TELKWA

Project 85

Volume 1

00712

part 1

CONFIDENTIAL

Crows Nest Resources LIMITED
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February 13, 1986

Ministry of Energy, Mines & Petroleum Resources
525 Superior Street
Victoria, B.C.
V8V 1T7

Dear Sirs:

Enclosed please find our report on the Telkwa Project.

This report has been prepared by Mr. S. Cameron and Mr. B. McKinstry, both of whom are employed by Crows Nest Resources Limited as geologists.

Mr. S. Cameron, B.Sc., in Geology graduated from the University of Calgary in 1981. Prior to graduation, Mr. Cameron worked as an assistant for a major exploration company in the North West Territories. He also worked for Crows Nest Resources Limited as a geological assistant in 1980. Mr. Cameron has been employed by Crows Nest Resources Limited as a Geologist since May 1981.

Mr. B. McKinstry, M.Sc., graduated in Geology from Carleton University, Ottawa in 1971. Prior to graduation, Mr. McKinstry worked as an assistant for a major mining firm and after graduation as a geologist with a mining firm, a research assistant at Carleton University and as a geologist with a consulting firm. Mr. McKinstry has been employed by Crows Nest Resources Limited as a Staff Geologist, since 1981.

Their work was carried out under the supervision of our Manager, Geology, Dr. Barry Ryan.

I consider the aforementioned geologists to be well qualified to undertake the responsibilities they were assigned on this project. I am satisfied that the attached report has been competently prepared and justly represents the information obtained from this project.

Yours very truly

H.G. Rushton
Vice President - Development

Enclosure

C8/cu.1

TELKWA PROJECT

GEOLOGICAL ASSESSMENT REPORT

NTS Map Sheet	93L/11	
Lat./Long.	54°35'/127°8'	
Land District	Coast Range 5	
Coal Licences	Group 368	4272✓ 4283✓ 4276 - 4281✓ 5305 - 5307✓ 7695✓ 7696✓ 6040✓ 4274✓
Licences held by:	Shell Canada Limited	
Operated by:	Crows Nest Resources Limited	
Exploration Period:	November 1, 1985 - November 30, 1985	
Report Date:	January 1986	
Project Members:	Steve Cameron - Geologist Brian McKinstry - Staff Geologist	

received March 24, 1986.

C8/cs.1

TELKWA PROJECT

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1.0 SUMMARY

The Telkwa North area is contained within ~~14~~ 15 coal licences (Group 368) and two freehold lots covering 3,626 hectares. Shell Canada Limited holds the licences with the freehold lots being under option agreements.

The Telkwa North licences are in close proximity to the Canadian National Railway and are 360km 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 volatile bituminous coal amenable to thermal use.

In 1985, an autumn drilling program was commissioned to further delineate the mineable coal resources north of the Telkwa River. This included the construction of access roads and four HQ diamond drill holes.

The total field expenditure for the 1985 program was $106,015.43.

2.0 INTRODUCTION

2.1 Location and Access

Enclosure 1 - 1: Index Map
Enclosure 1 - 2: Access Map

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. 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.

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	3785 - 3877, 4260 - 4262, 4264, 4265 3882, 3883, 3709, 3885, 4267, 4282, 5839
368	4276 - 4281, 5305 - 5307, 7695, 7696 4272, 4274, 4283, 6040

All Licences within group 368 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)~~.

Enclosure 1 - 6 of this report contains a "Coal Land Disposition Map".

3.0 REGIONAL GEOLOGY

Mesozoic successor basins developed in the Intermontane Belt between the Columbian and Pacific Orogens in the B.C. Cordillera. These deeply subsiding troughs usually had 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 was deposited on the folded and faulted terrane of the Bowser Lake Group and older groups such as the Hazelton. 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 Cretaceous 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]

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.

[1]Tipper H.W. and Richards T.A., Jurassic Stratigraphy and History of North Central British Columbia, 1976, page 7.

4.0 TELKWA GEOLOGY

4.1 Stratigraphy

Encl. 2 - 10 Typical Stratigraphic Sections

The rocks of the Telkwa coal field consist of interbedded marine and non-marine sedimentary and volcanic strata of the Skeena Group. The sediments include a predominance of mudstone and siltstone with minor sandstone and shale, a basal conglomerate and coal. Volcanics are grey to green basaltic to rhyolitic breccias, tuffs and flows. The Hazelton volcanics are usually weathered to a deep reddish-purple at their contact with the overlying Skeena sediments. Porphyritic Tertiary intrusive rocks in the form of dykes and sills have been found over the property. A large rhyolite plug has intruded the Skeena sediments north of the Telkwa River. In the Telkwa area recent 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 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 varies in thickness over the Telkwa area but probably does not exceed 500 metres. Laterally, individual beds often pinch out over short distances.

The Skeena section has been informally subdivided 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 regression/transgression cycles.

The third stratigraphic unit contains up to 10 coal seams interbedded with sandstones and shales. 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 sandstones with rare occurrences of thin coal seams. Palynological data suggest an upland depositional environment in a fluvial regime. In general, 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".

4.2 Coal Stratigraphy

At least 14 individual coal seams exist at Telkwa.

The #1 zone is in unit one of the stratigraphic section. The rest of the mineable coal seams are contained within unit three.

Individual coal seams can be correlated across the Goathorn Creek area. However, while the coal zones within unit 3 can be correlated to the Telkwa North area, individual seam correlation is tenuous. A distinct marker horizon occurs beneath seam 2 on the gamma ray logs. This geophysical signature has been used as a datum line for seam correlation over the entire property. Over the property individual coal seams often develop splits, their thickness changes over short lateral distances, and the seams exhibit an extremely variable nature. These inconsistencies will require a very flexible approach to mining.

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

4.3 Structure

North of the Telkwa river the surface mineable coal reserves are defined by two structural blocks separated by a west dipping normal fault. The west block dips to the northeast between 15° and 35°. The eastern block dips to the east between 15 and 25°. The coal measures are bordered on the north by an intrusive plug. Other than the normal faulting mentioned above it appears that there is surprisingly little faulting within the structural blocks themselves given the close proximity to the intrusive plug. Detailed drilling will likely delineate more extensive minor faulting within these blocks.

In the Goathorn Creek area normal and reverse faults have divided the area into several structural blocks. In this area the strata has a northerly regional strike with dips between 0° and 35°. Although some of the faults origginate in the basement volcanics it is believed that structural complexity increases up section.

5.0 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 - piezometer 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

Work Done in 1985

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

Four NQ diamond drill holes were completed on the property during 1985 for a total of 353 meters. All of the drill holes are situated on licences covered by this report. All drill core has been lithologically logged (Appendix I). CNRL's drill core storage facility is located at the site of Bulkley Valley Collieries Ltd.

All pertinent drill holes were surveyed. (Appendix 6).

All disturbances, including roads and drill sites were seeded.

All coal samples greater than 30cm drilled thickness were analyzed.

Leachate analysis had been done on Telkwa Overburden and Interburden samples.

Water Quality analyses has been done periodically on samples from 12 stations.

The annual progress report on the Reclamation Plots was done.

Air Quality (dustfall) measurements are taken monthly.

Meteorological data has been recorded.

The total cost of the 1985 exploration program was $106,015.43. All of this is being applied to the licences reported herein.

Appendix 3 contains a copy of the Application to Extend Term of Licence which gives a detailed account of the amount and nature of expenditures applied to the three licence groups.

There are additional in situ coal resources of a least 15 million tonnes in the Goathorn Creek area, which lie outside the currently defined pit limits.

7.0 MINEABILITY AND RESERVES

7.1 Telkwa North

Two potential pits have been delineated north of the Telkwa river (See Geology Map). Pit 7 is east of a large normal fault and Pit 8 is west of the fault. Both of these pits contain upper seam (unit 3) coal reserves only. Both pits contain raw in place coal reserves of approximately 3.5 million tonnes each. The strip ratio for Pit 7 is $3m^3$ waste/tonne raw coal, while the ratio for Pit 8 is higher at $4m^3$/tonne raw coal. Although the No. 1 zone has been intersected in the area, the seams are generally thin and therefore not as attractive as the upper seam reserves in the Telkwa north area.

7.2 Goathorn Creek Area

Six pits have been proposed for open pit mining in the Goathorn Creek area. The following is a reserve summary for each of these pits.

Goathorn Area Coal Reserves

	Coal (mt) Raw - r.o.m.	Waste ($x10^6$ m^3)
Pit #1	.68	5.05
Pit #2	2.36	20.62
Pit #3	16.26	108.34
Pit #4	.57	3.14
Pit #5	.28	1.64
Pit #6	1.61	10.26
	21.76	149.05

8.0 COAL QUALITY

Coal core samples were obtained from 4 NQ3 diamond drill holes.

The Telkwa coal is ranked as High Volatile A Bituminous by ASTM standards. Incremental results for each hole can be found in Enclosure 1 - 1.

10.0 REFERENCES

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TELKWA

01/10/86

DRILL HOLE # TW85D-501

LOG DATE 85/11/14
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
.00	6.83	6.83	OB					.1M OF GRANODIORITE RUBBLE IN CORE.		
6.83	9.48	2.65	COAL	6	1	92.45		TOP PICK FOR SEAM UNKNOWN DUE TO CASING LEVEL BUT COAL WAS ABOVE CASING. DULL WITH THIN BRIGHT CLEATED LENSES.	82	8.00
9.48	10.32	.84	MDST		1	17.90		GOUGE MATERIAL. MOSTLY LOST CORE. MISTAKENLY SAMPLED WITH 6 SEAM.		
10.32	11.76	1.44	COAL	5	1	59.00		AS ABOVE AT 6.83M. MISTAKENLY SAMPLED WITH 6 SEAM.		
11.76	11.93	.17	TUFF					PALE BROWN-CREAMY WHITE WITH THIN BLACK CARBONACEOUS WISPS.		
11.93	12.80	.87	COAL	5		17.20		NO SAMPLE. MOSTLY DULL WITH BRIGHT CLEATED BAND NEAR HW.		
12.80	13.56	.76	MDST					BROWN-DARK BROWN. HIGHLY WEATHERED CORE @ BASE.		
13.56	14.44	.88	COAL	4	2	87.50		VISIBLE PYRITE BLEBS ALONG BDDG IN MOSTLY DENSE, DULL, CHUNKY COAL.		
14.44	15.36	.92	MDST					MEDIUM GREY, MASSIVE TO WEAKLY BEDDED.	70	14.50
15.36	16.18	.82	COAL	4	3	81.70		DULL & ASHY-LOOKING @ HW BUT WITH NUMEROUS VY THIN BRIGHT LENSES @ BASE.		
16.18	18.35	2.17	MDST					CARBONACEOUS & MASSIVE. OCC	73	17.80

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DRILL HOLE # TW85D-501

LOG DATE 85/11/14
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
								BLEBS OF PYRITE. DARK BROWN TO DARK GREY. THIN TO VY THIN LENSES OF BRIGHT COAL.		
18.35	18.60	.25	COAL			84.00		NO SAMPLE. DULL & BRIGHT WITH NUMEROUS THIN WHITE BLEACHED LENSES.		
18.60	22.80	4.20	MDST					AS ABOVE @ 16.18M BUT BECOMING MORE WEATHERED & COALY @ BASE.	78	22.40
22.80	23.14	.34	COAL	3	4	88.20		VERY HARD & DENSE WITH LOTS OF PYRITE BLEBS & LENSES. MOSTLY DULL COAL. SAMPLE INCLUDED PART OF BRECCIATED INTRUSIVE @ HW CONTACT.		
23.14	24.65	1.51	IGN			100.00		LAMPROPHYRE? DYKE OR SILL. CRYSTALLINE, MEDIUM GREY-GREEN. OCC PYRITE BLEBS DARK GREEN FERRO-MAGNESIAN PHENOCRYSTS. IRREGULAR HW & FW CONTACT. MATRIX APPEARS TO BE FELDSPAR-RICH. COAL IS HARD & DENSE NEAR CONTACT.		
24.65	26.42	1.77	COAL	2	5	100.00		VERY DENSE & DULL FOR FIRST .17M BUT BECOMING LESS SO WITH DEPTH. THIN LIGHT GY SLST BAND (.01M RECOVERED) FROM 24.95-25.08M. COAL IS VERY BRIGHT & CLEATED @ BASE.		
26.42	35.20	8.78	SLST				MDST	INTERLAMINATED MEDIUM GREY SLST & DARK GREY, CARBONACEOUS MDST.	78	27.40
								VERY THIN LAMINATIONS GIVING	74	28.40

TELKWA

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
								CORE A STRIPED APPEARANCE.		
									78	29.90
									70	32.00
									68	33.20
									76	34.00
35.20	49.23	14.03	SLST					DARK-MEDIUM GREY. VERY WEAKLY BEDDED. OCC WHITE CC SHELL FGMTS.	77	35.60
								SOME POSSIBLE SS-FILLED CIRCULAR BURROWS. SLST ALMOST A VY FG SS.	76	42.50
49.23	55.43	6.20	SS					SLST ABOVE GRADING INTO SS UNIT. LIGHT-MEDIUM GY & FG. OCC BURROWS.	73	51.00
								NUMEROUS CC SHELL FGMTS & CARBONACEOUS BANDS. CC FRACTURES BUT STICK CORE.	71	52.50
									64	54.10
									68	55.40
55.43	58.70	3.27	SLST				SS	GREY-GREEN FG SS INTERBDD WITH DARK GY CARBONACEOUS SLST. SILTIER @ BASE.	74	56.30
								BDDG IS REWORKED & BURROWED BUT LAMINATIONS ARE STILL PRESENT.	72	58.00
58.70	59.50	.80	SLST					DARK GY WITH CARBONACEOUS BLEBS DEFINING A WEAK BDDG.	74	59.00

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LOG DATE 85/11/14
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A. DEPTH

TELKWA

DRILL HOLE # TW85D-502

01/10/86

LOG DATE 85/11/15
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
.00	7.40	7.40	OB					CASING LEVEL		
7.40	25.40	18.00	MDST					VERY SILTY. DARK BROWN WITH SLST CONCRETIONS IN OCC THIN ISOLATED LENSES. GOUGE ZONE FROM 18.6-18.62M & 19.0-19.15M. VERY POORLY BDD TO MASSIVE. CARBONACEOUS SLICKED SURFACES. RARE PYRITE BLEBS.	80	10.68
25.40	64.00	38.60	SLST					GY-GREEN TO GY. MASSIVE TO POORLY BDD. WHITE CC-FILLED FRACTURES. LIGHT BROWN SLST & LIGHT GY SS CONCRETIONS.	73	38.15
64.00	65.75	1.75	SS					SILTY, GREEN WITH LIGHT GY SLST CONCRETIONS. THESE CONCRETIONS ARE MORE NUMEROUS @ HW & FW CONTACTS.	74	65.50
65.75	68.35	2.60	SS				SLST	INTERBDD GREEN SS & GY SLST. WELL DEVELOPED LAMINATIONS. SLST RIP-UPS. OCC BAND OF COALY MATERIAL BORDERING CONCRETIONS.	67	66.40
68.35	70.40	2.05	SLST				SS	ALTERNATE LIGHT & DARK GY. VERY THINLY LAMINATED. OCC MICRO-FRACTURES.	69	69.10
70.40	70.60	.20	COAL			100.00		NO SAMPLE. DULL WITH OCC BRIGHT. PYRITE-RICH SHALE PARTING IN MIDDLE.	70	70.50
70.60	71.25	.65	SLST				SS	AS AT 68.35M.		

TELKWA

DRILL HOLE # TW85D-502

01/10/86

LOG DATE 85/11/15
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
71.25	72.10	.85	MDST					SILTY, DARK GY WITH POLISHED CARBONACEOUS SLICKS.		
72.10	73.10	1.00	SS					DARK BROWN, SILTY WITH OCC CONCRETIONS & CLEATED COAL BANDS.		
73.10	73.90	.80	SS				SLST	AS AT 65.75M.	69	73.70
73.90	74.48	.58	COAL	8	1	100.00		DULL, SHALEY		
74.48	77.43	2.95	SS				SLST	AS AT 65.75M.	55	75.30
									60	76.80
77.43	79.21	1.78	SS					PALE GY-GREEN WITH OCC LAMINATIONS OF DARK GY SLST. FG & LAMINATED.THIN BDD	65	78.30
79.21	79.54	.33	CLAY					FAULT-INDUCED GOUGE. CREAM-LIGHT GY.		
79.54	80.82	1.28	SLST					DARK BROWN. BROKEN CORE. WEAKLY LAMINATED WITH OCC CONCRETIONS.	68	79.80
80.82	87.43	6.61	SLST				SS	THINLY LAMINATED. DARK BROWN,FG SS & DARK GY SLST INTERLAMINATED.	55	82.40
								SOME REWORKED BDDG WITH BURROWS AND SCOURING STRUCTURES VISIBLE.	57	83.80
									66	85.20

TELKWA

01/10/86

DRILL HOLE # TW85D-502

LOG DATE 85/11/15
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
									56	86.50
87.43	89.88	2.45	SLST					DARK BROWN-GY. POORLY LAMINATED TO MASSIVE		
89.88	90.89	1.01	SLST				SS	AS AT 80.82M. BURROWS STILL EVIDENT AS WELL AS MUD DRAPES ON SS PEBBLES.	63	90.70
90.89	93.02	2.13	SS					GREEN, FG AS AT 64.M. OCC LAMINATIONS OF BROWN SLST DEFINE BDDG & X-BDDG.	62	92.30
93.02	93.90	.88	SS				SLST	AS AT 65.75M	62	93.90
93.90	95.36	1.46	SLST					DARK BROWN-DARK GY. VERY WEAKLY LAMINATED. OCC .05M BRT CLEATED COAL BANDS.		
95.36	95.91	.55	COAL	7	2	100.00		DULL WITH OCC THIN (.01M) BRT CLEATED BANDS & SLST PARTINGS. DIRTY @ BASE.		
95.91	96.36	.45	SLST					DARK GY. VERY WEAKLY BDD.		
96.36	100.49	4.13	SLST					INTERLAMINATIONS OF LIGHT & DARK GY SLST. VERY THINLY BDD. OCC COAL LENSES.	66	97.80
								POSSIBLE BRECCIA ZONE @ 100.14M	68	99.20
100.49	102.13	1.64	MDST					DARK GY. FEATURELESS.	68	101.00
102.13	103.76	1.63	COAL	6	3	100.00		10MM BAND OF SH/PY FROM		

TELKWA

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DRILL HOLE # TW85D-502

LOG DATE 85/11/15
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
								102.94-103.06M. SHALEY FW. DULL WITH OCC BRT CLEATED BANDS UP TO 15MM WIDE		
103.76	104.28	.52	MDST		4	82.10		DARK GY. 5-10 MM ROUND PYRITE NODULES COMMON. CARBONACEOUS. MASSIVE.		
104.28	105.50	1.27	COAL	6	5	100.00		BRT & DULL BANDED COAL.	61	104.70
									61	105.25
105.50	106.68	1.18	MDST					SILTY, DARK GY, CARBONACEOUS. POORLY BDD. COALY @ BASE.		
106.68	107.46	.78	COAL	6	6	100.00		FLAKEY & SHINEY		
107.46	109.63	2.17	MDST					DARK GY, SILTY. ODCC THIN COAL BANDS.		
109.63	109.91	.28	COAL	6	7	100.00		BRIGHT & DULL BANDS INTERLAMINATED.		
109.91	110.08	.17	SH	6	7	100.00		PY-RICH COALY SH WITH PYRITE AS 5-15 MM ROUND NODULES OR DISCRETE ELONGATE BLEBS.		
110.08	110.30	.22	COAL	6	7	86.40		AS ABOVE BUT WITH CC-FILLED FRACTURES.		
110.30	111.42	1.12	MDST					MEDIUM GY, SILTY, MASSIVE.		

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DRILL HOLE # TW85D-502

LOG DATE 85/11/15
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
111.42	111.67	.25	COAL	6	8	92.00		BRIGHT		
111.67	111.90	.23	MDST	6	8	95.45				
111.90	113.65	1.75	COAL	6	8	100.00		BRT @ TOP BECOMING DULL & MORE DENSE NEAR INTRUSIVE CONTACT.		
113.65	115.80	2.15	IGN			100.00		LAMPROPHYRE. DARK GREEN PHENOCRYSTS IN FG GY MATRIX. STICK CORE. VY HARD. 5 MM WIDE CC-FILLED FRACTURES IN RANDOM ORIENTATION @ BASE. SAME INTRUSIVE COMPOSITION AS IN HOLE TW85D-501.		
115.80	116.08	.28	COAL	6	8	100.00		REST OF SEAM ABOVE THE SILL. DENSE, HARD, DULL.		
116.08	118.08	2.00	SH					CARBONACEOUS, COALY, BLACK. BDDG ANGLE APPEARS TO BE 45 DEGREES. BDDG SURFACES ARE SLICKED & CURVED. BROKEN CORE.		
118.08	119.38	1.30	COAL	5	9	92.30		DULL WITH OCC BRT BANDS. 7 MM GOUGE ZONE FROM 119.5-119.57M. GOUGE IS FIBROUS, TAN & VERY SOFT.		
119.38	119.78	.40	MDST					CARBONACEOUS, DARK BROWN-GY.		

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
119.78	122.46	2.68	SLST					INTERLAMINATED AS AT 96.36M. SOME BURROWING & REWORKED BDDG.	61	120.80
									60	121.90
122.46	123.48	1.02	COAL	4	10	98.00		PYRITE BLEBS & LENSES COMMON. BRT & DULL. VERY THIN WHITE MICRO-FRACTURES @ BASE.		
123.48	124.20	.72	MDST					PYRITE BLEBS & LENSES AND OCC COAL BANDS. CARBONACEOUS. DARK GY.		
124.20	125.32	1.12	COAL	4	12	100.00		AS AT 122.46M BUT DULLER LUSTRE TO COAL.		
125.32	125.74	.42	MDST					CARBONACEOUS, COALY, DARK GY. FEATURELESS BDDG.		
125.74	127.01	1.27	SLST					DARK GY, WEAKLY LAMINATED. OCC THIN-VY THIN WHITE SS WISPS DEFINE BDDG.		
127.01	127.18	.17	SS					LIGHT GY, VY FG, SILTY.	59	127.10
127.18	131.75	4.57	SLST					AS AT 125.74M. COALY LENSES NEAR BASE.	62	128.50
									60	130.00
									61	131.70

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
131.75	133.79	2.04	SLST				SS	ALTERNATE LAMINATIONS OF MG WHITE SS & DARK GY-BROWN SLST.	55	133.20
								AVG BED THICKNESS IS 50MM. OCC WHITE CC-SLICKED FRACTURES.		
								CONCRETIONS @ TOP.		
133.79	137.32	3.53	COAL	2	13	87.80		BRT & DULL. 3MM SLST BAND @ 136.62M	61	134.00
									66	136.00
137.32	146.62	9.30	SLST				SS	INTERLAMINATIONS OF LIGHT GY VY FG SS & DARK GY SLST. OCC BURROWS.	64	139.00
								REWORKED BDDG. VY BROKEN FROM 137.49-138.4M WITH SLICKED SURFACES.	62	140.80
								ALSO CC-FILLED FRACTURE ZONES.	57	142.00
									51	143.80
									53	145.00
									62	146.30
146.62	148.25	1.63	SLST					DARK GY. POORLY BDD. OCC WHITE CC FRACTURES & SLICKED SURFACES.		

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DRILL HOLE # TW85D-503

LOG DATE 85/11/19
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
.00	7.00	7.00	OB					CASING LEVEL		
7.00	7.89	.89	LC					LOST CORE		
7.89	17.15	9.26	MDST					GY, SILTY, MASSIVE. POORLY DEFINED BDDG. RECORED FGMTS & BROKEN CORE. OCC COALY PLANT MATS NEAR BASE.		
17.15	17.50	.35	COAL			100.00		NO SAMPLE TAKEN. BRT & DULL. 5CM WIDE BAND OF VY FG PYRITE BLEBS & WISPS IN CENTER OF SEAM.		
17.50	17.80	.30	SH					CARBONACEOUS & COALY. DARK GY. MASSIVE.		
17.80	18.26	.46	MDST					AS AT 7.89M	73	17.90
18.26	18.74	.48	SLST					LAMINATED DARK GY-LIGHT GY. CONVOLUTED & DISRUPTED BDDG IN LIGHT GY BANDS.	76	18.60
18.74	19.17	.43	MDST					DARK GY, CARBONACEOUS, COALY.		
19.17	20.06	.89	COAL	7	1	100.00		BRT COAL. CLEAN SEAM. GLASSY .5-1.0 CM BANDS COMMON.		
20.06	21.49	1.43	MDST					AS AT 18.74M		

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DRILL HOLE # TW85D-503

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LOG DATE 85/11/19
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
21.49	21.60	.11	COAL			100.00		DULL. ABUNDANT PYRITE @ HW CONTACT. MANY VY THIN CC-FILLED MICRO-FRACTURES		
21.60	23.75	2.15	MDST					AS AT 18.74M		
23.75	23.95	.20	COAL			100.00		NO SAMPLE TAKEN. NUMEROUS CC MICRO-FRACTURES. DULL		
23.95	25.00	1.05	SLST					THINLY BDD TO INDISTINCT. MEDIUM GY.	83	24.50
25.00	25.35	.35	COAL			100.00		NO SAMPLE TAKEN. SHALEY,DIRTY. FW CONTACT DOMINATED BY 1-3 CM CC BANDS.		
25.35	30.02	4.67	MDST					DARK GY-BLK. NUMEROUS .1-.2 CM WIDE COAL STGRS & OCC WHITE CC VEINING.		
30.02	31.11	1.09	COAL	6	2	57.80		SHALEY HW. DIFFICULT TO PICK HW CONTACT IN CORE.		
31.11	31.29	.18	MDST					NO SAMPLE.		
31.29	31.60	.31	COAL			96.80		NO SAMPLE TAKEN. VERY SHALEY FW. DIFFICULT TO PICK FW CONTACT IN CORE.		
31.60	34.36	2.76	MDST					DARK GY, MASSIVE, COALY. APPEARS TO BE A FAULT CONTACT WITH SS BENEATH. FAULT IS COMPOSED OF GOUGE MATERIAL. ALSO APPEARS TO BE FOLDED BDDG TRACES .74M ABOVE FW CONTACT.		

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DRILL HOLE # TW85D-503

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
34.36	36.17	1.81	SS					FG-VY FG, BROWN-GY. BDDG IS WEAKLY DEVELOPED INTO WISPY LAMINAR HABIT. NUMEROUS THIN WHITE CC-FILLED FRACTURES.	55	35.90
36.17	36.82	.65	MDST					SILTY, GY, MASSIVE.		
36.82	37.62	.80	MDST				SH	VERY CARBONACEOUS & COALY. SHALEY @ HW GRADING INTO MDST WITH DEPTH.		
37.62	39.85	2.23	SLST					CARBNONACEOUS PLANT FGMTS & OCC COAL BANDS. MEDIUM GY.		
39.85	40.50	.65	SLST				SS	INTERLAMINATED. BDDG IS INDISTINCT DUE TO ORGANIC REWORKING.		
40.50	41.29	.79	SS					SILTY. MEDIUM GY. FG	66	40.60
41.29	45.69	4.40	SLST				SS	AS AT 39.85M	76	42.20
									86	44.50
45.69	46.87	1.18	SS					FG. LIGHT GY. DARK GY CARBONACOUS WISPS COMMON.	88	45.90
46.87	47.96	1.09	SLST				SS	MEDIUM GY SLST INTERBDD WITH LIGHT GY SS. MEDIUM BDDG THICKNESS. CARBONACEOUS PLANT DEBRIS		

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
								COMMON.		
47.96	50.80	2.84	MDST					DARK GY,CARBONACEOUS, MASSIVE. BECOMING COALY WITH SLICKED FRACTURES @ BASE	82	48.20
50.80	51.65	.85	COAL	2	3	70.60		DULL & SHALEY @ TOP.		
51.65	51.96	.31	MDST		3	67.70		COALY, DARK GY-BLK.		
51.96	53.08	1.12	COAL	2	3	43.70		SOFT, MUSHY TO POWDERY DULL COAL.		
53.08	53.61	.53	SLST					SANDY, MEDIUM GY, MASSIVE.		
53.61	54.56	.95	SS		4			LIGHT GY-TAN BROWN. DARK GY CARBONACEOUS RIP-UPS & CC VEINING COMMON. ALSO NUMEROUS BLEBS & PODS OF PYRITE.	80	54.30
54.56	55.61	1.05	SLST		5			DARK GY, SANDY. ROUND (.5-1. CM DIAM) PYRITE KNOTS LOCATED RANDOMLY IN CORE (5% SULPHIDES)		
55.61	56.92	1.31	SS		6			LIGHT GY. FG-MG. DARK GY COALY MATS & PLANT DEBRIS COMMON. 10% SULPHIDES. YELLOW SULPHIDE BLEBS DISTRIBUTED THROUGHOUT CORE. BECOMING LARGER & MORE NUMEROUS @ BASE.	76	56.20

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
56.92	57.49	.57	SLST		7			MEDIUM GY. 1-2% SULPHIDES.	73	57.10
57.49	58.98	1.49	SS		8			MEDIUM GY & VY FG @ TOP GRADING INTO MG, LIGHT GY @ BASE. BECOMING ALMOST CONGLOMERATIC IN PLACES @ BASE WITH COALY PLANT DEBRIS, SULPHIDE NODULES, VOLCANIC CLASTS & SLST RIP-UPS SUSPENDED IN SS MATRIX.		
58.98	59.58	.60	SLST		9			SANDY, MEDIUM GY WITH SULPHIDE LAYER @ BASE (1 CM THICK).		
59.58	60.95	1.37	CONG		10			MG, LIGHT GY SS @ TOP WITH SULPHIDES & COALY DEBRIS GRADING INTO CONG AT DEPTH WITH NUMEROUS VOLCANIC CLASTS, COALY DEBRIS & SULPHIDE NODULES. .5M FROM TOP MATRIX CHANGES TO MILKY GY, APHANITIC TUFF?. WEATHERED BASE.	77	60.10
60.95	61.90	.95	VOLC					DARK GREEN WITH FERROMAGNESIAN-RICH PHENOCRYSTS @ TOP GRADING INTO MATRIX WITH RED PHENOCRYSTS @ BASE. STRONGLY WEATHERED APPEARANCE.		
61.90	68.66	6.76	VOLC					LAVENDER TO DARK RED PORPHYRITIC ANDESITE?. PHENOCRYSTS ARE ANGULAR & PALE GREEN. OCC PATCHES OF GY-GREEN ALTERED VOLCANIC PRODUCE MOTTLED LOOK.		

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DRILL HOLE # TW85D-504

LOG DATE 85/11/20
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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
.00	10.00	10.00	OB					CASING LEVEL		
10.00	11.26	1.26	LC					LOST CORE		
11.26	11.45	.19	OB					OVERBURDEN RUBBLE		
11.45	12.08	1.63	SLST					LAMINATED WITH LIGHT GY VY THIN SS WISPS DEFINING BDDG. TAN BROWN WATER STAINS ALONG FRACTURES.	72	11.75
12.08	13.84	.76	MDST					DARK GY, MASSIVE, CARBONACEOUS. SHALEY & COALY @ FW.	72	13.20
13.84	15.39	1.55	COAL	7	1	100.00		DULL COAL @ TOP GRADING INTO BRT & DULL BANDED COAL IN MIDDLE OF SEAM.		
15.39	15.78	.39	MDST	7	1	100.00		GY, CARBONACEOUS, COALY. PYRITE-RICH LAYER @ BASE OF UNIT 3 CM WIDE.		
15.78	16.24	.46	COAL	7	1	100.00		THIN ALTERNATING BRT & DULL BANDED COAL.		
16.24	16.46	.22	MDST	7	1	86.40		DULL BRN-GY STRONGLY GOUGED MDST. POSSIBLE FAULT ZONE.		
16.46	17.19	.73	COAL	7	1	100.00				
17.19	17.45	.26	MDST					OCC THIN (2-3 MM) COAL BANDS.		

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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
17.45	17.62	.17	COAL			82.30		NO SAMPLE TAKEN. DULL @ BASE.		
17.62	20.10	2.48	MDST					DARK GY-BLK, COALY, CARBONACEOUS. PLANT FGMTS. OCC THIN COAL BANDS. BECOMES VERY CARBONACEOUS & MASSIVE @ BASE WITH 1-2 CM WIDE PY NODULES.		
20.10	21.30	1.20	COAL	6	2	100.00		BRT & DULL BANDED COAL WITH PY BAND FROM 20.64-20.72M		
21.30	22.62	1.32	SLST					VERY MUDDY WITH OCC WISPS OF LIGHT GY SS TO DEFINE BDDG. DARK GY.	65	21.40
22.62	26.92	4.30	COAL	6	3	100.00		MOSTLY DULL WITH OCC VY THIN BRT BANDS. OCC THIN (2-8 MM) PY BANDS.		
26.92	27.62	.70	MDST		4	95.70		DULL BRN, SOFT, CRUMBLY.		
27.62	28.44	.82	COAL	6	5	85.40		DULL		
28.44	30.04	1.60	MDST					AS AT 26.92M BUT WITH OCC PY BLEBS NEAR TOP. STGLY GOUGED FROM 29.18-29.28M		
30.04	32.14	2.10	COAL	5	6	95.20		BRT & DULL COAL. VY CLEAN SEAM.		
32.14	33.63	1.49	MDST					SILTY WITH WISPY THIN DISCONTINUOUS BDDG TRACES. MEDIUM GY. CARBONACEOUS		

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LOG DATE 85/11/20
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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
33.63	36.25	2.62	SS					FG, LIGHT GY-GRN WITH NUMEROUS DARK GY SILTY WISPS DEFINING BDDG.	80	34.10
								SLST RIP-UPS @ BASE.	69	34.85
									70	35.80
									72	36.20
36.25	37.65	1.40	SLST					DARK GY WITH WEAK LAMINATIONS FROM DISCONTINUOUS LIGHT GY SS WISPS.	70	37.30
37.65	38.32	.67	MDST					DARK GY, MASSIVE & VY COALY @ BASE.		
38.32	39.29	.97	COAL	4	7	100.00		DULL WITH VY THIN BRT BANDS.		
39.29	39.80	.51	MDST			100.00		GY-DARK GY, MASSIVE WITH PY BLEBS @ TOP.		
39.80	40.16	.36	COAL	4	10	100.00		DULL BUT WITH 1-3 MM BRT BANDS @ BASE.		
40.16	40.52	.36	SLST			91.70		VY WEAK BDDG TRACES DARK GY	63	40.30
40.52	41.24	.72	COAL	4	8	100.00		AS AT 38.32M		
41.24	43.24	2.00	MDST					DARK GY-BLK, CARBONACEOUS WITH COALY LENSES & BLEBS NEAR TOP.	60	41.70

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LOG DATE 85/11/20
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TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
43.24	47.29	4.05	SLST				SS	INTERLAMINATED GY-GRN FG SS, DARK GY SLST & BRN SLST.BDDG 2-3 CM THICK.	74	43.30
								CORE HAS STRIPED APPEARANCE & BECOMING SILTIER @ BASE.	73	44.70
									66	45.20
									72	46.60
47.29	48.15	.86	SLST					OCC WISPS OF LIGHT GY SS BUT MOSTLY DARK GY GRADING INTO MDST @ BASE.	73	47.35
48.15	51.80	3.65	MDST					DARK GY WITH OCC COAL STGRS & LENSES.	67	50.20
51.80	55.72	3.92	COAL	2	9	100.00		VY SHALEY FOR .42M @ HW. .23M PARTING FROM 53.3-53.53M.		
								COAL IS DULL & BRT WITH OCC 1 CM WIDE ROCK PARTINGS.		
								COAL BECOMES BRIGHTER & COARSER NEAR BASE OF SEAM.		
55.72	66.78	11.06	SLST					MEDIUM GY LAMINATED WITH THIN LIGHT GY SS WISPS. BDDG 2-3 CM WIDE.	70	55.80
								STRIPED APPEARANCE TO CORE.	70	57.00
									73	58.50
									74	60.00
									76	61.50

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DRILL HOLE # TW85D-504

01/10/86

LOG DATE 85/11/20
EXAMINED BY B. MCKINSTRY

TOP	BASE	THICKNESS	MAJOR	SEAM	SAMPLE#	REC %	MINOR LITHOLOGY	REMARKS	C.B.A.	DEPTH
									72	62.30
									78	64.50
									75	66.00
66.78	74.97	8.19	SLST					UNIFORM MASSIVE GY APPEARANCE. VERY MUDDY MATRIX @ TOP BUT BECOMING A GOOD SLST @ BASE. OCC COALY PLANT FGMTS & CONCRETIONS.		

Report on the Sealing of drillholes

Inspection District # 9 Date of Report December 11/85

Company Crows Nest Resources Land District Coast Range 5

Coal Tax Number NTS Map Sheet 93L/11 Licence Number 4279

1. Number of Drillhole. 7085D-501
2. Surface elevation. 896.6m
3. Type (Vertical, diamond, rotary, size etc. Vertical Diamond NQ3
4. Drilled by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources Limited
5. Date of completion. November 13/85
6. Date of Sealing November 13/85
7. Sealed by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources Limited.
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 Steve Cameron

Designation Geologist

Date December 11/85

Countersignature [signature]

Designation Manager

Date Dec 18/85

Report on the Sealing of drillholes

Inspection District # 4 Date of Report December 11/85

Company Crows Nest Resources Land District Coast Range 5

Map Sheet Number NTS Map Sheet 93L/11 Licence Number 4279

1. Number of Drillhole. 700 85D - 502
2. Surface elevation. 863.6 m
3. Type (Vertical, diamond, rotary, size etc. Vertical Diamond NQ3
4. Drilled by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources
5. Date of completion. November 14/85
6. Date of Sealing November 15/85
7. Sealed by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources Limited
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. 20' of casing was left in the hole from the 0 to 20' mark.

(a) Was the drillhole sealed in the manner outlined in the Chief Inspectors Instructions? No

(b) If No, give reasons and details of variation. The hole was making water and gas at 100 meters and an attempt to cement the hole was unsuccessful. A wax Ruth plug was obtained and placed at 76 meters and a rubber plug was placed at 75 meters. The hole was then cemented successfully.

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 Steve Cameron

Designation Geologist

Date December 11 1985

Countersignature [illegible]

Designation Manager

Date Dec. 16/85

Report on the Sealing of drillholes

Inspection District #9 Date of Report Dec 11/85

Company: Crows Nest Resources Land District Coast Range 5

Coal Lic. Number NTS Map Sheet 93L/11 Licence Number 4278

1. Number of Drillhole. TW85D-503
2. Surface elevation. 735.7 m
3. Type (Vertical, diamond, rotary, size etc. Vertical Diamond NQ3
4. Drilled by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources
5. Date of completion. November 16/85
6. Date of Sealing November 16/85
7. Sealed by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources Limited
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. One core catcher was left in the hole at a depth of
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 Stan Cameron

Designation Geologist

Date Dec 11/85

Countersignature Ann Baker

Designation Manager

Date Dec. 18/85

Report on the Sealing of drillholes

Inspection District # 9 Date of Report Dec 11/85

Company Crows Nest Resources Land District Coast Range 5

Prel. No. Number NTS Map Sheet 93L/11 Licence Number 4278

1. Number of Drillhole. TW85D-504
2. Surface elevation. 804.6 m
3. Type (Vertical, diamond, rotary, size etc. Vertical Diamond NQ3
4. Drilled by: Name of Contractor J.T. Thomas Diamond Drilling Ltd.
   Name of Exploration Company Crows Nest Resources Limited
5. Date of completion. November 17/85
6. Date of Sealing November 17/85
7. Sealed by: Name of Contractor J.T. Thomas Diamond Drilling Ltd
   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 Steve Cameron

Designation Geologist

Date December 11/1985

Countersignature [signature]

Designation Manager

Date Dec 18/85

CROW'S NEST RESOURCES LIMITED

TELKWA PROJECT

COORDINATES OF 1985 DRILL HOLES

SURVEYED: 19-20 November 1985

NOTE: ELEVATIONS are on Geodetic Datum and are derived by reciprocal trigonometric levelling from bench marks 1523, 3324, 1629, 2565, 2968 & 2574

COORDINATES are on UTM (Zone 9) grid and are derived from Government stations:
"CREEK", "MUCHO", "PABLO", "P. CON. 18", "POWER", & "TACK"

DECEMBER 3, 1985

D. E. Watson

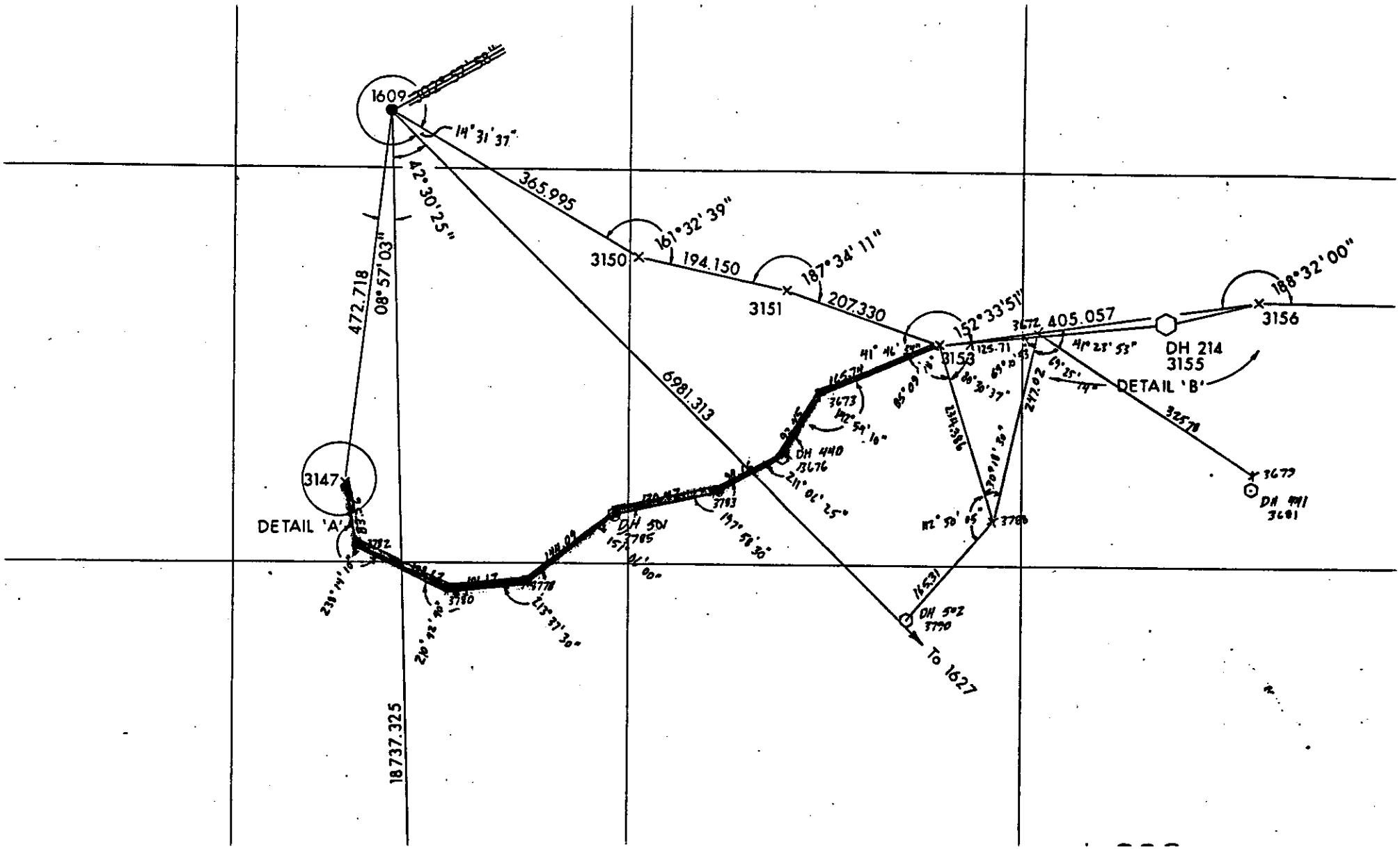
DONALD E. WATSON, B.C.L.S.

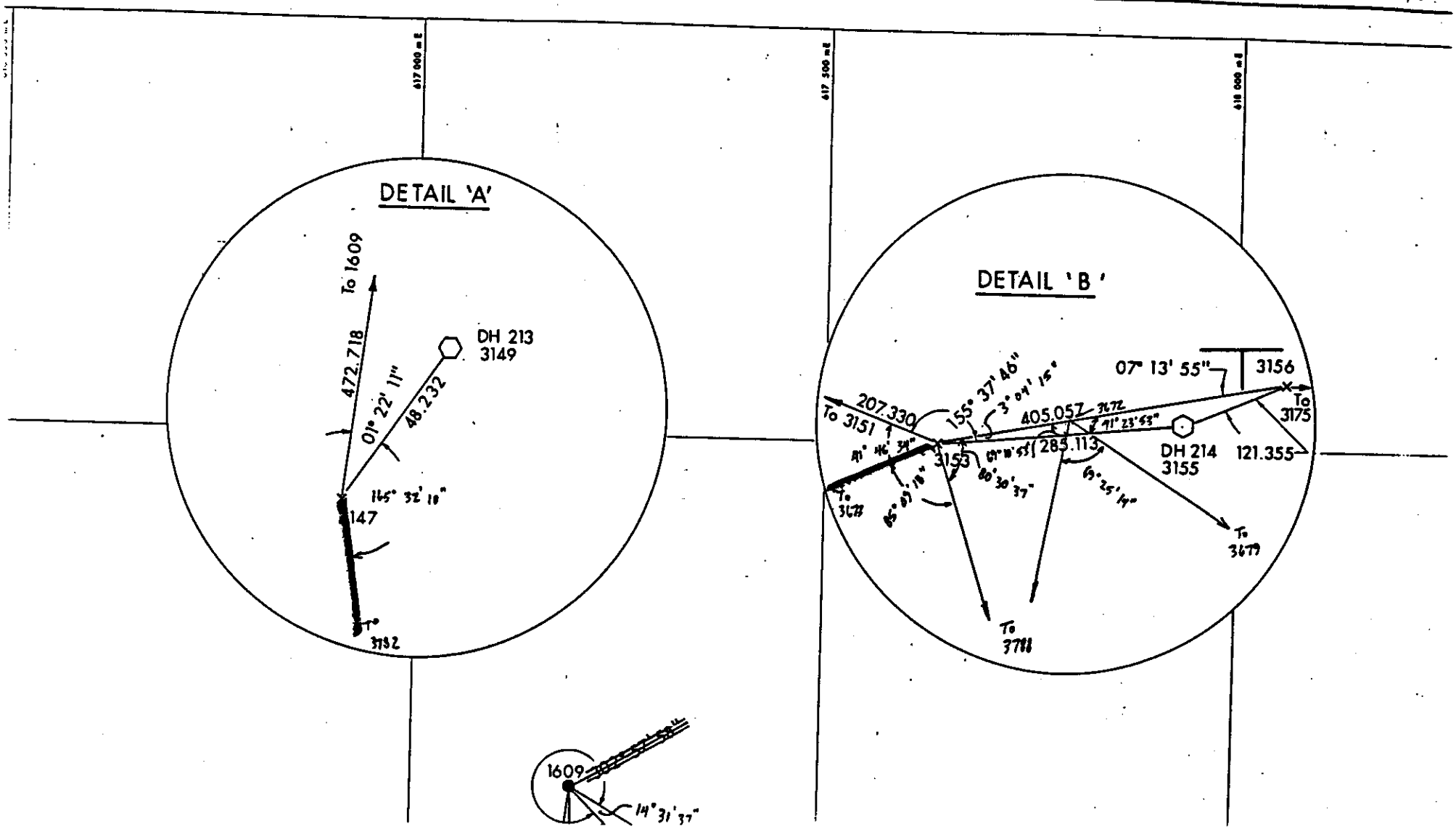
FILE #4275

TELKWA PROJECT

1985 DRILL HOLES

DRILL HOLE	TAG #	NORTHING	EASTING	TAG ELEVATION	GROUND ELEVATION
DH 501	3785	6,059,566.81	617,481.35	896.61	896.6
DH 502	3790	6,059,435.51	617,855.24	863.68	863.6
DH 503	3794	6,059,061.77	618,780.93	735.75	735.7
DH 504	3797	6,059,689.38	618,644.04	804.56	804.6


1609
14°31'37"
42°30'25"
365.995
161°32'39"
3150
194.150
187°34'11"
3151
207330
152°33'51"
3152
405.057
188°32'00"
3156
DH 214
3155
DETAIL 'B'
3153
41°41'
41°23'53"
69°25'
14"
125.71
65°09'
46°30'37"
165.74
3673
82°54'10"
DH 440
3676
211°02'25"
234.986
247.02
79°18'30"
325.78
3677
DH 441
3681
112°50'05"
3780
3147
DETAIL 'A'
472.718
08°57'03"
6981.313
18737.325
238°14'10"
3782
3780
213°37'30"
DH 501
3785
197°59'30"
3783
165.31
DH 502
3790
To 1627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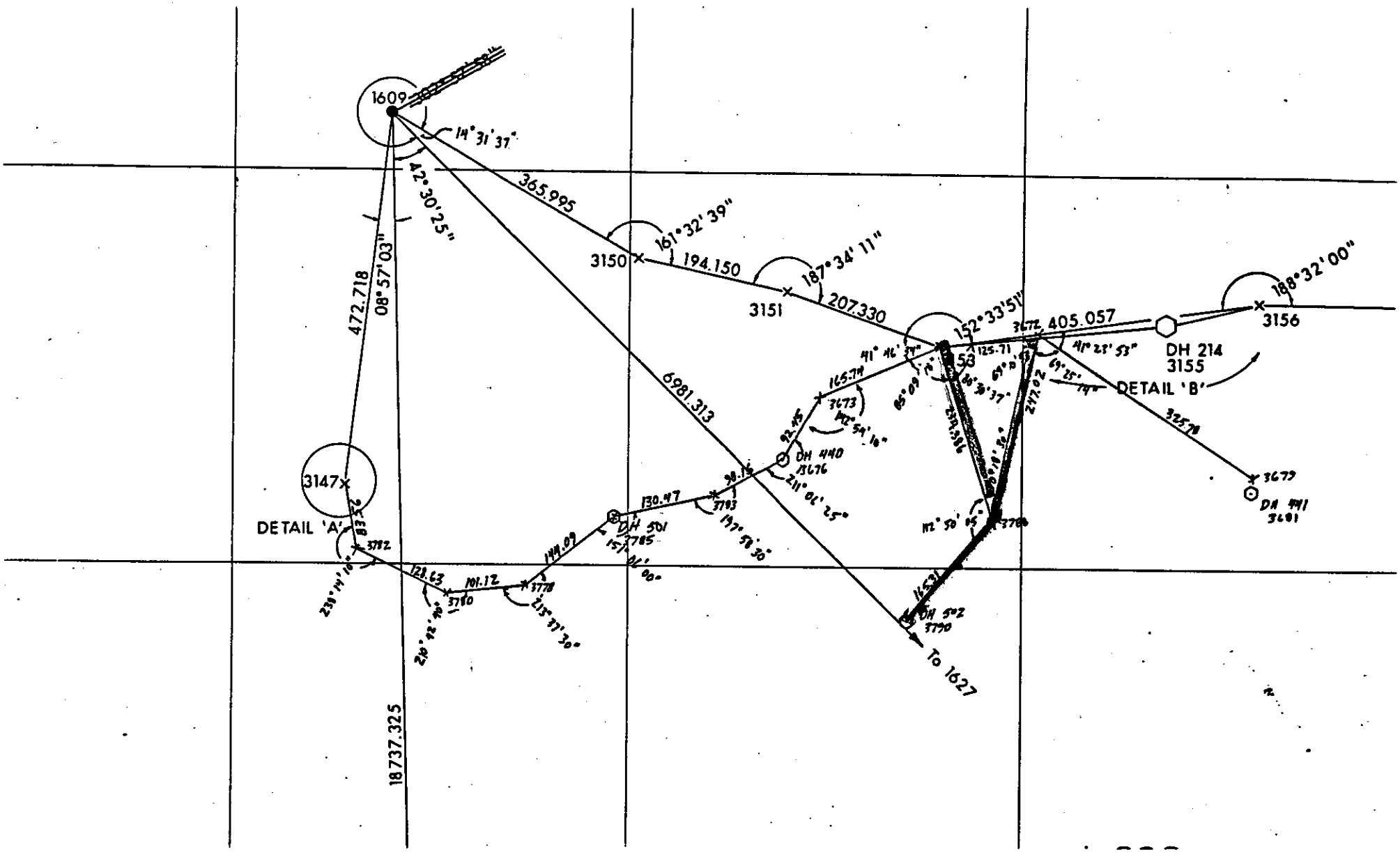
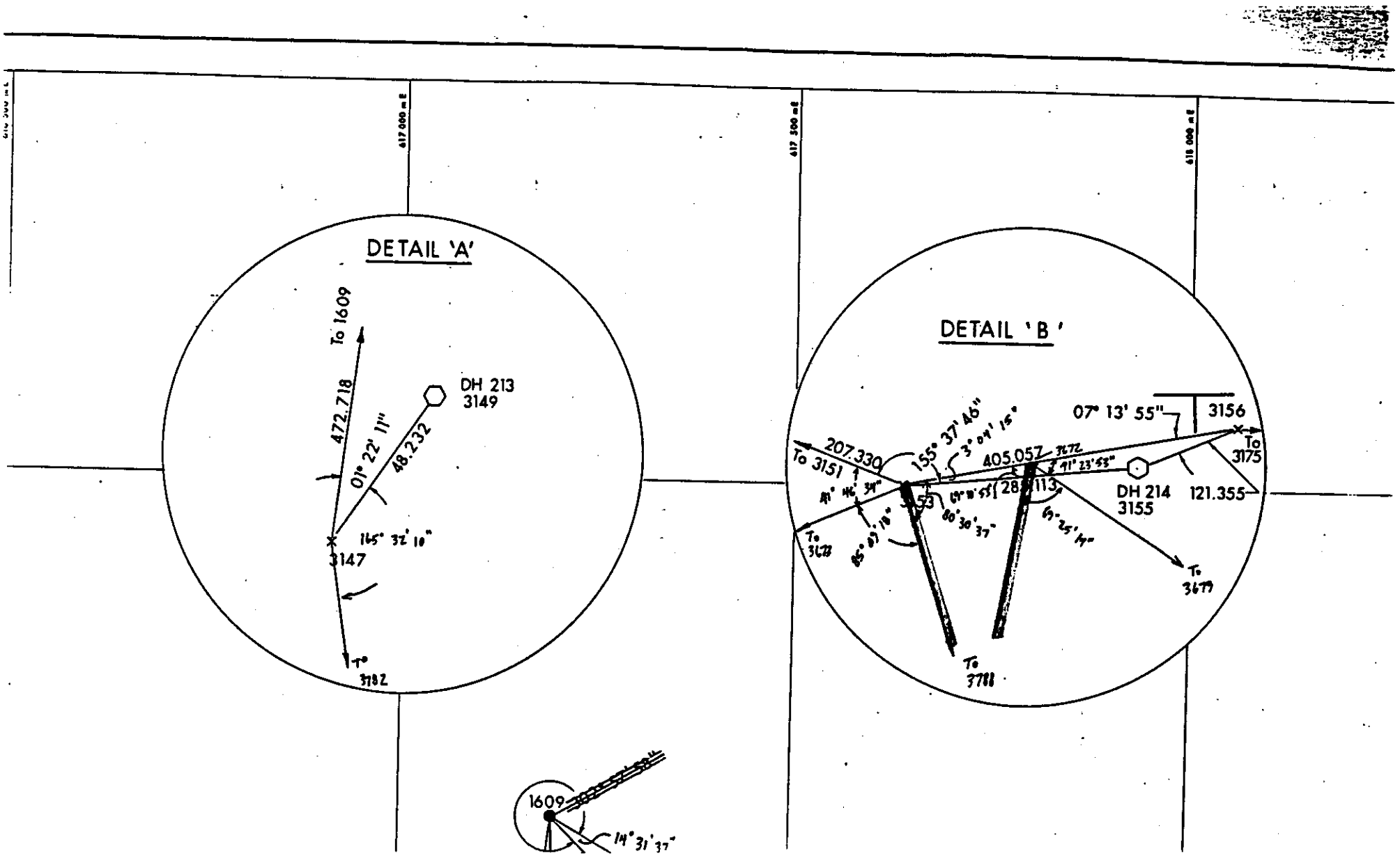
To 1609
472.718
01° 22' 11"
48.232
DH 213
3149
145° 32' 10"
147
To
3132
1609
14° 31' 37"
DETAIL 'B'
207.330
To 3151
155° 37' 46"
3° 04' 15"
405.057
07° 13' 55"
3156
To
3175
91° 23' 53"
DH 214
3155
121.355
285.113
3153
To
3678
To
3679
To
3788

STATION	DESCRIPTION	BEARING	GRID DISTANCE	STATION ELEVATION	GROUND ELEVATION	NORTHING	EASTING	MAP SHEET
3673	Old 20cm Spike					6,059,717.24	617,742.65	
		210-23-25	92.45					
3676	ODH 440 Old 20 cm Spike			891.10	891.3	6,059,637.49	617,695.88	
		241-29-50	98.16					
3783	20 cm Spike			892.83	892.8	6,059,590.65	617,609.62	
		259-28-20	130.47					
3785	DH 501 - 20 cm Spike in Cement			896.61	896.6	6,059,566.81	617,481.35	
		230-34-20	144.09					
3778	20cm Spike			894.87	894.9	6,059,475.29	617,370.05	
		264-11-50	101.12					
3780	20 cm Spike			897.35	897.4	6,059,465.07	617,269.44	
		294-54-30	128.63					
3782	20 cm Spike			902.04	902.0	6,059,519.24	617,152.78	
		353-13-50	83.56					
3147	Old 20 cm Spike			905.10	905.1	6,059,602.22	617,142.93	

STATION	DESCRIPTION	BEARING	GRID DISTANCE	STATION ELEVATION	GROUND ELEVATION	NORTHING	EASTING	MAP SHEET
3783	20 cm Spike	164-10-20	5.36	892.83	892.8	6,059,590.65	617,609.62	
	Tag 3784 in 30 cm Willow			893.62	892.3	6,059,585.49	617,611.08	
3785	DH 501 - ;20 cm Spike in Cement	350-45	21.32	896.61	896.6	6,059,566.81	617,481.35	
	Tag 3786 in 15cm Fir	233-47	18.71	899.22	897.9	6.059,587.85	617,477.92	
	Tag 3787 in 10 cm Willow			898.40	895.9	6,059,555.75	617,466.25	
3778	20 cm Spike	339-04-30	8.87	894.87	894.9	6,059,475.29	617,370.05	
	Tag 3779 in 10 cm Spruce			897.24	895.9	6,059,483.58	617,366.88	
3780	20 cm Spike	134-17	3.40	897.35	897.4	6,059,465.07	617,269.44	
	Tag 3781 in 10cm Spruce			898.30	897.0	6,059,462.69	617,271.87	


1609
14° 31' 37"
42° 30' 25"
365.995
161° 32' 39"
3150
194.150
187° 34' 11"
3151
207.330
152° 33' 51"
405.057
188° 32' 00"
3156
DH 214
3155
DETAIL 'B'
472.718
08° 57' 03"
6981.313
3147
DETAIL 'A'
18737.325
To 1627
DH 440
DH 501
DH 502
DH 441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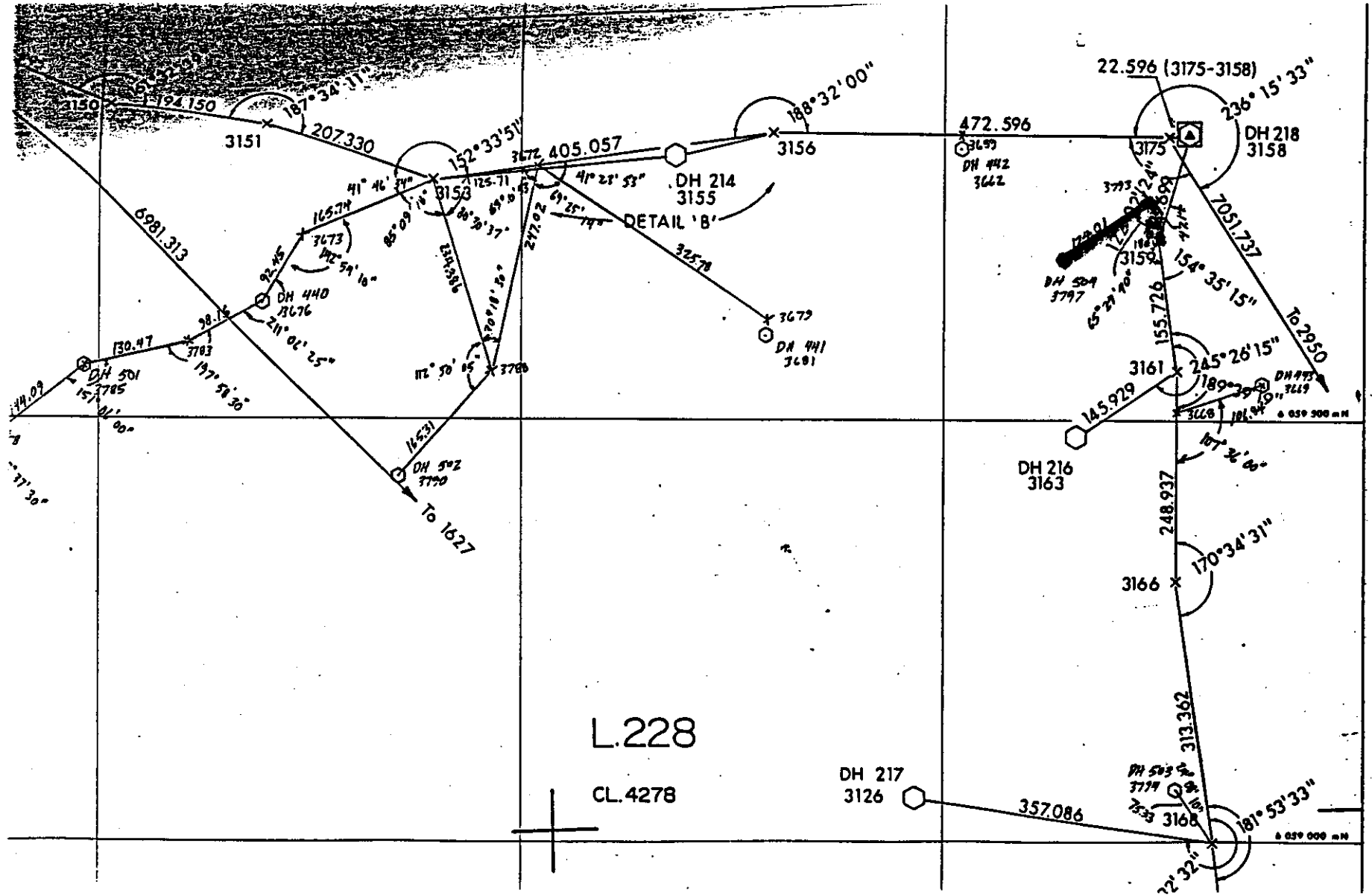
To 1609
472.718
01° 22' 11"
48.232
DH 213
3149
145° 32' 10"
3147
To
3182
DETAIL 'B'
207.330
To 3151
155° 37' 46"
3° 04' 15"
405.057
07° 13' 55"
3156
To
3175
DH 214
3155
121.355
To
3679
To
3788
1609
14° 31' 37"

STATION	DESCRIPTION	BEARING	GRID DISTANCE	STATION ELEVATION	GROUND ELEVATION	NORTHING	EASTING	MAP SHEET
3156	Old 20cm Spike					6,059,780.72	617,895.75	
		261-49-03	279.38					
3672	Old 20cm Spike			882.63	882.6	6,059,798.61	618,020.18	
		192-27-15	247.02					
3788	20cm Spike			866.65	866.7	6,059,557.40	617,966.91	
		222-29-35	165.31					
3790	DH 502 - East Corner of Bent Casing			863.68	863.6	6,059,435.51	617,855.24	
3788	20cm Spike			866.65	866.7	6,059,557.40	617,966.91	
		37-22	6.08					
	Tag 3789 in 30 cm Willow			867.80	866.5	6,059,561.32	617,971.55	
3790	DH 502 - East Corner of Bent Casing			863.68	863.6	6,059,435.51	617,855.24	
		325-07	18.50					
	Tag 3791 in 30 cm Willow			867.67	866.4	6,059,450.68	617,844.66	
		255-34	13.22					
	Tag 3792 in 20cm Willow			865.33	863.9	6,059,432.44	617,842.44	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187° 34' 11"
207.330
3151
132° 33' 51"
3152
405.057
188° 32' 00"
3156
472.596
3699
DH 442
3662
22.596 (3175-3158)
236° 15' 33"
DH 218
3158
3175
3153
125.71
41° 46' 34"
41° 28' 53"
DH 214
3155
DETAIL 'B'
6981.313
165.74
3673
92.45
DH 440
3676
211° 20' 25"
85° 09' 16"
80° 30' 37"
69° 25' 14"
325.78
3679
DH 441
3681
247.02
244.986
70° 18' 30"
112° 50' 05"
3788
130.47
3783
197° 58' 30"
DH 501
3785
144.09
151° 01' 00"
165.31
DH 502
3790
To 1627
3793
3689
3159
DH 504
3797
65° 29' 40"
154° 35' 15"
7051.737
To 2950
155.726
245° 26' 15"
3161
189° 39' 40"
DH 505
3799
3668
181° 44' 40"
145.929
DH 216
3163
107° 34' 40"
248.937
170° 34' 31"
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DH 503
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DH 217
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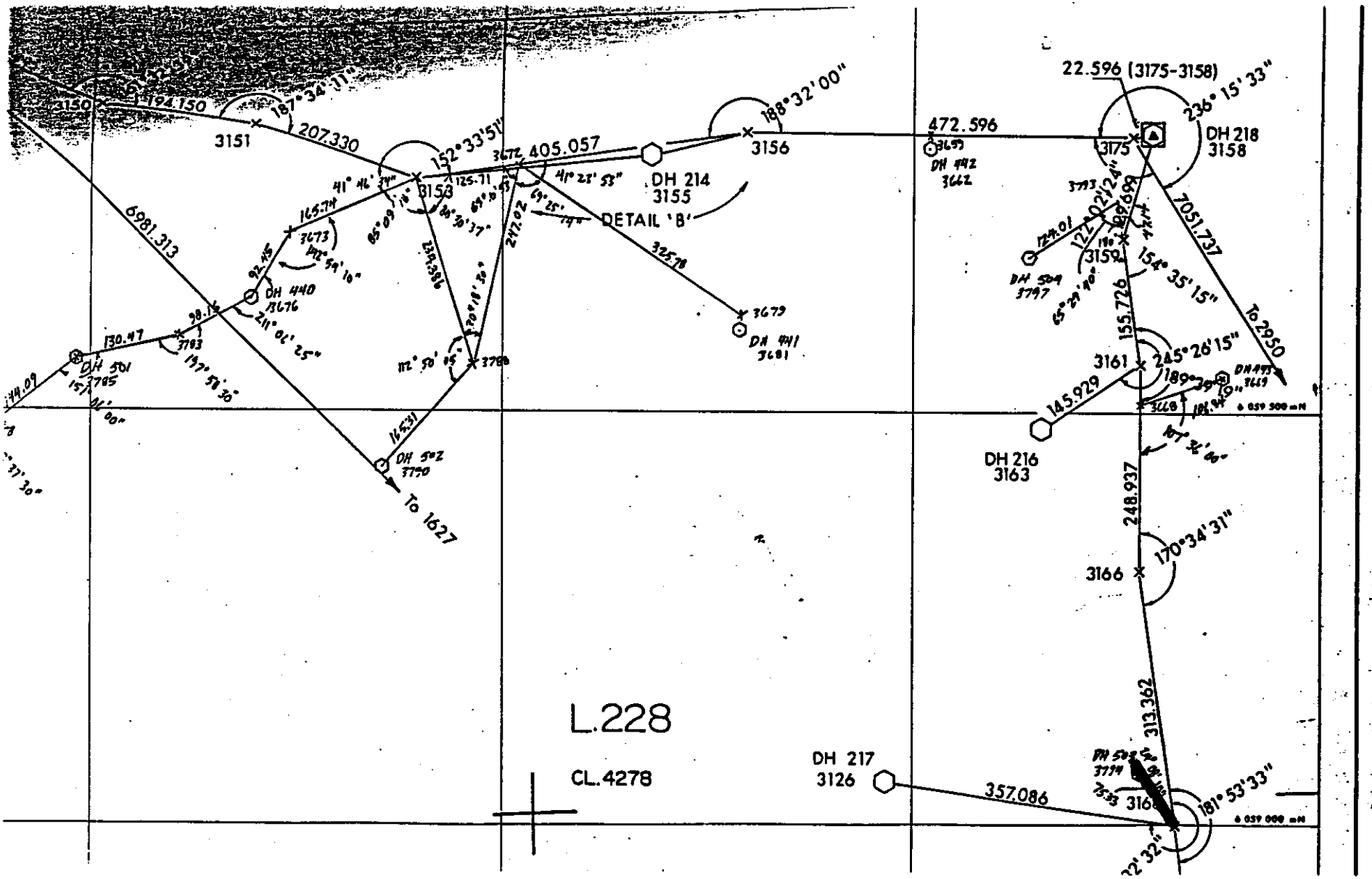
22' 32"
L.228
CL.4278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188° 32' 00"
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22.596 (3175-3158)
236° 15' 33"
DH 218
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3175
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41° 25' 53"
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41° 46' 39"
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3673
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DH 440
3676
6981.313
98.14
3783
130.47
DH 501
3785
197° 58' 30"
211° 04' 25"
112° 50' 05"
3780
165.31
DH 502
3750
To 1627
325.78
3679
DH 441
3681
247.02
125.71
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65° 25' 14"
DH 492
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124.01
DH 504
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65° 29' 10"
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154° 35' 15"
16.2950
155.726
3161
245° 26' 15"
145.929
DH 216
3163
248.937
170° 34' 31"
3166
313.362
DH 217
3126
357.086
181° 53' 33"
L.228
CL.4278

STATION	DESCRIPTION	BEARING	GRID DISTANCE	STATION ELEVATION	GROUND ELEVATION	NORTHING	EASTING	MAP SHEET
3166	Old 20 cm Spike			761.69	761.8	6,059,308.25	618,774,93	
		171-25-40	313.36					
3168	Old 20 cm Spike			731.86	732.0	6,058,998.38	618,821.64	
		327-17-30	75.33					
3794	D.H. 503 - 20 cm Spike in Cement			735.75	735.7	6,059,061.77	618,780.93	
		318-35-50	21.14					
	Tag 3795 in 30cm Poplar			738.50	737.1	6,059,077.62	618,766.95	
		56-05-50	15.72					
	Tag 3796 in 80cm Cottonwood			735.73	734.4	6,059,070.54	618,793.98	
3161	Old 20 cm Spike			780.93	781.0	6,059,557.16	618,778.63	
		351-11-50	155.73					
3159	Old 20 cm Spike			793.98	794.0	6,059,711.05	618,754.80	
		351-11-50	47.14					
3793	20 cm Spike			797.79	797.8	6,059,757.63	618,747.58	
		236-36-30	124.01					
3797	D.H. 504 - 20 cm Spike in Cement			804.56	804.6	6,059,689.38	618,644.04	
		213-59-30	15.73					
	Tag 3798 in 20 cm Willow			806.48	805.2	6,059,676.34	618,635.25	
		98-53-30	14.62					
	Tag 3799 in 50 cm Pine			804.12	802.8	6,059,687.12	618,658.49	

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

APPLICATION TO EXTEND TERM OF LICENCE

I, Glenn C. Proudfoot (Name) agent for Shell Canada Resources Limited (Name)

..... (Address) P.O. Box 100 (Address)

..... Calgary, Alberta

Valid FMC No. 207 568

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). 4272, 4274, 4276 - 4281, 4283, 5305 - 5307, 6040, 7695 - 7696 (Group No. 368)

for a further period of one year.

2. Property name Telkwa - North

3. I am allowing the following Coal Licence(s) No(s). to forfeit N/A

4. I have performed, or caused to be performed, during the period November 11, 1985 to November 22, 1985, 19 ....., work to the value of at least $ 106,015.43

on the location of coal licence(s) as follows:

CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
Geological mapping		
Surveys: Geophysical		
Geochemical		
Other		
Road construction	4278, 4279	
Surface work		
Underground work		
Drilling	4278, 4279	
Logging, sampling, and testing	4278, 4279	
Reclamation	4278, 4279	
Other work (specify)		
Off-property costs		

5. I wish to apply $..... of this value of work on Coal Licence(s) No(s).

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

7. The work performed on the location(s) is detailed in the attached report entitled Telkwa Project 1985 - Geological Assessment Report

December 31, 1985 (Date)

(Signature)

Supervisor - Land (Position)

(FORMS AND REPORT TO BE SUBMITTED IN DUPLICATE)

GEOLOGICAL MAPPING Yes ☐ No ☒

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

Total Cost $ .....

GEOPHYSICAL/GEOCHEMICAL SURVEYS Yes ☐ No ☒

Method .....
Grid .....
Topographic .....
Other* (specify) .....

Total Cost $ .....

ROAD CONSTRUCTION Yes ☒ No ☐

Length ..540.. metres .... Width ..10.. metres
On Licence(s) No.(s) ....4278....4279
Access to ...Drilling Sites...502 → 504

Total Cost $ .3750.00

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	4	353m	35,670.23
Wireline				
Rotary: Conventional				
Reverse circulation				
Other* (specify)				

Contractor .....
Where is the core stored? Bulkley Valley Coal, Telkwa, B.C.

Total Cost $ 35,670.23

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 $ 16,998.88

RECLAMATION Yes ☐ No ☐

Details Seed was provided to land owner for reclamation of road and drill sites. Total Cost $ 8,272.50

OTHER WORK (Specify details) Yes ☐ No ☒ Cost

Meteorological Studies & Water Quality Studies .....

Total Cost $ 33,162.44

OFF-PROPERTY COSTS Yes ☒ No ☐

Details Report preparation ..... Total Cost $ 8,161.00

Total Expenditures $ 106,015.43

December 31, 1985 .....
(Date)

(Signature)

Manager Geology
(Position)

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

93 L/11

93 L/10

610 000 mE

638 000 mE

6 066 000 mN

6 043 000 mN

54°45'

54°30'

127°00'

126°55'

Joins 93 L/14

Joins 93 L/12

Joins 93 L/6

TELKWA NORTH
GROUP No. 368

TELKWA
GROUP No. 366

TELKWA SOUTH
GROUP No. 367

BULKLEY RANGE

HAZELTON MOUNTAINS

PROVINCIAL FOREST

SKEENA

SMITHERS

TYHEE LAKE

Telkwa

Seymour Lake

Round Lake

McDowell Lake

Coffin Lake

Yellowhead Highway

CANADIAN NATIONAL

Machete Lake Provincial Park

BULKLEY RIVER

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

SCALE: 1:50,000

METRES 1000 0 1000 2000 3000 METRES

T.N.

GRID NORTH

LICENCES UNDER APPLICATION

712

Crows Nest Resources Limited
EXPLORATION

WEST CENTRAL B.C.

TELKWA PROJECT

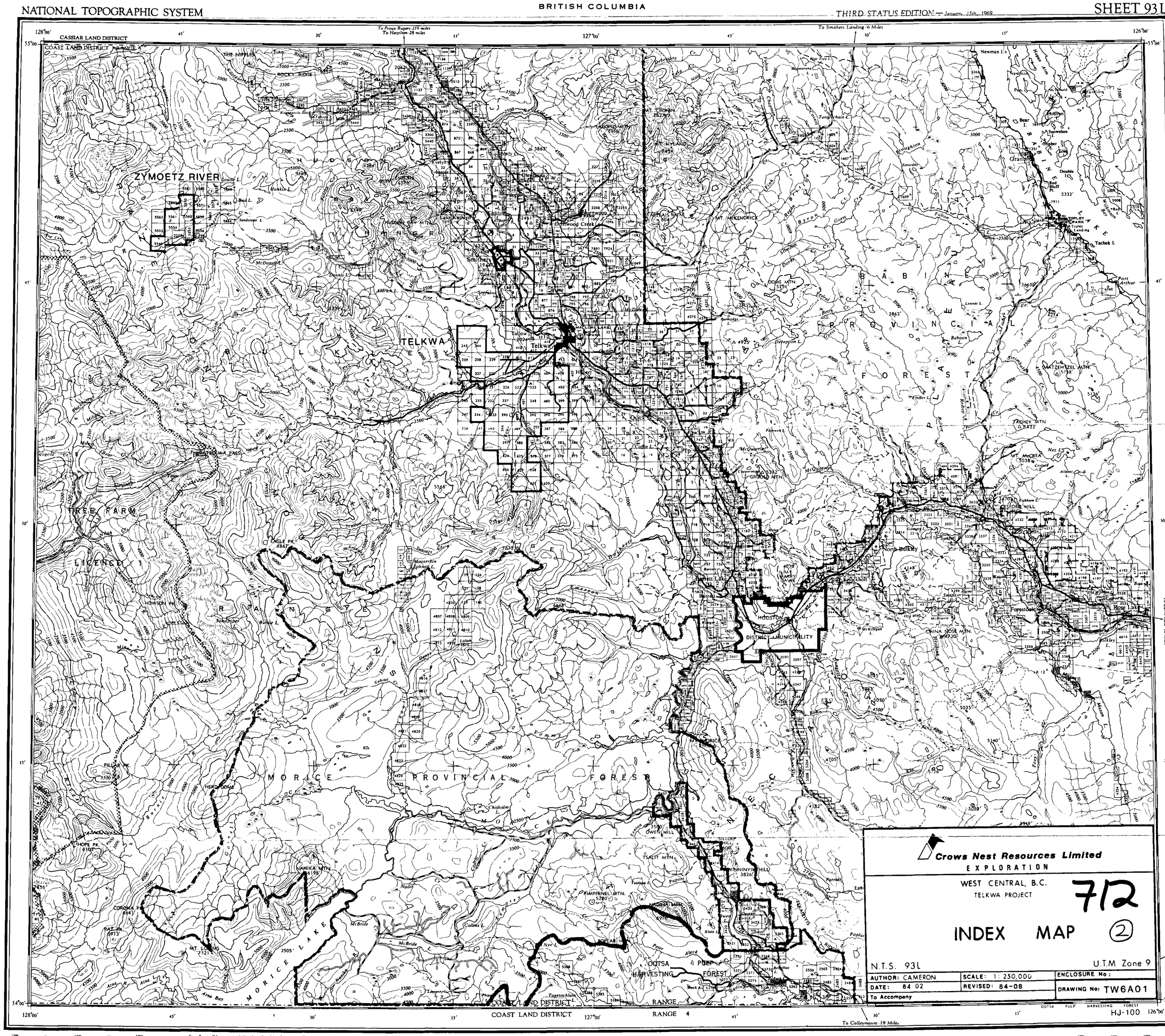
(1)

COAL LAND DISPOSITION MAP

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

UTM Zone 9

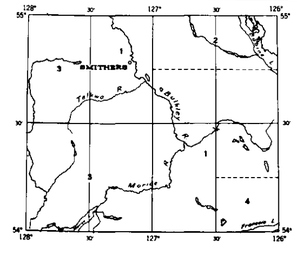
AUTHOR: C.N.R.L	SCALE: 1:50,000	ENCLOSURE No:
DATE: 82-12	REVISED: 86-03	DRAWING No: TW5H5
To Accompany		



Crows Nest Resources Limited
EXPLORATION
WEST CENTRAL, B.C.
TELKWA PROJECT
712
INDEX MAP (2)

N.T.S. 93L		U.T.M Zone 9
AUTHOR: CAMERON	SCALE: 1: 250,000	ENCLOSURE No:
DATE: 84 02	REVISED: 84-08	DRAWING No: TW6A01
To Accompany		

HJ-100



RELIABILITY DIAGRAM

1. Standard Provincial Topographic Surveys, 1:31,680, 1950-51.
2. Provincial Air Survey, Interim Mapping, 1:31,680, 1951.
3. Photomosaics compiled from B.C. Gov't. Air Photos, 1949.
4. Contours adapted from Mines and Technical Surveys, Ottawa, 1936.
5. Planimetry compiled from B.C. Gov't. Air Photos, 1949.
6. Contours from Mines and Technical Surveys, Ottawa, 1951.

Roads revised from B.C. Gov't. air photos, 1968.

First Status Edition compiled and produced by Geographic Division, Surveys and Mapping Branch, Dept. of Lands & Forests, Victoria, B.C., 1953.
Third Status Edition revised 1969.

REFERENCE

Land alienated or covered by application under the Land Act	
Surveyed Timber or Pulp Lease, Timber or Pulp Licence	T L or PL
Indian Reserve	
Government Reserve	G R
Land District Boundary	
Provincial Forest Boundary	
Tree Farm Licence	
Municipality	
Water Supply Area	
Park	
Park less than 40 acres	
Campground	
Forest Service Lookout	
Settlement or Locality	
Post Office	Pa
School	Sa
Hospital	Ho
Mine	
Dyke	
Historic Monument	
Mile Post	5 / M 15
International Boundary and Monument	

SMITHERS
BRITISH COLUMBIA
COAST LAND DISTRICT — RANGE 5

Scale 1:250,000 or approximately 1 Inch to 4 Miles

Miles 5 0 5 10 15 20 Miles

Scale of Kilometres

5 0 5 10 15 20 25 30

Magnetic Declination approximately 26°45' East of Centre of sheet, 1969.
Decreasing approximately 3'41" annually

Maps and indexes with price lists may be obtained from the Map Production Division, British Columbia Lands Service, Parliament Buildings, Victoria, B.C.

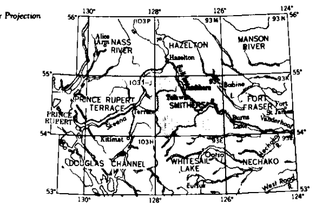
LITHOGRAPHED IN CANADA BY K. M. MACDONALD, QUEEN'S PRINTER, VICTORIA, BRITISH COLUMBIA

8

REFERENCE

Road, Hard Surface, All Weather	Route No. 16, 2 Lanes
" Loose Surface, All Weather	All Weather
" Loose Surface, Less than 2 lanes	Dry Weather
" Private (Logging, Mining etc)	
" Four Wheel Drive	
Trail	Canoe, Flag Stop
Railway	Along Road
Main Telephone Line	
Main Electric Power Line	Along Road, Wooden Poles, Steel Poles
Horizontal Control Station	
Contours (Interval 500 feet)	2500
Elevation in feet above mean sea-level	5215'
Intermittent Stream	
Intermittent Lake or Seasonal Inundation	
Swamp or Marsh	
Glacier or Icefield	
Spring	
Dam	Dam
Customs Office	Cust.
Lighthouse (occupied)	
Airport or Airstrip	
Airharbour or Seaplane Anchorage	
Abandoned Railway	

Universal Transverse Mercator Projection



On the above map index, the maps published are shown thus:

With District lot land status

Without

Land Commissioners' Offices are located in Smithers and Burns Lake.

Mineral Claims are not shown on this sheet.

District land lots, 5 acres or less may not be shown due to the scale of this map.

93 L11

93 L/10

610 000 mE

638 000 mE

54°45'

54°30'

6 066 000 mN

6 042 000 mN

Joins 93 L/14

Joins 93 L/12

Joins 93 L/6

127°00'

55'

10'

05'

15'

TELKWA NORTH
GROUP No. 368

TELKWA
GROUP No. 366

TELKWA SOUTH
GROUP No. 367

C.L. 5307
C.L. 4283
C.L. L 248 5306
C.L. L 244 4281
C.L. L 238 4280
C.L. L 229 4279
C.L. L 228 4278
C.L. 4277
C.L. L 411 4276
C.L. 7696
C.L. 6040
C.L. 4275
C.L. L 226 4274
C.L. L 409 7695
C.L. L 408 7694
C.L. L 222 4272
C.L. L 402 7692
C.L. L 403 7693
C.L. L 248 4271
C.L. L 400 3884
C.L. L 399 7691
C.L. L 234 4270
C.L. L 233 4269
C.L. L 392 3876
C.L. L 393 3885
C.L. L 394 7690
C.L. 4267
C.L. L 246 3875
C.L. L 388 3877
C.L. 5839
C.L. L 379 3882
C.L. L 380 3883
C.L. L 624 4265
C.L. L 625 4266
C.L. L 627 4262
C.L. L 628 4261
C.L. 4282
C.L. L 631 4260

F

BULKLEY RANGES

AZELTON MOUNTAINS

HAZELTON MOUNTAINS

PROVINCIAL FOREST

SMITHERS PROVINCIAL FOREST

TYHEE LAKE

Telkwa

Seymour Lake

McDowell Lake

Round Lake

Coffin Lake

Yellowhead Highway

CANADIAN NATIONAL

ACCESS ROAD

BULKLEY RIVER

Telkwa

Pine

Creek

Pipeline (underground)

Power Line

Trail

Gravel Pit

Dugout

Spring

Tp 4

Tp 6

Tp 8

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

T.N.

GRID NORTH

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Crows Nest Resources Limited
EXPLORATION
WEST CENTRAL B.C.
TELKWA PROJECT
(3)

ROAD ACCESS MAP

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

UTM Zone 9

AUTHOR: CAMERON	SCALE: 1:50,000	ENCLOSURE No:
DATE: 82-12	REVISED: JULY, 1984	DRAWING No: TW5A01
To Accompany		

CANADA

93 L/11

1:50,000

EDITION 2

93 L/11

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

CONVERSION SCALE FOR ELEVATIONS
ÉCHELLE DE CONVERSION DES ÉLÉVATIONS

Metres / Feet / Mètres / Pieds

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
DÉSIGNATION DE LA ZONE DU QUADRILLAGE
9U

100 000 M SQUARE IDENTIFICATION
IDENTIFICATION DU CARRÉ DE 100 000 M
WL RL

EXAMPLE OF METHOD USED
TO GIVE A REFERENCE TO NEAREST 100 METRES
EXEMPLE DE LA MÉTHODE EMPLOYÉE
POUR FIXER DES REPÈRES 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
Estimate tenths of a square from thick line eastward to point
Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction est

97 / 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
Estimate tenths of a square from thick line northward to point
Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction nord

98 / 4 / 984

GRID REFERENCE / RÉFÉRENCE AU QUADRILLAGE 975984

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

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.

Roads:	Routes:		
hard surface, all weather	pavée, toute saison	2 crossovers or more	plus de 2 voies
hard surface, all weather	pavée, toute saison	2 lanes	less than 2 lanes
		moins de 2 voies	
loose or stabilized surface, all weather	gravier agglomérè, toute saison	2 lanes or more	less than 2 lanes
		2 voies ou plus	moins de 2 voies
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		

TELKWA

COAST LAND DISTRICT RANGE 5

BRITISH COLUMBIA

Scale 1:50,000 Échelle

Miles / Milles 0 1 2 3

Metres / Mètres 0 1000 2000 3000 4000

Yards / Verges 0 1000 2000 3000 4000

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

EQUIDISTANCE 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.

712

Crows Nest Resources Limited
EXPLORATION

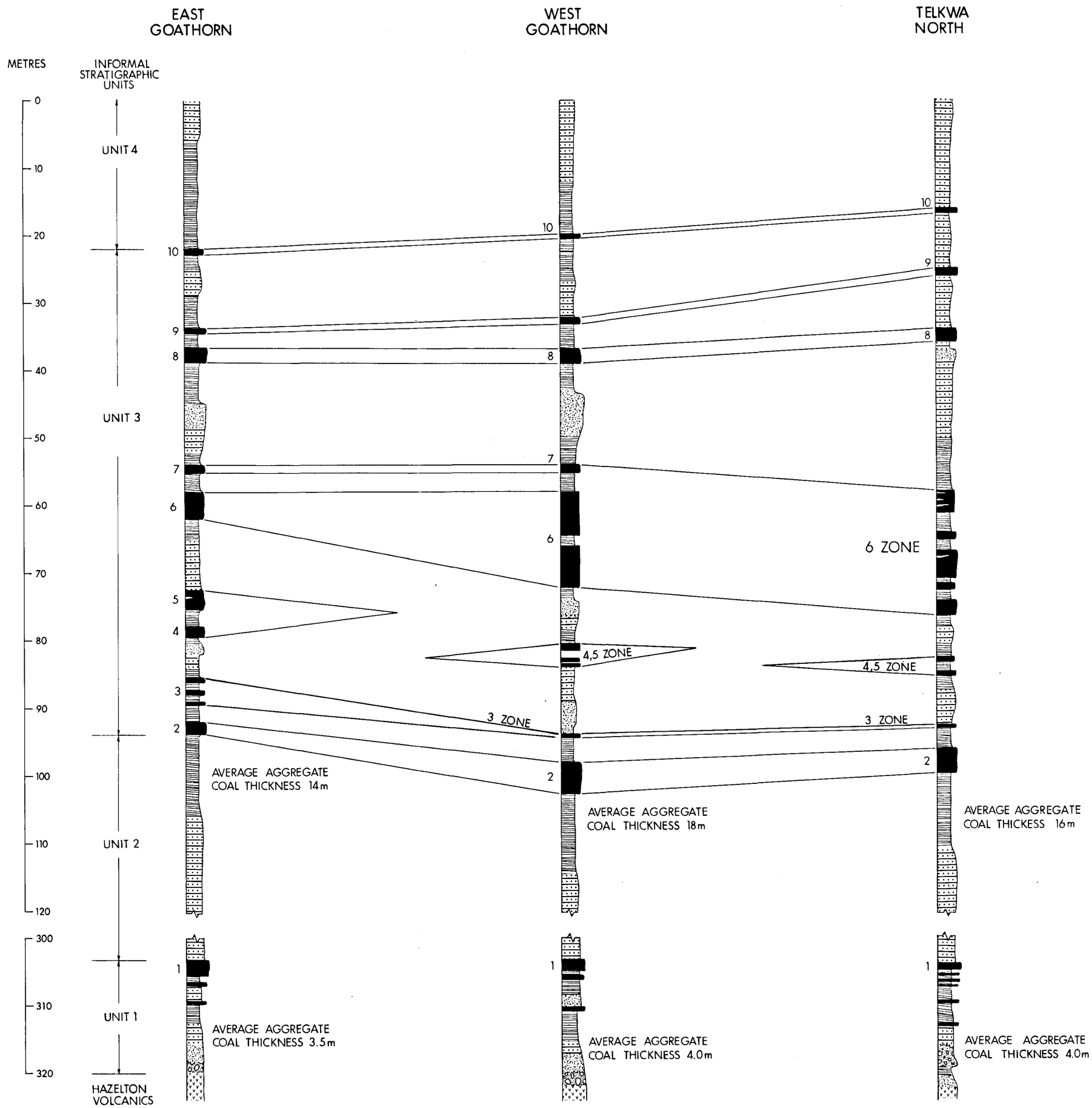
WEST CENTRAL B.C.
TELKWA PROJECT (4)

GEOLOGY COMPILATION MAP

N.T.S. 93 L / 11 U.T.M. Zone 9

AUTHOR: CAMERON	SCALE: 1:50,000	ENCLOSURE No:	
DATE: 04-02	REVISED: 84-12	DRAWING No: TW5U01	
To Accompany 1154 GEOLOGICAL REPORT			

HK-100



712

Crows Nest Resources Limited

TELKWA
WEST CENTRAL B. C.

(5)

TYPICAL STRATIGRAPHIC SECTIONS

AUTHOR: S. CAMERON	SCALE: AS SHOWN	DRAWN BY: R.G.P.
DATE: 80 - 02	REVISED:	DRAWING: TW6X03
To Accompany		

SEE SHEET NO. A2, DRAWING NO. TW3U07 (1:10 000)

SEE SHEET NO. A2, DRAWING NO. TW3U07 (1:10 000)

TERTIARY INTRUSIVE

SKEENA GROUP

HAZELTON GROUP

L 238
C.L.4280

L 229
C.L.4279

L228
C.L.4278

L 237
FREEHOLD

L 230
FREEHOLD

L 221
C.L.6040

PIT 7

PIT 8

AVELLING MINE (BETTY MINE)

MAJOR MINE PORTAL

MINE PORTAL

COAL OUTCROPS - 4 SEAMS TOTALLING ~ 4.5m

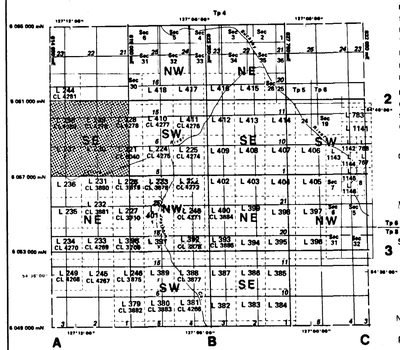
4 COAL SEAMS
0.5 - 1.0m THICK

AIR PHOTO INT.

IGNEOUS DYKE
PORPHYRITIC
VERT. 3m WIDE

TELKWA RIVER

MAP INDEX 93L10/11



LEGEND

MAIN ROAD
SECONDARY ROAD
BRIDGE, CULVERT
TRACK or TRAIL
BUILDING
POLE
FENCE
LOT LINE
CUT LINE
SPOT HEIGHT
CONTOURS
DEPRESSION

RIVER
INTERMITTENT STREAM
LAKE
SWAMP
SAND
SLIDE
TREES
DRILL HOLE
HORIZONTAL CONTROL
VERTICAL CONTROL
HORIZONTAL VERTICAL CONTROL

NOTE: LOT LINES APPROXIMATE ONLY

T.N.
GRID NORTH

MAP PROJECTION: UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN REFERENCE 129° W. UTM Zone 9

SURVEY NOTE:
Coordinates are on U.T.M. Grid (Zone 9) and are derived from Government control stations Blitzen, Padre, and Tack. Elevations are on Geodetic Datum and are derived from BM 79HA369 = 538.922 metres via reciprocal trigonometric levelling.

NOTE: 5 Metre Contour interpolated from 1:2000 Mapping

PREPARED BY: Aero Geometrics Ltd.

METRES 100 50 0 100 200 300 400 500 METRES

SCALE: 1:5000

CONTOUR INTERVAL: 5 METRES

DATE OF PHOTOGRAPHY:
Topography 1972
Planimetry 1975 & 1978

Compilation 1981 Cartography 1982

Update: Photography 1982 & 1983

Compilation 1982 Cartography 1983

LEGEND

HAZELTON GROUP (VOLCANICS) - (unconformable contacts) - Jurassic
SKEENA GROUP (SEDIMENTS) - (unconformable contacts) Lower Cretaceous
TERTIARY INTRUSIVE - (unconformable contacts)
REVERSE FAULT (KNOWN) - (triangle indicates upthrown side)
REVERSE FAULT (APPROXIMATE) - (triangle indicates upthrown side)
FAULT (DEFINED) - (type unknown)
FAULT (UNDEFINED) - (type unknown)
NORMAL FAULT (KNOWN) - (tad poles indicate downthrown side)
NORMAL FAULT (APPROXIMATE) - (tad poles indicate downthrown side)
ALIGNMENT OF UNKNOWN GEOLOGICAL SIGNIFICANCE (air photo interpreted)
BEDDING ATTITUDE
OUTCROP
B.V.C. SURFACE MINE AREA AND BOUNDARIES OF PREVIOUS UNDERGROUND MINES
TW-8 ⊙213 DRILL HOLE (Crows Nest Resources Ltd.)
B.V.C. BULKLEY VALLEY COLLIERIES LTD.
PREVIOUS UNDERGROUND MINE
COAL LICENCE BOUNDARY (approx)
TRENCH
⊙R-P-15 PLACER EXPLN' DRILL HOLE - 1970
SYNCLINE (arrow indicates direction of plunge)

712

Crows Nest Resources Limited
EXPLORATION

TELKWA PROJECT
SMITHERS AREA
WEST CENTRAL B.C.

(6)

GEOLOGICAL MAP

N.T.S: 93L11 UTM ZONE 9

AUTHOR: D. HANDY/S. CAMERON	SCALE: 1:5000	DRAWN BY:
DATE: 85-01	REVISED: 86-02	DRAWING No: TW2U18
To Accompany 1985 GEOLOGICAL REPORT		

712

TERTIARY INTRUSIVE

SKEENA GROUP

HAZELTON GROUP

L 228
C.L. 4278
R-P-16
R.P.16

L 410
C.L.4277
R-P-13
R-P13

L 411
C.L.4276

L 412
L. 409

L 410
CL 4277
L. 411
CL. 4276
L. 224
CL 4275
L. 225
CL. 4274

L. 228
CL. 4278
N½-L. 221
CL. 6040

CONG. OVERLYING VOLC.

CONG.,
WEATHERS DK. PURPLE
AND RESEMBLES VOLC.
FROM DISTANCE

TW11

L 221
C.L.6040

L 224
C.L.4275

L 225
C.L.4274

CONG.- PURPLE
RESEMBLE VOLC.

LOOKS BEDDED

TUNNEL FOUND IN THIS AREA
BEARING N 130° E
CIRCA 1918?

TW-8

L. 226
CL. 3879

L. 222
CL. 4272
L. 402

L 226
C.L.3879

L 223
C.L.3878

L 222
C.L.4272

TELKWA RIVER

Goathorn Creek

A'

A

LEGEND

- HAZELTON GROUP (VOLCANICS) - (unconformable contacts) - Jurassic
- SKEENA GROUP (SEDIMENTS) - (unconformable contacts) Lower Cretaceous
- TERTIARY INTRUSIVE - (unconformable contacts)
- REVERSE FAULT (KNOWN) - (triangle indicates upthrown side)
- REVERSE FAULT (APPROXIMATE) - (triangle indicates upthrown side)
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- FAULT (UNDEFINED) - (type unknown)
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- ALIGNMENT OF UNKNOWN GEOLOGICAL SIGNIFICANCE (air photo interpreted)
- BEDDING ATTITUDE
- OUTCROP
- B.V.C. SURFACE MINE AREA AND BOUNDARIES OF PREVIOUS UNDERGROUND MINES
- DRILL HOLE (Crows Nest Resources Ltd.)
- BULKLEY VALLEY COLLIERIES LTD.
- PREVIOUS UNDERGROUND MINE
- COAL LICENCE BOUNDARY (approx)
- TRENCH
- PLACER EXPLN' DRILL HOLE - 1970
- SYNCLINE (arrow indicates direction of plunge)

METRES 100 50 0 100 200 300 400 500 METRES

SCALE: 1:5000

CONTOUR INTERVAL: 5 METRES

DATE OF PHOTOGRAPHY:

Topography 1972

Planimetry 1975 & 1978

Compilation 1981 Cartography 1982

Update: Photography 1982 & 1983

Compilation 1982 Cartography 1983

MAP INDEX 93L

LEGEND

MAIN ROAD
SECONDARY ROAD
BRIDGE, CULVERT
TRACK or TRAIL
BUILDING
POLE
FENCE
LOT LINE
CUT LINE
SPOT HEIGHT
CONTOURS
DEPRESSION

RIVER
INTERMITTENT STREAM
LAKE
SWAMP
SAND
SLIDE
TREES
DRILL HOLE
HORIZONTAL CONTROL
VERTICAL CONTROL
HORIZONTAL VERTICAL CONTROL

NOTE: LOT LINES APPROXIMATE ONLY

MAP PROJECTION: UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN REFERENCE 129° W. U.T.M. Zone 9

SURVEY NOTE:

3 Coordinates are on U.T.M. Grid (Zone 9) and are derived from Government control stations Blitzen, Padre, and Tack. Elevations are on Geodetic Datum and are derived from BM 79HA369 = 538.922 metres via reciprocal trigonometric levelling.

NOTE: 5 Metre Contour interpolated from 1:2000 Mapping.

PREPARED BY: Aero Geometrics Ltd.

Crows Nest Resources Limited
EXPLORATION

TELKWA PROJECT
WEST CENTRAL B.C.

(7)

GEOLOGICAL MAP

N.T.S.-93L/11 UTM ZONE 9

AUTHOR: D. HANDY/S.CAMERON	SCALE: 1:5 000	ENCLOSURE No:	
DATE: 85-01	REVISED:	DRAWING No:	TW2U17
To Accompany 1985 GEOLOGICAL REPORT			

HAZELTON GROUP

COAL SEAMS 3.4m MEAS. SEC. 1979

COAL SEAM 2.66m

ANDESITE

OUTLINE OF PIT 1

OUTLINE OF PIT 2

McNEIL MINE PRE 1930 U/G 3.05m SEAM

L. 223 CL. 3879

L. 222 CL. 4272

L. 226 CL. 3879

L. 402

GRAVEL PIT

LUSCAR MINING AREA 1.83m SEAM

MEAS. SEC. 81-02 COAL SEAM 3.04m

COAL SEAM 1.1m

COAL SEAM 0.70m

B.V.C. NO. 4 MINE U/G 1.8m SEAM

SURFACE MINE

DYKES

BULKLEY VALLEY COLLIERIES LTD.

OUTLINE OF PIT 3

OUTLINE OF PIT 4

OUTLINE OF PIT 6

SKEENA GROUP

B.V.C. NO. 4 EXTENSION U/G 5.12m SEAM MEAS. SEC. 06-7

OUTLINE OF PIT 5

MDST - THIN BEDDED

MDST - / MINOR CONG. NEARLY FLAT LYING

DYKE

B.V.C. NO. 2 MINE 1943 - 5 90,500T 3.7m SEAM

Si/MDST. FINELY LAMINATED

MDST w/CONG.

MDST w/Si

B.V.C. NO. 1 MINE U/G 1930-43 80,000T

L. 401 FREEHOLD

L. 248 CL. 4271

L. 391 FREEHOLD

L. 392 CL. 3878

L. 400 CL. 3884

L. 393 CL. 3885

SKEENA GROUP

HAZELTON GROUP

HAZELTON GROUP

SEE SHEET NO. B3, DRAWING NO. TW3U06 (1:10,000)

6 057 000 mN
6 056 500 mN
6 056 000 mN
6 055 500 mN
6 055 000 mN
6 054 500 mN
6 054 000 mN
6 053 500 mN
54° 38' 00"
54° 37' 00"
619 000 mE
619 500 mE
620 000 mE
620 500 mE
621 000 mE
621 500 mE
622 000 mE
622 500 mE
623 000 mE
127° 09' 00"
127° 08' 00"
127° 07' 00"
126° 06' 00"

MAP INDEX 93L10/11

LEGEND

MAIN ROAD
SECONDARY ROAD
BRIDGE, CULVERT
TRACK or TRAIL
BUILDING
POLE
FENCE
LOT LINE
CUT LINE
SPOT HEIGHT
CONTOURS
DEPRESSION

RIVER
INTERMITTENT STREAM
LAKE
SWAMP
SAND
SLIDE
TREES
DRILL HOLE
HORIZONTAL CONTROL
VERTICAL CONTROL
HORIZONTAL VERTICAL CONTROL

NOTE: LOT LINES APPROXIMATE ONLY

MAP PROJECTION: UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN REFERENCE 129° W. UTM Zone 9

SURVEY NOTE:

3 Coordinates are on U.T.M. Grid (Zone 9) and are derived from Government control stations Blitzen, Padre, and Tack. Elevations are on Geodetic Datum and are derived from BM 79HA369 = 538.922 metres via reciprocal trigonometric levelling.

NOTE 5 Metre Contour interpolated from 1:2000 Mapping

PREPARED BY: Aero Geometrics Ltd.

METRES 100 50 0 100 200 300 400 500 METRES

SCALE: 1:5000

T.N. Grid North

LEGEND

HAZELTON GROUP (VOLCANICS) - (unconformable contacts) - Jurassic
SKEENA GROUP (SEDIMENTS) - (unconformable contacts) - Lower Cretaceous
TERTIARY INTRUSIVE - (unconformable contacts)
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REVERSE FAULT (APPROXIMATE) - (triangle indicates upthrown side)
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ALIGNMENT OF UNKNOWN GEOLOGICAL SIGNIFICANCE (air photo interpreted)
BEDDING ATTITUDE
OUTCROP
B.V.C. SURFACE MINE AREA AND BOUNDARIES OF PREVIOUS UNDERGROUND MINES
DRILL HOLE (Crows Nest Resources Ltd.)
BULKLEY VALLEY COLLIERIES LTD.
PREVIOUS UNDERGROUND MINE
COAL LICENCE BOUNDARY (approx)
TRENCH
PLACER EXPLN' DRILL HOLE - 1970
SYNCLINE (arrow indicates direction of plunge)

712

Crows Nest Resources Limited
EXPLORATION

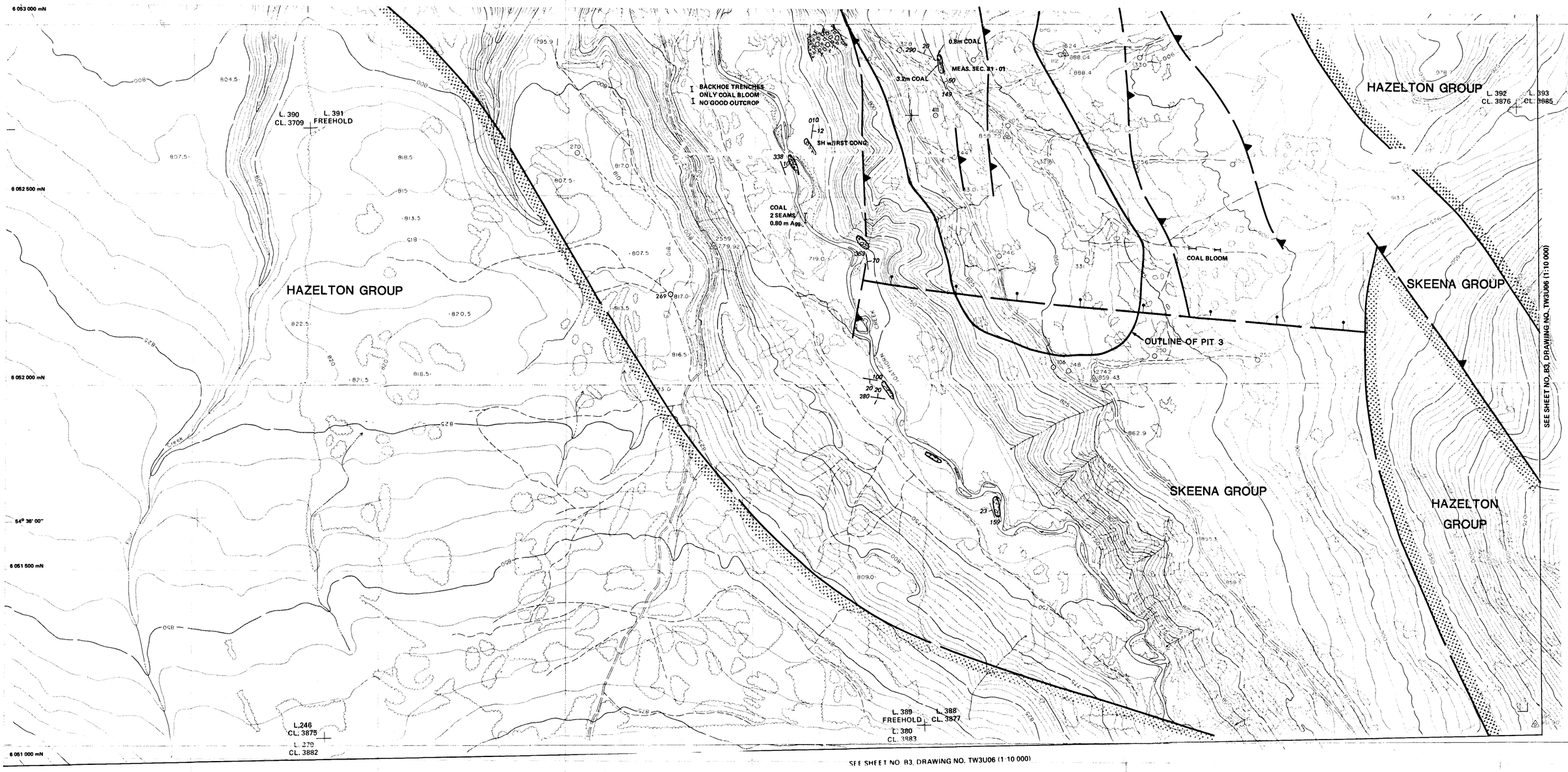
TELKWA PROJECT
SMITHERS AREA
WEST CENTRAL B.C.

8

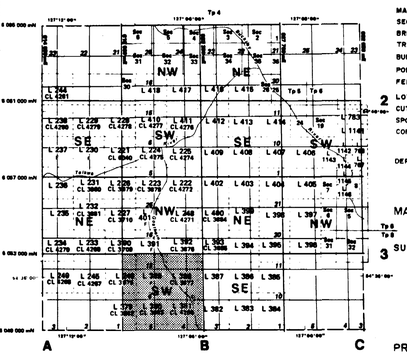
GEOLOGICAL MAP

N.T.S: 93L11 UTM ZONE 9

AUTHOR: D. HANDY/S. CAMERON	SCALE: 1:5000	DRAWN BY:
DATE: 85-01	REVISED:	DRAWING No: TW2U16
To Accompany 1985 GEOLOGICAL REPORT		



MAP INDEX 93L10/11



MAP PROJECTION: UNIVERSAL TRANSVERSE MERCATOR
CENTRAL MERIDIAN REFERENCE 129° W. UTM Zone 9

3 SURVEY NOTE:
Coordinates are on U.T.M. Grid (Zone 9) and are derived from Government control stations Blitzen, Padre, and Tack. Elevations are on Geodetic Datum and are derived from BM 79HA369 = 538.922 metres via reciprocal trigonometric levelling.

PREPARED BY: Aero Geometrics Ltd.

LEGEND

- MAIN ROAD
- SECONDARY ROAD
- BRIDGE, CULVERT
- TRACK or TRAIL
- BUILDING
- POLE
- FENCE
- LOT LINE
- CUT LINE
- SPOT HEIGHT
- CONTOURS
- DEPRESSION
- RIVER
- INTERMITTENT STREAM
- LAKE
- SWAMP
- SAND
- SLIDE
- TREES
- DRILL HOLE
- HORIZONTAL CONTROL
- VERTICAL CONTROL
- HORIZONTAL VERTICAL CONTROL

NOTE: LOT LINES APPROXIMATE ONLY

METRES 100 50 0 100 200 300 400 500 METRES

SCALE: 1:5000

CONTOUR INTERVAL: 5 METRES

DATE OF PHOTOGRAPHY:
Topography 1972
Planimetry 1975 & 1978
Compilation 1981 Cartography 1982

T. N. Grid North

LEGEND

- HAZELTON GROUP (VOLCANICS) - (unconformable contacts) - Jurassic
- SKEENA GROUP (SEDIMENTS) - (unconformable contacts) - Lower Cretaceous
- TERTIARY INTRUSIVE - (unconformable contacts)
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- B.V.C. SURFACE MINE AREA AND BOUNDARIES OF PREVIOUS UNDERGROUND MINES
- TW-8 ⊙213 DRILL HOLE (Crows Nest Resources Ltd.)
- B.V.C. BULKLEY VALLEY COLLIERIES LTD.
- PREVIOUS UNDERGROUND MINE
- COAL LICENCE BOUNDARY (approx)
- TRENCH
- ⊙ R-P-15 PLACER EXPLN' DRILL HOLE - 1970
- SYNCLINE (arrow indicates direction of plunge)

712

Crows Nest Resources Limited
EXPLORATION

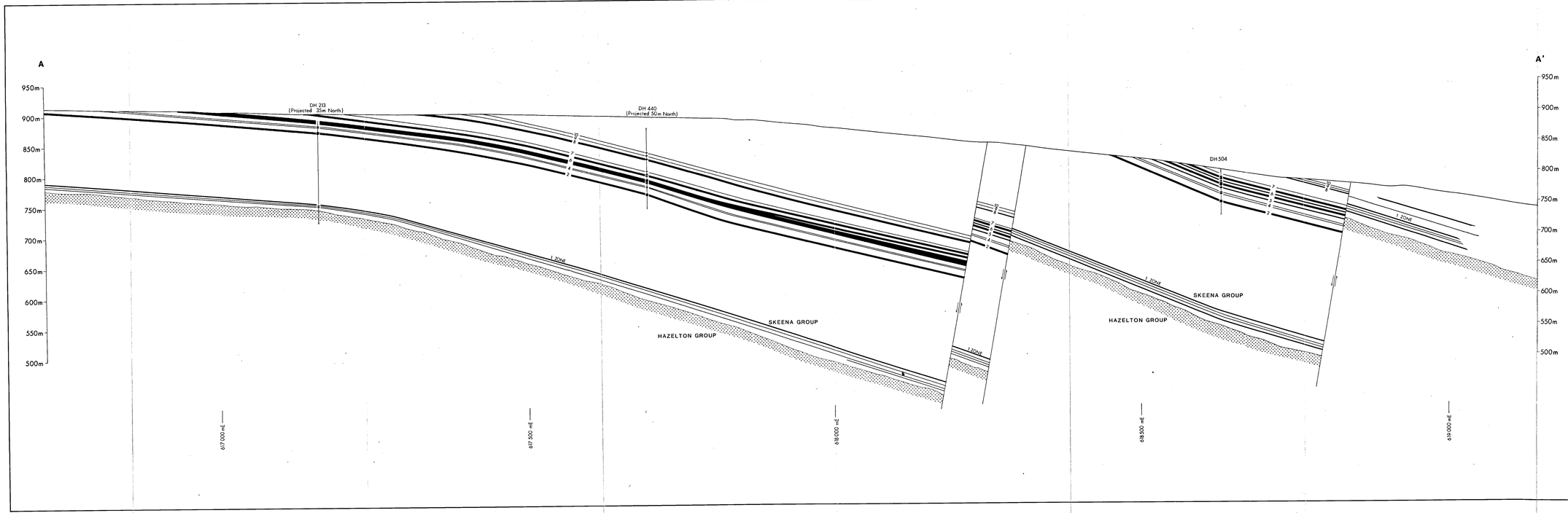
TELKWA PROJECT
SMITHERS AREA
WEST CENTRAL B.C.

(9)

GEOLOGICAL MAP

N.T.S: 93L11 UTM ZONE 9

AUTHOR: D. HANDY/S. CAMERON	SCALE: 1:5000	DRAWN BY:
DATE: 85-01	REVISED:	DRAWING No: TW2U19
To Accompany 1985 GEOLOGICAL REPORT		



712

Crows Nest Resources Limited

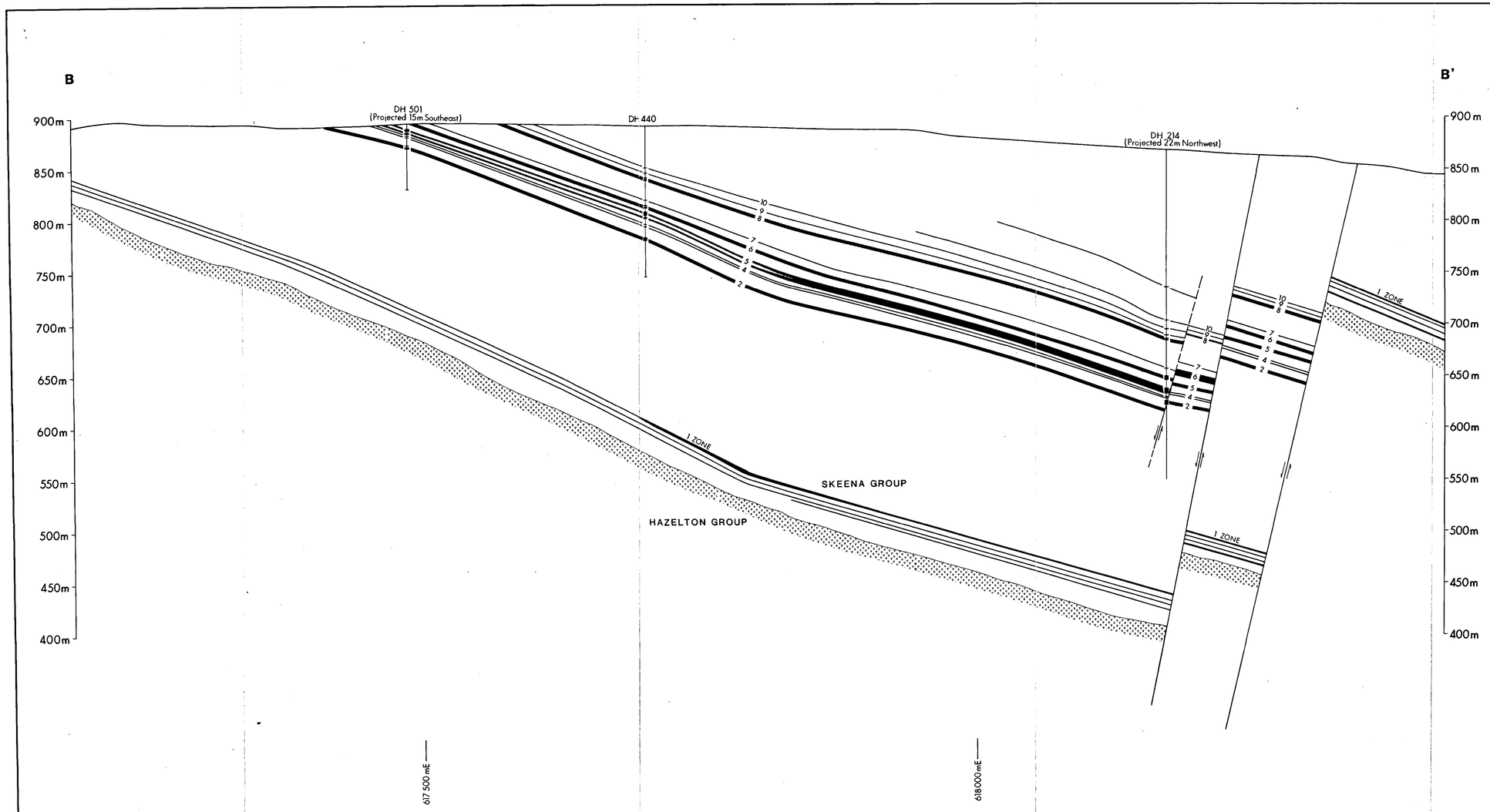
TELKWA
WEST CENTRAL B.C.

10

SECTION A - A'

NTS - 93L/11 UTM ZONE 9

AUTHOR CAMERON	SCALE 1:2000	DRAWN BY K.G.P.
DATE 86-03	REVISED	DRAWING No. TW1X09
As Accompanies		



712

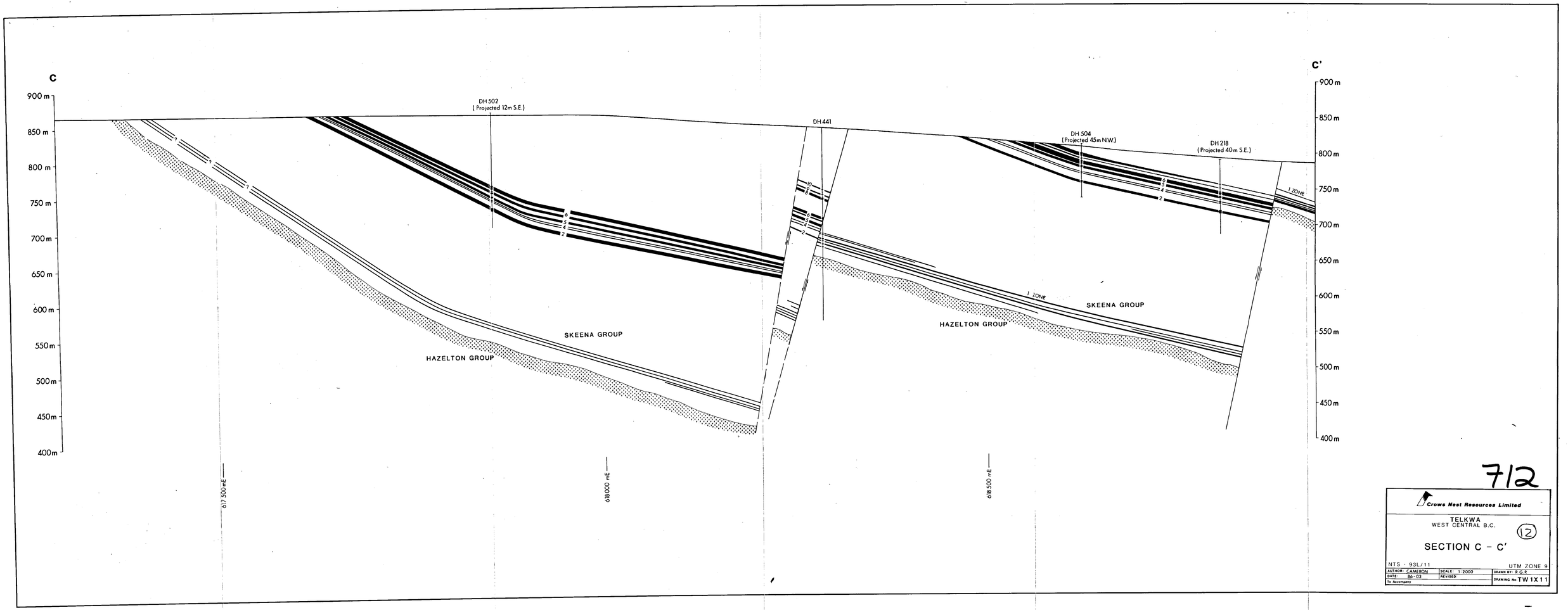
Crows Nest Resources Limited

TELKWA
WEST CENTRAL B.C.

(11)

SECTION B - B'

NTS - 93L/11		UTM ZONE 9
AUTHOR: CAMERON	SCALE: 1:2000	DRAWN BY: R.G.P.
DATE: 86-03	REVISED:	DRAWING No TW 1X10
To Accompany		



712

Crows Nest Resources Limited

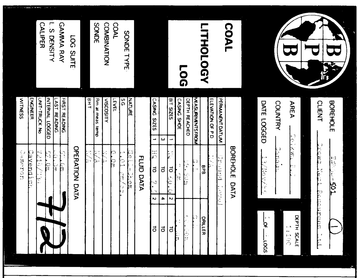
TELKWA
WEST CENTRAL B.C.

(12)

SECTION C - C'

NTS - 93L/11 UTM ZONE 9

AUTHOR CAMERON	SCALE 1:2000	DRAWN BY R.G.P.
DATE 86-03	REVISED	DRAWING No. TW1X11
To Accompany		



EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING			PANEL		CAL LOG	DEPTHS		SEAM LOG RUN
	SONDE	SOURCE	CALIBRATN	LOG SPEED	RECORD SPEED	DIRECT or REPLAY	SPEED	LOG SCALE	NORM	FROM	TO	W'RUN
GAMMA RAY												
L.S. DENSITY												
CALIPER	SIDEWALL POSITION											

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

	FROM	TO	INTERVAL TOTAL
1			
2			
3			
4			
INTERVAL			

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JG No. VALUE @ S' DIAM

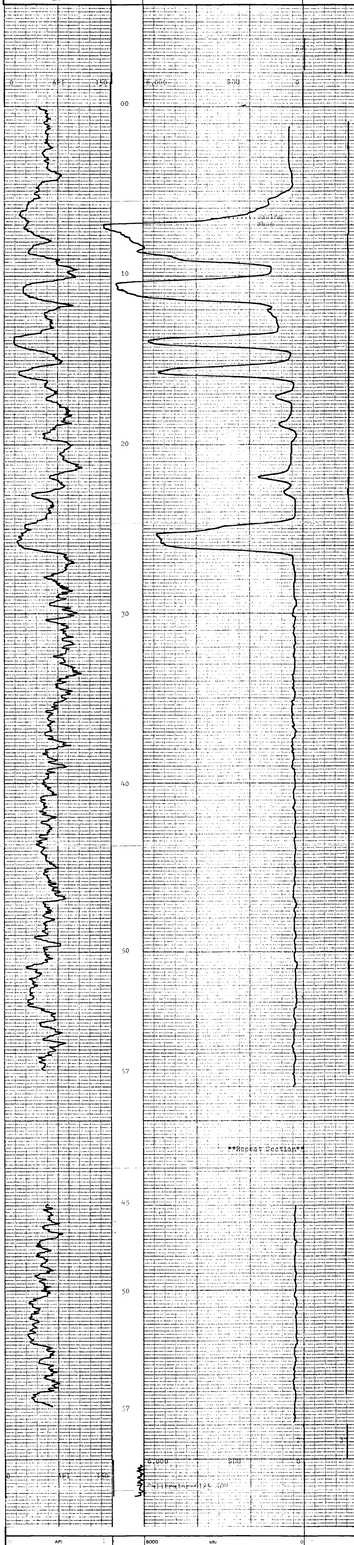
JG MARK SHOWN AT ABOVE VALUE -

JG CAL DATE JG VALUE SGU@ g/cm³ cps

JG No. SPAN NORM cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA



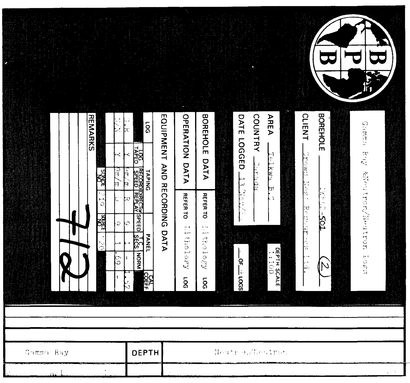
API		6000	Wtr	0
GAMMA RAY	DEPTH	BULK DENSITY g/cm³		CALIPER INCHES

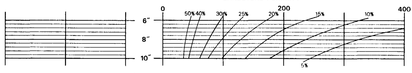
BOREHOLE AREA

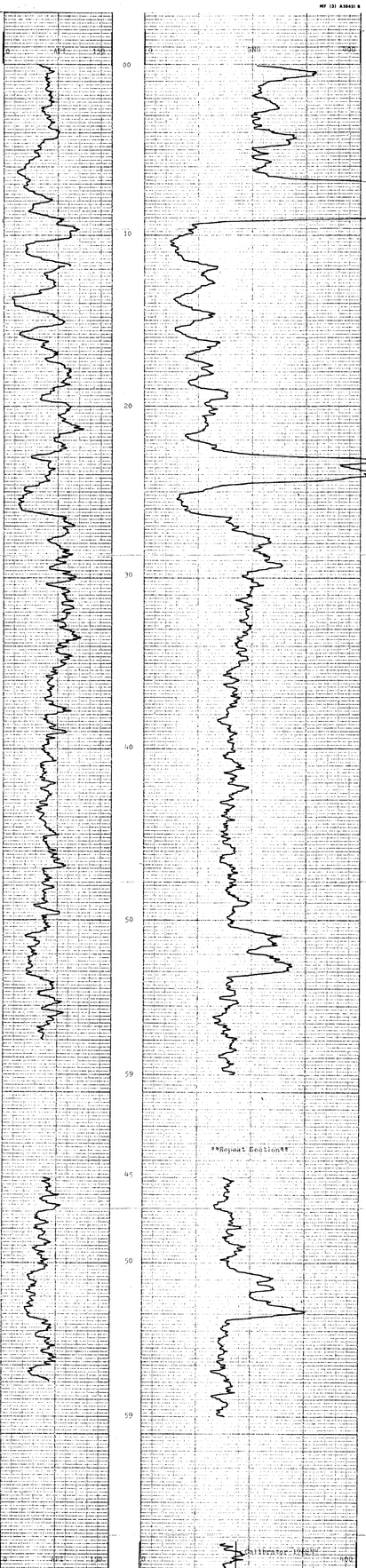
CLIENT COUNTRY

COAL LITHOLOGY LOG

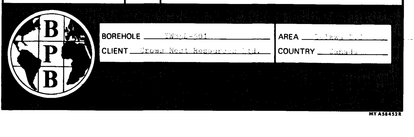
MT 1111214428

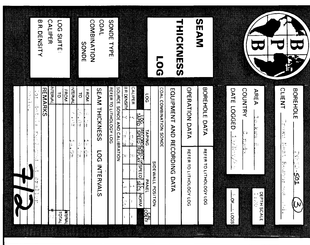






Gamma Ray
DEPTH
Neutron/Formation




SEAM THICKNESS LOG
LOG SUITE
CALIPER
B.R. DENSITY
SONDE TYPE
GAMMA COMBINATION
SONDE
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
SEAM THICKNESS LOG INTERVALS
REMARKS
BOREHOLE
CLIENT
AREA
COUNTRY
DATE LOGGED
SPS 3
STRATIGRAPHIC LOG
DEPTH
BED RESOLUTION DENSITY
CALIPER
INCHES

B P B SEAM THICKNESS LOG
CALIPER
INCHES
DEPTH
BED RESOLUTION DENSITY
21.000
2.500
3.000
**Scale change due to manipulation
BOREHOLE
CLIENT
AREA
COUNTRY
SEAM THICKNESS LOG

COAL QUALITY LOG

LOG SUITE: GAMMA RAY L.S. DENSITY

SONDE TYPE
COAL COMBINATION SONDE

BOREHOLE TW-Wo-162 (4)
CLIENT Trans Northern Resources Ltd.
AREA Yukon Area
COUNTRY Canada
DATE LOGGED 11-Nov-1982 — 09-Jan-1983
DEPTH LOGGED 1.0 — 28.0
REFERENCE LEVEL

BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
COAL COMBINATION SONDE
REFER TO LITHOLOGY LOG

LOG	TYPING	DEPTH	SPEED

REFER TO LITHOLOGY LOG
DEPTH CONTROL
SOURCE STRIP AND CORRECTION

	SOURCE	STRIP	CORRECTION
1			
2			

COAL QUALITY LOG INTERVALS
REFER TO LITHOLOGY LOG

	FROM	TO	THICKNESS
NOMINAL			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

REMARKS

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BPB COAL QUALITY LOG

DEPTH

Gamma Ray — COAL BULK DENSITY (g/cm³)

HOLE SIZE CORRECTION DATA

2" 4" 6" 8" — 1 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 2.3 2.4 2.5

6.000 — 4 ft — 0

6.000 — 0.000

4 6 10 12 14 16 18 23 24 26 28

0 — 100 — 200

0 — 100 — 200

6.000 — 4 ft — 0

Gamma Ray — COAL BULK DENSITY (g/cm³) — DEPTH

BPB

BOREHOLE TW-Wo-162 — AREA Yukon Area
CLIENT Trans Northern Resources Ltd. — COUNTRY Canada

COAL QUALITY LOG

COAL LITHOLOGY LOG

BPB

BOREHOLE
CLIENT
AREA
COUNTRY
DATE
SURFACE LEVEL
DRILLED DEPTH
LOGGED DEPTH
CASING DEPTH
CASING DIAMETER
DRILLING METHOD
FLUSH MEDIUM
HOLE DIAMETER
DRILLING CONTRACTOR
RIG TYPE
LOGGED BY
DRILLER
DRILLER'S REMARKS

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EQUIPMENT AND RECORDING DATA

COAL CONTACTS (TICKS)

CAL	SONDE	COUNTER No's		TIMING		PANEL			TOTAL		TICKS ON RUN
				LOG SPEED	CHART SPEED	SCALE	ZERO	FILTER	RUN No.	DATE	

COARSE
TO
DETAIL
DETAIL
TO
COARSE

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (NAN to shown by)

FROM
TO
INTERNAL

ADDITIONAL SONDES RUN				REMARKS
SONDE	LOG	COUNTER No's	TIMING	

NOTE TO ADDITIONAL READINGS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

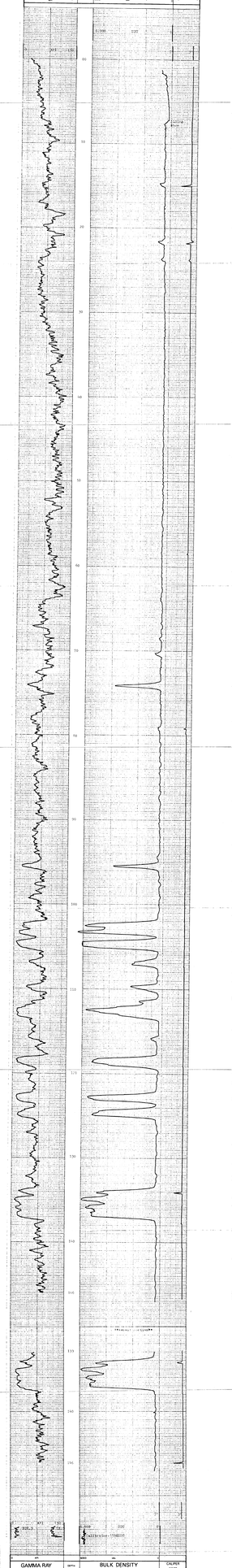
At No	Ht of	@ 1 Sonde	At Ht of	No @	gm/cc
At Same Number of Holes Ht of			At No	Shots	

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

API — DEPTH — gm/cc — INCHES

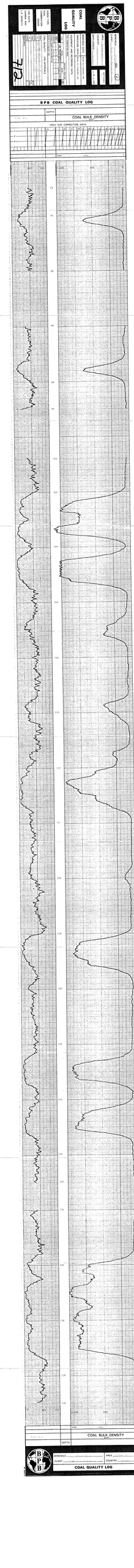


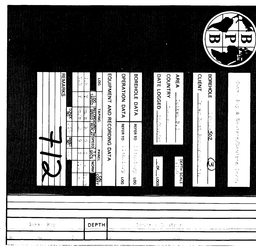
GAMMA RAY — DEPTH — BULK DENSITY — CALIPER

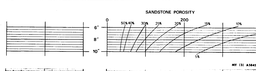
BPB

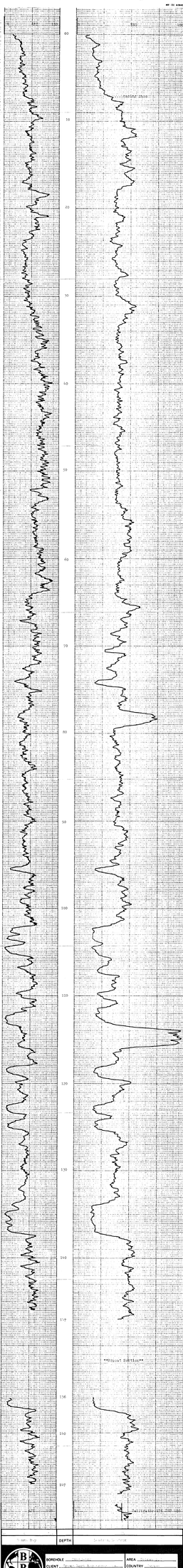
BOREHOLE — AREA
CLIENT — COUNTRY

COAL LITHOLOGY LOG

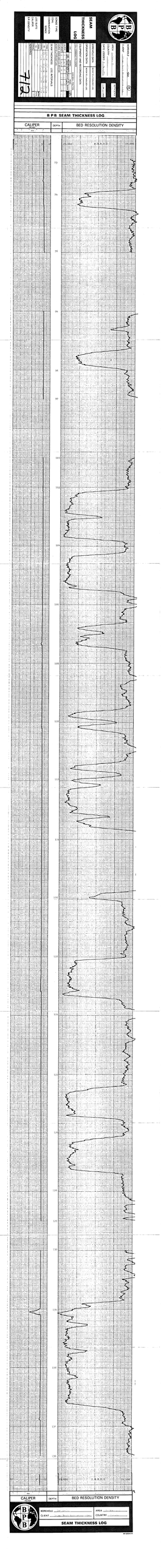

COAL QUALITY LOG
BPB COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
COAL BULK DENSITY
DEPTH
BOREHOLE
CLIENT
AREA
COUNTRY
COAL QUALITY LOG


BPB
DENSILOG
DENSILOG FIELD PRINT
CALIPER
GAMMA RAY
CCL
DATE LOGGED
RUN No.
DEPTH DRILLER
DEPTH LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE OF RMF
SOURCE OF RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
CLIENT
BOREHOLE
AREA
COUNTRY
DEPTH


SANDSTONE POROSITY
0
10%
15%
20%
30%
40%
50%
60%
400
8"
12"
16"
API UNITS


60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
...Caliper Log...
Mineral Section
...Caliper Log and Gamma Ray Log...


DEPTH
BOREHOLE
AREA
CLIENT
COUNTRY


BPB
SEAM THICKNESS LOG
BPB SEAM THICKNESS LOG
CALIPER
DEPTH
BED RESOLUTION DENSITY
BOREHOLE
CLIENT
AREA
COUNTY
SEAM THICKNESS LOG

BOREHOLE TW85D-502 (5)
CLIENT Crows Nest Resources Ltd.

AREA Telkwa B.C
COUNTRY Canada
DATE LOGGED 14/Nov/85

DEPTH SCALE 1:100

5 OF 5 LOGS

MULTI-CHANNEL SONIC LOG

BOREHOLE DATA

PERMANENT DATUM	Ground Level			
ELEVATION OF P D	N/A			
	BPB		DRILLER	
MEASUREMENTS FROM	G.L		G.L	
DEPTH REACHED	147.0m		148.43m	
CASING SHOE	7.0m		7.0m	
BIT SIZES	1 NQ TO 148.4		2 TO	
	3 TO		4 TO	
CASING SIZES	1 HQ TO 7.0		2 TO	

FLUID DATA

NATURE	Gell-Chem
SG	1.01
LEVEL	0.0m
VISCOSITY	N/A
Rm at meas temp	N/A
BHT	N/A

OPERATION DATA

FIRST READING	146.0m
LAST READING	7.0m
INTERVAL LOGGED	139.0m
UNIT-TRUCK No	V214/U34
ENGINEER	Cavendish
WITNESS	Cameron

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EQUIPMENT AND RECORDING DATA

SONDE No. 410

CENTRALISERS SET TO 4 inches DIAMETER

	TRANSDUCER ARRANGEMENT			GENERAL LOGGING		DETAIL LOGGING		DATA RECORDED			DATA DISPLAYED		
	RECEIVER PAIR	SPACING R-R	SPACING T-R	SPEED	TC SECS	SPEED	TC SECS	FROM	TO	INTERVAL	FROM	TO	INTERVAL
CHANNEL 1	R1 - R2	8"	24"	9m/m	.3			146	07	139	146	07	139
CHANNEL 2	R2 - R4	16"	32"	9m/m	.3	-	-	146	07	139	-	-	-
CHANNEL 3	R1 - R4	24"	24"	9m/m	.3	-		146	07	139	-	-	-
CHANNEL 4	R3 - R4	8"	40"	9m/m	.3	-		146	07	139	-	-	-

DETAIL ZONES DISPLAYED (SEE RELEVANT LOG)

FROM
TO **No MCS detail displayed**
INTERVAL

INTERVAL TOTAL

REMARKS

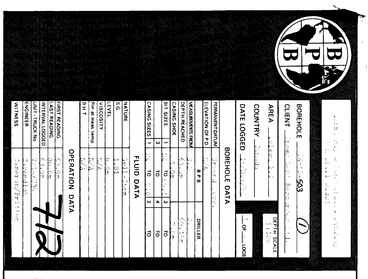
G.R displayed in Ft.

TOP OF SONDE

BOREHOLE TW85D-502
CLIENT Crows Nest Res. Ltd.
AREA Telkwa B.C
COUNTRY Canada

MC SONIC LOG

MY 126058R

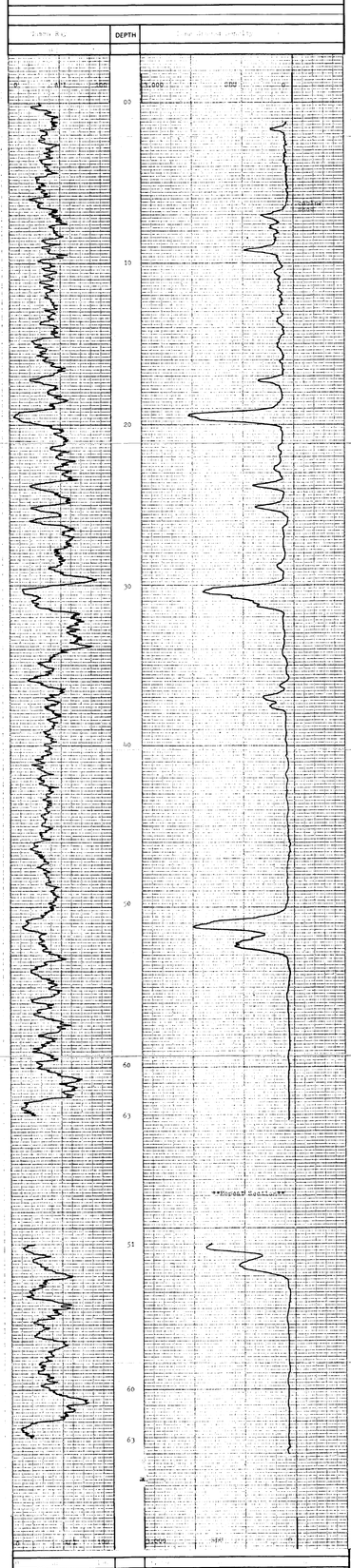


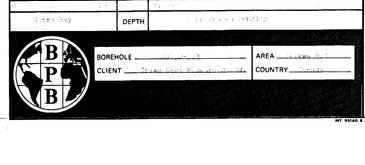
EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT			TAPING		PANEL		CAL LOG	DEPTH		
	SONDE	SOURCE	CALIBRATOR	LOG SPEED	RECORD/DIRECTION REPLAY	SPEED	T.C. SECS	NORM	FROM	TO	INTERV.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ADDITIONAL SONDES RUN				REMARKS
SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REFER TO ADDITIONAL HEADINGS





MT 93160 B

BPB

BOREHOLE 42/25-2 (2)
CLIENT Texaco North Sea (UK) Ltd.
AREA 42/25
COUNTRY United Kingdom
DATE LOGGED 4-Jun-84
DEPTH DATUM RT
LOG MEASURED FROM RT
DRILLING MEASURED FROM RT
PERMANENT DATUM MSL
ELEVATION OF PERMANENT DATUM 0 m
ELEVATION OF KELLY BUSHING 25 m
ELEVATION OF DERRICK FLOOR 24 m
ELEVATION OF GROUND LEVEL 0 m
APD 25 m
LOG MEASURED FROM RT
DRILLING MEASURED FROM RT

BOREHOLE DATA
RUN NO. 1
DEPTH DRILLER 3100
DEPTH LOGGER 3100
BTM LOG INTERVAL 3100
TOP LOG INTERVAL 2000
CASING DRILLER 13⅜" @ 1000
CASING LOGGER 1000
BIT SIZE 12¼"
TYPE FLUID IN HOLE Gel Chem
DENSITY 1.15
VISCOSITY 60
PH 10
FLUID LOSS 4.8
SOURCE OF SAMPLE Flowline
RM @ MEAS TEMP 0.19 @ 60°F
RMF @ MEAS TEMP 0.15 @ 60°F
RMC @ MEAS TEMP 0.23 @ 60°F
SOURCE OF RMF & RMC Measured
RM @ BHT 0.12 @ 120°F
TIME SINCE CIRC 12 hrs
MAX REC TEMP 120°F
EQUIP LOCATION Aberdeen
RECORDED BY Hall
WITNESSED BY Mr. Bell

OPERATION DATA
RIG NO. Sedco 703
TYPE LOG DLL-MSFL-BHC-GR
TYPE LOG LDL-CNL-GR
TYPE LOG CBL-VDL-GR
TYPE LOG
TYPE LOG

EQUIPMENT AND RECORDING DATA
LOG DLL-MSFL-BHC-GR
TRACK NO. 1
RECORDED ON TAPE NO. 72
LOG LDL-CNL-GR
TRACK NO. 2
RECORDED ON TAPE NO. 72
LOG CBL-VDL-GR
TRACK NO. 3
RECORDED ON TAPE NO. 72
LOG
TRACK NO.
RECORDED ON TAPE NO.
LOG
TRACK NO.
RECORDED ON TAPE NO.

REMARKS
Run 1 - Logged with 1000 psi on DP.
Repeat Section 3100 - 2000
Main Log 3100 - 2000

72

Drawn by: DEPTH

SANDSTONE POROSITY
0 400
6" 50% 40% 30% 25% 20% 15% 10%
8" 200
10" 5%

MY (3) A30410 A

2000 3000

00
10
20
30
40
50
60
64
"Repeat Section"
53
60
64

2000 3000

Drawn by: DEPTH

BPB

BOREHOLE 42/25-2 (2)
CLIENT Texaco North Sea (UK) Ltd.
AREA 42/25
COUNTRY United Kingdom

MY A30410 B

BOREHOLE TW83-S03 ③

CLIENT Crows Nest Resources Ltd.

AREA Telkwa B.C.

COUNTRY Canada

DATE LOGGED 16/Nov/83

DEPTH SCALE 1:20

1 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

	TAPING			PANEL			
LOG	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	T C SECS	NORM	CAL COEFF
GAMMA RAY	Y	2m/m	B	2	1	-	1.4
L.S DENSITY	Y	2m/m	R	2	1	1.14	-

SOURCE, SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

COAL QUALITY LOG INTERVALS

FROM	54.0m	33.0m	21.0m	
TO	49.0m	28.0m	18.0m	
INTERVAL	5.0m	5.0m	3.0m	
FROM				
TO				
INTERVAL				INTERVAL TOTAL = 13

REMARKS

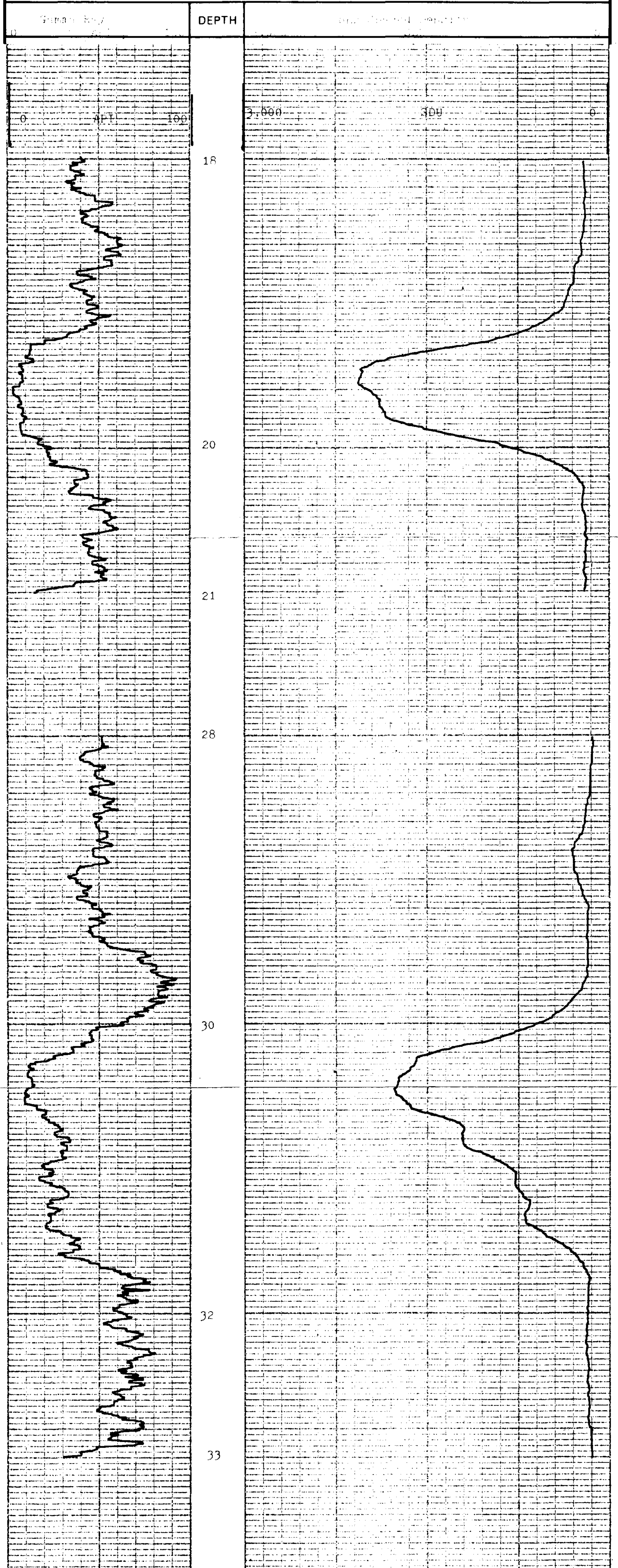
please note unusual scales due to drill rod effect.

7/2

SONDE TYPE:
COAL
COMBINATION
SONDE

LOG SUITE:
GAMMA RAY
L.S. DENSITY

BPB COAL QUALITY LOG



BOREHOLE TW83-S03

CLIENT Crows Nest Resources Ltd.

AREA Telkwa B.C.

COUNTRY Canada

COAL QUALITY LOG

MY 88002 R

BOREHOLE [illegible]-503 ④
CLIENT Crows Nest Resources Ltd.

AREA Telkwa B.C.
COUNTRY Canada
DATE LOGGED 16/Nov/8[illegible]

DEPTH SCALE 1:[illegible]

[illegible] OF [illegible] 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 or REPLAY	SPEED	TC SECS	NORM	
CALIPER	Y	[illegible]m/m	-	-	-	-	-
B R DENSITY	Y	2m/m	R	2	1	[illegible].40	-

SOURCE. SONDE AND CALIBRATION
REFER TO LITHOLOGY LOG

SONDE TYPE:
COAL
COMBINATION
SONDE

LOG SUITE:
CALIPER
B.R. DENSITY

SEAM THICKNESS LOG INTERVALS

FROM	54.0m	33.0m	21.0m	
TO	49.0m	28.0m	18.0m	
INTERVAL	5.0m	5.0m	3.0m	
FROM				INTERVAL
TO				TOTAL
INTERVAL				= 13

REMARKS
Please note unusual scales due to drill rod effect. Caliper not displayed.

712

B P B SEAM THICKNESS LOG

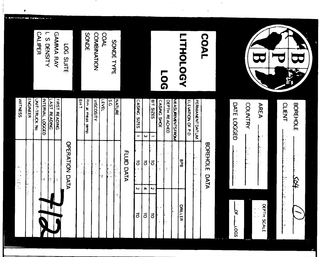
DEPTH	BED RESOLUTION DENSITY

DEPTH	BED RESOLUTION DENSITY
	12.000 S.B.R.D.U. 8.000

BOREHOLE [illegible]-503
CLIENT Crows Nest Resources Ltd.
AREA Telkwa B.C.
COUNTRY Canada

SEAM THICKNESS LOG

MY 88002 R



EQUIPMENT AND RECORDING DATA

COAL ITHOLOGY/GAMMA SONDE

LOG	EQUIPMENT			TAPING			PANEL		CAL.	DEPTHS				SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG STATUS	RECORD/DIRECT. DISPLAY	F.F. SPEED	SPEED	NORM	API/m	FROM	TO	NORM		
GAMMA RAY														
DENSITY														
CALIPER	SIDEWALL POSITION													

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM					INTERVAL TOTAL
TO					
INTERVAL					

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG/SCALE LOG	DETAIL SCALE LOG/SCALE LOG

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No. VALUE @ 9.10AM

JIG MARK SHOWN AT ABOVE VALUE =

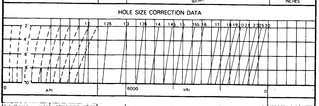
JIG CAL DATE

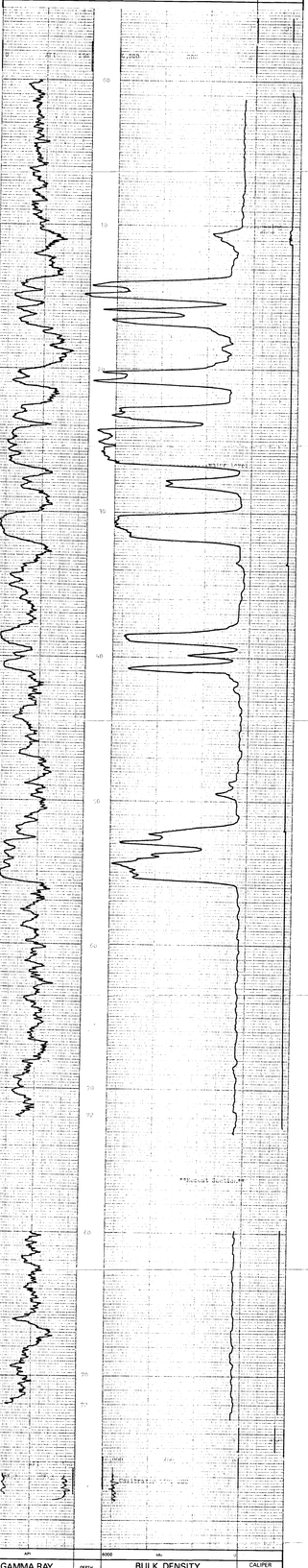
JIG VALUE SGU @ g/cm³ cps

JIG No. SPANS NORM API+ cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA





GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BPB

BOREHOLE _____ AREA _____

CLIENT _____ COUNTRY _____

COAL LITHOLOGY LOG

712

BPB

BOREHOLE 5694 (2)
CLIENT
AREA
COUNTRY
DATE LOGGED
SECTION
LOCATION
DEPTH
BOREHOLE DATA
DEPTH TD
CASING
OPERATION DATA
DEPTH TD
EQUIPMENT AND RECORDING DATA
LOG
RUN
TOOL TYPE
SERIAL NO.
POSITION
PASS
SPEED
REMARKS

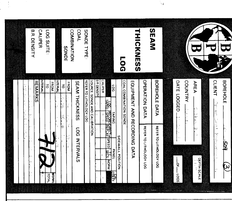
SANDSTONE POROSITY
0 200 400
6"
8"
10"
0% 5% 10% 15% 20% 25% 30%

GND

DEPTH

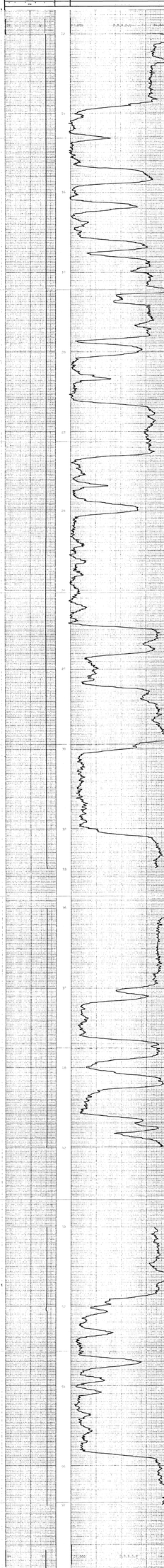
BPB

BOREHOLE
CLIENT
AREA
COUNTRY



B P B SEAM THICKNESS LOG

CALIPER	DEPTH	BED RESOLUTION DENSITY

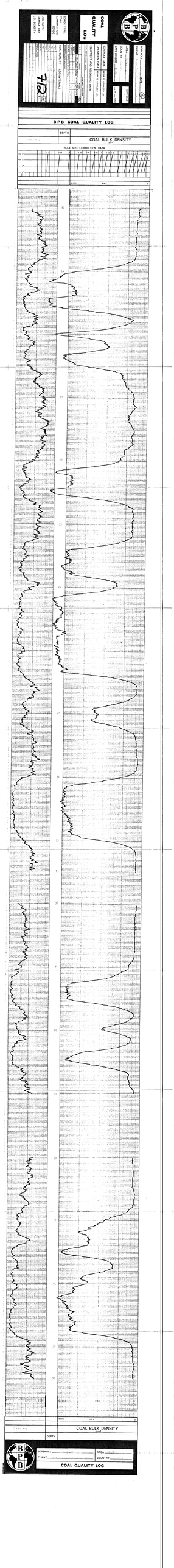


CALIPER	DEPTH	BED RESOLUTION DENSITY

BOREHOLE _____ AREA _____

CLIENT _____ COUNTRY _____

SEAM THICKNESS LOG


BPB
COAL QUALITY LOG
DENSITY TOOL
DETECTOR
SOURCE
DENSITY DATA
CALIPER DATA
GAMMA RAY DATA
OTHER DATA
DATE
RUN NUMBER
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENSITY
PH
FLUID LEVEL
MAX REC TEMP
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
REMARKS
TOOL NUMBER
TOOL TYPE
SOURCE TYPE
SOURCE STRENGTH
DENSITY RECORDED
CALIPER RECORDED
GAMMA RAY RECORDED
OTHER RECORDED
RM @ MEAS. TEMP
RMF @ MEAS. TEMP
RMC @ MEAS. TEMP
SOURCE OF RMF & RMC
RM @ BHT
TIME SINCE CIRC.
TIME ON BOTTOM
MAX. RECORDED TEMP.
EQUIPMENT NUMBER
LOCATION
RECORDED BY
WITNESSED BY
BPB COAL QUALITY LOG
DEPTH
COAL BULK DENSITY
HOLE SIZE CORRECTION DATA
CALI
BS
KMM
CDC
COAL BULK DENSITY
DEPTH
BPB
BOREHOLE
CLIENT
AREA
COUNTRY
COAL QUALITY LOG

TK - TELKWA 85 A

Confidential Coal Analyses

(Enclosure 1-1)

00712
part 2

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	1 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-501													
1	RAW COAL			As Received	7.39	-		14.93		.62			
6.83-11.76				Air Dried	-	.45		16.05		.67		2	
				Dry Basis	-	-		16.12		.67			
	-1.60FLT	-	86.36	Air Dried	-	.56	29.21	10.96	59.27	.57	7437	2	
				Dry Basis	-	-	29.37	11.02	59.61	.57	7479		
2	RAW COAL			As Received	5.14	-		12.39		1.75			
13.56-14.44				Air Dried	-	.32		13.02		1.84		2½	
				Dry Basis	-	-		13.06		1.85			
	-1.60FLT	-	91.64	Air Dried	-	.75	29.40	10.18	59.67	1.22	7584	2½	
				Dry Basis	-	-	29.62	10.26	60.12	1.23	7641		
3	RAW COAL			As Received	4.72	-		15.02		1.21			
15.36-16.18				Air Dried	-	.18		15.74		1.27		1	
				Dry Basis	-	-		15.77		1.27			
	-1.60FLT	-	87.37	Air Dried	-	.51	28.12	10.34	61.03	1.05	7499	1	
				Dry Basis	-	-	28.26	10.39	61.35	1.06	7537		

CONFIDENTIAL

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

FILE NO. AA-4

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD
ATTENTION	B. RYANS
PROJECT	TELKWA PROJECT
FILE NO.	28180
DATE	December 23/85
PAGE	2 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-501													
4	RAW COAL			As Received	2.57	-		46.20		3.28			
22.8-23.14				Air Dried	-	.44		47.21		3.35		0	
				Dry Basis	-	-		47.42		3.36			
	-1.60FLT	-	2.89	Air Dried	-	.55	17.13	13.70	68.62	.79	7016	1	
				Dry Basis	-	-	17.22	13.78	69.00	.79	7055		
5	RAW COAL			As Received	5.25	-		16.98		.49			
24.65-26.42				Air Dried	-	.50		17.83		.51		1	
				Dry Basis	-	-		17.92		.51			
	-1.60FLT	-	78.88	Air Dried	-	.67	22.77	8.86	67.70	.52	7646	1	
				Dry Basis	-	-	22.92	8.92	68.16	.52	7698		

PURCHASE ORDER NUMBER: CN 24019

ANALYST: _____

FILE NO. AA-4(

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	3 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-502													
1	RAW COAL			As Received	3.34	-		23.31		3.21			
73.9-74.48				Air Dried	-	.32		24.04		3.31		1½	
				Dry Basis	-	-		24.12		3.32			
	-1.60FLT	-	78.91	Air Dried	-	.78	29.34	18.32	51.56	2.66	6759	1½	
				Dry Basis	-	-	29.57	18.46	51.97	2.68	6812		
2	RAW COAL			As Received	3.48	-		23.02		3.01			
95.36-95.91				Air Dried	-	.27		23.79		3.11		2½	
				Dry Basis	-	-		23.85		3.12			
	-1.60FLT	-	70.03	Air Dried	-	.76	31.54	12.14	55.56	2.07	7283	4	
				Dry Basis	-	-	31.78	12.23	55.99	2.09	7339		
3	RAW COAL			As Received	3.56	-		13.42		1.71			
102.13-103.76				Air Dried	-	.38		13.86		1.77		4½	
				Dry Basis	-	-		13.91		1.78			
	-1.60FLT	-	86.77	Air Dried	-	.74	32.49	7.04	59.73	1.17	7779	5½	
				Dry Basis	-	-	32.73	7.09	60.18	1.18	7867		

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

FILE NO. AA-4

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	4 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-502													
4	RAW COAL			As Received	3.36	-		80.79		3.91			
103.76-104.28				Air Dried	-	.41		83.26		4.03		0	
				Dry Basis	-	-		83.60		4.05			
	-1.60FLT	-	1.20	Air Dried	-	.88	25.60	42.99	30.53	3.08	4462	4	
				Dry Basis	-	-	25.83	43.37	30.80	3.11	4502		
5	RAW COAL			As Received	4.48	-		7.67		.95			
104.28-105.5				Air Dried	-	.31		8.01		.99		3½	
				Dry Basis	-	-		8.03		.99			
	-1.60FLT	-	95.43	Air Dried	-	.80	30.20	5.92	63.08	.82	7852	3½	
				Dry Basis	-	-	30.44	5.97	63.59	.83	7915		
6	RAW COAL			As Received	2.92	-		44.33		.63			
106.68-107.46				Air Dried	-	.59		45.39		.65		1	
				Dry Basis	-	-		45.66		.65			
	-1.60FLT	-	35.84	Air Dried	-	1.00	24.93	20.78	53.29	.98	6499	3	
				Dry Basis	-	-	25.18	20.99	53.83	.99	6565		

PURCHASE ORDER NUMBER: CN 24019

ANALYST: _____

FILE NO. AA-46

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY: CROWSNEST RESOURCES LTD
ATTENTION: B. RYANS
PROJECT: TELKWA PROJECT
FILE NO.: 28180
DATE: December 23/85
PAGE 5 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-502													
7	RAW COAL			As Received	3.45	-		39.52		1.76			
109.63-110.3				Air Dried	-	.38		40.78		1.82		1	
				Dry Basis	-	-		40.94		1.83			
	-1.60FLT	-	48.43	Air Dried	-	1.04	26.44	15.48	57.04	1.39	7029	2½	
				Dry Basis	-	-	26.72	15.64	57.64	1.40	7103		
8	RAW COAL			As Received	4.23	-		26.78		.80			
111.42-116.08				Air Dried	-	.34		27.87		.83		0	
				Dry Basis	-	-		27.97		.83			
	-1.60FLT	-	62.84	Air Dried	-	.74	14.65	10.14	74.47	.76	7518	0	
				Dry Basis	-	-	14.76	10.22	75.02	.77	7574		
9	RAW COAL			As Received	3.36	-		18.51		.50			
118.08-119.38				Air Dried	-	.38		19.08		.52		3½	
				Dry Basis	-	-		19.15		.52			
	-1.60FLT	-	83.68	Air Dried	-	1.17	29.88	10.51	58.44	.59	7401	4½	
				Dry Basis	-	-	30.23	10.63	59.14	.60	7489		

PURCHASE ORDER NUMBER: CN 24019

ANALYST: _____

FILE NO. AA-4

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD
ATTENTION	B. RYANS
PROJECT	TELKWA PROJECT
FILE NO.	28180
DATE	December 23/85
PAGE	6 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE #TW-502													
10	RAW COAL			As Received	4.34	-		10.75		1.35			
122.46-123.48				Air Dried	-	.38		11.20		1.41		3	
				Dry Basis	-	-		11.24		1.42			
	-1.60FLT	-	93.07	Air Dried	-	.71	28.61	8.60	62.08	1.01	7666	3	
				Dry Basis	-	-	28.81	8.66	62.53	1.02	7721		
11	RAW COAL			As Received	4.97	-		85.43		.63			
123.48-124.2				Air Dried	-	1.00		89.00		.66		0	
				Dry Basis	-	-		89.90		.67			
	-1.60FLT	-	1.54	Air Dried	-	1.02	18.16	46.81	34.01	.60	4210	0	
				Dry Basis	-	-	18.35	47.29	34.36	.61	4253		
12	RAW COAL			As Received	4.12	-		18.68		1.64			
124.2-125.32				Air Dried	-	.49		19.39		1.70		1½	
				Dry Basis	-	-		19.49		1.71			
	-1.60FLT	-	83.91	Air Dried	-	.61	26.77	12.64	59.98	1.17	7310	2	
				Dry Basis	-	-	26.93	12.72	60.35	1.18	7355		

PURCHASE ORDER NUMBER: CN 24019

ANALYST: _____

FILE NO. AA-46

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	7 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-502													
13	RAW COAL			As Received	5.13	-		14.23		.93			
133.79-137.32				Air Dried	-	.44		14.93		.98		3	
				Dry Basis	-	-		15.00		.98			
	-1.60FLT	-	87.40	Air Dried	-	.81	28.32	10.33	60.54	.69	7461	3	
				Dry Basis	-	-	28.55	10.41	61.04	.70	7522		

PURCHASE ORDER NUMBER: CN 24019

ANALYST: _____

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	8 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-503													
1	RAW COAL			As Received	4.27	-		18.02		1.75			
19.17-20.06				Air Dried	-	.46		18.74		1.82		3½	
				Dry Basis	-	-		18.83		1.83			
	-1.60FLT	-	83.80	Air Dried	-	.67	30.01	11.56	57.76	1.82	7382	5	
				Dry Basis	-	-	30.21	11.64	58.15	1.83	7432		
2	RAW COAL			As Received	4.15	-		26.58		2.38			
30.02-31.11				Air Dried	-	.67		27.54		2.47		3½	
				Dry Basis	-	-		27.73		2.49			
	-1.60FLT	-	68.23	Air Dried	-	.51	30.12	17.19	52.18	1.48	6966	4½	
				Dry Basis	-	-	30.27	17.28	52.45	1.49	7002		
3	RAW COAL			As Received	6.75	-		37.21		.36			
50.8-53.08				Air Dried	-	.56		38.74		.37		2	
				Dry Basis	-	-		38.96		.37			
	-1.60FLT	-	49.96	Air Dried	-	.83	28.49	17.15	53.53	.46	6774	4	
				Dry Basis	-	-	28.73	17.29	53.98	.46	6831		

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

FILE NO. AA-4

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD
ATTENTION	B.RYANS
PROJECT	TELKWA PROJECT
FILE NO.	28180
DATE	December 23/85
PAGE	9 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-504													
1	RAW COAL			As Received	7.47	-		26.27		2.02			
13.84-17.19				Air Dried	-	.70		28.19		2.17		2	
				Dry Basis	-	-		28.39		2.19			
	-1.60FLT	-	67.09	Air Dried	-	.85	31.80	8.03	59.32	1.36	7557	3½	
				Dry Basis	-	-	32.07	8.10	59.83	1.37	7622		
2	RAW COAL			As Received	5.26	-		13.15		2.50			
20.1-21.3				Air Dried	-	.43		13.82		2.63		3	
				Dry Basis	-	-		13.88		2.64			
	-1.60FLT	-	90.99	Air Dried	-	.78	29.60	8.23	61.39	.99	7626	3½	
				Dry Basis	-	-	29.83	8.29	61.88	1.00	7686		
3	RAW COAL			As Received	6.25	-		12.31		1.36			
22.62-26.92				Air Dried	-	.74		13.03		1.44		2	
				Dry Basis	-	-		13.13		1.45			
	-1.60FLT	-	88.20	Air Dried	-	.69	29.61	7.11	62.59	.79	7717	2½	
				Dry Basis	-	-	29.82	7.16	63.02	.80	7771		

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

FILE NO. AA-4(

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	10 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-504													
4	RAW COAL			As Received	4.07	-		79.80		2.19			
26.92-27.62				Air Dried	-	1.30		82.10		2.25		0	
				Dry Basis	-	-		83.18		2.28			
	-1.60FLT	-	1.81	Air Dried	-	.42	27.66	27.70	44.22	2.02	5871	5½	
				Dry Basis	-	-	27.78	27.82	44.40	2.03	5896		
5	RAW COAL			As Received	4.12	-		24.12		1.31			
27.62-28.44				Air Dried	-	1.12		24.87		1.35		2½	
				Dry Basis	-	-		25.15		1.37			
	-1.60FLT	-	71.62	Air Dried	-	.74	30.10	15.56	53.60	1.10	6942	3	
				Dry Basis	-	-	30.32	15.68	54.00	1.11	6994		
6	RAW COAL			As Received	4.92	-		11.43		1.07			
30.04-32.14				Air Dried	-	1.04		11.90		1.11		3½	
				Dry Basis	-	-		12.03		1.12			
	-1.60FLT	-	88.51	Air Dried	-	.70	31.13	6.90	61.27	.77	7777	4	
				Dry Basis	-	-	31.35	6.95	61.70	.78	7832		

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	11 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-504													
7	RAW COAL			As Received	6.51	-		12.27		1.52			
38.32-39.29				Air Dried	-	.80		13.02		1.61		2	
				Dry Basis	-	-		13.13		1.62			
	-1.60FLT	-	89.27	Air Dried	-	.54	29.68	8.59	61.19	1.20	7648	2	
				Dry Basis	-	-	29.84	8.64	61.52	1.21	7690		
8	RAW COAL			As Received	5.49	-		16.46		1.52			
40.52-41.24				Air Dried	-	.94		17.25		1.59		2	
				Dry Basis	-	-		17.41		1.61			
	-1.60FLT	-	82.04	Air Dried	-	.48	28.61	10.15	60.76	1.01	7493	2	
				Dry Basis	-	-	28.75	10.20	61.05	1.01	7529		
9	RAW COAL			As Received	6.16	-		22.32		.78			
51.8-55.72				Air Dried	-	1.04		23.54		.82		1½	
				Dry Basis	-	-		23.79		.83			
	-1.60FLT	-	75.14	Air Dried	-	.84	29.17	10.93	59.06	.62	7336	3	
				Dry Basis	-	-	29.42	11.02	59.56	.63	7398		

PURCHASE ORDER NUMBER: CN 24019

ANALYST: _____

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD
ATTENTION	B. RYANS
PROJECT	TELKWA PROJECT
FILE NO.	28180
DATE	December 23/85
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SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	KCAL/KG	F.S.I	NOTES
HOLE#TW-504													
10	RAW COAL			As Received	5.30	-		16.73		3.46			
39.8-40.16				Air Dried	-	.73		17.54		3.63		1	
				Dry Basis	-	-		17.67		3.66			
	-1.60FLT	-	81.74	Air Dried	-	.73	25.98	12.87	60.42	1.68	7205	1	
				Dry Basis	-	-	26.17	12.96	60.87	1.69	7258		

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	28180
ATTENTION	B. RYANS	DATE	December 23/85
PROJECT	TELKWA PROJECT	PAGE	13 of 13

SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT	BASIS OF ANALYSIS	REC'D % H_2O	% H_2O	% V.M.	% ASH	% F.C.	% S	BTU/LB	F.S.I	NOTES
TW-502 Sample 3,4,5 48:16:36	Composite			Air Dried	-	.57		22.04		1.70		3	
				Dry Basis	-	-		22.17		1.71			
	-1.60FLT	-	76.01	Air Dried	-	.93	31.00	7.14	60.93	1.05	7745	4½	
				Dry Basis	-	-	31.29	7.21	61.50	1.06	7818		
TW-502 Sample10,11,12 31:35:34	Composite			Air Dried	-	.70		40.89		1.31		1	
				Dry Basis	-	-		41.18		1.32			
	-1.60FLT	-	58.80	Air Dried	-	.79	27.57	10.92	60.72	1.04	7412	2	
				Dry Basis	-	-	27.79	11.01	61.20	1.05	7471		
TW-504 Sample 3,4,5 72:15:13	Composite			Air Dried	-	.95		24.94		1.48		1½	
				Dry Basis	-	-		25.18		1.49			
	-1.60FLT	-	73.24	Air Dried	-	.72	29.61	8.20	61.47	.86	7628	2½	
				Dry Basis	-	-	29.82	8.26	61.92	.87	7683		

4 2 2850 5

14:50

PURCHASE ORDER NUMBER: CN 24019

ANALYST:

FILE NO. AA-4