PR- SECUS MT. 88(1)A

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Crows Nest Resources LIMITED
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P.O. Box 2699, Station M, Calgary, Alberta T2P 2M7 Telex 03-822505

March 16, 1984

Ministry of Energy, Mines & Petroleum Resources
617 Government Street
Victoria, B.C.
V8V 1X4

Attention: Mr. P. Hagen
Coal Administrator

Dear Mr. Hagen:

Enclosed please find our report on the Secus Mountain project.

This report has been prepared by Mr. A. White, Geologist and Mr. D. Fietz, Staff Technologist, both of whom are employed by Crows Nest Resources Limited.

Mr. A. White, Honours B.Sc., graduated in Geology from the University of Waterloo in 1977. Prior to joining Crows Nest Resources Limited in 1980, Mr. White worked as a geologist on a number of mineral exploration programs in Northern Ontario, the Northwest Territories and British Columbia.

Mr. D. Fietz, C.E.T. graduated from Exploration Technology: Mineral Resources from the Northern Alberta Institute of Technology in 1972. Prior to joining Shell Canada Resources Limited/Crows Nest Resources Limited in 1976, Mr. Fietz worked as a geological technologist for the Coal Department of the Energy Resources Conservation Board in Calgary.

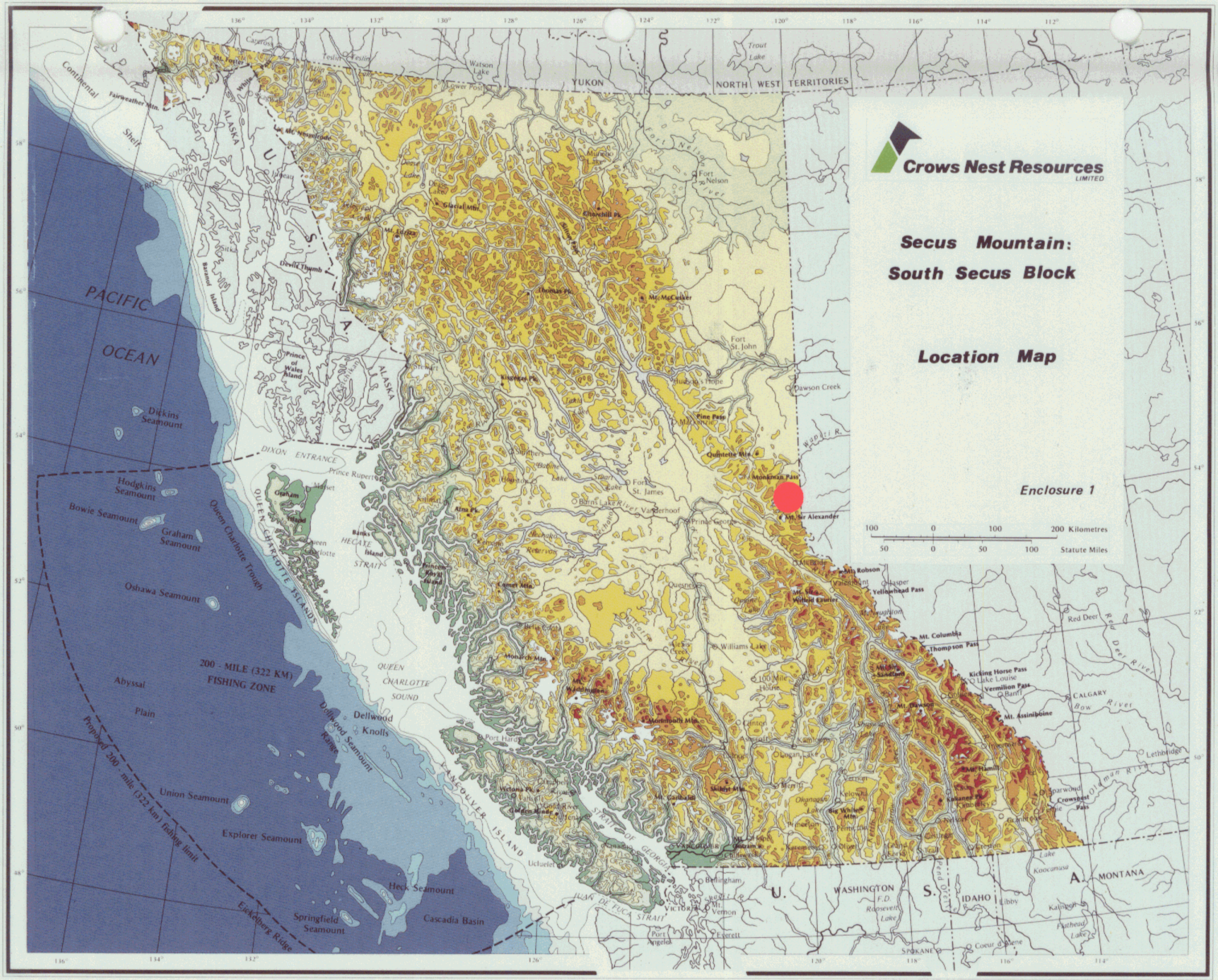
In my opinion, Mr. White and Mr. Fietz are fully qualified, by training and experience to prepare this report and this account of work done under their direct supervision.

Yours truly

H.G. Rushton
Vice President - Development

Enclosure

HGR/sc



Crows Nest Resources
LIMITED
Secus Mountain:
South Secus Block
Location Map
Enclosure 1
100 0 100 200 Kilometres
50 0 50 100 Statute Miles
YUKON
NORTH WEST TERRITORIES
PACIFIC
OCEAN
ALASKA
Fort Nelson
Fort St. John
Dawson Creek
Hudson's Hope
Pine Pass
Quintette Mtn.
Monkman Pass
Mt. Sir Alexander
Prince George
Prince Rupert
Fort St. James
Vanderhoof
Burns Lake
Quesnel
Williams Lake
100 Mile House
Kamloops
Valemount
Mt. Robson
Jasper
Yellowhead Pass
Mt. Columbia
Kicking Horse Pass
Lake Louise
Banff
CALGARY
Red Deer
Lethbridge
Vancouver
VANCOUVER ISLAND
Victoria
QUEEN CHARLOTTE ISLANDS
QUEEN CHARLOTTE SOUND
DIXON ENTRANCE
HECATE STRAIT
200 - MILE (322 KM) FISHING ZONE
Dickins Seamount
Hodgkins Seamount
Bowie Seamount
Graham Seamount
Oshawa Seamount
Union Seamount
Explorer Seamount
Heck Seamount
Springfield Seamount
Cascadia Basin
Abyssal Plain
Dellwood Knolls
WASHINGTON
IDAHO
MONTANA
Spokane
Bellingham

SECUS MOUNTAIN PROPERTY

Northeastern British Columbia

1983 EXPLORATION PROGRAM ON THE SOUTH SECUS BLOCK

B.C. Coal Licences 4204, 4205, 4206, 4208, 4209 and 7019
(Group #296)

HELD BY: SHELL CANADA RESOURCES LTD.
OPERATED BY: CROWS NEST RESOURCES LTD.

Located in the PEACE RIVER LAND DISTRICT N.T.S. Map Sheet 93 I/8W
(NARRAWAY RIVER)

120° 20' West Longitude, 54°19' North Latitude

REPORT PREPARED BY: A. WHITE
D. FIETZ

SUBMITTED: MARCH, 1984

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1.0 SUMMARY

The South Secus Block of the Secus Mountain property consists of six B.C. Coal licences within Group #296.

During August, 1983, one hole was drilled to a depth of 187.8 m, using a helicopter-supported Longyear 38 diamond drill. A total of 163.3 m of the lower Gates Member of the Commotion Formation werecored.

The main target, a seven meter coal seam in the middle Gates, projected from 1976 Petro-Canada drill hole BBD 76-1, 11.5 km north, was not intersected. Four coal seams greater than 1.0 m thick were intersected. The seams totalled 9 m of coal in a 110 m section, an in-situ ratio of approximately 7 BCM/Tonne of coal. The seams are easily correlated with seams intersected in 1981 drill hole SC 81-1, located 350 m to the east.

Eleven samples were removed for analysis. The remainder of the core has been shipped to the British Columbia Ministry of Energy Mines & Petroleum Resources (B.C.M.E.M.P.R.), Charlie Lake Core Storage Facility.

The results of the analyses indicate the rank of this coal to be High Volatile A Bituminous.

2.0 INTRODUCTION

2.1 Location, Access and Physiography

The South Secus Block of the Secus Mountain property is located in the Peace River Land District of Northeastern British Columbia at approximately 120°20' West Longitude and 54°19' North Latitude. (Enclosure 1) N.T.S. map sheet 93I/8W (Narraway River) covers the property.

The property encompasses a portion of the southern extention of the Wapiti Dip Slope, between the Narraway River and Belcourt Creek.

The closest settlements are:

Tumbler Ridge	100 km	N.N.W.
Grande Prairie	135 km	N.E.
Dawson Creek	155 km	N
Prince George	165 km	W
Chetwynd	175 km	N.N.W

Access to the property is very limited. During the 1983 program, the crew lodged in Dawson Creek and commuted to the property by helicopter. A Bell 206 B (Jet Ranger) supplied by Okanogan Helicopters Ltd. was used to transport the crew.

The closest roads to the property are abandoned oil rig service roads; one branching from the Kinuseo Falls Road 6 km west of Stony Lake, then following the eastern slopes of the foothills southeast to Omega Hill; the other branching from the Kakwa Falls Road approximately 170 km southwest of Grande Prairie, then winding through the mountains to a 1980 drill site, across the Narraway River from Nekik Mountain. A seismic line, in the swampy lowlands between Secus Mountain and Nekik Mountain, comes within 1 kilometer of the eastern edge of the property.

Access to the property was scouted in late April, 1983, by B. Aiello, D. Fietz and A. White. The service road leading from the Kinuseo Falls Road appears to be the better prospect of the two possibilities for future use. However, to be passable upgrading would be necessary and two bridges would have to be replaced; one over the Wapiti River and one over a small unnamed creek between the Wapiti River and Fearless Creek. This road leads to a 1978 Amoco drill site on the eastern edge of Omega Hill, 20 km northeast of the property.

The other possible access road, leading from the Kakwa Falls Road in Alberta, was in very poor condition. There were many washouts and mudslides over the road. This road comes within 6 km of the South Secus Block, however it is on the opposite side of the Narraway River.
In the event of a larger program on the property, the feasibility of upgrading and extending one of the roads to the property should be considered.

Physiographically, the property occupies the valley floor between Secus, Nekik and Meosin Mountains. The topography varies between 1,200 m A.S.L. and 1,500 m A.S.L. The western four licences are well drained by Belcourt Creek. The eastern two licences are less well drained and tend to be swampy. They drain into the Narraway River.

Forest cover varies between dense coniferous forest (mainly spruce and pine) in the better drained areas, and open forest with scrubby spruce in the swampy areas.

The wind direction is predominantly from the west, however due to the proximity to the mountains, gusty conditions with variable wind directions are common.

2.2 COAL LAND TENURE

The South Secus Block of the Secus Mountain Property is comprised of six B.C. Coal licences (4204, 4205, 4206, 4208, 4209 and 7019), covering 1,661 hectares, grouped in 1981 as Group #296. (Enclosure 2)

The licences within Group #296 were granted to Shell Canada Resources Ltd. in 1978 with the exception of C.L. 7019 which was granted in 1981.

The South Secus Block was originally part of the contiguous Secus Mountain Property stretching from the Narraway River north to the Red Deer River. Subsequent to the 1980 exploration program 13 licences were dropped, the remaining licences were formed into three groups; Group #297 (Dumbgoat Block), Group #298 (Belcourt Creek Block), and Group #296 (South Secus Block).

The following table, (Table I "B.C. COAL LICENCES TENURE STANDING") contains details of tenure.

Crows Nest Resources LIMITED

B.C. COAL LICENCES
TENURE STANDING

PROJECT: SECUS MTN. SOUTH YEAR: 1983

DATE: MARCH 1984

GROUP	LICENCE			ACQ/ADM		RENTALS		ANNIVERSARY	WORK REQUIREMENT				TOTAL EXPLORATION			REMARKS
NO.	NO.	LEGAL DESCRIPTION	AREA TOTAL/HA	YEAR	FEES	ANNUAL	TOTAL NEXT ANN.	DATE	EXPIRED	CURRENT	LIC. TERM	EXC. CREDIT	YEAR	AMOUNT	CASH IN LIEU	
296	6	LICENCES	1661		75	8,305	45,300	DECEMBER 31	117,855	75,500		159,547	1980	33,233	-	THE LICENCES ARE IN
		NTS 93-I-8C											1981	92,550	-	GOOD STANDING ON
	4204	63,64,73,74	302	78							6th	94.30/HA	1982	-	-	DEC. 31st 1983,
	4205	65,66,75,76	302	78							6th	94.30/HA	1983	134,066	-	RENT IS PAID FOR
	4206	67,68,77,78	302	78							6th	94.30/HA				1984. WORK COVERED
	4208	88,98	151	78							6th	94.30/HA				FOR 1984 FOR THE 78
	4209	89,90,99,100	302	78							6th	94.30/HA				LICENCES PLUS $44.30
	7019	69,70,79,80	302	81							4th	102.94/HA				EXCESS CREDIT & FOR
																THE 81 LICENCE WORK
																COVERED 84,85,86
																PLUS $2.94 EXCESS
																CREDIT.

BA-312

2.3 Previous Work

Previous work on the South Secus Block consisted of reconnaissance mapping (Hoffman, 1979), 1:5000 regional mapping (Bell, 1980), further 1:5000 mapping and one diamond drill hole (Bell, 1981).

It was on the basis of the 1980 report (Bell, 1980) that the licences covering the South Secus Block were grouped and Licence 7019 was applied for.

In addition to the work previously performed on the South Secus Block by Crows Nest Resources Ltd., Petro-Canada has drilled six holes in the vicinity. These holes were drilled in 1976, 1978 and 1981.

Previous work performed by Crows Nest Resources Ltd. is summarized in Table II.

TABLE II

SUMMARY OF PREVIOUS WORK

1979	1:50,000 reconnaissance geological mapping (Hoffman, 1979)
1980	1:5,000 regional geological mapping (Bell, 1980)
1981	1:5,000 geological mapping 1 NQ diamond drill hole (Bell, 1981)

2.4 Work Performed in 1983

During August, 1983, one NQ diamond drill hole was drilled on B.C. Coal licence 4208. The hole was T.D.'d at 187.8 m in the Torrens Sandstone, the basal unit of the Gates Member: Commotion Formation.

The hole was totally helicopter supported with the crew lodging in Dawson Creek and commuting to the rig via a helicopter supplied by Okanagan Helicopters Ltd.

Eleven (11) core samples were removed for coal quality analysis. The remainder of the core was shipped to the British Columbia Ministry of Energy Mines and Petroleum Resources (B.C.M.E.M.P.R) Core Storage Facility at Charlie Lake, B.C.

Upon completion of the drilling, the hole was geophysically logged with a helicopter transportable unit supplied by B.P.B. Instruments Ltd. The following suite of logs was obtained:

> Gamma, Long Spaced Density, Bed Resolution Density, Neutron/Neutron, Caliper, Verticality; (Gam, L.S.D., B.R.D., N-N, Cal, Vert.).

Copies of these logs are enclosed in Appendix "IV".

The full length of the hole was cemented.

2.4.1 Itemized Cost Statement

The costs incurred in carrying out this program were $134,066.00. Details are supplied in Enclosure 3 - "Application to Extend Term of Licence".

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

APPLICATION TO EXTEND TERM OF LICENCE

I, Leslie V. Gramantik (Name) agent for Shell Canada Resources Limited (Name)

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

Calgary, T2P 2M7

Valid FMC No. 257677

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). 4204, 4205, 4206, 4208, 4209, 7019 six licences, 1661 hectares

for a further period of one year.

2. Property name Secus Mountain South, Group No. 296, Peace River L.D.

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

4. I have performed, or caused to be performed, during the period January 1, 1983 to March 31, 19 84, work to the value of at least $ 134,066

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	-	-
Surface work	4208	5891
Underground work	-	-
Drilling	4208	85,954
Logging, sampling, and testing	4208	33,542
Reclamation	-	-
Other work (specify)	-	-
Off-property costs		8679

5. I wish to apply $ 134,066 of this value of work on Coal Licence(s) No(s). 4204, 4205, 4206, 4208, 4209 & 7019

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

7 The work performed on the location(s) is detailed in the attached report entitled South Secus Block, Geological Report 1983.

March 14th, 1984 (Date)

(Signature)

Assistant Landman (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 Width
On Licence(s) No.(s)
Access to

Total Cost $

SURFACE WORK — Yes ☒ No ☐

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

Total Cost $ 5891

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				
	Wireline	NQ	1	187.8	
Rotary	Conventional				
	Reverse circulation				
Other* (specify)					

Contractor Canadian Longyear Ltd.
Where is the core stored? B.C. M.E.M.P.R. Charlie Lake Core Storage

Total Cost $ 85,954

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)	Verticality					

Total Cost $ 33,542

RECLAMATION — Yes ☐ No ☒

Details Total Cost $

OTHER WORK (Specify details) — Yes ☐ No ☒ Cost

Total Cost $

OFF-PROPERTY COSTS — Yes ☒ No ☐

Details Report preparation, reproduction, drafting Total Cost $ 8,679

Total Expenditures $ 134,066

87.03.14 (Date)

W.T. Kennedy (Signature)

Manager Accounting - CNRL (Position)

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

3.0 TECHNICAL DATA

3.1 Stratigraphy

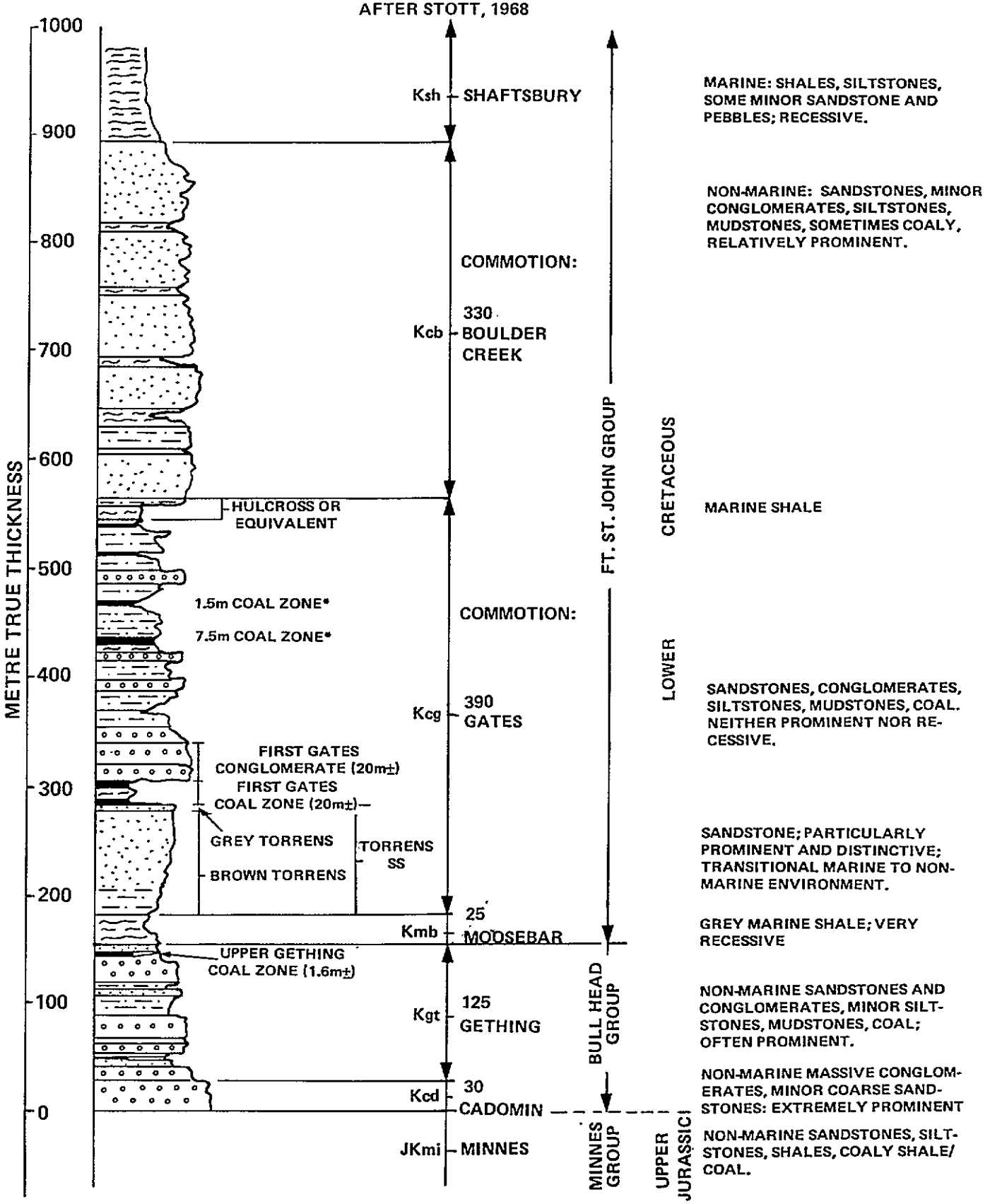
The Secus Mountain South Secus Block is underlain by strata of the Upper Jurassic and Lower Cretaceous Minnes, Bullhead and Fort St. John Groups. (Enclosure 4 - "Typical Stratigraphic Section").

In the Secus Mountain area, these Groups contain an unusually high proportion of conglomerates, greatly complicating the identification and mappability of the main target zone: the Gates Member of the Commotion Formation.

3.1.1 Minnes Group (JKmi)

The undivided Minnes Group refers to the stratigraphic unit lying immediately beneath the Cadomin Formation. The Minnes Group is composed of both marine and non-marine sediments. The sediments vary from conglomerates to interbedded sandstones, siltstones, and shales, with minor coal occurrences. Though they are laterally discontinuous, coal or coaly beds do occur; seam thicknesses, however, seldom exceed one meter.

AFTER STOTT, 1968



COAL

SHALE

SANDSTONE

CONGLOMERATES.

SANDSTONE, SILTSTONE MUDSTONE INTERBEDDED

*REF PETRO CANADA DRILL HOLE DDH: BBD–76–1

Crows Nest Resources Limited
EXPLORATION

N.E. BRITISH COLUMBIA
SECUS MOUNTAIN
TYPICAL
STRATIGRAPHIC SECTION
ENCLOSURE 4

AUTHOR: D. BELL	SCALE 1:5000	DRAWN BY
DATE: 81 03	REVISED 83 10 (D.F.)	DRAWING No AA-534
To Accompany		

Minnes strata throughout this portion of Northeastern British Columbia have not been mapped in detail.

3.1.2 Cadomin Formation (Kcd)

The Cadomin Formation (50 m±) refers to a unit that is primarily conglomeratic. Cadomin conglomerates characteristically weather light gray and ring hard when struck with a hammer; further, the cement is very resistant ... breakage occurs through the pebbles, cobbles, and boulders, rather than around them, through the matrix.

Visually, constituents of the Cadomin conglomerates contain shades of rosey pink, a jade-like green, and a particular smooth, light gray. Cadomin sandstones also contain the same, varied colours. Minnes conglomerates tend to have a somewhat weaker matrix, are browner in colour, slightly less topographically prominent, and do not contain pink and green constituents.

Similar to the basal contact of the Cadomin Formation, the top of the Cadomin is positioned where the resistant, light gray, massive conglomerate or sandstone grades to a softer, browner conglomerate (or sandstone).

3.1.3 Gething Formation (Kgt)

Within the Secus area the Gething Formation attains a thickness of 115 m ± and consists primarily of interbedded conglomerates and sandstones which often occur in massive, prominent units.

Economic coal potential within the Gething Formation is believed to be minimal. Only one Gething coal zone is noted in the Secus Mountain Area. Stratigraphically the coal occurrence, some 1.6 m thick, is positioned about 20 m below the top of the Gething Formation.

Constituents of Gething conglomerates bear another relation to the Cadomin beds, in addition to contrasting colors and hardness. The average size of the largest clasts within the Gething are always slightly smaller than the largest clasts found within the Cadomin Formation.

3.1.4 Moosebar Formation (Kmb)

The Moosebar Formation is lithologically distinct from the Gething Formation and consists primarily of dark grey, rubbly and partly calcareous mudstones and shales with minor beds of argillaceous sandstones and ironstone bands. Thin layers of bentonite and glauconitic sandstones are also present. Overall, the Moosebar Formation is soft and weathers easily.

The Moosebar Formation is notable primarily because of its very characteristic, recessive effect on the topography.

Within the Secus area, the Moosebar Formation has been measured to be 22 m thick.

3.1.5 Commotion Formation: Gates Member (Kcg)

In the Secus Mountain area, the Commotion Formation can be divided into the coal bearing Gates Member, and an overlying sandstone unit, the Boulder Creek Member.

The marine Hulcross Member present in the Commotion Formation further to the north, is not present in the Secus Mountain area. The last known occurrence is 1 m± thick, near the peak of Mt. Belcourt. (Bell, 1980)

The Gates Member is a very consistent unit. Within the Secus Mountain area, the unit is 390 m± thick. It is composed of alternating sequences of conglomerates, sandstones, siltstones, mudstones, and coal beds. Individual conglomerate units, though massive and often prominent, are thinner and have better developed bedding than the underlying Gething and Cadomin conglomerates. The Gates Member is the main target zone for coal exploration in the Secus Mountain area.

Within the lower portion of the Gates Member, three distinctive lithologic units have been recognized:

- Torrens Sandstone
- First Gates Coal Zone
- First Gates Conglomerate

The prominent Torrens Sandstone (50 m±) is located at the base of the Gates Member. The upper part of the Torrens is a hard grey sandstone; the underlying, thicker unit contains softer, brown sandstones which weather distinctively.

The First Gates Coal Zone (20 m±) encompasses the strata between the Torrens Sandstone and the First Gates Conglomerate. In the South Secus area, it contains 4 to 9 meters of coal in two main seams.

The First Gates Conglomerate (25 m±) refers to a massive coarse grained unit lying stratigraphically above the First Gates Coal Zone. It forms a convenient top to the recessive coal zone.

Based on a 1976 DDH drilled by Petro-Canada .... BBD-76-1*, the following coal zones are known to occur in the Gates Member: Commotion Formation:

- 7.5 m± zone — 80 m stratigraphically above the top of the First Gates Conglomerate.

- 1.5 m± zone — 120 m stratigraphically above the top of the First Gates Conglomerate.

- 3.0 m± zone — 5 m stratigraphically below the base of the First Gates Conglomerate.

- 6.0 m± zone — stratigraphically immediately above the top of the Torrens Sandstone.

* Hole BBD 76-1 is located at 6,032,292.89 m N 667, 494.29 m E (U.T.M. Zone 10) approximately 11.5 km N.W. of the South Secus Block.

- A summary log of Hole BBD 76-1 has been included as Enclosure 5 Appendix II.

3.1.6 Commotion Formation: Boulder Creek Member (Kcb)

The Boulder Creek Member (330 m±) is a prominent, predominantly sandstone unit lying stratigraphically above the Gates Member. The basal contact of the Boulder Creek Member is drawn at the beginning of a hard, generally grey-weathering, massive, often pebbly sandstone.

3.2 Structure

The structural setting of the South Secus Block is surprisingly simple, considering its location in the usually structurally complex inner foothills. Basically the structure is a broad syncline cut off on the west by the Front Range Thrust of the Rocky Mountans. This major fault has thrust Paleozoic carbonates over the Mezozoic coal bearing strata of the foothills. To the east of the synclinal axis, the east limb of the syncline is the west limb of the Wapiti anticline.

Stereographic analysis performed in 1980 of surface outcrop bedding attitudes indicates the syncline has a shallow plunge trending at 339°.

3.3 1983 Exploration Program

The 1983 exploration program on the South Secus Block consisted of one diamond drill hole on B.C. Coal Licence 4208. This helicopter-supported hole was drilled 350 m south west of 1981 drill hole SC 81-1 (Enclosure 6, Appendix III).

3.3.1 Objective

The objective of the 1983 drill hole was to intersect and core the upper to middle section of the coal bearing Gates Member of the Commotion Formation.

In 1981, three holes drilled in the South Secus area (two by Petro-Canada and one by CNRL) intersected the lower Gates, containing 8 m of coal in four seams in 107 m of section.

Based on the 1976 Petro-Canada drill hole BBD 76-1, which intersected a 7 m and a 1.5 m coal seam in the Middle Gates (see Appendix "II" - Summary of BBD 76-1), and on the stratigraphic consistency within the Gates, as shown by the three 1981 holes, it is believed that the Middle Gates may contain significant amounts of coal in the South Secus area.

The 1983 drill hole was spotted 350 m southwest of 1981 drill hole SC 81-1. Based on the 1981 interpretation, it was expected that the 1983 drill hole would intersect the Middle Gates and the top of the Torrens Sandstone within the 300 m depth capacity of the drill.

3.3.2 Results

Hole SC 83-1 was drilled vertically at approximately 6,022,020 north, 672,525 east, 1,304 m in elevation to a total depth of 187.8 m. Some 24.5 m were tri-coned and cased. The Torrens Sandstone was intersected at 179.9 m, so 155.4 m of the Lower Gates was cored. Four seams greater than 1.0 m thick were intersected, totaling 9 m of coal in 110 m of section; approximately 11/1 ratio or 7.3 BCM/tonne of coal. (Enclosures 8 and 9 "Core Description and Geophysical Logs".)

Hole SC83-1 intersected the same section of the Gates as 1981 drill hole SC81-1. The target section believed to contain a 7 m seam was missed.

The results of the drilling indicate that the axis of the syncline occurs between SC81-1 and SC83-1. As a result, the lower section of the Gates has been kept closer to the surface than expected (Enclosure 7 "Structural Cross Section 1300S").

3.3.3 Logistics

The 1983 exploration program was completely helicopter-supported. The crew was lodged in Dawson Creek, B.C. and was transported to the site in a Bell 206 B (Jet Ranger) supplied by Okanagan Helicopters Ltd. (Mike Malin - pilot).

The drill was trucked to a site near Sherman Meadows, Alberta, approximately 30 km from the drill site. From there it was transported to the drill site with a Bell 204 also supplied by Okanagan Helicopters Ltd.

The drilling contractor, Canadian Longyear Drilling Ltd., used a Longyear 38 drill. Water was pumped from a small stream 200 m south of the drill site.

The drill site was slashed by Borek Construction Ltd. of Dawson Creek.

At the end of the drilling program, the core was transported to the B.C.M.E.M.P.R. Core Storage Facility at Charlie Lake, B.C.

4.0 COAL QUALITY

Eleven (11) core samples were removed from drill hole SC83-1 for analyses. The sample locations are indicated on the core logs as well as on the annotated detail log and lithology strip log (Enclosures 11 and 12).

Analyses as indicated in Table III were performed by Loring Laboratories Ltd. in Calgary. The results of the analyses are included in this report (Enclosure 10, Appendix V). (CONFIDENTIAL)

In addition to the results of the analyses from the 1983 drill hole, the results from 1981 drill hole SC81-1 are included as they were not yet available when the report on the 1981 work was submitted. The types of analyses performed are also indicated in Table III.

TABLE III

SUMMARY OF COAL QUALITY ANALYSES PERFORMED

HOLE	BASIS OF ANALYSIS	AS REC'D H_2O	%H_2O	V.M.	ASH	F.C.	SULPHUR	FSI	CAL
SC83-1	RAW	X	X	-	X	-	X	-	-
	1.70 FLOAT	-	X	X	X	X	X	X	X
SC81-1	RAW	X	X	-	X	-	-	X	-
	1.60 FLOAT	-	X	X	X	X	X	X	X

The hole was cemented in its entirety after Geophysical Logging was performed by B.P.B. Instruments Ltd. (Bill Cavendish - Engineer).

In addition to the analyses reported, two composite samples comprised as follows...

Composite #1	31% Sample #1
	69% Sample #2
Composite #2	49% Sample #6
	20% Sample #7
	31% Sample #9

... were further analyzed to obtain Geisler plasticity, ultimate and ash fusion analyses. The results are included in Enclosure 10.

Using the coal analyses available at this time, the coal is classified as A.S.T.M. rank High Volatile A Bituminous.

5.0. CONCLUSIONS

The 1983 drill hole SC 83-1 intersected the lower 155 m of the Gates Member. This is the same section as drilled in 1981 Hole SC 81-1. This lower section of the Gates contains 9 m of coal in 110 m of section in 4 seams greater than 1 m thick.

It is interpreted that a synclinal axis occurs between SC 81-1 and SC 83-1 (see Enclosure 7 "Structural Cross Section 1300S"). The inferred position of the 7 metre seam is shown on the section.

There is excellent correlation between SC 81-1 and SC 83-1, confirming the expected stratigraphic consistency within the Gates.

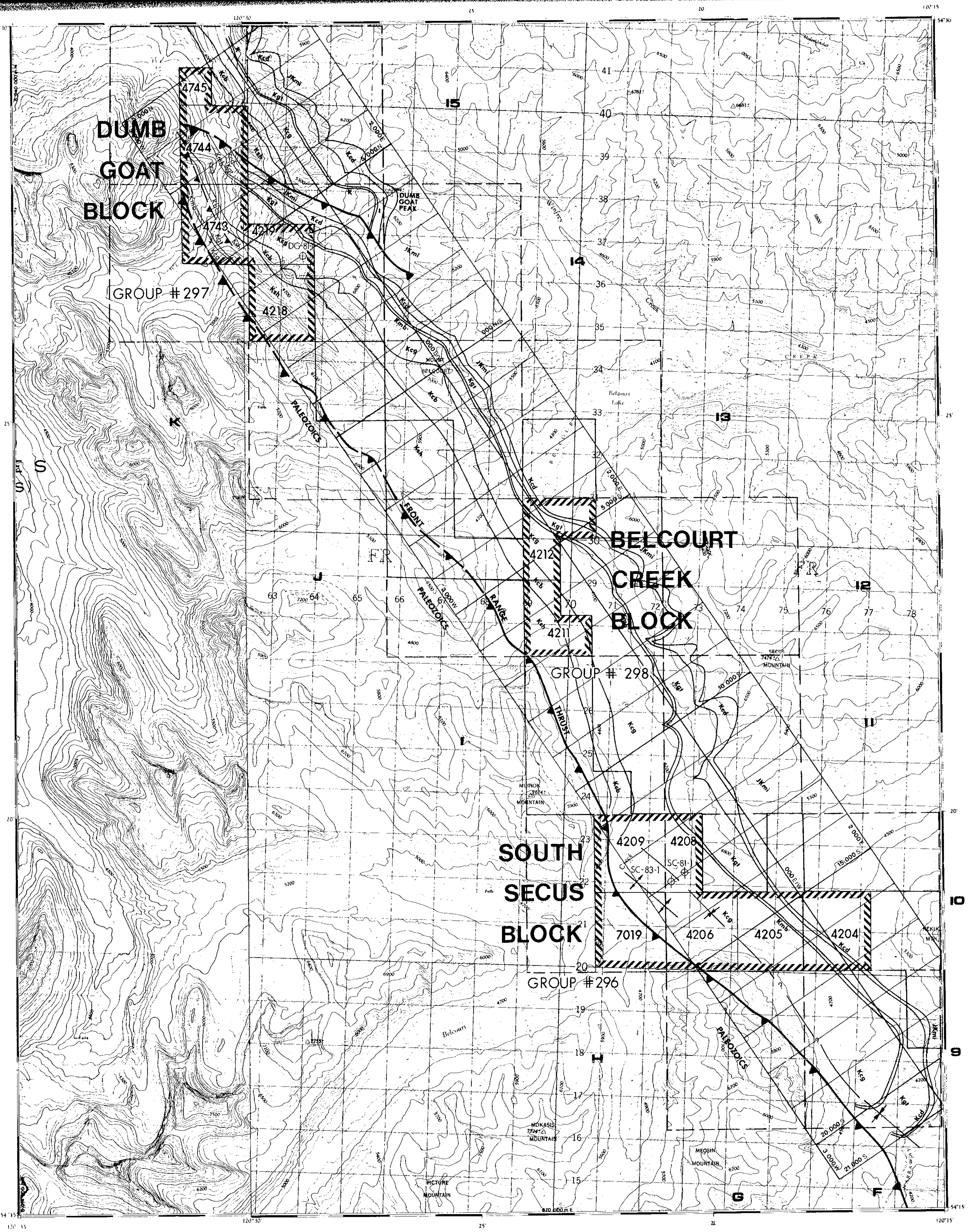
Coal quality analyses of the core from SC83-1 and SC81-1 indicate that the coal rank is High Volatile A Bituminous (A.S.T.M.).

6.0 BIBLIOGRAPHY

Bell, Dennis, 1980: "Geological Report, Secus Mountain Property"; internal report, Crows Nest Resources Limited, filed with B.C. Ministry of Energy, Mines and Petroleum Resources.

Bell, Dennis, 1981: "Geological Report, Secus Mountain Coal Exploration, 1981"; internal report, Crows Nest Resources Limited, filed with B.C. Ministry of Energy, Mines and Petroleum Resources.

Hoffman, Georgia, 1979: "1979 Geological Report, Secus Mountain Coal Property"; internal report, Crows Nest Resources Limited, filed with B.C. Ministry of Energy, Mines and Petroleum Resources.



TN GN

U.T.M. ZONE 10

GEOLOGICAL LEGEND

Ksh	SHAFTESBURY FORMATION	
Kcb	BOULDER CREEK FORMATION	
Kcg	COMMOTION FORMATION GATES MEMBER	FORT ST. JOHN GROUP
Kmb	MOOSEBAR FORMATION	
Kgt	GETHING FORMATION	BULLHEAD GROUP
Kcd	CADOMIN FORMATION	
JKmi	MINNIES GROUP, UNDIFFERENTIATED	

GEOLOGICAL SYMBOLS

SYNCLINE

ANTICLINE

THRUST FAULT, POSITION EXPOSED

THRUST FAULT, POSITION APPROXIMATE

CNRL DRILL HOLE

EXISTING COAL LICENCE BOUNDARY

633

Surveyed and compiled by the SURVEYS AND MAPPING BRANCH, BRITISH COLUMBIA, produced by the ARMY SURVEY ESTABLISHMENT, R.C.E. Information depicted current as of 1956. Printed 1966.

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa.

Crows Nest Resources Limited

EXPLORATION

SECUS MOUNTAIN
N.E. B.C.

Levée et établie par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, COLOMBIE-BRITANNIQUE, et publiée par le SERVICE TOPOGRAPHIQUE DE L'ARMÉE (G.R.C.) Renseignements à jour en 1956. Imprimée en 1966.

Ces cartes sont en vente au Bureau de distribution des cartes, ministère des Mines et des Relevés techniques, Ottawa.

SCALE 1:50,000 ÉCHELLE

CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level

ÉQUIDISTANCE DES COURBES 100 PIEDS
Élévations en pieds au-dessus du niveau moyen de la mer

Transverse Mercator Projection
North American Datum 1927

Projection transverse de Mercator
Réseau géodésique nord-américain unifié 1927

MAGNETIC DECLINATION 25°27' EAST AT CENTRE OF MAP 1965
Annual change decreasing 4.0'

DÉCLINAISON MAGNÉTIQUE AU CENTRE DE LA FEUILLE EN 1965. 25°27' EST
... décroissante 4.0'

Roads	Routes
hard surface, all weather	pavée, toute saison
hard surface, all weather	pavée, toute saison
loose surface, all weather	de gravier, toute saison
loose surface, dry weather	de gravier, période sèche
cart track	de terre
trail or portage	sentier ou portage
Railway, normal gauge, single track	Chemin de fer, voie unique (écartement normal)
Horizontal control point, with elevation	Point géodésique, avec cote
Bench mark, with elevation	Repère de nivellement, avec cote
Spot elevation; precise, approximate	Point coté, précis, approximatif

Building	Bâtiment
School	École
Cemetery	Cimetière
Mine or Open cut	Mine ou fosse à ciel ouvert
Lighthouse	Phare
Power transmission line	Ligne de transport d'énergie
River with bridge	Rivière avec pont
Stream, intermittent or dry	Cours d'eau intermittent, ou à sec
Lake intermittent, indefinite	Lac intermittent, rive imprécise
Marsh or Swamp	Marais ou marécage
Depression contours	Courbes de cuvette
Church	Église
Post Office	Bureau de poste

TABLEAU D'ASSEMBLAGE DU SYSTÈME NATIONAL DE RÉFÉRENCE CARTOGRAPHIQUE

93 I/10E	93 I/9W	93 I/9E
93 I		93 I/8E
93 I/2E	93 I/1W	93 I/1E

INDEX TO ADJOINING MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

PR. Secus Mt 83(2)A *(1)

Crows Nest Resources Limited
EXPLORATION

SECUS MOUNTAIN
N.E. B.C.
(SOUTH SECUS BLOCK)

INDEX, GEOLOGICAL COMPILATION AND COAL LAND DISPOSITION MAP

N.T.S. - 93 I

AUTHOR: D. BELL	SCALE: 1:50 000	ENCLOSURE No:
DATE: 81-11-	REVISED: 83 10 / A. WHITE	DRAWING No: SM5U03
To Accompany 1983 South Secus Report		

HF-90

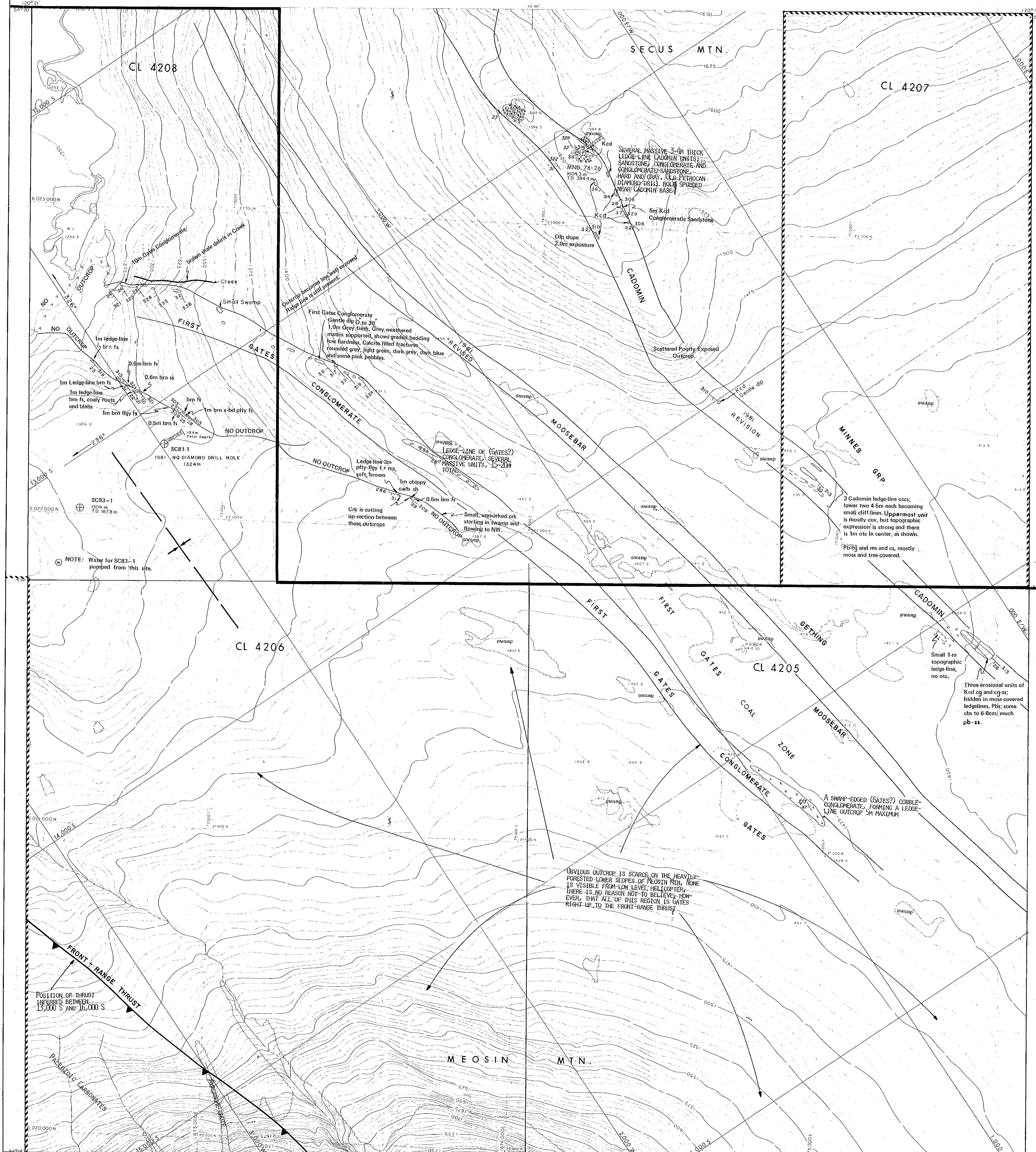
APPENDIX II

SUMMARY OF PETRO-CANADA DIAMOND DRILL HOLE BBC-76-1

o	1976	Petro-Canada DDH
o	Location	6 032 292.89m N 667 494.29m E
o	Elevation	1744.79 m ASL
o	T.D.	340.7 m
o	AZ	50°/60° from horizontal (*average)

DRILL HOLE SUMMARY

INTERVAL(m)	TH(m)	REMARKS/LITHOLOGY/UNIT
o hole spudded in Gates Member		
85.3 - 87.0	1.7	Coal
126.4 - 134.1	7.7	Coal
207.1 - 242.9	35.8	First Gates Conglomerate
242.9		Top of First Gates Coal Zone
247.0 - 250.6	3.4	Coal
271.3 - 277.4	6.1	Coal/Coaly Shale
277.4		Bottom of First Gates Coal Zone - Top of TORRENS SS
340.7		T.D....(in TORENS SS - believed to be very close to Kmb contact


CL 4208
CL 4207
CL 4206
CL 4205
SECUS MTN.
MEOSIN MTN.
12,000 S
13,000 S
14,000 S
15,000 S
16,000 S
1,000 W
2,000 W
000 E/W
1,000 E
6,023,000 N
6,022,000 N
6,021,000 N
6,020,000 N
120°21'
54°20'
120°18'
19'30"
10m Gates Conglomerate
brown shale debris in Creek
Creek
Small Swamp
NO OUTCROP
326°
1m ledge-line brn fs
0.5m brn fs
0.6m brn ss
1m Ledge-line brn fs
1m ledge-line brn fs, coaly roots and blebs
1m brn flgy fs
brn fs
1m brn x-bd plty fs
0.5m brn fs
194m Total Depth
SC81-1
1981 NQ DIAMOND DRILL HOLE 1324m
236°
SC83-1 1304 m T.D. 1878 m
NOTE: Water for SC83-1 pumped from this site.
Outcrop becomes less well exposed Ridge line is still present.
First Gates Conglomerate Gentle dip 0° to 30° 1.0m Grey fresh, Grey weathered matrix supported, shows graded bedding low hardness, Calcite filled fractures rounded grey, light green, dark grey, dark blue and some pink pebbles.
FIRST GATES CONGLOMERATE
1981 REVISED
LEDGE-LINE OF (GATES?) CONGLOMERATE, SEVERAL MASSIVE UNITS, 15-20M TOTAL
Ledge-line 3m plty-flgy f + ms, soft, brown
1m chippy carb sh
0.5m brn fs
Crk is cutting up-section between these outcrops
Small, unmarked crk starting in swamp and flowing to NW.
SEVERAL MASSIVE 3-4M THICK LEDGE-LINE CADOMIN UNITS; SANDSTONE, CONGLOMERATE AND CONGLOMERATE-SANDSTONE, HARD AND GRAY. OLD PETROCAN DIAMOND DRILL HOLE SPUDDED NEAR CADOMIN BASE.
MND 78-26
1608.3 m T.D. 384.4 m
Kcd
5m Kcd Conglomeratic Sandstone
Dip slope 2.0m exposure
CADOMIN
Scattered Poorly Exposed Outcrop
Kcd Gentle dip
1981 REVISION
MOOSEBAR
MINNES GRP.
3 Cadomin ledge-line otcs; lower two 4-5m each becoming small cliff-lines. Uppermost unit is mostly cov, but topographic expression is strong and there is 1m otc in center, as shown.
Pb-cg and ms and cs, mostly moss and tree-covered.
swamp
FIRST GATES
FIRST GATES COAL ZONE
GETHING
CADOMIN
HV804
Small 1-m topographic ledge-line, no otc.
Three erosional units of Kcd cg and cg-ss; hidden in moss-covered ledgelines. Pbs; some cbs to 6-8cm; much pb-ss.
MOOSEBAR
GATES CONGLOMERATE
GATES
A SWAMP-EDGED (GATES?) COBBLE-CONGLOMERATE, FORMING A LEDGE-LINE OUTCROP 5M MAXIMUM
OBVIOUS OUTCROP IS SCARCE ON THE HEAVILY-FORESTED LOWER SLOPES OF MEOSIN MTN. NONE IS VISIBLE FROM LOW LEVEL HELICOPTER. THERE IS NO REASON NOT TO BELIEVE, HOWEVER, THAT ALL OF THIS REGION IS GATES RIGHT UP TO THE FRONT-RANGE THRUST
FRONT - RANGE THRUST
POSITION OF THRUST INFERRED BETWEEN 13,000 S AND 16,000 S
PALEOZOIC CARBONATES
AVALANCHE CHUTE

SC81-1 UTM CO-ORDINATES

NORTHING	6,022,234.84
EASTING	672,794.66
ALTITUDE	1,323.66

LEGEND

1978 Coal Licence Boundary
Existing Coal Licence Boundary
Improved road
Secondary road
Track or trail
Cut line
Tree area
River
Steam
Intermittent stream
Swamp
Contours
Horizontal control
Vertical control
Spot elevation
Iron Pin

CONTOUR INTERVAL: 5 METRES
DATE OF PHOTOGRAPHY: SEPTEMBER 1975
DATE OF SURVEY: 1977 - 1978
DATE OF MAPPING: 1977 - 1978

SURVEY NOTE

The Horizontal and Vertical Co-ordinates were established by D. W. Watson B.C.L.S. using conventional and E.D.M. survey equipment. Horizontal and vertical co-ordinates and elevations are derived from Trig. Stations Quintette E, Quintette S.W., Marmie, Hawk, Marcia, Kinuseo. All co-ordinates referred to Universal Traverse Mercator Grid Zone 10. Elevations are above Mean Sea Level were established by trig levelling vertical angles being read at both ends of each course simultaneously.

LOWER CRETACEOUS
Ksh Shaftesbury
Kcb Boulder Creek
Kcg Gates (includes overlying Transition Beds & Torrens Sandstone)
Kmb Moosebar
Kgt Gething
Kcd Cadomin

JURASSIC - CRETACEOUS
JKmi Minnes Group (undivided)

Thrust fault, position exposed
Thrust fault, position approximate
Fault other than thrust
Anticline
Syncline

Isolated outcrop, sketched to extent and size:
Strike & dip where strike line of symbol touches outcrop outline
Strike & dip where strike & dip lines of symbols intersect
Patchy, indeterminate outcrop
Outcrop with exposed contact
Chain-and-compass line (tick marks are stations) with outcrop sketched to size and limits along chained line; strike & dip where strike line of symbol touches chained line
Chain & compass line; attitudes refer to strike & dip at nearest tick (chain station)

NOTE: See Report for Legend of Abbreviations

KEY MAP

Scale 1:5000

PR- SECUS MT. 83*(2)A *(1)

633

Crows Nest Resources Limited
EXPLORATION

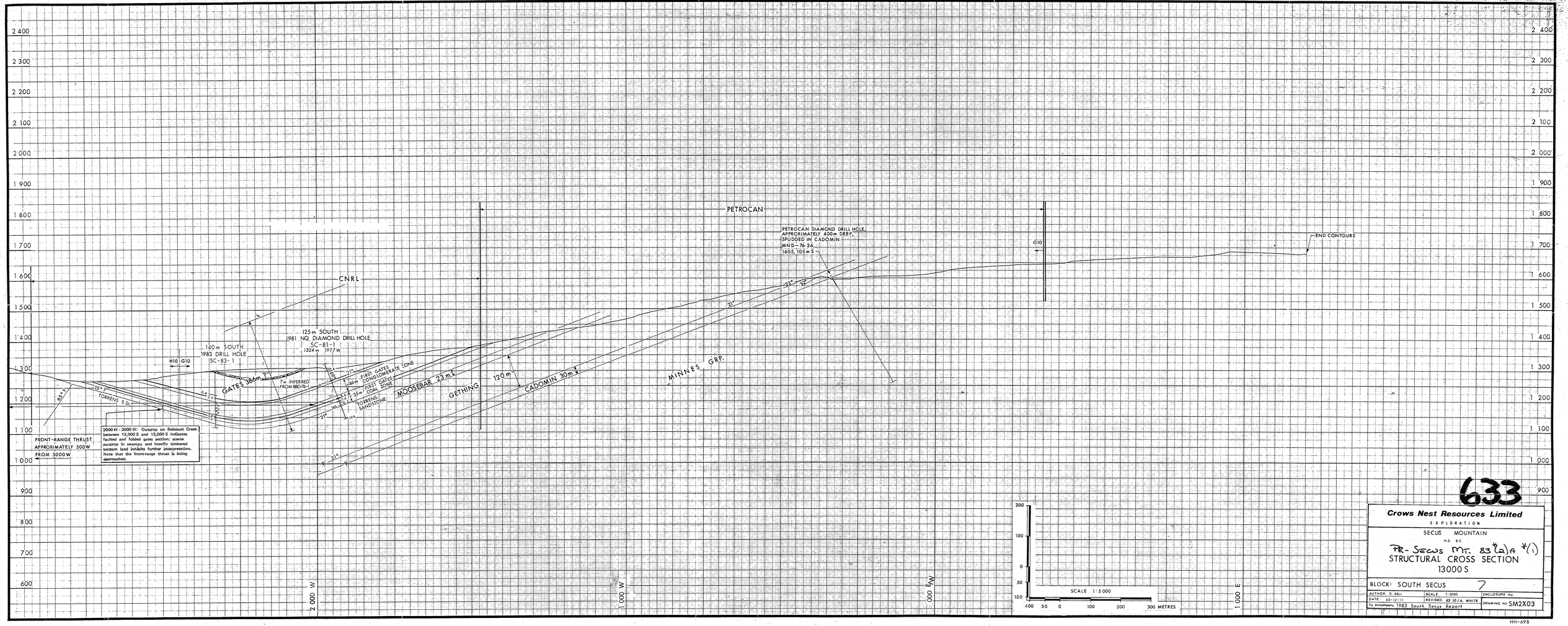
N.E. BRITISH COLUMBIA

SECUS MOUNTAIN PROJECT
SOUTH SECUS BLOCK
GEOLOGY MAP

G10

AUTHOR: G. COX, D. BELL	SCALE: 1:5000	ENCLOSURE No: 6
DATE: 80 08 26	REVISED: 83 09 A. WHITE	DRAWING No: SM2U22
To Accompany 1983 South Secus Report		

R.M. HARDY & ASSOCIATES LTD.
HA-59D


2 400
2 300
2 200
2 100
2 000
1 900
1 800
1 700
1 600
1 500
1 400
1 300
1 200
1 100
1 000
900
800
700
600
CNRL
PETROCAN
PETROCAN DIAMOND DRILL HOLE, APPROXIMATELY 400m DEEP, SPUDDED IN CADOMIN
MND-76-26
1605, 105m S
G10
END CONTOURS
125 m SOUTH
1981 NQ DIAMOND DRILL HOLE
SC-81-1
1324 m 1977 W
140 m SOUTH
1983 DRILL HOLE
SC-83-1
H10 G10
GATES 386m
7m INFERRED FROM 880-76-1
40m FIRST GATES CONGLOMERATE ZONE
35m FIRST GATES COAL ZONE
TORRENS SANDSTONE
MOOSEBAR 23 m
GETHING 120 m
CADOMIN 30m
MINNES GRP.
TORRENS S.S.
FRONT-RANGE THRUST APPROXIMATELY 500W FROM 3000W
2000 W - 3000 W: Outcrop on Belcourt Creek between 12,000 S and 13,000 S indicates faulted and folded gates section; scarce outcrop in swampy and heavily timbered bottom land inhibits further interpretation. Note that the front-range thrust is being approached.
2 000 W
1 000 W
1 000 E
SCALE 1:5 000
-100 50 0 100 200 300 METRES
633
Crows Nest Resources Limited
EXPLORATION
SECUS MOUNTAIN
N.E. B.C.
PR-Secus Mt. 83 G(2)A #(1)
STRUCTURAL CROSS SECTION
13000 S
BLOCK: SOUTH SECUS 7
AUTHOR D. BELL
SCALE 1:5000
ENCLOSURE No.
DATE 83-12-13
REVISED 83 10/A WHITE
To Accompany 1983 South Secus Report
DRAWING No SM2X03
HH-698

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
.00	24.50			24.50	0	OB		0.00-24.50 - DRILLED WITH TRI-CONE - SET CASING - NO CORE	.	.
24.50	31.00			6.50	0	SS		FINE GRAIN, MEDIUM GREY, MINOR DARK GREY SILTSTONE LAMINAE, IRREGULAR BEDDI NG; MINOR BIOTURBATION AT APPROX 31.3M; CALCAREOUS, LOWER CONTACT GRADATION AL	26.00	67
31.00	32.89			1.89	0	SLST		DARK GREY, MASSIVE, MINOR CARBONACEOUS DEBRIS, CALCAREOUS	.	.
32.89	37.97			5.08	0	SS		MEDIUM TO FINE GRAIN, MEDIUM GREY, FINELY BEDDED, CALCAREOUS; SMALL PLANT CASTS IN UPPER 0.5M OF INTERVAL; CROSS BEDDING AT 36.9 INDICATING "RIGHT WA Y UP"; MEDIUM GRAINED AT 37.22 - 37.97M	36.80	78
37.97	39.20			1.23	0	SLST		DARK GREY TO BLACK, MASSIVE, SANDSTONE BAND @ 38.50-38.70M, CARB & CALCAREO US THROUGHOUT; COALY IN LOWER .10M OF INTERVAL	.	.
39.20	40.05			.85	0	SLST		DARK GREY; CARBONACEOUS, MASSIVE, CALCAREOUS	.	.
40.05	47.19			7.14	0	SLST	MDST	DARK GREY TO BLACK; CARBONACEOUS; COALY WISPS/BLEBS THROUGHOUT; MINOR PYRITE AT 40.49M; AT 43.95-44.50 TAN TO BUFF WEATHERING ON A MASSIVE SILTSTONE	.	.
47.19	47.59			.40	0	COAL		BRIGHT, HARD, BROKEN.	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
								SEPARATION WITH ROOF - VISUAL POOR, PHYSICAL FAIR TO POOR; SEPARATION WITH FLOOR, VISUAL & PHYSICAL FAIR	.	.
47.59	52.50			4.91	0	SS		FINE GRAIN, MEDIUM TO DARK GREY, MINOR SILTSTONE; CALCAREOUS; FRACTURE ZONE AT 49.8 AT 5 DEGREES TO CORE AXIS; LOWER CONTACT GRADATIONAL	52.00	76
52.50	53.52			1.02	0	SLST		DARK GREY TO BLACK; CARBONACEOUS, CALCAREOUS; COALY WISPS COMMON	.	.
53.52	53.68			.16	0	SLST		TAN TO BEIGE; COALY WISPS COMMON. RECOVERY .11M	.	.
53.68	54.14			.46	0	SLST		DARK GREY TO BLACK; CARBONACEOUS; CALCAREOUS, MINOR COALY/CARBONACEOUS MATERIAL THROUGHOUT	.	.
54.14	55.02		01	.88	88	COAL		HARD; BRIGHT; BROKEN; .02M HIGH ASH BAND AT .15M FROM TOP OF INTERVAL. SEPARATION WITH ROOF, VISUAL POOR TO FAIR; PHYSICAL FAIR. RECOVERY 0.77M: SAMPLE #1 54.14M-55.40M	.	.
55.02	55.24		01	.22	100	SH	CARBONACEOUS	RECOVERY .22; DULL	.	.
55.24	55.40		01	.16	100	COAL		SOFT AT TOP - HARDER TO BASE; BROKEN. SEPARATION WITH FLOOR VISUAL & PHYSI CAL FAIR. RECOVERY 0.16M	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
55.40	57.86			2.46	0	SS		MEDIUM GREY, GRADES FROM VERY FINE GRAIN (AT TOP) TO MEDIUM GRAIN (AT BASE) BROKEN TO STICK; BOTTOM CONTACT ABRUPT	57.86	70
57.86	71.16			13.30	0	SS	SILTSTONE	INTERBEDDED FINE TO MEDIUM GRAIN; LIGHT GREY SANDSTONE AND DARK GREY SILTST ONE; BROKEN TO STICK; MOTTLED APPEARANCE; CALCAREOUS; MINOR CALCITE VEINING /FRACTURE IN-FILLING; GOUGE ZONE AT 63.60-63.70M & 68.09-68.19M. CALCITE BAND AT 69.29-69.31M; BELOW CALCITE BAND SILTSTONE BECOMES MASSIVE, "STICK" ; HOMOGENOUS I.E. NO INTERBEDS OF SANDSTONE	67.20	73
71.16	75.39			4.23	0	SS		MEDIUM GRAIN; LIGHT GREY; SALT AND PEPPER TEXTURE; "STICK" CORE; HOMOGENOUS	71.46 74.50	67 67
75.39	89.55			14.16	0	SS		MEDIUM GRAINED, LIGHT GREY, VARIABLE SALT & PEPPER TEXTURE, MINOR FINER GRAINED DARKER GREY ZONES, RARE COAL WISPS AND BLEBS AT 83.22 - 2CM BAND VERY HARD SHINY COAL	76.30 80.70 82.00 86.00	75 70 71 73
89.55	90.08			.53	43	SH		RECOVERY .23M; DARK GREY; .5CM COAL BANDS THROUGHOUT - MAKES		

CORE DESCRIPTION 02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
								UP APPROX 10% OF INTERVAL	.	.
90.08	90.17			.09	22	COAL		RECOVERY .02M; BRIGHT, HARD	.	.
90.17	90.44			.27	0	MDST		COALY; BLACK; DULL; HARD	.	.
90.44	90.51			.07	0	COAL		HARD; BRIGHT; CLEAN	.	.
90.51	90.54			.03	0	TNST		MEDIUM GREY TO BUFFY; ABUNDANT COALY DEBRIS	.	.
90.54	90.62			.08	0	COAL		HARD; BRIGHT CLEAN	.	.
90.62	91.50		02	.88	91	SLST		SILTSTONE AT TOP GRADES TO COALY SHALE AT BASE; INCREASING CARBONACEOUS/COALY DEBRIS TO BASE OF UNIT; DARK GREY TO BLACK; TONSTEINS	90.70	90
								0.10M AT 0.27M FROM TOP OF INTERVAL; 0.03M AT 0.41M FROM TOP OF INTERVAL.	.	.
								RECOVERY 0.80M: SAMPLE #2 91.06M-91.50M (HANGING WALL)	.	.
91.50	92.02		03	.52	0	COAL		HARD; BRIGHT; CLEAN. SEPARATION WITH ROOF VISUAL & PHYSICAL - POOR: SAMPLE #3 91.50M-93.88M	.	.
92.02	92.30		03	.28	4	SH	COALY	RECOVERY .01M; DULL; BLACK	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
92.30	93.54		03	1.24	98	COAL		HARD; BRIGHT; CLEAN; BROKEN. RECOVERY 1.22M	.	.
93.54	93.71		03	.17	71	COAL		RECOVERY 0.12M. HIGHER ASH THAN ABOVE; SOFT; BROKEN TO PULVERIZED	.	.
93.71	93.88		03	.17	59	COAL		HARD; BRIGHT; CLEAN: SEPARATION WITH FLOOR, VISUAL & PHYSICAL - GOOD. RECO VERY 0.10M	.	.
									.	.
93.88	102.80			8.92	0	SS		LIGHT GREY MEDIUM TO FINE	95.50	80
								GRAIN; VARIABLE SALT & PEPPER TEXTURE. COALY WISP		
								S AT 94.0-94.2M; 100.0-100.4M; SHARP CONTACT WITH UNDERLYING	98.90	68
								UNIT. FIRST		
								0.6M VERY FINE GRAINED - MUDSTONE	100.00	78
102.80	111.43			8.63	0	CONG		(TOP OF FIRST GATES CONGLOMERATE). PEBBLE CONGLOMERATE, POOR TO FAIR SORT-	.	.
								ING, MEDIUM TO COARSE GRAIN MATRIX; PEBBLES GREY (LIGHT TO DARK) BLACK, GREE	.	.
								N/GREY, MOSTLY WHITE, PEBBLES	.	.
								ROUNDED-OBLONG, PEBBLE SIZE INCREASES TO BASE		
								OF UNIT; SHARP CONTACT WITH UNDERLYING UNIT	.	.
111.43	122.92			11.49	0	SLST	SS - VERY FINE GRAIN; MUD	DARK TO MEDIUM GREY; VARIABLE	113.75	90
								GRAIN SIZE; CROSS BEDDED AT		
								116M INDICATES "RIGHT WAY UP"; AT	116.50	90
								119.75-120.5M "SWIRLING OF" DARK COLORED, FINE SEDIMENTS		
								VERY SHARP CONTACT AT BASE OF	121.60	85

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
								UNIT		
122.92	141.60			18.68	O	CONG		AS TWO UNITS ABOVE, (BOTTOM OF FIRST GATES CONGLOMERATE)	.	.
141.60	142.51			.91	O	SS		(TOP OF FIRST GATES COAL ZONE). MEDIUM GRAIN, MEDIUM GREY, FINELY BEDDED, HOMOGENOUS	.	.
142.51	146.15			3.64	O	SLST	MUDSTONE	MUDSTONE DARK GREY TO BLACK; SILTSTONE MEDIUM TO DARK GREY; MINOR COALY/CAR BONACEOUS INTERVALS; COAL AT 143.5-143.6M, 144.4-144.5M (COALY MDST), 144.8 -144.9M	.	.
146.15	146.95		04	.80	O	COAL		CLEAN AT BASE; MUDSTONE SPLITS TO TOP OF UNIT; VERY SHALY IN UPPER .20M. SEPARATION WITH ROOF, VISUAL - FAIR, PHYSICAL - POOR; SEPARATION WITH FLOOR VISUAL - FAIR TO POOR, PHYSICAL - FAIR: SAMPLE #4 146.15M-146.95M	.	.
146.95	148.00			1.05	O	SS	SLST	. . .	.	.
148.00	149.00		05	1.00	O	COAL	COALY - SHALE ZONE	0.64M COALY SHALE/MUDSTONE; 0.02M COAL; 0.19M COALY SHALE; 0.02M COAL; 0.07M COALY SHALE; 0.06M COAL. SEPARATION WITH ROOF, VISUAL & PHYSICAL - FAIR: SAMPLE #5 148.0M-150.12M (HANGING WALL)	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
149.00	149.22		05	.22	100	SH	CARBONACEOUS	RECOVERY 0.25M	.	.
149.22	149.28		05	.06	67	COAL		CLEAN. RECOVERY 0.04M	.	.
149.28	149.36		05	.08	100	SH	CARBONACEOUS	RECOVERY 0.08M	.	.
149.36	149.44		05	.08	100	SH	COAL	RECOVERY 0.11M	.	.
149.44	149.63		05	.19	100	COAL		CLEAN. RECOVERY 0.19M	.	.
149.63	149.80		05	.17	100	COAL		HIGH ASH; RECOVERY 0.17M. SEPARATION WITH FLOOR VISUAL - FAIR TO POOR, PHYSICAL - FAIR	.	.
149.80	150.12		05	.32	91	SLST		RECOVERY 0.29M. DARK GREY; MASSIVE; CARBONACEOUS	.	.
150.12	153.88		06/07	3.76	86	COAL		SAMPLE 06 - 150.12-152.74M; SAMPLE 07 - 152.74-153.88M. RECOVERY 3.25M. CLEAN; BRIGHT; HARD; BROKEN TO "STICK", CARBONACEOUS SHALE BAND AT 150.39-150.41M; UPPER 2.62M OF CORE "STICK" WHILE LOWER 0.63M OF CORE BROKEN TO CRUSHED; ASSUMED AREA OF CORE LOSS APPROX 152.74-153.88M. SEPARATION WITH ROOF, VISUAL - FAIR, PHYSICAL - POOR TO FAIR; SEPARATION WITH FLOOR, VISUAL	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
150.12	153.88		06/07	3.76	86	COAL		- GOOD, PHYSICAL - EXCELLENT	.	.
153.88	157.82			3.94	0	SS		FINE TO VERY FINE GRAIN, MEDIUM TO DARK GREY; FINELY BEDDED	.	.
157.82	158.43			.61	0	SS		MEDIUM GRAIN, LIGHT TO MEDIUM GREY; SALT & PEPPER TEXTURED; MINOR THIN COAL Y/CARBONACEOUS WISPS ESPECIALLY IN LOWER 0.17M OF INTERVAL	.	.
158.43	158.95			.52	0	SH	CARBONACEOUS	THIN COAL BANDS/LENSES THROUGHOUT	.	.
158.95	159.10			.15	0	SLST		TAN TO BEIGE; HARD; MINOR COAL WISPS THROUGHOUT, POSSIBLE TONSTEIN	.	.
159.10	159.15			.05	0	COAL	COALY SHALE	.	.	.
159.15	160.75			1.60	0	SS		FINE TO VERY FINE GRAIN, MEDIUM TO DARK GREY TO BLACK:	.	.
160.75	161.04		08	.29	62	SH	COALY	RECOVERY 0.18M; DULL; HARD; BLACK. SEPARATION WITH ROOF, VISUAL & PHYSICAL - POOR	.	.
161.04	161.35		08	.31	97	SH		RECOVERY 0.30M; BLACK; MASSIVE; SLIGHTLY CARBONACEOUS	.	.
161.35	162.93		09	1.58	92	COAL		RECOVERY 1.45M; BRIGHT, HARD, MOSTLY "STICK"; GRADATIONAL	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
								FLOOR INTO CARBON ACEOUS SHALE OVER 0.2M	.	.
								INTERVAL. SEPARATION WITH ROOF, VISUAL & PHYSICAL - FAIR; SEPARATION WITH FLOOR* VISUAL & PHYSICAL - GOOD.	.	.
								*ASSUMES THAT THE 0.15M CARBONACEOUS SHALE INTERVAL BELOW WOULD BE MINED AS "COAL": SAMPLE #9	.	.
								161.35M-162.93M	.	.
162.93	163.08		10	.15	100	SH		RECOVERY 0.15M; BLACK; CARBONACEOUS TO COALY: SAMPLE #10 162.93M-163.08M (FOOTWALL)	.	.
163.08	163.89			.81	0	SS		VERY FINE GRAIN, MEDIUM TO DARK GREY; LOWER CONTACT GRADATIONAL	.	.
163.89	167.11			3.22	0	SS		MEDIUM GRAIN; LIGHT GREY; SOFT SEDIMENT "SWIRLING"; MINOR CROSS BEDDING; THIN CALCITE FRACTURE INFILL AT 164.97M; GRAIN SIZE VERY GRADATIONAL - COARSENS TO LOWER INTERVAL - EXCEPT FOR BOTTOM 0.30M WHICH IS FINE GRAIN	.	.
167.11	167.70			.59	0	SLST		MEDIUM TO DARK GREY TO BLACK - BECOMES DARKER TO BASE OF INTERVAL	.	.
167.70	168.40		11	.70	79	COAL		RECOVERY 0.55M. BRIGHT; CLEAN; "STICK" TO BROKEN; BANDED. SEPARATION WITH ROOF, VISUAL - FAIR, PHYSICAL - POOR; WITH FLOOR VISUAL & PHYSICAL - POOR : SAMPLE #11 167.70M-168.40M	.	.

CORE DESCRIPTION 02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

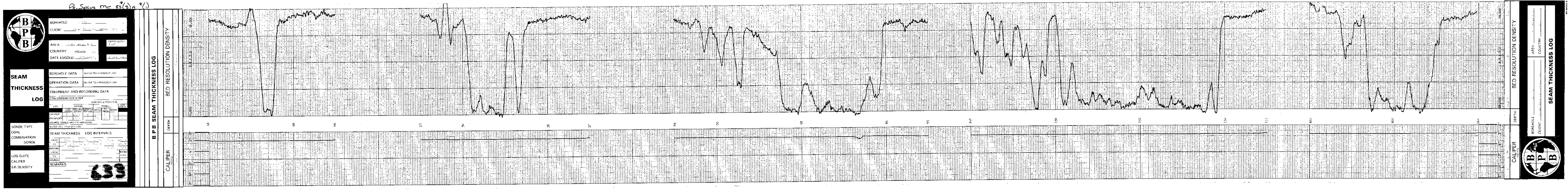
TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
168.40	168.81			.41	O	SH	COALY/CARBONACEOUS SHALE	DULL; MINOR THIN COAL LENSES/WISPS THROUGHOUT	.	.
168.81	168.90			.09	O	COAL		BRIGHT; CLEAN; BROKEN. SEPARATION WITH ROOF & FLOOR, VISUAL & PHYSICAL - POOR	.	.
168.90	169.09			.19	O	SH	COALY/CARBONACEOUS SHALE	DULL; MINOR THIN COALY WISPS THROUGHOUT	.	.
169.09	175.56			6.47	O	SLST	SS	FINE GRAIN, MEDIUM TO DARK GREY; MINOR COALY/CARBONACEOUS DEBRIS ESPECIALLY IN UPPER; SOFT SEDIMENT "SWIRLING";COAL AT 172.23 (0.02M), 173.07 (0.03M), 175.07 (0.04M), 174.92 (0.01M). SLICKENSIDES AT 171.55-171.84	.	.
175.56	177.25			1.69	O	MDST	SLST	DARK GREY TO BLACK; MINOR COALY/CARBONACEOUS MATERIAL THROUGHOUT	.	.
177.25	177.90			.65	O	SH	COALY/CARBONACEOUS SHALE	DULL DARK GREY TO BLACK; MINOR COAL THROUGHOUT; CONTACT WITH FLOOR ABRUPT	.	.
								(BOTTOM OF FIRST GATES COAL ZONE)	.	.
177.90	187.44			9.54	O	SS		(TOP OF TORRENS SANDSTONE). FINE TO MEDIUM TO COARSE GRAIN, MEDIUM GREY, SALT & PEPPER TEXTURE; WELL	185.20	90
								SORTED; HOMOGENOUS; "STICK" CORE; MINOR PEBBLES AT 182.30M, 183.03; PEBBLE CONGLOMERATE ZONE AT 183.34-184.50M; PEBBLES AT	.	.

CORE DESCRIPTION

02/28/84

HOLE ID SC83D-1
PROJECT SECUS
LOG DATE 83/08/00
EXAMINED BY A. WHITE

TOP	BASE	SEAM	SAM NUM	THIK	% REC	MAJ	MINOR	DETAIL	DEPTH	C.B.A.
177.90	187.44			9.54	0	SS		185.23, 185.86 (0.05), 186.19, 186.34 (0.09M), 186.89; MUDSTONE WISP ZONE A T 187.04 (0.08M); CONTACT WITH FLOOR ABRUPT	.	.
187.44	187.76			.32	0	SLST		DARK GREY; HARD. END OF HOLE - TOTAL DEPTH 187.76.	.	.


B P B
SEAM THICKNESS LOG
BOREHOLE
CLIENT
AREA
COUNTRY
DATE LOGGED
BOREHOLE DATA
OPERATION DATA
EQUIPMENT AND RECORDING DATA
SEAM THICKNESS
LOG INTERVALS
SONDE TYPE
COAL COMBINATION SONDE
LOG SUITE
CALIPER
S.P. DENSITY
REMARKS
633
B P B SEAM THICKNESS LOG
BED RESOLUTION DENSITY
CALIPER
Depths
SEAM THICKNESS LOG
BED RESOLUTION DENSITY
CALIPER
DEPTH

Re. Secus mt. 83(3)A (1)

COAL QUALITY LOG

BOREHOLE
CLIENT
AREA
COUNTRY
DATE LOGGED

DEPTH SCALE

OF LOGS

BOREHOLE DATA — REFER TO LITHOLOGY LOG

OPERATION DATA — REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, L.S DENSITY

SOURCE, SONDE AND CALIBRATION — REFER TO LITHOLOGY LOG

COAL QUALITY LOG INTERVALS

REMARKS

BPB COAL QUALITY LOG

DEPTH

COAL BULK DENSITY g/cm³

HOLE SIZE CORRECTION DATA

COAL BULK DENSITY

DEPTH

BOREHOLE
CLIENT
AREA
COUNTRY

COAL QUALITY LOG

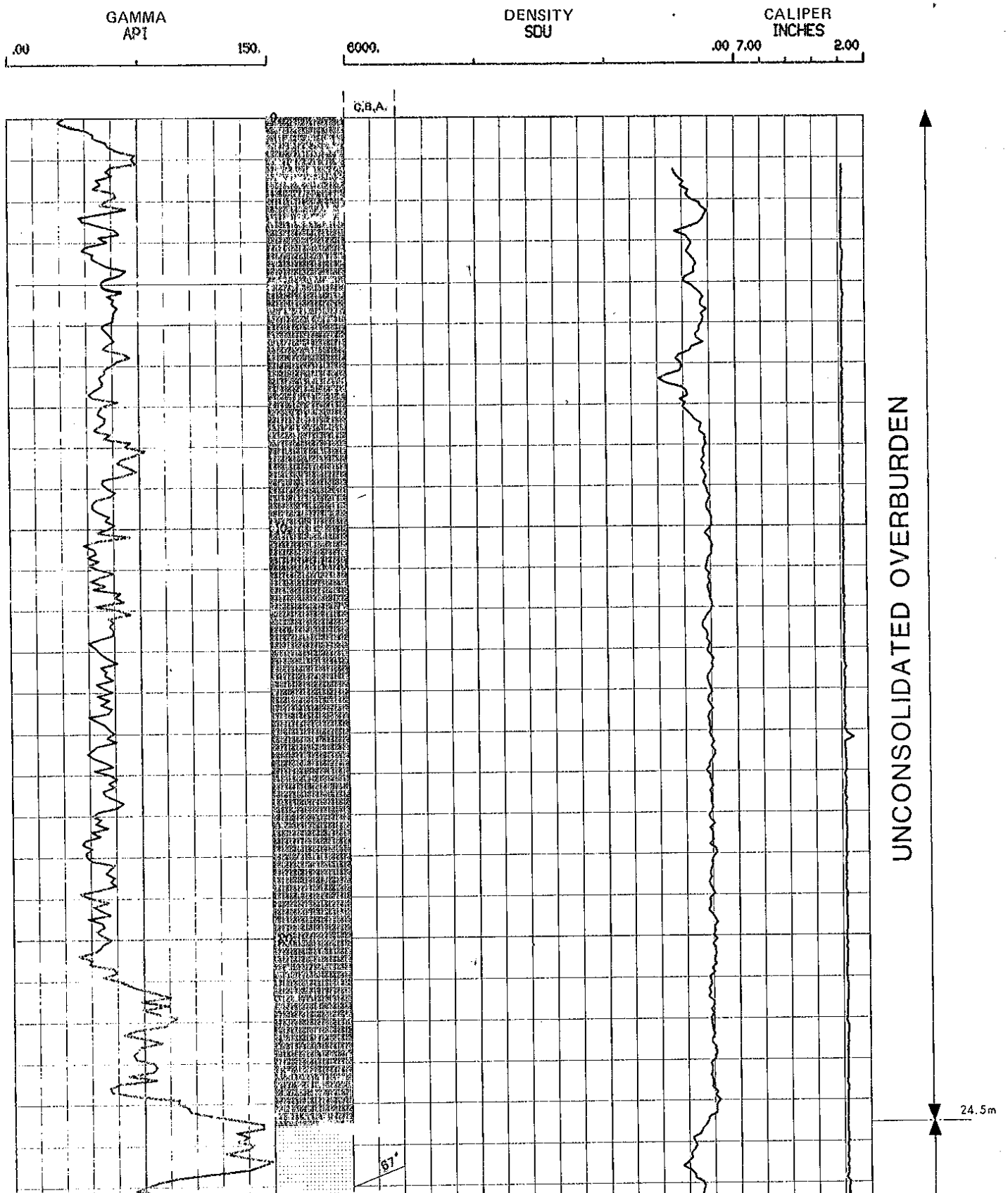
PR-SECUS MT. 83*(3)A *(1)

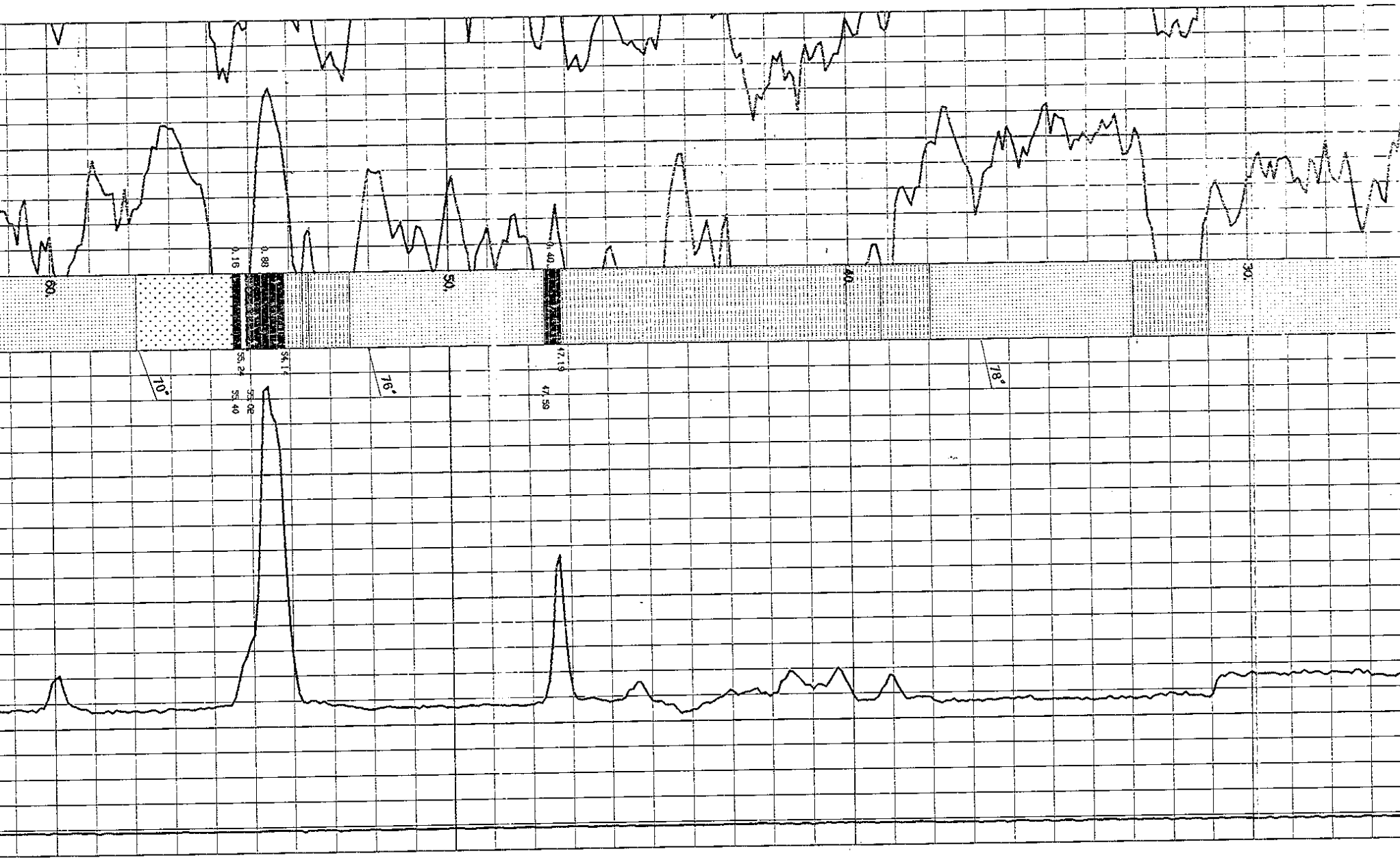
633

SECUS MOUNTAIN

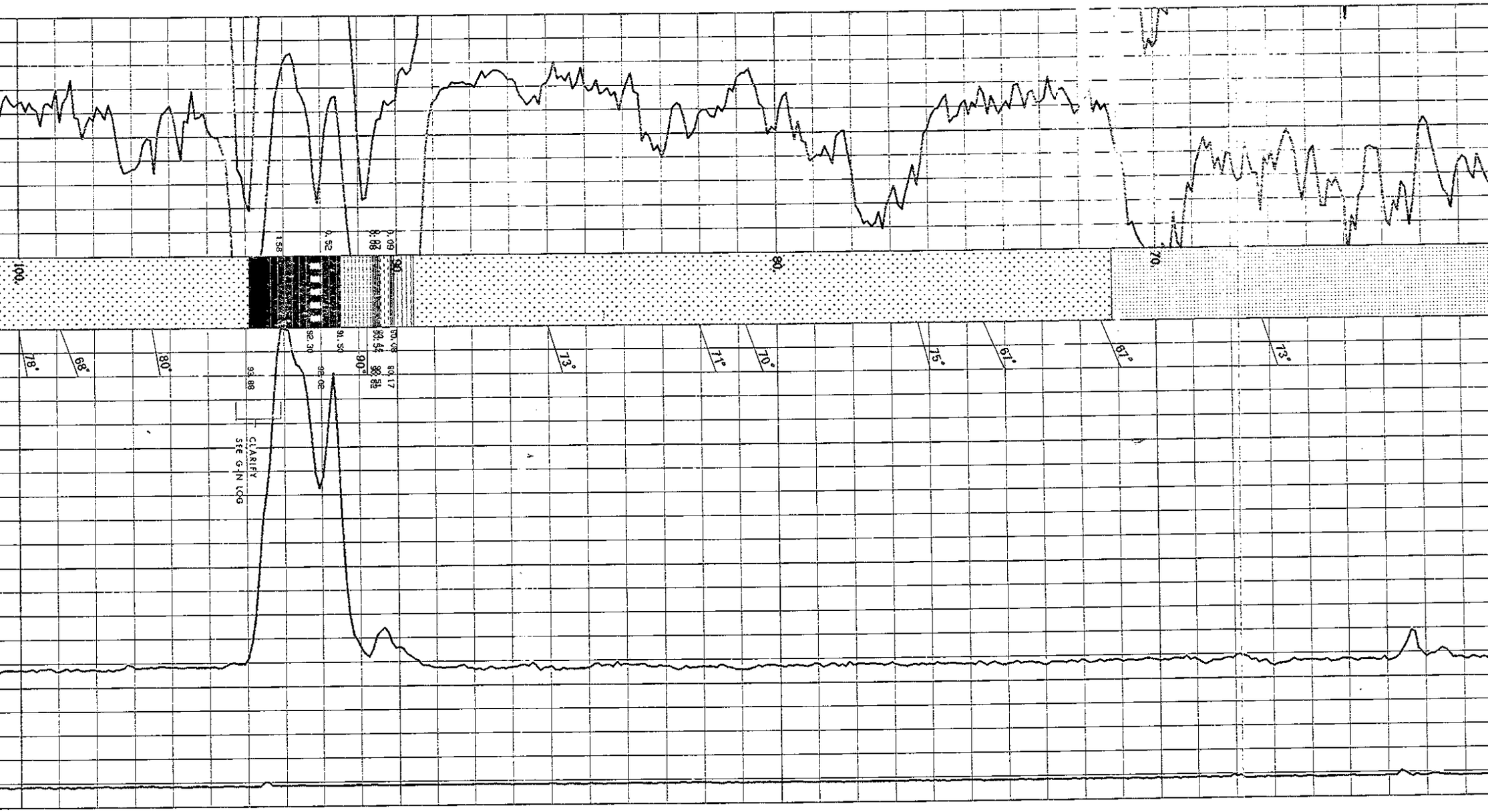
(SOUTH SECUS BLOCK)

DRILL HOLE #SC83-1

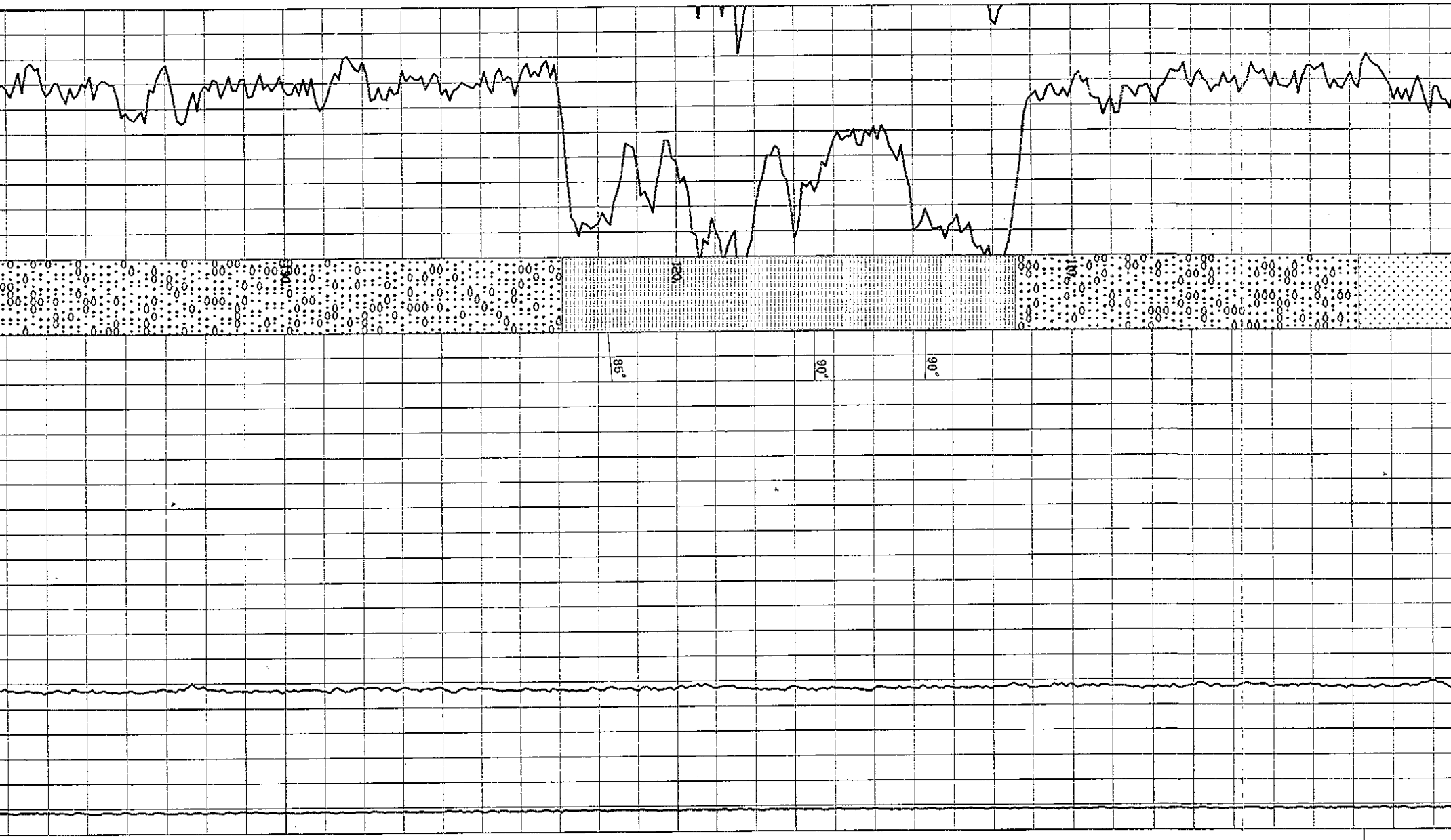




: GATES MEMBER

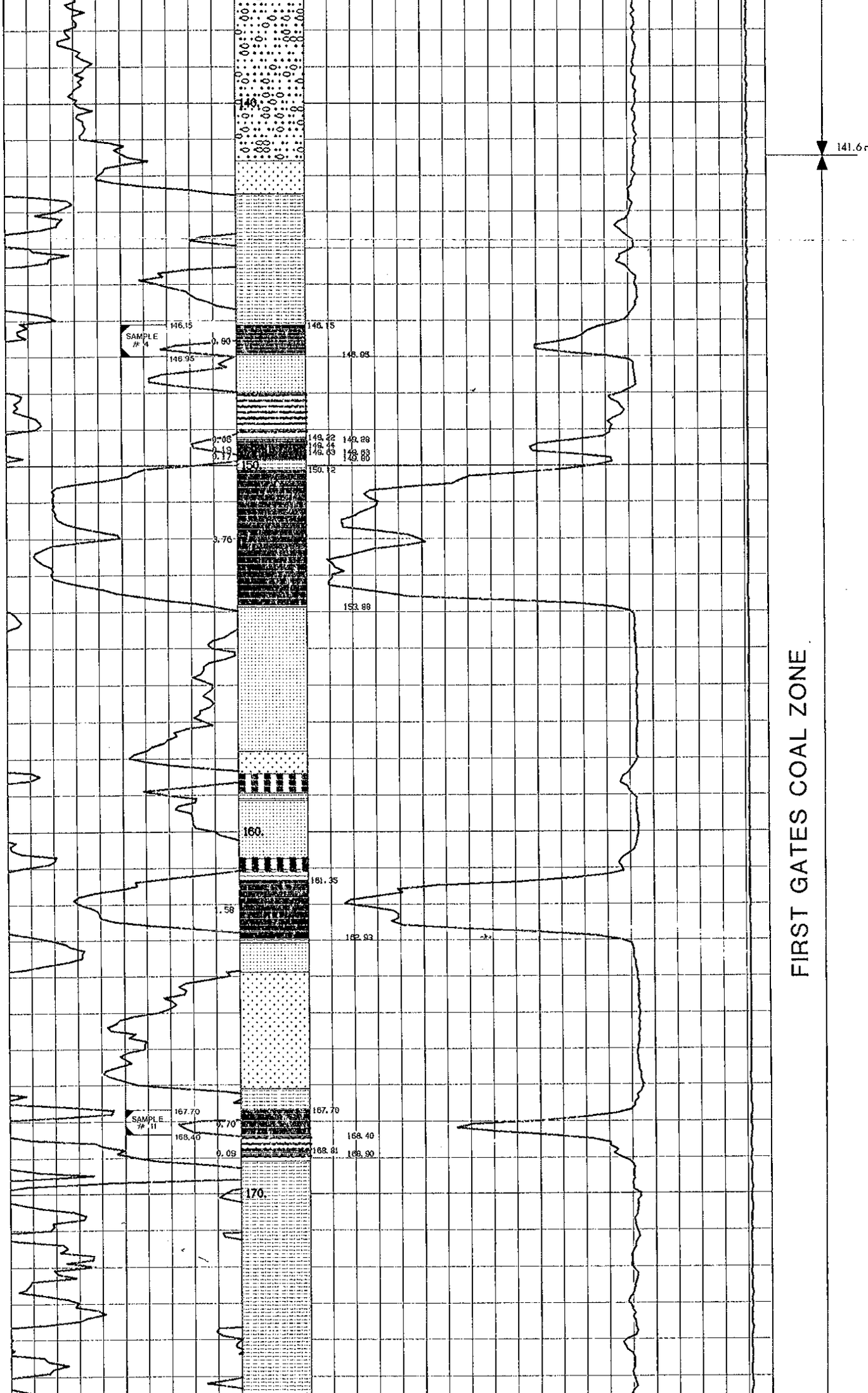


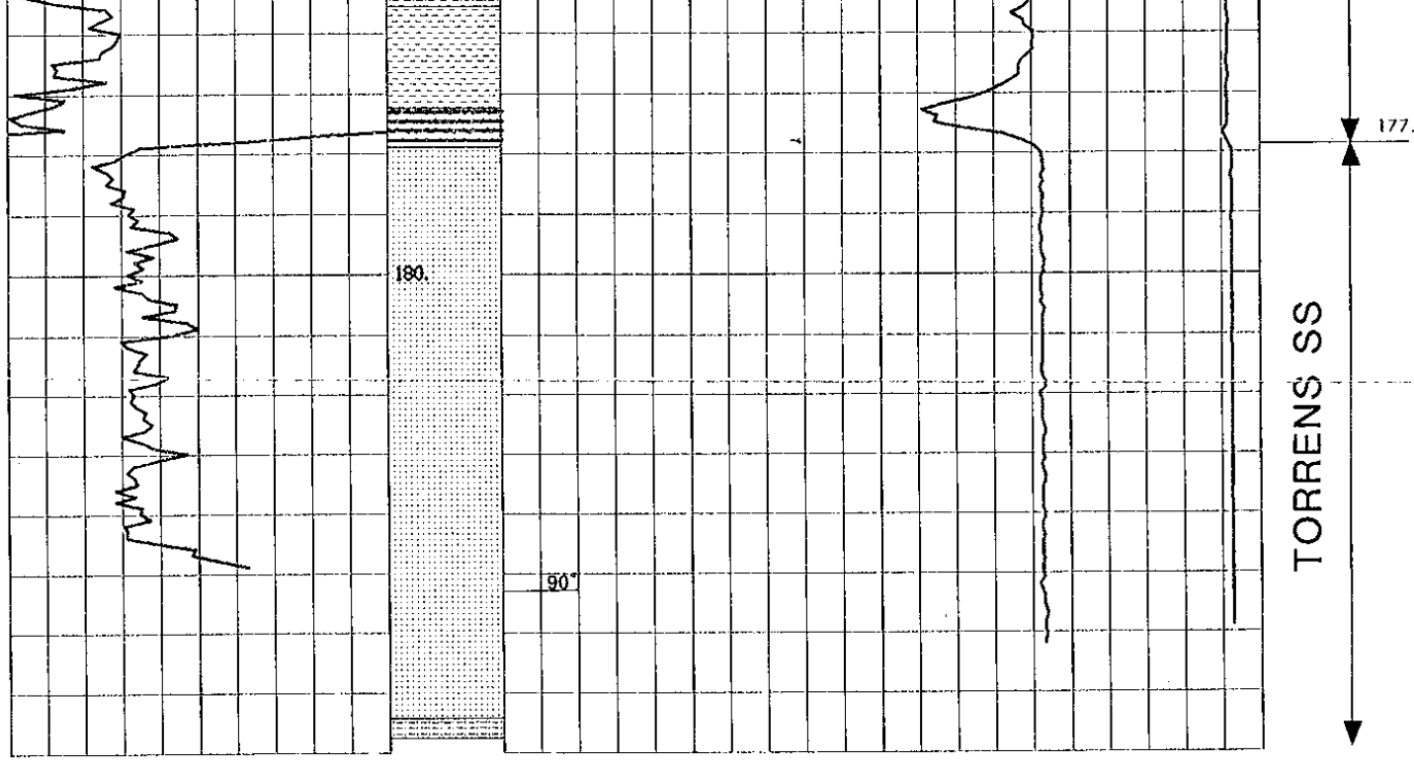
COMMOTION FORMATION

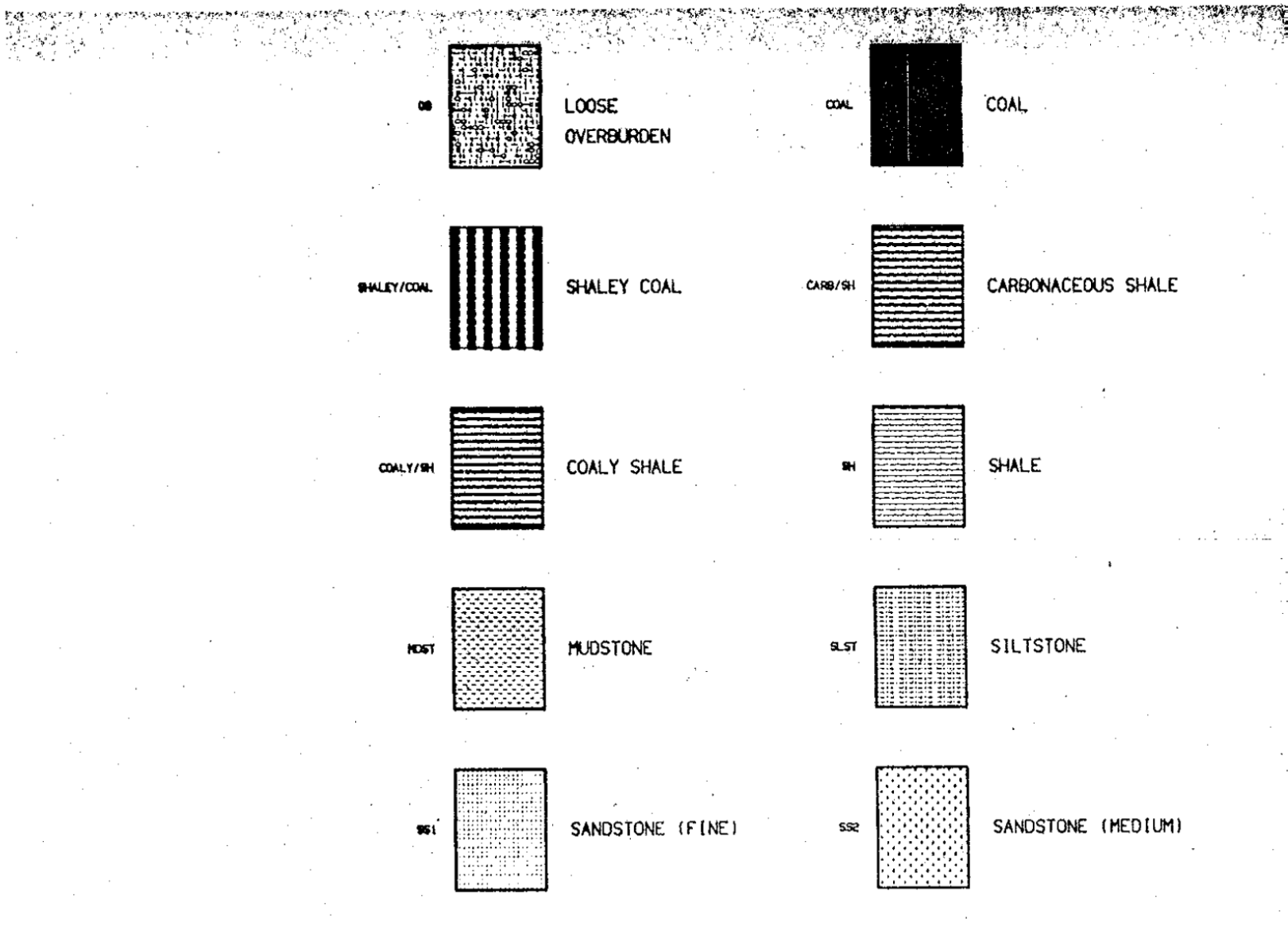


FIRST GATES CONGLOMERATE

102.8m


140.
141.6
SAMPLE # 4
146.15
0.80
146.95
146.15
148.95
149.22
149.28
149.44
149.63
149.63
149.80
0.06
0.19
0.17
150.
150.12
3.76
153.88
160.
161.35
1.58
162.93
SAMPLE # 11
167.70
0.70
168.40
167.70
168.40
0.09
168.81
168.90
170.
FIRST GATES COAL ZONE


180.
90°
177.
TORRENS SS


OB
LOOSE OVERBURDEN
COAL
COAL
SHALEY/COAL
SHALEY COAL
CARB/SH
CARBONACEOUS SHALE
COALY/SH
COALY SHALE
SH
SHALE
MDST
MUDSTONE
SLST
SILTSTONE
SS1
SANDSTONE (FINE)
SS2
SANDSTONE (MEDIUM)

SS3 SANDSTONE (COARSE)

SS4 SANDSTONE (CONG)

CONG CONGLOMERATE

IRST IRONSTONE

VOLC IGNEOUS

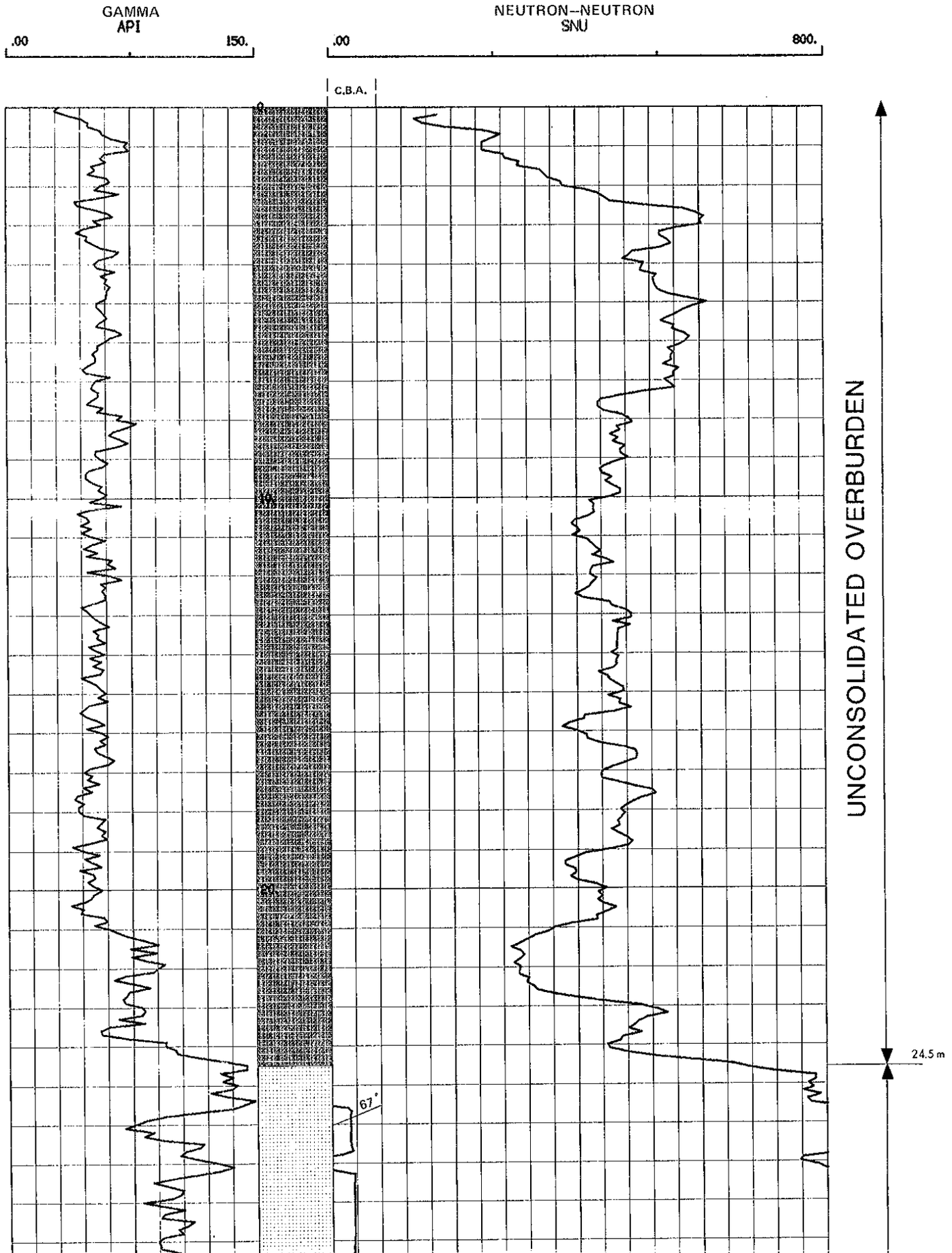
Pr. Secus Mt. 83(3)A *(i)

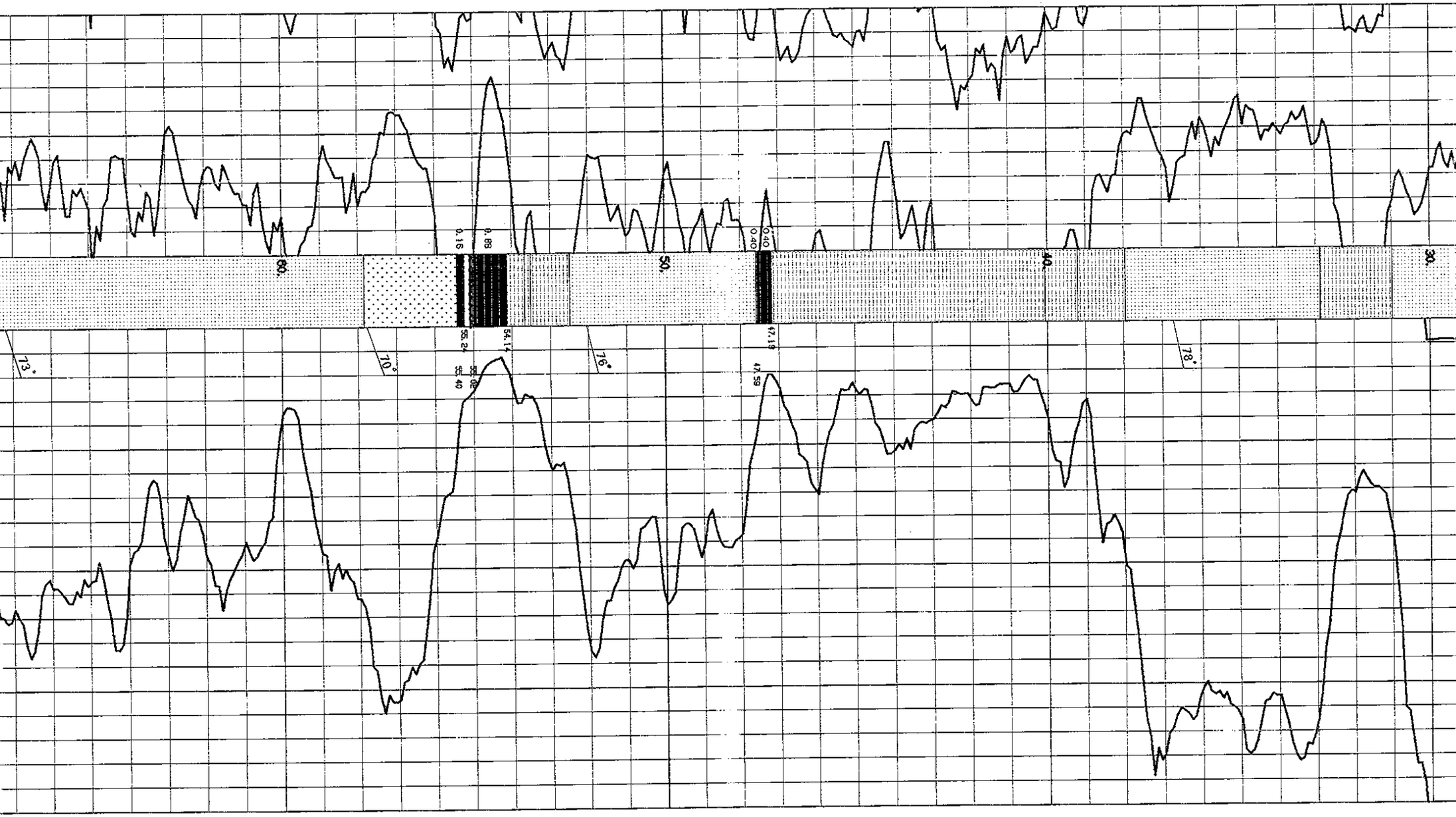
633

SECUS MOUNTAIN

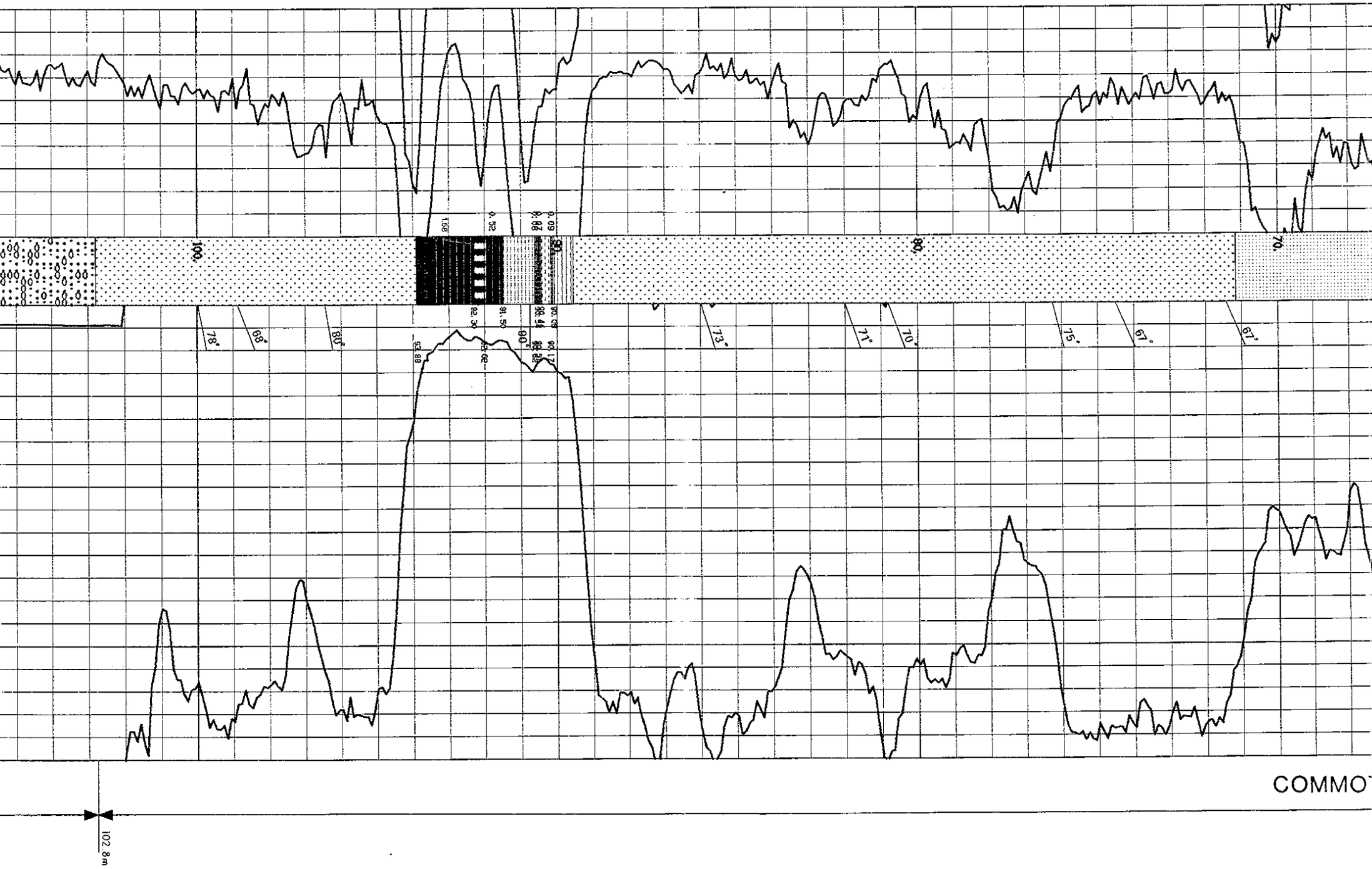
(SOUTH SECUS BLOCK)

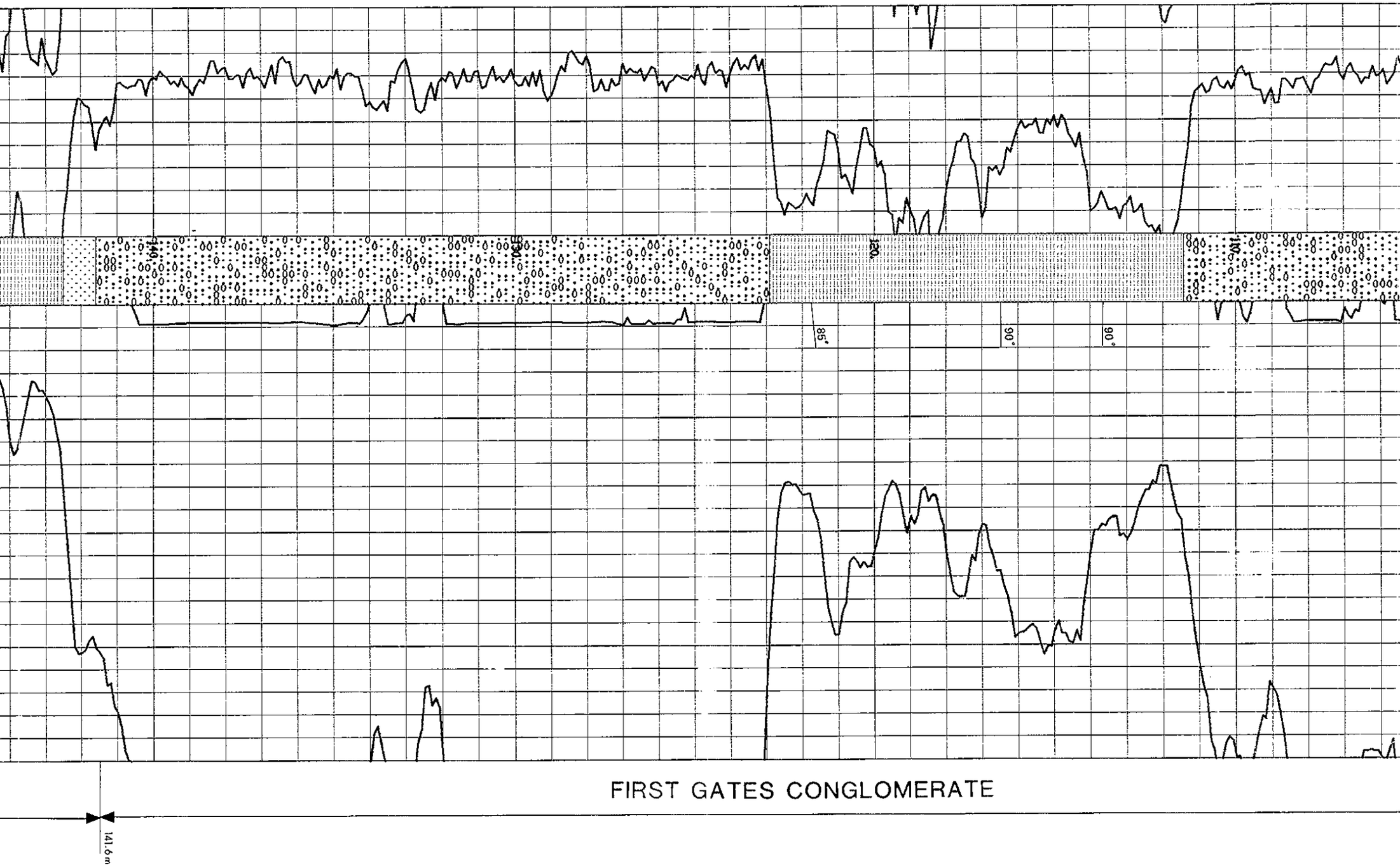
DRILL HOLE #SC83-1

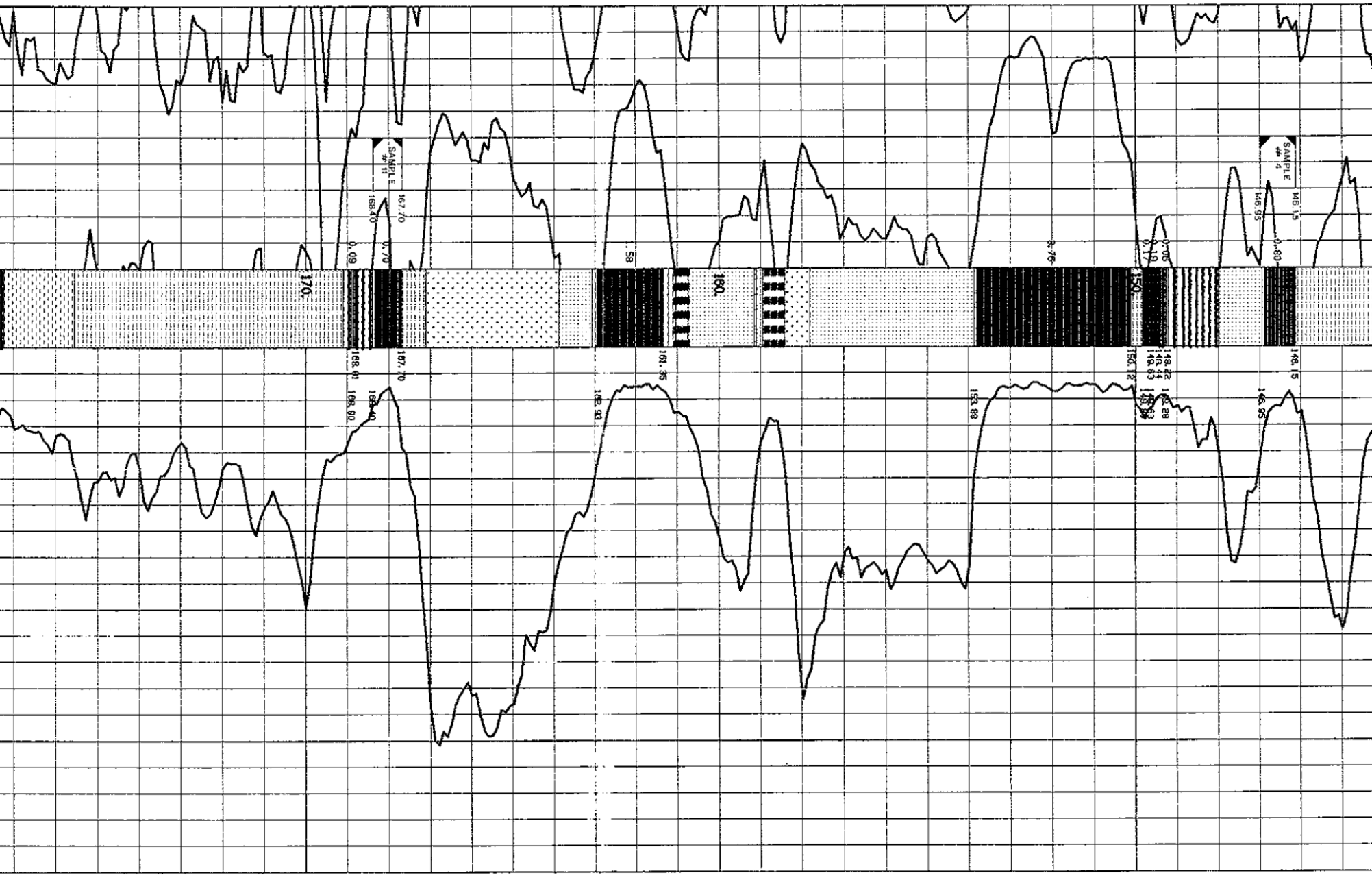




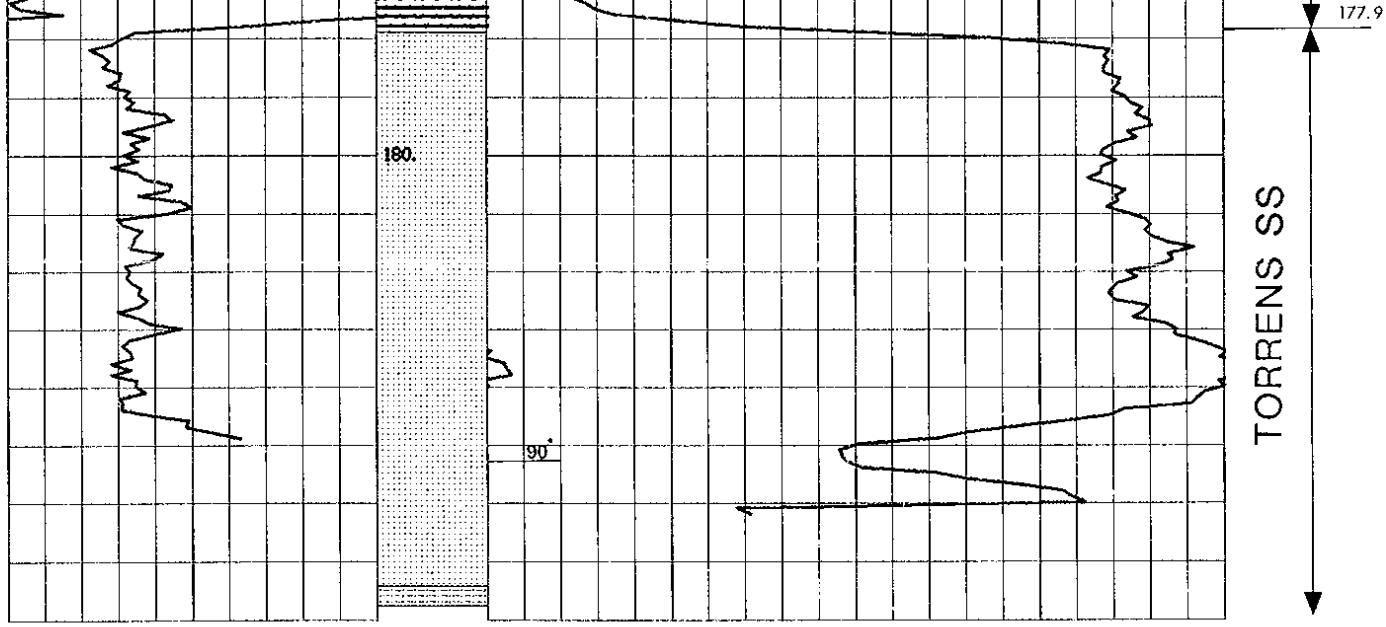
TION FORMATION : GATES MEMBER

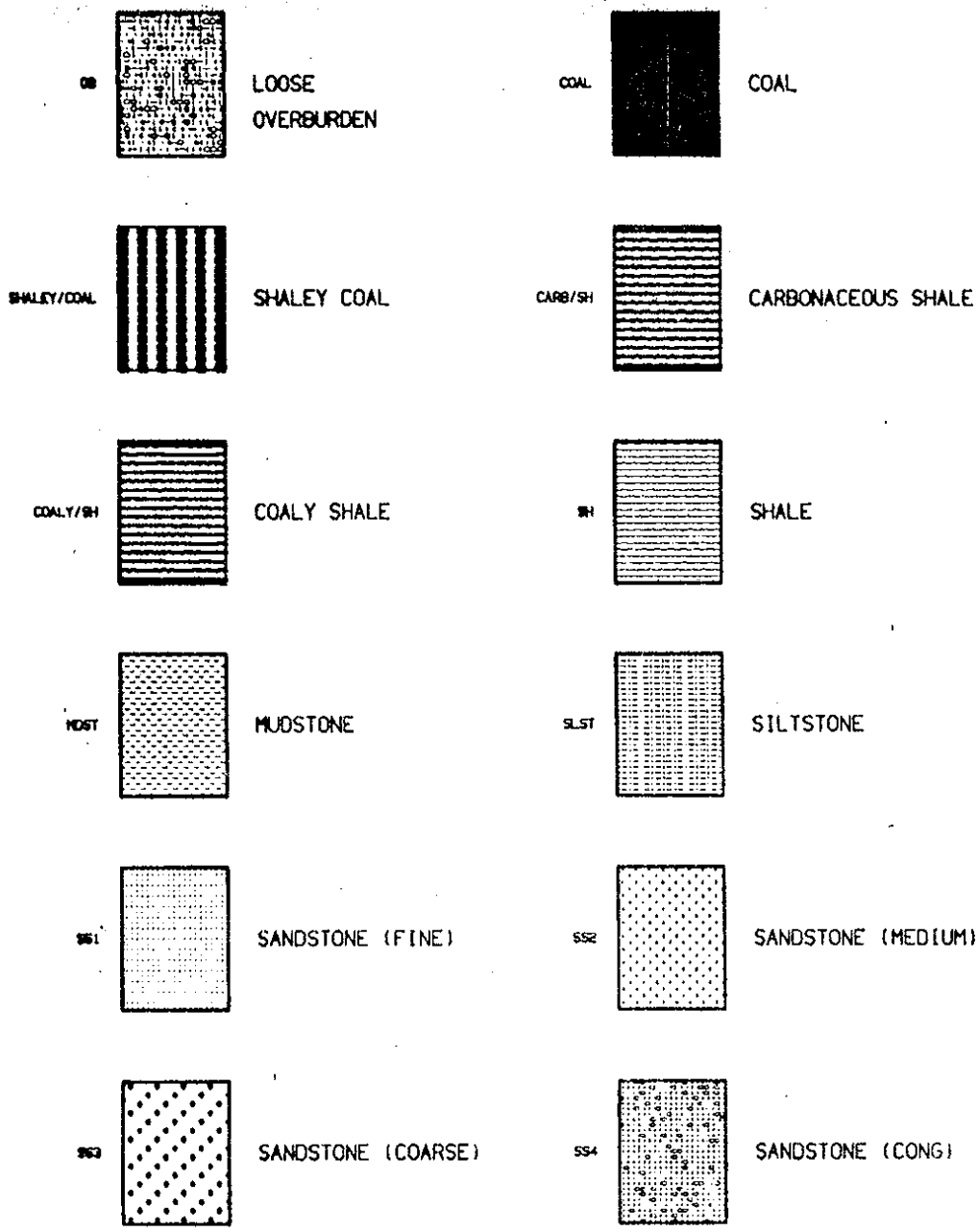

100
80
70
78°
68°
80°
73°
71°
70°
75°
67°
67°
COMMO
102.8m

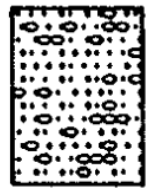

140
130
120
110
85°
90°
90°
FIRST GATES CONGLOMERATE
141.6 m

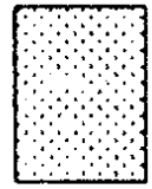


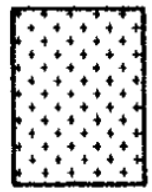
FIRST GATES COAL ZONE


177.9
180.
90°
TORRENS SS


OB
LOOSE OVERBURDEN
COAL
COAL
SHALEY/COAL
SHALEY COAL
CARB/SH
CARBONACEOUS SHALE
COALY/SH
COALY SHALE
SH
SHALE
MDST
MUDSTONE
SLST
SILTSTONE
SS1
SANDSTONE (FINE)
SS2
SANDSTONE (MEDIUM)
SS3
SANDSTONE (COARSE)
SS4
SANDSTONE (CONG)

CONG  CONGLOMERATE

IRST  IRONSTONE

VOLC  IGNEOUS

Pr. Secus Mt. 83(3)A #(1)

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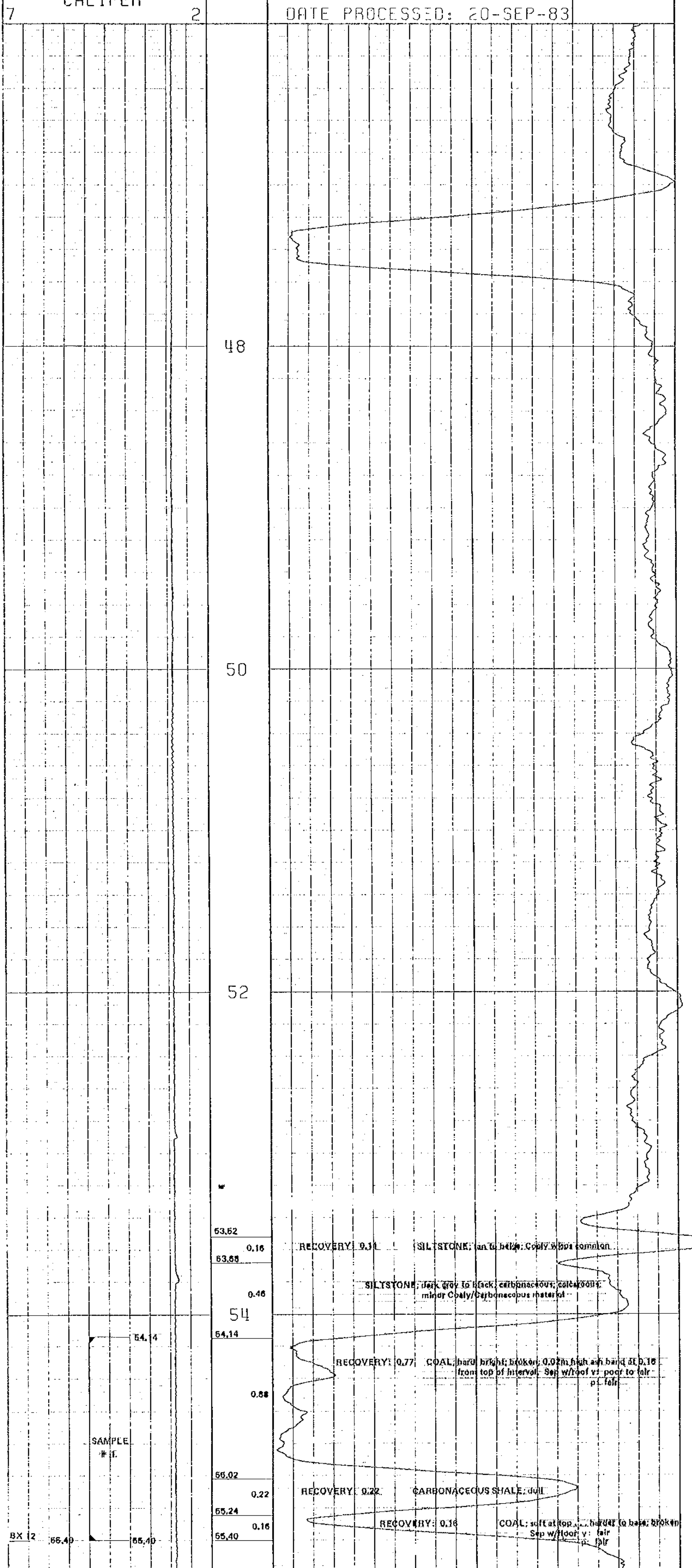
SECUS MOUNTAIN

(SOUTH SECUS BLOCK)

WELL NO: SC-83-1

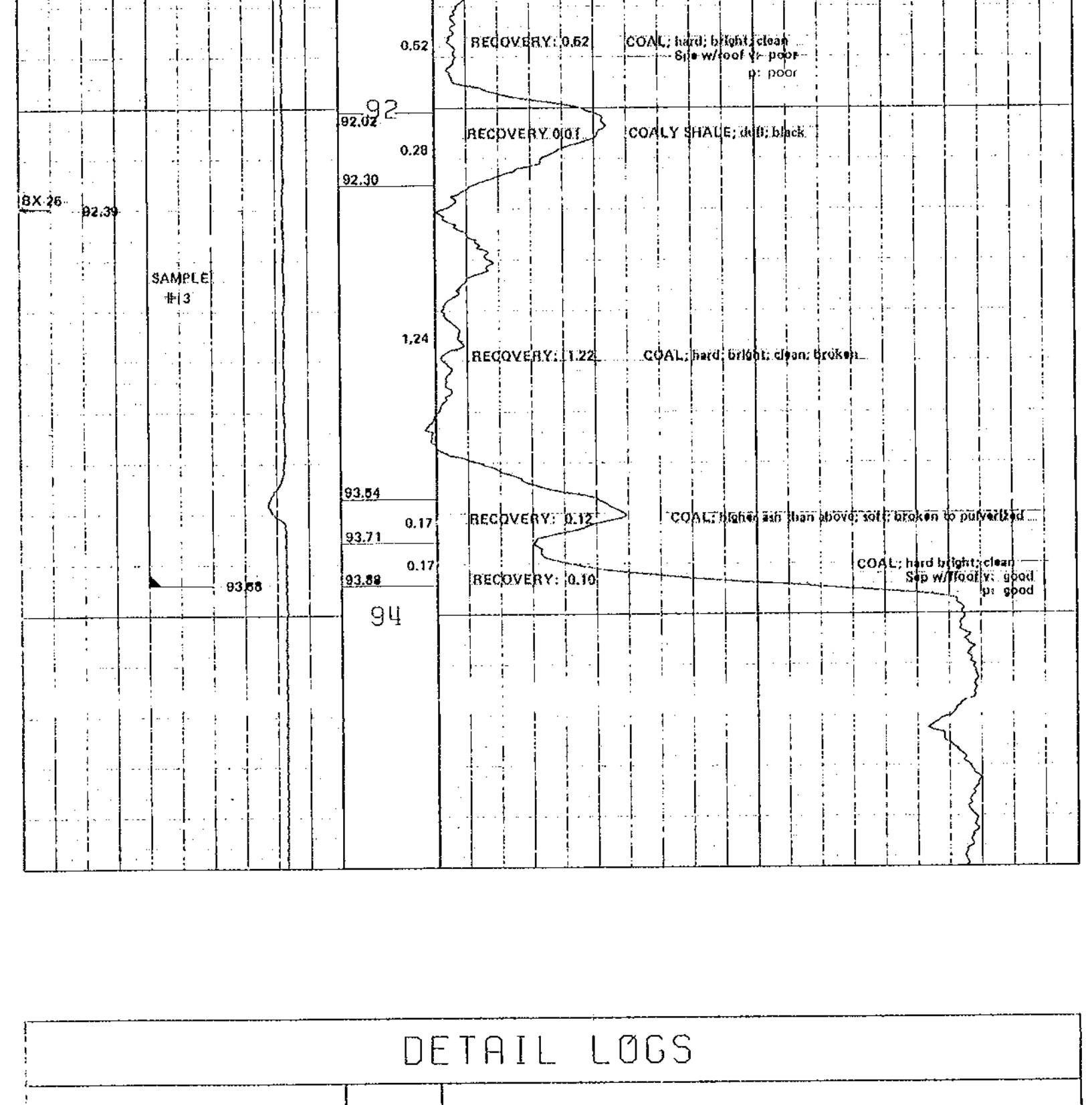
DETAIL LOGS

CALIPER 7 – 2	DEPTH SCALE 20	B.R.D (CCS) 24000 – 14000
		CLIENT: CROWS NEST RES. WELL NO: SC-83-1 AREA: SOUTH SECUS CASING: WATER: DEPTH: 46.00-57.00 DATE PROCESSED: 20-SEP-83



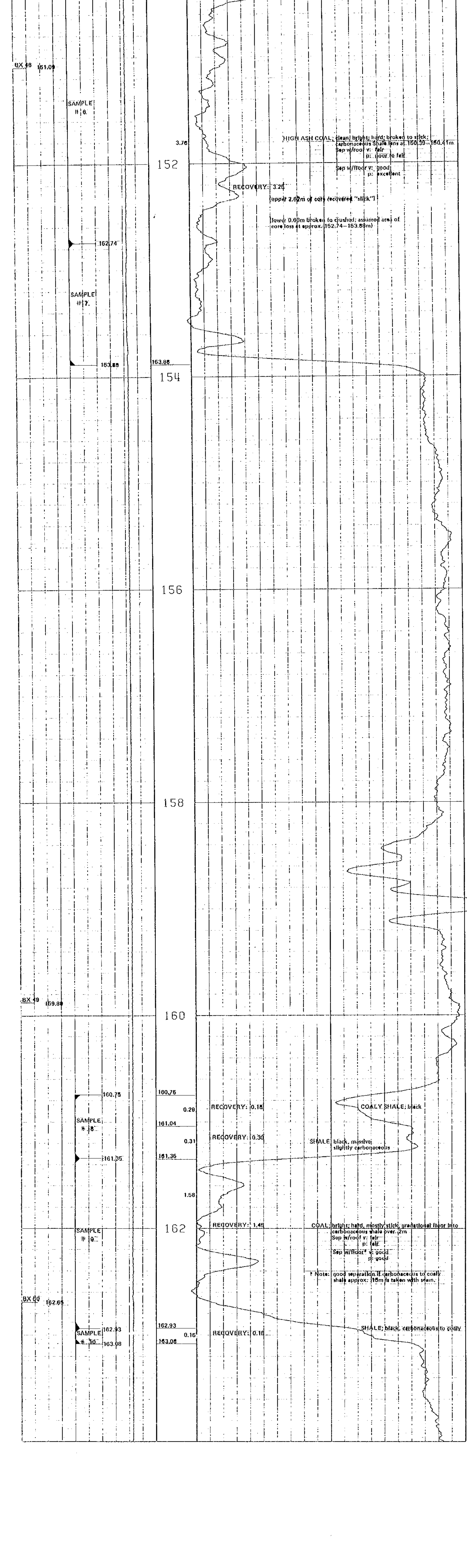
DETAIL LOGS

CALIPER 7 – 2	DEPTH SCALE 20	B.R.D (CCS) 24000 – 14000
		CLIENT: CROWS NEST RES. WELL NO: SC-83-1 AREA: SOUTH SECUS CASING: WATER: DEPTH: 89.00-95.00 DATE PROCESSED: 20-SEP-83



DETAIL LOGS

CALIPER 7 – 2	DEPTH SCALE 20	B.R.D (CCS) 24000 – 14000
		CLIENT: CROWS NEST RES. WELL NO: SC-83-1 AREA: SOUTH SECUS CASING: WATER: DEPTH: 148.00-164.00 DATE PROCESSED: 20-SEP-83



PR-SECUS MT 83A

[redacted]

COAL ANALYSIS

633

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	25572
ATTENTION	TOM COLE	DATE	Nov 24/83
PROJECT	SOUTH SECUS	PAGE	1 of 4

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 #SC-83-1													
1 54.14-55.40	Raw Coal			As Received	2.68	-		34.05		.40			
				Air Dried	-	1.34		34.52		.40			
				Dry Basis	-	-		34.99		.41			
	-1.70FLT	-	65.07	Air Dried	-	1.19	32.99	8.95	56.87	.53	7435	4½	
				Dry Basis	-	-	33.39	9.06	57.55	.54	7525		
2 91.06-91.50	Raw Coal			As Received	1.64	-		74.67		.16			
				Air Dried	-	1.02		75.15		.16			
				Dry Basis	-	-		75.92		.16			
	-1.70FLT	-	4.86	Air Dried	-	1.48	30.54	15.41	52.57	.70	6871	6	
				Dry Basis	-	-	31.00	15.64	53.36	.71	6974		
3 91.50-93.88	Raw Coal			As Received	2.88	-		15.44		.36			
				Air Dried	-	1.27		15.70		.37			
				Dry Basis	-	-		15.90		.37			
	-1.70FLT	-	89.45	Air Dried	-	1.23	31.23	10.61	56.93	.34	7308	3	
				Dry Basis	-	-	31.62	10.74	57.64	.34	7399		

PURCHASE ORDER NUMBER: # CN 22810

ANALYST:

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	25572
ATTENTION	TOM COLE	DATE	Nov 24/83
PROJECT	SOUTH SECUS	PAGE	2 of 4

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 #SC-83-1													
4	Raw Coal			As Received	1.77	-		49.12		1.19			
146.15-146.95				Air Dried	-	1.18		49.42		1.20			
				Dry Basis	-	-		50.01		1.21			
	-1.70FLT	-	33.54	Air Dried	-	1.16	31.56	11.37	55.91	.73	7244	5	
				Dry Basis	-	-	31.93	11.50	56.57	.74	7329		
5	Raw Coal			As Received	1.84	-		73.50		.18			
148.0-150.12				Air Dried	-	1.16		74.01		.18			
				Dry Basis	-	-		74.88		.18			
	-1.70FLT	-	14.11	Air Dried	-	1.16	30.07	17.72	51.05	.65	6747	3½	
				Dry Basis	-	-	30.42	17.93	51.65	.66	6826		
6	Raw Coal			As Received	2.01	-		13.88		.20			
150.12-152.74				Air Dried	-	1.32		13.97		.20			
				Dry Basis	-	-		14.16		.20			
	-1.70FLT	-	93.21	Air Dried	-	1.07	30.20	11.20	57.53	.16	7298	2½	
				Dry Basis	-	-	30.53	11.32	58.15	.16	7377		

PURCHASE ORDER NUMBER: # CN 22810

ANALYST:

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	25572
ATTENTION	TOM COLE	DATE	Nov 24/83
PROJECT	SOUTH SECUS	PAGE	3 of 4

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 #SC-83-1													
7 152.74-153.88	Raw Coal			As Received	6.24	-		11.97		.38			
				Air Dried	-	1.27		12.61		.40			
				Dry Basis	-	-		12.77		.41			
	-1.70FLT	-	91.11	Air Dried	-	1.41	33.24	8.97	56.38	.40	7496	4	
				Dry Basis	-	-	33.72	9.10	57.18	.41	7603		
8 160.75-161.35	Raw Coal			As Received	1.39	-		82.85		.36			
				Air Dried	-	.99		83.19		.37			
				Dry Basis	-	-		84.02		.37			
	-1.70FLT	-	2.05	Air Dried	-	1.19	29.01	20.63	49.17	1.45	6451	6½	
				Dry Basis	-	-	29.36	20.88	49.76	1.47	6529		
9 161.35-162.93	Raw Coal			As Received	1.86	-		15.57		.31			
				Air Dried	-	1.34		15.66		.32			
				Dry Basis	-	-		15.87		.32			
	-1.70FLT	-	89.12	Air Dried	-	1.15	30.18	11.62	57.05	.31	7260	4½	
				Dry Basis	-	-	30.53	11.76	57.71	.31	7344		

PURCHASE ORDER NUMBER: # CN 22810

ANALYST: _____

LORING LABORATORIES LTD.

CERTIFICATE OF COAL TESTING

COMPANY	CROWSNEST RESOURCES LTD	FILE NO.	25572
ATTENTION	TOM COLE	DATE	Nov 24/83
PROJECT	SOUTH SECUS	PAGE	4 of 4

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 #SC-83-1													
10	Raw Coal			As Received	1.50	-		74.63		1.04			
162.93-163.08				Air Dried	-	1.00		75.01		1.05			
				Dry Basis	-	-		75.77		1.06			
	-1.70FLT	-	13.72	Air Dried	-	1.24	30.06	18.90	49.80	.16	6653	5	
				Dry Basis	-	-	30.44	19.14	50.42	.16	6737		
11	Raw Coal			As Received	1.72	-		29.53		.49			
167.70-168.10				Air Dried	-	1.21		29.69		.49			
				Dry Basis	-	-		30.05		.50			
	-1.70FLT	-	72.17	Air Dried	-	1.20	31.03	15.49	52.28	.58	6967	6	
				Dry Basis	-	-	31.41	15.68	52.91	.59	7052		

PURCHASE ORDER NUMBER: # CN 22810

ANALYST: _____

To: CROWSNEST RESOURCES LTD.
Eau Claire Place, 525 - 3rd Ave S.W.,
Calgary, Alberta T2P 2M7
Attn: T. Cole

File No. 25572-2
Date March 6, 1984
Samples Coal Composites

Certificate of ASSAY

LORING LABORATORIES LTD.

"GEISELER PLASTICITY TESTS"

SAMPLE No.	START DDPM	START TEMP(C°)	MAXIMUM DDPM	MAXIMUM TEMP(C°)	FINAL DDPM	FINAL TEMP(C°)	RANGE
South Secus Hole SC-83-1 1.70 FLT							
Comp 1+3	1	420	5	446	0	480	60
Comp 6+7+9	1	425	5	444	0	472	47

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: CROWSNEST RESOURCES LTD
Eau Claire Place, 525 - 3rd Ave S.W.
Calgary, Alberta T2P 2M7
Attn: T. Cole

File No. 25572-1
Date March 2, 1984
Samples Coal
South Secus

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	% H_2O	% C	% H	% N	% ASH	% S	% O (diff)
"Ultimate Analysis" -1.70FLT "Air Dried"							
Hole SC-83-1							
Comp 1 + 3	1.23	74.33	4.62	.89	10.37	.39	8.17
Comp 6 + 7 + 9	1.09	73.97	4.47	.84	11.15	.27	8.21

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Pulps Retained one month unless specific arrangements made in advance.

Assayer

To: CROWSNEST RESOURCES LTD
Eau Claire Place
525 - 3rd Avenue S.W.,
Calgary, Alberta T2P 2M7
Attn: T. Cole

File No. 25572-1
Date March 2, 1984
Samples Coal Ash

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	"REDUCING ATMOSPHERE" IT(F°)	ST(F°)	HT(F°)	FT(F°)
"Ash Fusion Analysis"				
South Secus -1.70FLT				
Hole SC-83-1				
Comp 1 + 3	+2650	+2650	+2650	+2650
Comp 6 + 7 + 9	2543	2633	+2650	+2650
	"OXIDIZING ATMOSPHERE"			
Comp 1 + 3	+2650	+2650	+2650	+2650
Comp 6 + 7 + 9	2558	2643	+2650	+2650

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Pulps Retained one month unless specific arrangements made in advance.

Assayer

CROWS NEST RESOURCES ALYSIS REPORT

AREA: SECUS HOLE NO. 81-1 DATE: MAR. 11/82 ANALYST

CORE

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/ kg	CALC BASIS
				RAW	0.00	.49	66.07			½				ADB
														ARB
81 -	17A		58.9 →				66.40							DB
1789			59.16	1.6 FLOAT		1.72	5.04	33.41	59.83	7		8	7704	ADB
							5.13	33.99	60.88				7839	DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW	0.91	1.10	20.86			3				ADB
														ARB
81 -	17B		59.16 →				21.09							DB
1790			60.66	1.6 FLOAT		1.01	8.93	31.58	58.48	4		72	7395	ADB
							9.03	31.90	59.07				7470	DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW	1.24	.95	29.20			3				ADB
														ARB
81 -	18A		118.65 →				29.48							DB
1791			119.0	1.6 FLOAT		1.06	15.74	29.30	53.90	4½		61	6894	ADB
							15.91	29.62	54.47				6968	DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCE... ALYSIS REPORT

AREA: SECUS HOLE NO. 81-1 DATE: MAR. 11/82 ANALYST

CORE

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/ kg	CALC BASIS
				RAW	0.00	.78	82.87			0				ADB
														ARB
														DB
81 -	18B		119.0 →				83.52							
1792			119.16	1.6 FLOAT		0 FLOAT						0		ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW	0.86	.91	11.89			3				ADB
														ARB
81 -	18C		119.16 →											DB
1793			122.04				12.00							
				1.6 FLOAT		1.12	8.62	30.21	60.05	3½		88	7481	ADB
							8.72	30.55	60.73				7566	DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW	0.57	.90				4½				ADB
														ARB
							15.16							DB
81 -	19		130.5 →	1.6 FLOAT		1.25	7.74	30.34	60.67	5		84	7534	ADB
1794			132.15				7.84	30.73	61.43				7629	DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

To: CROWSNEST RESOURCES LTD.,
525 - 3rd Avenue S.W.,
Calgary, Alberta T2P 2M7
ATTN: T. Cole

cc: K. McCullough - Fernie, B.C.

File No. 23408
Date April 13, 1982
Samples Coal Pulp

P.O. # CN 24098

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	% S
"Coal Analysis"	
"Air Dried"	
Secus	
Hole # 81-1	
1.60 Flt	
81-1789 17A	.80
1790 17B	.38
1791 18A	.42
1793 18C	.22
1794 19	.45

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Pulps Retained one month unless specific arrangements made in advance.

Assayer