Bottom Log Interval: [illegible]
Top Log Interval: [illegible]
Casing Driller: [illegible]
Casing Logger: [illegible]
Bit Size: [illegible]
Type Fluid in Hole: [illegible]
Density: [illegible]
Viscosity: [illegible]
Fluid Loss: [illegible]
Source of Sample: [illegible]
Rm @ Meas. Temp.: [illegible]
Rmf @ Meas. Temp.: [illegible]
Rmc @ Meas. Temp.: [illegible]
Source Rmf / Rmc: [illegible]
Rm @ BHT: [illegible]
Time Since Circ.: [illegible]
Max. Rec. Temp.: [illegible]
Equipment No.: [illegible]
Location: [illegible]
Recorded By: [illegible]
Witnessed By: [illegible]

Remarks: SONIC GEOMETRICS PACKER ,1ST, PAYED TYPE III
CEMENTED FILL BELOW 1 - 43 - 32 - 21 (AB)
2ND SONIC(AL) PACKER FOR ABANDONED TO 3.29
0 TO 1 SACKS IN UNDERGRAD PER

Depth

0 — 14000 | 0 — 2000 — 4000

CASING

LOG REAR
CAL OR BAD HOLE
CAL REAR

LOG REAR
CAL OR BAD HOLE
CAL REAR

Checked By: [illegible]
Processing By: [illegible]

ROKE OIL (1977) LTD.

CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

Company	ROKE OIL (1977) LTD.
Well	16-15-23-28 W4M
Field	JOSEPHBURG
Location	16-15-23-28 W4M
Province	ALBERTA
Permanent Datum	GROUND LEVEL
Elev.	2,576 ft.
Log Measured From	KELLY BUSHING
Elev.	2,586 ft.
Drilling Measured From	KELLY BUSHING
Elev.	2,586 ft.
Date	23-JUL-82
Run No.	ONE
Depth Driller	3,520 ft.
Depth Logger	3,520 ft.
Bottom Logged Interval	3,520 ft.
Top Logged Interval	2,500 ft.
Casing Driller	8.625 in @ 243 ft.
Casing Logger	243 ft.
Bit Size	7.875 in.
Type Fluid in Hole	GEL CHEM
Density	10.0 lb/gal
Viscosity	50 s
Fluid Loss	8.0 cc
Source of Sample	CIRCULATION
Rm @ Meas. Temp.	0.25 @ 68 °F
Rmf @ Meas. Temp.	0.20 @ 68 °F
Rmc @ Meas. Temp.	0.30 @ 68 °F
Source of Rmf / Rmc	CALCULATED / CALCULATED
Rm @ BHT	0.14 @ 140 °F
Time Since Circ.	12 HRS
Max. Rec. Temp.	140 °F
Equip. No. & Location	3 CALGARY
Recorded By	MARTIN
Witnessed By	MR. BOYER

PROPRIETARY GAMMA RAY NEUTRON LOG

Roke Oil (1977) Ltd.

16-15-23-28 W4M

Joseph Lake Area

Alberta

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOCATION	NEUTRON/NEUTRON
DIAMETER	3.62 in	TOOL MODEL NO.	
SOURCE MODEL NO.		DIAMETER	3.62 in
TYPE	SCINTILLATION	NEUTRON MODEL NO.	
LENGTH	14.34 ft	LENGTH	PROPORTIONAL
DISTANCE TO N. SOURCE	7.04 ft	SOURCE MODEL NO.	11.26 Ci
		SOURCE NO.	MRC-N-53-M
GENERAL		SPACING	253
LOGGING TRUCK NO.	36	STRENGTH	11.26 Ci
INSTRUMENT TRUCK NO.			Amlite
TOOL SERIAL NO.	529 - 202		2.22/252

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN	LOGGED INTERVAL	SPEED ft/min	T.C. SETTING	SENS.	API G. R. UNITS PER 1/4th DIV.	T.C. SETTING	SENS.	ZERO ADJ.	API N. UNITS PER 1/4th DIV.
ONE	FROM 2,500 TO 3,523	30	1.0	100	10	1.0	100	500	5	180

REMARKS: OPEN HOLE

GAMMA RAY

GAMMA RAY INCREASES

0 — 160

NEUTRON

NEUTRON INCREASES

0 — 3600

90 100 110 120 130 140 150 160

ROKE

SIDEWALL DRILLING
CALGARY ALBERTA

WELL NAME AND LOCATION
S. ELK RIDGE 191-27-4
SURFACE LOCATION 1/4 SEC. 27 TWP. 19 RGE. 27 W 4 MER.
PROVINCE ALBERTA

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RUN NO.	DATE	DEPTH DRILLER	DEPTH LOGGER	CASING DRILLER	CASING LOGGER	BTM. LOG INTERVAL	TOP LOG INTERVAL	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE OF RMF	SOURCE OF RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
1	15 JUL 87	3495	3495	3491		3495	3491	GEL CHEM	9.2	43	10.5	6.4	MUD PIT	.96 @ 68	.72 @ 68	1.28 @ 68	MEAS	CALC	.64 @ 150	12 HRS	150	3-1	D. SMITH	

RUN NO.	CASING DRILLER	CASING LOGGER	BIT SIZE	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE OF RMF	SOURCE OF RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
1	3491	3491	7.875	GEL CHEM	9.2	43	10.5	6.4	MUD PIT	.96 @ 68	.72 @ 68	1.28 @ 68	MEAS	CALC	.64 @ 150	12 HRS	150	3-1	D. SMITH	

RUN NO.	DATE	DEPTH DRILLER	DEPTH LOGGER	BTM. LOG INTERVAL	TOP LOG INTERVAL	CASING DRILLER	CASING LOGGER	BIT SIZE	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE OF RMF	SOURCE OF RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
1	15 JUL 87	3495	3495	3495	3491	3491	3491	7.875	GEL CHEM	9.2	43	10.5	6.4	MUD PIT	.96 @ 68	.72 @ 68	1.28 @ 68	MEAS	CALC	.64 @ 150	12 HRS	150	3-1	D. SMITH	

RUN NO.	TIME LOGGER ON BOTTOM	UNIT NUMBER	LOCATION	RECORDED BY	WITNESSED BY
1	0600	3-1	3-1	D. SMITH	

RUN NO.	TOOL NO.	TYPE	SERIAL NO.	POSITION
1	1	DGR	1	
	2	CAL	2	
	3	DEN	3	
	4			

RUN NO.	CASING DRILLER	CASING LOGGER	BIT SIZE	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE OF RMF	SOURCE OF RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
1	3491	3491	7.875	GEL CHEM	9.2	43	10.5	6.4	MUD PIT	.96 @ 68	.72 @ 68	1.28 @ 68	MEAS	CALC	.64 @ 150	12 HRS	150	3-1	D. SMITH	

RUN NO.	TIME LOGGER ON BOTTOM	UNIT NUMBER	LOCATION	RECORDED BY	WITNESSED BY
1	0600	3-1	3-1	D. SMITH	

RUN NO.	TOOL NO.	TYPE	SERIAL NO.	POSITION
1	1	DGR	1	
	2	CAL	2	
	3	DEN	3	
	4			

GENERAL					GAMMA RAY			GENERAL (DENSITY)			
RUN NO.	DEPTH DRILLER	DEPTH LOGGER	CASING DEPTH DRILL.	T.D. DRILL	API UNITS	API G.R. UNITS PER LOG DIV.	T.D. LOGGER	BTM. LOG INTERVAL	TOP LOG INTERVAL	LOG SCALE
1	3495	3495	3491	3495			3495	3495	3000	50
1	0	147	0	CALIPER					2	10.43

REMARKS: 1ST RUN TOOL # 140 OPEN HOLE A. J. SMITH
CAL. TOOL # 387

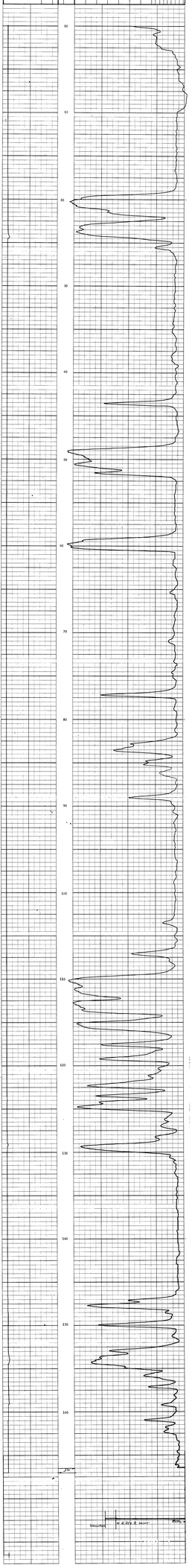
CALIPER
(DIAMETER - CENTIMETRES)

10.16	15.24	20.32	25.40	30.48	35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

276

FILE NO.	K-ELK RIVER 77 (3)
COMPANY	ELCO MINING LIMITED
WELL	DH - 62
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W ___ M	
Permanent Datum	GROUND LEVEL
Log Measured from	GROUND LEVEL ___ Above Perm. Datum
Well Depths Measured from	
Other Services:	DENS-CAL, FBL, DEV
K.B. / CSG / G.L.	

Run No.	ONE
Date	20 NOV 1976
First Reading	167 M
Last Reading	0
Footage Logged	167
Depth Reached	167
Depth Driller	167.68
Casing Roke	9.50
Casing Driller	
Liquid Type	MUD
Liquid Level	0.75
Min. Diam.	HQ
Rm @ °C	19.02 @ 25
Operating Time	1½ HOURS
Truck No.	36
Recorded By	EDWARDS
Witnessed By	McKELVIE

276

EQUIPMENT DATA

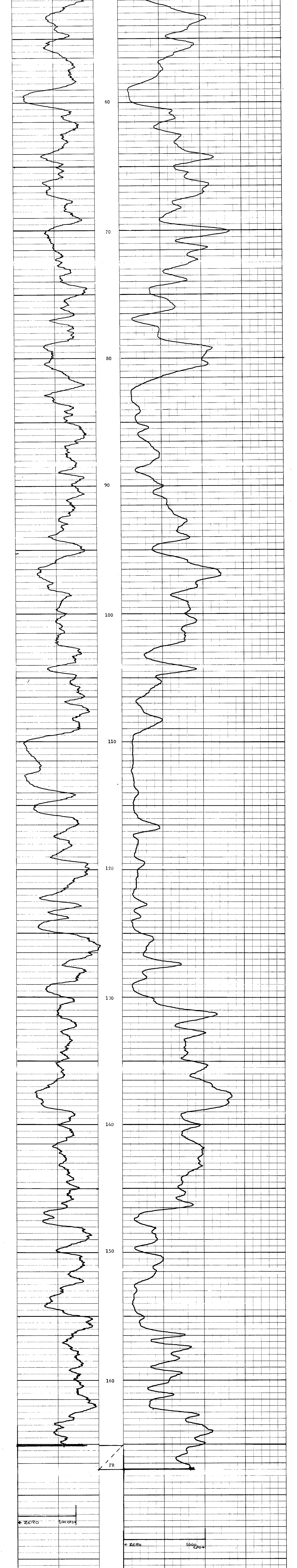
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	RGN 125	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	RGN 125
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	265
INSTRUMENT TRUCK NO.	36	SPACING	43.18 CM
TOOL SERIAL NO.	125 - 002	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	NEUTRON ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	167	3.66	4	1000	0	16	3	500	0	180

REMARKS OPEN HOLE. S. I. UNITS

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
0 — 16 — 160		0 — 180 — 1800 — 3600



ROKE

PROCESSED SIGN LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. 276

COMPANY: ELLIS-DON LOCATION

WELL: BH - 62

LOCATION: 276

FIELD: EDE RIVER VALLEY

PROVINCE: WESTERN CANADA

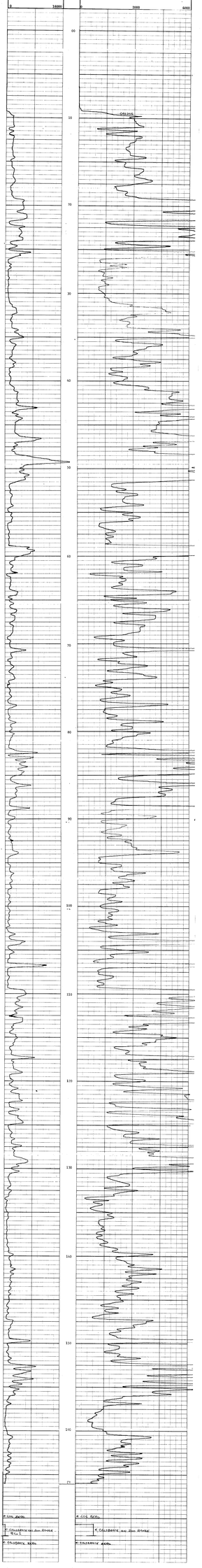
COUNTY: ELLIS-DON LOCATION

Date Logged: 6-6-

Date Processed: 6-6-

Date Processed: 6-6-

Remarks: SONDE GEOMETRIC FACTOR .139, FRUTO TYPE III, #1, UNITS
GROUND FIELD BEACHING - 640 UNITS
ZOO CONVERT, PRIMARY FOR ADJUSTED TO 3.79
8 TO 1 RATIO OF SECONDARY FOR



ROKE
SPREHALL DRILLING
COMPANY
CALGARY ALBERTA

K.B. Elev. 4416.0 ft. (1345.84 m)
Other Services: BHC GR/CAL SONIC
Permanent Datum: GROUND LEVEL
Elev.: K.B. 4416.0 ft. (1345.84 m)
Log Measured From: K.B. 9.0 ft. above Perm. Datum
Drilling Measured From: K.B.

Rge. 26 W4M
Twp. 36

276

Field: RED DEER SOUTH

Well: SPREHALL ET AL ROKE PROVOST 10-27-36-26

Location: 10-27-36-26 W4M

Province: ALBERTA

Licence No.: 7751

Date: 1-JUL-80

Run No.: ONE

Depth-Driller: 3640.0 m

Depth-Logger: 3640.0 m

Bottom Logged Interval: 3640.0 m

Top Logged Interval: 1000.0 m

Type Fluid in Hole: GEL CHEM

Salinity: 1000 PPM CL

Density: 1.10 KG/M3

Viscosity: 50 S

PH: 10.5

Fluid Loss: 6.0 C3

Source of Sample: FLOWLINE

Rm @ Meas. Temp.: 0.22 @ 22 DEGC

Rmf @ Meas. Temp.: 0.18 @ 22 DEGC

Rmc @ Meas. Temp.: 0.28 @ 22 DEGC

Source of Rmf & Rmc: CALC

Rm @ BHT: 0.12 @ 93 DEGC

Time Circulation Stopped: 0400 1-JUL-80

Time Logger on Bottom: 0800 1-JUL-80

Maximum Recorded Temperature: 93 DEGC

Equipment Number: 5704

Location: 10-27-36-26 W4M

Recorded By: R. MARTIN

Witnessed By: MR. MCCOY

GENERAL				T.D.	SEM	GAMMA RAY			T.D.	GENERAL CEMENTLOG		
RUN NO.	DATE		SPEED M/HR		SETTINGS	API CALIBRATION	SHOP CALIBRATION	UP S.N. UNITS PER LOG DIV.		BOND GAIN	BOND SIZE	CPS/DIV
	FROM	TO										
1	0	144.3	3.66						3	5000	2 IN	40.63
3	0	147	9.00	CALIPER								

REMARKS: GOOD TOOL @ 420 SUPER NOISE R. T. SMITH

CAL. TOOL @ 360

30.16 13.26	30.32	30.40	30.48

GAMMA RAY API

CALIPER (DIAMETER - CENTIMETRES)

30.16 | 30.32 | 30.40 | 30.48

BULK DENSITY (GRAMS/CC)

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

K.B. Elev. 9.0 ft. above Perm. Datum

Elevation 4416.0 ft.

ROKE

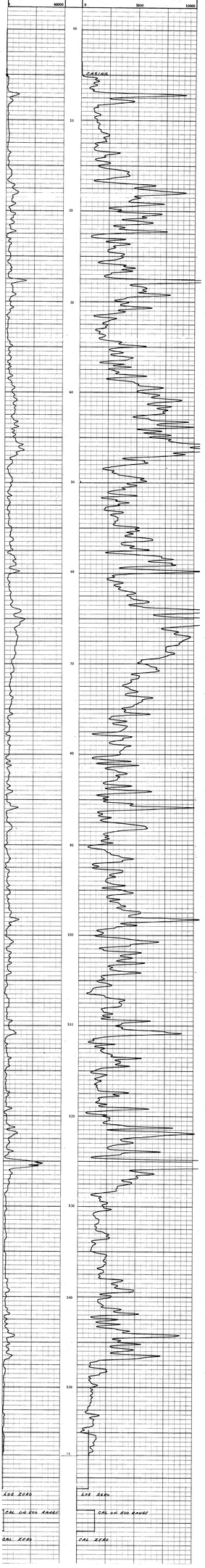
PROVIDENT ENERGY LTD.
OIL & GAS PROPERTIES LTD.
CALGARY, ALBERTA

WELL NAME: 11-5-43
LOCATION: NE - 43
LSD: 11
SEC: 5
TWP: 43
RGE: 13
W 4M
FIELD: KEG RIVER VALLEY
PROVINCE: ALBERTA
COUNTRY: CANADA

276

Log Run No.	1
Date	13 JAN 1978
Time	1:15 PM
Depth Driller	1120.5
Depth Logger	1118.5
Bottom Log Interval	1117.5
Top Log Interval	1000
Casing Driller	8 5/8 @ 1000
Casing Logger	NONE
Bit Size	7 7/8
Type Fluid in Hole	WATER
Dens. / Visc.	1.0 / 30
PH / Fluid Loss	NA / NA
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	1.15 @ 70
Rmf @ Meas. Temp.	1.15 @ 70
Rmc @ Meas. Temp.	NA @ NA
Source: Rmf / Rmc	MEASURED / NA
Rm @ BHT	0.85 @ 90
Time Since Circ.	14.5 / 1.5
Max. Rec. Temp.	90
Equip. / Loc.	3 / 5
Recorded By	MACKENZIE
Witnessed By	[illegible]

Remarks: NONE GEOMETRIC FACTOR .129 PADS TYPE III
GROUND FIRM READING - 5 OHMS
500 OHM/DIV, PRIMARY FOR ADJUSTED TO 3.29
8 TO 1 RATIO ON SECONDARY PEN



Recorded By: [illegible] | Witnessed By: [illegible]

LOCATION			
Permanent Datum: GROUND LEVEL	Elev.: K.B. [illegible]	Elev.: D.F. [illegible]	Elev.: G.L. [illegible]
Log Measured From: K.B. 10 FT. ABOVE PERM. DATUM			
Drilling Measured From: K.B.			

Run No.	ONE										
Date	1-SEPT-70										
Depth-Driller	1600										
Depth-Logger	1600										
Bottom Logged Interval	1600										
Top Logged Interval	50										
Type Fluid in Hole	WATER										
Salinity, P.P.M. Cl	30										
Density	8.4										
Level	FULL										
Max. Rec. Temp. Deg. F.	85										
Operating Rig Time	5 HRS										
Recorded By	[illegible]										
Witnessed By	[illegible]										

CASING RECORD			
	SIZE	WGT.	FROM
SURFACE STRING	8 5/8"	24	0
PRODUCTION STRING	5 1/2"	15.5	0
OPEN HOLE	7 7/8"		1600

BOREHOLE RECORD		
BIT	SIZE	FROM
1	7 7/8"	0

RUN NO.	ONE
TIME SINCE CIRC.	3 HRS
MAX. TEMP. DEG. F.	85
EQUIP. LOCATION	3 CRESCENT
RECORDED BY	[illegible]
WITNESSED BY	[illegible]

ROKE OILWELL SERVICES LTD.

GAMMA RAY NEUTRON LOG

COMPANY: CANADIAN SUPERIOR OIL OF CANADA LTD.

WELL: ROKE ET AL CRESCENT 6-3-23-5

FIELD: ROKE

LOCATION: 6-3-23-5 W4M

COUNTY: [illegible]

PROVINCE: ALBERTA

Other Services: [illegible]

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO S. SOURCE	7.6 CM	LENGTH	17.4 CM
		SOURCE MODEL NO.	MRC-N-BE-5
SENSITIVITY		SOURCE NO.	224
BOOST TRUCK NO.	36	SPACING	45.18 CM
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	122 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	METERS FROM	METERS TO	SPEED M. PER MIN.	T.C. SEC.	SENS. DIVISIONS	ZERO DIV. L. OR R.	API G. R. UNITS DIV. L. OR R.	T.C. SEC.	SENS. MICROSEC. DIV. L. OR R.	ZERO MICROSEC. DIV. L. OR R.	API N. UNITS MICROSEC. DIV. L. OR R.
1	0	1598	7.62	4	100	0	10	3	500	0	100

REMARKS: OPEN HOLE

GAMMA RAY		NEUTRON	
GAMMA RAY INCREASES		NEUTRON INCREASES	
←16→		←100→	
0	160	0	3600

METRES

50 60 70 80 90 100 110 120 130 140 150

75

0 150 GR

0 1500 API

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

DH 63.

FILE NO. K-ELK RIVER 77(3)#8

LSD
SEC
TWP
RGE
W ____ M

COMPANY: ELCO MINING LIMITED

WELL: DH - 63

LOCATION: 276

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum: GROUND LEVEL, Elev. ____ K.B. ____

Log Measured from: RIG FLOOR 1.10 M Above Perm. Datum CSG ____

Well Depths Measured from: GROUND LEVEL G.L. ____

Run. No.	ONE		
Date	23 NOV 1976		
First Reading	157.5 M		
Last Reading	0		
Footage Logged	157.5		
Depth Reached	158.42		
Depth Driller	158.60		
Casing Roke	5		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	0		
Min. Diam.	HQ		
Operating Time	2 HOURS		
Truck No.	36		

Recorded By: CARLSON Witnessed By: McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	157.5	3.66					3	1000	2 R	68.43
2	0	158		CALIPER							

REMARKS: DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587

ROKE

SPECIALIZED SERVICES

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

WELL NAME AND NUMBER: 976

COMPANY: ROKE OILS LIMITED

FIELD: [illegible]

LOCATION: 36 - 56 - 24 W4

PROVINCE: ALBERTA

COUNTRY: CANADA

PERMANENT DATUM: GROUND LEVEL

ELEV.: K.B. 1000

LOG MEASURED FROM: K.B. 10 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: K.B.

DATE: 1-3-74

RUN NO.: ONE

TYPE LOG: SIDEWALL DENSILOG

DEPTH DRILLER: 1648

DEPTH LOGGER: 1648

BTM. LOG INTERVAL: 1645

TOP LOG INTERVAL: 1000

CASING DRILLER: 8 5/8 @ 1000

CASING LOGGER: 1000

BIT SIZE: 7 7/8

TYPE FLUID IN HOLE: GEL CHEM

DENS: 10.2

VISC: 50

PH: 10

FLUID LOSS: 6.4

SOURCE OF SAMPLE: MUD PIT

RM @ MEAS. TEMP.: 1.1 @ 70°F

RMF @ MEAS. TEMP.: 1.0 @ 70°F

RMC @ MEAS. TEMP.: 1.4 @ 70°F

SOURCE: RMF: MEAS. RMC: MEAS.

RM @ BHT: 0.6 @ 120°F

TIME CIRC. STOPPED: 1 HR

TIME LOGGER ON BOTTOM: 1 HR

MAX. REC. TEMP.: 120°F

EQUIP. NO. & LOCATION: 1007 - 1008

RECORDED BY: [illegible]

WITNESSED BY: [illegible]

RUN NO.: ONE

BOREHOLE RECORD

BIT NO.	FROM	TO	SIZE
1	0	1648	7 7/8

CASING RECORD

SIZE	WGT.	GRADE	FROM	TO
8 5/8	24	J-55	0	1000

REMARKS: RUN WITH GAMMA RAY - CALIPER - BULK DENSITY

GENERAL

RUN NO.	INTERVAL FROM	INTERVAL TO	SPEED FT/HR	T.C.	BASE NORMAL
1	0	1648	1,647		
2	0	1648.5	CALIPER		

GAMMA RAY

RUN NO.	SCALE 0 API	SCALE 200 API	MEAS. DEPTH	T.C.	BASE NORMAL
1	0	150	1,647		
2	0	150	1,647		

REMARKS: DENS TOOL # 620, DENS SHOE

CAL TOOL # 567

DENSILOG DENSITY

RUN NO.	SCALE 2.95 G/CC	SCALE 1.95 G/CC	DPHI SCALE
1	3	1000	2 0
2			

RM @ MEAS. TEMP.: 1.1 @ 70°F

RMF @ MEAS. TEMP.: 1.0 @ 70°F

RMC @ MEAS. TEMP.: 1.4 @ 70°F

SOURCE: RMF: MEAS. RMC: MEAS.

RM @ BHT: 0.6 @ 120°F

TIME CIRC. STOPPED: 1 HR

TIME LOGGER ON BOTTOM: 1 HR

MAX. REC. TEMP.: 120°F

EQUIP. NO. & LOCATION: 1007 - 1008

RECORDED BY: [illegible]

WITNESSED BY: [illegible]

RUN NO.: ONE

BOREHOLE RECORD

BIT NO.	FROM	TO	SIZE
1	0	1648	7 7/8

CASING RECORD

SIZE	WGT.	GRADE	FROM	TO
8 5/8	24	J-55	0	1000

REMARKS: RUN WITH GAMMA RAY - CALIPER - BULK DENSITY

GENERAL

RUN NO.	INTERVAL FROM	INTERVAL TO	SPEED FT/HR	T.C.	BASE NORMAL
1	0	1648	1,647		
2	0	1648.5	CALIPER		

GAMMA RAY

RUN NO.	SCALE 0 API	SCALE 200 API	MEAS. DEPTH	T.C.	BASE NORMAL
1	0	150	1,647		
2	0	150	1,647		

REMARKS: DENS TOOL # 620, DENS SHOE

CAL TOOL # 567

DENSILOG DENSITY

RUN NO.	SCALE 2.95 G/CC	SCALE 1.95 G/CC	DPHI SCALE
1	3	1000	2 0
2			

SHAPE

CALIPER
(DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

3 2.95 2.90 2.85 2.80 2.75 2.70 2.65 2.60 2.55 2.50 2.45 2.40 2.35 2.30 2.25 2.20 2.15 2.10 2.05 2.00 1.95 1

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150

ABOVE DATUM
DATUM

ROKE OIL ENTERPRISES LTD.

CANADA LAND SURVEYORS LTD.
CALGARY ALBERTA

WELL: 16-35-27-5W4M
LOCATION: 16-35-27-5W4M
FIELD: EAST WATTS
PROV: ALBERTA
COUNTRY: CANADA
COMPANY: ROKE OIL ENTERPRISES LTD.

276

Recorded By	GARDNER	Witnessed By	MARSHALL	Permanent Datum	GROUND LEVEL	Elev.	K.B. 1 m
Location	16-35-27-5W4M			Log Measured From	K.B. 1 m above Perm. Datum		D.F.
Field	EAST WATTS			Drilling Measured From	K.B.		G.L.
Province	ALBERTA						
Country	CANADA						
Company	ROKE OIL ENTERPRISES LTD.						

Date	1-Jul-82		
Run No.	ONE		
Depth-Driller	1000		
Depth-Logger	1000		
Bottom Logged Interval	1000		
Top Logged Interval	0		
Type Fluid in Hole	WATER		
Salinity, PPM Cl			
Density			
Level	FULL		
Max. Rec. Temp.			
Equip. Location	3		
Recorded By	GARDNER		
Witnessed By	MARSHALL		

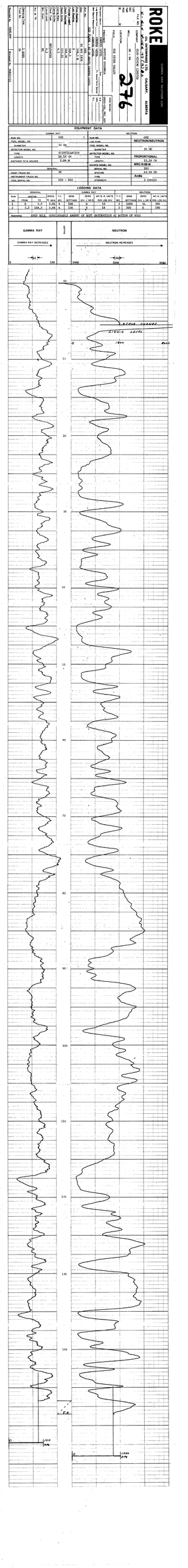
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		GUN TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		GUN DIA.	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	32.51 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	7.04 M	LENGTH	55.25 CM
		SOURCE MODEL NO.	MRC-N-88-M
GENERAL		SERIAL NO.	053
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Amble
TOOL SERIAL NO.	323 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL		GAMMA RAY						NEUTRON			
RUN	SPEED	SPEED	T.C.	SENS.	ZERO	APS & H. UNITS	T.C.	SENS.	ZERO	APS & H. UNITS
	FROM TO	M/MIN	SEC	SETTINGS	DIV.	FROM TO DIV.	SEC	SETTINGS	DIV.	FROM TO DIV.
1	0 7.5	3.66	4	100	0	0 16	3	1000	0	300
2	7.5 146.3	3.66	4	100	0	16 3	3	500	0	180

REMARKS: OPEN HOLE. CONSIDERABLE AMOUNT OF HOLE ENLARGEMENT AT BOTTOM OF HOLE



ROKE

SCHLUMBERGER CANADA LIMITED

CALGARY ALBERTA

COMPANY GULF OILS (CANADA) LIMITED

WELL NO. 76

FIELD BEAR CREEK

COUNTY, PARISH OR BLOCK

STATE OR PROVINCE ALBERTA

LOCATION 1980' FSL & 1980' FEL SEC. 34 TWP. 56 RGE. 5 W5M

PERMANENT DATUM GROUND LEVEL ELEV. 2,476

LOG MEASURED FROM KELLY BUSHING 14 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM KELLY BUSHING

	RUN NO.	ONE	TWO	THREE
DATE		8-8-74	8-9-74	
DEPTH-DRILLER		7,175	7,175	
DEPTH-LOGGER		7,175	7,175	
BTM. LOG INTERVAL		7,175	7,175	
TOP LOG INTERVAL		6,900	6,900	
CASING-DRILLER		9 5/8 @ 6,900		
CASING-LOGGER		9 5/8 @ 6,900		
BIT SIZE		8 3/4	8 3/4	
TYPE FLUID IN HOLE		GEL CHEM	GEL CHEM	
DENS. VISC.		9.6 LB/GAL 45 SEC	9.6 LB/GAL 45 SEC	
PH FLUID LOSS		10.5 8.4 CC	10.5 8.4 CC	
SOURCE OF SAMPLE		MUD PIT	MUD PIT	
RM @ MEAS. TEMP.		.76 @ 70°F	.76 @ 70°F	
RMF @ MEAS. TEMP.		.61 @ 70°F	.61 @ 70°F	
RMC @ MEAS. TEMP.		.95 @ 70°F	.95 @ 70°F	
SOURCE RMF RMC		MEAS MEAS	MEAS MEAS	
RM @ BHT		.34 @ 160°F	.34 @ 160°F	
TIME SINCE CIRC.		4 HRS	4 HRS	
MAX. REC. TEMP.		160°F	160°F	
EQUIP. LOCATION		5-5	5-5	
RECORDED BY		WATSON	WATSON	
WITNESSED BY		MR. SMITH	MR. SMITH	

RUN NO. ONE

TYPE LOG DUAL INDUCTION LATEROLOG

Remarks

BOREHOLE GEOMETRY: FACTOR .329, PHOTO TYPE III
CALIPER FIGS 5,6,7,8,9 - 132 CURVE
700 SENSITIVITY, PRIMARY PEN ADJUSTED TO 3,29
TO 1 RATIO ON RECORDER PEN

BOREHOLE RECONSTRUCTED AT 325 M
CALIBRATED BY LOGGING SPEED

0 40000 0 5000 10000

LOG READ

CAL CO 500 RANGE

CAL READ

LOG READ

CAL ON 500 RANGE

CAL READ

ROKE

SIDEWALL DENSILOG

CALIBER

ON ENTERPRISES LTD.

KLAKA 77-C-14-A

ROKE OIL & GAS LIMITED

CALGARY ALBERTA

LICENCE NO.	276
WELL	08 - 65
FIELD	ELK RIVER VALLEY
LOCATION	11-27-23-W4M
Licensee	ROKE OIL & GAS LIMITED
Contractor	SIDEWALL DENSILOG LTD.
Type Log	SIDEWALL DENSILOG
Depth-Driller	553.0
Depth-Logger	553.0
Bottom Log Interval	553.0
Top Log Interval	15.24
Casing-Driller	15.24
Casing-Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

Run No.	1
Date	08 NOV 75
Depth Driller	553.0
Depth Logger	553
Bottom Log Interval	553
Top Log Interval	15.24
Casing Driller	15.24
Casing Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

Run No.	2
Date	08 NOV 75
Depth Driller	553.0
Depth Logger	553
Bottom Log Interval	553
Top Log Interval	15.24
Casing Driller	15.24
Casing Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

Run No.	3
Date	08 NOV 75
Depth Driller	553.0
Depth Logger	553
Bottom Log Interval	553
Top Log Interval	15.24
Casing Driller	15.24
Casing Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

Run No.	4
Date	08 NOV 75
Depth Driller	553.0
Depth Logger	553
Bottom Log Interval	553
Top Log Interval	15.24
Casing Driller	15.24
Casing Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

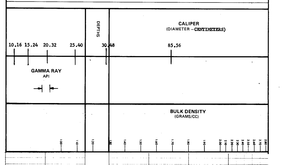
Run No.	5
Date	08 NOV 75
Depth Driller	553.0
Depth Logger	553
Bottom Log Interval	553
Top Log Interval	15.24
Casing Driller	15.24
Casing Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

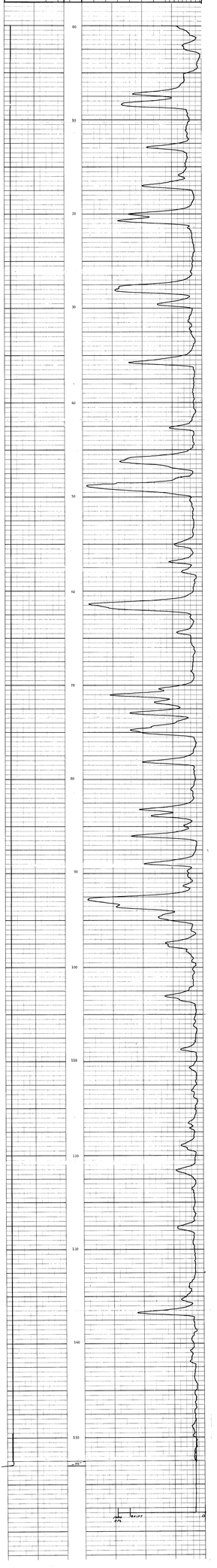
Run No.	6
Date	08 NOV 75
Depth Driller	553.0
Depth Logger	553
Bottom Log Interval	553
Top Log Interval	15.24
Casing Driller	15.24
Casing Logger	15.24
Bit Size	7 7/8
Type Fluid in Hole	MUD
Dens. Visc.	1.2 - 1.3
Max. Rec. Temp.	80
Equipment No.	3
Location	
Recorded By	NEILSEN
Witnessed By	

GENERAL					GAMMA RAY			SIDEWALL DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN	T.C. SEC	SENS SETTINGS	SPEED CPS / CM	API G.R. UNITS PER LOG DIV.	T.C. SEC	SENS SETTINGS	SPEED CPS / CM	CPS/LOG DIV.
1	0	553.0	3.45	0.5	CALIPER			0.3	3000	28	68.43
2	0	553									

REMARKS: SENS TOOL # 420 — OPER BULK

CAL TOOL # 507





ROKE

ROCKIES ROKE SERVICES

P. O. BOX 2626, 2ND FLOOR, 736 6TH AVENUE S.W. CALGARY, ALBERTA

COMPANY GULF RESOURCES LTD.

WELL 16-35-23-3W5

FIELD PEN KISKA ZONE

LOCATION SE - 35 - 23 - 3W5

PROVINCE ALBERTA CANADA

Other Services

DUAL INDUCTION LATEROLOG

Permanent Datum GROUND LEVEL

Elev.: K.B. 4141.0

D.F. 4139.5

G.L. 4127.0

Log Measured From K.B. 1.5 ft. Above Perm. Datum

Drilling Measured From K.B.

Date	11-DEC-73		
Run No.	ONE		
Depth-Driller	11,253		
Depth-Logger	11,254		
Bottom Logged Interval	11,254		
Top Logged Interval	3,124		
Type Fluid in Hole	GEL CHEM		
Salinity, PPM Cl	1,000		
Density	10.0		
Level	FULL		
Max. Rec. Temp. Deg. F.	160		
Operating Rig Time	24 HRS		
Recorded By	MCINTYRE		
Witnessed By	MR. CLARK		

Run No.			
Bit No.			
Size			
Type			
From			
To			

Type			
Weight			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp. Deg. F.			
Equipment Location			
Recorded By			
Witnessed By			

Other Services

SDL-DSN-GR-AM

276

Remarks: BOREHOLE GEOMETRICAL FACTOR -.329 PARTLY TYPE III
GROUND FIELD BEARING: - 315 DEGS
500 H/M/HY. FILTERED FOR ALIGNED IN 1.29
4 TO 1 PEN RATIO ON BOREHOLE PEN

Depths

0 — 10000

00
10
20
LIQUID LEVEL
30
40
50
60
70
80
90
100
110
120
130
140
150
FS

LOG ZERO
CAL ON 200 RANGE
CAL ZERO

LOG ZERO
CAL ON 200 RANGE
CAL ZERO

ROKE OIL ENTERPRISES LTD.
CHARTER NO. 1960
CALGARY ALBERTA

Well No. 276
Location: 16-23-28-4W4
Field: JOARCAM
Prov. or State: ALBERTA
Elevation: KB 2500 DF GL 2490
Permanent Datum: GROUND LEVEL
Log Measured From: KB 10 Ft. Above Perm. Datum
Drilling Measured From: KB
Date: 1-11-72
Run No.: ONE
Depth-Driller: 3650
Depth-Logger: 3650
Bottom Logged Interval: 3650
Top Logged Interval: 1600
Type Fluid in Hole: GEL CHEM
Salinity, PPM Cl: 1000
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 90
Operating Rig Time: 12 HRS
Recorded By: GARNER
Witnessed By: MCINTYRE

Run No. ONE
Type Log: GAMMA RAY NEUTRON
Depth-Driller: 3650
Depth-Logger: 3650
Bottom Logged Interval: 3650
Top Logged Interval: 1600
Casing-Driller: 8 5/8 @ 1600
Casing-Logger: 1600
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 90
Equip. No. and Location: 1309 CAL
Recorded By: GARNER
Witnessed By: MCINTYRE

Run No. ONE
Type Log: GAMMA RAY NEUTRON
Depth-Driller: 3650
Depth-Logger: 3650
Bottom Logged Interval: 3650
Top Logged Interval: 1600
Casing-Driller: 8 5/8 @ 1600
Casing-Logger: 1600
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 90
Equip. No. and Location: 1309 CAL
Recorded By: GARNER
Witnessed By: MCINTYRE

Run No. ONE
Type Log: GAMMA RAY NEUTRON
Depth-Driller: 3650
Depth-Logger: 3650
Bottom Logged Interval: 3650
Top Logged Interval: 1600
Casing-Driller: 8 5/8 @ 1600
Casing-Logger: 1600
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 90
Equip. No. and Location: 1309 CAL
Recorded By: GARNER
Witnessed By: MCINTYRE

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	3⅜ IN.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	3⅜ IN.
TYPE	SCINTILLATOR	DETECTOR MODEL NO.	
LENGTH	10.16 IN.	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	7.04 ft.	LENGTH	15.24 CM.
		SOURCE MODEL NO.	MRC N-85-9
GENERAL		QUANTITY	5 MC
HOIST TRUCK NO.	36	SPACING	45.18 CM.
INSTRUMENT TRUCK NO.		TYPE	Am Be
TOOL SERIAL NO.	323 + .002	STRENGTH	5 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	CASING FROM	CASING TO	SPEED F/M	T.C. SETTING	SENS	ZERO	API G. R. UNITS	T.C. SETTING	SENS	ZERO	API N. UNITS
1	0	1600	30	3.0	4	100	0	1.0	5	5000	60
2	1600	3650	30	3.0	4	100	0	1.0	5	5000	60
3	1600	3650	60	1.5	4	100	0	1.0	5	5000	60

REMARKS: OPEN HOLE

GAMMA RAY | Feet | NEUTRON

GAMMA RAY INCREASES → 0 160

NEUTRON INCREASES → 1640 8640

SCALE CHANGE

LIQUID LEVEL 2490

0 1000 CPS

0 1000 CPS

ROKE
OIL ENTERPRISES LTD.
GAMMA RAY NEUTRON LOG

COMPANY ROKE OIL ENTERPRISES LTD.
WELL 2320 SOUTH
FIELD KEG RIVER SOUTH
LOCATION SE 1-9-6
COUNTY/PROV. CYPRESS
PROVINCE ALBERTA

Permanent Datum: GROUND
Elev. 2276 K.B. 2276
Log Measured From: K.B. 0.3 M Above Perm. Datum
Drilling Measured From: K.B.
Date: 26-JUL-76
Run No.: ONE
Depth-Driller: 1375
Depth-Logger: 1375
Bottom Logged Interval: 1373
Top Logged Interval: 1373
Casing-Driller: 139.7 @ 0
Casing-Logger: 139.7 @ 0
Bit Size: 9.5
Type Fluid in Hole: GEL CHEM
Dens. Visc.: 1.10 50
pH: 9.5
Fluid Loss: 8.0
Source of Sample: MUD PIT
Rm @ Meas. Temp.: 0.5 @ 21
Rmf @ Meas. Temp.: 0.4 @ 21
Rmc @ Meas. Temp.: 0.6 @ 21
Source of Rmf & Rmc: MEASURED
Rm @ BHT: 0.3 @ 49
Time Since Circ.: 3 HRS
Max. Rec. Temp.: 49
Equip. No. & Location: 2320 SOUTH
Recorded By: CARLSON
Witnessed By: JONES

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.24 M	LENGTH	10.16 CM
		SOURCE MODEL NO.	MRC-N-88-M
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	63.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	123 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN	DEPTH FROM	DEPTH TO	SPEED M/MIN.	T.C. SEC.	SENS. SETTINGS	ZERO API & K UNITS	API & K UNITS PER DIV.	T.C. SEC.	SENS. SETTINGS	ZERO API & K UNITS	API & K UNITS PER DIV.
ONE	0	137	3.4	4	100	0	16	3	300	0	180

REMARKS CPS9 HOLE - DUE TO A ROCK FALL, PLOWING LOGGING WAS NOT POSSIBLE INSTEAD UNABLE TO CLEAN OUT HOLE.

GAMMA RAY	DEPTH	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
0 — 160		0 — 1800 — 3600

0
10
20
30
40
50
60
70
80
90
100
110
120
130
140

F.E.

0 — 1000 CPS

0 — 1000 CPS

Dec-96

Recorded By: JOSEPH
Witnessed By: MARTIN

ROKE

SIDEWALL CORE LOG

K. B. Elev. 3,276.00 ft.
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING
Permanent Datum: GROUND LEVEL
Elev.: K.B. 3,276.00 ft. G.L. 3,266.00 ft.

LOG No. 1
FILE NO.
RUN
DATE
M

COMPANY: ROKE ENTERPRISES LTD.
CALGARY, ALBERTA

WELL: 08-34-27-27W4
LOCATION: 08-34-27-27W4
FIELD: ROKE (ELKTON)

Other Services: CBL-VDL-GR

Rge. 27 W4

276

Recorded By	JOSEPH
Witnessed By	MARTIN
Run No.	ONE
Date	23 MAR 76
Type Log	SIDEWALL CORE
Depth-Driller	3600
Depth-Logger	3601
Bottom Log Interval	3601
Top Log Interval	3300
Casing-Driller	8 5/8 @ 331
Casing-Logger	331
Bit Size	7 7/8
Type Fluid in Hole	WATER GEL
Density	9.2
Viscosity	38
Fluid Loss	10
Source of Sample	CIRC
Rm @ Meas. Temp.	1.2 @ 70
Rmf @ Meas. Temp.	.9 @ 70
Rmc @ Meas. Temp.	.7 @ 70
Source of Rmf & Rmc	CALC
Rm @ BHT	.5 @ 120
Time Since Circ.	12 HRS
Max. Rec. Temp.	120
Equip. No. & Location	1306 RED DEER
Recorded By	JOSEPH
Witnessed By	MARTIN

GENERAL				GAMMA RAY				SIDEWALL SEPARATION			
RUN NO.	DEPTH FROM	DEPTH TO	SPACE INTERVAL	T.C. SPAN	ZERO API UNITS	API U.N. UNITS PER 1/10 DIV.		T.C. DIV.	SPAN (MILLIMETRES)	ZERO (DIV.) OR B	CPS/DIV.
1	0	110	5.48					3	1000	2.8	68.43
2	0	550		CALIPER							

REMARKS: 3000 TOOL # 430
CBL TOOL # 587

CALIPER (DIAMETER - CENTIMETRES)

10.16	15.24	20.32	25.40	30.48
4				

10.16	15.24	20.32	25.40	30.48
4				

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

0																					150
1.95																					2.95

60
70
80
90
100
110
120
130
140
150

JOE

1800
CPS

Rm=1.2

Rmf=.9

Rmc=.7

Rm=.5

ROKE

CALGARY ALBERTA

Oil Enterprises Ltd.

COMPANY 6-22 ROKE ARDLEY

WELL

FIELD

LOCATION

PROVINCE

Permanent Datum: GROUND LEVEL Elev.: 3,243.5 ft

Log Measured From: KELLY BUSHING 10 ft. Above Perm. Datum

Drilling Measured From: KELLY BUSHING

Elev.: K.B. 3,253.5 ft. D.F. G.L. 3,243.5 ft.

Date: 1-3-73

Run No.: ONE

Depth-Driller: 3,600 ft.

Depth-Logger: 3,600 ft.

Bottom Logged Interval: 3,600 ft.

Top Logged Interval: 3,100 ft.

Type Fluid in Hole: GEL CHEM

Salinity, PPM Cl: 1,500

Density: 9.7

Viscosity: 50

Fluid Loss: 9.6 cc

Source of Sample: FLOWLINE

R_m @ Meas. Temp.: 1.33 @ 70°F

R_mf @ Meas. Temp.: 1.11 @ 70°F

R_mc @ Meas. Temp.: 1.78 @ 70°F

Source of R_mf: MEASURED

Source of R_mc: CALCULATED

R_m @ BHT: 1.33 @ 70°F

Time Since Circ.: 5 HRS.

Max. Rec. Temp.: 70°F

Equip. No. & Loc.: 3 CALGARY

Recorded By: CARRUTHERS

Witnessed By: MR. TAYLOR

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	32 MM	DIAMETER	32 MM
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	7.04 ft	DISTANCE TO SOURCE	11.54 CM
SOURCE MODEL NO.		SOURCE MODEL NO.	MRC-N-55-W
SERIAL NO.		SERIAL NO.	265
GENERAL		SPACING	63.38 CM
HOIST TRUCK NO.	36	TYPE	Amile
INSTRUMENT TRUCK NO.		STRENGTH	3 CURIES
TOOL SERIAL NO.	323 - 002		

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN	DATUM	SPEED	T.C.	SENS	API G. R. UNITS	T.C.	SENS	ZERO	API N. UNITS		
	FROM TO	FPM	SEC.	SETTING	ZERO & 100 API	SEC.	SETTING	SETTING	0 API & 100 API		
1	0 3,600	7.45	4	100	0	3	500	0	100		

REMARKS OPEN HOLE

GAMMA RAY

SCALE

NEUTRON

GAMMA RAY INCREASES

NEUTRON INCREASES

0 160

0 3600

10

20

30

40

50

60

70

80

90

100

110

120

130

140

75

100 FPM

2000 FPM

ROKE

PROCESSED SONIC LOG

ROKE OIL (ALBERTA) LTD.
CALGARY, ALBERTA

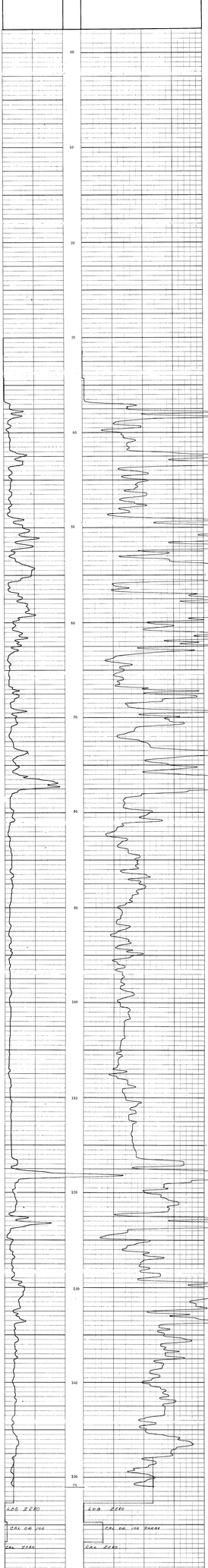
FIELD NO.	OIL - 47
CO.	ROKE OIL (ALBERTA) LTD.
WELL	2-29
FIELD	
COUNTY	
STATE	ALBERTA
Elev.	
Date	
Run No.	
Depth Driller	
Depth Logger	
Bottom Log Interval	
Top Log Interval	
Casing Driller	
Casing Logger	
Bit Size	
Type Fluid in Hole	
Dens.	
Visc.	
pH	
Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source: Rmf / Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	
Equip. Location	
Recorded By	
Witnessed By	

276

Run No.	ONE
Depth Drlr	
Depth Log	
Bit Size	
Casing Size	
Type Fluid	
Density	
Viscosity	
pH	
Fluid Loss	
Source	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source: Rmf / Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	
Equip. Location	
Recorded By	
Witnessed By	

Operating Time	0.5 HOURS
Depth Log	0 - 4000
Log Interval	0 - 4000
Scale	5 INCH = 100 FT
Line Speed	30 FT/MIN
Time Constant	0.5 SECS
Gain	0
Zero Offset	0
Cable Tension	1000 LBS
Cable Speed	30 FT/MIN
Recorded By	
Witnessed By	

Remarks: GEOMETRIC SONIC FACTOR =325, PHOTO TYPE III
GRAD=2 FIN MARGIN = 250-1000
100 GRADS/FT, PAYZONE PER ADDED TO 7.29 SEY
8 CO 1 PER RATED ON SECONDARY PIN



ROKE

SIDEWALL DENSILOG

COMPANY: ROKE RESOURCES LTD.
WELL: K-K-K 4-15-26-4 W4
FIELD: WILDCAT
LOCATION: 15 - 26 - 4 W4
COUNTY: ROKE RESOURCES LTD.
STATE: ALBERTA
Other Services: DSN SSTVD
Permanent Datum: GROUND LEVEL
Elevation: K.B. 1101.00 m
D.F.
G.L. 1097.00 m
Log Measured From: K.B. 4.00 m ABOVE PERM. DATUM
Drilling Measured From: K.B.
Date: 13 JAN 2022
Run No.: ONE
Depth-Driller: 1100.00 m
Depth-Logger: 1100.00 m
Bottom Logged Interval: 1100.00 m
Top Logged Interval: 0.00 m
Type Fluid in Hole: WATER BASED MUD
Salinity, PPM Cl: 10000
Density: 1.10 kg/m³
Viscosity: 50 s
Fluid Loss: 10 cc
Source of Sample: FLOWLINE
R_m @ Meas. Temp.: 0.300 @ 20 °C
R_mf @ Meas. Temp.: 0.240 @ 20 °C
R_mc @ Meas. Temp.: 0.400 @ 20 °C
Source: R_mf: MEASURED R_mc: CALCULATED
R_m @ BHT: 0.150 @ 80 °C
Time Since Circ.: 4 HRS
Max. Rec. Temp.: 80 °C
Equip. No. & Location: 2 DENSILOG 2 DENSILOG
Recorded By: K. MCCRYSTAL
Witnessed By: MR. ROKE

276

Run 1st

GENERAL					GAMMA RAY			SIDEWALL DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/min	T.C. SEC.	GAIN SETTINGS	DATE RUN	API G.R. UNITS PER 100 DIV	T.C. SEC.	GAIN SETTINGS	DATE RUN	API G.R.
1	0	100	3.05					3	3300	26	68.43

REMARKS: 3000 STDS, F 620
GR: 3100, F 387
OPEN HOLE

CALIPER (DIAMETER)

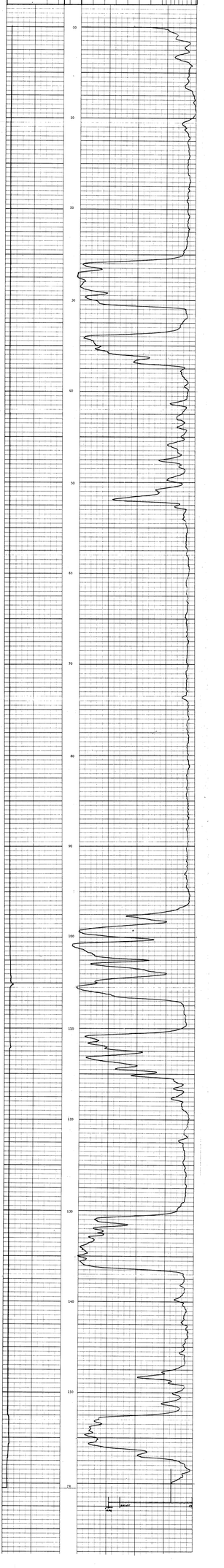
20.14	13 JAN 2022	23.48

GAMMA RAY API

30.48	35.56

BULK DENSITY (GRAM/CC)

1.95	2.95



ROKE

ROKE OIL & DEVELOPMENT LTD.
2400, 440 - 2nd AVENUE S.W. CALGARY, ALBERTA

COMPANY

WELL: 2-26-23-5 W4

FIELD: WILDCAT

LOCATION: 26 - 23 - 5 W4

COUNTY OR DISTRICT: MEDICINE HAT

PROVINCE: ALBERTA

Other Services: NEUTRON

Permanent Datum: GROUND LEVEL

Elev.: K.B. 2276

Log Measured From: K.B. 6 FT. ABOVE PERM. DATUM

Drilling Measured From: K.B.

Date	1-11-72		
Run No.	ONE		
Depth-Driller	3600		
Depth-Logger	3600		
Bottom Logged Interval	3600		
Top Logged Interval	1500		
Type Fluid in Hole	GEL CHEM		
Salinity, P.P.M. Cl	1000		
Density	9.6		
Level	FULL		
Max. Rec. Temp. Deg. F.	120		
Operating Rig Time	5 HRS		
Recorded By	M. SIMS		
Witnessed By	MR. WOOD		

Run No.	ONE		
Bit From	SURF.		
Size	7 7/8		
Type	STEEL TOOTH		
Weight	9.6		
Viscosity	45		
Fluid Loss	10.0		
Source of Sample	CIRC.		
Rm @ Meas. Temp.	.55 @ 70		
Rmf @ Meas. Temp.	.45 @ 70		
Rmc @ Meas. Temp.	.75 @ 70		
Source: Rmf / Rmc	CALC. / CALC.		
Rm @ BHT	.30 @ 120		
Time Since Circ.	5 HRS		
Max. Rec. Temp. Deg. F.	120		
Equip. Location	3-5-23-5 W4		
Recorded By	M. SIMS		
Witnessed By	MR. WOOD		

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
PREAMP MODEL NO.		DIAMETER	32 MM
DETECTOR	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	15.14 CM	DETECTOR	PROPORTIONAL
DISTANCE TO N. SOURCE	7.64 M	LENGTH	15.14 CM
GENERAL		SOURCE MODEL NO.	MRC-N-55-W
HOIST TRUCK NO.	36	SERIAL NO.	260
INSTRUMENT TRUCK NO.		SPACING	43.18 CM
TOOL SERIAL NO.	125 - 502	TYPE	Amite
		STRENGTH	3 Curies

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
Run No.	DEPTH FROM	DEPTH TO	SPEED MPH	T.C. SEC.	SENS. SETTING	ZERO API & LN/FS	API & LN/FS	T.C. SEC.	SENS. SETTING	ZERO SPC & LN/FS	API & LN/FS	LOG SCALE
1	0	3601.5	5.85	1	100	0	14	3	200	0	9	100

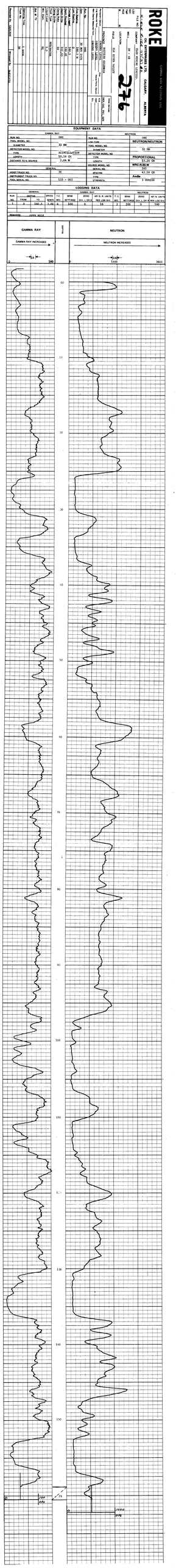
REMARKS: 100FR SCALE

GAMMA RAY | NEUTRON

GAMMA RAY INCREASES

NEUTRON INCREASES

0 — 180 — 3600



ROKE

PROCESS RAW LOG

COMPANY: ROKE OIL (WESTERNBRIDGE) LTD.
WELL: ROKE ET AL CLARK 12-24-31-5W5
FIELD: GEN ELTON VALLEY
LOCATION: 12-24-31-5W5
PROVINCE: ALBERTA
COUNTRY: CANADA

276

Run No. ONE
Date 26 JAN 88
Depth-Driller 6000
Depth-Logger 6000
Bottom Log Interval 5998
Top Log Interval 3000
Casing-Driller 9.625 @ 3000
Casing-Logger 3000
Bit Size 8.5
Type Fluid in Hole KCL GEL
Density lb/gal 9.2
Viscosity s 42
Fluid Loss cc/30min 8.8
Source of Sample FLOWLINE
Rm @ Meas. Temp 0.5 @ 20
Rmf @ Meas. Temp 0.4 @ 20
Rmc @ Meas. Temp 0.7 @ 20
Source: Rmf Rmc CALC
Rm @ BHT 0.3 @ 120
Time Since Circ. 12 HRS
Max. Rec. Temp. Deg. F 120
Equip. No. & Location 5067 5067
Recorded By MARK
Witnessed By MR. CLARK

Remarks
SONDE CORRECTED FACTOR .329, PHOTO TYPE 111
CHECKS FROM RAWLOG - 3000 OHMS
200 OHM-API. SETTING3 PIP ADJUSTED TO 3.29 HZ=1
6 TO 1 RATIO OF SECONDARY PIP

Depth

0 | 1000 | 0 | 2000 | 4000

10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

LOG ZERO
CAL. ON 200 OHMS
CAL. ZERO

LOG ZERO
CAL. ON 200 OHMS
CAL. ZERO

ROKE
SCHLUMBERGER OILFIELD SERVICES

SIDEWALL CORE LOG

Company: ROKE OIL (1967) LTD.
Well: 6-6-64-7-W5
Field: KAYBOB SOUTH
Province: ALBERTA

276

Other Services: BHC-GR

Permanent Datum: GROUND LEVEL
Elev.: K.B. 2,470 | D.F. | G.L. 2,461

Log Measured From: K.B. 9 Ft. Above Perm. Datum
Drilling Measured From: K.B.

Date: 3-7-67
Run No.: ONE
Depth-Driller: 2,520
Depth-Logger: 2,520
Bottom Logged Interval: 2,520
Top Logged Interval: 2,000
Type Fluid in Hole: GEL CHEM
Salinity: 1,000 PPM CL
Density: 10.0 LB/GAL
Level: FULL
Max. Rec. Temp.: 100 °F
Equipment No. & Location: 1301 KAYBOB
Recorded By: R. BOYD
Witnessed By: MR. MOORE

	Size	Wgt.	From	To
Surface String	8 5/8"	24	0	1,000
Prod. String	5 1/2"	14	0	2,520
Liner				
Liner				

Bit Record: 7 7/8" | Rotary Tools Used: YES | Rig No.: 1 | Type: RIG

Type Log: GAMMA RAY - SIDEWALL CORES
Scale: 5" = 100'
Run No.: ONE
Depth-Driller: 2,520
Depth-Logger: 2,520
Bottom Logged Interval: 2,520
Top Logged Interval: 2,000
Type Fluid in Hole: GEL CHEM
Salinity: 1,000 PPM CL
Density: 10.0 LB/GAL
Level: FULL
Max. Rec. Temp.: 100 °F
Equipment No. & Location: 1301 KAYBOB
Recorded By: R. BOYD
Witnessed By: MR. MOORE

Rm @ Meas. Temp.: 1.45 @ 70 °F
Rmf @ Meas. Temp.: 1.16 @ 70 °F
Rmc @ Meas. Temp.: 1.74 @ 70 °F
Source of Rmf & Rmc: MEASURED
Rm @ BHT: 1.00 @ 100 °F
Time Since Circ.: 3 HRS
Max. Rec. Temp.: 100 °F
Equipment No. & Location: 1301 KAYBOB
Recorded By: R. BOYD
Witnessed By: MR. MOORE

	Size	Wgt.	From	To
Surface String	8 5/8"	24	0	1,000
Prod. String	5 1/2"	14	0	2,520
Liner				
Liner				

Bit Record: 7 7/8" | Rotary Tools Used: YES | Rig No.: 1 | Type: RIG

Type Log: GAMMA RAY - SIDEWALL CORES
Scale: 5" = 100'

GENERAL

RUN NO.	CASING FROM	CASING TO	SPEED (ft./min.)	T.C.	GAIN SETTINGS	GAMMA RAY API (G.R. UNITS)	MUD LOSS (bbls.)
1	0	1000	1,440				
2	0	100			CALIPER		

REMARKS: IBHD 7985, F 620 — OPEN HOLE — GR. 7985, F 540

SIDEWALL SPROULS

RUN NO.	GAIN SETTINGS	SPEC. (ft./min.)
1	5000	2 3

10.11 11.26 30.32 23.40

GAMMA RAY API

Depth

30.40

CALIPER (DIAMETER - CENTIMETERS)

30.56

BULK DENSITY (GRAMS/CC)

1.95 2.00 2.05 2.10 2.15 2.20 2.25 2.30 2.35 2.40 2.45 2.50 2.55 2.60 2.65 2.70 2.75 2.80 2.85 2.90 2.95 3.00

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

CPS

ROKE

CANADA WEST NEUTRON LTD.

CALGARY, ALBERTA

WELL	276
FIELD	GOOSE RIVER SOUTH
COUNTY	BIG VALLEY
LOCATION	30 - 34 - 21 - W4
API NO.	50-133-20276

RUN NO.	ONE
DATE	3-JUN-81
TYPE LOG	NEUTRON
DEPTH DRILLER	3600
DEPTH LOGGER	3600
BTM. LOG INTERVAL	3600
TOP LOG INTERVAL	0
CASING DRILLER	244.5 @ 0
CASING LOGGER	244.5 @ 0
BIT SIZE	200
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	1.10
VISCOSITY	36
PH	10.5
FLUID LOSS	7.4
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	0.26 @ 20
RMF @ MEAS. TEMP.	0.21 @ 20
RMC @ MEAS. TEMP.	0.31 @ 20
SOURCE RMF	MEAS
SOURCE RMC	MEAS
RM @ BHT	0.13 @ 100
TIME CIRC.	3 HRS
TIME LOGGER ON BOTTOM	0600
MAX. REC. TEMP.	100
EQUIP. LOCATION	3
RECORDED BY	D. MOSS
WITNESSED BY	

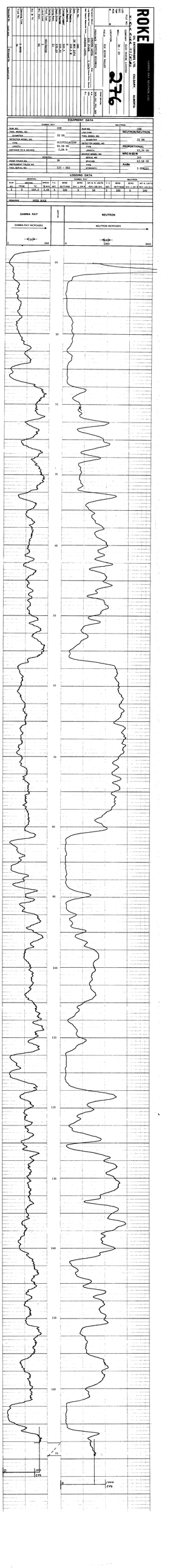
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	10 IN.	DIAMETER	7½ IN.
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	ACCUMULATION	TYPE	PROPORTIONAL
LENGTH	10.16 CM.	LENGTH	76.2 CM.
DISTANCE TO X SOURCE	1.04 M.	SOURCE MODEL NO.	MNC-N-88
GENERAL		STRENGTH	203
HOIST RACK NO.	35	SPACING	43.18 CM.
INSTRUMENT TRUCK NO.		TYPE	Am/Be
TOOL SERIAL NO.	133 - 002	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL FROM	GENERAL TO	SPEED M./MIN.	T.C. SETTING	SENS. DIV. = 1/M.R.	GAMMA RAY API G. R. UNITS PER 1/20 DIV.	T. C. SETTING	NEUTRON SENS. DIV. = 1/M.R.	NEUTRON API N. UNITS PER 1/20 DIV.
1	0	169.3	3.66	4	100	10	2	200	10
							4	500	10

REMARKS: 2000 BOW



ROKE

RESOURCES LTD.

CALGARY ALBERTA

S-E-A-L R-E-C-O-R-D-S

Company: ROKE RESOURCES LTD.
Well: 16-36-29-4W4
Field: WAYNE
Province: ALBERTA

276

Elevations: KB 2400 GL 2391
Log Measured From: KB 9 Ft. Above Perm. Datum
Drilling Measured From: KB

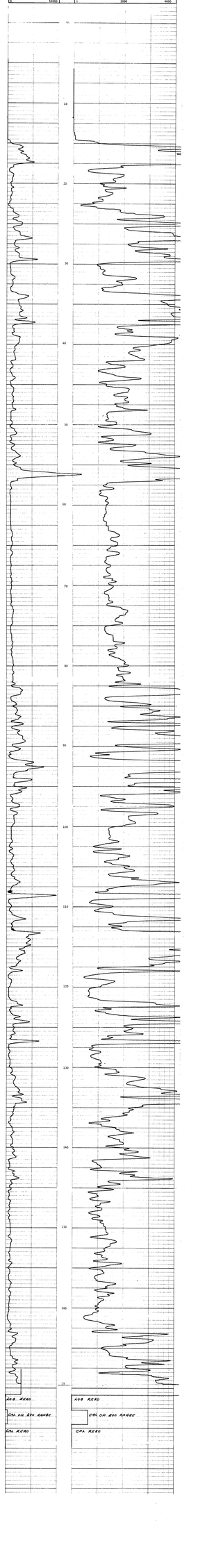
Date: 1-Jun-82
Run No.: ONE
Depth-Driller: 3000
Depth-Logger: 3000
Bottom Logged Interval: 3000
Top Logged Interval: 2000
Type Fluid in Hole: GEL CHEM
Salinity, PPM Cl: 1,500
Density: 9.2
Viscosity: 40
Fluid Loss: 10.0
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.24 @ 70°F
Rmf @ Meas. Temp.: 1.00 @ 70°F
Rmc @ Meas. Temp.: 1.86 @ 70°F
Source: Rmf: CALC Rmc: CALC
Rm @ BHT: 0.70 @ 150°F
Time Since Circ.: 6 HRS
Max. Rec. Temp.: 150°F
Equip. Location: 3-3-29-4W4
Recorded By: MACKAY
Witnessed By: MACKAY

Run No.	Bit From	Bit To	Casing Size	Casing Wgt.	Casing From	Casing To
ONE	0	3000	8 5/8"	24	0	1000

Type Log: DUAL INDUCTION LATEROLOG
Scale Up: 2"/100'
Scale Down: 5"/100'
Logging Unit No.: 1
Logging Engineer: MACKAY
Operating Rig Time: 24 HR
Rig No.: 4
Truck No.: 1
Base No.: 1
Unit No.: 1
Serial No.: 1
Mud Type: GEL CHEM
Rm @ Meas. Temp.: 1.24 @ 70°F
Rmf @ Meas. Temp.: 1.00 @ 70°F
Rmc @ Meas. Temp.: 1.86 @ 70°F
Source: Rmf: CALC Rmc: CALC
Rm @ BHT: 0.70 @ 150°F
Time Since Circ.: 6 HRS
Max. Rec. Temp.: 150°F
Equip. Location: 3-3-29-4W4
Recorded By: MACKAY
Witnessed By: MACKAY

Remarks: BOREHOLE GEOMETRY CALIPER (.125", PHOTO TYPE III)
CURVES FILED PARALLEL - 300 CURVE
300 CURVE/DEV. PLOTTED PER API-RP31A PG 3.26
R TO I RATIO OR DISCRIMINANT PICK

Depth: 3000 to 2000



CM-70

ROKE

OIL INTERPRETATION LTD.
CALGARY, ALBERTA

SIDEWALL DENSILOG

COMPANY: ROCK NORTH ENERGY
WELL: ROCK NORTH ENERGY
FIELD: ROCK NORTH ENERGY
COUNTY: ROCK NORTH ENERGY
PROVINCE: ROCK NORTH ENERGY
COUNTRY: ROCK NORTH ENERGY
LOCATION: ROCK NORTH ENERGY
SEC: 36 TWP: 25 RGE: 24 W4M
ELEV: KB: 3157 GL: 3146
DATE: 2-12-86
RUN: 1
DEPTH: 3160
DENSITY: 2.4
LOGGED BY: ROCK NORTH ENERGY
DRILLING FLUID: ROCK NORTH ENERGY
DENSITY: 1.0
VISCOSITY: 50
PH: 10
FLUID LOSS: 10
RM: 0.5 @ 70
RMF: 0.5 @ 70
RMC: 0.5 @ 70
RM BHT: 0.5 @ 70
MAX. REC. TEMP.: 70
EQUIP. NO.: 1
LOCATION: 2-36-25-24 W4M
RECORDED BY: ROCK NORTH ENERGY
WITNESSED BY: ROCK NORTH ENERGY

276

276 PHL 70

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	CASING DEPTH METRES	CASING DEPTH FT.	BIT SIZE CM.	FT.C. BOTTOM	DEPTH METRES	DEPTH FT.	API & GR. UNITS PER LINE DIV.	FT.C. BOTTOM	DEPTH METRES	DEPTH FT.	CPS/CM PER LINE DIV.
1	0	132	7.366					2	3000	2 K	68.43
2	0	138		CALIPER							

REMARKS: 3000 TOOL # 420 OPEN HOLE
GAM. TOOL # 347

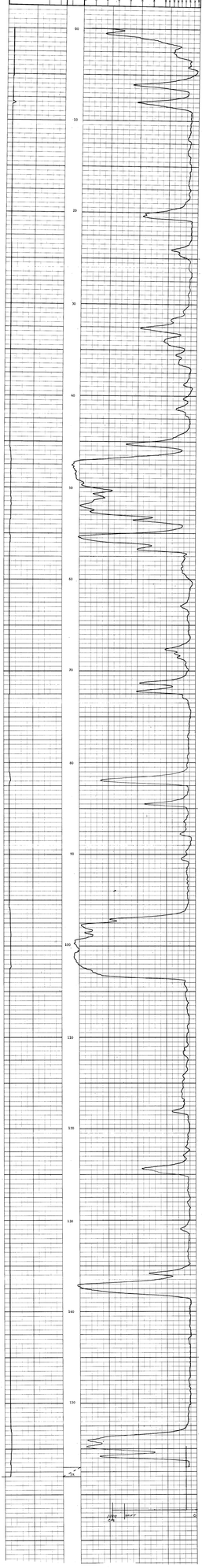
DEPTH

CALIPER (DIAMETER - CENTIMETRES)

18.16 13.26 20.32 25.40 30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE

GAMMA RAY NEUTRON LOG

CANADA

ALBERTA

COMPANY: ROKE OIL ENTERPRISES LTD.

WELL: 16-35-76

FIELD: JOLA

LOCATION: 16-35-76-25W5

COUNTY: GRID 4 REGION

Permanent Datum: GROUND

Elevation: K.B. 2,936

D.F.

G.L. 2,926

Log Measured From: K.B. 10 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Date	3-8-76		
Run No.	ONE		
Depth-Driller	8660		
Depth-Logger	8660		
Bottom Log Interval	8660		
Top Log Interval	5960		
Casing-Driller	9 5/8 @ 5960		
Casing-Logger	5960		
Bit Size	8 3/4		
Type Fluid in Hole	GEL CHEM		
Density	10.0		
Viscosity	50		
pH	10.5		
Fluid Loss	7.6		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp.	.76 @ 70°		
Rmf @ Meas. Temp.	.57 @ 70°		
Rmc @ Meas. Temp.	1.0 @ 70°		
Source of Rmf & Rmc	CALC.		
Rm @ BHT	.36 @ 160°		
Time Since Circ.	6 HRS.		
Max. Rec. Temp.	160°		
Equip. Location	926		
Recorded By	GARDOW		
Witnessed By	J. BOYD		

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		GAM. TYPE	NEUTRON/NEUTRON
DIAMETER	32 NH	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 NH
TYPE	SCINTILLATION	DETECTOR MODEL NO.	PROPORTIONAL
DISTANCE TO N. SOURCE	10.16 CM 7.24 N	TYPE	15.24 CM
		SOURCE MODEL NO.	MISC-N-85-W
GENERAL		AERIAL NO.	253
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	323 - 008	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN	SECTION	SPEED	T.C.	SENS	API G. R. UNITS	T.C.	SENS	ZERO	API N. UNITS
	FROM TO	M.P.H.	SEC.	SETTING	ZERO	450 LOG SPC.	SETTING	ZERO	API N. UNITS 450 LOG SPC.
1	0 156	7.46	4	100	0	16	3	1000	60 390
2	156	3.46	4	500	0	16	3	500	0 100

REMARKS: OPEN HOLE

GAMMA RAY

SCALE

NEUTRON

GAMMA RAY INCREASES →

← NEUTRON INCREASES

0 ← 160

5660 ← 300 → 5960

8660

LIQUID LEVEL

8200

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

0

FT.

200 FT.

0

200 FT.

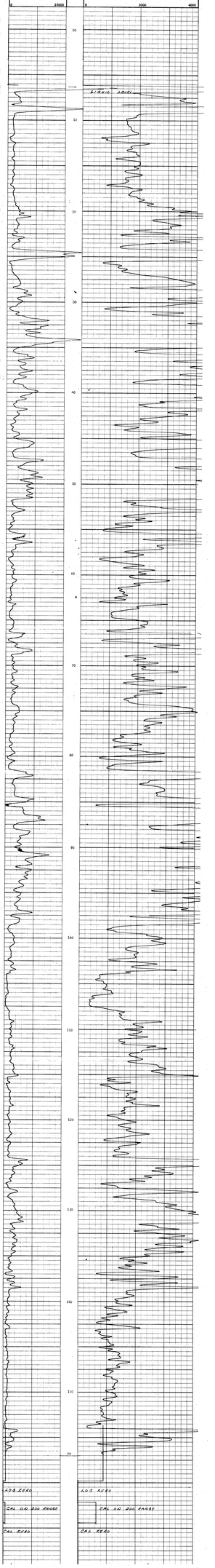
ROKE

PROCESSED BASIS LOG

ROKE OIL INTERNATIONAL LTD. CALGARY, ALBERTA

FIELD	WILDCAT
WELL	08 - 29
LOCATION	08-29-TP-RGE-W4
PROVINCE	ALBERTA
COUNTRY	CANADA
LICENCE NUMBER	276
LOG DATE	1-OCT-1974
RUN NUMBER	ONE
DEPTH DRILLER	10,000
DEPTH LOGGER	10,000
BOTTOM LOG INTERVAL	10,000
TOP LOG INTERVAL	0
CASING DRILLER	9 5/8 @ 1,000
CASING LOGGER	1,000
BIT SIZE	8 1/2
TYPE FLUID IN HOLE	LIGNOSULPHONATE
DENSITY	10.7
VISCOSITY	50
PH	10.5
FLUID LOSS	10.0
SOURCE OF SAMPLE	FLOWLINE
RM @ MEASURED TEMP	0.7 @ 70
RMF @ MEASURED TEMP	0.7 @ 70
RMC @ MEASURED TEMP	0.7 @ 70
RM @ BHT	0.4 @ 180
TIME CIRC. ENDED	19:45
TIME LOGGER AT BTM	0:30
MAX. TEMP. RECORDED	180
EQUIP. NO.	5-CAL-1-NE
LOCATION	5-CAL-1-NE
RECORDED BY	G. JACOBS
WITNESSED BY	M. WEBSTER

Remarks: SENSOR GEOMETRIC FACTOR .133 PROD TYPE III
GROUND FIELD BASEING - 300 OHMS
SPL CURVES: PRIMARY FOR RADIUS 30 3.27 SEVE
SECONDARY FOR RADIUS 8 TO 1



ROKE
SIDEWALL DENSILOG
Gearhart

Company: CANADIAN SUPERIOR OIL LTD.
Well: 16-36-67-25W6
Field: BEAR CREEK
Location: SE 1/4 36-67-25W6
County/Province: GRANDE PRAIRIE NO. 1 ALBERTA
Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING
Elev.: K.B. 2276 D.F. G.L. 2265
Date: 3-JUL-77
Run No.: ONE
Depth-Driller: 3000
Depth-Logger: 3000
Bottom Logged Interval: 3000
Top Logged Interval: 1500
Type Fluid in Hole: GEL CHEM
Salinity, PPM Cl: 1000
Density: 9.2
Viscosity: 50
Fluid Loss: 8.8
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 0.5 @ 68°F
Rmf @ Meas. Temp.: 0.4 @ 68°F
Rmc @ Meas. Temp.: 0.6 @ 68°F
Source: Rmf: MEASURED Rmc: CALCULATED
Rm @ BHT: 0.3 @ 120°F
Time Since Circ.: 4 HRS
Max. Rec. Temp.: 120°F
Equip. No. & Location: 3301 3301
Recorded By: R. WEBB
Witnessed By: MR. TITTLE

276

GENERAL

RUN NO.	CENTER FROM	CENTER TO	SPEED IN FPM	T.C. SEL.	SPAN SETTINGS
1	0	156	15,00		
2	0	150			

GAMMA RAY

SPAN SETTINGS	RATIO (CAL.) OR #
CALIPER	

SIDEWALL DENSILOG

API G.R. UNITS PER LOG DIV.	T.C. SEL.	RATIO SETTINGS	PEAK G.R. #	CPM/DIV
	3	2000	2 A	66,63

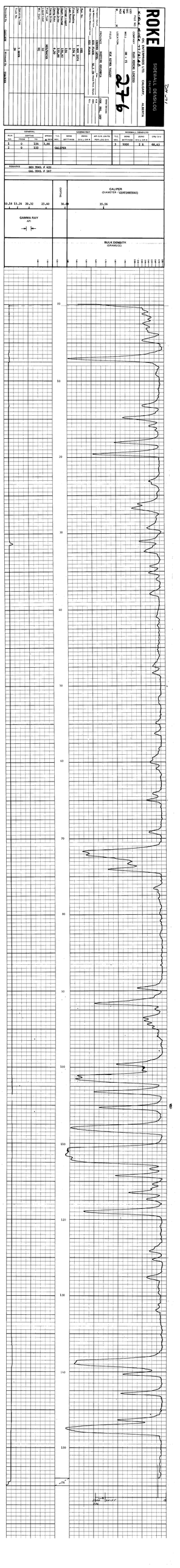
REMARKS

SBS 3060, # 420
CAL 3060, # 367

GAMMA RAY API

CALIPER (DIAMETER - CENTIMETRES)

BULK DENSITY (GRAMS/CC)



ROKE

GAMMA RAY NEUTRON LOG

CALGARY ALBERTA

Company	ROKE OILS LTD.
Well	2 HZ 16-7-25-4 W4
Field	COUNTESS
County/Province	ALBERTA
Location	1980 FSL & 660 FEL
Other Services	
Permanent Datum	GROUND LEVEL
Elevation	2276
Log Measured From	KB 14 FT ABOVE PERM. DATUM
Drilling Measured From	KB
Date	3-DEC-82
Run No.	ONE
Depth-Driller	8660
Depth-Logger	8660
Bottom Logged Interval	8660
Top Logged Interval	3000
Type Fluid in Hole	LIGHTLY GAS CUT
Salinity, PPM Cl	
Density	
Level	FULL
Max. Rec. Temp.	190 F
Equipment No. & Location	1109
Recorded By	D. WEBER
Witnessed By	MR. CHRISTIE

CASING RECORD	SIZE	WGT.	GRADE	FROM	TO
SURFACE STRING	9 5/8	36	K-55	0	3175
PRODUCTION STRING	5 1/2	15.5	K-55	0	8660
OPEN HOLE	8 3/4			3175	8660

BOREHOLE RECORD	BIT NO.	SIZE	FROM	TO
	1	8 3/4	3175	8660

TYPE JOB	DATE	TIME
ONE STAGE	3-DEC-82	0730

RUN NO.	ONE
TIME LOGGER ON BOTTOM	1100
MAX. REC. TEMP.	190 F
EQUIP. LOCATION	1109
RECORDED BY	D. WEBER
WITNESSED BY	MR. CHRISTIE

276

EQUIPMENT DATA

GAMMA RAY	
RUN NO.	ONE
TOOL MODEL NO.	
DIAMETER	32 MM
DETECTOR MODEL NO.	SCINTILLATOR
TYPE	
LENGTH	10.54 FT
DISTANCE TO N. SOURCE	7.46 FT

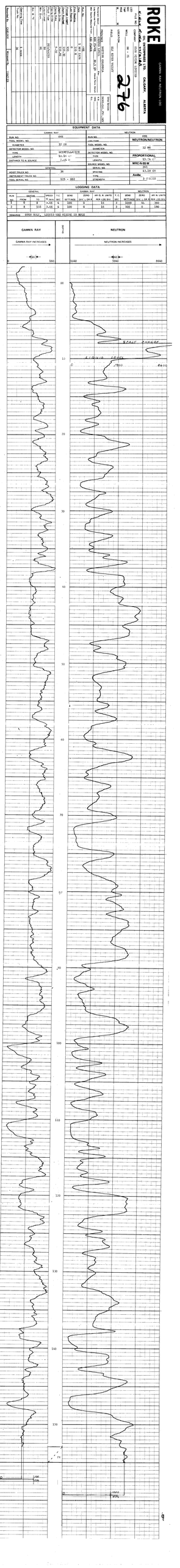
NEUTRON	
RUN NO.	ONE
TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	32 MM
DETECTOR MODEL NO.	PROPORTIONAL
TYPE	
LENGTH	10.75 FT
SOURCE MODEL NO.	MRC-N-05-M
SERIAL NO.	243
SPACING	43.18 CM
TYPE	Amtec
STRENGTH	3 CURIES

GENERAL	
HOIST TRUCK NO.	36
INSTRUMENT TRUCK NO.	
TOOL SERIAL NO.	125 - 002

LOGGING DATA

GAMMA RAY						NEUTRON					
Run No.	SECTION FROM	SECTION TO	SPEED M/min (MIN)	T.C. SETTING	ZERO DIV. | GR ft	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTING	ZERO DIV. | GR ft	API G. R. UNITS PER LOG DIV.
1	0	8	7.62 6	100	0	10	3	1000	51	100
2	8	155	7.62 6	100	0	10	3	500	0	100

REMARKS OPEN HOLE, LOGGED VIA PIPING TO BELL



ROKE

RECORDED FROM LOG

COMPANY: ROKE OIL (1978) LTD.

WELL: C-E-EA ROKE 3-17-63-25

FIELD: EDSON

PROVINCE: ALBERTA

LOCATION: 3-17-63-25 W5M

PERMANENT DATUM: GROUND LEVEL

ELEV.: K.B. 3178

LOG MEASURED FROM: K.B. 10 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: K.B.

Date	26-Jan-78
Run No.	ONE
Depth-Driller	3178
Depth-Logger	3178
Bottom Logged Interval	3174
Top Logged Interval	1400
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	6,500
Density, LB/GAL	9.9
Level	FULL
Max. Rec. Temp. Deg. F.	90
Operating Rig Time	8 HRS
Recorded By	MCINTYRE
Witnessed By	MR. ROKE

Run No.	ONE	
Service Order	20067-78	
Depth-Driller	3178	
Depth-Logger	3178	
Bottom Logged Interval	3174	
Top Logged Interval	1400	
Casing-Driller	9.625 @ 1400	
Casing-Logger	1400	
Bit Size	8.75	
Type Fluid in Hole	GEL CHEM	
Density, LB/GAL	9.9	
Level	FULL	
Max. Rec. Temp. Deg. F.	90	
Equipment No.	3	
Location	EDSON	
Recorded By	MCINTYRE	
Witnessed By	MR. ROKE	

276

Remarks

BOREH CORRECTED FACTOR .329 PHOTO TYPE 111
MEASURED FIRE RADIUS - .508 DEGC
500 LHR/HIL, FLOWAT FOR ANJUSTED TO 3,29
8 TO 1 PIP RATIO ON SECONDARY PIP

DEPTH

GAMMA RAY

0 25000 40000

0 1000 10000

00

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

155

STATIC level 1.62

ADA ZERO

CAL ON ADA RANGE

CAL ZERO

ADA ZERO

CAL ON ADA RANGE

CAL ZERO

ROKE

SIDEWALL DENSLOG

Recorded by: CASSIDY

Witnessed by: THAYER

Rm. Temp.	80
Rm. Resist.	.3 @ 75
Source Type	1 Curie
Source No.	36
Density Tool	3.1005
Serial No.	36
Caliper Tool	9.1577
Serial No.	36
Gamma Ray Tool	4.150
Serial No.	36
Cable Head	4.43
Cable Type	7.32
Length	135
Max. Temp.	135

Recorded by: CASSIDY
Witnessed by: THAYER

Rm. Temp.	80
Rm. Resist.	.3 @ 75
Source Type	1 Curie
Source No.	36
Density Tool	3.1005
Serial No.	36
Caliper Tool	9.1577
Serial No.	36
Gamma Ray Tool	4.150
Serial No.	36
Cable Head	4.43
Cable Type	7.32
Length	135
Max. Temp.	135

Permanent Datum: GROUND LEVEL — Elevation: 3375
Log Measured From: KELLY BUSHING — 6.00 Ft. Above Perm. Datum
Drilling Measured From: KELLY BUSHING

Bulk No. 008
Rec. No. 1
Date 7-24-72
Depth Driller 5,000
Depth Logger 5,000
Btm. Log Interval 4,998
Top Log Interval 3,000
Casing Driller 9 5/8 @ 3,000
Casing Logger 9 5/8 @ 3,000
Bit Size 8 3/4
Type Fluid in Hole GEL CHEM
Density 9.2
Level FULL
Max. Rec. Temp. 135
Operating Rig Time
Source Rm. Temp. 80
Source Rm. Resist. .3 @ 75
Equip. No. 3
Location 3-27-72
Recorded By CASSIDY
Witnessed By THAYER

COMPANY: ESSO RESOURCES LTD.
WELL: BIG - 22
FIELD: RED WATER VALLEY
COUNTY: PARKLAND
STATE: ALBERTA
LOCATION: 27-57-19-W4
Other Services: SONIC, DIPLOG
Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING — 6.00 Ft. Above Perm. Datum
Drilling Measured From: KELLY BUSHING

276

Run No. ONE
Date 7-24-72
Depth Driller 5,000
Depth Logger 5,000
Btm. Log Interval 4,998
Top Log Interval 3,000
Casing Driller 9 5/8 @ 3,000
Casing Logger 9 5/8 @ 3,000
Bit Size 8 3/4
Type Fluid in Hole GEL CHEM
Density 9.2
Level FULL
Max. Rec. Temp. 135
Operating Rig Time
Source Rm. Temp. 80
Source Rm. Resist. .3 @ 75
Equip. No. 3
Location 3-27-72
Recorded By CASSIDY
Witnessed By THAYER

RUN NO.	SIDEWALL DEPTH FROM	DEPTH TO	SPEED IN./HR.	REC.
1	0	136	7.6	
2	0	136		

T.C. SETTING	GAMMA RAY ZERO DIVS. ON R.	API U.S. UNITS PER DIV.
CALIPER		

RUN NO.	SIDEWALL DENSLOG T.C. SETTING	ZERO DIVS. ON R.	CPS/ DIV
3	1000	2.8	68.43

REMARKS: DENS TOOLS # 630 — GYRO MULE
CAL. TOOLS # 597

DEPTH

CALIPER
(DIAMETER - CENTIMETERS)

30.48 — 35.56

10.16 13.26 20.32 25.40

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

-.30 — 0 — .30

-.30 -.25 -.20 -.15 -.10 -.05 0 .05 .10 .15 .20 .25 .30

00
10
20
30
40
50
60
70
80
90
100
110
120
130
FR

MAG - 5 MAY
CPS

Recorded By: MARRON

Witnessed By: THOMSON

Operating Time: 5 hrs. No.

Run No.: 1 Rm. # 72

Depth Driller: 5600 Depth Logger: 5600 Bottom Logged Interval: 5600 Top Logged Interval: 5000 Casing Driller: 9.500 @ 0 Casing Logger: 9.500 @ 0 Bit Size: 8.750 Type Fluid in Hole: WATER Salinity, PPM Cl: 0 Density: 8.3 Level: Full Max. Rec. Temp. Deg. F.: 135 Equip. Location: 36 Recorded By: MARRON Witnessed By: THOMSON

Source of Sample: FLOWLINE Rm @ Meas. Temp.: 1.500 @ 60 Rmf @ Meas. Temp.: 1.200 @ 60 Rmc @ Meas. Temp.: 1.800 @ 60 Source: Rmf: MEASURED Rmc: CALCULATED Rm @ BHT: 1.000 @ 135 Time Since Circ.: 5 hrs. Max. Rec. Temp. Deg. F.: 135 Equip. Location: 36 Recorded By: MARRON Witnessed By: THOMSON

Bit No.: 1 Type: STEEL Size: 8.750 From: 0 To: 5600

Elevations: KB: 3440 DF: GL: 3425

SCHLUMBERGER

GAMMA RAY NEUTRON LOG

COMPANY: ESSO RESOURCES LIMITED

WELL: No. 72

FIELD: REA WATER VALLEY

LOCATION: 36 - 32 - 5 - W5M

PROVINCE: ALBERTA

COUNTY: CALGARY

Other Services: DIFF-SPECTRAL DEN. GR

Permanent Datum: GROUND LEVEL Elev.: 3440

Log Measured From: KELLY BUSHING 5 Ft. Above Perm. Datum

Drilling Measured From: KELLY BUSHING

Elev.: K.B. 3440 D.F. G.L. 3425

API Serial No.: 33-025-21476

Permit No.: 276

EQUIPMENT DATA

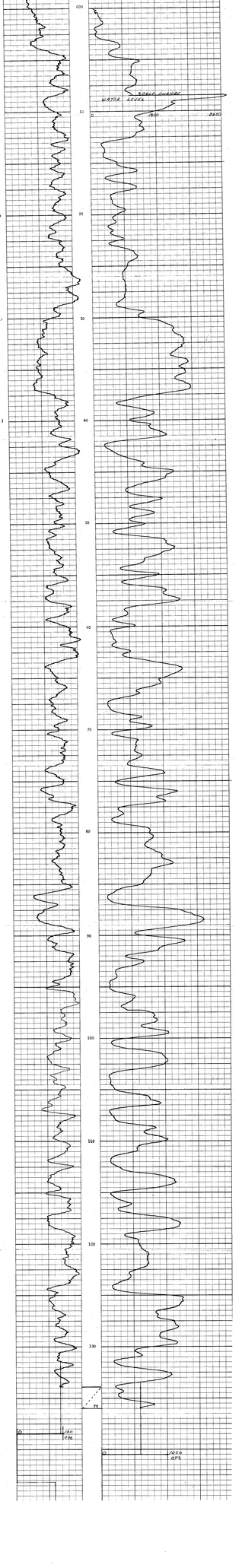
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.05 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MNC-AGS-M
GENERAL		SERIAL NO.	065
HOIST TRUCK NO.	36	SPACING	41.10 CM
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	123 - 002	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	METRE FROM	METRE TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	GAMMA RAY ZERO	GAMMA RAY API G. R. UNITS DIV.	T.C. SEC.	NEUTRON SENS SETTINGS	NEUTRON ZERO	NEUTRON API N. UNITS DIV.
1	0	2.5	3.6	6	100	0	16	3	1000	4	360
2	2.5	130	3.6	6	100	0	16	3	500	0	180

REMARKS: OPEN HOLE

GAMMA RAY	DEPTH	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
0 — 160		3440 — 8660



ROKE RESERVOIRS LTD. CALGARY, ALBERTA

PRODUCED BY ROKE LOG

Well: K-64 E of B.C. 094 A/94 G/94 A
Co.: CANADIAN SUPERIOR OIL OF CANADA LTD.
Loc.: 12-32-7-5
Field: GEORGE CREEK
Prov.: ALBERTA

276

Recorded By: CAMERON
Witnessed By: THACKERY

Depth Driller	36,000 FT
Depth Logger	36,000 FT
Bottom Log Interval	35,998 FT
Top Log Interval	30 FT
Casing Driller	9 5/8" @ 5,000 FT
Casing Logger	5,000 FT
Bit Size	8 1/2"
Type Fluid in Hole	GEL CHEM
Density	10.2 LB/GAL
Viscosity	53 SEC
pH	10.5
Fluid Loss	5.6 CC
Source of Sample	CIRCULATION
Rm @ Meas. Temp.	0.27 @ 120 °F
Rmf @ Meas. Temp.	0.22 @ 120 °F
Rmc @ Meas. Temp.	0.34 @ 120 °F
Source Rmf / Rmc	CALC / CALC
Rm @ BHT	0.13 @ 230 °F
Time Since Circ.	24 HRS
Max. Rec. Temp.	230 °F
Equip. Location	32-7-5
Recorded By	CAMERON
Witnessed By	THACKERY

Permanent Datum: GROUND LEVEL — Elev. 3,294 FT
Log Measured From: KELLY BUSHING — 18 FT Above Perm. Datum
Drilling Measured From: KELLY BUSHING

Run No. ONE
Date Recorded 30 DEC 1971
Depth Driller 36,000 FT
Depth Logger 35,998 FT
Bottom Log Interval 35,998 FT
Top Log Interval 30 FT
Casing Driller 9 5/8" @ 5,000 FT
Casing Logger 5,000 FT
Bit Size 8 1/2"
Type Fluid in Hole GEL CHEM
Density 10.2 LB/GAL
Viscosity 53 SEC
pH 10.5
Fluid Loss 5.6 CC
Source of Sample CIRCULATION
Rm @ Meas. Temp. 0.27 @ 120 °F
Rmf @ Meas. Temp. 0.22 @ 120 °F
Rmc @ Meas. Temp. 0.34 @ 120 °F
Source Rmf / Rmc CALC / CALC
Rm @ BHT 0.13 @ 230 °F
Time Since Circ. 24 HRS
Max. Rec. Temp. 230 °F
Equip. Location 32-7-5
Recorded By CAMERON
Witnessed By THACKERY

Permanent Datum: GROUND LEVEL — Elev. 3,294 FT
Log Measured From: KELLY BUSHING — 18 FT Above Perm. Datum
Drilling Measured From: KELLY BUSHING

Run No. ONE
Date Recorded 30 DEC 1971
Depth Driller 36,000 FT
Depth Logger 35,998 FT
Bottom Log Interval 35,998 FT
Top Log Interval 30 FT
Casing Driller 9 5/8" @ 5,000 FT
Casing Logger 5,000 FT
Bit Size 8 1/2"
Type Fluid in Hole GEL CHEM
Density 10.2 LB/GAL
Viscosity 53 SEC
pH 10.5
Fluid Loss 5.6 CC
Source of Sample CIRCULATION
Rm @ Meas. Temp. 0.27 @ 120 °F
Rmf @ Meas. Temp. 0.22 @ 120 °F
Rmc @ Meas. Temp. 0.34 @ 120 °F
Source Rmf / Rmc CALC / CALC
Rm @ BHT 0.13 @ 230 °F
Time Since Circ. 24 HRS
Max. Rec. Temp. 230 °F
Equip. Location 32-7-5
Recorded By CAMERON
Witnessed By THACKERY

Remarks

BOREHOLE GEOMETRIC FACTOR .329 PHOTO TYPE 221
GRADED FILE HEADING - 180 0700
500 GHS/DEV, FRIEMAN FEA ADJUSTED TO 3.29
8 TO 1 FEA RATIO ON SHORTHAUL FEA

0 40000 | Depth | 0 5000 10000

000
10
20
30
40
50
60
70
80
90
100
110
120
130
140

LATERAL LOG

ADD. ZERO
DEL. DO. SEC. RANGE
DEL. ZERO

ADD. ZERO
DEL. DO. SEC. RANGE
DEL. ZERO

Dec. 73

ROKE

SCHLUMBERGER Limited

SIDETRACK DENSILOG

Co.	ROKE OIL ENTERPRISES LTD.
Well	06 - 31
Field	ROKE
Location	
Other Services	
Permanent Datum	GROUND LEVEL
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elev. K.B.	3,163
Elev. D.F.	
Elev. G.L.	3,154
Date	14-DEC-73
Run No.	ONE
Depth-Driller	3,163
Depth-Logger	3,163
Bottom Log Interval	3,163
Top Log Interval	1,142
Casing-Driller	9 5/8 @ 1,142
Casing-Logger	9 5/8 @ 1,142
Bit Size	8 1/2
Type Fluid in Hole	GEL CHEM
Density	9.6
Viscosity	50
Fluid Loss	10.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	.58 @ 70
Rmf @ Meas. Temp.	.47 @ 70
Rmc @ Meas. Temp.	.78 @ 70
Source of Rmf & Rmc	CALCULATED
Rm @ BHT	.37 @ 120
Time Since Circ.	3 HOURS
Max. Rec. Temp.	120
Equip. No. & Location	3A 1 TEL
Recorded By	ANDERSON
Witnessed By	MACLEOD

CALGARY ALBERTA

276

GENERAL			GAMMA RAY			SONIC			BOREHOLE DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	T.C. SECS	SENS. API/IN	API & VOLTS PER LOG INCH	T.C. SECS	SENS. MICRO SEC/FT	CYCLE SKIP	T.C. SECS	SENS. G/C3	CYCLE SKIP
1	0	142	3,69						3	1000	2 X	64.53
2	0	142		CALIPER								

REMARKS: HOLE TOOL # 620
CAL TOOL # 387

OPEN HOLE MEASURED FROM CASING LEVEL

CALIPER
(QUARTER - CENTIMETERS)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

10.16	15.24	20.32
		25.40
		30.48
		35.56

CASING

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

ROKE

CHEVRON STANDARD LIMITED

CALGARY ALBERTA

Company	CHEVRON STANDARD LIMITED
Well	ROKE 5-34-5-5W5
Field	WILDCAT
County	MUNICIPAL DISTRICT OF FOOTHILLS NO. 31
Province	ALBERTA

276

Location	5-34-5-5W5
Permanent Datum	GROUND LEVEL
Log Measured From	K.B. 3.5 M. ABOVE PERM. DATUM
Drilling Measured From	K.B.
Date	1-12-78
Run No.	ONE
Depth-Driller	3600 M.
Depth-Logger	3600 M.
Bottom Logged Interval	3600 M.
Top Logged Interval	0 M.
Casing-Driller	244.5 MM @ 142 M.
Casing-Logger	244.5 MM @ 142 M.
Bit Size	222 MM
Type Fluid in Hole	GEL CHEM
Density	1.14
Viscosity	50
pH	10.5
Fluid Loss	5
Source of Sample	CIRC. PIT
R_m @ Meas. Temp.	0.33 @ 20 °C
R_mf @ Meas. Temp.	0.25 @ 20 °C
R_mc @ Meas. Temp.	0.44 @ 20 °C
Source R_mf & R_mc	CALC.
R_m @ BHT	0.13 @ 124 °C
Time Since Circ.	12 HRS.
Max. Rec. Temp.	124 °C
Equip. No. & Location	5301
Recorded By	GRAY
Witnessed By	KOCH

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL TYPE	NEUTRON/NEUTRON
DIAMETER	37 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	92 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	1.14 M	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	1.05 M	LENGTH	1.52-.26 M
GENERAL		SOURCE MODEL NO.	MRC N-85
		STRENGTH	555
HOIST TRUCK NO.	36	SPACING	1.5-.16 M
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	113 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
RUN NO.	SECTION FROM	SECTION TO	SPEED M. MIN.	T.C. SEC.	SENS SECTION	ZERO SCA. DIV.	API G. UNITS API=(SD-SY)	T.C. SEC.	SENS SECTION	ZERO SCA. DIV.	API N. UNITS API=(SD-SY)
1	0	142	3.28	4	100	0	10	3	300	0	180

REMARKS: OPEN HOLE - MEASURED FROM CASED LEVEL

GAMMA RAY | Scale | NEUTRON

GAMMA RAY INCREASES ← 16 → 160

NEUTRON INCREASES 0 ← 40 → 1600 3600

LIQUID LEVEL

CASING

FS

FBO

CPS

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (S)8B

FILE NO.

LSD
SEC
TWP
RGE
W. M

COMPANY ELCO MINING LIMITED

WELL DH - 73

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: CBN-HCNS-CAL-SDV

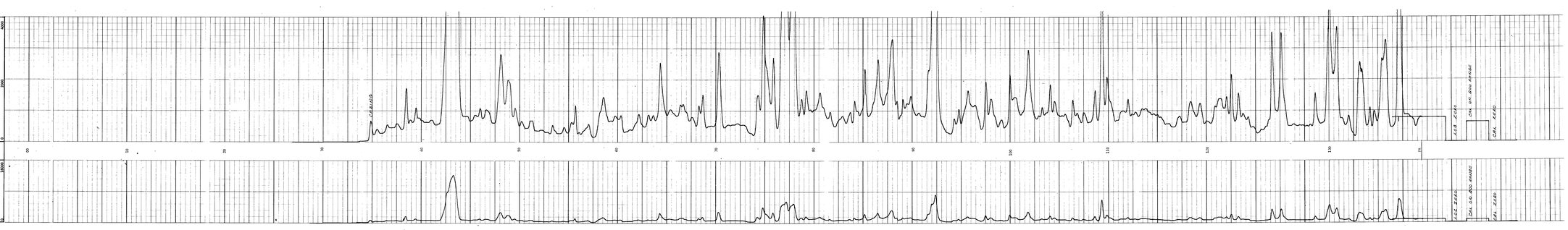
Permanent Datum: GROUND LEVEL Elev: K.B.
Log Measured from: GROUND LEVEL Above Perm. Datum: GSG
Bot Depths Measured from: GROUND LEVEL G.L.

BIG FLOOR - 60 CM ABOVE GROUND LEVEL

Run. No.	000
Date	9 NOV 1976
First Reading	142
Last Reading	35
Footage Logged	107
Depth Reached	142.92
Depth Driller	143.95
Casing Rake	35
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	18
Min. Diam.	92
Rm @ °C	15.38 @ 25
Operating Time	1 HOUR
Truck No.	36

Recorded By CARLSON Witnessed By MARKEVITZ

Remarks: BOREHOLE GEOPHYSICAL PROVINCE, 1979 PHOTO STATE 111
GROUND FLOOR MEASURE - 275 TO 300
300 SIDEWALK TO 3.29
8 TO 1 PCB RADIO US ABOVEMENT PAD



DH 74

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. K-ELK RIVER 77(3)A6

LSD
SEC
TWP
RGE
W ___ M

COMPANY: ELCO MINING LIMITED
WELL: DH - 74
LOCATION: 276
FIELD: ELK RIVER VALLEY
PROVINCE: BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum: GROUND LEVEL   Elev.   K.B.
Log Measured from: RIG FLOOR   Above Perm. Datum   CSG
Well Depths Measured from: RIG FLOOR   G.L.

Run No.	ONE
Date	3 NOV 1976
First Reading	154 M
Last Reading	0
Footage Logged	154
Depth Reached	154.92
Depth Driller	155.55
Casing Roke	32
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	0
Min. Diam.	HQ
Operating Time	1½ HOURS
Truck No.	36

Recorded By: CARLSON   Witnessed By: McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
1	0	154	3.66					3	1000	2 R	68.43

REMARKS DENS TOOL # 420   OPEN HOLE
CAL TOOL # 587

DEPTHS

CALIPER
(DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

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

ROKE

COMPANY OF CANADA LTD.

CALGARY ALBERTA

Recorded By	
Witnessed By	

COMPANY	ROKE OIL (1967) LTD.
WELL	30 - 16
FIELD	RED DEER RIVER
LOCATION	
COUNTY/PROVINCE	
SERVICE ORDER NO.	
PERMANENT DATUM	GROUND LEVEL
ELEV.	
LOG MEASURED FROM	KELLY BUSHING
DRILLING MEASURED FROM	KELLY BUSHING
API No.	
Other Services	

Date	23 JUL 70
Run No.	ONE
Depth-Driller	3600
Depth-Logger	3600
Bottom Logged Interval	3600
Top Logged Interval	0
Type Fluid in Hole	WATER
Salinity, PPM Cl	
Density	
Level	FULL
Max. Rec. Temp.	
Equipment No.	
Location	
Recorded By	
Witnessed By	

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG FROM	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	30.48 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	3.04	SPACING	15.24 CM
		SOURCE MODEL NO.	MNC-N-66-M
		SERIAL NO.	265
SHUNT TRACK NO.	36	SPACING	45.18 CM
INSTRUMENT TRACK NO.		TYPE	Amrb
TOOL SERIAL NO.	323 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL							GAMMA RAY					NEUTRON				
RUN	DEPTH		SPEED	T.C.	SENS	ZERO	API G. R. UNITS		T. C.	SENS	ZERO	API N. UNITS				
NO.	FROM	TO	M/Min.	SEC.	SETTING	API G. R.	PER 1/20 SCALE DIV.	SEC.	SETTING	API G. R.	PER 1/20 SCALE DIV.	SEC.	SETTING	API N. UNITS	PER 1/20 SCALE DIV.	SEC.
1	0	155	9.44	4	100	0	14	3	300	0	100	3				

REMARKS OVER SCALE

GAMMA RAY

GAMMA RAY INCREASES

0 160

NEUTRON

NEUTRON INCREASES

0 3600

ROKE

RESOURCE BASE LTD.

CALGARY ALBERTA

Field NO. 1-34-64-23-W5M

Company RIO ALTO (1980) LTD.

Well No. 34

Field BIG WATER VALLEY

276

Province ALBERTA

Location 1-34-64-23-W5M

Elevation: Perm. Datum GL 2,000 ft

Log Measured From KB 10 ft Above Perm. Datum

Drilling Measured From KB

Date 3-NOV-1979

Run No. ONE

Depth-Driller 5,000

Depth-Logger 5,000

Bottom Logged Interval 4,995

Top Logged Interval 3,500

Casing-Driller 9.625 @ 3,500

Casing-Logger 3,500

Bit Size 8.75

Type Fluid in Hole GEL CHEM

Density and Viscosity 10.0 LB/G 50 S

pH and Fluid Loss 10.5 pH 5.0 CC

Source of Sample CIRC

Rm @ Meas. Temp. 0.180 @ 70 F

Rmf @ Meas. Temp. 0.140 @ 70 F

Rmc @ Meas. Temp. 0.220 @ 70 F

Source of Rmf and Rmc MEASURED

Rm @ BHT 0.110 @ 120 F

Time Since Circulation 12 HRS

Time Since Circ. 1 HR

Max. Rec. Temp. Deg. F 120

Equipment No. 6001

Location

Recorded By WAYNE

Witnessed By ROGER

Run No.	ONE		
Service Order	13-0		
Depth-Driller	5,000		
Depth-Logger	5,000		
Bottom Logged Interval	4,995		
Top Logged Interval	3,500		
Type Log	DUAL INDUCTION SFL		
Scale Up/Down	2		
Max. Rec. Temp. Deg. F	120		
Equipment No.	6001		
Location			
Recorded By	WAYNE		
Witnessed By	ROGER		

Remarks

RUN#1 GR/SP/DUAL INDUC .SFL PASS#1 TIED TO
GR/SP/DUAL FOC READING - LOG RAN
THE OPPOSITE PASS#2 WAS RAN/RUN TO 3,29
0 TO 1 PASS RATIO ON GR/SP/DUAL FOC

Depths

1 : 1000 | 0 | 2000 | 4000

CASING

LOG ZERO

CAL ON 200 RANGE

CAL ZERO

LOG ZERO

CAL ON 200 RANGE

CAL ZERO

ROKE
SIDEWALL DENSILOG
ROKE TECHNOLOGIES LTD.
CALGARY, ALBERTA

Page 26

COMPANY	ROKE TECHNOLOGIES LTD.
WELL	16-25
FIELD	BIG ROCK CREEK
LOCATION	16-25-29-5W4
COUNTY, PROV.	BIG HORN COUNTY, ALBERTA
COMPANY	ROKE TECHNOLOGIES LTD.
WELL	16-25
FIELD	BIG ROCK CREEK
LOCATION	16-25-29-5W4
COUNTY, PROV.	BIG HORN COUNTY, ALBERTA
API NO.	
OTHER SERVICES	
PERMANENT DATUM	GROUND LEVEL
ELEV.	K.B. 1181
LOG MEASURED FROM	K.B. 4.5 M ABOVE PERM. DATUM
DRILLING MEASURED FROM	K.B.
DATE	26-JAN-1982
RUN NO.	ONE
DEPTH-DRILLER	182
DEPTH-LOGGER	181.5
BTM. LOG INTERVAL	181.5
TOP LOG INTERVAL	2.45
CASING-DRILLER	139.7 MM @ 2.45 M
CASING-LOGGER	
BIT SIZE	114.3 MM
TYPE FLUID IN HOLE	WATER
DENSITY	
VISCOSITY	
PH	
FLUID LOSS	
SOURCE OF SAMPLE	
RM @ MEAS. TEMP.	
RMF @ MEAS. TEMP.	
RMC @ MEAS. TEMP.	
SOURCE RMF RMC	
RM @ BHT	
TIME SINCE CIRC.	
MAX. REC. TEMP.	
EQUIP. LOCATION	
RECORDED BY	
WITNESSED BY	

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	CASING DEPTH - DRILLER	CASING DEPTH - LOG	SPACE BTWN. BOTTOMS	R.U. NO.	DENS. SETTINGS	AREA B.H.C. GAM M	API G.R. UNITS PER 1.00 M	R.U. NO.	DENS. SETTINGS	AREA B.H.C. L.D.T. M	CPS/ CPS
1	2	181.5	2.45					3	1000	2.5	68.42
2		182									

CALIPER

REMARKS: HOME TOOL # 420 OPEN HOLE
CAL. 1000, # 347

10.24	11.24	10.32	25.40

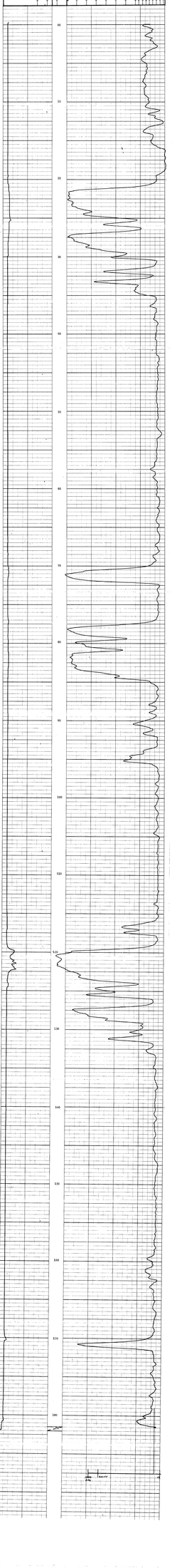
CALIPER
(DIAMETER - CENTIMETRES)

30.48	35.56

GAMMA RAY
API

BULK DENSITY
(GRAM/CC)

1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00



ROKE

ROKE OILFIELD SERVICE LTD.

E. Gulf Grande, 5611, 52nd St. N.E.
P.O. Box 6, Postal Station "C"
CALGARY, ALBERTA
PHONE 295-3377 TELEX 03-821-610

COMPANY: ESSO RESOURCES CANADA LIMITED
WELL: 276
FIELD: NORMANDVILLE
COUNTY: STETTLER
PROVINCE: ALBERTA
LOCATION: 16-37-20-W4M
OTHER SERVICES: DIL, BHC
PERMANENT DATUM: GROUND LEVEL
ELEV.: K.B. 2500 FT.
D.F. 2499 FT.
G.L. 2490 FT.
LOG MEASURED FROM: K.B. 10 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM: K.B.
DATE: 1-JUNE-72
RUN NO.: ONE
TYPE LOG: GAMMA RAY NEUTRON
DEPTH-DRILLER: 3600 FT.
DEPTH-LOGGER: 3600 FT.
BTM. LOG INTERVAL: 3600 FT.
TOP LOG INTERVAL: 1600 FT.
CASING-DRILLER: 9 5/8 @ 1600 FT.
CASING-LOGGER: 1600 FT.
BIT SIZE: 8 3/4 IN.
TYPE FLUID IN HOLE: GEL CHEM
DENS.: 10.0 LB/GAL
VISC.: 45 S
PH: 9.5
FLUID LOSS: 8.0 C.C.
SOURCE OF SAMPLE: MUD PIT
RM @ MEAS. TEMP.: 1.0 @ 70 °F
RMF @ MEAS. TEMP.: 1.0 @ 70 °F
RMC @ MEAS. TEMP.: 1.0 @ 70 °F
SOURCE: RMF: RMC:
RM @ BHT: 0.5 @ 120 °F
TIME CIRC. STOPPED: 1-JUNE-72
TIME LOGGER ON BOTTOM: 1-JUNE-72
MAX. REC. TEMP.: 120 °F
EQUIP. NO. & LOCATION: 1202 - 1203
RECORDED BY: R. HOWARD
WITNESSED BY: MR. MOORE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
GUARD	32 DC	GUARD	
TOOL MODEL NO.		TOOL MODEL NO.	32 DC
TYPE	SCINTILLATION	TYPE	
LENGTH	34.34 Ft.	DETECTOR MODEL NO.	PROPORTIONAL
DISTANCE TO SOURCE	7.25 ft.	TYPE	17.25 Ft.
		LENGTH	MNC-N-50-M
		SOURCE MODEL NO.	17.25 Ft.
		DISTANCE TO SOURCE	
		SPACING	15.12 CM
		TYPE	Amtex
		STRENGTH	5 millicuries

DENSITY	
MUDCAKE MODEL NO.	
CALIPER MODEL NO.	
DISTANCE TO SOURCE	
SPACING	
TYPE	
STRENGTH	

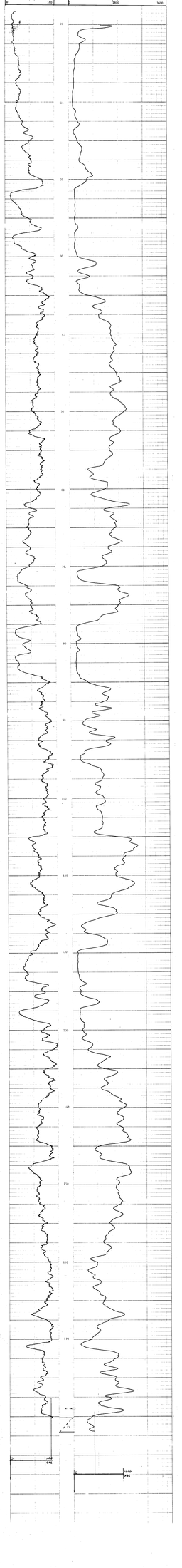
MEASUREMENT TRUCK NO.	
RECORDING NO.	1221 - 1202

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN	RECORD	SPEED	F.O.	ZERO	API G. R. UNITS	T. C.	ZERO	API N. UNITS
NO.	NO.	FT./MIN.	NO.	READING	SCALE	SEC.	READING	SCALE
1	1	60	1221	100	1	10	3	500	0	100

REMARKS: CCSD, RFOC

GAMMA RAY		NEUTRON	
GAMMA RAY INCREASES →		NEUTRON INCREASES →	
0	100	1600	3600



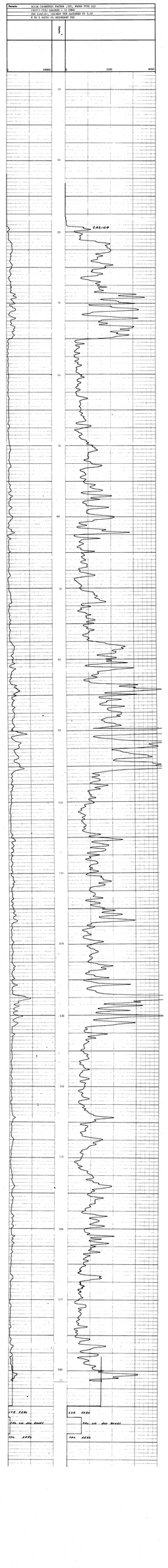
ROKE

RESOURCES LTD.

CALGARY ALBERTA

Well	16-35-35-5W5
Field	
Province	ALBERTA
Location	
Elevation	
Date	
Run No.	ONE
Depth Driller	14660
Depth Logger	14660
Bottom Log Interval	14660
Top Log Interval	4000
Casing Driller	13 3/8 @ 4000
Casing Logger	
Bit Size	12 1/4
Type Fluid in Hole	GEL CHEM
Density	10.2
Viscosity	45
pH	10.5
Fluid Loss	4.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	.13 @ 70
Rmf @ Meas. Temp.	.11 @ 70
Rmc @ Meas. Temp.	.17 @ 70
Source of Rmf & Rmc	CALC
Rm @ BHT	.07 @ 220
Time Since Circ.	24 HRS
Max. Rec. Temp.	220
Equip. No. & Location	5277
Recorded By	
Witnessed By	

Remarks: GEOM CORRTRIC FACTOR =.575, PHOTO TYPE 111
CONDITIONS 100KM/HR 20 DEGREES
CONDITIONS 100KM/HR 20 DEGREES TO 5/8
4 TO 1 RATIO-96 SECONDARY PEC



ROKE — SCHLUMBERGER

SIDEWALL SPECTROLOG

COMPANY: C. DELTA ARG. S.A.C.I.P.A.

WELL: ROKE x-1

FIELD: ROKE NEUQUEN ARG.

COUNTY: NEUQUEN

STATE: NEUQUEN

LOCATION: 38° 14' S — 70° 15' W

Other Services: DIL-SP-GR-CAL / BHC-GR-CAL

Permanent Datum: G.L.

Elevation: 1,000 ft

Log Measured From: K.B. 8 ft above Perm. Datum

Drilling Measured From: K.B.

Date: 1-2-71

Run No.: ONE

Depth-Driller: 1,000

Depth-Logger: 1,000

Bottom Logged Interval: 1,000

Top Logged Interval: 0

Type Fluid in Hole: WATER

Salinity, PPM Cl: 5,000

Density: 8.5

Level: FULL

Max. Rec. Temp. Deg. F: 70

Operating Rig Time: 3 HRS

Recorded By: J. PEREZ

Witnessed By: MR. ROKE

276

RUN NO.	BIT FROM	BIT TO	CASING SIZE	CASING WGT.	CASING DEPTH	BOREHOLE RECORD BIT SIZE	BOREHOLE RECORD FROM	BOREHOLE RECORD TO
1	0	1000	9 5/8"	36	1000	8 3/4"	0	1000

TOOL TYPE (PLACEMENT) — TOOL NO. — DIAMETER — DENSITY — VISCOSITY

GAMMA RAY — 1000 — 5 3/8" — 8.5 — 70

CALIPER — 1000 — 5 3/8" — 8.5 — 70

RUN NO.	DEPTH FROM	DEPTH TO	SPEED (FT/HR)	T.C. SENS.	GAIN SETTINGS	GAMMA RAY API-A.N. UN.TO MEV LOG D.C.	T.C. SENS.	SONIC SPACING	SONIC SPEED DEL-T
1	0	143	7,45				1	1000	2 X 10,43
2	0	142		CALIPER					

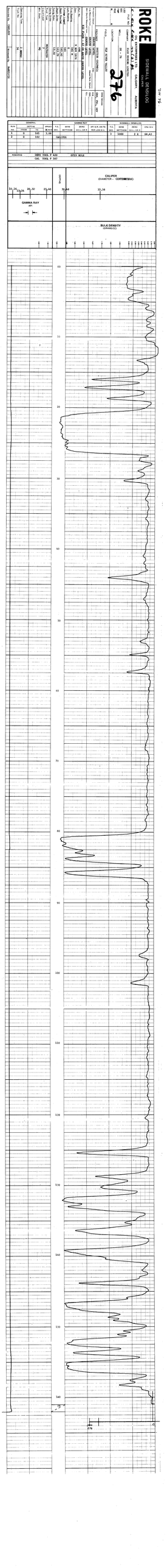
REMARKS: 3800 TOOL # 420 — GAL TOOL # 387 — SIXTH RULE

CALIPER (DIAMETER - CENTIMETERS)

15,16 | 15,56 | 20,32 | 21,40 | 30,48 | 15,16

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



ROKE — OKLAHOMA TAX COMMISSION

COMPANY	SUPERIOR OIL CO.
WELL	GLADE #1-12 A.A.
FIELD	WILDCAT
COUNTY	GRADY
STATE	OKLAHOMA
LOCATION	SE SE NW
SEC.	12
TWP.	7N
RGE.	6W
PERMANENT DATUM	GROUND LEVEL
ELEV.	1,138
LOG MEASURED FROM	K.B.
10 FT. ABOVE PERM. DATUM	
DRILLING MEASURED FROM	K.B.
DATE	12-15-82
RUN NO.	ONE
DEPTH-DRILLER	10,150
DEPTH-LOGGER	10,148
BTM. LOG INTERVAL	10,146
TOP LOG INTERVAL	9,800
CASING-DRILLER	9 5/8 @ 9,800
CASING-LOGGER	9,800
BIT SIZE	8 3/4
TYPE FLUID IN HOLE	SALT WATER GEL
DENS.	10.0
VISC.	40
PH	10.5
FLUID LOSS	8.0
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.25 @ 70°
RMF @ MEAS. TEMP.	.20 @ 70°
RMC @ MEAS. TEMP.	.30 @ 70°
SOURCE OF RMF	MEAS.
SOURCE OF RMC	MEAS.
RM @ BHT	.12 @ 180°
TIME SINCE CIRC.	12 HRS.
MAX. REC. TEMP.	180°
EQUIP. LOCATION	1-A
RECORDED BY	R. SMITH
WITNESSED BY	J. DOE

RECEIVED — JAN 19 1983 — OKLAHOMA TAX COMMISSION

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3 3/8"	DIAMETER	3 3/8"
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	10.16 CM	LENGTH	10.16 CM
DISTANCE TO S. SOURCE	7.05 M	SOURCE MODEL NO.	MSC-N-66 M
GENERAL		SOURCE STRENGTH	66 MC
HOIST TRUCK NO.	30	EFFICIENCY	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Am/Be
TOOL SERIAL NO.	121 - 902	STRENGTH	7 CURIES

LOGGING DATA

RUN NO.	GAMMA RAY CALIBRATION FROM	TO	SPEED F. PER MIN.	T.C. SETTING	SENS. DIV. L.OG	API G. R. UNITS PER L.OG DIV.	T.C. SETTING	SENS. DIV. L.OG	API N. UNITS PER L.OG DIV.
ONE	0	162	7,450 A	100	0	16	3	500	0	180

REMARKS: OPEN HOLE

GAMMA RAY — NEUTRON

GAMMA RAY INCREASES → — NEUTRON INCREASES →

0 — 160 — 1600 — 3600

9,800

9,900

10,000

10,100

10,150

A-CASING ARRIVAL

B-CASING

FEET

10 FEET

ROKE

SCHLUMBERGER OF CANADA LIMITED

CALGARY ALBERTA

Run No.	ONE
Date	5-6-71
Depth-Driller	11,000
Depth-Logger	11,000
Bottom Logged Interval	11,000
Top Logged Interval	3,000
Casing-Driller	9 5/8 @ 3,000
Casing-Logger	3,000
Bit Size	8 1/2
Type Fluid in Hole	GEL CHEM
Density	10.2
Viscosity	50
Fluid Loss	5.6 CC
Source of Sample	CIRC
Rm @ Meas. Temp.	.51 @ 74
Rmf @ Meas. Temp.	.42 @ 74
Rmc @ Meas. Temp.	.95 @ 74
Source of Rmf and Rmc	CALC
Rm @ BHT	.31 @ 170
Time Since Circ.	5 HRS
Max. Rec. Temp. Deg. F.	170
Equipment No. and Location	3-5826
Recorded By	R. SMITH
Witnessed By	MR. TAYLOR

RUN ONE

Density	DENSITY-NEUTRON
Log Measured From	KB
Drilling Measured From	KB
Elevation	K.B. 4,207
	G.L. 4,192
	D.F.

WELL: ROKE BLACK BUTTE 7-6-13-5W5

FIELD: BLACK BUTTE

COMPANY: ROKE OILS (1970) LIMITED

LOCATION: 7-6-13-5W5

PROV.: ALBERTA

276

CALGARY, ALBERTA

Remarks:	RUNNING GEOMETRIC FACTOR - 333, PHOTO TYPE 322
	CENTRE FIRE READING - 1300 OHMS
	300 MPH/FPY, PICKOFF PEG ADJUSTED TO 2.29
	8 TO 1 RATIO ON HOOKWEAR PEG

Density

0 — 40000 — 0 — 3000 — 10000

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
178

LOG ZERO
CAL 00 600 OHMS
CAL ZERO

LOG ZERO
CAL 00 600 OHMS
CAL ZERO

ROKE

SIDEWALL CORING LTD.
CALGARY ALBERTA

Core 77

WELL NAME AND NUMBER: Bow River Gravels 2-36-23-5-W5
FIELD: Bow River Gravels
LOCATION: 2-36-23-5-W5
COMPANY: Bow River Gravels
DATE: 2-36-23-5-W5
RUN NO.: 1
DEPTH DRILLER: 2-36-23-5-W5
DEPTH LOGGER: 2-36-23-5-W5
BTM. LOG INTERVAL: 2-36-23-5-W5
TOP LOG INTERVAL: 2-36-23-5-W5
CASING DRILLER: 2-36-23-5-W5
CASING LOGGER: 2-36-23-5-W5
BIT SIZE: 2-36-23-5-W5
TYPE FLUID IN HOLE: 2-36-23-5-W5
DENSITY: 2-36-23-5-W5
VISCOSITY: 2-36-23-5-W5
PH: 2-36-23-5-W5
FLUID LOSS: 2-36-23-5-W5
SOURCE OF SAMPLE: 2-36-23-5-W5
RM @ MEAS. TEMP.: 2-36-23-5-W5
RMF @ MEAS. TEMP.: 2-36-23-5-W5
RMC @ MEAS. TEMP.: 2-36-23-5-W5
SOURCE RMF: 2-36-23-5-W5
RM @ BHT: 2-36-23-5-W5
TIME SINCE CIRC.: 2-36-23-5-W5
TIME ON BOTTOM: 2-36-23-5-W5
MAX. REC. TEMP.: 2-36-23-5-W5
EQUIP. LOCATION: 2-36-23-5-W5
RECORDED BY: 2-36-23-5-W5
WITNESSED BY: 2-36-23-5-W5

2-36

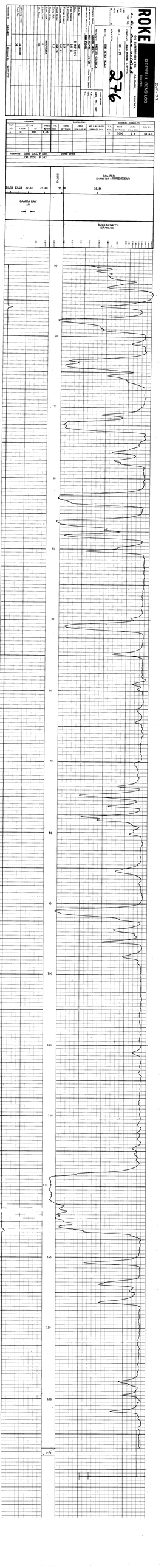
GENERAL				GAMMA RAY				GENERAL CENELOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED ft/sec	T.C. SEC.	SENS. SET'TINGS	ZERO SET	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS. SETTINGS	ZERO SET	CNL DIV.
1	0	147	1.48					1	1000	2 0	10.63

REMARKS: TOOL 2 400 OPEN HOLE
CAL TOOL 2 347

GAMMA RAY API

CALIPER (DIAMETER - CENTIMETERS)

BULK DENSITY (GRAMS/CC)



ROKE

CANADIAN WELL LOGGING SOCIETY

CALGARY ALBERTA

COMPANY	C.S.C. GULF ET AL
WELL	16-31-29-19
FIELD	BIG VALLEY
COUNTY	RED DEER
PROVINCE	ALBERTA
LOCATION	16-31-29-19 W4
OTHER SERVICES	
PERMANENT DATUM	GROUND LEVEL
ELEV.	K.B. 2776
LOG MEASURED FROM	K.B. 10 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM	K.B.
DATE	3-7-72
RUN NO.	ONE
DEPTH-DRILLER	2400
DEPTH-LOGGER	2400
BTM. LOG INTERVAL	2400
TOP LOG INTERVAL	100
CASING-DRILLER	8 5/8 @ 100
CASING-LOGGER	
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	GEL CHEM
DENS. VISC.	9.5 50
PH FLUID LOSS	9.5
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.75 @ 70
RMF @ MEAS. TEMP.	.55 @ 70
RMC @ MEAS. TEMP.	.95 @ 70
SOURCE OF RMF & RMC	CALC
RM @ BHT	.32 @ 150
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	150
EQUIP. LOCATION	3-31-29-19 W4
RECORDED BY	D. MILLER
WITNESSED BY	MR. HEIN

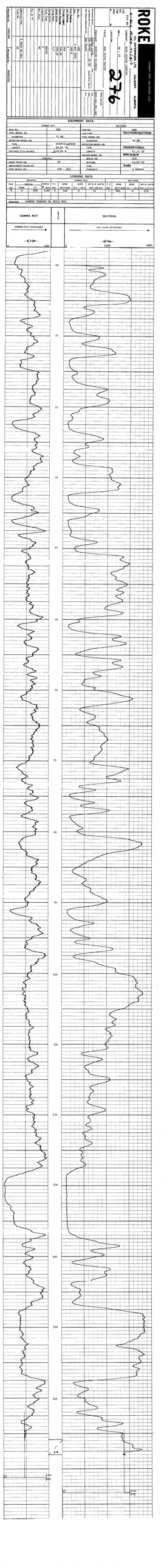
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	2 1/2 IN.	DIAMETER	2 1/2 IN.
SOURCE MODEL NO.		SOURCE MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	24.11 FT.	LENGTH	9 FT. 1 IN.
DISTANCE TO X-SOURCE	6 FT. 7 IN.	SOURCE MODEL NO.	MRC N-55-89
		SERIAL NO.	202
GENERAL		SPACING	6 FT. 11 IN.
LOGGER TRUCK NO.	28	STRENGTH	Amer.
LOGGER SERIAL TRUCK NO.			
TOOL SERIAL NO.	123 - 002	STRENGTH	5 CURIES

LOGGING DATA

RUN	GENERAL				GAMMA RAY				NEUTRON				
	LOGGING SPEED		SPEED	T.C.	SENS	ZERO	API & % UNITS	T.C.	SENS	ZERO	API & UNITS
	FROM	TO		SEC.	SETTINGS	DEV.	PER DEV.	SEC.	SETTINGS	DEV.	PER DEV.
ONE	0	2400	30	3.0	500	0	4.2	3.0	500	0	4.0

REMARKS GOOGED FEBRUARY 4th 1972 - M.D.



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

K-ELK RIVER 77 (3) &D

276

FILE NO.	
COMPANY	ELCO MINING LIMITED
WELL	DH - 77
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W M	
Other Services:	GRN, DENS-CAL, DEV
Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR, 51 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
Elev. K.B. / CSG / G.L.	

Run. No.	ONE			
Date	3 NOV 1976			
First Reading	167 M			
Last Reading	5.5			
Footage Logged	161.50			
Depth Reached	167.92			
Depth Driller	168.36			
Casing Roke	5.5			
Casing Driller				
Fluid Type	MUD/WATER			
Liquid Level	0			
Min. Diam.	HQ			
Rm @ °C	11.75 @ 25			
Operating Time	1 HOUR			
Truck No.	36			
Recorded By	CARLSON	Witnessed By	McKELVIE	

Remarks	
	GEOMETRIC SONDE FACTOR .329 PROTO TYPE III
	GROUND FISH READING - 200 OHMS
	500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIV
	8 TO 1 RATIO ON SECONDARY PEN

0 — 40000	Depths	0 — 5000 — 10000

DH 78.

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. K-ELK RIVER 77(3)#B

LSD	
SEC	
TWP	
RGE	
W	M
COMPANY	ELCO MINING LIMITED
WELL	DH - 78
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	GROUND LEVEL Above Perm. Datum
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	

Run. No.	ONE
Date	16 NOV 1976
First Reading	191 M
Last Reading	0
Footage Logged	191
Depth Reached	191.92
Depth Driller	192.76
Casing Roke	4.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	17.5
Min. Diam.	HQ
Operating Time	2¼ HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	191	3.66					3	1000	2 R	68.43
2	0	191		CALIPER							

REMARKS DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587

CALIPER (DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

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

ROKE

COMPANY LTD.

CALGARY ALBERTA

CANADA

Co.	
Well	
Field	
County	
Province	
Location	
Other Services	
Permanent Datum	
Log Measured From	
Drilling Measured From	
Elev.	K.B.
	D.F.
	G.L.
Date	
Run No.	
Depth-Driller	
Depth-Logger	
Bottom Logged Interval	
Top Logged Interval	
Type Fluid in Hole	
Salinity, PPM Cl	
Density	
Level	
Max. Rec. Temp. Deg. F	
Operating Rig Time	
Recorded By	
Witnessed By	

Run No.	Bit From	Bit To	Size	Type Fluid in Hole	Density	Visc.	pH	Fluid Loss	Source of Sample	R @ Meas. Temp.	@ °F	R @ Meas. Temp.	@ °F	R @ BHT	@ °F	Time Since Circ.	Max. Rec. Temp. Deg. F	Equip. No.	Location

Rm @ Meas. Temp.	
@ °F	
Rmf @ Meas. Temp.	
@ °F	
Rmc @ Meas. Temp.	
@ °F	
Source of Rmf & Rmc	
R @ Meas. Temp.	
@ °F	
Rm @ BHT	
@ °F	
Time Since Circ.	
Max. Rec. Temp. Deg. F	
Equip. No.	
Location	

Recorded By

Witnessed By

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	
DIAMETER	32 IN	DIAMETER	32 IN
SERIAL NO.		SERIAL NO.	
SOURCE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	51.34 Cm	TYPE	PROPORTIONAL
METHOD TO % SOURCE	0.05 %	SERIAL NO.	6 IN
		SOURCE MODEL NO.	MODEL 6 IN
	GR/CCL/SL	SERIAL NO.	201
JOINT TRACK NO.	36	SPACING	6 1/4 IN
INSTRUMENT TRACK NO.		TYPE	Ra-Be
CALIBRATION TRACK NO.	125 + 200	STRENGTH	3 CURIES

LOGGING DATA

GAMMA RAY								NEUTRON							
Run No.	LOGGING FROM	TO	SPEED FT/MIN	TIME CONST. SEC	SETTING	SCALE CPS	R @ MEAS. TEMP.	@ °F	R @ BHT	@ °F	Run No.	LOGGING FROM	TO	SPEED FT/MIN	TIME CONST. SEC	SETTING	SCALE CPS
ONE	0	515	240	1.66	6	500	0		12		ONE	0	1005	240	1.66	6	500
2	515	0	240	1.66	6	500	0		19		2	500	0	240	1.66	6	500

REMARKS: 100% MUD

Depth

GAMMA RAY

GAMMA RAY INCREASES

0 API 100

NEUTRON

NEUTRON INCREASES

3440 3060 2680

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

200

BASAL CARBONATE

BASAL SILTSTONE

GAMMA SHALE

0 1000 2000

ROKE

PRODUCED FROM DATA

Schlumberger WELL SERVICES, ENTERPRISE LTD. CALGARY, ALBERTA

Company: ESSO RESOURCES CANADA LIMITED

Well: 276

Field: ESSO NORTH TROLL A

County: Province: NORWAY

Location: Other Services:

Permanent Datum: GROUND LEVEL Elev.: 0 m

Log Measured From: KELLY BUSHING 30 m Above Perm. Datum

Drilling Measured From: KELLY BUSHING

Run No.	ONE	TWO	THREE
Date	29-JUL-90	30-JUL-90	
Depth-Driller	2430 m	2430 m	
Depth-Logger	2430 m	2430 m	
Bottom Logged Interval	2430 m	2430 m	
Top Logged Interval	2000 m	2000 m	
Type Fluid in Hole	WBM	WBM	
Salinity, PPM Cl	18000	18000	
Density	1.20 g/cm³	1.20 g/cm³	
Viscosity	50 s	50 s	
pH	9.0	9.0	
Fluid Loss	4.0 cm³/30min	4.0 cm³/30min	
Source of Sample	FLOWLINE	FLOWLINE	
Rm @ Meas. Temp	0.13 @ 70 degC	0.13 @ 70 degC	
Rmf @ Meas. Temp	0.10 @ 70 degC	0.10 @ 70 degC	
Rmc @ Meas. Temp	0.17 @ 70 degC	0.17 @ 70 degC	
Source of Rmf and Rmc	CALC	CALC	
Rm @ BHT	0.08 @ 110 degC	0.08 @ 110 degC	
Time Since Circulation	12 HRS	24 HRS	
Max. Rec. Temp.	110 degC	110 degC	
Equipment Number	0215	0215	
Location	STAVANGER	STAVANGER	
Recorded By	T. VAN DE VEN	T. VAN DE VEN	
Witnessed By	M. ROSE	M. ROSE	

Remarks

RUN#1 CENTRALI FAITH -SEN, PRESS STAT& SEI
GROUND FIRE SEALING + LAND GOOD
TOOL STRING, PRESSURE TOOL MEASURES TO 3.20
4 TO 1 PRE RATIO ON SHOCKWAVE PEN

Tension

0 60000

0 5000 10000

CASING

LOG READ:
CAL ON CAL MADE:
CAL READ:

LOG READ:
CAL ON CAL MADE:
CAL READ:

ROKE

SIDEWALL DENSILOG

Calgary

Exp. 77

Recorded By	BRENT
Witnessed By	ALISTAIR

Engineer's Name	C. BLAIR, BC. SC. (HONS)
Engineer's Title	CALGARY
Office No.	276
Location	11-24-29-4 W4M
Company	ROKE OILWELL SERVICES
Well	16-11-29-4 W4M
Field	ROSEBUD
Province	ALBERTA
Other Services	
Permanent Datum	GROUND LEVEL
Elevation	0.0 ft.
Log Measured From	K.B. 10.0 ft.
Drilling Measured From	K.B.
Date	12-11-77
Run No.	ONE
Depth Driller	1370
Depth Logger	1373
Bottom Logged Interval	1373
Top Logged Interval	1000
Casing Driller	178 @ 1370
Casing Logger	178 @ 1373
Bit Size	7 7/8
Type Fluid in Hole	GEL CHEM
Density	9.2
Viscosity	55
Fluid Loss	6.4
Source of Sample	CIRC
Rm @ Meas. Temp.	1.0 @ 60
Rmf @ Meas. Temp.	.75 @ 60
Rmc @ Meas. Temp.	.75 @ 60
Source of Rmf and Rmc	CALC
Rm @ BHT	.5 @ 100
Time Since Circ.	3 HRS
Max. Rec. Temp.	100
Equipment Location	276
Recorded By	BRENT
Witnessed By	ALISTAIR

GENERAL				GAMMA RAY				SIDEWALL DENSILOG				
RUN NO.	BOTTOM LOGGED INTERVAL	TOP LOGGED INTERVAL	CASING DRILLER	CASING LOGGER	BIT SIZE	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.
1	1373	1000	178 @ 1370	178 @ 1373	7 7/8	GEL CHEM	9.2	55	6.4	CIRC	1.0 @ 60	.75 @ 60

RUN NO.	BOTTOM LOGGED INTERVAL	TOP LOGGED INTERVAL	CASING DRILLER	CASING LOGGER	BIT SIZE	TYPE FLUID IN HOLE	DENSITY	VISCOSITY	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.
1	0	137.5	9.45									
3	0	137.5	9.45	CALIPER								

GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	TOOL NO.	SERIAL NO.	DETECTOR TYPE	TOOL NO.	SERIAL NO.	DETECTOR TYPE	SPACING
1	3	1100	2 D	3	1100	2 D	60.45

REMARKS: GAMMA TOOL # 620 — SIDEWALL D.D. UNITS
CAL TOOL # 387 — V.D. .42

CALIPER
(DIAMETER - CENTIMETERS)

10.24 15.24 20.32 25.40 30.48 10.24

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

WATER LINE

CASING

ROKE

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

Company ROKE OIL ENTERPRISES LTD.
Well 16-36-32-13W4
Field GRAFTON
Location 36 - 32 - 13W4
Province ALBERTA
Other Services GAMMA RAY NEUTRON CASED HOLE
Permanent Datum GROUND LEVEL
Elev. 1705
Log Measured From KELLY BUSHING
Elev. 1715
Drilling Measured From KELLY BUSHING
Elev. 1715

Date	17-JUN-82				
Run No.	ONE				
Depth-Driller	3400				
Depth-Logger	3401				
Bottom Logged Interval	3401				
Top Logged Interval	1750				
Type Fluid in Hole	WATER				
Salinity, PPM Cl					
Density					
Level	FULL				
Max. Rec. Temp.	140				
Equipment No.	3276				
Location					
Recorded By					
Witnessed By					

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	NGS 121	TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	32 (D)	DIAMETER	NGS 121 32 (D)
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	10.16 (D)	LENGTH	15.24 (D)
DISTANCE TO N. SOURCE	2.06 (D)	SOURCE MODEL NO.	MRC-N.SS-M
		SERIAL NO.	282
GENERAL		SPACING	63.5 (D)
LOGGIT TRUCK NO.	36	TYPE	Amba
INSTRUMENT TRUCK NO.	36	STRENGTH	3 CURIES
TOOL SERIAL NO.	103 - 007		

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
RUN	DEPTH		SPEED	T.C.	ZERO	API G. R. UNITS	T.C.	ZERO	API N. UNITS	
No.	FROM	TO	F. MIN. SEC.	SETTING	SET @ 5.00 VF	PER 1.00 V.F.	SEC.	SETTING	SET @ 1.00 VF	PER 1.00 VOLT
1	0	1501	3 45	100	0	16	3	500	0	180

REMARKS: CASED HOLE Ft. 3 CURIES

GAMMA RAY — API UNITS — NEUTRON

GAMMA RAY INCREASES → 0 — 140

NEUTRON INCREASES → 1800 — 3600

WATER LEVEL

CASING

00 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

+ 1500 — 100 CPS

+ 1500 — 100 CPS

ROKE

POWER SERVICES

E. L. & P. Co. Ltd. 2 STARS
CALGARY, ALBERTA

COMPANY: GULF RESOURCES
WELL: 16-19
FIELD: WILDCAT
COUNTY: MACKENZIE DELTA
PROVINCE: NORTHWEST TERRITORIES

276

Other Services: BHC-GR-CAL

Permanent Datum: SEA LEVEL
Elev.: 0 K.B. 0
Log Measured From: K.B. 0 Ft. Above Perm. Datum
Drilling Measured From: K.B.

Date	25-MAY-74		
Run No.	ONE		
Depth-Driller	13,000		
Depth-Logger	13,004		
Bottom Logged Interval	13,004		
Top Logged Interval	11,500		
Type Fluid in Hole	GEL CHEM		
Salinity, PPM Cl	1,000		
Density, LB/GAL	9.7		
Viscosity, SEC	40		
PH	9.5		
Fluid Loss, CC	4.0		
Source of Sample	CIRC		
Rm @ Meas. Temp.	0.73 @ 70°F		
Rmf @ Meas. Temp.	0.60 @ 70°F		
Rmc @ Meas. Temp.	1.10 @ 70°F		
Source: Rmf / Rmc	MEAS / CALC		
Rm @ BHT	0.33 @ 181°F		
Time Since Circ.	8 HRS		
Max. Rec. Temp.	181°F		
Equip. Location	2-1-10-16W4		
Recorded By	A. MACKAY		
Witnessed By	A. SMITH		

Remarks: BOREHOLE GEOMETRY: CAL 1 FROM TYPE 333 R.I. UNITS
GAMMA RAY SHADOW = ARH CURVE
500 CPS/DIV. FORMAT PEN ADJUSTED TO 2.29
R TO L RATIO ON SECONDARY PEN

Depth

0 — 40000 — 0 — 5000 — 10000

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
170

GAMMA

F-104, 8600

1. CALIBRATE w/ 500 API AT 8600

2. CALIBRATION MARK

F-104, 8600

1. CALIBRATE w/ 500 API AT 8600

2. CALIBRATION MARK

DH. 80

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG

FILE NO. E-ELK RIVER 77(3) #8

276

LSD
SEC
TWP
RGE
W ____ M

COMPANY: ELCO MINING LIMITED
WELL: DH - 80
LOCATION:
FIELD: ELK RIVER VALLEY
PROVINCE: BRITISH COLUMBIA

Other Services: GRN, FRL, DEV

Permanent Datum: GROUND LEVEL Elev.
Log Measured from: RIG FLOOR 30 CM Above Perm. Datum
Well Depths Measured from: RIG FLOOR

K.B.
CSG
G.L.

Run. No.	ONE
Date	25 JAN 1977
First Reading	177.5 M
Last Reading	0
Footage Logged	177.5
Depth Reached	178.42
Depth Driller	179.04
Casing Roke	7
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	10
Min. Diam.	BQ
Operating Time	1½ HOURS
Truck No.	36

Recorded By CARLSON — Witnessed By McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	177.5	3.66					3	1000	1.8R	54.55
2	0	178		CALIPER							

REMARKS DENS TOOL # 457 OPEN HOLE
CAL TOOL # 587

DEPTHS

CALIPER
(DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #8

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY ELCO MINING LIMITED
WELL DH - 80 - 276
LOCATION
FIELD ELK RIVER VALLEY
PROVINCE BRITISH COLUMBIA

Other Services: DEN, CAL, FEL, DEV

Permanent Datum GROUND LEVEL Elev.
Log Measured from RIG FLOOR 30 CM Above Perm. Datum
Well Depths Measured from RIG FLOOR

K.B.
CSG
G.L.

Run. No.	ONE
Date	25 JAN 1977
First Reading	178 M
Last Reading	0
Footage Logged	178
Depth Reached	178.30
Depth Driller	179.04
Casing Roke	7
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	10
Min. Diam.	BQ
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	169 - 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	178	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → 16 (0 – 100)		NEUTRON INCREASES → 180 (0 – 1800 – 3600)

ROKE

ROKE OIL EXPLORATIONS LTD.
CALGARY ALBERTA

WELL LOCATION SURVEY

Well No. 1
Field WILDCAT
Area
Lease
Location 10-36-1-5W5
Province ALBERTA
Date Run 1 JUNE 1972
Depth Driller 9700
Depth Logger 9702
Bottom Log Interval 9700
Top Log Interval 8000
Casing Driller 13 3/8 @ 1000
Casing Logger
Bit Size 12 1/4
Type Fluid in Hole GEL CHEM
Density 10.0
Viscosity 50
pH 10.5
Fluid Loss 6.0
Source of Sample CIRC
Rm @ Meas. Temp. .45 @ 70°F
Rmf @ Meas. Temp. .35 @ 70°F
Rmc @ Meas. Temp. .65 @ 70°F
Source of Rmf & Rmc MEASURED
Rm @ BHT .30 @ 160°F
Time Since Circ. 12 HRS
Max. Rec. Temp. 160°F
Equip. No. & Location 1 1005
Recorded By R. MOORE
Witnessed By MR. MOORE

Run No. ONE
Type Log DUAL INDUCTION LATEROLOG
Depth-Driller 9700
Depth-Logger 9702
Bottom Log Interval 9700
Top Log Interval 1000
Casing-Driller 13 3/8 @ 1000
Casing-Logger
Bit Size 12 1/4
Type Fluid in Hole GEL CHEM
Density 10.0
Viscosity 50
pH 10.5
Fluid Loss 6.0
Source of Sample CIRC
Rm @ Meas. Temp. .45 @ 70°F
Rmf @ Meas. Temp. .35 @ 70°F
Rmc @ Meas. Temp. .65 @ 70°F
Source of Rmf & Rmc MEASURED
Rm @ BHT .30 @ 160°F
Time Since Circ. 12 HRS
Max. Rec. Temp. 160°F
Equip. No. & Location 1 1005
Recorded By R. MOORE
Witnessed By MR. MOORE

Run No. TWO
Type Log BOREHOLE COMPENSATED SONIC
Depth-Driller 9700
Depth-Logger 9702
Bottom Log Interval 9700
Top Log Interval 8000
Casing-Driller 13 3/8 @ 1000
Casing-Logger
Bit Size 12 1/4
Type Fluid in Hole GEL CHEM
Density 10.0
Viscosity 50
pH 10.5
Fluid Loss 6.0
Source of Sample CIRC
Rm @ Meas. Temp. .45 @ 70°F
Rmf @ Meas. Temp. .35 @ 70°F
Rmc @ Meas. Temp. .65 @ 70°F
Source of Rmf & Rmc MEASURED
Rm @ BHT .30 @ 160°F
Time Since Circ. 12 HRS
Max. Rec. Temp. 160°F
Equip. No. & Location 1 1005
Recorded By R. MOORE
Witnessed By MR. MOORE

Run No. THREE
Type Log
Depth-Driller
Depth-Logger
Bottom Log Interval
Top Log Interval
Casing-Driller
Casing-Logger
Bit Size
Type Fluid in Hole
Density
Viscosity
pH
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source of Rmf & Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. No. & Location
Recorded By
Witnessed By

Remarks

SONDE GEOMETRIC RADIUS .325 PHOTO TYPE EF
CENTRED PISO BLACING = 85.5CAL
SAD CONCURS. PRIMARY FOR CALCULATIONS TO 3.39 GFFID
3 TO 1 RATIO OF RECIPROCAL PEN

SCALE

A 8000 B 9000 10000

8700 LATEROLOG LOG IN

60
90
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190

LOG READ

CAL ON LOG RANGE

CAL READ

LOG READ

CAL ON LOG RANGE

CAL READ

ROKE
ROKE OIL EXPLORATIONS LTD.
CALGARY, ALBERTA

WELL: 16-36-24-5W4
FIELD: BLUE SPRINGS
LOCATION: 16-36-24-5W4
ELEV: K.B. 1,205 ft.
D.F. 1,203 ft.
G.L. 1,200 ft.
PERMANENT DATUM: GROUND LEVEL
LOG MEASURED FROM: K.B. 5 ft. ABOVE PERM. DATUM
DRILLING MEASURED FROM: K.B.
DATE: 1-7-74
RUN NO.: ONE
DEPTH-DRILLER: 5,005 ft.
DEPTH-LOGGER: 5,005 ft.
BTM. LOG INTERVAL: 5,001 ft.
TOP LOG INTERVAL: 94.33
CASING-DRILLER: 8 5/8" @ 94.33 ft.
CASING-LOGGER: 94.33 ft.
BIT SIZE: 7 7/8"
TYPE FLUID IN HOLE: GEL CHEM
DENSITY: 9.2
VISCOSITY: 40
PH: 10.5
FLUID LOSS: 8.4 ml
SOURCE OF SAMPLE: FLOWLINE
RM @ MEAS. TEMP.: 1.1 @ 70°F
RMF @ MEAS. TEMP.: 1.0 @ 70°F
RMC @ MEAS. TEMP.: 1.2 @ 70°F
SOURCE OF RMF: MEASURED
SOURCE OF RMC: MEASURED
RM @ BHT: 0.5 @ 130°F
TIME SINCE CIRC.: 4 HRS.
MAX. REC. TEMP.: 130°F
EQUIP. NO. & LOCATION: 2276 CALGARY
RECORDED BY: R. SCHMIDT
WITNESSED BY: MR. MOORE

GAMMA RAY-NEUTRON: SCALE 0-100 API UNITS; 0-1000 API UNITS
DENSITY-GAMMA RAY: SCALE 0-100 API UNITS; 0-1000 API UNITS; CPS
RUN: 1 | BOTTOM: 5,005 | TOP: 94.33

REMARKS: 2000 MCFD
CALCULATED ABSOLUTE OPEN FLOW

GAMMA RAY (API)
CALIPER (CALIPER - CENTIMETERS)
BULK DENSITY (GRAMS/CC)

Scale 1:240

ROKE

COMPANY	ROKE OIL EXPLORATIONS LTD.
WELL	276
FIELD	
COUNTY	
PROVINCE	ALBERTA

LOCATION	1980 FEET FROM THE SOUTH LINE AND 1980 FEET FROM THE EAST LINE
SEC.	26
TWP.	46
RGE.	24 W4M
PERMANENT DATUM	GROUND LEVEL
ELEV.	
LOG MEASURED FROM	KELLY BUSHING
DRILLING MEASURED FROM	KELLY BUSHING
ELEV. K.B.	
ELEV. D.F.	
ELEV. G.L.	

DATE	1-12-78
RUN NO.	ONE
DEPTH-DRILLER	1600
DEPTH-LOGGER	1600
BTM. LOG INTERVAL	1600
TOP LOG INTERVAL	1200
CASING-DRILLER	8 5/8 @ 1200
CASING-LOGGER	1200
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	GEL CHEM
DENS.	9.2
VISC.	40
PH	10.5
FLUID LOSS	8.0
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.9 @ 60°F
RMF @ MEAS. TEMP.	.8 @ 60°F
RMC @ MEAS. TEMP.	1.1 @ 60°F
SOURCE RMF & RMC	MEASURED
RM @ BHT	.5 @ 100°F
TIME SINCE CIRC.	4 HOURS
MAX. REC. TEMP.	100°F
EQUIP. LOCATION	3004
RECORDED BY	D. ANDERSON
WITNESSED BY	MR. BOYLE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/MULTIPACE
DIAMETER	3.5 OD	TOOL MODEL NO.	
LENGTH		DIAMETER	3.5 OD
TOOL SERIAL NO.		LENGTH	
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	20.00 IN	TYPE	PROPORTIONAL
DETECTOR TO A SOURCE	5.00 ft	SOURCE	5 mCi Am-Be
		SPACING	SHORT 1.0 ft
			LONG 1.5 ft
RECORDING		DETECTOR MODEL NO.	
UNIT FACTOR NO.	30	SERIAL NO.	141
INTERFACE CABLE NO.		TYPE	Ratio 60.00 IN
TOOL SERIAL NO.	1425 + 1601	SERIAL NO.	
		SOURCE	5 mCi Am-Be

LOGGING DATA

GAMMA RAY							NEUTRON						
RUN	LOGGING SPEED		TC	SPAN	SENSITIVITY		RUN	LOGGING SPEED		TC	SPAN	SENSITIVITY	
	FEET/MIN	CM/MIN						FEET/MIN	CM/MIN				
ONE	30	91	3	200	2000	API & APIUNITS	ONE	30	91	3	200	2000	API & APIUNITS
				100	1000	API & APIUNITS					100	1000	API & APIUNITS

REMARKS: RUN GOOD

GAMMA RAY

NEUTRON

GAMMA RAY INCREASES

NEUTRON INCREASES

0 — 100

0 — 1000

1600

1550

1500

1450

1400

1350

1300

1250

1200

1150

1100

1050

1000

950

900

850

800

750

700

650

600

550

500

450

400

350

300

250

200

150

100

50

0

0 — 100

0 — 1000

ROKE
SIDEWALL DENSILOG
CALGARY, ALBERTA
276
DENSILOG
CALIPER
BULK DENSITY
CONTROL
CALIPER FAST
BULK DENSITY

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77 (3) #B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W	M
COMPANY	ELCO MINING LIMITED
WELL	DH - 82
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS, CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	TOP OF CASING 37 CM Above Perm. Datum
Well Depths Measured from	TOP OF CASING
K.B.	
CSG	
G.L.	
Run. No.	ONE
Date	1 FEB 1977
First Reading	253.5 M
Last Reading	0
Footage Logged	253.5
Depth Reached	253.80
Depth Driller	253.76
Casing Roke	7.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	1
Min. Diam.	HQ
Rm @ °F	
Operating Time	1½ HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

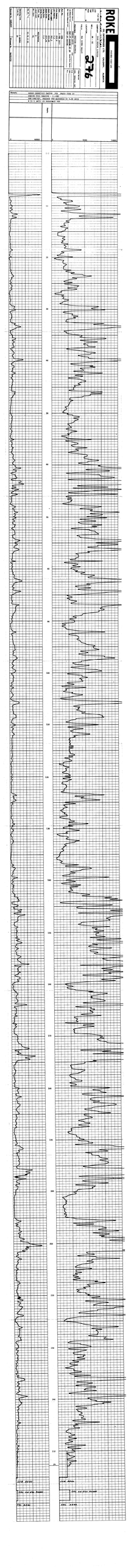
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	169 - 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	253.5	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE


ROKE
474
SURFACE CASING
PRODUCTION CASING
LINER
TUBING
PACKERS
PERFORATIONS
FORMATION TOPS
REMARKS
DRILLING RECORD
DRILLING CONTRACTOR
DRILLING FLUID
CORES
DRILL STEM TESTS
COMPLETION RECORD
INITIAL PRODUCTION
GAS
OIL
WATER
GRAVITY
GAS-OIL RATIO
CASING PRESSURE
TUBING PRESSURE
CHOKE
PRODUCING FORMATION
PRODUCING INTERVAL
PLUGS
PLUGGED BACK TOTAL DEPTH
TOTAL DEPTH
ELEVATION
DATE COMPLETED
DATE DRILLING COMPLETED
DATE DRILLING COMMENCED
DRILLING COMMENCED
DRILLING COMPLETED
COMPLETED
ABANDONED
ELEVATION
TOTAL DEPTH
PLUGGED BACK TOTAL DEPTH
PRODUCING INTERVAL
PRODUCING FORMATION
CHOKE
TUBING PRESSURE
CASING PRESSURE
GAS-OIL RATIO
GRAVITY
WATER
OIL
GAS
INITIAL PRODUCTION
COMPLETION RECORD
DRILL STEM TESTS
CORES
DRILLING FLUID
DRILLING CONTRACTOR
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GAS
OIL
WATER
GRAVITY
GAS-OIL RATIO
CASING PRESSURE
TUBING PRESSURE
CHOKE
PRODUCING FORMATION
PRODUCING INTERVAL
PLUGS
PLUGGED BACK TOTAL DEPTH
TOTAL DEPTH
ELEVATION
DATE COMPLETED
DATE DRILLING COMPLETED
DATE DRILLING COMMENCED
DRILLING COMMENCED
DRILLING COMPLETED
COMPLETED
ABANDONED
ELEVATION
TOTAL DEPTH
PLUGGED BACK TOTAL DEPTH
PRODUCING INTERVAL
PRODUCING FORMATION
CHOKE
TUBING PRESSURE
CASING PRESSURE
GAS-OIL RATIO
GRAVITY
WATER
OIL
GAS
INITIAL PRODUCTION
COMPLETION RECORD
DRILL STEM TESTS
CORES
DRILLING FLUID
DRILLING CONTRACTOR
DRILLING RECORD
REMARKS
FORMATION TOPS
PERFORATIONS
PACKERS
TUBING
LINER
PRODUCTION CASING
SURFACE CASING

ROKE

GAMMA RAY NEUTRON LOG

K-ROK ENERGY LTD. & GULF
PEMBINA 13-21-48-7W5M
ALBERTA

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
M	
LOCATION	
WELL	13-21
COMPANY	K-ROK ENERGY LTD. & GULF
FIELD	PEMBINA
REF. KELLY BUSHING	
REF. DERRICK FLOOR	
REF. GROUND	
ELEVATIONS	KB 3135 DF GL 3125
DRILLING MEASURED FROM	KB
CASING DRILLER	8.625 @ 1217
CASING LOGGER	1217
BTM. CASING REF.	
CASING	
TUBING	
TYPE FLUID IN HOLE	WATER
DENSITY	
VISCOSITY	
PH	
FLUID LOSS	
SOURCE OF SAMPLE	
RM @ MEAS. TEMP.	
RMF @ MEAS. TEMP.	
RMC @ MEAS. TEMP.	
SOURCE RMF	RMC
RM @ BHT	
TIME CIRC.	
TIME SINCE CIRC.	
MAX. REC. TEMP.	
EQUIP. LOCATION	
RECORDED BY	
WITNESSED BY	

EQUIPMENT DATA

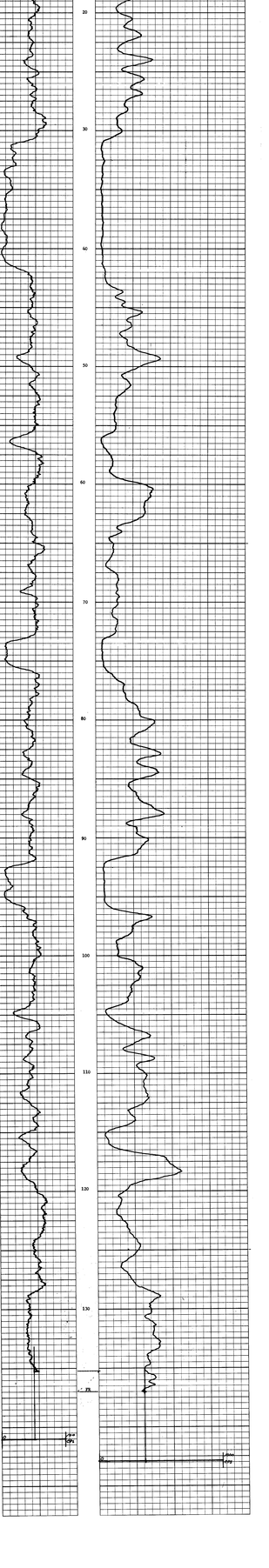
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	3? 3/8	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	3? NO
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.06 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-55-M
GENERAL		SERIAL NO.	122
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	Amilo
TOOL SERIAL NO.	122 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL			GAMMA RAY				NEUTRON			
RUN NO.	OFFICIAL FROM	OFFICIAL TO	SPEED M/MIN	T.C. SEC	SENS SETTING	API G. R. UNITS ZERO DIV.	API G. R. UNITS PER LOG DIV.	T.C. SEC	SENS SETTING	API N. UNITS ZERO DIV.
1	0	137	3.66	6	100	0	12	3	500	0

API N. UNITS PER LOG DIV.
140

REMARKS 1)CASED, THROUGH NO DATUM, NOSE



DH-102

ROKE OIL ENTERPRISES LTD.

SIDEWALL DENSILOG

Kelly Rube 32C-6 Pad

Well No. 32C-6 Pad

Field: [illegible]

Area: [illegible]

Prov.: [illegible]

Sec. 6 Twp. 32 Rge. 5 W 5 Mer.

Elev.: K.B. [illegible] G.L. [illegible]

Meas. from K.B.

Other Services: [illegible]

Permanent Datum: GROUND LEVEL

Log Measured From: K.B. 6.1 M. Above Perm. Datum

Drilling Measured From: K.B.

Date: 1981 6 1 1

Run No.: ONE

Depth-Driller: 1377 M

Depth-Logger: 1377 M

Bottom Logged Interval: 1373 M

Top Logged Interval: 133 M

Type Fluid in Hole: MUD

Salinity: 8 %

Density: 1.14 KG/M

Viscosity: 50

Fluid Loss: 6.5 C.C.

Source of Sample: CIRC. TANK

R_m @ Meas. Temp.: 0.33 @ 24 °C

R_mf @ Meas. Temp.: 0.27 @ 24 °C

R_mc @ Meas. Temp.: 0.44 @ 24 °C

Source: R_mf MEASURED

R_m @ BHT: 0.20 @ 49 °C

Time Circ. Stopped: 0130

Time Logger on Bottom: 0300

Max. Rec. Temp.: 49 °C

Equip. No. & Location: 2205 GRAVENHURST

Recorded By: [illegible]

Witnessed By: [illegible]

276

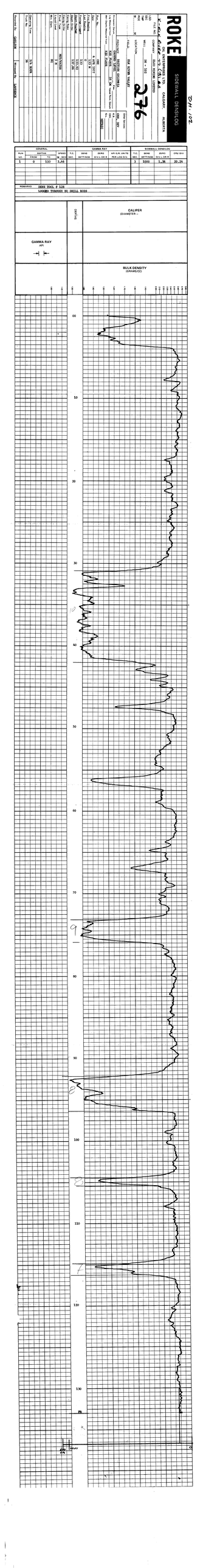
Permanent Datum: GROUND LEVEL Elev.: 0 M

Log Measured From: K.B. 6.1 M. Above Perm. Datum

Drilling Measured From: K.B.

GENERAL					GAMMA RAY			SIDEWALL DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN.	F.E. SEC.	BASE SETTING	BASE DIV'S. DIR. R	API GR UNITS PER LOG DIV.	F.E. SEC.	BASE SETTING	BASE DIV'S. DIR. R	CPS/DIV.
1	0	133	3.48					3	1000	1.38	20.26

REMARKS: DENS TOOL # 328
LOGGED THROUGH DC DRILL RODS



ROKE

PRESSURE TEST OF

OIL INTERNATIONAL LTD. CALGARY, ALBERTA

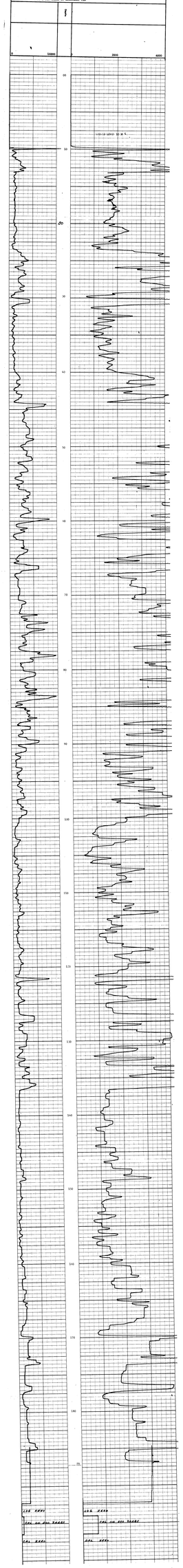
COMPANY SELECTED PERFS

276

Well	No. 1
Field	Wildcat
Location	10-26-27-W4
Date	Mar. 1, 1971
Elev.	2,300
Total Depth	6,000
Casing Size	5 1/2
Casing Depth	5,999
Tubing Size	2 3/8
Tubing Depth	5,900
Perforations	5,900-5,920
Packer Depth	5,900
Bottom Hole Temp.	140°
Gas Gravity	.6
Gas Rate	1,000
Oil Gravity	40
Oil Rate	0
Water Rate	0
Gas-Oil Ratio	0
Water-Gas Ratio	0
Bottom Hole Pressure	2,300
Surface Pressure	0
Flow Time	1 hr.
Shut-In Time	1 hr.
Gas Meter	1
Orifice	1
Choke	1
Gas Gravity	.6
Gas Rate	1,000
Oil Gravity	40
Oil Rate	0
Water Rate	0
Gas-Oil Ratio	0
Water-Gas Ratio	0
Bottom Hole Pressure	2,300
Surface Pressure	0
Flow Time	1 hr.
Shut-In Time	1 hr.
Gas Meter	1
Orifice	1
Choke	1

Remarks: SURGE CHARTS: FACTOR .024 PRIOR TO 2:00 PM
SURGE CHARTS: FACTOR .024 AFTER 2:00 PM
SURGE CHARTS: MAGNAFLOW FAC CALCULATED TO 2.00 PM
MAGNAFLOW FAC CALCULATED TO 3.00 PM
A TO 2 PSI WATER ON BEGINNING OF TEST

EXCESSIVE TRACKING ERROR
ON SURGE PORTION OF TEST



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. K-ELK RIVER 77 (3) #8

276

COMPANY	ELCO MINING LIMITED
WELL	DH - 122
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD	
SEC	
TWP	
RGE	
W M	

Other Services: DENS-CAL, FDL, DEV

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	RIG FLOOR	61 CM Above Perm. Datum	CSG
Well Depths Measured from	RIG FLOOR		G.L.
			METRIC

Run. No.	ONE
Date	16 JAN 1977
First Reading	187.5 M
Last Reading	0
Footage Logged	187.5
Depth Reached	187.80
Depth Driller	188.19
Casing Roke	4.5
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	12.5
Min. Diam.	HQ
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N: SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	169 - 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	11.5	3.66	4	100	0	16	3	1000	8L	180
2	11.5	187.5	3.66	4	100	0	16	3	1000	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
0 16 160		1440 180 3240 5040

ROKE

SOCIETE DE PROSPECTION

Rig Up 12:00 Noon 7/6/77
Rig Down 7:00 PM 7/6/77
Date Logged 7/7/77
Run No. ONE
Depth Driller 5,400
Depth Logger 5,397
Bottom Logged Interval 5,397
Top Logged Interval 3,000
Type Fluid in Hole SALT GEL
Salinity, PPM Cl 150,000
Density, Lb/Gal 10.0
Level Full
Max. Rec. Temp. Deg. F 127
Operating Rig Time 6 HRS
Recorded By ROBERTSON
Witnessed By MR. BOB MOORE

Permanent Datum GROUND LEVEL
Elevation 3,000
Log Measured From K.B.
Drilling Measured From K.B.

Company: MOBIL OIL CORP.
Well: M. T. 123
Field: BIG BOW AREA
County: MORTON
State: KANSAS

Other Services: DUAL IND. L.L. MICRO

Run No. 1
Bit From 3,000
Bit To 5,400
Size 7 7/8
Type Bit HTC
Size Casing 8 5/8 @ 3,000
Type Fluid in Hole SALT GEL
Density Lb/Gal 10.0
Viscosity 38
Fluid Loss 10 CC
Source of Sample MUD PUMP
Rm @ Meas. Temp. .85 @ 70°
Rmf @ Meas. Temp. .65 @ 70°
Rmc @ Meas. Temp. 1.2 @ 70°
Source of Rmf & Rmc MEASURED
Rm @ BHT .45 @ 127°
Time Since Circ. 6 HRS
Max. Rec. Temp. Deg. F 127
Equip. No. & Location 1110 LIBERAL
Recorded By ROBERTSON
Witnessed By MR. BOB MOORE

Run No.	Bottom (Driller)	Bottom (Logger)	Open Hole Size	T.D. Driller	Gamma Ray Scale Setting	Gamma Ray Scale Value API & A. Units Min. Low Scale	T.D. Driller	Scale Setting	Scale Value	Time Since Circ.
1	0	5,397	7 7/8	5,400			3000	5,400	34.35	
R		547.3								

OIL LYNX

REMARKS: 3000 FEVL @ 127
OIL FEVL @ 247

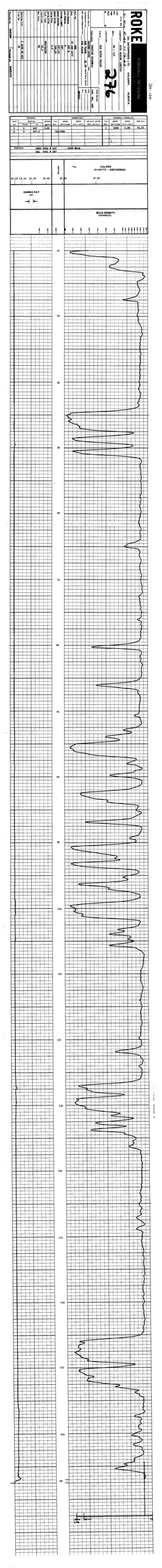
OTHER RUNS

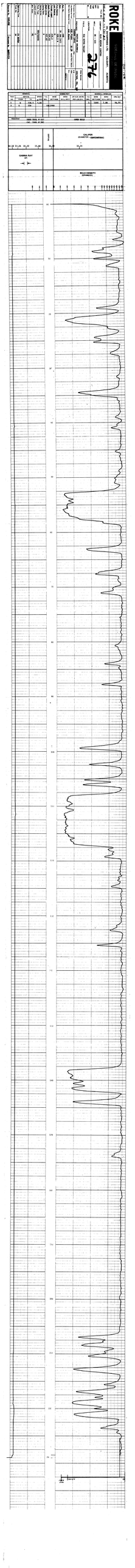
CALIPER
(DIAMETER - BOREHOLE)

Inches: 10.24 15.24 20.32 25.40 | 30.48 | 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)




ROKE
212
CALIPER
(DIAMETER - CENTIMETRES)
GAMMA RAY
API
BULK DENSITY
(GRAMS/C.C.)

ROKE
ROKE OIL LTD.
2300, 10175 - 101 STREET
EDMONTON, ALBERTA
T5J 3W8

COMPANY	ROKE OIL LTD.
WELL	2-36-76-25 W6M
FIELD	
LOCATION	
COUNTY	
PROVINCE	ALBERTA

SERVICE COMPANY	SCHLUMBERGER
RUN NO.	ONE
DATE	15-JAN-88
TYPE LOG	DUAL INDUCTION SFL
DEPTH-DRILLER	2100 M
DEPTH-LOGGER	2100 M
BOTTOM LOGGED INTERVAL	2100 M
TOP LOGGED INTERVAL	1000 M
CASING-DRILLER	244.5 MM @ 1000 M
CASING-LOGGER	1000 M
BIT SIZE	200 MM
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	1.10
VISCOSITY	50
PH	10.0
FLUID LOSS	6.0
SOURCE OF SAMPLE	FLOWLINE
RM @ MEAS. TEMP.	0.45 @ 24 DEG
RMF @ MEAS. TEMP.	0.35 @ 24 DEG
RMC @ MEAS. TEMP.	0.60 @ 24 DEG
SOURCE RMF & RMC	MEASURED
RM @ BHT	0.20 @ 70 DEG
TIME CIRC.	6 HRS
TIME LOGGER ON BOTTOM	0200 15-JAN-88
MAX. REC. TEMP.	70 DEG
EQUIP. LOCATION	2 SYNCRUDE
RECORDED BY	MCCRAE
WITNESSED BY	MR. MOSS

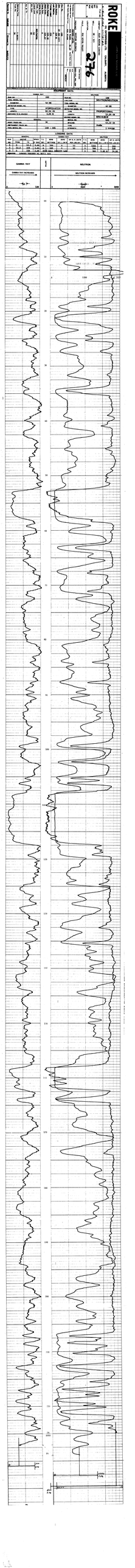
EQUIPMENT DATA

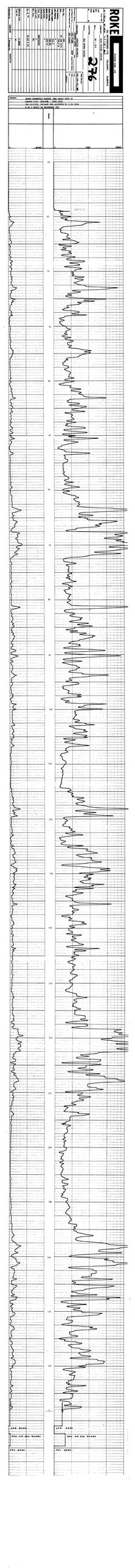
CONTROL PANEL		SELECTION	
RUN NO.	ONE	RUN NO.	ONE
DUAL MODEL NO.	62 DM	DUAL MODEL NO.	62 DM
SUMMER		SUMMER	
SUMMER MODEL NO.		SUMMER MODEL NO.	
TYPE	INTERPOLATION	TYPE	PROPORTIONAL
SPACING (S.S. RATIO)	8.0 : 1	SPACING (S.S. RATIO)	8.0 : 1
		SPACING (FEET)	SFL1 SFL2 SP
MATRIX		MATRIX NO.	4.5
MUD CAKE NO.	34	MUD CAKE NO.	1.0 1.0 20
MUD CAKE/C TRACE NO.		TYPE	FLUID
COND. MODEL NO.	200 : 400	LOCATION	2 SYNCRUDE

LOGGING DATA

SCALE													
RUN	INTERVAL		SPEED	TC	MUD	SPEED	SP & GAMMA		TC	MUD	SPEED	SP & GAMMA	
NO.	FROM	TO	M/MIN	SEC	RES.	M/MIN	RES.	SCALE	NO.	RES.	M/MIN	RES.	SCALE
1	1000	1400	9.14	1	0.45	9.14	0.45	5	1	0.45	9.14	0.45	5
2	1400	1700	9.14	1	0.45	9.14	0.45	5	1	0.45	9.14	0.45	5
3	1700	2100	9.14	1	0.45	9.14	0.45	5	1	0.45	9.14	0.45	5

REMARKS: CASING TOLERANCE +5, -0 MM




ROKE
276

ROKE

SERVICES LIMITED

Well No. 276

Field: ROKE

County: OXFORDSHIRE

Location: ROKE

Co. No. 2000

Permanent Datum: GROUND LEVEL

Elevation: 0.00 m

Log Measured From: KELLY BUSHING

Drilling Measured From: KELLY BUSHING

Date: 27-Jan-2000

Run No. ONE

Depth Driller: 1500.00 m

Depth Logger: 1500.00 m

Bottom Log Interval: 1500.00 m

Top Log Interval: 0.00 m

Casing Driller: 0.00 m @ 0.00 m

Casing Logger: 0.00 m @ 0.00 m

Bit Size: 8.50 in

Type Fluid in Hole: WATER BASED MUD

Density: 1.00 g/cm³

Viscosity: 0.00 s

PH: 0.00

Fluid Loss: 0.00 ml

Source of Sample: CIRCULATION

Rm @ Measured Temp: 0.00 ohmm @ 0.00 °C

Rmf @ Measured Temp: 0.00 ohmm @ 0.00 °C

Rmc @ Measured Temp: 0.00 ohmm @ 0.00 °C

Source of Rmf / Rmc: MEASURED / CALCULATED

Rm @ BHT: 0.00 ohmm @ 0.00 °C

Time Since Circulation: 0.00 hrs

Time on Bottom: 0.00 hrs

Max Recorded Temp: 0.00 °C

Equipment / Base: 0.00 m

Recorded By: ROKE

Witnessed By: ROKE

Run No. | Bit Size (in) | Depth Driller (m) | Depth Logger (m) | Bottom Log Interval (m) | Top Log Interval (m) | Casing Driller (m @ m) | Casing Logger (m @ m) | Bit Size (in) | Type Fluid in Hole | Density (g/cm³) | Viscosity (s) | PH | Fluid Loss (ml) | Source of Sample | Rm @ Measured Temp (ohmm @ °C) | Rmf @ Measured Temp (ohmm @ °C) | Rmc @ Measured Temp (ohmm @ °C) | Source of Rmf / Rmc | Rm @ BHT (ohmm @ °C) | Time Since Circulation (hrs) | Time on Bottom (hrs) | Max Recorded Temp (°C) | Equipment / Base (m) | Recorded By | Witnessed By

ONE | 8.50 | 1500.00 | 1500.00 | 0.00 | 0.00 | 0.00 @ 0.00 | 0.00 @ 0.00 | 8.50 | WATER BASED MUD | 1.00 | 0.00 | 0.00 | 0.00 | CIRCULATION | 0.00 @ 0.00 | 0.00 @ 0.00 | 0.00 @ 0.00 | MEASURED / CALCULATED | 0.00 @ 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | ROKE | ROKE

Run No. | Tool Type | Serial No. | Position | Min. Rec. Temp. (°C) | Max. Rec. Temp. (°C) | Time Rec. Temp. Recorded | Max. Rec. Pressure (psi) | Time Rec. Pressure Recorded | Time Tool Left Bottom

ONE | GAMMA RAY | 2000 | 0.00 m | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00

Remarks:

ZERO RUNS, IF ANY.

ODL DUAL, IF ANY.

ZERO HOLE

GAMMA RAY (GAPI) 0.00 | 15.24 | 15.32 | 22.40

Depth (m)

CALIPER (CALIPER - DIMENSIONS) 30.48 | 15.24

GAMMA RAY (GAMMA RAY) 0.00 | 150.00

ROCK DENSITY (DENSITY) 1.95 | 2.95

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500

Tension

ROKE

Schlumberger

COMPANY: [illegible]

WELL: [illegible]

FIELD: [illegible]

COUNTY: [illegible]

STATE: [illegible]

LOCATION: [illegible]

SECTION: [illegible]

TOWNSHIP: [illegible]

RANGE: [illegible]

PERMANENT DATUM: [illegible]

ELEV.: K.B. [illegible]

LOG MEASURED FROM: [illegible]

DRILLING MEASURED FROM: [illegible]

DATE: [illegible]

RUN NO.: [illegible]

TYPE LOG: [illegible]

DEPTH-DRILLER: [illegible]

DEPTH-LOGGER: [illegible]

BTM. LOG INTERVAL: [illegible]

TOP LOG INTERVAL: [illegible]

CASING-DRILLER: [illegible]

CASING-LOGGER: [illegible]

BIT SIZE: [illegible]

TYPE FLUID IN HOLE: [illegible]

DENS.: [illegible]

VISC.: [illegible]

PH: [illegible]

FLUID LOSS: [illegible]

SOURCE OF SAMPLE: [illegible]

RM @ MEAS. TEMP.: [illegible]

RMF @ MEAS. TEMP.: [illegible]

RMC @ MEAS. TEMP.: [illegible]

SOURCE OF RMF: [illegible]

SOURCE OF RMC: [illegible]

RM @ BHT: [illegible]

TIME SINCE CIRC.: [illegible]

MAX. REC. TEMP.: [illegible]

EQUIP. NO.: [illegible]

LOCATION: [illegible]

RECORDED BY: [illegible]

WITNESSED BY: [illegible]

RUN NO.: [illegible]

BOTTOM LOGGED INTERVAL: [illegible]

TOP LOGGED INTERVAL: [illegible]

CASING SIZE: [illegible]

TYPE FLUID IN HOLE: [illegible]

DENSITY: [illegible]

VISCOSITY: [illegible]

PH: [illegible]

FLUID LOSS: [illegible]

SOURCE OF SAMPLE: [illegible]

RM @ MEASURED TEMP.: [illegible]

RMF @ MEASURED TEMP.: [illegible]

RMC @ MEASURED TEMP.: [illegible]

SOURCE OF RMF: [illegible]

SOURCE OF RMC: [illegible]

RM @ BHT: [illegible]

TIME CIRC.: [illegible]

MAX. REC. TEMP.: [illegible]

EQUIP. NO.: [illegible]

LOCATION: [illegible]

RECORDED BY: [illegible]

WITNESSED BY: [illegible]

276

EQUIPMENT DATA

GAMMA RAY		SECTION	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	[illegible]	TOOL MODEL NO.	NEUTRON/NEUTRON
SONDE SERIAL NO.	43 SH	SONDE SERIAL NO.	[illegible]
TYPE	[illegible]	TYPE	AC SH
LENGTH	DIFFERENTIAL CURR.	LENGTH	[illegible]
CENTER TO R. BOUND	30.00 IN	CEN.	PROPORTIONAL
	3.00 ft	CENTER TO R. BOUND	24.00 IN
			2.00 ft
	SECTION		MICROLOG
		SONDE SERIAL NO.	[illegible]
		MODEL NO.	144
UNIT CABLE NO.	36	STANDOFF	13.25 IN
CABLE TYPE & NO.		SIZE	[illegible]
TOOL MODEL NO.	109 + 603	STANDOFF	1.10/8.5

LOGGING DATA

GAMMA RAY								SECTION							
MEAS.	SPEED	T.C.	SENS.	SP/1 MV	SP/2 MV			MEAS.	SPEED	T.C.	SENS.	SP/1 MV	SP/2 MV		
0	10	0.25	20	100	50	1.5	0.5	SECTION	10	1.0	0.5	100	50		
7.5	15	0.50	10	50	25	3	1	SONDE	20	2.0	1.0	50	25		
15.0	120	1.00	5	25	12.5	6	2		40	4.0	2.0	25	12.5		

REMARKS: [illegible]

GAMMA RAY		NEUTRON
GAMMA RAY INTENSIFIED →		NEUTRON INCREASES →
0	140	0 7500

Schlumberger

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

FILE NO. K-ELK RIVER 77(2)#6

COMPANY	ELCO MINING LIMITED
WELL	DH - 124
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DEN-CAL, DEV
Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR 50 CM Above Perm. Datum
Well Depths Measured from	RIG FLOOR
	METRIC

Run No.	ONE
Date	21 JAN 1977
Last Reading	220.5 M
First Reading	12
Footage Logged	208.5
Depth Reached	221.11
Depth Driller	221.28
Casing Roke	4
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	12
Min. Diam.	HQ
Rm @ °C	23.53 @ 25
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKIVIE

Remarks: SONDE GEOMETRIC FACTOR .329 PROTO TYPE IV
GROUND FICH READING - 5 OHMS
500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

ROKE

GAMMA RAY NEUTRON LOGS

K-ENERGY ENTERPRISES LTD.
OIL ENTERPRISES LTD.
CALGARY, ALBERTA

FILE NO.
LOG TYPE
RUN NO.
DATE
TIME

COMPANY ESSO RESOURCES LIMITED
WELL IRI - 125
LOCATION
M
FIELD ELK RIVER VALLEY
PROVINCE BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL — Elev.: K.B. 1144.5 — Elev.: D.F. 1143.5 — Elev.: G.L. 1139.5
Log Measured From: K.B. 5.5 CM Above Perm. Datum
Drill Measured From: K.B.

Other Services: DIESEL GAL. TEL. LAT.

276

Rec. No.		
Date	20 FEB 1977	
Time	0	
Last Reading	0	
Depth Driller	3542	
Depth Logger	3542	
Bottom Logged Interval	3541	
Top Logged Interval	2743	
Casing Driller	23	
Casing Logger		
Bit Size		
Type Fluid in Hole	MUD/WATER	
Density	10	
Viscosity		
Max. Rec. Temp.		
Equip. No. & Loc.		
Recorded By	CARLSON	
Witnessed By	MACKENZIE	

Operating Time
Truck No.
36
1 & WOOD

EQUIPMENT DATA

GAMMA RAY

RUN NO.	ONE
TOOL MODEL NO.	
DIAMETER	43 MM
DETECTOR MODEL NO.	
TYPE	SCINTILLATION
LENGTH	10,16 CM
DISTANCE TO N. SOURCE	15,24 CM

NEUTRON

RUN NO.	ONE
TOOL TYPE	NEUTRON/NEUTRON
TOOL MODEL NO.	
DIAMETER	43 MM
DETECTOR MODEL NO.	
TYPE	PROPORTIONAL
LENGTH	15,24 CM
SOURCE MODEL NO.	MRC-N-SS-N

GENERAL

HOIST TRUCK NO.	36
INSTRUMENT TRUCK NO.	
TOOL SERIAL NO.	169 001

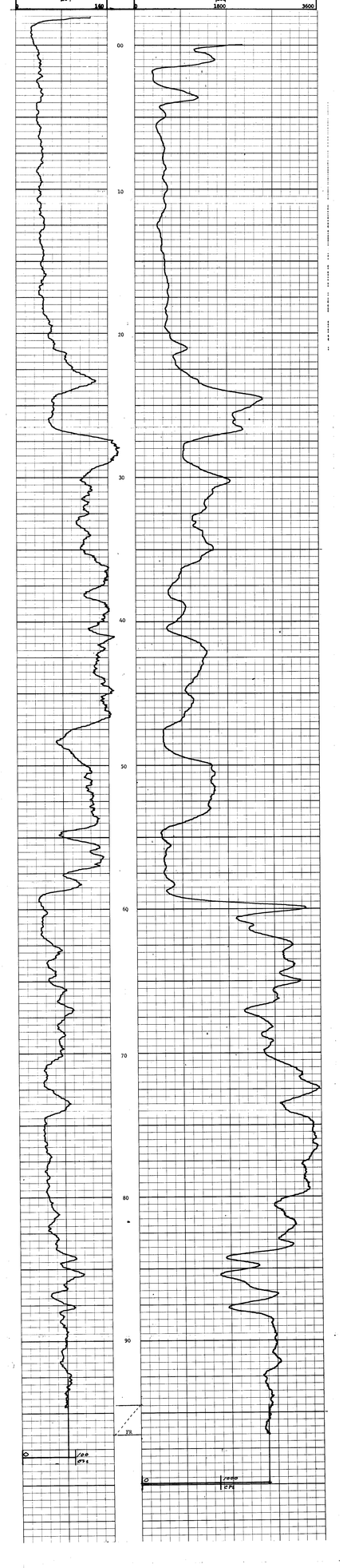
NEUTRON

SERIAL NO.	188
SPACING	43,18 CM
TYPE	AmBe
STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN	GAMMA RAY T.C. SEC.	GAMMA RAY SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R	GAMMA RAY API G. R. UNITS PER LOG DIV.	NEUTRON T.C. SEC.	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L OR R	NEUTRON API N. UNITS PER LOG DIV.
1	0	96.9	3,66	4	100	0	16	3	500	0	180

REMARKS CURVE MOVED



ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. K-Elk Lake 7-21-81-6

LSD 7 SEC. 21 TWP. 81 RGE. 6 W

WELL 3H - 223 COMPANY RED RIVER LIMITED

LOCATION

FIELD SEA RIVER VALLEY PROVINCE SASKATCHEWAN

276

Other Services: BOREHOLE COMPENSATED SONIC, CAL/TEL/GRY

Permanent Datum: GROUND LEVEL Elev. 330.2 FEET

Log Measured From: KELLY BUSHING 5.5 CM Above Perm. Datum

Drilling Measured From: KELLY BUSHING 330.2 FEET

Date	20 FEB. 1977	
Run No.	ONE	
Depth Driller	169.0 M	
Depth Logger	169.0 M	
Bottom Logged Interval	168.4 M	
Top Logged Interval	0	
Casing Driller	94.4 M	
Casing Logger	94.4 M	
Bit Size	22	
Type Fluid in Hole	GEL CHEM	
Density	1.20	
Level	FULL	
Max. Rec. Temp.	33	
Est. Cement Top	SURFACE	
Equipment No.	36	
Location	3H	
Recorded By	GAUDOIN	
Witnessed By	MORLOCK	

EQUIPMENT DATA

GAMMA RAY	ONE	NEUTRON	ONE
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	30.48 CM	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-55-W
HOIST TRUCK NO.	26	SERIAL NO.	168
INSTRUMENT TRUCK NO.		SPACING	43.18 CM
TOOL SERIAL NO.	169.001	TYPE	AmBe
		STRENGTH	9 CURIES

LOGGING DATA

RUN NO.	DEPTH FROM	DEPTH TO	SPEED M/MIN.	GAMMA RAY T.C. SEC.	GAMMA RAY SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R.	GAMMA RAY API G. R. UNITS PER LOG DIV.	NEUTRON T.C SEC.	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L OR R.	NEUTRON API N. UNITS PER LOG DIV.
1	0	164.5	3.66	6	100	0	16	3	500	0	180

REMARKS ORIGIN 180 N

GAMMA RAY — GAMMA RAY INCREASES — 0 — 150

DEPTHS

NEUTRON — NEUTRON INCREASES — 1800 — 3600

00 10 20 30 40 50 60 70 80 90

FR

0 — 100 — 200

0 — 1200 — 2400

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD.
CALGARY, ALBERTA

<~ BLK. 8 ~>

FILE NO.
COMPANY ROCK MOUNTAIN LIMITED
WELL 3B - 12S
LOCATION
FIELD BEK RIVER VALLEY
PROVINCE BRITISH COLUMBIA

276

Other Services
SDBH, FDL, SWC

Permanent Datum: GROUND LEVEL — Elev. 3300
Log Measured From: KELLY BUSHING — 10 Ft. Above Perm. Datum
Drilling Measured from: KB — G.L.

Rig No.	008
Date	20 FEB 1977
Run No.	ONE
Depth-Driller	96
Depth-Logger	96.33
Bottom Logged Interval	97.91
Top Logged Interval	23
Casing-Driller	
Casing-Logger	
Bit Size	
Type Fluid in Hole	MUD/WATER
Salinity, PPM Cl	
Density	
Level	FULL
Max. Rec. Temp. Deg. F.	
Operating Time	
Recorded By	CARLSON
Witnessed By	McELVEIN

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	SETTING FROM	SETTING TO	SPEED M/MIN.	T.C. SEC.	SENS SETTINGS	ZERO DIV'S. OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV'S. OR R	CPS/ DIV
1	0	96	3.66					3	1000	1.88	54.55
2	0	96.5		CALIPER							

REMARKS: DENSITY TOOL # 657 — OPEN HOLE
CALIPER TOOL # 387

DEPTHS

CALIPER
(DIAMETER – CENTIMETERS

10.16 15.24 20.32 25.40 | 30.48 | 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

130 | 135 | 140 | 145 | 150 | 155 | 160 | 165 | 170 | 175 | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 | 225 | 230 | 235 | 240 | 245 | 250 | 255 | 260 | 265 | 270 | 275 | 280

00
10
20
30
40
50
60
70
80
90
100

1000 CPS
0.25
EXIT

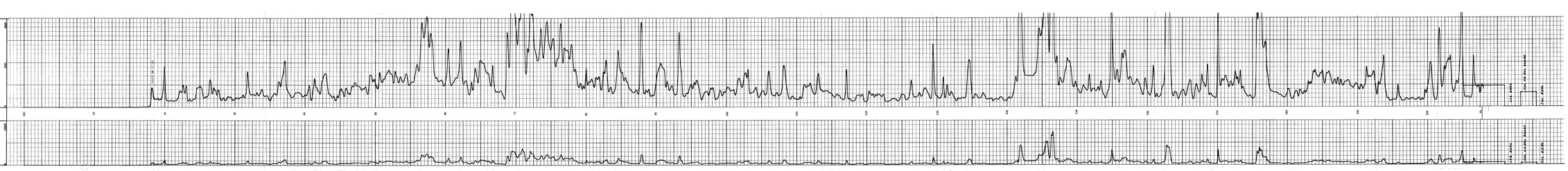
ROKE

PACKED SIGN SAG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-Ray Cuba 12-2-28

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W	
COMPANY	ALVIN REVIEW LIMITED
WELL	20 - 126
LOCATION	
FIELD	ROE RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Date Serviced	DEC 2000 CAL 2001
Recorded Date	2000 CAL 2001
Log Received Date	2000 CAL 2001
Date Received Date	2000 CAL 2001
Run No.	1
Date	6 FEB 1977
Log Reading	208.8
Log Reading	14
Zero Log Reading	1.5
Depth Reached	208.4
Depth Scale	200.35
Casing Scale	14
Casing Driller	
Casing Type	2023/10/24
Mud Type	2
Mud Wt.	50
Bin Wt.	50
Bin Wt. °C	12.33 @ 23
Operating Time	1 HRS
Truck No.	36
Recorded By	CAGLAND
Reviewed By	MARCELITO



ROKE

Company: [illegible]
Well: [illegible]
Field: [illegible]
County: [illegible]
State: [illegible]

Other Services: [illegible]

Permanent Datum: [illegible]
Elev.: K.B. [illegible] D.F. [illegible] G.L. [illegible]
Log Measured From: [illegible]
Drilling Measured From: [illegible]

Date: [illegible]
Run No.: [illegible]
Depth-Driller: [illegible]
Depth-Logger: [illegible]
Bottom Logged Interval: [illegible]
Top Logged Interval: [illegible]
Type Fluid in Hole: [illegible]
Salinity, PPM Cl: [illegible]
Density: [illegible]
Level: [illegible]
Max. Rec. Temp. Deg. F.: [illegible]
Operating Rig Time: [illegible]
Recorded By: [illegible]
Witnessed By: [illegible]

Run No. | Bit | From | To | Size | Wgt. | Type Fluid | Density | Viscosity | pH | Fluid Loss | Source of Sample | R_m @ Meas. Temp. | R_mf @ Meas. Temp. | R_mc @ Meas. Temp. | Source R_mf | Source R_mc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. Deg. F. | Equip. Location | Recorded By | Witnessed By

Casing Record: Size | Wgt. | Grade | Type Joint | From | To | Bit Record: Size | From | To

Run No. [illegible]

Permanent Datum: [illegible] Elev.: K.B. [illegible] D.F. [illegible] G.L. [illegible]
Log Measured From: [illegible]
Drilling Measured From: [illegible]

Date: [illegible]
Run No.: [illegible]
Depth-Driller: [illegible]
Depth-Logger: [illegible]
Bottom Logged Interval: [illegible]
Top Logged Interval: [illegible]
Type Fluid in Hole: [illegible]
Salinity, PPM Cl: [illegible]
Density: [illegible]
Level: [illegible]
Max. Rec. Temp. Deg. F.: [illegible]
Operating Rig Time: [illegible]
Recorded By: [illegible]
Witnessed By: [illegible]

Run No. | Bit | From | To | Size | Wgt. | Type Fluid | Density | Viscosity | pH | Fluid Loss | Source of Sample | R_m @ Meas. Temp. | R_mf @ Meas. Temp. | R_mc @ Meas. Temp. | Source R_mf | Source R_mc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. Deg. F. | Equip. Location | Recorded By | Witnessed By

Casing Record: Size | Wgt. | Grade | Type Joint | From | To | Bit Record: Size | From | To

Run No. [illegible]

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
Serial No.	1234	Serial No.	1235
Log. Model No.		Log. Model No.	NEUTRON-NEUTRON
Scaler No.	A3 BC	Scaler No.	
Log. Model No.		Log. Model No.	A2 AM
Type	SCINTILLATION	Detector Model No.	
Detector Spacing	3 FT. 6 IN.	Type	PROPORTIONAL
Logging (U.S. Gallons)	3 FT. 6 IN.	Logging (U.S. Gallons)	
		Source Model No.	MNC-8 AM-1
CASING		Type	
Upper Truck No.	16	Spacing	A2 1ft 1in
Intermediate Truck No.		Logging	
Lower Truck No.	1234 - 1A3	Type Elements	4 RINGS

CALIBRATION DATA

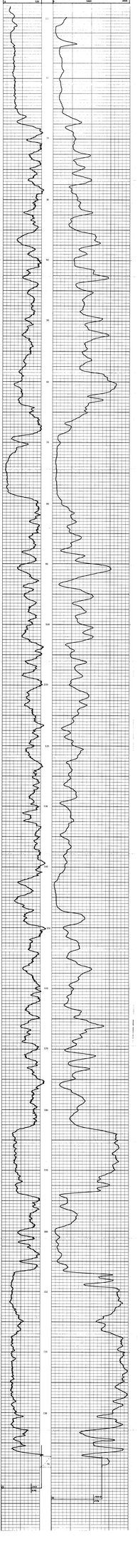
GAMMA RAY									NEUTRON							
Test	Model No.	Serial No.	Time Const.	Date	Det. & Amp. Setting	Tool Calibrator Model No.	Tool Calibrator Serial No.	Tool Calibrator Setting	Test	Model No.	Serial No.	Time Const.	Date	Det. & Amp. Setting	Tool Calibrator Model No.	Tool Calibrator Serial No.	Tool Calibrator Setting
B	1234	A-45	1 SEC	3/3/51	1A3	1234	A-45	1A3	B	1235	A-45	1 SEC	3/3/51	1A3	1234	A-45	1A3

REMARKS: RUNNING TOGETHER ON SINGLE RUN

GAMMA RAY | NEUTRON

GAMMA RAY INCREASES → | ← NEUTRON INCREASES

0 | 100 | 0 | 2000



ROKE

SCHLUMBERGER

COMPANY	AMOCO PRODUCTION COMPANY
WELL	276
FIELD	PRUDHOE BAY
COUNTY	NORTH SLOPE BOROUGH
STATE	ALASKA
API SERIAL NO.	50-029-21141-00
LOCATION	1320' FSL & 1320' FEL
SECTION	11
TOWNSHIP	11N
RANGE	13E
PERMANENT DATUM	MEAN SEA LEVEL
ELEV.	0
LOG MEASURED FROM	KELLY BUSHING
ELEV.	36.15
DRILLING MEASURED FROM	KELLY BUSHING
ELEV.	36.15
DATE	8-JUL-87
RUN NO.	ONE
DEPTH-DRILLER	10,200
DEPTH-LOGGER	10,204
BTM. LOG INTERVAL	10,200
TOP LOG INTERVAL	9,400
CASING-DRILLER	9.625 @ 9,400
CASING-LOGGER	9,400
BIT SIZE	8.5
TYPE FLUID IN HOLE	LIGNOSULFONATE
DENSITY	9.6
VISCOSITY	40
PH	10.5
FLUID LOSS	4.8
SOURCE OF SAMPLE	CIRCULATING
RM @ MEAS. TEMP.	1.45 @ 70
RMF @ MEAS. TEMP.	1.15 @ 70
RMC @ MEAS. TEMP.	2.1 @ 70
SOURCE RMF	MEASURED
SOURCE RMC	MEASURED
RM @ BHT	0.75 @ 180
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	180
EQUIP. LOCATION	2277
RECORDED BY	R. ROBERTSON
WITNESSED BY	D. SCHOLZ

276

RUN	BOREHOLE RECORD BIT SIZE	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
1	8.5	9,400	10,204	7	29	0	9,400

RUN	TOOL NUMBER	TYPE	SERIAL NO.	POSITION	MAX REC TEMP
1	DIL-SLS-GR	DIL	1005	1.89	54.33

REMARKS: LOGS RUN IN CASED HOLE. 1 REPEAT SECTION.

10.34	11.24	10.30
20.46	30.48	30.34

GAMMA RAY (API)

CALIPER (8=BIT/20=ENLARGED)

BULK DENSITY (G/CM3)

31.34	31.34	

9,400
9,500
9,600
9,700
9,800
9,900
10,000
10,100
10,200

ROKE

FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K- ELK RIVER 77 (3) #B

FILE NO.
LSD
SEC
TWP
RGE
W M

COMPANY ELCO MINING LIMITED

WELL DH - 125

LOCATION 276

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: GRN. DENS. CAL. DEV

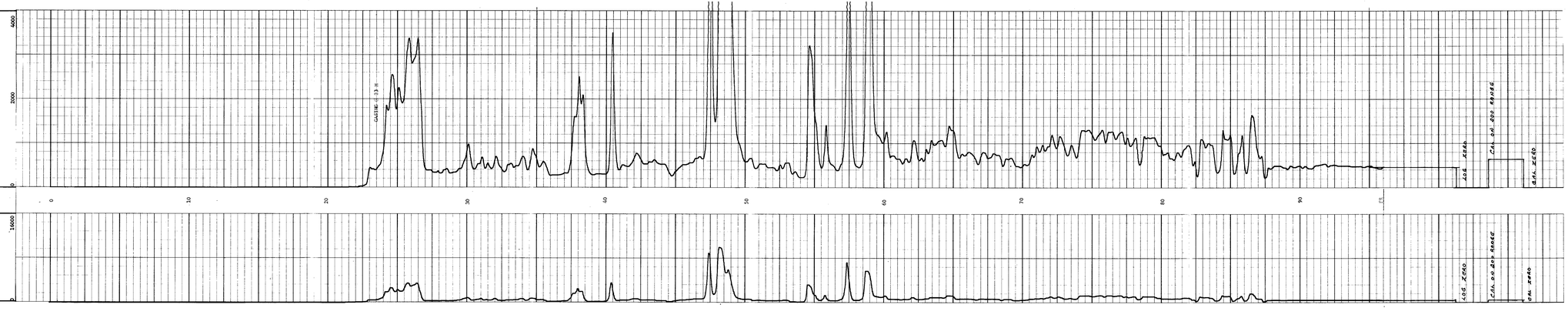
Permanent Datum GROUND LEVEL Elev.
Log Measured from RIG FLOOR 55 CM Above Perm. Datum
Well Depths Measured from RIG FLOOR

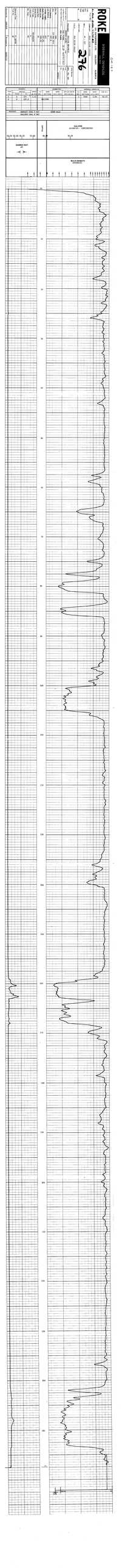
K.B.
CSG
G.L.
METRIC

Run. No.	ONE		
Date	20 FEB 1977		
First Reading	96 M		
Last Reading	23		
Footage Logged	73		
Depth Reached	96.60		
Depth Driller	97.91		
Casing Roke	23		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level	2		
Min. Diam.	HQ		
Rm @ °C	28.57 @ 25		
Operating Time	20 MIN		
Truck No.	36		

Recorded By CARLSON Witnessed By McKELVIE

Remarks: SOUND GEOMETRIC FACTOR 329, PHOTO TYPE IV
GROUND FISH READING - 60 GRMS
200 GRM/DIS, PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN




ROKE
276
CALIPER
GAMMA RAY
BULK DENSITY

ROKE

276

REPEAT DATA

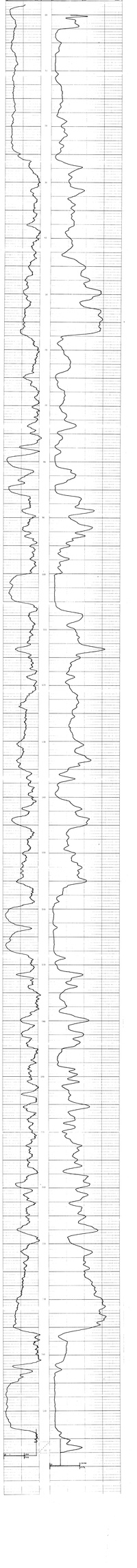
GAMMA RAY		NEUTRON	
RUN NO.	1	RUN NO.	
DATE		DATE	
CASING SIZE	5½ IN	CASING SIZE	
TYPE FLUID IN HOLE		TYPE FLUID IN HOLE	
DENSITY		DENSITY	
VISCOSITY		VISCOSITY	
PH		PH	
FLUID LEVEL		FLUID LEVEL	
MAX. RECORDED TEMP.		MAX. RECORDED TEMP.	
ESTIMATED CEMENT TOP		ESTIMATED CEMENT TOP	
TIME SINCE CIRCULATION		TIME SINCE CIRCULATION	
WITNESS		WITNESS	
MATRIX	SANDSTONE	MATRIX	LIMESTONE
HOLE CORRECTION		HOLE CORRECTION	
TOOL TYPE		TOOL TYPE	
TOOL NO.		TOOL NO.	
DETECTOR NO.		DETECTOR NO.	
SOURCE		SOURCE	
SOURCE STRENGTH		SOURCE STRENGTH	
DIST. SOURCE TO DETECTOR	24 IN	DIST. SOURCE TO DETECTOR	24 IN
TOOL OFFSET		TOOL OFFSET	
DIST. FLUID TO DETECTOR		DIST. FLUID TO DETECTOR	
DIST. SOURCE TO FLUID		DIST. SOURCE TO FLUID	
TOOL SPEED	30	TOOL SPEED	30
DATA SPEED	1 FT/MIN	DATA SPEED	1 FT/MIN

LOGGING DATA

PASS	GAMMA RAY				NEUTRON			
	SCALE	OFFSET	SCALE	OFFSET	SCALE	OFFSET	SCALE	OFFSET
1	0-100	0	0-100	0	0-100	0	0-100	0
2	0-100	0	0-100	0	0-100	0	0-100	0

REMARKS: GAMMA RAY 1

GAMMA RAY		NEUTRON
GAMMA RAY INCREASES		NEUTRON INCREASES
0 API	100	0 API 1000



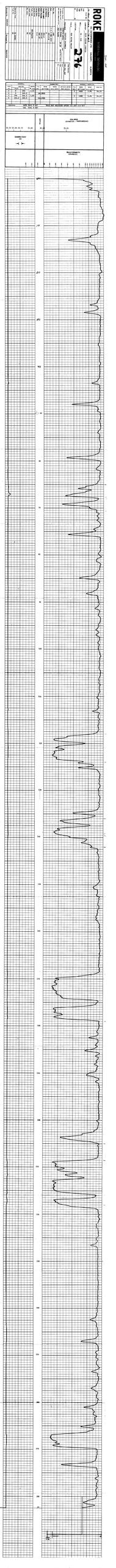
ROKE

276

Notes:
MOTOR OBSERVATEUR CHATEAU «LES» PRATS D'EN 33
OBSEVER POUR ANALYSE - BP 1000
A 50 % SORTIE DU DEPOTAGE MAX

ROKE

SCHLUMBERGER



ROKE

376

COMPANY	
WELL	
FIELD	
COUNTY	
STATE	
LOCATION	
SEC	TWP
RGE	
PERMANENT DATUM	
ELEV.	
LOG MEASURED FROM	
DRILLING MEASURED FROM	
DATE	
RUN NO.	
DEPTH-DRILLER	
DEPTH-LOGGER	
BTM. LOG INTERVAL	
TOP LOG INTERVAL	
CASING-DRILLER	
CASING-LOGGER	
BIT SIZE	
TYPE FLUID IN HOLE	
DENS.	
VISC.	
PH	
FLUID LOSS	
SOURCE OF SAMPLE	
RM @ MEAS. TEMP.	
RMF @ MEAS. TEMP.	
RMC @ MEAS. TEMP.	
SOURCE RMF	RMC
RM @ BHT	
TIME SINCE CIRC.	
MAX. REC. TEMP.	
EQUIP. NO.	
LOCATION	
RECORDED BY	
WITNESSED BY	

EQUIPMENT DATA

RUN NO.	
TYPE LOG	INDUCTION
TYPE ELECTRODE	
SPACING	
MAX. REC. TEMP.	
OPERATING RIG TIME	
RECORDED BY	
WITNESSED BY	

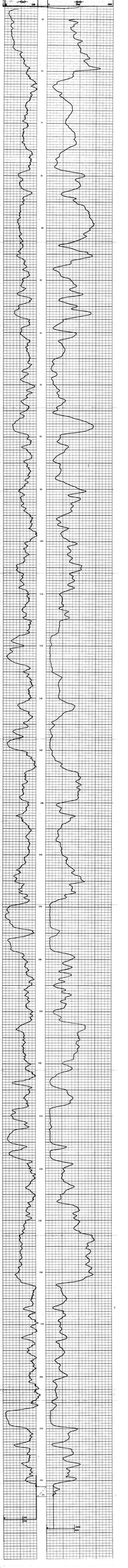
CASING DATA

SIZE	WGT.	GRADE	FROM	TO

LOGGING DATA

RUN NO.	BIT SIZE	CASING SIZE	CASING WGT.	CASING GRADE	CASING FROM	CASING TO	TYPE FLUID IN HOLE	DENS.	VISC.	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE RMF	SOURCE RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. NO.	LOCATION	RECORDED BY	WITNESSED BY

GAMMA RAY		SELECTION
GAMMA RAY NEUTRON		NEUTRON NEUTRON
0 GAPI 150		0 API UNITS 1000



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

FILE NO.	E Elk River 77(2)A-6
COMPANY	ELCO MINING LIMITED
WELL	DH - 128
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DENS, CAL, HRV
Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR 34 CM Above Perm. Datum
Wtr. Depths Measured from	RIG FLOOR

276

Run No.	ONE
Date	2 & 3 FEB 1977
First Reading	283 M
Last Reading	9.5
Footage Logged	273.5
Depth Reached	283.6
Depth Driller	284.26
Casing Driller	9.5
Fluid Type	MUD/WATER
Liquid Level	10
Max. Rec. Temp.	NR
Rm @ °C	16.67 @ 25
Operating Time	2 HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKENZIE

Remarks

SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 160 OHMS
500 OHM/DIV. PRLARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

1ST RUN - 9.5 TO 264 - 2 FEB 1977
2ND RUN - 264 TO 283 - 3 FEB 1977

ROKE

COMPENSATED NEUTRON - GAMMA RAY

Company: ROKE OIL, INC.
Well: #1 ROKE
Field: WILDCAT
County: GRAHAM
State: TEXAS

Location: 330' FSL & 330' FEL
Sec. 2 Twp. 5S Rge. 19W

Permanent Datum: GROUND LEVEL
Elev.: K.B. 1,431
D.F. 1,429
G.L. 1,421

Log Measured From: K.B. 10 Ft. Above Perm. Datum
Drilling Measured From: K.B.

Date: 12-15-82
Run No.: ONE
Depth-Driller: 3,600
Depth-Logger: 3,600
Bottom Logged Interval: 3,600
Top Logged Interval: 2,800
Type Fluid in Hole: SALT GEL
Salinity, PPM Cl: 5,000
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 110
Operating Rig Time: 4 HRS

Recorded By: J. MILLER
Witnessed By: MR. ROKE

276

RUN NO. ONE

	GAMMA RAY	NEUTRON
Run No.	ONE	ONE
Type Log	GR	COMPENSATED NEUTRON
Bore-Hole Rec. No.	1	1
Date	12-15-82	12-15-82
Recorded By	J. MILLER	J. MILLER
Witnessed By	MR. ROKE	MR. ROKE
Bore-Hole Record		
Bit No.	1	1
From	SURFACE	SURFACE
To	3,600	3,600
Casing Record		
Size	8 5/8" @ 1,400	8 5/8" @ 1,400
Type Fluid in Hole	SALT GEL	SALT GEL
Density	9.2	9.2
Level	FULL	FULL
Max. Rec. Temp. Deg. F	110	110
Operating Rig Time	4 HRS	4 HRS
Recorded By	J. MILLER	J. MILLER
Witnessed By	MR. ROKE	MR. ROKE

LOGGING DATA

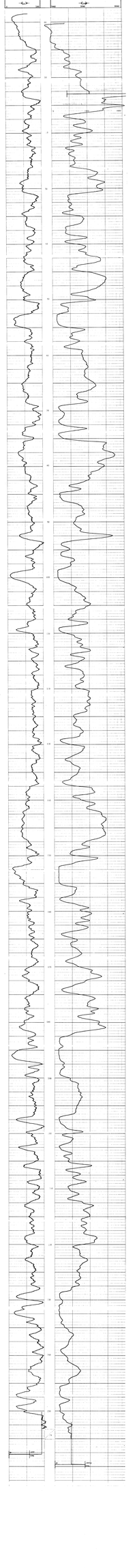
GENERAL					GAMMA RAY				NEUTRON			
RUN	TOOL TYPE	TIE IN	Logged Interval	API UNITS	SCALE SETTINGS	SEN	API UNITS	SCALE SETTINGS	SEN	API UNITS	SCALE SETTINGS	SEN
1	GR	2,800	3,600	0-150	0-150							
1	CN	2,800	3,600						0-60	0-60	0-60	

REMARKS: 100% HOLE

GAMMA RAY | 1 | NEUTRON

GAMMA RAY INCREASES → | NEUTRON DECREASES →

2,800 | 3,600



DIM / 89

ROKE

SIDEWALL DENSILOG

CALIBRATED

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

Well Name: ROKE OIL ENTERPRISES LTD. ET AL. HALL 2-16-1-28

Field: BEAR VALLEY

Location: SEC 16 TWP 1 RGE 28 W4

Well No.: 276

Date: 1-3-89

Run No.: 1

Depth Driller: 1215

Depth Logger: 1215

Bottom Log Interval: 1212

Top Log Interval: 0

Casing Driller: 8

Casing Logger: 8

Bit Size: 7.875

Type Fluid in Hole: WATERBASED

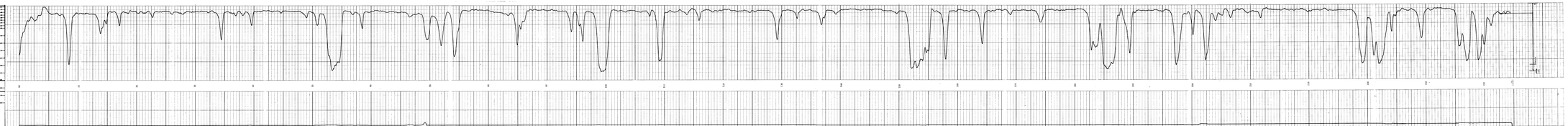
Fluid Level: FULL

Max. Rec. Temp.: 24

Equipment No.: 1

Recorded By: SHEARER

Witnessed By: MARSHALL



ROKE

TEXACO, INCORPORATED

LEASE: ALBERS
WELL: 1
FIELD: WILDCAT
COUNTY: MONROE
STATE: FLORIDA

LOCATION: 1320' FSL & 1320' FEL
SEC. 26 TWP. 17S RGE. 31E

Elev. 276

Date: 7-8-76

Permanent Datum:	GL	Elev.	276
Log Measured From:	KB	12 Ft. Above Perm. Datum	
Drilling Measured From:	KB		

Date	7-8-76								
Run No.	1								
Depth-Driller	9,200								
Depth-Logger	9,198								
Bottom Log Interval	9,196								
Casing-Driller	13 3/8 @ 1,000								
Casing-Logger	NONE								
Bit Size	12 1/4								
Type Fluid in Hole	LIGNOSULFONATE								
Dens. / Visc.	10.4 / 45								
pH / Fluid Loss	10.5 / 8.0								
Source of Sample	FLOWLINE								
Rm @ Meas. Temp.	0.61 @ 80°								
Rmf @ Meas. Temp.	0.51 @ 80°								
Rmc @ Meas. Temp.	0.71 @ 80°								
Source: Rmf / Rmc	MEASURED / CALC.								
Rm @ BHT	0.27 @ 200°								
Time Since Circ.	8 HRS								
Max. Rec. Temp.	200°								
Equipment Location	1 MILE N. OF MARATHON, FLORIDA								
Recorded By	MCCLOUD								
Witnessed By	MR. BOYLE								

Run No.	Bit Size	Casing Size	Casing Depth	Top Log Int.	Type Fluid	Density	Viscosity	pH	Fluid Loss	Source	Rm	Rmf	Rmc	Rm @ Meas. Temp.
1	12 1/4	13 3/8 @ 1,000	NONE	9,196	LIGNOSULFONATE	10.4	45	10.5	8.0	FLOWLINE	0.61 @ 80°	0.51 @ 80°	0.71 @ 80°	0.27 @ 200°

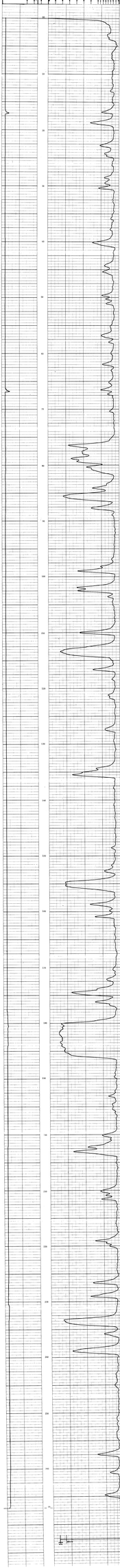
DIFFICULTIES	
LOGGING DISTANCE	9,198
CASING SIZE	
LOGGING SPEED	

10,24	10,34	10,44	10,54	10,64	10,74

GAMMA RAY
0 API 100

CALIPER
DIAMETER CONDENSED
6 IN 16 IN

BULK DENSITY
CORRECTION
-0.5 G/CC 0.5 G/CC



ROKE

GAMMA RAY NEUTRON LOG

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO	K-ELK RIVER 72 (3) 8
COMPANY	ELCO MINING LIMITED
WELL	DH - 130
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Permanent Datum	GROUND LEVEL
Log Measured from	RIG FLOOR 46 CM. Above Perm. Datum
Well Depths Measured from	RIG FLOOR
Other Services	DENS CAL. DEV
	METRIC

276

Run No.	ONE
Date	9 FEB 1977
First Reading	267 M
Last Reading	0
Footage Logged	267
Depth Reached	267.30
Depth Driller	268.40
Casing Driller	6.5
Casing Logger	
Fluid Type	MUD/WATER
Liquid Level	13
Min. Diam.	HQ
Run @ °F	
Operating Time	1½ HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	MCKENZIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	188
INSTRUMENT TRUCK NO.		SPACING	43.18 CM
TOOL SERIAL NO.	169 001	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

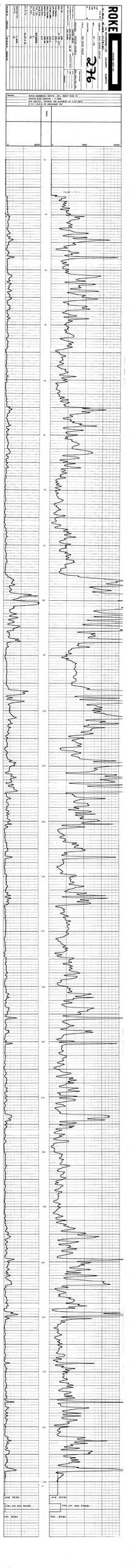
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	GAMMA RAY T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	NEUTRON T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	12	3.66	4	100	0	16	3	1000	4 L	360
2	12	267	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

ROKE

276

Remarks: ROKE GAMMARAY PROFILE (GR), PROFILE FILE 276
GAMMARAY FILE: 276 GR
CALIBRATION: 1 CPS = 0.0 API
GR DETECTOR, MEDIUM GAMMARAY 20 JUL 1978
A 1:1 RATIO ON GAMMARAY PROF



ROKE

Schlumberger

276

Company	ROKE OIL & GAS LTD.	Date	11-Jan-91
Well	Alaska Lake Creek 1	Run	1
Field	Wildcat	Depth Driller	2,100
County	Nelson	Depth Logged	2,100
State	Alaska	Bottom Log Interval	2,100
Location	1980' FSL & 1980' FEL	Top Log Interval	0
Sec.	34	Casing Driller	8 5/8 @ 0
Twp.	15 N	Casing Logged	
Rge.	3 W	Bit	7 7/8
Permanent Datum	Ground Level	Type Fluid in Hole	Water
Elev.	2,100	Dens.	8.4
Log Measured From	Kelly Bushing	Visc.	28
Drilling Measured From	Kelly Bushing	Max. Rec. Temp.	70
		Est. Cement Top	

Equipment	Location
Recorded By	Witnessed By
Mr. Kevin Kelly	Mr. Ron Wilson

Run No.	Bit Size	Depth Drilled	Depth Logged	Time Circ.	Max. Rec. Temp.	Equipment	Location
1	7 7/8	2,100	2,100	3 hrs	70		

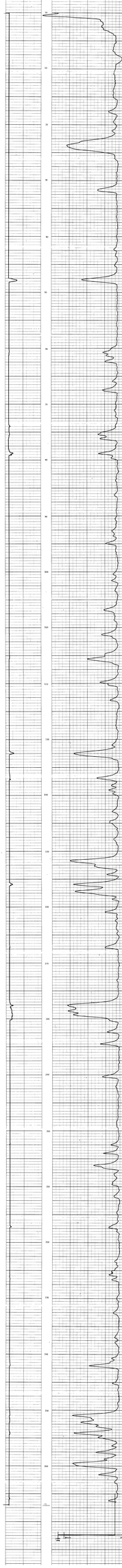
Casing Record			
	Size	Weight	Depth
Surface	8 5/8	24	0
Production			

Rmf	Rmf Temp.	Rmc	Rmc Temp.	Rmb	Rmb Temp.	Source Rmf	Source Rmc	Source Rmb
.75	70	.75	70	.75	70	Calc	Calc	Calc

Rm @ BHT	Time Since Circ.	Max. Rec. Temp.	Equipment	Location
.75 @ 70	3 hrs	70		

Remarks
Gamma Ray & Caliper
Neutron, Density & Caliper

Caliper	Gamma Ray	Neutron	Density
6 in.	0 API	30 %	2.0 g/cc
16 in.	150 API	-10 %	3.0 g/cc



ROKE

276

EQUIPMENT DATA

GAMMA RAY

RUN NO.	
TOOL MODEL NO.	
DIAMETER	3.5" OD
DETECTOR MODEL NO.	
TYPE	SCINTILLATION
LENGTH	10.75" OD
DISTANCE TO D.P. BOTTOM	5.25 ft
SHIELDING	
MODEL NO.	
SHIELDING	NA
TOOL WEIGHT	150 LBS
TOOL MATERIAL NO.	

NEUTRON

RUN NO.	
TOOL MODEL NO.	
DIAMETER	3.5" OD
DETECTOR MODEL NO.	
TYPE	PROPORTIONAL
LENGTH	10.75" OD
DISTANCE TO D.P. BOTTOM	5.25 ft
SOURCE NO.	
SHIELDING	ALLOY CO.
TOOL WEIGHT	150 LBS
ATTENUATOR	4 SHIELD

LOGGING DATA

GAMMA RAY						NEUTRON					
RUN	DENSITY							DENSITY			
NO.	TYPE	TIME CONST.	SPEED FT/MIN	SENSITIVITY	CALIBRATOR NO.	API UNITS	RUN	TYPE	TIME CONST.	SPEED FT/MIN	SENSITIVITY
1	GR	3 SEC	30	1	1	100	1				
2	GR	3 SEC	30	1	1	100	2				

REMARKS

GAMMA RAY	NEUTRON
GAMMA RAY INCREASES	NEUTRON INCREASES
0 API	0
100	100

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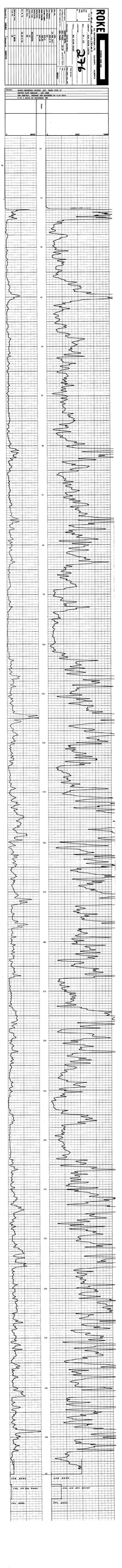

ROKE
276
Remarks
Remarks

ROKE
SCHLUMBERGER

DIGITAL WELL DATA

COMPANY	ROKE OIL EXPLORATION N.L.
WELL	276
FIELD	WILDCAT
COUNTY	
STATE	NORTHERN TERRITORY
LOCATION	1,320 FEET FROM SOUTH BOUNDARY 1,320 FEET FROM WEST BOUNDARY
SECTION	35
TOWNSHIP	5S
RANGE	1E
PERMANENT DATUM	GROUND LEVEL
ELEVATION	0 FEET
LOG MEASURED FROM	KELLY BUSHING
DRILLING MEASURED FROM	KELLY BUSHING
ELEVATION	0 FEET
DATE	7-6-73
RUN NO.	ONE
DEPTH-DRILLER	3,000 FEET
DEPTH-LOGGER	3,000 FEET
BTM. LOG INTERVAL	2,999 FEET
TOP LOG INTERVAL	1,000 FEET
CASING-DRILLER	13 3/8 @ 1,000 FEET
CASING-LOGGER	1,000 FEET
BIT SIZE	12 1/4 INCHES
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	9.2 LB/GAL
VISCOSITY	40 SEC
PH	10.5
FLUID LOSS	6.0 CC
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	0.25 @ 80 °F
RMF @ MEAS. TEMP.	0.20 @ 80 °F
RMC @ MEAS. TEMP.	0.30 @ 80 °F
SOURCE OF RMF	MEASURED
SOURCE OF RMC	MEASURED
RM @ BHT	0.12 @ 120 °F
TIME SINCE CIRC.	12 HOURS
MAX. REC. TEMP.	120 °F
EQUIP. LOCATION	ALICE SPRINGS
RECORDED BY	R. SMITH
WITNESSED BY	MR. ROKE

RUN NO. | BIT NO. | FROM | TO | FEET DRILLED | HOURS | FEET/HOUR

ONE | 1 | SURF | 3000 | 3000 | 24 | 125

RUN NO.	CASING DRILLER	CASING LOGGER	BOT. LOG INTERVAL	TOP LOG INTERVAL	TYPE FLUID IN HOLE	DENSITY LB/GAL	VISCOSITY SEC	PH	FLUID LOSS CC
ONE	13 3/8 @ 1000	1000	2999	1000	GEL CHEM	9.2	40	10.5	6.0

EQUIPMENT NUMBERS: DRESS. 2 SKT
LOCATION: DARL'S, ALICE

HOLE ANGLE: DEG. AT

35.24	13.24	35.32
35.24		35.48

GAMMA RAY
API
0 — 100

CALIPER
DIAMETER - CHRISTENSEN
6 — 16

ROCK DENSITY
DENSITY(G)
1.95 — 2.95

Feet
1000 — 3000

Scale
1/240

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

THROUGH RODS

FILE NO. K- ELK RIVER 77(3) #B

COMPANY: ELCO MINING LIMITED

WELL: DH - 132

LOCATION: 276

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

Other Services: DENS, CAL, FRL, DEV

Permanent Datum: GROUND LEVEL

Log Measured From: RIG FLOOR, 63 CM Above Perm. Datum

Drill Depths Measured from: RIG FLOOR

Elev.: K.B. / CSG / G.L.

METRIC

Run No.: ONE

Date: 16 FEB 1977

Depth: 222 M

222.65

220.30

222

8

MUD/WATER

21

HQ

1½ HOURS

36

Recorded By: CARLSON

Witnessed By: McKELVIE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	169 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	19.5	3.66	4	100	0	12	3	1000	0	280
2	19.5	222	3.66	4	100	0	12	3	500	0	140

REMARKS: LOGGED THROUGH HQ DRILL ROD
45° ANGLE HOLE

OPEN HOLE

ROKE

PRINTED IN CANADA

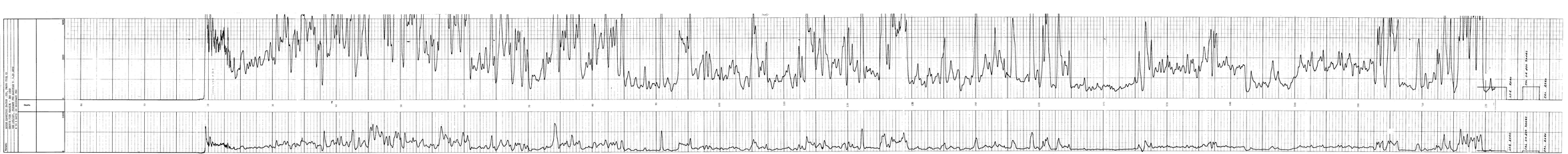
ROKE ENTERPRISES LTD. CALGARY, ALBERTA

K-Ca-Gamma Density Log

FILE NO.	
LEG	
LEV	
DATE	
WELL	00 - 5 - 120
LOCATION	
FIELD	OLD KEYSER VALLEY
PROVINCE	WESTERN SASKATCHEWAN

276

Run No.	ONE		
Date	24 JUN 1977		
First Reading	1210.5 ft		
Last Reading	21		
Logged Interval	1189.5		
Casing Logger	222.45		
Depth Driller	222.45		
Casing Size			
Casing Weight			
Fluid Type	BRINE/GAS		
Fluid Level	21		
Rig Time	24		
Rm @ °F	54.58 @ 23		
Operating Time	4 HOURS		
Truck No.	26		
Recorded By	CAGLIOSTRO	Witnessed By	MARTYNIUK



ROKE

SCHLUMBERGER

Schlumberger Canada Limited

CALGARY ALBERTA

276

Company	ROKE OIL & GAS LTD.
Well	16-32-26-5W4
Field	RED ROCK VALLEY
County	
Province	ALBERTA
Location	16-32-26-5W4
Other Services	
Permanent Datum	GROUND LEVEL
Elevation	3,000
Log Measured From	K.B. 10 FT. ABOVE PERM. DATUM
Drilling Measured From	K.B.
Date	7-6-82
Run No.	ONE
Depth-Driller	3,300
Depth-Logger	3,301
Bottom Logged Interval	3,301
Top Logged Interval	200
Type Fluid in Hole	GEL CHEM
Salinity	
Density	9.2
Viscosity	40
Fluid Loss	8.0
Source of Sample	CIRC.
Rm @ Meas. Temp.	.96 @ 70°F
Rmf @ Meas. Temp.	.72 @ 70°F
Rmc @ Meas. Temp.	.48 @ 70°F
Source of Rmf & Rmc	CALC.
Rm @ BHT	.48 @ 120°F
Time Since Circ.	12 HRS.
Max. Rec. Temp.	120°F
Equip. No. & Location	5102
Recorded By	D. SCHMIDT
Witnessed By	MR. ROSS

RUN	BIT	FROM	TO	FEET	HOURS
ONE	1	SURF.	3,301	3,301	24

CASING RECORD						
	SIZE	WGT.	GRADE	FROM	TO	
SURF. STRING	8 5/8"	24#	J-55	SURF.	200	
PROD. STRING	5 1/2"	15.5#	J-55	SURF.	3,301	

TYPE	DENSITY	VISCOSITY	PH	FLUID LOSS	SOURCE
GEL CHEM	9.2	40		8.0	CIRC.

RESISTIVITY				TEMPERATURE	
	MAX. REC.	@ BHT	TIME SINCE CIRC.	MAX. REC.	@ BHT
	.96 @ 70°F	.48 @ 120°F	12 HRS.	120°F	

EQUIPMENT NUMBERS			
	TYPE	LOCATION	
RECORDED BY	5102		
WITNESSED BY			

RUN	TOOL	SERIAL NO.	POSITION	DIAMETER	LENGTH	WEIGHT
ONE	DENSITY SNP, F 442					
	CALIPER SNP, F 362					

REMARKS: DENSITY SNP, F 442 — OPEN HOLE

CALIPER SNP, F 362

10	24	10	32
33	32	33	40

Scale 1

CALIPER
(DIAMETER - CENTIMETRES)

33,40 — 33,24

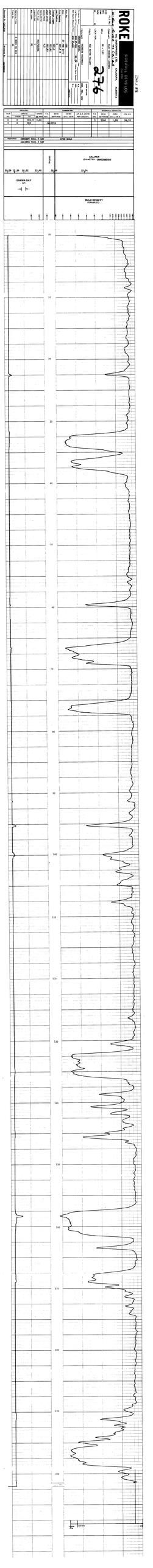
GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

Scale 5

1,95	2,95

Depth



ROKE

CONTRACTOR

WELL SERVICES LTD.

COMPANY: ROKE OIL AND GAS LTD.

WELL: 276

FIELD: GRANGE

COUNTY: CALGARY

PROVINCE: ALBERTA

LOCATION: 10-35-24-W4M

OTHER SERVICES: CBL-VDL-GR

PERMANENT DATUM: GROUND LEVEL

ELEV.: K.B. 1135.0

D.F. 1133.5

G.L. 1130.0

LOG MEASURED FROM: K.B. 5.0 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: K.B.

DATE: 1-3-74

RUN NO.: ONE

TYPE LOG: GAMMA RAY NEUTRON

DEPTH-DRILLER: 1400

DEPTH-LOGGER: 1400

BTM. LOG INTERVAL: 1400

TOP LOG INTERVAL: 0

CASING-DRILLER: 8 5/8 @ 135

CASING-LOGGER: 135

BIT SIZE: 7 7/8

TYPE FLUID IN HOLE: GEL CHEM

DENSITY: 9.2

VISCOSITY: 40

PH: 10.5

FLUID LOSS: 10.0

SOURCE OF SAMPLE: FLOWLINE

RM @ MEAS. TEMP.: 1.1 @ 70°F

RMF @ MEAS. TEMP.: 1.0 @ 70°F

RMC @ MEAS. TEMP.: 1.4 @ 70°F

SOURCE: RMF: FLOWLINE RMC: FLOWLINE

RM @ BHT: 0.6 @ 110°F

TIME SINCE CIRC.: 4 HRS.

MAX. REC. TEMP.: 110°F

EQUIP. LOCATION: 276

RECORDED BY: D. ROSS

WITNESSED BY: MR. ROKE

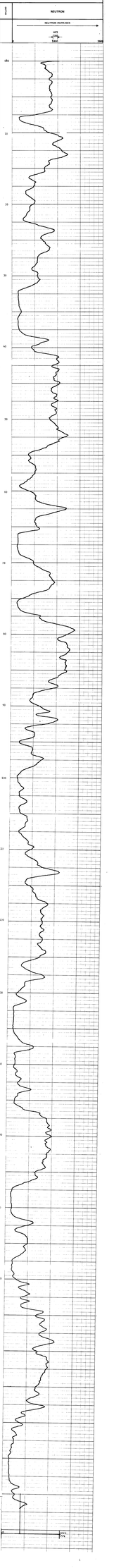
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
SERIAL NO.	27 SM	SERIAL NO.	
DETECTOR MODEL NO.		SOURCE	20 MC
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.25 IN	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	6.25 IN	LENGTH	11.25 IN
		DISTANCE TO SOURCE	SPC'S 20 IN
SENSITIVITY		SERIAL NO.	121
HEIGHT (TRACE NO.)	76	SPACING	11.25 IN
INSTRUMENT (TRACE NO.)	76	Amplitude	1.0
TOOL SERIAL NO.	122 SSN	STRETCH	1.0

LOGGING DATA

GENERAL								GAMMA RAY					NEUTRON				
RUN NO.	RECD. FROM	TO	SPEED F.P.M.	T.C. SEC.	BTM.	DEPTH	MT. R. UNITS	T.C. SEC.	BTM.	DEPTH	MT. R. UNITS
1	300	1,400	30	1	1,400	0	15	1	1,400	0	100

REMARKS: LARGE HOLE



ROKE

ROKE PETROLEUM LTD., CALGARY, ALBERTA

WELL NAME: 102 ROKE ET AL CHAIN LAKE 10-36-76-10

LOCATION: 10-36-76-10 W6M

FIELD: CHAIN LAKE

PROVINCE: ALBERTA

COUNTRY: CANADA

DATE: 30 JUL 2019

RUN NO.: ONE

DEPTH DRILLER: 6000.0 M

DEPTH LOGGER: 6000.0 M

BTM LOG INTERVAL: 6000.0 M

TOP LOG INTERVAL: 2000.0 M

CASING DRILLER: 244.5 MM @ 2000.0 M

CASING LOGGER: 2000.0 M

BIT SIZE: 200.0 MM

TYPE FLUID IN HOLE: WATER BASED MUD

DENSITY: 1.10 KG/M3

VISCOSITY: 50.0 S

PH: 8.0

FLUID LOSS: 5.0 ML

SOURCE OF SAMPLE: CIRCULATED

RM @ MEAS TEMP: 0.200 OHMM @ 20.0 C

RMF @ MEAS TEMP: 0.150 OHMM @ 20.0 C

RMC @ MEAS TEMP: 0.250 OHMM @ 20.0 C

SOURCE RMF: MEASURED

SOURCE RMC: MEASURED

RM @ BHT: 0.100 OHMM @ 80.0 C

TIME SINCE CIRC: 12.0 HR

MAX REC TEMP: 80.0 C

EQUIP NO.: 2

LOCATION: 10-36-76-10 W6M

RECORDED BY: J. SMITH

WITNESSED BY: M. JONES

274

Remarks: RUNNING GEOMETRIC CALIPER, 1.969 INCH PITCH X3
CORRECTED FLUID BOUNDARY - SEE NOTES
CALIPER CALIBRATED ON SURFACE ON 30 JUL 2019
4 TO 1 RATIO ON SECONDARY GRS

GRS (GAPI)
0 — 10000

CALIPER (MM)
0 — 5000 — 6000

DEPTH (M)
50 — 60 — 70 — 80 — 90 — 100 — 110 — 120 — 130 — 140 — 150 — 160 — 170 — 180 — 190 — 200

CASING = 244.5 MM

LOG DEPTH

TOP LOG INTERVAL 2000.0 M

BTM LOG INTERVAL 6000.0 M

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77(3) AB

276

FILE NO.

COMPANY	ELCO MINING LIMITED		
WELL	DH - 134		
LOCATION			
FIELD	ELK RIVER VALLEY		
PROVINCE	BRITISH COLUMBIA	Other Services:	DENS, DEV
LSD SEC TWP RGE W M			
Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	TOP OF RODS 3 M	Above Perm. Datum	CSG
Well Depths Measured from	RIG FLOOR		G.L.
			METRIC

Run. No.	ONE			
Date	24 MAR 1977			
First Reading	305 M			
Last Reading	0			
Footage Logged	305			
Depth Reached	305.30			
Depth Driller	305.40			
Casing Roke				
Casing Driller	12.20			
Fluid Type	MUD/WATER			
Liquid Level	21.5			
Min. Diam.	HQ			
Rm @ °F				
Operating Time	2 HOURS			
Truck No.	36			

Recorded By CARLSON | Witnessed By LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	4.5	3.66	4	100	0	12	3	1000	0	280
2	4.5	305	3.66	4	100	0	12	3	500	0	140

REMARKS LOGGED THROUGH HQ DRILL RODS

ROKE
SIDEWALL DENSILOG
276

DH-135

ROKE — SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	DH - 135
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DEV

276

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	RIG FLOOR	Above Perm. Datum	CSG
Well Depths Measured from	RIG FLOOR		G.L.
			METRIC

Run. No.	ONE		
Date	10 APR 1977		
First Reading	311 M		
Last Reading	0		
Footage Logged	311		
Depth Reached	311.92		
Depth Driller			
Casing Roke	14		
Casing Driller			
Fluid Type	MUD/WATER		
Liquid Level			
Min. Diam.	NQ		
Operating Time	3 HOURS		
Truck No.	36		

Recorded By JOHNSON/CARLSON | Witnessed By LAWRENCE

General: Run No.	Depths From	Depths To	Speed M/MIN	Gamma Ray: T.C. Sec.	Sens Settings	Zero Div. L or R	API G.R. Units per Log Div.	Sidewall Densilog: T.C. Sec.	Sens Settings	Zero Div. L or R	CPS/DIV
1	0	176	3.66					3	1000	1.3 R	20.24
2	176	311	3.66					3	1000	1.3 R	20.24

REMARKS

DENSITY TOOL # 128

0 - 176 LOGGED THROUGH HQ DRILL ROD

176 - 179 LOGGED THROUGH HQ & NQ DRILL ROD

179 - 311 LOGGED THROUGH NQ DRILL ROD

CALIPER (DIAMETER –)

DEPTHS

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77 (3) A B

276

FILE NO.	
COMPANY	ELCO MINING LIMITED
WELL	DH - 135
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W M	
Other Services:	DENS, DEV
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	RIG FLOOR Above Perm. Datum
Well Depths Measured from	RIG FLOOR
K.B. / CSG / G.L.	METRIC

Run. No.	ONE
Date	10 APR 1977
First Reading	311 M
Last Reading	0
Footage Logged	311
Depth Reached	311.80
Depth Driller	
Casing Roke	14
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	
Min. Diam.	NQ
Rm @ °F	
Operating Time	3 HOURS
Truck No.	36
Recorded By	JOHNSON/CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

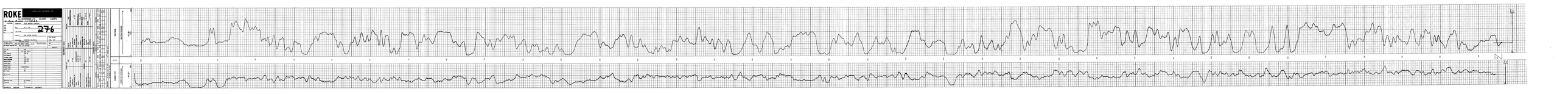
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

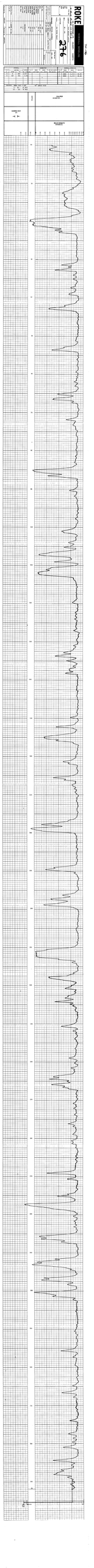
LOGGING DATA

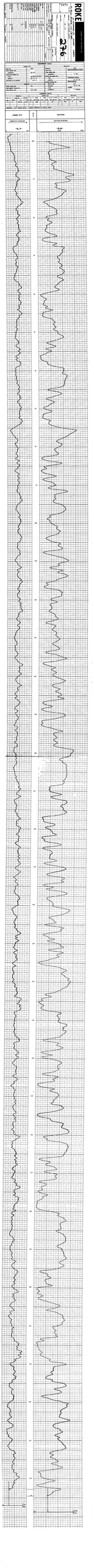
GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	177	3.66	4	100	0	12	3	500	0	140
2	177	311	3.66	4	100	0	12	3	500	0	140

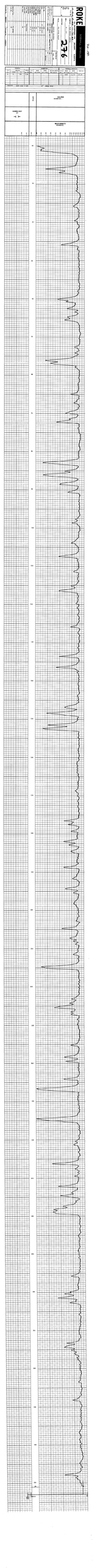
REMARKS 00 TO 177 METERS - LOGGED THROUGH HQ DRILL ROD
177 - 179 METERS - LOGGED THROUGH HQ & NQ DRILL ROD
179 - 311 METERS - LOGGED THROUGH NQ DRILL ROD

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
12		140
0 — 120		0 — 1400 — 2800


ROKE
276


ROKE
Schlumberger
276
Dual Induction Laterolog
Array Induction Imager Tool
Gamma Ray
Deep Induction
Medium Induction
Shallow Conductivity
Caliper
Bit Size
Spontaneous Potential
Deep Resistivity
Medium Resistivity
Shallow Resistivity
Mud Resistivity
Formation Temperature
Gamma Ray in Casing
Casing Collar Locator
Cable Speed


ROKE
276
GAMMA RAY
NEUTRON



ROKE
SIDEWALL DRESSLOG

S. Bel ROKE et al
GALAXY 276
ALBERTA

2-4-75

Co.	S. Bel ROKE et al
Well	GALAXY 276
Field	
Location	2-4-75
Province	ALBERTA
Elevation	
Log Measured From	
Drilling Measured From	
Permanent Datum	
Date	
Run No.	
Depth-Driller	
Depth-Logger	
Bottom Log Interval	
Top Log Interval	
Casing-Driller	
Casing-Logger	
Bit Size	
Type Fluid in Hole	
Density	
Viscosity	
Fluid Loss	
Source of Sample	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source of Rmf & Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	
Equip. No. & Location	
Recorded By	
Witnessed By	

RUN NO. ONE

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. TWO

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. THREE

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. FOUR

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. FIVE

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. SIX

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. SEVEN

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. EIGHT

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. NINE

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

RUN NO. TEN

Run No.			
Depth-Driller			
Depth-Logger			
Bottom Log Interval			
Top Log Interval			
Casing-Driller			
Casing-Logger			
Bit Size			
Type Fluid in Hole			
Density			
Viscosity			
Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp.			
Equip. No. & Location			
Recorded By			
Witnessed By			

GENERAL			SPEED	T.C.	GAMMA RAY		SP & R. UNITS		BOREHOLE DENSITOMETER			SPEC D+V
RUN NO.	DEPTH FROM	DEPTH TO	FT./MIN.	TIME CONST.	GEIGER METHANE	ZERO SCALE DIVS.	SP R. UNITS PER LOG DIV.	MUD RES.	T.C. TIME CONST.	GEIGER METHANE	ZERO SCALE DIVS.	SPEC D+V
1	0	172	7,60						1	1000	0	20.26
REMARKS												

ROKE

CANADA WIDE WELL LOGGING SERVICE

276

Company	Canada Wide Oil Ltd.
Well	Roke Et Al Wilson Creek 5-7-15-5 W.4
Field	Wilson Creek
Location	5-7-15-5 W.4
Province	Alberta
Elevation	2230 K.B. 2225 D.F. 2225 G.L.
Date	Dec. 28, 1965
Run No.	One
Depth-Driller	3000
Depth-Logger	3000
Bottom Logged Interval	3000
Top Logged Interval	0
Type Fluid in Hole	Water
Salinity, PPM Cl	1000
Density	9.0
Level	Full
Max. Rec. Temp. Deg. F.	120
Operating Rig Time	6 hrs.
Recorded By	Ed Hall
Witnessed By	Mr. Hall

No.	Bit	From	To
1	7 7/8	Surface	3000

Size	Wgt.	Grade	From	To
8 5/8	24	J-55	Surface	1000
5 1/2	14	J-55	Surface	3000

Size	Wgt.	Grade	From	To
2 3/8	4.7	J-55	Surface	2900

Type Completion: Single Gas
Producing Formation: Viking
Electrical Surface Readout: Yes
Open Hole Log: Yes
Cased Hole Log: Yes
Date: Dec. 28, 1965

Rig No. 1
Rig Type: Rotary
Rig Name: Canada Wide Oil Ltd.

Recorded By: Ed Hall
Witnessed By: Mr. Hall

EQUIPMENT DATA

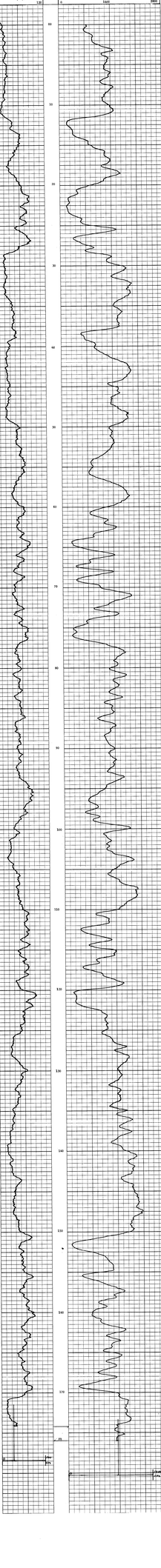
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
RECORD. NO.		TYPE	NEUTRON/NEUTRON
DIAMETER	32 DIA	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 DIA
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	24.28 OA	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	3.04 N	LENGTH	23.74 OA
		SOURCE MODEL NO.	MDC-C-B-M
GENERAL		SERIAL NO.	123
JOINT TRUCK NO.	36	STRENGTH	5.5 CH OH
INSTRUMENT TRUCK NO.		TYPE	Ra-Be
TOOL SERIAL NO.	123 DDA	DISTANCE	2.03 FAR

LOGGING DATA

GENERAL				GAMMA RAY			NEUTRON		
RUN	RECORD		SPEED	T.C.	GAIN	GAIN & SENS.	T.C.	GAIN	SPL & LINTH
	FROM	TO	FT. PER MIN.			BOTTOMS SEV. & LIN.K			BOTTOMS SEV. & SPL K PER LOG DIV.
1	0	3000	1,200	1	100	15	1	200	100

REMARKS: GAMMA RAY CALIBRATED ON API HOT BOX

GAMMA RAY		NEUTRON	
GAMMA RAY INCREASES		NEUTRON INCREASES	
0	120	0	2000
0	120	1400	2000



Book 4 of 4

K-ELK RIVER 77(3)B

ROTARY
DRILL HOLE
LOGGING.

76-1 to 76-4; 77-5 to 77-7

276

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R76-1

Total depth: 291 ft
88.7 m

Location: EGMS co-ordinates - N 5587374.012
E 647184.585

Baseline co-ordinates- N 328+51.7
E 2+50.7

Elevation - ft 5316.1
m 1620.35

Date of starting : Nov. 2, 1976
Date of completion : Nov. 15, 1976

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination
0	0	90.0°	-
262	80	85.0°	S 7° E

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00276

Remarks : Top of drill table 49 inches above ground
Rock: Hammer drilled
Coal: Cored where possible
Overburden: Triconed with mud

Ref. 77-14 Logging Sheets Missing
24-77-23 Graphitized Logs

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R 76-1

Footage		DESCRIPTION
From to	thickness	
0 - 14		Clay and rock
14 - 68		Coarse sand and rock
68 - 83		Shale ?
83 - 189.5		Siltstone
189.5 - 196.5		Shale
196.5 - 201.8		Siltstone
201.8 - 211.2		Shale
211.2 - 246.8	35.6	Coal, cored (Sample no. R76-1-1)
246.8 - 257.8		Hard siltstone
257.8 - 261.8	4.0	Coal, cored (Sample no. R76-1-2)
261.8 - 262.8		Siltstone
262.8 - 264.4	1.6	Coal, cored (Sample no. R76-1-3)
264.4 - 266		Siltstone
266 - 267.8	1.8	Coal, cored (Sample no. R76-1-4)
267.8 - 278.6		Sandstone
278.6 - 279.2	0.6	Coal, not sampled
279.2 - 290.8		Shale
		T.D. @ 291.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R 76-1

Footage		REMARKS
From to	Thickness	
209.0 - 242.5	33.5	No. 4 Seam Partings @ 212.3' - 213.3' 224.0' - 225.4'
256.6 - 258.5	1.9	
265.8 - 266.7	0.9	

DIAMOND DRILL CORE LOGGING SHEET

DDH No. R76-1

Footage		Recovery		Description
from	to	feet	%	
211.2	245.0	30.0 / 33.8	89	Coal - Sample R76-1-1
245.0	246.9			Siltstone - Carbonaceous
286.2	290.7	4.5 / 4.5	100	Coal - Sample R76-1-2

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R 76-2

Total depth: 381 ft
116.1 m

Location:

EGMS co-ordinates - N 5587344.756
E 647190.821

Baseline co-ordinates- N 327+53.6
E 2+47.9

Elevation - ft 5313.6
m 1619.58

Date of starting : Nov. 16, 1976
Date of completion : Dec. 2, 1976

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
148	45	87.5°	S14°W
312	95	86.8°	S74°E

Remarks :

Top of drill table 67 inches above ground
Rock : Hammer drilled
Coal : Cored where possible
Overburden: Triconed with mud

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R76-2

Footage		REMARKS
From to	Thickness	
228.4 - 262.5	34.1	#4 Seam Partings @ 231.6 - 233.3 247.4 - 249.0
270.7 - 274.7	4.0	Parting @ 272.0 - 273.3
284.5 - 285.4	0.9	
308.4 - 310.1	1.7	
314.6 - ?		Bottom of Seam not logged due to sloughing in hole.

DIAMOND DRILL CORE LOGGING SHEET

DDH No. R-76-2

Footage		Recovery		Description
from	to	feet	%	
230.0	249.7	13.5 19.7		Coal: R-76-2-1 Core highly ground
256.0	263.2	7.0 7.2		Coal: R-76-2-2 Core highly ground
311	312			Coal: R-76-2-3 Core broken
318	337.1	17.0 19.1		Coal: R-76-2-4 Core broken

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R 76-2

Footage			DESCRIPTION
From	to	thickness	
0	- 90		Coarse sand and rock
90	- 98		Shale
98	- 220.4		Hard siltstone
220.4	- 224.3		Shale
224.3	- 228.2		Siltstone
228.2	- 263.4	35.2	Coal, cored (Sample no. R76-2-1)
263.4	- 268		Siltstone
268	- 270		Shale
270	- 274	4.0	Coal, cored (Sample no. R76-2-2)
274	- 308		Siltstone
308	- 311.2		Shale
311.2	- 312.4	1.4	Coal, cored (Sample no. R76-2-3)
312.4	- 318.2		Mudstone
318.2	- 337	18.8	Coal, cored (Sample no. R76-2-4)
337	- 350		Siltstone
350	- 351	1.0	Coal
351	- 354		Mudstone
354	- 355	1.0	Coal
355	- 361.3		Carbonaceous shale
361.3	- 381	19.7	Coal, cored (Sample no. R76-2-5)
			T.D. @ 381'.

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R76-3

Total depth: 559 ft / 170.4 m

Location:

EGMS co-ordinates - N 5587268.887
E 647207.636

Baseline co-ordinates- N 324+98.7
E 24 + 42.7

Elevation - ft 5303.1
m 1616.38

Date of starting : Dec. 2, 1976
Date of completion : Dec. 12, 1976

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	
184	56	83.0°	S29°E
367	112	80.1°	S54°E
541	165	73.0°	N89°E

Remarks :
Overburden: Triconed with mud
Rock : Hammer drilled 111 ft-394 ft
triconed 394 ft-551 ft
Coal : Cored where possible

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R76-3

Footage			DESCRIPTION
From	to	thickness	
0 -	111		Overburden - not described
111 -	180		Rock - not described
180 -	265		Shale
265 -	292	27.0	Coal, cored (Sample no. R76-3-1)
292 -	307		Shale
307 -	308	1.0	Coal
308 -	315.5		Shale
315.5 -	316.5	1.0	Coal
316.5 -	346		Shale
346 -	347	1.0	Coal
347 -	352		Shale
352 -	361	9.0	Coal, cored (Sample no. R76-3-2)
361 -	365	4.0	Coaly Shale, cored (Sample no. R76-3-3)
365 -	393		Shale with coal
393 -	394		Shale
394 -	498		Shale with thin sandstone stringers.
498 -	506	8	Coal, cored (Sample No. R76-3-4)
506 -	559		Shale
			T.D. @ 559.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R76-3

Footage		REMARKS
From to	Thickness	
261.8 - 286.8	27.0	Parting @ 263.3 - 265.1
302.5 - 303.5	1.0	
312.5 - 313.7	1.2	
343.5 - 344.5	1.0	
350.4 - 361.6	11.2	
391.1 - 391.8	0.7	
394.7 - 397.0	2.3	
403.2 - 406.0	2.8	
488.9 - 502.3	13.4	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R76-4

Total depth: 439 ft
133.8 m

Location:

EGMS co-ordinates - N 5587362.476
E 647107.339

Baseline co-ordinates- N 328+74.8
W 0+4.5

Elevation - ft 5292.0
m 1613.00

Date of starting : Dec. 3, 1976
Date of completion : Dec.11, 1976

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatic
0	0	90.0°	-
131	40	86.1°	S34°E
262	80	84.8°	S59°E
407	124	80.5°	S79°E

Remarks : Drill table 64 3/4" above ground
Overburden: Triconed with mud
Rock : Triconed & hammered
Coal : Cored

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R76-4

Footage			DESCRIPTION
From	to	thickness	
0 -	101		Overburden: Rock and gravel
101 -	131		Siltstone
131 -	229		Fractured siltstone, Calcite Chips
229 -	237		Rock - not described
237 -	248.2	11.2	Coal, cored (Sample No. R76-4-1)
248 -	322		Possibly highly fractured rock, calcite chips
322 -	342		Rock - not described
342 -	350		Mudstone
350 -	390		Siltstone
390 -	399		Shale
399 -	427.5	28.5	Coal, cored (Sample no. R76-4-2)
427.5 -	437.2		Siltstone
437.2 -	439	1.8	Coal, cored. Gas in hole (Sample no. R76-4-3)
			T.D. @ 439.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R76-4

Footage		REMARKS
From to	Thickness	
238.5 - 240.5	2.0	
244.4 - 245.4	1.0	
400.9 - 402.6	1.5	
404.4 -		No. 4 Seam Bottom of seam not logged due to sloughing in hole. (Note: Assume bottom of no.4 seam to be at 429.4)

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-5

Total depth: 644 ft
196.3 m

Location: EGMS co-ordinates - N55 87343.008
E 6 47034.218

Baseline co-ordinates- N 328+69.4
W 2+52.7

Elevation - ft 5275.2
m 1607.88

Date of starting : March 25, 1977
Date of completion : March 31, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
197	60	88.4°	N 69°E
394	120	87.0°	S 59°E
787	180	84.5°	S 31°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-5

Footage			DESCRIPTION
From	to	thickness	
0 -	52		Gravel
52 -	98		Till and gravel
98 -	133		Sandstone
133 -	136		Shale
136			Coal stringer
136 -	139		Shale
139 -	144	5	Coal and shale (Sample R77-5-1)
144 -	214		Shale
214 -	229	15	Coal (Sample R77-5-2)
229 -	232		Shale
232 -	240	8	Coal (Sample R77-5-3)
240 -	242		Shale
242 -	248	6	Coal (Sample R77-5-4)
248 -	255		Shale
255			Coal stringer

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-5

Footage		REMARKS
From to	Thickness	
255 - 257		Shale
257		Coal stringer
257 - 259		Shale
259		Coal stringer
259 - 282		Shale
282 - 283	1	Coal
283 - 303		Shale
303		Coal stringer
303 - 305		Shale
305 - 309	4	Coal (Sample R-77-5-5)
309 - 321		Sandstone
321 - 336		Shale
336 - 442		Sandstone
442 - 457		Shale
457		Coal stringer
458 - 460	2	Coal and shale (Sample R-77-5-6)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-5

Footage		REMARKS
From to	Thickness	
460 - 531		Shale
531		Clay
531 - 592		Shale
592		Clay
592 - 595		Shale
595		Coal stringer
595 - 598		Shale
598		Coal stringer
598 - 601		Shale
601 - 631	30	Coal (Sample R-77-5-8)
631 - 644		Shale
	EOH	

COAL INTERSECTIONS - DERIVED FROM GEO PHYSICAL LOGS

HOLE NO. R77-5

Footage		REMARKS
From to	Thickness	
135.2 - 137.1	1.9	
139.1 - 140.1	1.0	
141.4 - 142.7	1.3	
144.0 - 145.2	1.2	
146.8 - 147.6	0.8	
213.3 - 229.3	16.0	Partings @ 225.4 - 226.7 227.4 - 228.4
232.6 - 242.8	9.2	
245.1 - 247.0	1.9	
248.4 - 249.4	1.0	
284.8 - 287.1	2.3	
305.1 - 308.4	3.3	
455.4 - 458.4	3.0	
460.2 - 462.3	2.1	
467.2 - 468.5	1.3	
483.1 - 484.6	1.5	
597.8 - 599.8	2.0	
602.4 - (625')		Bottom of seam not logged due to sloughing in the hole. Driller's log indicates bottom of seam @ 631'.

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-6

Total depth: 658 ft
200.6 m

Location: EGMS co-ordinates - N5587306.976
E 647044.860

Baseline co-ordinates- N 327+46.3
W 2+46.7

Elevation - ft 5272.9
m 1607.18

Date of starting : March 20, 1977
Date of completion : March 24, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
197	60	87.0°	S 80°E
394	120	86.8°	S 64°E
591	180	84.8°	S 35°E

Remarks : S.D.S. Rig. No. 3

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-6

Footage		DESCRIPTION
From to	thickness	
0 - 68		Till and gravel
68 - 88		Clay
88 - 97		Gravel
97 - 99		Sandstone
99 - 145		Siltstone
145 - 147	2	Coal & Shale (Sample R77-6-1)
147 - 149		Shale
149 - 161	12	Carbonaceous Shale (Sample R77-6-2 Sample taken from 151'-161') (2 bags)
161 - 222		Shale
222 - 242	20	Coal (Sample R-77-6-3) (5 bags)
242 - 246		Shale
246 - 255	9	Coal (Sample R77-6-4) (3 bags)
255 - 260		Carbonaceous shale
260 - 291		Shale (Coal stringer @ 288')
291 - 292		Coal
292 - 312		Shale
312 - 320		Mudstone
320 - 398		Shale and sandstone
398 - 468		Sandstone
468 - 470		Shale
470 - 472	2	Coal and shale (Sample R77-6-5)
472 - 612		Brown and grey shale
612 - 642	30	Coal (Sample R77-6-6)
642 - 658		Shale
		T.D. @ 658'.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-6 G.P. Log Coal Intersections

Footage		REMARKS
From to	Thickness	
144.4 - 146.0	1.6	
147.6 - 149.0	1.4	
150.3 - 152.2	1.9	
153.2 - 154.9	1.7	
155.8 - 156.5	0.7	
157.2 - 158.5	1.3	
220.5 - 239.2	18.7	
243.6 - 251.8	8.2	Parting @ 246.9' - 248.4'
254.6 - 256.9	2.3	
258.4 - 259.8	1.4	
274.9 - 276.6	1.7	
289.4 - 296.7	1.3	
314.2 - 317.4	3.2	
465.1 - 468.4	3.3	
470.8 - 474.4	3.6	
480.0 - 481.3	1.3	
494.4 - 495.8	1.4	
606.3 - 609.3	3.0	
611.6 - 638.8	27.2	
642.2 - (?)		Bottom of seam not logged due to sloughing in the hole.

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-7

Total depth: 730 ft
222.5 m

Location: EGMS co-ordinates - N 5587235.246
E 647058.443

Baseline co-ordinates- N 325+07.1
W 2+59.0

Elevation - ft 5268.3
m 1605.78

Date of starting : March 19, 1977

Date of completion : April 1, 1977

Logged by driller :

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
213	65	90.0°	-
426	130	88.0°	S 10°E
640	195	84.0°	S 9°E
689	210	83.6°	S 24°E

Remarks : Rig 3: 0-92 ft
Rig 6: 92-667 ft
Rig 3: 667-730 ft

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-7
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Footage		DESCRIPTION
From to	thickness	
0 - 68		Till and boulders
68 - 82		Gravel and boulders
82 - 92		Sandstone
92 - 93		Shale
93		Coal stringer
93 - 102		Shale
102		Coal stringer
102 - 107		Shale
107		Coal stringer
107 - 121		Shale
121		Coal stringer
121 - 123		Shale
123 - 129	6	Coal: with shale Sample R77-7-1
129 - 138		Sandstone
138		Coal stringer
138 - 144		Sandstone

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-7

Footage				DESCRIPTION
From		to	thickness	
144	-	199		Sandstone
199				Coal Stringer
199	-	201		Sandstone
201				Coal stringer
201	-	205		Sandstone
205	-	211	6	Coal and shale (Sample R-77 - 7-2)
211	-	219		Sandstone
219	-	250		Shale
250	-	289		Sandstone
284	-	320	31	Coal (Sample R77-7-3
320	-	378		Shale
378				Coal stringer
378	-	464		Shale
464	-	520		Sandstone
520	-	547		Shale
547	-	553	6	Coal and shale (Sample R77-7-4)
553	-	562		Shale
562	-	564		Coal and shale (Sample R77-7-5)
564	-	667		Shale and sandstone stringer
667	-	683		Shale
683	-	709	26	Coal (Sample R77-7-6)
709	-	730		Shale

EOH

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-7

Footage		REMARKS
From to	Thickness	
119.1 - 120.4	1.3	
123.0 - 145.3	22.3	Partings @ 125.3' - 126.3' 129.3' - 130.3' 134.5' - 135.5' 140.4' - 141.7'
196.0 - 197.5	1.5	
199.3 - 200.8	1.5	
201.8 - 204.2	2.4	
205.7 - 207.5	1.8	
208.7 - 211.6	2.9	
290.4 - 306.1	15.7	Partings @ 293.3' - 294.5'
309.7 - 318.9	9.2	Parting @ 314.3' - 315.6'
321.9 - 323.8	1.9	
374.7 - 379.8	5.1	Parting @ 377.3' - 378.3'
544.0 - 553.7	9.7	Partings @ 547.3' - 548.9' 551.9' - 552.8'
559.4 - 562.7	3.3	Parting @ 560.4' - 561.7'
569.9 - 570.9	1.0	
676.2 - 677.5	1.3	
679.8 - 706.4	26.6	Partings @ 685.1' - 686.1' 693.9' - 694.9'

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-8

Total depth: 523 ft / 159.4 m

Location:

EGMS co-ordinates - N 5587329.943
E 646959.350

Baseline co-ordinates- N 328+85.8
W 5+01.5

Elevation - ft 5262.5
m 1604.01

Date of starting : March 14, 1977

Date of completion : March 26, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination
0	0	90.0°	-
164	50	88.1°	S 87°W
328	100	88.5°	S 38°W
492	150	85.9°	S 49°W

Remarks :

0-105 ft - Rig # 3 set surface casing
105-523 ft - Rig # 6 drilled rock

Hole: Skidded due to caving hole, driller misjudged bedrock surface.

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-8 1st and 2nd attempt

Footage			DESCRIPTION
From	to	thickness	
0 -	4		Loam
4 -	20		Till and silt
20 -	52		Till and gravel
52 -	67		Gravel (1st attempt T.D. @ 67'; skidded rig for 2nd attempt)
0 -	31		Till and gravel
31 -	77		Gravel and boulders
77 -	101		Gravel
101 -	113		Sandstone and shale
113 -	197		Shale, coal stringer @ 195.'
197 -	229	) 36	Coal (Sample R77-8-1) Shaly: 217-221
229 -	233		Coal (Sample R77-8-2) Shaly: 231-233
233 -	246		Shale, coal stringers @ 237 & 240'
246 -	276		Sandstone, coal stringers @ 276'
276 -	295		Shale, coal stringers @ 278 & 292'
295 -	317	22	Coal (Sample R77-8-3)
317 -	377		Shale, coal stringers @ 367 & 374'
374 -	385	18	Coal (Sample R77-8-4)
385 -	438		Sandstone
438 -	449		Shale
449 -	459	10	Coal (Sample R77-8-5)
459 -	465		Shale
465 -	477	12	Coal, shaly 475-477 (Sample R77-8-6)
477 -	479		Shale
479 -	481		Coal and shale (Sample R77-8-7)
481 -	523		Shale
			T.D. @ 523'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-8

Footage		REMARKS
From to	Thickness	
196.7 - 234.6	37.9	
290.7 - 317.3	26.6	Partings @ 291.4' - 292.8' 297.2' - 299.2' 305.1' - 306.1' 313.7' - 315.5'
371.2 - 383.2	12.0	Parting @ 373.4' - 374.7'
447.8 - 461.0		
466.6 - 476.4		
480.0 - 481.5		

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-9

Total depth: 557 ft
169.8 m

Location: EGMS co-ordinates - N 5587308.719
E 646886.122

Baseline co-ordinates- N 328+74.9
W 7+51.4

Elevation - ft 5250.6
m 1600.38

Date of starting : March 1, 1977
Date of completion : March 5, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination
0	0	90.0°	-
164	50	87.8°	S 09°E
328	100	86.1°	S 25°E
525	160	83.5°	S 39°E

Remarks : 0-90 ft: Rig # 3 set surface casing
(G.P. log indicates 84' of casing)
90-557 ft: Rig # 6; rock drilling

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-9

Footage			DESCRIPTION
From	to	thickness	
0	- 15		Till and gravel
20	- 35		Gravel and clay
35	- 87		Gravel and boulders
87	- 105		Shale
105	- 125		Black shale
125	- 135	10	Coal and shale (Sampled R77-9-1)
135	- 138		Shale
138			Coal and shale stringer
138	- 142		Shale
142			Coal stringer
142	- 181		Hard black shale
181	- 206		Shale and sandstone
206	- 217		Shale
217	- 218	1	Coal
218	- 219		Shale
219	- 223	4	Coal (Sampled R77-9-2)
223	- 233		Shale
233			Coal stringer
233	- 249		Shale
249	- 251	2	Coal (Sampled R77-9-4)
251	- 314		Shale and sandstone
314	- 407		Hard black shale
407	- 414		Shale
414	- 446	32	Coal: Sampled (R77-9-3) bags 1-5
446	- 469		Shale
469	- 473		Shale
473			Coal stringer
473	- 475		Shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-9

Footage			DESCRIPTION
From	to	thickness	
475			Coal stringer
475	- 525		Shale
525	- 541	16	Coal sampled R77-9-5, bags 1-3)
541	- 557		Shale
			EOH

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-9

Footage		REMARKS
From to	Thickness	
120.6 - 128.9	8.3	This seam may be shaly Parting @ 122.0 - 123.0
133.9 - 135.8	1.9	
137.8 - 139.1	1.3	
201.1 - 202.8	1.7	
210.8 - 212.3	1.5	
214.1 - 229.5	15.4	Parting @ 215.6' - 216.9'
245.1 - 247.0	1.9	
269.7 - 271.0	1.3	
409.5 - 441.3	31.8	
519.0 - 534.8	15.8	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-10

Total depth: 550 ft
167.6 m

Location:

EGMS co-ordinates - N 5587270.746
E 646895.982

Baseline co-ordinates- N 327+46.2
W 7+49.4

Elevation - ft 5248.7
m 1599.80

Date of starting : March 7, 1977
Date of completion : March 25, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination
0	0	90.0°	-
180	55	87.4°	S48°E
361	110	83.5°	S54°E
525	160	76.5°	S54°E

Remarks : 0 - 96': surface casing set by Rig # 3
96-550' : rock drilling by Rig # 6
Hole skidded, lost bit and sub in first hole

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-10

Footage			DESCRIPTION
From	to	thickness	
0 -	13		Gravel and boulders
13 -	101		Gravel and till, coal stringer @ 88', shanked bit in hole @ 101', skidded hole
0 -	63		Gravel and till
63 -	65		Boulders
65 -	67		Boulders, till and gravel
67 -	84		Gravel and boulders
84 -	96		Shale, set casing to 87'
87 -	125		Shale, coal stringer @ 124'
125 -	131	6	Coal (Sample no. R77-10-1)
131 -	164		Shale, coal stringers @ 133', 135', 143'
164 -	208		Sandstone, coal stringer @ 208'
208 -	224		Shale, coal stringers @ 212', 214', 217'
224 -	238	14	Coal (Sample No. R77-10-2)
238 -	249		Shale, coal stringers @ 240' & 249'
249 -	295		Sandstone, coal stringers @ 253' & 282'
295 -	378		Shale, coal stringer @ 316'
378 -	387		Sandstone
387 -	413		Shale
413 -	439	26	Coal (Sample R77-10-3)
439 -	448		Shale
448 -	466		Sandstone, coal stringer @ 466
466 -	477		Shale, coal stringer @ 471 & 477
477 -	512		Sandstone

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-10

Footage			DESCRIPTION
From	to	thickness	
512	- 477	16	Coal (Sample R77-10-4)
528	- 550		Sandstone
			T.D. @ 550'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-10

Footage		REMARKS
From to	Thickness	
124.0 - 137.0	13.0	Partings @ 125.7 - 127.0' 132.9 - 133.9'
142.4 - 143.7	1.3	
206.7 - 208.3	1.6	
212.3 - 213.3	1.0	
216.2 - 217.5	1.3	
218.8 - 221.5	2.7	
222.8 - 236.9	13.1	Partings @ 224.4' - 225.6' 228.8' - 230.0'
251.3 - 254.8'	3.5	
411.1 - 438.7	27.6	
476.4 - 477.7	1.3	
512.2 - 529.2	17.0	Parting @: 526.6' - 527.6'

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-11

Total depth: 602 ft
183.1 m

Location: EGMS co-ordinates - N 5587196.558
E 646912.358

Baseline co-ordinates- N 324+97.0
W 7+54.7

Elevation - ft 5242.2
m 1597.82

Date of starting : March 21, 1977 (overburden March 11-13)
Date of completion : March 23, 1977

Logged by driller :

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio

NO TESTS

Remarks : Gamma ray neutron log run only due to caving ground

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-11

Footage		DESCRIPTION
From to	thickness	
0 - 31		Till and gravel
31 - 66		Gravel and boulders
66 - 71		Gravel
71 - 72		Shale
72		Coal stringer
72 - 124		Shale
124 - 134	10	Coal (Sample R77-11-1)
134 - 149		Shale
149		Coal stringer
149 - 152		Shale
152 - 174		Sandstone
174		Coal stringer
174 - 176		Shale
176 - 182	6	Coal and shale (Sample R77-11-2)
182 - 185		Shale
185 - 187	2	Coal and shale (Sample R77-11-3)
187 - 192		Sandstone
192		Coal stringer
192 - 251		Shale
251		Coal stringer
251 - 254		Shale
254		Coal stringer
254 - 258		Shale
258		Coal stringer
258 - 259		Shale
259 - 279	10	Coal & shale (Sample R77-11-4) Bags 1-
279 - 285		Shale
285		Coal stringer
285 - 299		Shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-11

Footage			DESCRIPTION
From	to	thickness	
299			Coal stringer
299 -	392		Shale
392			Coal stringer
392 -	428		Shale
428			Coal stringer
428 -	455		Shale
455 -	491	36	Coal (Sample $77-11-5, bags 1-6)
491 -	495		Shale
495			Coal stringer
495 -	498		Shale
498			Coal stringer
498 -	504		Shale
504 -	519		Sandstone
519			Coal stringer
519 -	532		Shale
532 -	567		Shale
567 -	587	20	Coal (Sample R77-11-6, bags 1-3)
587 -	602		Sandstone
602			EOH

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-11

Footage		REMARKS
From to	Thickness	
125.0 - 134.2	9.2	
140.8 - 142.1	1.3	
150.3 - 151.9	1.6	
175.5 - 183.1	7.6	
186.0 - 188.0	2.0	
252.6 - 254.3	1.7	
257.9 - 278.6	20.7	
284.5 - 285.7	1.2	
289.7 - 291.4	1.7	
293.0 - 295.6	2.6	Partings @ 294.0' - 294.5'
342.0 - 343.7	1.7	
361.6 - 363.0	1.4	
455.4 - 490.5	35.1	
569.6 - 584.3	14.7	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-12

Total depth: 451.0 ft
137.5 m

Location:

EGMS co-ordinates - N 5587291.346
E 646811.832

Baseline co-ordinates- N 328+77.1
W 10+01.7

Elevation - ft 5241.0
m 1597.46

Date of starting : February 25, 1977
Date of completion : March 1, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
131	40	86.0°	S76°E
262	80	82.0°	N88°E
393	120	80.0°	S86°E

Remarks : Note: Hole skidded due to caving overburden

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-12

Footage		DESCRIPTION
From to	thickness	
0 - 43.0		Overburden
43.0 - 56.0		Shale
56.0 - 61.0		Sandstone
61.0 - 86.0		Shale
86.0 - 88.0	2	Coal (Sample R77-12-1)
88.0 - 105.0		Shale
105.0 - 112.0	7	Coal (Sample R77-12-2)
112.0 - 125.0		Shale
125.0 - 127.0	2	Coal & shale (Sample R77-12-3)
127.0 - 176.0		Shale and sandstone
176.0 - 177.0		Coal and shale
177.0 - 182.0		Shale
182.0 - 190.0	8	Coal (Sample R77-12-4)
190.0 - 193.0		Shale
193.0 - 199.0	6	Coal (Sample R77-12-5)
199.0 - 205.0		Shale
205.0 - 209.0	4	Coal (Sample R-77-12-6)
209.0 - 222.0		Shale and sandstone
222.0 - 226.0	4	Coal (Sample R77-12-7)
226.0 - 289.0		Shale
289.0 - 299.0	10	Coal (Sample R77-12-8)
299.0 - 300.0		Shale
300.0 - 302.0		Coal (Sample R77-12-9)
302.0 - 314.0		Shale
314.0 - 322.0	8	Coal (Sample R77-12-10)
322.0 - 388.0		Shale, coal stringer @ 382.0
388.0 - 408.0	20	Coal (Sample R77-12-13)
		(Samples 11 + 12 do not exist)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-12

Footage			DESCRIPTION
From	to	thickness	
408.0 -	410.0		Shale
410.0 -	412.0	2	Coal and shale (Sample R77-12-14)
412.0 -	415.0		Shale
415.0 -	422.0	7	Coal and shale (Sample R77-12-15)
422.0 -	434.0		Shale, coal stringer @ 434.0)
434.0 -	451.0		Shale and sandstone

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-12

Footage		REMARKS
From to	Thickness	
82.7 - 85.3	2.6	
100.7 - 105.3	4.6	
121.7 - 122.7	1.0	
107.9 - 111.2	3.3	
178.8 - 187.3	8.5	
191.3 - 196.9	5.6	
201.5 205.7	4.2	
213.9 - 222.8	8.9	
284.5 - 294.6	10.1	
297.6 - 299.2	2.6	
309.1 - 316.3	7.2	
378.3 - 379.6	1.3	
383.2 - 401.6	18.4	
413.4 - 433.1	20.0	------Shaly

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-13

Total depth: 560 ft
170.7 m

Location:

EGMS co-ordinates - N 5587270.741
E 646738.829

Baseline co-ordinates- N 328+68.0
W 12+50.4

Elevation - ft 5237.6
m 1596.4

Date of starting : February 18, 1977
Date of completion : February 21, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatic
0	0	90.0°	-
180	55	87.5°	N 21°E
361	110	87.5°	N 16°E
541	165	85.5°	N 16°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-13

Footage		DESCRIPTION
From to	thickness	
0 - 18		Clay and gravel
18 - 20		Broken shale
20 - 40		Blue shale
40 - 47		Shale, coal stringer @ 40'
47 - 65		Sandstone
65 - 66		Coal stringer
66 - 83		Sandstone
83 - 93	10	Coal (Sample R77-13-1)
93 - 96		Shale
96 - 104	8	Coal (Sample R77-13-2)
104 - 117		Sandstone
117 - 140		Shale
140 - 145		Shale with traces of coal (very hard)
145 - 158		?
158 - 169		Black shale
169 - 170		Coal and shale
170 - 188		Sandstone
188 - 200	12	Coal (Sample R77-13-3)
200 - 218		Sandstone
218 - 224	6	Coal (Sample R77-13-4)
224 - 237		Coal stringer

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-13

Footage			DESCRIPTION
From	to	thickness	
237	258		Sandstone
258	286		Shale, coal stringers at 260' to 279'
286	288	2	Coal (Sample R77-13-5)
288	305		Shale
305	321	16	Coal (Sample R77-13-6)
321	324		Shale
324	326	2	Coal (Sample R77-13-7)
326	350		Shale, 349' coal stringer
350	371		Sandstone
371	396		Shale
396	398	2	Coal (Sample R77-13-8)
398	404		Shale
404	416	12	Coal (Sample R77-13-9)
416	427		Shale
427	433	6	Coal (Sample R77-13-10)
433	444		Shale
444	446	2	Coal (Sample R77-13-11)
446	455		Shale
455	458	3	Coal (Sample R77-13-12)
458	460		Shale
460	462	2	Coal (Sample R77-13-13)
462	503		Shale
503	506		Sandstone
506	512	6	Coal (Sample R77-13-14)
512	522		Black shale
522	524	2	Coal and shale (Sample R77-13-15)
524	536		Black shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-13

Footage			DESCRIPTION
From	to	thickness	
536	548	12	Coal (Sample R77-13-16)
458	550		Black shale
550	551	1	Coal and shale
551	560		Sandstone
			T.D. @ 560'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-13

Footage		REMARKS
From to	Thickness	
82.7 - 90.2	7.5	
94.8 - 101.4	6.6	
168.6 - 170.3	1.7	
188.3 - 199.8	11.6	
219.8 - 224.7	4.9	
283.5 - 286.4	2.9	
302.8 - 318.6	15.8	Shaly from 302.8 - 314.6
321.8 - 322.8	1.0	
394.7 - 396.0	1.3	
405.9 - 419.3	13.4	
426.2 - 428.2	2.0	
434.7 - 437.4	2.7	
439.7 - 440.6	0.9	
441.6 - 445.2	3.6	
458.7 - 461.3	2.6	
506.4 - 510.2	3.8	
311.2 - 513.8	2.6	
524.0 - 525.9	1.9	
537.4 - 540.4	3.0	
541.4 - 542.7	1.3	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-15

Total depth: 579 ft
176.5 m

Location:

EGMS co-ordinates - N 5587159.480
E 646766.572

Baseline co-ordinates- N 324+91.8
W 12+48.2

Elevation - ft 5230.4
m 1594.23

Date of starting : Feb. 22, 1977
Date of completion : March 3, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
164	50	87.5°	S46°W
328	100	86.5°	S33°W
492	150	84.8°	S36°W

Remarks : S.D.S. Rig # 6

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-15

Footage		DESCRIPTION
From to	thickness	
0 - 20		Sandy clay
20 - 36		Gravel
36 - 44		Shale : black
44		Coal stringer
44 - 58		Shale
58 - 100		Sandstone
100 - 115		Shale
115 - 138		Sandstone
138 - 148	10	Coal (Sample R77-15-1)
148 - 153		Black shale
153 - 157	4	Coal and shale (Sample R77-15-2)
157 - 205		Shale: hard and black
205 - 231		Shale
231 - 235	4	Coal (Sample R77-15-3)
235 - 244		Shale
244 - 269		Sandstone
269 - 281	12	Coal (Sample R77-15-4, bags 1-3)
281 - 285		Shale
285 - 293	8	Coal (Sample R77-15-5, bags 1-2)
293 - 295		Sandstone
295 - 321		Sandstone
321		Coal stringer
321 - 326		Shale: black
327 -		Coal stringer
327 - 343		Shale: black
344		Coal stringer
344 - 349		Shale: black
350		Coal stringer
350 - 359		Shale: black'

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-15

Footage			DESCRIPTION
From	to	thickness	
359	366	7	Coal and shale (Sample R77-16-6)
366	403		Shale: black
404	406	2	Coal
406	408		Shale
409			Coal stringer
409	454		Shale: black
454	470		Shale
470			Coal stringer
470	474		Shale
474	494	20	Coal (Sample R77-15-7, bags 1-7)
494	507		Shale
507	513	6	Coal (512-516 (Sample R77-15-8)
513	516		Shale
516	518	2	Coal (Sample R77-15-9)
518	524		Shale
524	525	1	Coal
525	527		Shale
527	545	28	Coal (Sample 527 - 543 - R77-15-10, bags 1-4)
545	554		Shale
554			Coal stringer
554	579		Shale
			EOH = 579'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-15

Footage			REMARKS
From	to	Thickness	
54.1	- 55.1	1.0	
134.8	- 144.3	9.5	
148.3	- 154.5	6.2	
231.0	- 234.6	3.6	
270.4	- 281.5	11.1	
286.4	- 293.6	7.2	
345.2	- 346.8	1.6	
360.9	- 367.1	6.2	
473.8	- 492.8	19.0	
504.6	- 507.6	3.0	
514.0	- 516.4	2.4	
523.0	- 525.0	2.0	
528.9	- 547.1	18.2	
553.2	- 555.5	2.3	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-16

Total depth: 540 ft
164.6 m

Location:

EGMS co-ordinates - N 5587253.007
E 646665.505

Baseline co-ordinates- N 328+68.3
W 14+97.9

Elevation - ft 5250.5
m 1600.35

Date of starting : Feb. 19, 1977
Date of completion : Feb. 25, 1977

Logged by driller :

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
No tests			

Remarks : Gamma ray neutron log run only

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-16

Footage		DESCRIPTION
From to	thickness	
0 - 35		Till
35 - 45		Gravel
45 = 54		Shale
54 - 67		Sandstone
67 - 70		Shale
70 - 77		Sandstone
77 - 79	2	Shale and coal (Sample R77-16-1)
79 - 82		Sandstone
82 - 89		Shale with coal stringers
89 - 103		Sandstone and shale, coal stringer @ 103'.
103 - 110		Shale
110 - 112	2	Coal (Sample R77-16-2)
112 - 124		Sandstone
124 - 126	2	Coal and shale (Sample R77-16-3)
126 - 130		Shale
130 - 139		Sandstone
139 - 177		Shale
177 - 179	2	Coal (Sample R77-16-4)
179 - 180		Shale
180 - 189	9	Coal (Sample R77-16-5)
189 - 199		Shale
199 - 209	10	Coal (Sample R77-16-6)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-16

Footage			DESCRIPTION
From	to	Thickness	
209 -	212		Shale
212 -	214	2	Coal (Sample R77-16-7)
214 -	219		Shale
219 -	234		Sandstone
234 -	270		Shale
270 -	313		Sandstone and shale
313 -	321	8	Coal (Sample R77-16-8)
321 -	327		Shale
327 -	335	8	Coal (Sample R77-16-9)
335 -	389		Sandstone
389 -	408		Shale with coal stringer @ 408'.
408 -	422		Sandstone
422 -	425		Shale
425 -	433	8	Coal (Sample R77-16-10)
433 -	436		Shale
436 -	442	6	Coal (Sample R77-16-11)
442 -	500		Shale with sandstone stringers
500 -	503	3	Coal with shale (Sample R77-16-12)
503 -	519		Shale
519 -	521	2	Coal (Sample R77-16-13)
521 -	525		Shale with a coal stringer @ 525'.
525 -	540		Shale and sandstone
			T.D. @ 540'.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-16 G.P. Log coal intersections

Footage		REMARKS
From to	Thickness	
75.8 - 78.7	1.9	
108.3 - 111.5	3.2	
123.0 - 127.3	4.3	
155.2 - 157.2	2.0	
175.3 - 177.2	1.7	
181.4 - 187.7	6.3	
199.2 - 208.3	9.1	
211.6 - 213.3	1.7	
312.7 - 319.2	6.5	
325.5 - 332.4	6.9	
406.2 - 407.8	1.6	
423.3 - 431.8	8.5	
434.7 - 441.3	6.6	
498.1 - 501.7	3.6	
516.8 - 520.0	3.2	
522.7 - 524.6	1.9	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-17

Total depth: 540.0 ft
164.6 m

Location: EGMS co-ordinates - N 5587237.195
E 646590.930

Baseline co-ordinates- N 328+75.7
W 17+47.9

Elevation - ft 5236.3
m 1596.02

Date of starting : Febr. 13, 1977
Date of completion : Febr. 15, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
164	50	88.0°	S 09°E
328	100	86.2°	S 04°E
509	155	85.0°	S 19°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-17

Footage		DESCRIPTION
From to	thickness	
0 - 18.0		Overburden
18.0 - 43.0		Shale
43.0 - 52.0	9	Coal (Sample R77-17-1)
52.0 - 140.0		Shale, coal stringer @ 138.0'
140.5- 142.5	2	Coal (Sample R77-17-2)
142.5- 180.0		Shale, coal stringer @ 150.0'
180.0- 213.0		Shale and sandstone
312.0- 221.0	8	Coal (Sample R77-17-3)
221.0- 223.0		Shale
223.0- 233.0	10	Coal (Sample R77-17-4)
233.0- 252.0		Shale
252.0- 255.0	3	Coal (Sample R77-17-5)
255.0- 311.0		Shale and sandstone
311.0- 313.0	2	Coal (Sample R77-17-6)
313.0- 379.0		Shale, coal stringer @ 321.6, 352.0'
379.0- 387.5	8.5	Coal (Sample R77-17-7)
387.5- 395.0		Shale
395.0- 401.0	6	Coal (Sample R77-17-8)
401.0- 402.0		Shale
402.0- 405.0	3	Coal (Sample R77-17-9)
405.0- 443.0		Shale - 1' coal A 7 409.0'

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-17

Footage				DESCRIPTION
From		to	thickness	
443.0	-	445.0	2	Coal and shale (Sample R77-17-10
445.0	-	510.0		Shale
510.0	-	517.0	7	Coal (Sample R77-17-11)
517.0	-	520.0		Shale
520.0	-	529.0	9	Coal (Sample R77-17-12 Shaly 526.0 - 529.0')
529.0	-	540.0		Shale
				EOH at 540'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-17

Footage		REMARKS
From to	Thickness	
43.0 - 52.2	9.2	
103.4 - 105.0	1.6	
139.7 - 141.7	2.0	
149.3 - 150.6	1.3	
210.6 - 234.6	24.0	
307.8 - 309.7	1.9	
317.9 - 319.2	1.3	
350.0 - 352.7	2.7	
376.7 - 382.2	5.5	
392.7 - 402.6	9.9	
407.2 - 408.5	1.3	
440.3 - 442.0	1.7	
505.6 - 514.1	8.5	
517.1 - 525.9	8.8	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-18

Total depth: 540.0 ft / 164.6 m

Location:

EGMS co-ordinates - N 5587199.332
E 646598.662

Baseline co-ordinates- N 327+49.0
W 17+52.6

Elevation - ft 5233.3
m 1595.11

Date of starting : Feb. 10, 1977
Date of completion : Feb. 12, 1977

Logged by driller :

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
164	50	88.8°	S 46°E
328	100	88.0°	S 54°E
509	155	86.5°	S 09°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-18

Footage			DESCRIPTION
From	to	thickness	
0 -	14.0		Overburden
14.0 -	60.0		Shale
60.0 -	60.5	0.5	Coal
60.5 -	70.0		Shale - sandy
70.0 -	78.0	8.0	Coal (Sample R77-18-1)
78.0 -	130.0		Shale, coal stringer at 101.0, 130.0'
130.0-	233.0		Sandstone and shale
233.0-	234.0		Shale
234.0-	255.0	21.0	Coal (Sample R77-18-2)
255.0-	298.0		Shale
298.0-	300.0	2.0	Coal (Sample R77-18-3
300.0-	304.0		Shale
304.0-	305.0	1.0	Coal
305.0-	365.0		Sandstone and shale Coal stringers @ 331.0, 338.0'
365.0-	367.0	2.0	Coal (Sample R77-18-4)
367.0-	387.0		Shale
387.0-	391.0	4.0	Coal (Sample R77-18-5)
391.0-	404.0		Shale, coal @ 394.0
404.0-	408.0	4.0	Coal (Sample R77-18-6)
408.0 -	410.0		Shale
410.0 -	412.0	2.0	Coal (Sample R77-18-7)
412.0 -	512.0		Shale, coal stringers @ 473.0-478.0'
512.0 -	519.6	7.6	Coal (Sample R77-18-8)
519.6 -	523.0		Shale
523.0 -	529.0	6.0	Coal (Sample R77-18-9)
529.0 -	540.0		Shale
			EOH = 540'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-18

Footage		REMARKS
From to	Thickness	
69.2 - 76.4	7.2	
128.3 - 129.6	1.3	
164.0 - 165.5	1.5	
174.2 - 175.7	1.5	
231.3 - 253.9	22.6	
363.5 - 366.2	2.7	
385.5 - 390.4	4.9	
401.6 - 406.2	4.6	
407.8 - 409.8	2.0	
417.3 - 419.6	2.3	
510.2 - 516.8	6.6	
520.7 - 522.7	2.0	
524.0 - 528.2	4.2	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-19

Total depth: 585 ft
178.3 m

Location: EGMS co-ordinates - N 5587123.962
E 646621.787

Baseline co-ordinates- N 324+90.8
W 17+37.3

Elevation - ft 5247.4
m 1599.41

Date of starting : Feb. 15, 1977
Date of completion : Feb. 18, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatic
0	0	90.0°	-
197	60	88.5°	S 53°E
394	120	84.0°	S 59°E
558	170	81.2°	S 49°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-19

Footage		DESCRIPTION
From to	thickness	
0 - 29		Overburden
29 - 39	10	Coal (Sample R77-19-1)
39 - 42		Shale
42 - 106		Shale
106 - 112	6	Coal and shale (Sample R77-19-2)
112 - 159		Shale
159 - 229		Shale, coal stringers at 212, 217'
229 - 231		Coal
231 - 276		Shale
276 - 277	1	Coal
279 - 300	21	Coal) (Sample R77-19-3)
300 - 309		Shale
309 - 425		Shale
425 - 431	6	Coal (Sample R77-19-4)
439 - 448	9	Coal (Sample R77-19-5)
462 - 464	2	Coal (Sample R77-19-6)
490		Coal stringer
524 - 542		Shale
542 - 548	6	Coal and shale
548 - 550		Shale (Sample R77-19-7)
550 - 585		Shale with coal stringers
		T.D. @ 585'

COAL INTERSECTIONS - DERIVED FROM GEO PHYSICAL LOGS
HOLE NO. R77-19

Footage		REMARKS
From to	Thickness	
34.4 - 42.3	7.9	
107.0 -112.9	5.9	
173.9 -174.9	1.0	
216.2 -218.2	2.0	
277.9 -298.9	21.0	
389.8 -392.4	2.6	
423.2 -427.8	4.6	
437.7 -447.9	10.2	
460.7 -463.4	2.7	
538.7 -544.0	5.3	
546.9 -552.8	5.9	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-20

Total depth: 450.0 ft / 137.2 m

Location:

EGMS co-ordinates - N 5587224.316
E 646515.641

Baseline co-ordinates- N 328+93.0
W 19+97.9

Elevation - ft 5217.9
m 1590.42

Date of starting : Feb. 8, 1977
Date of completion : Feb. 10, 1977

Logged by driller :

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
148	45	88.5°	S 36°E
396	90	85.5°	S 16°E
427	130	82.0°	S 06°W

Remarks :

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-20

Footage		DESCRIPTION
From to	thickness	
0 - 7.0		Overburden
7 - 30.0		Shale
30 - 34.	4	Coal and carb shale (Sample R77-20-1)
34 - 71		Shale
71 - 81	10	Coal (Sample R77-20-2)
81 - 96		Shale
96 - 97	1	Coal
97 - 108		Shale
108 - 165		Sandstone, Coal 134-135'
165 - 184		Shale
184 - 210	16	Coal (Sample R77-20-3) 186-188 carb shale
210 - 226		Shale
226 - 230	4	Coal (Sample R77-20-4)
230 - 291		Shale with inter sandstone
291 - 295		Shale
295 - 308		Sandstone
308 - 330		Shale
330 - 332	2	Coal
332 - 335		Shale (Sample R77-20-5)
335 - 351		Sandstone
351 - 374		Shale
374 - 395	21	Coal (Sample R77-20-6)
395 - 450		Shale (Some sandstone stringers)
		EOH 450'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-20

Footage		REMARKS
From to	Thickness	
27.9 - 31.5	3.6	
68.9 - 77.1	8.2	
93.8 - 96.8	3.0	
131.9 - 132.9	1.0	
182.1 - 206.7	24.6	
209.3 - 212.3	3.0	
222.1 - 230.0	7.9	
289.1 - 290.0	0.9	
324.2 - 325.8	1.6	
331.4 - 332.4	1.0	
375.7 - 397.0	21.3	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-22

Total depth: 621.0 ft / 189.3 m

Location:

EGMS co-ordinates - N 5587163.345
E 646453.238

Baseline co-ordinates- N 327+47.0
W 22+44.1

Elevation - ft 5219.1
m 1590.78

Date of starting : Febr. 1, 1977
Date of completion : Febr. 7, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatic
0	0	90.0°	-
197	60	87.6°	S 58°E
394	120	83.8°	S 27°E
591	180	80.1°	S 19°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-22

Footage			DESCRIPTION
From	to	thickness	
0 -	16.0		Overburden
16.0-	42.0		Shale
42.0-	92.0		Sandstone
92.0-	97.0	5.0	Coal (Sample R77-22-1)
97.0-	102.0		Sandstone
102.0-	105.0		Shale
105.0-	140.0		Sandstone
140.0-	143.0		Shale
143.0-	147.0	4.0	Coal (Sample R77-22-2)
147.0-	155.0		Shale with sandstone stringers
155.0-	161.0	6.0	Coal (Sample R77-22-3)
161.0-	164.0		Shale
164.0-	167.0	3.0	Coal (Sample R77-22-4)
167.0-	179.0		Sandstone - fine, with some shale
179.0-	183.0	4.0	Coal and some shale (Sample R77-22-5)
183.0-	200.0		Shale
200.0-	203.0	3.0	Coal (Sample R77-22-6)
203.0-	246.0		Shale
246.0-	249.0	3.0	Coal (Sample R77-22-7)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-22

Footage		REMARKS
From to	Thickness	
249.0 - 293.0		Shale
293.0 - 298.0	5.0	Coal (Sample R77-22-8)
298 - 316.0		Shale
316.0 - 318.0	2.0	Coal (Sample R77-22-9)
318.0 - 329.0		Shale
329.0 - 412.0		Sandstone - 1' coal stringer @ 338.0'
412.0 - 414.0		Shale
414.0 - 430.0	16.0	Coal (Sample R77-22-10)
430.0 - 432.0		Shale
432.0 - 433.0	1.0	Coal
433.0 - 440.0		Shale
440.0 - 448.0	8.0	Coal (Sample R77-22-11)
448.0 - 521.0		Shale, coal stringers @ 450.0, 467.0, 499.0, 501.0'
521.0 - 544.0		Sandstone
544.0 - 557.0		Shale, coal stringers 546.0'
557.0 - 560.0	3.0	Coal (Sample R77-22-12)
560.0 - 593.0	6.0	Sandstone with shale (Coal - (Sample R77-22-13)
593.0 - 609.0		
609.0 - 621.0		Shale
		EOH at 621.0'

COAL INTERSECTIONS - DERIVED FROM GEOGRAPHICAL LOGS
HOLE NO. R77-22 G.P. Log coal intersections

Footage		REMARKS
From to	Thickness	
92.9 - 98.1	5.2	
106.6 - 107.9	1.3	
142.7 - 147.3	4.6	
155.2 - 160.8	6.6	
164.0 - 167.0	3.0	
181.0 - 185.0	3.9	Shaly
201.8 - 204.0	2.2	
247.7 - 250.3	2.6	
294.6 - 300.9	6.3	
316.6 - 319.2	2.6	
412.7 - 431.5	18.8	
442.6 - 449.8	7.2	
548.9 - 450.6	1.7	
557.4 - 559.4	2.0	
590.6 - 610.3	19.7	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-23

Total depth: 503.0 ft
153.3 m

Location: EGMS co-ordinates - N 5587090.564
E 646470.495

Baseline co-ordinates- N 325+01.6
W 22+45.5

Elevation - ft 5243.6
m 1598.25

Date of starting : Jan. 26, 1977
Date of completion : Jan. 31, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio

NO TESTS

Remarks : No G.P. Logs run

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-23

Footage			DESCRIPTION
From	to	thickness	
0 -	22.0		Overburden
22.0-	30.0		Shale
30.0-	39.0		Shale and sandstone
39.0 -	53.0		Shale
53.0-	54.0	1.0	Coal and shale
54.0-	72.0		Shale
72.0-	73.0	1.0	Coal
73.0-	74.0		Shale
74.0-	92.0		Shale and sandstone stringers
92.0-	93.0		Sandstone
93.0-	124.0		Shale
124.0-	127.0		Sandstone - fractured
127.0-	140.0		Sandstone
140.0-	147.5	7.5	Coal (Sample R77-23-1)
147.5-	149.0		Shale
149.0-	150.0		Sandstone
150.0-	158.0		Shale
158.0-	159.0	1.0	Coal
159.0-	164.0		Shale
164.0-	184.0		Sandstone and some shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-23

Footage		DESCRIPTION
From to	Thickness	
184.0 - 184.5		Shale
184.5 - 188.5	4.0	Coal (Sample R77-23-2)
188.5 - 209.0		Shale
209.0 - 210.6	1.6	Coal (Sample R77-23-3)
210.6 - 212.5		Shale
212.5 - 217.3	4.8	Coal (Sample R77-23-4)
217.3 - 218.3		Shale
218.3 - 219.0	0.7	Coal
219.0 - 232.0		Shale
232.0 - 233.0	1.0	Coal
233.0 - 235.8		Shale
235.8 - 237.8	2.0	Coal (Sample R77-23-5)
237.8 - 242.7		Shale
242.7 - 243.3	0.6	Coal
243.3 - 250.8		Shale
250.8 - 255.0	4.2	Coal (Sample R77-23-6)
255.0 - 293.0		Shale
293.0 - 295.0	2.0	Coal (Sample R77-23-8)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-23

Footage			DESCRIPTION
From	to	Thickness	
295.0	302.0		Sandstone
302.0	313.0		Shale
313.0	314.0		Coal and shale
314.0	326.0		Shale
326.0	342.0		Shale - sandy
342.0	347.5	5.5	Coal (Sample R77-23-9)
347.5	362.0		Shale
362.0	366.0	4.0	Coal (Sample R77-23-7)
366.0	364.0		Shale - soft with coal traces
369.0	392.0		Shale - sandy
392.0	395.0		Sandstone
395.0	409.0		Shale
409.0	410.0	1.0	Coal
410.0	419.0		Shale
419.0	420.0	1.0	Coal
420.0	424.0		Shale
424.0	425.0	1.0	Coal
425.0	452.0		Shale with coal stringers
452.0	470.0	18.0	Coal (Sample R77-23-10)
470.0	474.0		Shale
474.0	476.0	2.0	Coal (Sample R77-23-11)
476.0	489.0		Shale and coal stringers
489.0	503.0		Shale and sandstone stringers
			EOH at 503'

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R 77-24 Total depth: 596 ft / 181.7 m

Location: EGMS co-ordinates - N 5587237.034
E 646432.874

Baseline co-ordinates- N 329+97.7
W 22+51.9

Elevation - ft 5223.8
m 1592.21

Date of starting : March 5, 1977
Date of completion : March 8, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
197	60	87.5°	N 46°E
394	120	83.5°	N 81°E
574	175	80.5°	N 81°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-24

Footage			DESCRIPTION
From	to	thickness	
0 -	3		Loam
3 -	69		Sandstone - hard
69 -	73	4	Coal (Sample R77-24-1)
73 -	74		Shale
74 -	76	2	Coal (Sample R77-24-2)
76 -	80		Sandstone
80 -	82	2	Coal (Sample R77-24-3)
82 -	99		Shale
99 -	110		Sandstone
110 -	112	2	Coal (Sample R77-24-4)
112 -	136		Sandstone
137			Coal stringer
138 -	142		Shale
142 -	145	3	Coal and shale (Sample R77-24-5)
145 -	160		Sandstone; coal stringer @ 160'
160 -	175		Shale
175 -	237		Sandstone; coal stringers @ 181', 188', 211'
237 -	240	3	Coal and shale (Sample R77-24-6)
240 -	245		Sandstone
245 -	275		Shale
275 -	283	8	Coal (Sample R77-24-7)
283 -	293		Shale
293 -	295	2	Coal (Sample R77-24-8)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-24

Footage		REMARKS
From to	Thickness	
295 - 332		Sandstone with shale
332		Coal stringer
332 - 378		Shale
378 - 396		Sandstone, coal stringer @396'
396 - 398		Shale
398 - 415	17	Coal (Sample R77-24-9)
415 - 417		Shale, coal stringer @ 417'
417 - 423		Shale, coal stringer @ 423'
423 - 425		Shale, coal stringer @ 425'
425 - 428		Shale, coal stringer @ 428'
428 - 461		Sandstone, coal stringer @ 461'
461 - 466		Shale, coal stringer @ 466'
366 - 469		Shale
469 - 484		Sandstone, coal stringer @ 484'
484 - 486		Shale, coal stringer @ 486'
486 - 513		Sandstone
513		Coal stringer
513 - 515		Shale
515		Coal stringer
515 - 560		Sandstone
560 - 576	16	Coal (Sample R77-24-10)
576 - 596		Sandstone
		T.D. @ 596'

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS
HOLE NO. R77-24

Footage		REMARKS
From to	Thickness	
68.9 - 72.5	3.6	
74.5 - 75.8	1.3	
80.7 - 82.7	2.0	
108.6 -110.9	2.3	
134.8 -139.4	4.6	
143.4 -146.0	2.6	
160.1 -161.4	1.3	
163.1 -164.7	1.6	
182.1 -183.7	1.6	
189.0 -190.0	1.0	
236.9 -240.2	3.3	
274.6 -280.5	5.9	
292.3 -295.3	3.0	
396.0 -413.4	17.4	
416.7 -418.3	1.6	
425.5 -428.8	3.3	
514.5 -515.4	0.9	
519.1 -521.3	2.2	
558.4 -575.8	17.4	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-25

Total depth: 660 ft
201.2 m

Location: EGMS co-ordinates - N 5587170.394
E 646297.099

Baseline co-ordinates- N 328+90.5
W 27+36.4

Elevation - ft 5281.0
m 1609.65

Date of starting : March 8, 1977
Date of completion : March 15, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
197	60	85.0°	N 25°E
394	120	85.0°	N 47°E
640	195	81.7°	N 78°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-25

Footage			DESCRIPTION
From	to	thickness	
0 -	10		Clay and boulders
10 -	18		Gravel and boulders
18 -	19		Coal stringer
19 -	23		Shale
23 -	24		Coal stringer
24 -	35		Shale
35 -	36		Coal stringer
36 -	51		Shale
51 -	52		Coal stringer
52 -	61		Siltstone
61 -	63	2	Coal (Sample R77-25-1)
63 -	89		Siltstone and sandstone
89 -	91	2	Coal (Sample R77-25-2)
91 -	115		Shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-25

Footage		REMARKS
From to	Thickness	
115 - 117	2	Coal (Sample R77-25-3
117 - 118		Shale
118 - 149		Sandstone
149		Coal stringer
150 - 152	2	Coal shale (Sample R77-25-4)
152 - 158		Shale
158		Coal stringer
158 - 160		Shale
160 - 162	2	Coal and shale (Sample R77-25-5)
162 - 182	2	Sandstone
182		Coal stringer
182 - 187		Shale
187		Coal stringer
187 - 202		Stone
202 - 204	2	Coal and shale (Sample R77-25 -6)

ROTARY DRILL HOLE LOGGING SHEET

R77-25

204 - 209		Shale
209		Coal stringer
209 - 229		Sandstone
229 - 234	5	Coal and shale (Sample R77-25-7)
234 - 237		Shale
237		Coal stringer
237 - 241		Shale
241 - 243	2	Coal and shale (Sample R77-25-8)
243 - 248		Shale
248		Coal stringer
248 - 262		Sandstone
262 - 274		Shale
274 - 275		Coal stringer
275 - 283		Shale
283 - 284		Coal stringer

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-25

Footage		REMARKS
From to	Thickness	
284 - 300		Coal shale
300 - 304	4	Coal (Sample R77-25-9)
304 - 313		Shale
313 - 314		Coal stringer
314 - 332		Siltstone
332 - 333		Coal stringer
333 - 357		Siltstone
357 - 378		Sandstone
378		Coal stringer
378 - 386		Sandstone
386		Coal stringer
386 - 439		Sandstone
439		Coal stringer

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-25

Footage		REMARKS
From to	Thickness	
439 - 454		Sandstone
454 - 463		Siltstone
463 - 464		Coal stringer
464 - 465		Shale
465 - 524		Siltstone
524 - 532	8	Coal (Sample R77-25-10)
532 - 544		Siltstone
544 - 578		Sandstone and coal (Sample 560-562, R77-25-11)
578 - 582	4	Coal and shale (Sample R77-25-12)
582 - 586		Shale
586 - 588	2	Coal and shale (Sample R77-25-13)
588 - 604		Shale
604		Coal stringer
605 - 608		Shale
608 - 609	1	Coal and shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-25

Footage			REMARKS
From	to	Thickness	
609	- 612		Shale
612	- 629		Shale
629			Coal stringer
629	- 640		Sandstone
640			Coal stringer
640	- 644		Shale
644			Coal stringer
644	-649		Shale
649			Coal stringer
649	- 660		Sandstone

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-25

Footage			REMARKS
From	to	Thickness	
17.1	18.4	1.3	
22.0	23.0	1.0	
23.8	24.6	0.8) 1.8	
34.4	35.4	1.0	
50.0	51.5	1.5	
60.4	63.0	2.6	
86.6	91.2	4.6	
114.8	116.1	1.3	
149.2	150.3	1.1	
156.7	160.1	3.4	
198.5	205.7	7.2	
227.0	228.4	1.4)	
229.7	230.6	0.9)	
232.0	233.0	1.0)	
234.9	236.2	1.3) 19.8	
237.9	238.8	0.9)	
240.2	241.8	1.6)	
246.7	247.7	1.0	
262.2	263.1	0.9	
266.6	268.0	1.4	
272.3	274.0	1.7	
280.8	282.5	1.7	
298.6	301.2	2.6	
520.8	522.0	1.2	
523.3	528.2	4.9) 10.1	
529.2	530.9	1.7	
534.5	535.6	1.1	

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-25

Footage		REMARKS
From to	Thickness	
558.8 - 560.2	1.4	
576.5 - 581.4	4.9	
584.0 - 587.3	3.3	
599.4 - 600.0	0.6	
605.6 - 607.8	2.2	
627.5 - 629.1	1.6	
647.2 - 648.8	1.6	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-26

Total depth: 550 ft
167.6 m

Location: EGMS co-ordinates - N 5587128.767
E 646366.123

Baseline co-ordinates- N 327+50.8
W 27+39.9

Elevation - ft 5283.3
m 1610.35

Date of starting : March 16, 1977
Date of completion : March 18, 1977

Logged by driller

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declination
0	0	90.0°	-
180	55	85.8°	N 61°E
360	110	83.5°	N 76°E
509	155	81.7°	N 65°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET
HOLE NO. R77-26

Footage		DESCRIPTION
From to	thickness	
0 - 7		Overburden
7 - 24		Bedrock (according to driller) set 11' of casing
24 - 47		Sandstone, coal stringer @ 44'
47 - 49	2	Coal (Sample R77-26-1)
49 - 110		Sandstone with coal stringers @ 61, 74 & 84'
110 - 112	2	Coal (Sample R77-26-2)
112 - 140		Sandstone
140 - 142	2	Coal (Sample R77-26-3)
142 - 171		Shale with coal stringers @ 159 & 169'
171 - 173	2	Coal (Sample R77-26-4)
173 - 179		Shale
179 - 183	4	Coal (Sample R77-26-5)
183 - 208		Shale with coal stringers @ 196, 202 & 208'
208 - 222		Sandstone
222 - 224	2	Coal (Sample R77-26-6)
224 - 236		Sandstone with coal stringer@ 230'
236 - 248		Shale
248 - 254	6	Coal
254 - 260	6	Coal & Shale) (Sample R77-26-7)
260 - 266		Shale
266 - 268	2	Coal & Shale (Sample R77-26-8)

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-26

Footage		REMARKS
From to	Thickness	
268 - 281		Shale
281 - 283	2	Coal & shale (Sample R77-26-9)
283 - 318		Shale with coal stringers @ 292', 301' & 304'
318 - 322	4	Coal
322 - 326		Coal & Shale) R77-26-10
326 - 342		Shale with a coal stringer @ 334'
342 - 349		Sandstone
349 - 355		Shale with coal stringers @ 351', 358'
355 - 453		Sandstone with coal stringer @ 409', 453'
453 - 459		Shale with coal stringers @ 455', 459'
459 - 487		Sandstone with @ coal stringer @ 478'
487 - 495		Shale
495 - 533		Sandstone with @ coal stringer @ 533'.
533 - 535		Shale
535 - 539	4	Coal and shale (Sample R77-26-11)
539 - 550		Sandstone with a coal stringer @ 541'
		END OF HOLE @ 550'.

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-26

Footage		REMARKS
From to	Thickness	
43.0 - 44.3	1.3	
45.9 - 48.2	2.3	
60.4 - 61.7	1.3	
82.0 - 84.6	2.6	
109.6 - 113.2	3.6	
138.8 - 141.1	2.3	
169.8 - 171.6	1.8	
177.2 - 181.1	3.9	
2o1.0 - 202.8	1.8	
218.8 - 223.1	4.3	
247.7 - 252.3	4.6	
254.1 - 260.3	6.2	
264.1 - 265.4	1.3	
276.9 - 278.6	1.7	
281.5 - 282.8	1.3	
287.9 - 288.7	0.8	
296.9 - 297.7	0.8	
315.0 - 319.2	4.2	
530.2 - 534.8	4.6	
536.1 - 537.1	1.0	

ROTARY DRILL HOLE LOGGING SHEET

Hole No. : R77-27

Total depth: 568 ft
173.1 m

Location: EGMS co-ordinates - N 5587054.215
E 646320.611

Baseline co-ordinates- N 325+01.9
W 27+51.5

Elevation - ft 5276.0
m 1608.12

Date of starting : March 19, 1977
Date of completion : March 21, 1977

Logged by driller :

Drill hole deviations :

Depth ft	Depth m	Dip of hole	Direction (corrected for magnetic declinatio
0	0	90.0°	-
190	55	88.2°	N 21°E
360	110	83.2°	N 84°E
540	165	77.4°	S 87°E

Remarks :

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-27

Footage		DESCRIPTION
From to	thickness	
0 - 3		Till
3 - 7		Gravel
7 - 9	2	Coal
9 - 35		Bedrock
35		Coal stringers
35 - 40		Bedrock
40 - 72		Sandstone
72		Coal stringer
72 - 75		Shale
75		Coal stringer
75 - 101		Sandstone
101 -		Coal stringer
101 - 105		Shale
105		Coal stringer

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-27

Footage		REMARKS
From to	Thickness	
105 - 116		Shale
116		Coal stringer
116 - 146		Sandstone
146		Coal stringer
146 - 148		Shale
148 - 150	2	Coal (Sample R77-26-1)
150 - 158		Sandstone
158		Coal stringer
158 - 177		Sandstone
177		Coal stringer
177 - 183		Sandstone
183 - 194		Shale
194		Coal stringer
194 - 199		Shale
199 - 204	5	Coal and shale (Sample R77-27-2 (199-203')

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-27

Footage		REMARKS
From to	Thickness	
204 - 207		Shale
207 - 211	4	Coal
211 - 212	1	Coal and shale) (Sample R77-27-3)
212 - 225		Shale
225		Coal stringer
225 - 232		Shale
232		Coal stringer
232 - 234		Shale
234 - 251		Sandstone
251		Coal stringer
251 - 253		Sandstone
253 - 255		Shale
255 - 257	2	Coal (Sample R77-27-4)
257 - 260		Shale
260		Coal stringer
260 - 273		Shale
273		Coal stringer

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-27

Footage		REMARKS
From to	Thickness	
273 - 280		Shale
280 - 281	1	Coal
282 - 284	2	Coal and shale) (Sample R77-27-5)
284 - 286		Shale
286 - 292	6	Coal (Sample R77-27-6)
292 - 295		Shale
295		Coal shale
295 - 306		Shale
306		Coal stringer
306 - 309		Shale
309 - 311	2	Coal and shale (Sample R77-27-7)
311 - 315		Siltstone
315		Coal stringer
315 - 326		Siltstone
326		Coal stringer
326 - 344		Siltstone

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-27

Footage		REMARKS
From to	Thickness	
344 - 350		Shale
350 - 352	2	Coal (Sample R77-27-8)
352 - 354		Shale
354		Coal stringer
354 - 363		Shale
363 - 421		Sandstone
421		Coal stringer
421 - 437		Shale
437		Coal stringer
437 - 464		Sandstone
464		Coal stringer
464 - 474		Shale
474		Coal stringer
474 - 476		Shale
476		Coal stringer
476 - 483		Shale

ROTARY DRILL HOLE LOGGING SHEET

HOLE NO. R77-27

Footage		REMARKS
From to	Thickness	
483 - 489		Shale
489		Coal stringer
489 - 545		Sandstone
545		Coal stringer
545 - 548		Shale
548 - 554	6	Coal (Sample R77-27-9)
554 - 559		Sandstone
559		Coal stringer
559 - 568		Sandstone

COAL INTERSECTIONS - DERIVED FROM GEOPHYSICAL LOGS

HOLE NO. R77-27

Footage		REMARKS
From to	Thickness	
36.4 - 38.1	1.7	
76.1 - 78.1	2.0	
116.3 - 119.1	2.8	
147.0 - 151.6	4.6	
178.8 - 181.1	2.3	
201.8 - 204.7	2.9	
210.3 - 213.9	3.6	
233.9 - 235.2	1.3	
256.6 - 259.9	3.3	
281.5 - 295.3	13.8	
307.6 - 309.4	1.8	
311.0 - 312.4	1.4	
328.1 - 328.9	0.8	
351.9 - 356.0	4.3	
549.9 - 556.1	6.2	

R-76-1

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD.
CALGARY, ALBERTA

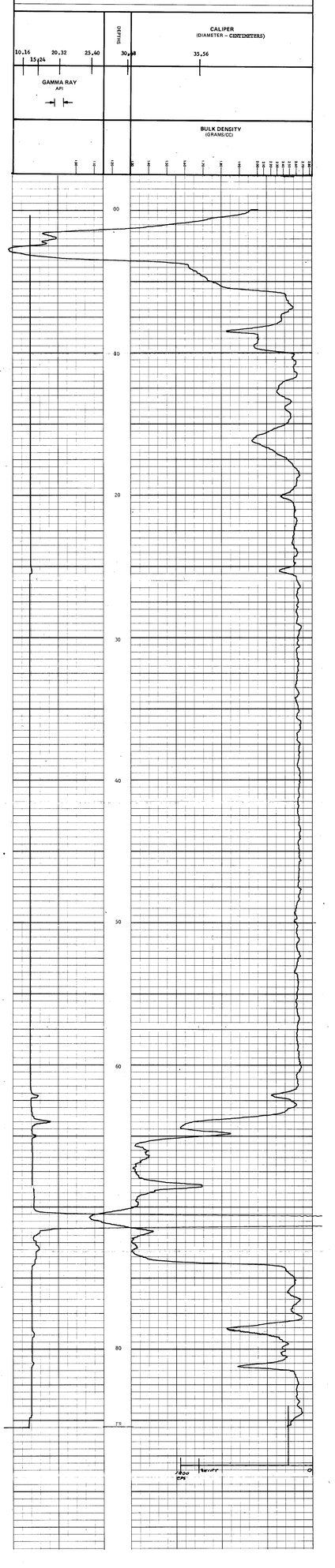
K-ELK RIVER 2 SIDEWALL

FILE NO.	
COMPANY	ELGO MINING LIMITED
WELL	R 76 - 1
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services	GRN, PHL, DEV
Permanent Datum	GROUND LEVEL
Log Measured from	GROUND LEVEL
Drill Depth Measured from	GROUND LEVEL
Elev.	
Above Perm. Datum	
K.B.	
D.F.	
G.L.	

Run No.	ONE
Date	17 NOV 1976
First Reading	85.5 M
Last Reading	0
Reading Interval	85.5
Depth Reached	84.42
Depth Driller	88.43
Casing Bottom	25
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	6
Min. Diam.	5 1/8
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	MCKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED (M/M)	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	85.5	3.66					3	1000	2R	68.43
2	0	85.5		CALIPER							

REMARKS DENS TOOL # 420 OPEN HOLE
CAL TOOL # 587



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77-(35)-B-B

LSD SEC TWP RGE W4M

WELL R 76 - 1

LOCATION

FIELD PEACE RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: SONIC-GAMMA RAY

Permanent Datum: GROUND LEVEL — Elev.

Log Measured From: GROUND LEVEL — ft. Above Perm. Datum

Drilling Measured From: K.B.

Rig No.	006
Date	17 MAY 1976
Type Fluid in Hole	GEL CHEM
Density	85.5
Viscosity	85.5 M
Fluid Loss	0
Source of Sample	CIRC
Rm @ Meas. Temp.	85.5
Rmf @ Meas. Temp.	85.5
Rmc @ Meas. Temp.	85.45
Source of Rmf & Rmc	CALC
Rm @ BHT	85.5
Time Since Circ.	23
Max. Rec. Temp.	MEASURED
Equip. Location	6
Recorded By	5 1/8
Witnessed By	

Operating Time

Tape No.	36
	3 HOURS

Recorded By: CARLSON

Witnessed By: MCGUIRE

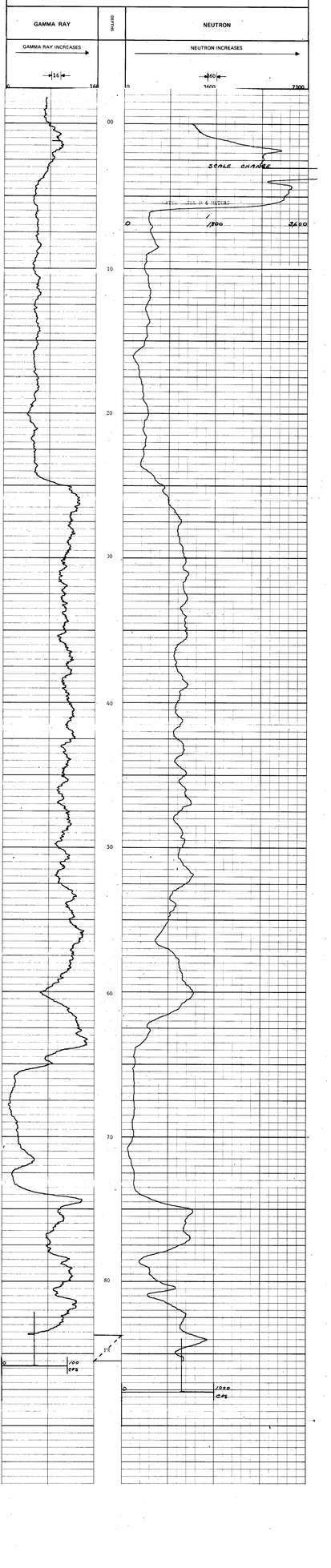
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10,16	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	2,04 M	LENGTH	13,34 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	265
INSTRUMENT TRUCK NO.		SPACING	43,18 CM
TOOL SERIAL NO.	125 - 002	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTHS FROM	TO	SPEED M/MN	T.C. SEC	SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	5,5	3,66	4	100	0	16	3	1000	0	360
2	6,5	85,5	3,66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

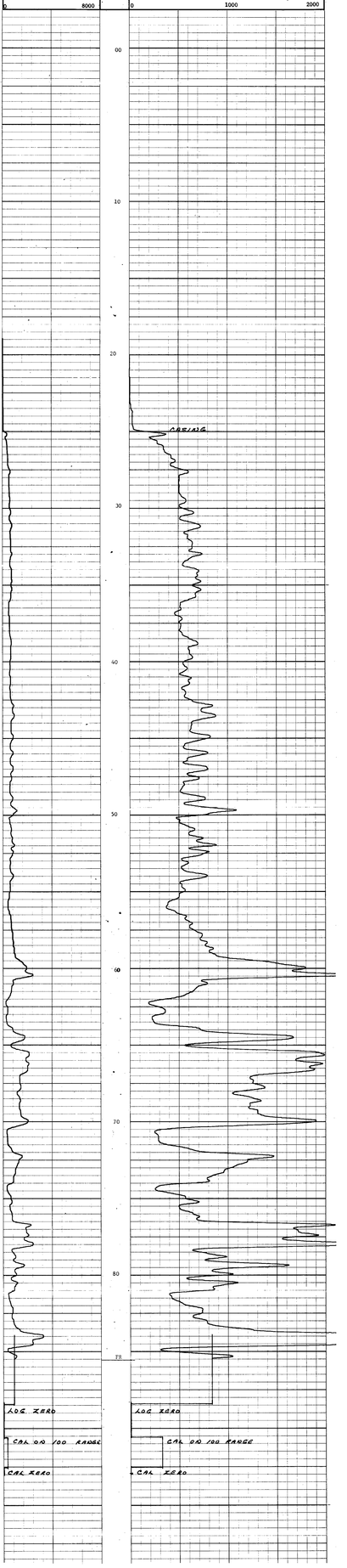
FOCUSED BEAM LOG

K-ELK RIVER 22 (2) 26

FILE NO.	
COMPANY	ELCO MINING LIMITED
WELL	R 76 - 1
LOCATION	
FIELD	ELK RIVER VALLEY
Permanent Datum	GROUND LEVEL
Log Measured from	GROUND LEVEL
Well Depth Measured from	GROUND LEVEL
Other Services	GEN, DENS-CAL, DIP
K.B.	
G.L.	

Run No.	ONE
Date	17 NOV 1976
First Reading	83.5 H
Last Reading	25
Scanned Logged	60.5
Depth Reached	86.42
Depth Driller	84.45
Casing Rate	25
Casing Driller	
Fluid Type	MED/WATER
Ground Level	6
Min. Chain	5 1/8
Rm @ °C	10.31 @ 25
Operating Time	1 HOUR
Truck No.	56
Recorded By	CARLSON
Witnessed By	MCKELVIE

Remarks	
	SONDE GEOMETRIC FACTOR .329, PROTO TYPE III
	GROUND FISH READING - 5 OHMS
	100 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29
	8 TO 1 RATIO ON SECONDARY PEN



ROKE

SIDEWALL DENSILOG
CALIPER

K-E-X RANGE 27 (93-W-6)

COMPANY	ESSO RESOURCES LIMITED
WELL	K 76 - 2
FIELD	RED DEER VALLEY
PROVINCE	ALBERTA
LOCATION	LSD SEC TWP RGE W
FILE NO.	

CALGARY, ALBERTA

K-76-2

Permanent Datum	GROUND LEVEL
Log Measured From	K.B.
Drilling Measured From	K.B.
Elev.	K.B. 1076
	D.F.
	G.L. 1059

Date	3-DEC-76
Run No.	ONE
Depth-Driller	1076
Depth-Logger	99
Btm. Log Interval	99
Top Log Interval	29
Casing-Driller	29 @ 1076
Casing-Logger	29
Bit Size	15.24
Type Fluid in Hole	GEL CHEM
Dens.	1.20
Visc.	70
Fluid Loss	3.6
Source of Sample	CIRC
Rm @ Meas. Temp.	.66 @ 24°C
Rmf @ Meas. Temp.	.53 @ 24°C
Rmc @ Meas. Temp.	.88 @ 24°C
Source Rmf & Rmc	MEASURED
Rm @ BHT	.33 @ 49°C
Time Since Circ.	3 HRS
Max. Rec. Temp.	49°C
Equip. No. & Location	3 DDA
Recorded By	MORRITZ
Witnessed By	SAVAGE

Operating Time	
Truck No.	
	2 WORKS
	36

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/min	T.C. SEC.	SENS SETTINGS	ZERO DIV./O.R.	API-G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV./O.R.	CPS/DIV
1	0	99	3.66					3	1000	2.8	68.43
2	0	99.5		CALIPER							

REMARKS: DENI TOOL # 620
CAL TOOLS # 587

OPEN HOLE, UNABLE TO REACH FULL DEPTH DUE TO A WEAVERING KRAUT CALIPER READS SO CM TOO LOW.

DEPTHS

CALIPER
(DIAMETER - CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

1.80 1.70 1.60 1.50 1.40 1.30 1.20 1.10 1.00

00 10 20 30 40 50 60 70 80 90

78

1000 CPS

BASE

0

ROKE

OIL ENTERPRISES LTD.

K.B. ELK

FILE NO.

COMPANY: ESSO RESOURCES CANADA LIMITED

CALGARY, ALBERTA

WELL: B-72-2

LOCATION: B-72-2

FIELD: BEAVER RIVER

PROVINCE: BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL

Log Measured From: GROUND LEVEL

Drilling Measured From: ROTARY TABLE

Elev.: K.B. 1,000 ft. G.L. 976 ft.

Date: 3 DEC 75

Run No.: ONE

Depth-Driller: 8,640 ft.

Depth-Logger: 8,640 ft.

Bottom Logged Interval: 8,640 ft.

Top Logged Interval: 3,660 ft.

Type Fluid in Hole: WATER GEL

Salinity, PPM Cl: 2,500

Density: 9.0 lb/gal

Viscosity: 39 sec

pH: 10.5

Fluid Loss: 22 cc

Source of Sample: CIRC.

R_m @ Meas. Temp.: 5.1 @ 70°F

R_mf @ Meas. Temp.: @

R_mc @ Meas. Temp.: @

Source: R_mf / R_mc

Rm @ BHT: @

Time Since Circ.: 3 HOURS

Max. Rec. Temp.: 36

Equipment No.: 0002-0-01

Recorded By: M. MCINTYRE

Witnessed By: M. MCINTYRE

276

SERIAL NO. 1484

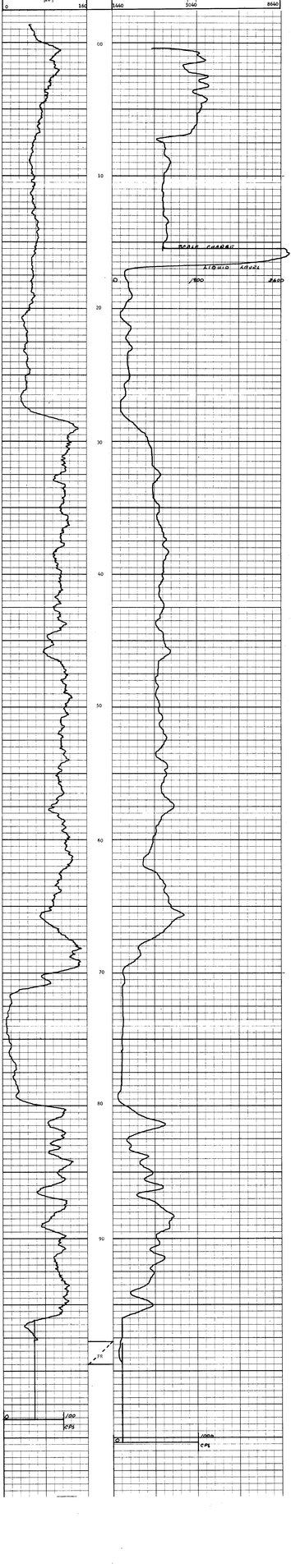
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.06 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-85-W
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	125 - 002	STRENGTH	3 CURIES

LOGGING DATA

GENERAL					GAMMA RAY			NEUTRON		
RUN NO.	SECTION FROM	SECTION TO	SPEED M /MIN.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	13,5	3,66	4	100	0	16	3	1000	4 L	160
2	13,5	99,5	3,66	4	100	0	16	3	500	0	160

REMARKS: OPEN HOLE - UNABLE TO GET BELOW CAVE IN AT 100 M
SECTION - 96 - 97,5 M - NEUTRON REPEATS AFTER THREE TESTS



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 17(3)-6-5

FILE NO.

COMPANY: ZEAD MINING LIMITED

LSD
SEC
TWP
RGE
W. M

WELL: R 76 - 2

LOCATION: 276

FIELD: ELK RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

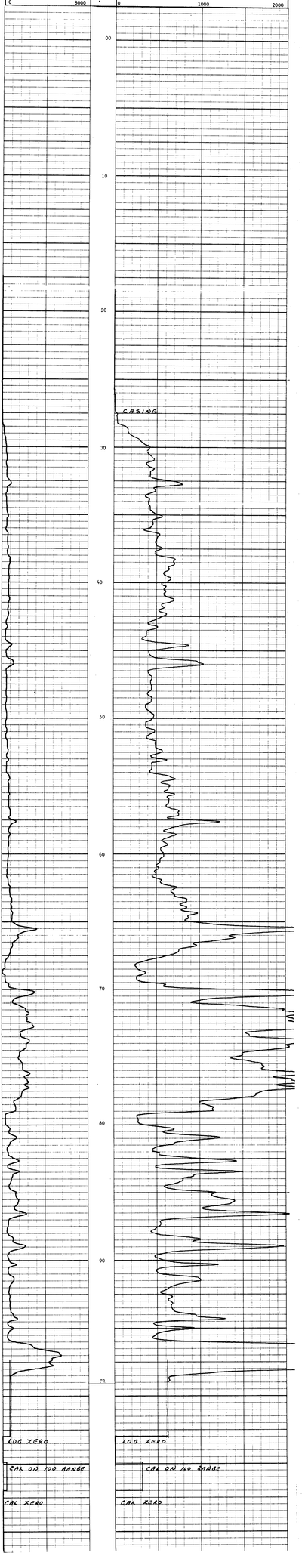
Permanent Datum: GROUND LEVEL
Elev.: GROUND LEVEL
Log Measured From: GROUND LEVEL
Above Perm. Datum: GROUND LEVEL

Other Services: GEN, CAL, DIM, DIV
K.B.
Grid
G.L.

Run No.	ONE
Date	3 FEB. 1976
Elev. Reading	99 M
Last Reading	28 M
Footage Logged	71
Depth Reached	99.92
Depth Drilled	115.00
Casing Rules	28
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	17
Min. Diam.	5 1/8
Rm @ °C	20.83 @ 25
Operating Time	1 HOUR
Truck No.	36

Recorded By: CARLSON
Witnessed By: McKELVIE

Remarks: SONDE GEOMETRIC FACTOR .329, PROTO TYPE III
GROUND FISH READING - 5 OHMS
100 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29
8 TO 1 RATIO ON SECONDARY PEN



R-76-3

ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-WILK RIVER 77 (2) AB

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W	N
COMPANY	ROAD MINING LIMITED
WELL	R 76 - 3
LOCATION	276
FIELD	BLUE RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Drilling Date	CHECKED LEVEL
Log Measured From	CHECKED LEVEL
Well Depth Measured From	CHECKED LEVEL
Date Run	1980
Depth Driller	1
Casing Driller	1
Fluid Type	NON/WATER
Fluid Level	3
Max. Depth	13.00 GM
Operating Time	2 HOURS
Truck No.	38
Reported By	CALGARY
Witnessed By	NAMEWATER

Run No.	1	2	3
Date	1	2	3
Depth Driller	1	2	3
Casing Driller	1	2	3
Fluid Level	3	3	3
Max. Depth	13.00 GM	13.00 GM	13.00 GM
Operating Time	2 HOURS		
Truck No.	38		
Reported By	CALGARY		
Witnessed By	NAMEWATER		

ROKE

A SERVICE TO THE OIL INDUSTRY

P.O. Box 1675 Midland, Texas 79702

COMPANY

WELL

FIELD

COUNTY

STATE

Other Services

Permanent Datum

Elev.: K.B.

D.F.

G.L.

Log Measured From

Drilling Measured From

Date

Run No.

Depth-Driller

Depth-Logger

Bottom Logged Interval

Top Logged Interval

Type Fluid in Hole

Salinity, PPM Cl

Density

Level

Max. Rec. Temp. Deg. F

Operating Rig Time

Recorded By

Witnessed By

BOREHOLE RECORD

Bit No.	From	To	Size

CASING RECORD

No.	Size	Wgt.	Grade	From	To

TUBING RECORD

Size	Wgt.	Grade	From	To

TYPE LOG

DENSITY RECORD

Run No.	From	To	Size

MATRIX

Primary

Secondary

Tertiary

Fluid

Lithology

Max. Rec. Temp. Deg. F

Equip. No. & Location

Recorded By

Witnessed By

Run No.

Type Log

Depth-Driller

Depth-Logger

Bottom Logged Interval

Top Logged Interval

Type Fluid in Hole

Salinity, PPM Cl

Density

Level

Max. Rec. Temp. Deg. F

Equip. No. & Location

Recorded By

Witnessed By

RUN NO. 1

DATE 8-15-82

LOCATION

SEC. 276

BLK.

SURVEY

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
Run No.	GRR	Run No.	GRR
Tool, Model, No.		Log Unit	NEUTRON/NEUTRON
Serial No.	20 3M	Tool, Model, No.	
Detector Model, No.		Serial No.	20 3M
Type	SCINTILLATION	Detector Model, No.	
Length	10.20 IN	Type	PROPORTIONAL
Distance to Source	5.05 IN	Length	10.20 IN
		Source Model, No.	MRC-N-5E/W
GENERAL		Serial No.	243
Model Truck No.	36	Spacing	43.34 IN
Instrument Truck No.		Source	Am/Be
Tool Serial No.	131-002	Strength	5 MILLICURIES

LOGGING DATA

RUN	GENERAL FROM	GENERAL TO	SPEED FT./MIN.	T.C. SEC.	GAMMA RAY SENS.	GAMMA RAY API & MV UNITS	F.C.	NEUTRON SENS.	NEUTRON API & MV UNITS
1	0	3492	1.66	6	100	43	1	800	0

REMARKS: GYRO RUN, EIGHT MEN AND CHRONDALE

GAMMA RAY

NEUTRON

GAMMA RAY INCREASES

NEUTRON INCREASES

0 — 100

0 — 3600

60

70

80

90

100

110

120

130

140

150

160

EOL

EOT

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

FILE NO.	K-ELK RIVER 77(2) #3
COMPANY	ELCO MINING LIMITED
WELL	R - 76 - 3
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W M	
Other Services:	GRN, DEN-CAL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	

Run No.	ONE			
Date	11 DEC 1976			
First Reading	168 M			
Last Reading	34			
Footage Logged	134			
Depth Reached	168.31			
Depth Driller	170.50			
Casing Driller	34			
Casing Roke				
Fluid Type	MUD/WATER			
Liquid Level	3			
Min. Diam.	13.02 CM			
Rm @ °F	13.33 @ 25			
Operating Time	1 HOUR			
Truck No.	36			
Recorded By	CARLSON	Witnessed By	McKELVIE	

Remarks SONDE GEOMETRIC FACTOR .329 PROTO TYPE III
GROUND FISH READING - 5 OHMS
100 OHM/DIV. PRIMARY PEN ADJUSTED TO 3.29
8 TO 1 RATIO ON SECONDARY PEN

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

K-ELK RIVER 77(3) AB

R-76-4

FILE NO. 276

LSD / SEC / TWP / RGE / W M

COMPANY ELCO MINING LIMITED

WELL R 76 - 4

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: GRN, FBL, DEV

Permanent Datum GROUND LEVEL Elev

Log Measured from GROUND LEVEL Above Perm. Datum

Well Depths Measured from GROUND LEVEL

K.B. / CSG / G.L.

Run No.	ONE
Date	11 DEC 1976
First Reading	127.5 M
Last Reading	0
Footage Logged	127.5
Depth Reached	128.42
Depth Driller	133.89
Casing Roke	31
Casing Driller	
Fluid Type	MUD/WATER
Liquid Level	26
Min Diam.	13.02 CM
Operating Time	2 HOURS
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	127.5	3.66					3	1000	2R	68.43
2	0	128		CALIPER							

REMARKS DENS TOOL # 420 OPEN HOLE. BLOWING GAS
CAL TOOL # 587

ROKE

OIL DEVELOPMENTS LTD.
CALGARY, ALBERTA

LOGGING BAY NO. 1 DIVISION

Recorded By: CHARLIE
Witnessed By: MCINTYRE

Depth Control Tape No. 34
Run No. 1
Date 11-DEC-1970
Time 1:30 P.M.
Driller's Depth 3,600
Logger's Depth 3,600
Bottom Logged Interval 3,600
Top Logged Interval 3,000
Casing Driller 9 5/8" @ 3,000
Casing Logger 9 5/8" @ 3,000
Bit Size 8 3/4"
Type Fluid in Hole GEL CHEM
Density 10.0
Viscosity 45
Fluid Loss 8.4
Source of Sample CIRCULATION
Rm @ Meas. Temp. .84 @ 70°F
Rmf @ Meas. Temp. .63 @ 70°F
Rmc @ Meas. Temp. 1.26 @ 70°F
Source of Rmf & Rmc MEASURED
Rm @ BHT .42 @ 150°F
Time Since Circulation 24 HRS
Time Since Circ. 24 HRS
Max. Rec. Temp. 150°F
Equip. No. 1
Location 276
Recorded By CHARLIE
Witnessed By MCINTYRE

FIELD: RED RIVER VALLEY
WELL: 8-29-4-5
LOCATION: 276
COMPANY: ROKE OIL DEVELOPMENTS LTD.
FILE NO.:
API No.:
SEC.:
TWP.:
RGE.:
MER.:

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	33 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	20.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-05-M
GENERAL		SERIAL NO.	265
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.		TYPE	Amba
TOOL SERIAL NO.	123 - 002	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL DEPTH FROM	DEPTH TO	SPEED IN F.P.M.	T.C. SEC.	GAMMA RAY SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	NEUTRON SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	34	9.48	A	100	0	16	3	1000	46	560
2	34	130.5	1.64	A	100	0	16	3	300	0	180

REMARKS: ORBS ROTARY HOLE SLANTING GAS

GAMMA RAY — NEUTRON

GAMMA RAY INCREASES — NEUTRON INCREASES

0 — 116 — 150 — 2000 — 2040 — 6660

DEPTH

00 10 20 30 40 50 60 70 80 90 100 110 120

STEEL CHANGE

LIQUID LEVEL

1000 C.P.S.

FT.

1000 C.P.S.

ROKE

ROKE OIL (WATERFORD) LTD.
PRODUCTION SECTION
CALGARY ALBERTA

K-ELK BLUE 33-1 (33-1-69-5)

COMPANY ROKE OIL (WATERFORD) LTD.

WELL K-ELK BLUE 33-1 (33-1-69-5)

FIELD ELK VALLEY

LOCATION 33-69-5

Elev.: K.B. 3476
D.F. 3475
G.L. 3462

Date 1-3-73

Run No. ONE

Depth-Driller 3230'
Depth-Logger 3236'
Btm. Log Interval 3236'
Top Log Interval 3000'
Casing-Driller 9⅝" @ 1131'
Casing-Logger 1131'
Bit Size 8½"
Type Fluid in Hole GEL CHEM
Dens. Visc. 9.2 45
pH Fluid Loss 10.5 8 cc
Source of Sample CIRC.
Rm @ Meas. Temp. .71 @ 70°F
Rmf @ Meas. Temp. .56 @ 70°F
Rmc @ Meas. Temp. .95 @ 70°F
Source of Rmf & Rmc MEASURED
Rm @ BHT .39 @ 180°F
Time Since Circ. 24 HRS
Max. Rec. Temp. Deg. F 180°F
Equip. No. & Location 1301 CAL.
Recorded By GRIFFITH
Witnessed By ROCKSTEDT

RUN NO. ONE
DATE 1-3-73
TYPE LOG DUAL INDUCTION LATEROLOG
DEPTH-DRILLER 3230'
DEPTH-LOGGER 3236'
BTM. LOG INTERVAL 3236'
TOP LOG INTERVAL 3000'
CASING-DRILLER 9⅝" @ 1131'
CASING-LOGGER 1131'
BIT SIZE 8½"
TYPE FLUID IN HOLE GEL CHEM
DENS. VISC. 9.2 45
PH FLUID LOSS 10.5 8 cc
SOURCE OF SAMPLE CIRC.
RM @ MEAS. TEMP. .71 @ 70°F
RMF @ MEAS. TEMP. .56 @ 70°F
RMC @ MEAS. TEMP. .95 @ 70°F
SOURCE OF RMF & RMC MEASURED
RM @ BHT .39 @ 180°F
TIME SINCE CIRC. 24 HRS
MAX. REC. TEMP. DEG. F 180°F
EQUIP. NO. & LOCATION 1301 CAL.
RECORDED BY GRIFFITH
WITNESSED BY ROCKSTEDT

276

Remarks

BOREHOLE GEOMETRIC FACTOR +.329, PHOTO TYPE III
GROUND PINE READING = 5 OHMS CORRECT
200 OHM/MTR. PATHWAY FOR ADJUSTED ID 3.29 DIV
8 TO 1 RATIO ON SECONDARY PEN

GAS SIGNING FROM MUD LOG. OBTAINED W/LIB USING CHROMCALB (GAAP). WATER SAMPLE TAKEN FROM HOLE AFTER DRILLING WAS STOPPED

RESISTIVITY OHM METERS
0 — 16000

Depths

RESISTIVITY OHM METERS
0 — 2000 — 4000

00
10
20
30
40
50
60
70
80
90
100
110
120
130

CASING

LOG ZERO
CAL ON 200 RANGE
CAL ZERO

LOG ZERO
CAL ON 200 RANGE
CAL ZERO

R 77-5

ROKE SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ____ M	
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 5
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	GROUND LEVEL	Above Perm. Datum	CSG
Well Depths Measured from	GROUND LEVEL		G.L.
			METRIC

Run. No.	ONE		
Date	1 APR 1977		
First Reading	190.5 M		
Last Reading	0		
Footage Logged	190.5		
Depth Reached	191.42		
Depth Driller	196.42		
Casing Roke	29.5		
Casing Driller			
Fluid Type	WATER/AIR		
Liquid Level	19		
Min. Diam.	12.7 CM		
Operating Time	1 HOUR 40 MIN		
Truck No.	36		

Recorded By CARLSON | Witnessed By LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	190.5	3.66					3	1000	1.3 R	46.14
2	0	191		CALIPER							

REMARKS DENS TOOL # 128 OPEN HOLE
CAL TOOL # 587

CALIPER
(DIAMETER – CENTIMETERS)

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 5
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	1 APR 1977
First Reading	191 M
Last Reading	0
Footage Logged	191
Depth Reached	191.30
Depth Driller	196.42
Casing Roke	29.5
Casing Driller	
Fluid Type	WATER/AIR
Liquid Level	19
Min. Diam.	12.7 CM
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAURENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	18.5	3.66	4	100	0	16	3	1000	0	360
2	18.5	191	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
→16←		→360←
0 160		0 3600 7200

ROKE

POSTED FROM LAS

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-EAGLE RIVER 77-3

FILE NO.
LTD
DIV
PAGE
AGE
W. N

COMPANY: ELGO RESOURCE LIMITED

WELL: R. 77 - 3

LOCATION: 276

FIELD: EAGLE RIVER VALLEY

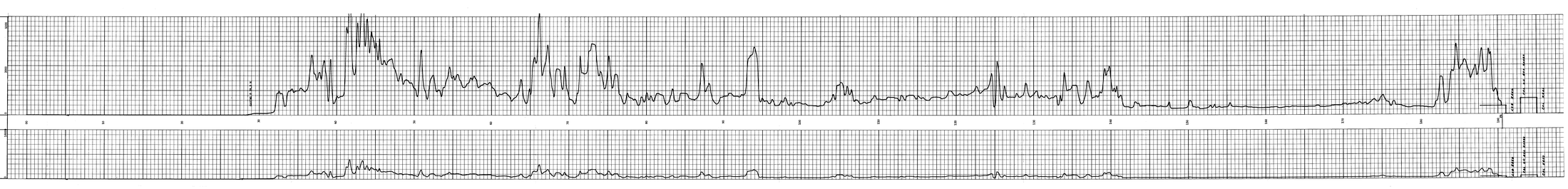
PROVINCE: BRITISH COLUMBIA

Other Services:
DUAL INDUCTION-GAMMA RAY

Permanent Datum:	GROUND LEVEL
Log Measured From:	GROUND LEVEL
Drill Measured From:	GROUND LEVEL
Elevation:	K.B.
	D.F.
	G.L.
Date:	8-4-81
Run No.	ONE
Depth-Driller	1,000
Depth-Logger	1,000.5 M
Bottom Log Interval	1,000.5 M
Top Log Interval	0
Casing-Driller	219.4
Casing-Logger	219.4
Bit Size	200
Type Fluid in Hole	GEL-CHEM
Dens. Visc.	1.2 - 1.04
PH / Fluid Loss	10.5
Source of Sample	FLOWING
Rm @ Meas. Temp.	0.4 @ 23
Rmf @ Meas. Temp.	0.4 @ 23
Rmc @ Meas. Temp.	0.4 @ 23
Source: Rmf / Rmc	MEASD / MEASD
Rm @ BHT	0.4 @ 23
Time Since Circ.	4 HRS
Max. Rec. Temp.	50
Equipment No.	1
Location	50
Recorded By	GUELLAND
Witnessed By	LAVERDIERE

Remarks:

DUAL INDUCTION-GAMMA RAY LOG, RUNS 1 & 2 ON 1 PASS
RUN 1 FROM 1000 TO 219.4 METRES
RUN 2 FROM 219.4 TO 0 METRES
8 3/8 CASING SHOE AT 219.4 METRES



ROKE

SIDEWALL SERVICES

A DIVISION OF ROKE OILFIELD SERVICES LTD.

ALBERTA

276

COMPANY	
WELL	
FIELD	
LOCATION	
COUNTY	
PROVINCE	
DATE	
RUN NO.	
DEPTH DRILLER	
DEPTH LOGGER	
BTM. LOG INTERVAL	
TOP LOG INTERVAL	
CASING DRILLER	
CASING LOGGER	
BIT SIZE	
TYPE FLUID IN HOLE	
DENSITY	
VISCOSITY	
PH	
FLUID LOSS	
SOURCE OF SAMPLE	
RM @ MEAS. TEMP.	
RMF @ MEAS. TEMP.	
RMC @ MEAS. TEMP.	
SOURCE RMF	RMC
RM @ BHT	
TIME SINCE CIRC.	
MAX. REC. TEMP.	
EQUIP. LOCATION	
RECORDED BY	
WITNESSED BY	

RUN NO.	CASING DRILLER	CASING LOGGER	BOT. LOG INTERVAL	TOP LOG INTERVAL
1	0	106	3,246	

RUN NO.	BIT SIZE	TYPE FLUID IN HOLE	DENSITY	VISCOSITY
1	7.875			

RUN NO.	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
1					

RUN NO.	GAMMA RAY				
	T.C. SETTING	SPD. SETTING	SPD. N.A. (IN./S) REV. (IN./S)	SPD. N.A. (IN./S) REV. (IN./S)	TYPE REC.
1					

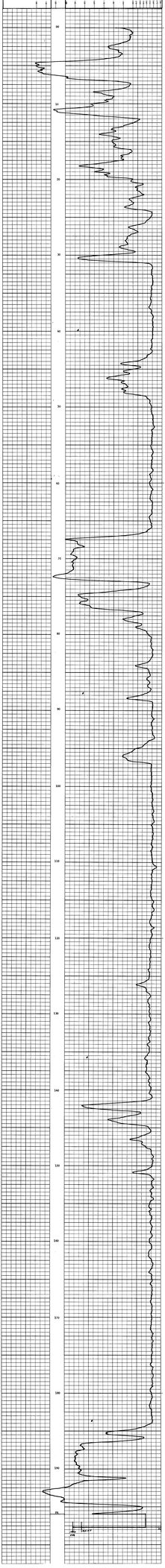
RUN NO.	GENERAL				GAMMA RAY				
	T.C. SETTING	SPD. SETTING	SPD. N.A. (IN./S) REV. (IN./S)	SPD. N.A. (IN./S) REV. (IN./S)	T.C. SETTING	SPD. SETTING	SPD. N.A. (IN./S) REV. (IN./S)	SPD. N.A. (IN./S) REV. (IN./S)	CPS/V
1					0	1000	1.25	14.25	

REMARKS: 3000 3000, X AXIS
OTHER SPUR

CALIPER
(DIAMETER)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)



ROKE OIL & EXPLORATION LTD.
CALGARY ALBERTA

276

WELL	16-27-23-5 W4M
FIELD	WILDCAT
COUNTY	
PROVINCE	ALBERTA
LOCATION	660' FSL & 660' FWL
SECTION	27
TOWNSHIP	23
RANGE	5 W4M
PERMANENT DATUM	GROUND LEVEL
ELEV.	3,170 FT.
LOG MEASURED FROM	K.B.
DRILLING MEASURED FROM	K.B.
ELEV. K.B.	3,179 FT.
ELEV. D.F.	
ELEV. G.L.	3,170 FT.
DATE	1-11-74
RUN NO.	ONE
TYPE LOG	GAMMA RAY NEUTRON
DEPTH DRILLER	2,700 FT.
DEPTH LOGGER	2,700 FT.
BTM. LOG INTERVAL	2,700 FT.
TOP LOG INTERVAL	1,000 FT.
CASING DRILLER	8 5/8" @ 1,000 FT.
CASING LOGGER	1,000 FT.
BIT SIZE	7 7/8"
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	9.2
VISCOSITY	40
PH	10
FLUID LOSS	8.4
SOURCE OF SAMPLE	FLOWLINE
RM @ MEAS. TEMP.	.75 @ 60°F
RMF @ MEAS. TEMP.	.60 @ 60°F
RMC @ MEAS. TEMP.	.95 @ 60°F
SOURCE OF RMF & RMC	MEASURED
RM @ BHT	.32 @ 120°F
TIME SINCE CIRC.	12 HRS.
MAX. REC. TEMP.	120°F
EQUIP. LOCATION	3 DIVS
RECORDED BY	A. DOBSON
WITNESSED BY	MR. LEE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
SERIAL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3 7/8 in.	SERIAL NO.	
DETECTOR MODEL NO.		DIAMETER	3 7/8 in.
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
SERIAL NO.	111 M 439	TYPE	PROPORTIONAL
DISTANCE TO X-RAYS	7.24 ft.	SPACING	15.24 CM.
		SOURCE MODEL NO.	MNC-N-50 M
CENTRAL		SERIAL NO.	127
ASSET TAG# NO.	30	TYPE	AM-BE CM
INSTRUMENT TRUCK NO.	24	STRENGTH	Curie
FINAL SERIAL NO.	122 DDG	ATTENUATION	1 0705284

LOGGING DATA

RUN	INTERVAL FROM	TO	SPEED FT/MIN	GAMMA RAY SENS	TC	SPC & or GAIN	F-1	NEUTRON SENS	SPC
ONE	1,000	2,700	30	1	1	1	1	1	1

REMARKS: CASING TENSION SHOWN ON GAMMA RAY. NEUTRON = CHANGE IN SPC PER 1. DEPTH

SPLICED SIDE SIDE 1 & SIDE 2 LOGS INTERVAL

GAMMA RAY — NEUTRON

GAMMA RAY INCREASES → | ← NEUTRON INCREASES

0 — 75 — 150 — 450 — 1650 — 2850

SCALE 1" = 50'

1000 — 1050 — 1100 — 1150 — 1200 — 1250 — 1300 — 1350 — 1400 — 1450 — 1500 — 1550 — 1600 — 1650 — 1700 — 1750 — 1800 — 1850 — 1900 — 1950 — 2000 — 2050 — 2100 — 2150 — 2200 — 2250 — 2300 — 2350 — 2400 — 2450 — 2500 — 2550 — 2600 — 2650 — 2700

SCALE 1" = 50'

R77-7

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

FILE NO. K-ELK RIVER 77(3)

COMPANY ELCO MINING LIMITED

WELL R 77 - 7

LOCATION 276

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

LSD
SEC
TWP
RGE
W M

Other Services: GRN, FBL, DEV

Permanent Datum GROUND LEVEL Elev.
Log Measured from GROUND LEVEL Above Perm. Datum
Well Depths Measured from GROUND LEVEL

K.B.
CSG
G.L.

METRIC

Run No.	ONE
Date	29 MAR 1977
First Reading	213 M
Last Reading	0
Footage Logged	213
Depth Reached	213.92
Depth Driller	222.65
Casing Roke	28
Casing Driller	
Fluid Type	WATER/AIR
Liquid Level	16.5
Min. Diam.	12.7 CM
Operating Time	1 HOUR 40 MIN
Truck No.	36

Recorded By CARLSON
Witnessed By LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M /MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	202.5	3.66					3	1000	1.87 R	39.41
2	0	203		CALIPER							

REMARKS DENS TOOL # 829 OPEN HOLE
CAL TOOL # 857 HOLE WAS DRILLED AND LOGGED IN TWO STAGES
1 st RUN - 202.5 - 00
2 nd RUN - 213 - 202.5

CALIPER
(DIAMETER - CENTIMETERS

10.16 15.24 20.32 25.40 30.48 35.56

DEPTHS

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77(3)AB

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 7
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
' Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	29 MAR 1977
First Reading	217.5 M
Last Reading	0
Footage Logged	217.5
Depth Reached	217.80
Depth Driller	222.65
Casing Roke	28
Casing Driller	
Fluid Type	WATER/AIR
Liquid Level	16.5
Min. Diam.	12.7 CM
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	13	3.66	4	100	0	16	3	1000	4L	360
2	13	203	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE. DRILLED AND LOGGED IN TWO STAGES
1st RUN - 203 - 00 M. 2nd RUN - 217.5 - 203 M

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →

ROKE

MANUFACTURING CO.

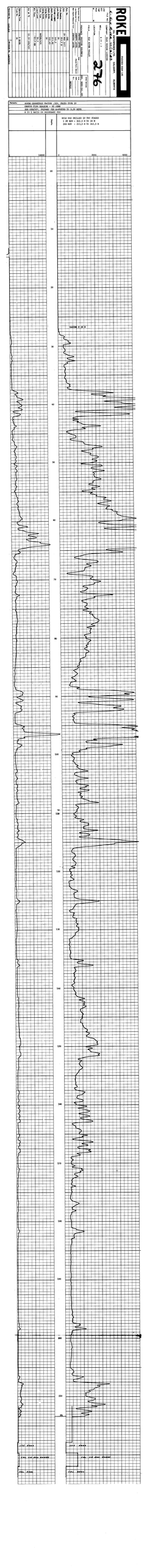
HOUSTON, TEXAS

2776

Remarks:

SYSTEM DISCONTINUES PASSING 12th PASSES DOWN IT
AND CONTINUES DOWN 13th PASS
AND CONTINUES, RECEIVES 3RD ANSWERING TO 2.5KC NOTE
& TO 5 WATTS ON INSTRUMENT MTR

WCSA WAS INCLUDED IN TWO STAGES
1 00 MON = 2412.5 N TO 28 W
300 MON = 2413.5 N TO 2412.5 W



K-ELK RIVER 77 (3) #B

R77-8

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	ELGO MINING LIMITED
WELL	R 77 - 8
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE		
Date	27 MAR 1977		
First Reading	159 M		
Last Reading	0		
Footage Logged	159		
Depth Reached	159.92		
Depth Driller	159.62		
Casing Roke	32		
Casing Driller			
Fluid Type	WATER/AIR		
Liquid Level	17.5		
Min. Diam.	12.7 CM		
Operating Time	1 HOUR 25 MIN		
Truck No.	36		
Recorded By	CARLSON	Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M /MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	159	3.66					3	1000	1.87R	39.47

REMARKS DENS TOOL # 829
CAL TOOL # 587

CALIPER (DIAMETER – CENTIMETERS

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

DEPTHS

BULK DENSITY
(GRAMS/CC)

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

ROKE

GAMMA RAY NEUTRON LOG

RECORDED BY: GEARHART-OWEN

K.B. 3,625.25 (est.)

D.F. 3,623.25 (est.)

G.L. 3,613.25 (est.)

Elev.: K.B. 3,625.25 (est.) D.F. 3,623.25 (est.) G.L. 3,613.25 (est.)

Permanent Datum: GROUND LEVEL

Log Measured From: K.B. 12 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Date: 3-8-84

Run No.: ONE

Depth-Driller: 8440

Depth-Logger: 8440

Bottom Logged Interval: 8440

Top Logged Interval: 3500

Type Fluid in Hole: WBM

Salinity, PPM Cl: 1,000

Fluid Level: FULL

Max. Rec. Temp. Deg. F.: 170

Equip. No. & Location: 2276 ODESSA

Recorded By: R. A. S.

Witnessed By: MR. BOWEN

CASING RECORD

	Size	Wgt.	Grade	Type Joint	From	To
Surface String	13 3/8"	54.5#	J-55	ST&C	0	1,171'
Prod. String	7"	23#	N-80	LT&C	0	8,440'
Liner						
Liner						

BORE HOLE RECORD

	Bit No.	From	To
	1	0	1,171'
	2	1,171'	8,440'

TYPE LOG: GAMMA RAY NEUTRON

LOGGING DISTRICT: ODESSA

LOGGED BY: J. HOLLOWAY

WITNESSED BY: MR. BOWEN

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3 3/8"	DIAMETER	3 3/8"
DETECTOR MODEL NO.	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.18 ON	LENGTH	PROPORTIONAL 13.14 ON
DISTANCE TO S. SOURCE	5.04 ft	SOURCE MODEL NO.	MRC-N-65-M
		SERIAL NO.	110
		SPACING	43.19 ON
		STRENGTH	Amrs
GENERAL			
RIGHT STACK NO.	36		
TOOL SERIAL NO.	110		070219
TOOL SERIAL NO.	122.004		

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	INTER. FROM	INTER. TO	SPEED F/M	T.C. SEC.	SENS. SETTING	DEV. L.IN.	API G. R. UNITS PER L.OG DIV.	T.C. SEC.	SENS. SETTING	ZERO	API N. UNITS PER L.OG DIV.
1	0	1,171	1,200	1	100	0	10	1	1000	40	200
2	1,171	8,440	1,200	1	100	0	10	1	200	0	100

REMARKS: CASED HOLE

GAMMA RAY | DEPTH | NEUTRON

GAMMA RAY INCREASES → 0 | 100

NEUTRON INCREASES → 8440 | 8440

SCALE CHANGE @ 11,1 9

LOGGED DEPTH @ 11,1 9

3500 | 3500

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
175

ROKE

POOTERS RUN LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (7-8)

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W.	M
COMPANY	ELGO KEYSTONE LIMITED
WELL	R 77 - 8
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA

Other Services: CDN, GRDSN-CAL, DPV

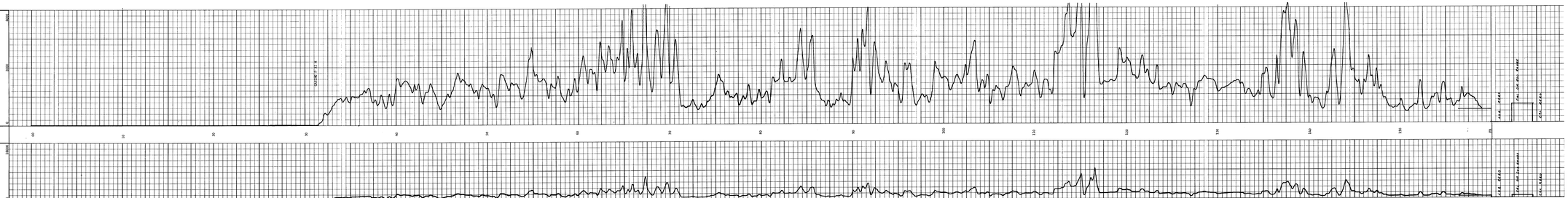
Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	GROUND LEVEL	Above Perm. Datum	D.F.
Drill Measured from	GROUND LEVEL		G.L.

NETSCI

Run No.	ONE		
Date	27 MAR 1977		
First Reading	128 M		
Last Reading	327		
Footage Logged	199		
Depth Reached	159.45		
Depth Drilled	159.45		
Casing Rate	32		
Casing Drilled			
Fluid Type	WATER/AIR		
Liquid Level	17.3		
Min. Chem.	12.7		
Rec. # °C	15.38 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By: GARSON Witnessed By: LAWRENCE

Remarks: SONIC CONDITIONS FAIRLY GOOD, DROPS TO 10 AT 159.45 ON RETURN. SONIC CONDITIONS FAIRLY GOOD FROM 0 TO 1 DROPS TO 10 AT 159.45 ON RETURN IN BOTTOMHOLE ZONE



ROKE OIL ENTERPRISES LTD.

SPERRY-SUN WELL SURVEYING COMPANY
CALGARY ALBERTA

FILE NO. 276
DATE 8-12-5
SURVEY FROM SURFACE
TO 3600
RUN ONE

WELL: 8-12-5
LOCATION: SW 12-29-5 W4M
FIELD: JOFFRE
COUNTY OR PROVINCE: RED DEER COUNTY, ALBERTA

276

Elevations: K.B. 2,500 ft.
Above Perm. Datum
Log Measured From K.B.
Drilling Measured From K.B.

Date Run: 8-12-5
Date Rec.: 8-12-5
Depth-Driller: 3600
Depth-Logger: 3600
Bottom Logged Interval: 3600
Top Logged Interval: SURFACE
Type Fluid in Hole: GEL CHEM
Salinity: 1.5 PPM
Density: 9.5 LB/GAL
Level: FULL
Max. Rec. Temp. Deg. F.: 80
Operating Rig Time: 8 HRS
Recorded By: JAMIESON
Witnessed By: MARTIN

Run No.: ONE
Type Log: GAMMA RAY NEUTRON
Scale: 5" = 100'
Gamma Ray Scale: 0 - 100 API
Neutron Scale: 60 - 0 %
Type Run: OPEN HOLE
Equipment No.: 1-1501
Location: EDMONTON
Recorded By: JAMIESON
Witnessed By: MARTIN

Run No.: TWO
Type Log: CALIPER BULK DENSITY
Scale: 5" = 100'
Caliper Scale: 6 - 16 INS.
Bulk Density Scale: 2.0 - 3.0 GM/CC
Type Run: OPEN HOLE
Equipment No.: 1-1501
Location: EDMONTON
Recorded By: JAMIESON
Witnessed By: MARTIN

GENERAL				GAMMA RAY				SIDEWALL CORE(S)			
RUN NO.	CASING FROM	CASING TO	SPACE @ DEPTH	T.C. SETTING	ZERO SET'G DEPTH	API G.R. UNITS PER DIV. SET'G		T.C. SETTING	ZERO SET'G DEPTH	CPS/ DIV	
1	0	347.5	3,68					3	1000	1,01	34,53
2	0	348		CALIPER							

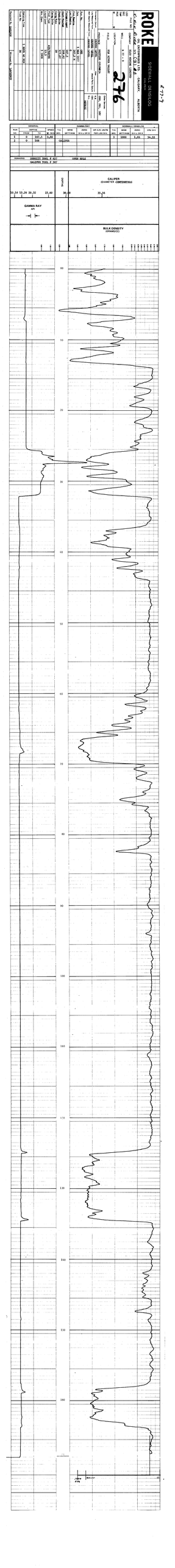
REMARKS: DIRECT 3500, F 617
CALIPER 3500, F 587

OPEN HOLE

CALIPER
(DIAMETER CENTIMETERS)

BULK DENSITY
(GRAMS/CC)

GAMMA RAY
API



ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.	K- Elk River 77 (a) # B
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 9
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W M	
Other Services:	DENS.CAL.FEL.DEV
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	GROUND LEVEL Above Perm. Datum
Well Depths Measured from	GROUND LEVEL
K.B. / CSG / G.L.	METRIC

Run No.	ONE
Date	5 MAR 1977
First Reading	168 M
Last Reading	00
Footage Logged	168
Depth Reached	168.30
Depth Driller	175.07
Casing Driller	28
Casing Roke	
Fluid Type	AIR/WATER
Liquid Level	13.5
Min. Diam.	5 INCH
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 MM	TOOL MODEL NO.	-
DETECTOR MODEL NO.		DIAMETER	25 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	36	SERIAL NO.	127
INSTRUMENT TRUCK NO.	36	SPACING	43.18 CM
TOOL SERIAL NO.	125 004	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	13	3.66	4	100	0	16	3	1000	4L	360
2	13	168	3.66	4	100	0	16	3	500	0	180

REMARKS OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
API 16		API 360
0 160		1440 5040 8640

ROKE

Company: CONOCO INC.
Well: 1 T.J.S.
Location: 24,25N-10E-SECTION 13
Field: WILDCAT
County: GARFIELD
State: OKLAHOMA

Elevation: 1100 GL
Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Date: 1-23-73
Run No.: ONE
Depth-Driller: 9,000
Depth-Logger: 9,000
Bottom Logged Interval: 8,998
Top Logged Interval: 3,000
Type Fluid in Hole: CHEMICAL
Salinity, PPM Cl: 10,000
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 160
Operating Rig Time: 12 HRS
Recorded By: JOHNSON
Witnessed By: JOHNSON

Run No. ONE
Type Log: DUAL INDUCTION LATEROLOG
Depth-Driller: 9,000
Depth-Logger: 9,000
Bottom Logged Interval: 8,998
Top Logged Interval: 3,000
Casing-Driller: 13 3/8 @ 1,000
Casing-Logger: 1,000
Bit Size: 12 1/4
Type Fluid in Hole: CHEMICAL
Density: 9.2
Viscosity: 40
Ph: 10.5
Fluid Loss: 6.4
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 0.75 @ 70
Rmf @ Meas. Temp.: 0.60 @ 70
Rmc @ Meas. Temp.: 1.00 @ 70
Source: Rmf: MEASURED Rmc: MEASURED
Rm @ BHT: 0.35 @ 160
Time Since Circ.: 12 HRS
Max. Rec. Temp. Deg. F: 160
Equip. No. & Location: 3 OKC
Recorded By: JOHNSON
Witnessed By: JOHNSON

Remarks: BOOSTER CORRECTION FACTOR .125, TRACES TAKEN BY ...
CONOCO FIELD HANDBOOK - 1250 HYBRID.
ZONE INTERVALS, READINGS AND ANALYSIS DO 2.25 DEVS.
R TO I RATIO ON SHOWBOAT PEN

Scale 0 to 1000 | Scale 0 to 3000 | Scale 0 to 6000

CASING @ 1000

LOG READ: 0.2 0.6 2
FAL DU DOG SCALE
FAL ZERO

LOG READ: 0.2 0.6 2
FAL DU DOG SCALE
FAL ZERO

Recorded By: JARVIS
Witnessed By: JARVIS
Drilling Fluid Type: GEL CHEM
Fluid Loss: 9.0 cc
Source of Sample: FLOWLINE
R_m @ Meas. Temp: 1.30 @ 18°C
R_mf @ Meas. Temp: 1.00 @ 18°C
R_mc @ Meas. Temp: 1.60 @ 18°C
Source: R_mf: MEAS. R_mc: CALC.
Rm @ BHT: 0.70 @ 70°C
Time Since Circ: 12 HRS.
Max. Rec. Temp.: 70°C
Equip. No. & Location: 2305 DEVON
Recorded By: JARVIS
Witnessed By: JARVIS

ROKE
SIDEWALL CORING

ROKE OIL AND ENTERPRISES LTD.
1112 - 1st STREET S.E.
CALGARY, ALBERTA

WELL: 102/16-36-032-05W5/00
FIELD: BEAVERHILL LAKE
COUNTY: BEAVERHILL LAKE
LOCATION: 16-36-032-05W5
PROVINCE: ALBERTA
COUNTRY: CANADA

Permanent Datum: GROUND LEVEL
Elev.: K.B. 1000 ft
Log Measured From: K.B. 10 ft ABOVE PERM. DATUM
Drilling Measured From: K.B.
Elev.: K.B. 1000 ft, G.L. 990 ft

Date: 6 DEC 77
Run No.: ONE
Depth-Driller: 3000 ft
Depth-Logger: 3000 ft
Bottom Logged Interval: 3000 ft
Top Logged Interval: 1000 ft
Casing-Driller: 9 5/8 @ 1000 ft
Casing-Logger: 9 5/8 @ 1000 ft
Bit Size: 8 3/4 in
Type Fluid in Hole: GEL CHEM
Density: 10.0 lb/gal
Viscosity: 45 s
pH: 10.0
Fluid Loss: 9.0 cc
Source of Sample: FLOWLINE
R_m @ Meas. Temp: 1.30 @ 18°C
R_mf @ Meas. Temp: 1.00 @ 18°C
R_mc @ Meas. Temp: 1.60 @ 18°C
Source: R_mf: MEAS. R_mc: CALC.
Rm @ BHT: 0.70 @ 70°C
Time Since Circ: 12 HRS.
Max. Rec. Temp.: 70°C
Equip. No. & Location: 2305 DEVON

RECORDED BY: JARVIS
WITNESSED BY: JARVIS

976

K-77-09

SPIRAL				GAMMA RAY				SIDEWALL SAMPLING		
RUN NO.	CENTER FROM	CENTER TO	SPACED @ FEET/MIN.	T.C. SETTINGS	SENS. API/1.0V/M.F.	API M.A. UNITS MEA.LOG SCA.	T.C. SETTINGS	SENS. API/1.0V/M.F.	CAL. DIV.	
1	0	146.5	1.88				3	1000	1.88	54.40
2	0	163		CALIPER						
REMARKS: 2000 3000, @ 60/ ONE TOOL, @ 30/										

CALIPER (DIAMETER - CENTIMETERS)

10.16 13.24 20.32 25.40 30.48 35.56

GAMMA RAY API

BULK DENSITY (GRAMS/CC)

1.95 2.00 2.05 2.10 2.15 2.20 2.25 2.30 2.35 2.40 2.45 2.50 2.55 2.60 2.65 2.70 2.75 2.80 2.85 2.90 2.95 3.00

1000
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

K-ELK RIVER 77(3)#B

276

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W	M
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 10
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	DENS-CAL, FBL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	25 MAR 1977
First Reading	167 M
Last Reading	0
Footage Logged	167
Depth Reached	167.30
Depth Driller	167.75
Casing Roke	28
Casing Driller	
Fluid Type	WATER/AIR
Liquid Level	14
Min. Diam.	12.7 CM
Rm @ °F	
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	32 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	32 MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	127
HOIST TRUCK NO.	36	SPACING	43.18 CM
INSTRUMENT TRUCK NO.	36	TYPE	AmBe
TOOL SERIAL NO.	125 004	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	13	3.66	4	100	0	7	3	1000	10 L	120
2	13	167	3.66	4	100	0	7	3	500	0	60

REMARKS LOGGED THROUGH DOUBLE WALL DRILL ROD

ROKE

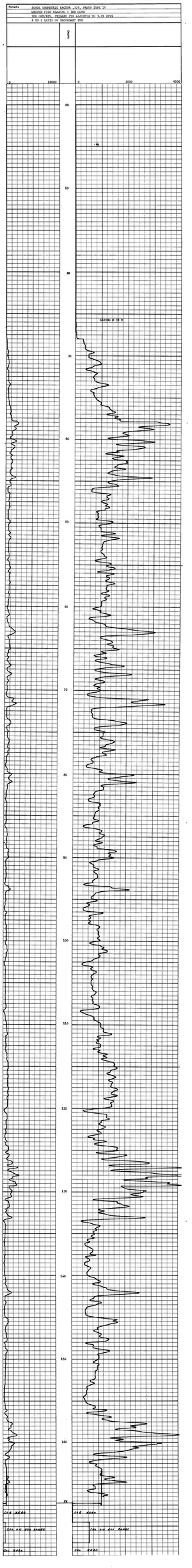
PROCESSED BY ROKE LOG

K-BOAR LTD.
OIL INTERPRETATION LTD.
CALGARY, ALBERTA

FILE NO. 276
COMPANY: ROCK ISLAND OIL
WELL: B.T.P. - 10
LOCATION: 6-29 XIX VIRGO VILLAGE
FIELD: 6-29 XIXIX VILLAGE
Date Run: 1-MAR-83
Date Processed: 1-MAR-83
Log Scale: 1:200
Depth Scale: 1:1

Elev. KB	
Elev. GL	
Elev. DF	
Elev. Log Datum	
Depth Log Datum	
Log Interval	2149 - 1314
Casing Shoe	1314.3
Casing Diam.	10 3/4
Casing Wgt.	32.75
Casing Type	
Bit Size	9 7/8
Mud Type	NONTOXIC
Mud Wt.	11.7
Mud Visc.	37.0K
Max. Rec. Temp.	
Rm @ °C	
Rmf @ °C	
Rmc @ °C	
Source Rmf	
Source Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	
Equipment No.	3-MUD 2-DIL
Recorded By	
Witnessed By	

Remarks: SONIC CORRECTED FACTOR .125, PHOTO TYPE IV
GRADED FOR HARDING - 300 GONE
300 GONE/DIV. PREPARE FOR ANALYSIS DO 3.29 XIVX
8 TO 1 RATIO IN SECONDARY PPM



ROKE

ROKE OILFIELD SERVICES LTD.
Suite 900, 639 - 5th Ave. S.W. CALGARY, ALBERTA T2P 0M9

WELL 276
FIELD
PROVINCE
LOCATION
COUNTY
STATE
COMPANY

Other Services: CBL-VDL-GR

Permanent Datum: GL Elev.: K.B.: D.F.: G.L.:
Log Measured From: K.B. 11 Ft. Above Perm. Datum
Drilling Measured From: K.B.

Date: 1-Jun-84
Run No.: ONE
Depth-Driller: 3600
Depth-Logger: 3600
Bottom Logged Interval: 3600
Top Logged Interval: 1300
Type Fluid in Hole: WATER BASE
Salinity, PPM Cl: 1000
Density: 9.2
Level: FULL
Max. Rec. Temp. Deg. F: 120
Equip. No. & Location: 1111 CAL
Recorded By: R. LEE
Witnessed By: MR. GOLDEY

	Bit	Size	From	To
CASING RECORD		8 5/8	SURF	1300
		5 1/2	1300	3600

	Type	Density	Viscosity	pH	Fluid Loss
MUD TYPE	GEL CHEM	9.2	40	10.5	8.4

	Source	RM @ Meas. Temp.	RMF @ Meas. Temp.	RMC @ Meas. Temp.	Source of RMF & RMC
MUD RESISTIVITY	MEAS.	1.11 @ 70	1.11 @ 70	1.11 @ 70	MEAS.

	Time Since Circ.	Max. Rec. Temp.	Equip. Location	Recorded By	Witnessed By
	12 HRS	120	1111 CAL	R. LEE	MR. GOLDEY

EQUIPMENT DATA

GAMMA RAY	
RUN NO.	ONE
TOOL MODEL NO.	
DIAMETER	3½ OD
DETECTOR MODEL NO.	
LENGTH	SCINTILLATION
DISTANCE TO SOURCE	5.25 IN.
DISTANCE TO DETECTOR	5.25 IN.

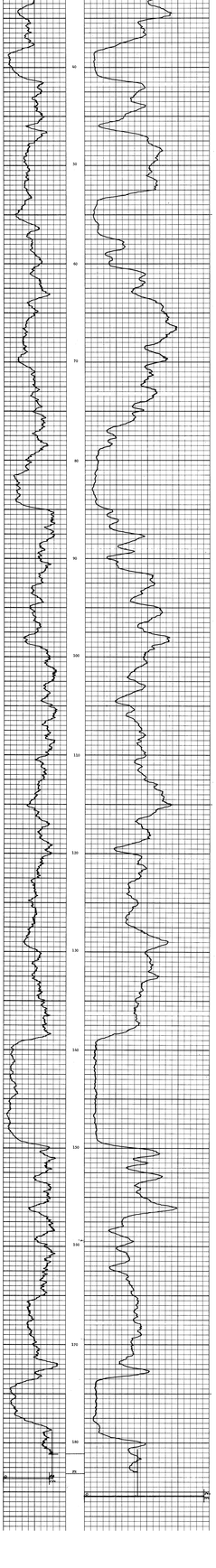
GENERAL	
INSERT TRACK NO.	70
CORRELATION TRACK NO.	70
TOOL SERIAL NO.	112-106

NEUTRON	
RUN NO.	ONE
TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	3½ OD
DETECTOR MODEL NO.	
LENGTH	PROPORTIONAL
SOURCE MODEL NO.	13.25 IN.
SERIAL NO.	MRC-B 50 M
SPACING	13.25 IN.
SOURCE	Am-Be
DISTANCE TO DETECTOR	4 GOLEY

LOGGING DATA

RUN NO.	GENERAL SETTINGS			T.C.	GAMMA RAY	NEUTRON			T.C.	NEUTRON		
	FROM	TO	SPEED (FPM)	SETTING	SENS. (API/IN)	API & IN. UNITS (API/IN)			SETTING	SENS. (CPS/IN)	API & IN. UNITS (API/IN)	
1	0	11.5	2,400	6	500	0	7	3	1000	50	5	135
1	11.5	1613	2,400	6	500	0	7	3	500	0	0	60

REMARKS: LOGGED TOWARDS BOTTOM



ROKE
SCHLUMBERGER LTD.
CALGARY ALBERTA

SIDEWALL DENSILOG

Recorded By: COSGROVE
Witnessed By: JOHNSTON

Location From Which Measurements Are Taken: K.B.
Drilling Measured From: K.B.

Run No.	Date	Depth-Driller	Depth-Logger	Bottom Logged Interval	Top Logged Interval	Casing-Driller	Casing-Logger	Bit Size
1	3-NOV-71	3301	3317	3315	1355	1355	1355	7.875

Type Fluid in Hole: GEL CHEM
Dens.: 10.0 Visc.: 50
pH: 11.5 Fluid Loss: 10.4 c.c.
Source of Sample: CIRC.
Rm @ Meas. Temp.: 0.37 @ 70°F
Rmf @ Meas. Temp.: 0.30 @ 70°F
Rmc @ Meas. Temp.: 0.45 @ 70°F
Source: Rmf: CALC Rmc: CALC
Rm @ BHT: 0.22 @ 120°F
Time Since Circ.: 5 HRS
Max. Rec. Temp. Deg. F: 120°F
Equip. No. & Location: 1309 - 1309
Recorded By: COSGROVE
Witnessed By: JOHNSTON

COMPANY	SOUTH LOUISIANA LIMITED
WELL	B-72-I-12
LOCATION	B-72-I-12
FIELD	RED RIVER VALLEY
COUNTY/PARISH	
STATE/PROVINCE	MANITOBA
SECTION	12
TOWNSHIP	1
RANGE	27
PERMANENT DATUM	GROUND LEVEL
ELEV.	
LOG MEASURED FROM	K.B. 1.5 FT. ABOVE PERM. DATUM
DRILLING MEASURED FROM	K.B.
ELEV.: K.B.	1.5
D.F.	
G.L.	

Other Services: DUAL INDUCTION LATEROLOG

2-27-12

276

GENERAL				GAMMA RAY			BOREHOLE DENSILOG		
RUN No.	DEPTH FROM	DEPTH TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO API G.A. UNITS PER LOG D/V	T.C. SEC.	SENS SETTINGS	ZERO GM/CC PER LOG D/V
1	0	128	3.66		1 355		3	1000	1.88 2.33
2	0	3315		COUPLED					

REMARKS: DENSITY TOOL # 637 CALIPER TOOL # 207

OPEN HOLE, VERY POOR LOGGING CONDITIONS, WITH "SLOUGHING IN" LAST 30 METERS. TOOL WAS HYDRED TO F.L. THIS BEGANS BRICK. CORRESPONDENTS DEPTH READINGS READ 1.5 M DIFFERENT TO CAS LOG

CALIPER (DIAMETER - CENTIMETERS)

20.16	15.24	20.32	23.40	DEPTH	30.48	35.56

GAMMA RAY (API)

BULK DENSITY (GRAMS/CC)

1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00

ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD.

CALGARY ALBERTA

COMPANY

WELL

FIELD

LOCATION

S.E. 27 - 32 - 27 W4

276

COUNTY

PROVINCE

Permanent Datum	GROUND LEVEL	Elev.	3,570
Log Measured From	K.B.		10 FT.
Drilling Measured From	K.B.		

Date			3-12-77
Run No.			ONE
Depth Driller			5,800
Depth Logger			5,777
Bottom Logged Interval			5,777
Top Logged Interval			4,000
Casing Driller			8 5/8 @ 127
Casing Logger			127
Bit Size			7 7/8
Type Fluid in Hole			GEL CHEM
Density			9.7
Viscosity			40
Fluid Loss			8.4
Source of Sample			CIRC.
R_m @ Meas. Temp.			.5 @ 70°F
R_mf @ Meas. Temp.			.4 @ 70°F
R_mc @ Meas. Temp.			.6 @ 70°F
Source R_mf / R_mc			MEAS. / CALC.
R_m @ BHT			.3 @ 150°F
Time Since Circ.			12 HR
Max. Rec. Temp.			150°F
Equip. Location			3-5
Recorded By			BOWER
Witnessed By			GOODWIN

EQUIPMENT DATA

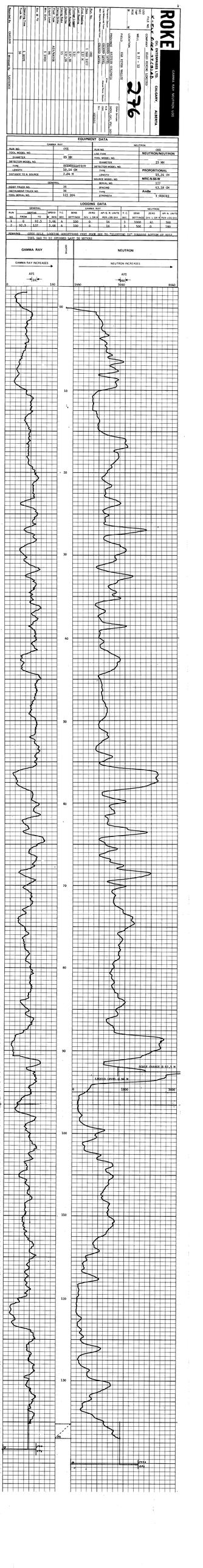
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	25 IN.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	25 IN.
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.14 CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 M	LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-55-M
JOINT TRUCK NO.	36	SERIAL NO.	327
INSTRUMENT TRUCK NO.	36	SPACING	43.18 CM
TOOL SERIAL NO.	122.004	TYPE	AmBe
		STRENGTH	3 CURIES

LOGGING DATA

GENERAL

RUN NO.	INTERVAL FROM	INTERVAL TO	SPEED M. MIN	SPEED SEC	GAMMA RAY T.C. SETTINGS	GAMMA RAY MEAS. DIV. L OR M	GAMMA RAY API/L OR M UNITS PER 1 DIV DIV.	NEUTRON T.C. SETTINGS	NEUTRON SENS. SETTINGS	NEUTRON ZERO DIV. L OR M	NEUTRON API/L OR M UNITS PER 1 DIV
1	0	92.3	3.48	4	100	0	16	3	5000	41	560
2	92.3	137	5.68	4	100	0	16	3	500	0	140

REMARKS: OPEN HOLE LOGGING CONDITIONS VERY POOR DUE TO CAVING IN. DIMINISH BOTTOM OF HOLE. TOOL SAID TO BE STUCK LAST 20 METERS



ROKE

Focused Beam Log

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER YUKON

FILE NO.

COMPANY ELCO ALASKA ALBERTA

LSD SEC TWP RGE W M

WELL R 22-12

LOCATION

276

FIELD ELK RIVER VALLEY

PROVINCE OR TERRITORY YUKON TERRITORY

Permanent Datum: GROUND LEVEL Elev.

Log Measured from: GROUND LEVEL Above Perm. Datum

Elev.: K.B. 2241.00 D.F. G.L.

Other Services: GEOLOGICAL LOG

Rec. No. 2 3 4

Date 1 MAR 27 2 APR 1 3 APR 2

Type Fluid in Hole 1 GEL 2 GEL 3 GEL

Density 1 9.5 2 9.5 3 9.5

Viscosity 1 42 2 42 3 42

Depth-Driller 1 8210 2 8210 3 8210

Depth-Logger 1 8212 2 8212 3 8212

Bottom Logged Interval 1 8212 2 8212 3 8212

Top Logged Interval 1 SURFACE 2 SURFACE 3 SURFACE

Casing-Driller 1 @ 2 @ 3 @

Casing-Logger 1 @ 2 @ 3 @

Bit Size 1 7 7/8" 2 7 7/8" 3 7 7/8"

Type Fluid in Hole 1 SALT/GYP 2 SALT/GYP 3 SALT/GYP

Salinity, PPM Cl 1 35K 2 35K 3 35K

Source of Sample 1 FLOWLINE 2 FLOWLINE 3 FLOWLINE

Rm @ Meas. Temp. 1 .472@81°F 2 .472@81°F 3 .472@81°F

Rmf @ Meas. Temp. 1 2 3

Rmc @ Meas. Temp. 1 2 3

Source of Rmf and Rmc 1 2 3

Rm @ BHT 1 .472@81°F 2 3

Time Since Circ. 1 4HR 2 3

Max. Rec. Temp. Deg. F 1 86 2 3

Equip. Location 1 2 3

Recorded By 1 GRABOWSKI 2 3

Witnessed By 1 GRABOWSKI 2 3

Remarks: SONIC GEOMETRIC FACTOR .329 PHOTO TYPE TU
GROUND FISH RESPONSE = 90 UNITS
SSD DA/DU, PRIMARY RUN NORMALIZED TO 3.29 LIME
R TO I RATIO ON SECONDARY RUN

SEVERAL HOURS BETWEEN TIME OF 1ST LOG (GRD) AND FBL. CONSIDERABLE SLUMPING IN AT BOTTOM OF HOLE PLUS GRADUAL RISE OF WATER INDICATES TAKEN PLACE.

0 10,000 0 5000 10,000

WATER LEVEL 24.5 M

50 60 70 80 90 100 110 120

FR

LOG READ

CAL ON BOX RANGE

CAL READ

LOG READ

CAL ON BOX RANGE

CAL READ

ROKE

SIDEWALL DENSILOG

Compensated

K.B. Elev. 3,731 ft. Above Sea Level

Elev.: K.B. 3,731	
D.F.	
G.L.	
Log Measured From K.B.	
Drilling Measured From K.B.	
Permanent Datum: GROUND LEVEL	Elev. 3,717 ft.

Rge. 26 W4M

Twp. 33

Sec. 35

Unit

Field No.

Office No.

Well	8-35-33-26
Company	ROKE OILS LIMITED
Calgary	Alberta

276

Run No.	ONE
Date	10-5-78
Type Log	DENSILOG
Depth-Driller	3600
Depth-Logger	3599
Bottom Logged Interval	3599
Top Logged Interval	3000
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1,000
Density	10.0
Level	FULL
Max. Rec. Temp. Deg. F.	140
Equipment Number	1 SIDE
Location	
Recorded By	D. LEWIS
Witnessed By	

Run No.	ONE
Bit From	0
Bit To	3600
Size	7 7/8
Type	HTC
Weight	10.0
Viscosity	40
Fluid Loss	10.0
Source of Sample	MUD PIT
R @ Meas. Temp.	1.0 @ 70
R_mf @ Meas. Temp.	.75 @ 70
R_mc @ Meas. Temp.	1.5 @ 70
Source: R_mf / R_mc	MEASURED
R @ BHT	.5 @ 140
Time Since Circ.	12 HRS
Time on Bottom	1 HR
Max. Rec. Temp. Deg. F.	140
Equipment Number	1 SIDE
Location	
Recorded By	D. LEWIS
Witnessed By	

GENERAL DATA			GAMMA RAY			SIDEWALL DENSILOG			
RUN NO.	FROM	TO	SPEED IN FPM	T.C. SETTINGS	SENS. API, G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS. SETTINGS	ZERO DIAL LOG	CAL. DIV
1	0	140.0	5.85			3	3600	2.4	34.55

REMARKS: DENSITY TOOL # 487 — GAMMA MEDIA

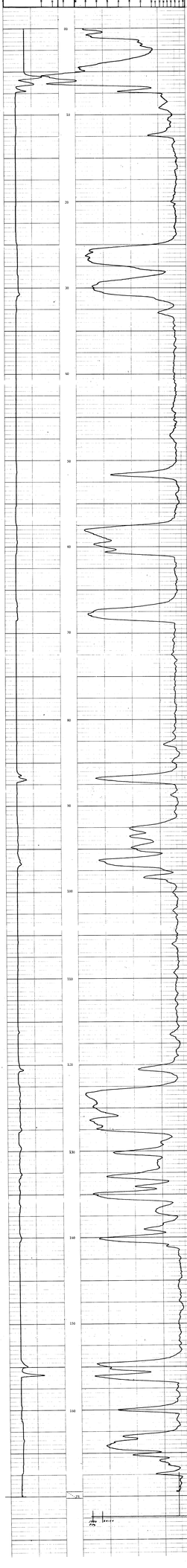
CALIPER TOOL # 587

30.16	33.36	35.92
	30.48	
		35.56

CALIPER (DIAMETER - CENTIMETRES)

GAMMA RAY API

BULK DENSITY (GRAMS/CC)



Base Log

Tender

ROKE

CANADIAN WELL LOGGING SOCIETY

FILE NO. 276

COMPANY: C.P.R. ET AL

WELL: C.P.R. ET AL ROKE 2-13-29-5W4

FIELD: ROKE

LOCATION: SEC 2 TWP 29 RGE 5 W 4 M

PROVINCE: ALBERTA

COUNTY: CALGARY

OTHER SERVICES: DIP

PERMANENT DATUM: GROUND LEVEL

ELEV.: K.B. 1276 D.F. G.L.

LOG MEASURED FROM: K.B. 12 FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: K.B.

RUN NO. ONE

DEPTH-DRILLER 7300

DEPTH-LOGGER 7300

BTM. LOG INTERVAL 7300

TOP LOG INTERVAL 3000

CASING-DRILLER 8 5/8 @ 540

CASING-LOGGER 540

BIT SIZE 7 7/8

TYPE FLUID IN HOLE GEL CHEM

DENSITY 9.2

VISCOSITY 45

PH 10.5

FLUID LOSS 8.4

SOURCE OF SAMPLE MUD PIT

RM @ MEAS. TEMP. 1.1 @ 70

RMF @ MEAS. TEMP. .9 @ 70

RMC @ MEAS. TEMP. .7 @ 70

SOURCE OF RMF & RMC MUD PIT

RM @ BHT .5 @ 140

TIME SINCE CIRC. 12 HRS

MAX. REC. TEMP. 140

EQUIP. NO. & LOCATION 1008 CALGARY

RECORDED BY R. ZIMMERMAN

WITNESSED BY MR. MOORE

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	4.5 IN.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	4.5 IN.
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
DISTANCE TO SOURCE	24 3/4 IN.	TYPE	PROPORTIONAL
	7.06 M.	LENGTH	12-24 IN.
GENERAL		SOURCE MODEL NO.	MNC-5-80-19
		SERIAL NO.	155
HOIST TRUCK NO.	36	SPACING	12,18 IN.
INSTRUMENT TRUCK NO.		TYPE	Am-Be
TOOL SERIAL NO.	103 001	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY			NEUTRON			
RUN NO.	INTERVAL FROM	INTERVAL TO	SPEED IN FPM	T.C. SEC.	SENS. BOTTOM	ZERO API & M. UNITS	API & M. UNITS PER DIV.	T.C. SEC.	SENS. BOTTOM	ZERO API & UNITS
1	0	12.5	5.44	.5	500	0	5.5	.5	1000	0
2	12.5	540	5.44	.5	500	0	5.5	.5	500	0

REMARKS: JOHN WOLF - GAMMA RELATIVE TO CONTINUOUS GAS CALIPERED AND MUDDED TO 54. ASSEMBLY

GAMMA RAY

GAMMA RAY INCREASES

0 — 540

NEUTRON

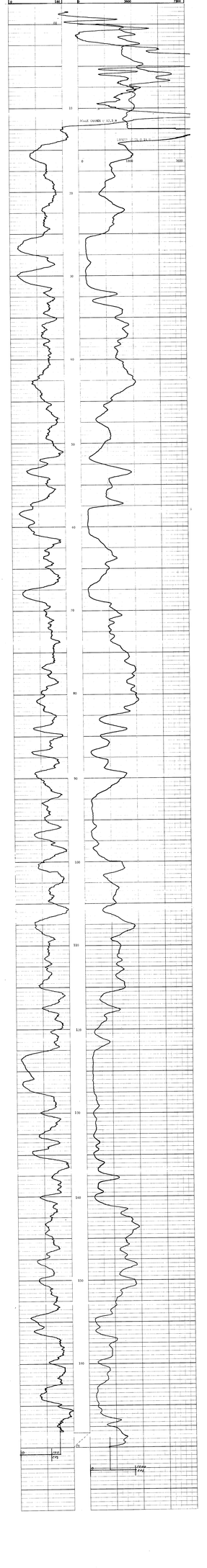
NEUTRON INCREASES

3000 — 7300

SCALE CHANGES @ 12,5 M

LIMESTONE PORTION OF 12,5 M

0 — 1000 — 3000



ROKE

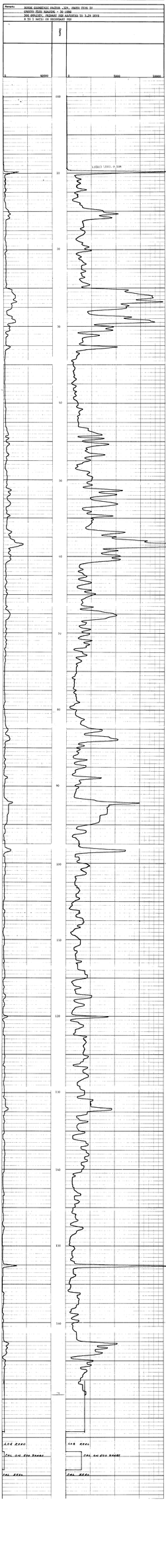
OIL OILFIELD SERVICES LTD.

CALGARY, ALBERTA

276

Company	ROKE OIL OILFIELD SERVICES LTD.
Well	K. Cok Eaglesham 6-30
Field	EAGLESHAM
County	
Province	ALBERTA
Country	CANADA
Date	6-11-83
Run No.	1
Depth Driller	6300
Depth Logger	6300
Bottom Log Interval	6300
Top Log Interval	1500
Casing Driller	13 3/8 @ 1500
Casing Logger	
Bit Size	12 1/4
Type Fluid in Hole	LIGNOSULPHONATE
Dens.	10.0
Visc.	45
PH	9.5
Fluid Loss	10.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	1.83 @ 70°F
Rmf @ Meas. Temp.	1.53 @ 70°F
Rmc @ Meas. Temp.	1.10 @ 70°F
Source Rmf / Rmc	CALC.
Rm @ BHT	1.83 @ 70°F
Time Since Circ.	10 HRS
Max. Rec. Temp.	70°F
Equipment Number	1
Location	6-30-T-24-W4
Recorded By	R. SCHMIDT
Witnessed By	

Remarks: DUAL GEOMETRIC FACTOR .125, PROTO TYPE IV
LONGER TRAV SPACING - 30 USED
500 OPERATE, PROMPT FOR ADDITIONS TO 3.29 SEVE
8 TO 1 RATIO ON SECONDARY PAD



ROKE

SIDEWALL DENSILOG

Company: ROKE OIL (1967) LTD.
Well: 14-32-26-5W5
Field: KILLAM
Location: 8-14-32-26W5
Province: ALBERTA
Other Services: CNL-GR
Permanent Datum: KB
Elev.: 2376
Log Measured From: KB
Ft. Above Perm. Datum: 4.5
Drilling Measured From: KB
Date: 3-MAY-67
Run No.: ONE
Depth-Driller: 3000
Depth-Logger: 3000
Bottom Log Interval: 2999
Top Log Interval: 1000
Casing-Driller: 8.625 @ 1000
Casing-Logger: 1000
Bit Size: 7.875
Type Fluid in Hole: GEL CHEM
Density: 10.0
Viscosity: 50
Fluid Loss: 7.5
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 0.71 @ 70
Rmf @ Meas. Temp.: 0.53 @ 70
Rmc @ Meas. Temp.: 1.2 @ 70
Source of Rmf & Rmc: CALC
Rm @ BHT: 0.39 @ 140
Time Since Circ.: 12 HRS
Max. Rec. Temp. Deg. F: 140
Equip. No. & Location: 1306 RED DEER
Recorded By: R. MCNEIL
Witnessed By: JOHNSON

2376

GENERAL				GAMMA RAY			SIDEWALL DENSILOG		
RUN NO.	CASING (FROM)	CASING (TO)	SPEED (FT. PER MIN.)	T.C.	SENS. SETTINGS	DENS. SETTINGS	SET. GL. UNITS PER LOG INCH	T.C. SEC.	SENS. SETTINGS	DENS. SETTINGS	CPM/ SCU
1	0	126	3,600					3	1000	1.68	54.55
2	0	126.5									

REMARKS: CALIPER

REMARKS	DENSITY TOOL # 467
	CALIPER TOOL # 387

OPEN HOLE

CALIPER
QUARTER - DIMENSIONS

INCHES

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE

CANADA WIDE SERVICE LTD.

COMPANY	K-B-K ENERGY LTD.
WELL	K-B-K ET AL PEMBINA 6-33-49-7
FIELD	PEMBINA
COUNTY	PARISH
PROVINCE	ALBERTA
LOCATION	6-33-49-7 W5M
PERMANENT DATUM	GROUND LEVEL
LOG MEASURED FROM	K.B.
DRILLING MEASURED FROM	K.B.
ELEVATION	K.B. 1600
	D.F.
	G.L. 1590
DATE	13-12-83
RUN NO.	ONE
DEPTH-DRILLER	1600
DEPTH-LOGGER	1600
BTM. LOG INTERVAL	1600
TOP LOG INTERVAL	0
CASING-DRILLER	8.625 @ 0
CASING-LOGGER	0
BIT SIZE	7.875
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	1.10
VISCOSITY	50
PH	10.5
FLUID LOSS	6.0
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	0.44 @ 20
RMF @ MEAS. TEMP.	0.33 @ 20
RMC @ MEAS. TEMP.	0.66 @ 20
SOURCE RMF & RMC	MEAS
RM @ BHT	0.22 @ 60
TIME SINCE CIRC.	4 HRS
MAX. REC. TEMP.	60
EQUIP. LOCATION	276
RECORDED BY	D. DENZIL
WITNESSED BY	

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	22 MM	DIAMETER	22 MM
DETECTOR MODEL NO.		SHIELDING	
TYPE	SCINTILLATATOR	DETECTOR MODEL NO.	
LENGTH	91.44 CM	TYPE	PROPORTIONAL
DISTANCE TO X-SOURCE	7.298 M	LENGTH	1.524 M
		SOURCE MODEL NO.	NRC 4 GI M
GENERAL		SERIAL NO.	121
ASSAY TRUCK NO.	98	STRENGTH	4.1 G
INSTRUMENT TRUCK NO.	70	TYPE	AM-BE
TOOL SERIAL NO.	121 004	DISTANCE	7 CENTRES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
Item No.	FROM	TO	BASIS	T.C.	Meter Setting	S.P.	R.T.	SPAN	T.C.	Meter Setting	SPAN
					A-B-M	PER CM DIV.	DIV.			A-B-M	PER CM DIV.
1	0	33.5	6.65	4	100	0	7	500	4	100	0
2	33.5	173.5	6.65	4	100	0	7	500	4	60	60

REMARKS: TAKEN THROUGH SERVICE VALVE INSTL. 8TBG

GAMMA RAY | FEET | NEUTRON

GAMMA RAY INCREASES

API

0 | 75

NEUTRON INCREASES

0 | 1600

0 | 1600

SCALE CHANGE @ 33.5

1:240 = 1:600 = 1" = 50 M

0 | 1600

0 | 1600

0 | 75

0 | 1600

ROKE

PACIFIC ENERGY LTD

OIL ENTERPRISES LTD. CALGARY, ALBERTA

V-RIV RIVER 77 (3) 2B

FILE NO.

LSD
SEC
TWP
RGE
W.....M

COMPANY: ELGO MINING LIMITED

WELL: R 77 - 13

LOCATION:

FIELD: NEW RIVER VALLEY

276

Other Services: ESDA, DENSE, CAL, DEV

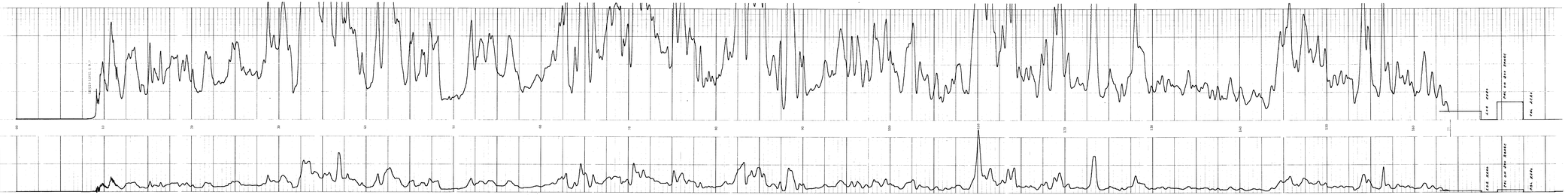
PROVINCE: BRITISH COLUMBIA

Permanent Datum	GROUND LEVEL	Elev.	
Log Measured from	GROUND LEVEL	Above Perm. Datum	
Drill Measured from	GROUND LEVEL		

Run. No.	ONE
Date	3 MAR 1977
First Reading	166 M
Last Reading	0
Frame Length	133
Depth Reached	166.40
Depth Driller	176.29
Casing Rate	7.5
Casing Driller	
Fluid Type	AIR/WATER
Liquid Level	0
Min. Diam.	5 INCH
Max. Dia.	26.67 @ 23
Operating Time	1 HOUR
Truck No.	56

Recorded By: CARLSON Witnessed By: LAWRENCE

Remarks: BOOM CONTROLS PAYING, 1.5% PAYED TYPE 77 ... DENSITY FOR REACHING 400 PSIG ... 2 SECS. 2 SECS. OF BOOSTER 20 3.25 SECS. 2 SECS. 2 SECS. OF BOOSTER 20



ROKE

KELLY SAND UNIT 276

GAMMA RAY NEUTRON LOG

COMPANY	ROKE
WELL	KELLY SAND UNIT 276
FIELD	WILDCAT
COUNTY	HARDEMAN
STATE	TEXAS
LOCATION	467' FSL & 1,467' FEL
SURVEY	BLOCK 2
SECTION	
ABSTRACT	
API NO.	42-197-31
PERMANENT DATUM	GROUND LEVEL
ELEV.	1,167
LOG MEASURED FROM	KELLY BUSHING
DRILLING MEASURED FROM	KELLY BUSHING
ELEV. K.B.	1,176
ELEV. D.F.	
ELEV. G.L.	1,167
DATE	10-2-15
RUN NO.	ONE
DEPTH DRILLER	5,400
DEPTH LOGGER	5,400
BTM. LOG INTERVAL	5,400
TOP LOG INTERVAL	3,400
CASING DRILLER	8 5/8 @ 1,500
CASING LOGGER	1,500
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	FRESH WATER
DENSITY	8.4
VISCOSITY	28
PH	9
FLUID LOSS	8.4
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.19 @ 70
RMF @ MEAS. TEMP.	.15 @ 70
RMC @ MEAS. TEMP.	.25 @ 70
SOURCE RMF & RMC	MEASURED
RM @ BHT	.09 @ 150
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	150
EQUIP. LOCATION	276
RECORDED BY	M. PETTY
WITNESSED BY	MR. ROKE

276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
DIAMETER	4.5 SGC	DIAMETER	4.5 SN
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATION	TYPE	PROPORTIONAL
LENGTH	10.16 CM	LENGTH	15.24 CM
DISTANCE TO X-SOURCE	3.49 IN	SOURCE MODEL NO.	MNC-4130-M
		SOURCE STRENGTH	130
GENERAL		SPACING	4.5 15 CM
MONIT TRACK NO.	36	TYPE	Amlite
INSTRUMENT TRACK NO.	36	STRENGTH	1 CI/G235
TOOL SERIAL NO.	169 003		

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED ft./min.	T.C. SEC.	SENS. DIV./in.	ZERO API & API UNITS	T.C. SEC.	SENS. DIV./in.	ZERO API & API UNITS	
1	0	10.3	3,45	1	100	0	15	2	1000	46	300
2	10.3	165	3,45	1	100	0	14	2	500	0	150

REMARKS: OPEN HOLE

GAMMA RAY

GAMMA RAY INCREASES

API

0 — 160

NEUTRON

NEUTRON INCREASES

API

3840 — 3960 — 8400

Core 1: Cleared @ 82.3 ft

LIQUIDS LOST @ 52 ft

10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

75

ROKE
SIDWALL DENSILOG

ROKE OIL ENTERPRISES LTD.
CALGARY ALBERTA

WELL NAME: ROKE ET AL ARDLEY
LOCATION: E 7 - 17
FIELD: BEN NEVIS GRANDE PRAIRIE
PROVINCE: ALBERTA
COUNTRY: CANADA
Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING
Elevation: 3135 K.B. 3130 D.F. 3128 G.L.
Date: 15 DEC 1977
Run No.: ONE
Depth Driller: 3400
Depth Logger: 3400
Bottom Log Interval: 3400
Top Log Interval: 1000
Casing Driller: 9 5/8 @ 1000
Casing Logger: 1000
Bit Size: 8 1/2
Type Fluid in Hole: GEL CHEM
Density: 9.6
Viscosity: 45
Ph: 10.5
Fluid Loss: 6.4
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.1 @ 20°C
Rmf @ Meas. Temp.: .9 @ 20°C
Rmc @ Meas. Temp.: 1.4 @ 20°C
Source of Rmf & Rmc: MEASURED
Rm @ BHT: .6 @ 90°C
Time Since Circ.: 12 HRS
Max. Rec. Temp. Deg. F.: 90°C
Equipment Location: 3 MILES SOUTH GRANDE PRAIRIE
Recorded By: MARTIN
Witnessed By: MR. ROKE

276

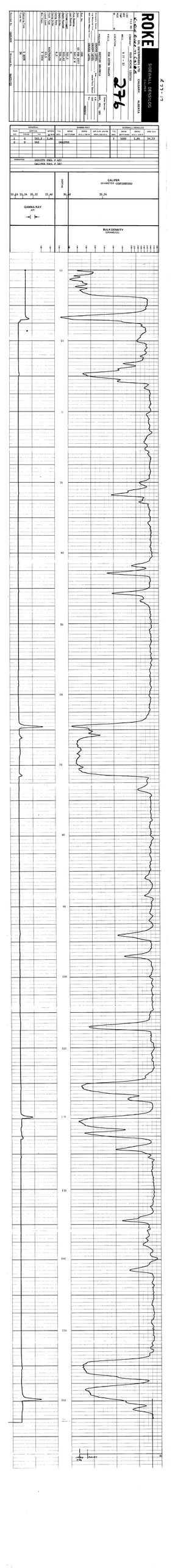
SIDWALL DENSILOG					GAMMA RAY			SIDWALL DENSILOG			
RUN NO.	CASING DEPTH	TYP.	BIT SIZE	T.D.	BASE CALIBR.	ZERO API & GAMMA RAY UNITS	API & GAMMA RAY UNITS PER DIVISION	T.C. NO.	BASE CALIBR.	ZERO	CPS/DIV
1	0	1002.3	3.88					3	3000	1.88	34.35
2	0	163		CALIPER							

REMARKS
SONIC TOOL # 622
CALIPER TOOL # 543

CALIPER
(DIAMETER CENTIMETERS)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)



ROKE

ROKE OIL (WESTERN) LTD. CALGARY ALBERTA

WELL: R22-12
LOCATION: 12-22-23-W4M
FIELD: [illegible]
PROV. OR STATE: ALBERTA

276

Recorded by: [illegible]

Run No.	Depth-Driller	Depth-Logger	Bottom Logged Interval	Top Logged Interval	Type Fluid in Hole	Salinity, PPM Cl	Density lb/gal	Level	Max. Rec. Temp. deg. F	Equip. No. & Location	Recorded By	Witnessed By
1	1100	1100	1100	0	WATER			FULL				
2	1100	1100	1100	0	WATER			FULL				
3	1100	1100	1100	0	WATER			FULL				

Remarks: [illegible]

CASING RECORD

	Size	Wgt.	Grade	Type Joint	Top	Bottom
Surface String	8 5/8"	24#	J-55	ST&C	0	1100
Prod. String	4 1/2"	9.5#	J-55	ST&C	0	1100
Liner						
Liner						

Tubing Record: 2 3/8" EUE 8rd J-55 4.7# @ 1100'

Perforation Record: 1 SPF 1088'-1092'

Stimulation: 1000 GAL 15% HCL ACID FOLLOWED BY 2000 GAL 15% HCL ACID

Remarks: [illegible]

EQUIPMENT DATA

	GAMMA RAY	NEUTRON
RUN NO.	ONE	ONE
TOOL MODEL NO.		
DIAMETER	22.8A	
DETECTOR MODEL NO.		
TYPE	SCINTILLATION	
LENGTH	10-1/2"	
DISTANCE TO N. SOURCE	3.0A.M.	
GENERAL		
LOGGIT TRUCK NO.	46	
INSTRUMENT TRUCK NO.		
TOOL SERIAL NO.	18001	

	GAMMA RAY	NEUTRON
RUN NO.		ONE
TOOL TYPE		NEUTRON/NEUTRON
TOOL MODEL NO.		
DIAMETER		22.8A
DETECTOR MODEL NO.		
TYPE		PROPORTIONAL
LENGTH		10-1/2"
SOURCE MODEL NO.		MSC-A-R-M
SERIAL NO.		188
HOUSING		22.8 O.D.
TYPE		Kinley
STRENGTH		2 curie

LOGGING DATA

RUN NO.	GENERAL TYPE	SPEED FT/MIN.	T.C. SETTING	GAMMA RAY SENS	ZERO SET ON R. UNITS	MV/IN. R. UNITS	T.C. SETTING	NEUTRON SENS	ZERO SET ON R. UNITS	MV/IN. R. UNITS
1	O.H.	30	1 SEC	100	0	10	1 SEC	1000	0	100
2	C.H.	30	1 SEC	100	0	10	1 SEC	1000	0	100
3										

REMARKS: O.H. & C.H. HOLE

GAMMA RAY

Scale 1/240

GAMMA RAY INCREASES

0 150

NEUTRON

NEUTRON INCREASES

0 2000

LIQUID LEVEL @ 139'

SEPARATION @ 12'

00

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

TD

ROKE

Location

K-ELROSE ET AL
ROKE 102 HZ 10-12-32-5 W5M
GRANDE PRAIRIE ALBERTA

Company: ROKE OIL & GAS LIMITED
Well: 102 HZ 10-12-32-5 W5M
Field: KELROSE
Province: ALBERTA
Location: GRANDE PRAIRIE
Elevation: KB 1146.0 m
Permanent Datum: GROUND LEVEL
Log Measured From: KB 6.0 m Above Perm. Datum
Drilling Measured From: KB

Date: 2012-10-17
Run No.: ONE
Depth-Driller: 3200.0 m
Depth-Logger: 3200.0 m
Bottom Logged Interval: 3199.0 m
Top Logged Interval: 1140.0 m
Casing-Driller: 244.5 mm @ 1140.0 m
Casing-Logger: 244.5 mm @ 1140.0 m
Bit Size: 222.2 mm
Type Fluid in Hole: WBM
Density: 1.15 kg/m³
Viscosity: 50.0 s
Fluid Loss: 8.0 cc
Source of Sample: FLOWLINE
Rm @ Meas. Temp: 0.45 @ 20.0 °C
Rmf @ Meas. Temp: 0.35 @ 20.0 °C
Rmc @ Meas. Temp: 0.6 @ 20.0 °C
Source of Rmf & Rmc: CALCULATED
Rm @ BHT: 0.25 @ 90.0 °C
Time Since Circ.: 5 HRS
Time Logger on Bottom: 0200 HRS 17-OCT-2012
Maximum Recorded Temp.: 90.0 °C
Equipment & Location: 9-5 GRANDE PRAIRIE
Recorded By: CHAMPION
Witnessed By: MACLEAN

Other Services: NEU DEN GR

Remarks: BOREHOLE GEOMETRY FACTOR =.329, PROVO TYPE IV.
GRADED FIRE HEADING - 120 CUBE
300 GRS/QTZ, FRIENDLY FEE ADJUSTED TO 2.29 MTVS
TP: 1 DATE: ON GROUNDMAY PER

972

Depth

0 — 60000 — 0 — 5000 — 10000

LOGGER'S CASG. = 1140.0 M

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

LOG REPEAT

CAL DEN GRN RAMEE

CAL REPEAT

LOG REPEAT

CAL DEN LOG RAMEE

CAL REPEAT

ROKE

SIDEWALL DESIGNS

Houston, Texas

Company: ROKE OIL COMPANY

Well: 276

Field: SEA ROSA WEST

Location: 1 - 17 - 1S

County: KLEBERG

State: TEXAS

Elevations: KB 30 DF GL

Permanent Datum: GROUND LEVEL

Log Measured From: KELLY BUSHING

Drilling Measured From: KELLY BUSHING

Date: 3-5-65

Run No.: ONE

Depth-Driller: 3,500

Depth-Logger: 3,498

Bottom Logged Interval: 3,498

Top Logged Interval: SURFACE

Type Fluid in Hole: SALT WATER

Salinity, PPM Cl: 10,000

Density: 10.0

Viscosity: 38

Fluid Loss: 8.4

Source of Sample: FLOWLINE

R_m @ Meas. Temp.: .75 @ 84°F

R_mf @ Meas. Temp.: .60 @ 84°F

R_mc @ Meas. Temp.: .90 @ 84°F

Source: R_mf MEASURED

R_m @ BHT: .40 @ 130°F

Time Since Circ.: 4 HRS

Max. Rec. Temp.: 130°F

Equip. No. & Location: 1 - 1 KINGSVILLE

Recorded By: KENDRICK

Witnessed By: MARTIN

RUN	GENERAL CASING (FROM)	GENERAL CASING (TO)	GAMMA RAY BIT SIZE	GAMMA RAY DEPTH DRILLER	GAMMA RAY DEPTH LOGGER	GAMMA RAY API G.R. UNITS MIN-MAX SCALE	NORMAL - SPHERICAL T.C. (MMHOS)	NORMAL - SPHERICAL SPACE (FEET)	NORMAL - SPHERICAL SPAC (OHM-M)
1	0	542.3	7.88				3	5000	7.88	34.55
2	0	542		CALIPER						

REMARKS: DENSITY TOOL # 617 CALIPER TOOL # 587

OPEN HOLE

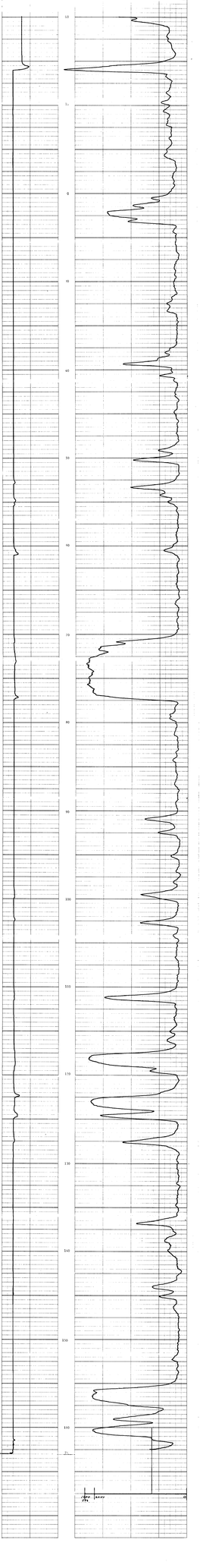
CALIPER
(DIAMETER - CENTIMETERS)

10.16 | 15.24 | 20.32 | 25.40 | 30.48 | 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3



ROKE

OIL DEVELOPMENTS LTD.
KALGARY, ALBERTA

FILE NO.	2276
COMPANY	ROKE OIL DEVELOPMENTS LTD.
WELL	8-12-14-28
FIELD	BRUCE
LOCATION	8-12-14-28
PROVINCE	ALBERTA
COUNTRY	CANADA
DATE	13 NOV 1977
RUN NO.	ONE
DEPTH-DRILLER	165.0
DEPTH-LOGGER	164.0
BTM LOG INTERVAL	163.0
TOP LOG INTERVAL	0
CASING-DRILLER	5 5/8 @ 10.7
CASING-LOGGER	NONE
BIT SIZE	7 7/8
TYPE FLUID IN HOLE	WATER
DENSITY	1.0
VISCOSITY	35
PH	7.0
FLUID LOSS	NONE
SOURCE OF SAMPLE	FLOWLINE
RM @ MEASURED TEMP.	0.7 @ 70
RMF @ MEASURED TEMP.	0.7 @ 70
RMC @ MEASURED TEMP.	0.7 @ 70
RM @ BHT	0.3 @ 100
TIME SINCE CIRCULATION	3 HRS
MAX. REC. TEMP.	100
EQUIP. LOCATION	3 DEVON
RECORDED BY	
WITNESSED BY	

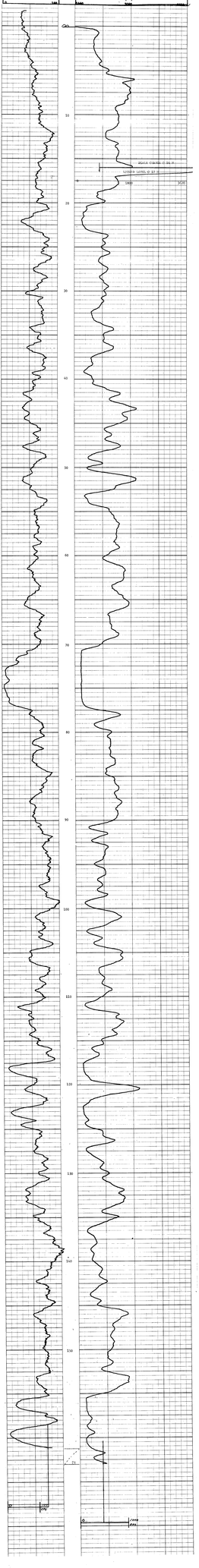
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG CODE	NEUTRON/NEUTRON
DIAMETER	43 MM	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	43 MM
TOOL SERIAL NO.	MODWELL/LATOUR	TOOLS SERIAL NO.	
LENGTH	50.14 CM	LENGTH	PROPORTIONAL
DISTANCE TO N. SOURCE	2.96 M	DETECTOR	13-15 CM
GENERAL		SOURCE MODEL NO.	MISC-8-00 M
MONIT. TRACE NO.	30	SERIAL NO.	125
INSTRUMENT TRACE NO.	30	SPACING	43.18 CM
TOOL SERIAL NO.	145 001	TYPE	Amer
		STRENGTH	3 CURIES

LOGGING DATA

GAMMA RAY						NEUTRON					
RUN	ABOVE	BELOW	SPEED	T.C.	SENS	ZERO	MV/G & UNITS	T.C.	SENS	ZERO	MV/G & UNITS
NO.	FROM	TO	M/MIN.	SEC.	SETTING	DIV. & DEV.	PER LOG DIV.	SEC.	SETTING	DIV. & DEV.	PER LOG DIV.
1	0	165	7.62	1	100	0	10	2	1000	61	300
2	165	165	7.62	1	100	0	10	2	300	0	100

REMARKS: ZERO SET



ROKE

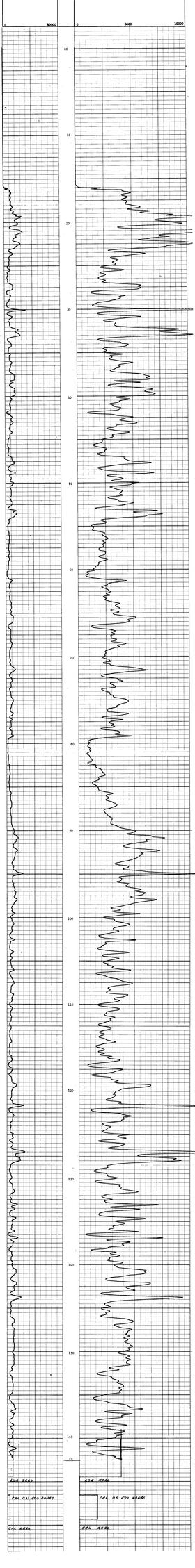
PROCESSED BY SAC

K-ELM OIL ENTERPRISES LTD.
CALGARY ALBERTA

File No.	
Log No.	
Page	
Run No.	
Depth Driller	3304
Depth Logger	3304
Bottom Log Interval	3304
Top Log Interval	1400
Casing Driller	13 3/8 @ 1400
Casing Logger	13 3/8 @ 1400
Bit Size	12 1/4
Type Fluid in Hole	GEL CHEM
Dens. Visc.	9.7 - 38
pH / Fluid Loss	10.5 / 8.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	1.8 @ 70 F
Rmf @ Meas. Temp.	1.4 @ 70 F
Rmc @ Meas. Temp.	3.5 @ 70 F
Rm @ BHT	1.2 @ 200 F
Time Since Circ.	3 HOURS
Max. Rec. Temp.	200 F
Equip. & Loc.	3-DIS 2-DD
Recorded By	BRIAN
Witnessed By	BOB

Company: K-ELM OIL ENTERPRISES LTD.
Well: 8-27-18
Location: FIELD - BEAR ROCK VALLEY
Field: BEAR ROCK VALLEY
County: SUNDRE
Province: ALBERTA
Permanent Datum: GROUND LEVEL
Elev.: 4300 GL
Log Measured From: KB 10 FT. ABOVE PERM. DATUM
Drilling Measured From: KB
Elev.: K.B. 4310
Date: 13-Jan-77
Run No.: ONE
Depth Driller: 3304
Depth Logger: 3304
Bottom Log Interval: 3300
Top Log Interval: 1400
Casing Driller: 13 3/8 @ 1400
Casing Logger: 13 3/8 @ 1400
Bit Size: 12 1/4
Type Fluid in Hole: GEL CHEM
Dens. Visc.: 9.7 - 38
pH / Fluid Loss: 10.5 / 8.0
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: 1.8 @ 70 F
Rmf @ Meas. Temp.: 1.4 @ 70 F
Rmc @ Meas. Temp.: 3.5 @ 70 F
Rm @ BHT: 1.2 @ 200 F
Time Since Circ.: 3 HOURS
Max. Rec. Temp.: 200 F
Equip. & Loc.: 3-DIS 2-DD
Recorded By: BRIAN
Witnessed By: BOB

Remarks: SONDE GEOMETRIC FACTOR .1259, PROC TYPE IV
GROUND FLOW RADIUS - 3.58 OHMS
200 OHM/CM. PROBAB IND AQUIFERS TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN



ROKE
Schlumberger

Permanent Datum: GROUND LEVEL — Elev.: 0
Log Measured From: KELLY BUSHING — 4.27 m Above Permanent Datum
Drilling Measured From: KELLY BUSHING

Date	2-Feb-94
Run No.	ONE
Depth-Driller	1000
Depth-Logger	1000
Bottom Logged Interval	1000
Top Logged Interval	300
Casing-Driller	13 3/8 @ 300
Casing-Logger	300
Bit Size	12 1/4
Type Fluid in Hole	GEL CHEM. WATER
Density / Viscosity	1.08 / 50
pH / Fluid Loss	10.5 / 6.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp.	0.14 @ 20
Rmf @ Meas. Temp.	0.11 @ 20
Rmc @ Meas. Temp.	0.19 @ 20
Source of Rmf / Rmc	MEASURED / CALCULATED
Rm @ BHT	0.07 @ 60
Time Since Circulation	12 HRS
Max. Rec. Temp.	60
Equipment Number	2276
Location	60 KM SOUTH OF KUPARUK
Recorded By	D. MARTIN
Witnessed By	T. MARTIN

Company: ARCO ALASKA INC.
Well: 2T-212
Field: KUPARUK RIVER UNIT
County: NORTH SLOPE BOROUGH
State: ALASKA

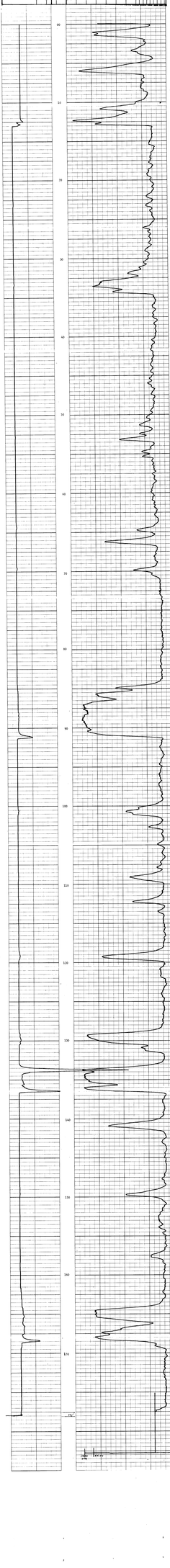
GENERAL				GAMMA RAY			NORMAL 16"SHORT		
RUN NO.	CASING FROM	CASING TO	WEIGHT lb/ft	BOW SPRING	API SLIM HOLE (BHC)	API SLIM HOLE (FDC)	TIE IN (BHC)	BOW SPRING	SPRING
1	0	317.2	3.85				300	5.6	56.25
1	0	178		CENTER					

REMARKS

CALIPER
(DIAMETER - CENTIMETERS)

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)



ROKE

GAMMA RAY NEUTRON LOG

ALASKA

COMPANY	KERR-MCGEE CORPORATION
WELL	KCU 23-1
FIELD	KENAI
COUNTY	KENAI PENINSULA BOROUGH
STATE	ALASKA
LOCATION	1980' FSL & 1980' FEL
SEC. 23 TWP. 5N RGE. 11W	
PERMANENT DATUM	GROUND LEVEL
ELEV.	0
LOG MEASURED FROM	KELLY BUSHING
23 FT. ABOVE PERM. DATUM	
DRILLING MEASURED FROM	KELLY BUSHING
DATE	12-31-74
RUN NO.	ONE
DEPTH-DRILLER	7300
DEPTH-LOGGER	7298
BTM. LOG INTERVAL	7298
TOP LOG INTERVAL	0
CASING-DRILLER	13 3/8 @ 1000
CASING-LOGGER	1000
BIT SIZE	12 1/4
TYPE FLUID IN HOLE	LIGNOSULFONATE
DENSITY	10.1
VISCOSITY	40
PH	10.5
FLUID LOSS	5.6
SOURCE OF SAMPLE	PIT
RM @ MEAS. TEMP.	.52 @ 80
RMF @ MEAS. TEMP.	.46 @ 80
RMC @ MEAS. TEMP.	.68 @ 80
SOURCE RMF & RMC	MEAS
RM @ BHT	.23 @ 160
TIME SINCE CIRC.	12 HRS
MAX. REC. TEMP.	160
EQUIP. LOCATION	1000
RECORDED BY	R. SCHMIDT
WITNESSED BY	MR. HOLT

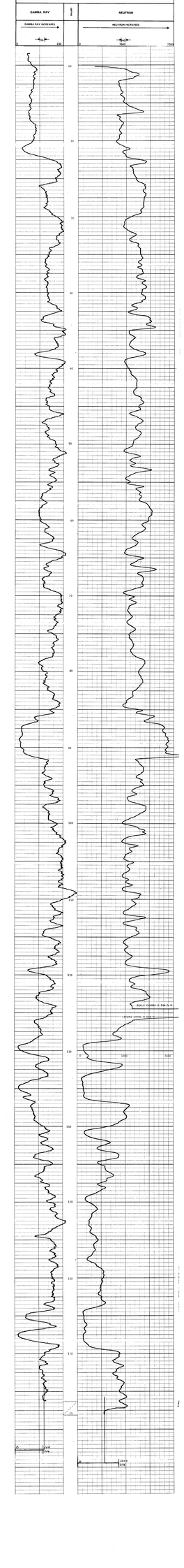
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	
DIAMETER	3.5 IN.	DIAMETER	4.5 IN.
DETECTOR MODEL NO.		DETECTOR MODEL NO.	
TYPE	SCINTILLATOR	TYPE	PROPORTIONAL
LENGTH	10.10 CR.	LENGTH	17.5 CR.
DISTANCE TO N. SOURCE	7.25 N.	SOURCE	
		SOURCE MODEL NO.	MFG. N-50-19
GENERAL		SERIAL NO.	181
HORIZ TRACK NO.	30	STRENGTH	50.58 CR.
VERT. SHEET TRACK NO.		TYPE	AmBe
TOOL SERIAL NO.	185-303	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL INTERVAL FROM	TO	SPEED F/MIN	T.C. SEC	GAMMA RAY SENS. (API UNITS PER 1/8 DEV.)	T.C. SEC	NEUTRON SENS. (API UNITS PER 1/8 DEV.)	T.C. SEC	HIGH VOLTAGE	NEUTRON SCALE 1 OR 2	GAMMA RAY SCALE 1 OR 2
1	0	176.5	1,65	6	100	6	16	6	1000	2	100
2	176.5	1176	5,65	6	500	6	54	6	500	2	100

REMARKS: JOINT WELL



ROKE

POWERED BLACK LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

V. ELK RIVER 77 (2) AB

FILE NO.

LSD
SEC
TWP
RGE
W. M

COMPANY ELGO PETROLEUM LIMITED

WELL B 77 - 39

276

LOCATION

FIELD ELK RIVER VALLEY

PROVINCE BRITISH COLUMBIA

Other Services: ACOUSTIC, DENSITY, GAS, SAND

Permanent Datum: GROUND LEVEL Elev.

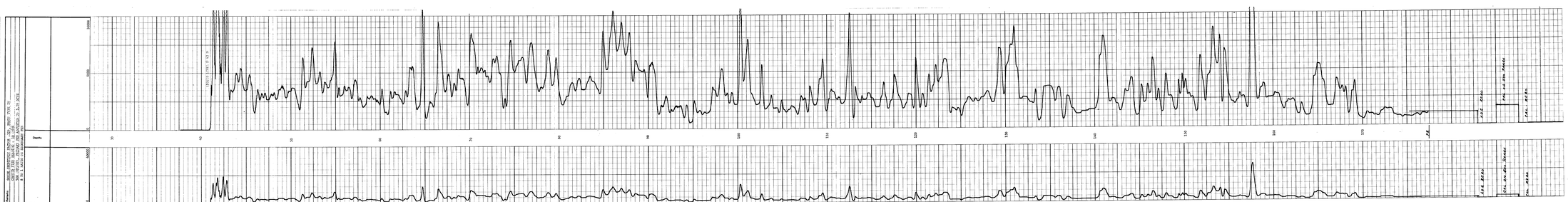
Log Measured from: GROUND LEVEL Above Perm. Datum

Rec Depths Measured from: GROUND LEVEL

K.B.
GRD
G.L.
DATUM

Run No.	008		
Date	12 FEB 1977		
First Reading	127.5 M		
Last Reading	36		
Footage Logged	163.5		
Depth Reached	179.16		
Depth Drilled	178.43		
Casing Rate	12		
Casing Driver			
Fluid Type	AIR/WATER		
Liquid Level	36		
Min. Chem.	5 INCH		
Rm @ °C	33.33 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By: CARLSON Witnessed By: HAKELITE



ROKE OIL & ENERGY LTD.

SIDEWALL DENSILOG
CALIPER

CALGARY, ALBERTA

K. REX CLARK 27-23-28

LSD 27 TWP 23 RGE 28 W4

FILE NO. | COMPANY: ESSO RESOURCES LIMITED

WELL: K. REX CLARK 27-23-28

LOCATION: 1980 FEET FROM THE NORTH LINE AND 1980 FEET FROM THE WEST LINE

FIELD: REX KEYES TENANT

PROVINCE: ALBERTA

Other Services: GAMMA RAY

SEC 27 TWP 23 RGE 28 W4

Permanent Datum: GROUND LEVEL | Elev.: K.B. 3177 | Elev.: G.L. 3172

Log Measured From: GROUND LEVEL | 6 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Date: 15 FEB 1978

Run No.: ONE

Depth-Driller: 3650

Depth-Logger: 3650

Bottom Logged Interval: 3650

Top Logged Interval: 3300

Casing-Driller: 9 5/8 @ 1237

Casing-Logger: 1237

Bit Size: 8 1/2

Type Fluid in Hole: LIGNOSULFONATE

Density: 9.5

Viscosity: 57

pH: 10.5

Fluid Loss: 7.2 CC

Source of Sample: FLOWLINE

Rm @ Meas. Temp.: .47 @ 70°F

Rmf @ Meas. Temp.: .38 @ 70°F

Rmc @ Meas. Temp.: .63 @ 70°F

Source of Rmf & Rmc: CALCULATED

Rm @ BHT: .28 @ 120°F

Time Since Circ.: 5 HRS

Max. Rec. Temp. Deg. F: 120°F

Equipment No.: 1 | Location: 36 | Recorded By: MACKAY

Witnessed By: GARLOCK

277-20

GENERAL					GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTH FROM	DEPTH TO	SPEED FPM	T.C. SEC.	SENS SETTINGS	READ. D.V.L. OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	READ. D.V.L. OR R	CPM/ DIV
1	0	137	3.45					3	1000	1.88	56.55
2	0	137.5		CALIPER							

REMARKS: DENSITY TOOL # 637
CALIPER TOOL # 587

DEPTH

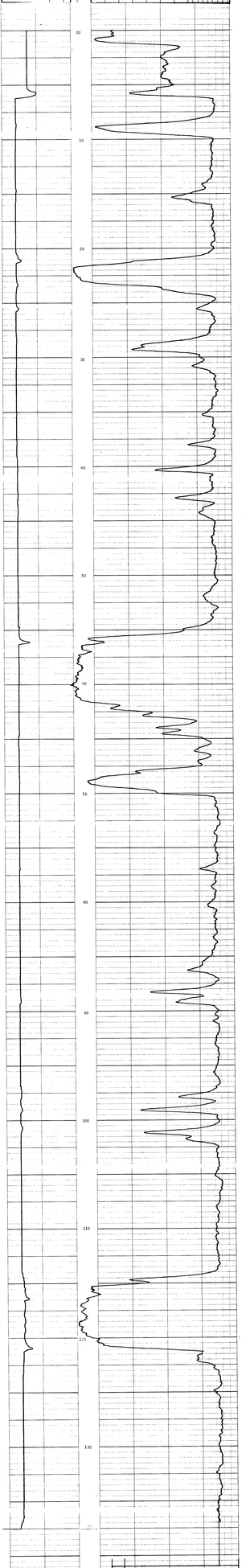
CALIPER
(DIAMETER — CENTIMETERS)

30.48 35.56

30.16 25.24 20.32 25.40

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)



ROKE

FOCUSED BEAM LOG

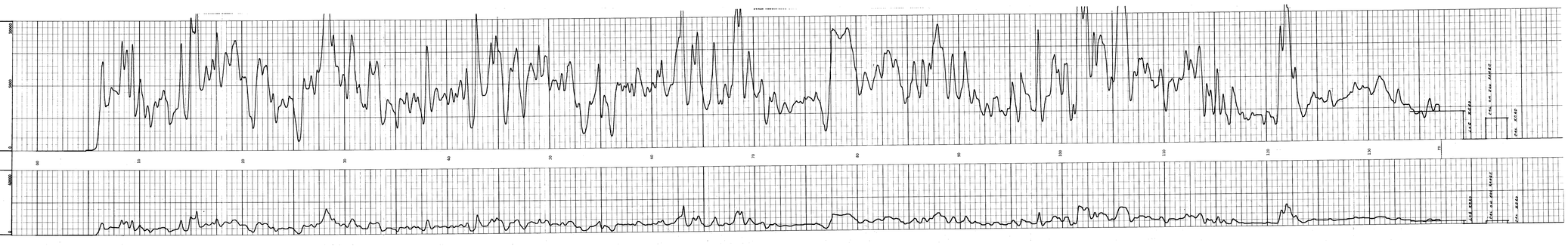
OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) #B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W	
COMPANY	ELGO MINING LIMITED
WELL	R 77 - 20
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services	GRN, SNDS, CAL, DEV
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
R.B.	
GSL	
	METRIC

Run. No.	ONE
Date	15 FEB 1977
First Reading	137 M
Last Reading	4
Footage Logged	131
Depth Reached	137.60
Depth Driller	137.15
Casing Rake	5.5
Casing Driller	
Fluid Type	AIR/WATER
Liquid Level	6
Min. Diam.	5 INCH
Run @ °C	16.67 @ 25
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	MARTELVIE

Remarks: SONDE CENTERED FACING 1.25% PROVE TYPE 27
GROUND FIRE BEARING - 300 SPUD
500 GROUND, PROVE TYPE 20 3.25 TYPE
8 TO 1 RATIO ON ENDEMARK PER



ROKE OIL ENTERPRISES LTD.

GAMMA RAY NEUTRON LOG

CALGARY ALBERTA

Well: K-C Bly et al Kinsella 2-6-47-20 W4
Field: Kinsella
Location: 2-6-47-20 W4
Other Services: GR
Permanent Datum: GROUND LEVEL Elev.: 2171.5
Log Measured From: KELLY BUSHING 8.5 Ft. Above Perm. Datum
Drilling Measured From: KELLY BUSHING
Elev.: K.B. 2180 D.F. G.L. 2171.5

Date: 3-5-76
Run No.: ONE
Depth-Driller: 1515
Depth-Logger: 1513
Bottom Logged Interval: 1513
Top Logged Interval: 1100
Casing-Driller: 8 5/8 @ 1513
Casing-Logger: 1513
Bit Size: 7 7/8
Type Fluid in Hole: GEL CHEM
Density: 9.5 lb/gal
Viscosity: 45 sec/qt
Fluid Loss: 7.2 cc/30 min
Source of Sample: FLOWLINE
Rm @ Meas. Temp.: .65 @ 70 °F
Rmf @ Meas. Temp.: .52 @ 70 °F
Rmc @ Meas. Temp.: .78 @ 70 °F
Source of Rmf & Rmc: CALC
Rm @ BHT: .39 @ 120 °F
Time Since Circ.: 4 HRS
Max. Rec. Temp. Recorded: 120 °F
Equipment No. & Location: 606 1111
Recorded By: C. GOLDEN
Witnessed By: MR. BOWEN

276

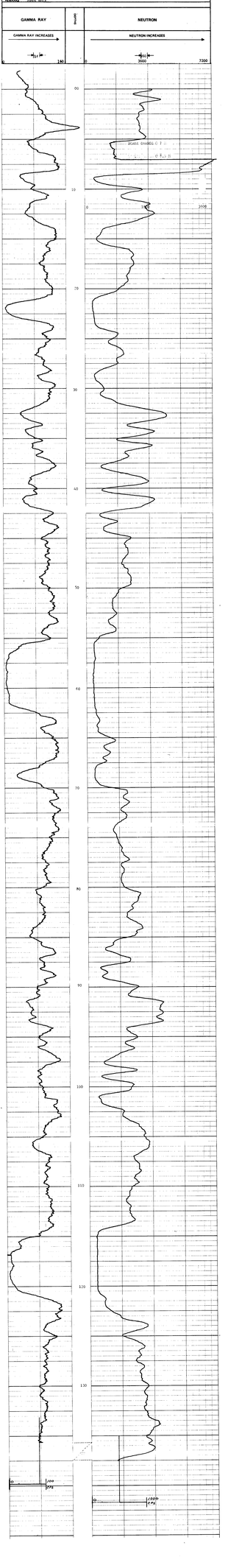
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL, MODEL NO.	GDS	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	4.1 IN.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	4.1 IN.
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16 IN.	TYPE	PROPORTIONAL
DISTANCE TO SOURCE	2.04 IN.	LENGTH	15.16 IN.
		SOURCE MODEL NO.	MRC-N-65-M
GENERAL		SERIAL NO.	188
HOIST TRUCK NO.	36	STRENGTH	43.18 CH.
INSTRUMENT TRUCK NO.	56	TYPE	Amb
TOOL SERIAL NO.	166.003	STRENGTH	3 CURIES

LOGGING DATA

RUN NO.	GENERAL FROM	GENERAL TO	SPEED IN. PER MIN.	T.C. SEC.	SENS. SETTINGS	GAMMA RAY DIV. L OR R	GAMMA RAY API G. R. UNITS PER LOG DIV.	NEUTRON T.C. SEC.	NEUTRON SENS. SETTINGS	NEUTRON DIV. L OR R	NEUTRON API N. UNITS PER LOG DIV.
1	0	?	5.66	4	100	0	16	3	1000	0	300
2	?	1121	5.66	4	100	0	16	3	300	0	100

REMARKS: CASING SHOE @



R-77-22

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO. K-Elk River 77 (3) #B

COMPANY	ELCO MINING LIMITED
WELL	R 77 - 22
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD	
SEC	
TWP	
RGE	
W M	

276

Other Services: GRN, FBL, DEV

Permanent Datum	GROUND LEVEL	Elev.
Log Measured from	GROUND LEVEL	Above Perm. Datum
Well Depths Measured from	GROUND LEVEL	

K.B.
CSG
G.L.

METRIC

Run. No.	ONE		
Date	8 FEB 1977		
First Reading	188.5 M		
Last Reading	0		
Footage Logged	188.5		
Depth Reached	189.42		
Depth Driller	189.42		
Casing Roke	6		
Casing Driller			
Fluid Type	AIR/WATER		
Liquid Level	1		
Min. Diam.	5 INCH		
Operating Time	2 HOURS		
Truck No.	36		
Recorded By	CARLSON	Witnessed By	McKELVIE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	188.5	3.66					3	1000	1.8R	54.55
2	0	189		CALIPER							

REMARKS DENSITY TOOL # 457 OPEN HOLE
CALIPER TOOL # 587

CALIPER (DIAMETER – CENTIMETERS)
10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

DEPTHS

BULK DENSITY (GRAMS/CC)

ROKE

CASING & TUBING SIZE

DRILLER

LOGGER

BOTTOM LOGGED INTERVAL

TOP LOGGED INTERVAL

TYPE FLUID IN HOLE

SALINITY

DENSITY

LEVEL

SOURCE OF SAMPLE

RM @ MEAS. TEMP.

RMF @ MEAS. TEMP.

RMC @ MEAS. TEMP.

SOURCE OF RMF

SOURCE OF RMC

RM @ BHT

TIME SINCE CIRC.

MAX. REC. TEMP.

EQUIP. LOCATION

RECORDED BY

WITNESSED BY

RUN NO.

DATE

TYPE LOG

DEPTH DRILLER

DEPTH LOGGER

BTM. LOG INTERVAL

TOP LOG INTERVAL

CASING DRILLER

CASING LOGGER

BIT SIZE

TYPE FLUID IN HOLE

DENSITY

VISCOSITY

PH

FLUID LOSS

SOURCE OF SAMPLE

RM @ MEAS. TEMP.

RMF @ MEAS. TEMP.

RMC @ MEAS. TEMP.

SOURCE OF RMF

SOURCE OF RMC

RM @ BHT

TIME SINCE CIRC.

MAX. REC. TEMP.

EQUIP. LOCATION

RECORDED BY

WITNESSED BY

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	4.2 IN	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	4.2 IN
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	12.16 IN	TYPE	PROPORTIONAL
DISTANCE TO N SOURCE	7.05 ft	LENGTH	13.34 IN
		SPACING MODEL NO.	6SC-6-55-N
SPACING		SPACING	
POINT TRACK NO.	26	TYPE	43.10 CM
INSTRUMENT TRUCK NO.	34	STRENGTH	Amb
TOOL SERIAL NO.	103 001		3 CURIES

LOGGING DATA

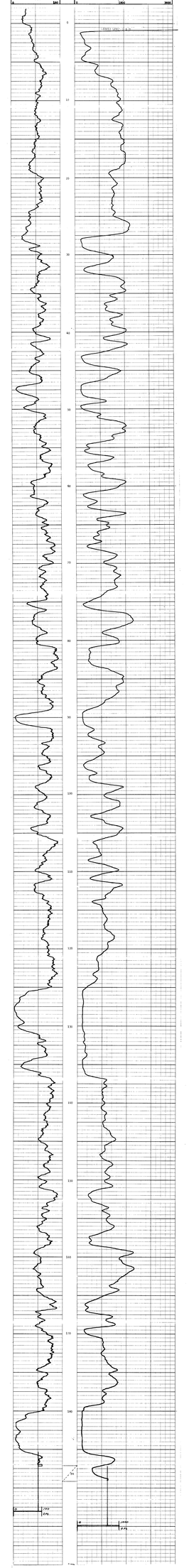
GENERAL					GAMMA RAY				NEUTRON			
RUN NO.	INTERVAL FROM	INTERVAL TO	SPEED FT/MIN	T.C. SEC.	SENS. SETTINGS	SCALE DIV. x 100 API	SCALE DIV. x 10 % UNITS MUD LOSS SHIFT	T.C. SEC.	SENS. SETTINGS	SCALE DIV. x 100 API	SCALE DIV. x 10 % UNITS
1		1,555	5,241	1	100		18	1	1500	0	180

REMARKS: JOHN NO 4

GAMMA RAY | Scale | NEUTRON

GAMMA RAY INCREASES | NEUTRON INCREASES

0 | 540 | 1600 | 3600



ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

FILE NO.	
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 22
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD / SEC / TWP / RGE / W_M	
Other Services:	GRN, DENS, CAL, DEV

K-ELK RIVER 77 (3) 13

276

Permanent Datum	GROUND LEVEL	Elev.
Log Measured from	GROUND LEVEL	Above Perm. Datum
Well Depths Measured from	GROUND LEVEL	
K.B.		
CSG		
G.L.		
METRIC		

Run. No.	ONE
Date	8 FEB 1977
First Reading	188.5 M
Last Reading	6
Footage Logged	18[illegible].5
Depth Reached	189.10
Depth Driller	189.41
Casing Roke	6
Casing Driller	
Fluid Type	AIR/WATER
Liquid Level	1
Min. Diam.	5 INCH
Rm @ °C	17.39 @ 25
Operating Time	1 HOUR
Truck No.	36
Recorded By	CARLSON
Witnessed By	McKELVIE

Remarks
SONDE GEOMETRIC FACTOR .329. PROTO TYPE IV
GROUND FISH READING - 5 OHMS
500 OHM/DIV. PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

R77- 24

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-ELK RIVER 77 (3) B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ___ M	
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 24
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, FBL, DEV

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	GROUND LEVEL	Above Perm. Datum	CSG
Well Depths Measured from	GROUND LEVEL		G.L.
			METRIC

Run. No.	ONE		
Date	8 MAR 1977		
First Reading	180.5 M		
Last Reading	0		
Footage Logged	180.5		
Depth Reached	181.42		
Depth Driller	181.98		
Casing Roke			
Casing Driller			
Fluid Type	AIR/WATER		
Liquid Level	11.5		
Min. Diam.	12.7 CM		
Operating Time	1 HOUR 40 MINS		
Truck No.	36		

Recorded By CARLSON/JOHNSON | Witnessed By LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	180.5	3.66					3	1000	1.8R	54.55
2	0	181		CALIPER							

REMARKS DENSITY TOOL # 457 OPEN HOLE
CALIPER TOOL # 587

CALIPER
(DIAMETER - CENTIMETERS)
35.56 30.48 25.40 20.32 15.24 10.16

DEPTHS

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

ROKE

OIL & GAS DEVELOPMENT LTD.
400, 500 - 4th Avenue S.W.
CALGARY, ALBERTA T2P 2V6

LOCATION

WELL: 2-7-76
FIELD: WILDCAT
COUNTY: MACKENZIE
PROVINCE: NORTHWEST TERRITORIES

Permanent Datum	GROUND LEVEL
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elevation	K.B. 1214 ft.
	D.F.
	G.L.

Date	4-7-76
Run No.	ONE
Depth Driller	10,150 ft.
Depth Logger	10,150 ft.
Bottom Logged Interval	10,150 ft.
Top Logged Interval	9,000 ft.
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1,000
Density	10.2
Level	FULL
Max. Rec. Temp.	190 °F
Est. Cement Top	7,000 ft.
Equipment No. & Location	1214
Recorded By	R. ROSS
Witnessed By	MR. MOSS

CASING RECORD

SURFACE	13 3/8 in.	68 lb/ft	1,000 ft.
INTERMEDIATE	9 5/8 in.	40 lb/ft	9,000 ft.
PRODUCTION	7 in.	29 lb/ft	10,150 ft.
LINER			

BIT RECORD

1	12 1/4 in.	HTC	J-33	1,000 ft.
2	8 1/2 in.	HTC	J-33	10,150 ft.

REMARKS

RUN 1 - 13 3/8" CASING @ 1000 ft.
RUN 2 - 9 5/8" CASING @ 9000 ft.
RUN 3 - 7" LINER 8800 ft. - 10,150 ft.

RECEIVED
APR 12 1976
OIL & GAS CONSERVATION BRANCH

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL TYPE	NEUTRON/NEUTRON
DIAMETER	3⅜ in.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	3⅜ in.
SCINTILLATOR		DETECTOR MODEL NO.	
LENGTH	10'10" in.	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.04 ft.	LENGTH	1'6.25 in.
		SOURCE MODEL NO.	MSC N-30 M
		SERIAL NO.	43
ASSY TRACK NO.	36	STRENGTH	0.13
DISTANCE TRACK NO.	36	TYPE	Amko
TOOL SERIAL NO.	122 305	STRENGTH	3 curies

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
RUN NO.	INTERVAL FROM	TO	SPEED FT/MIN	T.C. SEC.	SENS. API/IN	API IN. UNITS PER 1.00 IN	T.C. SEC.	SENS. BOTTOM	API IN. UNITS PER 1.00 IN			
1	0	10.2	3.45	1	100	25	3	1000	AL	100		
2	10.2	101	3.45	1	100	CL	3	300	CL	100		

REMARKS

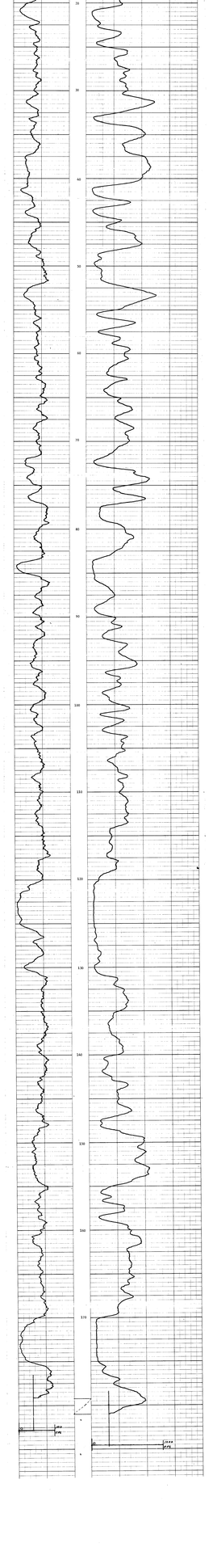
GAMMA RAY | NEUTRON

GAMMA RAY INCREASES

AFL 0 150

NEUTRON INCREASES

AFL 2000 6000



ROKE FOCUSED BEAM LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K - ELK RIVER 77 (3) #B

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ______ M	
COMPANY	ELCO MINING LIMITED
WELL	R 77 - 24
LOCATION	
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
Other Services:	GRN, DENS-CAL, DEV

276

Permanent Datum	GROUND LEVEL	Elev.	K.B.
Log Measured from	GROUND LEVEL	Above Perm. Datum	CSG
Well Depths Measured from	GROUND LEVEL		G.L
			METRIC

Run. No.	ONE		
Date	8 MAR 1977		
First Reading	180.5 M		
Last Reading	11.5		
Footage Logged	169		
Depth Reached	181.10		
Depth Driller	181.98		
Casing Roke			
Casing Driller			
Fluid Type	AIR/WATER		
Liquid Level	11.5		
Min. Diam.	12.7 CM		
Rm @ ° C	25.00 @ 25		
Operating Time	1 HOUR		
Truck No.	36		

Recorded By CARLSON/JOHNSON — Witnessed By LAWRENCE

Remarks:
SONDE GEOMETRIC FACTOR .329, PROTO TYPE IV
GROUND FISH READING - 150 OHMS
500 OHM/DIV, PRIMARY PEN ADJUSTED TO 3.29 DIVS
8 TO 1 RATIO ON SECONDARY PEN

ROKE

SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

R 77-25

FILE NO. K-ELK RIVER 77 (3) #B

COMPANY	ELCO MINING LIMITED
WELL	R 77 - 25
LOCATION	276
FIELD	ELK RIVER VALLEY
PROVINCE	BRITISH COLUMBIA
LSD	
SEC	
TWP	
RGE	
W ___ M	
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	TOP OF CASING 23 CM Above Perm. Datum
Well Depths Measured from	TOP OF CASING
Other Services:	GRN, FBL, DEV
K.B.	
CSG	
G.L.	
	METRIC

Run. No.	ONE
Date	16 MAR 1977
First Reading	199.5 M
Last Reading	0
Footage Logged	199.5
Depth Reached	200.42
Depth Driller	201.30
Casing Roke	2.5
Casing Driller	
Fluid Type	WATER/AIR
Liquid Level	24.5
Min. Diam.	12.7 CM
Operating Time	1 HOUR 40 MIN
Truck No.	36
Recorded By	CARLSON
Witnessed By	LAWRENCE

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M./MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	199.5	3.66					3	1000	1.8R	54.55
2	0	200		CALIPER							

REMARKS

CALIPER
(DIAMETER – CENTIMETERS

10.16 15.24 20.32 25.40 30.48 35.56

GAMMA RAY
API

DEPTHS

BULK DENSITY
(GRAMS/CC)

COMPANY NAME, ADDRESS, PHONE NUMBER, LOCATION, WELL NAME, FIELD, COUNTY, STATE, OTHER SERVICES, SEC, TWP, RGE, PERMANENT DATUM, ELEV., LOG MEASURED FROM, DRILLING MEASURED FROM, API SERIAL NO., PERMANENT DATUM, ELEVATION, ELEV. K.B., ELEV. D.F., ELEV. G.L., DATE, RUN NO., TYPE LOG, DEPTH DRILLER, DEPTH LOGGER, BTM. LOG INTERVAL, TOP LOG INTERVAL, CASING DRILLER, CASING LOGGER, BIT SIZE, TYPE FLUID IN HOLE, DENS., VISC., PH, FLUID LOSS, SOURCE OF SAMPLE, RM @ MEAS. TEMP., RMF @ MEAS. TEMP., RMC @ MEAS. TEMP., SOURCE RMF, SOURCE RMC, RM @ BHT, TIME SINCE CIRC., MAX. REC. TEMP., EQUIP. LOCATION, RECORDED BY, WITNESSED BY

ROKE
KCL-GEL-POLYMER-STARCH
COMPANY
WELL
FIELD
COUNTY
STATE
LOCATION
Other Services
Sec. Twp. Rge.
Permanent Datum
Elev.
Log Measured From
Drilling Measured From
API Serial No.
Permanent Datum
Elevation
Elev. K.B.
Elev. D.F.
Elev. G.L.
Date
Run No.
Type Log
Depth Driller
Depth Logger
Btm. Log Interval
Top Log Interval
Casing Driller
Casing Logger
Bit Size
Type Fluid in Hole
Dens.
Visc.
pH
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source Rmf
Source Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. Location
Recorded By
Witnessed By
276

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
LOG. DATE		LOG. DATE	
TOOL MODEL NO.	33 SS	TOOL MODEL NO.	NEUTRON/NEUTRON
TOOL NO.	33 SS	SOURCE NO.	72 MC
TYPE	SCINTILLATION	DETECTOR MODEL NO.	PROPORTIONAL
LENGTH	15.34 OD	TYPE	1.25 OD, 7ft.
DETECTOR TO SOURCE	3.875 ft.	LENGTH	MEC 6.5-8
		SOURCE-BOREHOLE NO.	1.0
		SERIAL NO.	ALLIS CH
		ATOMIC NO.	Ave. 3
		TYPE	3 GRAINS
		LENGTH	

LOGGING DATA

RUN NO.	GENERAL					GAMMA RAY				NEUTRON			
	FROM	TO	BASE LOG	T-C	WIRE LINE	SPEED	SENS.	MV @ 1 API	T-C	BASE	SPEED	SENS.	MV @ 1 API
1	SURFACE	3000	GR	A	7-46	30	10	10	A	3000	60	50	100
2	3000	5000	GR	A	7-46	30	10	10	A	3000	60	25	100

REMARKS: LOGS RUN 2 IN 1

GAMMA RAY

NEUTRON

GAMMA RAY INCREASES

NEUTRON INCREASES

Log Scale 2 in = 1

Linear Scale 2 in = 1

Base Line Shift

Base Line Shift

ROKE

PROVIDED HEAD LAB

OIL ENTERPRISES LTD. CALGARY, ALBERTA

Kelly River 77 (2) 8A

FILE NO. 276

COMPANY: KLIO RIVER LIMITED

WELL: R 77 - 25

LOCATION:

FIELD: KLIO RIVER VALLEY

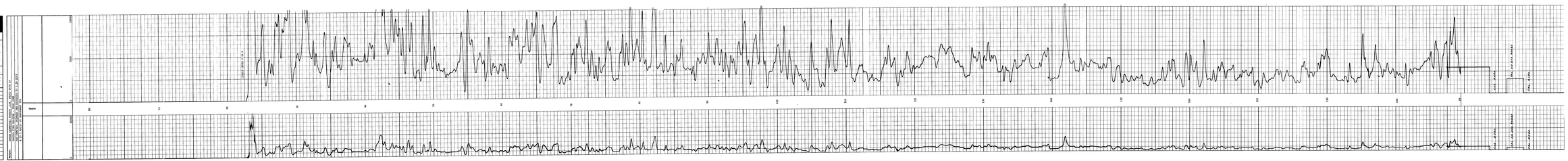
PROVINCE: BRITISH COLUMBIA

Date Service: 1969-09-04-1969

Permanent Datum	DEVONIAN LAKE	Elev.	
Log Measured From	Bot of Casing 23.0A	Above Perm. Datum	
Drill Measured From	Bot of Casing		

Run No.	1000		
Date	19 MAR 1977		
Last Reading	1.25 A		
Log Reading	1.5		
Format Logged	1.5		
Depth Reached	1.5		
Depth Drilled	2.5		
Casing Shoe	2.5		
Casing Type	NATURALLY		
Fluid Level	2.5		
Mud Weight	1.1 - 1.0		
Rm @ T.C.	15.0 @ 0.25		
Operating Time	1 HOUR		
Truck No.	96		

Recorded By: CALGARY Witnessed By: LAWRENCE



ROKE

SIDEWALL DENSILOG

ROKE OIL (WESTBROKER) LTD.
CALGARY, ALBERTA

FILE NO. 4-2-26
COMPANY ROKE OILS (WEST) LTD.
WELL 276
FIELD REA RIVER GRANITE
LOCATION S.E. 7-24-26 W4M
PROVINCE ALBERTA

Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Elev. K.B.	3000
Elev. D.F.	
Elev. G.L.	2991

Date	4-2-26
Run No.	ONE
Depth-Driller	3000
Depth-Logger	3000
Bottom Logged Interval	3000
Top Logged Interval	1000
Type Fluid in Hole	GEL CHEM
Salinity PPM Cl	1000
Density LB/GAL	9.5
Level	FULL
Max. Rec. Temp. Deg. F.	90
Operating Rig Time	6 HRS
Recorded By	J. ROSS
Witnessed By	MR. KING

RUN NO. 1 — BOW SPRING

Bit From	0	Bit To	3000
Casing-Driller	8 5/8	@	1000
Casing-Logger	8 5/8	@	1000
Bit Size	7 7/8		
Type Fluid in Hole	GEL CHEM		
Dens.	9.5	Visc.	40
pH	9.5	Fluid Loss	8.4
Source of Sample	CIRC.		
Rm @ Meas. Temp.	.5 @ 90		
Rmf @ Meas. Temp.	.4 @ 90		
Rmc @ Meas. Temp.	.6 @ 90		
Source: Rmf / Rmc	CALC.	CALC.	
Rm @ BHT	.3 @ 120		
Time Since Circ.	6 HRS		
Max. Rec. Temp. Deg. F.	120		
Equip. Location	4-26-W4		
Recorded By	J. ROSS		
Witnessed By	MR. KING		

RUN NO. — TYPE LOG

Bit From		Bit To	
Casing-Driller		@	
Casing-Logger		@	
Bit Size			
Type Fluid in Hole			
Dens.		Visc.	
pH		Fluid Loss	
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source: Rmf / Rmc			
Rm @ BHT			
Time Since Circ.			
Max. Rec. Temp. Deg. F.			
Equip. Location			
Recorded By			
Witnessed By			

GENERAL

RUN NO.	FROM	TO	SPEED FT/MIN	T.C.	GENR SETTINGS	GR S/N	GR S/N SETTINGS	CAL S/N	CAL S/N SETTINGS
1	0	3000	30						
2	0	1000	60						

GAMMA RAY

RUN NO.	FROM	TO	SPEED FT/MIN	T.C.	GENR SETTINGS	GR S/N	GR S/N SETTINGS
1	0	1003.5	3,60				
2	0	1000		CALCITE			

SIDEWALL DENSILOG

RUN NO.	FROM	TO	SPEED FT/MIN	T.C.	GENR SETTINGS	GR S/N	GR S/N SETTINGS	CAL S/N	CAL S/N SETTINGS
3	1000	3,48	36,55						

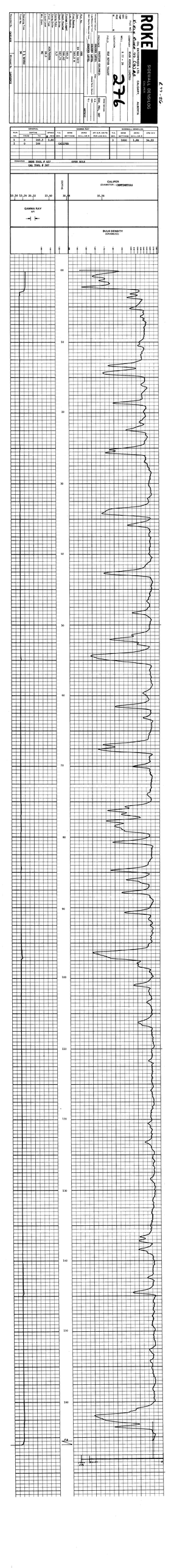
REMARKS: BOW TOOL # 667
CAL TOOL # 587

OPEN HOLE

CALIPER
CHARACTER - LIMESTONE

GAMMA RAY
API

BULK DENSITY
DENSITY



ROKE OIL (ATHABASCA) LTD.

CALGARY, ALBERTA

Company	ROKE OIL (ATHABASCA) LTD.
Well	276
Field	GRAND RAPIDS
County	ATHABASCA
Province	ALBERTA
Location	16-1-6 W4
Elevation	K.B. 1160 ft. D.F. 1159 ft. G.L. 1149 ft.
Permanent Datum	GROUND LEVEL
Log Measured From	K.B. 11 ft. Above Perm. Datum
Drilling Measured From	K.B.
Date	1-2-74
Run No.	ONE
Depth-Driller	1515
Depth-Logger	1515
Bottom Logged Interval	1514
Top Logged Interval	1100
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1000
Density	9.5
Level	FULL
Max. Rec. Temp. Deg. F.	90
Operating Rig Time	5 HRS
Recorded By	D. ANDERSON
Witnessed By	MR. MOORE

CASING RECORD

	Size	Wgt.	Grade	From	To
Surface String	8 5/8"	24	J-55	0	1111
Prod. String	4 1/2"	9.5	J-55	0	1515

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		TOOL MODEL NO.	NEUTRON/NEUTRON
QUARTER	32 SPC	LOGG. CUM.	
DETECTOR MODEL NO.		TOOL MODEL NO.	32 SPC
TYPE	SCINTILLATION	LOGGING CUM.	
LENGTH	32.16 CM	DETECTOR MODEL NO.	
DISTANCE TO SOURCE	7.04 M	TYPE	PROPORTIONAL
		LENGTH	15.24 CM
GENERAL		SOURCE MODEL NO.	MRC-N-66-M
INSET CHART NO.	30	SERIAL NO.	
CALIBRATION VALUE NO.	90	STRENGTH	15.25 CM
TOOL SERIAL NO.	325 2014	SPACING	Am/Be
		DETECTOR	1 CM/SEC

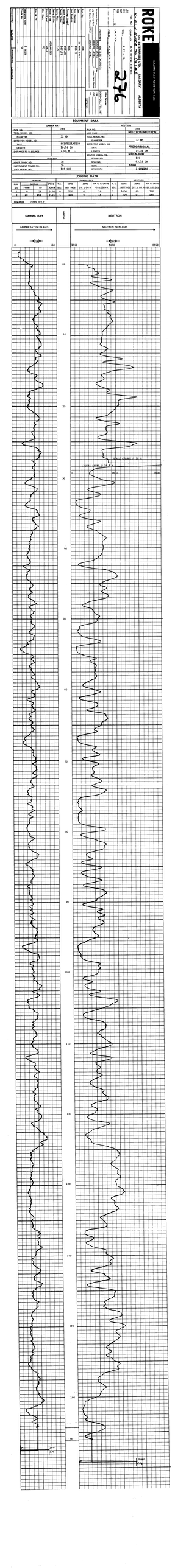
LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN	LOG FROM	LOG TO	SPEED FT/MIN	T.C. SEC	SENS. MV/DIV	AMP. SL. UNITS MV/DIV	T.C. SEC	SENS. MV/DIV	AMP. SL. UNITS MV/DIV
1	1100	1514	30	3	100	0	14	3	1000	0	100
1	60	1100	1-60	3	100	0	14	3	500	0	100

REMARKS LOGS SELF

SCALE CHANGE AT 60 K

LEGEND: RUN 1 AT 30 FPM



ROKE

PHOTOED BEAM LAID

OIL ENTERPRISES LTD. CALGARY, ALBERTA

V. RIV RIVER 77(3)28

FILE NO.

LSD
SEC
TWP
RGE
M

COMPANY: ESSO NEWCOM LIMITED

WELL: B. 77 - 26

276

LOCATION:

FIELD: ESA RIVER VALLEY

PROVINCE: BRITISH COLUMBIA

Other Services: DIV. BOSS-GAL. DIV

Permanent Datum: CENTRE LEVEL

Elev.:

Log Measured From: CENTRE LEVEL

Above Perm. Datum:

Drill Measured From: CENTRE LEVEL

Elev.: K.B.:

GRS:

G.L.:

METRIC

Run. No.	ONE
Date	19 MAR 1977
First Reading	103.0 M
Last Reading	27.3
Foreign Legend	130
Depth Reached	104.50
Depth Driller	107.72
Casing Rate	7.1
Casing Driller	
Fluid Type	AIR/WATER
Liquid Level	27.3
Min. Chem.	NIL
Rec. at %	15.43 @ 25
Operating Time	5 HOURS
Truck No.	36
Recorded By	GAGLIOTI
Witnessed By	LAWRENCE

Remarks: ROKE OIL ENTERPRISES LTD., PHOTO TYPE 27
CENTRE FIRE BEACH, 4 AND 4 ONE
SPOT PROJECT, FEDERAL BOX AVAILED 20, 3.20 DEPTH
A 10 X 5 METER OR BENDEMARK PIN

ROKE

OIL DEVELOPMENTS LTD. CALGARY, ALBERTA

Company	ROKE OIL DEVELOPMENTS LTD.
Well	8-27-27
Field	RED DEER VALLEY
Location	
Province	ALBERTA

276

4-27-27

Permanent Datum	GROUND LEVEL
Log Measured From	K.B.
Drilling Measured From	K.B.
Elevation	K.B. 2,519.0
	D.F.
	G.L. 2,515.0

Date	8-27-27
Run No.	ONE
Depth-Driller	8660
Depth-Logger	8660
Bottom Logged Interval	8660
Top Logged Interval	5000
Type Fluid in Hole	GAS CUT MUD
Salinity, PPM Cl	
Density	9.8
Level	FULL
Max. Rec. Temp. Deg. F.	180° F
Operating Rig Time	
Recorded By	JOHNSON
Witnessed By	JAMIESON

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG CODE	NEUTRON/NEUTRON
DIAMETER	3½ IN.	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	3½ IN.
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.38 CM.	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	7.06 M.	LENGTH	15.24 CM.
		SOURCE MODEL NO.	MRC N-05-M
GENERAL		SERIAL NO.	522
HOIST TRUCK NO.	36	SPACING	45.18 CM.
INSTRUMENT TRUCK NO.	35	TYPE	Amble
TOOL SERIAL NO.	103 104	STRENGTH	1 Curie

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	UNITS FROM	UNITS TO	SPEED (FPM)	T.C. SETTINGS	SPEED SEC.	API N. UNITS DIV. = 100 M.	PER LOG DIV.	T.C. SETTINGS	SPEED (FPM) DIV. = 100 M.	API N. UNITS PER LOG DIV.
ONE	0	26.5	2.45	4	100	0	15	1000	0	100
	26.5	173	2.45	4	100	6	15	2	700	0	100

REMARKS: GATE WIDTH

GAMMA RAY

GAMMA RAY INCREASES

0 — 160

NEUTRON

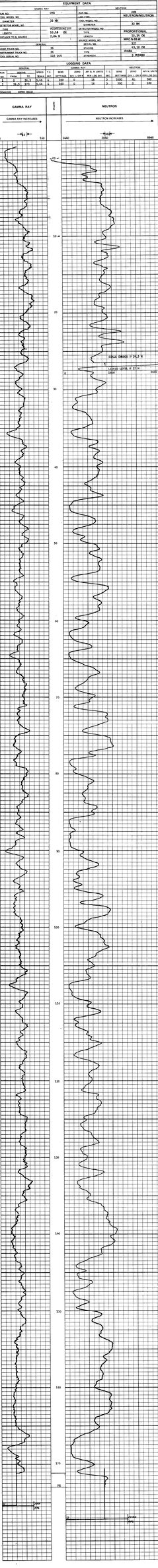
NEUTRON INCREASES

5000 — 8660

RADIUS CHANGE IF ONLY IN

CASING LEVEL @ 217 M.

1800 — 5600



ROKE
SCHLUMBERGER Limited

K.B. ELEV. 3,294 ft.
D.F. ELEV. 3,293 ft.
G.L. ELEV. 3,283 ft.

COMPANY IMPERIAL OIL LIMITED
WELL 276
FIELD JOFFRE
COUNTY PROVINCE ALBERTA

LOCATION 12-38-27-4

Other Services
SGR
DIL

Permanent Datum G.L.
Log Measured From K.B.
Drilling Measured From K.B.

Date	3 MAR 70
Run No.	ONE
Depth-Driller	3,175
Depth-Logger	3,175
Bottom Logged Interval	3,175
Top Logged Interval	2,000
Type Fluid in Hole	GEL CHEM
Salinity, PPM Cl	1,000
Density	10.3
Level	FULL
Max. Rec. Temp. Deg. F.	96
Operating Rig Time	11 HRS
Recorded By	R. KEEN
Witnessed By	MR. MC

RUN NO. ONE
DATE 3 MAR 70
TYPE LOG SGR-DIL

CASING RECORD
SURFACE 8 5/8 @ 327 ft.
PRODUCTION 5 1/2 @ 3,175 ft.

BOREHOLE RECORD
BIT NO. 1 2 3
SIZE 7 7/8 7 7/8
FROM 327 3,175
TO 3,175

TYPE JOINT USED
LONG

REMARKS
RUN 1 DUAL INDUCTION-SFL
RUN 1 SIDEWALL NEUTRON-GAMMA RAY
RUN 1 BOREHOLE COMPENSATED SONIC-GAMMA RAY
RUN 1 DUAL INDUCTION-SFL
RUN 1 SIDEWALL NEUTRON-GAMMA RAY
RUN 1 BOREHOLE COMPENSATED SONIC-GAMMA RAY

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GENERAL					GAMMA RAY			SIDEWALL NEUTRON		
RUN NO.	DEPTH FROM	DEPTH TO	SPACED Ft. and Dec.	T.C.	ZERO SETTINGS	ZERO DIAL SET	API G.R. UNITS PER 100 DIV.	T.C. SETTINGS	ZERO DIAL SET	LIME DIV
1	0	327.5	5.66					3	1000	1.28 54.55
2	0	327								

CALIPER

REMARKS: DERR TOOL # 627
CAL TOOL # 587

OPEN HOLE

CALIPER
(DIAMETER - CENTIMETRES)

30.16 35.24 30.32 25.40 30.48 35.56

GAMMA RAY
API

BULK DENSITY
(GRAMS/CC)

00
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170

ROKE

PETERS KERR LTD.

ROKE OIL ENTERPRISES LTD.

CALGARY, ALBERTA

Well Name and No. ROKE ET AL HZ SEXSMITH 10-8-72-5

Licence No. 0467

Surface Location 10-8-72-5 W6M

Field PEACE RIVER

Province ALBERTA

Country CANADA

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Drilling Contractor PRECISION DRILLING CO.

Rig No. 161

Spud Date 07-Jan-2008

Drilling Completed 17-Jan-2008

Total Depth 2,215 m

Final Drill Date 17-Jan-2008

Rig Released 17-Jan-2008

Logging Date 17-Jan-2008

Type of Log GAMMA RAY

Run No. ONE

Depth Driller 2,215

Depth Logger 2,215

Btm. Log Interval 2,215

Top Log Interval 1,500

Open Hole Size 6 1/8

Casing Driller 244.5 @ 0 m

Casing Logger

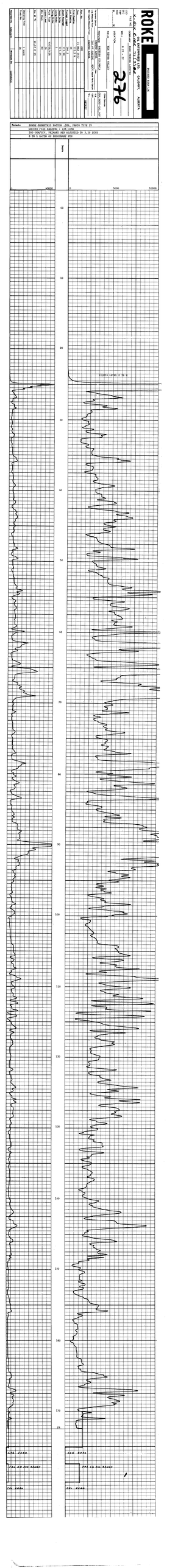
Bit Run 3

Max. Rec. Temp. 93 deg. C

Equip. No. GAM0035

Location No. CALGARY

Recorded By M. MARK

Witnessed By J.SPENCE

Remarks: BOREHOLE GEOMETRIC FACTOR =.579, PHOTO TYPE IV
GROUND FIRE ENGAGED = 2215 GIHD
500 DENSITY, PRIMARY PEP MAGNIFIED TO 3,29 HYPE
0 90 % RATIO OR BOUNDARY PEP