1985 EXPLORATION WORK

HAMILTON LAKE COAL LICENCES, Nos. 7480, 7481, 7482 & 7483

CUMBERLAND COAL FIELD, NELSON LAND DISTRICT

Lat. 49 deg. 34′ to 49 deg. 36′

Long. 125 deg. 02′ to 05′

NTS Sheet 92 F/11

EAST CENTRAL VANCOUVER ISLAND

BRITISH COLUMBIA

Prepared For :

WELDWOOD OF CANADA LIMITED

VANCOUVER, BRITISH COLUMBIA

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 699

Prepared By :

GARDNER EXPLORATION CONSULTANTS

STEPHEN L. GARDNER, P. GEOL.
NANAIMO, BRITISH COLUMBIA

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May 20 to June 20, 1985

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  4+500
  4+800

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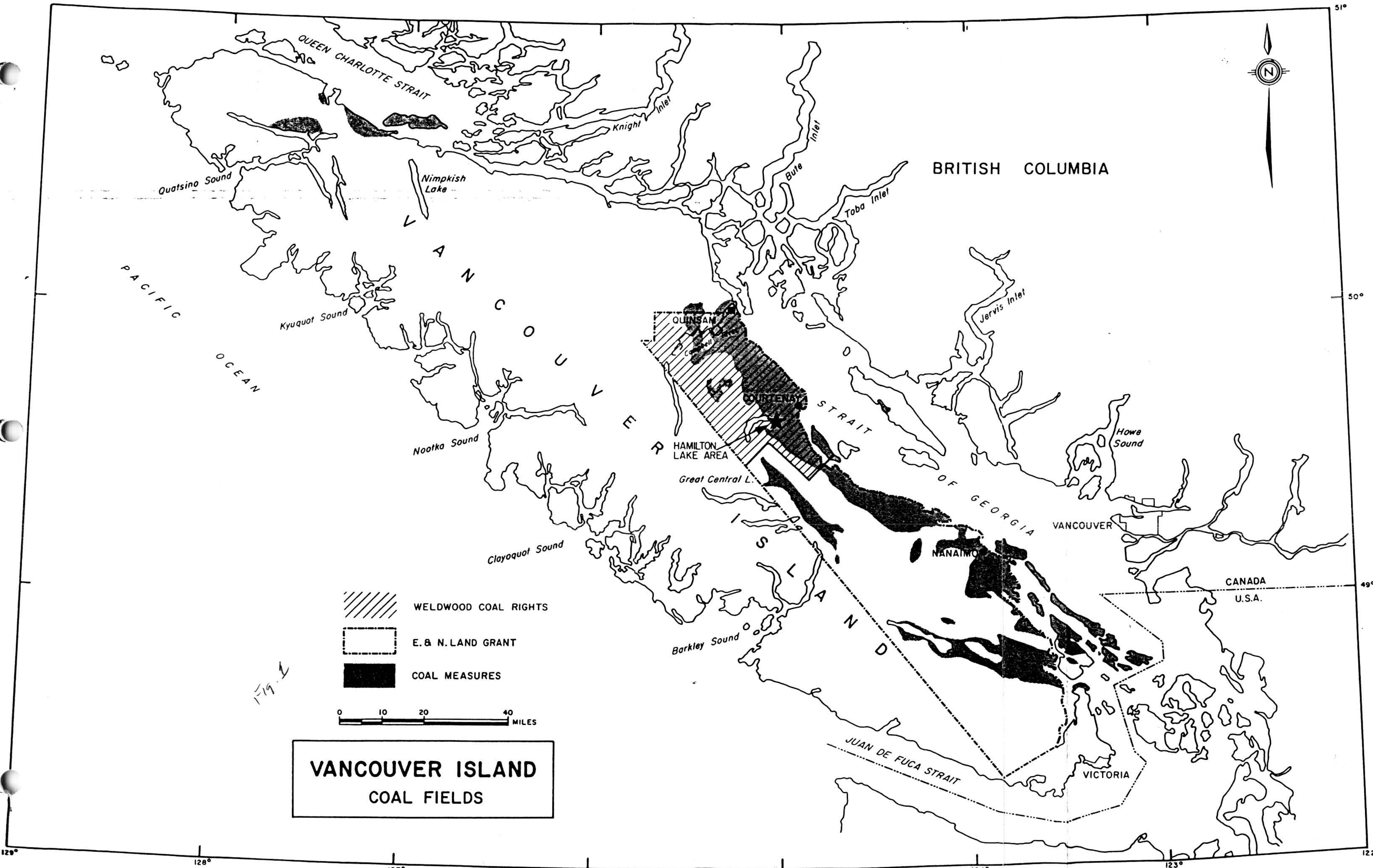


VANCOUVER ISLAND

COAL FIELDS

FIG 6

WELDWOOD OF CANADA LTD.

HAMILTON LAKE COAL LICENCES

LONGITUDINAL SECTION
RESERVE BLOCKS A & B

DRAWN BY:	DRAFTED BY:	CHECKED BY:	DATE:
S.L. GARDNER	E.J. DUNN		JUNE 1983

Chapter 1

INTRODUCTION

1.1 LOCATION AND DESCRIPTION OF THE HAMILTON LAKE COAL LICENCES

Coal Licence Numbers 7480, 7481, 7482 and 7483, held by Weldwood of Canada Limited, are located in the Cumberland Coalfield on the east coast of Vancouver Island between Latitude 49 degrees 34' to 49 degrees 36' and Longitude 125 degrees 02' to 125 degrees 05' (NTS Reference Map 92F/11). Weldwood of Canada Limited owns extensive fee-simple coal rights throughout the Cumberland-Comox area. In addition to these large holdings of fee-simple rights, some of the outlying areas of the coalfield are held by Weldwood of Canada Limited under licence from the British Columbia Provincial Government. The Hamilton Lake area, covering the aforementioned coal licences, is one of these areas.

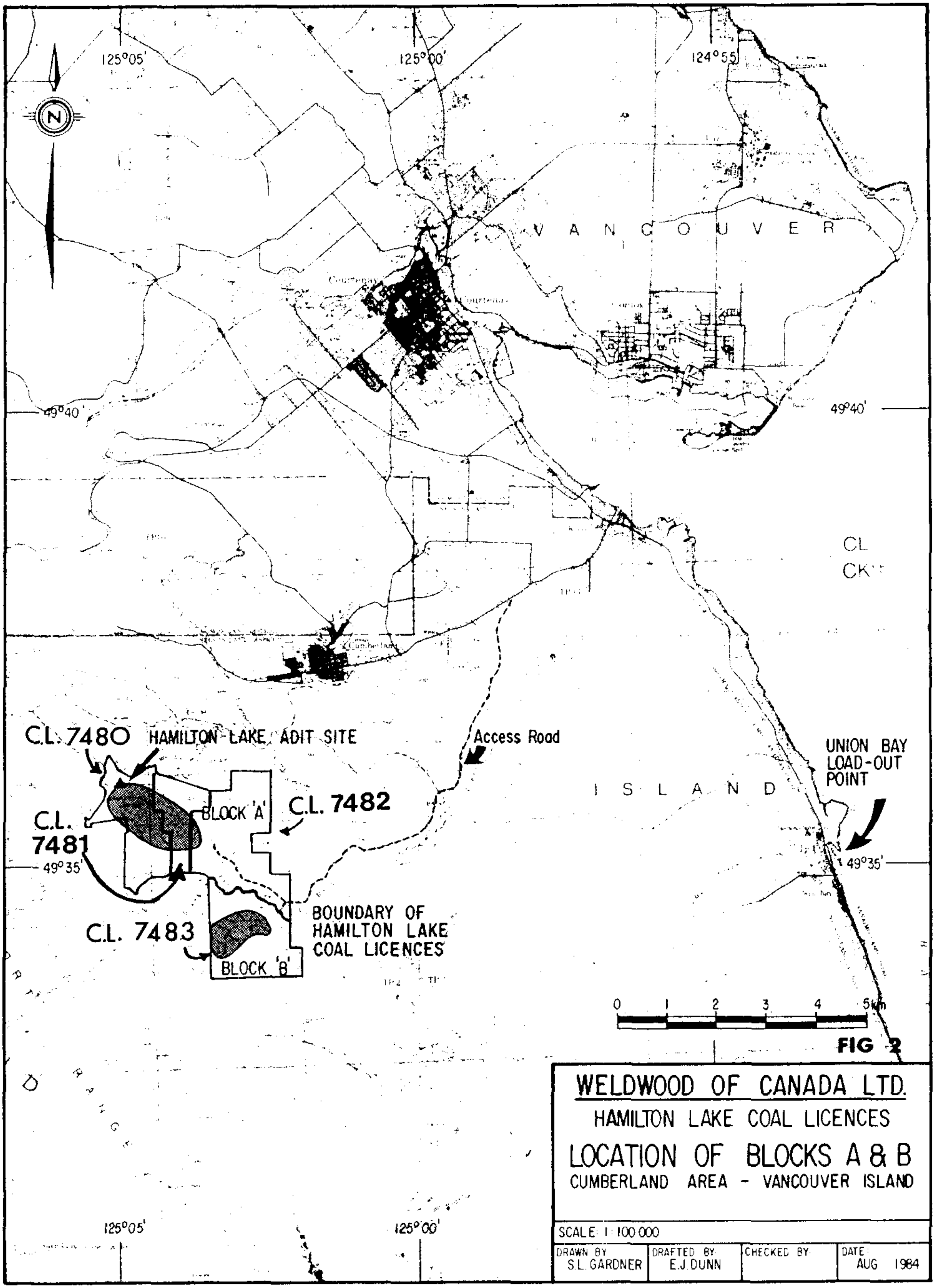
The present coal licences were once part of the the Esquimalt and Nanaimo Railway Land Grant and were held fee simple by Weldwood of Canada Limited after its purchase of Canadian

Collieries in 1964. In 1973 Weldwood cut down on the size of its coal holdings within the Railway Belt. The Hamilton Lake area was surrendered to the Crown. After further evaluations, the company decided to reacquire the area, which necessitated applications for licence.

The Hamilton Lake coal licences, issued on October 1, 1982 form a contiguous block of licences covering approximately 1091 hectares. They lie in the Nelson Land District, approximately 6.5 km due southwest of the village of Cumberland. Access to the area is via 12 km of good gravelled logging road owned and maintained by Pacific Forest Products Ltd.. This logging road joins the Royston-Cumberland highway approximately 3 km northeast of Cumberland. The total road distance to the old Union Bay shipping wharf is 23 kilometres.

1.1.1 Physiography

The Hamilton Lake Coal Licences cover a high plateau area that overlooks the broad Comox Valley. The towns of Courtenay, Comox and the Comox airport are all visible in the distance to the northeast. The topography on this plateau ranges from 400 to 650 metres above sea level. The plateau is one of a number of low ridges that form the foothills along the east side of the Beaufort Mountains.


125°05'
125°00'
124°55'
N
V A N C O U V E R
49°40'
49°40'
CL
C.L. 7480
HAMILTON LAKE ADIT SITE
Access Road
C.L. 7481
BLOCK 'A'
C.L. 7482
49°35'
49°35'
I S L A N D
UNION BAY LOAD-OUT POINT
BOUNDARY OF HAMILTON LAKE COAL LICENCES
C.L. 7483
BLOCK 'B'
0 1 2 3 4 5 km
FIG 2
WELDWOOD OF CANADA LTD.
HAMILTON LAKE COAL LICENCES
LOCATION OF BLOCKS A & B
CUMBERLAND AREA - VANCOUVER ISLAND
SCALE: 1:100 000
DRAWN BY S.L. GARDNER
DRAFTED BY E.J. DUNN
CHECKED BY
DATE AUG 1984
125°05'
125°00'

The northern part of the licence area covers part of the Cumberland waterworks district. Hamilton Lake, which is the second-highest dammed lake in the water supply, directly abuts the coal measures on the north end of the licence area. In keeping with previous studies on the Hamilton Lake licences, this northern part of the licence area is termed Block 'A'. All of the current year's exploration work is confined to this Block 'A' area.

Drainage in the middle and south end of the licence area occurs in deep, steep-sided valleys. The Trent River is the major drainage in this part of the licence area. Between the Trent River and Idle Creek to the south, a small area of sedimentary deposition occurs. This is termed the Block 'B' area.

1.1.2 Description of Previous Work

The coal seams at Hamilton Lake were known about for many years but the relatively inaccessible nature of the area during the mining period and the generally dirty characteristics of the coal at outcrop deterred development.

As part of an on-going program of evaluation and assessment of its holdings, Weldwood of Canada Limited constructed a bulk sample adit in the coal measures near the edge of Hamilton Lake in 1976. A 20 ton bulk sample was extracted and shipped to

Birtley Engineering in Calgary for float-sink and washability testing.

As a follow-up to this work, a number of exploratory drillholes were completed in 1978 in order to determine the size and extent of the coal reserve. These holes confirmed the presence of a number of coal seams in the Block 'A' area north of the Trent River, and the Block 'B' area, south of the Trent River. The scattered nature of the drillholes allowed preliminary reserve estimates to be made for each of the two areas, however it was recognized that more work was required in order to establish the boundaries of each deposit and determine the geology with respect to the coal measures.

In 1983, a small program of field-mapping and surface geology led to the planning of a more detailed drilling program covering both areas, staged over a period of years. The initial stage of this drilling program was completed in June of 1984.

The 1984 drill program was confined to the Block 'B' area, south of the Trent River. A total of 10 drillholes were completed in this area between June 18 and June 29, 1984. Certain coal sections were cored in three of these holes. Total drilling amounted to 354 metres, with an additional 33 metres cored.

1.2 DESCRIPTION OF PRESENT WORK

1985 work was confined to the Block 'A' area, adjacent to the Hamilton Lake Adit Site on the north part of the block. All surveying and drilling operations were confined to Coal Licence Numbers 7480 and 7481. This work was undertaken between May 20 and June 20, 1985.

The work consisted of the following:

- Surveying: a baseline was constructed on a bearing of 139 degrees E. of N. which approximates the general formation strike in the area. Three drill lines were surveyed at right angles to this baseline on a 300 metre spacing.

- Drilling: Drilling was conducted on existing access trails at locations where these trails intersected the surveyed grid lines, and other locations. A total of 7 holes were drilled, for a total of 282 metres or 926 ft. . No coring was undertaken.

- Geophysical Logging: All holes were geophysically logged from top to bottom using a Caliper, Resistivity, Density, Gamma and Neutron suite. All holes were drilled vertically with no deviation.

1.2.1 Method of Operations

Drilling was conducted on existing access roads which were upgraded with the aid of a D-7 Caterpillar. One Bucyrus-Erie Model 12R air rotary drilling rig equipped with a drill-thru casing hammer for overburden work and a downhole percussion hammer for rock drilling was employed. All holes were cased to the rock with heavy-duty 15.2 cm. water-well casing. Casing was cut off below ground level and holes were cemented with surface plugs.

1.2.2 Cost Summary

Table 1 summarizes the costs of the 1985 work :

TABLE 1. - COST SUMMARY, 1985 EXPLORATION PROGRAM

ITEM	TOTAL COST	
Drilling	$ 5,468.75	
Bits & Consumables	1,485.06	
Travel	200.00	
Room & Board	450.00	
Mobilization	300.00	
SUB-TOTAL		$ 7,903.81
Cat Work & Reclamation		2,645.00
Geophysical Logging		2,105.25
Surveying		2,900.00
Supervision		4,194.40
Miscellaneous Supplies		139.19
TOTAL ON-PROPERTY EXPENDITURE :		$ 19,887.65
OFF-PROPERTY COSTS :		
Final Reporting		3,179.64
GRAND TOTAL* :		$ 23,061.29

* NOTE : Does not include head office and administration charges.

The overall cost per foot for this program is $ 21.48, or $ 70.44 per metre. The direct drilling cost per foot is $ 8.54, or $ 28.00 per metre.

The following is a list of contractors which supplied services to Weldwood of Canada Limited during the course of the 1985 field work :

Drillwell Enterprises Ltd., Cowichan Bay, B. C.
D. Prowse Bulldozing, Courtenay, B. C.
Don J. Campbell Surveying, Lantzville, B. C.
Davies Exploration Logging Ltd., Blairmore, Alberta
Gardner Exploration Consultants, Nanaimo, B. C.

In addition to these contractors, numerous supplies and services were purchased from local businesses in the Courtenay area.

Table 2. tabulates the summary of holes drilled and other pertinent information.

TABLE 2. - DRILLING SUMMARY, 1985 EXPLORATION WORK

HOLE NUMBER	GRID LINE	LOCATION Lt. = Left of B/L	ELEVATION metres a.s.l.	DATE DRILLED	TILL DEPTH (m)	DEPTH TO UPPER SEAM (m)	DEPTH TO LOWER SEAM (m)	TOTAL DEPTH (m)
HL-85-01	4+800	115 m. Lt.	552.24	03/06/85	2.44	6.65	-	29.00
HL-85-02	4+995	1123 m. Lt.	589.40	04/06/85	3.05	-	-	35.00
HL-85-03	4+800	568 m. Lt.	585.59	04/06/85	2.13	20.75	28.60	42.70
HL-85-04	4+886	907 m. Lt.	611.42	10/06/85	1.22	6.35	27.45	37.50
HL-85-05	4+782	1145 m. Lt.	633.06	11/06/85	-	8.05	-	43.90
HL-85-06	4+793	767 m. Lt.	609.68	11/06/85	-	21.75	32.30	43.90
HL-85-07	4+535	281 m. Lt.	583.30	12/06/85	3.35	9.50	41.20	50.29

Chapter 2

SUMMARY AND CONCLUSIONS

A total of 7 holes were drilled on the Hamilton Lake Block 'A' area in June, 1985, for a total of 282 metres or 926 ft drilled. This work was initiated on a surveyed base-line grid pattern. Previous drilling had been undertaken on a random basis. As a result of this work, the following conclusions can be drawn:

1. This coal reserve is contained within 3 main coal zones in the reserve area, over a stratigraphic interval ranging from 9.9 to 32.2 metres, or 32.5 to 105.6 feet.

2. Although continuous, the seams display a variance in quality and thickness from hole to hole. This variance is due to depositional factors affecting coal seam generation, rather than structural complications. Quality and thickness of the seams decreases to the southeast.

3. The structure of the area is relatively simple, with the formation dipping uniformly to the northeast and east.

4. Previous in-situ coal reserve calculations of 6.43 million

metric tonnes do not reflect recoverable or clean coal reserves in the Block 'A' area for which there are no estimates at this time, due to the limited amount of data over the block. However, high in-situ ash contents of the seams as interpreted from the geophysical logs indicate that the clean coal recoveries from a processing operation will be low and overall strip ratios will be high.

Chapter 3

GEOLOGIC SETTING

Because of its marginal continental location, the geologic history of Vancouver Island is chiefly related to plate tectonics and massive crustal movements on the Pacific margin of North America. Vancouver Island represents submarine and later terrestrial vulcanism associated with rifting along an ocean floor subduction zone, formed from the Pacific oceanic plate colliding with the western edge of the North American continental plate and being subducted beneath the continental margin. These crustal movements began in Paleozoic time and have continued to the present. Most of the vulcanism associated with the rifting took place in early Mesozoic time[1]. During Jurassic and Triassic time, massive outpourings of pillow and flow lavas, and aquagene tuffs formed volcanic island arcs which eventually formed the Insular Mountain Belt, which covers Vancouver Island, the Queen

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1. Muller, J. E., "Evolution of the Pacific Margin, Vancouver Island and Adjacent Regions", Can. Journal of Earth Science, Vol. 14, 1977

Charlotte Islands, the Alaska Panhandle and the Wrangell and St. Elias ranges of Alaska. These volcanic buildups are represented on Vancouver Island by the thick basalts of the Triassic Karmutsen Formation, and the major batholiths of the acidic Island Intrusions. These volcanic complexes form the basement rock upon which later clastic sediments of Cretaceous Age were deposited.

3.1 SEDIMENTATION

In the Cumberland area, Upper Cretaceous sediments of the Nanaimo Group occur in unconformable contact with the volcanic basement rock of the Triassic Karmutsen Formation. The Nanaimo Group in this area is represented by Comox Formation sandstones, siltstones, shales and coal beds. In addition to these, the Benson basal conglomerate member of the Comox Formation is evident. This basal member signifies the beginnings of Late Cretaceous Nanaimo Group deposition on the old erosional surface of the Triassic basalts.

3.2 STRUCTURE

The structure of the Cumberland coalfield and areas to the south

FIGURE 3

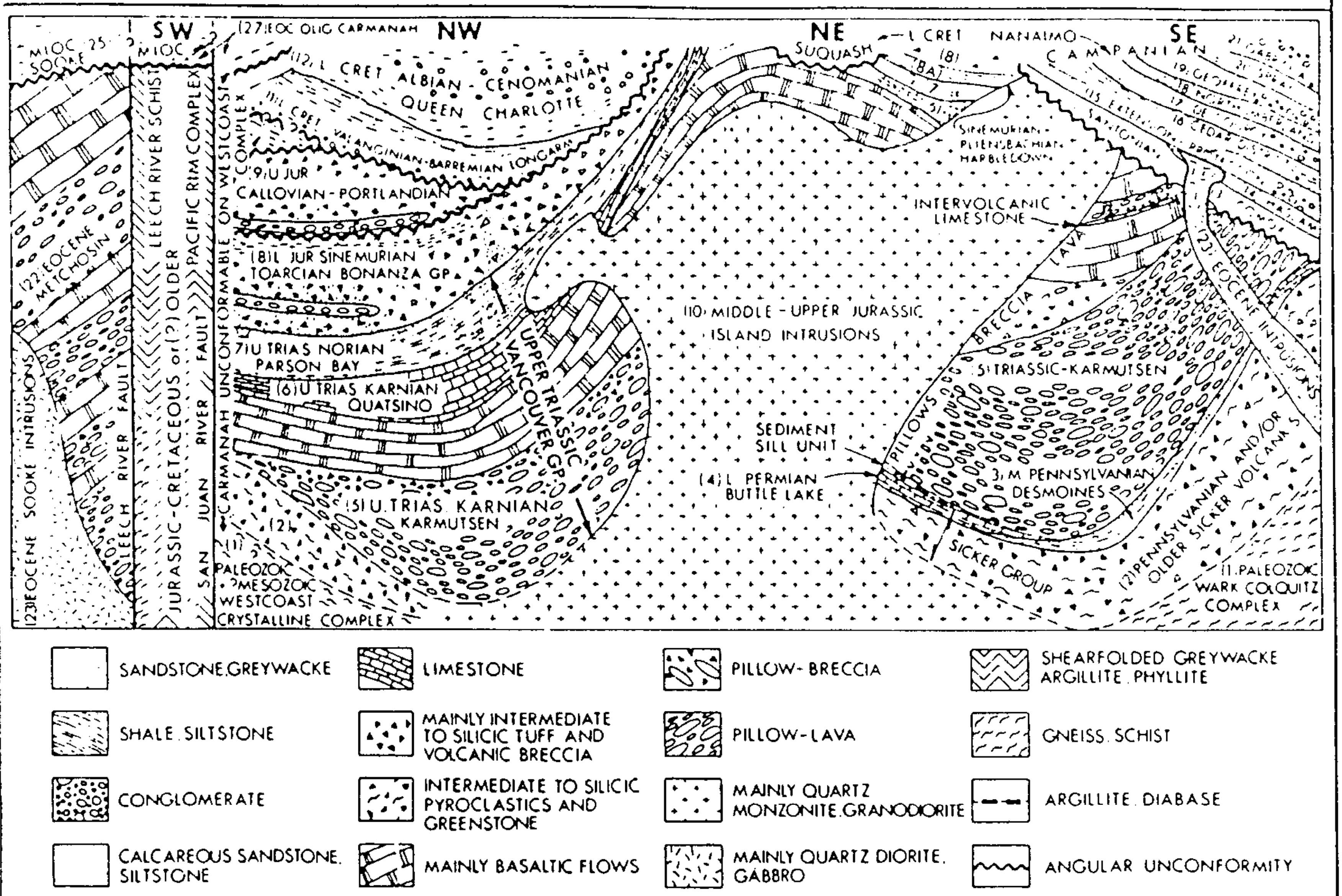
TABLE OF FORMATIONS OF VANCOUVER ISLAND*

Era	Period		Stage	Group	Formation	Symbol	Average thickness in m. ±	Lithology
CENOZOIC					late Tert. volc's of Port McNeill	Tvs		
					SOOKE BAY	mpTSB		conglomerate, sandstone, shale
			EOCENE to OLIGOCENE		CARMANAH	eoTC	1,200	sandstone, siltstone, coglomerate
					ESCALANTE	eTE	300	conglomerate, sandstone
			early EOCENE		METCHOSIN	eTM	3,000	basaltic lava, pillow lava, breccia, tuff
MESOZOIC		LATE	MAESTRICHTIAN	NANAIMO	GABRIOLA	uKGA	350	sandstone, conglomerate
					SPRAY	uKS	200	shale, siltstone
			CAMPANIAN		GEOFFREY	uKG	150	conglomerate, sandstone
					NORTHUMBERLAND	uKN	250	siltstone, shale, sandstone
					DE COURCY	uKDC	350	conglomerate, sandstone
					CEDAR DISTRICT	uKCD	300	shale, siltstone, sandstone
					EXTENSION - PROTECTION	uKEP	300	conglomerate, sandstone, shale, coal
			SANTONIAN		HASLAM	uKH	200	shale, siltstone, sandstone
					COMOX	uKC	350	sandstone, conglomerate, shale, coal
		EARLY	CENOMANIAN ALBIAN APTIAN?	QUEEN CHARLOTTE	conglomerate unit	lKQC	900	conglomerate, greywacke
					siltstone shale unit	lKQP	50	siltstone, shale
			VALANGINIAN BARREMIAN		LONGARM	lKL	250	greywacke, conglomerate, siltstone
	JURASSIC	MID to LATE	TITHONIAN CALLOVIAN		Upper Jurassic sediment unit	uJs	500	siltstone, argillite, conglomerate
		EARLY	TOARCIAN? PLIENSBACHIAN SINEMURIAN	BONANZA	volcanics	lJB	1,500	basaltic to rhyolitic lava, tuff, breccia, minor argillite, greywacke
					HARBLEDOWN	lJH		argillite, greywacke, tuff
	TRIASSIC	LATE	NORIAN	VANCOUVER	PARSON BAY	uTrPB	450	calcareous siltstone, greywacke, silty-limestone, minor conglomerate, breccia
			KARNIAN		QUATSINO	uTrQ	400	limestone
					KARMUTSEN	muTrK	4,500	basaltic lava, pillow lava, breccia, tuff
		MID	LADINIAN		sediment - sill unit	Trds	750	metasiltstone, diabase, limestone
PALEOZOIC	PENN. and ? PERM.			SICKER	BUTTLE LAKE	CPBL	300	limestone, chert
					sediments	CPSs	600	metagreywacke, argillite, schist, marble
					volcanics	CPSv	2,000	basaltic to rhyolitic metavolcanic flows, tuff, agglomerate
	DEV. or EARLIER							

* Courtesy: Muller, J.E., "Geology of Vancouver Island" G.S.C. No. O.F. 463, 1977

FIGURE 4

RELATIONSHIPS OF FORMATIONS OF VANCOUVER ISLAND*



*Courtesy: Muller, J.E., "Geology of Vancouver Island", G.S.C. No. O.F. 463, 1977 of the coalfield is dominated by major normal faults that strike in a general northwest to southeast orientation. These faults are usually downthrown to the northeast. Secondary reverse faulting also occurs. These reverse faults are hinged, so that displacements along the fault line vary from zero to 10 or 20 metres. In the Hamilton Lake area, sedimentary blocks that have been uplifted as a result of tectonic movement are isolated from each other by volcanic terrain from which the later sediments have been completely eroded away, exposing the old Triassic unconformity.

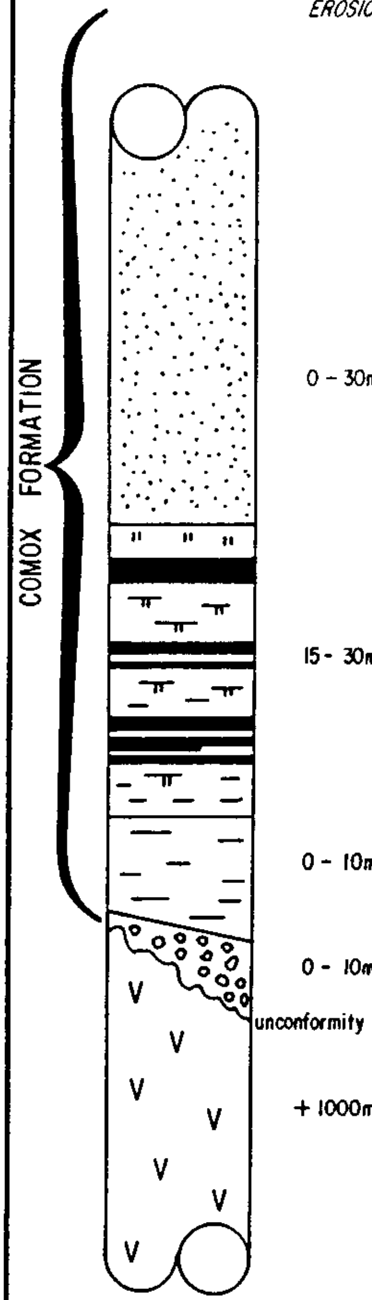
Sedimentary blocks usually dip to the northeast at angles of 6 to 16 degrees. However, near fault zones and areas of intense structural disturbance, dips can be steeper.

3.3 SURFICIAL GEOLOGY

The uplifted sedimentary areas, such as the Block 'A' and Block 'B' areas at Hamilton Lake, have been subjected to considerable glacial scour. On the tops of these plateau areas, striations and grooves created by the movement of ice are visible. These striations are aligned in an east-northeasterly direction.

Because of the relatively steep nature of the flanks of the uplifted sedimentary blocks, glacial deposition occurs, especially on the northeast side of these areas, which is the lee side of the ice movement. Up to 30 metres of glacial till is present in these areas and in the valleys separating them. These till accumulations on the flanks of the hills mask fault contacts and generally smooth out the topographic contours of the Cretaceous erosional surface.

EROSIONAL SURFACE



0 – 30m	SANDSTONE UNIT:	Massive, thick-bedded medium to coarse - grained sandstone.
15 - 30m	COAL MEASURES:	Mudstone and shale containing three main coal zones.
0 - 10m	SHALE UNIT:	Concentrically weathering silty shale.
0 - 10m	BENSON MEMBER (Late Cretaceous):	Basal conglomerate.
+ 1000m	KARMUTSEN FORMATION (Triassic):	Flow basalts and pillow lavas.

FIG 5

WELDWOOD OF CANADA LTD.

HAMILTON LAKE COAL LICENCES

GENERALIZED STRATIGRAPHIC COLUMN

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Chapter 4

DESCRIPTION OF THE COAL MEASURES

Field work and past drilling indicates that as much as 100 meters of the lowermost part of the Comox Formation occurs in the Hamilton Lake area. This consists of a series of silty shales and mudstones which contains 3 main coal zones and a number of thin coal bands, overlain by a thick-bedded medium to coarse-grained lithic sandstone. The total thickness of the coal-bearing unit varies from 15 metres in the north part of Block 'A' to 50 metres near the southeast end of Block 'A' and in the Block 'B' area. Figure 5. illustrates the generalized stratigraphic column of the Comox Formation in the Hamilton Lake area.

1983 work established a correlation between the coal seams found in the Block 'A' area and Block 'B' area, illustrated by Figure 6. This correlation is further supported by the 1984 drilling on Block 'B'.

4.1 BLOCK 'A' COAL MEASURES

The 1985 drilling program was designed to provide more information on the northern and western boundaries of the coal deposits, and to investigate the thickness and continuity of the seams adjacent to the Hamilton Lake 1976 Adit Site on the southwest shore of Hamilton Lake. The three seams as identified in the 1978 work were intersected in most of the holes (see Table 2, Drilling Summary). Holes 85-01 and 85-02 determined boundaries of the deposit. These holes indicate that the northeastern and northwestern boundaries are not a faulted contact with the basaltic basement rock - rather, they represent a depositional thinning of the seams as the proximity to the unconformity increases. As the total sedimentary section increases to the southeast and south, the coal seams thin and spread apart (see 85-07).

Table 3. documents the aggregate seam thicknesses in each of the 1978 and 1985 holes on the northern part of the Block 'A' area. For a more detailed breakdown of the individual seam thicknesses, the reader is referred to the geophysical logs in the Appendix and the drillhole information map, Appendix Map IA.

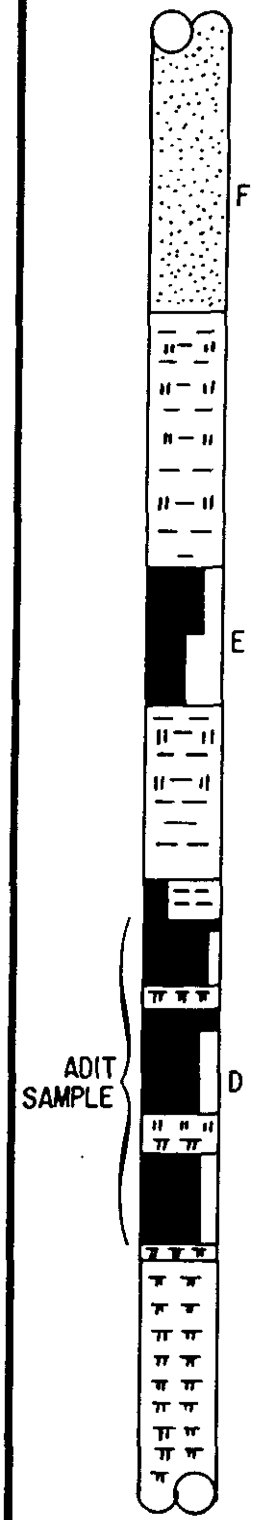
Figure 7 illustrates the outcrop exposure of the two upper coal seams as measured in the 1983 work at the 1976 Bulk Sample Site. The coal sections as described appear dirty and boney, dull and

TABLE 3. - AGGREGATE SEAM THICKNESS

HOLE NUMBER	DEPTH TO TOP OF UPPER SEAM (m)	DEPTH TO BOTTOM OF LOWER SEAM (m)	STRATIGRAPHIC INTERVAL (m)	AGGREGATE SEAM THICKNESS (m)	VERTICAL O/B TO COAL RATIO
HL-85-03	20.75	30.65	9.90	3.75	22.39
HL-85-04	6.35	30.65	24.30	4.65	10.58
HL-85-05	8.05	0		1.60	7.05
HL-85-06	21.75	36.55	14.80	3.75	24.70
HL-85-07	9.50	41.70	32.20	1.10	37.77
HL-78-03C	20.75	33.68	12.93	4.27	22.78
HL-78-09	17.77	28.38	10.61	2.72	20.67
HL-78-13	10.60	37.88	27.28	2.65	19.89
HL-78-04	23.59	51.60	28.01	3.07	

NOTES- Stratigraphic Interval = Depth to Bottom of Lower Seam minus Depth to Top of Upper Seam, (includes coal)

Vertical Overburden to Coal Ratio = Aggregate Thickness of all overburden, including partings, over aggregate thickness of all coal to bottom of lower seam.



MEASURED INTERVALS	LITHOLOGIC DESCRIPTION
covered	
+1.83 m	SANDSTONE: Buff to light grey; weathering orange; becoming thinly bedded at base with coaly and carbonaceous laminae; medium grained.
1.65m	SHALE: Dark grey; silty; fissile; some vertical fracturing; concentrically weathered near base.
0.91 m	COAL: Blocky and hard; dirty and boney sections throughout; streaks brown; becoming harder and dirtier near base.
1.14 m	SHALE: Dark grey weathering to grey and buff; some thin coal lenses; silty
0.25 m	SHALE: Dark grey to black; fissle; abundant coal laminae throughout
0.43 m	COAL: Blocky; hard but somewhat dirty; bright and dull banded
0.15 m	MUDSTONE: Dark grey weathering to buff and orange; hard.
0.69 m	COAL: Hard; blocky with dull and bright sections; boney and dirty throughout.
0.25 m	MUDSTONE: Dark brown; silty at top; concrectionary lenses near base.
0.58 m	COAL: Hard; dull with some bright sections; streaks brown; dirtier near base.
0.08 m	MUDSTONE: Light grey to cream; fairly soft; irregular thickness.
1.50m	MUDSTONE: Dark grey weathering to reddish and light grey; large concretionary layer near top - smaller ironstone concretions throughout.
covered	

TOTAL SECTION 9.46m

FIG 7

WELDWOOD OF CANADA LTD.
HAMILTON LAKE COAL LICENCES
OUTCROP EXPOSURE
BULK SAMPLE SITE
BLOCK 'A'

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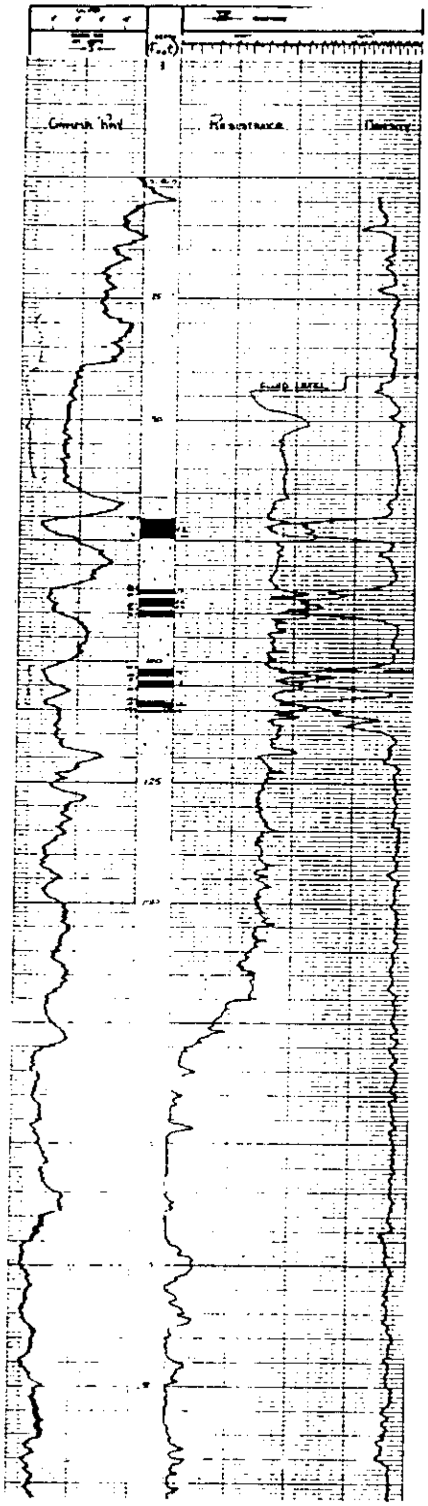
bright-banded, much of which gives a brown streak. These characteristics are demonstrated on the density curves of the recently drilled holes. Drilling indicates that the thickness of the three coal zones decreases to the westerly outcrop edge of the deposit. Appendix Map IA. illustrates the drillhole information documenting seam and parting thicknesses as interpreted from the geophysical logs of the holes.

HL - 78 - 03



RAW COAL ANALYTICAL DATA

Moisture	Ash	Volatile Matter	Fixed Carbon	Sulphur	Calorific Value (Btu/lb)	Free Swelling Index
0.45%	20.5%	31.5%	47.6%	2.40%	11,690	7.0
0.40%	23.6%	30.9%	45.1%	1.57%	11,254	6.5
0.46%	27.4%	27.2%	44.9%	0.90%	10,166	5.5

*NOTE: Ash content does not reflect the gross seam section, as some partings were removed prior to analytical work.

FIG 8

WELDWOOD OF CANADA LTD.

HAMILTON LAKE COAL LICENCES

RAW COAL QUALITY (AIR - DRIED BASIS)*

BLOCK 'A'

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Chapter 5

COAL QUALITY

Due to the budget limitations of the 1985 program, no coring or other coal quality work was undertaken. Previous work, however, gives good indications of predicted coal quality over the Block 'A' area. The following excerpt from a report on the bulk sample washability tests conducted by Birtley Engineering of Calgary gives an indication of general coal quality for the Hamilton Lake area:

> "The clean coal, which places in the High Volatile Bituminous 'A' classification, exhibits good coking characteristics with an F.S.I. of 8 1/2 comparing with a G. factor of 1.068 of the Ruhr Dilatometer test. The sulphur content of the coal is rather high at 1.5%."

Figure 8. illustrates the geophysical log of corehole HL-78-03C. Head assays of the raw coal samples are detailed on the log. These are taken from the analytical data contained in the 1978 report. The ash contents do not necessarily reflect the gross seam section as shown on the log, as some partings were removed prior to the analysis.

Corehole 78-03C shows that the sulphur content varies by seam:

the upper seam is highest in sulphur content at 2.4%, the middle seam is somewhat lower in sulphur at 1.6% and the lowest seam is lowest in sulphur at 0.9% .

Chapter 6

COAL RESERVES

The reader is referred to the 1983 report entitled, "The Geology and Coal Resources of the Hamilton Lake Licences, Cumberland Coal Field" by this author for a calculation of coal reserves on Block 'A'. In this report a figure of 6.43 million metric tonnes of coal was arrived at by utilizing the information available as a result of the 1978 drilling. As only the northernmost area of Block 'A' received further drilling in 1985, a refinement of these reserves is not possible at this time. When additional coring and drilling work is undertaken within the Block 'A' area, these reserves can be recalculated. It should be noted, however, that the summation of in-situ coal reserves in the 1983 study does not put an economic limit on, or suggest recoverable coal reserves. The latest drilling indicates that two factors might have a negative influence on recoverable reserves as compared to in-situ reserves:

- The great amount of overburden present in holes that indicate the best seam sections, resulting in a high overburden to coal ratio, and

- the high ash characteristics of the coal as interpreted from the density logs.

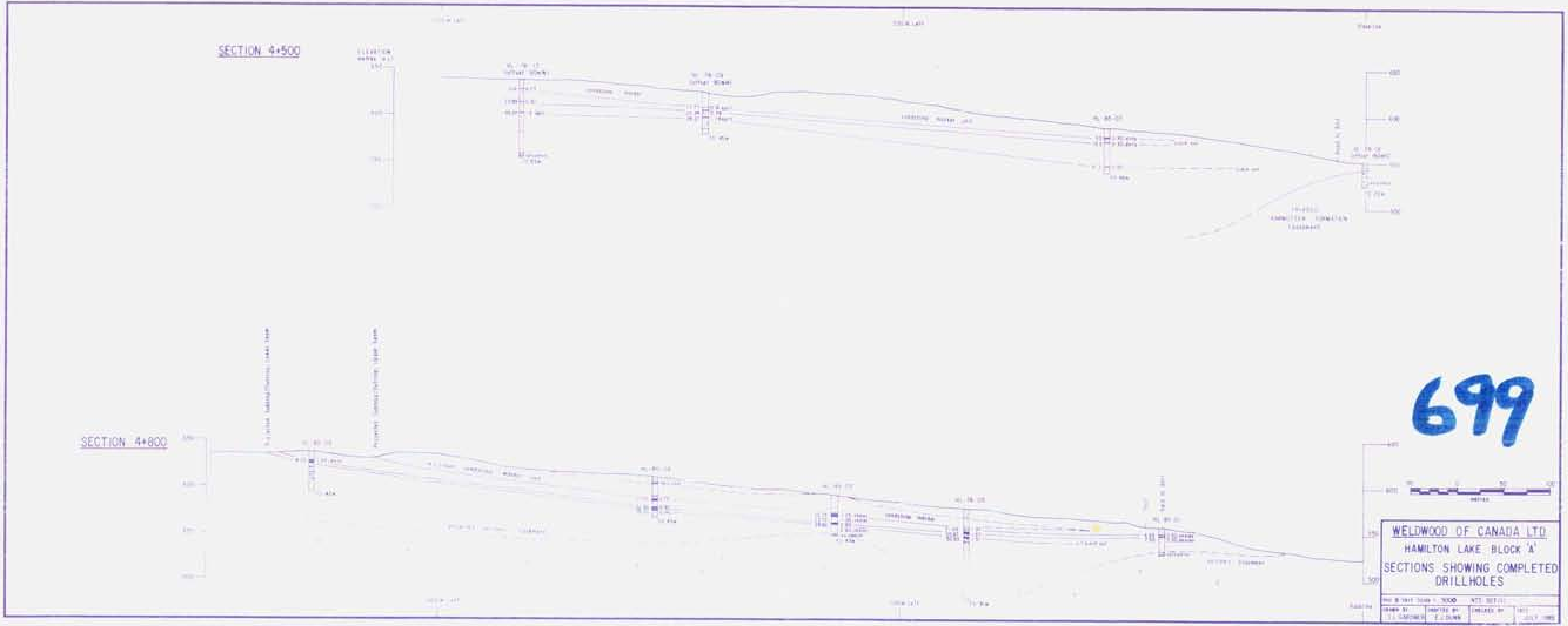
Clean coal yields may be predicted from the bulk sample washability testwork of 1976/77, however these may not be representative of the entire deposit. More coring work is required to determine amount of ash within the seams, present as in-seam partings and inherent material. The ash determinations will have a direct bearing on the clean coal yields, hence the amount of recoverable coal reserves.

APPENDICES I & II —

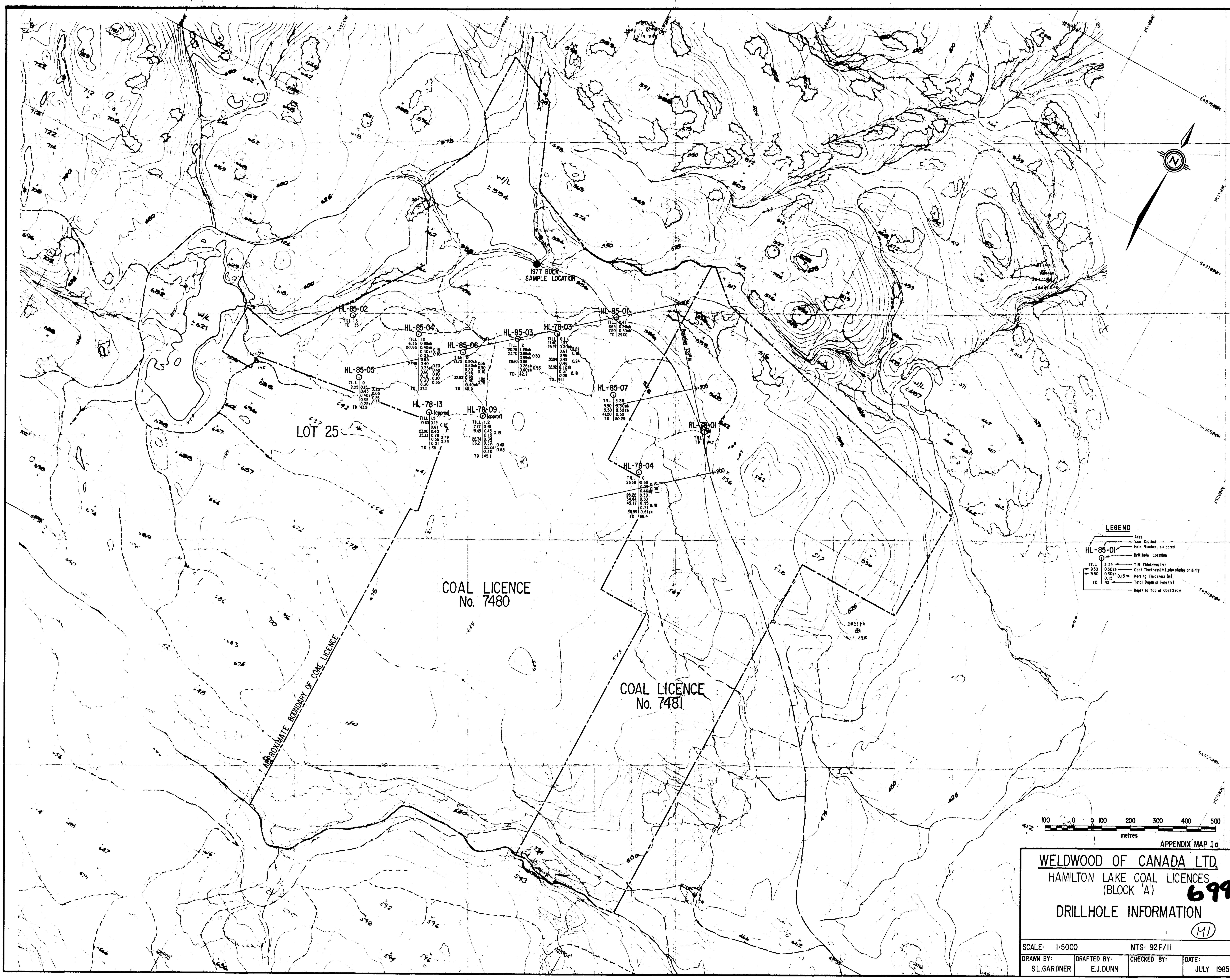
APPENDIX MAPS A, B & C

APPENDIX SECTIONS 4 + 500
& 4 + 800

APP. I & II


SECTION 4+500
SECTION 4+800
WELDWOOD OF CANADA LTD
HAMILTON LAKE BLOCK 'A'
SECTIONS SHOWING COMPLETED DRILLHOLES

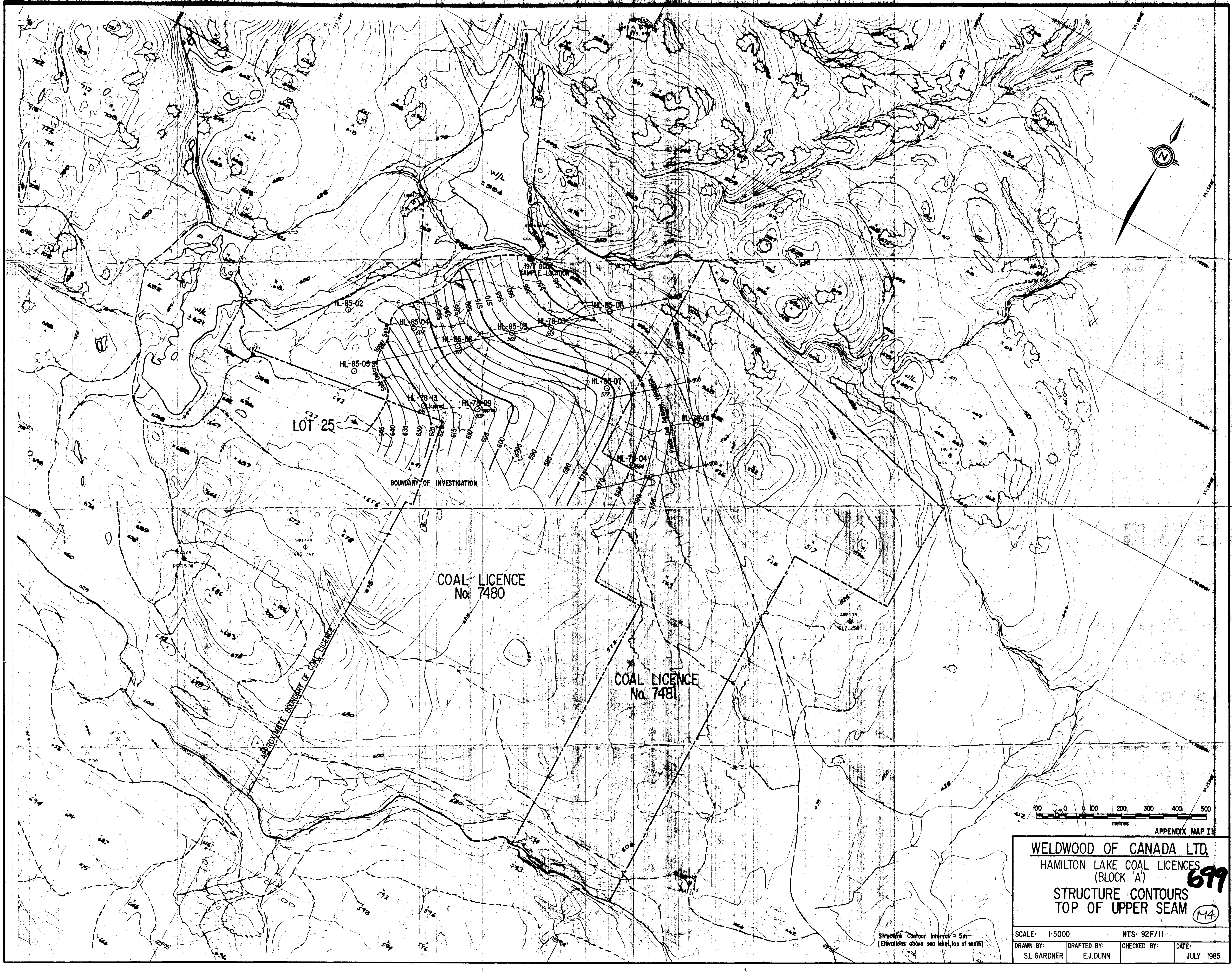
699



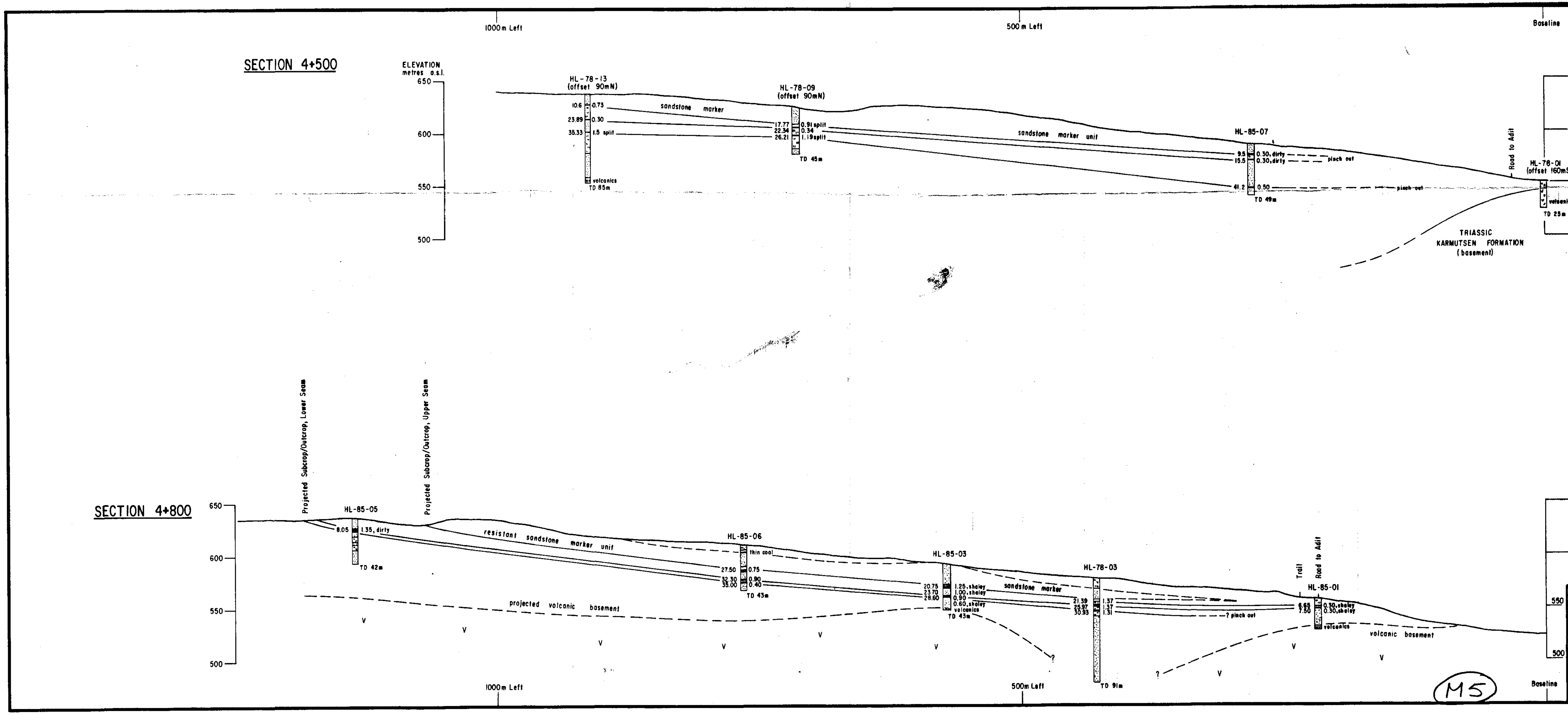
1977 BULK SAMPLE LOCATION
HL-85-02
HL-85-04
HL-85-06
HL-85-03
HL-78-03
HL-85-01
HL-85-05
HL-78-13
HL-78-09
HL-85-07
HL-78-01
HL-78-04
LOT 25
COAL LICENCE No. 7480
COAL LICENCE No. 7481
APPROXIMATE BOUNDARY OF COAL LICENCE
LEGEND
Area
Year Drilled
Hole Number, c = cored
Drillhole Location
Till Thickness (m)
Coal Thickness (m), sh = shaley or dirty
Parting Thickness (m)
Total Depth of Hole (m)
Depth to Top of Coal Seam
100 0 100 200 300 400 500
metres
APPENDIX MAP Ia
WELDWOOD OF CANADA LTD.
HAMILTON LAKE COAL LICENCES
(BLOCK 'A')
699
DRILLHOLE INFORMATION
M1
SCALE: 1:5000
NTS: 92F/11
DRAWN BY: S.L.GARDNER
DRAFTED BY: E.J.DUNN
CHECKED BY:
DATE: JULY 1985


1977 BULK SAMPLE LOCATION
W/L ±554
W/L ±621
W/L ±487
HL-85-02
HL-85-04
HL-85-06
HL-85-03
HL-78-03
HL-85-01
HL-85-05
HL-85-07
HL-78-13 (approx)
HL-78-09 (approx)
HL-78-01
HL-78-04
LOT 25
COAL LICENCE No. 7480
COAL LICENCE No. 7481
APPROXIMATE BOUNDARY OF COAL LICENCE
LEGEND
Area
Year Drilled
Hole Number, c= cored
Drillhole Location
Till Thickness (m)
Coal Thickness (m), sh= shaley or dirty
Parting Thickness (m)
Total Depth of Hole (m)
Depth to Top of Coal Seam
HL-85-01
TILL 3.35
9.50 0.30sh
15.50 0.30sh 0.15
0.15
TD 43
100 0 0 100 200 300 400 500
metres
APPENDIX MAP Ia
WELDWOOD OF CANADA LTD.
HAMILTON LAKE COAL LICENCES
(BLOCK 'A')
699
DRILLHOLE INFORMATION
M2
SCALE: 1:5000
NTS: 92F/11
DRAWN BY: S.L.GARDNER
DRAFTED BY: E.J.DUNN
CHECKED BY:
DATE: JULY 1985

1977 BULK SAMPLE LOCATION
HL-85-01
HL-85-02
HL-85-03
HL-85-04
HL-85-05
HL-85-06
HL-85-07
HL-78-01
HL-78-03
HL-78-04
HL-78-09
HL-78-13
Sub-Outcrop Lower Seam
W/L ±504
W/L ±621
W/L ±457
LOT 25
BOUNDARY OF INVESTIGATION
COAL LICENCE No. 7480
COAL LICENCE No. 7481
APPROXIMATE BOUNDARY OF COAL LICENCE
100 0 100 200 300 400 500
metres
Structure Contour Interval = 5m
(Elevations above sea level, top of seam)
APPENDIX MAP Ic
WELDWOOD OF CANADA LTD.
HAMILTON LAKE COAL LICENCES
(BLOCK 'A')
699
STRUCTURE CONTOURS
TOP OF LOWER SEAM
M3
SCALE: 1:5000
NTS: 92F/11
DRAWN BY: S.L.GARDNER
DRAFTED BY: E.J.DUNN
CHECKED BY:
DATE: JULY 1985



W/L ±584
W/L ±621
1977 BULK SAMPLE LOCATION
HL-85-01
HL-85-02
HL-85-03
HL-85-04
HL-85-05
HL-85-06
HL-85-07
HL-78-01
HL-78-03
HL-78-04
HL-78-09
HL-78-13
Upper Seam
LOT 25
BOUNDARY OF INVESTIGATION
COAL LICENCE No. 7480
COAL LICENCE No. 7481
APPROXIMATE BOUNDARY OF COAL LICENCE
Structure Contour Interval = 5m
(Elevations above sea level, top of seam)
metres
APPENDIX MAP Ib
WELDWOOD OF CANADA LTD.
HAMILTON LAKE COAL LICENCES (BLOCK 'A')
STRUCTURE CONTOURS TOP OF UPPER SEAM
699
M4
SCALE: 1:5000
NTS: 92F/11
DRAWN BY: S.L.GARDNER
DRAFTED BY: E.J.DUNN
CHECKED BY:
DATE: JULY 1985



699

WELDWOOD OF CANADA LTD.

HAMILTON LAKE BLOCK 'A'

SECTIONS SHOWING COMPLETED DRILLHOLES

Hor. & Vert. Scale 1:2500	NTS: 92F/11		
DRAWN BY: S.L.GARDNER	DRAFTED BY: E.J.DUNN	CHECKED BY:	DATE: JULY 1985

M5

APPENDIX III —

DRILLER'S LOGS

GEOPHYSICAL LOGS

[redacted] —

[redacted]

APPENDIX III

HL - 85 - 01

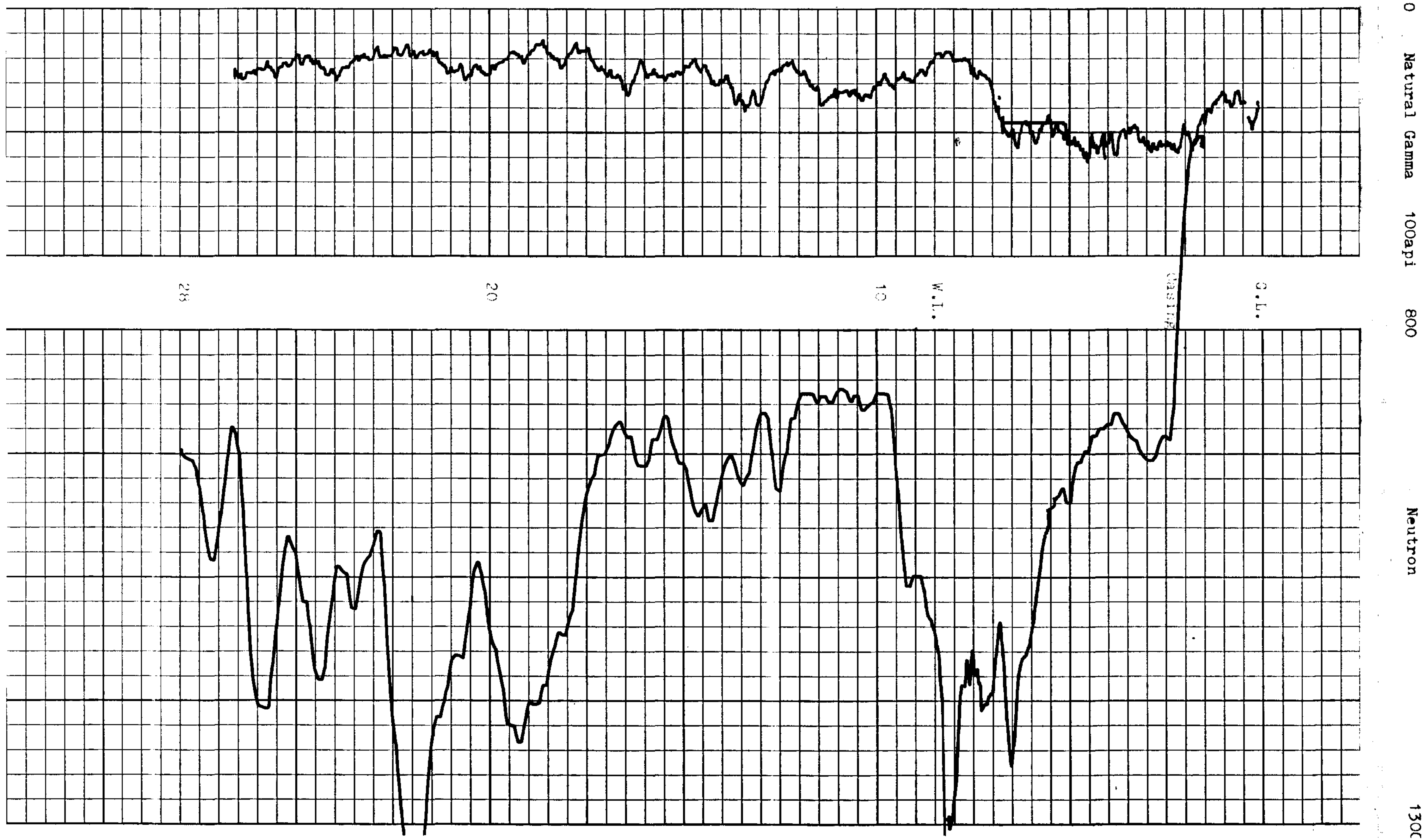
LOCATION :

ELEVATION :

DATE COMPLETED : June 3, 1985

DRILLER : Drillwell Enterprises Ltd.
D. Slade

DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	2.44	2.44	Brown Soil and broken sandstone
2.44	6.71	4.27	Siltstone
6.71	7.32	.61	COAL and shale mixed
7.32	10.06	2.74	Sandstone
10.06	15.84	5.79	Shale, silty at base
15.84	17.37	1.53	Sandstone, med. to coarse
17.37	18.90	1.53	Conglomeratic sandstone
18.90	19.81	0.91	Sandstone
19.81	20.73	0.92	Conglomeratic sandstone
20.73	22.86	2.13	Sandstone
22.86	27.43	4.57	Sandstone, green
27.43	29.00	1.57	Volcanics



DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 01
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	552.24 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 13 1985
DRILLED DEPTH	28
LOGGED DEPTH	28
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	2.4m
REMARKS:	

699

L1

DAVIES EXPLORATION LOGGING LTD.

COMPANY Weldwood of Canada Ltd.

HOLE NUMBER HL - 85 - 01

LOCATION Hamilton Lake

PROVINCE B.C.

ELEVATION 552.24 m.

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE June 13 1985

DRILLED DEPTH 28

LOGGED DEPTH 28

ZERO DATUM G.L.

HOLE DIAMETER 6"

CASING LENGTH 2.4

REMARKS:

699

L2

HL - 85 - 02

LOCATION : ELEVATION :

DATE COMPLETED : June 4, 1985

DRILLER : Drillwell Enterprises Ltd.
D. Slade

DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	3.05	3.05	Brown soil and broken Sandstone
3.05	12.19	9.14	Siltstone
12.19	13.72	1.53	Sandstone
13.72	16.76	3.04	Siltstone
16.76	19.81	3.05	Sandstone, coarse, white
19.81	23.77	3.96	Sandstone, dark brown
23.77	25.91	2.14	Sandstone, rust brown
25.91	27.43	1.52	Sandstone, green
27.43	28.65	1.22	Sandstone, rust
28.65	29.26	0.61	Sandstone, green
29.26	34.14	4.88	Sandstone, rust
34.14	35.05	0.91	Volcanics

DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 02
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	589.40 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 12 1985
DRILLED DEPTH	34
LOGGED DEPTH	33.5
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	
REMARKS:	

699

L3

DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 02
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	589.40 m.
LOG TYPE:	CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY
DATE	June 12 1985
DRILLED DEPTH	34
LOGGED DEPTH	33.5
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	
REMARKS:	

699

L4

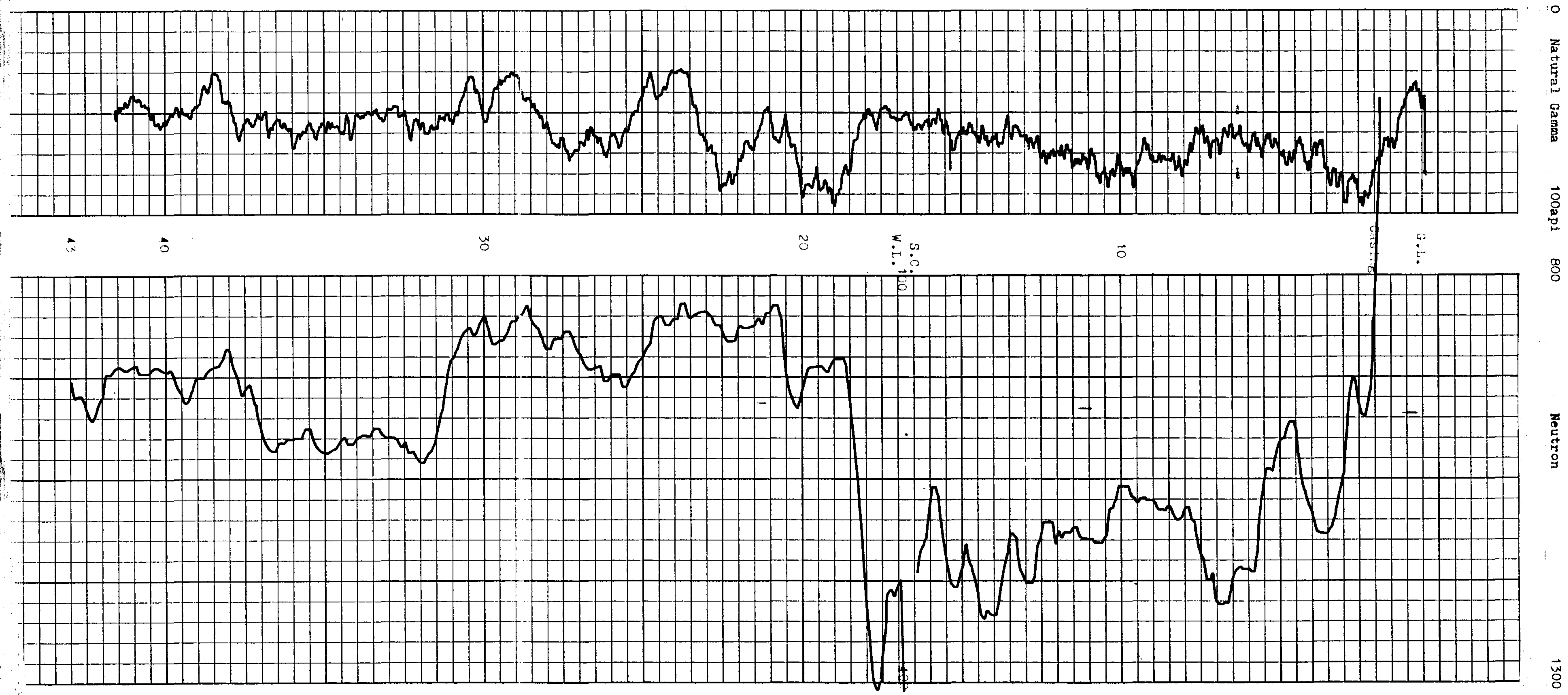
HL - 85 - 03

LOCATION :   ELEVATION :

DATE COMPLETED : June 4, 1985

DRILLER : Drillwell Enterprises Ltd.
D. Slade

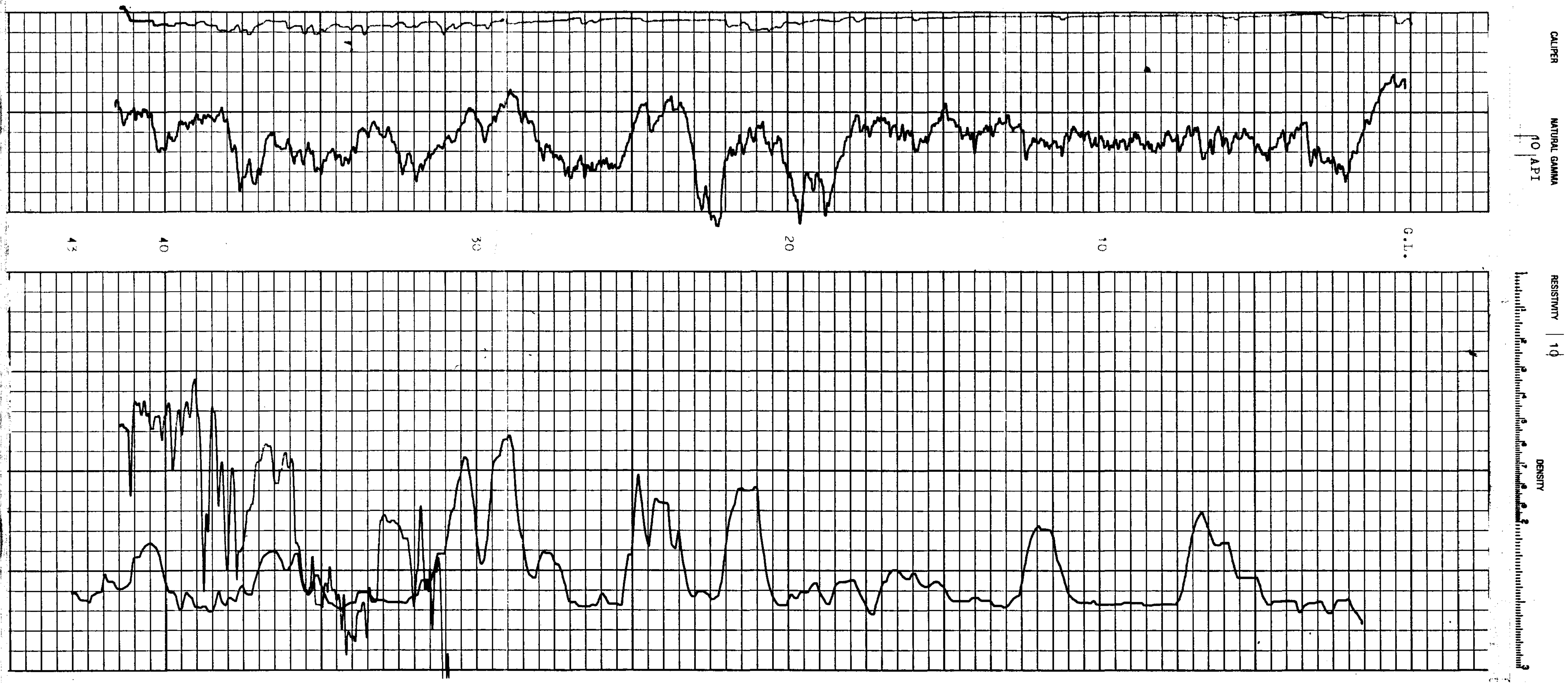
DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	2.13	2.13	Brown Soil
2.13	3.05	0.92	Sandstone, dark grey
3.05	12.80	9.75	Sandstone, coarse, white
12.80	14.02	1.22	Sandstone, coarse, dark grey
14.02	18.29	4.27	Sandstone, coarse, white
18.29	20.12	1.83	Shale
20.12	20.42	0.30	Sandstone, green
20.42	21.34	0.92	COAL
21.34	22.86	1.52	Shale
22.86	23.47	0.61	COAL, and shale mixed
23.47	24.69	1.22	COAL
24.69	28.35	3.66	Shale
28.35	28.96	0.61	COAL, and shale mixed
28.96	29.57	0.61	COAL
29.57	31.39	1.82	Shale, and COAL
31.39	31.70	0.31	Sandstone
31.70	35.36	3.66	Shale
35.36	42.67	7.31	Volcanics



DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 03
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	585.59 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 13 1985
DRILLED DEPTH	44
LOGGED DEPTH	43
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	2m
REMARKS:	

L5



DAVIES EXPLORATION LOGGING LTD.

COMPANY Weldwood of Canada Ltd.

HOLE NUMBER HL - 85 - 03

LOCATION Hamilton Lake

PROVINCE B.C.

ELEVATION 585.59 m.

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE June 13 1985

DRILLED DEPTH 44

LOGGED DEPTH 43

ZERO DATUM G.L.

HOLE DIAMETER 6"

CASING LENGTH 2m

REMARKS:

699

L6

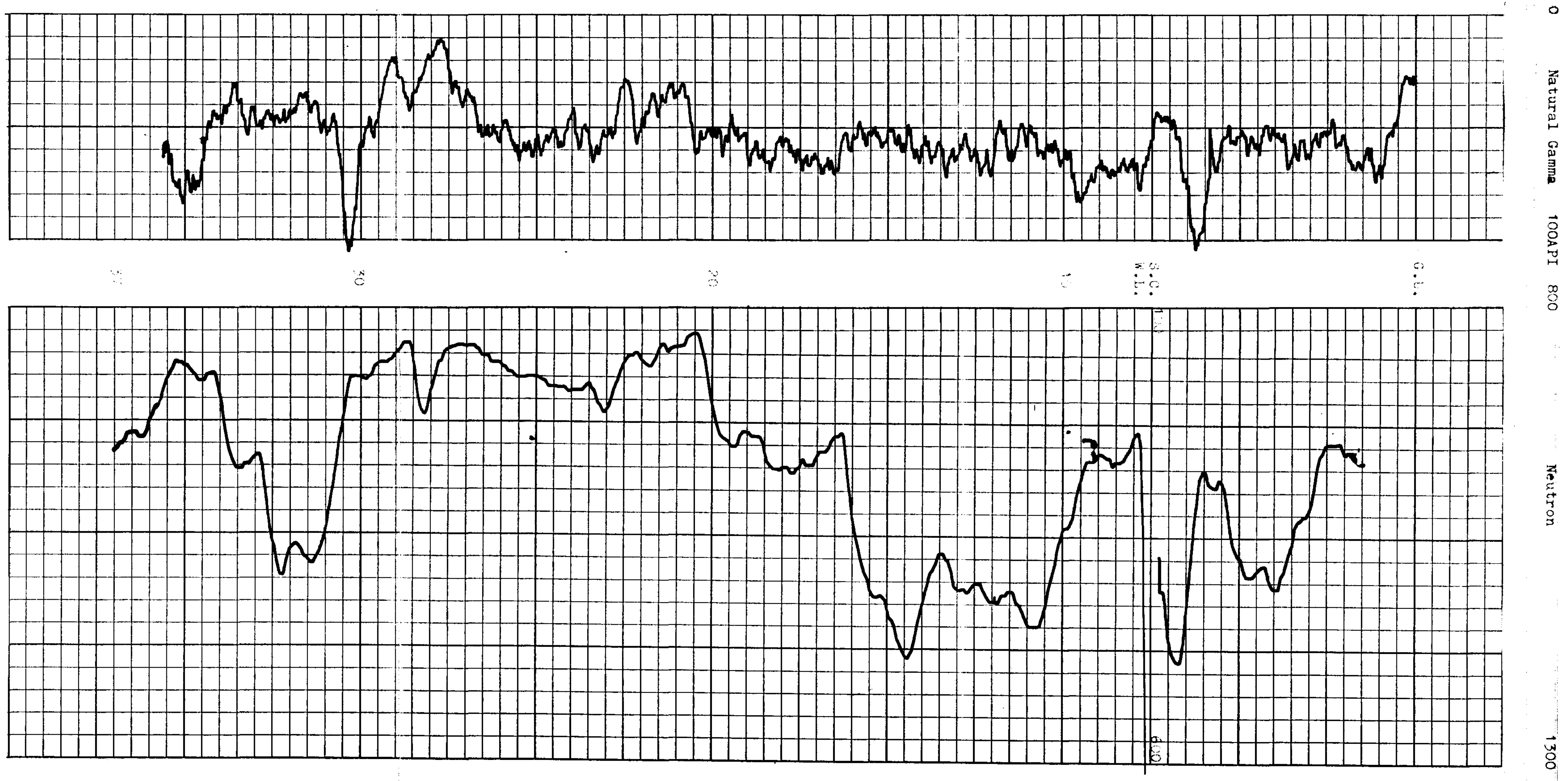
HL - 85 - 04

LOCATION :   ELEVATION :

DATE COMPLETED : June 10, 1984

DRILLER : Drillwell Enterprises Ltd.
D. Slade

DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	1.22	1.22	Brown Soil and broken sandstone
1.22	5.79	4.57	Sandstone
5.79	6.71	0.91	COAL, and shale mixed
6.71	7.32	0.61	COAL
7.32	9.14	1.82	Shale
9.14	11.58	2.44	Sandstone, thin layers of coal
11.58	16.15	4.57	Sandstone
16.15	20.73	4.58	Shale
20.73	21.95	1.22	COAL
21.95	22.25	0.30	Shale
22.25	22.86	0.61	COAL
22.86	26.82	3.96	Shale, thin coal at 26.82 m
26.82	27.43	0.61	Shale
27.43	28.35	0.91	COAL
28.35	28.65	0.30	Sandstone
28.65	29.87	1.22	COAL
29.87	30.18	0.31	Shale
30.18	30.78	0.61	COAL
30.78	32.00	1.22	Shale
32.00	32.92	0.92	Sandstone
32.92	33.83	0.91	Conglomerate
33.83	34.44	0.61	Sandstone, green
34.44	37.49	3.05	Sandstone, green

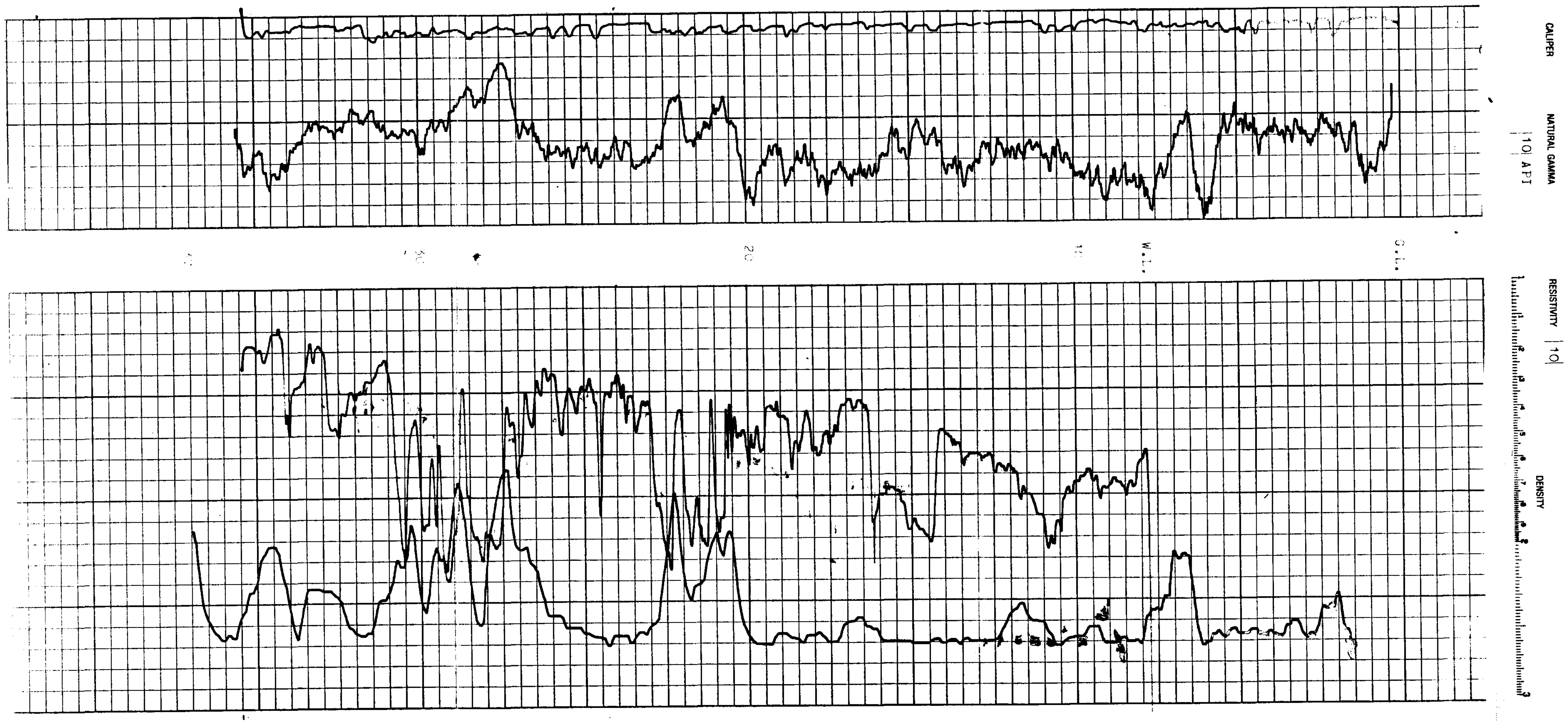


DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 04
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	611.42 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 12 1985
DRILLED DEPTH	37
LOGGED DEPTH	37
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	
REMARKS:	

699

L7



DAVIES EXPLORATION LOGGING LTD.

COMPANY Weldwood of Canada Ltd.

HOLE NUMBER HL - 85 - 04

LOCATION Hamilton Lake

PROVINCE B.C.

ELEVATION 611.42 m.

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE June 12 1985

DRILLED DEPTH 37

LOGGED DEPTH 37

ZERO DATUM G.L.

HOLE DIAMETER 6"

CASING LENGTH

REMARKS:

699

L8

HL - 85 - 05

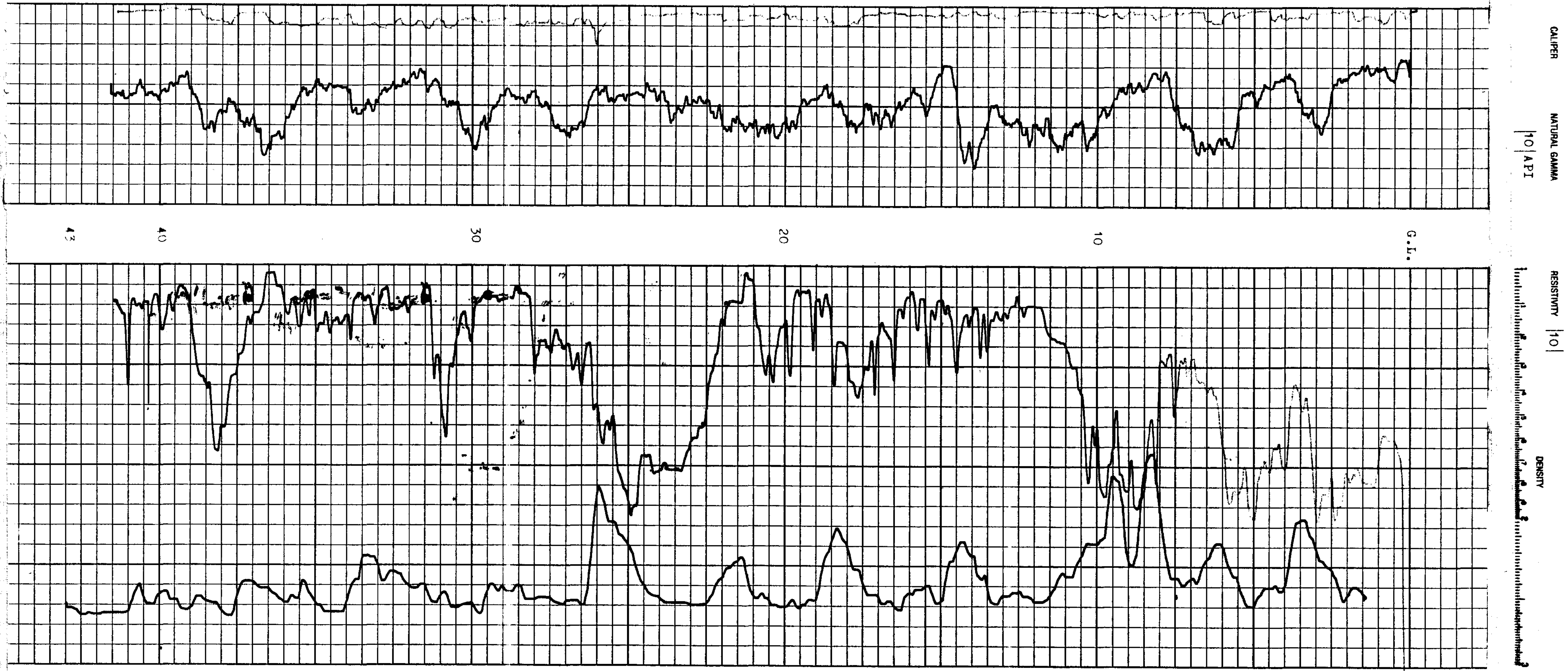
LOCATION :   ELEVATION :

DATE COMPLETED : June 11, 1985

DRILLER : Drillwell Enterprises Ltd.
D. Slade

DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	4.27	4.27	Sandstone, white
4.27	4.57	0.30	Shale
4.57	6.10	1.53	Sandstone, white
6.10	7.32	1.22	Sandstone, dark
7.32	9.14	1.82	Shale
9.14	9.45	0.31	COAL
9.45	10.06	0.61	Sandstone
10.06	10.97	.91	COAL
10.97	13.41	2.44	Sandstone
13.41	16.15	2.74	Shale
16.15	16.76	.61	COAL, with shale mixed
16.76	23.16	6.40	Siltstone
23.16	26.21	3.05	Sandstone, green
26.21	26.82	0.61	Conglomerate
26.82	27.43	0.61	Shale
27.43	31.09	3.66	Siltstone
31.09	31.70	0.61	Shale
31.70	32.00	0.30	COAL, with shale mixed
32.00	37.19	5.19	Siltstone
37.19	38.10	0.91	Shale, green
38.10	39.32	1.22	Sandstone, green
39.32	43.89	4.57	Shale

REMARKS : Water-bearing fault at 26.51 m., 20 g.p.m.



DAVIES EXPLORATION LOGGING LTD.

COMPANY Weldwood of Canada Ltd.

HOLE NUMBER HL - 85 - 05

LOCATION Hamilton Lake

PROVINCE B.C.

ELEVATION 633.06 m.

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE June 12 1985

DRILLED DEPTH 44

LOGGED DEPTH 43

ZERO DATUM G.L.

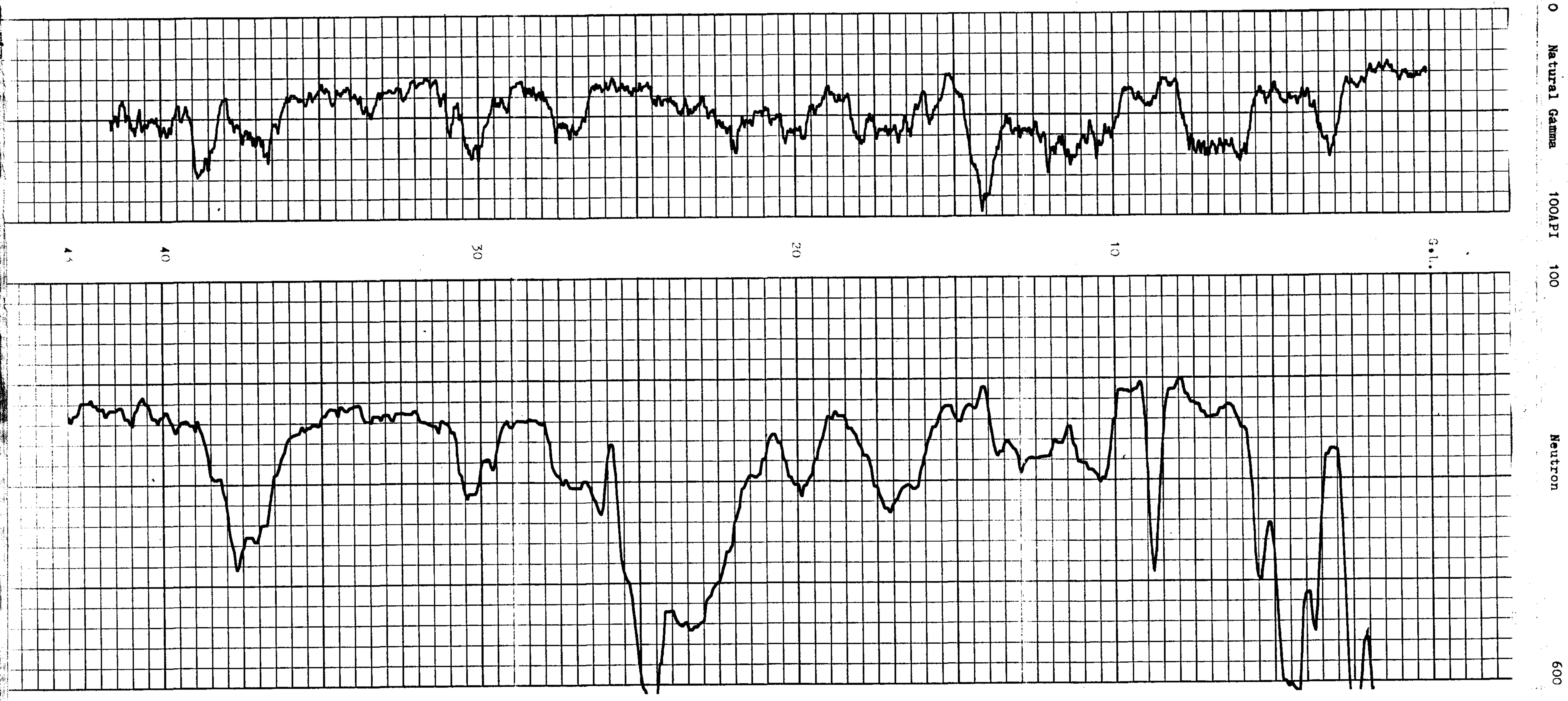
HOLE DIAMETER 6"

CASING LENGTH

REMARKS:

699

L9



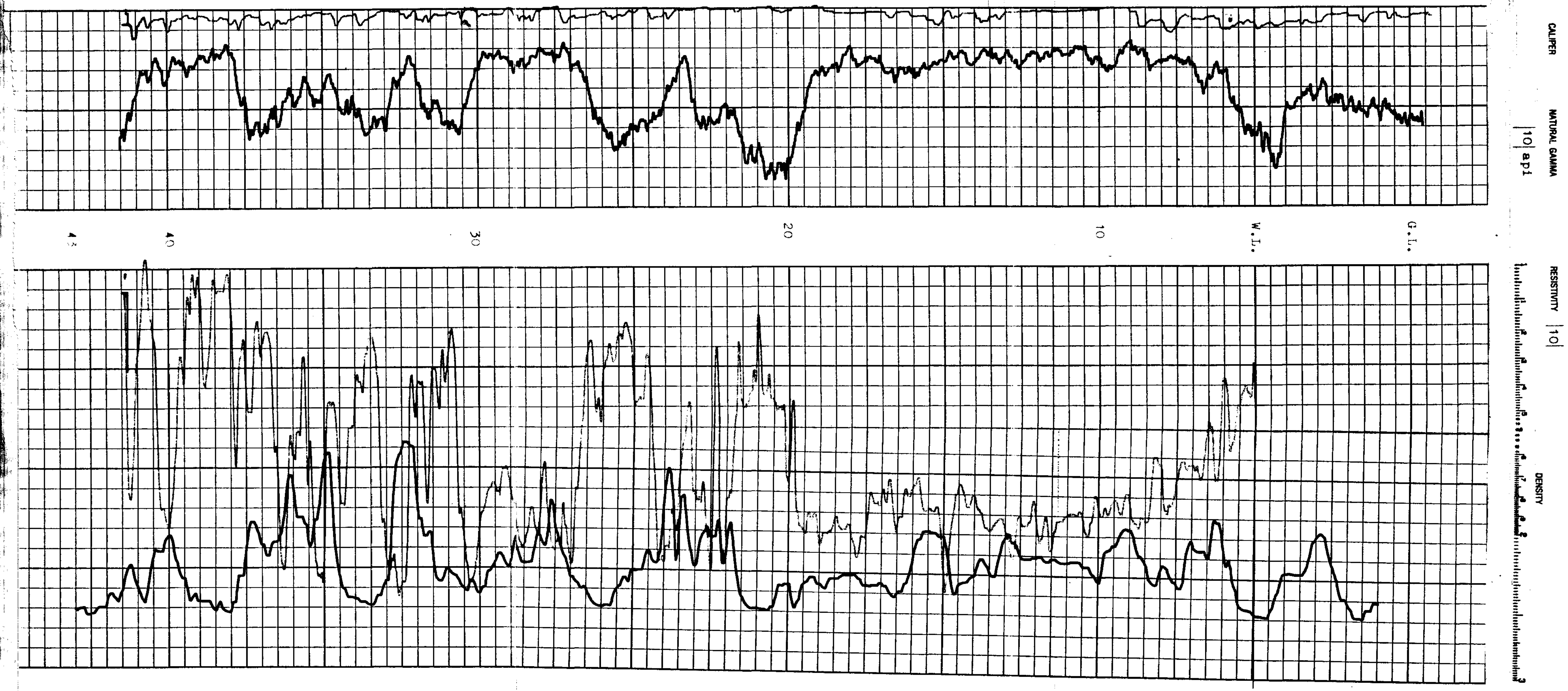
DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 05
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	633.06 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 12 1985
DRILLED DEPTH	44
LOGGED DEPTH	43
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	

REMARKS:

699

L10



DAVIES EXPLORATION LOGGING LTD.

COMPANY Weldwood of Canada Ltd.

HOLE NUMBER HL - 85 - 06

LOCATION Hamilton Lake

PROVINCE B.C.

ELEVATION 609.68 m

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE June 13 1985

DRILLED DEPTH ~~50~~ 44

LOGGED DEPTH 43

ZERO DATUM G.L.

HOLE DIAMETER 6"

CASING LENGTH

REMARKS:

699

L11

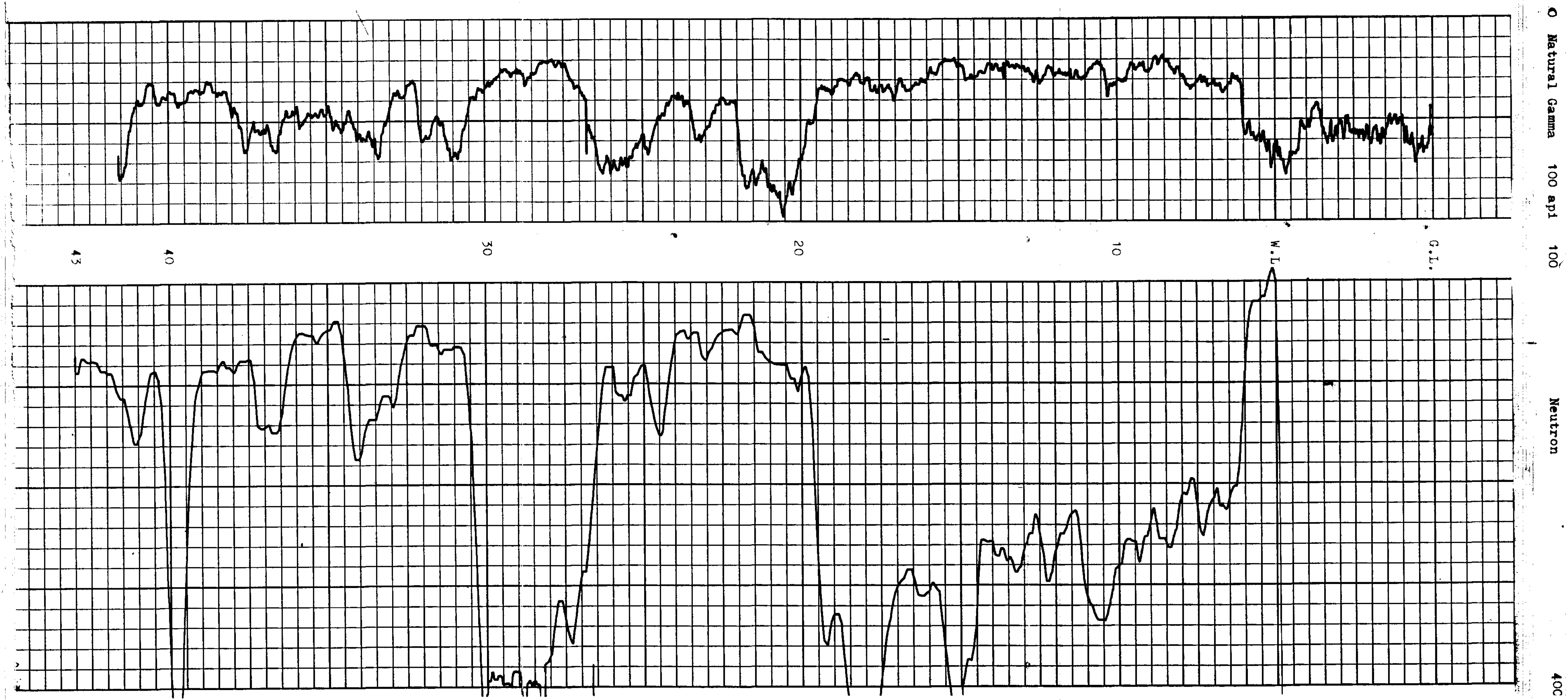
HL - 84 - 06

LOCATION :   ELEVATION :

DATE COMPLETED : June 11, 1984

DRILLER : Drillwell Enterprises Ltd.
D. Slade

DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	2.44	2.44	Sandstone, white
2.44	4.88	2.44	Sandstone, dark
4.88	5.18	0.30	COAL
5.18	7.62	2.44	Shale, sandstone, some coal
7.62	10.36	2.74	Sandstone, brown
10.36	20.73	10.37	Sandstone, white, some coal
20.73	22.56	1.83	Shale, with COAL mixed
22.56	22.86	0.30	COAL
22.86	23.16	0.30	Shale
23.16	23.47	0.31	COAL
23.47	23.77	0.30	Shale
23.77	24.69	0.92	COAL, with shale mixed
24.69	24.99	0.30	Shale
24.99	25.60	0.61	Sandstone
25.60	27.74	2.14	Shale
27.74	29.87	2.13	Sandstone, white
29.87	31.39	1.52	Sandstone, some COAL
31.39	32.92	1.53	Shale, some COAL
32.92	33.53	0.61	COAL
33.53	34.14	0.61	Shale
34.14	35.36	1.22	Sandstone, dark
35.36	37.19	1.83	COAL, with shale mixed
37.19	39.93	2.74	Sandstone, dark
39.93	41.15	1.22	Sandstone, white
41.15	42.06	0.91	Sandstone, dark
42.06	43.89	1.83	Siltstone



DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 06
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	609.68 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 13 1985
DRILLED DEPTH	44
LOGGED DEPTH	43
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	
REMARKS:	

699

L12

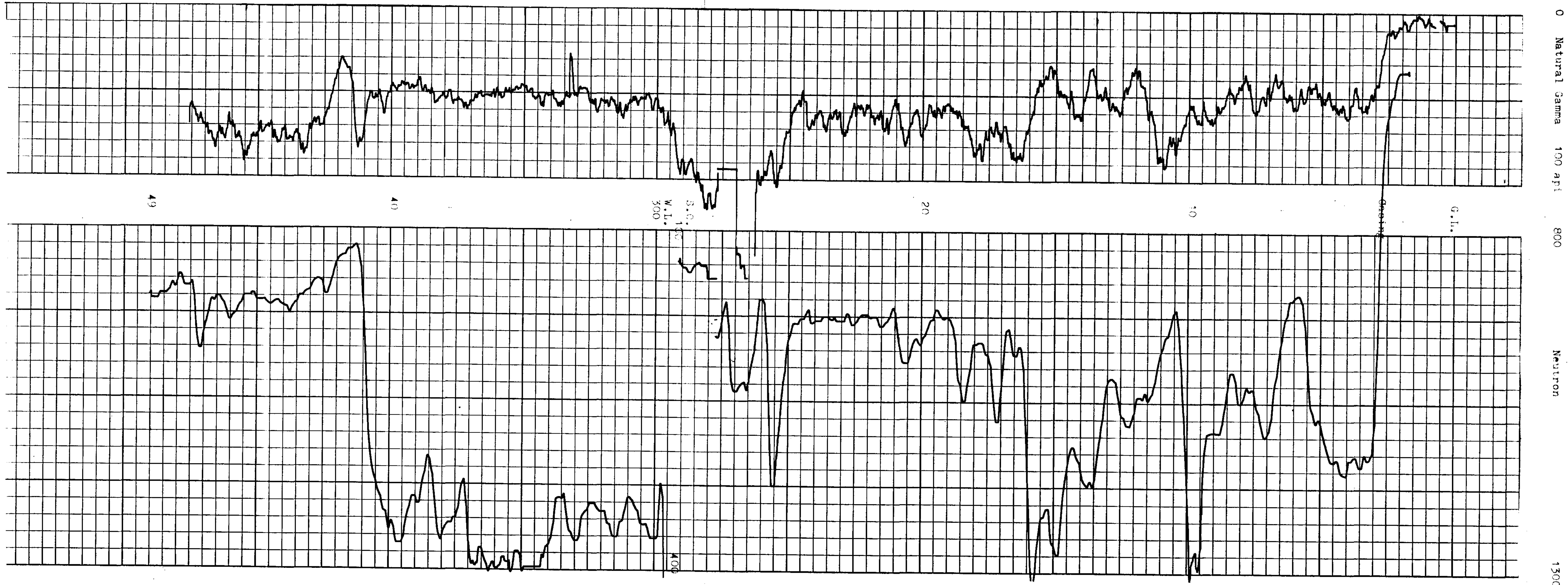
HL - 85 - 07

LOCATION : ELEVATION :

DATE COMPLETED : June 12, 1985

DRILLER : Drillwell Enterprises Ltd.
D. Slade

DEPTH (metres)			DESCRIPTION
From	To	Thickness	
0	3.35	3.35	Tight grey till
3.35	10.06	6.71	Sandstone, dark
10.06	11.28	1.22	COAL
11.28	12.50	1.22	Shale
12.50	16.46	3.96	Sandstone, dark w/ coal stringers
16.46	16.76	0.30	COAL
16.76	19.20	2.44	Shale, sandstone, coal mixed
19.20	19.51	0.31	COAL
19.51	21.34	1.83	Shale, brown
21.34	23.77	2.43	Sandstone, brown
23.77	26.21	2.44	Shale
26.21	28.04	1.83	COAL, mixed with shale
28.04	28.65	0.61	Shale
28.65	28.96	0.31	COAL
28.96	29.87	0.91	Shale
29.87	31.09	1.23	Sandstone, dark
31.09	36.58	5.49	Sandstone, white
36.58	42.37	5.79	Sandstone, dark
42.37	42.98	0.61	COAL
42.98	50.29	7.31	Shale

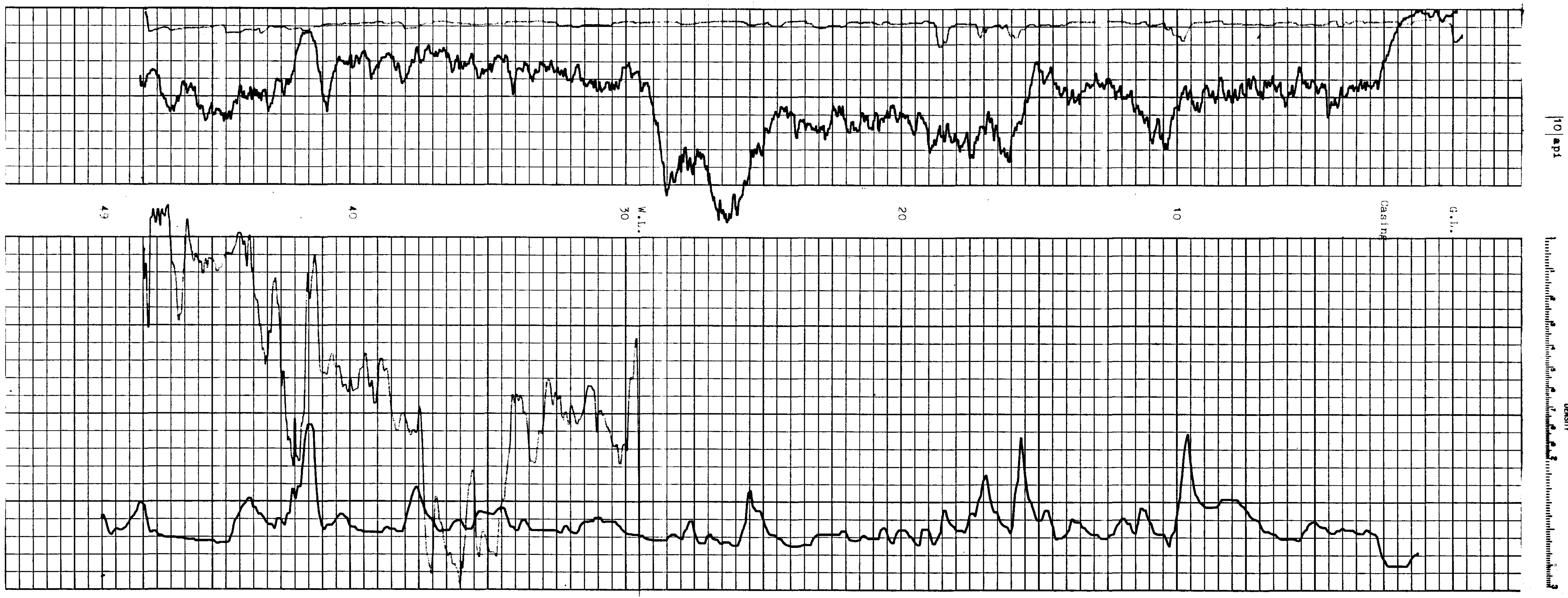


DAVIES EXPLORATION LOGGING LTD.

COMPANY	Weldwood of Canada Ltd.
HOLE NUMBER	HL - 85 - 07
LOCATION	Hamilton Lake
PROVINCE	B.C.
ELEVATION	583.30 m.
LOG TYPE:	Natural Gamma & Neutron
DATE	June 13 1985
DRILLED DEPTH	50
LOGGED DEPTH	49
ZERO DATUM	G.L.
HOLE DIAMETER	6"
CASING LENGTH	2.7
REMARKS:	

699

L13



DAVIES EXPLORATION LOGGING LTD.

COMPANY Weldwood of Canada Ltd.

HOLE NUMBER HL - 85-07

LOCATION Hamilton Lake

PROVINCE B.C.

ELEVATION 583.30 m.

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE June 13 1985

DRILLED DEPTH 50

LOGGED DEPTH 49

ZERO DATUM G.L.

HOLE DIAMETER 6"

CASING LENGTH 2.7

REMARKS:

699

L14

APPENDIX IV -

SURVEY INFORMATION

APPENDIX IV

TRAVERSE SHEET

Calc. By DJC Checked By ________ Date JUNE 23/85

Location HAMILTON LAKE DH 4+500 Field Bk. ______ P. _____ Area ________

(1) The Mean of reading clockwise from backsight to foresight
(2) Co-ordinates from: [illegible]

STA.	ANGLE (1)	FULL CIRCLE BEARING	QUADRANTAL BEARING	DISTANCE	COSINE BEARING	SINE BEARING	+ Lats. NORTHING	− Lats. SOUTHING	+ Deps. EASTING	− Deps. WESTING	Co-ordinates (2) N	S	E	W
TP#3														
		270-00-00												
TP#4	282-15-15	+102-15-15									4500.00			289.016
		372-15-15		35.682			34.869		7.574					
DH-1											4,534.869			281.443

Calc. By DJC Checked By ______ Date June 13/85

TRAVERSE SHEET

(1) The Mean of reading clockwise from backsight to foresight
(2) Co-ordinates from : [illegible]

Location [illegible] DH South of Lake Field Bk. ____ P. ____ Area ____

STA.	ANGLE (1)	FULL CIRCLE BEARING	QUADRANTAL BEARING	DISTANCE	COSINE BEARING	SINE BEARING	+ Lats. NORTHING	− Lats. SOUTHING	+ Deps. EASTING	− Deps. WESTING	Co-ordinates (2) N	S	E	W
TH 3														
		10-00-00												
TP#1	64-23-14	-115-36-46									4,800.00			217.392
		334-23-14		158.149			142.609			68.266				
TP#2	148-44-54	-31-15-06									4,942.609			285.[illegible]
		303-08-08		189.597			103.638			158.765				
TP#3	180-25-03	+0-25-03									5,046.247			444.[illegible]
		303-33-11		93.179			51.501			77.653				
TP#4	149-36-33	-30-23-27									5,097.747			522.[illegible]
		273-09-44		128.576			7.093			128.380				
TP#5	149-34-43	-30-25-17									5,104.840			650.556
		242-44-27		167.702				76.810		149.078				
TP#6	222-18-51	+42-18-51									5,028.030			799.635
		285-03-18		196.618			51.071			189.870				
TP#7	135-51-10	-44-08-50									5,079.101			989.503
		240-54-28		58.647				28.515		51.248				
TP#8	167-25-00	-12-35-00									5,050.585			1,040.751
		228-19-28		70.457				46.848		52.626				
TP#9	206-03-30	+26-03-30									5,003.738			1,093.371
		254-22-58		30.754				8.279		29.619				
DH-85-2	Elev	589.385									4,995.459			1,122.995

Calc. By DSC Checked By __________ Date JUNE 23/85

TRAVERSE SHEET

(1) The Mean of reading clockwise from backsight to foresight
(2) Co-ordinates from : ⊬

Location HAMILTON LAKE 4800 LINE Field Bk. ______ P. _____ Area ______________

STA.	ANGLE (1)	FULL CIRCLE BEARING	QUADRANTAL BEARING	DISTANCE	COSINE BEARING	SINE BEARING	+ Lats.	−	+ Deps.	−	Co-ordinates (2)			
							NORTHING	SOUTHING	EASTING	WESTING	N	S	E	W
TH 8														
		90-00-00												
TH4 418.834	307-19-57	-127-19-57									4,800.00			418.834
		217-19-57		17.215				13.752		10.448				
IH-78											4,786.248			429.322
	ELEVATION 575.244													
TH 5														
		90-00-00												
TH4 4800 418.834	359-25-48	-179-25-48									4,800.00			418.834
		269-25-48		149.420				1.487		149.413				
DH-85-7	ELEV 585.586										4,798.513			568.247
TH 6														
		270-00-00												
TH7 4800 771.0084	55-00-06	-124-59-54									4800.00			771.008
		145-00-06		8.613				7.056	4.94					
DH-85-6	ELEV. 609.680										4,792.944			766.068
TH 7														
		270-00-00												
TH8 4800.00 1041.072	170-09-42	-9-50-18									4800.00		/	1041.072
		260-09-42		105.332				17.998		103.783				
DH-85-3	ELEV 633.061										4,782.002			1,144.855

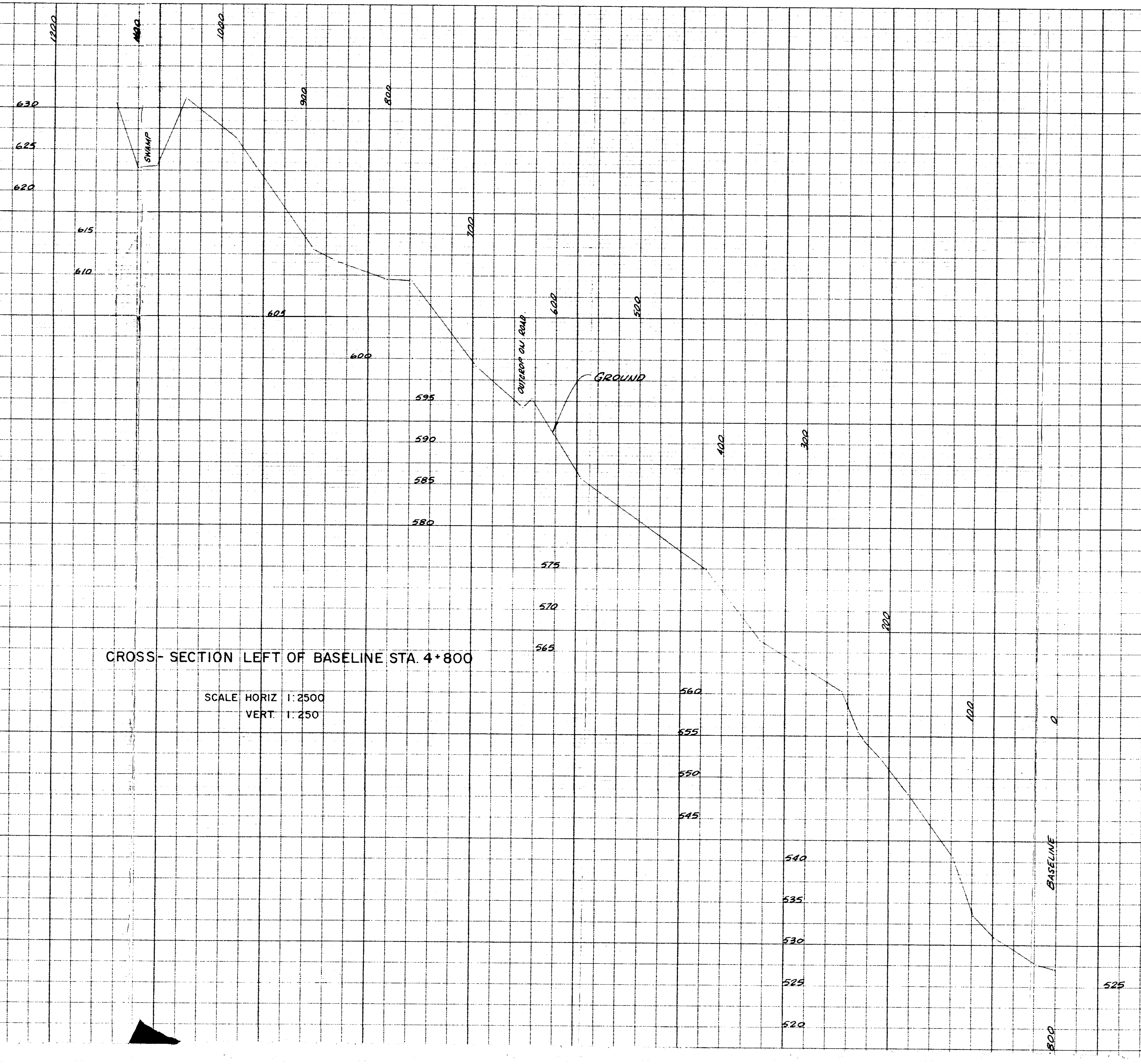
Calc. By DJC Checked By ________ Date JUNE 23/85

TRAVERSE SHEET

(1) The Mean of reading clockwise from backsight to foresight
(2) Co-ordinates from : ________

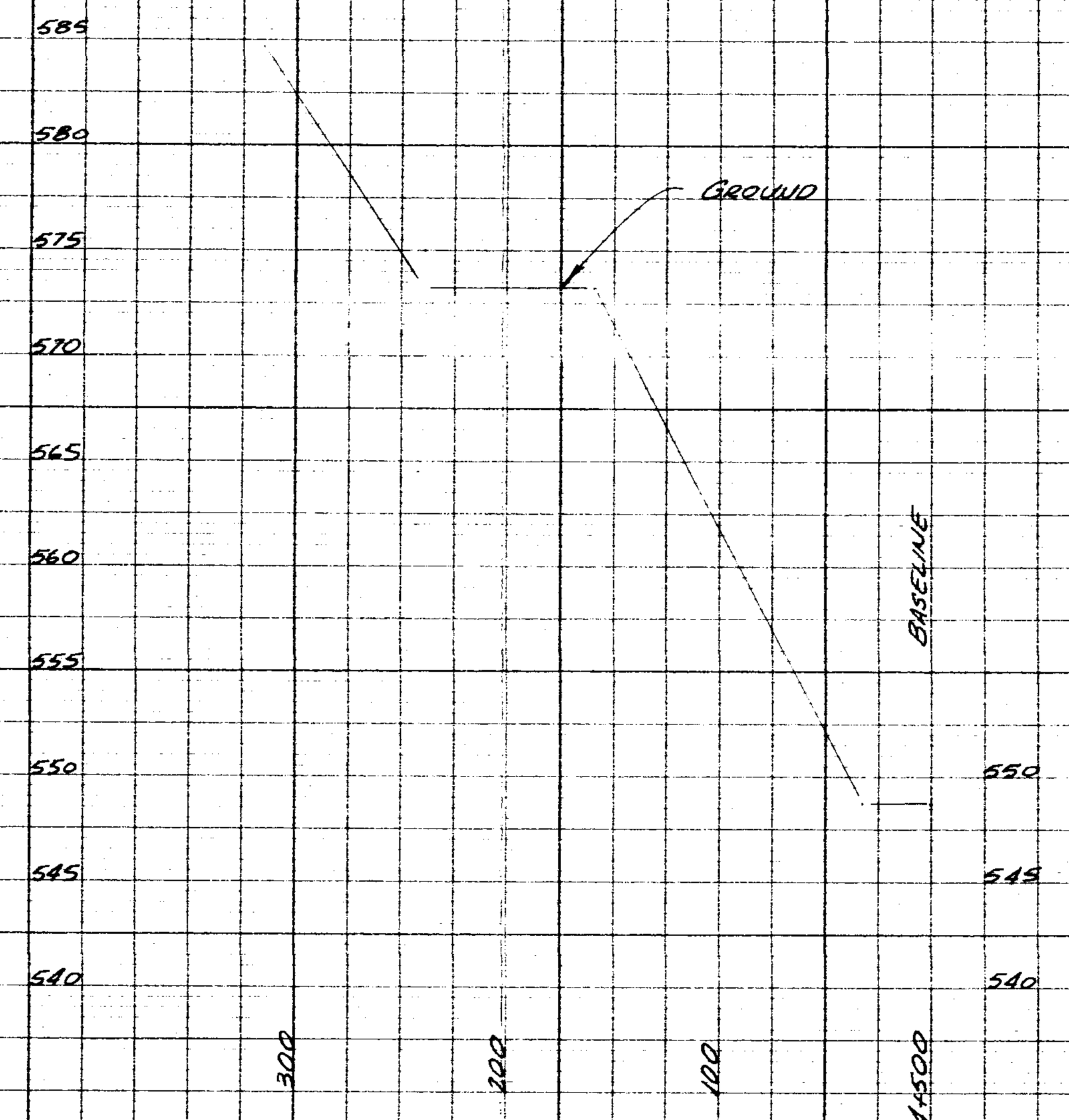
Location HAMILTON LAKE 4+800 LINE Field Bk. ______ P. ____ Area ______

STA.	ANGLE (1)	FULL CIRCLE BEARING	QUADRANTAL BEARING	DISTANCE	COSINE BEARING	SINE BEARING	+ Lats. NORTHING	− Lats. SOUTHING	+ Deps. EASTING	− Deps. WESTING	Co-ordinates (2) N	S	E	W
TH7														
		270-00-00												
TH8	274-54-44	+94-54-44									4,800.00			1041.072
		4-54-44		81.519			81.220		6.980					
TR "A"	231-06-25	+51-06-25									4,881.220			1034.092
		56-01-09		29.565			16.524		24.516					
TR "B"	203-17-06	+23-17-06									4,897.744			1009.576
		79-18-15		53.355			9.902		52.428					
TR "C"	206-28-04	+26-28-04									4,907.646			957.148
		105-46-19		53.212				14.464	51.209					
TR "D"	261-24-35	81-24-35									4,893.183			905.939
		187-10-54		6.993				6.938		−.874				
DH-85	4' ELEV 611.422										4,886.245			906.813
TH3														
		90-00-00												
THZ 4800 176.39	01-25-32	−178-34-28									4,800.00			176.319
		271-25-32		33.497			0.833			33.487				
DH-5	ELEV	552.020									4,800.833			209.806
TP3A														
		270-00-00												
TP4A	284-20-02	+104-20-02									4,200.00			354.91
		374-20-02		41.347										
TP4A1	245-32-39	+65-32-39									4,240.060			344.674
		79-52-41		100.031										
DHHL-78-04	ELEV 583.944										4257.640			246.200



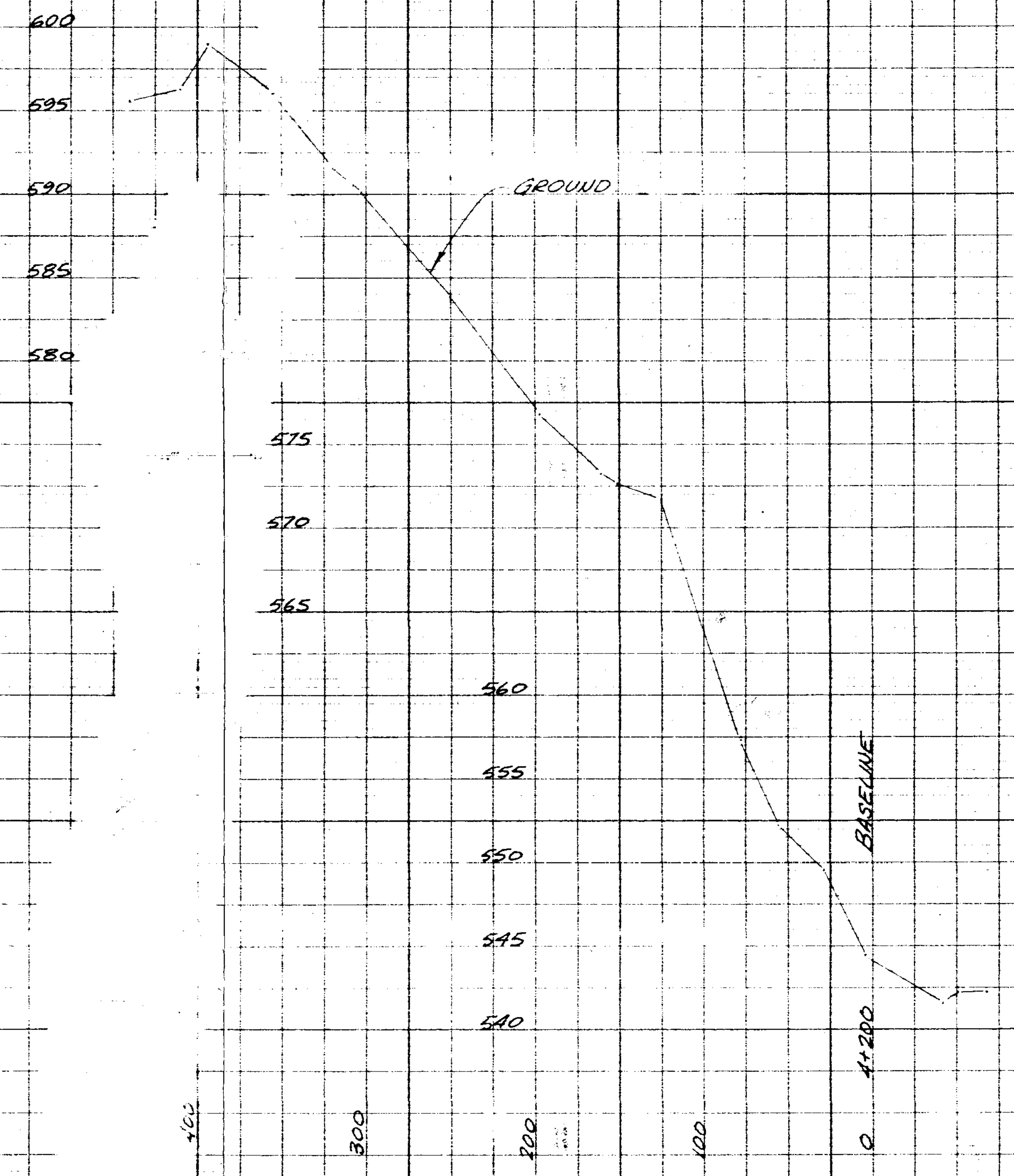
CROSS- SECTION LEFT OF BASELINE STA. 4+800

SCALE HORIZ 1:2500
VERT 1:250



CROSS-SECTION LEFT OF BASELINE STA. 4+500

SCALE HORIZ 1:2500
VERT 1:250



CROSS-SECTION LEFT OF BASELINE 4+200

SCALE HORIZ 1:2500
VERT 1:250

699

M6