Telkwa Project
1988 Geological
Assessment Report
Volume I

00743
part 1

TELKWA PROJECT

1988 GEOLOGICAL ASSESSMENT REPORT

NTS Map Sheet	93L/11	
Lat./Long.	54°35'/127°8'	
Land District	Coast Range 5	
Coal Licenses	Group 368	4272, 4283 4226 - 4281 5305 - 5307 7695, 7696 6040, 4274 8208 - 8211
Licenses held by:	Shell Canada Limited	
Operated by:	Crows Nest Resources Limited	
Exploration Period:	August 30, 1988 - October 15, 1988	
Report Date:	February 1989	
Project Members:	Brian McKinstry - Staff Geologist Steve Cameron - Contract Geologist	

743

TABLE OF CONTENTS

LIST OF ENCLOSURES

Encl. No.	Enclosure
Vol. 1	Text
1	Index Map (1:250,000)
2	Road Access Map (1:50,000)
3	Coal Land Disposition Map (1:50,000)
4	Application to Extend Term of Licence
5	Geology Compilation Map (1:50,000)
6	Typical Stratigraphic Section
Vol. 2	
7	Geology Map (1:2000)
8	Cross Sections (4) (1:2000)
9	2 and 4 Seam Structure Contours (1:2000)
10	Correlation Chart
11	Drill Hole Particulars
12	Coal Quality Data
13	Survey Data
14	Drill Hole Cementing Reports
15	Geophysical Survey Report(Geophysicon Ltd.)
16	Core Descriptions
Vol. 3	
17	Geophysical Logs (1:200)

1.0 SUMMARY

The Telkwa North area is contained within 19 coal licences (Group 368) and two freehold lots. Shell Canada Limited holds the crown licenses with the freehold lots being retained under option agreements.

The Telkwa North licences are in close proximity to the Canadian National Railway (6 kms) and are 360 km east of the port of Prince Rupert. Existing infrastructure, the proximity of a coal handling port (Ridley Island) and the quality of the coal make Telkwa an attractive project.

Early Cretaceous sedimentary rocks of the Skeena Group contain significant thicknesses (single seams up to 4.5 meters in the Telkwa North area) of low ash, medium to high volative bituminous coal amenable to thermal use.

In 1988, a fall drilling program was commissioned to further delineate the mineable coal reserves and resources north of the Telkwa River. This included a geophysical survey (Direct Current Profiling Survey), road construction, drilling fourteen NQ Diamond Drill Holes, and coal analyses.

The total field expenditure for the 1988 program was $307,969.65.

2.0 INTRODUCTION

2.1 Location and Access

The exploration area is located 15 km south of the town of Smithers in West Central British Columbia; Coast Land District 5, NTS Map Sheet 93L/11. The coal licences are north of the Telkwa River and east of Pine Creek (Enclosure 1). The center of the licence block is situated at Lat. 54°35'N, Long. 127°8'W. Smithers is 360 km from the port of Prince Rupert along the CNR line and Highway 16. The Telkwa North area is 20 km from Smithers and accessible by good gravel road (Enclosure 2).

2.2 Tenure

The Telkwa Project licences are subdivided into three groups. The licences reported herein are contained in licence group No. 368.

Group Number	Licence Numbers
366	3878 - 3881, 4269 - 4271, 7690 - 7694, 3710, 3884, 4275
367	3875 - 3877, 4260 - 4262, 4264, 4265, 3882, 3883, 3709, 3885, 4267, 4282, 5839
368	4276 - 4281, 5305 - 5307, 7695, 7696, 4272, 4274, 4283, 6040, 8208, 8209, 8210, 8211

All licences within group 368 (Telkwa North) are operated by Crows Nest Resources Limited. All licences in the Telkwa North area are held by Shell Canada Limited with the exception of the Whalen option (2 lots). (Lots 230 & 237) Enclosure 3 of this report contains a "Coal Land Disposition Map", detailing the spatial relationship of the licenses.

3.0 REGIONAL GEOLOGY (Enclosure 4)

Mesozoic successor basins developed in the Intermontane Belt between the Columbian and Pacific Orogens in the B.C. Cordillera. These troughs experienced a history of deep and continuous subsidence with the development of both marine and continental depositional environments. Coal bearing clastic sequences often accumulated in areas of dip-slip and strike-slip faulting in the troughs.

The Skeena Group successor basin is filled with interbedded marine and non-marine sedimentary and volcanic strata. This assemblage unconformably overlies the Hazelton group on the Skeena Arch, but overlies Bowser Lake group off the northern flank of the arch. Sediments of the Skeena Group are distinguishable from the Bowser Lake and Hazelton Sediments by the presence of fine grained detrital muscovite. "In the Late Jurassic to Early Cretaceous, prior to deposition of the Skeena Group sediments, the Hazelton Group underwent a period of uplift, deformation and erosion. During the mid Early Cretaceous, the sea readvanced from the west, in the area of Skeena Valley, inundating the non-marine, late Lower Cretaceious coal basins such as Telkwa and Lake Kathlyn. The sediments of the Skeena Group were derived from an uplifted Pinchi-belt - Columbian Orogen. They were deposited in a southwesterly direction, across the Skeena Arch, which apparently had little influence on the shape of the basin receiving the Skeena clastics"[1], but may have influenced the location of the best coal development (i.e. Telkwa).

Tipper and Richards (1976) have taken Sutherland Brown's (1960) subdivision from the Hazelton Group and applied it to the Skeena Group as follows: The Brian Boru Formation for the Early Cretaceous volcanics and the Red Rose Formation for the Late Jurassic to Early Cretaceous sediments. The Skeena sediments at Telkwa range in age from Necomian to Albian.

1. Schoeter, T.G., White G.V. and Koo, J. 1986. Coal in Northwest British Columbia, Minister of Energy, Mines and Petroleum Resources Paper, 1985-86

4.0 SUMMARY OF PREVIOUS WORK

1979
- 1:10000 scale geological mapping
- bulldozer trenching
- road upgrading
- rotary drilling (4 holes)
- coal sampled and analyzed
- drill site reclamation

1980
- no exploration

1981
- 1:10000 scale geological mapping
- 1:5000 scale geological mapping
- road upgrading
- bulldozer trenching
- rotary drilling (7 holes)
- diamond drilling (1 hole)
- coal sampled and analyzed
- drill site reclamation
- topographic survey
- geophysical survey - EM37
- 1:5000 scale topographical maps constructed

1982
- 1:5000 scale geological mapping
- backhoe trenching
- road construction and upgrading
- rotary drilling
- diamond drilling
- coal sampled and analyzed
- geophysical surveys
  - EM37
  - seismic refraction
  - proton magnetometer
- geotechnical studies
  - peizometer installation
  - soil sampling
  - core logging

- 1:5000 scale topographical maps constructed
- 1:1000 scale topographical maps constructed
- 1:2000 scale topographical maps constructed
- road and drill site reclamation

1983
- 1:1000 scale geological mapping (test pit)
- road construction
- diamond drilling - NQ and 6 inch diameter
- coal sampled and analyzed
- seismic refraction survey
- geotechnical studies - piezometer installation
  - core logging
- test pit excavated
- 219 tonnes of coal bulk sampled from seven seams
- road and drill site reclamation
- test pit reclamation

1984
- road construction
- diamond drilling
- coal sampled and analyzed
- piezometer installation
- road and drill site reclamation

1985
- road construction
- diamond drilling
- coal sampled and analyzed
- road and drill site reclamation

1986
- road construction
- diamond drilling
- coal sampled and analyzed
- road and drill site reclamation

1987
- no exploration

5.0 1988 EXPLORATION PROGRAM

The total cost of the 1988 exploration program was $307,969.65. An application to extend the term of licence is included in Enclosure 4.

Fourteen vertical NQ diamond drill holes were drilled for a total depth of 1550.35 meters. All holes were surveyed (Enclosure 13). Existing access was used where possible, although it was necessary to construct 5,200 meters of new road. In addition, 4,100 meters of cut lines were constructed for surface geophysical resistivity surveys (Enclosure 15). Drill holes 801, 803, 804, 805, 810, 811, 812 and 814 were on coal licence 4279. Drill hole 802 was on coal licence 4280. Drill holes 806, 807, 809 and 813 were on coal licence 4281. Drill hole 808 was on coal licence 5306.

Drill cores were described on site and are stored at the CNRL core storage facility at the old Bulkley Valley Collieries. Core recovery in coal seams was approximately 10% higher than in past years. This is likely due in part to the use of the Acker hydraulic diamond drill over more conventional diamond drills.

Roads were reclaimed and local land owners compensated for damage.

5.1 Surface Geophysics Program

An electrical resistivity survey was commissioned by Crows Nest Resources and carried out by Geophysicon Co. Ltd. The purpose of the program was to delineate the occurrence of near surface coal seams prior to drilling. The survey proved to be a useful tool in selecting borehole locations and was also valuable in delineating fault locations and even the apparent dip of the coal bearing strata along the profile.

The success of the method obviously depends on a resistivity contrast between the coal and the overburden and/or interburden. Fortunately at Telkwa, coal with a relatively high apparent resistivity is overlain and underlain by siltstones, mudstones and clays with relatively low apparent resistivities. As outlined in Appendix A of the Geophysicon report (Enclosure 14) there are other factors besides the composition of the materials that affect the resistivity such as the conductivity of the ground water and the thermal state of the ground. In addition, since the method is only useful to about 35 meters the depth of overburden is critical. If the overburden is too deep,

resistivity contrast becomes muted. Also coals must be sufficiently thick to affect the apparent resistivity of any particular terrain.

Although individual coal seams could not be delineated at Telkwa, coal zones could be detected with relative certainty. This was adequate to properly locate drillholes as well as delineate major structures. The major fault in the Pit 8 area (Enclosure 7) was initially delineated using this method. A test line (Line 1) was run perpendicular to strike over a known coal subcrop at DDH 601. The survey successfully detected the shallow coal. In addition another smaller anomaly was detected 200 meters up the line to the northeast. Other subparallel profiles (see Line Location Map in Geophysicon report - Enclosure 14) also detected two anomalies. Subsequent drilling proved that there indeed were two northwest striking structural blocks with low ratio coal separated by a normal fault.

The Direct Current Profiling Survey proved itself as a useful cost effective exploration tool on the Telkwa North property. The method is explained in detail in the Geophysicon report (Enclosure 14)

6.0 TELKWA GEOLOGY

6.1 Stratigraphy

The rocks of the Telkwa coal field consist of interbedded marine and non-marine clastics of the Skeena Group. The sediments include coal, mudstone, siltstone, sandstone and minor conglomerate. The underlying Hazelton volcanics are usually weathered to a deep reddish-purple at their unconformable contact with the overlying Skeena sediments. Porphyritic Tertiary intrusive rocks in the form of dykes and sills have been found over the property. There are occasional tuffs and ash bands. A large intrusive plug has intruded the Skeena sediments north of the Telkwa River. In the Telkwa area Pleistocene erosion has removed the coal-bearing sediments from the higher ridges leaving most of the sedimentary sequence preserved in topographic lows. Outcrops are usually found in stream valleys which have cut through the glacial drift cover. Few exposures occur away from the creeks until the higher ridges are reached and invariably these are volcanics of the Hazelton Group, the exception being the Telkwa north area where Skeena sediments occur high on a ridge at an elevation of 850 m. The Skeena-Hazelton contact over most of the area is drift covered and heavily timbered making accurate delineation of the aerial extent of the coal bearing sediments very difficult.

The Skeena Group stratigraphic section (Enclosure 7) varies in thickness over the Telkwa area but probably does not exceed 500 meters. Laterally, individual beds often pinch out over short distances.

Crows Nest geologists have informally subdivided the Skeena section into four units based on interpretation of cores and palynological work. Unit 1, the lowest unit, is characterized by the #1 coal zone. Palynological data in the Goathorn Creek area indicates clastic deposition started in Neocomian times in a marine depositional environment. A marine regression occurred, resulting in a fluvial flood plain environment with the deposition of the #1 coal zone.

The second unit consists mainly of siltstones and shales which were deposited in a shallow, low energy marine environment with occasional regressive/transgressive cycles.

The third stratigraphic unit contains up to 10 coal seams interbedded with sandstones, siltstones and mudstones. This unit is believed to have been deposited in a deltaic environment supporting swamp and/or marsh vegetation. The upper part of this unit has been subjected to several minor marine transgressions.

Unit 4 consists largely of siltstones and immature sandstones with rare occurrences of thin coal seams. Palynological data suggest an upland depositional environment in a fluvial regime. A major marine regression near the end of the Lower Cretaceous explains the sequence of depositional environments in units 2 through 4.

The Skeena sediments in the Telkwa area exhibit numerous soft sediment deformation structures including rip up clasts, micro slump faults and load casts. Heavily bioturbated zones are common. Thin clay layers (1 to 5 cm thick) are present at certain locations in several of the coal horizons. X-ray defraction indicates most of these clays to be kaolinitic in composition and not mixed layer "swelling clays".

6.2 Coal Stratigraphy

At least 14 individual coal seams exist at Telkwa.

The #1 coal zone is in Unit 1 of the stratigraphic section. The rest of the mineable coal seams are contained within Unit 3.

Individual coal seams can be correlated across the Telkwa North area. However, while the coal zones within unit 3 can be correlated to the Goathorn Creek area, individual seam correlation is sometimes tenuous. Over the property individual coal seams often develop splits, their thicknesses change over short lateral distances, and the seam continuity can exhibit an extremely variable nature. These inconsistencies will require a very flexible approach to mining.

In the Telkwa North area individual seams become thinner and less continuous toward the northwest. Seams 8, 9, and 10 are extremely discontinuous.

Average aggregate coal thickness is 16m in the Telkwa North area.

6.3 Structure

The geology is presented on a 1:2000 scale map, (Enclosure 7) and 4 sections (Enclosure 8) and two structure contour maps (Enclosure 9).

A computer modelling package (Miner 2: MINCOM, USA) was used to geologically model a portion of the area of the 800 series drilling. This is referred to as the Pit 8 area. Other potential pit areas of Telkwa have been similarly modelled. Cross sections (Enclosure 8) and structure contours (Enclosure 9) were produced from the model. Also a generalized geology map of the area is enclosed (Enclosure 7).

North of the Telkwa River, the coal measures are truncated by a number of north and northwest trending faults with down drop on the west. This is a similar geometry to the Goathorn East area. Dip meter logs for the 500, 600 and 800 series holes provide strike and dip values for most seams which help localize the faults. There is a complete lack of outcrop to provide further information on the location or dip of the faults. The Telkwa North area is bounded by an intrusive to the north. The northwest trending fault in the Pit 8 area is subparallel to this intrusive. It is probable that some of the faulting is related to the intrusive event. It is not uncommon for faults with displacements up to 100 meters to die out over a distance of about a kilometer. Most of the faults are high angle normal faults. Unlike the Goathorn Creek area, thrust faulting appears to be rare north of the Telkwa River.

In general, the strata within Pit 8 area dip gently (15-25°) to the northeast with steeper dips only associated with fault zones. Outside Pit 8 limits, various dipmeter measurements in other boreholes suggest that rotations of individual fault blocks can produce profound variations in strata orientation. This in turn may provide new areas of resource potential.

7.0 RESOURCE POTENTIAL

Two provisional pits have been delineated north of the Telkwa River. (Pits 7 & 8). The purpose of the 1988 drilling program was to increase the resource base and further delineate reserves in the Pit 8 area. Reserves and pit configurations have been delineated using the computer generated geological model. At present, ROM reserves for Pit 7 are considered to be 3.4 X 10^6 tonnes at a ratio of 4.0 to 1.

ROM reserves for Pit 8 are calculated to be 10.3 X 10^6 tonnes at a ratio of 4.9 to 1. The nature of the faulting north of the Telkwa, the excess section existing between Seam 1 outcrops along the Telkwa River and Pit 8, and the promising coal trends near drillholes D809 and D502 indicate good potential for additional low ratio coal reserves to be delineated with future exploration.

8.0 COAL QUALITY

All the quality data obtained from the 1988 drilling program are contained in Enclosure 12.

These data together with previous results suggest that within Pit 8 area, there is a quality trend towards the Tertiary intrusive. Subtle but distinct increases in ash and sulphur occur in a southeast to northwest trend. A corresponding decrease in volatile matter, calorific value and yield can also be measured. There is an apparent correlation between raw sulphur content and seam thickness with the thicker seams exhibiting lower sulphur values (usually less than 1%). Sulphur analyses suggest most sulphur occurs in pyritic form. Hardgrove indexes for the coal average around 70 and mineral matter appears to be comprised principally of clays, quartz and calcite. Calorific values average about 7000 kcal/kg on an air-dried basis.

There appears to have been a general devolatization of seams in Pit 8 due to the intrusive activity. Volatile matter content is consistently 2-3% less than for correlative seams in the Goathorn Creek area. An examination of quality/borehole geophysics data from holes drilled to the west of Pit 8 (i.e. DH806, 807, 808) suggest that seams intersected in this area are indicative of Unit 1 within the Skeena Group. Of particular note is the change in coal rank to semi-anthracite grade for the coal seams in Hole 808. This rank variation is thought to be a result of thermal metamorphosis accompanying the emplacement of a 25 meter thick quartz-feldspar porphyry sill within the coal measures at this locality. Characteristically, however, coal seams within Zone 1 exhibit a low to medium volatile bituminous rank, low sulphur values (.3-.7%) and variable but generally high raw ash content (20-45%)

9.0 RECOMMENDATIONS FOR FURTHER WORK

At present two areas of low ratio surface mineable coal have been delineated. There is the possibility of a third small pit in the area of DDH 809 but further drilling is needed to establish the extent of the low ratio coal in this area. Some further drilling is needed in the Pit 8 area in the vicinity of the fault to more accurately determine stripping ratios and fault locations. The Pit 7 area is defined to a point where any further work could be scheduled prior to a mine production decision.

The interplay of faults and topography almost certainly ensures that other mineable areas remain to be found north of the Telkwa River. An area of specific interest lies between Pit 8 and the Telkwa River. Given the attitude of the strata near or within Pit 8, there appears to be an excess of section to account for the existence of Seam 1 outcropping in gullies along the Telkwa River. This excess could be rationalized with extensive normal faulting. Within these fault blocks there may be areas of low ratio coal resources. Future cost effective programs to explore for these low ratio coal areas should utilize the D.C. profiling geophysical method outlined in Section 5.1.

10.0 REFERENCES

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93 L/13 — 1:50,000 — CANADA — EDITION 1 — 93 L/13

Refer to this map as: 93 L/13 EDITION 1 MCE SERIES A 721

Joins 93 M/4

CASSIAR LAND DISTRICT — OMINECA LAND DISTRICT

SMITHERS PROVINCIAL FOREST

ROCKY RIDGE

BULKLEY RANGES

HUDSON BAY RANGE

HAZELTON MOUNTAINS

SMITHERS PROVINCIAL FOREST

Kitseguecla Lake

Tatlatui Lake

Louise Lake

Hankin Lake

Sandarone Lake

McDonell Lake

Kitseguecla River

Kisgaras Creek

Zymoetz River

Red Canyon Creek

Babine Lake

Joins 103-I/16

Joins 93 L/14

Joins 93 L/12

CONVERSION SCALE FOR ELEVATIONS — Metres — Feet

T.N. — 1°01' or 18 Mils — 26.03' or 463 Mils — Grid North — Magnetic North

Use diagram only to obtain numerical values
APPROXIMATE MEAN DECLINATION 1972
FOR CENTRE OF MAP
Annual change decreasing 3.2'

ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 9

GRID ZONE DESIGNATION: 9 U — 100,000 M. SQUARE IDENTIFICATION: WL

EXAMPLE OF METHOD USED TO GIVE A REFERENCE TO NEAREST 100 METRES

THE FOLLOWING GRID REFERENCE IS A SAMPLE ONLY AND DOES NOT REFER TO A POINT ON THIS MAP

REFERENCE POINT	CHURCH (as above)	
EASTING. Read number on grid line immediately to left of point	97	
Estimate tenths of a square from this line eastward to point		5
	975	
NORTHING. Read number on grid line immediately below point	98	
Estimate tenths of a square from this line northward to point		4
	984	

EXAMPLE MILITARY GRID REFERENCE 975984

Nearest similar grid reference 100,000 metres (about 63 miles)

McDONELL LAKE
BRITISH COLUMBIA

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Milles

Metres 1000 0 1000 2000 3000 4000 Mètres

Yards 1000 0 1000 2000 3000 4000 Verges

This Provisional Map is equivalent to a standard map in accuracy of content.

Some names on this map are not yet official. Corrections or additions are invited by the Surveys and Mapping Branch.

CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

Produced, 1970, by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES, from aerial photographs taken in 1968. Field surveys 1968. Printed 1974.

Copies may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, or your nearest map dealer.

Roads: Routes:

		2 lanes or more / 2 voies ou plus	less than 2 lanes / moins de 2 voies
loose or stabilized surface, all weather	gravier aggloméré, toute saison		
loose surface, dry weather and unclassified streets	de gravier, temps sec et rues hors classe		
cart track	de terre		
trail or portage	sentier ou portage		

GEOLOGICAL LEGEND

- JKs - Jurassic/Cretaceous Sediments
- JKv - Jurassic/Cretaceous Volcanics
- KTi - Cretaceous/Tertiary Intrusives
- Geological contact
- Geological fault
- Bedding attitude
- Syncline

Crows Nest Resources Limited
EXPLORATION

WEST CENTRAL BRITISH COLUMBIA
SMITHERS PROJECT
ZYMOETZ RIVER
ENCL 3

715 pt 1 (1)

GEOLOGY COMPILATION MAP

NTS 93L/13 — UTM ZONE 9

AUTHOR: S. CAMERON	SCALE: 1:50,000	ENCLOSURE No:	
DATE: DEC 15 1981	REVISED: 85 11	DRAWING No:	SI5U01
To Accompany 1983 GEOLOGICAL REPORT			

93 L 11

93 L/10

610 000 mE

Joins 93 L/14

638000 mE

6046000 mN

6043 000 mN

54°45'

54°30'

127°00'

TELKWA NORTH
GROUP No. 368

TELKWA
GROUP No. 366

TELKWA SOUTH
GROUP No. 367

C.L. 8209
C.L. 8208
C.L. 5307
C.L. 4283
C.L. 5306
C.L. 4284
C.L. 5305
C.L. 4280
C.L. 4279
C.L. 4278
C.L. 4277
C.L. 8211
C.L. 8210
C.L. 4276
C.L. 7696
C.L. 6040
C.L. 4275
C.L. 4274
C.L. 7695
C.L. 7694
C.L. 3880
C.L. 3879
C.L. 3878
C.L. 4272
C.L. 7692
C.L. 7693
C.L. 3885
C.L. 3710
C.L. 4271
C.L. 3884
C.L. 7691
C.L. 4270
C.L. 4269
C.L. 3709
C.L. 3876
C.L. 4267
C.L. 3875
C.L. 3877
C.L. 5839
C.L. 3882
C.L. 3883
C.L. 4265
C.L. 4264
C.L. 4262
C.L. 4261
C.L. 4282
C.L. 4260

F

TYHEE LAKE

Telkwa

Seymour Lake

Tyhee Lake Seaplane Anchorage

Mackenzie Lake Provincial Park

Yellowhead Highway

CANADIAN NATIONAL

BULKLEY RIVER

MIDDLE RIVER

Round Lake

Coffin Lake

Gravel Pit

Pipeline

Trails

Creek

Road Access

JEAN BAPTISTE INDIAN RESERVE 6B

SKEENA MOUNTAINS

BULKLEY RANGE

HAZELTON MOUNTAINS

WAPLEY RANGE

PROVINCIAL FOREST

SMITHERS

MAP INDEX

93-L-13	93-L-14	93-L-15
93-L-12	93-L-11	93-L-10
93-L-5	93-L-6	93-L-7

127°30' 126°00' 55°00' 54°45' 54°30' 54°00'

SCALE: 1:50,000

METRES 1000 0 1000 2000 3000 METRES

TN. GRID NORTH

LICENCES UNDER APPLICATION

743 pt. 1

Crows Nest Resources Limited
EXPLORATION
WEST CENTRAL B.C.
TELKWA PROJECT

ROAD ACCESS MAP (2)

SHELL - CNRL LICENCES TELKWA 93-L-11,10

UTM Zone 9

AUTHOR: C N R L	SCALE: 1:50,000	ENCLOSURE No:
DATE: 82-12	REVISED: 83-02	DRAWING No. 2
To Accompany		

93 L/11

93 L/10

610 000 mE

638 000 mE

54°45'

54°30'

6 066 000 mN

6 043 000 mN

Joins 93 L/14

Joins 93 L/12

Joins 93 L/6

TELKWA NORTH GROUP No. 368

C.L. 8209 | C.L. 8208 | C.L. 5307 | C.L. 4283 | C.L. 8211 | C.L. 8210 | C.L. 7696

C.L. L243 5306 | C.L. L244 4281 | C.L. L238 4280 | C.L. L229 4279 | C.L. L228 4278 | C.L. L410 4277 | C.L. L411 4276 | C.L. L412 7696

C.L. L239 5305

F | F | C.L. 6040 | C.L. L227 4275 | C.L. L409 7695 | C.L. L408 7694

C.L. L226 4274

TELKWA GROUP No. 366

C.L. L241 3880 | C.L. L226 3879 | C.L. L223 3878 | C.L. L222 4272 | C.L. L400 7692 | C.L. L403 7693

C.L. L232 3885 | C.L. L227 3710 | C.L. L248 4271 | C.L. L400 3884 | C.L. L399 7691

F | F

TELKWA SOUTH GROUP No. 367

C.L. 5839 | C.L. L379 3882 | C.L. L380 3883

C.L. L524 4265 | C.L. L625 4264

C.L. L627 4262 | C.L. L628 4261

C.L. L234 4270 | C.L. L233 4269 | C.L. L390 3709 | C.L. L392 3876 | C.L. L382 3877

C.L. L245 4267 | C.L. L246 3875

F | F | F | F

C.L. L631 4260

C.L. L630 4282

BULKLEY RANGES

HAZELTON MOUNTAINS

WAPITI PLATEAU

SKEENA MOUNTAINS

SMITHERS PROVINCIAL FOREST

TYHEE LAKE

Telkwa

Seymour Lake

Tyhee Lake Seaplane Anchorage

BKA Machete Lake Provincial Park

Yellowhead Highway

CANADIAN NATIONAL

Gravel Pit

Power Line

Telkwa Pass Trail (Abandoned)

Telkwa Pass Trail

Bulkley River

Pine Creek

McDowell Creek

Round Lake

Coffin Lake

Quick

Roche

Huberts

Driftwood Creek

Tp 4 | Tp 5 | Tp 6

JEAN BAPTISTE 882 INDIAN RESERVE 28

JEAN BAPTISTE 882 INDIAN RESERVE 28A

Dugout | Radio Tower

BM 1660 | BM 1688 | BM 1684 | BM 1681 | BM 1145

Elevations: 2518 | 7519

MAP INDEX

127°30' | 126°00' | 55°00' | 54°45' | 54°30' | 54°00'

93-L-13	93-L-14	93-L-15
93-L-12	93-L-11	93-L-10
93-L-5	93-L-6	93-L-7

SCALE: 1:50,000

METRES 1000 0 1000 2000 3000 METRES

T.N. GRID NORTH

LICENCES UNDER APPLICATION

743 pt.1

Crows Nest Resources Limited

EXPLORATION

WEST CENTRAL B.C.

TELKWA PROJECT (3)

COAL LAND DISPOSITION MAP

SHELL - CNRL LICENCES TELKWA 93-L-11,10

UTM Zone 9

AUTHOR: C·N·R·L	SCALE: 1:50,000	ENCLOSURE No:
DATE: 82-12	REVISED: 83-02	DRAWING No: TW5H5
To Accompany		

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

APPLICATION TO EXTEND TERM OF LICENCE

I, Brian McKinstry (Staff Geologist) (Name)
525 3rd Avenue S.W. (Address)
Calgary, Alberta

agent for Shell Canada Limited (Name)
400 4th Avenue S.W. (Address)
Calgary, Alberta

Valid FMC No. 207568

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). (Group 368) 4272, 4274, 7695, 7696, 4276, 4277, 4278, 4280, 6040, 4281, 4283, 5305, 5306, 5307, 8208, 8209, 8210, 8211, 4279
for a further period of one year.

2. Property name Telkwa

3. I am allowing the following Coal Licence(s) No(s). to forfeit None

4. I have performed, or caused to be performed, during the period January 1, 1988 to December 31, 1988, 19 ..., work to the value of at least $ 307,969.65 on the location of coal licence(s) as follows:

CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
Geological mapping	-	-
Surveys: Geophysical	4279, 4280, 4281, 4283, 5307	$28,550.00
Geochemical	-	-
Other	4279, 4280, 4281, 4283, 5307	10,045.00
Road construction	4278, 4279, 4280, 4281, 5307, 4283	40,033.86
Surface work	-	-
Underground work	-	-
Drilling	4279, 4280, 4281, 4283, 5307	140,139.48
Logging, sampling, and testing	4279, 4280, 4281, 4283, 5307	38,191.02
Reclamation	4278, 4279, 4280, 4281, 4283, 5307	10,750.00
Other work (specify)	Access Charges 4278, 4279	2,630.00
Off-property costs	(Group 368)	37,629.67

5. I wish to apply $ ... of this value of work on Coal Licence(s) No(s). (Group 368) 4272, 4274, 7695, 7696, 4276, 4277, 4278, 4279, 4280, 6040, 4281, 4283, 5305, 5306, 5307, 8208, 8209, 8210, 8211

6. I wish to pay cash in lieu of work in the amount of $ - on Coal Licence(s) No(s).

7. The work performed on the location(s) is detailed in the attached report entitled Telkwa North Geological Assessment Report 1988

February 15, 1989 (Date)

Brian McKinstry (Signature)

Staff Geologist (Position)

(FORMS AND REPORT TO BE SUBMITTED IN DUPLICATE)

743

GEOLOGICAL MAPPING Yes ☐ No ☒

	Area (Hectares)	Scale	Duration
Reconnaissance			
Detail: Surface			
Underground			
Other* (specify)			

Total Cost $

GEOPHYSICAL/GEOCHEMICAL SURVEYS Yes ☒ No ☐

Method ... D.C. Profiling (Resistivity) Geophysical Survey
Grid
Topographic
Other* (specify) .. Survey taken along cut lines and roads

Total Cost $ $28,550.00

ROAD CONSTRUCTION Yes ☒ No ☐

Length ... 5200 metres ... Width ... 8 metres
On Licence(s) No.(s) .. 4278, 4279, 4280, 4281
Access to DDH 801-814

Total Cost $ $40,033.86

SURFACE WORK Yes ☐ No ☒

	Length	Width	Depth	Cost
Trenching				
Seam Tracing				
Crosscutting				
Other* (specify)				

Total Cost $

UNDERGROUND WORK Yes ☐ No ☒

	No. of Adits	Maximum Length	No. of Holes	Total Metres	Cost
Test Adits					
Other workings*					

Total Cost $

DRILLING Yes ☒ No ☐

	Hole Size	No. of Holes	Total Metres	Cost
Core: Diamond	NQ	14	1550.25 metres	
Wireline				
Rotary: Conventional				
Reverse circulation				
Other* (specify)				

Contractor J.T. Thomas Diamond Drilling Ltd
Where is the core stored? ..... Bulkey Valley Collieries

Total Cost $ $140,139.48

LOGGING, SAMPLING, AND TESTING Yes ☒ No ☐

Lithology: Drill samples ☐ Core samples ☒ Bulk samples ☐
Logs: Gamma-neutron ☒ Density ☒

Other* (specify)

Testing: Proximate analysis ☒ FSI ☒ Washability ☒
Carbonization ☐ Petrographic ☒ Plasticity ☐

Other* (specify)

Total Cost $ $38,191.02

RECLAMATION Yes ☒ No ☐

Details ... All roads on Crown Land were seeded and ditch with water bars where needed. Total Cost $ $10,750.00

OTHER WORK (Specify details) Yes ☒ No ☐ Cost

Drill Hole Survey ... $10,045.62
Access to Private Land ... 2,630.00

Total Cost $

OFF-PROPERTY COSTS Yes ☒ No ☐

Details ... Report and Drawings Preparation ... Total Cost $ $37,629.67

Total Expenditures $ $307,969.65

February 15, 1988
(Date)

Brian McGuinty
(Signature)

Staff Geologist
(Position)

*A full explanation of other work is to be included.

93 L/11 — 1:50,000 — EDITION 2 — 93 L/11

CANADA

Joins 93 L/14 — Joins 93 L/12 — Joins 93 L/10 — Joins 93 L/6

Military users, refer to this map as Référence de cette carte pour usage militaire:	SERIES A 721 SÉRIE
	MAP 93 L/11 CARTE
	EDITION 2 MCE EDITION

GEOLOGICAL LEGEND

- JKs - Jurassic / Cretaceous Sediments - Skeena Group
- JKv - Jurassic / Cretaceous Volcanics - Hazelton Group
- KTi - Cretaceous / Tertiary Intrusives
- Geological contact
- Geological fault
- Bedding attitude
- Syncline

TELKWA

COAST LAND DISTRICT RANGE 5

BRITISH COLUMBIA

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Miles

Metres 1000 0 1000 2000 3000 4000 Metres

Yards 1000 0 1000 2000 3000 4000 Yards

CONVERSION SCALE FOR ELEVATIONS
ÉCHELLE DE CONVERSION DES ÉLÉVATIONS

Feet 100 50 0 100 200 300 400 500 600 700 800 900 1000 Ft Pieds

Metres 30 25 20 15 10 5 0 50 100 150 200 250 300 Metres Mètres

Use diagram only to obtain numerical values
APPROXIMATE MEAN DECLINATION 1972
FOR CENTRE OF MAP
Annual change decreasing 3.7

N'utiliser le diagramme que pour obtenir les valeurs numériques
DÉCLINAISON MOYENNE APPROXIMATIVE
AU CENTRE DE LA CARTE EN 1972
Variation annuelle décroissante 3.7

ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 9
QUADRILLAGE DE MILLE MÈTRES
TRANSVERSE UNIVERSEL DE MERCATOR

GRID ZONE DESIGNATION DESIGNATION DE LA ZONE DU QUADRILLAGE	100,000 M. SQUARE IDENTIFICATION IDENTIFICATION DU CARRÉ DE 100,000 M
9U	WL KL

EXAMPLE OF METHOD USED TO GIVE A REFERENCE TO NEAREST 100 METRES
EXEMPLE DE LA MÉTHODE EMPLOYÉE POUR FIXER DES RÉPÉRES À 100 MÈTRES PRÈS

REFERENCE POINT / POINT DE REPÈRE	CHURCH / ÉGLISE (as above / ci-dessus)
EASTING. Read number on grid line immediately to left of point. LONGITUDE EST. Noter le chiffre de la ligne du quadrillage immédiatement à gauche du repère	97
Estimate tenths of a square from this line eastward to point. Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction est	5 — 975
NORTHING. Read number on grid line immediately below point. LATITUDE NORD. Noter le chiffre de la ligne du quadrillage immédiatement en-dessous du repère	98
Estimate tenths of a square from this line northward to point. Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction nord	4 — 984
GRID REFERENCE / REFERENCE AU QUADRILLAGE	975984

Roads: Routes:

		Solid Surface	Dual Lane Plus 2 Lanes
hard surface, all weather	pavée, toute saison	2 chaussées séparées 2 voies	plus de 2 voies
hard surface, all weather	pavée, toute saison	2 voies	moins de 2 voies
loose or stabilized surface, all weather	gravier aggloméré, toute saison	2 voies ou plus	moins de 2 voies
loose surface, dry weather and unclassified streets	de gravier: temps sec et rues hors classe	2 voies ou plus	moins de 2 voies
cart track	de terre		
trail or portage	sentier ou portage		

First edition map updated by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES, from aerial photographs taken in 1968. Culture check 1971. Printed 1975.

Copies may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, or your nearest map dealer.

This Provisional Map is equivalent to a standard map in accuracy of content.

Some names on this map are not yet official.
Corrections or additions are invited by the Surveys and Mapping Branch.

CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

Cette carte provisoire équivaut une carte régulière au point de vue précision de l'information

Certains noms inscrits sur cette carte ne sont pas encore officiels. La Direction des levés et de la cartographie saurait gré au public de lui signaler corrections et additions

ÉQUIDISTANCE DES COURBES 100 PIEDS
Élévations en pieds au-dessus du niveau moyen de la mer
Système de référence géodésique nord-américain, 1927
Projection transverse de Mercator

Première édition mise à jour par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES, à l'aide de photographies aériennes prises en 1968. Vérification des ouvrages en 1971. Imprimée en 1975.

Ces cartes sont en vente au Bureau des Cartes du Canada, ministère de l'Énergie, des Mines et des Ressources, Ottawa, ou chez le vendeur le plus près.

743 pt. 1

④

Crows Nest Resources Limited
EXPLORATION

WEST CENTRAL B.C.
TELKWA PROJECT

GEOLOGY COMPILATION MAP

⑤

N.T.S. 93 L / 11 — U.T.M. Zone 9

AUTHOR: CAMERON	SCALE: 1:50,000	ENCLOSURE No:	
DATE: 84-02	REVISED: 86-02	DRAWING No: TW5U01	
To Accompany 1986 GEOLOGICAL REPORT			

HK-100

TELKWA SOUTH

TELKWA NORTH

METRES

INFORMAL STRATIGRAPHIC UNITS

0
10
20
30
40
50
60
70
80
90
100
110
120
300
310
320

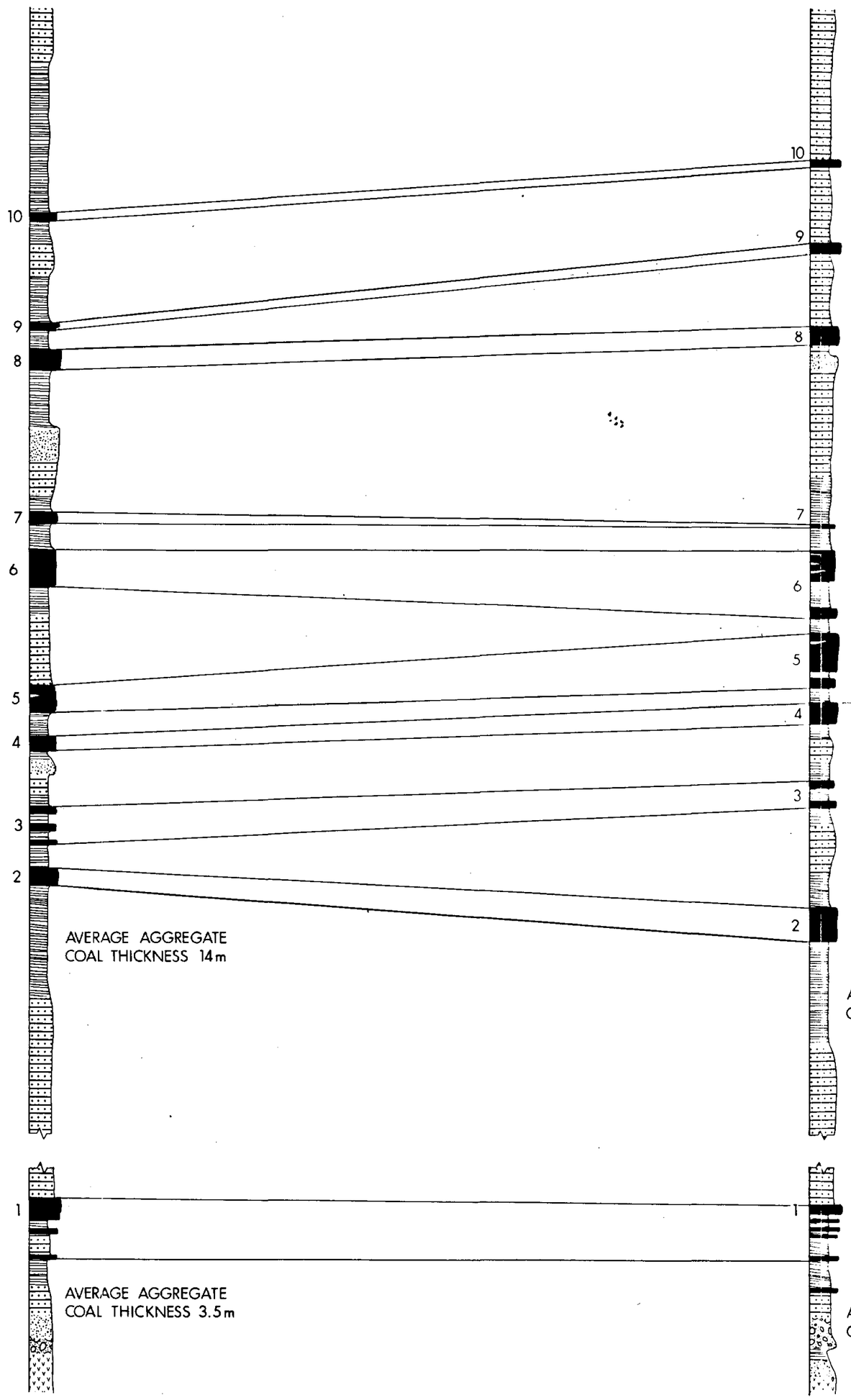
UNIT 4

UNIT 3

UNIT 2

UNIT 1

HAZELTON VOLCANICS



AVERAGE AGGREGATE COAL THICKNESS 14m

AVERAGE AGGREGATE COAL THICKESS 16m

AVERAGE AGGREGATE COAL THICKNESS 3.5m

AVERAGE AGGREGATE COAL THICKNESS 4.0m

SKEENA GROUP

- COAL
- CONGLOMERATE
- SANDSTONE
- SILTSTONE
- SHALE

HAZELTON GROUP

- IGNEOUS

743 PT.1

Crows Nest Resources Limited

TELKWA
WEST CENTRAL B. C.

5

GENERALIZED STRATIGRAPHIC SECTIONS

AUTHOR: S. CAMERON	SCALE: AS SHOWN	DRAWN BY:	
DATE:	REVISED:	DRAWING	
To Accompany			

TKWPIT8 PROJECT - SHEET PIT8

BRIAN (SCALE 1 : 2,000)

NAME
+ = SELECT D
COLLAR

SK

U

D

TOPO MODEL CONTOURS OF "TOPO" AT INTERVALS OF 5

LEGEND

Tertiary Intrusive

Skeena Group — SK

Drill Holes — +

Fault — U / D

0 50 100 150 200m

Crows Nest Resources Limited
ENGINEERING

GEOLOGY MAP
PIT 8

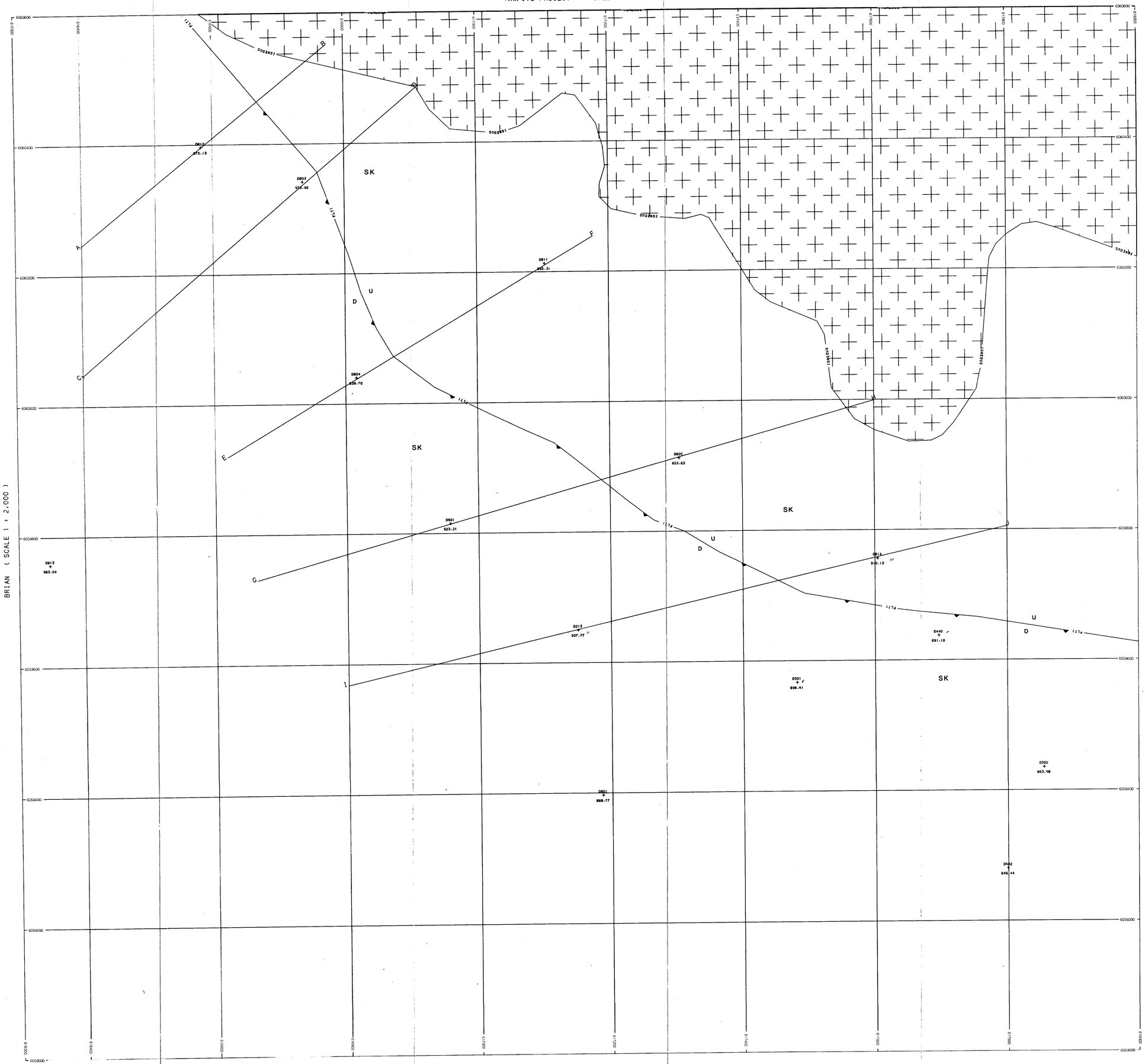
AUTHOR: B. MCKINSTRY	SCALE: 1 : 2000	DRAWN BY:	
DATE: 89-02-22	REVISED:	DRAWING No:	7
To Accompany			

743

TKWPIT8 PROJECT - SHEET PIT8

BRIAN (SCALE 1 : 2,000)

NAME
+ = SELECT D
COLLAR



LEGEND

- Tertiary Intrusive
- Skeena Group — SK
- Drill Holes — +
- Fault — D / U

0 50 100 150 200m

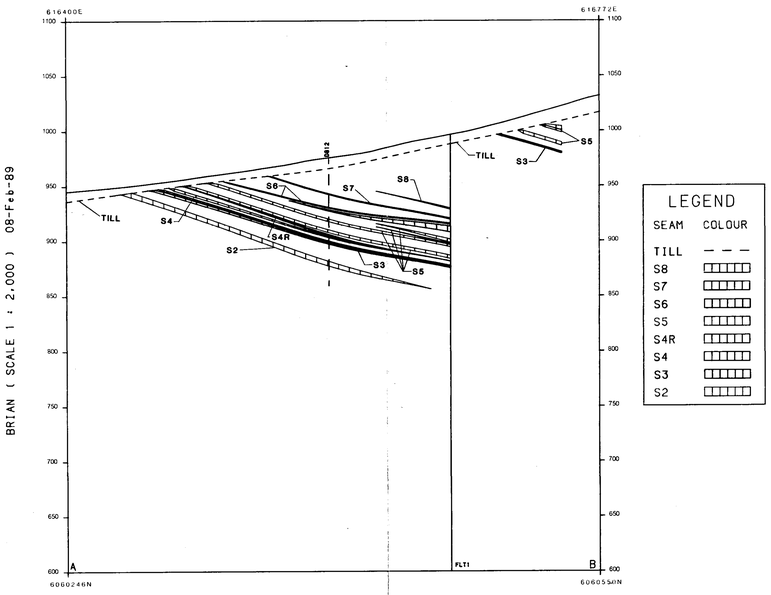
Crows Nest Resources Limited
ENGINEERING

CROSS SECTION LOCATIONS

AUTHOR: B. MCKINSTRY	SCALE: 1 : 2000	DRAWN BY:
DATE: 89-12-22	REVISED:	DRAWING No:
To Accompany		

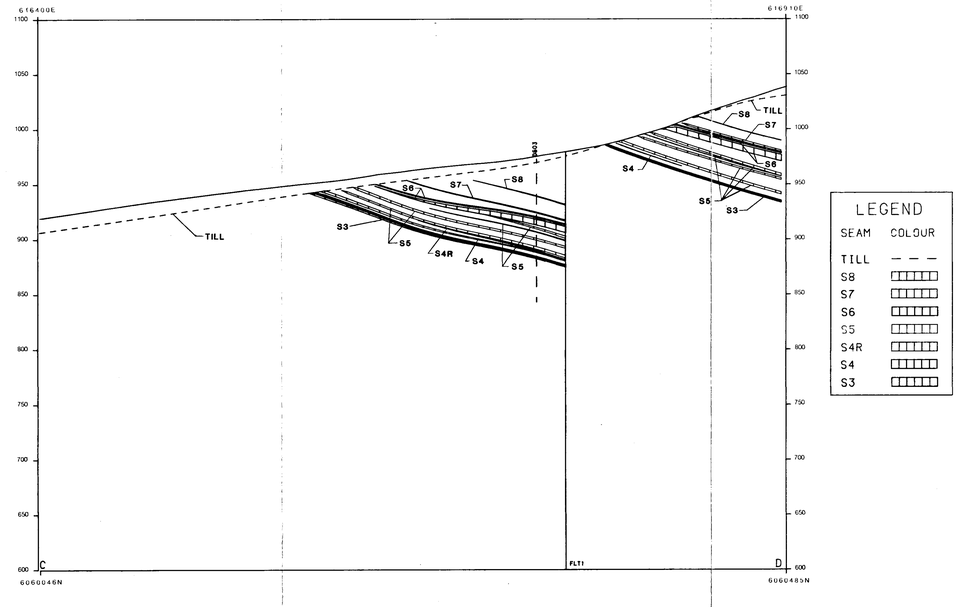
743
pt 9 ①

TKWPIT8 PROJECT -- SHEET PIT8



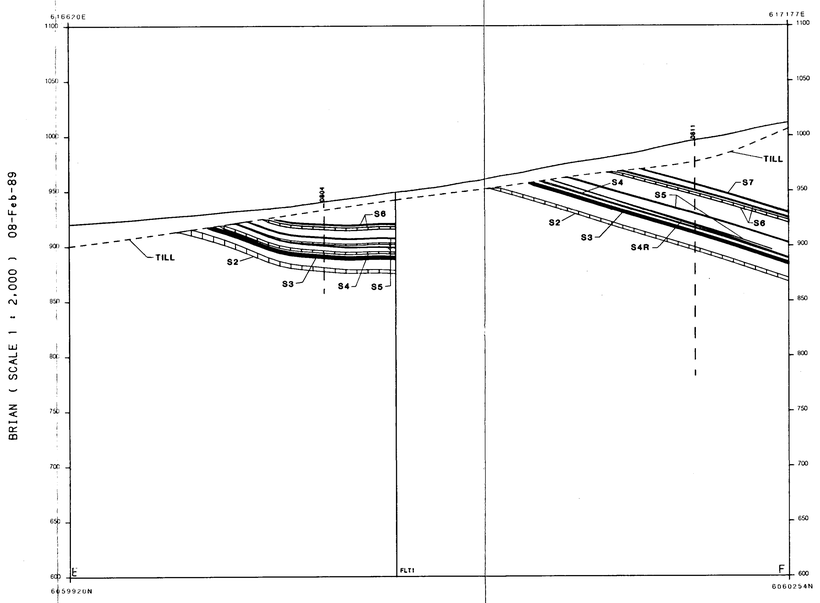
SECTION A-B

TKWPIT8 PROJECT -- SHEET PIT8



SECTION C-D

TKWPIT8 PROJECT -- SHEET PIT8



SECTION E-F

0 50 100 150 200m

Crows Nest Resources Limited
ENGINEERING

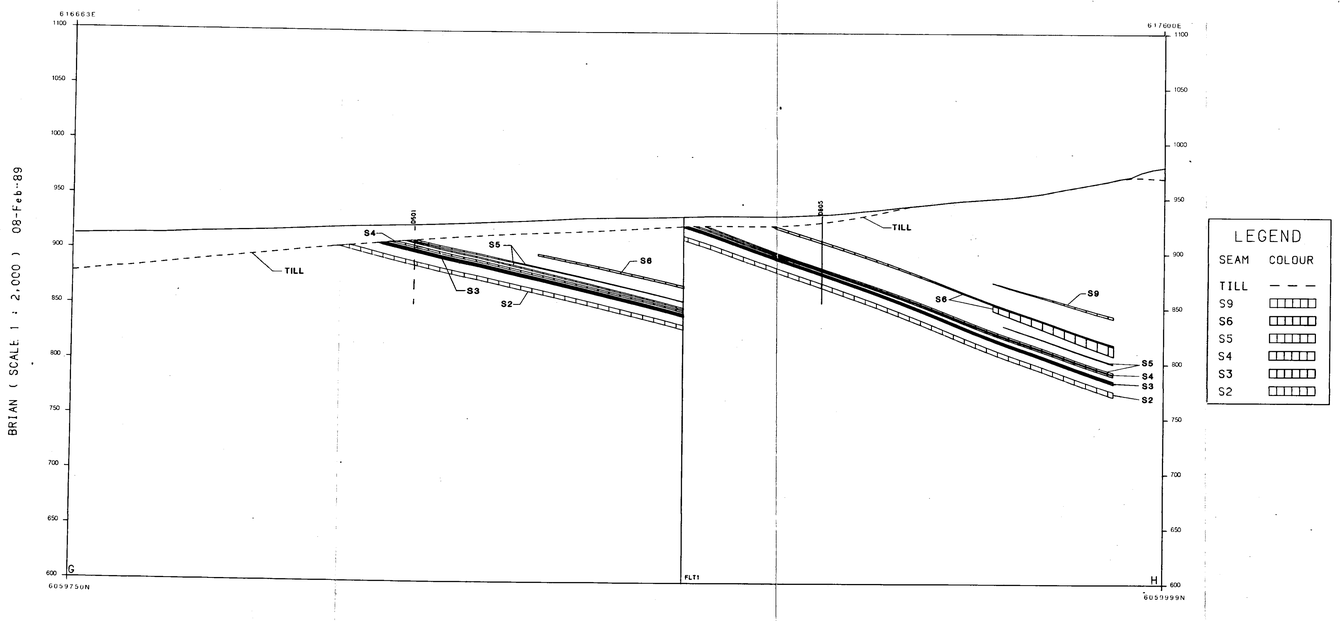
TELKWA CROSS SECTIONS

(SEC. A-B, SEC. C-D, SEC. E-F)

AUTHOR: B. MCKINSTRY	SCALE: 1 : 2000	DRAWN BY:
DATE: 89-02-22	REVISED:	DRAWING No:
To Accompany		

743 encl 8 (2)
pt 4

TKWPIT8 PROJECT -- SHEET PIT8

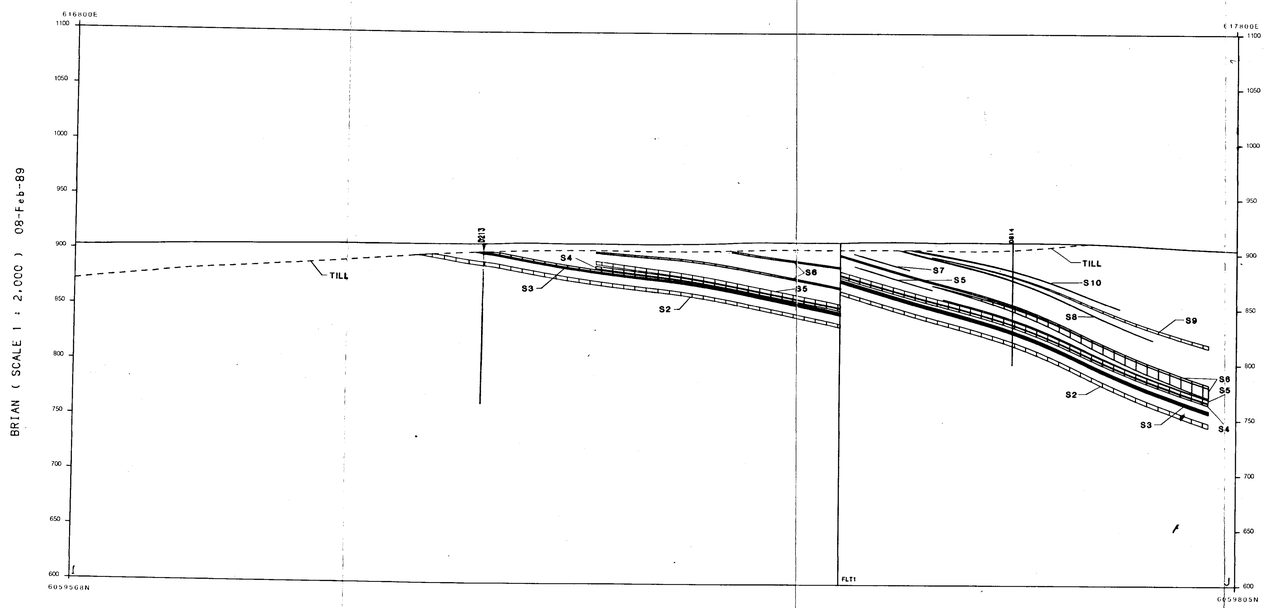


SECTION G-H

LEGEND

SEAM	COLOUR
TILL	
S9	
S6	
S5	
S4	
S3	
S2	

TKWPIT8 PROJECT -- SHEET PIT8



SECTION I-J

LEGEND

SEAM	COLOUR
TILL	
S10	
S9	
S8	
S7	
S6	
S5	
S4	
S3	
S2	

0 50 100 150 200m

Crows Nest Resources Limited
ENGINEERING

TELKWA CROSS SECTIONS

(SEC. G-H, SEC. I-J)

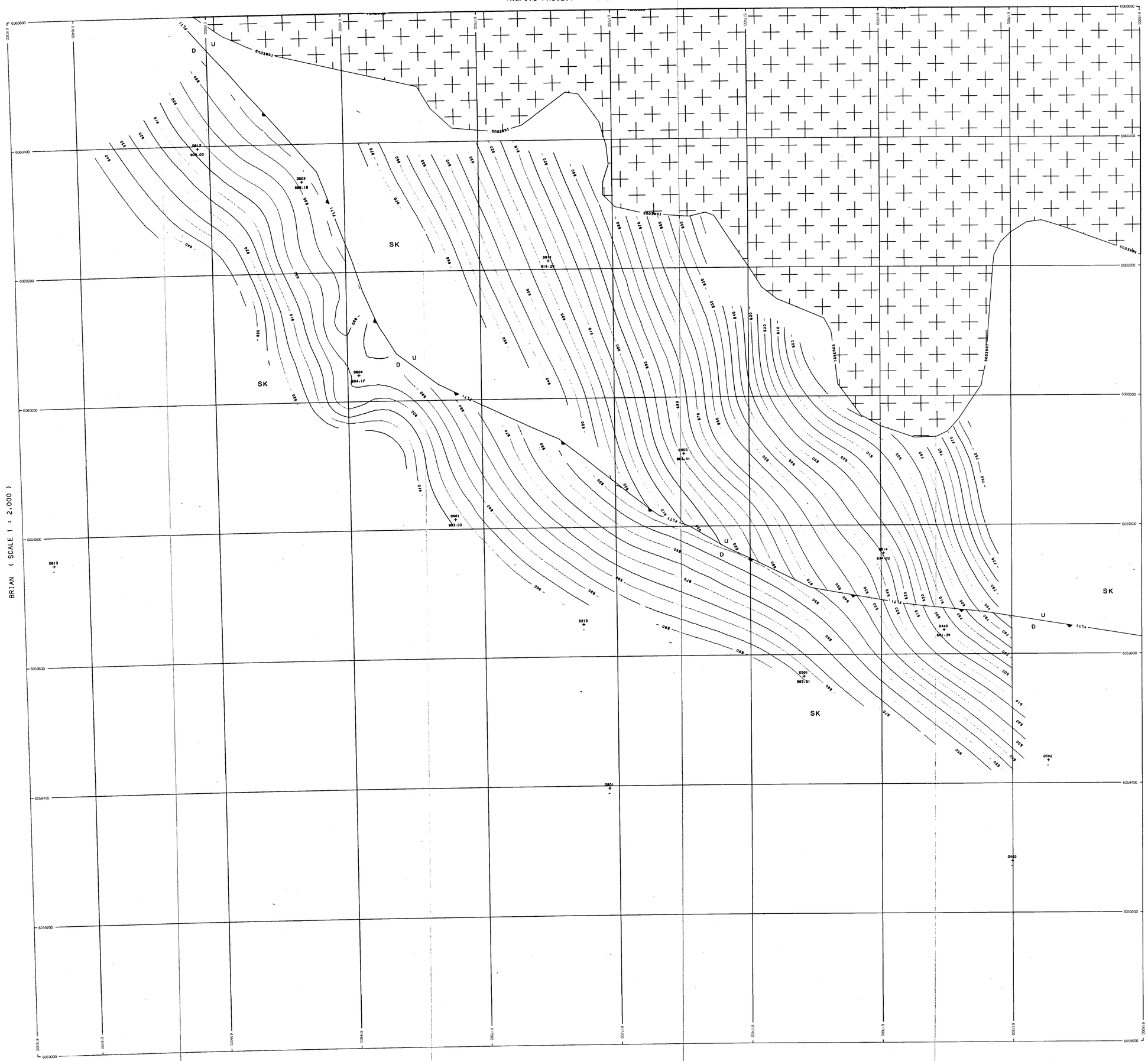
AUTHOR: B MCKINSTRY	SCALE: 1 : 2000	DRAWN BY:
DATE: 89-02-22	REVISED:	DRAWING No.
To Accompany		

743
pt 4
encl 8 (3)

TKWPIT8 PROJECT - SHEET PIT8

BRIAN (SCALE 1 : 2,000)

NAME
+ = SELECT D
S4 FLOOR



MID RESOLUTION MODEL CONTOURS OF "S4 FLOOR" AT INTERVALS OF 5

LEGEND

Tertiary Intrusive

Skeena Group — SK

Drill Holes +

Fault — U / D

0 50 100 150 200m

Crows Nest Resources Limited
ENGINEERING

STRUCTURE CONTOUR MAP
(SEAM 4 FLOOR)

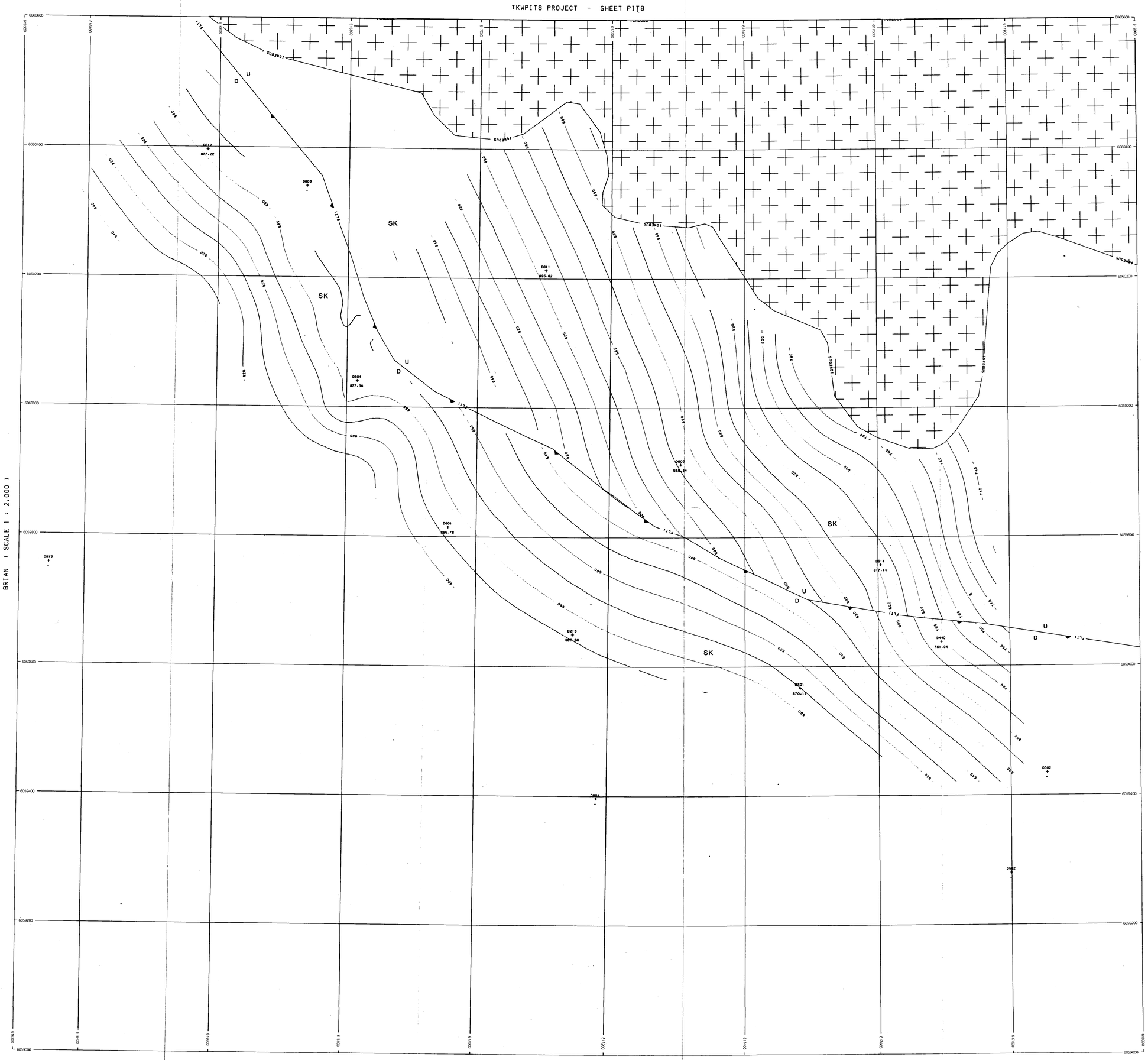
(1)

AUTHOR: B MCKINSTRY	SCALE: 1 : 2000	DRAWN BY:	
DATE: 89-02-27	REVISED:	DRAWING No:	
To Accompany			

743
pt. 1
Encl. 9

TKWPIT8 PROJECT - SHEET PIT8

BRIAN (SCALE 1 : 2,000)



MID RESOLUTION MODEL CONTOURS OF "S2 FLOOR" AT INTERVALS OF 10

NAME
+ = SELECT D
S2 FLOOR

LEGEND

Tertiary Intrusive	✚
Skeena Group	SK
Drill Holes	+
Fault	D ▸ U

0 50 100 150 200m

Crows Nest Resources Limited
ENGINEERING

STRUCTURE CONTOUR MAP
(SEAM 2 FLOOR)

9

②

AUTHOR: B. MCKINSTRY	SCALE: 1 : 2000	DRAWN BY:
DATE: 89-02-22	REVISED:	DRAWING No:
To Accompany		

743
pt. 4
Encl. 9

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 801 Total Depth 84.74 m

Northing 6059396.904 Easting 617185.424 Elevation 888.767

Drilling Contractor J. T. THOMAS DIAMOND DRILLING

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Neutron Porosity, Dipmeter.

Water Level G. L. Comments

Seams Intersected No Coal

743

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 802 Total Depth 91.0 m

Northing 6060251.429 Easting 616192.708 Elevation 930.221

Drilling Contractor J.T. THOMAS DIAMOND DRILLING

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Neutron Porosity, Focussed Electric, Dipmeter

Water Level 17.20 Comments

Seams Intersected No Coal

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 803 Total Depth 131 m

Northing 6060341.250 Easting 616736.500 Elevation 973.920

Drilling Contractor J.T. THOMAS DIAMOND DRILLING

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.) ~~$~~

Logs run Coal Lithology (Gamma, Density, Caliper)

Water Level G.L. Comments

Seams Intersected 3L, 3U, 4, 4R, 5A, 5B, 5C, 5D, 6A 6B, 7, 8

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 804 Total Depth 82.3 m

Northing 6060040.144 Easting 616816.032 Elevation 939.704

Drilling Contractor J.T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Coal Quality, Seam Thickness, Focussed Electric, Neutron Porosity, Dipmeter.

Water Level 6.9 m Comments

Seams Intersected 2, 3L, 3U, 4, 5A, 5B, 5C, 6B, 7

BWM/bc.1

DRILL HOLE PARTICULARS

Project TECKWA

Hole I.D. TW - 805 Total Depth 79.25

Northing 6059912.691 Easting 617304.456 Elevation 933.83

Drilling Contractor J.T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Coal Quality, Focused Electric, Neutron Porosity, Seam Thickness, Dipmeter

Water Level G.L. Comments

Seams Intersected 2, 3L, 3U, 4, 5A, 6B

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 806 Total Depth 60.96

Northing 6060713.870 Easting 615390.615 Elevation 899.157

Drilling Contractor J. T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Focussed Electric, Neutron Porosity, Coal Quality, Dipmeter.

Water Level 4.9 m Comments

Seams Intersected one thin coal seam at subcrop.

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 807 Total Depth 118.8

Northing 6062397.662 Easting 615629.275 Elevation 889.94

Drilling Contractor J. T. THOMAS DIAMOND DRILLING.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (GAMMA, DENSITY, CALIPER), Neutron Porosity, Coal Quality, SEAM THICKNESS, DIPMETER

Water Level 4.0 Comments

Seams Intersected 2, 4, 5, ??

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 808 Total Depth 60.96m

Northing 6062569.377 Easting 614525.459 Elevation 895.82

Drilling Contractor J.T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.) Logger rolled truck damaging equipment making it impossible to log the hole

Logs run NONE

Water Level ? Comments

Seams Intersected 1 ZONE

BWM/bc.1

DRILL HOLE PARTICULARS

Project TECKWA

Hole I.D. TW 809 Total Depth 112.8

Northing 6060975.676 Easting 616215.893 Elevation 976.281

Drilling Contractor J. T. THOMAS DIAMOND DRILLING

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (GAMMA, DENSITY, CALIPER), Coal Quality, Neutron Porosity, Seam Thickness, Focussed Electric, Dipmeter, Continuous Verticality.

Water Level 43.4 m Comments

Seams Intersected 2, 3C, 3U, 5, 6, 7

BWM/bc 1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 810 Total Depth ~~999.64~~ 152.4

Northing 6060622.984 Easting 616484.579 Elevation 999.64

Drilling Contractor J. T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Gamma

Water Level 22.5 ? Comments

Seams Intersected No Coal

BWM/bc 1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 811 Total Depth 213.4

Northing 6060212.914 Easting 617102.807 Elevation 995.313

Drilling Contractor J. T. THOMAS DIAMOND DRILLING LTD

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (GAMMA, DENSITY, CALIPER), DIPMETER, CONTINUOUS VERTICALITY

Water Level G. L. Comments

Seams Intersected 2, 4, 5A, 5B, 5C, 5D, 6B, 8, 9, 10

BWM/bc 1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 812 Total Depth 115.8

Northing 6060395.923 Easting 616582.715 Elevation 975.139

Drilling Contractor J. T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES. 30 feet of casing was cemented in hole to prevent water flow in overburden.

Logging Contractor BPB INSTRUMENTS LTD.

Logging Engineer R. RACE

Comments (cost, etc.)

Logs run Coal Lithology (GAMMA, DENSITY, CALIPER), Seam Thickness, Coal Quality

Water Level G. L. Comments

Seams Intersected 2, 3L, 3U, 4, 4R, 5A, 5B, 6A, 6B, 8

BWM/bc.1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 813 Total Depth 137.0 m

Northing 6060683.925 Easting 616346.014 Elevation 983.044

Drilling Contractor J. T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper), Neutron Porosity, Coal Quality, Seam Thickness, Dipmeter, Continuous Verticality.

Water Level 6 m Comments

Seams Intersected one coal seam (.84 m) thick. One other minor seam (.15 m)

BWM/bc 1

DRILL HOLE PARTICULARS

Project TELKWA

Hole I.D. TW - 814 Total Depth 110.0 m

Northing 6059756.621 Easting 617604.428 Elevation 910.132

Drilling Contractor J. T. THOMAS DIAMOND DRILLING LTD.

Drilling Type (Diamond, Rotary, etc.) DIAMOND NQ

Comments (cost, etc.)

Was hole cemented? YES

Logging Contractor BPB INSTRUMENTS

Logging Engineer R. RACZ

Comments (cost, etc.)

Logs run Coal Lithology (Gamma, Density, Caliper) Seam Thickness Neutron Porosity, Focussed Electric, Coal Quality, Dipmeter, Continuous verticality.

Water Level 23 m Comments

Seams Intersected 2, 3L, 3U, 4, 5A, 5B, 6A, 6B, 8, 9, 10

BWM/bc.1

Telkwa Coal
Project 1988

Clean Coal Data
Quality Data

00743
part 2

LORING LABORATORIES LTD.

629 BEAVERDAM RD., N.E.,
CALGARY, ALBERTA.
TEL: (403) 274-2777 FAX: (403) 275-0541

TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-01 DEPTH: 34.0 - 34.61

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.40	13.48	2.16	
	A.D.	1.19	13.65	2.19	2.8
	D.B.	-----	13.81	2.22	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.21	[illegible]	[illegible].39	64.58	1.79	7479
	D.B.	-----	[illegible]	[illegible].64	65.37	1.81	7571

1.7 FLT. % REC. 89.35 F.S.I. 0

****

SAMPLE ID : 88-02 DEPTH: 48.9 - 49.8

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.30	11.39	1.82	
	A.D.	0.98	11.54	1.84	2.7
	D.B.	-----	11.65	1.86	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.21	12.46	23.87	62.46	1.62	7592
	D.B.	-----	12.61	24.16	63.23	1.64	7685

1.7 FLT. % REC. 93.53 F.S.I. 1.5

743

LORING LABORATORIES LTD.
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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-03 DEPTH: 52.96 - 54.0

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.66	19.10	1.60	
	A.D.	0.94	19.44	1.63	2.8
	D.B.	-----	19.62	1.65	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.29	12.94	23.45	62.32	1.22	7405
	D.B.	-----	13.11	23.76	63.13	1.24	7502

1.7 FLT. % REC. 85.49 F.S.I. 1.0

****

SAMPLE ID : 88-04 DEPTH: 55.4 - 60.55

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.08	20.76	1.93	
	A.D.	1.27	21.15	1.97	3.6
	D.B.	-----	21.42	2.00	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.29	13.67	23.04	62.00	1.14	7198
	D.B.	-----	13.85	23.34	62.81	1.15	7292

1.7 FLT. % REC. 84.96 F.S.I. 0.5

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-05 DEPTH: 62.78 - 64.35

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.90	21.86	1.24	
	A.D.	1.36	22.21	1.26	4.0
	D.B.	-----	22.52	1.28	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.17	12.69	23.94	62.20	0.92	7107
	D.B.	-----	12.84	24.22	62.94	0.93	7191

1.7 FLT. % REC. 80.21 F.S.I. 1.0

****

SAMPLE ID : 88-06 DEPTH: 66.85 - 67.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	1.63	32.47	5.80	
	A.D.	1.13	32.64	5.83	3.7
	D.B.	-----	33.01	5.90	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.19	18.77	23.00	57.04	4.04	6734
	D.B.	-----	19.00	23.28	57.73	4.09	6815

1.7 FLT. % REC. 67.18 F.S.I. 1.5

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-07 DEPTH: 72.6 - 74.39

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.91	19.68	0.99	
	A.D.	1.49	20.18	1.01	3.8
	D.B.	-----	20.49	1.03	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.20	15.42	24.07	59.31	0.83	6911
	D.B.	-----	15.61	24.36	60.03	0.84	6995

1.7 FLT. % REC. 88.19 F.S.I. 1.0

****

SAMPLE ID : 88-08 DEPTH: 80.25 - 80.70

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.38	32.75	0.56	
	A.D.	1.43	33.07	0.57	3.3
	D.B.	-----	33.55	0.58	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.53	21.74	25.86	50.87	0.74	6317
	D.B.	-----	22.08	26.26	51.66	0.75	6415

1.7 FLT. % REC. 69.87 F.S.I. 2.5

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-09 DEPTH: 81.95 - 82.55

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.42	37.33	2.51	
	A.D.	1.38	37.73	2.54	3.2
	D.B.	-----	38.26	2.58	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.09	25.85	20.76	52.30	0.99	6220
	D.B.	-----	26.13	20.99	52.88	1.00	6289

1.7 FLT. % REC. 65.92 F.S.I. 1.5

****

SAMPLE ID : 88-10 DEPTH: 83.7 - 84.45

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.68	18.20	2.68	
	A.D.	1.35	18.45	2.72	3.6
	D.B.	-----	18.70	2.76	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.34	13.07	25.45	60.14	2.27	7079
	D.B.	-----	13.25	25.80	60.96	2.30	7175

1.7 FLT. % REC. 88.33 F.S.I. 1.5

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-11 DEPTH: 85.2 - 85.74

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.88	21.69	0.77	
	A.D.	1.40	22.02	0.78	3.0
	D.B.	-----	22.33	0.79	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.56	14.48	26.11	57.85	0.67	6940
	D.B.	-----	14.71	26.52	58.77	0.68	7050

1.7 FLT. % REC. 83.82 F.S.I. 1.5

****

SAMPLE ID : 88-12 DEPTH: 89.05 - 89.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.14	13.51	1.91	
	A.D.	1.43	13.75	1.94	3.6
	D.B.	-----	13.95	1.97	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.63	10.67	27.16	60.54	1.49	7405
	D.B.	-----	10.85	27.61	61.54	1.51	7528

1.7 FLT. % REC. 93.42 F.S.I. 1.5

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-13 DEPTH: 90.47 - 91.15

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.81	16.92	1.04	
	A.D.	1.63	17.30	1.06	3.5
	D.B.	-----	17.59	1.08	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.21	11.80	26.62	60.37	0.87	7199
	D.B.	-----	11.94	26.95	61.11	0.88	7287

1.7 FLT. % REC. 89.73 F.S.I. 1.5

****

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 4

SAMPLE ID : 88-14 DEPTH: 19.08 - 19.93

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.65	26.85	1.07	
	A.D.	1.41	27.48	1.10	3.1
	D.B.	-----	27.87	1.12	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.31	10.35	33.36	54.98	1.24	7459
	D.B.	-----	10.49	33.80	55.71	1.26	7558

1.7 FLT. % REC. 69.07 F.S.I. 5.0

****

SAMPLE ID : 88-15 DEPTH: 21.68 - 23.28

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.08	13.26	1.58	
	A.D.	1.41	13.49	1.61	3.0
	D.B.	-----	13.68	1.63	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.57	9.15	29.44	59.84	1.26	7373
	D.B.	-----	9.30	29.91	60.79	1.28	7491

1.7 FLT. % REC. 90.79 F.S.I. 1.0

LORING LABORATORIES LTD.

629 BEAVERDAM RD., N.E.,
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TEL: (403) 274-2777 FAX: (403) 275-0541

TO: CROWSNEST RESOURCES LTD.
ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLES: DDH-804 /

SAMPLE ID : 16 DEPTH: 23.28 - 23.65

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.02	32.23	26.72	40.03	1.86	5433
	D.B.	-----	32.56	27.00	40.44	1.88	5489
1.7 FLT.	% REC.	11.53		F.S.I.	3.5		

****

SAMPLE ID : 19 DEPTH: 31.84 - 32.26

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.15	28.19	27.34	43.32	1.09	5764
	D.B.	-----	28.52	27.66	43.82	1.10	5831
1.7 FLT.	% REC.	3.06		F.S.I.	7.5		

****

SAMPLE ID : 24 DEPTH: 45.06 - 45.26

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.18	54.34	21.93	22.55	0.31	2649
	D.B.	-----	54.99	22.19	22.82	0.31	2681
1.7 FLT.	% REC.	1.60		F.S.I.	1.5		

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CALGARY, ALBERTA.
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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-17 DEPTH: 23.65 - 24.08

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	2.45	21.57			1.39	
	A.D.	1.20	21.85			1.41	2.2
	D.B.	-----	22.12			1.43	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.41	18.72	28.10	51.77	1.22	6625
	D.B.	-----	18.99	28.50	52.51	1.24	6720

1.7 FLT. % REC. 93.21 F.S.I. 1.5

****

SAMPLE ID : 88-18 DEPTH: 31.02 - 31.84

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	3.12	35.50			3.45	
	A.D.	1.30	36.17			3.51	3.4
	D.B.	-----	36.65			3.56	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.34	22.92	26.47	49.27	1.19	6200
	D.B.	-----	23.23	26.83	49.94	1.21	6284

1.7 FLT. % REC. 66.21 F.S.I. 1.0

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-21 DEPTH: 36.16 - 37.56

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.12	18.55	1.39	
	A.D.	1.38	18.88	1.42	3.6
	D.B.	-----	19.14	1.44	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.17	14.50	29.07	55.26	1.10	6932
	D.B.	-----	14.67	29.41	55.91	1.11	7014

1.7 FLT. % REC. 91.95 F.S.I. 2.5

****

SAMPLE ID : 88-22 DEPTH: 38.54 -39.06

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.38	38.55	2.84	
	A.D.	1.43	38.93	2.87	2.6
	D.B.	-----	39.49	2.91	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.90	26.35	21.82	50.93	1.20	5668
	D.B.	-----	26.59	22.02	51.39	1.21	5719

1.7 FLT. % REC. 50.13 F.S.I. 1.0

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-23 DEPTH: 43.40 - 45.06

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.10	17.13	1.47	
	A.D.	1.23	17.46	1.50	3.7
	D.B.	-----	17.68	1.52	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.22	12.82	28.20	57.76	0.97	7233
	D.B.	-----	12.98	28.55	58.47	0.98	7322

1.7 FLT. % REC. 88.58 F.S.I. 1.0

****

SAMPLE ID : 88-25 DEPTH: 45.26 - 45.53

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.92	36.01	0.37	
	A.D.	1.01	36.72	0.38	2.8
	D.B.	-----	37.09	0.38	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.16	26.21	25.17	47.46	0.45	8423
	D.B.	-----	26.52	25.47	48.02	0.46	8522

1.7 FLT. % REC. 64.38 F.S.I. 1.0

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-26 DEPTH: 47.15 - 48.18

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.15	14.41	1.29	
	A.D.	0.91	14.74	1.32	4.1
	D.B.	-----	14.88	1.33	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.14	8.72	29.25	60.89	0.99	7497
	D.B.	-----	8.82	29.59	61.59	1.00	7583

1.7 FLT. % REC. 92.13 F.S.I. 2.5

****

SAMPLE ID : 88-27 DEPTH: 49.28 - 50.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.47	20.48	0.73	
	A.D.	1.08	20.99	0.75	3.4
	D.B.	-----	21.22	0.76	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.09	15.05	26.86	57.00	0.78	6856
	D.B.	-----	15.22	27.16	57.63	0.79	6932

1.7 FLT. % REC. 88.15 F.S.I. 1.0

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-28 DEPTH: 58.57 - 62.14

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.99	ERR	ERR	
	A.D.	1.10	24.39	0.55	3.8
	D.B.	-----	24.66	0.56	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.22	12.67	27.57	58.54	0.48	7195
	D.B.	-----	12.83	27.91	59.26	0.49	7284

1.7 FLT. % REC. 82.91 F.S.I. 1.0

****

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TO: CROWSNEST RESOURCES LTD.
ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

ASH FUSION TEMPERATURE
1.70 FLOAT

HOLES: TW-804 /

DEGREE C

SAMPLE	REDUCING				*	OXIDIZING			
	TI	TS	TH	TF	*	TI	TS	TH	TF
15	1411	1453	1467	+1472	*	1419	+1472	+1472	+1472
21	1351	1417	+1472	+1472	*	+1472	+1472	+1472	+1472
23	1259	1303	1317	1364	*	1295	1324	1332	1367
26	1274	1288	1293	1359	*	1293	1311	1327	1367
27	1288	1303	1314	1369	*	1303	1314	1324	1401
28	1253	1317	1343	1438	*	1338	1367	1374	1443

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: TW-804 / T[illegible]

SAMPLE	H2O %	ASH %	C %	H %	N %	S %	O %
15	1.57	9.15	73.03	4.45	1.04	1.26	9.50
21	1.17	14.50	70.45	4.72	1.05	1.10	7.01
23	1.22	12.82	73.11	4.94	0.99	0.97	5.95
26	1.14	8.72	76.60	4.37	1.02	0.99	7.16
27	1.09	15.05	71.09	3.98	0.93	0.78	7.08
28	1.22	12.67	72.34	4.50	1.04	0.48	7.75

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PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: TW-804 / TI ...

SAMPLE #	H.G.I.
15	69
21	70
23	74
26	75
27	73
28	72

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PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

MINERAL ANALYSIS OF ASH
1.70 FLOAT

HOLES: TW-804 / [illegible]

	%									
SAMPLE	Na2O	K2O	CaO	MgO	Fe2O3	Al2O3	SO3	TiO2	SiO2	P2O5
15	0.79	0.28	4.20	0.52	8.32	24.95	0.47	1.60	54.08	0.61
21	0.94	0.37	2.21	0.70	5.18	28.35	0.98	2.42	53.98	1.02
23	0.61	0.20	8.68	1.23	5.06	15.50	3.56	0.82	60.80	2.01
26	0.57	0.16	6.41	0.95	6.84	18.15	2.87	1.78	58.08	2.40
27	0.54	0.16	8.84	2.10	4.38	13.99	4.15	1.42	61.04	1.10
28	0.80	0.39	5.82	1.51	2.75	23.82	2.61	2.18	53.84	1.52

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ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 29 DEPTH: 22.76 - 24.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.34	12.20	1.72	
	A.D.	0.92	12.43	1.75	2.7
	D.B.	-----	12.55	1.77	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.88	9.09	28.66	61.37	1.23	7513
	D.B.	-----	9.17	28.91	61.91	1.24	7580

1.7 FLT. % REC. 92.76 F.S.I. 1.5

****

SAMPLE ID : 30 DEPTH: 47.51 - 48.61

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.77	35.51	0.87	
	A.D.	0.87	36.20	0.89	2.9
	D.B.	-----	36.52	0.90	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.92	21.00	26.84	51.24	0.85	6383
	D.B.	-----	21.19	27.09	51.72	0.86	6442

1.7 FLT. % REC. 69.15 F.S.I. 1.0

743

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 32 DEPTH: 49.35 - 50.42

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.09	14.63	0.94	
	A.D.	0.98	14.93	0.96	3.0
	D.B.	-----	15.08	0.97	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.75	9.41	28.94	60.90	0.69	7787
	D.B.	-----	9.48	29.16	61.36	0.70	7846

1.7 FLT. % REC. 93.37 F.S.I. 1.0

****

SAMPLE ID : 34 DEPTH: 50.58 - 50.89

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.98	51.97	0.60	
	A.D.	1.42	52.81	0.61	3.0
	D.B.	-----	53.57	0.62	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.43	31.40	23.29	43.88	0.47	5567
	D.B.	-----	31.86	23.63	44.52	0.48	5648

1.7 FLT. % REC. 41.80 F.S.I. 0.5

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 36 DEPTH: 51.84 - 52.73

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.87	13.05	1.27	
	A.D.	1.74	13.22	1.29	3.4
	D.B.	-----	13.45	1.31	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.81	10.55	28.30	59.34	1.08	7357
	D.B.	-----	10.74	28.82	60.43	1.10	7493

1.7 FLT. % REC. 95.20 F.S.I. 1.5

****

SAMPLE ID : 38 DEPTH: 53.09 - 54.16

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.99	16.73	1.50	
	A.D.	1.91	16.92	1.52	4.0
	D.B.	-----	17.25	1.55	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.88	12.27	26.40	59.45	1.03	6443
	D.B.	-----	12.51	26.91	60.59	1.05	6566

1.7 FLT. % REC. 89.45 F.S.I. 1.0

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 39 DEPTH: 61.33 - 61.57

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.75	48.75	2.08	
	A.D.	1.50	49.38	2.11	3.3
	D.B.	-----	50.13	2.14	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.07	30.46	24.11	44.36	1.36	5632
	D.B.	-----	30.79	24.37	44.84	1.37	5693

1.7 FLT. % REC. 33.18 F.S.I. 1.0

****

SAMPLE ID : 41 DEPTH: 62.11 - 65.49

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.75	22.51	0.71	
	A.D.	1.56	22.79	0.72	3.0
	D.B.	-----	23.15	0.73	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.24	14.60	29.33	54.83	0.57	6874
	D.B.	-----	14.78	29.70	55.52	0.58	6960

1.7 FLT. % REC. 84.67 F.S.I. 1.5

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLE: DDH-805

SAMPLE ID : 33 DEPTH: 50.42 - 50.58

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.12	28.71	23.96	46.21	1.51	5769
	D.B.	-----	29.04	24.23	46.73	1.53	5834

1.7 FLT. % REC. 3.31 F.S.I. 2.5

****

SAMPLE ID : 35 DEPTH: 50.89 - 51.84

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.08	38.44	23.65	36.83	2.31	4944
	D.B.	-----	38.86	23.91	37.23	2.34	4998

1.7 FLT. % REC. 1.37 F.S.I. 5.0

****

SAMPLE ID : 37 DEPTH: 52.73 - 53.09

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.92	43.29	20.98	34.81	1.96	4431
	D.B.	-----	43.69	21.17	35.13	1.98	4472

1.7 FLT. % REC. 1.44 F.S.I. 2.5

****

SAMPLE ID : 40 DEPTH: 61.57 - 62.11

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.77	30.74	26.40	42.09	2.29	5639
	D.B.	-----	30.98	26.60	42.42	2.31	5683

1.7 FLT. % REC. 7.05 F.S.I. 3.5

****

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLES: / DDH-805

SAMPLE ID : 31 DEPTH: 48.61 - 49.35

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.94	34.13	22.65	42.28	1.84	5230
	D.B.	-----	34.45	22.86	42.68	1.86	5280

1.7 FLT. % REC. 3.33 F.S.I. 1.5

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: / TW-805

SAMPLE	H2O %	ASH %	C %	H %	N %	S %	O %
29	0.88	9.09	76.35	4.14	1.09	1.23	7.22
41	1.24	14.60	69.96	4.10	0.99	0.57	8.54

NOTE: HYDROGEN AND OXYGEN DO NOT INCLUDE H AND O FROM SAMPLE MOISTURE. VALUE OF OXYGEN BY DIFFERENCE.

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

ASH FUSION TEMPERATURE
1.70 FLOAT

HOLES: [illegible] / TW-805

DEGREE C

SAMPLE	REDUCING				*	OXIDIZING			
	TI	TS	TH	TF	*	TI	TS	TH	TF
29	1324	1345	1367	1459	*	1359	1390	1422	1464
41	1261	1266	1280	1359	*	1295	1306	1319	1361

TI = INITIAL TEMPERATURE
TS = SOFTENING TEMPERATURE
TH = HEMISPHERIC TEMPERATURE
TF = FLUID TEMPERATURE

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: TW- / TW-805

SAMPLE #	*	H.G.I.
29	*	72
	*	
41	*	72

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31878-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

MINERAL ANALYSIS OF ASH HOLES: TW-805
1.70 FLOAT

	%									
SAMPLE	Na2O	K2O	CaO	MgO	Fe2O3	Al2O3	SO3	TiO2	SiO2	P2O5
29	0.79	0.28	4.67	0.90	5.38	23.44	2.20	1.75	57.18	1.77
41	0.78	0.30	11.53	1.72	3.22	21.17	5.54	1.70	49.74	1.39

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ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 6

SAMPLE ID : 42 DEPTH: 9.10 - 9.75

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.98	44.44	0.44	
	A.D.	1.40	45.16	0.45	3.4
	D.B.	-----	45.80	0.46	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.26	20.98	25.26	52.50	0.54	6399
	D.B.	-----	21.25	25.58	53.17	0.55	6481

1.7 FLT. % REC. 54.29 F.S.I. 1.5

****

743

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ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 43 DEPTH: 9.64 - 10.79

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.88	60.10	6.11	
	A.D.	1.21	60.96	6.20	4.3
	D.B.	-----	61.71	6.28	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.27	19.82	22.16	56.75	2.52	6706
	D.B.	-----	20.07	22.45	57.48	2.55	6792

1.7 FLT. % REC. 21.70 F.S.I. 2.0

****

SAMPLE ID : 44 DEPTH: 11.52 - 13.01

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.60	40.37	1.99	
	A.D.	1.27	40.92	2.02	3.1
	D.B.	-----	41.45	2.05	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.24	22.31	22.78	53.67	1.57	6466
	D.B.	-----	22.59	23.07	54.34	1.59	6547

1.7 FLT. % REC. 54.34 F.S.I. 4.5

743

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ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 45 DEPTH: 14.22 - 15.31

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	2.81	62.66			3.90	
	A.D.	1.34	63.13			3.93	4.1
	D.B.	-----	63.99			3.98	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.25	24.97	22.74	51.04	1.83	6225
	D.B.	-----	25.29	23.03	51.69	1.85	6304

1.7 FLT. % REC. 18.39 F.S.I. 6.0

****

SAMPLE ID : 47 DEPTH: 15.69 - 16.21

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	2.07	33.57			1.85	
	A.D.	1.06	33.92			1.87	2.5
	D.B.	-----	34.28			1.89	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.72	19.35	23.17	56.76	1.78	6878
	D.B.	-----	19.49	23.34	57.17	1.79	6928

1.7 FLT. % REC. 68.73 F.S.I. 4.5

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 48 DEPTH: 17.85 - 18.30

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.29	38.28	0.60	
	A.D.	0.98	39.29	0.62	2.9
	D.B.	-----	39.68	0.63	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.77	19.88	24.68	54.67	0.89	6817
	D.B.	-----	20.03	24.87	55.09	0.90	6870

1.7 FLT. % REC. 42.29 F.S.I. 7.0

****

SAMPLE ID : 49 DEPTH: 22.28 - 22.79

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.52	55.51	0.25	
	A.D.	1.22	56.83	0.26	3.8
	D.B.	-----	57.53	0.26	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.99	12.14	27.42	59.45	0.68	7447
	D.B.	-----	12.26	27.69	60.04	0.69	7521

1.7 FLT. % REC. 22.34 F.S.I. 8.0

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ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 50 DEPTH: 23.70 - 24.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.78	45.92	0.27	
	A.D.	1.05	46.64	0.27	3.2
	D.B.	-----	47.13	0.27	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	23.58	22.90	52.76	0.42	6264
	D.B.	-----	23.76	23.08	53.16	0.42	6312

1.7 FLT. % REC. 46.90 F.S.I. 1.0

****

SAMPLE ID : 51 DEPTH: 40.80 - 41.90

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.57	44.54	0.34	
	A.D.	1.15	45.19	0.34	3.6
	D.B.	-----	45.72	0.34	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	25.96	21.88	51.40	0.49	6101
	D.B.	-----	26.16	22.05	51.79	0.49	6148

1.7 FLT. % REC. 40.39 F.S.I. 3.0

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 52 DEPTH: 43.40 - 43.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.02	65.70	0.40	
	A.D.	1.22	66.75	0.41	4.0
	D.B.	-----	67.57	0.42	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.09	18.76	24.23	55.92	0.74	6693
	D.B.	-----	18.97	24.50	56.54	0.75	6767

1.7 FLT. % REC. 14.69 F.S.I. 7.0

****

SAMPLE ID : 53 DEPTH: 46.20 - 47.00

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.77	61.16	0.14	
	A.D.	1.10	62.21	0.14	4.0
	D.B.	-----	62.90	0.14	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.92	21.91	23.19	53.98	0.33	6437
	D.B.	-----	22.11	23.41	54.48	0.33	6497

1.7 FLT. % REC. 26.80 F.S.I. 3.5

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 54 DEPTH: 47.60 - 48.14

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	2.55	41.31			0.26	
	A.D.	1.10	41.94			0.26	3.8
	D.B.	-----	42.41			0.26	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.08	23.73	23.45	51.74	0.39	6270
	D.B.	-----	23.99	23.71	52.30	0.39	6338

1.7 FLT. % REC. 49.01 F.S.I. 4.0

****

SAMPLE ID : 55 DEPTH: 50.60 - 51.15

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	2.59	52.19			0.20	
	A.D.	1.12	52.98			0.20	3.8
	D.B.	-----	53.58			0.20	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.84	17.26	26.79	55.11	0.39	6613
	D.B.	-----	17.41	27.02	55.58	0.39	6669

1.7 FLT. % REC. 26.73 F.S.I. 3.5

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 8

SAMPLE ID : 56 DEPTH: 11.36 - 12.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.46	26.21	2.96	
	A.D.	0.90	26.63	3.01	4.7
	D.B.	-----	26.87	3.04	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.73	11.44	12.15	75.68	2.07	7345
	D.B.	-----	11.52	12.24	76.24	2.09	7399

1.7 FLT. % REC. 74.45 F.S.I. 0.0

****

SAMPLE ID : 57 DEPTH: 12.51 - 13.55

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.30	66.22	2.31	
	A.D.	1.55	67.42	2.35	4.8
	D.B.	-----	68.48	2.39	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.96	22.80	9.57	66.67	1.50	6359
	D.B.	-----	23.02	9.66	67.32	1.51	6421

1.7 FLT. % REC. 19.40 F.S.I. 0.0

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 8

SAMPLE ID : 58 DEPTH: 14.03 - 14.63

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.58	29.90	3.36	
	A.D.	1.21	30.64	3.44	4.6
	D.B.	-----	31.02	3.48	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.26	13.87	9.22	75.65	1.60	6967
	D.B.	-----	14.05	9.34	76.62	1.62	7056

1.7 FLT. % REC. 58.48 F.S.I. 0.0

****

SAMPLE ID : 59 DEPTH: 15.01 - 16.04

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.45	70.09	0.20	
	A.D.	1.70	72.11	0.21	5.8
	D.B.	-----	73.36	0.21	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.06	14.67	11.97	72.30	0.67	6586
	D.B.	-----	14.83	12.10	73.07	0.68	6657

1.7 FLT. % REC. 7.66 F.S.I. 0.0

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 61 DEPTH: 50.77 - 52.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.69	16.13	6.11	
	A.D.	0.79	16.29	6.36	5.6
	D.B.	-----	16.92	6.41	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.84	7.76	27.35	64.05	2.11	7702
	D.B.	-----	7.83	27.58	64.59	2.13	7767

1.7 FLT. % REC. 78.03 F.S.I. 3.0

****

SAMPLE ID : 62 DEPTH: 56.95 - 57.52

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.11	33.40	4.17	
	A.D.	0.86	34.18	4.27	4.1
	D.B.	-----	34.48	4.31	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.68	21.40	25.09	52.83	2.44	6508
	D.B.	-----	21.55	25.26	53.19	2.46	6553

1.7 FLT. % REC. 64.23 F.S.I. 2.5

743

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 64 DEPTH: 58.44 - 60.79

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	5.15	18.27	2.11	
	A.D.	1.39	18.99	2.19	4.2
	D.B.	-----	19.26	2.22	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.33	12.01	25.30	61.36	0.98	7088
	D.B.	-----	12.17	25.64	62.19	0.99	7184

1.7 FLT. % REC. 86.10 F.S.I. 3.0

****

SAMPLE ID : 65 DEPTH: 64.70 - 65.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	1.34	43.96	3.64	
	A.D.	1.10	44.07	3.65	3.6
	D.B.	-----	44.56	3.69	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.11	23.39	22.59	52.91	2.71	6346
	D.B.	-----	23.65	22.84	53.50	2.74	6417

1.7 FLT. % REC. 54.38 F.S.I. 1.0

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 66 DEPTH: 75.05 - 78.62

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.30	23.33	1.88	
	A.D.	0.92	24.15	1.95	2.8
	D.B.	-----	24.37	1.97	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.88	12.46	24.96	61.70	1.80	7279
	D.B.	-----	12.57	25.18	62.25	1.82	7344

1.7 FLT. % REC. 73.94 F.S.I. 1.5

****

SAMPLE ID : 67 DEPTH: 84.57 - 85.48

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.77	25.01	3.03	
	A.D.	1.12	25.97	3.15	3.3
	D.B.	-----	26.26	3.19	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.03	11.56	25.86	61.55	1.69	7447
	D.B.	-----	11.68	26.13	62.19	1.71	7525

1.7 FLT. % REC. 79.82 F.S.I. 2.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 69 DEPTH: 86.32 - 87.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.67	14.18	1.38	
	A.D.	0.88	14.74	1.43	3.8
	D.B.	-----	14.87	1.44	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.82	8.39	27.19	63.60	1.30	7617
	D.B.	-----	8.46	27.41	64.13	1.31	7680

1.7 FLT. % REC. 88.52 F.S.I. 3.0

****

SAMPLE ID : 70 DEPTH: 93.02 - 97.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	5.01	9.78	0.94	
	A.D.	1.27	10.16	0.98	3.2
	D.B.	-----	10.29	0.99	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.11	6.30	26.95	65.64	0.84	7810
	D.B.	-----	6.37	27.25	66.38	0.85	7898

1.7 FLT. % REC. 93.20 F.S.I. 1.5

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PROJECT: TELKWA

FILE # 31906-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLES: DDH-809 / DDH-811

SAMPLE ID : 63 DEPTH: 57.52 - 58.44

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	39.13	22.06	38.05	2.88	4918
	D.B.	-----	39.43	22.23	38.34	2.90	4956

1.7 FLT. % REC. 1.81 F.S.I. 4.0

****

SAMPLE ID : 68 DEPTH: 85.48 - 86.32

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.97	22.64	26.24	50.15	2.07	6359
	D.B.	-----	22.86	26.50	50.64	2.09	6421

1.7 FLT. % REC. 6.91 F.S.I. 4.5

****

SAMPLE ID : 79 DEPTH: 82.40 - 83.10

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.98	34.24	21.36	43.42	1.76	5213
	D.B.	-----	34.58	21.57	43.85	1.78	5265

1.7 FLT. % REC. 1.00 F.S.I. 3.0

****

SAMPLE ID : 82 DEPTH: 98.14 - 98.95

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.72	44.94	19.75	34.59	0.81	3566
	D.B.	-----	45.27	19.89	34.84	0.82	3592

1.7 FLT. % REC. 1.13 F.S.I. 3.0

****

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FILE # 31706
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 71 DEPTH: 38.61 - 39.49

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.93	20.17	2.25	
	A.D.	0.66	20.86	2.33	3.6
	D.B.	-----	21.00	2.35	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.64	12.87	20.56	65.93	2.01	7303
	D.B.	-----	12.95	20.69	66.35	2.02	7350

1.7 FLT. % REC. 88.95 F.S.I. 0.0

****

SAMPLE ID : 72 DEPTH: 43.92 - 44.85

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.81	11.26	2.82	
	A.D.	0.52	11.52	2.89	3.4
	D.B.	-----	11.58	2.91	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.47	8.87	22.01	68.65	2.29	7647
	D.B.	-----	8.91	22.11	68.97	2.30	7683

1.7 FLT. % REC. 95.54 F.S.I. 0.0

743

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 73 DEPTH: 46.71 - 48.99

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.05	28.21	3.70	
	A.D.	0.70	29.19	3.83	3.4
	D.B.	-----	29.40	3.86	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.55	11.03	22.12	66.30	1.47	7407
	D.B.	-----	11.09	22.24	66.67	1.48	7448

1.7 FLT. % REC. 72.11 F.S.I. 0.5

****

SAMPLE ID : 74 DEPTH: 51.10 - 51.53

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.65	29.17	3.81	
	A.D.	0.61	29.78	3.89	3.8
	D.B.	-----	29.96	3.91	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.52	18.91	20.05	60.52	3.99	6803
	D.B.	-----	19.01	20.15	60.84	4.01	6839

1.7 FLT. % REC. 72.77 F.S.I. 0.0

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 75 DEPTH: 65.21 - 66.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.08	41.68	0.48	
	A.D.	0.81	42.65	0.49	3.3
	D.B.	-----	43.00	0.49	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.78	20.10	22.66	56.46	1.40	6538
	D.B.	-----	20.26	22.84	56.90	1.41	6589

1.7 FLT. % REC. 54.42 F.S.I. 0.5

****

SAMPLE ID : 76 DEPTH: 76.40 - 76.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.81	34.79	2.30	
	A.D.	0.88	35.48	2.35	2.9
	D.B.	-----	35.79	2.37	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	26.89	24.32	48.03	0.52	5927
	D.B.	-----	27.10	24.51	48.40	0.52	5972

1.7 FLT. % REC. 73.00 F.S.I. 1.5

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 77 DEPTH: 78.25 - 79.02

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.61	54.27	0.87	
	A.D.	0.84	55.26	0.89	2.4
	D.B.	-----	55.73	0.90	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.60	26.43	22.29	50.68	0.57	6099
	D.B.	-----	26.59	22.42	50.99	0.57	6136

1.7 FLT. % REC. 30.81 F.S.I. 1.0

****

SAMPLE ID : 78 DEPTH: 81.70 - 82.40

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.24	39.59	6.21	
	A.D.	0.67	40.23	6.31	2.9
	D.B.	-----	40.50	6.35	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.66	14.47	23.83	61.04	1.86	7170
	D.B.	-----	14.57	23.99	61.45	1.87	7218

1.7 FLT. % REC. 46.03 F.S.I. 1.5

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 80 DEPTH: 83.10 - 84.38

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.36	16.09	1.39	
	A.D.	0.65	16.54	1.43	2.8
	D.B.	-----	16.65	1.44	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.49	12.49	25.98	61.04	1.11	7361
	D.B.	-----	12.55	26.11	61.34	1.12	7397

1.7 FLT. % REC. 92.51 F.S.I. 1.5

****

SAMPLE ID : 81 DEPTH: 96.30 - 98.14

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.47	19.98	0.49	
	A.D.	0.80	20.75	0.51	3.5
	D.B.	-----	20.92	0.51	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.77	12.92	26.19	60.12	0.58	7315
	D.B.	-----	13.02	26.39	60.59	0.58	7372

1.7 FLT. % REC. 84.45 F.S.I. 1.5

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 83 DEPTH: 98.95 - 99.49

	BASIS	% H2O	% ASH	% S	% Eq.H2O
RAW	A.R.	4.07	18.91	0.83	
	A.D.	0.93	19.53	0.86	3.4
	D.B.	-----	19.71	0.87	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.87	14.30	24.99	59.84	0.61	7216
	D.B.	-----	14.43	25.21	60.37	0.62	7279

1.7 FLT. % REC. 84.63 F.S.I. 1.5

****

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PROJECT: TELKWA

FILE # 31906-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLES: DDH-809 / DDH-811

SAMPLE ID : 63 DEPTH: 57.52 - 58.44

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	39.13	22.06	38.05	2.88	4918
	D.B.	-----	39.43	22.23	38.34	2.90	4956

1.7 FLT. % REC. 1.81 F.S.I. 4.0

****

SAMPLE ID : 68 DEPTH: 85.48 - 86.32

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.97	22.64	26.24	50.15	2.07	6359
	D.B.	-----	22.86	26.50	50.64	2.09	6421

1.7 FLT. % REC. 6.91 F.S.I. 4.5

****

SAMPLE ID : 79 DEPTH: 82.40 - 83.10

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.98	34.24	21.36	43.42	1.76	5213
	D.B.	-----	34.58	21.57	43.85	1.78	5265

1.7 FLT. % REC. 1.00 F.S.I. 3.0

****

SAMPLE ID : 82 DEPTH: 98.14 - 98.95

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.72	44.94	19.75	34.59	0.81	3566
	D.B.	-----	45.27	19.89	34.84	0.82	3592

1.7 FLT. % REC. 1.13 F.S.I. 3.0

****

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

ASH FUSION TEMPERATURE
1.70 FLOAT

HOLES: DDH-811 / DDH-814

DEGREE C

SAMPLE	REDUCING				*	OXIDIZING			
	TI	TS	TH	TF	*	TI	TS	TH	TF
73	1272	1359	1380	+1472	*	1367	1453	+1472	+1472
115	+1472	+1472	+1472	+1472	*	+1472	+1472	+1472	+1472
117	1293	1359	1372	+1472	*	1343	1403	1419	+1472

TI = INITIAL TEMPERATURE
TS = SOFTENING TEMPERATURE
TH = HEMISPHERIC TEMPERATURE
TF = FLUID TEMPERATURE

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: DDH-811 / DDH-814

SAMPLE	H.G.I.
73	88
115	72
117	76

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: DDH-811 / DDH-814

SAMPLE	H2O	ASH	C	H	N	S	O
	%						
73	0.55	11.03	72.21	3.67	1.04	1.47	10.03
115	0.75	11.49	73.09	4.62	1.09	0.51	8.45
117	0.57	10.63	72.03	4.86	1.13	0.61	10.17

NOTE: HYDROGEN AND OXYGEN DO NOT INCLUDE H AND O FROM SAMPLE MOISTURE. VALUE OF OXYGEN BY DIFFERENCE.

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PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

MINERAL ANALYSIS OF ASH HOLES: DDH-811 / DDH-814
1.70 FLOAT

	%									
SAMPLE	Na2O	K2O	CaO	MgO	Fe2O3	Al2O3	SO3	TiO2	SiO2	P2O5
73	0.87	0.38	4.51	0.90	8.01	24.19	1.93	2.44	54.81	0.95
115	0.79	0.27	3.55	0.80	2.93	25.71	1.90	2.68	58.76	1.01
117	0.61	0.19	6.21	1.17	2.06	19.66	3.20	1.70	62.32	1.30

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 84 DEPTH: 32.10 - 33.00

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.47	18.49	1.50	
	A.D.	0.54	19.25	1.56	2.7
	D.B.	-----	19.35	1.57	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.38	12.85	22.30	64.47	1.46	7353
	D.B.	-----	12.90	22.39	64.72	1.47	7381

1.7 FLT. % REC. 88.29 F.S.I. 0.5

****

SAMPLE ID : 85 DEPTH: 44.39 - 45.25

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.97	23.40	4.62	
	A.D.	0.61	23.97	4.73	3.4
	D.B.	-----	24.12	4.76	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.57	9.33	27.21	62.89	1.88	7668
	D.B.	-----	9.38	27.37	63.25	1.89	7712

1.7 FLT. % REC. 78.87 F.S.I. 2.5

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 86 DEPTH: 46.80 - 47.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.84	19.76	3.50	
	A.D.	0.75	20.19	3.58	3.0
	D.B.	-----	20.34	3.61	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.73	10.91	25.92	62.44	1.89	7399
	D.B.	-----	10.99	26.11	62.90	1.90	7453

1.7 FLT. % REC. 81.19 F.S.I. 1.0

****

SAMPLE ID : 87 DEPTH: 51.80 - 52.23

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.99	29.87	7.38	
	A.D.	0.68	30.58	7.56	6.9
	D.B.	-----	30.79	7.61	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.56	17.78	23.98	57.68	6.68	6736
	D.B.	-----	17.88	24.12	58.00	6.72	6774

1.7 FLT. % REC. 76.17 F.S.I. 1.5

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 88 DEPTH: 55.10 - 55.95

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.86	18.76	0.84	
	A.D.	0.91	19.34	0.87	3.0
	D.B.	-----	19.52	0.88	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.97	11.74	26.55	60.74	0.64	7205
	D.B.	-----	11.85	26.81	61.33	0.65	7276

1.7 FLT. % REC. 81.19 F.S.I. 1.5

****

SAMPLE ID : 90 DEPTH: 56.31 - 57.42

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.97	29.86	0.43	
	A.D.	0.93	30.81	0.44	3.9
	D.B.	-----	31.10	0.44	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	13.16	24.74	61.34	0.52	7089
	D.B.	-----	13.26	24.93	61.81	0.52	7143

1.7 FLT. % REC. 73.55 F.S.I. 1.5

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 91 DEPTH: 64.29 - 64.69

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.70	51.56	0.76	
	A.D.	1.26	52.87	0.78	4.2
	D.B.	-----	53.54	0.79	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.97	26.76	24.71	47.56	1.13	5939
	D.B.	-----	27.02	24.95	48.03	1.14	5997

1.7 FLT. % REC. 19.47 F.S.I. 4.5

****

SAMPLE ID : 93 DEPTH: 64.94 - 65.59

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.67	31.82	0.70	
	A.D.	1.09	33.02	0.73	3.5
	D.B.	-----	33.38	0.74	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.92	20.91	26.39	51.78	0.81	6330
	D.B.	-----	21.10	26.64	52.26	0.82	6389

1.7 FLT. % REC. 66.09 F.S.I. 2.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 94 DEPTH: 66.39 - 66.80

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	3.37	54.55			1.09	
	A.D.	1.12	55.82			1.12	4.4
	D.B.	-----	56.45			1.13	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.93	27.92	25.79	45.36	1.65	5825
	D.B.	-----	28.18	26.03	45.79	1.67	5880

1.7 FLT. % REC. 23.68 F.S.I. 4.0

****

SAMPLE ID : 96 DEPTH: 67.20 - 67.45

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	3.95	55.17			0.31	
	A.D.	0.96	56.89			0.32	4.7
	D.B.	-----	57.44			0.32	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.87	23.13	25.70	50.30	0.65	6155
	D.B.	-----	23.33	25.93	50.74	0.66	6209

1.7 FLT. % REC. 25.17 F.S.I. 2.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 97 DEPTH: 69.02 - 70.04

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.83	39.47	2.14	
	A.D.	0.78	40.30	2.19	3.2
	D.B.	-----	40.62	2.21	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.68	15.65	27.04	56.63	1.58	6927
	D.B.	-----	15.76	27.23	57.02	1.59	6974

1.7 FLT. % REC. 50.71 F.S.I. 2.0

****

SAMPLE ID : 98 DEPTH: 70.97 - 72.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.49	38.63	0.91	
	A.D.	0.66	39.76	0.94	3.1
	D.B.	-----	40.02	0.95	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.61	17.46	27.47	54.46	0.82	6622
	D.B.	-----	17.57	27.64	54.79	0.83	6663

1.7 FLT. % REC. 58.87 F.S.I. 2.0

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 99 DEPTH: 75.00 - 76.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.93	13.07	2.18	
	A.D.	0.64	13.52	2.25	3.4
	D.B.	-----	13.61	2.26	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.59	9.09	27.75	62.57	1.46	7573
	D.B.	-----	9.14	27.91	62.94	1.47	7618

1.7 FLT. % REC. 92.89 F.S.I. 1.5

****

SAMPLE ID : 101 DEPTH: 76.55 - 77.90

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.87	21.49	1.37	
	A.D.	0.83	22.40	1.43	4.1
	D.B.	-----	22.59	1.44	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.69	12.21	26.02	61.08	1.11	7233
	D.B.	-----	12.29	26.20	61.50	1.12	7283

1.7 FLT. % REC. 85.12 F.S.I. 2.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 102 DEPTH: 93.56 - 96.61

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.44	17.76	0.45	
	A.D.	0.92	18.41	0.47	4.1
	D.B.	-----	18.58	0.47	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.86	11.79	26.95	60.40	0.43	7323
	D.B.	-----	11.89	27.18	60.92	0.43	7387

1.7 FLT. % REC. 86.01 F.S.I. 2.5

****

SAMPLE ID : 104 DEPTH: 97.31 - 97.91

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.67	21.57	1.35	
	A.D.	1.14	22.14	1.39	4.7
	D.B.	-----	22.40	1.41	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.99	14.80	25.20	59.01	0.96	6966
	D.B.	-----	14.95	25.45	59.60	0.97	7036

1.7 FLT. % REC. 84.52 F.S.I. 2.5

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PROJECT: TELKWA

FILE # 31906-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLE: DDH-812

SAMPLE ID : 89 DEPTH: 55.95 - 56.31

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.45	30.87	24.57	43.11	1.30	5230
	D.B.	-----	31.32	24.93	43.74	1.32	5307

1.7 FLT. % REC. 5.60 F.S.I. 0

****

SAMPLE ID : 92 DEPTH: 64.69 - 64.94

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.77	24.22	26.75	48.26	0.71	6173
	D.B.	-----	24.41	26.96	48.63	0.72	6221

1.7 FLT. % REC. 2.73 F.S.I. 6.0

****

SAMPLE ID : 95 DEPTH: 66.80 - 67.20

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.76	23.53	31.24	44.47	0.69	6245
	D.B.	-----	23.71	31.48	44.81	0.70	6293

1.7 FLT. % REC. 5.09 F.S.I. 6.5

****

SAMPLE ID : 100 DEPTH: 76.10 - 76.55

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.82	52.58	17.49	29.11	0.76	2939
	D.B.	-----	53.01	17.63	29.35	0.77	2963

1.7 FLT. % REC. 1.04 F.S.I. 0

****

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLE: DDH-812

SAMPLE ID : 103 DEPTH: 96.61 - 97.31

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.89	39.66	19.16	40.29	1.27	4827
	D.B.	-----	40.02	19.33	40.65	1.28	4870

1.7 FLT. % REC. 2.08 F.S.I. 1.0

****

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 3

SAMPLE ID : 105 DEPTH: 43.81 - 44.06

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	3.98	58.27			1.06	
	A.D.	0.79	60.20			1.10	4.2
	D.B.	-----	60.68			1.11	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.55	14.66	27.43	57.36	2.95	7149
	D.B.	-----	14.74	27.58	57.68	2.97	7189

1.7 FLT. % REC. 37.39 F.S.I. 3.5

****

SAMPLE ID : 106 DEPTH: 111.80 - 112.64

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	7.07	33.73			2.23	
	A.D.	0.74	36.03			2.38	2.9
	D.B.	-----	36.30			2.40	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.69	18.43	25.64	55.24	0.73	6639
	D.B.	-----	18.56	25.82	55.62	0.74	6685

1.7 FLT. % REC. 70.36 F.S.I. 1.0

743

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 107 DEPTH: 24.67 - 25.11

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.78	26.29	2.90	
	A.D.	0.89	27.08	2.99	2.6
	D.B.	-----	27.32	3.02	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.74	19.77	30.85	48.64	2.35	6634
	D.B.	-----	19.92	31.08	49.00	2.37	6683

1.7 FLT. % REC. 84.43 F.S.I. 5.0

****

SAMPLE ID : 108 DEPTH: 29.59 - 30.46

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.96	20.70	4.65	
	A.D.	0.87	21.15	4.75	3.1
	D.B.	-----	21.34	4.79	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.78	10.46	31.14	57.62	3.58	7333
	D.B.	-----	10.54	31.38	58.07	3.61	7391

1.7 FLT. % REC. 81.01 F.S.I. 3.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 109 DEPTH: 33.20 - 33.76

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.27	32.93	4.60	
	A.D.	0.93	33.73	4.71	3.6
	D.B.	-----	34.05	4.75	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.86	15.71	30.58	52.85	3.34	6973
	D.B.	-----	15.85	30.85	53.31	3.37	7033

1.7 FLT. % REC. 59.69 F.S.I. 5.0

****

SAMPLE ID : 110 DEPTH: 55.50 - 56.98

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.70	18.67	2.33	
	A.D.	0.80	19.23	2.40	2.0
	D.B.	-----	19.39	2.42	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.75	9.00	33.39	56.86	1.42	7688
	D.B.	-----	9.07	33.64	57.29	1.43	7746

1.7 FLT. % REC. 84.29 F.S.I. 5.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 112 DEPTH: 58.27 - 59.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.35	17.37	2.00	
	A.D.	0.74	18.03	2.08	3.7
	D.B.	-----	18.16	2.10	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.79	9.11	29.71	60.39	0.85	7609
	D.B.	-----	9.18	29.95	60.87	0.86	7670

1.7 FLT. % REC. 83.04 F.S.I. 3.0

****

SAMPLE ID : 114 DEPTH: 60.85 - 61.24

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.43	60.34	0.39	
	A.D.	1.02	61.85	0.40	4.6
	D.B.	-----	62.49	0.40	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	1.06	25.44	27.06	46.44	0.70	6070
	D.B.	-----	25.71	27.35	46.94	0.71	6135

1.7 FLT. % REC. 14.63 F.S.I. 7.5

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 115 DEPTH: 70.12 - 73.41

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.89	15.29	0.54	
	A.D.	0.83	15.78	0.56	2.9
	D.B.	-----	15.91	0.56	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.75	11.49	28.03	59.73	0.51	7354
	D.B.	-----	11.58	28.24	60.18	0.51	7410

1.7 FLT. % REC. 93.99 F.S.I. 1.5

****

SAMPLE ID : 117 DEPTH: 74.04 - 76.11

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.87	12.16	0.60	
	A.D.	0.69	12.56	0.62	2.8
	D.B.	-----	12.65	0.62	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.57	10.63	29.74	59.06	0.61	7715
	D.B.	-----	10.69	29.91	59.40	0.61	7759

1.7 FLT. % REC. 97.51 F.S.I. 3.0

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 118 DEPTH: 79.14 - 80.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.26	22.86	1.75	
	A.D.	0.62	23.48	1.80	2.6
	D.B.	-----	23.63	1.81	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.54	12.24	28.96	58.26	1.46	7315
	D.B.	-----	12.31	29.12	58.58	1.47	7355

1.7 FLT. % REC. 80.80 F.S.I. 2.5

****

SAMPLE ID : 120 DEPTH: 80.86 - 81.98

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.61	18.25	2.01	
	A.D.	0.84	18.77	2.07	3.5
	D.B.	-----	18.93	2.09	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.79	14.18	27.51	57.52	1.28	7104
	D.B.	-----	14.29	27.73	57.98	1.29	7161

1.7 FLT. % REC. 91.98 F.S.I. 1.5

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 121 DEPTH: 89.32 - 92.99

	BASIS	% H2O	% ASH			% S	% EQ.H2O
RAW	A.R.	3.80	26.89			1.26	
	A.D.	0.87	27.71			1.30	3.3
	D.B.	-----	27.95			1.31	

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.79	14.42	29.31	55.48	1.08	7035
	D.B.	-----	14.53	29.54	55.92	1.09	7091

1.7 FLT. % REC. 76.16 F.S.I. 2.5

****

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE : DECEMBER 9, 1988
SAMPLE TYPE: TRENCH

HOLE: DDH-814

SAMPLE ID : 111 DEPTH: 56.98 - 58.27

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.70	27.46	27.81	44.03	1.17	5911
	D.B.	-----	27.65	28.01	44.34	1.18	5953

1.7 FLT. % REC. 3.04 F.S.I. 4.5

****

SAMPLE ID : 113 DEPTH: 59.90 - 60.85

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.45	41.28	22.87	35.40	0.49	4679
	D.B.	-----	41.47	22.97	35.56	0.49	4700

1.7 FLT. % REC. 4.49 F.S.I. 1.5

****

SAMPLE ID : 116 DEPTH: 73.41 - 74.04

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.59	33.73	28.23	37.45	3.27	5419
	D.B.	-----	33.93	28.40	37.67	3.29	5451

1.7 FLT. % REC. 5.31 F.S.I. 4.0

****

SAMPLE ID : 119 DEPTH: 80.20 - 80.86

	BASIS	% H2O	% ASH	% VOL	% F.C.	% S	KCAL/KG
CLEAN	A.D.	0.71	55.08	17.29	26.92	0.82	3406
	D.B.	-----	55.47	17.41	27.11	0.83	3430

1.7 FLT. % REC. 1.64 F.S.I. 0

****

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

ASH FUSION TEMPERATURE
1.70 FLOAT

HOLES: DDH-811 / DDH-814

DEGREE C

SAMPLE	REDUCING				*	OXIDIZING			
	TI	TS	TH	TF	*	TI	TS	TH	TF
73	1272	1359	1380	+1472	*	1367	1453	+1472	+1472
115	+1472	+1472	+1472	+1472	*	+1472	+1472	+1472	+1472
117	1293	1359	1372	+1472	*	1343	1403	1419	+1472

TI = INITIAL TEMPERATURE
TS = SOFTENING TEMPERATURE
TH = HEMISPHERIC TEMPERATURE
TF = FLUID TEMPERATURE

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: DDH-811 / DDH-814

SAMPLE	*	H.G.I.
73	*	88
115	*	72
117	*	76

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TO: CROWSNEST RNEST RESOURCES LTD.
ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

AIR DRIED BASIS
1.70 FLOAT

HOLES: DDH-811 / DDH-814

SAMPLE	H2O (%)	ASH (%)	C (%)	H (%)	N (%)	S (%)	O (%)
73	0.55	11.03	72.21	3.67	1.04	1.47	10.03
115	0.75	11.49	73.09	4.62	1.09	0.51	8.45
117	0.57	10.63	72.03	4.86	1.13	0.61	10.17

NOTE: HYDROGEN AND OXYGEN DO NOT INCLUDE H AND O
FROM SAMPLE MOISTURE. VALUE OF OXYGEN BY DIFFERENCE.

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ATTN: BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906-1
DATE: DECEMBER 12, 1988
SAMPLE TYPE: TRENCH

MINERAL ANALYSIS OF ASH HOLES: DDH-811 / DDH-814
1.70 FLOAT

SAMPLE	% Na2O	K2O	CaO	MgO	Fe2O3	Al2O3	SO3	TiO2	SiO2	P2O5
73	0.87	0.38	4.51	0.90	8.01	24.19	1.93	2.44	54.81	0.95
115	0.79	0.27	3.55	0.80	2.93	25.71	1.90	2.68	58.76	1.01
117	0.61	0.19	6.21	1.17	2.06	19.66	3.20	1.70	62.32	1.30

QUALITY STATS REPORT

SEAM: S10	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	2	0.89	0.92	0.91	-
ASH (RAW)	2	13.03	27.08	17.82	-
SULPHUR (RAW)	2	2.99	3.35	3.23	-
RESIDUAL MOISTURE (WASHED)	2	0.79	1.26	1.10	-
ASH (WASHED)	2	9.08	19.77	12.73	-
VOLATILE MATTER	2	30.85	34.68	33.37	-
FIXED CARBON	2	48.64	54.98	52.82	-
CALORIFIC VALUE	2	6634.00	7474.00	7187.49	-
SULPHUR (WASHED)	2	2.20	2.35	2.25	-
YIELD	2	84.00	92.80	89.80	-
DRILLING RECOVERY OF CORE	2	96.00	100.00	98.64	-
FREE SWELLING INDEX	1	5.00	5.00	5.00	-
SPECIFIC GRAVITY OF TESTING	1	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S9	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	2	0.87	1.26	1.03	-
ASH (RAW)	2	21.15	54.04	34.84	-
SULPHUR (RAW)	2	2.53	4.75	3.83	-
RESIDUAL MOISTURE (WASHED)	2	0.78	0.98	0.86	-
ASH (WASHED)	2	10.46	10.98	10.68	-
VOLATILE MATTER	2	31.14	33.48	32.11	-
FIXED CARBON	2	54.56	57.62	56.35	-
CALORIFIC VALUE	2	7333.00	7349.00	7339.66	-
SULPHUR (WASHED)	2	2.65	3.58	3.19	-
YIELD	2	39.80	81.00	63.86	-
DRILLING RECOVERY OF CORE	2	100.00	100.00	100.00	-
FREE SWELLING INDEX	1	3.00	3.00	3.00	-
SPECIFIC GRAVITY OF TESTING	1	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S8	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	3	0.93	1.19	1.07	-
ASH (RAW)	3	13.65	33.73	17.95	-
SULPHUR (RAW)	3	0.75	4.71	1.78	-
RESIDUAL MOISTURE (WASHED)	3	0.86	2.01	1.63	-
ASH (WASHED)	3	9.65	15.71	11.63	-
VOLATILE MATTER	3	20.39	30.58	27.02	-
FIXED CARBON	3	52.85	64.58	59.72	-
CALORIFIC VALUE	3	6973.00	7479.00	7266.21	-
SULPHUR (WASHED)	3	0.71	3.34	1.42	-
YIELD	3	60.00	92.40	85.66	-
DRILLING RECOVERY OF CORE	3	96.00	100.00	98.44	-
FREE SWELLING INDEX	2	0.00	5.00	2.39	-
SPECIFIC GRAVITY OF TESTING	2	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S7	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	4	0.54	0.98	0.76	0.19
ASH (RAW)	4	11.54	20.86	16.69	3.96
SULPHUR (RAW)	4	1.56	3.84	2.18	0.74
RESIDUAL MOISTURE (WASHED)	4	0.38	1.21	0.80	0.35
ASH (WASHED)	4	10.43	12.87	12.40	0.82
VOLATILE MATTER	4	20.56	28.56	23.16	2.54
FIXED CARBON	4	59.89	65.93	63.64	2.02
CALORIFIC VALUE	4	7297.00	7592.00	7399.61	124.15
SULPHUR (WASHED)	4	1.46	2.53	1.81	0.36
YIELD	4	88.00	94.00	90.73	2.59
DRILLING RECOVERY OF CORE	3	93.00	94.00	93.67	-
FREE SWELLING INDEX	3	0.00	1.50	0.67	-
SPECIFIC GRAVITY OF TESTING	3	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S6B	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	7	0.52	1.41	0.86	0.23
ASH (RAW)	7	11.52	27.48	18.71	5.59
SULPHUR (RAW)	7	1.10	4.73	2.25	0.98
RESIDUAL MOISTURE (WASHED)	7	0.47	1.31	0.90	0.29
ASH (WASHED)	7	8.87	12.94	9.89	1.33
VOLATILE MATTER	7	22.11	33.39	28.91	4.06
FIXED CARBON	7	54.98	68.65	60.31	4.12
CALORIFIC VALUE	7	7372.00	7688.00	7542.99	116.29
SULPHUR (WASHED)	7	1.22	2.29	1.47	0.35
YIELD	7	68.10	95.50	83.87	9.46
DRILLING RECOVERY OF CORE	7	49.00	100.00	90.51	15.04
FREE SWELLING INDEX	6	0.00	5.00	2.52	1.86
SPECIFIC GRAVITY OF TESTING	6	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S6A	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	6	0.70	1.37	1.06	0.25
ASH (RAW)	6	20.19	45.41	28.12	9.01
SULPHUR (RAW)	6	1.24	3.83	2.14	0.88
RESIDUAL MOISTURE (WASHED)	6	0.55	1.46	1.08	0.36
ASH (WASHED)	6	7.88	21.54	14.09	4.12
VOLATILE MATTER	6	22.12	29.43	25.47	2.76
FIXED CARBON	6	50.56	66.30	59.36	5.27
CALORIFIC VALUE	6	6469.70	7649.00	7111.66	368.55
SULPHUR (WASHED)	6	0.72	1.89	1.16	0.32
YIELD	6	48.91	85.00	72.82	13.26
DRILLING RECOVERY OF CORE	6	87.00	100.00	93.83	4.97
FREE SWELLING INDEX	5	0.50	3.11	1.27	1.03
SPECIFIC GRAVITY OF TESTING	5	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S5D	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	1	1.36	1.36	1.36	-
ASH (RAW)	1	22.21	22.21	22.21	-
SULPHUR (RAW)	1	1.26	1.26	1.26	-
RESIDUAL MOISTURE (WASHED)	1	1.17	1.17	1.17	-
ASH (WASHED)	1	12.69	12.69	12.69	-
VOLATILE MATTER	1	23.94	23.94	23.94	-
FIXED CARBON	1	62.20	62.20	62.20	-
CALORIFIC VALUE	1	7107.00	7107.00	7107.00	-
SULPHUR (WASHED)	1	0.92	0.92	0.92	-
YIELD	1	80.00	80.00	80.00	-
DRILLING RECOVERY OF CORE	1	87.00	87.00	87.00	-
FREE SWELLING INDEX	1	1.00	1.00	1.00	-
SPECIFIC GRAVITY OF TESTING	1	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S5C	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	3	1.13	1.37	1.26	-
ASH (RAW)	3	32.64	65.45	41.28	-
SULPHUR (RAW)	3	0.45	5.83	3.59	-
RESIDUAL MOISTURE (WASHED)	3	1.17	1.34	1.26	-
ASH (WASHED)	3	18.77	26.84	22.44	-
VOLATILE MATTER	3	23.00	26.47	25.12	-
FIXED CARBON	3	46.69	57.04	51.18	-
CALORIFIC VALUE	3	5863.00	6734.00	6297.13	-
SULPHUR (WASHED)	3	0.82	4.04	2.01	-
YIELD	3	8.80	67.00	54.15	-
DRILLING RECOVERY OF CORE	3	81.00	84.00	82.89	-
FREE SWELLING INDEX	2	1.00	1.50	1.20	-
SPECIFIC GRAVITY OF TESTING	2	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S5B	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	5	0.81	1.49	1.18	0.26
ASH (RAW)	5	18.88	42.65	30.28	9.24
SULPHUR (RAW)	5	0.49	1.85	1.04	0.49
RESIDUAL MOISTURE (WASHED)	5	0.78	1.22	1.07	0.16
ASH (WASHED)	5	13.64	20.10	15.51	1.85
VOLATILE MATTER	5	22.66	29.07	25.80	2.10
FIXED CARBON	5	55.26	59.31	57.62	1.39
CALORIFIC VALUE	5	6538.00	6993.00	6863.38	132.60
SULPHUR (WASHED)	5	0.69	1.40	0.94	0.23
YIELD	5	48.82	92.00	70.95	16.61
DRILLING RECOVERY OF CORE	5	93.00	100.00	98.75	2.68
FREE SWELLING INDEX	4	0.50	2.50	1.35	0.66
SPECIFIC GRAVITY OF TESTING	4	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S5A	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	7	0.45	1.43	0.94	0.31
ASH (RAW)	7	15.78	38.93	22.27	8.74
SULPHUR (RAW)	7	0.49	2.87	0.89	0.57
RESIDUAL MOISTURE (WASHED)	7	0.56	2.30	1.26	0.67
ASH (WASHED)	7	10.96	26.35	15.04	5.34
VOLATILE MATTER	7	21.82	29.21	26.78	2.13
FIXED CARBON	7	50.93	59.73	56.93	3.49
CALORIFIC VALUE	7	5668.00	7437.00	6958.22	492.32
SULPHUR (WASHED)	7	0.50	1.20	0.67	0.23
YIELD	7	50.00	94.00	82.86	11.96
DRILLING RECOVERY OF CORE	7	92.45	100.00	95.38	2.51
FREE SWELLING INDEX	5	1.00	2.00	1.65	0.36
SPECIFIC GRAVITY OF TESTING	4	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S4R	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	3	0.78	1.35	1.00	-
ASH (RAW)	3	18.45	40.30	31.86	-
SULPHUR (RAW)	3	2.19	2.72	2.40	-
RESIDUAL MOISTURE (WASHED)	3	0.68	1.34	0.92	-
ASH (WASHED)	3	13.07	26.89	16.83	-
VOLATILE MATTER	3	24.32	27.04	25.99	-
FIXED CARBON	3	48.03	60.14	56.26	-
CALORIFIC VALUE	3	5927.00	7079.00	6795.20	-
SULPHUR (WASHED)	3	0.52	2.27	1.62	-
YIELD	3	50.70	88.00	67.70	-
DRILLING RECOVERY OF CORE	3	93.00	100.00	96.34	-
FREE SWELLING INDEX	3	1.50	2.00	1.74	-
SPECIFIC GRAVITY OF TESTING	3	1.70	1.70	1.70	-

QUALITY STATS REPORT

SEAM: S4	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	8	0.66	2.23	1.13	0.51
ASH (RAW)	8	12.56	55.26	20.63	12.16
SULPHUR (RAW)	8	0.62	2.95	1.31	0.75
RESIDUAL MOISTURE (WASHED)	8	0.57	2.26	1.22	0.63
ASH (WASHED)	8	9.41	26.43	12.97	4.29
VOLATILE MATTER	8	22.29	29.74	27.66	1.80
FIXED CARBON	8	50.68	60.90	58.15	2.68
CALORIFIC VALUE	8	6099.00	7787.00	7225.79	453.69
SULPHUR (WASHED)	8	0.57	0.97	0.77	0.13
YIELD	8	31.00	97.50	83.76	17.77
DRILLING RECOVERY OF CORE	8	71.00	100.00	96.58	7.36
FREE SWELLING INDEX	6	1.00	3.00	1.72	0.85
SPECIFIC GRAVITY OF TESTING	6	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S3U	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	9	0.32	1.74	0.96	0.44
ASH (RAW)	9	10.85	40.23	16.81	7.84
SULPHUR (RAW)	9	1.29	6.31	2.09	1.30
RESIDUAL MOISTURE (WASHED)	9	0.54	2.16	1.24	0.61
ASH (WASHED)	9	8.43	14.47	10.36	1.69
VOLATILE MATTER	9	23.83	29.40	27.81	1.46
FIXED CARBON	9	58.26	62.57	60.59	1.38
CALORIFIC VALUE	9	7170.00	7584.00	7413.02	125.82
SULPHUR (WASHED)	9	0.99	1.86	1.30	0.25
YIELD	9	46.00	95.00	87.25	12.99
DRILLING RECOVERY OF CORE	9	33.00	100.00	90.38	18.85
FREE SWELLING INDEX	7	1.50	2.50	1.96	0.50
SPECIFIC GRAVITY OF TESTING	6	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S3L	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	9	0.18	1.91	1.06	0.53
ASH (RAW)	9	15.03	22.40	18.32	2.41
SULPHUR (RAW)	9	0.75	2.07	1.46	0.35
RESIDUAL MOISTURE (WASHED)	9	0.49	2.34	1.16	0.61
ASH (WASHED)	9	10.34	15.05	12.62	1.19
VOLATILE MATTER	9	25.55	28.12	26.48	0.76
FIXED CARBON	9	57.00	61.08	59.74	1.42
CALORIFIC VALUE	9	6443.00	7499.00	7098.46	285.84
SULPHUR (WASHED)	9	0.78	1.28	1.04	0.17
YIELD	9	78.69	92.90	88.29	4.39
DRILLING RECOVERY OF CORE	9	81.70	100.00	95.97	5.49
FREE SWELLING INDEX	7	1.00	2.00	1.40	0.37
SPECIFIC GRAVITY OF TESTING	6	1.70	1.70	1.70	0.00

QUALITY STATS REPORT

SEAM: S2	COUNT	LOW VALUE	HIGH VALUE	MEAN	STANDARD DEVIATION
RESIDUAL MOISTURE (RAW)	9	0.50	2.33	1.18	0.50
ASH (RAW)	9	15.22	37.64	25.10	7.50
SULPHUR (RAW)	8	0.48	1.30	0.71	0.28
RESIDUAL MOISTURE (WASHED)	9	0.67	1.92	1.15	0.42
ASH (WASHED)	9	8.52	21.28	13.62	4.34
VOLATILE MATTER	9	22.77	29.31	26.60	1.90
FIXED CARBON	9	52.57	67.70	58.63	4.63
CALORIFIC VALUE	9	6346.30	7646.00	7073.37	398.25
SULPHUR (WASHED)	8	0.48	1.08	0.67	0.20
YIELD	9	63.30	84.80	76.16	6.21
DRILLING RECOVERY OF CORE	8	94.00	100.00	97.43	2.66
FREE SWELLING INDEX	7	1.00	2.50	1.91	0.56
SPECIFIC GRAVITY OF TESTING	5	1.70	1.70	1.70	0.00

SEAM 10

	Ash Washed AW	Sulphur Washed SW	Volatiles Washed VW	Calorific Value Washed CW	FSI	THICK
D213	-	-	-	-	-	-
D440	9.08	2.20	34.68	7474.00	-	0.85
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	-	-	-	-	-	-
D804	-	-	-	-	-	-
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	-	-	-	-	-	-
D812	-	-	-	-	-	-
D813	-	-	-	-	-	-
D814	19.77	2.35	30.85	6634.00	5.00	0.44

SEAM 9

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	10.98	2.65	33.48	7349.00	-	0.62
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	-	-	-	-	-	-
D804	-	-	-	-	-	-
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	-	-	-	-	-	-
D812	-	-	-	-	-	-
D813	-	-	-	-	-	-
D814	10.46	3.58	31.14	7333.00	3.00	0.87

SEAM 8

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	9.65	0.71	28.14	7285.00	-	1.83
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	13.82	1.79	20.39	7479.00	0.00	0.61
D804	-	-	-	-	-	-
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	-	-	-	-	-	-
D812	-	-	-	-	-	-
D813	-	-	-	-	-	-
D814	15.71	3.34	30.58	6973.00	5.00	0.56

SEAM 7

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	10.43	2.53	28.56	7297.00	-	0.45
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	12.46	1.62	23.87	7592.00	1.50	0.90
D804	-	-	-	-	-	-
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	12.87	2.01	20.56	7303.00	0.00	0.88
D812	12.85	1.46	22.30	7353.00	0.50	0.90
D813	-	-	-	-	-	-
D814	-	-	-	-	-	-

SEAM 6B

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	10.89	1.34	32.27	7372.00	-	0.92
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	12.94	1.22	23.45	7405.00	1.00	1.04
D804	10.35	1.24	33.36	7459.00	5.00	0.85
D805	9.09	1.23	28.66	7513.00	1.50	2.04
D810	-	-	-	-	-	-
D811	8.87	2.29	22.11	7647.00	0.00	0.93
D812	9.33	1.88	27.21	7668.00	2.50	0.86
D813	-	-	-	-	-	-
D814	9.00	1.42	33.39	7688.00	5.00	1.58

SEAM 6A

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	7.88	0.85	29.43	7649.00	-	1.70
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	13.67	1.14	23.04	7198.00	0.50	5.15
D804	14.42	1.35	28.78	6939.90	1.48	2.40
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	11.03	1.47	22.12	7407.00	0.50	2.28
D812	10.91	1.89	25.92	7399.00	1.00	1.00
D813	-	-	-	-	-	-
D814	21.54	0.72	27.17	6469.70	3.11	2.97

SEAM 5D

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	-	-	-	-	-	-
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	12.69	0.92	23.94	7107.00	1.00	1.57
D804	-	-	-	-	-	-
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	-	-	-	-	-	-
D812	-	-	-	-	-	-
D813	-	-	-	-	-	-
D814	-	-	-	-	-	-

SEAM 5C

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	26.84	0.82	25.30	5863.00	-	0.37
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	18.77	4.04	23.00	6734.00	1.50	0.55
D804	22.92	1.19	26.47	6200.00	1.00	0.82
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	-	-	-	-	-	-
D812	-	-	-	-	-	-
D813	-	-	-	-	-	-
D814	-	-	-	-	-	-

SEAM 5B

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	-	-	-	-	-	-
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	13.64	1.01	27.58	6993.00	-	1.42
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	15.42	0.83	24.07	6911.00	1.00	1.79
D804	14.50	1.10	29.07	6932.00	2.50	1.41
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	20.10	1.40	22.66	6538.00	0.50	0.98
D812	15.39	0.69	25.38	6843.03	1.27	2.32
D813	-	-	-	-	-	-
D814	-	-	-	-	-	0.24

SEAM 5A

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	11.84	0.50	26.85	7103.00	-	4.07
D501	10.96	0.57	29.21	7437.00	2.00	2.65
D502	-	-	-	-	-	-
D601	17.25	1.19	27.25	6704.00	-	1.00
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	24.09	0.88	22.95	6261.57	1.93	2.30
D804	26.35	1.20	21.82	5668.00	1.00	0.52
D805	21.00	0.85	26.84	6383.00	1.00	1.10
D810	-	-	-	-	-	-
D811	-	-	-	-	-	0.20
D812	-	-	-	-	-	2.51
D813	-	-	-	-	-	-
D814	11.49	0.51	28.03	7354.00	1.50	3.29

SEAM 4R

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	-	-	-	-	-	-
D501	-	-	-	-	-	-
D502	-	-	-	-	-	-
D601	-	-	-	-	-	-
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	13.07	2.27	25.45	7079.00	1.50	0.75
D804	-	-	-	-	-	-
D805	-	-	-	-	-	-
D810	-	-	-	-	-	-
D811	26.89	0.52	24.32	5927.00	1.50	0.40
D812	15.65	1.58	27.04	6927.00	2.00	1.02
D813	-	-	-	-	-	-
D814	-	-	-	-	-	-

SEAM 4

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	-
D440	10.45	0.80	27.40	7318.00	-	1.71
D501	-	-	-	-	-	2.48
D502	-	-	-	-	-	-
D601	11.21	0.81	26.92	7177.00	-	1.68
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	14.48	0.67	26.11	6940.00	1.50	0.54
D804	12.82	0.97	28.20	7233.00	1.00	2.13
D805	9.41	0.69	28.94	7787.00	1.00	1.07
D810	-	-	-	-	-	-
D811	26.43	0.57	22.29	6099.00	1.00	0.77
D812	17.46	0.82	27.47	6622.00	2.00	1.13
D813	-	-	-	-	-	-
D814	10.63	0.61	29.74	7715.00	3.00	2.07

SEAM S3U

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	0.80
D440	10.38	1.06	27.20	7284.00	-	1.02
D501	10.18	1.22	29.40	7584.00	2.50	0.88
D502	-	-	-	-	-	-
D601	8.43	1.25	27.29	7458.00	-	1.08
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	10.67	1.49	27.16	7405.00	1.50	0.75
D804	8.72	0.99	29.25	7497.00	2.50	1.03
D805	10.55	1.08	28.30	7357.00	1.50	0.89
D810	-	-	-	-	-	-
D811	14.47	1.86	23.83	7170.00	1.50	0.70
D812	9.09	1.46	27.75	7573.00	1.50	1.10
D813	-	-	-	-	-	-
D814	12.24	1.46	28.96	7315.00	2.50	1.06

SEAM 3L

	AW	SW	VW	CW	FSI	THICK
D213	-	-	-	-	-	0.90
D440	12.30	1.23	25.55	7073.00	-	1.02
D501	10.34	1.05	28.12	7499.00	1.00	0.82
D502	-	-	-	-	-	-
D601	12.49	0.79	25.91	7125.00	-	1.12
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	11.80	0.87	26.62	7199.00	1.50	0.68
D804	15.05	0.78	26.86	6856.00	1.00	0.92
D805	12.27	1.03	26.40	6443.00	1.00	1.07
D810	-	-	-	-	-	-
D811	12.49	1.11	25.98	7361.00	1.50	1.28
D812	12.21	1.11	26.02	7233.00	2.00	1.35
D813	-	-	-	-	-	-
D814	14.18	1.28	27.51	7104.00	1.50	1.12

SEAM 2

	AW	SW	VW	CW	FSI	THICK
D213	8.52	-	27.40	7522.00	2.50	3.43
D440	9.25	0.50	24.51	7446.00	-	2.22
D501	8.86	0.52	22.77	7646.00	1.00	1.77
D502	-	-	-	-	-	-
D601	8.57	0.50	26.30	7438.00	-	3.61
D602	-	-	-	-	-	-
D801	-	-	-	-	-	-
D802	-	-	-	-	-	-
D803	-	-	-	-	-	-
D804	12.67	0.48	27.57	7195.00	1.00	3.57
D805	17.61	0.84	28.65	6642.03	1.73	4.16
D810	-	-	-	-	-	-
D811	21.28	0.64	24.35	6346.30	1.88	3.19
D812	16.69	0.64	25.46	6872.10	2.26	4.35
D813	-	-	-	-	-	-
D814	14.42	1.08	29.31	7035.00	2.50	3.67

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TO: CROWSNEST RESOURSES LTD.
ATTN : BRIAN MCKENSTRY
PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-01 DEPTH: 34.0 - 34.61

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.40	13.48	2.16	
	A.D.	1.19	13.65	2.19	2.8
	D.B.	-----	13.81	2.22	

SAMPLE ID : 88-02 DEPTH: 48.9 - 49.8

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.30	11.39	1.82	
	A.D.	0.98	11.54	1.84	2.7
	D.B.	-----	11.65	1.86	

743

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-03 DEPTH: 52.96 - 54.0

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.66	19.10	1.60	
	A.D.	0.94	19.44	1.63	2.8
	D.B.	-----	19.62	1.65	

SAMPLE ID : 88-04 DEPTH: 55.4 - 60.55

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.08	20.76	1.93	
	A.D.	1.27	21.15	1.97	3.6
	D.B.	-----	21.42	2.00	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-05 DEPTH: 62.78 - 64.35

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.90	21.86	1.24	
	A.D.	1.36	22.21	1.26	4.0
	D.B.	-----	22.52	1.28	

SAMPLE ID : 88-06 DEPTH: 66.85 - 67.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	1.63	32.47	5.80	
	A.D.	1.13	32.64	5.83	3.7
	D.B.	-----	33.01	5.90	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-07 DEPTH: 72.6 - 74.39

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.91	19.68	0.99	
	A.D.	1.49	20.18	1.01	3.8
	D.B.	-----	20.49	1.03	

SAMPLE ID : 88-08 DEPTH: 80.25 - 80.70

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.38	32.75	0.56	
	A.D.	1.43	33.07	0.57	3.3
	D.B.	-----	33.55	0.58	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-09 DEPTH: 81.95 - 82.55

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.42	37.33	2.51	
	A.D.	1.38	37.73	2.54	3.2
	D.B.	-----	38.26	2.58	

SAMPLE ID : 88-10 DEPTH: 83.7 - 84.45

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.68	18.20	2.68	
	A.D.	1.35	18.45	2.72	3.6
	D.B.	-----	18.70	2.76	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-11 DEPTH: 85.2 - 85.74

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.88	21.69	0.77	
	A.D.	1.40	22.02	0.78	3.0
	D.B.	-----	22.33	0.79	

SAMPLE ID : 88-12 DEPTH: 89.05 - 89.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.14	13.51	1.91	
	A.D.	1.43	13.75	1.94	3.6
	D.B.	-----	13.95	1.97	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 3

SAMPLE ID : 88-13 DEPTH: 90.47 - 91.15

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.81	16.92	1.04	
	A.D.	1.63	17.30	1.06	3.5
	D.B.	-----	17.59	1.08	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: T W - 8 0 4

SAMPLE ID : 88-14 DEPTH: 19.08 - 19.93

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.65	26.85	1.07	
	A.D.	1.41	27.48	1.10	3.1
	D.B.	-----	27.87	1.12	

SAMPLE ID : 88-15 DEPTH: 21.68 - 23.28

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.08	13.26	1.58	
	A.D.	1.41	13.49	1.61	3.0
	D.B.	-----	13.68	1.63	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-17 DEPTH: 23.65 - 24.08

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.45	21.57	1.39	
	A.D.	1.20	21.85	1.41	2.2
	D.B.	-----	22.12	1.43	

SAMPLE ID : 88-18 DEPTH: 31.02 - 31.84

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.12	35.50	3.45	
	A.D.	1.30	36.17	3.51	3.4
	D.B.	-----	36.65	3.56	

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-21 DEPTH: 36.16 - 37.56

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.12	18.55	1.39	
	A.D.	1.38	18.88	1.42	3.6
	D.B.	-----	19.14	1.44	

SAMPLE ID : 88-22 DEPTH: 38.54 -39.06

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.38	38.55	2.84	
	A.D.	1.43	38.93	2.87	2.6
	D.B.	-----	39.49	2.91	

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-23 DEPTH: 43.40 - 45.06

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.10	17.13	1.47	
	A.D.	1.23	17.46	1.50	3.7
	D.B.	-----	17.68	1.52	

SAMPLE ID : 88-25 DEPTH: 45.26 - 45.53

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.92	36.01	0.37	
	A.D.	1.01	36.72	0.38	2.8
	D.B.	-----	37.09	0.38	

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-804 16 DEPTH: 23.28 - 23.65

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	2.82	67.01	1.97	
	A.D.	1.42	67.98	2.00	3.9
	D.B.	-----	68.96	2.03	

****

SAMPLE ID : DDH-804 19 DEPTH: 31.84 - 32.26

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	2.07	71.17	0.77	
	A.D.	1.37	72.20	0.78	3.7
	D.B.	-----	73.24	0.79	

****

SAMPLE ID : DDH-804 20 DEPTH: 32.26 - 32.68

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	2.43	70.58	0.24	
	A.D.	1.31	71.60	0.24	3.4
	D.B.	-----	72.63	0.24	

****

SAMPLE ID : DDH-804 24 DEPTH: 45.06 - 45.26

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	2.91	77.90	0.09	
	A.D.	1.42	79.02	0.09	4.7
	D.B.	-----	80.16	0.09	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-26 DEPTH: 47.15 - 48.18

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.15	14.41	1.29	
	A.D.	0.91	14.74	1.32	4.1
	D.B.	-----	14.88	1.33	

SAMPLE ID : 88-27 DEPTH: 49.28 - 50.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.47	20.48	0.73	
	A.D.	1.08	20.99	0.75	3.4
	D.B.	-----	21.22	0.76	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 4

SAMPLE ID : 88-28 DEPTH: 58.57 - 62.14

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.99	ERR	ERR	
	A.D.	1.10	24.39	0.55	3.8
	D.B.	-----	24.66	0.56	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 29 DEPTH: 22.76 - 24.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.34	12.20	1.72	
	A.D.	0.92	12.43	1.75	2.7
	D.B.	-----	12.55	1.77	

SAMPLE ID : 30 DEPTH: 47.51 - 48.61

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.77	35.51	0.87	
	A.D.	0.87	36.20	0.89	2.9
	D.B.	-----	36.52	0.90	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 32 DEPTH: 49.35 - 50.42

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.09	14.63	0.94	
	A.D.	0.98	14.93	0.96	3.0
	D.B.	-----	15.08	0.97	

SAMPLE ID : 34 DEPTH: 50.58 - 50.89

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.98	51.97	0.60	
	A.D.	1.42	52.81	0.61	3.0
	D.B.	-----	53.57	0.62	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 36 DEPTH: 51.84 - 52.73

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.87	13.05	1.27	
	A.D.	1.74	13.22	1.29	3.4
	D.B.	-----	13.45	1.31	

SAMPLE ID : 38 DEPTH: 53.09 - 54.16

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.99	16.73	1.50	
	A.D.	1.91	16.92	1.52	4.0
	D.B.	-----	17.25	1.55	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 5

SAMPLE ID : 39 DEPTH: 61.33 - 61.57

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.75	48.75	2.08	
	A.D.	1.50	49.38	2.11	3.3
	D.B.	-----	50.13	2.14	

SAMPLE ID : 41 DEPTH: 62.11 - 65.49

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.75	22.51	0.71	
	A.D.	1.56	22.79	0.72	3.0
	D.B.	-----	23.15	0.73	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-805 40 DEPTH: 61.57 - 62.11

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.79	80.26	1.93	
	A.D.	1.74	81.97	1.97	6.9
	D.B.	-----	83.42	2.00	

****

SAMPLE ID : DDH-807 46 DEPTH: 15.31 - 15.69

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.22	80.22	1.66	
	A.D.	1.55	81.93	1.70	4.4
	D.B.	-----	83.38	1.73	

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-805 31 DEPTH: 48.61 - 49.35

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.28	82.43	2.44	
	A.D.	1.15	84.24	2.49	4.9
	D.B.	-----	85.22	2.52	

****

SAMPLE ID : DDH-805 33 DEPTH: 50.42 - 50.58

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.86	81.22	5.78	
	A.D.	1.19	83.00	5.91	5.0
	D.B.	-----	83.97	5.98	

****

SAMPLE ID : DDH-805 35 DEPTH: 50.89 - 51.84

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.44	84.54	2.23	
	A.D.	2.04	86.40	2.28	5.1
	D.B.	-----	87.41	2.31	

****

SAMPLE ID : DDH-805 37 DEPTH: 52.73 - 53.09

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.49	84.07	1.12	
	A.D.	2.00	85.92	1.14	5.8
	D.B.	-----	86.92	1.15	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 6

SAMPLE ID : 42 DEPTH: 9.10 - 9.75

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.98	44.44	0.44	
	A.D.	1.40	45.16	0.45	3.4
	D.B.	-----	45.80	0.46	

743

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PROJECT: TELKWA

FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 43 DEPTH: 9.64 - 10.79

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.88	60.10	6.11	
	A.D.	1.21	60.96	6.20	4.3
	D.B.	-----	61.71	6.28	

SAMPLE ID : 44 DEPTH: 11.52 - 13.01

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.60	40.37	1.99	
	A.D.	1.27	40.92	2.02	3.1
	D.B.	-----	41.45	2.05	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 45 DEPTH: 14.22 - 15.31

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.81	62.66	3.90	
	A.D.	1.34	63.13	3.93	4.1
	D.B.	-----	63.99	3.98	

SAMPLE ID : 47 DEPTH: 15.69 - 16.21

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.07	33.57	1.85	
	A.D.	1.06	33.92	1.87	2.5
	D.B.	-----	34.28	1.89	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 48 DEPTH: 17.85 - 18.30

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.29	38.28	0.60	
	A.D.	0.98	39.29	0.62	2.9
	D.B.	-----	39.68	0.63	

SAMPLE ID : 49 DEPTH: 22.28 - 22.79

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.52	55.51	0.25	
	A.D.	1.22	56.83	0.26	3.8
	D.B.	-----	57.53	0.26	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 50 DEPTH: 23.70 - 24.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.78	45.92	0.27	
	A.D.	1.05	46.64	0.27	3.2
	D.B.	-----	47.13	0.27	

SAMPLE ID : 51 DEPTH: 40.80 - 41.90

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.57	44.54	0.34	
	A.D.	1.15	45.19	0.34	3.6
	D.B.	-----	45.72	0.34	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 52 DEPTH: 43.40 - 43.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.02	65.70	0.40	
	A.D.	1.22	66.75	0.41	4.0
	D.B.	-----	67.57	0.42	

SAMPLE ID : 53 DEPTH: 46.20 - 47.00

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.77	61.16	0.14	
	A.D.	1.10	62.21	0.14	4.0
	D.B.	-----	62.90	0.14	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 7

SAMPLE ID : 54 DEPTH: 47.60 - 48.14

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.55	41.31	0.26	
	A.D.	1.10	41.94	0.26	3.8
	D.B.	-----	42.41	0.26	

SAMPLE ID : 55 DEPTH: 50.60 - 51.15

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.59	52.19	0.20	
	A.D.	1.12	52.98	0.20	3.8
	D.B.	-----	53.58	0.20	

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FILE # 31878
DATE : NOVEMBER 4,1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-805 40 DEPTH: 61.57 - 62.11

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.79	80.26	1.93	
	A.D.	1.74	81.97	1.97	6.9
	D.B.	-----	83.42	2.00	

****

SAMPLE ID : DDH-807 46 DEPTH: 15.31 - 15.69

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.22	80.22	1.66	
	A.D.	1.55	81.93	1.70	4.4
	D.B.	-----	83.38	1.73	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 8

SAMPLE ID : 56 DEPTH: 11.36 - 12.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.46	26.21	2.96	
	A.D.	0.90	26.63	3.01	4.7
	D.B.	-----	26.87	3.04	

SAMPLE ID : 57 DEPTH: 12.51 - 13.55

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.30	66.22	2.31	
	A.D.	1.55	67.42	2.35	4.8
	D.B.	-----	68.48	2.39	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 8

SAMPLE ID : 58 DEPTH: 14.03 - 14.63

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.58	29.90	3.36	
	A.D.	1.21	30.64	3.44	4.6
	D.B.	-----	31.02	3.48	

SAMPLE ID : 59 DEPTH: 15.01 - 16.04

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.45	70.09	0.20	
	A.D.	1.70	72.11	0.21	5.8
	D.B.	-----	73.36	0.21	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 61 DEPTH: 50.77 - 52.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.69	16.13	6.11	
	A.D.	0.79	15.79	6.36	5.6
	D.B.	-----	16.92	6.41	

SAMPLE ID : 62 DEPTH: 56.95 - 57.52

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.11	33.40	4.17	
	A.D.	0.86	34.18	4.27	4.1
	D.B.	-----	34.48	4.31	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 64 DEPTH: 58.44 - 60.79

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	5.15	18.27	2.11	
	A.D.	1.39	18.99	2.19	4.2
	D.B.	-----	19.26	2.22	

SAMPLE ID : 65 DEPTH: 64.70 - 65.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	1.34	43.96	3.64	
	A.D.	1.10	44.07	3.65	3.6
	D.B.	-----	44.56	3.69	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 66 DEPTH: 75.35 - 78.62

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.30	23.33	1.88	
	A.D.	0.92	24.15	1.95	2.8
	D.B.	-----	24.37	1.97	

SAMPLE ID : 67 DEPTH: 84.57 - 85.48

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.77	25.01	3.03	
	A.D.	1.12	25.97	3.15	3.3
	D.B.	-----	26.26	3.19	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 0 9

SAMPLE ID : 69 DEPTH: 86.32 - 87.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.67	14.18	1.38	
	A.D.	0.88	14.74	1.43	3.8
	D.B.	-----	14.87	1.44	

SAMPLE ID : 70 DEPTH: 93.02 - 97.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	5.01	9.78	0.94	
	A.D.	1.27	10.16	0.98	3.2
	D.B.	-----	10.29	0.99	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-809 63 DEPTH: 57.52 - 58.44

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.06	82.89	2.46	
	A.D.	1.69	84.93	2.52	4.8
	D.B.	-----	86.39	2.56	

****

SAMPLE ID : DDH-809 68 DEPTH: 85.48 - 86.32

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.29	79.26	3.00	
	A.D.	1.27	80.92	3.06	4.4
	D.B.	-----	81.96	3.10	

****

SAMPLE ID : DDH-811 79 DEPTH: 82.40 - 83.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.07	84.52	1.63	
	A.D.	1.38	86.89	1.68	5.7
	D.B.	-----	88.11	1.70	

****

SAMPLE ID : DDH-811 82 DEPTH: 98.14 - 98.95

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.76	85.79	0.40	
	A.D.	1.17	88.10	0.41	5.2
	D.B.	-----	89.14	0.41	

****

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FILE # 3196
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 71 DEPTH: 38.61 - 39.49

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.93	20.17	2.25	
	A.D.	0.66	20.86	2.33	3.6
	D.B.	-----	21.00	2.35	

SAMPLE ID : 72 DEPTH: 43.92 - 44.85

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.81	11.26	2.82	
	A.D.	0.52	11.52	2.89	3.4
	D.B.	-----	11.58	2.91	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 73 DEPTH: 46.71 - 48.99

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.05	28.21	3.70	
	A.D.	0.70	29.19	3.83	3.4
	D.B.	-----	29.40	3.86	

SAMPLE ID : 74 DEPTH: 51.10 - 51.53

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.65	29.17	3.81	
	A.D.	0.61	29.78	3.89	3.8
	D.B.	-----	29.96	3.91	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 75 DEPTH: 65.21 - 66.19

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.08	41.68	0.48	
	A.D.	0.81	42.65	0.49	3.3
	D.B.	-----	43.00	0.49	

SAMPLE ID : 76 DEPTH: 76.40 - 76.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.81	34.79	2.30	
	A.D.	0.88	35.48	2.35	2.9
	D.B.	-----	35.79	2.37	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 77 DEPTH: 78.25 - 79.02

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.61	54.27	0.87	
	A.D.	0.84	55.26	0.89	2.4
	D.B.	-----	55.73	0.90	

DEPTH: 81.70 - 82.40

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.24	39.59	6.21	
	A.D.	0.67	40.23	6.31	2.9
	D.B.	-----	40.50	6.35	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 80 DEPTH: 83.10 - 84.38

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.36	16.09	1.39	
	A.D.	0.65	16.54	1.43	2.8
	D.B.	-----	16.65	1.44	

SAMPLE ID : 81 DEPTH: 96.30 - 98.14

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.47	19.98	0.49	
	A.D.	0.80	20.75	0.51	3.5
	D.B.	-----	20.92	0.51	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 1

SAMPLE ID : 83 DEPTH: 98.95 - 99.49

	BASIS	% H2O	% ASH	% S	% SD.H2O
RAW	A.R.	4.07	18.91	0.83	
	A.D.	0.93	19.53	0.86	3.4
	D.B.	-----	19.71	0.87	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-809 63 DEPTH: 57.52 - 58.44

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.06	82.89	2.46	
	A.D.	1.69	84.93	2.52	4.8
	D.B.	-----	86.39	2.56	

****

SAMPLE ID : DDH-809 68 DEPTH: 85.48 - 86.32

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.29	79.26	3.00	
	A.D.	1.27	80.92	3.06	4.4
	D.B.	-----	81.96	3.10	

****

SAMPLE ID : DDH-811 79 DEPTH: 82.40 - 83.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.07	84.52	1.63	
	A.D.	1.38	86.89	1.68	5.7
	D.B.	-----	88.11	1.70	

****

SAMPLE ID : DDH-811 82 DEPTH: 98.14 - 98.95

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.76	85.79	0.40	
	A.D.	1.17	88.10	0.41	5.2
	D.B.	-----	89.14	0.41	

****

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 84 DEPTH: 32.10 - 33.00

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.47	18.49	1.50	
	A.D.	0.54	19.25	1.56	2.7
	D.B.	-----	19.35	1.57	

SAMPLE ID : 85 DEPTH: 44.39 - 45.25

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.97	23.40	4.62	
	A.D.	0.61	23.97	4.73	3.4
	D.B.	-----	24.12	4.76	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 86 DEPTH: 46.80 - 47.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.84	19.76	3.50	
	A.D.	0.75	20.19	3.58	3.0
	D.B.	-----	20.34	3.61	

SAMPLE ID : 87 DEPTH: 51.80 - 52.23

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.99	29.87	7.38	
	A.D.	0.68	30.58	7.56	6.9
	D.B.	-----	30.79	7.61	

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 88 DEPTH: 55.10 - 55.95

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.86	18.76	0.84	
	A.D.	0.91	19.34	0.87	3.0
	D.B.	-----	19.52	0.88	

SAMPLE ID : 90 DEPTH: 56.31 - 57.42

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.97	29.86	0.43	
	A.D.	0.93	30.81	0.44	3.9
	D.B.	-----	31.10	0.44	

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 91 DEPTH: 64.29 - 64.69

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.70	51.56	0.76	
	A.D.	1.26	52.87	0.78	4.2
	D.B.	-----	53.54	0.79	

SAMPLE ID : 93 DEPTH: 64.94 - 65.59

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.67	31.82	0.70	
	A.D.	1.09	33.02	0.73	3.5
	D.B.	-----	33.38	0.74	

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 94 DEPTH: 66.39 - 66.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.37	54.55	1.09	
	A.D.	1.12	55.82	1.12	4.4
	D.B.	-----	56.45	1.13	

SAMPLE ID : 96 DEPTH: 67.20 - 67.45

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.95	55.17	0.31	
	A.D.	0.96	56.89	0.32	4.7
	D.B.	-----	57.44	0.32	

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 97 DEPTH: 69.02 - 70.04

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	2.83	39.47	2.14	
	A.D.	0.78	40.30	2.19	3.2
	D.B.	-----	40.62	2.21	

SAMPLE ID : 98 DEPTH: 70.97 - 72.10

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.49	38.63	0.91	
	A.D.	0.66	39.76	0.94	3.1
	D.B.	-----	40.02	0.95	

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-812 89 DEPTH: 55.95 - 56.31

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	4.57	75.05	0.30	
	A.D.	0.97	77.88	0.31	4.0
	D.B.	-----	78.64	0.31	

****

SAMPLE ID : DDH-812 92 DEPTH: 64.69 - 64.94

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.62	79.61	0.16	
	A.D.	1.25	81.57	0.16	4.8
	D.B.	-----	82.60	0.16	

****

SAMPLE ID : DDH-812 95 DEPTH: 66.80 - 67.20

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.07	73.79	0.20	
	A.D.	0.85	75.48	0.20	3.7
	D.B.	-----	76.13	0.20	

****

SAMPLE ID : DDH-812 100 DEPTH: 76.10 - 76.55

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	4.37	84.01	1.11	
	A.D.	0.93	87.03	1.15	5.7
	D.B.	-----	87.85	1.16	

****

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ATTN : BRIAN MCKINSTRY
PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 99 DEPTH: 75.00 - 76.10

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.93	13.07	2.18	
	A.D.	0.64	13.52	2.25	3.4
	D.B.	-----	13.61	2.26	

SAMPLE ID : 101 DEPTH: 76.55 - 77.90

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.87	21.49	1.37	
	A.D.	0.83	22.40	1.43	4.1
	D.B.	-----	22.59	1.44	

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 2

SAMPLE ID : 102 DEPTH: 93.56 - 96.61

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.44	17.76	0.45	
	A.D.	0.92	18.41	0.47	4.1
	D.B.	-----	18.58	0.47	

SAMPLE ID : 104 DEPTH: 97.31 - 97.91

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.67	21.57	1.35	
	A.D.	1.14	22.14	1.39	4.7
	D.B.	-----	22.40	1.41	

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-812 103 DEPTH: 96.61 - 97.31

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.90	84.16	0.68	
	A.D.	1.00	86.70	0.70	5.5
	D.B.	-----	87.58	0.71	

****

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 3

SAMPLE ID : 105 DEPTH: 43.81 - 44.06

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.98	58.27	1.06	
	A.D.	0.79	60.20	1.10	4.2
	D.B.	-----	60.68	1.11	

SAMPLE ID : 106 DEPTH: 111.80 - 112.64

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	7.07	33.73	2.23	
	A.D.	0.74	36.03	2.38	2.9
	D.B.	-----	36.30	2.40	

743

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 107 DEPTH: 24.67 - 25.11

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.78	26.29	2.90	
	A.D.	0.89	27.08	2.99	2.6
	D.B.	-----	27.32	3.02	

SAMPLE ID : 108 DEPTH: 29.59 - 30.46

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	2.96	20.70	4.65	
	A.D.	0.87	21.15	4.75	3.1
	D.B.	-----	21.34	4.79	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 109 DEPTH: 33.20 - 33.76

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.27	32.93	4.60	
	A.D.	0.93	33.73	4.71	3.6
	D.B.	-----	34.05	4.75	

SAMPLE ID : 110 DEPTH: 55.50 - 56.98

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.70	18.67	2.33	
	A.D.	0.80	19.23	2.40	2.0
	D.B.	-----	19.39	2.42	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 112 DEPTH: 58.27 - 59.80

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	4.35	17.37	2.00	
	A.D.	0.74	18.03	2.08	3.7
	D.B.	-----	18.16	2.10	

SAMPLE ID : 114 DEPTH: 60.85 - 61.24

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.43	60.34	0.39	
	A.D.	1.02	61.85	0.40	4.6
	D.B.	-----	62.49	0.40	

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 115 DEPTH: 70.12 - 73.41

	BASIS	% H2O	% ASH	% S	% EQ.H2
RAW	A.R.	3.89	15.29	0.54	
	A.D.	0.83	15.78	0.56	2.9
	D.B.	-----	15.91	0.56	

SAMPLE ID : 117 DEPTH: 74.04 - 76.11

	BASIS	% H2O	% ASH	% S	% EQ.H2
RAW	A.R.	3.87	12.16	0.60	
	A.D.	0.69	12.56	0.62	2.8
	D.B.	-----	12.65	0.62	

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PROJECT: TELKWA

FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 118 DEPTH: 79.14 - 80.20

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.26	22.86	1.75	
	A.D.	0.62	23.48	1.80	2.6
	D.B.	-----	23.63	1.81	

SAMPLE ID : 120 DEPTH: 80.86 - 81.98

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.61	18.25	2.01	
	A.D.	0.84	18.77	2.07	3.5
	D.B.	-----	18.93	2.09	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

HOLE: D D H - 8 1 4

SAMPLE ID : 121 DEPTH: 89.32 - 92.99

	BASIS	% H2O	% ASH	% S	% EQ.H2O
RAW	A.R.	3.80	26.89	1.26	
	A.D.	0.87	27.71	1.30	3.3
	D.B.	-----	27.95	1.31	

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FILE # 31906
DATE : NOVEMBER 16, 1988
SAMPLE TYPE: TRENCH

SAMPLE ID : DDH-814 111 DEPTH: 56.98 - 58.27

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.76	83.15	1.06	
	A.D.	1.26	85.31	1.09	3.2
	D.B.	-----	86.40	1.10	

****

SAMPLE ID : DDH-814 113 DEPTH: 59.90 - 60.85

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.44	83.59	0.15	
	A.D.	1.08	85.63	0.15	4.5
	D.B.	-----	86.56	0.15	

****

SAMPLE ID : DDH-814 116 DEPTH: 73.41 - 74.04

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	3.01	78.74	2.27	
	A.D.	1.09	80.30	2.31	3.1
	D.B.	-----	81.18	2.34	

****

SAMPLE ID : DDH-814 119 DEPTH: 80.20 - 80.86

	BASIS	% H20	% ASH	% S	% EQ.H20
RAW	A.R.	4.08	85.24	0.77	
	A.D.	1.49	87.54	0.79	6.6
	D.B.	-----	88.86	0.80	

****

TELKWA 1988 SURVEY

DRILL HOLE	NORTHING	EASTING	ELEVATION
801	6059396.903758	617185.423734	888.767
802	6060251.428817	616192.707801	930.221
803	6060341.250000	616736.500000	973.920
804	6060040.144028	616816.032448	939.704
805	6059912.690583	617304.450589	933.829
806	6060713.869684	615390.614985	899.157
807	6062397.661935	615629.274565	889.940
808	6062569.377440	614525.459406	895.820
809	6060975.676276	616215.893079	976.281
810	6060622.984359	616484.578678	999.638
811	6060212.914061	617102.807230	995.313
812	6060395.922536	616582.714734	975.139
813	6060683.924703	616346.013506	983.044
814	6059756.620836	617604.427783	910.132

BWM/bd 1

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 20/09/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 801
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J. T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion SEPT 20 1988
6. Date of Sealing SEPT 20 1988
7. Sealed by: Name of Contractor J. T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature
Designation J. T. THOMAS
Date 20/09/88

Countersignature
Designation CROWS NEST RESOURCES
Date 20/09/88

743

APPENDIX II

Report on the Sealing of drillholes

Inspection District # 9 Date of Report 21/09/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 502
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 21/09/88
6. Date of Sealing 21/09/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? No
   (b) If so, give details and location

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature Doug Campbell
Designation J.T. Thomas
Date 21/09/88

Countersignature Brian McKinstry
Designation CROWS NEST RESOURCES
Date 21/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 22/09/88

Company CROWS NEST RESOURCES Land District Coast Range 5

1. Number of Drillholes 803
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES.
5. Date of completion 22/09/88
6. Date of Sealing 22/09/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature
Designation J.T. THOMAS
Date 22/09/88

Countersignature
Designation CROWS NEST RESOURCES
Date 22/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 23/09/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 804
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES.
5. Date of completion 23/09/88
6. Date of Sealing 23/09/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES.
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature Doug Crowell
Designation J.T. Thomas
Date 23/09/88

Countersignature Brian McKinstry
Designation ~~Engineer~~ CROWS NEST RES
Date 23/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District # 9 Date of Report 23/09/88

Company Crows West Resources Land District Coast Range 5

1. Number of Drillholes 805
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor T.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 23/09/88
6. Date of Sealing 23/09/88
7. Sealed by: Name of Contractor T.T. THOMAS
   Name of Exploration Company CROWS NEST RES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature
Designation T.T. Thomas
Date 23/09/88

Countersignature
Designation CROWS NEST RESOURCES
Date 23/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 24/09/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 806
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES
5. Date of completion 24/09/88
6. Date of Sealing 24/09/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location _____

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation _____

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out _____

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature _____
Designation J.T. THOMAS
Date 24/09/88

Countersignature _____
Designation CROWS NEST RESOURCES
Date 24/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 24/09/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 807
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J. T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 24/09/88
6. Date of Sealing 24/09/88
7. Sealed by: Name of Contractor J. T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature [signature]
Designation J. T. THOMAS
Date 24/09/88

Countersignature [signature]
Designation CROWS NEST RESOURCES
Date 24/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 25/09/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 808
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor T.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 25/09/88
6. Date of Sealing 25/09/88
7. Sealed by: Name of Contractor T.T. THOMAS
   Name of Exploration Company CROWS NEST RES.
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature
Designation T.T. THOMAS
Date 25/09/88

Countersignature
Designation CROWS NEST RESOURCES
Date 25/09/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 5/10/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 809
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES.
5. Date of completion 5/10/88
6. Date of Sealing 5/10/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature [signature]
Designation J.T. THOMAS
Date 05/10/88

Countersignature [signature]
Designation CROWS NEST RESOURCES
Date 05/10/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 5/10/88

Company Crows Nest Resources. Land District Coast Range 5

1. Number of Drillholes 810
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 05/10/88
6. Date of Sealing 05/10/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature J.T. Thomas
Designation
Date 05/10/88

Countersignature
Designation CROWS NEST RESOURCES
Date 05/10/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District # 9 Date of Report 07/10/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 8/1
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 07/10/88
6. Date of Sealing 07/10/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location

9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation

10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out

11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature Don Campbell
Designation J.T. THOMAS
Date 07/10/88

Countersignature Thomas McGinty
Designation CROWS NEST RESOURCES
Date 07/10/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 07/10/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 8/2
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 07/10/88
6. Date of Sealing 07/10/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? YES
   (b) If so, give details and location 30 FEET OF CASING CEMENTED IN HOLE TO PLUG WATER FLOW IN OVERBURDEN. UTM :
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature
Designation J.T. THOMAS
Date 07/10/88

Countersignature
Designation CROWS NEST RESOURCES
Date 07/10/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District #9 Date of Report 8/10/88

Company Crows Nest Resources. Land District Coast Range 5

1. Number of Drillholes 813
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 8/10/88
6. Date of Sealing 8/10/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature Ray Campbell
Designation J.T. Thomas
Date 08/10/88

Countersignature Peter McKinstry
Designation CROWS NEST RESOURCES
Date 08/10/88

APPENDIX II

Report on the Sealing of drillholes

Inspection District # 9 Date of Report 9/10/88

Company Crows Nest Resources Land District Coast Range 5

1. Number of Drillholes 814
2. Surface elevation
3. Type(Vertical, diamond, rotary, size, etc. DIAMOND (VERTICAL)
4. Drilled by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
5. Date of completion 9/10/88
6. Date of Sealing 9/10/88
7. Sealed by: Name of Contractor J.T. THOMAS
   Name of Exploration Company CROWS NEST RESOURCES
8. (a) Has any casing, drill pipe, drill bits, core barrel, etc. been left in the hole? NO
   (b) If so, give details and location _____
9. (a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? YES
   (b) If No, give reasons and details of variation _____
10. (a) Was the sealing effective? YES
    (b) Details of any tests carried out _____
11. I certify that the above drillhole has been effectively sealed in accordance with the instructions of the Chief Inspector of Mines.

Signature [signature]
Designation J.T. THOMAS
Date

Countersignature [signature]
Designation CROWS NEST RESOURCES
Date

GEO-PHYSI-CON

DIRECT CURRENT PROFILING SURVEY
TELKWA COAL PROJECT
SMITHERS, BRITISH COLUMBIA

Prepared For

CROWS NEST RESOURCES LTD
CALGARY, ALBERTA

Prepared By

GEO-PHYSI-CON CO. LTD.
CALGARY, ALBERTA

November 1988
C88-47

00743
part 4

GEO-PHYSI-CON

Table of Contents

1.0 INTRODUCTION

This report presents the results of an electrical resistivity survey on the Crows Nest Resources Ltd, Telkwa coal project near Smithers, British Columbia (Figure 1). The purpose of the survey was to delineate coal subcrop using direct current methods in the profiling mode. In order to determine the effectiveness of this geophysical method, an initial test line with drill hole control was surveyed. Based on the results obtained along this line, additional lines were surveyed.

Authorization for the work was granted under Crows Nest Resources Ltd., Purchase Order CN 25034 dated August 16, 1988.

2.0 LOGISTICS AND DATA ACQUISITION

The geophysical surveys were performed by a three man crew between September 11 and 19, 1988. The crew lodged at commercial facilities in Smithers, British Columbia and travelled daily to the site by truck.

The direct current profiling (DCP) survey was carried out along 7 survey lines for a total length of 4.8 km (Figure 2). All survey lines were located and slashed by Crows Nest Resources Ltd. Pinflags denoting line number and chainage were left at 100 metre intervals along the survey lines.

The DCP survey used a 20 metre station interval with the measurement array oriented along the direction of the survey line. At each station, measurements were made to four different effective depths of exploration. Table 1 lists the separation of current electrodes, potential electrodes and an estimate of the effective depth of exploration for each of the four configurations.

Table 1

DCP Measurement Arrays

Current Electrode Separation (m)	Potential Electrode Separation (m)	Estimated Effective Depth of Exploration (m)
20	2	5
60	20	15
100	20	25
140	20	35

In addition to the DCP survey, direct current soundings were taken at selected locations using a Schlumberger array. The curves were generally distorted and uninterpretable since required array lengths were large in comparison to the rate of lateral change of material resistivity (due to dipping nature of the geology in this area). The curves did, however, provide a qualitative interpretation to ensure proper electrodes spacing for the DCP method.

Appendix A contains notes describing the technical principles for these measurements. Appendix B contains the manufacturer's technical description of the instrumentation used.

3.0 DATA PRESENTATION

The DCP measurements have been converted to apparent resistivity using well known relationships involving measurement array geometry. The apparent resistivity is the total resistivity measured at ground surface due to the combined effect of subsurface layers of various thickness and resistivity within the effective exploration depth of the survey array used.

Direct current profiles of apparent resistivity for each of the four arrays used have been plotted on a linear scale versus midpoint station location along all survey lines. Areas underlain by coal are characterized by larger apparent resistivities. The subcrop of coal is characterized by relatively sharp reductions to lower apparent resistivity levels.

The data has also been presented as apparent resistivity pseudosections. The pseudosections show the resistivity stratification with depth based on the effective depth of exploration of the various instrument modes using a constant datum.

4.0 RESULTS

In the survey area, the number of coal layers have been interpreted based on drill hole information. The coal layers commonly occur within fairly low resistivity siltstones and/or mudstones. The coal layers generally dip at between 20° and 30° to the west in the vicinity of Lines 1 to 5 and 7. The surface elevation generally decreases to the west.

4.1 Line 1

The DC profiling data along Line 1 are shown in Figure 3. This line was the initial test line for the survey. From the data two areas of coal subcrop are. The first terminates in the vicinity of station 150 and the other at station 430.

Drill hole 601 (at station 380), placed prior to the geophysical program showed a number of coal layers between 13 and 24 metres and also between 32 and 38 metres. Overburden was reported to be approximately 6 metres thick at this location. Projections made by Crows Nest Resources Ltd. representatives in the field using information from drill hole 601 indicated that the coal subcrop would occur in the vicinity of station 430. This is in agreement with the geophysical interpretation.

Based on the geophysical signature east of station 50, an additional drill hole (TW-805-88) was placed at station 0. This drill hole intersected coal in the 25 and 50 metre ranges. Discussions with Crows Nest Resources Ltd. personnel have indicated that the coal seams which are intersected in TW-805-88 are the same as those intersected at

drill hole 601. Considering the depths and dips of the coal seams, it would appear that the coal seams have been repeated higher in the section at drill hole TW-805-88.

Based on the shallowest measurement configuration, it would appear that there is a change in the overburden materials at approximately station 550. East of station 550 the near surface materials are fairly resistive, indicating the presence of coarse grained materials. West of station 550 there is a decrease in near surface resistivity, indicating the presence of more fine grained materials.

4.2 Line 2

The DC profiling data along Line 2 are shown in Figure 4. From the data two areas of coal subcrop are apparent. The subcrop of the main coal seams is expected to occur near station 780. The subcrop of repeated seams is similarly expected to occur at station 350.

Drill hole 213 (station 670) placed prior to the geophysical program indicated the presence of a number of coal seams. Projections made in the field indicate that the coal subcrop occurs in the vicinity

of station 780. This is in good agreement with the geophysical interpretation.

Based on the geophysical signature east of station 350, a drill hole (TW-814-88) was drilled at station 200. This drill hole intersected coal in the 25 metre range and also in the 80 metre range. Discussions with Crows Nest Resources Ltd., personnel have indicated that the coal seams intersected in drill hole 213 and TW-814-88 are the same. Considering the depths and dips associated with the coal seams, it would appear that the coal east of station 350 is repeated higher in the section.

The overburden along this line is approximately 6 metres thick from the drilling results. From the shallowest measurement configuration it would appear that there is a change in the overburden type at approximately station 1190. East of this point the materials are more resistive, indicating less clay materials. West of station 1190 the near surface materials are less resistive, indicating more clay content.

4.3 Line 3

The DC profiling data along Line 3 are shown in Figure 5. The data shows that apparent resistivity is fairly uniform with depth indicating that no coal subcrop occurs along this line. Drill hole TW-806-88 (station 320) did not intersect coal.

The overburden is approximately 9 metres thick based on the drill hole. From the shallowest measurement configuration it would appear the near surface materials are more resistive (less clayey) south of station 100.

4.4 Line 4

The DC profiling data along Line 4 are shown in Figure 6. From the data three areas of coal subcrop are apparent. The first terminates at station 70, the second at station 260 and the third at station 340. Based on drilling information off the survey line and similar geophysical signatures along 1 and 2, the first area is interpreted to represent the repeated coal section. Drill hole TW-804-88 was located at station 160 and intersects a number of coal seams. This drill hole occurs within the second area.

The third area terminates at station 340. This zone is also interpreted as coal at perhaps a greater depth than recorded at drill hole TW-804-88.

The overburden is approximately 6 metre thick based on the drill hole. From the shallowest instrument configuration there is a decrease in the near surface resistivity (increasing clay content) between station 350 and 400.

4.5 Line 5

The DC profiling data along Line 5 are shown in Figure 7. The data shows fairly uniform resistivity with depth along the line. At approximately station 300 there is a slight increase in apparent resistivity with depth based on the deeper measurement configurations. Drill hole TW-802-88 at approximately station 300 does not report the presence of coal at this location. The drill hole reports the water table and a change of rock type from sandstone to siltstone at 17 metres depth. This most likely represents the change in resistivity mapped at the surface. At the east end of the line there appears to be an increase in resistivity with depth. This may indicate a change in rock type and/or the presence of coal.

4.6 Line 6

The DC profiling data along Line 6 are shown in Figure 8. The data shows two areas underlain by resistive materials. The first occurs between approximately station 200 and 380 and the other between station 440 and 550. There is limited drill hole information along this line. One drill hole (TW-808-88) is located at station 260. The geological log report numerous coal seams. No geophysical logs were available for this drill hole. The second area (station 440-550) has a similar geophysical signature as those along Line 1 and 2 and may be interpreted to represent coal.

The overburden is approximately 6 metres thick as reported in the drill hole. The shallowest measurement configuration shows the near surface resistivity to be quite variable. Between stations 0 and 250 and from station 700 to the south end of the line the near surface is resistive indicating the presence of granular materials or perhaps peat.

4.7 Line 7

The DC profiling data along Line 7 are shown in Figure 9. The data shows two areas underlain by resistive materials. The first terminates at station 40 and the other at station 330. Based on the geophysical signature and information obtained along adjacent lines the first resistor most likely represents the repeated coal section. The second resistor which terminates at station 330 most likely represents coal, as inferred from drill hole TW-803-88 at station 80 which reports a number of coal seams between 30 and 90 metres in depth.

The overburden along the line is approximately 4 metres thick based on the drill hole information. From the shallowest measurement configuration the near surface materials are resistive between station 20 and 80 and from stations 440 to the end of the line. This would indicate low clay content in these areas.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The direct current profiling data has been shown to be useful in mapping coal subcrop in the Telkwa project area. Based on the

geophysical signatures a number of drill holes have been placed which intersected coal. In areas where the apparent resistivity was uniform with depth no coal was encountered in the drill holes. It is recommended that additional drill holes be placed along line 6 to determine if the anomalous resistivity values are related to the presence of coal.

A limited number of direct current soundings were taken in the project area. This data was generally distorted and uninterpretable due to the dipping nature of the geology encountered in this area. It is recommended in the future that the direct current profiling method be used when trying to locate coal subcrop in this area.

Respectfully submitted

Geo-Physi-Con Co. Ltd.

PERMIT TO PRACTICE
GEO-PHYSI-CON CO. LTD.
Signature M. Pesowski
Date Nov. 7 '88
PERMIT NUMBER: P 2802
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

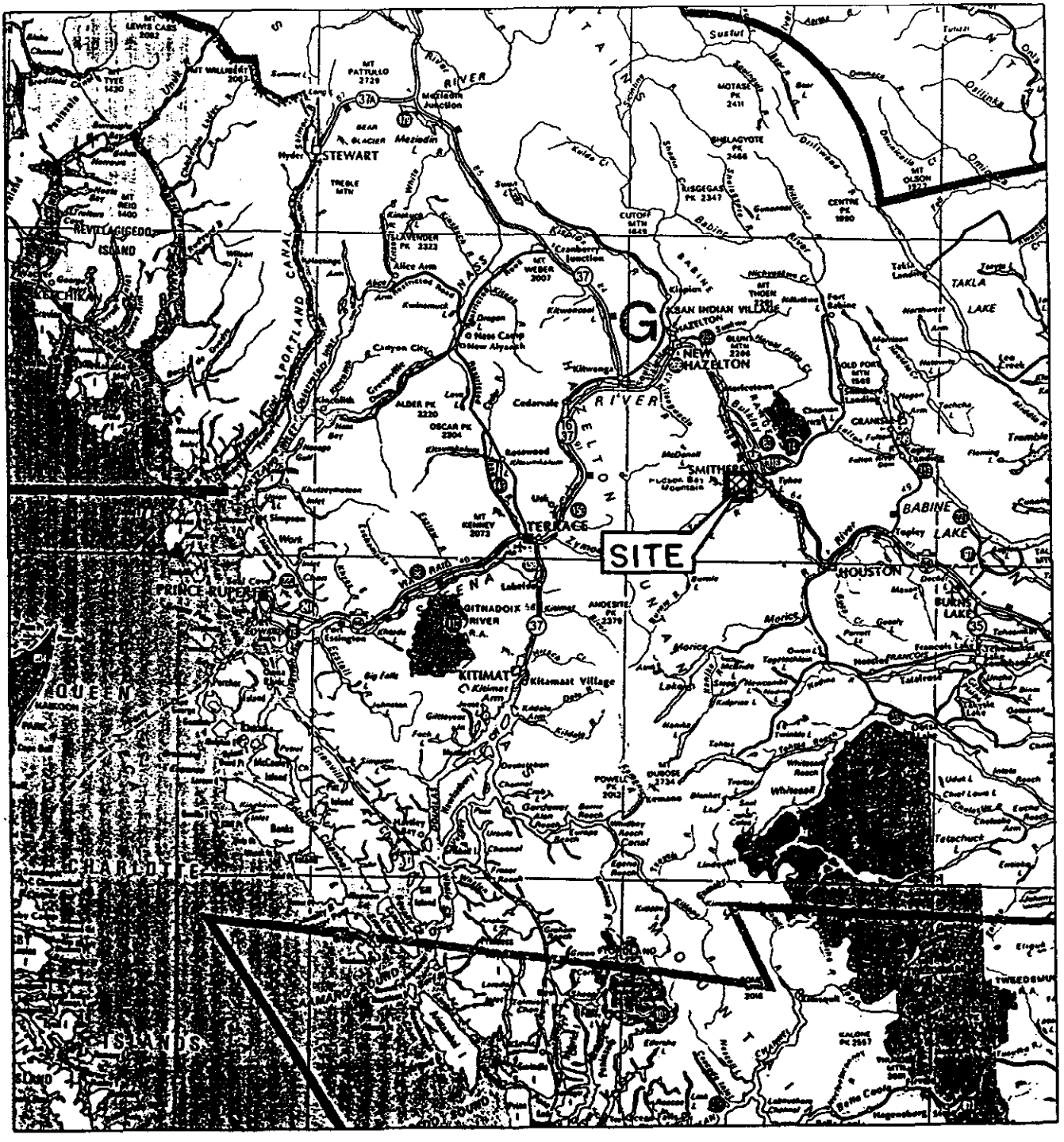
Per: M. Pesowski

Michael Pesowski, P.Geoph.
Project Geophysicist

Reviewed by: Tony Setnell for

J. D. Henderson
President

Calgary, Alberta
November 1988
C88-47



Crows Nest Resources LIMITED

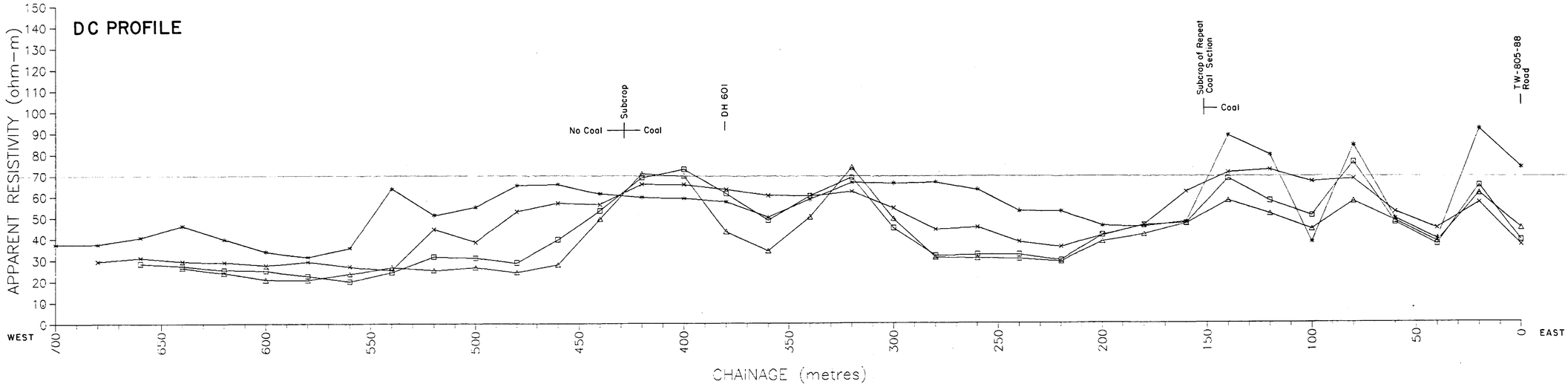
TELKWA COAL PROJECT

SITE LOCATION MAP

GEO-PHYSI-CON	SCALE	DRAWN BY BB	DATE Nov., 1988
	N.T.S.	PROJECT NO. C 88-47	FIGURE 1

614 000 mE
615 000 mE
616 000 mE
617 000 mE
618 000 mE
6 063 000 mN
6 062 000 mN
6 061 000 mN
6 060 000 mN
6 059 000 mN
Road
LINE 6
0
808
LINE 3
806
LINE 5
802
LINE 7
803
LINE 4
804
811
LINE 1
601
805
LINE 2
213
814
Road
N
0 100 200 300 400 metres
SCALE
743 pt.4
Encl. 15
Crows Nest Resources LIMITED
TELKWA COAL PROJECT (1)
LINE LOCATION MAP
GEOPHYSICON
SCALE 1:10 000
N.T.S.
DRAWN BY BB
PROJECT NO. C 88-47
DATE Nov., 1988
FIGURE 2

DC PROFILE



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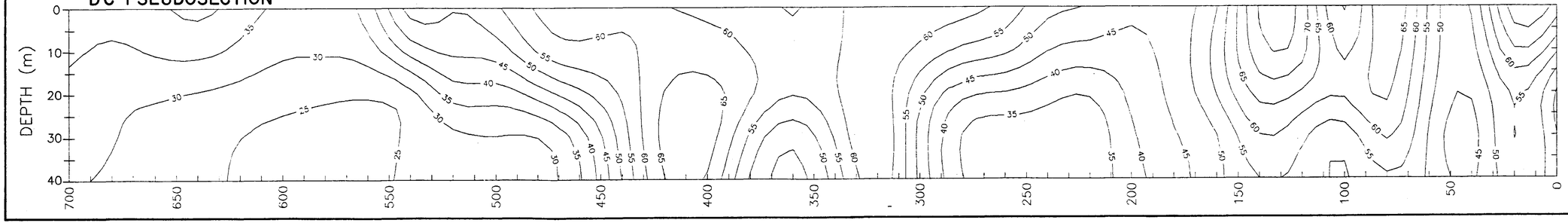

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Crows Nest Resources LIMITED

(2)

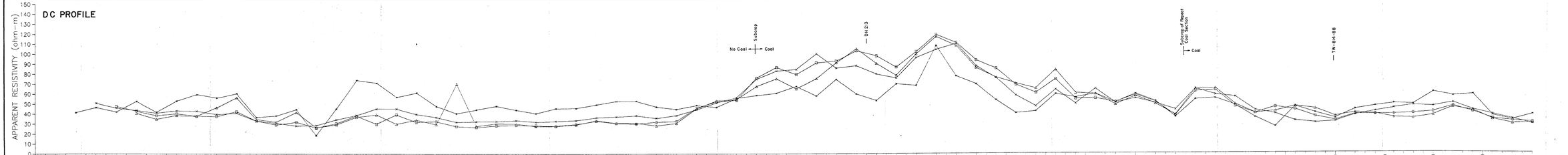
TELKWA COAL PROJECT

DIRECT CURRENT PROFILE

LINE 1

GEO-PHYSI-CON	SCALE	DRAWN BY	DATE
	N.T.S.	BB	Nov., 1988
		PROJECT NO. C 88-47	FIGURE 3

DC PROFILE



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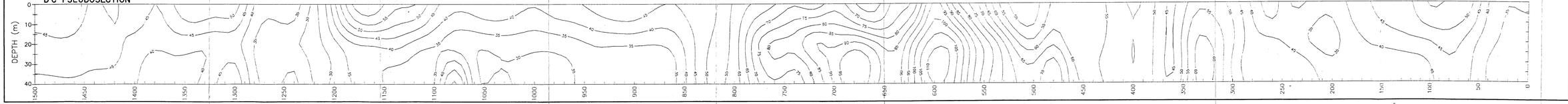

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Crows Nest Resources Limited

(3)

TELKWA COAL PROJECT

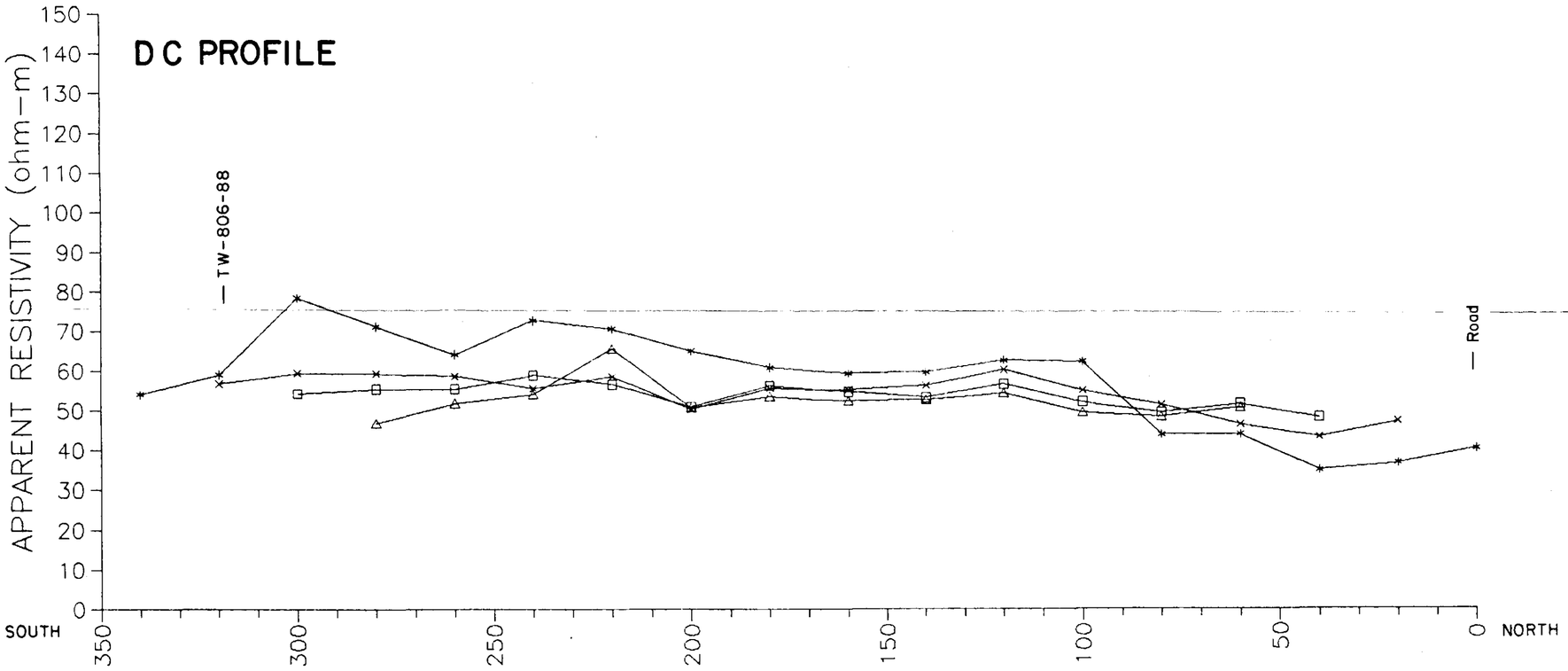
DIRECT CURRENT PROFILE

LINE 2

geophysical

SCALE	DRAWN BY	DATE
N.T.S.	B.B	Nov., 1988
	PROJECT NO. C 88-47	FIGURE 4

DC PROFILE



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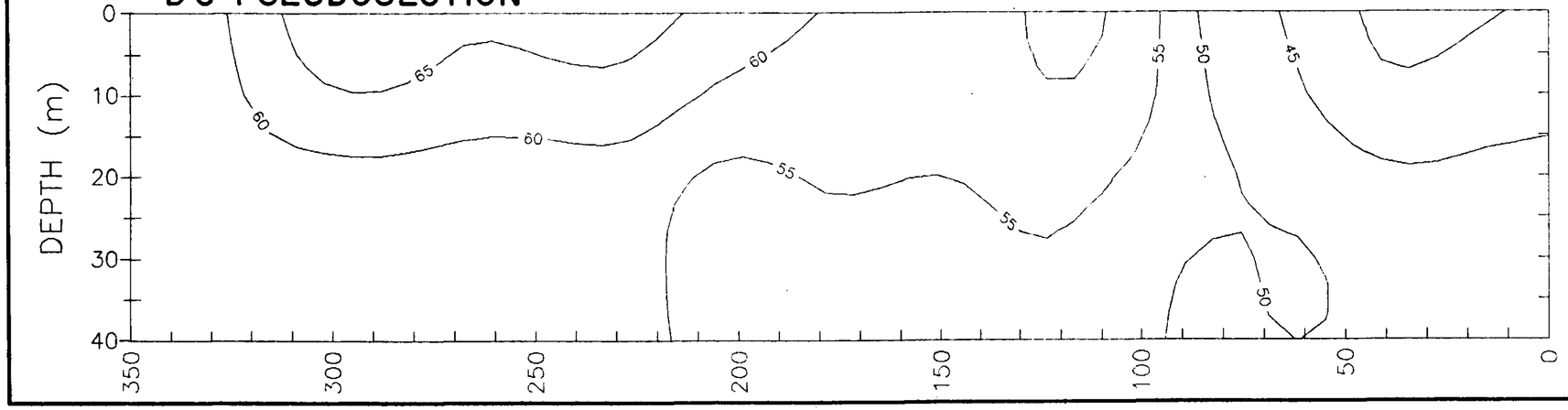

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Crows Nest Resources LIMITED

(4)

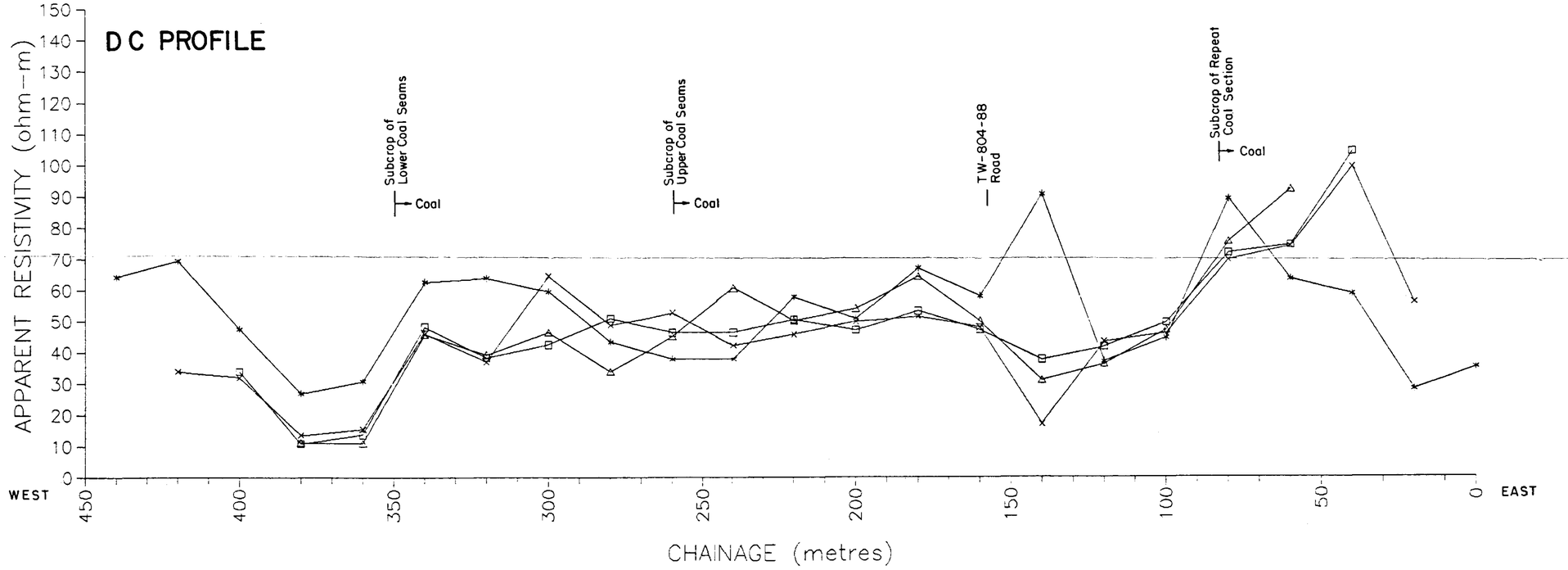
TELKWA COAL PROJECT

DIRECT CURRENT PROFILE

LINE 3

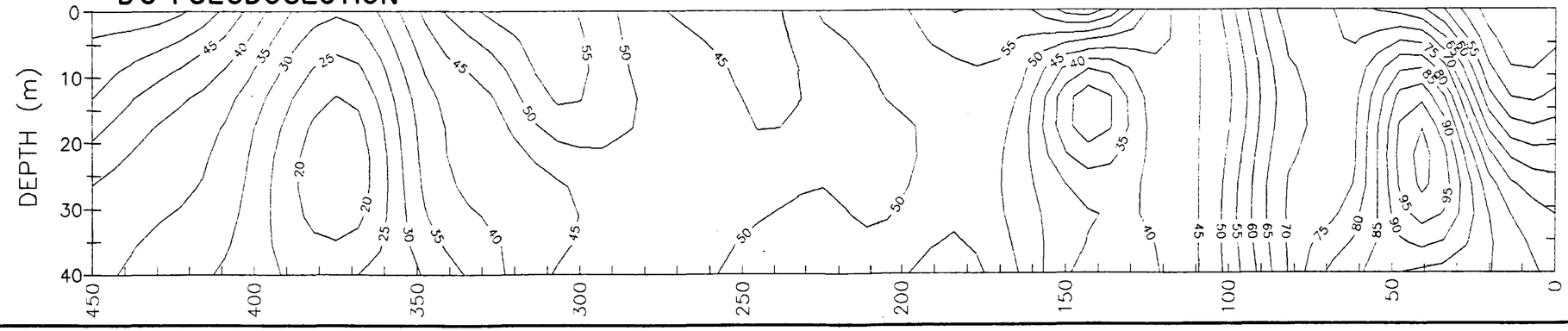
GEO-PHYSICON	SCALE	DRAWN BY	DATE
	N.T.S.	BB	Nov., 1988
		PROJECT NO. C 88-47	FIGURE 5

DC PROFILE



DATA LINE	EFFECTIVE DEPTH OF EXPLORATION
✱-✱-✱-✱-✱	5 metres
×-×-×-×-×	15 metres
□-□-□-□-□	25 metres
△-△-△-△-△	35 metres

DC PSEUDOSECTION



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Crows Nest Resources LIMITED

(5)

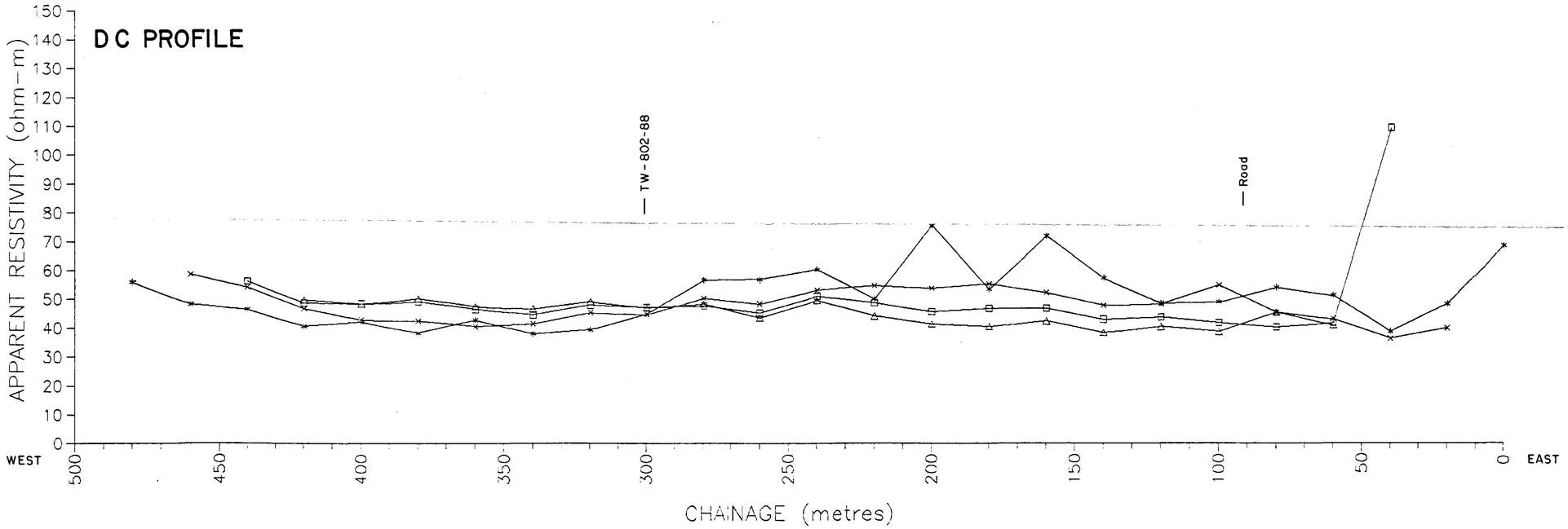
TELKWA COAL PROJECT

DIRECT CURRENT PROFILE

LINE 4

GEOPHYSICON	SCALE	DRAWN BY	DATE
	N.T.S.	BB	Nov., 1988
		PROJECT NO. C 88-47	FIGURE 6

DC PROFILE



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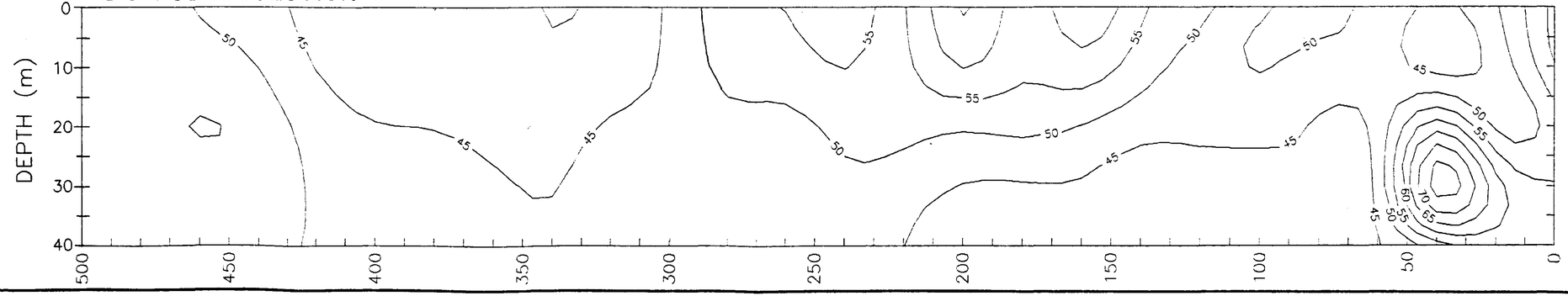

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Crows Nest Resources LIMITED

(6)

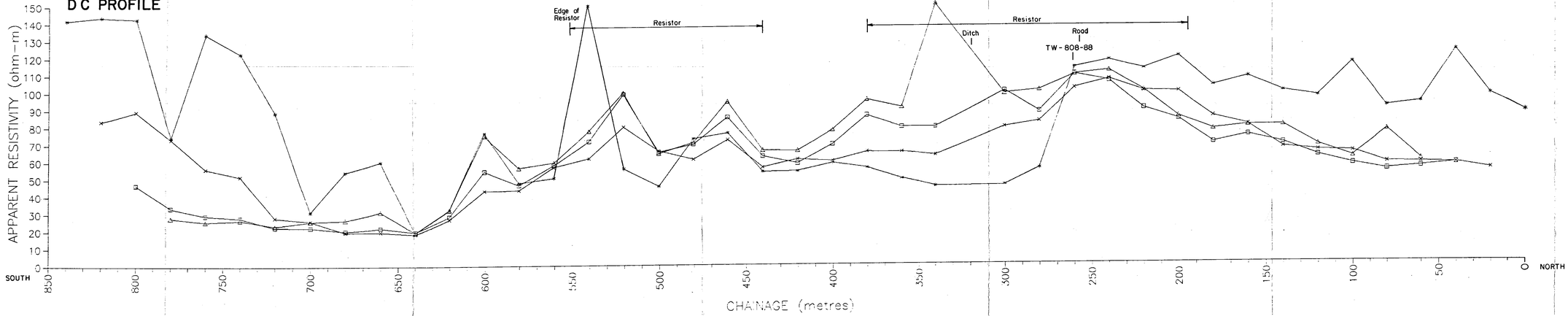
TELKWA COAL PROJECT

DIRECT CURRENT PROFILE

LINE 5

GEOPHYSICON	SCALE	DRAWN BY	DATE
	N.T.S.	BB	Nov., 1988
		PROJECT NO. C 88-47	FIGURE 7

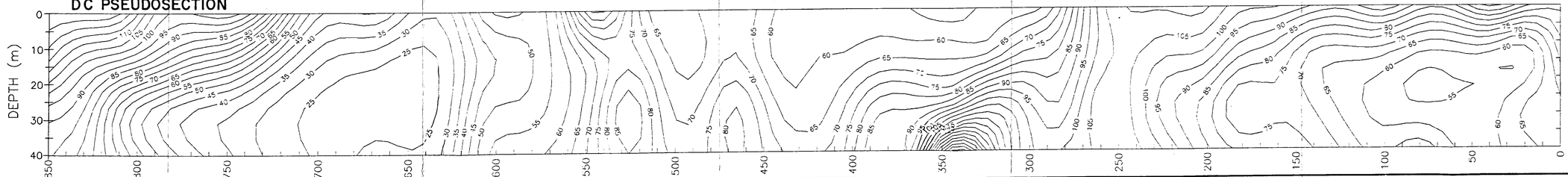
DC PROFILE



DATA LINE — EFFECTIVE DEPTH OF EXPLORATION

- 5 metres
- 15 metres
- 25 metres
- 35 metres

DC PSEUDOSECTION



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Pt 4
encl. 15

Crows Nest Resources LIMITED

(7)

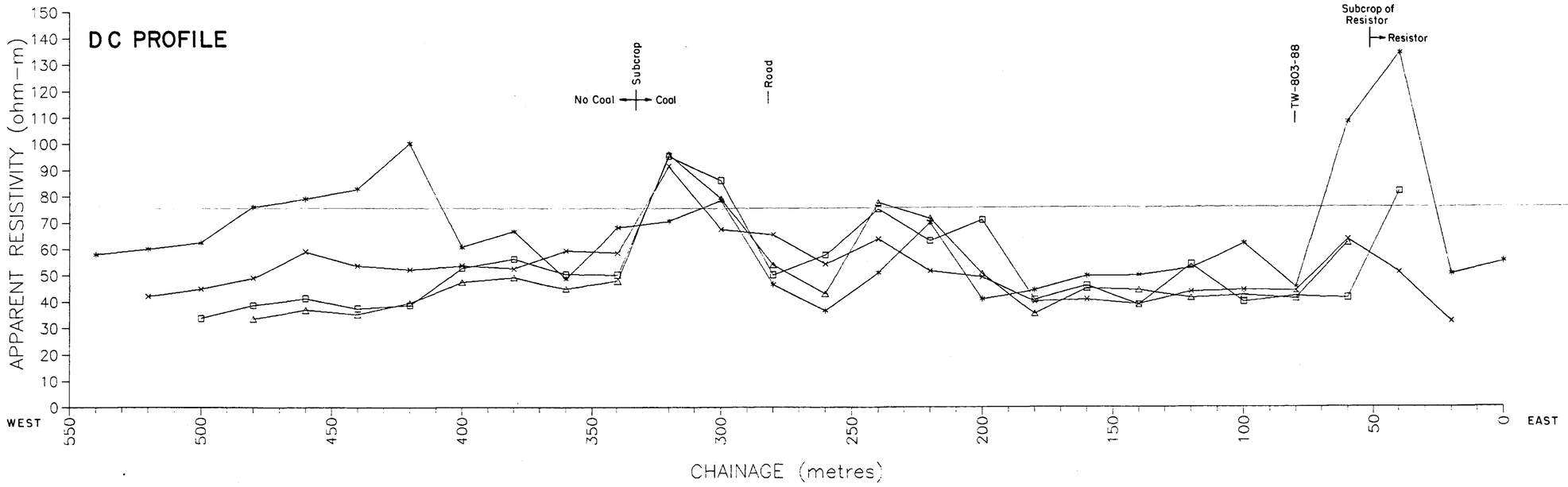
TELKWA COAL PROJECT

DIRECT CURRENT PROFILE

LINE 6

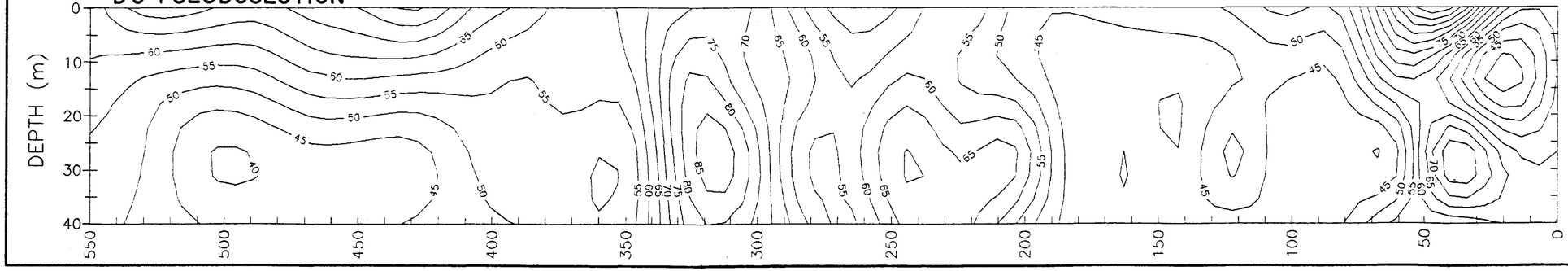
GEOPHYSICON	SCALE	DRAWN BY	DATE
	H.T.S.	BS	Nov., 1988
		PROJECT NO. C 88-47	FIGURE 8

DC PROFILE



DATA LINE	EFFECTIVE DEPTH OF EXPLORATION
✱—✱—✱	5 metres
×—×—×	15 metres
□—□—□	25 metres
△—△—△	35 metres

DC PSEUDOSECTION



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Crows Nest Resources LIMITED (8)

TELKWA COAL PROJECT

DIRECT CURRENT PROFILE

LINE 7

GEOPHYSICON	SCALE	DRAWN BY	DATE
	N.T.S.	BB	Nov., 1988
		PROJECT NO. C 88-47	FIGURE 9

APPENDIX A

APPENDIX A

PHYSICAL AND INTERPRETATIVE PRINCIPLES FOR SURFACE ELECTRICAL METHODS

Electrical conductivity and resistivity are inversely related. Either can be measured depending on the equipment used.

The major factors affecting terrain resistivity include:

1. the soil or rock type
2. the thermal state, and
3. the conductivity of groundwater.

In permafrost free terrain, soil and rock types exhibit a wide range of electrical resistivity, as illustrated in Figures A1(a,b). In permafrost terrain, the resistivity of frozen and unfrozen soil or rock of the same type may differ substantially (Figure A2a). Frozen materials having a high ice content (Figure A2b) often exhibit an increase in resistivity proportional to ice content. The presence of ion-rich groundwater can create a large increase in terrain conductivity, irrespective of soil or rock type.

The overlap of ranges of resistivity for different soil or rock types often does not allow direct identification of material type on the basis of resistivity data along. Other geologic or geotechnical information is required for this purpose. However, the location of terrain of anomalously high or low resistivity can be conveniently and effectively detected using surface based electrical methods.

A.1 Direct Current Profiling and Sounding Methods

Coal is generally characterized by an electrical resistivity that is many times larger than that of materials containing the coal. This large resistivity contrast enhances the ability to directly detect the presence and depth to coal, within the upper 30 metres of the subsurface, using surface based direct current techniques. Generally, the low resistivity of materials overlying coal does not allow for the useful application of other electrical techniques (induction, VLF, radar, etc.) for this purpose.

The direct current technique can be undertaken in two different manners. These are often referred to as sounding (electric drilling) and profiling (electric trenching). When soundings and

profiling data are obtained using a symmetric configuration (Schlumberger array) consisting of two outer current injection electrodes and two inner potential difference measurement electrodes, there is a natural correspondence between the two data sets that can be used to verify data reliability and repeatability.

Direct current soundings are one of the oldest and most commonly used methods for determining stratification of earth resistivity. Operation of the system in the Schlumberger configuration, as used during the survey, is illustrated in Figure A3.

Current is driven into the ground through one pair of electrodes (I_1 and I_2). The potential difference established in the earth by this current is measured with a second pair of electrodes (P_1 and P_2). To study the variation in resistivity with depth, the spacing between the current electrodes is altered. Figure A3 shows schematically the distribution of current flow at two electrode spacings. At close electrode spacing (Figure A3a), the currents dominantly flow near the surface and the potential field is virtually not influenced by deeper strata. With increased spacing, part of the current flow is located in deeper layers, and the potential measured is influenced by the resistivities of these layers.

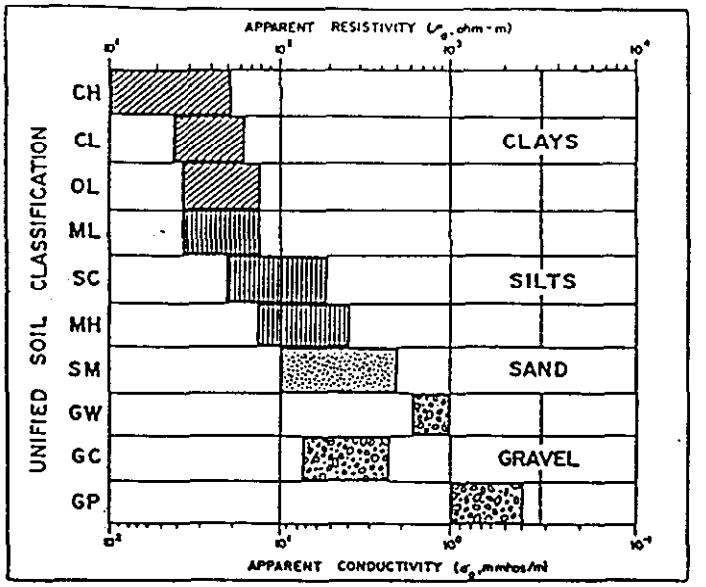
The direct current sounding data are converted to apparent resistivities and plotted against one half the current electrode separation, on a log-log scale. The resulting curves are compared to a set of master curves to determine preliminary estimates of the resistivity and thickness for distinctive subsurface strata. The resistivity and thickness of each layer are then adjusted, using computer algorithms, until a match of the field and model data is found.

The fact that the current electrode separations need be 4 to 5 times greater than the depth of exploration illustrates the dependence of the method on lateral homogeneity in earth resistivity. This impacts the orientations allowed for the measurement array when working across laterally constrained areas such as coal seam subcrops. The availability of direct current profiling data to monitor the lateral variation in earth resistivity can assist locating suitable sites for soundings.

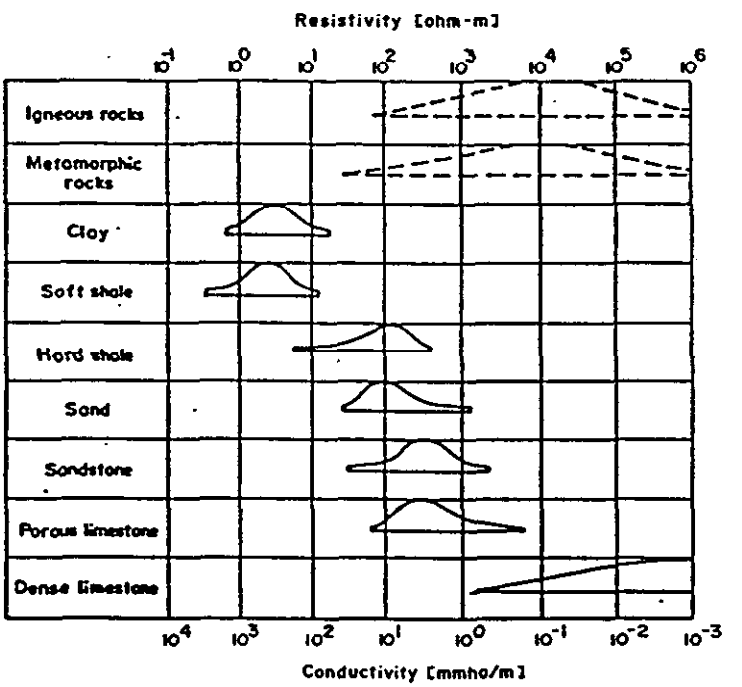
Interpretations based on direct current soundings data generally require correlation with drilling. This occurs due to the fact that a range of resistivities and thicknesses can be assigned to a particular subsurface layer, each combination of which yields nearly

the same apparent resistivity curve, within the acceptable error of measurement.

Direct current profiling is essentially the same as direct current sounding, except that fewer current electrode separations are used but at a greater density of measurement stations. The variation in apparent resistivity observed along survey lines can be correlated to the lateral extent of subsurface strata characterized by distinct contrasts in electrical resistivity.



a) Soil Type - Conductivity Relations

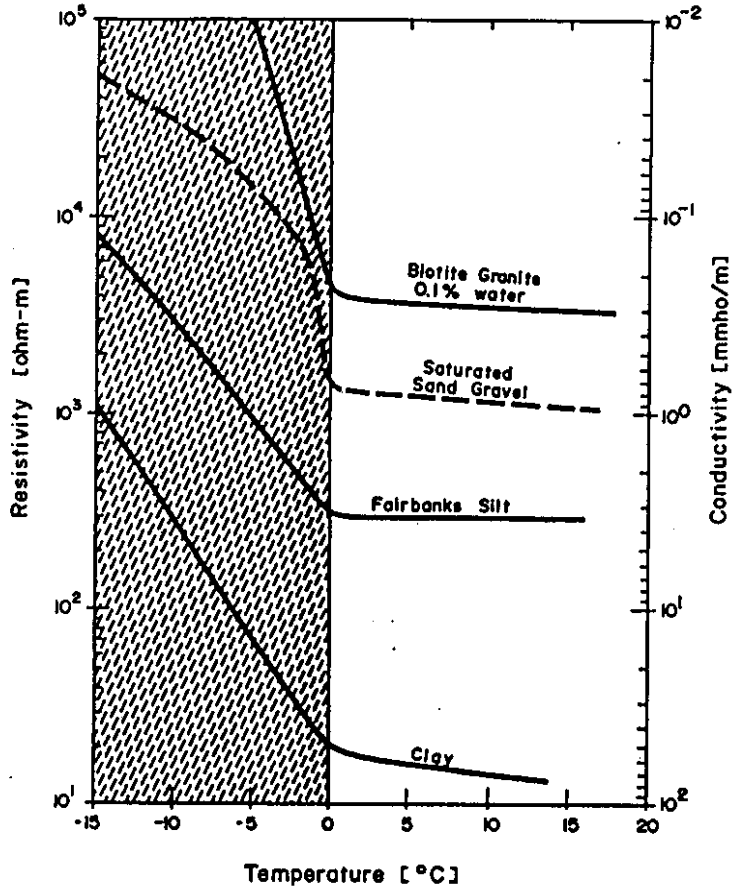


b) Rock Type - Conductivity Relations

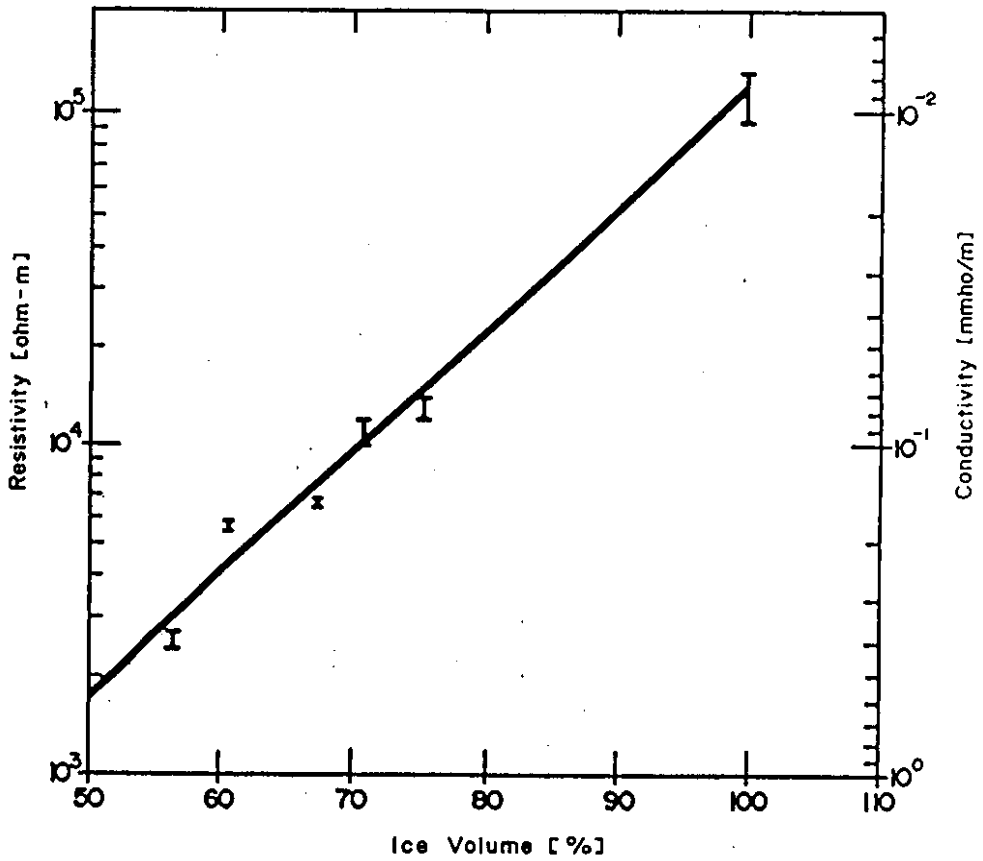
GEO-PHYSI-CON

TYPICAL CONDUCTIVITY VARIATION OF SOILS AND ROCKS

Figure A-1



a) Temperature - Conductivity Relations

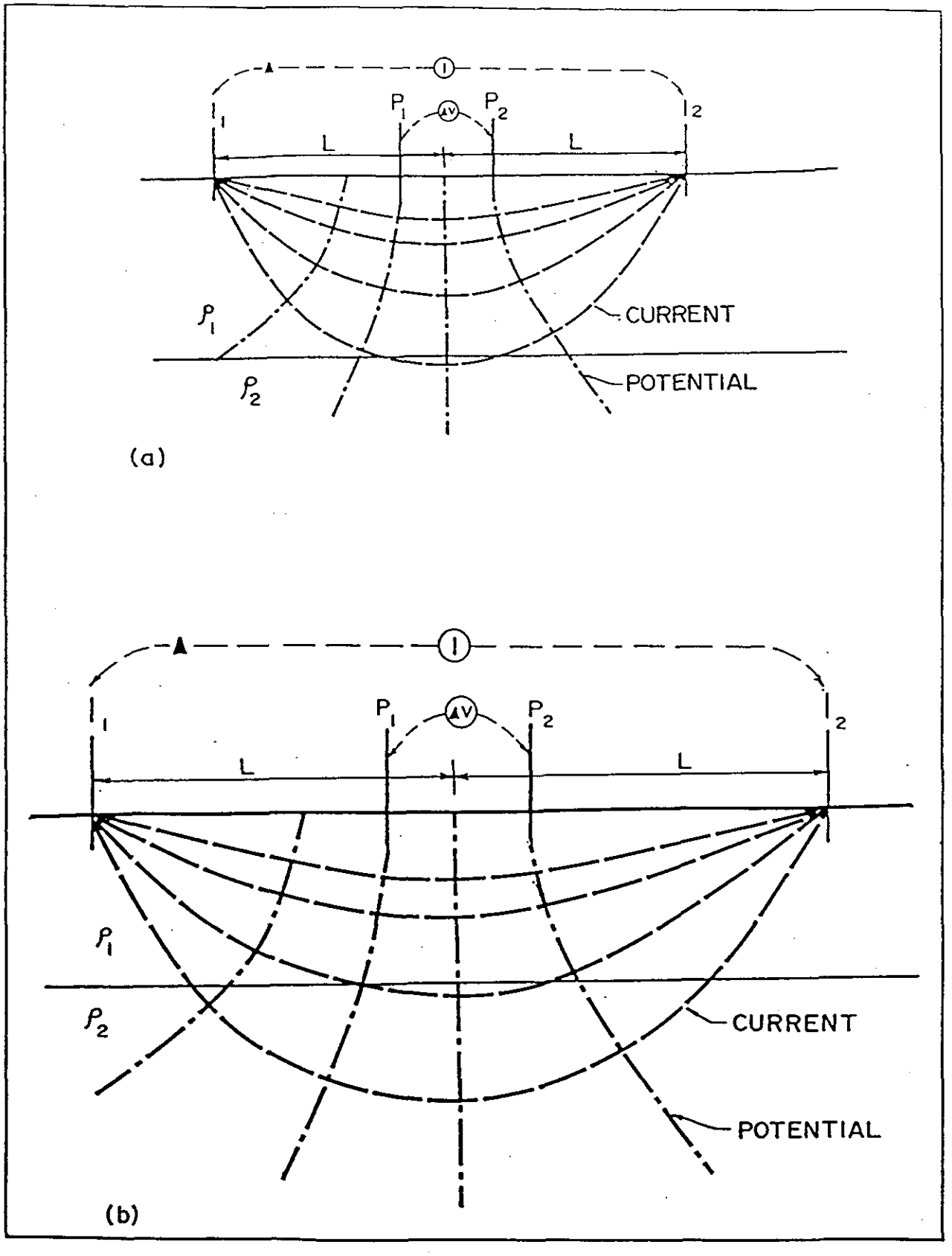


b) Ice Content - Conductivity Relations

GEO-PHYSI-CON

CONDUCTIVITY · VARIATION WITH TEMPERATURE AND ICE CONTENT

Figure A-2



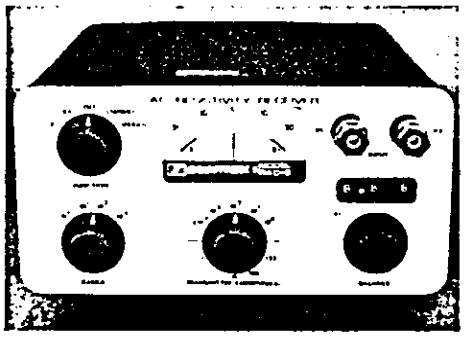
GEO-PHYSI-CON

SCHEMATIC OF CURRENT AND POTENTIAL DISTRIBUTION FOR THE D.C.S. METHOD

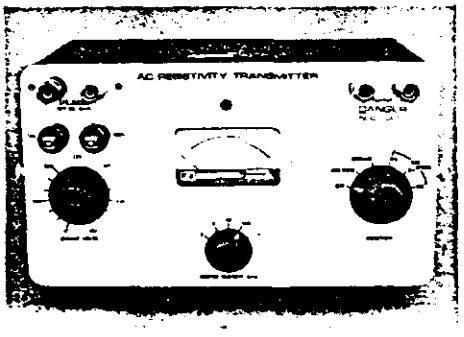
Figure A-3

APPENDIX B

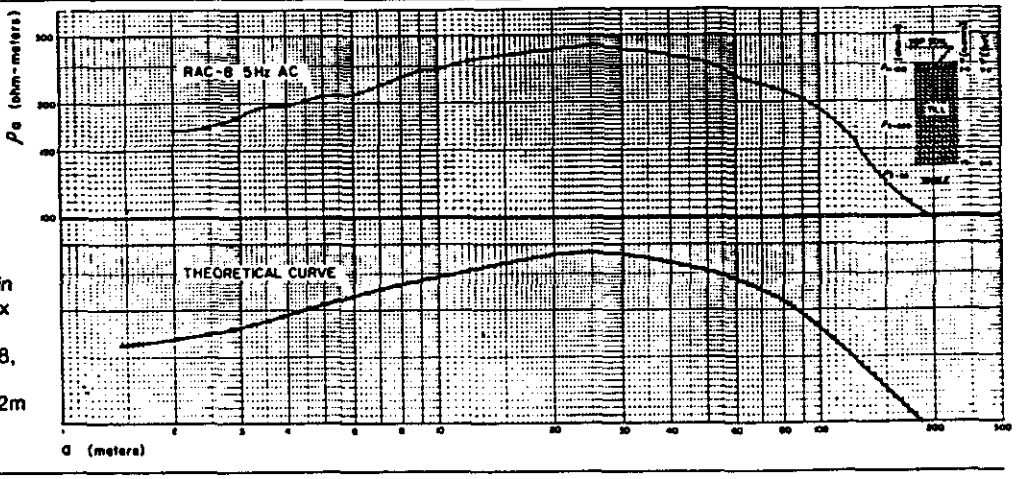
Technical Description of RAC-8 Low Frequency Resistivity System



Complete System	
Measurement Range	.0001 to 10,000 ohms
Accuracy	In range .0001 to .0003 ohms, ±5% In range .0003 to 10,000 ohms, ±2%
Operating Temperature Range	−10° to +50°C
Operating Frequency	5 Hz square-wave
Total Weight	11.8 kg
Receiver	
Range	.0001 to 1.0 volt
Input Impedance	10 Megohms
Instrument Noise	Less than 0.3 microvolt rms (about 1.5 microvolts peak-to-peak) on most sensitive range with input shorted.
Band Width	±0.185 Hz
Powerline Noise Rejection	An applied 50 or 60 Hz disturbance 150 times (43.5 dB) greater than a normal input signal will not affect the reading at any range. Both the signal and disturbance on the input should never exceed 3 V peak to peak in order to maintain accuracy ±2%. When ordering an RAC-8, the purchaser should specify the frequency of powerlines in the proposed survey area. For universal operation, a filter for the other frequency is offered as an option.
Common Mode Noise Rejection	A common mode voltage (applied between case and shorted "INPUT" terminals) of 1 volt peak to peak for a 5 Hz square-wave, or 7 volts peak to peak for a 50-60 Hz sine wave will not affect reading on any range.
Power Supply	Two 6V-1 Ampere-hour Globe GC 610-1 internally mounted, sealed lead acid accumulators. Connector provided for external charger. Batteries provide over 100 hours of operation in field work on a 25% duty cycle.
Dimensions	268 mm x 190 mm x 95 mm
Weight	3.2 kg
Transmitter	
Output Current Levels	0.1, 1, 10, 100, 333 mA, switch selectable
Current Stabilization	0.5%



Output Voltage	Maximum 1000 V peak-to-peak. Actual output voltage depends on the current level and load resistance.
Output Power	Maximum 80 W
Operating Frequency	5 Hz square-wave
Operating Position	Transmitter must be operated vertically within ±30° maximum. For transportation this is not required and instrument can be stored in any position.
Protection	Automatic circuit breaker turns off when the load on the "OUTPUT" terminals is interrupted, or if it is shorted while voltage is set over 60 V.
Load Precautions	Not more than one fully wound reel of wire (1000 m, inductance ±0.2 Henry) can be in series with the transmitter load, in order not to affect measuring accuracy. With large electrode separations (several km) no reeled wire should be in the transmitter circuit, particularly if a high current level is required, to prevent inductive surges.
Power Supply	The power supply is composed of two independent battery sets mounted in a common detachable compartment, which is attached to the bottom of the transmitter housing. Set No. 1: Two 6 V — 1 Ampere-hour Globe GC610-1 sealed lead-acid accumulators providing a supply for electronic circuits of the constant current regulator. Capacity is sufficient for over 100 hours of operation in the field. Set No. 2: Two 6 V — 6 Ampere-hour Globe GC660-1 sealed lead-acid accumulators providing a main power supply with 80 W maximum. This battery set limits actual field work duty of the instrument to maximum 40 hours.



Wenner array depth sounding using RAC-8 in electrically noisy industrial area near Scintrex plant in Concord, Ontario. The section is interpreted as a 3 layer case with ρ_1 = 158, ρ_2 = 290 and ρ_3 = 55 ohm-meters. The upper layer is 2.8 m of topsoil followed by 72m of till overlying shale.

CORE DESCRIPTION

PROJECT Telkwa Pit 8 **HOLE I.D.** TW-88-801 **EXAMINER** S.J. Cameron **DATE** Sept. 20, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	9.60	9.60	O.B.		Hard clay with occ boulders				
9.60	17.60	8.0	MDST	SS1	Interbedded MDST/SS1 MDST black SSI light grey Wavy bedding Lenticular SS1 lenses Soft sed deformation Occ bioturbation Stick core		90-80°		
17.60	28.00	10.4	SS1		V.F.G. SSI med. grey Occ MDST and coaly MDST stringer Coarsens to fg. SS at base Rip up clasts Occ calcite filled fractures Massive Stick core				
28.0	29.48	1.48	SSI		Gradational upper contact Light grey Occ thin stringer of MDST and carb MDST Occ calcite filled fracture				
29.48	29.75	0.27	Shell	Frags	.27 cm zone of shell frags, bivalves & possibly brachiopods Contained m.g. SS2 matrix				

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DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
29.75	30.50	0.75	SS1		A/A Gradation lower contact				
30.50	32.05	1.55	SS2		Light grey				
32.05	33.00	0.95	SS3		Coal frags, MDST frag, broken shell frags				
33.00	37.10	4.10	SS2		Light grey, greenish hue Interbedded MDST stringers & carb MDST stringers Small scale reverse faults (5 cm) Calcite filled fractures Stick core	33.00 36.00	80-75° 65-75°		
37.10	41.80	4.70	SLST		Dark grey Massive Rare bivalves and brach frags Rare 1 cm coal bands Occ grades to v.f.g. SS1 Stick core Zones with shell frags up to 5 cm often very close to thin coal stringers				
41.80	42.15	0.35	IRST		ABN calcite filled fractures				
42.15	61.60	19.45	SLST		A/A Occ thin IRST bands				
61.60	62.00	0.40	Bent		Bentonite (white ash band) Calcite filled fractures				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
62.00	70.38	8.38	SLST		Dark grey Massive Shell frags throughout in the 5-10 cm zones Occ grades to v.f.g. SS1 Bioturbation common near base of unit Stick core				
70.38	75.60	5.22	SSI		Fig SS1 Fairly massive Light grey Occ thin MDST/SLST interbed Stick core	72.70	75-80°		
75.60	84.73	9.13	SSI		Gradational upper contact Light grey SALT & PEPPER Interbeds of SLST and CARB MDST Occ coaly frags Rip up clasts Occ IRST band or nodule Stick core	77.70 80.60	82° 79°		

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-807-88 **EXAMINER** S.J. CAMERON **DATE** Sept. 25, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	6.70	6.70	O.B.						
6.70	8.05	1.35	MDST		CARB Black				
8.05	8.40	0.35	COAL	DIRTY					
8.40	9.64	1.24	MDST		CARB Black Coaly stringers Very broken				
9.64	10.40	0.76	COAL		Broken rubble Broken mix of coal, MDST, coaly MDST Cave Zone			43	35
10.40	10.79	0.39	MDST	COALY	Rubble				
10.79	11.52	0.73	MDST		CARB, black Broken stick				
11.52	12.04	0.52	COAL					44	94
12.04	12.19	0.15	MDST	COALY	Black				
12.19	12.52	0.33	COAL			12.39	76°		
12.52	12.82	0.30	MDST	COALY	Black				
12.82	13.01	0.19	COAL						

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DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
13.01	14.22	1.21	MDST	CARB	Stick core				
14.22	14.54	0.32	COAL		Dirty, stick core			45	79
14.54	14.93	0.39	MDST	CARB	Black, stick core				
14.93	15.31	0.38	COAL		Dirty coal, stick core				
15.31	15.69	0.38	MDST	CARB				46	100
15.69	16.21	0.52	COAL			15.80	72°	47	100
16.21	17.85	1.64	MDST	CARB	Black Stick core	17.70	76°		
17.85	18.30	0.45	COAL		Broken, sheared			48	4242
18.30	19.40	1.10	MDST	CARB	Black, stick core				
19.40	22.28	2.88	SS1		Light grey Fairly massive with occ. thin interbeds of CARB MDST Bedding is wavy lenticular	19.70 21.10	76° 74°		
22.28	22.79	0.51	COAL		Broken stick, slightly sheared			49	100
22.79	23.70	0.91	SLST	CARB	ABN coaly blebs & plant frags Dark grey/blacK				
23.70	24.20	0.50	COAL					50	100
24.20	24.32	0.12	ASH		White/grey				
24.32	24.45	0.13	COAL		Coaly MDST				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
24.45	25.75	1.30	SS1		Light grey, CARB frags Interbed band of CARB MDST and SLST Wavy, convoluted bedding	25.40	74°		
25.75	25.84	0.09	MDST	COALY					
25.84	26.21	0.37							
26.21	26.61	0.40	MDST	COALY	Black, CARB, SLST at top of unit	26.50	78°		
26.61	27.60	0.99	SLST	CARB	Dark grey	27.00 27.50	79° 74°		
27.60	28.00	0.40	MDST	COALY					
28.00	30.40	2.40	SS1		Light grey Interbedded CARB MDST and SLST Occ. IRST bands Soft sed deformation	28.50 30.00	70° 83°		
30.40	30.90	0.50	MDST	CARB	Black, heavily sheared, very broken				
30.90	35.30	4.40	SS1	SILTY	Med. grey ABN CARB material Thin beds of CARB MDST and SLST	 34.80	 79°		
35.30	40.61	5.31	CONGL.		GRADATIONAL CONTACT Pepple congl. with granitic, volc, qtz and lithic clasts debris, occ. thin <8cm coal band Occ. grades to SS3 Occ. calcite filled fracture	 36.00 37.60 38.50 39.60	 81° 81° 83° 68°		
40.61	40.80	0.19	MDST	CARB		40.80	81°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
40.80	41.90	1.10	COAL		White flecks near base of seam May be volc ash or debris	41.70	82°	51	90
41.90	43.40	1.50	MDST	SS1	GRADATIONAL CONTACT CARB May contain volc ash or debris Grades through CARB SLST to v.f.g. SS1 at base Occ. IRST band				
43.40	43.80	0.40	COAL	DIRTY	Occ. grades to coaly MDST			52	100
43.80	44.40	0.60	MDST						
44.40	45.00	0.60	MDST	COALY					
45.00	46.20	1.20	SLST	MUDDY	CARB, thin coaly bands May contain some thin volc ash bands with talc filled shear surfaces				
46.20	47.00	0.80	COAL	DIRTY	ABN talc?? filled fractures GRADATIONAL CONTACT	46.40	81°	53	95
47.00	47.60	0.60	SLST	SS1	Interbed, med. grey, CARB Grades to MDST at base				
47.60	48.14	0.54	COAL		Thin interbeds of CARB MDST	48.00	80°	54	74
48.14	48.50	0.36	SLST	CARB	Med Grey				
48.50	48.60	0.10	MDST	COALY					
48.60	50.60	2.00	SS1		Med. grey CARB	48.80 50.50	81° 81°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
50.60	51.15	0.55	COAL	DIRTY	Thin CARB MDST bands			55	36
51.15	52.15	1.00	SLST	CARB	Med. grey				
52.15	54.62	2.47	SS3	CONGL	C.G. salt & pepper SS1 with bands of pebble congl. CARB and coaly clasts and stringers throughout Becomes increasingly congl. near base of unit	54.00	76°		
54.62	55.15	0.53	MDST	SS1	Shear zone, ABN talc coated slicken-sides				
55.15	56.35	1.20	SLST	CARB	Med grey, talc coated joint surfaces				
56.35	56.68	0.33	MDST	COALY	GRADATIONAL CONTACTS				
56.68	57.16	0.48							
57.16	58.39	1.23	SS1	SLST	V.F.G. to SLST CARB, fairly massive	58.00	78°		
58.39	59.00	0.61	MDST	COALY					
59.00	62.52	3.52	SS1	SLST	Interbed SLST, CARB MDST, SS1 thin coal bands throughout ABN plant frags	59.60	78°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
62.52	65.20	2.68	VOLC	AGGL	Light grey APHANITIC VOLCANIC CLASTIC SED Finer gr. (aphanitic) at top of unit grading to pebble agglomerate at base Pebbles are graniteic, volc and lithic frags Poorly sorted, angular				
65.20	65.85	0.65	VOLC	AGGL	Similar fining upward cycle as described above				
65.85	67.10	1.25	MDST	CARB/COALY	Black, stick core Coal bands 5cm throughout unit				
67.10	72.60	5.50	SED	VOLC/CLAST	A series of fining upward cycles Sediments appear to be volcaniclastics with aphanitic MDST at top of a cycle and angular pebble agglomerate at base Coalified plant debris is ABN and is found throughout the cycle Talc along joint surfaces	68.10 70.00	85° 78°		
72.60	74.20	1.60	SED	VOLC/CLAST	A/A				
74.20	75.40	1.20	SLST	CARB	Dark grey ABN coalified wood fragments				
75.40	78.62	3.22	SS1		Light grey SS1 Interbed dark grey SLST and CARB MDST, also some interbedded volcanic sediments	85.80 87.80	82° 78°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
78.62	79.80	1.18	MDST	CARB SILTY	Dark grey/black				
79.80	80.04	0.24	MDST	COALY	Large coaly blebs in CARB MDST Blebs make up 70% of rock				
80.04	80.85	0.81	MDST	CARB	ABN plant frags Occ. thin (3cm) volc ash? band	80.80	79		
80.85	81.92	1.07	SS2		M.G. salt & pepper SS1 Irregular coaly stringers, massive				
81.92	88.40	6.48	VOLC		Grades between f.g. and m.g. volcanic/clastic sandstones Brittle Wood frags throughout unit Very immature, angular, poorly sorted Talc along joint surfaces Coaly and CARB MDST blebs throughout	84.90	80°		
88.40	89.35	0.95	MDST	CARB SILTY	GRADATIONAL CONTACT	88.50	84°		
89.35	90.60	1.25	MDST	COALY/ CARB	ABN coaly stringers and bands 5cm throughout unit	90.00	85°		
90.60	92.51	1.91	SS1	SILTY	Fining upward sequence Fairly massive				
92.51	93.10	0.59	CONGL						
93.10	96.32	3.22	SS1	SILTY/SS3	Scoured contact Minor pebbley congl at base				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
96.32	99.40	3.08	SS1	SS3	CARB Fining upward sequence Dark grey CARB silty SS1 at top grading to pebbley SS3 at base Some gr size variation within the sequence ie. isn't consistently fining upward Volcanic clastic Massive				
99.40	99.95	0.55	MDST	SLST	CARB				
99.95	100.50	0.55	SLST	VOLCANIC	CARB				
100.50	101.05	0.55	TUFF		Crystaline tuff??				
101.05	102.82	1.77	SLST	SS1	Volcanic clastic Light grey Massive				
102.82	106.20	3.38	CONGL		GRADATIONAL CONTACT Pebble at top Cobble size at base - volc granitic and sedimentary pebbles - coal blebs throughout unit - Occ. SS3 band with scoured upper contact	104.00	82°		
106.20	110.02	3.82	SS1	SILTY	Scour Contact Med. grey CARB Massive Occ. slickensided surface				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
110.02	110.80	0.78	VOLC	CLASTIC	F.G. gr ABN coalified plant debris & wood frags				
110.80	111.32	0.52	SLST	CARB					
111.32	111.75	0.43	MDST	COALY	ABN talc coated shear surfaces				
111.75	112.42	0.67	MDST	CARB	Irregular wavy bedding				
112.42	113.05	0.63	MDST	COALY		112.60	79°		
113.05	114.00	0.95	SLST	CARB	Possibly volcanic sed.				
114.00	118.00	4.00	VOLC	CLASTIC	SEDIMENTS Ranges from aphanitic to m.g., ABN coalified plant frags and blebs Hard, fairly massive				

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-802-88 **EXAMINER** S. Cameron **DATE** 21/09/88

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	6.71	6.71	O.B.						
6.71	16.00		SS1/SLT		Fine gr m.g. salt & pepper st. - light grey				
					Interbedded SLST and MDST - dark grey/black	9.25	55°		
					ABN soft sed deformation				
					ABN bioturbation	12.85	54°		
					Occ disseminated pyrite				
					Occ calcite filled fracture				
					Stick core	15.80	62°		
16.00	17.25	1.25	SS1		Quartz rich				
					ABN disseminated pyrite (heavy)				
17.25	35.50	18.25	SLST		Dark grey				
					Occ Grades to grey/black MDST				
					Occ thin <2cm SS1 (light grey) band				
					Minor disseminated pyrite				
					Minor calcite filled fractures				
					Soft sed deformation				
					Stick core	21.20	63°		
35.50	45.70	10.20	MDST		GRADATIONAL CONTACT	39.0	59°		
					Grey/black	39.70	59°		
					Occ thin (<3cm) SLST or SST lense	42.90	59°		
					Rare shell frag, rare bioturbation				

743

BWM/ab.1

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
45.70	57.11	11.41	SLST		GRADATIONAL CONTACT Dark grey Interbedded thin bands SS1 (light grey) X bedding in light grey SS1 Occ bioturbation Occ thin IRST band	48.75 55.39 56.30	58° 60° 58°		
57.11	74.70	17.59	SILTY	MDST	GRADATIONAL CONTACT Grey/black Race thin interbeds of light grey SS1 Bioturbation common near top of unit Disseminated pyrite common near base of unit Occ IRST band throughout unit	61.40 64.40	54° 65°		
74.70	81.60	6.90	SLST		Grey/black Occ IRST band ABN disseminated pyrite Massive				
81.60	88.39	6.79	V.F.G..	SST	Dark grey Pyrite throughout Massive Grades to F.G. SST at base of unit Stick core				
88.39	93.40	5.01	M.G.	SST	Light grey greenish hue Thin (<5cm) interbeds of SLST, MDST and IRST Occ coal frag Calcite filled high angle fractures	90.89 92.00 93.40	64° 64° 68°		

BWM/ab.2

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-803-88 **EXAMINER** B.W. McKinstry **DATE** 22/9/88

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	3.66		O.B.						
3.66	6.40	2.74	MDST		Olive brown High clay content Very soft				
6.40	11.20	4.80	MDST		Grey/black Massive Stick core				
11.20	18.75	7.55	Silty MDST		GRADATIONAL CONTACT Grey/black Massive Stick core Minor pyrite				
18.75	19.40	0.65	SS1		Light grey Very hard Minor calcite filled fractures				
19.4	20.00	0.60	MDST						
20.00	21.30	1.30	SS1		A/A				
21.30	23.20	1.90	MDST	SLST	Grey/Black				

BWM/ac.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
23.20	32.80	9.60	SS1		F.g. light grey SS1 occ grades to med. gr. (greenish hue) ABN thin interbeds of dark grey SLST and MDST Muscovite flecks in SST Rare Pyrite Occ calcite filled fracture Occ thin CARB and coaly MDST stingers	25.00 27.00 28.60 31.70	78° 73° 70.5° 77°		
32.80	34.00	1.20	SLST	SS1	Dark grey SLST with thin light grey SS1 lenses, soft sed deformation				
34.00	34.61	0.61	COAL		Hard, broken stick			88-01	96
34.61	35.65	1.04	CARB SILTY MDST		Dark grey/black				
35.65	35.70	0.05			Thin coal band				
35.70	37.95	2.25	MUDDY SLST		Dark grey Occ thin carb lense				
37.95	47.68	9.73	SS1		Light grey Thin lenticular interbeds of dark grey SLST and MDST Small scale normal faults (healed) Occ calcite filled fracture	 42.00 43.00 45.00 45.60 47.40	 28° 35° 41.5° 45° 47°		

BWM/ac.2

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
47.68	48.90	1.22	MUDDY SLST		Dary Grey Carb 1 mm SS1 lenses	 48.55 48.85	 73° 70°		
48.90	49.80	0.90	COAL			49.60	50°	88-02	94
49.80	52.60	2.80	SS1	SLST	Light grey SS interbedded with dark grey SLST	50.95 52.20	28° 28°		
52.60	52.96	0.36	MDST		Carb black silty				
52.96	54.00	1.04	COAL		Broken			88-03	94
54.00	55.40	1.40	MDST		Silty Massive at top, sheare at base Dary grey Occ coaly stringer	 54.60 54.95	 22° 28°		
55.40	60.55	5.15	COAL		ABN pyrite blebs at top of seam Varies from broken stick to highly sheared Minor pyrite Difficult to get drilled thickness exact due to broken and sheared nature of the coal	56.19 58.90	24° 26°	 88-04	 ≈ 90
60.55	60.90	0.35	SS1		Med grey, carb lenses, ABN pyrite vy f.g.				
60.90	62.20	1.30	SS1		Light grey Interbedded SLST and MDST Pyrite present	 61.40 62.10	 50° 72°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
62.20	62.78	0.58	MDST		Black, highly sheared				
62.78	64.35	1.57	COAL		Broken to broken stick			88-05	87
64.35	65.20	0.85	MDST		Dark grey/black carb Some coaly zones				
65.20	66.65	1.45	SILTY MDST		Dark grey Occ 5 cm coaly MDST band ABN pyrite in carb zones	66.40	73°		
66.65	67.20	0.55	COAL					88-06	84
67.20	70.00	2.80	SLST		Med grey Occ grades to v.f.g. SS1 Thin coaly and carb bands throughout Wavy bedding ABN calcite along cleats in coaly bands GRADATIONAL CONTACT	69.00	69°		
70.00	71.7	1.70	SS1		Light grey; dark grey SLST and MDST interbeds Occ thin coaly MDST (<5cm) band	70.50	57°		
71.70	72.60	0.90	MDST	CARB	Med grey, silty				
72.60	74.39	1.79	COAL		Broken to broken stick	75.10	78°	88-07	100
74.39	75.90	1.51	CARB MDST		Dark grey Coaly flecks throughout Massive	75.70	78°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
75.90	76.30	0.40	SANDY SLST	MUDDY SLST					
76.30	76.60	0.30	DIRTY COAL						
76.60	77.25	0.65	SLST		Dark grey, ABN CARB MDST and coaly stringers				
77.25	77.60	0.35	CARB MDST		Black				
77.60	80.25	2.65	CARB SLST		ABN CARB MDST and coal bands (<5cm)	78.30 78.65 78.95	65° 77° 79°		
80.25	80.70	0.45	COAL		Gradational roof	80.25	80°	88-08	100
80.70	81.95	1.25	CARB SLTY MDST		Dark grey ABN thin coal bands Occ pyrite blebs Gradational roof				
81.95	82.55	0.60	COAL		Stick core			88-09	100
82.55	83.70	1.15	MDST		Black carb 5cm coaly bands	83.39	82°		
83.70	84.45	0.75	COAL		Hard Stick core Thin pyrite band near roof	83.90	85°	88-10	100

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
84.45	85.20	0.75	MDST		Carb Silty Dark grey				
85.20	85.74	0.54	COAL		Stick Calcite filled vertical fractures near base	85.65	83°	88-11	100
85.74	85.98	0.24	BENT		Greasy, abrupt contact with coal				
85.98	86.05	0.07	COAL		GRADATIONAL CONTACT Grades from COAL → CARB MDST → V.F.G. SS → SS1 Over 15cm				
86.05	89.05	3.00	SS1	SLST	Thin interbeds of CARB MDST Occ pyrite bleb Grades to SLST at base of unit	87.30 88.50 88.90	86° 85° 87°		
89.05	89.80	0.75	COAL		Stick Calcite fractures near base			88-12	100
89.80	90.47	0.67	MDST		Black carb, silty				
90.47	91.15	0.58	COAL		Calcite filled fractures near base	90.60	86°	88-13	100
91.15	92.10	0.95	MDST		Black carb				
92.10	92.50	0.40	SLST		Dark grey carb				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
92.50	94.20	1.70	SS1	SS3	Grades from fine gr. SS1 to coarse gr. SS3 at base SS3 salt & pepper Fining up cycle	93.90	78°		
94.20		-	SS3		Scour surface				
94.20	111.60	17.40	SS1		Light grey SS1 Thinly interbedded dark grey SLST Occ calcite filled fractures Occ slickensided surface along bedding Occ IRST band Some soft SED deformation Occ small scale normal faults	95.00 97.00 98.90 101.80 104.60 108.00	50° 65° 72° 82° 75° 75°		
111.60	112.20	0.60			ABN shell frags in SS1				
112.20	118.00	5.80				114.40 116.90 117.60	65° 70° 68°		
118.00	122.00	4.00	SS2		M.G. salt & pepper Thin interbeds of fine gr. med. gr. SS1 and dark grey SLST				
122.00	131.00		SS1		Light grey Massive Stick core				

CORE DESCRIPTION

PROJECT TELKWA **HOLE I.D.** TW-804-88 **EXAMINER** S.J. CAMERON **DATE** Sept. 23, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	6.10	6.10	O.B.						
6.10	9.20	3.10	SLST		Med. grey Occ. thin interbeds of SS1 and MDST Stick core Soft	10.00	73°		
9.20	9.49	0.29	COAL	DIRTY	CARB MDST at top grading to coal at base ABN calcite filled fractures				82
9.49	13.40	3.91	SLST		Dark grey Interbedded thin bands of light grey SS1 and dark grey MDST				
13.40	19.08	5.68	SS1		GRADATIONAL CONTACT Light grey Thin interbeds of SLST and MDST Lenticular to irregular bedding Some soft sed deformation and bioturbation Irregular wavy bedding	15.00 16.00 17.90 18.50 18.90	68° 70° 46° 39° 56°		
19.08	19.70	0.62	COAL					14	49
19.93	21.68	1.75	SLST		CARB dark grey	21.00 21.60	69° 65°		

BWM/ad.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
21.68	23.28	1.60	COAL		Thin 3cm pyritic salt & pepper SS2 interbeds Two 3cm splits	22.50	65°	15	98
23.28	23.65	0.37	MDST		GRADATIONAL UPPER CONTACT Black, CARB, coaly	23.50	66°	16	100
23.65	24.08	0.43	COAL		GRADATIONAL UPPER CONTACT	24.00	68°	17	100
24.08	24.40	0.32	MDST	CARB	Black, coaly frags.				
24.40	24.70	0.30	SLST	CARB					
24.70	31.02	6.32	SS1		Light grey Interbed SLST and MDST Wavy lenticular beds Bedding and occ convoluted ABN soft sed deformation Occ bioturbation	25.40 26.10 29.00 29.90	67° 72° 75° 73°		
31.02	31.84	0.82	COAL		Dirty, ABN, pyrite ABN CARB MDST parting All contacts very gradational			18	83
31.84	32.26	0.42	MDST		Black, very CARB			19	100
32.26	32.68	0.42	MDST		Coaly MDST			20	100
32.68	34.28	1.60	MDST		CARB, black	34.00	82°		
34.28	34.51	0.23	COAL	DIRTY					
34.51	34.96	0.45	MDST	CARB					
34.96	35.18	0.22	COAL	DIRTY					

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
35.18	36.16	0.98	MDST						
36.16	37.56	1.40	COAL		Hard Stick core Two thin coaly MDST splits	36.70 37.20	74° 75°	21	93
37.56	38.54	0.98	MDST	SLTY					
38.54	39.06	0.52	COAL		ABN pyrite at top Calcite and intrusive blebs near base			22	100
39.06	39.37	0.31	SILL		Felsic aphaNitic sill Grab sample of contact taken				
39.37	39.50	0.13	MDST	COALY	Irregular contacts where sill has intruded the coal seam				
39.50	41.00	1.50	SLST		Dark grey Massive, CARB				
41.00	41.40	0.40	SS1		Med grey, v.f.g.				
41.40	43.40	2.00	SLST	SS1	Dark grey, CARB Grades to MDST 5cm from base of unit Fairly massive	 43.00	 73°		
43.40	45.06	1.66	COAL		Coal, hard, stick core One thin (8cm) coaly MDST band at 44m	44.40 44.75	77° 78°	 23	 100
45.06	45.26	0.20	ASH		Bentonitic			24	100
45.26	45.53	0.27	COAL					25	100

BWM/ad.3

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
45.53	46.00	0.47	MDST	CARB	Dark grey/black thin coaly stringers Irregular bedding				
46.00	47.15	1.15	SLST	CARB	Dark grey carb, ABN plant frags. Grades to CARB MDST at base - thin coal stringers Bedding wavy, variable	46.80 47.00	66° 71°		
47.15	48.18	1.03	COAL					26	100
48.18	49.28	1.10	MDST	SLTY	Carb, black				
49.28	50.20	0.92	COAL					27	98
50.20	51.00	0.80	MDST	SLTY	CARB, occ coaly band <5cm	50.90	82°		
51.00	51.14	0.14	COAL		Dirty coal, occ vitrain band				
51.14	51.52	0.38	COAL			51.30	83°		
51.52	52.01	0.49	COAL	DIRTY/BONE	Occ vitrain band Gradational upper and lower contacts				
52.01	58.57	6.56	SS1	SLST	Interbedded light grey SS1 and med grey SLST Thinly bedded Bedding wavy, lenticular Occ IRST band with calcite filled fractures Becomes increasingly CARB near base of unit ABN pyrite near base of unit	51.50 55.60 57.20 58.40	80° 85° 82° 47°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
58.57	58.72	0.15	COAL						
58.72	58.80	0.08	BENT		Bentonite?				
58.80	60.33	1.53	COAL		Thin light/dark CARB SLST/SS1 splits throughout seam generally less than 8cm Possibly one thin bentonite (4cm) band at 58.85	59.20	80°	27	94
60.33	60.48	0.15	MDST						
60.48	62.14	1.66	COAL						
62.14	64.10	1.96	MDST		CARB, black Thin interbeds of SLST and light grey SS1 Occ thin <5cm coal band				
64.10	76.80		SS1	SS2	F.G. SS1 at top of unit grading to m.g. SS2 (salt and pepper) at base Fining upward sequence Occ. IRST band Some scour surfaces near base Some SS1 appears to be reworked Convoluted bedding Irregular bedding surfaces Calcite filled fractures (high angle) Occ. shell frags ?? Occ. very thin (2cm) coal bands Occ thin <5cm pebble congl. bands Occ 30° joints calcite filled, heavily slickensided	64.50 65.10 65.70 70.00 76.80	82° 78° 76° 70° 73°		

BWM/ad.5

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-805-88 **EXAMINER** S.J. Cameron **DATE** Sept. 23, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	6.10	6.10	O.B.						
6.10	7.90	1.80	MDST		Black, high clay content Very soft	7.00	71°		
7.90	20.89	12.99	SS1		Light grey Thin interbeds of dark grey SLST and occ. black carb MDST Occ thin IRST band Bedding is wavy, lenticular ABN muscovite flecks	9.90 11.40 14.10 17.00 20.00	75° 77° 76° 72° 69°		
20.89	22.76	1.87	SLST		GRADATIONAL CONTACT Dark grey, CARB, ABN plant frags Occ. grades to dark grey SS1 Grades to silty CARB MDST at base				
22.76	23.40	0.64	COAL		Hard, stick core			29	100
23.40	23.60	0.20	COAL	BONE					
23.60	24.80	1.20	COAL						
24.80	25.18	0.38	MDST	CARB		25.00	72°		
25.18	25.60	0.42	MDST	COALY	One thin SS1 (2cm) split	25.40	68°		
25.60	25.89	0.29	MDST	CARB	Black, thin coaly bands <5cm				
25.89	27.62	1.73	MDST	CARB	Black	27.10	68°		

BWM/ae.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
27.62	28.50	0.88	SS1		V.F.G. Med. grey, occ. light grey lenticular f.g. SS1 interbeds				
28.50	29.60	1.10	MDST	CARB	Black, ABN plant frags.				
29.60	31.11	1.51	MDST	COALY	Dirty coal Grading to coaly MDST Black				
31.11	34.20	3.09	SLST		Dark grey grades to silty SS1 at base Occ. thin lenticular interbeds of light grey SS1 Occ. IRST band Occ plant frags	37.20 33.70	57° 60°		
34.20	38.60	4.40	SS1		GRADATIONAL CONTACT Med. grey, ABN muscovite flecks Massive	37.90 38.40	58° 61°		
38.60	38.90	0.30	SS3		Coarse gr. salt & pepper SS1 Coaly stringers ABN slickensides				
38.90	39.10	0.20	COAL	DIRTY					
39.10	43.75	4.65	SS1		Med. grey, ABN muscovite flecks Massive	43.60	42°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
43.75	47.20	3.45	SS1	SLST	Interbedded f.g. SS1 (light grey) with dark grey SLST, plant frags throughout Bedding ranges from planar to wavy lenticular ABN soft sed. deformation ABN coal band (<5cm) near base of unit	45.40 46.80	56° 53°		
47.20	47.51	0.31	MDST	CARB	Black, plant frags throughout				
47.51	48.61	1.10	COAL		Hard Stick core	47.70 48.00	66° 58°	30	95
48.61	49.00	0.39	MDST		Black, CARB				
49.00	49.35	0.35	MDST		Dirty coal Black, CARB			31	97
49.35	50.42	1.07	COAL			49.60 50.20	58° 59°	32	97
50.42	50.58	0.16	MDST	CARB				33	
50.58	50.89	0.31	COAL			50.80	58°	34	
50.89	51.84	0.95	MDST		Black, CARB, ABN plant frags	51.70	69°	35	100
51.84	52.73	0.89	COAL		Hard, stick core	52.10	66°	36	100
52.73	53.09	0.36	MDST		Carb, dark grey			37	100
53.09	54.16	1.07	COAL		ABN thin pyrite bands	53.40	65°	38	100

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
54.16	61.33	7.17	SLST	SANDY	Med. grey Slightly CARB	55.50	67°		
					Occ. IRST band	58.00	64°		
					Occ thin lenticular SS1 band near base of unit	60.00	67°		
61.33	61.57	0.24	COAL			61.50	68°	39	
61.57	62.11	0.54	MDST	CARB	Black, occ 5cm coal band	61.80	69°	40	
62.11	65.49	3.38	COAL		3cm salt & pepper SS2 parting	63.00	68°	41	100
					15cm dirt COAL & coaly MDST	65.00	64°		
65.49	72.20	6.71	SS1	SLST	Light grey SS1 interbedded with dark grey SLST	65.70	62°		
					Planar to lenticular wavy bedding	66.20	64°		
					Occ. IRST band (2cm-8cm thick)				
					Occ. slickensided surfaces	68.40	45°		
					Occ. calcite filled fracture	69.30	67°		
					Slightly CARB in places	71.50	64°		
72.20	77.20	5.00	SS1	SS2	Grades from f.g. light grey SS1 to m.g. light SS1	75.20	61°		
					Occ. thin SLST and dark grey CARB MDST interbeds				
					Occ. coal band (<5cm) and blebs				
					Fairly massive				
					Muscovite flecks				
					Occ. IRST band with calcite filled fractures	77.20	65°		

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-806-88 **EXAMINER** S.J. Cameron **DATE** Sept. 24, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	9.10	9.10	O.B.						
9.10	9.50	0.40	COAL		Soft, broken			42	92
9.50	9.60	0.10	MDST	COALY	Coal bands throughout				
9.60	9.75	0.15	COAL						
9.75	15.00	5.25	MDST	SILTY	Dark grey Interbedded light grey lenticular beds of SS1 Occ. IRST band with calcite filled fractures Soft sed. deformation	10.20 13.00 13.60 14.00 14.40 14.80	80° 45° 18° 66° 58° 62°		
15.00	18.00	3.00	SS1		GRADATIONAL CONTACT Light grey Occ. interbeds of dark grey SLST or CARB MDST Occ. thin coal band Occ. calcite filled fracture Occ. IRST band Occ. plant frags. in SS1 Often grades to SS2				
18.00	18.20	0.20	SS1		Fossiliferous zone, ABN shell frags				
18.20	26.20	8.00	SS1		A/A Bedding is often irregular	19.60 23.60	77° 69°		

BWM/af.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
26.20	26.60	0.40	SS3		C.G. salt & pepper SS1 Massive ABN pyrite, rare SLST rip up clast				
26.60	30.80	4.20	SS2		M.G. light grey to salt & pepper SS1 Occ. grades to f.g. light grey SS1 Occ thin interbeds of dark grey SLST and MDST, black CARB MDST and thin COAL bands (<5cm), but unit is generally massive Where bedding is apparent it is planar to wavy lenticular Occ. IRST bands with calcite filled fractures Minor dissemenated pyrite throughout Muscovite flecs in SS1 Bedding is often irregular				
30.80	31.41	0.61	SS3	SS2	M.g. to c.g. massive salt & pepper SST				
31.41	49.60	18.19	SS2		A/A	31.90 34.00 42.60 49.00	79° 70° 72° 79°		
49.60	59.00	9.40	SS1		GRADATIONAL CONTACT Light grey Fairly massive Occ. grades to SILTY bands and blebs near base of unit Occ. calcite filled fractures Bedding where discernable is wavy, lenticular and irregular	55.00 57.80 58.80	72° 79° 77°		

BWM/af.2

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-808-88 **EXAMINER** S.J. Cameron **DATE** October 4, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	6.10	6.10	O.B.						
6.10	11.31	5.21	SS1	SLST	Light grey SS1 with interbedded dark grey CARB SLST and MDST Thin lenticular beds of CARB SLST and MDST in light grey SS1 Muscovite flecks in SS1	8.10 9.5	86° ≈85°		
11.31	11.36	0.05	MDST	CARB	Dark grey, black				
11.36	11.62	0.26	COAL					56	
11.62	11.66	0.04	SS1		Light grey, slightly CARB	11.62	≈86°		
11.66	12.19	0.53	COAL		Grades to coaly MDST last 5cm Broken stick				
12.19	12.51	0.32	MDST	CARB	Black				
12.51	12.72	0.21	COAL	DIRTY	Thin pyrite (1cm) band near top of seam			57	
12.72	13.02	0.30	MDST	CARB	Grades occ. to coaly MDST				
13.02	13.55	0.53	COAL		Hard, stick core Dull with bright vitrain bands				
13.55	14.03	0.48	MDST	CARB	Black/dark grey				
14.03	14.28	0.25	COAL		Stick core Dull with bright vitrain bands	14.20	83°	58	

BWM/ah.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
14.28	14.47	0.19	MDST	COALY	Stick core				
14.47	14.63	0.16	COAL		Broken stick	14.80	79°	58	
14.63	15.01	0.38	MDST	CARB	Dark grey				
15.01	15.46	0.45	COAL	DIRTY	High MDST content, thin MDST bands	15.30	79°	59	
15.46	15.87	0.41	MDST	COAL	CARB MDST with thin coaly bands throughout				
15.87	16.04	0.17	COAL	DIRTY	Thin bands of CARB MDST ABN pyrite bands between 16.00-16.04	16.01	≈81°		
16.04	18.08	2.04	SLST	CARB	Black/dark grey, often grades to CARB MDST				
18.08	34.39	16.31	PORPHYRY		Feldspar, qtz. prophyry Also phenocrysts of opaques probably sefides. These phenocrysts have a brown copper color; sphalerite Occ. tale coated joint and/or shear surfaces Massive stick core This felsic intrusive is homogeneous from top to bottom				
34.39	37.48	3.09	SLST	SS1	Dark grey SLST to v.f.g. SS1 Thin lenticular interbeds of light grey SS1 CARB	34.50 35.00 35.10 37.00 37.10	86° 84° 71° 76° 74°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
37.48	39.45	1.97	MDST	CARB	Occ. grades to dark grey CARB SLST CARB MDST is black to olive grey Thin coaly stringers and bands throughout				
39.45	39.63	0.18	COAL	DIRTY	Thin bright vitrain bands throughout Becomes sheared along bedding planes at base	39.50	79°		
39.63	41.17	1.54	MDST	CARB	Black to dark grey, occ. grades to CARB SANDY SLST ABN thin coal stringers and bands (<5cm) near base of unit	40.10 40.50	80° 78°		
41.17	42.61	1.44	SS1	CARB	CARB, med. grey, hard, stick core Grades to SILT SS1 at base ABN plant and wood frags				
42.61	42.81	0.20	SLST	CARB	Dark grey, ABN slicked surfaces ABN wood frags				
42.81	43.02	0.21	MDST	COALY	Broken rubble, occ. vitrain band				
43.02	43.22	0.20	SLST	CARB	Dark grey/black				
43.22	43.78	0.56	SS1	CARB	Dark grey, v.f.g., coalified wood frags throughout				
43.78	44.22	0.44	MDST	CARB	Thin coaly stringers throughout				
44.22	44.46	0.24	COAL		Sheared coaly stringers throughout				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
44.46	44.51	0.05	SS1	CARB	F.G. med. grey, stick core	44.51	80°		
44.51	44.57	0.06	COAL	DIRTY	Black, vitrain bands along bedding				
44.57	46.52	1.95	SS2	SS1	Grades from f.g. CARB light grey SS1 with interbedded CARB MDST at top to massive m.g.-c.g. salt & pepper SST at base Occ. band (<5cm) of salt & pepper conglomeritic SST throughout unit Irregular scour contact at base Fining upward sequence				
46.52	47.88	1.36	SLST	CARB	Med. grey Top 7cm is black CARB MDST Grades to CARB SS1 at base				
47.88	48.13	0.25	COAL	DIRTY	Thin MDST stringers throughout	47.90	87°		
48.13	49.07	0.94	SLST	SS1	Grades from CARB SLST to CARB med. grey SS1 at base Basal contact is gradational				
49.07	50.02	0.95	SS2	SS3	M.G. SS2 at top grading to med. grey SS3 at base, CARB and coaly clasts throughout Abrupt lower contact				
50.02	50.44	0.42	SLST	CARB	Grey/black, ABN wood frags GRADATIONAL LOWER CONTACT				
50.44	51.32	0.88	SS1		Light grey, thin interbeds of grey/ black SLST and salt & pepper SS2				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
51.32	51.92	0.60	SLST	CARB	Grey/black, occ. IRST band				
51.92	52.19	0.27	MDST	COALY	Coaly frags and stringers throughout Black MDST				
52.19	54.86	2.67	SS1		Grades from v.f.g. dark grey SS1 to f.g. light grey SS1 at base GRADATIONAL CONTACT AT BASE				
54.86	56.98	2.12	SS2	SS3	Grades from m.g. salt & pepper SS2 at top to c.g. salt & pepper at base Occ. thin <4cm of conglomeritic SST throughout unit GRADATIONAL LOWER CONTACT Thin coal stringers and frags throughout unit Bedding is wavy, x bedded	55.60 55.70 56.80	87° 73° 76°		
56.98	57.16	0.18	CONGL		Pebble congl. Mostly qtz, feldspar and lithic clasts Lower contact is abrupt thin CARB MDST Stringer at lower contact				
57.16	58.04	0.88	SS1	SS2	F.G. salt & pepper SS1 at top grading to m.g. salt & pepper SS2 at base Thin CARB stringers throughout GRADATIONAL LOWER CONTACT	57.90	84°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
58.04	58.94	0.90	CONGL	SS3	Pebble congl. of volc and sed pebbles Coal stringers and wood frags throughout Grades (over 10cm at top) from SS3 to congl. Pebbles range from 1 cm in diameter at top to 4cm in diameter at base Coal frags are very angular while the pebbles are subrounded, generally poorly sorted Abrupt scoured lower contact	58.00 58.50	80° 78°		
58.94	60.96	2.02	SS2	SS3	Med. to c.g. salt & pepper SST ABN coal and CARB SLST stringers Occ. angular coal frags Occ. band of pebbley or conglo-meratic SS3	59.20 59.55 59.60 60.78 60.85	80° 73° 79° 81° 76°		

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-809-88 **EXAMINER** B. McKinstry **DATE** Oct 5, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	24.3		O.B						
24.3	29.6	5.3	SS1	Silty	Silty, dark grey to dark olive green Massive stick core ABN pyrite blebs and stringers Disseminated muscovite throughout Rare thin coal bands near base				
29.6	37.0	7.4	SS1	Silty	Light greenish grey SS1 with thin beds of dark grey SLST Bedding is planar to wavy lenticular ABN soft SED deformation Minor Bioturbation Occ. IRST band SS1 and SLST are often CARB containing wood fragments Occ. light green/grey SS2				
37.0	38.5	1.5			Fossiliferous Zone Oval shaped shell frags in light and grey SS1 Burrows?	38	57		
38.5	42.95	4.45	SS1	SLST	A/A				
42.95	45.65	2.70	Sandy SLST	Silty SS1	Dark grey/ black Very CARB Very porous				

BWM/ai.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
45.65	46.56	0.96	COAL		Broken Stick Hard			60	100
46.56	47.2	0.64	MDST	SILTY	CARB, black				
47.2	49.42	2.22	SS1	SLST	Light Grey SS1 interbed with dark grey SLST				
49.42	50.77	1.35	Silty MDST	CARB	Black, ABN Pyrite Blebs	47.5	60		
50.77	52.19	1.42	COAL	Bone Coal	Broken Stick, Hard ABN Pyrite at top of seam	51 52	64 64	61	88
52.19	56.95	4.76	Silty	SS1	v.f.g. CARB SS1 Med to dark grey Often grades to CARB SLST Thin lenticular bands of light grey SS1	54	61		
56.95	57.52	.57	Silty	SS1		56.8	61	62	60
57.52	58.44	.92	SLST	CARB	Dark grey, fairly massive	58.4	61	63	100
58.44	60.79	2.35	Coal					64	88
60.79	61.95	1.16	SLST MDST	CARB	Black Gradational contact				
61.95	62.2	0.25	MDST	CARB SLST	Black				
62.20	64.28	2.08	SS1		Light grey/med grey Thin interbeds of dark grey CARB SS1 and CARB SLST OCC IRST bands with Calcite filled fractures				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
64.28	64.7	0.42	SLST	CARB	Dark grey/Black ABN Pyrite				
64.7	65.1	0.4	COAL		Hard, Broken Stick, Dirty at top		65	100	
65.1	77.0	11.9	SS1	SLST	Thinly interbed med grey SS1 with med/ dark grey v.f.g. SS1 dark grey SLST	68	71		
					Occ. band of CAARB/Coal MDST	70	62		
					Wavy lenticular bedding	72	64		
					CARB	75	62		
					Occ. thin lenticular band of light grey SS1	76	60		
					Med. grey, very Hard IRST??				
					Light grey SS1 interbedded with dark grey v.f.g. CARB, SS1, SLST and MDST				
					Occ. IRST band				
					Occ the SLST's and most dominate the unit				
					Bedding is wavy lenticular.				
					Soft SED deformation and small scale faults throughout unit.				
					Occ. bioturbation				
					Occ. pyrite				
					The finer grained sediments dominate this unit toward base				
77.0	78.05	1.05	SLST	CARB	Gradational Contact, Grades up to v.f.g. med grey SS1				
78.05	78.62	.57	COAL					66	100

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
78.62	83.70	5.08	SLST	SS1	Dark grey/Black CARB SLST/v.f.g. SS1 with very thin lenticular interbeds of light grey SS1 Soft SED deformation throughout unit Minor bioturbation Minor small scale faulting				
83.70	84.57	0.87	SLST	MDDY	CARB Gradational Contact, Black				
84.57	85.48	0.91	COAL					67	88
85.48	86.06	0.58	SS1	CARB Silty SS1	v.f.g. dark grey CARB			68	100
86.06	86.16	0.10	COAL	MDST					
86.16	86.32	0.16	CARB	SLST					
86.32	87.19	0.13	COAL					69	100
87.19	92.14	0.05	SLST	SS1	CARB				
92.14	92.28	0.14	COAL						
92.28	93.02	0.74				92.8	60		
93.02	97.80	4.78	COAL		Small pyrite blebs Broken Stick core 2cm thin band pyrite, thin MDST splits			70	90
97.8	99.04	1.24	SLST		CARB, Dark grey/black Occ. grades to v.f.g. SS1				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
99.04	99.30	0.26	COAL	DIRTY	ABN MDST, ABN Calcite filled cleats				
99.30	100.60	1.30	SS1		Dark grey Grades to CARB v.f.g. SS1/SLST at top and bottom of unit	99.5	61		
100.60	101.00	0.40	COAL	DIRTY	ABN MDST, ABN Calcite filled cleats Grades to coaly MDST at base				
101.00	112.00	11.00	SLST	SS1	Dark grey/black SLST v.f.g. SS1 with thin lenticular interbeds Occ. IRST band Thin coaly band (≈ 2cm) becoming ABN near base of unit	104.0 108	60 55		
112.00	112.78	0.78	SLST	SS1					

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-810-88 **EXAMINER** S.J. CAMERON **DATE** OCT. 6, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	24.38	24.38	O.B.						
24.38	33.04	33.04	SS1	SILTY	Silty SS1 to sandy SLST grades betewen the above two lithologies Med to dark grey Massive Discernable bedding is rare Generally unfossiferous Occ. IRST band Rare interbeds of light grey SS1 Homogenous unit Large 2cm worm burrows or twig casts	43.10 44.60	64° 66°		
57.42	71.61	14.19	SS1		Med grey, Occ grades to f.g. Massive Calcite filled fractures Occ. sheared joint surface Muscovite fleks throughout Homogenous unit (grain size change down through unit is very subtle)	78.50	59° ??		
71.61	78.70	7.09	SLST	SANDY	GRADATIONAL CONTACT Med grey Often grades to silty SS1 Occ. calcite filled fractures				
78.70	79.90	1.20	MDST		GRADATIONAL CONTACT Black, sheared	79.80	54°		

BWM/aj.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
79.90	80.20	0.30	SS2		M.G. salt & pepper SS2 Calcite filled fractures Soft sed deformation				
80.20	84.30	4.10	SS1		Med/dark grey Fairly massive Occ. irregular shape SS1 and IRST bleb Rare coalified plant frag. Occ. calvite filled joint surface				
84.30	87.40	3.10	SS2		Green Massive ABN calcite along high angle joint surfaces				
87.40	90.00	2.60	SS1	SLST	Light green/grey SS1 with thin inter-beds of dark grey SLST and MDST	88.00	77°		
					Occ. IRST nodule and band Some small scale reverse faults Soft sed. deformation	88.50	74°		
					Wavy bedding CARB	89.00	74°		
					Shell frags at base in light grey SS1/SS2	89.80	68°		
90.00	93.40	3.40	SLST	MDST	Sheared Black highly sheared SLST Occ. grades to black MDST Thin interbeds of light grey SS1 Occ. IRST band with calcite filled fractures				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
93.40	98.10	4.70	SLST	SS1	Highly sheared Dark grey SLST with thin interbeds of light grey SS1 ABN soft sed deformation Bedding is wavy to convoluted ABN calcite filled fractures	96.50 97.20	71° ? 70° ?		
98.10	121.80	23.70	SS1		Med grey Massive Occ. IRST band and nodules with calcite filled fractures Occ. concretion Occ. thin wavy CARB and coaly bands and blebs Coal bands become more common near base of unit	108.00 118.50 121.20	78° 72° 70°		
121.80	122.10	0.30	ASH		Ash band, bentonitic (?) Light grey to white				
122.10	131.50	9.40	SS1		Light grey, greenish hue ABN bioturbation and/or rootlets Occ. shell frags Occ. thin interbed of dark grey SLST and rare CARB MDST	127.00	73°		
131.50	131.60	0.10	SHELL FRAGS		Pelcypod shells in light grey SS1				
131.60	132.40	0.80	SS1		A/A				
132.40	132.60	0.20	SHELL FRAGS		ABN shell frags in SS1 (pelcypods)				
132.60	133.00	0.40	SS1		A/A				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
133.00	133.11	0.11	SHELL FRAGS		Pelcypod shells in SS1				
133.11	136.40	3.29	SS2		M.G. salt & pepper SST Greenish hue Interbedded Bioturbation Thin interbeds of SLST and dark grey SS1 near base of unit Occ. IRST band	135.00 135.80	79° 80°		
136.40	137.50	1.10	SLST	SS1					
137.50	150.00	12.50	SS2	SS1	Fine and med. grey salt & pepper SS1 Greehish hue to SS1 Occ. interbeds of c.g. salt & pepper SS1 ABN thin interbed of dark grey SLST, CARB MDST, and coal stringers Some small scale normal faults Coaly and CARB frags in SS1 Occ. irregular sheared IRST band and nodule Occ. calcite filled fracture SST is Xbedded → irratic c/b angles Occ. scour contact between lithologies within this unit → some small fining upward sequences (scale <20cm)	142.00 142.90 143.80 146.60 149.40	75° 85° 90° 74° 77°		

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-811-88 **EXAMINER** B. McKinstry **DATE** Oct. 7, 1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00		18.23		O.B.					
18.23	26.72	8.49	Silty MDST		Dark grey/black Soft, Unconsolidated Homogenous Blocky Fracture pattern				
26.72	30.00	3.28	SLST		Dark grey Occ. grades to very fine grain dark grey SS1 Blocky fracture pattern				
30.00	33.00	3.00	SS1		Gradational Contact f.g. micaceous SS1, light grey/green Thin coal bands and blebs				
33.00	37.74	4.74	SS1	MDST	Light grey/green SS1 with thin interbeds of CARB MDST and SLST SS1 is often very pyritic Bedding is wavy to lenticular Some soft SED deformation Bioturbation Occ. nodule.	36.00 36.80 37.30 37.60	61° 65° 70° 74°		
37.74	38.61	0.87	CARB	SLST		38.10	75°		
38.61	39.49	0.88	COAL		Dark grey Thin light grey SS1 interbeds Thin coal bands throughout			71	93

BWM/ak.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
39.49	40.30	0.81	CARB	SLST	Light grey SS1 with thin interbeds of SLST and CARB MDST, wavy bedding, Occ. IRST band				
40.30	41.60	1.30	SS1	SLST					
41.60	43.92	2.32	SLST		Dark grey CARB Thin lenticular bands of light grey/green SS1			72	84
43.92	44.85	0.93	COAL		Hard Broken stick	44.70 45.40	73° 75°		
44.85	46.71	1.86	SANDY SLST	CARB	Grey/Black CARB Stick core Occ. grades to f.g. dark grey SS1				
46.71	48.99	2.28	COAL		Sandy, ABB Pyrite Broken stick to rubble			73	87
48.99	49.51	0.52	SLST	CARB	Thin coaly bands throughout				
49.51	51.10	1.59	SS1	SLST	Med grey Interbed bands of dark grey CARB SLST Thin coal bands with calcite filled cleats	49.80	75°		
51.10	51.53	0.43	Coal		Broken Stick			74	77
51.53	51.84	0.31	MDST	CARB	Black				

BWM/ak.2

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
51.84	58.95	7.11	SS1	SLST	Thinly interbed light grey SS1 with dark grey SLST Occ. Coaly and CARB MDST stringers Minor soft SED deformation Occ. small scale normal fault	52.20 57.60	70° 72°		
58.95	60.00	1.05	SS2		M.g. salt and pepper SS1, slight greenish hue Occ. thin band band of CARB MDST SLST, and IRST				
60.00	63.89	3.89	SS1	SLST	Interbedded light grey SS1 with dark grey SLST SS1 interbeds are often lenticular Minor soft SED deformation Occ. grades to SLST	60.20 63.60	76° 75°		
63.89	65.21	1.32	CARB	SLST	Coaly bands throughout Becomes more CARB toward base Extremely sheared			75	100
65.21	66.19	0.98	COAL	DIRTY	Thin CARB MDST bands throughout				
66.19	67.45	1.26	CARB	Silty MDST	Dark grey occ. grades to dark grey SS1 ABN thin coal bands.	66.90	70°		
67.45	68.25	0.80	SS1		Light grey, massive.				
68.25	68.79	0.54	CARB	SLST	Dark grey, ABN thin coal bands				
68.79	69.00	0.21	COAL	DIRTY					

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
69.00	69.60	0.60	SLST		SLST to silty SS1, CARB, dark grey to black				
69.60	75.39	5.79	SS1	SLST	Light grey SS1 thinly interbedded with dark grey SLST and dark				
75.39	75.59	0.20	COAL		Shaley roof				
75.59	76.40	0.81	MDST	CARB	Dark grey/black, silty	76.20	66°		
76.40	76.80	0.40	COAL		Broken Calcite filled cleats			76	98
76.80	78.25	1.45	MDST	CARB	Silty CARB SLST at top of unit ABN thin coal bands				
78.25	79.02	0.77	COAL	CARB SLST	ABN thin MDST bands, calcite filled fractures and cleats			77	71
79.02	81.70	2.68	SLST	CARB	Dark grey, ABN plant fragments	80.00	54°		
81.70	82.40	0.30	COAL					78	33
82.40	83.10	0.70	CARB	SLST	Dark grey, occ. grades to MDST thin coal bands throughout			79	
83.10	84.38	1.28	COAL		Stick to rubble			80	90
84.38	96.30	11.92	SLST	SS1	Dark grey SLST with thin inter-beds of lenticular light grey SS1 Occ. lensoidal pod of salt & pepper SS2 and pebble congl (≈5cm)	84.60 84.80 85.20 89.20 92.00 95.20 95.80	58° 70° 58° 71° 70° 73° 68°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
96.30	98.14	1.84	COAL		Coaly MDST with 2cm brown MDST or ASH band			81	100
98.14	98.95	0.81	CARB	SLST	ABN wood fragments and plant debris Occ thin light grey SS1 stringers			82	
98.95	99.49	0.50	COAL					83	100
99.49	108.94	9.45	SS1	SLST	Light grey SS1 thinly interbedded with dark grey v.f.g. SS1 and SLST	99.60	73°		
					Light SS1 is lense shaped to planar	102.00	72°		
					Soft SED deformation	105.20	70°		
					Occ. IRST band	106.80	69°		
					Possible bioturbation?	108.00	70°		
					Occ. calcite filled fractures	115.40	69°		
					Occ. thin band of salt & pepper SS2	119.80	68°		
108.94	122.50	0.25	SHELL FRAGS.		Calcite replaced frags have dark brown waxy lustre Pelycypods or possibly bracs Contained in m.g. salt & pepper SS2				
122.50	123.74	0.99	SS1		Grey/green thin SLST interbeds Bioturbation?	123.10	70°		
123.74	123.85	0.11	Shell frag.		A/A				
123.85	127.42	3.57	SS2		Salt & pepper				
					Interbedded stringers and bands of CARB MDST (<8cm) CARB MDST, coaly MDST and SLST	124.20	69°		
						124.50	77°		
						125.50	70°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
127.42	133.40	5.98	SS1		Light grey/green Thin interbeds of dark grey SLST and Occ. MDST Wavy lenticular bedding Slight CARB Soft SED deformation Occ. Rootlets of coaly MDST Occ. IRST nodule				
133.40	134.32	0.92	SS1	SILTY	Dark grey, slightly CARB				
134.32	162.65	28.33	SS1		Light grey/green, massive Occ. IRST nodule or concretion Occ. CARB flecks Occ. thin <2cm coal band with calcite filled cleats Minor calcite filled joints Occ. Iregular shaped blebs of sulphides Rare shell frags near base of unit				
162.65	163.08	0.43	BENT		White Ash band				
163.08	176.00	12.92	SS1		Light grey/green Thin wavy stringers of CARB MDST and dark grey SLST ABN CARB rootlets Sporadic shell fragments through-out unit Concave side of shell often filled with SS2. Shell frags sometimes black? Occ. thin coal band Some bioturbation Occ. calcite filled fracture	163.40 168.60 169.40 172.00	77° 74° 72° 71°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
176.00	179.10	3.10	SS2		M.g. salt & pepper Thin interbeds of CARB MDST and dark grey CARB SLST Occ. thin brown IRST ? bands Some soft SED deformation Often the base of SS2 has scoured the underlying interbed Rare 5cm band of SS3 and congl.	176.80 178.00 178.80	70° 73° 75°		
179.10	186.70	7.60	SS1	SLST	Interbedded Unit ABN soft SED deformation SS1 beds are often lenticular Bedding is wavy to convoluted Bioturbation Occ. thin lenticular bed of coarse or salt & pepper SS1 Rare thin coal band associated with the coarser SED	182.50 184.40	71° 75°		
186.70	192.30	5.60	SS2		Med to coarse grained salt & pepper SS1 Occ. thin interbed of dark grey SLST Rip up clasts of CARB MDST and brown MDST Frags of coal and coalified woody debris in SS2/SS3 Occ. thin 2cm coal band in salt & pepper SS1 Occ. thin zone of broken shell in the SS3	190.00	72°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
192.30	194.00	1.70	SS1	SLST	Thinly interbedded unit Bioturbation at top of unit Light grey green SS1 interbedded with dark grey SLST and CARB MDST Planar bedding	193.10 193.80	72° 73°		
194.00	200.40	6.40	SS2		M. to c.g. salt & pepper SS1 Thin stringers of CARB MDST and grey SLST Occ. interbed of light green SS1	194.80 195.80 197.10	72° 68° 70°		
200.40	205.20	4.80	SS1	SLST	Interbed light grey SS1 dark grey SLST with Occ. interbed of c.g. SS1 Lenticular wavy to planar bedding Soft SED deformation Some bioturbation Occ. thin coal band <4cm Occ. IRST band	203.80 204.60 205.00	77° 84° 72°		
205.20	213.00	7.80	SS2		Salt & pepper Greenish hue Convoluted and wavy stringers of CARB MDST and SLST ABN soft SED deformation throughout Occ. calcite filled fracture Rare shell fragments Occ. IRST nodule. Occ. thin convoluted red <5cm of c.g. salt and pepper SS1				

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-812-88 **EXAMINER** B. McKinstry **DATE** October 8,1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0.00	9.10		O.B						
9.10	13.40	4.40	SLST		Dark Grey Massive Broken Stick Core				
13.40	25.40	11.00	SS1	Silty	Dark grey Massive Homgeneous Broken Stick with several rubble areas (cave zones)				
25.40	26.95	1.50	Green SS1		Massive Dark green, gioconitic Rare dark grey SLST interbed near base of unit, slightly silty wear on top of unit as well.	26.60	73°		
26.95	32.10	5.15	SS1		Convoluted bedding Light grey green Thin lenticular interbeds of SLST ABN soft SED deformations Occ. calcite filled fracture Very irregular sometimes convoluted bedding	27.60 30.20 31.60	84° 70° 65°		
32.10	33.00	0.90	Coal		Broken stick			84	94

743

BWM/al.1

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
33.00	33.80	0.80	SLST		Dark grey, occ. SS1 stringer CARB, Occ. Slicken sides	35.20	35°		
33.80	34.80	1.00	SS1	SLST	Light grey SS1 with thin interbeds of CARB SLST, minor soft SED deformation Small scale normal faults, convoluted bedding		34.40	48°	
34.80	35.60	0.80	SLST		Dark grey CARB	35.20	35°		
35.60	38.20	2.60	SS1	SLST	GRADATIONAL CONTACT Light grey SS1 interbedded with dark grey SLST Occ. IRST nodule, Occ. Calcite filled fracture	37.80	52°		
38.20	38.70	0.50	MDST		CARB, Black				
38.70	43.80	5.10	SS1	SLST	Light green grey micaeous SS1 interbedded with dark grey SLST and v.f.g. SS1 Bedding is very convoluted varies from wavy sub-vertical to horizontal Extremely micaceous Fault zone, sheared joint and bedding surfaces	39.00 39.50 41 41.80 42.20 42.90	76° 56° 18° 36° 8° 68°		
43.80	44.39	0.59	SLST	CARB	Dark grey/black	44.30	70°		
44.39	45.25	0.86	COAL		Broken stick			85	95
45.25	46.80	1.55	SLST		CARB	46.00	50°		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
46.80	47.80	1.00	COAL					86	92
47.80	50.25	2.45	SLST	SS1	Dark grey CARB SLST interbed with light grey SS1	48.0	51°		
					Convoluted bedding	48.70	49°		
					ABN shear surfaces	49.90	27°		
					Occ. IRST band	50.10	5°		
50.25	51.80	1.55	SS1	SLST	GRADATIONAL CONTACT				
					Light grey SS1 becomes dominant lithology	50.40	0°		
51.80	52.23	0.43	COAL		Stick core	52.00	24°	87	100
52.23	53.81	1.58	SS1	SLST		52.80	30°		
						53.30	30°		
53.81	54.90	1.09	SLST	SS1	GRADATIONAL CONTACT	54.60	45°		
54.90	55.10	0.20	SS1		Dark Grey SS1 with irregular shaped burrows or dike of salt & pepper SS2				
55.10	57.42	2.32	Coal	MDST	Healed normal faults at upper contact	55.30	40°		
						55.80	33°	88	100
						56.60	70°	89	
								90	100
57.42	58.62	1.20	CARB	Silty MDST	Black ABN discontinous coal stringers Occ. zone of sandy SLST				
58.62	59.01	0.39	SLST	SANDY	Dark grey, CARB. coaly stringers				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
59.01	59.25	.24	Coal						
59.25	64.29	5.04	SS1	SLST	Light grey lenticular SS1	59.4	52		
					interbedded with dark grey SS1	60	71		
					and SLST	61.4	70		
					Unit is extremely micaceous SS1	62	73		
					Occ. IRST band and nodule	63	75		
					Minor soft SED deformation	63.8	75		
64.29	64.49	.40	Dirty Coal		Stick Core			91	
64.49	64.94	.25	CARB	MDST	Silty Stick core			92	
64.94	65.59	.65	Dirty Coal		Extremely sheared			93	
65.59	66.39	.80	CARB	MDST	Black, silty, ABN woody fragments		94		
66.39	66.8	.41	Dirty Coal						
66.8	67.2	.40	CARB	MDST	ABN coaly stringer			95	
67.2	67.45	.25	Dirty Coal		Thin lenticular SS1 stringers grey/brown	67.3	76		96
67.45	69.02	1.57	CARB	Muddy SLST	Dark grey CARB	67.7	78		
					Thin coal bands throughout	68.9	75		
					Occ. slickensided surface				
69.02	70.04	1.02	Coal			70	76	97	93

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
70.04	70.97	.93	CARB		Grey/black ABN wood fragments Coaly stringers and pyrite blebs near base	70.8	72		
70.97	72.1	1.13	Coal		Bentonite Band (2 cm)			98	100
72.1	73.3	1.2	CARB	SLST	Grey/black ABN thin coal bands and stringers	72.4 73	72 73		
73.3	74.3	1.0	SS1		Med. grey Extremely hard and heavy - high iron coarbonate content Calcite filled fractures				
74.3	75.0	.70	CARB	SLST	Grey/black				
75.0	76.1	1.1	Coal		Broken Core			99	100
76.1	76.55	.45	CARB	Silty MDST	Grey/black Occ. Bleb of pyrite			100	100
76.55	77.9	1.35	Coal		Broken Stick	77.5	76	101	97
77.9	79.41	1.51	Silty SS1		CARB Med. Grey Thin coal stringers				
79.41	85.6	6.19	SS1	SLST	Interbedded light grey SS1 with dark grey SLST Occ. small scale normal fault Some soft SED deformation SS1 has slight greenish hue	81.4 82 82.9 84.7	72 74 71 64		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
85.6	87.6	2.0	SS2		ABN thin interbeds of dark brown SLST and v.f.g. SS1 Soft SED deformation Thin coal bands throughout Wavy to convoluted bedding Occ. IRST nodule	85 85.8 86.4	77 65 83		
87.6	93.56	5.96	SLST	SS1	Interbedded light grey SS1 with dark grey SLST Lenticular SS1 beds, thinly bedded Small scale normal faults Slightly CARB Rare rip up clasts in SS1 Occ. thin coal band base of unit	87.4 88.7 90.8 92 93.3	82 76 74 79 75		
93.56	96.61	3.05	Coal	Bone Coal	Bentonite, Brown, Wavy Gradational Contacts			102	100
96.61	97.31	.70	CARB	Silty MDST	Thin pyrite band			103	100
97.31	97.91	.60	Coal			97.5 97.6	63? 56?	104	100
97.91	98.85	.94	CARB	SLST	Grey/Black, thin coal stringers	98.0 98.8	72 79		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
98.85	108.3	9.45	SLST	SS1	Dark grey SLST interbedded with light grey SS1 SS1 beds are often lenticular Occ. soft SED deformation Minor bioturbation near top of unit Occ. IRST band Light grey SS1 is often cross bedded	99.5 100 101 101.6 102.8 104 104.6 106.2 107.2	78 72 73 79 75 74 74 75 75		
108.3	118.87	10.57	SS1		f.g. med grey SS1, greenish hue Massive Stick core Occ. IRST nodule Rare thin wavy stringer (Soft SED deformation) of most of CARB MDST Occ. IRST nodule Rare thin coal band with ABN pyrite				
118.87			T.D.						

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW-813-88 **EXAMINER** S. Cameron **DATE** October 8/88

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0	30.48		O.B						
30.48	31.8	1.32	Silty MDST		Grey, black Massive Blocky, rectangular, fracture pattern				
31.8	35.6	3.8	Silty SS1		Med. to dark grey Occ. Calcite filled fracture Occ. thin coal band ≈ 4-6 cm Massive				
35.6	39.41	3.81	Green SS1		Dark green SS1 Massive	38	55		
39.41	41.4	1.99	SS1	SLST	Light grey green SS1 interbedded with dark grey SLST	39.6 40.3	46 52		
41.4	41.7	.30	Shell Frags.		ABN shell fragments				
41.7	43.81	.11	SS1	SLST	SS1 is very micaceous Occ. thin bands of salt & pepper SS2 Occ. thin coal stringer Minor bands of siderite Minor fault	42.2 43.81	50 33	105	100
43.81	44.06	.25	Coal						

BWM/am.1

743

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
44.06	49.8	5.74	SLST	SS1	Dark grey SLST with thin lenticular interbeds of light grey SS1				
					SS1 interbeds are more ABN at top of unit	46 48	40 44		
					SLST grades to dark grey silty SS1 at base				
					ABN small scale normal faults at top of unit				
					Rare bioturbation				
					Minor soft SED deformation				
49.8	60.7	10.9	Silty SS1		Gradational Contact				
					Med to dark grey				
					Occ. thin interbeds of light grey SS1	52.4	42		
					Minor oval shaped SS1 pods	57.2	32		
					Occ. slickensided surface	58.2	48		
					Fairly massive homogenous unit	60	8		
					Minor plant frags.				
					Subvertical convoluted bedding				
60.7	61.3	.60	SLST		Dark grey, blocky fracture pattern				
61.3	62.9	1.6	SS1						
62.9	63.7	.80	SLST		Dark grey, blocky fracture pattern				
63.7	78.4	14.7	SS1		Med to dark grey	65	32		
					Occ. thin interbed of light grey SS1				
						67	35		
						72	39		
						75	48		

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
78.4	90.1	12.3	Sandy SLST		Gradational Contact Dark grey, blocky fracture pattern Occ. Grades to dark grey SS1 Minor interbeds of light grey SS1 Rare IRST bands with calcite and pyrite filled fractures Generally fairly massive homogenous unit	78.4 81.3	55 68		
90.1	107	16.9	Silty SS1	Sandy SLST	Dark grey silty SS1 Massive Homogeneous Grades to dark grey sandy SLST Nondescript unit Often has dark olive green hue Occ. IRST band/nodule Occ. talc?? filled fracture	102	62		
107.	111.8	4.8	SS1		Dark green grey SS1 (glauconite?) Occ. Talc?? filled fracture Occ. slickensided surface C/B Micaceous Massive Rare MDST near base of unit Very abrupt contact with underlying coal	111.6	60		
111.8	112.64	.84	Coal	CARB MDST	Slickensided upper surface Broken rubble Pyrite blebs Slickensides				94

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
112.64	114.2	1.56	MDST Breccia		Fault guauge ABN angular frags of SS1, SLST and MDST in MDST matrix Abrupt lower contact				
114.2	129.3	15.1	SS1		Med grey, greeninsh hue Minor thin MDST interbeds Soft SED deformation Occ. slickensided surface C/B 30				
129.3	132.4	3.10	SS1		Gradational Contact Med grey greenish hue As above but with Occ. thin coal stringer Soft SED deformation Rare bioturbation Minor CARB debris	131.7	41		
132.4	132.8	.40	Clayey	MDST	Breccuted				
132.8	133.4	.60			Yellow White fine grain ABN talc?? filled fracture				
133.4	133.78	.38	Clay		Fault zone, very soft				
133.78	134.38	.6			Breccia Abrupt lower contact				
134.38	137.16	2.78	SS1		Med grey greenish hue Minor thin MDST interbeds Soft SED deformation Occ. slickensided surface C/B 30 Occ. IRST nodule				
137.16			T.D.						

BWM/am.4

CORE DESCRIPTION

PROJECT Telkwa **HOLE I.D.** TW 814-88 **EXAMINER** S. Cameron **DATE** October 8,1988

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
0	6.1		O.B.						
6.1	10.75	4.65	SLST		Dark grey Massive Blocky fracture				
10.75	18.61	7.86	Silty SS1		Med Grey Blocky to concoidal fracture pattern Fairly massive				
18.61	20.35	1.74	Green SS1		Massive stick core Glauconite ? Rare thin coal stringer				
20.35	23.35	3.00	SS1	SLST	Light grey green SS1 interbeds of dark grey SLST and CARB MDST Unit becomes increasingly interbed toward base Micaceous Deseminated pyrite and pyrite blebs Lenticular to wavy bedding Occ. thin coal band and stringer	22.8	73		
23,35	24.67	1.32	CARB	Silty SS1	Med to dark grey ABN thin coal bands and coalified plant frags.				
24.67	25.11	.44	Coal		2 cm pyrite band ABN calcite filled cleats			107	96

743

BWM/an.1

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
25.11	28.79	3.68	SS1	SLST	Light grey green micaceous SS1 thinly interbedded with dark grey SLST and thin stringers of CARB MDST and Coal Occ. Slickensided bedding surfaces	25.6 27.6 28.4	67 78 80		
28.79	29.59	.80	CARB	Silty MDST	Grey Black				
29.59	30.46	.87	Coal					108	100
30.46	32.7	2.24	SS1	SLST	Light grey SS1 interbedded with dark grey SLST and MDST Thin CARB MDST and coal stringers Soft SED deformation Minor slickensides near base of unit	31 31.8	65 65		
32.7	33.2	.50	CARB	MDST	Black/dark grey				
33.2	33.76	.56	Dirty Coal		Gradational basal contact			109	96
33.76	34.2	.44	Silty CARB	MDST	Black, ABN plant fragments				

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
34.2	47.4	13.2	SS1	SLST	Light grey green micaceous SS1 interbedded with dark grey SLST and Occ. CARB MDST Rare very thin coaly stringers Beds are often lenticular Occ. IRST band and nodule Bedding planar to wavy; trough cross bedding in some SS1 interbeds Occ. interbeds of salt & pepper SS2 these beds often contain MDST rip up clasts Soft SED deformation Minor bioturbation	34.7 36.4 38.35 40.9 42 44.1 46	64 60 68 72 66 66 64		
47.4	54.0	6.6	SLST	SS1	Gradational Contact A/A SLST is now dominant unit with thin lenticular SS1 interbeds	47.9 48.6 49.4 49.8 51.1 53 53.8	66 65 61 60 60 67 66		
54.0	55.5	1.5	SLST		Dark grey rare thin light grey interbed of SS1 Occ. IRST band, ABN thin coal bands Soft SED deformation, ABN calcite and pyrite filled bedding plane frags at top of unit	54.3	69		
55.5	56.98	1.48	Coal					110	100

BWM/an.3

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
56.98	58.27	1.29	SLST	CARB	Dark grey CARB, muddy SLST Occ. thin light grey SS1 stringers			111	
58.27	59.90	1.63	Coal	SLST	Thin pyrite band			112	98
59.90	60.85	.95	MDST	CARB	Black, ABN thin coal bands			113	
60.85	61.24	.39	Coal		Dirty gradational lower contact			114	100
61.24	65.1	3.86	Silty MDST	CARB	Dark grey/black, extremely CARB Occ. thin SS1 stringers Intermittent coaly MDST bands (≈12 cm) Often grades to SLST ABN thin coal bands Occ. talc? covered shear plane	61.6 62.4 64.9	66 66 66		
65.1	65.8	.7	IRST		SS1 with FE carbonate cement				
65.8	68.82	3.01	Silty MDST	CARB	A/A Often grades to SLST Occ. slickensided surface	67.8	68		
68.82	69.06	.24	Dirty Coal						
69.06	70.12	1.06	MDST	CARB	ABN MDST stringers Thin coal bands throughout				
70.12	73.41	3.29	Coal	Boney Coal		72 72.6	68 68	115	96

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
73.41	74.04	2.07	MDST	CARB	Black, often grades to coaly MDST ABN thin coal bands Slickensided bedding planes	74	70	116	
74.04	76.11	2.07	Coal			75.6	68	117	94
76.11	76.36	.25	Bent		White Ash band, ABN shear surfaces				
76.36	76.48	.12	Coaly MDST						
76.48	76.95	.47	Silty MDST	CARB	Med. grey ABN coal bands Occ. filled slicked joints	76.8	63		
76.95	77.08	.13	SS3		c.g. Salt & pepper SS3 Abrupt contacts interbedded MDST				
77.08	79.14	2.06	MDST Silty	CARB SLST	Dark grey/brown → black ABN thin coal stringers & bands				
79.14	80.20	1.06	Coal					118	100
80.20	80.86	.66	SLST	CARB	Black CARB Rare MDST clasts near top			119	
80.86	81.98	1.12	Coal					120	100
81.98	88.95	6.97	SLST		Black, often grades to black MDST Thin light grey SS1 stringers throughout, often lenticular	82.4 85 86.6 88.5	68 70 67 64		
88.95	89.09	.14	Dirty						

DEPTH (METRES)			LITHOLOGY			BEDDING ANGLE		SAMPLE	
FROM	TO	THICK-NESS	MAIN	MINOR	DESCRIPTION	DEPTH (M)	ANGLE	NUMBER	% RCVRY
89.09	89.32	.23	MDST	CARB					
89.32	92.99	3.67	Coal					121	95
92.99	102.35	9.36	SLST	SS1	Interbedded dark grey SLST with thin lenticular light grey SS1 beds 5mm to 10cm Bedding planar to wavy Occ. thin Salt & pepper SS3 bed IRST nodules and bands throughout Occ. pyrite blebs Micaceous Minor soft SED deformation	94 96.1 96.3 100 102	69 69 70 68 72		
102.35		SS1			Gradational contact Med grey, greenish hue Massive, stick core Rare thin coal bands at top of unit Occ. pyrite view of bleb Rare IRST band or nodule				

COAL LITHOLOGY LOG

BPB

BOREHOLE	[illegible]
CLIENT	CONSORT RESOURCES LTD.
COUNTY	ALBERTA
DATE LOGGED	[illegible]
LOG No.	[illegible]
SUPPLEMENTARY LOGS RUN	

BOREHOLE DATA	
DRILLER'S T.D.	
LOGGER'S T.D.	
CASING DIAM.	
CASING DEPTH	
CASING WEIGHT	
CASING TYPE	
BIT SIZE	
MUD TYPE	
MUD WEIGHT	
MUD VISCOSITY	
MUD PH	
MUD LOSS	
MUD SAMPLE FROM	
MUD RESISTIVITY	
MUD SAMPLE TEMP.	
MUD RESISTIVITY	
MUD FILTRATE SAMPLE FROM	
MUD FILTRATE RESISTIVITY	
MUD FILTRATE SAMPLE TEMP.	
MUD CAKE RESISTIVITY	
MUD CAKE SAMPLE TEMP.	
TIME SINCE CIRCULATION	
MAX. REC. TEMP.	
EQUIP. LOCATION	
RECORDED BY	
WITNESSED BY	

OPERATING TIMES		
	RIG ON HOLE	LEFT HOLE
DATE		
TIME		

RUN No.	BIT	FROM	TO	FEET

CASING	SIZE	WEIGHT	GRADE	FROM	TO

LOG	INTERVAL	SCALE

LOG SUITE	LOG COMBINATION SONDE	SONDE TYPE

LOG	RECORDED	PRINTED

OPERATOR'S STATION	
TRUCK No.	
ENGINEER	
ASSISTANT	

CALIPER CORRECTION	
BOREHOLE SIZE	
CALIPER SETTING	
CALIPER CORRECTION	

DEPTH CONTROL	
DEPTH CONTROL STANDARD	
LOGGING MEASURE POINT	
PERMANENT DATUM	
ELEVATION	
LOG MEASURED FROM	
DRILLING MEASURED FROM	

REMARKS

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 503

LOG	EQUIPMENT			TUNING			PANEL			CAL. CODE	DEPTHS			TEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG MODEL	RECORD SPEED	DIRECTION REPLAY	LOG SPEED	% NORM	NORM		FROM	TO	NORM	
	910													
GAMMA			113	1	10	D	9	1	-	LAYER 2	0	1626		
DENSITY			1011	1136	1	10	D	9	1	5.42	+	0.1	2	1616
CALIPER	SONDE POSITION		1" - 2"	1	10	D	9	1.7	-	-		0.1	1	1626

COAL QUALITY/STEAM THICKNESS LOG INTERVALS (Refer to relevant log)

	FROM	TO	INTERVAL 100ths
1			
2			

ADDITIONAL SONDES RUN

SONDE	LOG	CAL. VALUE	CAL. CODE
507	1068	11100	-
226	1037	-	-
232	1017	-	-

ROTEX TO ADDITIONAL HEADINGS

REMARKS

SONDE STUCK IN HOLE AT 218m.

BPB COAL LITHOLOGY LOG

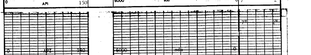
CALIBRATION DATA

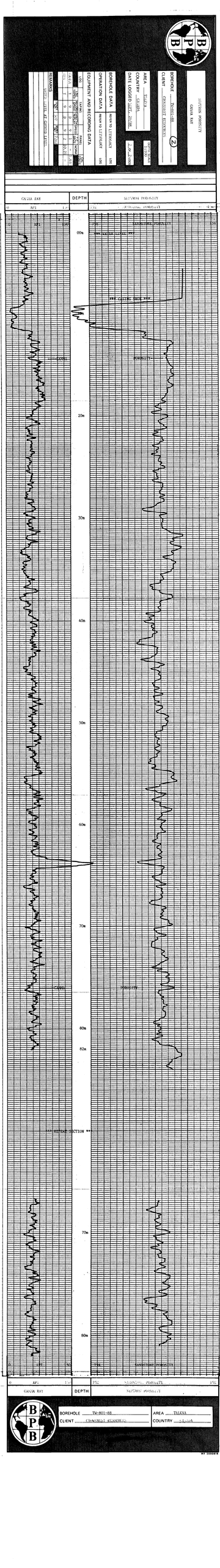
JIG No. 113	VALUE 11100 @ 11 SHAW	JIG CAL DATE 01/05/82	JIG VALUE 5540 @ 4800
JIG MARK SHOWN AT ABOVE VALUE		JIG No. 1036	SPAN 4000 NORM 2867 = 5.42

	1 in. 215 mm
	1 in. 535 mm

GAMMA RAY — DEPTH — BULK DENSITY (GRAPH) — CALIPER INCHES

HOLE SIZE CORRECTION DATA




BPB
NEUTRON POROSITY
GAMMA RAY
BOREHOLE TH-901-88
CLIENT CHEVRONTEXACO RESOURCES
AREA TILENA
COUNTRY CANADA
DATE LOGGED 14TH JULY 2010
2 OPERATORS
EQUIPMENT
BOREHOLE DATA
RUN NO 1
TIME SINCE CIRC 999
MAX REC TEMP 100
EQUIPMENT AND RECORDING DATA
OPERATION DATA
MATRIX DENSITY 2.65
HOLE SIZE 8.5
FLUID DENSITY 1.0
FLUID SALINITY 0
FLUID LEVEL FULL
REMARKS
GAMMA RAY
DEPTH
NEUTRON POROSITY
API
0
150
45
-15
00m
10m
20m
30m
40m
50m
60m
70m
80m
82m
SECTION 43
BOREHOLE TH-901-88
CLIENT CHEVRONTEXACO RESOURCES
AREA TILENA
COUNTRY CANADA

743

743

DIPMETER ANALYSIS

CLIENT CROWSNEST RESOURCES

BOREHOLE TW-801-88 (3)

AREA TELKWA

COUNTRY CANADA

DATE LOGGED.....20-SEP-88

DATE PROCESSED..30-SEP-88

COMMENTS.....

INTERPRETATION PARAMETERS

STEP 0.25M.

INTERVAL 0.50M.

SEARCH ANGLE 75.

DECLINATION 26.0 EAST

DEPTH RANGE 10.33 - 32.00M.

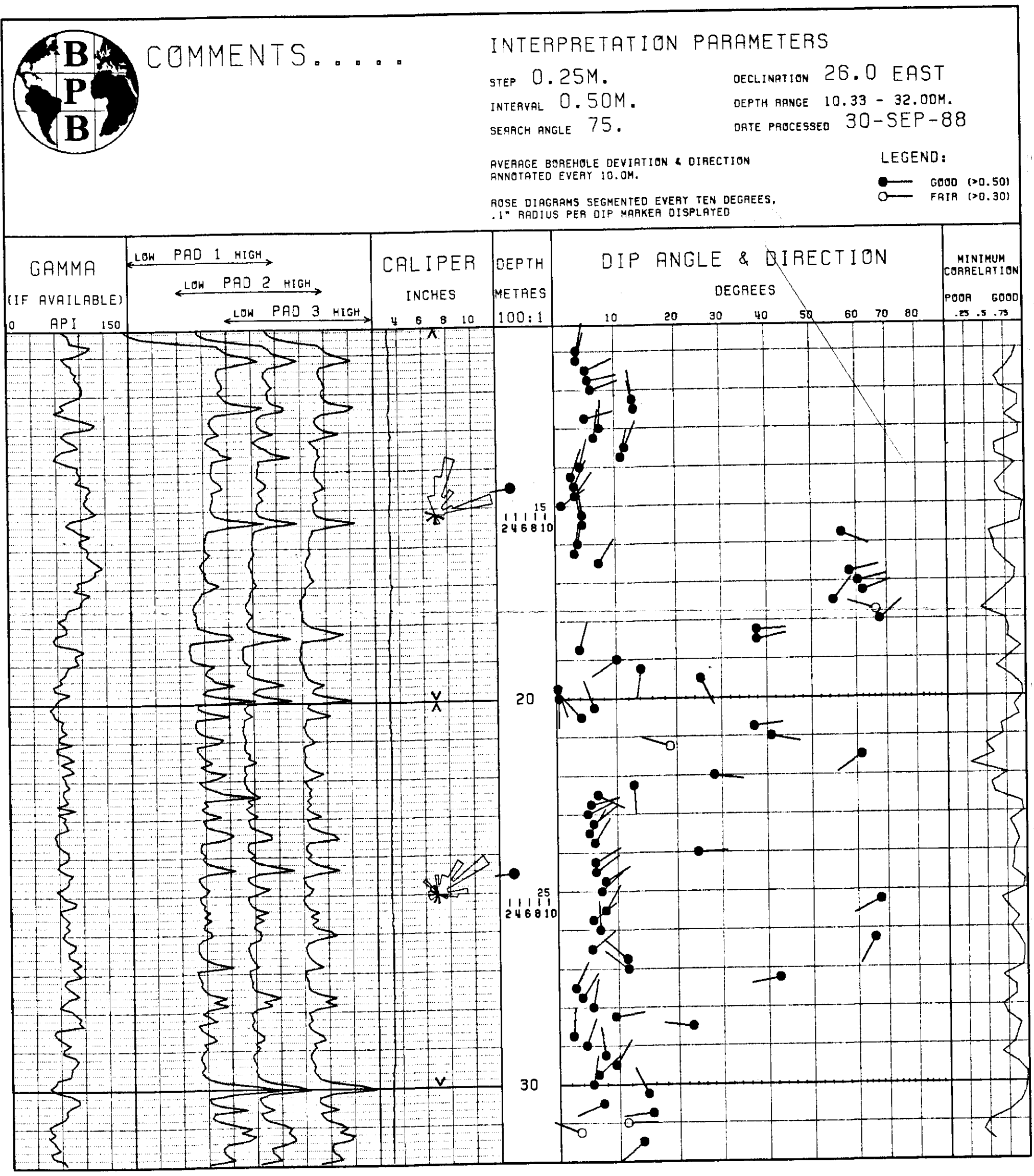
DATE PROCESSED 30-SEP-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:

- GOOD (>0.50)
- FAIR (>0.30)



COAL LITHOLOGY LOG

BPB

BOREHOLE: [illegible]
CLIENT: [illegible]
AREA: [illegible]
COUNTRY: [illegible]
DATE LOGGED: [illegible]
RUN NUMBER: [illegible]
DEPTH DRILLER: [illegible]
DEPTH LOGGER: [illegible]
CASING SHOE: [illegible]

BOREHOLE DATA

CASING/HOLE	SIZE	FROM	TO
CASING 1	[illegible]	[illegible]	[illegible]
CASING 2	[illegible]	[illegible]	[illegible]
HOLE	[illegible]	[illegible]	[illegible]

BIT	SIZE	FROM	TO
BIT 1	[illegible]	[illegible]	[illegible]
BIT 2	[illegible]	[illegible]	[illegible]

FLUID DATA

	TYPE	DENSITY	VISCOSITY	PH	FLUID LOSS
START	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX REC TEMP	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

OPERATING DATA

RIG NAME	[illegible]
RECORDED BY	[illegible]
WITNESSED BY	[illegible]

EQUIPMENT	SOURCE	CALIBRATION
GAMMA RAY	[illegible]	[illegible]
DENSITY	[illegible]	[illegible]
CALIPER	[illegible]	[illegible]

LOG	SONDE	LOG SPEED	RECORDED SPEED	DIRECTION	OPEN HOLE	CASED HOLE	NORM	FROM	TO	REMARKS
GAMMA RAY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DENSITY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALIPER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SOURCE TYPE
COLLIMATION
SONDE

LOG SUITE
GAMMA RAY
DENSITY
CALIPER

743

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE: [illegible]

LOG	SONDE	SOURCE	CALIBRATION	LOG LEVEL	RECORD SPEED	DIRECTION	OPEN HOLE	CASED HOLE	NORM	FROM	TO	REMARKS
GAMMA RAY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DENSITY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALIPER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to remarks log)

	FROM	TO	INTERVAL
	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL DETAILS SCALE LOGGING LOG
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

REFER TO ADDITIONAL HEADINGS

REMARKS

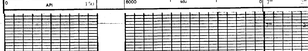
BPB COAL LITHOLOGY LOG

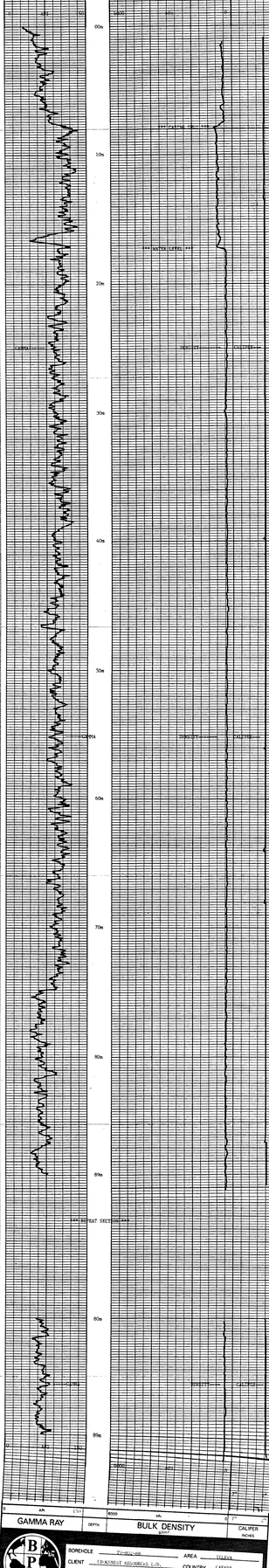
CALIBRATION DATA

JD No. [illegible]	VALUE@ 0 DIAM	JD CAL DATE [illegible]	JD VALUE [illegible]
JD MARK SHOWN AT ABOVE VALUE =		JD No. [illegible]	SPAN [illegible]

GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES

HOLE SIZE CORRECTION DATA



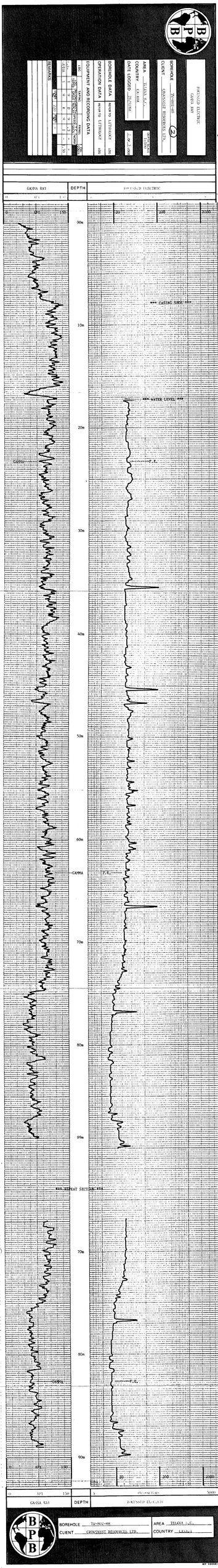


GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES

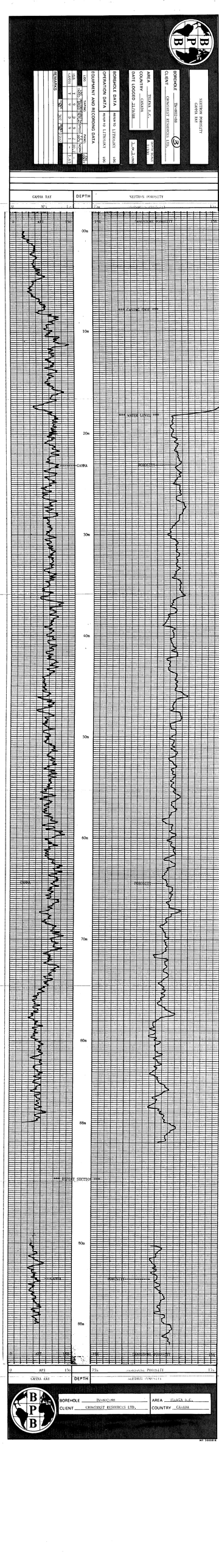
BPB

BOREHOLE: [illegible]
CLIENT: [illegible]
AREA: [illegible]
COUNTRY: [illegible]

COAL LITHOLOGY LOG


BPB
POTENTIAL ELECTRIC
GAMMA RAY
BOREHOLE TW-HOU-08 (2)
CLIENT CROWNEST RESOURCES, LTD.
AREA TIJUANA R.C.
COUNTRY CALIFORNIA
DATE LOGGED 12/2/86
RUN NO. 1
DEPTH DRILLER 5,000
DEPTH LOGGER 5,000
BOREHOLE DATA
MUD TYPE LITHOLOGY
MUD WT. LITHOLOGY
OPERATION DATA
MAX REC. TEMP. LITHOLOGY
EQUIPMENT AND RECORDING DATA
SONDE TYPE
SONDE SERIAL NO.
SONDE O.D.
CENTRALIZER
LOGGING SPEED
TIME CONSTANT
SENSITIVITY
REMARKS
GAMMA RAY
DEPTH
POTENTIAL ELECTRIC
API
150
20
200
2000
5000
90m
10m
20m
30m
40m
50m
60m
70m
80m
*** CASING SHOE ***
*** WATER LEVEL ***
P.E.
GAMMA
*** REPEAT SECTION ***
BOREHOLE TW-HOU-08
CLIENT CROWNEST RESOURCES LTD.
AREA TIJUANA R.C.
COUNTRY CALIFORNIA

743


BPB
NEUTRON POROSITY
GAMMA RAY
BOREHOLE TW-0827-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TULAGA B.C.
COUNTRY CANADA
DATE LOGGED 21/9/1988
RUN NO. 1
DEPTH DRILLER 100m
DEPTH LOGGER 100m
BOTTOM LOGGED INTERVAL 100m
TOP LOGGED INTERVAL 0m
CASING DRILLER 0m
CASING LOGGER 0m
BOTTOM CASING 0m
EQUIPMENT AND RECORDING DATA
RECORDED BY LITHOLOGY
OPERATION DATA
BOREHOLE DATA
RECORDED BY LITHOLOGY
REMARKS
GAMMA RAY
DEPTH
NEUTRON POROSITY
API
GAMMA
POROSITY
00m
10m
20m
30m
40m
50m
60m
70m
80m
88m
*** WATER LEVEL ***
*** CASING SHOE ***
*** BASE OF SECTION ***
BOREHOLE TW-0827-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TULAGA B.C.
COUNTRY CANADA

743

743

DIPMETER ANALYSIS

CLIENT___ CROWSNEST RESOURCES

BOREHOLE_ TW-802-88 (4)

AREA_____ TELKWA

COUNTRY___ CANADA

DATE LOGGED.....21-SEP-88
DATE PROCESSED..30-SEP-88

COMMENTS.....

INTERPRETATION PARAMETERS

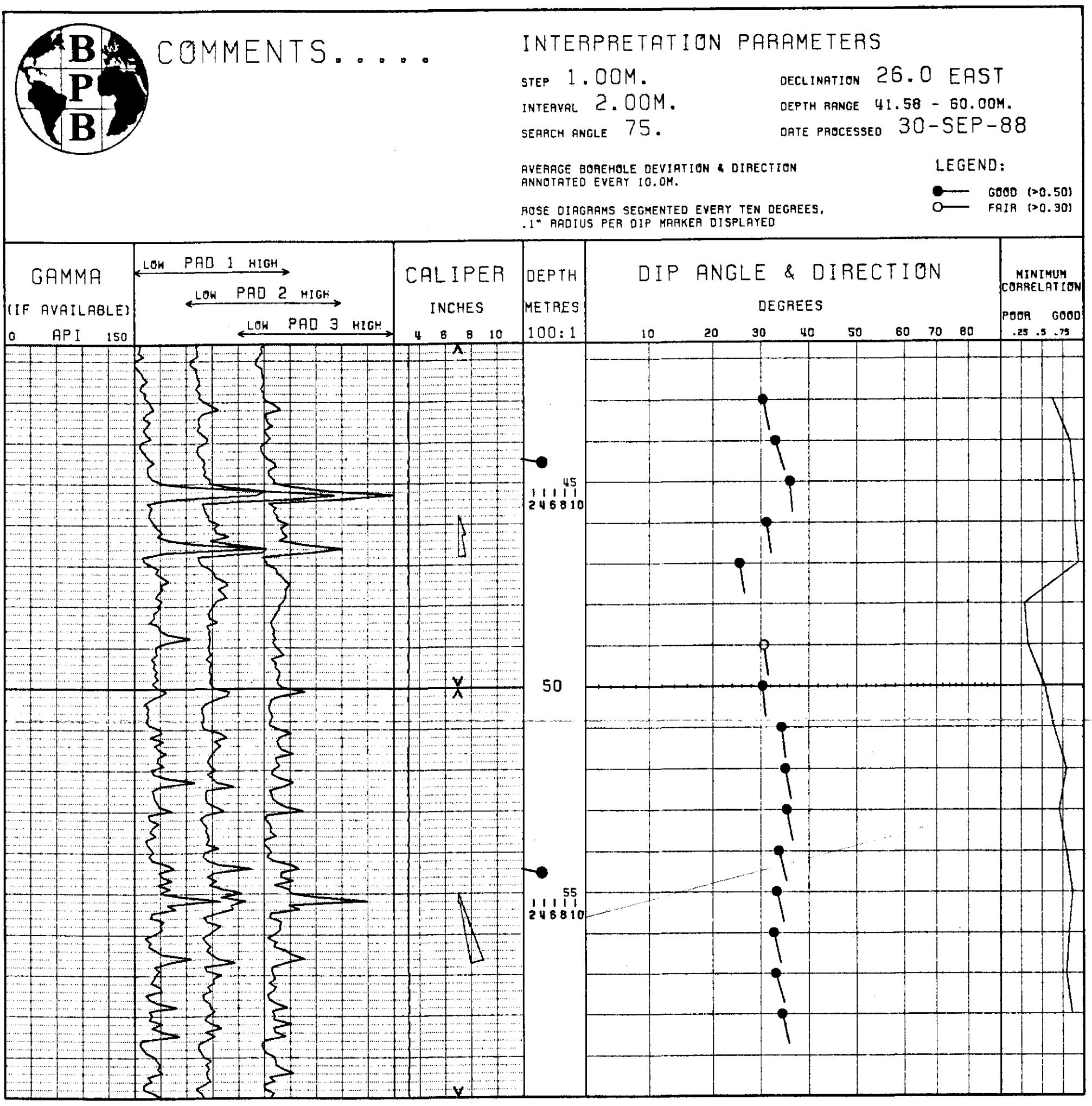
STEP 1.00M.
INTERVAL 2.00M.
SEARCH ANGLE 75.

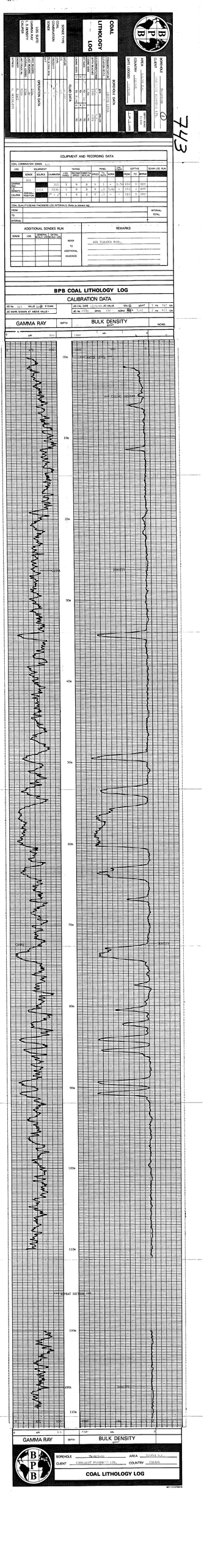
DECLINATION 26.0 EAST
DEPTH RANGE 41.58 - 60.00M.
DATE PROCESSED 30-SEP-88

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES.
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)




BPB
COAL LITHOLOGY LOG
LOG SUITE
LOG ANALYSIS
CALIPER
SONDE TYPE
BOREHOLE CONDITIONS
BOREHOLE DATA
OPERATING DATA
CLIENT
AREA
COUNTRY
BOREHOLE
743
EQUIPMENT AND RECORDING DATA
ADDITIONAL SONDES RUN
REMARKS
BPB COAL LITHOLOGY LOG
CALIBRATION DATA
GAMMA RAY
BULK DENSITY
DEPTH
INCHES
API
KG/M3
CALIPER
DENSITY
SPACING
COMPENSATION
BOREHOLE
AREA
CLIENT
COUNTRY
COAL LITHOLOGY LOG

COAL LITHOLOGY LOG

GAMMA RAY CALIPER
LOG SUITE
DENSITY GAMMA RAY
COMBINATION SONDE
SONDE TYPE
COMBINATION SONDE
SERIAL NUMBER
SONDE 315
CABLE 1/4" 7 core
OPERATING ENGINEER
ENGINEER'S NAME
GEOLOGIST
WITNESS
OPERATION DATA
LOGGING DATE
LOGGING TIME
MEASURED FROM
DRILLER'S DEPTH
LOGGER'S DEPTH
CASING
BOREHOLE DATA
DRILLER'S DEPTH
LOGGER'S DEPTH
CASING DATA
FLUID DATA
DENSITY
VISCOSITY
PH
FLUID LEVEL
RECORDED BY
WITNESSED BY
BOREHOLE DATA
BIT SIZE
FROM
TO
CASING SIZE
WEIGHT
FROM
TO
TYPE
LEVEL
SOURCE OF DATA
RUN NUMBER
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY

AREA
CONTRACTOR
DEPT. LOGGED
DEPTH DRILLER
DEPTH LOGGER
BTM. LOG INTERV.
TOP LOG INTERV.
CASING
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 CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY

BOREHOLE
CLIENT

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 315

LOG	EQUIPMENT SONDE	SOURCE	SUBARRAY	TAPING LOG NAMES	RECORD DIRECT/REPLAY	UPWARD	PANEL LOG AXIS	DOWN	Co-ORD	DEPTHS FROM	TO	SCALE	LOG RUN
	315												
GAMMA RAY			315	T	9	D	9	I	-	3.50	76	G	2nd
DENSITY		5014		1938	T	9	D	9	1	3.50	76	G	2nd
CALIPER	BOREHOLE POSITION		2"- 2"	T	9	D	9	15	-	-	37	I	2nd

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	67m	53m	65m	25m
TO	56m	43m	53m	19m
INTERVAL	6m	10m	12m	6m

INTERVAL TOTAL 30m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE	DETAIL LOG/SCALE
507	DCL	1:1200	-
226	VLST	-	-
232	RIF	-	-
220	F.C.L.	1:1200	-

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

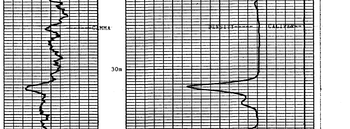
CALIBRATION DATA

JG No. 315 VALUE(LL) @ 9"DIAM
JG MARK SHOWN AT ABOVE VALUE =

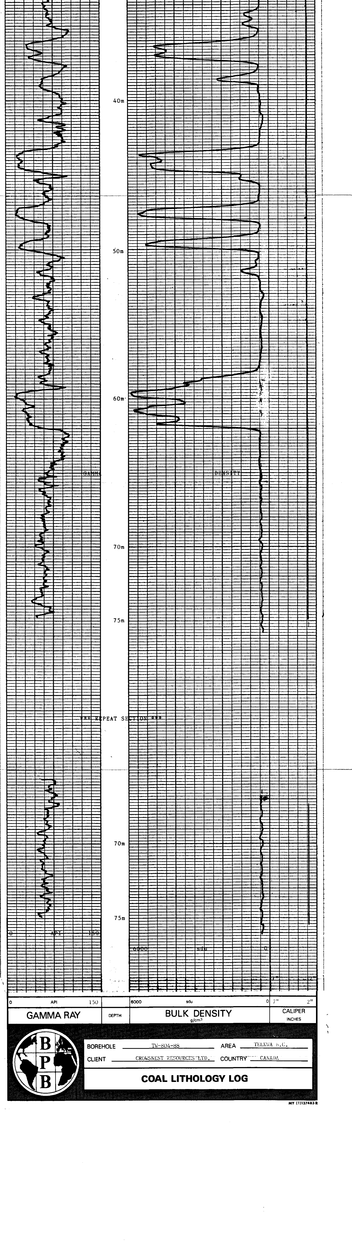
JG CAL DATE 21/9/82 JG VALUE 950 g/cm³ ? ins 735 cps
JG No. 0938 SPAN 9091 NOW 962 5.92 ins 847 cps

GAMMA RAY | DEPTH | BULK DENSITY g/cm³ | CALIPER INCHES

HOLE SIZE CORRECTION DATA



0 API 150 | 3000 kN/m | 0 2" 2"



0 API 150 | 3000 kN/m | 0 2" 2"

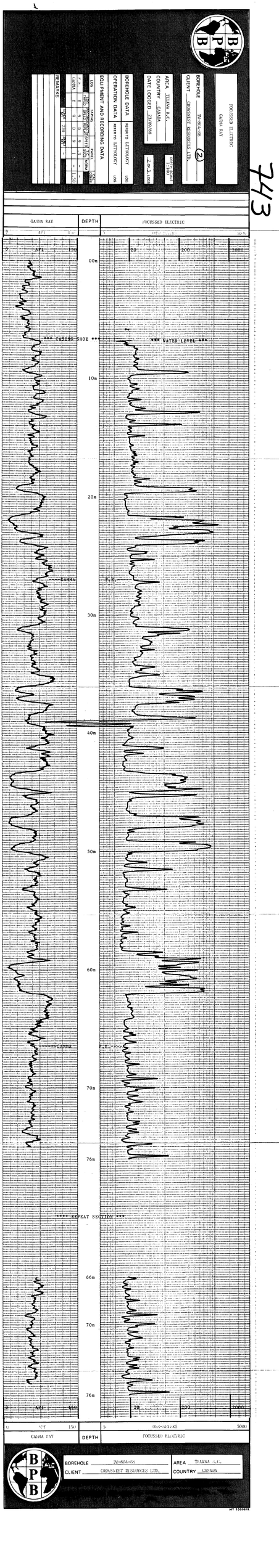
GAMMA RAY | DEPTH | BULK DENSITY g/cm³ | CALIPER INCHES

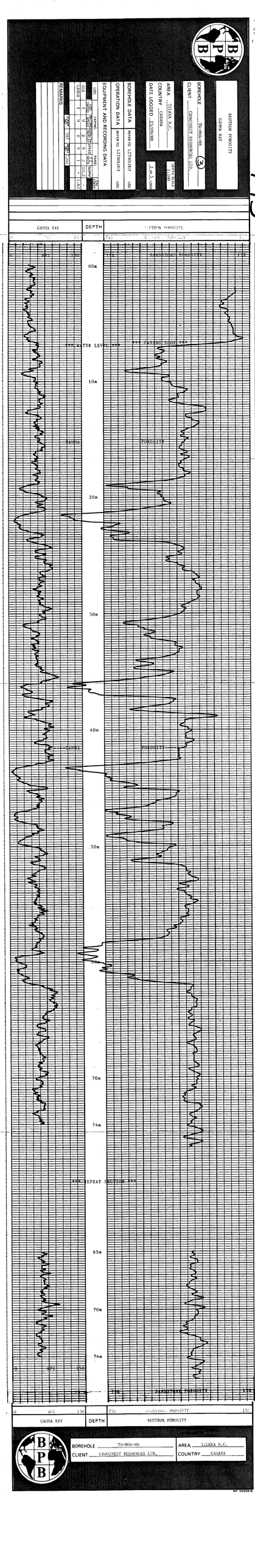
BPB

BOREHOLE Tweedside AREA Tranent N.C.
CLIENT Deadstart Products Ltd. COUNTRY Canada

COAL LITHOLOGY LOG

REF 1770219414


BPB
FOCUSSED ELECTRIC
GAMMA RAY
BOREHOLE TD-80S-08 (2)
CLIENT CROSSNEST RESOURCES LTD.
AREA TILENA N.L.
COUNTRY CANADA
DATE LOGGED 23/09/88
-0.5 -0.005
LOG
DEPTH
MATRIX
FLUID
HOLE
CASING
BOREHOLE DATA
REFER TO LITHOLOGY LOG
OPERATION DATA
EQUIPMENT AND RECORDING DATA
REFER TO LITHOLOGY LOG
REMARKS
GAMMA RAY
DEPTH
FOCUSSED ELECTRIC
API
0
150
00m
10m
20m
30m
40m
50m
60m
70m
76m
66m
70m
76m
*** CASING SHOE ***
*** WATER LEVEL ***
GAMMA
RES.
GAMMA
RES.
***** REPEAT SECTION ***
OHMS/METER
5
5000
BOREHOLE TD-80S-08
CLIENT CROSSNEST RESOURCES LTD.
AREA TILENA N.L.
COUNTRY CANADA
MY 3000818


BPB
NEUTRON POROSITY
GAMMA RAY
BOREHOLE TN-804-188
CLIENT CONSOLIDATED RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 23/09/88
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
REMARKS
GAMMA RAY
DEPTH
NEUTRON POROSITY
*** WATER LEVEL ***
** CASING SHOE ***
*** REPEAT SECTION ***
00m
10m
20m
30m
40m
50m
60m
70m
74m
65m
70m
74m
API
SANDSTONE POROSITY
BOREHOLE TN-804-188
CLIENT CONSOLIDATED RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

743

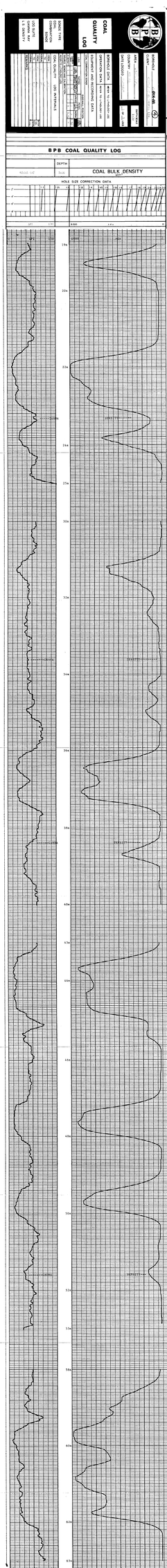
BPB COAL QUALITY LOG

DEPTH

NEUTRON

COAL BULK DENSITY

HOLE SIZE CORRECTION DATA



COAL BULK DENSITY

DEPTH

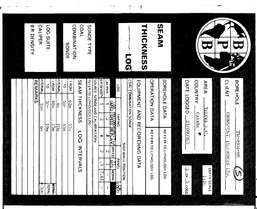
BOREHOLE

CLIENT

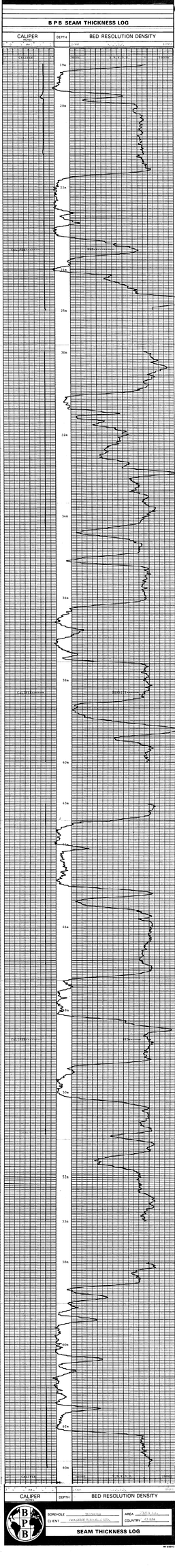
AREA

COUNTRY

COAL QUALITY LOG


B P B
SEAM THICKNESS LOG
BOREHOLE
CLIENT
AREA
COUNTRY
DATE LOGGED
OPERATOR DATA
EQUIPMENT AND RECORDING DATA
SEAM THICKNESS LOG INTERVALS
CALIPER
BED RESOLUTION DENSITY
DEPTH

143


B P B SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
19m
20m
21m
22m
23m
24m
25m
26m
27m
28m
29m
30m
31m
32m
33m
34m
35m
36m
37m
38m
39m
40m
41m
42m
43m
44m
45m
46m
47m
48m
49m
50m
51m
52m
53m
54m
55m
56m
57m
58m
59m
60m
61m
62m
63m
BOREHOLE
CLIENT
AREA
COUNTRY
SEAM THICKNESS LOG

DIPMETER ANALYSIS

CLIENT	CROWSNEST RESOURCES
BOREHOLE	TW-804-88 ⑥
AREA	TELKWA
COUNTRY	CANADA

DATE LOGGED.....22-SEP-88
DATE PROCESSED..29-SEP-88

COMMENTS.....

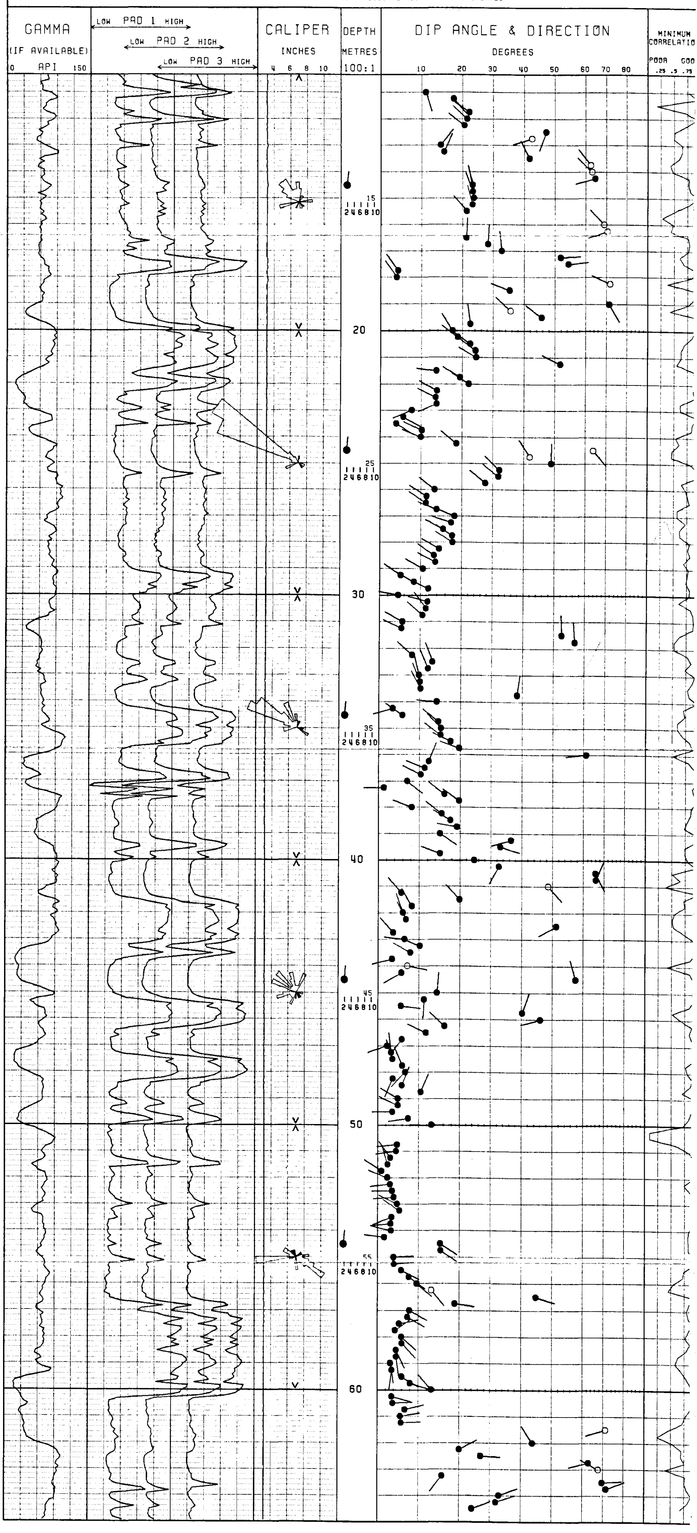
INTERPRETATION PARAMETERS

STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.
DECLINATION 26.0 EAST
DEPTH RANGE 10.33 - 65.00M.
DATE PROCESSED 29-SEP-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



743

COAL LITHOLOGY LOG

BOREHOLE: 86-88 D
CLIENT: CHEVRON RESOURCES LTD.
AREA: TRIASSIC BASIN
COUNTRY: CANADA
DATE LOGGED: 27/11/86
DEPTH DATUM: KELLY BUSHING
ELEVATION: 1.5m ABOVE G.L.

BOREHOLE DATA

CASING	SIZE	FROM	TO
CASING	9 5/8"	0	30m
CASING	7"	0	76m
LINER			
OPEN HOLE	6 1/4"	76m	1754m

MUD: GEL CHEM
DENSITY: 1.10 g/cc
VISCOSITY: 45 sec
FLUID LOSS: 6 cc
PH: 9.5
RESISTIVITY: 0.2 ohm-m @ 21°C
SOURCE: MUD PIT
TEMP: MEASURED @ 1754m
CORRECTED TO: 1754m

FLUID DATA

CHLORIDES	1	5	10
	2	10	50
	3	50	100
	4	100	500
	5	500	1000
	6	1000	5000
	7	5000	10000
	8	10000	50000
	9	50000	100000
	10	100000	200000
	11	200000	300000
	12	300000	400000

RUN	DATE	DRILLER'S DEPTH	LOGGER'S DEPTH	CASING SHOE
1	27/11/86	1754m	1754m	76m

UNITS	DRILLING	LOG
DEPTH	1754m	1754m
TEMP	21°C	21°C
RES	0.2 ohm-m @ 21°C	0.2 ohm-m @ 21°C
DENSITY	1.10 g/cc	1.10 g/cc
VISCOSITY	45 sec	45 sec
PH	9.5	9.5
FLUID LOSS	6 cc	6 cc
SOURCE	MUD PIT	MUD PIT

OPERATION DATA

RECORDED BY	J.C. ROBERTS
WITNESSED BY	J.D. WILLIS
EQUIPMENT No.	5700
LOCATION	TRIASSIC

LOG SUITE
GAMMA RAY
DENSITY
CALIPER

COAL COMBINATION ZONE

PRODUCT TYPE
RAW
PROCESSED
CLEAN

CUSTOMER	
COAL	
SEAM	
SAMPLE No.	

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE ???

LOG	EQUIPMENT			SLIPPING		PANEL			DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATION	LOG SPEED	RECORD SPEED	REPLAY SPEED	GAIN	NORM	FROM	TO	NORMALISE	
GAMMA RAY	101											
DENSITY		5411	0336	1	9	9	9	1	1,754.72	0	77m	1
CALIPER	HORIZ. POSITION		7" +2"	1	9	9	9	x3	–	78	2 76m	1
									–	76	1 76m	1

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	66m	56m	26m
TO	60m	47m	22m
INTERVAL	6m	9m	4m

INTERVAL TOTAL: 19m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL DETAIL SCALE LOGARITHMIC LOG
220	F.E.	1:1140 –
502	BSK	1:1140 –
226	YEBI	– –
232	ZEF	– –

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JOG No. 115 VALUE 11.@ 5'DIAM
JOG MARK SHOWN AT ABOVE VALUE –

JOG CAL DATE 27/11/86 JOG VALUE 804.@ 50mm
JOG No. 0336 SPAN 800 NORM 400 = 5.0

2 ins 787 GR
2 ins 475 DEN

GAMMA RAY — DEPTH — BULK DENSITY (GCM³) — CALIPER (INCHES)

HOLE SIZE CORRECTION DATA

GAMMA RAY — DEPTH — BULK DENSITY (GCM³) — CALIPER (INCHES)

BOREHOLE 86-88D AREA TRIASSIC BASIN
CLIENT CHEVRON RESOURCES LTD. COUNTRY CANADA

COAL LITHOLOGY LOG

MY 1112/9483

FOCUSSED ELECTRIC
GAMMA RAY

BOREHOLE TW-805-88 ②
CLIENT CROWSNEST RESOURCES LTD.

DEPTH SCALE 1:100

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 23/9/88

2 OF 5 LOGS

BORHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

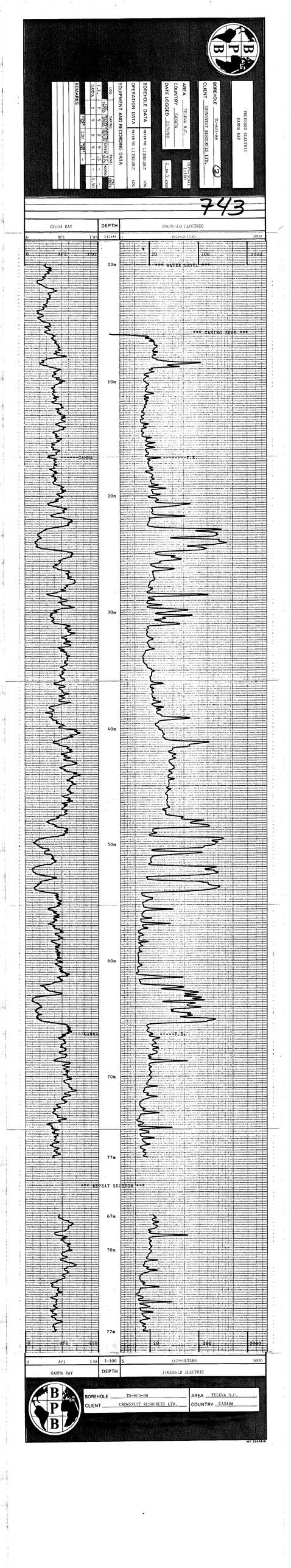
EQUIPMENT AND RECORDING DATA

LOG	TAPING: LOG TAPED	TAPING: RECORD SPEED	TAPING: DIRECT or REPLAY	PANEL: SPEED	PANEL: T.C SECS	PANEL: NORM	CAL COEFF
F.E.	Y	9	D	9	.3	-	-
GAMMA	Y	9	D	9	1	-	1.50

SONDE NO 220 SOURCE NO -

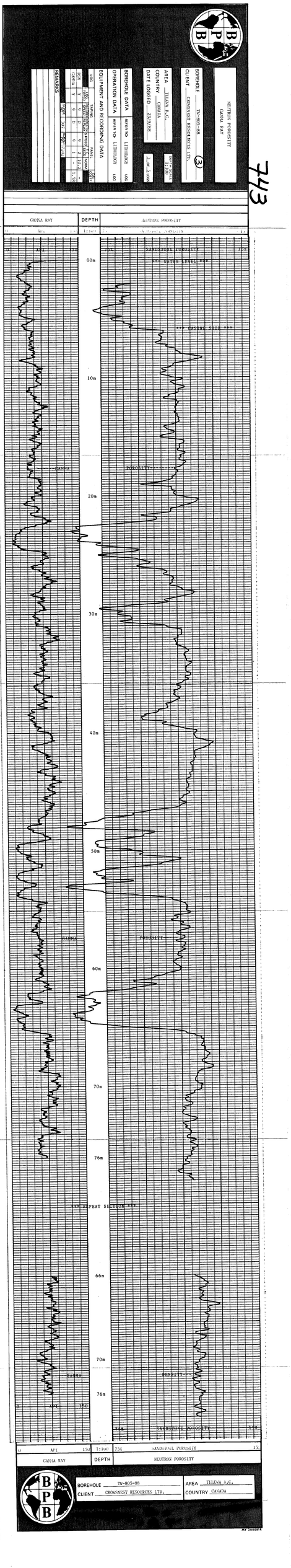
REMARKS

743



BOREHOLE TW-805-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

MY 200081R


NEUTRON POROSITY
GAMMA RAY
BOREHOLE TN-805-88
CLIENT CROSSWEST RESOURCES LTD.
AREA TELEGRA B.C.
COUNTRY CANADA
DATE LOGGED 21/7/88
RUN NO. ONE
DEPTH DRILLER 3.0m-76.0m
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
REMARKS
GAMMA RAY
DEPTH
NEUTRON POROSITY
SANDSTONE POROSITY
*** WATER LEVEL ***
*** CASING SHOE ***
GAMMA
POROSITY
*** REPEAT SECTION ***
BOREHOLE TN-805-88
CLIENT CROSSWEST RESOURCES LTD.
AREA TELEGRA B.C.
COUNTRY CANADA

743

743

BPB

COAL QUALITY LOG

SONDE TYPE:
COAL
COMBINATION
SONDE

LOG SUITE:
GAMMA RAY
L.S. DENSITY

BOREHOLE TW-805-88 ④
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 23/9/88

DEPTH SCALE 1:20

4 OF 5 LOGS

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	LOG TAPED	RECORD SPEED	DIRECT OR REPLAY	SPEED	T.C SECS	NORM	CAL COEFF
GAMMA RAY	Y	2	R	2	1	–	1.51
L.S DENSITY	Y	2	R	2	1	5.82	–

SOURCE, SONDE AND CALIBRATION
REFER TO LITHOLOGY LOG

COAL QUALITY LOG INTERVALS

FROM	66m	56m	26m	
TO	60m	47m	22m	
INTERVAL	6m	9m	4m	
FROM				INTERVAL TOTAL
TO				
INTERVAL				19m

REMARKS

BPB COAL QUALITY LOG

GAMMA RAY	DEPTH 1:20	COAL BULK DENSITY g/cm3

HOLE SIZE CORRECTION DATA

	1.2	1.25	1.3	1.35	1.4	1.45	1.5	1.55	1.6	1.7	1.8	1.9	2.0	2.2	2.4	3.0
2"																
4"																
6"																
8"																

0 API 150		6000 sdu 0

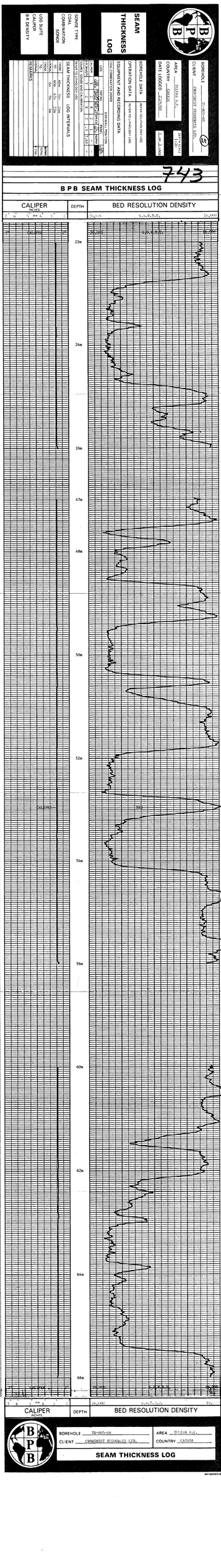
0 API 150		6000 sdu 0
GAMMA RAY		COAL BULK DENSITY g/cm3
	DEPTH	

BPB

BOREHOLE TW-805-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

COAL QUALITY LOG

MY 88002 R


SEAM THICKNESS LOG
BPB
BOREHOLE TW-905-08
CLIENT CROWSNEST RESOURCES LTD.
AREA TITANIA PIT
COUNTRY CANADA
DATE LOGGED 22/9/88
RUN NO. 1
DEPTH DRILLER 1150
DEPTH LOGGER 1150
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
LOG CORRELATION SHOWN
OVERALL POSITION
SONDE TYPE
COAL COMBINATION SONDE
LOG SUITE
CALIPER
B.P. DENSITY
REMARKS
LOG INTERVALS
MAXIMUM THICKNESS
LOG
CALIPER
DENSITY
SHORT SPACED NEUTRON
LONG SPACED NEUTRON
CALIPER
INCHES
DEPTH
BED RESOLUTION DENSITY
743
B P B SEAM THICKNESS LOG
22m
24m
26m
47m
48m
50m
52m
54m
56m
60m
62m
64m
66m
BOREHOLE TW-905-08
CLIENT CROWSNEST RESOURCES LTD.
AREA TITANIA PIT
COUNTRY CANADA
SEAM THICKNESS LOG

DIPMETER ANALYSIS

CLIENT___ CROWSNEST RESOURCES
BOREHOLE_ TW-805-88 (6)
AREA_____ TELKWA
COUNTRY__ CANADA

DATE LOGGED.....23-SEP-88
DATE PROCESSED..29-SEP-88

COMMENTS.....

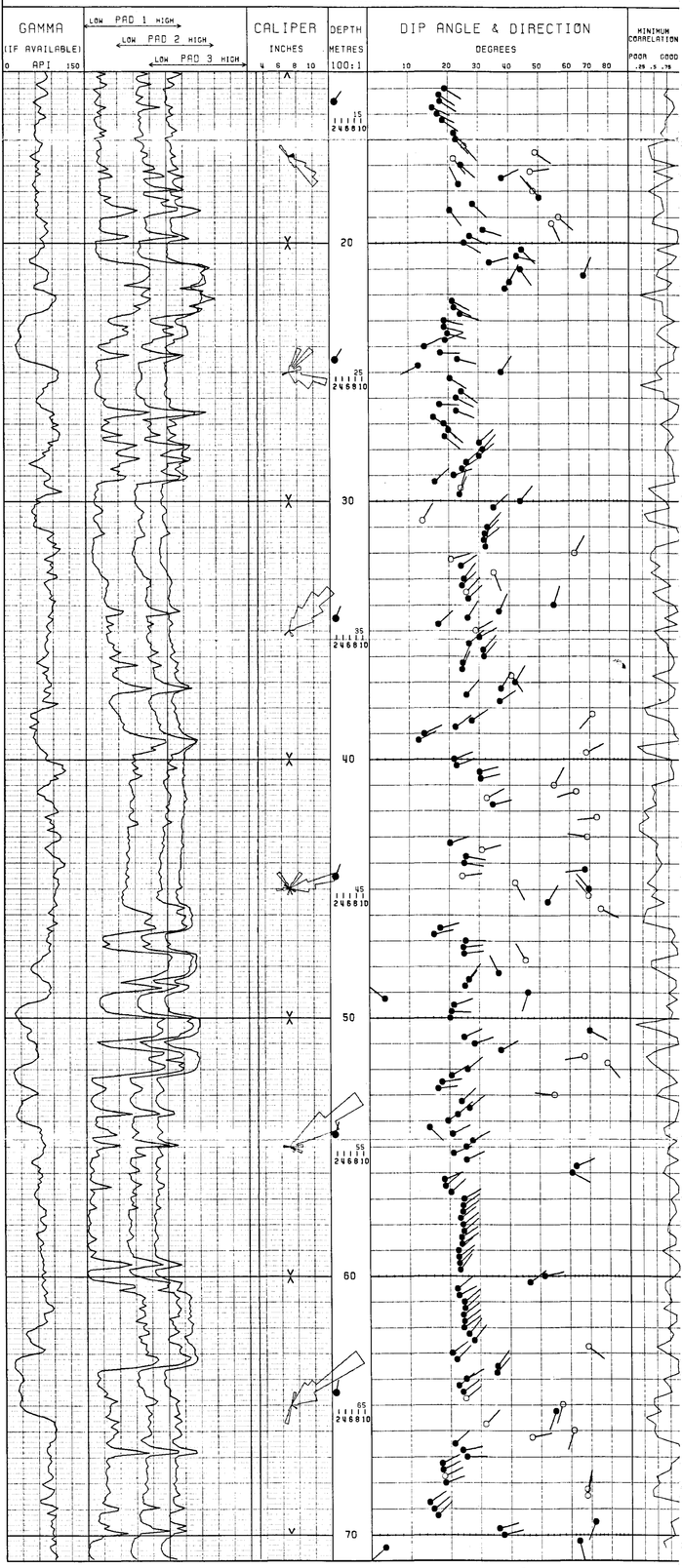
INTERPRETATION PARAMETERS

STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.
DECLINATION 26.0 EAST
DEPTH RANGE 13.33 - 71.00M.
DATE PROCESSED 29-SEP-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



743

COAL LITHOLOGY LOG

BOREHOLE	TW-806-88 ①
CLIENT	CROWSNEST RESOURCES LTD.
AREA	TELKWA B.C.
COUNTRY	CANADA
DATE LOGGED	24/9/88
DEPTH SCALE	1:100

1 OF 5 LOGS

SONDE TYPE:
COAL
COMBINATION
SONDE

LOG SUITE:
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE DATA

	BPB	DRILLER
PERMANENT DATUM	GROUND LEVEL	
ELEVATION OF P.D.	–	
MEASUREMENTS FROM	G.L.	G.L.
DEPTH REACHED	59.54m	60.96m
CASING SHOE	9.1m	9.1m
BIT SIZES	1 3" TO TD	2 TO
	3 TO	4 TO
CASING SIZES	1 HQ TO 9.1m	2 TO

FLUID DATA

NATURE	SG 550
S.G.	N/A
LEVEL	4.9m
VISCOSITY	N/A
Rm at meas temp.	N/A
B.H.T.	N/A

OPERATION DATA

FIRST READING	58m
LAST READING	0m
INTERVAL LOGGED	58m
UNIT-TRUCK No.	V220
ENGINEER	R. RACZ
WITNESS	B. MCKINSTRY

743

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 101

LOG	EQUIPMENT			TAPING			PANEL			CAL. COEFF.	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	T.C. SECS	NORM		FROM	TO	INTERVAL	
	101													
GAMMA RAY	SIDEWALL POSITION		315	Y	9	D	9	1	–	1.50	58	0	58m	Y
L.S. DENSITY		5851	0336	Y	9	D	9	1	5.82	–	59	2	57m	Y
CALIPER			7"– 2"	Y	9	D	9	.3	–	–	59	1	58m	Y

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	10m	INTERVAL TOTAL
TO	8m	
INTERVAL	2m	= 2m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
220	F.E.	1:100	–
507	DSN	1:100	–
226	VERT	–	–
232	DIP	–	–

REFER TO ADDITIONAL HEADINGS

REMARKS

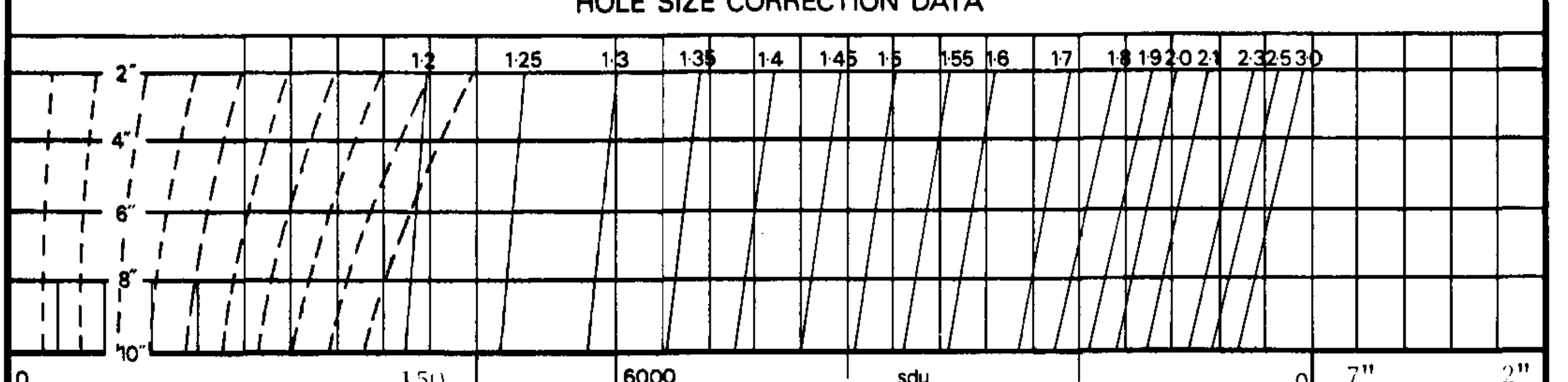
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No. 315 VALUE 844 @ 5" DIAM.	JIG CAL. DATE 22/9/88 JIG VALUE SDU @ g/cm³	7 ins.	747 cps.
JIG MARK SHOWN AT ABOVE VALUE ←	JIG No. 0336 SPAN 600 NORM SDU/CPS = 5.82	2 ins.	475 cps.

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA



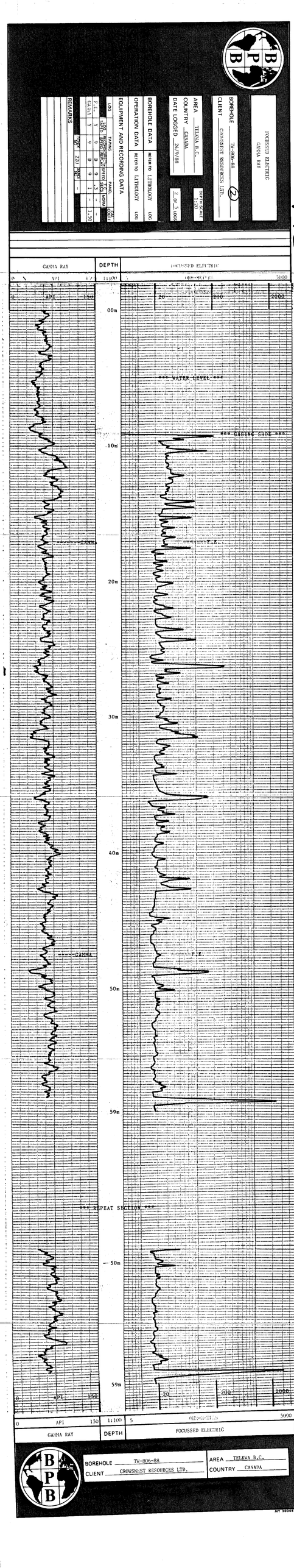
0 API 150		6000 sdu 0	7" 2"

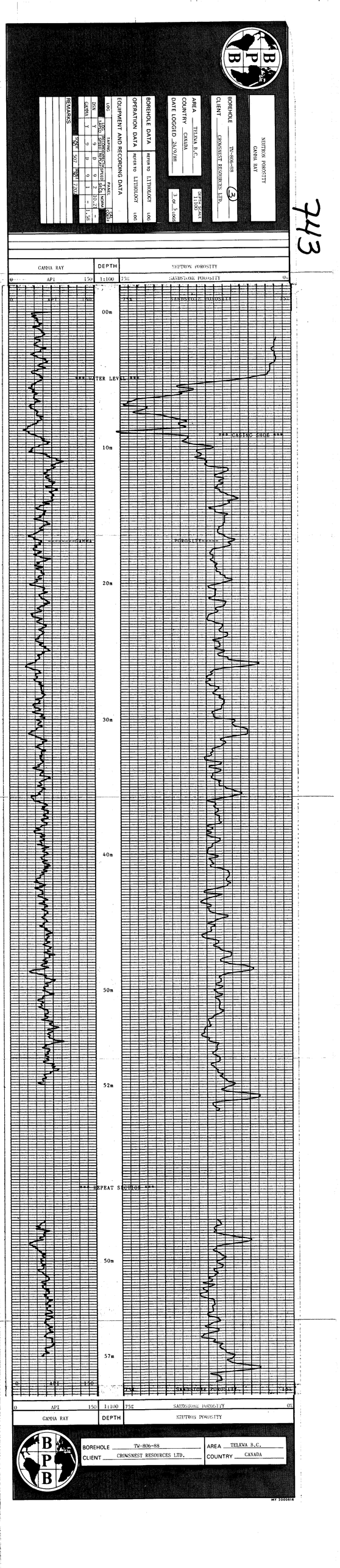
0 API 150		6000 sdu 0	7" 2"
GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BOREHOLE	TW-806-88	AREA	TELKWA B.C.
CLIENT	CROWSNEST RESOURCES LTD.	COUNTRY	CANADA

COAL LITHOLOGY LOG

MY (1)137483 R


FOCUSSED ELECTRIC
GAMMA RAY
BOREHOLE TW-806-88 (2)
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 24/9/88
DEPTH SCALE 1:100
2 OF 2 SONDES
LOG
REFER TO LITHOLOGY LOG
OPERATION DATA
REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA
LOG
PRIMARY
SECONDARY
TERTIARY
CASING
REMARKS
743
GAMMA RAY
DEPTH
FOCUSSED ELECTRIC
0 API 150
1:100
0 20 200 2000
3000
00m
10m
20m
30m
40m
50m
59m
*** WATER LEVEL ***
*** CASING SHOE ***
------GAMMA
------P.E.
*** REPEAT SECTION ***
BOREHOLE TW-806-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA
MY 3000818


NEUTRON POROSITY
GAMMA RAY
BOREHOLE TW-806-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 24/9/88
DEPTH SCALE 1:100
3 of 3 006
BOREHOLE DATA
REFER TO LITHOLOGY LOG
OPERATION DATA
REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA
LOG
RUN
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
PARAMETERS
LOG
SCALE
GAMMA
X
9
0
1
-
150
REMARKS
TOOL
SGT
SGT
TGM
CASING
SHOE
WATER
LEVEL
GAMMA RAY
API
DEPTH
1:100
NEUTRON POROSITY
SANDSTONE POROSITY
00m
10m
20m
30m
40m
50m
52m
50m
57m
*** WATER LEVEL ***
*** CASING SHOE ***
GAMMA
POROSITY
*** REPEAT SECTION ***
BOREHOLE TW-806-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA
MY 2000818

743

BOREHOLE TW-806-88 (4)

CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.

COUNTRY CANADA

DATE LOGGED 24/9/88

DEPTH SCALE 1:20

4 OF 5 LOGS

COAL QUALITY LOG

BOREHOLE DATA — REFER TO LITHOLOGY LOG

OPERATION DATA — REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING			PANEL		
	LOG TAPED	RECORD SPEED	DIRECTION REPLAY	SPEED	T.C. SECS	NORM
GAMMA RAY	Y	2	R	2	1	–
L.S DENSITY	Y	2	R	2	1	5.82

CAL COEFF: GAMMA RAY 1.50; L.S DENSITY –

SOURCE. SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY L.S. DENSITY

COAL QUALITY LOG INTERVALS

FROM	10m
TO	8m
INTERVAL	2m
FROM	
TO	
INTERVAL	

INTERVAL TOTAL ≠2m

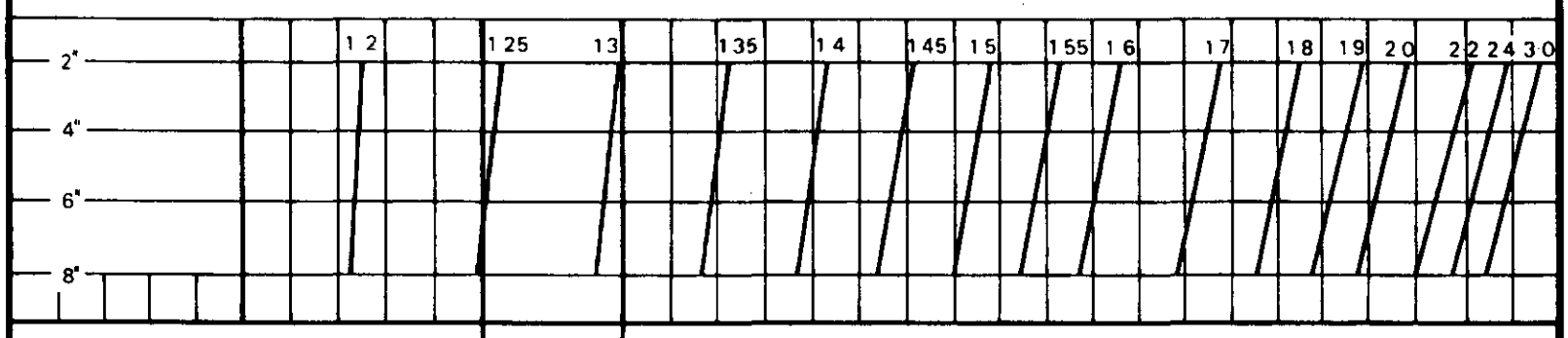
REMARKS

BPB COAL QUALITY LOG

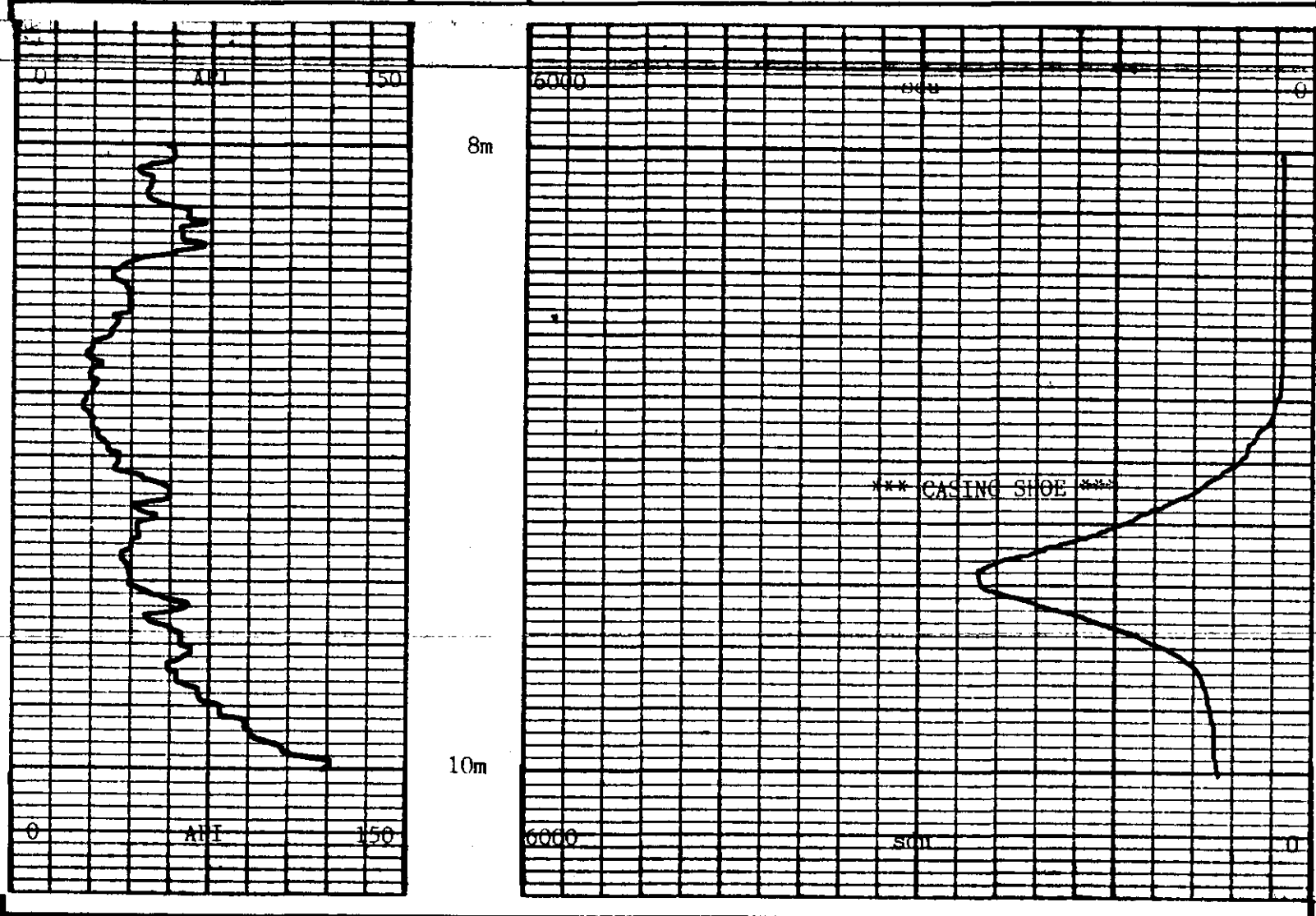
DEPTH

GAMMA RAY 1:20 COAL BULK DENSITY g/cm³

HOLE SIZE CORRECTION DATA



0 API 150 | 6.000 sdu 0



0 API 150 | 6 000 sdu 0

GAMMA RAY — COAL BULK DENSITY g/cm³

DEPTH

BOREHOLE TW-806-88 AREA TELKWA B.C.

CLIENT CROWSNEST RESOURCES LTD. COUNTRY CANADA

COAL QUALITY LOG

MY 88002 R

743

BOREHOLE TW-806-88 (5)
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 24/9/88

DEPTH SCALE 1:20

5 OF 5 LOGS

SEAM THICKNESS LOG

BOREHOLE DATA — REFER TO LITHOLOGY LOG
OPERATION DATA — REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

SONDE TYPE: COAL COMBINATION SONDE
LOG SUITE: CALIPER, B.R. DENSITY

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING			PANEL		CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	TC SECS	NORM	
CALIPER	Y	9	R	9	1	–	–
B R DENSITY	Y	9	R	9	.3	7.61	–

SOURCE SONDE AND CALIBRATION
REFER TO LITHOLOGY LOG

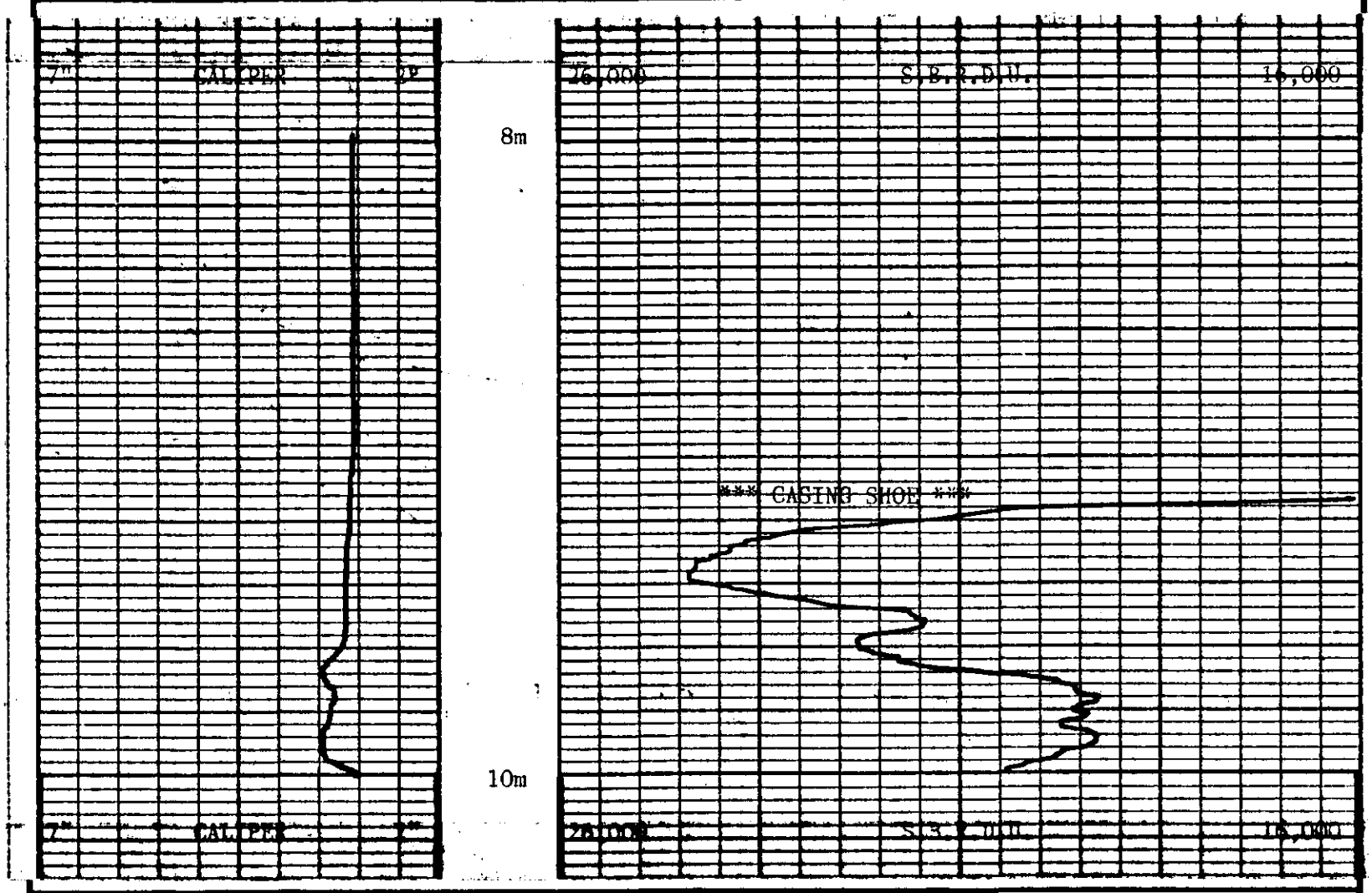
SEAM THICKNESS LOG INTERVALS

FROM	10m	
TO	8m	
INTERVAL	2m	INTERVAL
FROM		TOTAL
TO		≠ 2m
INTERVAL		

REMARKS

B P B SEAM THICKNESS LOG

CALIPER INCHES	DEPTH	BED RESOLUTION DENSITY
7" 6" 5" dia 4" 3" 2"		26,000 S.B.R.D.U. 16,000



CALIPER INCHES	DEPTH	BED RESOLUTION DENSITY
7" 6" 5" dia 4" 3" 2"		26,000 S.B.R.D.U. 16,000

BOREHOLE TW-806-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

SEAM THICKNESS LOG

MY 88002 R

CLIENT____ CROWSNEST RESOURCES

BOREHOLE_ TW-806-88 (6)

AREA_____ TELKWA

COUNTRY__ CANADA

DATE LOGGED.....24-SEP-88
DATE PROCESSED..29-SEP-88

743

COMMENTS.....

INTERPRETATION PARAMETERS

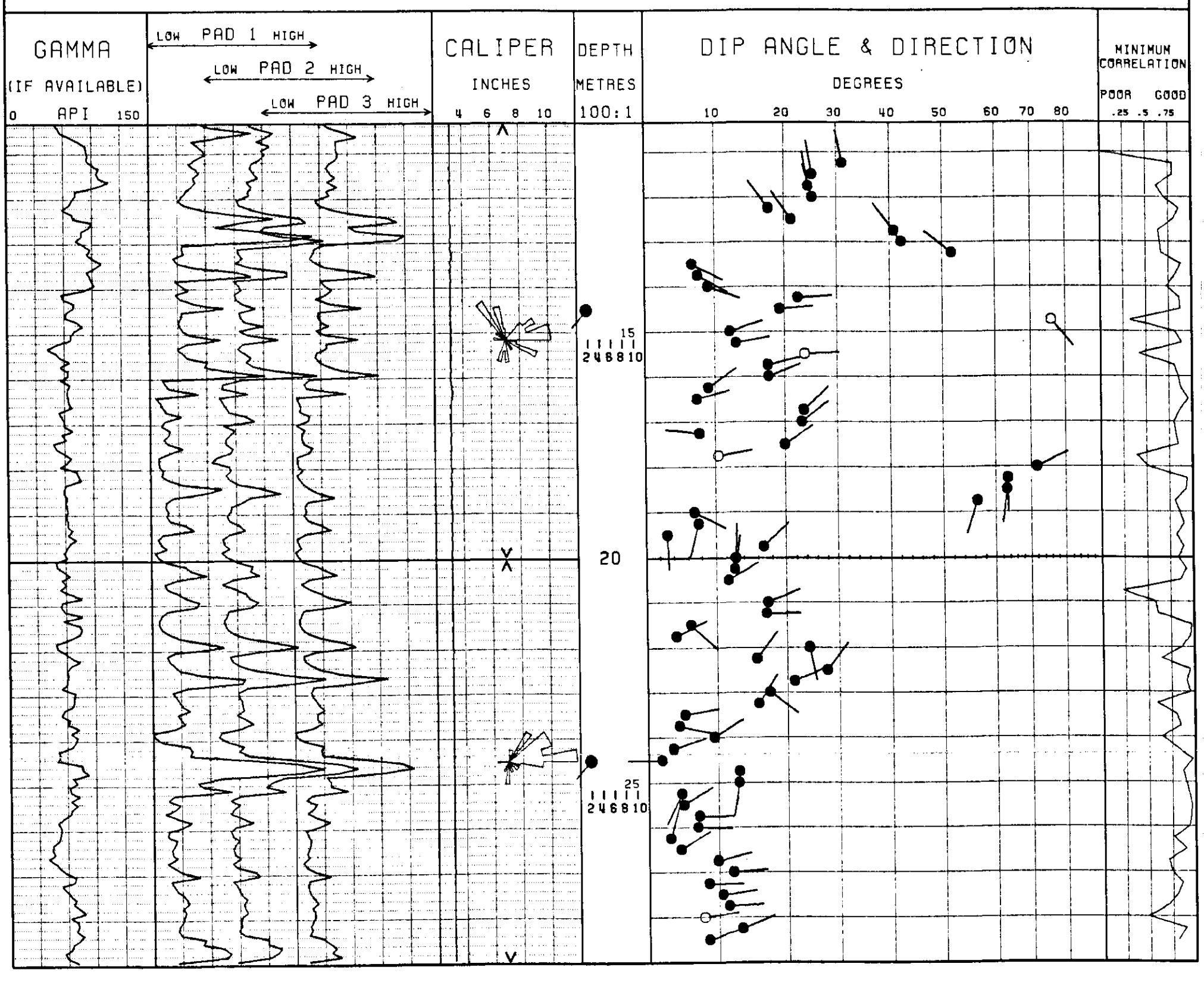
STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.

DECLINATION 26.0 EAST
DEPTH RANGE 10.33 - 29.00M.
DATE PROCESSED 29-SEP-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



COAL LITHOLOGY LOG

BPB

BOREHOLE
AREA
CLIENT
COUNTY
DATE LOGGED
LOGGING ENGINEER
OPERATOR
DRILLING CONTRACTOR
DRILLER
RIG TYPE
DRILLING METHOD
CASING DIAMETER
CASING DEPTH
BOREHOLE DATA
DEPTH
DIAMETER
CASING
WATER LEVEL
DATE
TIME
DRILLERS DEPTH
LOGGERS DEPTH
CASING DEPTH
RUN NO.
TOOL STRING NO.
LOGGING UNIT NO.
LOGGING ENGINEER
OPERATOR
GAMMA RAY CALIBRATION
DENSITY CALIBRATION
TOOL SERIAL NO.
DETECTOR
SOURCE
SOURCE STRENGTH
SOURCE SERIAL NO.
DENSITY CALIBRATION
CALIPER CALIBRATION
NEUTRON CALIBRATION
NEUTRON SERIAL NO.
NEUTRON SOURCE
NEUTRON SOURCE STRENGTH
NEUTRON SOURCE SERIAL NO.
NEUTRON CALIBRATION

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 510

RUN	EQUIPMENT			TAPING					PANEL		CAL	DEPTHS		CLAMP USE RUN
	SONDE	SOURCE	CALIBRATION	LOG SPEED	RECORDING DENSITY	DEPTH INTERVAL	SPEED	LOG SCALE	NUMBER		RUN NO.	FROM	TO	BOTTOM
1	510													
CLOSEST APPROACH		3611	1536	3	9	0	9	5	1	3.50	1	115	1136	1
DENSITY CALIPER	NORMAL LOCATION	3611	1536	3	9	0	9	5	1	3.50	1	115	1136	1
				3	9	0	9	5	1	3.50	1	115	1136	1

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to detailed log)

	FROM	TO	INTERVAL TOTAL
1	106		
2	96		
INTERVAL	96		96

ADDITIONAL SONDES RUN

SONDE	LOG	NOTE OBSERVATION
104	FULL	1150
307	BHC	1150
336	WFT	"
416	BHP	"

REMARKS

RUNS

TO

ADDITIONAL

HEADINGS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No. 115	VALUE(cps) @ 10 Gcm/cc		JIG CAL DATE 22/10/80	JIG VALUE	SDU	μSv/hr 2.2	cps 767
JIG MARK SHOWN AT ABOVE VALUE			JIG No. 1536	SPAN 0.80	NOMAL	μSv/hr 2.22	cps 623

GAMMA RAY

DEPTH

BULK DENSITY

CALIPER

HOLE SIZE CORRECTION DATA

6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

API 150 1100 3000 Mm 50 mm

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900 10000 10100 10200 10300 10400 10500 10600 10700 10800 10900 11000 11100 11200 11300 11400 11500 11600 11700 11800 11900 12000 12100 12200 12300 12400 12500 12600 12700 12800 12900 13000 13100 13200 13300 13400 13500 13600 13700 13800 13900 14000 14100 14200 14300 14400 14500 14600 14700 14800 14900 15000 15100 15200 15300 15400 15500 15600 15700 15800 15900 16000 16100 16200 16300 16400 16500 16600 16700 16800 16900 17000 17100 17200 17300 17400 17500 17600 17700 17800 17900 18000 18100 18200 18300 18400 18500 18600 18700 18800 18900 19000 19100 19200 19300 19400 19500 19600 19700 19800 19900 20000 20100 20200 20300 20400 20500 20600 20700 20800 20900 21000 21100 21200 21300 21400 21500 21600 21700 21800 21900 22000 22100 22200 22300 22400 22500 22600 22700 22800 22900 23000 23100 23200 23300 23400 23500 23600 23700 23800 23900 24000 24100 24200 24300 24400 24500 24600 24700 24800 24900 25000 25100 25200 25300 25400 25500 25600 25700 25800 25900 26000 26100 26200 26300 26400 26500 26600 26700 26800 26900 27000 27100 27200 27300 27400 27500 27600 27700 27800 27900 28000 28100 28200 28300 28400 28500 28600 28700 28800 28900 29000 29100 29200 29300 29400 29500 29600 29700 29800 29900 30000 30100 30200 30300 30400 30500 30600 30700 30800 30900 31000 31100 31200 31300 31400 31500 31600 31700 31800 31900 32000 32100 32200 32300 32400 32500 32600 32700 32800 32900 33000 33100 33200 33300 33400 33500 33600 33700 33800 33900 34000 34100 34200 34300 34400 34500 34600 34700 34800 34900 35000 35100 35200 35300 35400 35500 35600 35700 35800 35900 36000 36100 36200 36300 36400 36500 36600 36700 36800 36900 37000 37100 37200 37300 37400 37500 37600 37700 37800 37900 38000 38100 38200 38300 38400 38500 38600 38700 38800 38900 39000 39100 39200 39300 39400 39500 39600 39700 39800 39900 40000 40100 40200 40300 40400 40500 40600 40700 40800 40900 41000 41100 41200 41300 41400 41500 41600 41700 41800 41900 42000 42100 42200 42300 42400 42500 42600 42700 42800 42900 43000 43100 43200 43300 43400 43500 43600 43700 43800 43900 44000 44100 44200 44300 44400 44500 44600 44700 44800 44900 45000 45100 45200 45300 45400 45500 45600 45700 45800 45900 46000 46100 46200 46300 46400 46500 46600 46700 46800 46900 47000 47100 47200 47300 47400 47500 47600 47700 47800 47900 48000 48100 48200 48300 48400 48500 48600 48700 48800 48900 49000 49100 49200 49300 49400 49500 49600 49700 49800 49900 50000 50100 50200 50300 50400 50500 50600 50700 50800 50900 51000 51100 51200 51300 51400 51500 51600 51700 51800 51900 52000 52100 52200 52300 52400 52500 52600 52700 52800 52900 53000 53100 53200 53300 53400 53500 53600 53700 53800 53900 54000 54100 54200 54300 54400 54500 54600 54700 54800 54900 55000 55100 55200 55300 55400 55500 55600 55700 55800 55900 56000 56100 56200 56300 56400 56500 56600 56700 56800 56900 57000 57100 57200 57300 57400 57500 57600 57700 57800 57900 58000 58100 58200 58300 58400 58500 58600 58700 58800 58900 59000 59100 59200 59300 59400 59500 59600 59700 59800 59900 60000 60100 60200 60300 60400 60500 60600 60700 60800 60900 61000 61100 61200 61300 61400 61500 61600 61700 61800 61900 62000 62100 62200 62300 62400 62500 62600 62700 62800 62900 63000 63100 63200 63300 63400 63500 63600 63700 63800 63900 64000 64100 64200 64300 64400 64500 64600 64700 64800 64900 65000 65100 65200 65300 65400 65500 65600 65700 65800 65900 66000 66100 66200 66300 66400 66500 66600 66700 66800 66900 67000 67100 67200 67300 67400 67500 67600 67700 67800 67900 68000 68100 68200 68300 68400 68500 68600 68700 68800 68900 69000 69100 69200 69300 69400 69500 69600 69700 69800 69900 70000 70100 70200 70300 70400 70500 70600 70700 70800 70900 71000 71100 71200 71300 71400 71500 71600 71700 71800 71900 72000 72100 72200 72300 72400 72500 72600 72700 72800 72900 73000 73100 73200 73300 73400 73500 73600 73700 73800 73900 74000 74100 74200 74300 74400 74500 74600 74700 74800 74900 75000 75100 75200 75300 75400 75500 75600 75700 75800 75900 76000 76100 76200 76300 76400 76500 76600 76700 76800 76900 77000 77100 77200 77300 77400 77500 77600 77700 77800 77900 78000 78100 78200 78300 78400 78500 78600 78700 78800 78900 79000 79100 79200 79300 79400 79500 79600 79700 79800 79900 80000 80100 80200 80300 80400 80500 80600 80700 80800 80900 81000 81100 81200 81300 81400 81500 81600 81700 81800 81900 82000 82100 82200 82300 82400 82500 82600 82700 82800 82900 83000 83100 83200 83300 83400 83500 83600 83700 83800 83900 84000 84100 84200 84300 84400 84500 84600 84700 84800 84900 85000 85100 85200 85300 85400 85500 85600 85700 85800 85900 86000 86100 86200 86300 86400 86500 86600 86700 86800 86900 87000 87100 87200 87300 87400 87500 87600 87700 87800 87900 88000 88100 88200 88300 88400 88500 88600 88700 88800 88900 89000 89100 89200 89300 89400 89500 89600 89700 89800 89900 90000 90100 90200 90300 90400 90500 90600 90700 90800 90900 91000 91100 91200 91300 91400 91500 91600 91700 91800 91900 92000 92100 92200 92300 92400 92500 92600 92700 92800 92900 93000 93100 93200 93300 93400 93500 93600 93700 93800 93900 94000 94100 94200 94300 94400 94500 94600 94700 94800 94900 95000 95100 95200 95300 95400 95500 95600 95700 95800 95900 96000 96100 96200 96300 96400 96500 96600 96700 96800 96900 97000 97100 97200 97300 97400 97500 97600 97700 97800 97900 98000 98100 98200 98300 98400 98500 98600 98700 98800 98900 99000 99100 99200 99300 99400 99500 99600 99700 99800 99900 100000 100100 100200 100300 100400 100500 100600 100700 100800 100900 101000 101100 101200 101300 101400 101500 101600 101700 101800 101900 102000 102100 102200 102300 102400 102500 102600 102700 102800 102900 103000 103100 103200 103300 103400 103500 103600 103700 103800 103900 104000 104100 104200 104300 104400 104500 104600 104700 104800 104900 105000 105100 105200 105300 105400 105500 105600 105700 105800 105900 106000 106100 106200 106300 106400 106500 106600 106700 106800 106900 107000 107100 107200 107300 107400 107500 107600 107700 107800 107900 108000 108100 108200 108300 108400 108500 108600 108700 108800 108900 109000 109100 109200 109300 109400 109500 109600 109700 109800 109900 110000 110100 110200 110300 110400 110500 110600 110700 110800 110900 111000 111100 111200 111300 111400 111500 111600 111700 111800 111900 112000 112100 112200 112300 112400 112500 112600 112700 112800 112900 113000 113100 113200 113300 113400 113500 113600 113700 113800 113900 114000 114100 114200 114300 114400 114500 114600 114700 114800 114900 115000 115100 115200 115300 115400 115500 115600 115700 115800 115900 116000 116100 116200 116300 116400 116500 116600 116700 116800 116900 117000 117100 117200 117300 117400 117500 117600 117700 117800 117900 118000 118100 118200 118300 118400 118500 118600 118700 118800 118900 119000 119100 119200 119300 119400 119500 119600 119700 119800 119900 120000 120100 120200 120300 120400 120500 120600 120700 120800 120900 121000 121100 121200 121300 121400 121500 121600 121700 121800 121900 122000 122100 122200 122300 122400 122500 122600 122700 122800 122900 123000 123100 123200 123300 123400 123500 123600 123700 123800 123900 124000 124100 124200 124300 124400 124500 124600 124700 124800 124900 125000 125100 125200 125300 125400 125500 125600 125700 125800 125900 126000 126100 126200 126300 126400 126500 126600 126700 126800 126900 127000 127100 127200 127300 127400 127500 127600 127700 127800 127900 128000 128100 128200 128300 128400 128500 128600 128700 128800 128900 129000 129100 129200 129300 129400 129500 129600 129700 129800 129900 130000 130100 130200 130300 130400 130500 130600 130700 130800 130900 131000 131100 131200 131300 131400 131500 131600 131700 131800 131900 132000 132100 132200 132300 132400 132500 132600 132700 132800 132900 133000 133100 133200 133300 133400 133500 133600 133700 133800 133900 134000 134100 134200 134300 134400 134500 134600 134700 134800 134900 135000 135100 135200 135300 135400 135500 135600 135700 135800 135900 136000 136100 136200 136300 136400 136500 136600 136700 136800 136900 137000 137100 137200 137300 137400 137500 137600 137700 137800 137900 138000 138100 138200 138300 138400 138500 138600 138700 138800 138900 139000 139100 139200 139300 139400 139500 139600 139700 139800 139900 140000 140100 140200 140300 140400 140500 140600 140700 140800 140900 141000 141100 141200 141300 141400 141500 141600 141700 141800 141900 142000 142100 142200 142300 142400 142500 142600 142700 142800 142900 143000 143100 143200 143300 143400 143500 143600 143700 143800 143900 144000 144100 144200 144300 144400 144500 144600 144700 144800 144900 145000 145100 145200 145300 145400 145500 145600 145700 145800 145900 146000 146100 146200 146300 146400 146500 146600 146700 146800 146900 147000 147100 147200 147300 147400 147500 147600 147700 147800 147900 148000 148100 148200 148300 148400 148500 148600 148700 148800 148900 149000 149100 149200 149300 149400 149500 149600 149700 149800 149900 150000 150100 150200 150300 150400 150500 150600 150700 150800 150900 151000 151100 151200 151300 151400 151500 151600 151700 151800 151900 152000 152100 152200 152300 152400 152500 152600 152700 152800 152900 153000 153100 153200 153300 153400 153500 153600 153700 153800 153900 154000 154100 154200 154300 154400 154500 154600 154700 154800 154900 155000 155100 155200 155300 155400 155500 155600 155700 155800 155900 156000 156100 156200 156300 156400 156500 156600 156700 156800 156900 157000 157100 157200 157300 157400 157500 157600 157700 157800 157900 158000 158100 158200 158300 158400 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172800 172900 173000 173100 173200 173300 173400 173500 173600 173700 173800 173900 174000 174100 174200 174300 174400 174500 174600 174700 174800 174900 175000 175100 175200 175300 175400 175500 175600 175700 175800 175900 176000 176100 176200 176300 176400 176500 176600 176700 176800 176900 177000 177100 177200 177300 177400 177500 177600 177700 177800 177900 178000 178100 178200 178300 178400 178500 178600 178700 178800 178900 179000 179100 179200 179300 179400 179500 179600 179700 179800 179900 180000 180100 180200 180300 180400 180500 180600 180700 180800 180900 181000 181100 181200 181300 181400 181500 181600 181700 181800 181900 182000 182100 182200 182300 182400 182500 182600 182700 182800 182900 183000 183100 183200 183300 183400 183500 183600 183700 183800 183900 184000 184100 184200 184300 184400 184500 184600 184700 184800 184900 185000 185100 185200 185300 185400 185500 185600 185700 185800 185900 186000 186100 186200 186300 186400 186500 186600 186700 186800 186900 187000 187100 187200 187300 187400 187500 187600 187700 187800 187900 188000 188100 188200 188300 188400 188500 188600 188700 188800 188900 189000 189100 189200 189300 189400 189500 189600 189700 189800 189900 190000 190100 190200 190300 190400 190500 190600 190700 190800 190900 191000 191100 191200 191300 191400 191500 191600 191700 191800 191900 192000 192100 192200 192300 192400 192500 192600 192700 192800 192900 193000 193100 193200 193300 193400 193500 193600 193700 193800 193900 194000 194100 194200 194300 194400 194500 194600 194700 194800 194900 195000 195100 195200 195300 195400 195500 195600 195700 195800 195900 196000 196100 196200 196300 196400 196500 196600 196700 196800 196900 197000 197100 197200 197300 197400 197500 197600 197700 197800 197900 198000 198100 198200 198300 198400 198500 198600 198700 198800 198900 199000 199100 199200 199300 199400 199500 199600 199700 199800 199900 200000

GAMMA RAY

DEPTH

BULK DENSITY

CALIPER

API 150 1100 3000 Mm 50 mm

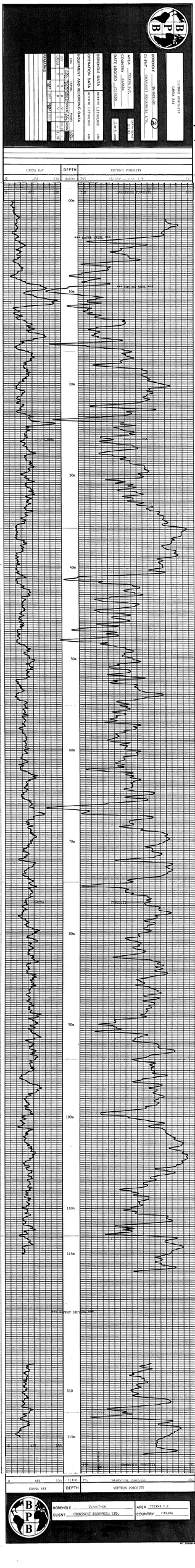
BPB

BOREHOLE 76/107/198 AREA DURHAM

CLIENT DENSITY ENGINEERING LTD. COUNTRY ENGLAND

COAL LITHOLOGY LOG

MT 1110/0883


BPB
BOREHOLE TV-017-08
CLIENT CROWSNEST RESOURCES LTD.
AREA TIERRA P.J.
COUNTRY CANADA
DATE LOGGED 7/10/2008
RUN NUMBER 2
DEPTH DRILLER 120.00m
DEPTH LOGGER 120.00m
BTM LOG INTERVAL 120.00m
TOP LOG INTERVAL 0.00m
OPERATING RIG TIME 0.00hrs
OPERATION DATA
EQUIPMENT AND RECORDING DATA
REMARKS
GAMMA RAY
DEPTH
SECTION POROSITY
0 API 150
115.00 m
270 GRADUATIONAL LIMESTONE 170
*** WATER LEVEL ***
*** CASING SHOE ***
*** BOTTOM OF HOLE ***
00m
10m
20m
30m
40m
50m
60m
70m
80m
90m
100m
110m
115m
110
115m

743

743

BOREHOLE TW-807-88 (3)
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 25/9/88

DEPTH SCALE 1:20

3 OF 4 LOGS

COAL QUALITY LOG

BOREHOLE DATA	REFER TO LITHOLOGY LOG
OPERATION DATA	REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING			PANEL			CAL COEFF.
	LOG TAPED	RECORD SPEED	DIRECT/ REPLAY	SPEED	T/C SECS	NORM	
GAMMA RAY	Y	2	R	2	1	-	1.50
L.S DENSITY	Y	2	R	2	1	7.61	-

SOURCE. SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY L.S. DENSITY

COAL QUALITY LOG INTERVALS

FROM	16m	
TO	9m	
INTERVAL	5m	
FROM		INTER-VAL TOTAL
TO		= 5m
INTERVAL		

REMARKS

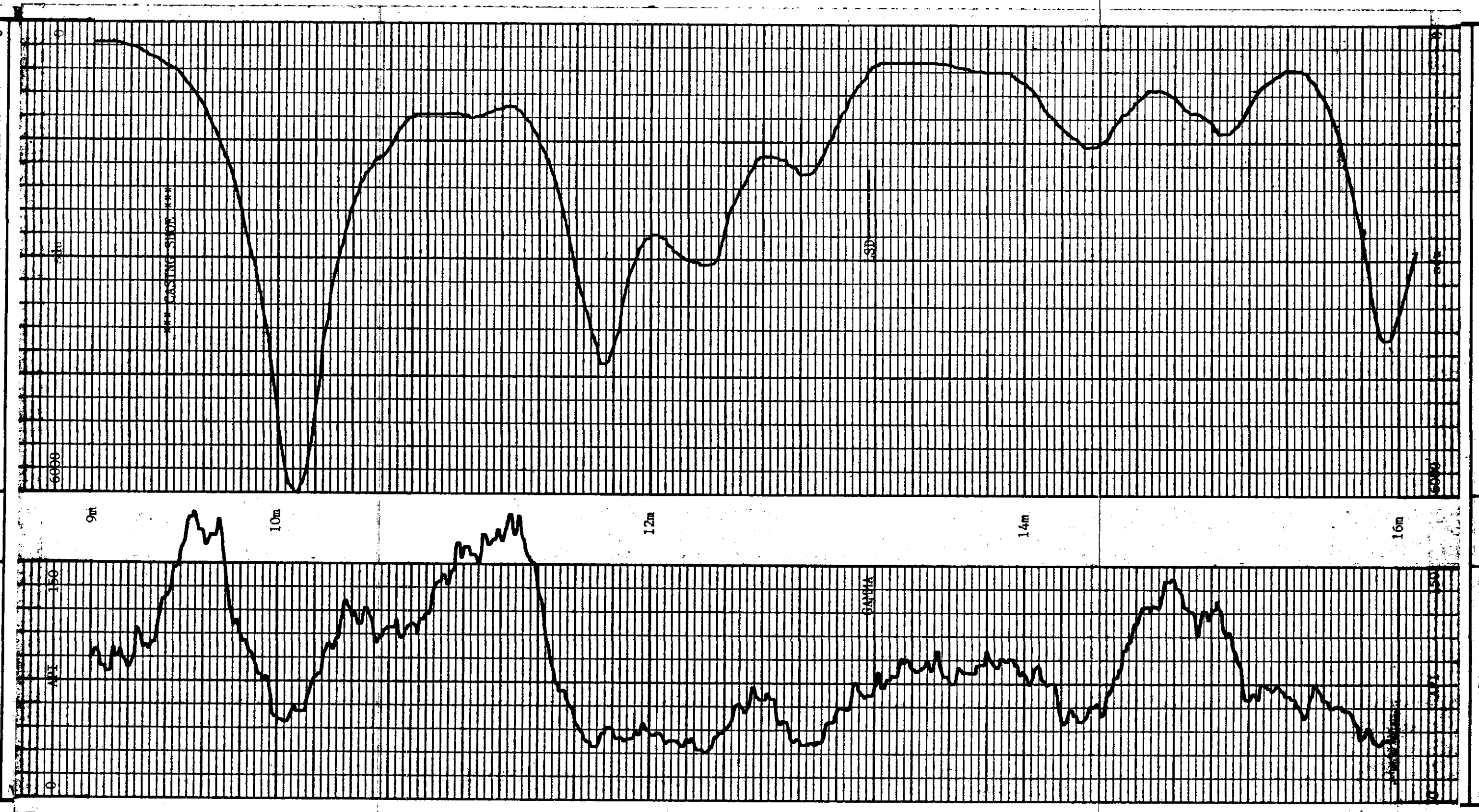
BPB COAL QUALITY LOG

DEPTH 1:20

GAMMA RAY API 0 150

COAL BULK DENSITY g/cm³ 0 6000 sdu

HOLE SIZE CORRECTION DATA 1.2 1.25 1.3 1.35 1.4 1.45 1.5 1.55 1.6 1.7 1.8 1.9 2.0 2.2 2.4 2.6 2.8 3.0



COAL BULK DENSITY g/cm³ 0 6000 sdu

DEPTH 1:20

GAMMA RAY API 0 150

BOREHOLE TW-807-88
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA

COAL QUALITY LOG

743

BOREHOLE TW-807-88 (4)
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED 25/9/88

DEPTH SCALE 1:20

4 OF 4 LOGS

SEAM THICKNESS LOG

BOREHOLE DATA — REFER TO LITHOLOGY LOG

OPERATION DATA — REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING			PANEL		CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT / REPLAY	SPEED	TC SECS	NORM
CALIPER	Y	2	R	2	1	–
B R DENSITY	Y	2	R	2	.3	7.61

SOURCE SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: CALIPER B.R. DENSITY

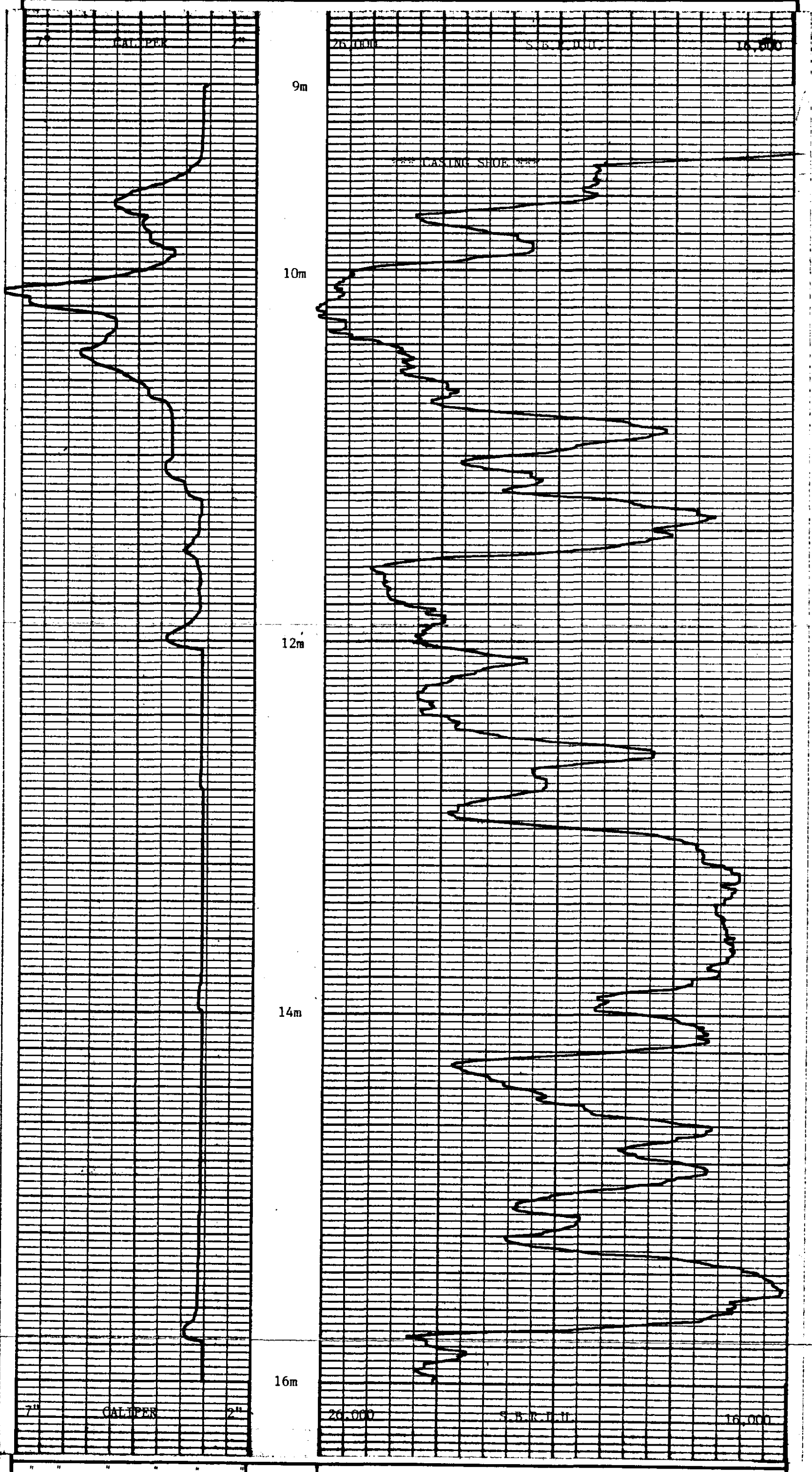
SEAM THICKNESS LOG INTERVALS

FROM	14m	
TO	9m	
INTERVAL	5m	INTERVAL
FROM		TOTAL
TO		≠5m
INTERVAL		

REMARKS

B P B SEAM THICKNESS LOG

CALIPER INCHES	DEPTH	BED RESOLUTION DENSITY
7" 6" 5" dia 4" 3" 2"	1:20	26,000 S.B.R.D.U. 16,000



CALIPER INCHES	DEPTH	BED RESOLUTION DENSITY
7" 6" 5" dia 4" 3" 2"	1:20	26,000 S.B.R.D.U. 16,000

BOREHOLE TW-807-88
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA

SEAM THICKNESS LOG

MY 88002 R

743

DIPMETER ANALYSIS

CLIENT___ CROWSNEST RESOURCES
BOREHOLE_ TW-807-88 (5)
AREA_____ TELKWA
COUNTRY__ CANADA

DATE LOGGED.....25-SEP-88
DATE PROCESSED..29-SEP-88

COMMENTS.....

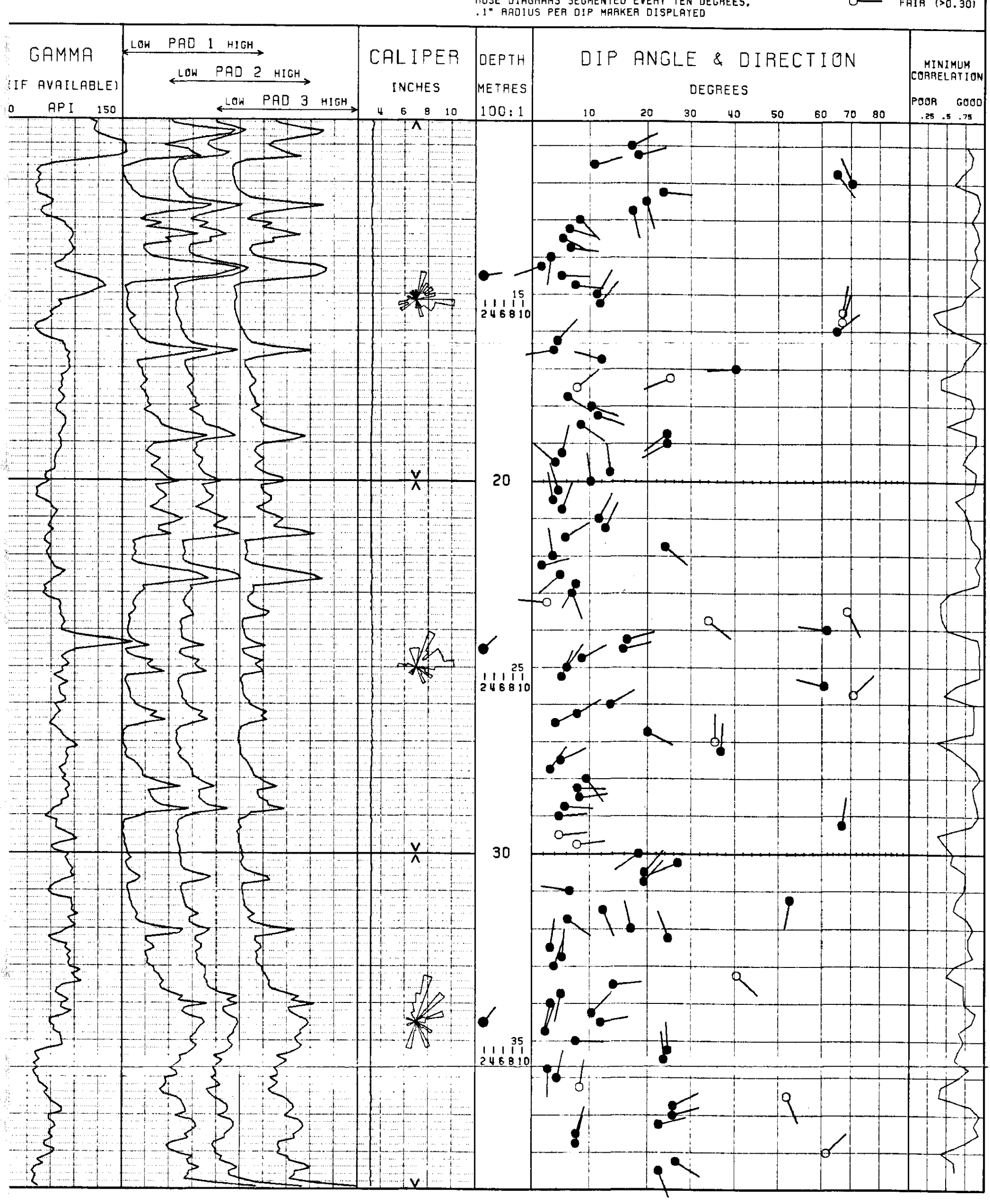
INTERPRETATION PARAMETERS

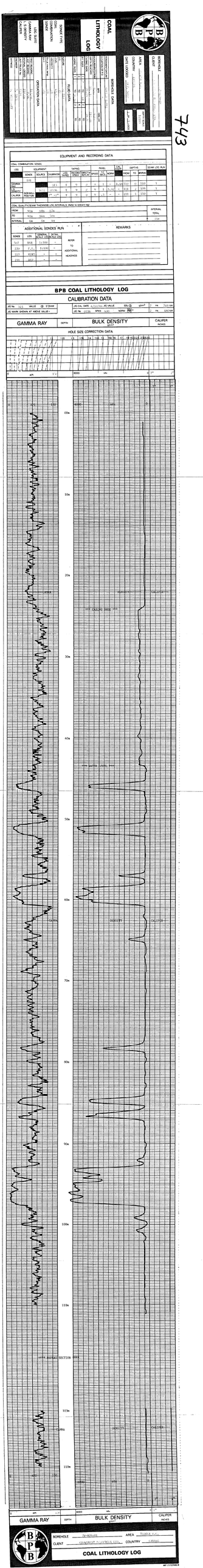
STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.
DECLINATION 26.0 EAST
DEPTH RANGE 10.33 - 39.00M.
DATE PROCESSED 29-SEP-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.

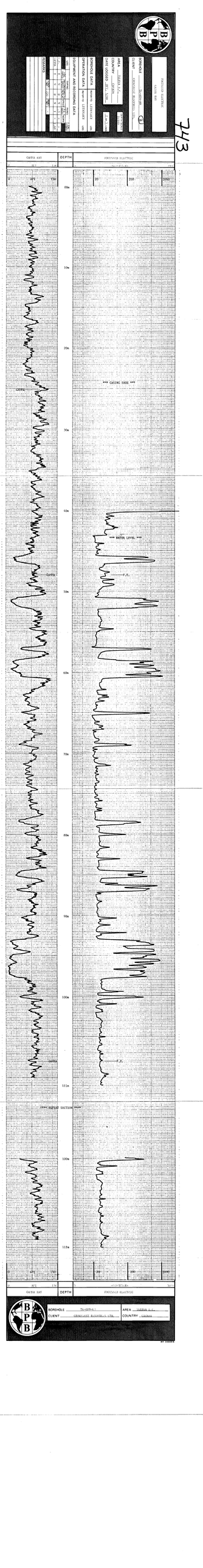
ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

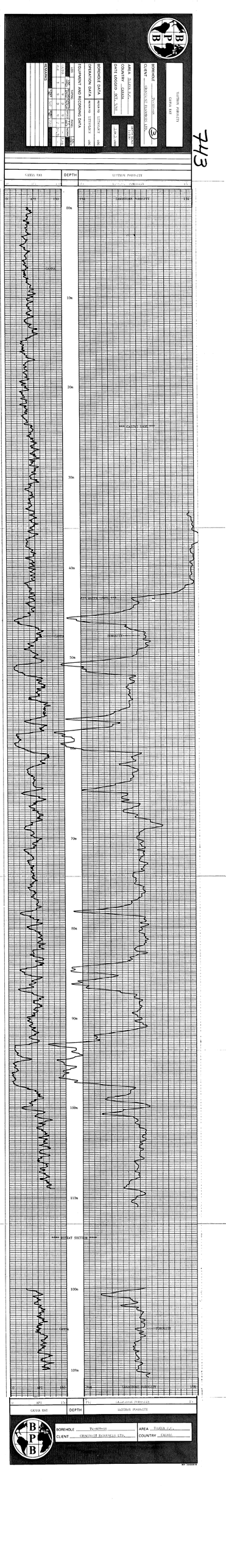
LEGEND:
GOOD (>0.50)
FAIR (>0.30)




BPB
COAL LITHOLOGY LOG
SONDE TYPE
LOG SUITE
COAL DENSITY
GAMMA RAY
CALIPER
REFERENCE
ELEV
AREA
COUNTRY
DRILLED
LOGGED
DEPTH DRILLER
DEPTH LOGGER
CASING DRILLER
CASING LOGGER
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
COAL COMBINATION SONDE
REMARKS
ADDITIONAL SONDES RUN
CALIBRATION DATA
GAMMA RAY
BULK DENSITY
CALIPER
HOLE SIZE CORRECTION DATA
COAL LITHOLOGY LOG
BOREHOLE
CLIENT
AREA
COUNTRY

743


BP
BPB
743
REMARKS
RECORDED BEFORE
RECORDED AFTER
BOREHOLE RECORD
BOREHOLE FLUID
OPERATING DATA
EQUIPMENT AND RECORDING DATA
DEPTH
GAMMA RAY
FOCUSED ELECTRIC
*** CASING SHOE ***
*** WATER LEVEL ***
*** REPEAT SECTION ***
BOREHOLE
CLIENT
AREA
COUNTRY


BPB
BOREHOLE
CLIENT
AREA
COUNTRY
DATE LOGGED
RUN NO.
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID
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
REMARKS
TOOL
SERIAL NO.
TYPE
DIA
WT
MAX TEMP
MAX PRESS
GAMMA RAY
DEPTH
NEUTRON POROSITY
API
0
150
0.45
-0.15
SANDSTONE
LIMESTONE
DOLOMITE
00m
10m
20m
30m
40m
50m
60m
70m
80m
90m
100m
110m
120m
130m
BOREHOLE
CLIENT
AREA
COUNTRY

BPB

COAL QUALITY LOG

LOG SUITE
GAMMA RAY
S.S. DENSITY

SONIC TYPE
DENSITY
COMBINATION
SONDES

BOREHOLE
CLIENT
AREA
COUNTY
DATE LOGGED
REFERENCE

BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA

COAL QUALITY LOG INTERVALS

REMARKS

BPB COAL QUALITY LOG

DEPTH

GAMMA RAY

COAL BULK DENSITY

HOLE SIZE CORRECTION DATA

API

4000

0

65a
66a
67a
50a
52a
53a
56a
58a
60a
62a
86a
88a
90a
94a
96a
98a

COAL BULK DENSITY

DEPTH

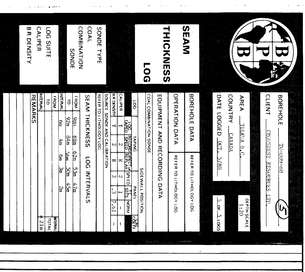
BOREHOLE

CLIENT

AREA

COUNTRY

COAL QUALITY LOG



743

B P B SEAM THICKNESS LOG

CALIPER (INCHES) | DEPTH | BED RESOLUTION DENSITY (Kg/M3)

45m
46m
47m
50m
52m
53m
56m
58m
60m
62m
64m
66m
68m
92m
94m
96m
98m

CALIPER (INCHES) | DEPTH | BED RESOLUTION DENSITY (Kg/M3)

BOREHOLE _____ AREA _____
CLIENT _____ COUNTRY _____

SEAM THICKNESS LOG

DIPMETER ANALYSIS

743

CLIENT___ CROWSNEST RESOURCES
BOREHOLE_ TW-809-88 (6)
AREA_____ TELKWA
COUNTRY__ CANADA

DATE LOGGED.....05-OCT-88
DATE PROCESSED..11-OCT-88

COMMENTS.....

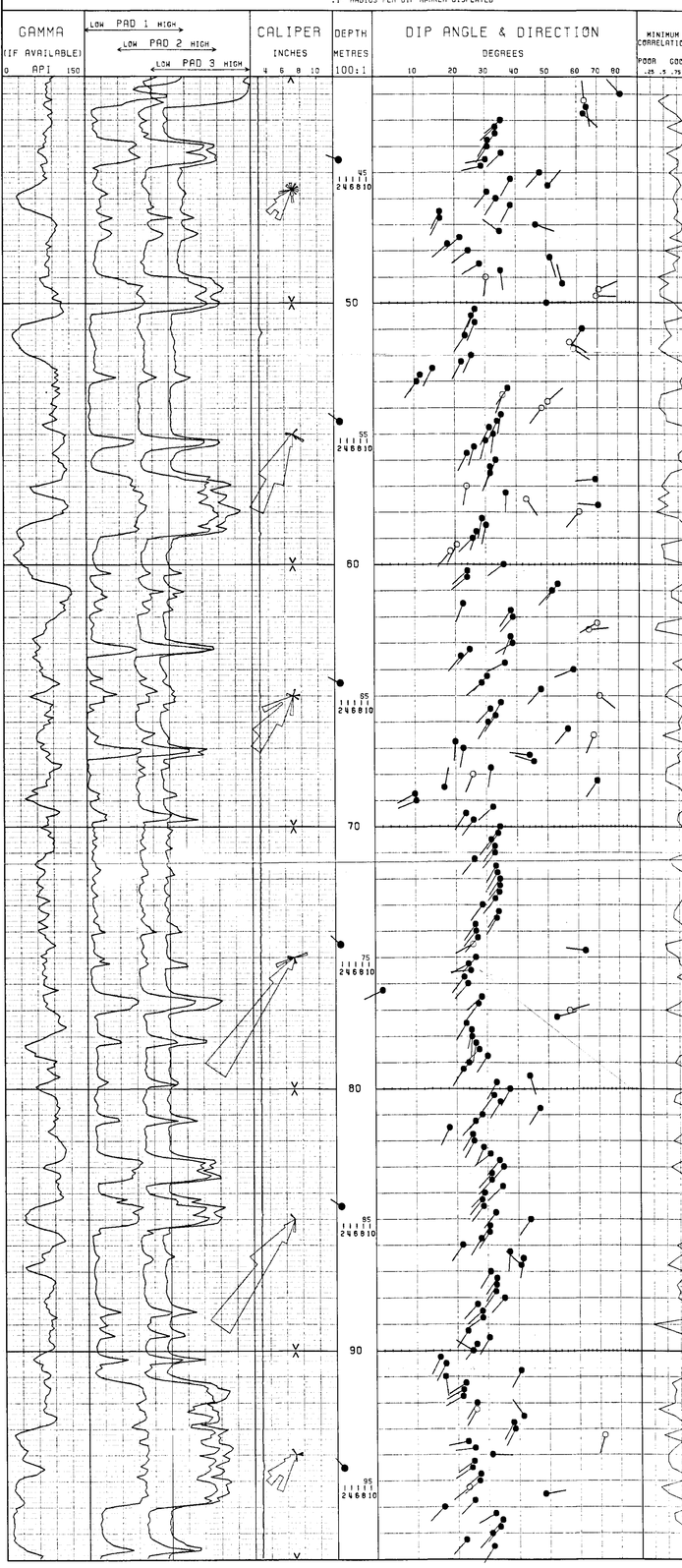
INTERPRETATION PARAMETERS

STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.
DECLINATION 26.0 EAST
DEPTH RANGE 41.33 - 98.00M.
DATE PROCESSED 11-OCT-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES, .1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



743

CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ CROWS NEST RESOURCES
BOREHOLE_ TW-809-88 (7)
AREA_____ TELKWA
COUNTRY__ CANADA

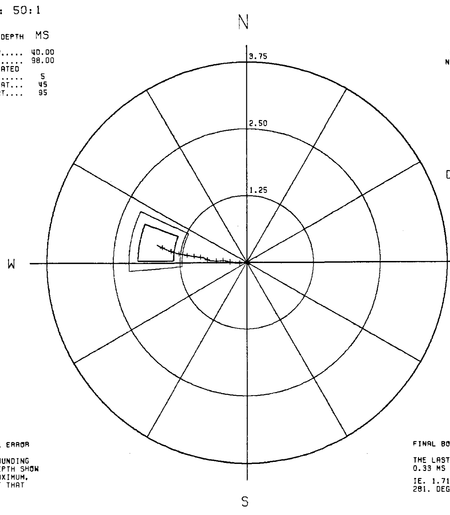
DATE LOGGED.....05-OCT-88
DATE PROCESSED..13-JAN-88
UPPER REFERENCE POINT....G.L.
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH..... 40.00
LAST PLOTTED DEPTH..... 98.00
DEPTH MARKERS ANNOTATED IN MULTIPLES OF..... 5
FIRST DEPTH MARKER AT... 45
LAST DEPTH MARKER AT.... 95



MAGNETIC NORTH
TRUE NORTH
DECLINATION 26.0 DEG.

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 0.33 MS NORTH, 1.68 MS WEST

IE. 1.71 MS FROM THE ORIGIN, 281. DEG. FROM MAGNETIC NORTH

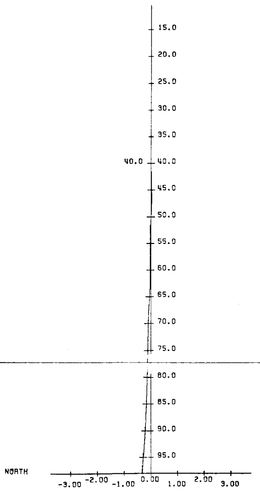
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

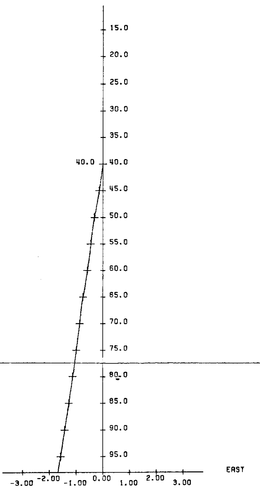
VERTICAL SCALE 500 :1

MARKERS ANNOTATED AS ABOVE

N-S SECTION

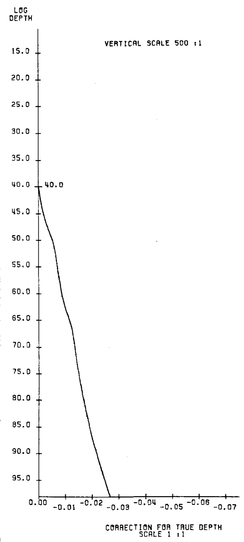


W-E SECTION

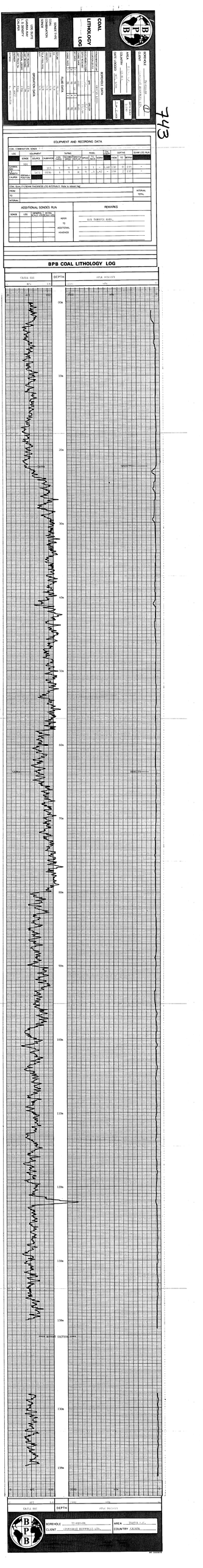


HORIZONTAL SCALE 100 :1

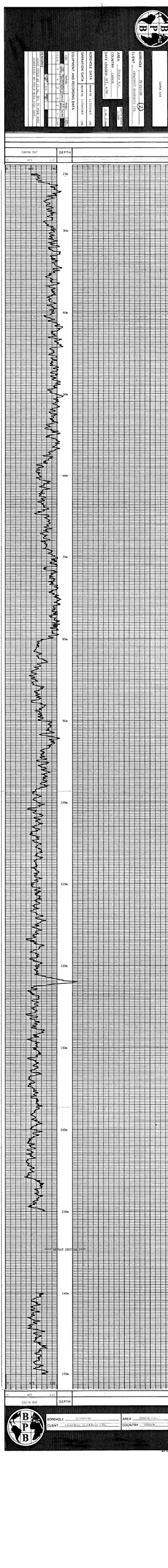
DEPTH CORRECTION ANALYSIS



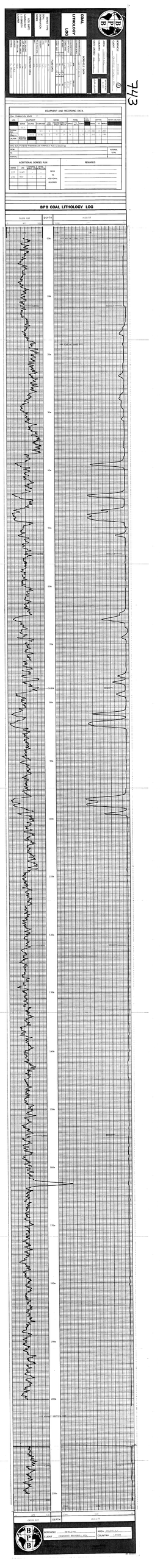
DEPTHS: LOG	TRUE
41.00	41.00
42.00	42.00
43.00	43.00
44.00	44.00
45.00	45.00
46.00	46.00
47.00	47.00
48.00	48.00
49.00	49.00
50.00	49.99
51.00	50.99
52.00	51.99
53.00	52.99
54.00	53.99
55.00	54.99
56.00	55.99
57.00	56.99
58.00	57.99
59.00	58.99
60.00	59.99
61.00	60.99
62.00	61.99
63.00	62.99
64.00	63.99
65.00	64.99
66.00	65.99
67.00	66.99
68.00	67.99
69.00	68.99
70.00	69.99
71.00	70.99
72.00	71.99
73.00	72.99
74.00	73.99
75.00	74.99
76.00	75.98
77.00	76.98
78.00	77.98
79.00	78.98
80.00	79.98
81.00	80.98
82.00	81.98
83.00	82.98
84.00	83.98
85.00	84.98
86.00	85.98
87.00	86.98
88.00	87.98
89.00	88.98
90.00	89.98
91.00	90.99
92.00	91.98
93.00	92.98
94.00	93.98
95.00	94.98
96.00	95.97
97.00	96.97
98.00	97.97


BPB
COAL LITHOLOGY LOG
SONDE TYPE
SONDE COMBINATION
BOREHOLE
PROJECT
COUNTY
AREA
COUNTRY
DATE LOGGED
OPERATOR
RECORDED BY
DRILLER
DRILLER DATA
OPERATIONS
CASING
HOLE DIAMETER
DRILLING MUD
MUD LEVEL
MUD RESISTIVITY
MUD DENSITY
MUD VISCOSITY
FLUID LOSS
RUN NUMBER
DEPTH DRILLER
DEPTH LOGGER
BOTTOM LOGGED INTERVAL
TOP LOGGED 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. LOCATION
RECORDED BY
WITNESSED BY
EQUIPMENT AND RECORDING DATA
COAL COMBINATION SONDE
VDD
EQUIPMENT
SONDE
SOURCE
CALIBRATOR
TUNING
LOG
PROPORTIONAL CONSTANT
OFFSET
SCALE
PANEL
COAL
DEPTHS
FROM
TO
BEAM LOG RUN
SPACING
GAMMA RAY CALIBRATOR
GAMMA RAY SEARCH
DENSITY CALIPER
COAL QUALITY/SEAM THICKNESS LOG INTERVALS (NOW to BRIGHT TM)
FROM
TO
INTERVAL
INTERVAL TOTAL
ADDITIONAL SONDES RUN
SONDE
VDD
RESISTIVITY & SPONTANEOUS POTENTIAL LOG
GAMMA RAY LOG
DENSITY LOG
CALIPER LOG
NEUTRON LOG
VELOCITY LOG
OTHER
TO
ADDITIONAL HEADINGS
REMARKS
RUN PARAMETER HEADS.
BPB COAL LITHOLOGY LOG
GAMMA RAY
DEPTH
SEISMIC VELOCITY
SONIC
DENSITY
NEUTRON
RESISTIVITY
SPONTANEOUS POTENTIAL
CALIPER
SONIC BOREHOLE CORRECTION
BOREHOLE
CLIENT
AREA
COUNTRY

743


B P B
COMPANY
WELL
AREA
COUNTY
STATE
OTHER SERVICES
PERMANENT DATUM
ELEV.
LOG MEASURED FROM
DRILLING MEASURED FROM
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 OF RMF
SOURCE OF RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RIG
CASING
TUBING
TYPE
WEIGHT
GRADE
FROM
TO
CASING SIZE
TUBING SIZE
REMARKS
GAMMA RAY
API
DEPTH
BOREHOLE
CLIENT
AREA
COUNTRY

7413

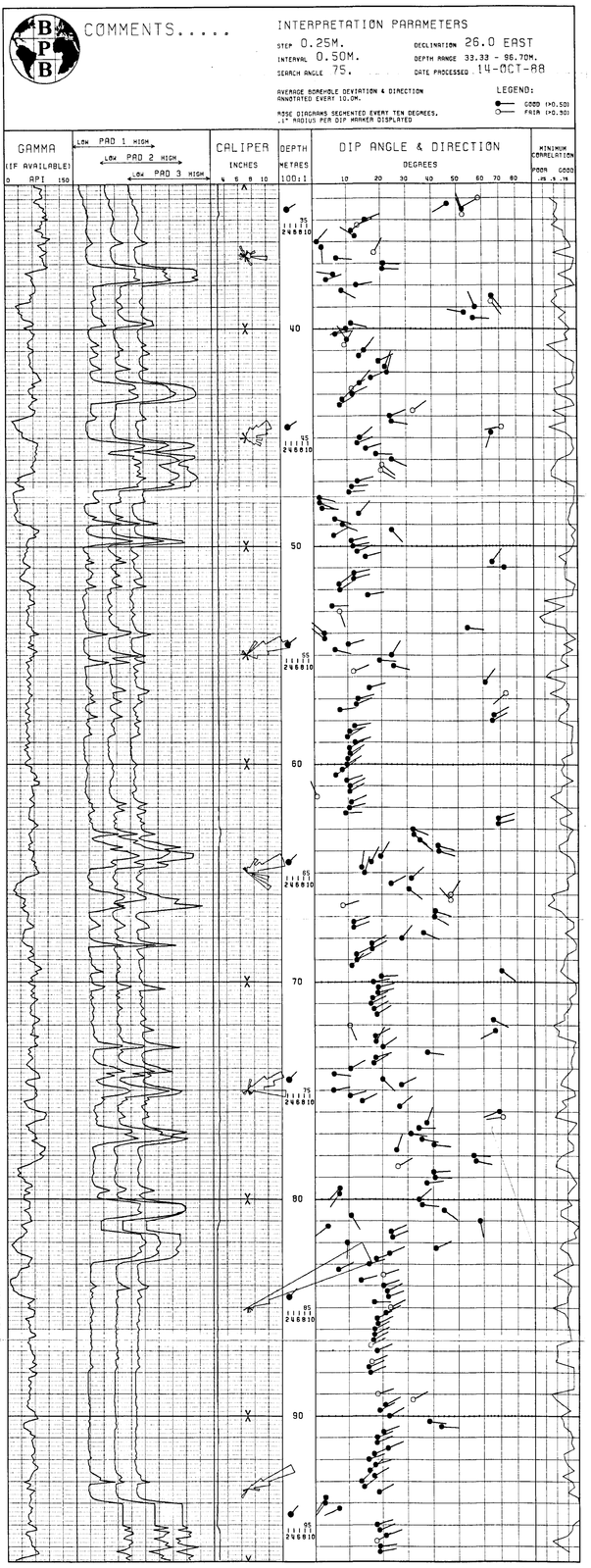

COAL LITHOLOGY LOG
BPB
7413
EQUIPMENT AND RECORDING DATA
BPB COAL LITHOLOGY LOG
DEPTH
SCALE 1/20
SCALE 1/40
BOREHOLE
CLIENT
AREA
COUNTY

811

DIPMETER ANALYSIS

CLIENT___ CROWSNEST RESOURCES
BOREHOLE_ TW-811-88 (2)
AREA_____ TELKWA
COUNTRY__ CANADA

DATE LOGGED.....07-OCT-88
DATE PROCESSED..14-OCT-88



743

CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ CROWS NEST RESOURCES
BOREHOLE_ TW-811-88 (3)
AREA_____ TELKWA
COUNTRY__ CANADA

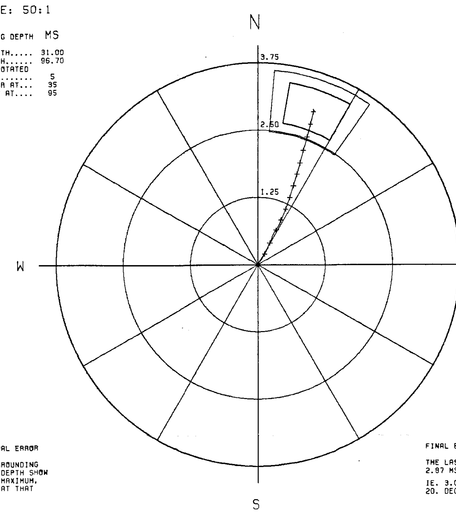
DATE LOGGED.....07-OCT-88
DATE PROCESSED..13-JAN-88
UPPER REFERENCE POINT....G.L.
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH..... 31.00
LAST PLOTTED DEPTH..... 96.70
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF..... 5
FIRST DEPTH MARKER AT... 35
LAST DEPTH MARKER AT.... 95



MAGNETIC NORTH
TRUE NORTH
DECLINATION 26.0 DEG

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 2.87 MS NORTH, 1.04 MS EAST
IE. 3.05 MS FROM THE ORIGIN, 20. DEG. FROM MAGNETIC NORTH

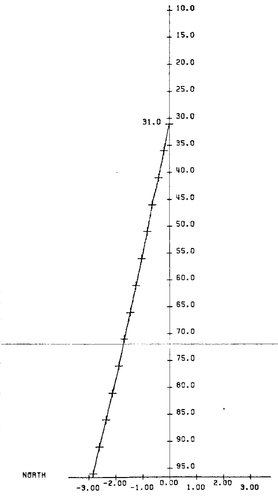
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

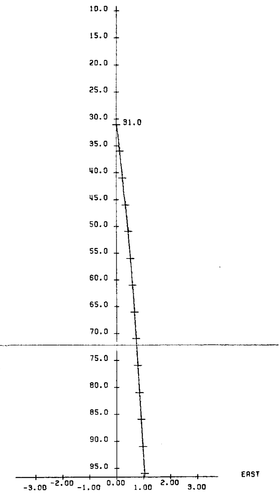
VERTICAL SCALE 500 :1

MARKERS ANNOTATED AS ABOVE

N-S SECTION

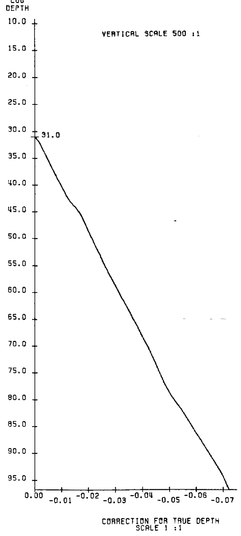


W-E SECTION



HORIZONTAL SCALE 100 :1

DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	TRUE
32.00	32.00
33.00	33.00
34.00	34.00
35.00	35.00
36.00	36.00
37.00	37.00
38.00	38.00
39.00	39.00
40.00	40.00
41.00	41.00
42.00	42.00
43.00	43.00
44.00	44.00
45.00	45.00
46.00	46.00
47.00	47.00
48.00	48.00
49.00	49.00
50.00	50.00
51.00	51.00
52.00	52.00
53.00	53.00
54.00	54.00
55.00	55.00
56.00	56.00
57.00	57.00
58.00	58.00
59.00	59.00
60.00	60.00
61.00	61.00
62.00	62.00
63.00	63.00
64.00	64.00
65.00	65.00
66.00	66.00
67.00	67.00
68.00	68.00
69.00	69.00
70.00	70.00
71.00	71.00
72.00	72.00
73.00	73.00
74.00	74.00
75.00	75.00
76.00	76.00
77.00	77.00
78.00	78.00
79.00	79.00
80.00	80.00
81.00	81.00
82.00	82.00
83.00	83.00
84.00	84.00
85.00	85.00
86.00	86.00
87.00	87.00
88.00	88.00
89.00	89.00
90.00	90.00
91.00	91.00
92.00	92.00
93.00	93.00
94.00	94.00
95.00	95.00
96.00	96.00
97.00	96.00

743

COAL LITHOLOGY LOG

SONDE TYPE:
COAL
COMBINATION
SONDE

LOG SUITE:
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE TW-812-88 ①
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED OCT. 8/88

DEPTH SCALE 1:100
1 OF 3 LOGS

BOREHOLE DATA

PERMANENT DATUM GROUND LEVEL
ELEVATION OF P.D. –

	BPB	DRILLER
MEASUREMENTS FROM	G.L.	G.L.
DEPTH REACHED	110m	115.8m
CASING SHOE	9m	9.1m

BIT SIZES	1	3" TO TD	2	TO
	3	TO	4	TO
CASING SIZES	1	HQ TO 9m	2	TO

FLUID DATA

NATURE SG 120
S.G. N/A
LEVEL G.L.
VISCOSITY N/A
Rm at meas. temp. N/A
B.H.T. N/A

OPERATION DATA

FIRST READING 110m
LAST READING 0m
INTERVAL LOGGED 110m
UNIT-TRUCK No. V220
ENGINEER R. RACZ
WITNESS B. MCKINSTRY

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 113

LOG	EQUIPMENT			TAPING			PANEL			CAL. COEFF.	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	T.C. SECS	NORM		FROM	TO	INTERVAL	
	113													
GAMMA RAY			315	Y	9	D	9	1	–	1.53	110	0	110	Y
L.S. DENSITY		5851	0336	Y	9	D	9	1	6.41	–	111	2	109	Y
CALIPER	SIDEWALL POSITION													

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	22m	34m	49m	60m	79m	99m	INTERVAL TOTAL
TO	20m	31m	43m	54m	63m	93m	
INTERVAL	2m	3m	6m	6m	16m	6m	= 39m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG

REFER TO ADDITIONAL HEADINGS

REMARKS

DUE TO POOR HOLE CONDITIONS, CCS RAN THROUGH RODS FROM 110m, AT 2¼" DIAMETER .

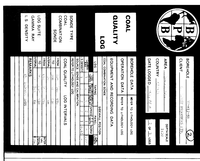
BPB COAL LITHOLOGY LOG

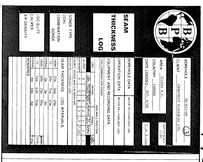
GAMMA RAY	DEPTH	DENSITY
0 API 100		2500 sdu 0

0 API 100		2500 sdu 0
GAMMA RAY	DEPTH	DENSITY

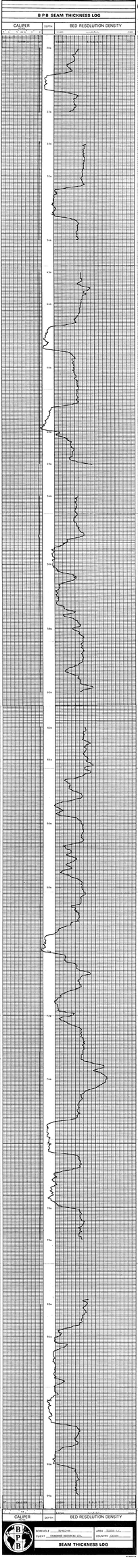
BOREHOLE TW-812-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

MY 200081R

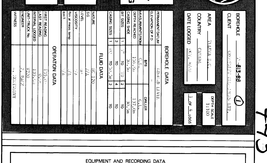

COAL QUALITY LOG
BPB COAL QUALITY LOG
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
DEPTH
20m
21m
71m
72m
73m
74m
75m
76m
77m
78m
79m
92m
93m
94m
95m
96m
97m
98m
99m
100m
101m
102m
103m
104m
105m
106m
107m
108m
109m
110m
111m
112m
113m
114m
115m
116m
117m
118m
119m
120m
121m
122m
123m
124m
125m
126m
127m
128m
129m
130m
131m


BPB
SEAM THICKNESS LOG
WELL
BOREHOLE
CLIENT
AREA
COUNTRY
DRILLED
LOGGED
PROCESSED
DRILLING FLUID
CASING
BOREHOLE DIAMETER
REMARKS
DEPTH
CALIPER
BED RESOLUTION DENSITY

743


B P B SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY

CALIPER
DEPTH
BED RESOLUTION DENSITY
BPB
BOREHOLE
CLIENT
AREA
COUNTRY
SEAM THICKNESS LOG



2443

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE 2117

LOG	EQUIPMENT			TAPING			PANEL		LOG	DEPTHS			GAMA LOG RUN
	SONDE	SERIAL	DIAMETER	LOG (CPS)	SPAN (CPS)	SPAN (API)	LOG	TAPE	RUN	FROM	TO	BORE	
2113													
GAMMA RAY		313		9	9	9	8	1.5	1	0	1135	0	1
NEUTRON	NORMAL	0072	2113in	9	9	9	8	1.5	1	0	1136	0	1136
CALIPER	DIGITAL POSITION		4"	9	9	9	8	1.5	1	0	1136	0	1

TOTAL QUALITY/DRAW THICKNESS LOG INTERVALS (Name to relevant log)

	FROM	TO	INTERVAL THICKNESS
1			
2			
INTERVAL			TOTAL

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL NOTES (BOILER ROOMS)
507	315	1/1370
227	0197	" "
252	317	" "

REMARKS

RERUN
TO
ADDITIONAL
HEADINGS

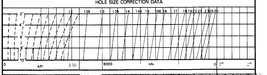
BPB COAL LITHOLOGY LOG

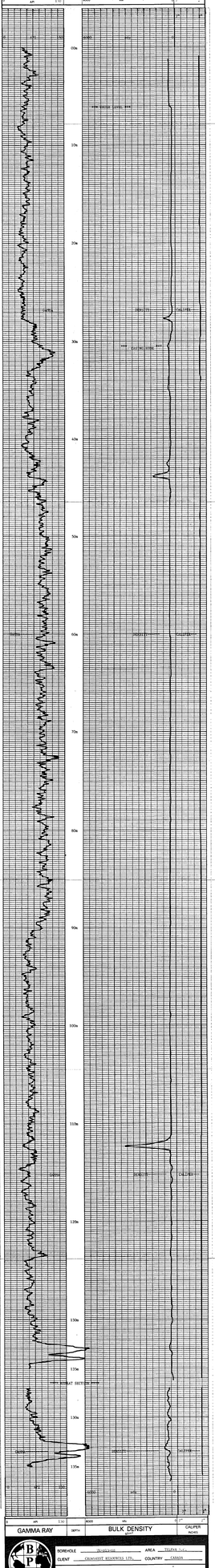
CALIBRATION DATA

.45 Ra	315	VALUE @ 870MM	.45 Ra DATE	11/10/89 VALUE	50cps @ 600MM / in 4.55 ins
.45 MARK SHOWN AT ABOVE VALUE =			.45 Ra	2176 SPAN 0197	NORM Ra = 9.58 / in 7.55 ins

GAMMA RAY — DEPTH — BULK DENSITY — CALIPER

HOLE SIZE CORRECTION DATA





GAMMA RAY — DEPTH — BULK DENSITY — CALIPER

BOREHOLE 10-89-058 — AREA TELKWA (BC)
CLIENT CROWNEST RESOURCES LTD. — COUNTRY CANADA

COAL LITHOLOGY LOG

743

NEUTRON POROSITY
GAMMA RAY

BOREHOLE TW-813-88 ②
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED OCT. 8/88

DEPTH SCALE 1:100

2 OF 4 LOGS

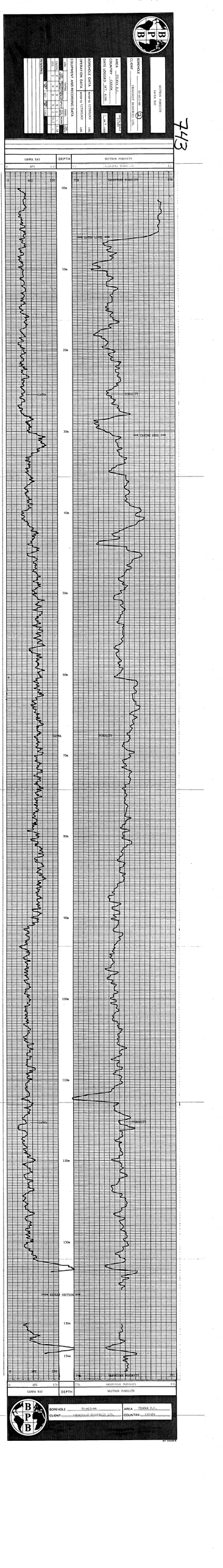
BOREHOLE DATA	REFER TO LITHOLOGY LOG
OPERATION DATA	REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPING			PANEL			CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	T.C. SECS	NORM	
GAMMA	Y	9	D	9	1	–	1.58
DSN	Y	9	D	9	2	10.7	–
		SONDE NO	507	SOURCE NO	7202		

REMARKS

GAMMA RAY	DEPTH	NEUTRON POROSITY
0 API 150		75% SANDSTONE POROSITY 15%



0 API 150		75% SANDSTONE POROSITY 15%
GAMMA RAY	DEPTH	NEUTRON POROSITY

BOREHOLE TW-813-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

MY 200081R

BPB

BOREHOLE TW-813-88 (3)
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED OCT. 8/10/88

3 OF 4 LOGS

DEPTH SCALE 1:250

COAL QUALITY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY L.S. DENSITY

BOREHOLE DATA	REFER TO LITHOLOGY LOG
OPERATION DATA	REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA	
COAL COMBINATION SONDE	SIDEWALL POSITION

LOG	TAPING PANEL	RECORDER POLARITY	SPEED	DELAY	SENS.	NORM	CORE
GAMMA RAY	TAPE	V	2	R	2	1	-	1.35
L.S DENSITY		V	2	R	2	1	6.61	-

SOURCE SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

COAL QUALITY LOG INTERVALS

	INTERVAL	INTERVAL	INTERVAL
FROM	113m	45m	
TO	111m	43m	
INTERVAL	2m	2m	TOTAL 4m

REMARKS

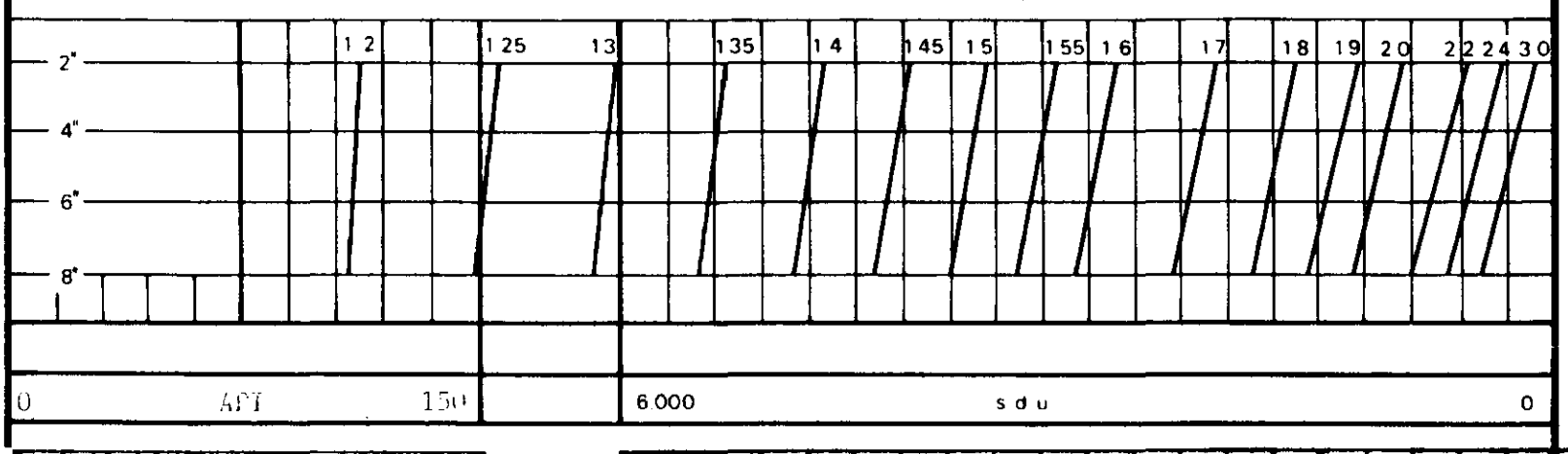
743

BPB COAL QUALITY LOG

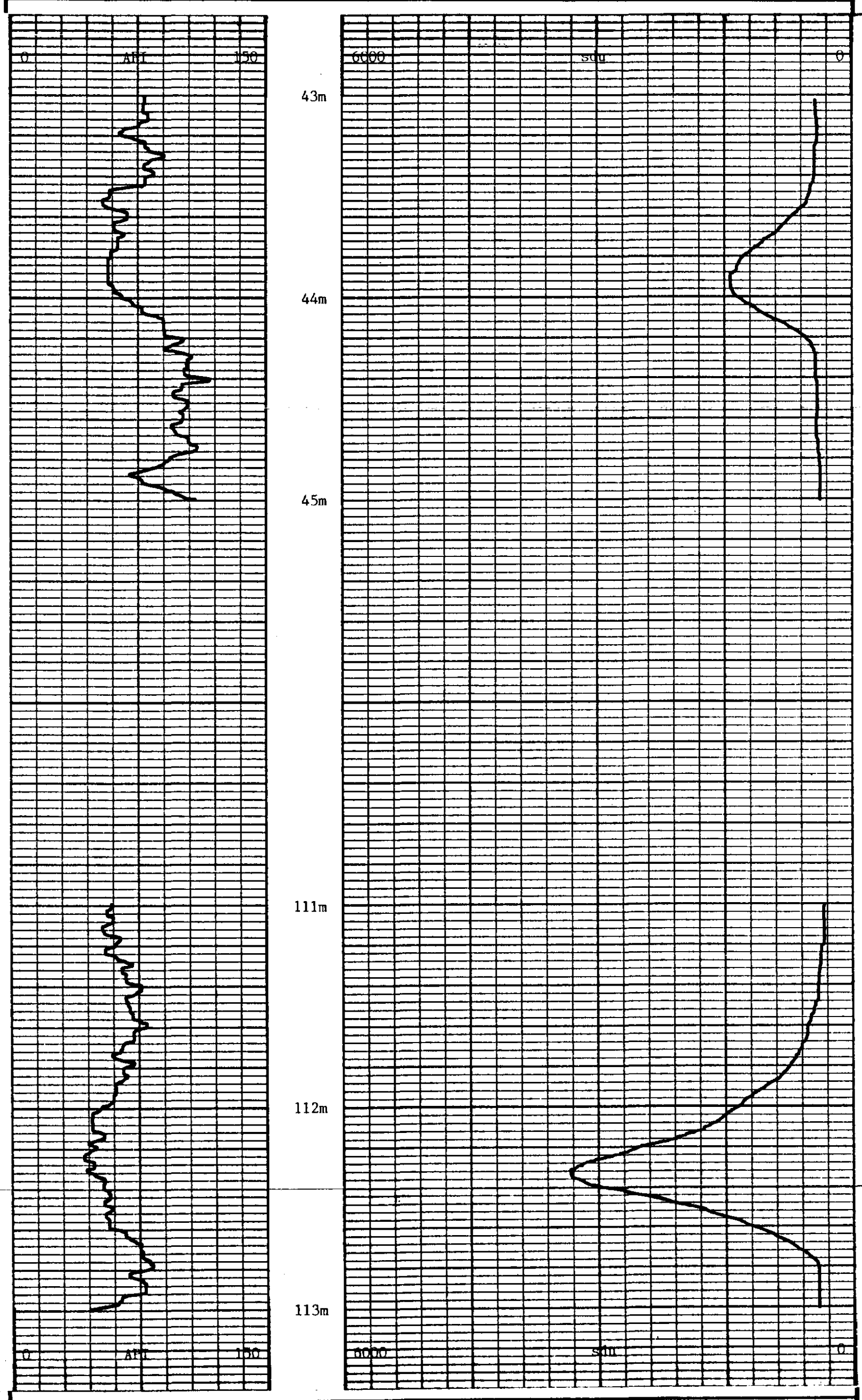
DEPTH

GAMMA RAY — COAL BULK DENSITY g/cm³

HOLE SIZE CORRECTION DATA



0 API 150 | 6000 sdu 0



0 API 150 | 6000 sdu 0

GAMMA RAY — COAL BULK DENSITY g/cm³

DEPTH

BPB

BOREHOLE TW-813-88 | AREA TELKWA B.C.
CLIENT CROWSNEST RESOURCES LTD. | COUNTRY CANADA

COAL QUALITY LOG

AM 2002 K

743

BOREHOLE TW-813-88 (4)

CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.

COUNTRY CANADA

DATE LOGGED OCT. 8/88

DEPTH SCALE 1:20

4 OF 4 LOGS

SEAM THICKNESS LOG

BOREHOLE DATA	REFER TO LITHOLOGY LOG
OPERATION DATA	REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING			PANEL			CAL COEFF
	LOG TAPED	RECORD SPEED	RECORD/DIRECT REPLAY	SPEED	TC SECS	NORM	
CALIPER	Y	2	R	2	1	–	–
B.R.DENSITY	Y	2	R	2	.3	7.10	–

SOURCE SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	113m	
TO	111m	
INTERVAL	2m	
FROM	45m	INTERVAL TOTAL
TO	43m	≠ 4m
INTERVAL	2m	

REMARKS

SONDE TYPE
COAL COMBINATION SONDE

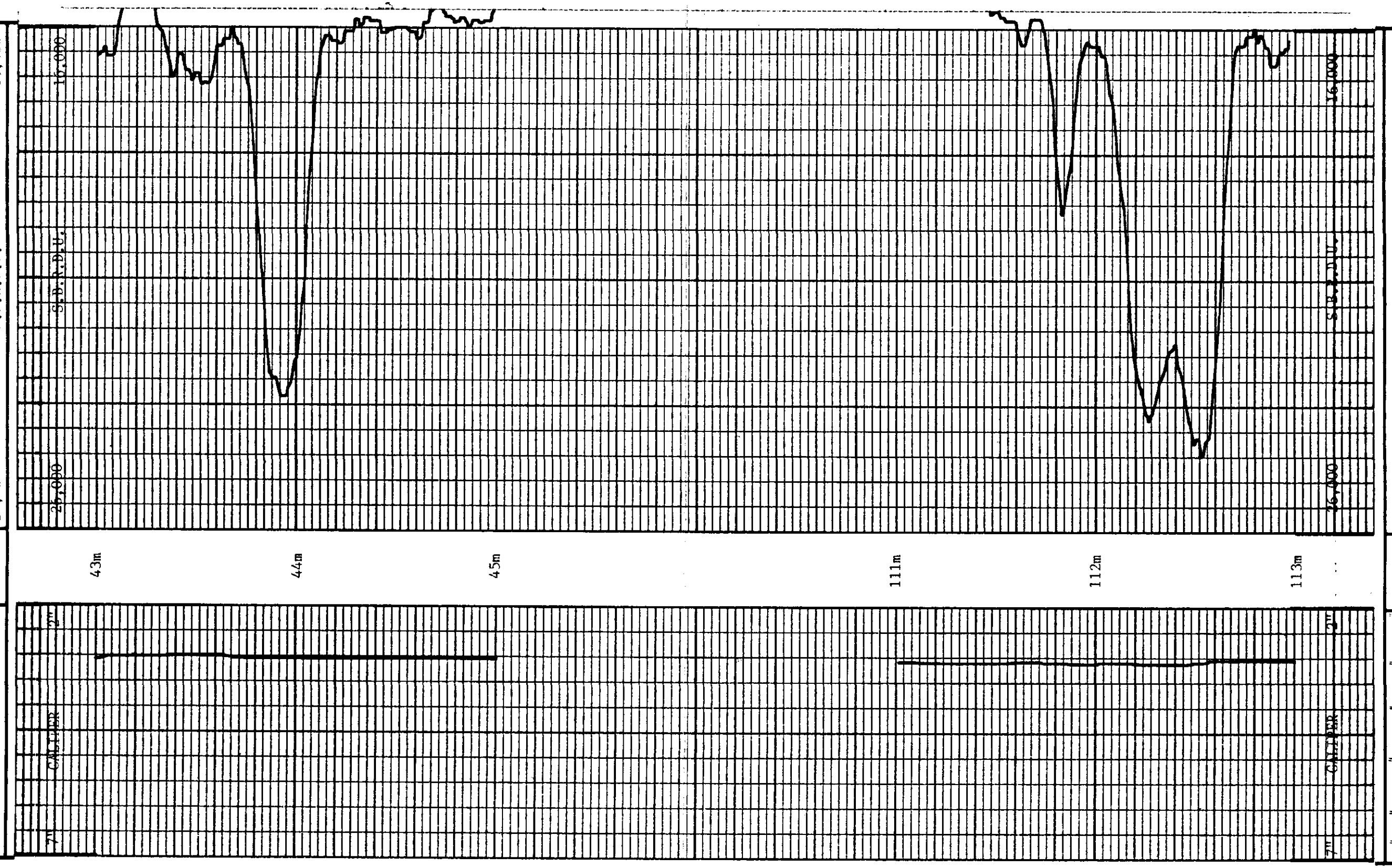
LOG SUITE
CALIPER
B.R.DENSITY

B P B SEAM THICKNESS LOG

BED RESOLUTION DENSITY — 1g/cm³ — 2g/cm³ — S.G.R.D.U.

DEPTH

CALIPER INCHES — 5" dia — CALIPER



BED RESOLUTION DENSITY — 1g/cm³ — 2g/cm³ — S.G.R.D.U.

DEPTH

CALIPER INCHES — 5" dia — CALIPER

BOREHOLE TW-813-88

CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.

COUNTRY CANADA

SEAM THICKNESS LOG

MY88002B

CONTINUOUS VERTICALITY ANALYSIS

CLIENT	CROWS NEST RESOURCES
BOREHOLE	TW-813-88 (5)
AREA	TELKWA
COUNTRY	CANADA

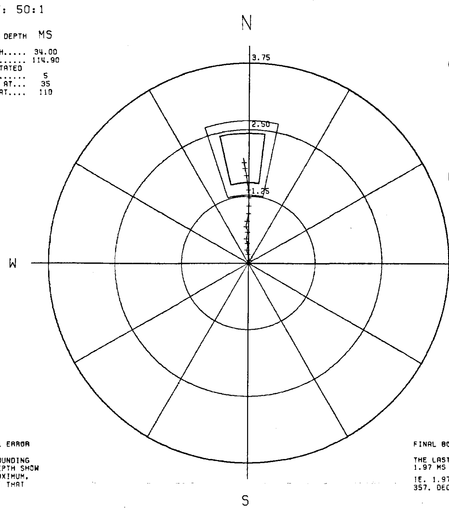
DATE LOGGED.....08-OCT-88
DATE PROCESSED..13-JAN-88
UPPER REFERENCE POINT....G.L.
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH..... 34.00
LAST PLOTTED DEPTH..... 114.90
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF..... 5
FIRST DEPTH MARKER AT... 35
LAST DEPTH MARKER AT.... 110



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

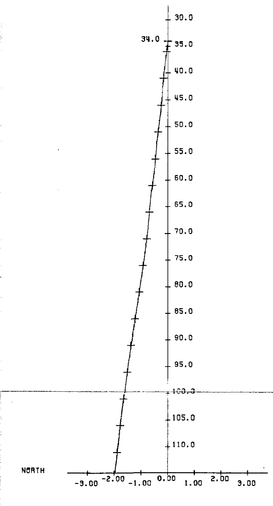
THE LAST PLOTTED DEPTH IS AT 1.97 MS NORTH, 0.10 MS WEST

IE. 1.97 MS FROM THE ORIGIN, 357. DEG. FROM MAGNETIC NORTH

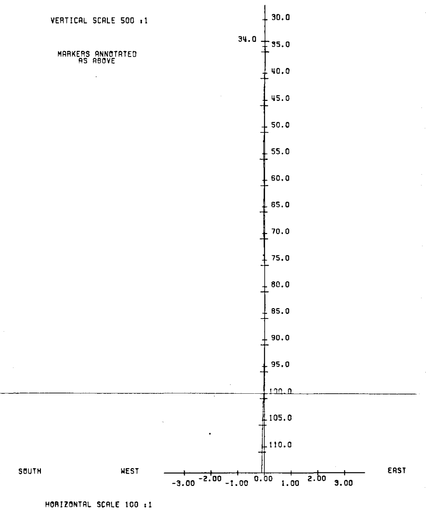
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

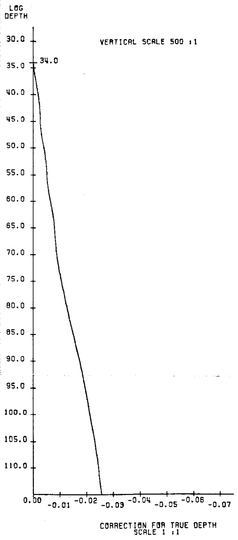


W-E SECTION



HORIZONTAL SCALE 100 :1

DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	DEPTHS: TRUE	DEPTHS: LOG	DEPTHS: TRUE
35.00	35.00	105.00	104.98
36.00	36.00	106.00	105.98
37.00	37.00	107.00	106.98
38.00	38.00	108.00	107.98
39.00	39.00	109.00	108.98
40.00	40.00	110.00	109.98
41.00	41.00	111.00	110.98
42.00	42.00	112.00	111.98
43.00	43.00	113.00	112.97
44.00	44.00	114.00	113.97
45.00	45.00	115.00	114.97
46.00	46.00		
47.00	47.00		
48.00	48.00		
49.00	49.00		
50.00	50.00		
51.00	51.00		
52.00	52.00		
53.00	53.00		
54.00	53.99		
55.00	54.99		
56.00	55.99		
57.00	56.99		
58.00	57.99		
59.00	58.99		
60.00	59.99		
61.00	60.99		
62.00	61.99		
63.00	62.99		
64.00	63.99		
65.00	64.99		
66.00	65.99		
67.00	66.99		
68.00	67.99		
69.00	68.99		
70.00	69.99		
71.00	70.99		
72.00	71.99		
73.00	72.99		
74.00	73.99		
75.00	74.99		
76.00	75.99		
77.00	76.99		
78.00	77.99		
79.00	78.98		
80.00	79.98		
81.00	80.98		
82.00	81.98		
83.00	82.98		
84.00	83.98		
85.00	84.98		
86.00	85.98		
87.00	86.98		
88.00	87.98		
89.00	88.98		
90.00	89.98		
91.00	90.98		
92.00	91.98		
93.00	92.98		
94.00	93.98		
95.00	94.98		
96.00	95.98		
97.00	96.98		
98.00	97.98		
99.00	98.98		
100.00	99.98		
101.00	100.98		
102.00	101.98		
103.00	102.98		
104.00	103.98		

DIPMETER ANALYSIS

743

CLIENT___ CROWSNEST RESOURCES
BOREHOLE_ TW-813-88 (6)
AREA_____ TELKWA
COUNTRY__ CANADA

DATE LOGGED.....08-OCT-88
DATE PROCESSED..14-OCT-88

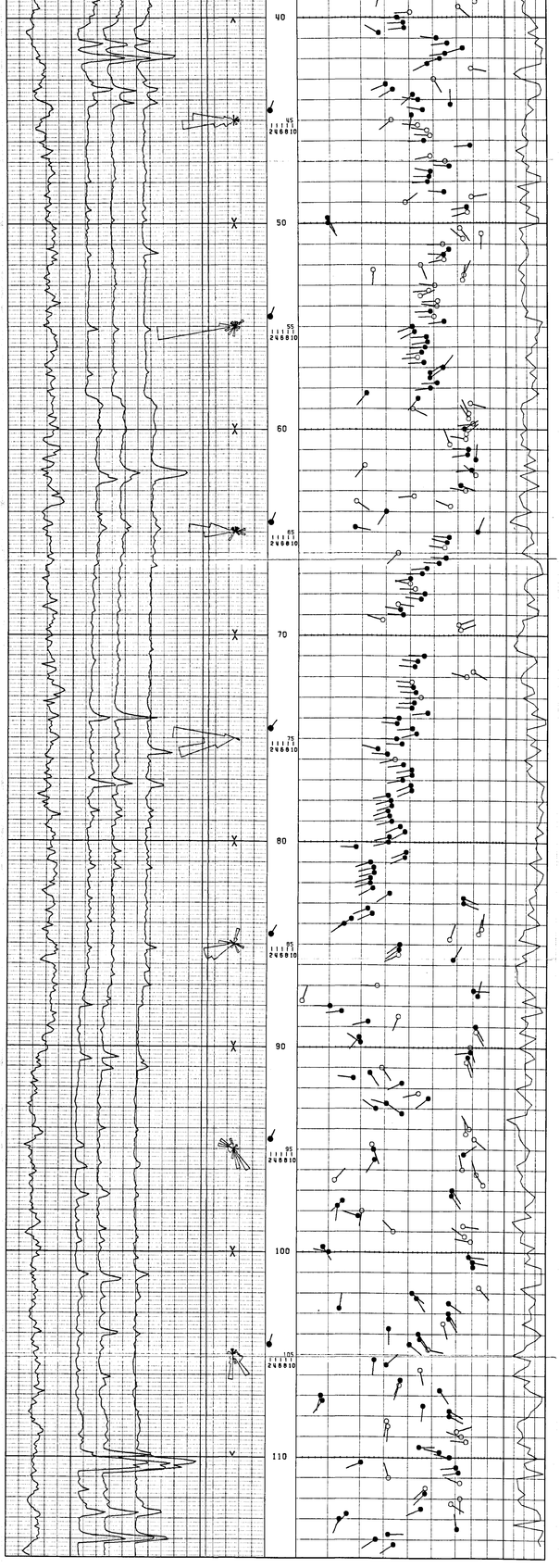
COMMENTS.....

INTERPRETATION PARAMETERS

STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.
DECLINATION 26.0 EAST
DEPTH RANGE 35.33 - 114.90M.
DATE PROCESSED 14-OCT-88

AVERAGE BOREHOLE DEVIATION & DIRECTION ANNOTATED EVERY 10.0M.
ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES.
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.50)
FAIR (>0.30)



COAL LITHOLOGY LOG

BPB

SONDE TYPE
COMBINATION SONDE
LOG SUITE
GAMMA DENSITY CALIPER

BOREHOLE
CLIENT
AREA
DATE LOGGED
LOG ENGINEER
WITNESS

BOREHOLE DATA

	DRILLER	LOGGER
DEPTH		
DIAMETER		
CASING		
FLUID		
DENSITY		
VISCOSITY		
PH		
RESISTIVITY		
TEMPERATURE		

RUN DATA

RUN NO.			
TIME			
DATE			
CASING DRILLER			
CASING LOGGER			
BTM LOG INTERVAL			
TOP LOG INTERVAL			

OPERATION DATA

RECORDED BY			
WITNESSED BY			
MAX REC. TEMP.			
EQUIPMENT NO.			
LOCATION			

LOG	EQUIPMENT SONDE	EQUIPMENT CALIBRATOR	TAPING LOG METRES	TAPING RECORDED METRES	TAPING CHECKED METRES	PANEL LOG SCALE	PANEL NORM	DEPTHS FROM	DEPTHS TO	DEPTHS MEDIUM	REMARKS LOG RUN
GAMMA RAY	113										
DENSITY		115									
CALIPER	SEISMIC POSITION	0612	1036								

COAL SEAM/STRATA/MARKER THICKNESSES LOG INTERVALS (Refer to relevant log)

FROM						INTERVAL
TO						TOTAL
INTERVAL						

ADDITIONAL SONDES RUN

SONDE	LOG	OPERATING SCALE	DIGITAL LOG SCALE

REMARKS

REFER TO ADDITIONAL HEADINGS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

AC No.	VALUE @ 'D' DATE		AC VALUE	SENS @	
AD MARK SHOWN AT ABOVE VALUE =		AD No.	SPAN	NORM	

GAMMA RAY — DEPTH — BULK DENSITY — CALIPER INCHES

HOLE SIZE CORRECTION DATA

API — KGM3 — INCHES

GAMMA — BULK DENSITY — CALIPER

00m 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m 107m

TOTAL DEPTH SECTION 1

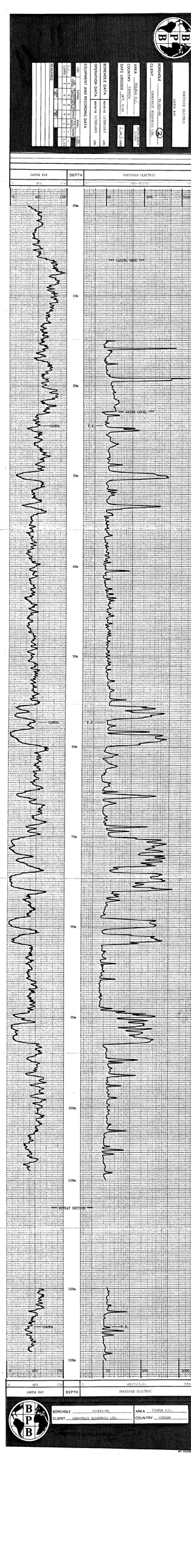
GAMMA RAY — DEPTH — BULK DENSITY — CALIPER INCHES

BPB

BOREHOLE
AREA
CLIENT
COUNTRY

COAL LITHOLOGY LOG

743


BOREHOLE RECORD
CLIENT CROMEMCO RESOURCES LTD.
BOREHOLE IN-834-88
AREA TILLEVA N.W.T.
COUNTRY CANADA
DATE LOGGED 1-OCT-1988
RUN NO. ONE
DEPTH-DRILLER 1000m
DEPTH-LOGGER 1000m
BTM LOG INTERVAL 1000m
TOP LOG INTERVAL 100m
CASING-DRILLER 100m
CASING-LOGGER 100m
BIT SIZE 8.5"
TYPE FLUID IN HOLE WATER BASED MUD
DENSITY 1.1
VISCOSITY 60
PH 10.0
FLUID LOSS 6.0
SOURCE OF SAMPLE MUD PIT
RM @ MEAS. TEMP 0.2 @ 20°C
RMF @ MEAS. TEMP 0.2 @ 20°C
RMC @ MEAS. TEMP 0.2 @ 20°C
SOURCE OF RMF & RMC MEASURED
RM @ BHT 0.1 @ 50°C
TIME SINCE CIRC. 12 HRS
MAX. REC. TEMP. 50°C
EQUIPMENT & RECORDED DATA
OPERATING RIG NUMBER 100
OPERATOR DATA WAYNE STERRICK
BOREHOLE DATA WAYNE STERRICK
GAMMA RAY
DEPTH
FOCUSSED ELECTRIC
API
0
150
00m
10m
20m
30m
40m
50m
60m
70m
80m
90m
100m
108m
*** CASING SHOE ***
*** WATER LEVEL ***
F.E.
GAMMA
*** REPEAT SECTION ***
0
500
1000
2000
BOREHOLE IN-834-88
CLIENT CROMEMCO RESOURCES LTD.
AREA TILLEVA N.W.T.
COUNTRY CANADA

743

743

NEUTRON POROSITY
GAMMA RAY

BOREHOLE TW-814-88 ③
CLIENT CROWSNEST RESOURCES LTD.

AREA TELKWA B.C.
COUNTRY CANADA
DATE LOGGED OCT. 9/88

DEPTH SCALE 1:100

3 OF 5 LOGS

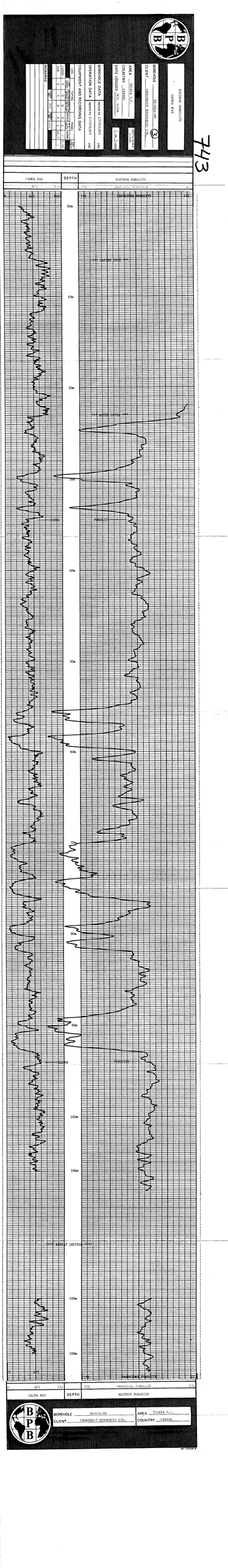
BOREHOLE DATA	REFER TO LITHOLOGY	LOG
OPERATION DATA	REFER TO LITHOLOGY	LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPING			PANEL			CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	T.C. SECS	NORM	
GAMMA	Y	9	D	9	1	-	1.58
DSN	Y	9	D	9	2	10.7	-
		SONDE NO	507	SOURCE NO	7202		

REMARKS

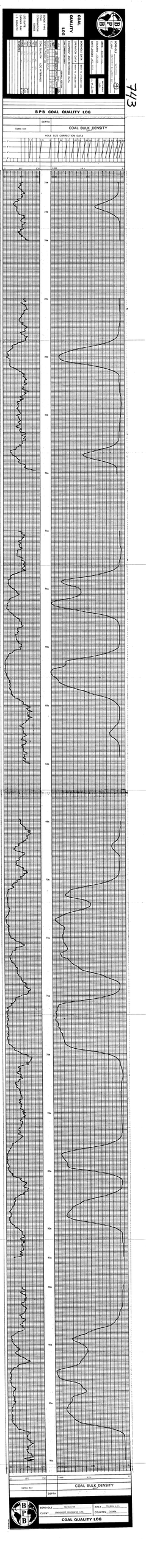
GAMMA RAY	DEPTH	NEUTRON POROSITY
0 API 150		75% SANDSTONE POROSITY 15%



GAMMA RAY	DEPTH	NEUTRON POROSITY
0 API 150		75% SANDSTONE POROSITY 15%

BOREHOLE TW-814-88
CLIENT CROWSNEST RESOURCES LTD.
AREA TELKWA B.C.
COUNTRY CANADA

MY 200081R


COAL QUALITY LOG
BPB
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
DEPTH
GAMMA RAY
CALIPER
1000
0.5
2.5
2m
3m
4m
5m
6m
7m
8m
9m
10m
11m
12m
13m
14m
15m
16m
17m
18m
19m
20m
21m
22m
23m
24m
25m
26m
27m
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31m
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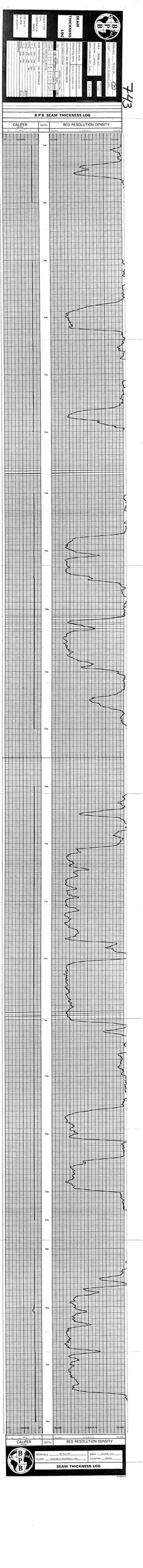
36m
37m
38m
39m
40m
41m



7443

B P B SEAM THICKNESS LOG

CALIPER (INCHES) | DEPTH | BED RESOLUTION DENSITY (G/CC)

BOROUGH _____ SECTION _____ AREA _____ BLOCK/LOT _____

CLIENT _____ GEOLOGIC ASSOCIATES, LTD. COUNTY _____ STATE _____

SEAM THICKNESS LOG

BPB

743

DIPMETER ANALYSIS

CLIENT___ CROWSNEST RESOURCES
BOREHOLE_ TW-814-88 (16)
AREA_____ TELKWA
COUNTRY__ CANADA

DATE LOGGED.....09-OCT-88
DATE PROCESSED..14-OCT-88

COMMENTS.....

INTERPRETATION PARAMETERS

STEP 0.25M.
INTERVAL 0.50M.
SEARCH ANGLE 75.
DECLINATION 26.0 EAST
DEPTH RANGE 25.33 - 100.00M.
DATE PROCESSED 14-OCT-88

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 10.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES.
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
GOOD (>0.
FAIR (>0.

GAMMA (IF AVAILABLE) 0 API 150
LOW PAD 1 HIGH
LOW PAD 2 HIGH
LOW PAD 3 HIGH
CALIPER INCHES 6 8 10
DEPTH METRES 100:1
DIP ANGLE & DIRECTION DEGREES 10 20 30 40 50 60 70 80
MINIMU CORRELAT
POOR
.25 .5

30
40
50
60
70
80
90

743

CONTINUOUS VERTICALITY ANALYSIS

CLIENT___ CROWS NEST RESOURCES
BOREHOLE_ TW-814-88 (7)
AREA_____ TELKWA
COUNTRY__ CANADA

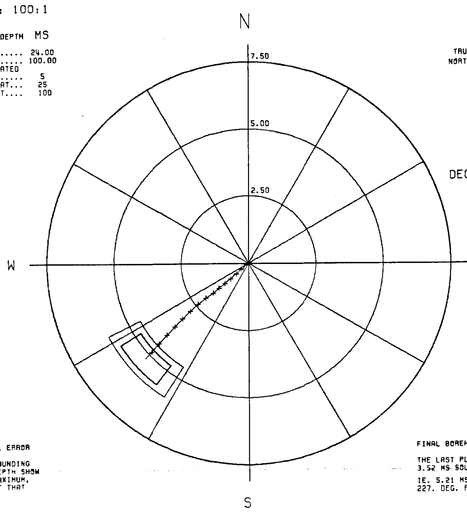
DATE LOGGED.....09-OCT-88
DATE PROCESSED..13-JAN-88
UPPER REFERENCE POINT....G.L.
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 100:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH..... 24.00
LAST PLOTTED DEPTH..... 100.00
DEPTH MARKERS ANNOTATED
IN MULTIPLES OF.....: 5
FIRST DEPTH MARKER AT..: 25
LAST DEPTH MARKER AT....: 100



MAGNETIC NORTH
TRUE NORTH
DECLINATION 26.0 E

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL AND MAXIMUM POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 3.52 MS SOUTH, 3.84 MS WEST

IE, 5.21 MS FROM THE ORIGIN, 227. DEG. FROM MAGNETIC NORTH

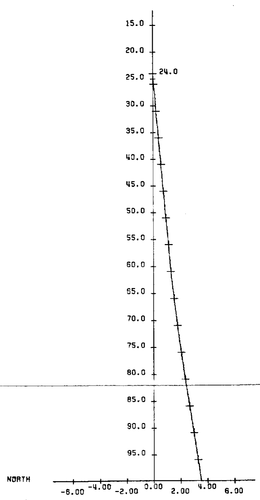
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

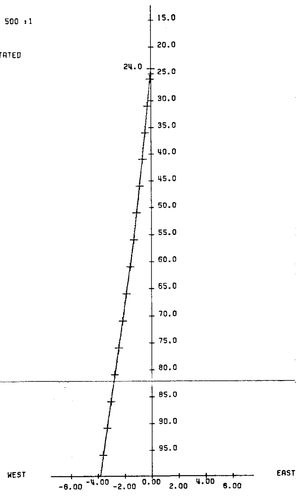
N-S SECTION

VERTICAL SCALE 500 :1

MARKERS ANNOTATED MS ABOVE

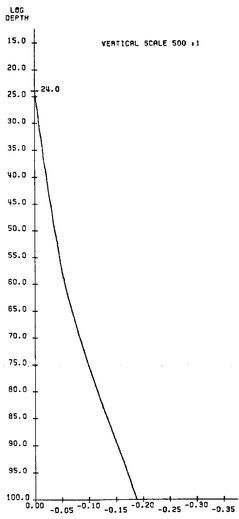


W-E SECTION



HORIZONTAL SCALE 200 :1

DEPTH CORRECTION ANALYSIS



DEPTHS: LOG	TRUE	DEPTHS: LOG	TRUE
25.00	25.00	95.00	94.83
26.00	26.00	96.00	95.83
27.00	27.00	97.00	96.82
28.00	27.99	98.00	97.82
29.00	28.99	99.00	98.82
30.00	29.99	100.00	99.81
31.00	30.99		
32.00	31.99		
33.00	32.99		
34.00	33.99		
35.00	34.99		
36.00	35.98		
37.00	36.98		
38.00	37.98		
39.00	38.98		
40.00	39.98		
41.00	40.98		
42.00	41.98		
43.00	42.97		
44.00	43.97		
45.00	44.97		
46.00	45.97		
47.00	46.97		
48.00	47.97		
49.00	48.96		
50.00	49.96		
51.00	50.96		
52.00	51.96		
53.00	52.96		
54.00	53.96		
55.00	54.95		
56.00	55.95		
57.00	56.95		
58.00	57.95		
59.00	58.95		
60.00	59.94		
61.00	60.94		
62.00	61.94		
63.00	62.94		
64.00	63.93		
65.00	64.93		
66.00	65.93		
67.00	66.93		
68.00	67.92		
69.00	68.92		
70.00	69.92		
71.00	70.91		
72.00	71.91		
73.00	72.91		
74.00	73.90		
75.00	74.90		
76.00	75.90		
77.00	76.89		
78.00	77.89		
79.00	78.89		
80.00	79.88		
81.00	80.88		
82.00	81.88		
83.00	82.87		
84.00	83.87		
85.00	84.87		
86.00	85.86		
87.00	86.86		
88.00	87.85		
89.00	88.85		
90.00	89.85		
91.00	90.84		
92.00	91.84		
93.00	92.84		
94.00	93.83		

CONFIDENTIAL

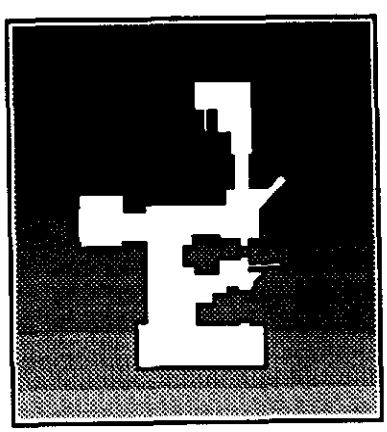
Petrographic Analyses

of

Four Telkwa Coals

Prepared for Crows Nest Resources Ltd.

February 1989



743

part 3

David E. Pearson & Associates Ltd.

Organic Petrographers & Geologists

4277 Houlihan Place,

Victoria,

British Columbia, Canada. V8N 3T2

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Organic Petrographers & Geologists
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Telephones (604) 477-2548 & 380-8324 Fax (604) 477-4775

February 14, 1989.

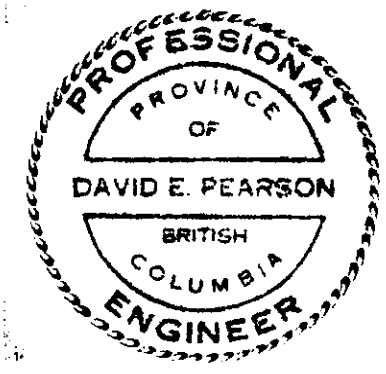
Mr. Brian McKenstry,
Crows Nest Resources Limited,
525 - 3rd Avenue S.W.,
Calgary, Alberta.
T2P0G6

Dear Brian:

Re: Petrography of Four Telkwa Coals.

We are pleased to provide you with our report on the petrography of the above-described coals. We trust you will find the information to be most useful.

Once again, we thank you for the opportunity to have been of assistance to you.



Yours very truly,
David E. Pearson & Associates Ltd.,

David E. Pearson, Ph.D., P.Eng.

INTRODUCTION

Petrographic analyses were performed on four Telkwa coal samples which arrived at the Coal Laboratory on January 23, 1989. The samples were described as follows:

Crows Nest Resources Ltd,

Hole #803 Sample 88.07
Hole #811 Sample 73
Hole #814 Sample 117
Hole #814 Sample 121

SAMPLE PREPARATION

The coal samples were coned and quartered and reduced to provide sufficient material for one pellet. This coal was then mixed with a thermoplastic and pelletized under slight pressure. The pellets were subsequently ground and polished on Beuhler equipment.

The polished samples were then immersed in a bath containing a solution of organic dye and potassium hydroxide. Using this technique, oxidized coal becomes stained an olive-green, whereas unoxidized coal remains unstained.

PETROGRAPHIC EXAMINATION

The polished samples were examined under an oil-immersion lens using a Leitz Orthoplan MPV Compact microscope-photometer. The control panel of the microscope and a Swift Automatic Point Counter are interfaced to a Hewlett-Packard 85 microcomputer, which captures the data. These data are then passed to a Hewlett-Packard 9816 microcomputer, an Apple LaserWriter printer and a Hewlett-Packard 7475A plotter for processing, printing and draughting of results.

The reflectance of one hundred individual vitrinite 'A' grains was measured in the rank analysis. Standardization of photometer-readout was performed before and after the analysis, if necessary. Maximum reflectance values were

retained by the computer.

One thousand grains were counted during the maceral analysis, at a traverse interval of 0.5mm.

In this report, the following approach was used to identify reactive semifusinite.

> Final results of some recent research done in this laboratory on coking coals from Quintette Mine, Line Creek Mine and Fording River Mine, suggest that semifusinites should be regarded as reactive if their random reflectance is less than the mean random reflectance of the associated vitrinite 'A', plus 0.22.
>
> The actual threshold is determined by the following relationship:-
>
> Threshold reflectance (%) = 1.000 Romax + 0.2206
>
> By using this threshold value, predicted levels of Inertinite macerals are closest to those considered to have been present in the above-described coking coals when they were carbonized at CANMET's Laboratory in Ottawa. And by using such a threshold value among similar coals, confidence in predicted rheological and coking parameters should be improved.

The reflectance of each semifusinite maceral encountered during the maceral analysis was measured, and depending upon the result, was assigned to either the inert or reactive category. In the Appendix, this method of assigning reactive semifusinite is described as that of Pearson.

At the end of one thousand readings, the mean, standard deviation, variance and a correction for the mineral-matter content were electronically computed and printed.

During the maceral analysis, the random reflectance of each maceral was also determined, in polarized light, and these 1000 values were used to construct the reflectogram.

The Coke-Strength Rose shows the effect of different levels of inerts on coals of a specific vitrinite reflectance. The diagram shows the predicted coke strength for the determined level of inerts for the sample in question, and also the effects on the predicted coke strength of ±10% of the total inerts.

AUTOMATED REFLECTANCE ANALYSIS

After four years of in-house research, we have recently commissioned our Zeiss microscope photometer system, which is computer-controlled for automated petrographic analysis. In addition to our normal services, this system was also used to determine Total Inerts and vitrinite reflectance on these samples. Automated petrographic analysis using this equipment involves the determination of the average of five reflectance values taken at about 44000 contiguous locations, or about 210000 reflectance values spaced along a 22 centimetre line on a 2.5 cm diameter pellet.

During the analysis, all focussing and traversing of the sample is under computer control. The unfiltered data are then subjected to one-dimensional, digital image-analysis, which removes readings taken on the thermoplastic binder material, and also the erroneous reflectance readings measured at grain boundaries, and on scratched surfaces. The filtered data are then interpreted in the same manner as the manually prepared reflectograms, on the basis of a reflectance cut-off, the location of which is related to the location of the vitrinite peak. (Fine tuning of the filtering conditions is presently being evaluated). The resulting Digital Scanogram is highly-reproducible, and provides a "fingerprint" of the coal.

RESULTS

The results of all analyses are contained as Appendices, and are shown in the **Summary of Petrographic Analysis.**

For these samples the reported results are:-

* Reflectance values
* Reflectance statistics
* Vitrinite-type histogram
* 1000 Maceral counts
* Maceral statistics
* Maceral-distribution diagram
* 1000 - point reflectogram
* Predicted Strength & Balance Index
* Predicted D.I. 30/15
* Predicted coke strength
* Predicted free swelling index
* Coke-Strength Rose
* Filtered digital scanogram

Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION

Laboratory number M7158
Hole #814 Sample 121
Ash 14.42% Sulphur 1.08%

PETROGRAPHIC INDICES

Mean Maximum Reflectance.....%	0.89
Composition Balance Index.....	2.26
Calculated Strength Index.....	2.46
Calculated Stability Index.....	0
Estimated Coke Strength DI 30/15.....	60.2
Predicted Free Swelling Index.....	<4

DISTRIBUTION OF VITRINITE TYPES

V - 7.....%	3
V - 8.....%	58
V - 9.....%	37
V - 10.....%	2

REACTIVE COMPONENTS

Vitrinite.....%	37.3
Exinite.....%	0.9
Reactive Semifusinite.....%	16.4
Total Reactives.....%	54.6

INERT COMPONENTS

Macrinite.....%	4.9
Inert Semifusinite.....%	25.5
Fusinite.....%	3.2
Inertodetrinite.....%	3.7
Mineral Matter.....%	8.1
Total Inerts.....%	45.4

Analysis Completed : February 14, 1989 2:57 PM

David E. Pearson & Associates Ltd.
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Petrographic Analysis

for

Crows Nest Resources Ltd

SAMPLE IDENTIFICATION

Laboratory number M7155
Hole #803 Sample 88.07
Ash 15.42% Sulphur 0.83%

PETROGRAPHIC INDICES

Mean Maximum Reflectance.....%	1.07
Composition Balance Index.....	3.18
Calculated Strength Index.....	3.36
Calculated Stability Index.....	9
Estimated Coke Strength DI 30/15.....	69.6
Predicted Free Swelling Index.....	<<4

DISTRIBUTION OF VITRINITE TYPES

V - 9.....%	5
V - 10.....%	69
V - 11.....%	26

REACTIVE COMPONENTS

Vitrinite.....%	27.3
Exinite.....%	0.6
Reactive Semifusinite.....%	15.9
Total Reactives.....%	43.8

INERT COMPONENTS

Macrinite.....%	5.8
Inert Semifusinite.....%	34.9
Fusinite.....%	4.3
Inertodetrinite.....%	2.6
Mineral Matter.....%	8.6
Total Inerts.....%	56.2

Analysis Completed : February 13, 1989 2:05 PM

David E. Pearson & Associates Ltd.
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Petrographic Analysis

for

Crows Nest Resources Ltd

SAMPLE IDENTIFICATION

Laboratory number M7156
Hole #811 Sample 73
Ash 11.03% Sulphur 1.47%

PETROGRAPHIC INDICES

Mean Maximum Reflectance..... %	1.29
Composition Balance Index.....	3.65
Calculated Strength Index.....	4.72
Calculated Stability Index.....	35
Estimated Coke Strength DI 30/15.....	88.2
Predicted Free Swelling Index.....	<4

DISTRIBUTION OF VITRINITE TYPES

V - 11.....%	5
V - 12.....%	43
V - 13.....%	50
V - 14.....%	2

REACTIVE COMPONENTS

Vitrinite.....%	25.7
Reactive Semifusinite.....%	23.6
Total Reactives.....%	49.3

INERT COMPONENTS

Macrinite.....%	5.2
Inert Semifusinite.....%	33.6
Fusinite.....%	2.7
Inertodetrinite.....%	2.8
Mineral Matter.....%	6.4
Total Inerts.....%	50.7

Analysis Completed : February 13, 1989 7:31 PM

David E. Pearson & Associates Ltd.
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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION

Laboratory number M7157
Hole #814 Sample 117
Ash 10.63% Sulphur 0.61%

PETROGRAPHIC INDICES

Mean Maximum Reflectance.....%	0.88
Composition Balance Index.....	1.63
Calculated Strength Index.....	2.88
Calculated Stability Index.....	22
Estimated Coke Strength DI 30/15.....	80.5
Predicted Free Swelling Index.....	4

DISTRIBUTION OF VITRINITE TYPES

V - 7.....%	2
V - 8.....%	64
V - 9.....%	33
V - 10.....%	1

REACTIVE COMPONENTS

Vitrinite.....%	43.3
Exinite.....%	0.5
Reactive Semifusinite.....%	18.8
Total Reactives.....%	62.6

INERT COMPONENTS

Macrinite.....%	3.7
Inert Semifusinite.....%	19.4
Fusinite.....%	3.0
Inertodetrinite.....%	5.4
Mineral Matter.....%	5.9
Total Inerts.....%	37.4

Analysis Completed : February 14, 1989 11:38 AM

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Vitrinite Reflectance

CROWS NEST RESOURCES LTD
Hole #803 Sample 88.07

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	1.07
Standard Error of the Mean	0.00
Coefficient of Variation...%	3.93
Variance	.0018
Standard Deviation	.0420
Skewness	-.0522
Kurtosis	3.3561

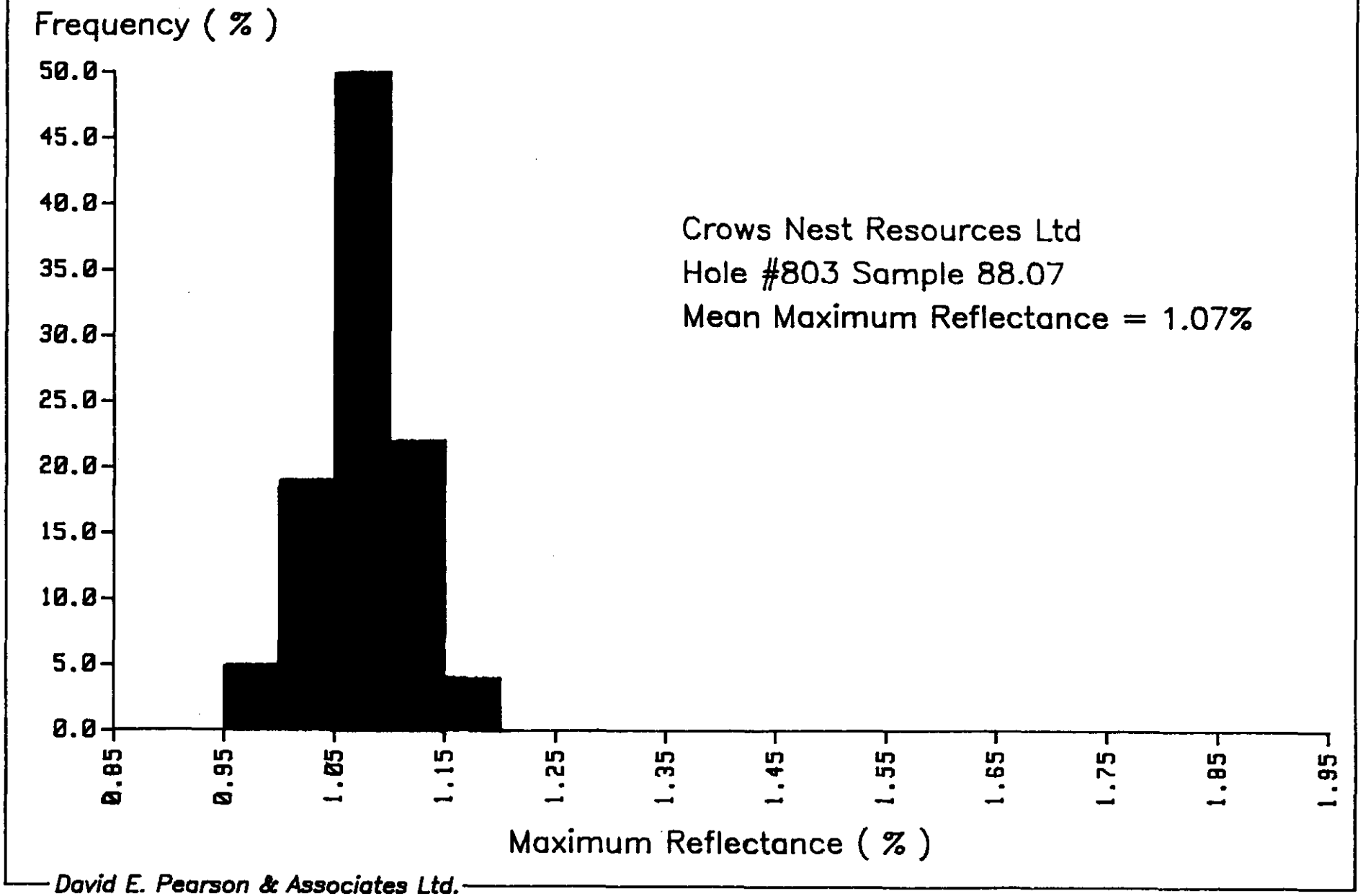
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
3	0.95	5	5.00
4	1.00	19	19.00
5	1.05	50	50.00
6	1.10	22	22.00
7	1.15	4	4.00

VITRINITE TYPE DISTRIBUTION

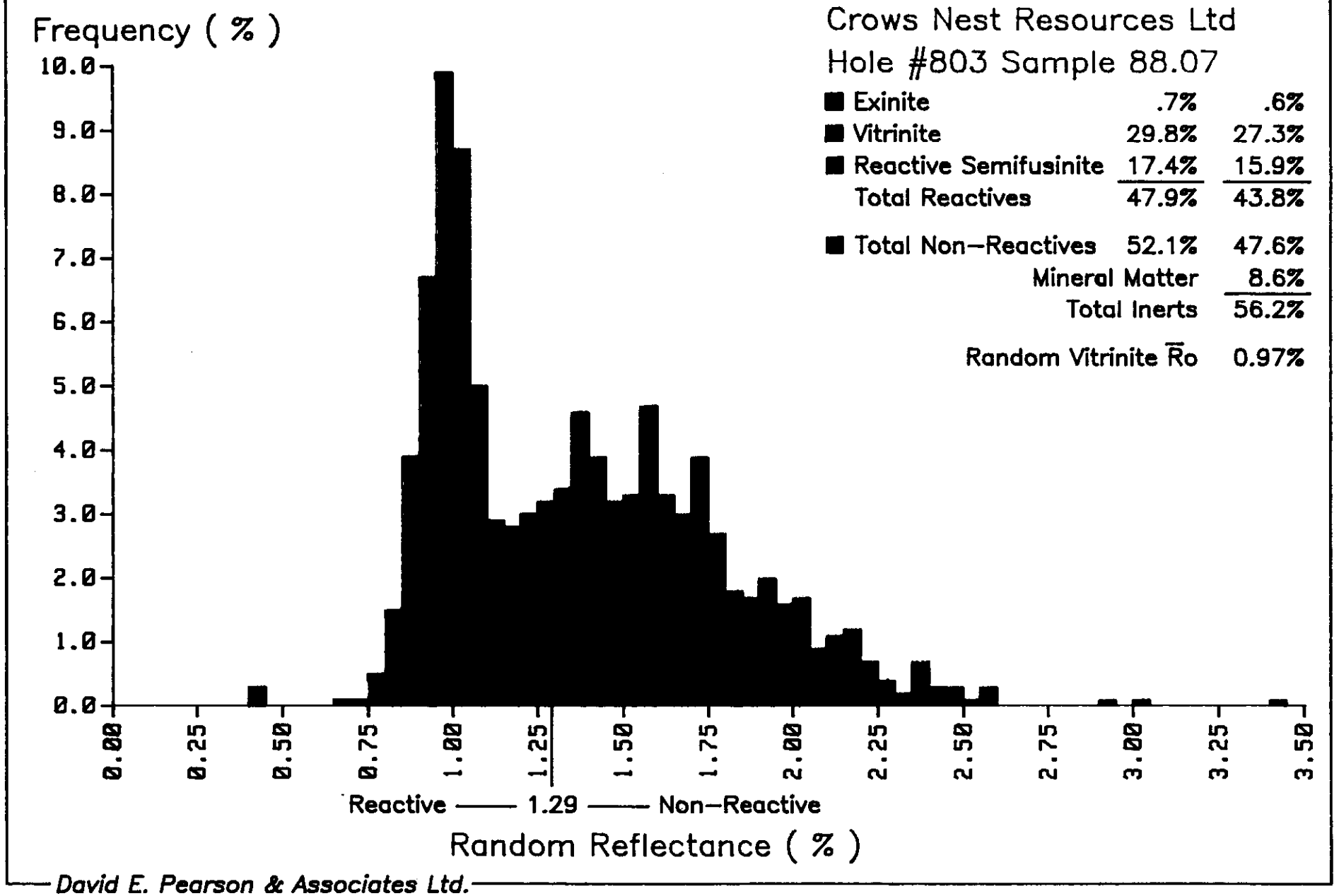
Vitrinite Type	Frequency (%)
V9	5.00
V10	69.00
V11	26.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

REFLECTOGRAM



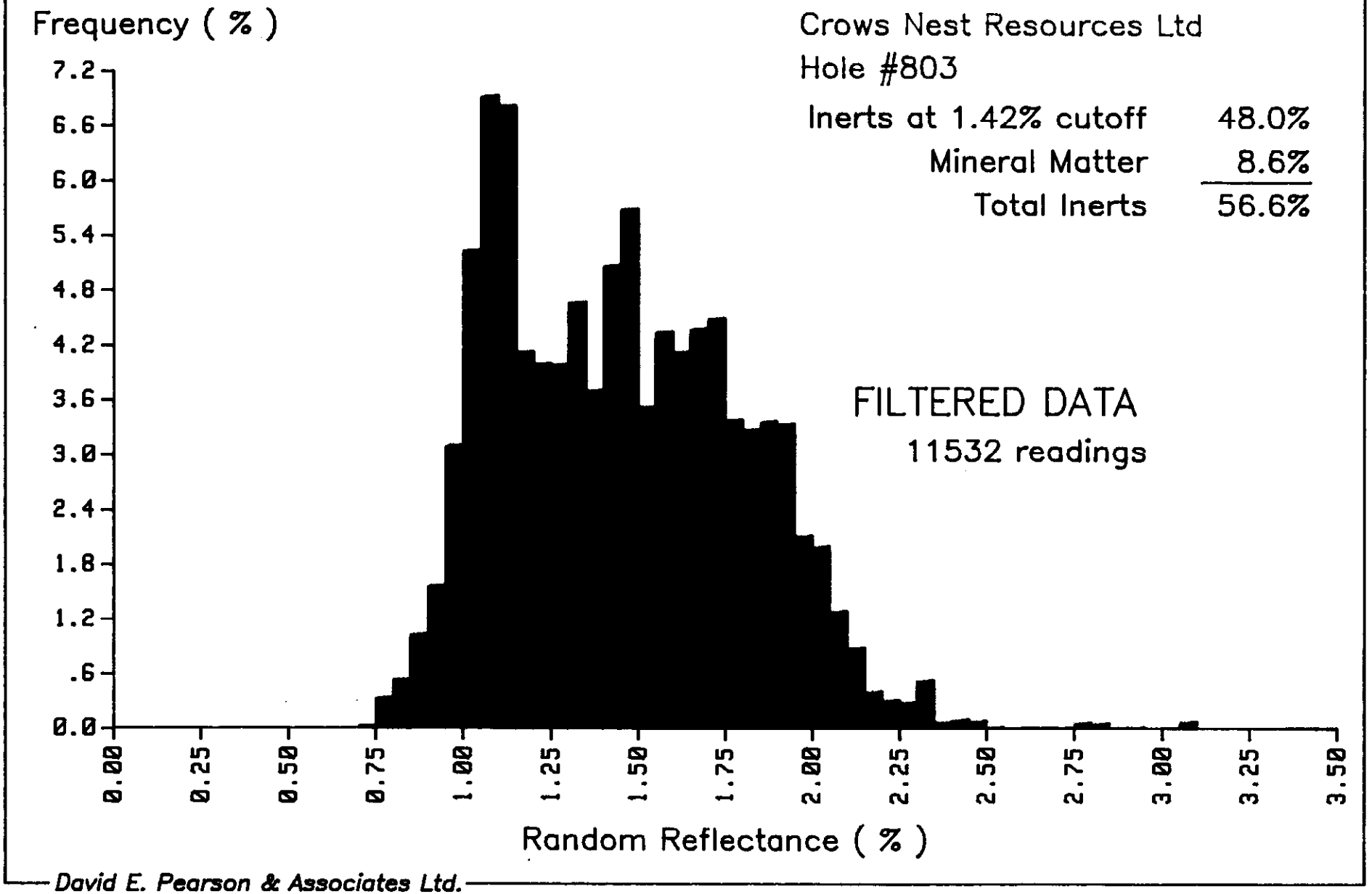
Crows Nest Resources Ltd

Hole #803 Sample 88.07

Exinite	.7%	.6%
Vitrinite	29.8%	27.3%
Reactive Semifusinite	17.4%	15.9%
Total Reactives	47.9%	43.8%
Total Non-Reactives	52.1%	47.6%
Mineral Matter		8.6%
Total Inerts		56.2%
Random Vitrinite $\bar{R}o$		0.97%

David E. Pearson & Associates Ltd.

DIGITAL SCANOGRAM



David E. Pearson & Associates Ltd.

Maceral Analysis

CROWS NEST RESOURCES LTD
Hole #803 Sample 88.07

Count #	1	2	3	4	5	6	7	8	9	10
Vitrinite	30	30	34	29	28	27	24	24	43	29
Exinite	1	2	0	1	0	1	0	1	1	0
Reactive Semifusinite	13	14	12	18	23	20	14	21	19	20
Total Reactives	44	46	46	48	51	48	38	46	63	49
Macrinite	9	7	1	7	7	4	6	7	8	8
Inert Semifusinite	40	35	46	36	35	37	49	37	27	40
Fusinite	5	10	1	6	6	9	5	2	1	2
Inertodetrinite	2	2	6	3	1	2	2	8	1	1
Total Non-Reactives	56	54	54	52	49	52	62	54	37	51

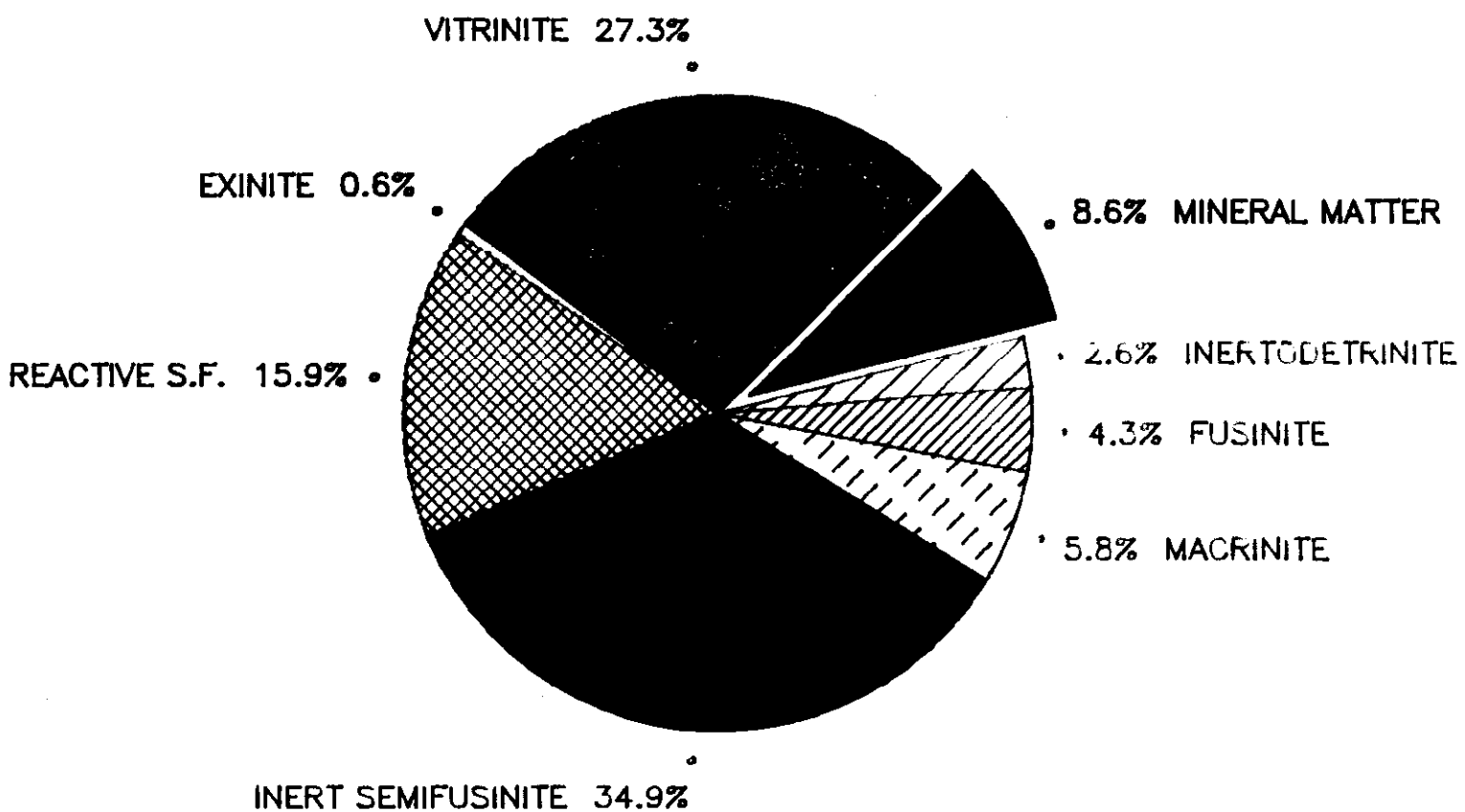
Basic Statistics	Mean	St.Deviation	Variance
Vitrinite	29.8	5.5	30.2
Exinite	.7	.7	.5
Reactive Semifusinite	17.4	3.8	14.7
Total Reactives	47.9	6.3	40.3
Macrinite	6.4	2.3	5.4
Inert Semifusinite	38.2	6.1	37.5
Fusinite	4.7	3.2	10.2
Inertodetrinite	2.8	2.3	5.5
Total Non-Reactives	52.1	6.3	40.3

Maceral Data Corrected For Mineral Matter Content

Vitrinite	27.3
Exinite	.6
Reactive Semifusinite	15.9
Total Reactives	43.8
Macrinite	5.8
Inert Semifusinite	34.9
Fusinite	4.3
Inertodetrinite	2.6
Total Non-Reactives	47.6
Mineral Matter	8.6
Total Inerts	56.2

MACERAL DISTRIBUTION

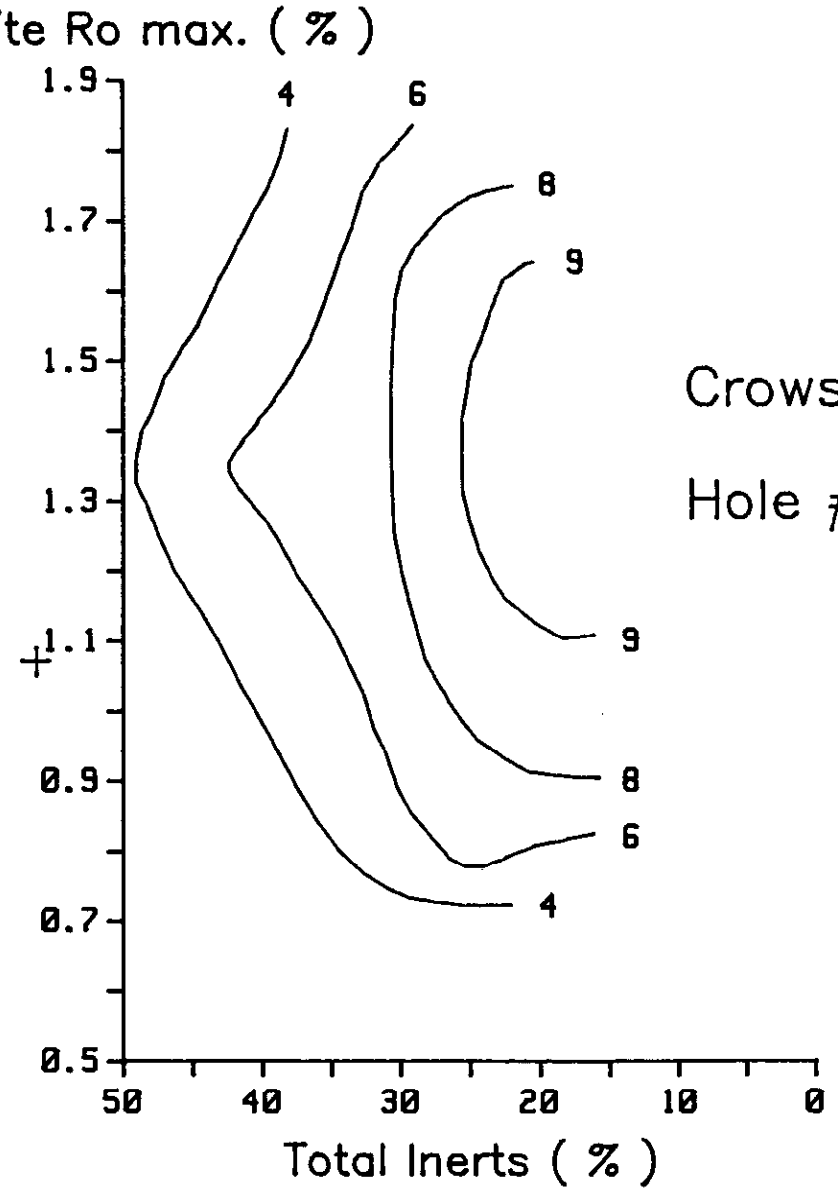
Semifusinite – Pearson Method



Crows Nest Resources Ltd
Hole #803 Sample 88.07

David E. Pearson & Associates Ltd.

PREDICTED F.S.I.



Crows Nest Resources Ltd

Hole #803 Sample 88.07

David E. Pearson & Associates Ltd.

Vitrinite Reflectance

CROWS NEST RESOURCES LTD
Hole #811 Sample 73

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	1.29
Standard Error of the Mean	0.00
Coefficient of Variation...%	3.79
Variance	.0024
Standard Deviation	.0489
Skewness	-.3610
Kurtosis	4.4634

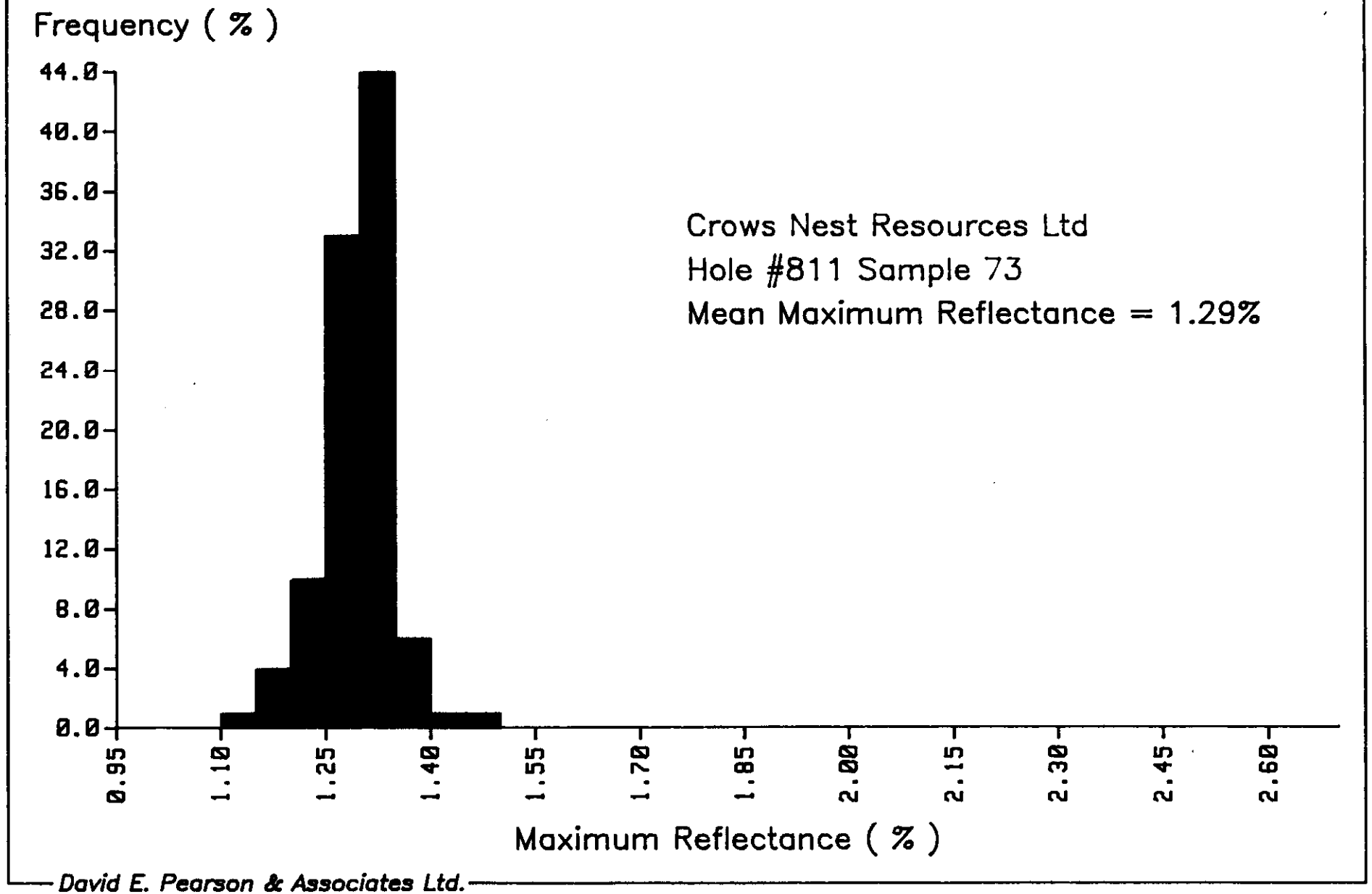
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
4	1.10	1	1.00
5	1.15	4	4.00
6	1.20	10	10.00
7	1.25	33	33.00
8	1.30	44	44.00
9	1.35	6	6.00
10	1.40	1	1.00
11	1.45	1	1.00

VITRINITE TYPE DISTRIBUTION

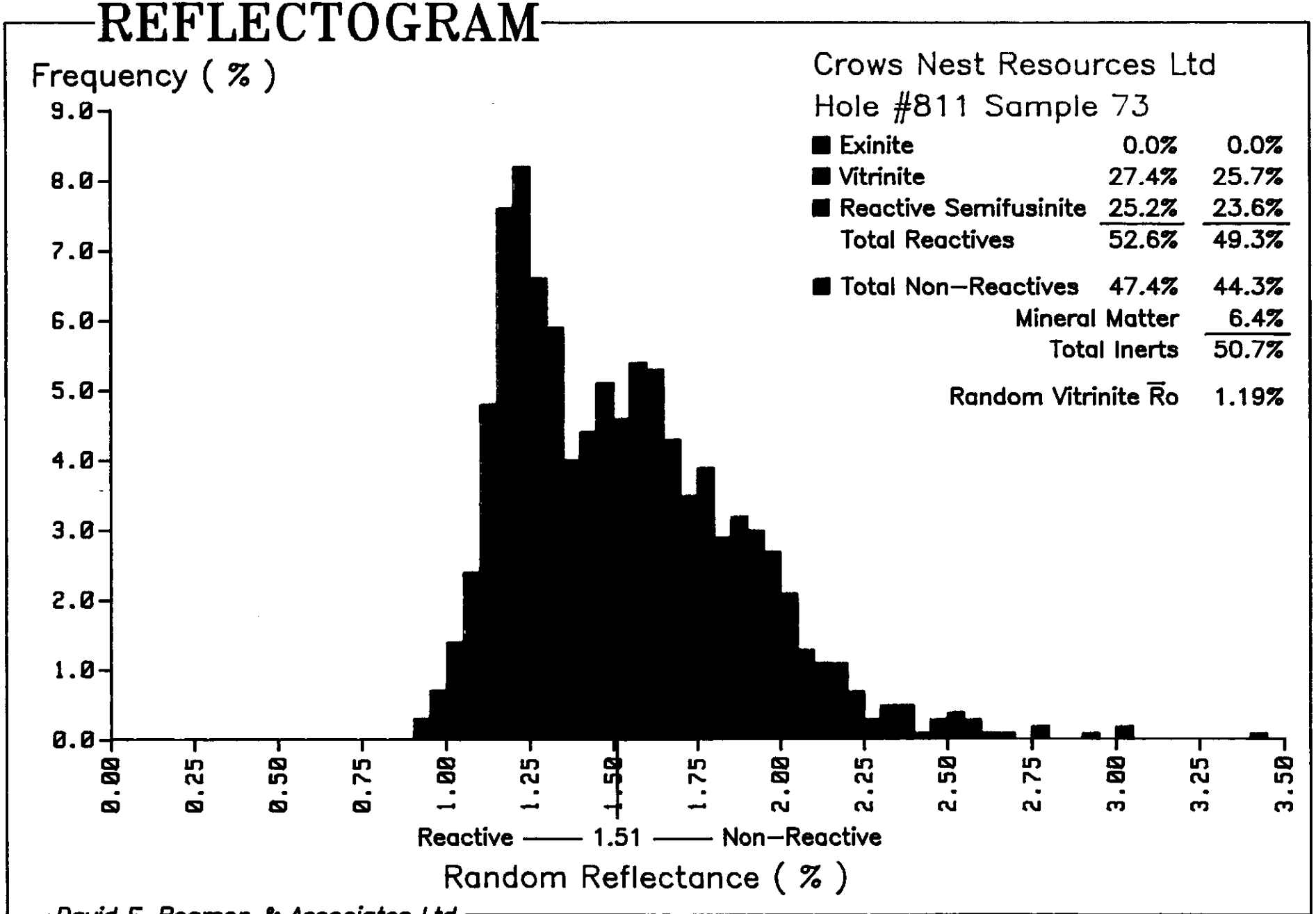
Vitrinite Type	Frequency (%)
V11	5.00
V12	43.00
V13	50.00
V14	2.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

REFLECTOGRAM



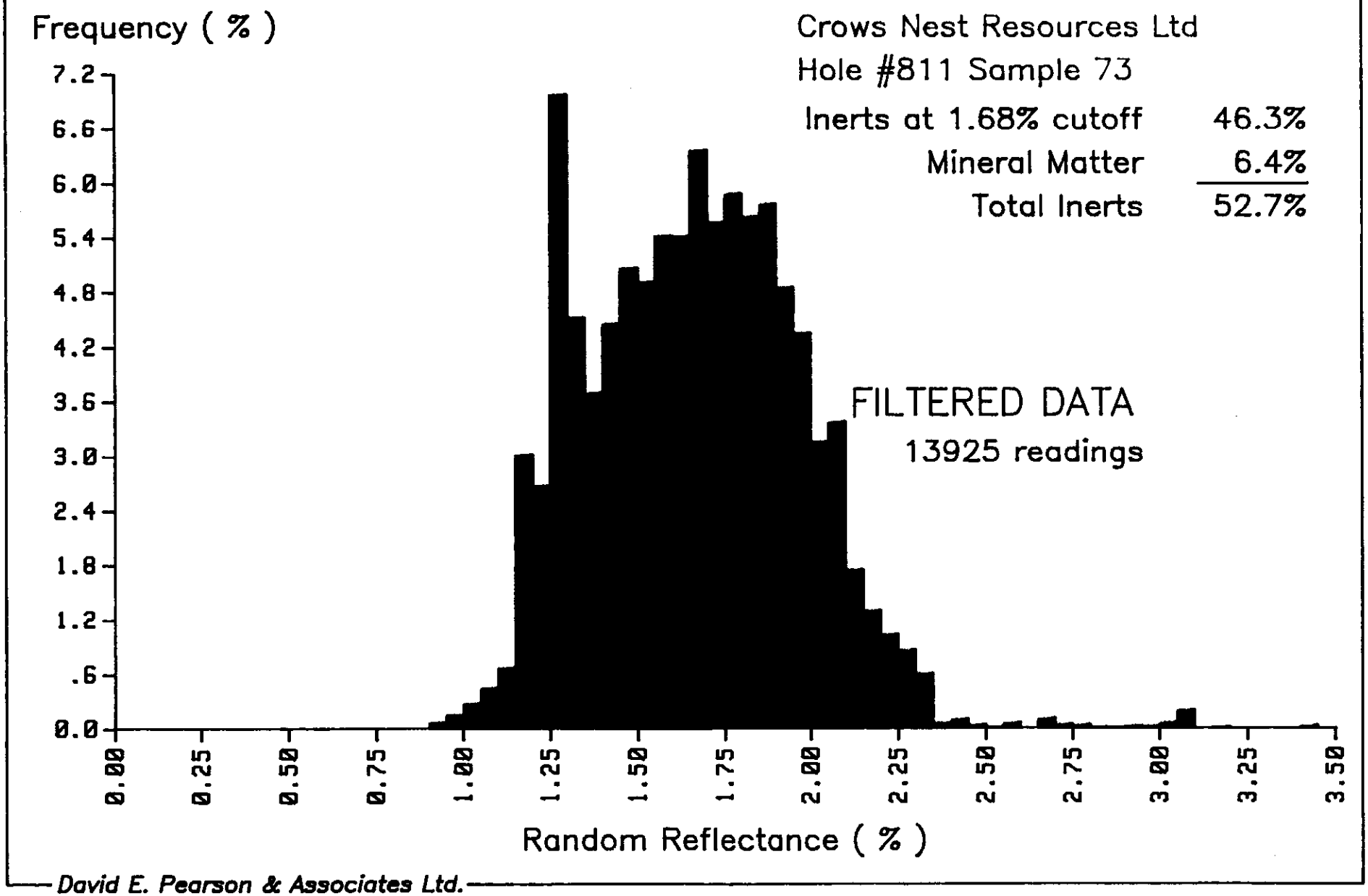
Crows Nest Resources Ltd

Hole #811 Sample 73

Exinite	0.0%	0.0%
Vitrinite	27.4%	25.7%
Reactive Semifusinite	25.2%	23.6%
Total Reactives	52.6%	49.3%
Total Non—Reactives	47.4%	44.3%
Mineral Matter		6.4%
Total Inerts		50.7%
Random Vitrinite $\bar{R}o$		1.19%

David E. Pearson & Associates Ltd.

DIGITAL SCANOGRAM



David E. Pearson & Associates Ltd.

Maceral Analysis

CROWS NEST RESOURCES LTD
Hole #811 Sample 73

Count #	1	2	3	4	5	6	7	8	9	10
Vitrinite	24	38	20	32	20	29	23	21	40	27
Reactive Semifusinite	20	18	25	26	28	28	28	27	22	30
Total Reactives	44	56	45	58	48	57	51	48	62	57
Macrinite	5	3	7	7	3	4	3	15	4	5
Inert Semifusinite	44	37	41	28	43	36	41	32	29	28
Fusinite	5	1	3	4	3	2	3	1	2	5
Inertodetrinite	2	3	4	3	3	1	2	4	3	5
Total Non-Reactives	56	44	55	42	52	43	49	52	38	43

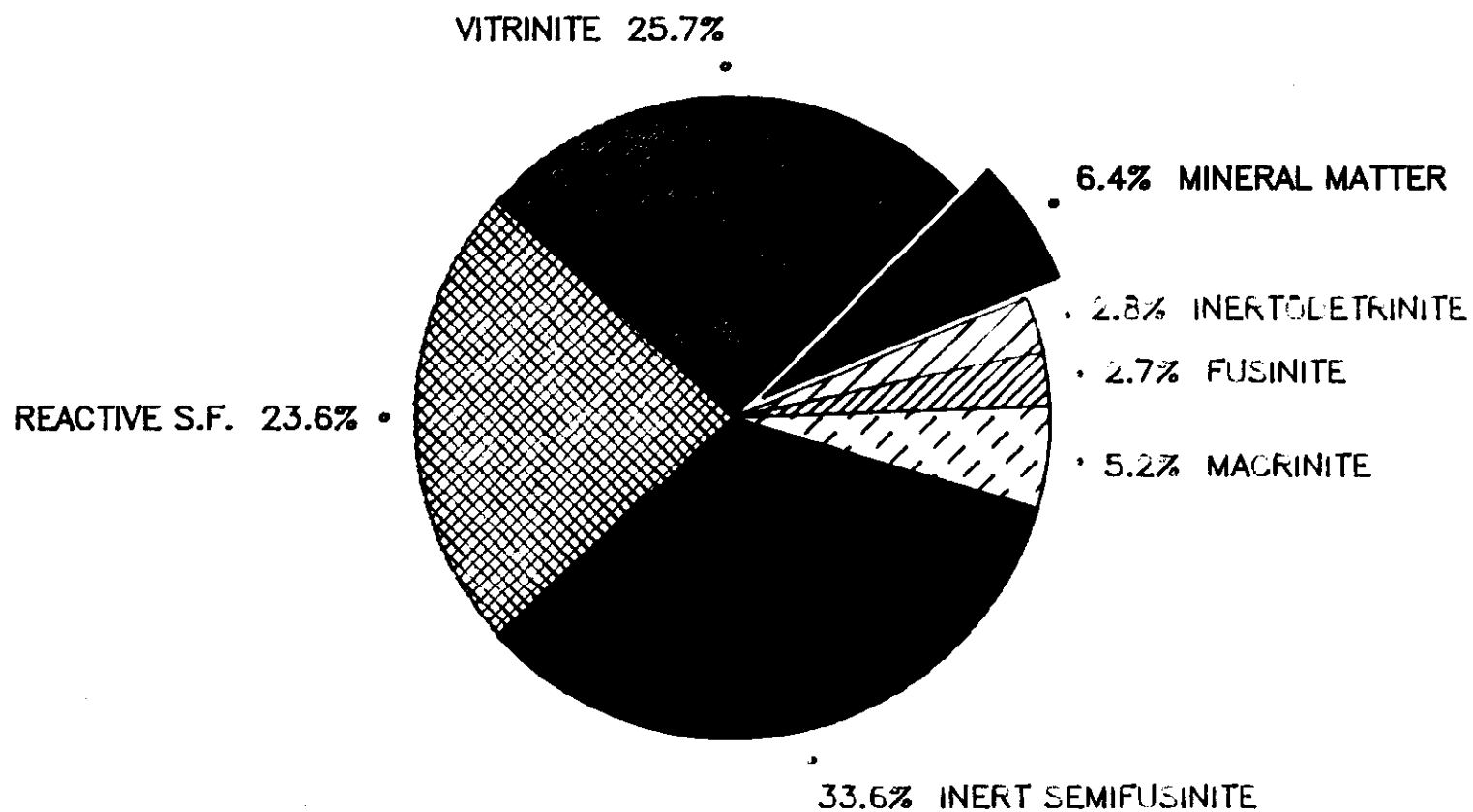
Basic Statistics	Mean	St.Deviation	Variance
Vitrinite	27.4	7.3	52.9
Reactive Semifusinite	25.2	3.9	15.5
Total Reactives	52.6	6.2	38.3
Macrinite	5.6	3.6	13.2
Inert Semifusinite	35.9	6.3	39.7
Fusinite	2.9	1.4	2.1
Inertodetrinite	3.0	1.1	1.3
Total Non-Reactives	47.4	6.2	38.3

Maceral Data Corrected For Mineral Matter Content

Vitrinite	25.7
Reactive Semifusinite	23.6
Total Reactives	49.3
Macrinite	5.2
Inert Semifusinite	33.6
Fusinite	2.7
Inertodetrinite	2.8
Total Non-Reactives	44.3
Mineral Matter	6.4
Total Inerts	50.7

MACERAL DISTRIBUTION

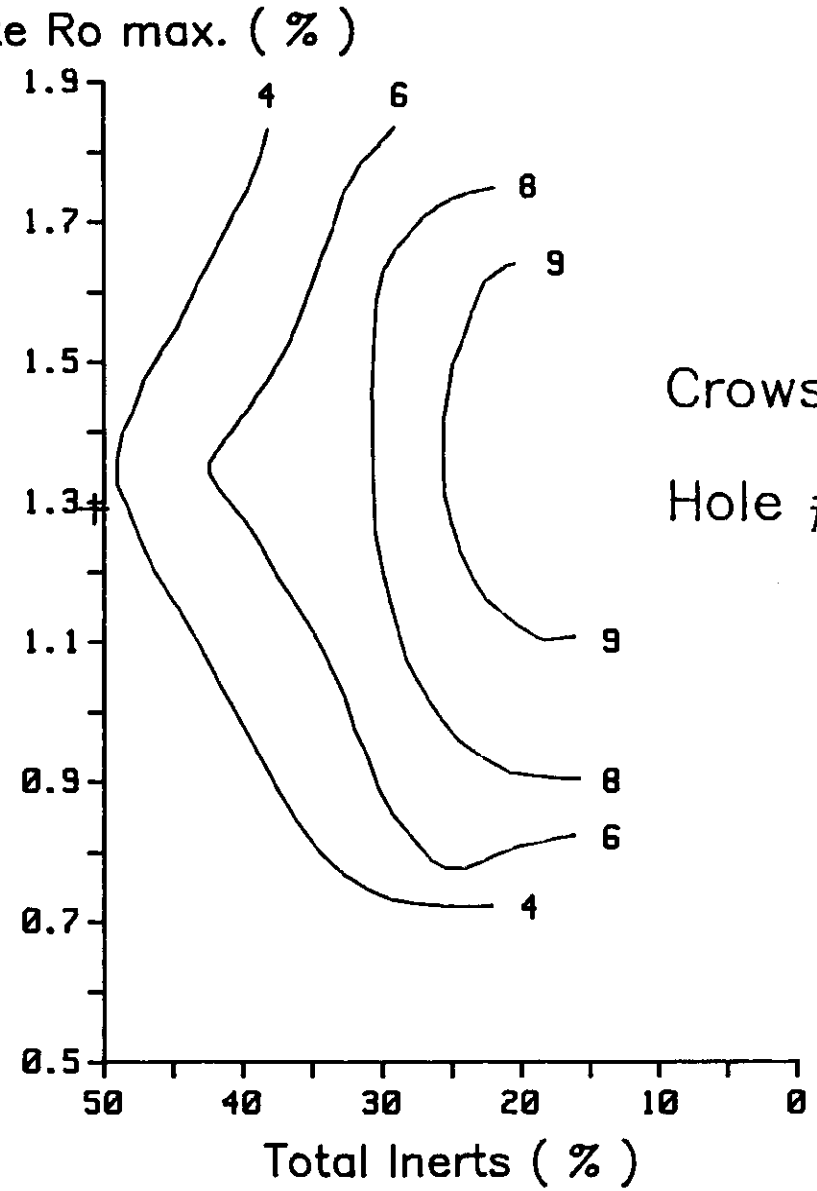
Semifusinite – Pearson Method



Crows Nest Resources Ltd
Hole #811 Sample 73

David E. Pearson & Associates Ltd.

PREDICTED F.S.I.



Crows Nest Resources Ltd

Hole #811 Sample 73

David E. Pearson & Associates Ltd.

Vitrinite Reflectance

CROWS NEST RESOURCES LTD
Hole #814 Sample 117

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	.88
Standard Error of the Mean	0.00
Coefficient of Variation...%	4.72
Variance	.0017
Standard Deviation	.0414
Skewness	.0922
Kurtosis	2.9415

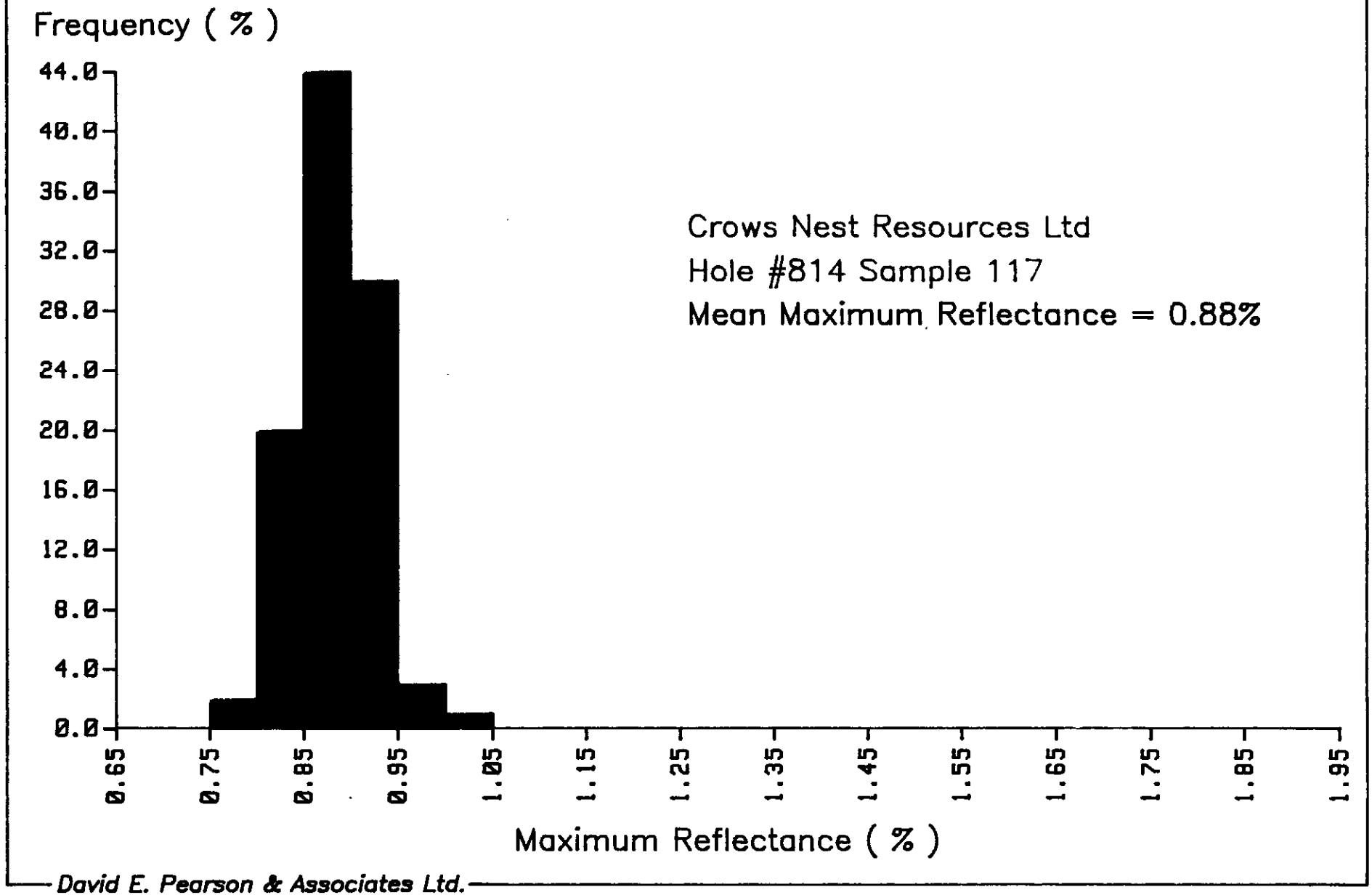
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
3	0.75	2	2.00
4	0.80	20	20.00
5	0.85	44	44.00
6	0.90	30	30.00
7	0.95	3	3.00
8	1.00	1	1.00

VITRINITE TYPE DISTRIBUTION

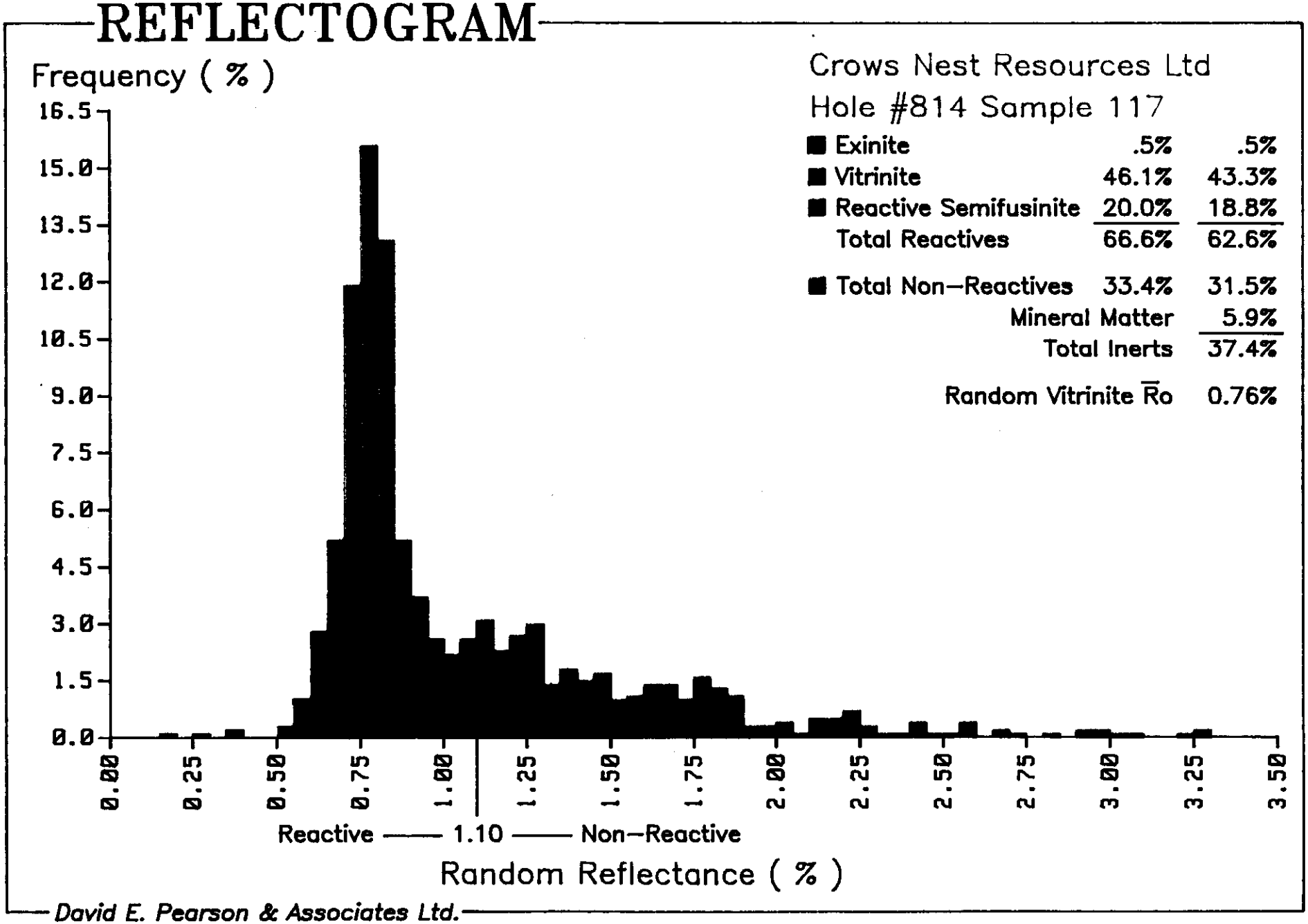
Vitrinite Type	Frequency (%)
V7	2.00
V8	64.00
V9	33.00
V10	1.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

REFLECTOGRAM



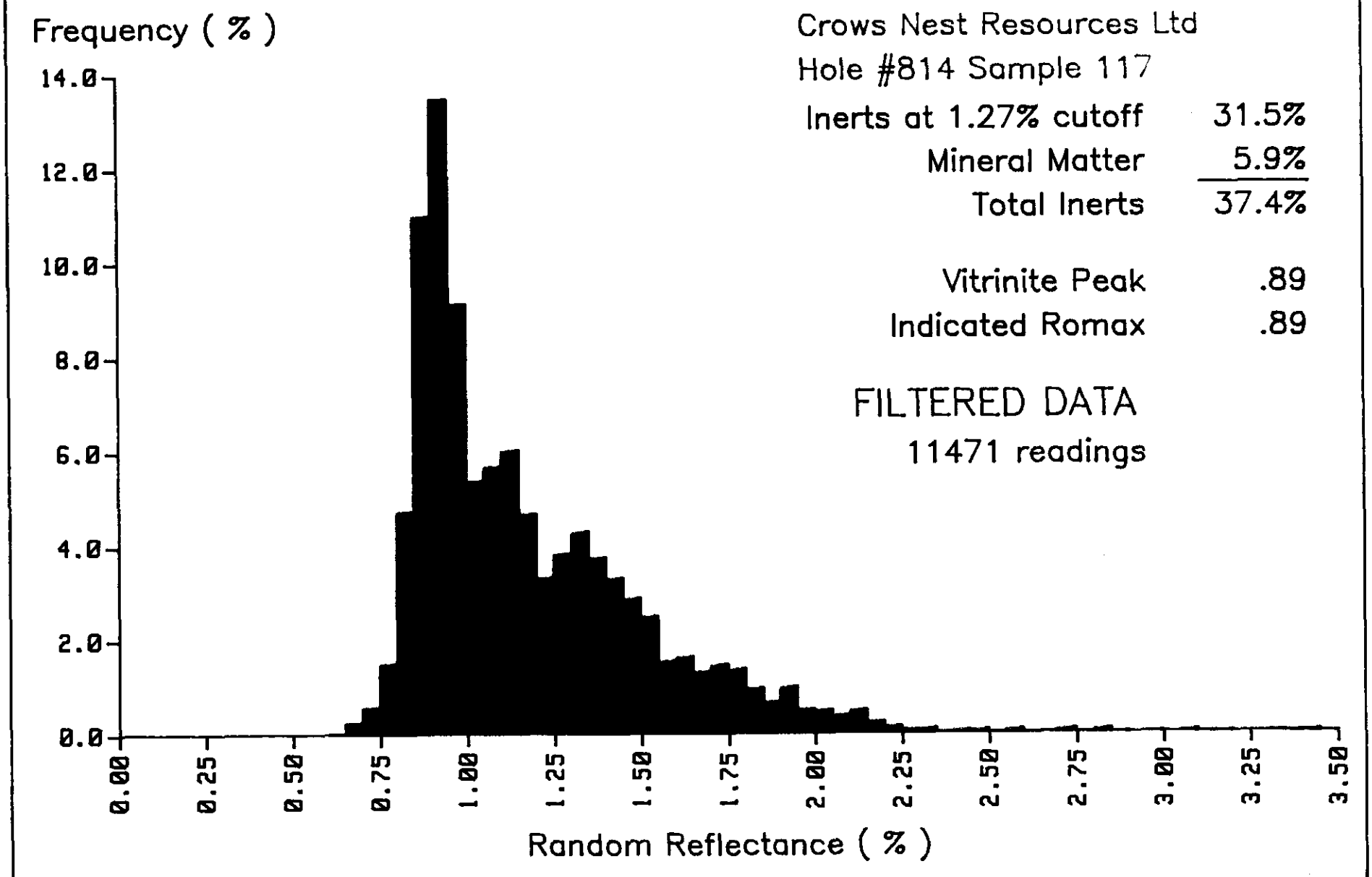
Crows Nest Resources Ltd

Hole #814 Sample 117

Exinite	.5%	.5%
Vitrinite	46.1%	43.3%
Reactive Semifusinite	20.0%	18.8%
Total Reactives	66.6%	62.6%
Total Non—Reactives	33.4%	31.5%
Mineral Matter		5.9%
Total Inerts		37.4%
Random Vitrinite $\overline{Ro}$		0.76%

David E. Pearson & Associates Ltd.

DIGITAL SCANOGRAM



Crows Nest Resources Ltd
Hole #814 Sample 117

Inerts at 1.27% cutoff	31.5%
Mineral Matter	5.9%
Total Inerts	37.4%
Vitrinite Peak	.89
Indicated Romax	.89

FILTERED DATA
11471 readings

David E. Pearson & Associates Ltd.

Maceral Analysis

CROWS NEST RESOURCES LTD
Hole #814 Sample 117

Count #	1	2	3	4	5	6	7	8	9	10
Vitrinite	56	55	34	50	39	52	44	58	43	30
Exinite	0	0	0	0	2	1	0	0	0	2
Reactive Semifusinite	21	23	21	20	21	18	18	13	14	31
Total Reactives	77	78	55	70	62	71	62	71	57	63
Macrinite	3	2	10	1	5	2	0	2	7	7
Inert Semifusinite	15	13	24	21	22	19	27	14	25	26
Fusinite	2	3	6	3	5	1	3	6	2	1
Inertodetrinite	3	4	5	5	6	7	8	7	9	3
Total Non-Reactives	23	22	45	30	38	29	38	29	43	37

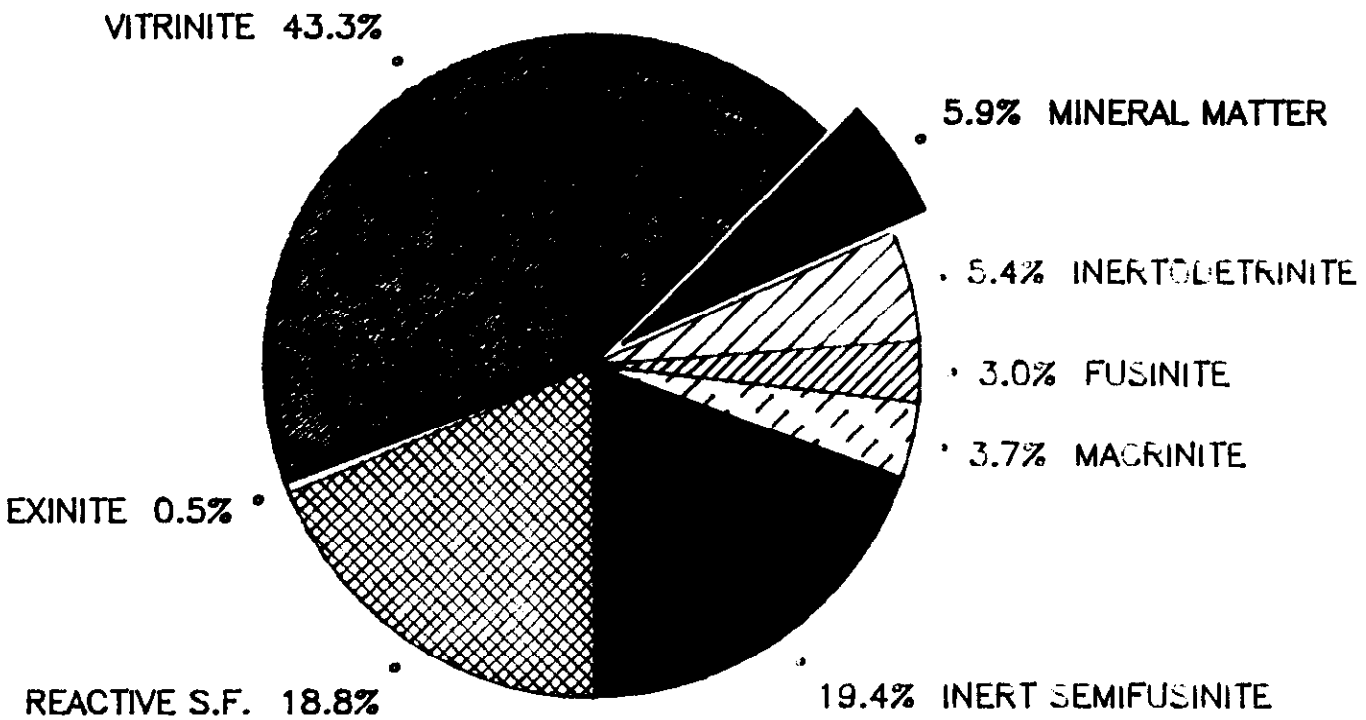
Basic Statistics	Mean	St.Deviation	Variance
Vitrinite	46.1	9.7	93.2
Exinite	.5	.8	.7
Reactive Semifusinite	20.0	5.0	25.1
Total Reactives	66.6	8.0	63.4
Macrinite	3.9	3.2	10.3
Inert Semifusinite	20.6	5.1	26.5
Fusinite	3.2	1.9	3.5
Inertodetrinite	5.7	2.0	4.2
Total Non-Reactives	33.4	8.0	63.4

Maceral Data Corrected For Mineral Matter Content

Vitrinite	43.3
Exinite	.5
Reactive Semifusinite	18.8
Total Reactives	62.6
Macrinite	3.7
Inert Semifusinite	19.4
Fusinite	3.0
Inertodetrinite	5.4
Total Non-Reactives	31.5
Mineral Matter	5.9
Total Inerts	37.4

MACERAL DISTRIBUTION

Semifusinite – Pearson Method



Crows Nest Resources Ltd
Hole #814 Sample 117

David E. Pearson & Associates Ltd.

Coke Stability Calculation

CROWS NEST RESOURCES LTD
Hole #814 Sample 117

Coke Stability Index Calculation

Total Inerts = 37.4 %

(100 - TI) / 100 = 0.63

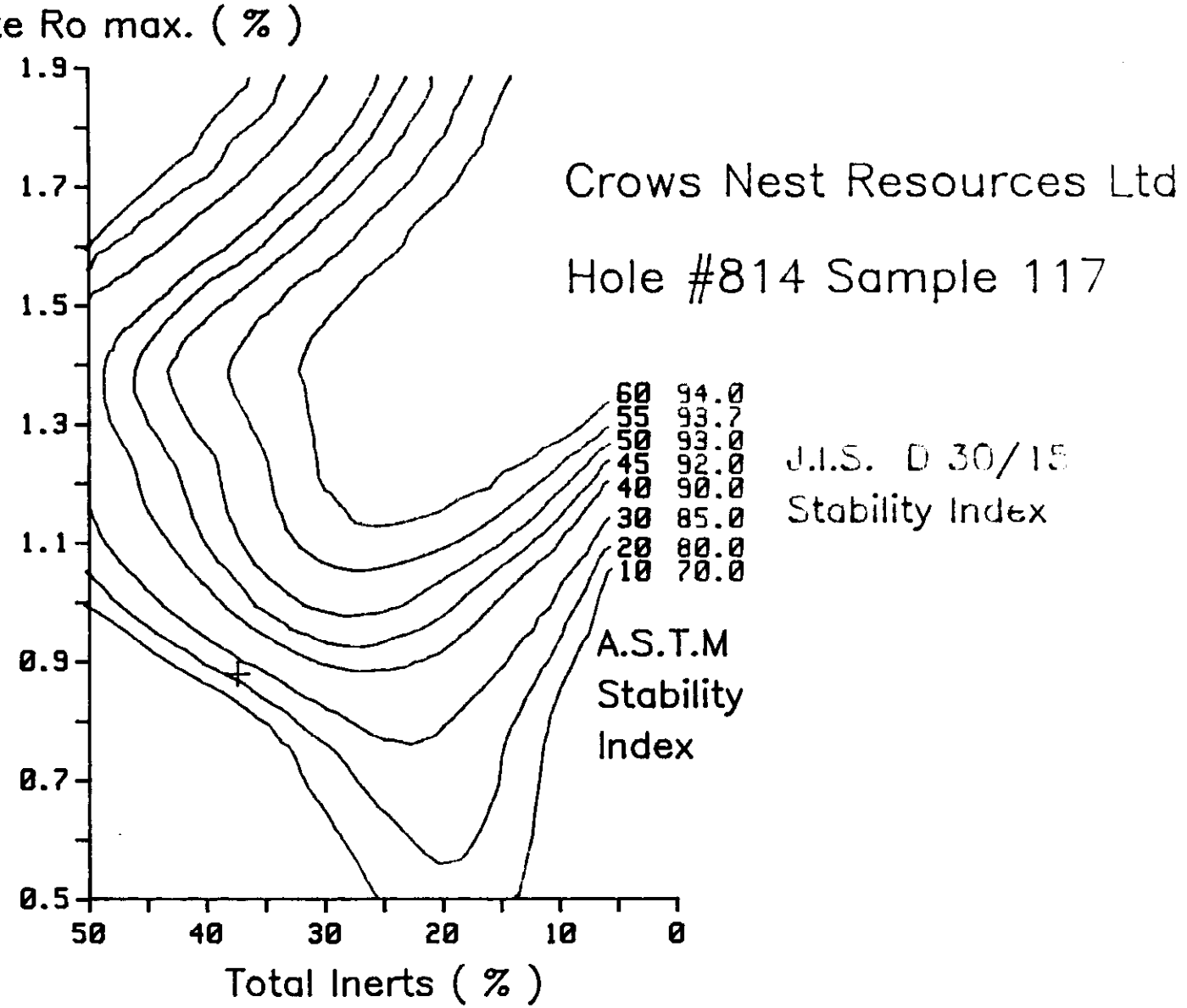
Vitrinite Types	%	Prorated Reactives	Optimum Ratio	PR/OR	Strength Factors	PRxSF
V-4	0	0.0	4.3	0.0	1.53	0.0
V-5	0	0.0	3.8	0.0	1.71	0.0
V-6	0	0.0	3.5	0.0	1.91	0.0
V-7	2	1.3	3.1	0.4	2.14	2.7
V-8	64	40.1	2.8	14.3	2.55	102.2
V-9	33	20.7	2.6	7.9	3.53	72.9
V-10	1	0.6	2.4	0.3	3.71	2.3
V-11	0	0.0	2.7	0.0	4.30	0.0
V-12	0	0.0	3.2	0.0	4.54	0.0
V-13	0	0.0	4.0	0.0	5.68	0.0
V-14	0	0.0	5.2	0.0	6.68	0.0
V-15	0	0.0	7.0	0.0	6.82	0.0
V-16	0	0.0	9.5	0.0	6.97	0.0
V-17	0	0.0	12.3	0.0	7.13	0.0
V-18	0	0.0	14.8	0.0	7.27	0.0
V-19	0	0.0	17.1	0.0	7.44	0.0
V-20	0	0.0	19.3	0.0	5.41	0.0

Optimum Inert Index = 22.9
Optimum Strength Index = 180.1

Composition Balance Index = 1.63
Strength Index = 2.88

A.S.T.M. Stability Index = 22
J.I.S. D 30/15 = 80.5

PREDICTED COKE STRENGTH



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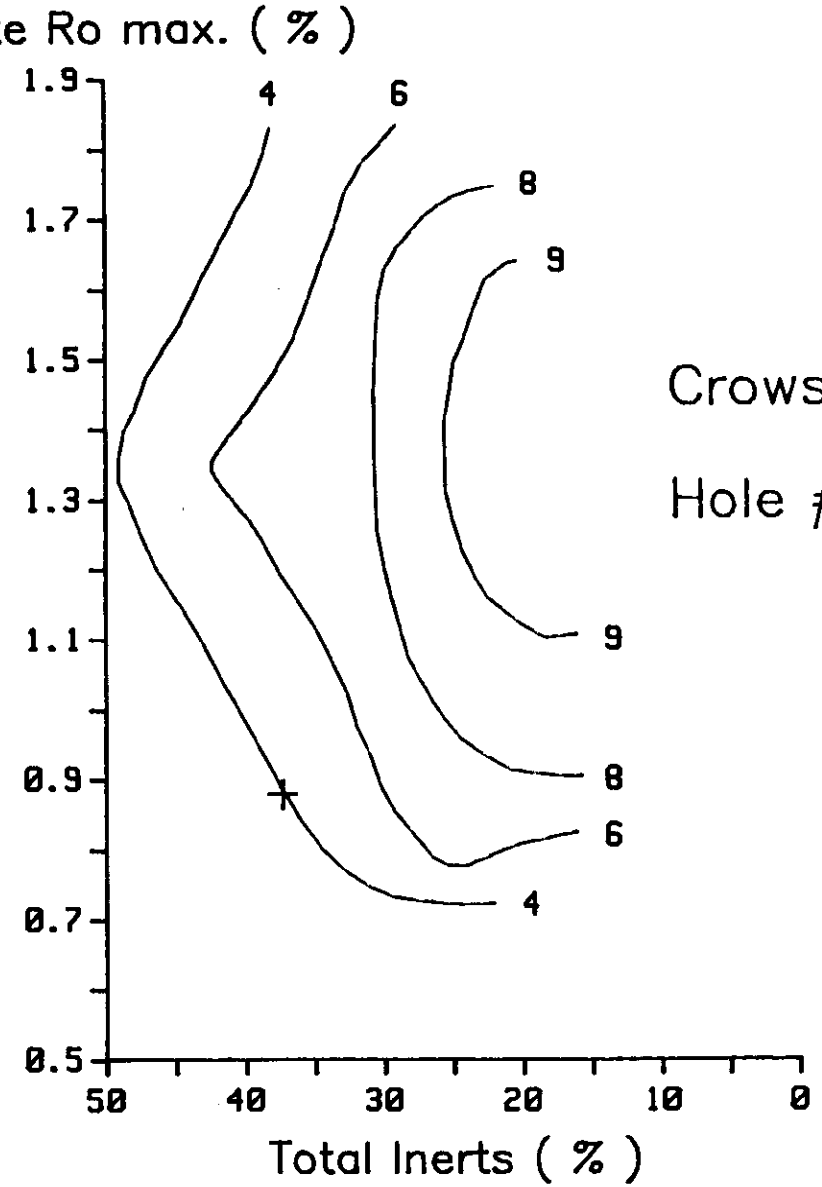
PREDICTED F.S.I.



Crows Nest Resources Ltd

Hole #814 Sample 117

David E. Pearson & Associates Ltd.

Vitrinite Reflectance

CROWS NEST RESOURCES LTD
Hole #814 Sample 121

BASIC STATISTICS

Total Number of Observations.....	100
Mean Maximum Reflectance (Romax)...%	.89
Standard Error of the Mean.....	.01
Coefficient of Variation.....%	6.02
Variance.....	.0028
Standard Deviation.....	.0533
Skewness.....	.0641
Kurtosis.....	3.7456

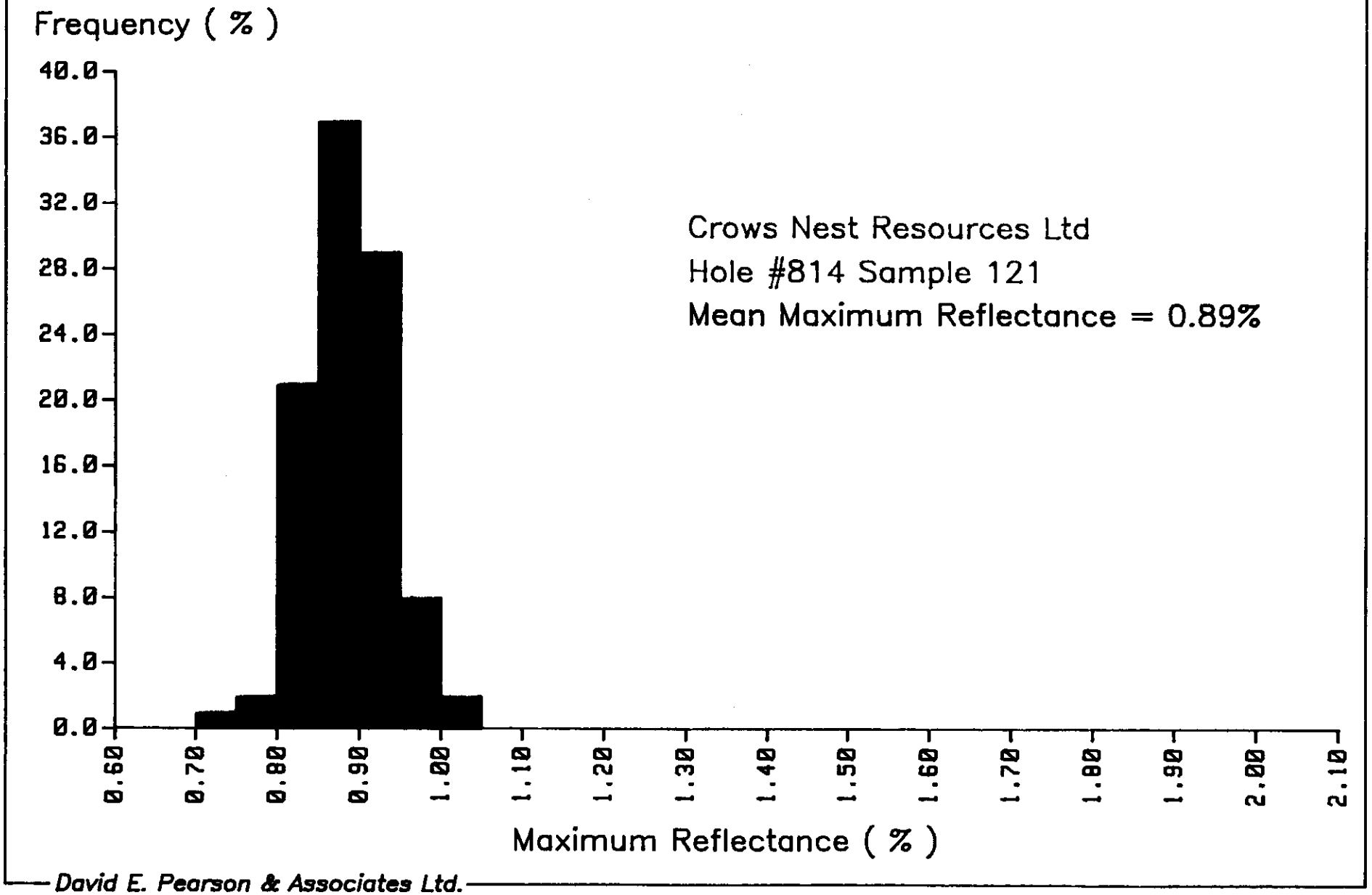
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
3	0.70	1	1.00
4	0.75	2	2.00
5	0.80	21	21.00
6	0.85	37	37.00
7	0.90	29	29.00
8	0.95	8	8.00
9	1.00	2	2.00

VITRINITE TYPE DISTRIBUTION

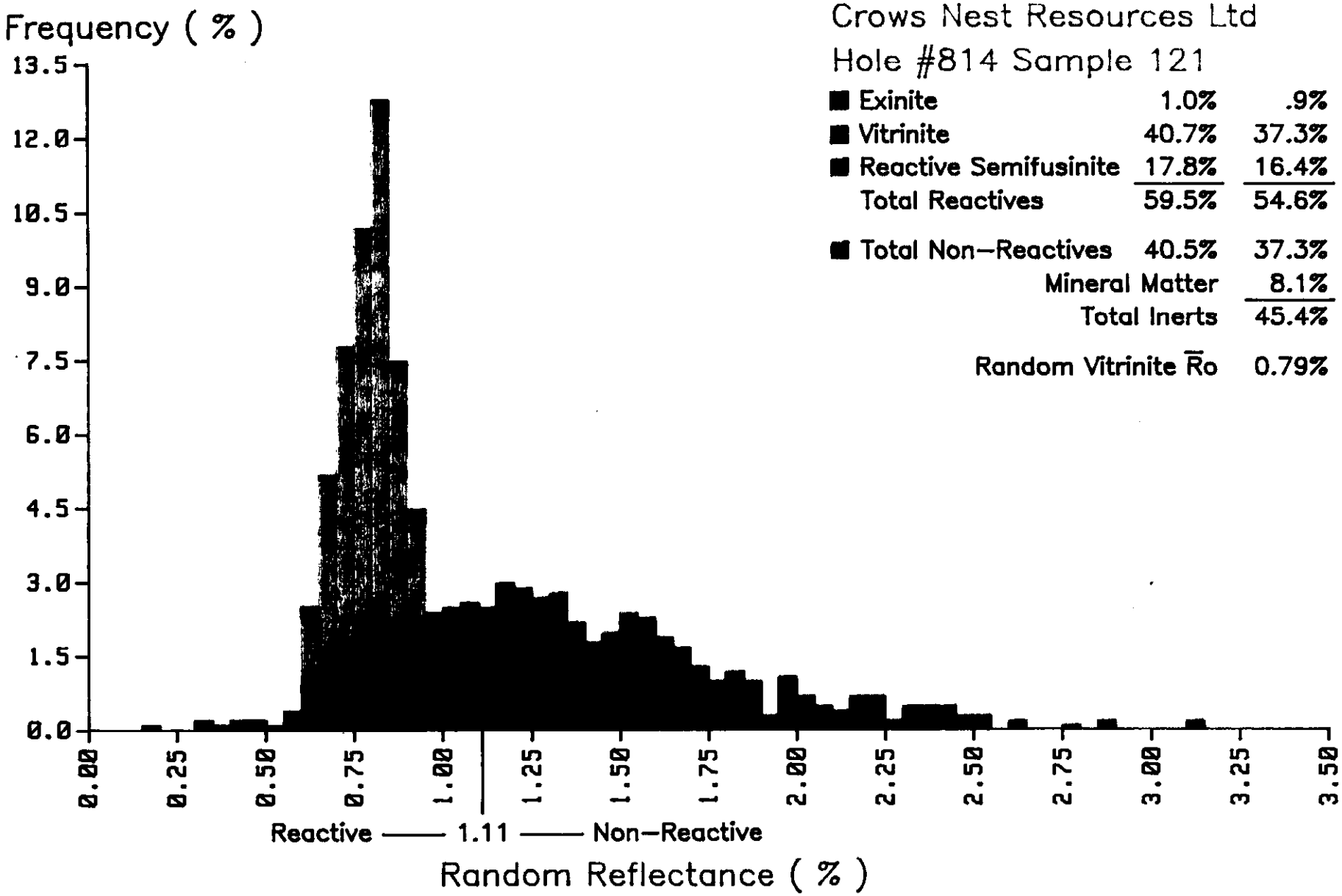
Vitrinite Type	Frequency (%)
V7	3.00
V8	58.00
V9	37.00
V10	2.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

REFLECTOGRAM



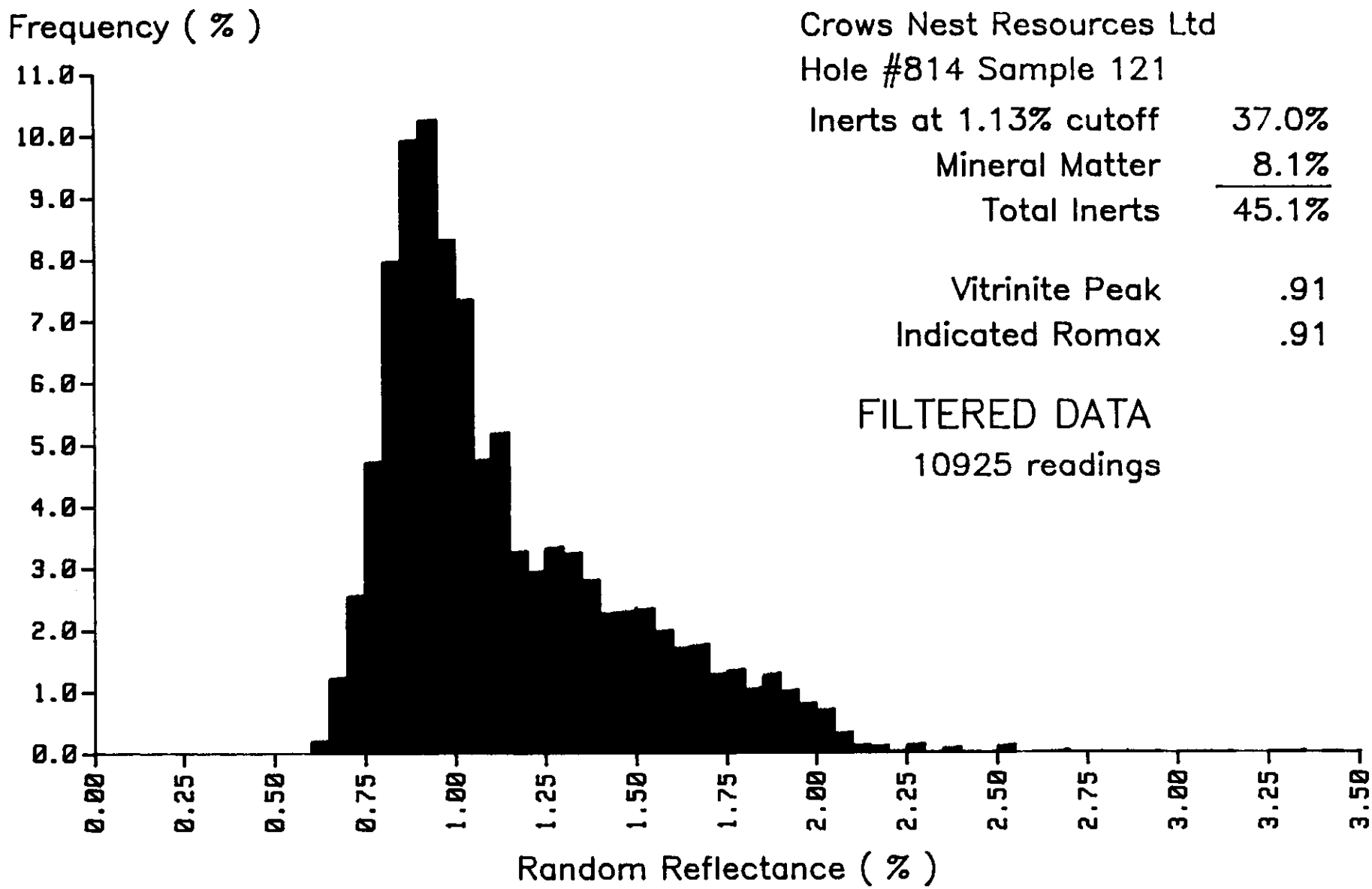
Crows Nest Resources Ltd

Hole #814 Sample 121

Exinite	1.0%	.9%
Vitrinite	40.7%	37.3%
Reactive Semifusinite	17.8%	16.4%
Total Reactives	59.5%	54.6%
Total Non—Reactives	40.5%	37.3%
Mineral Matter		8.1%
Total Inerts		45.4%
Random Vitrinite $\bar{R}o$		0.79%

David E. Pearson & Associates Ltd.

DIGITAL SCANOGRAM



Crows Nest Resources Ltd
Hole #814 Sample 121

Inerts at 1.13% cutoff	37.0%
Mineral Matter	8.1%
Total Inerts	45.1%
Vitrinite Peak	.91
Indicated Romax	.91

FILTERED DATA
10925 readings

David E. Pearson & Associates Ltd.

Maceral Analysis

CROWS NEST RESOURCES LTD
Hole #814 Sample 121

Count #	1	2	3	4	5	6	7	8	9	10
Vitrinite	52	40	33	35	42	47	44	38	39	37
Exinite	2	0	1	1	2	0	0	2	1	1
Reactive Semifusinite	16	19	20	16	24	21	12	16	16	18
Total Reactives	70	59	54	52	68	68	56	56	56	56
Macrinite	2	4	4	10	3	3	8	10	4	5
Inert Semifusinite	21	30	33	29	26	23	28	26	30	31
Fusinite	2	0	5	6	0	4	3	3	7	5
Inertodetrinite	5	7	4	3	3	2	5	5	3	3
Total Non-Reactives	30	41	46	48	32	32	44	44	44	44

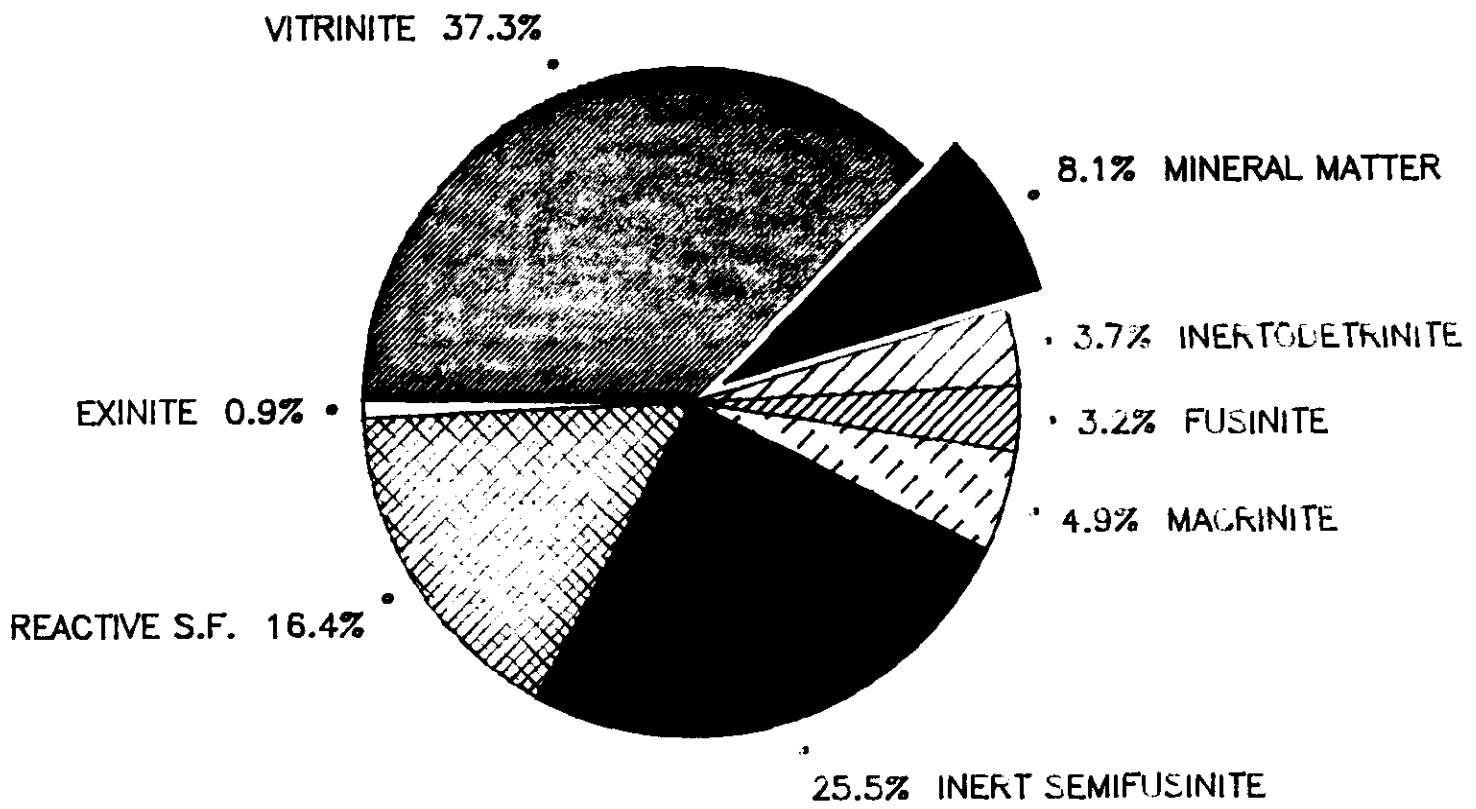
Basic Statistics	Mean	St.Deviation	Variance
Vitrinite	40.7	5.7	32.9
Exinite	1.0	.8	.7
Reactive Semifusinite	17.8	3.4	11.3
Total Reactives	59.5	6.6	43.4
Macrinite	5.3	2.9	8.7
Inert Semifusinite	27.7	3.7	13.8
Fusinite	3.5	2.4	5.6
Inertodetrinite	4.0	1.5	2.2
Total Non-Reactives	40.5	6.6	43.4

Maceral Data Corrected For Mineral Matter Content

Vitrinite	37.3
Exinite	.9
Reactive Semifusinite	16.4
Total Reactives	54.6
Macrinite	4.9
Inert Semifusinite	25.5
Fusinite	3.2
Inertodetrinite	3.7
Total Non-Reactives	37.3
Mineral Matter	8.1
Total Inerts	45.4

MACERAL DISTRIBUTION

Semifusinite – Pearson Method



Crows Nest Resources Ltd
Hole #814 Sample 121

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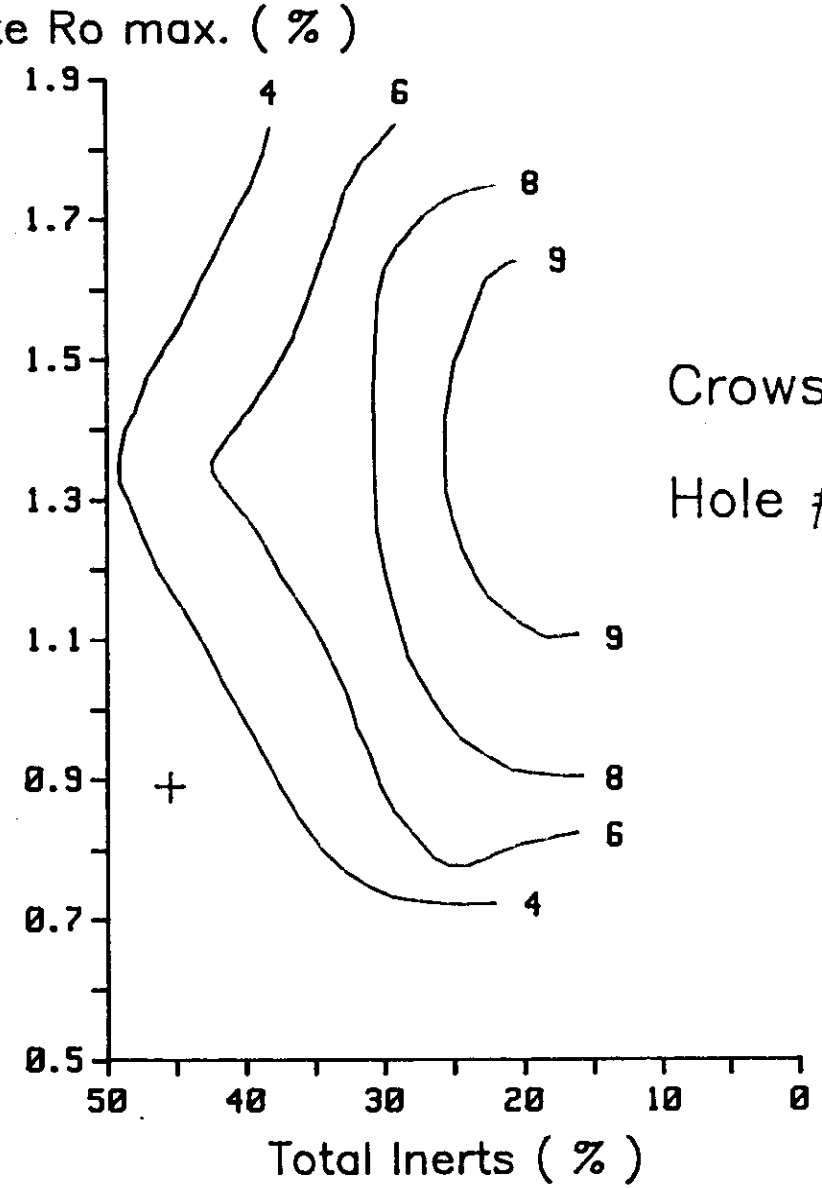
PREDICTED F.S.I.



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Hole #814 Sample 121

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