GEOLOGICAL
REPORT

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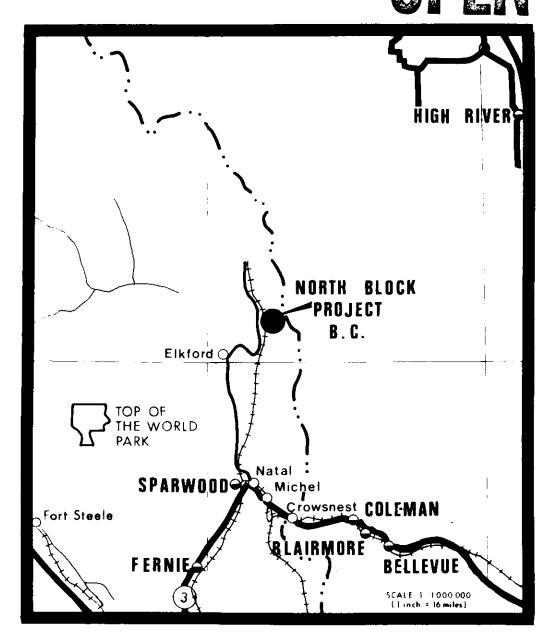
K. SHEW- NORTH BEGER TO (1) A.

# CROWS NEST RESOURCES LIMITED

SHELL CANADA RESOURCES LIMITED

Report on Coal Licence 264 to 276 Inclusive





RECEIVED FOR FILING MAY 24th 79

# NORTH BLOCK PROJECT

71437

KOOTENAY DISTRICT B.C.

# NORTH BLOCK PROJECT REPORT ON COAL LICENSES NOS. 264 to 276 INCLUSIVE

KOOTENAY DISTRICT

MAP REFERENCE: 82J/2

 $50^{\circ}$  02' to  $50^{\circ}$  08' NORTHERN LATITUDE  $114^{\circ}$  45' to  $114^{\circ}$  50' WESTERN LONGITUDE

CROWS NEST RESOURCES LIMITED

SHELL CANADA RESOURCES LIMITED

CALGARY, ALBERTA

AUTHORS: J. Horachek, P. Eng.

D. Fietz, C.E.T.

EXPLORATION PERIOD: June to

August, 1978

REPORT DATE: April, 1979

#### PROFESSIONAL VERIFICATION OF REPORT

Entitled: North Block Project

Report on Coal Licenses

Nos. 264 to 276 Inclusive

#### SOUTHEASTERN BRITISH COLUMBIA, 1978

Mr. Jaro Horachek planned and carried out the geological field program of Shell Canada Resources Ltd. and Crows Nest Resources Ltd. - 1978 North Block Project, and prepared this report under the general supervision of the undersigned.

Jaro Horachek, M.Sc., graduated in Geological Engineering from the Mining University of Ostrava, Czechoslovakia in 1969. Mr. Horachek is a member, as a Professional Engineer, of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta. His experience in Western Canadian coal exploration since 1970 includes positions with:

- Scurry Rainbow Oil Ltd., Calgary, Alberta
- Energy Resources Conservation Board, Calgary, Alberta
- Shell Canada Resources Ltd., Calgary, Alberta
- Crows Nest Resources Ltd., Calgary, Alberta

He currently holds the position of Senior Geologist for Crows
Nest Resources Ltd.

I consider Jaro Horachek to be well qualified to undertake the responsibilities he was assigned on this project. I am satisfied that the attached report dated April, 1979 has been competently prepared and justly represents the information obtained from this project.

. J. Crabb, PA

April 30, 1979

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Bare Mountain Area

ENCLOSURE TWO Stratigraphic Sections Correlation Chart -

Chauncey Creek Area

# LIST OF SEPARATE REPORTS

Two reports pertaining to the geodetic survey were submitted separately:

Survey control for CNRL, Fernie - Sparwood, B. C.

Photogrammetric mapping for CNRL, Fernie - Sparwood, B. C.

#### SUMMARY

The North Block Project, comprised of coal licenses No. 264 to 276, has an areal extent of 3173 hectares. The license block is located in the Fording River Valley, 3 km south of Fording Coal Ltd's mine.

During the summer of 1978, about 40% of the area underlain by coal was mapped and nearly 50 stratigraphic sections were measured. To support the geological mapping and stratigraphic survey, some 40 hand trenches were dug. In addition to the geological activity, a new series of 1:40,000 scale air photographs were flown during the summer; from these 1:5,000 scale topographic maps were produced.

In total \$93,107 was spent on the Project; in-field costs amounted to \$82,607 and the balance, \$10,500, was accredited to in-office expenditures. The total represents \$29.34 per hectare.

Interpretation of the exploration data led to the compilation of this report which includes the following principal documents:

- general geological map (1:50,000 scale)
- detail geological map compiled on an enlarged air photograph (1:10,000 scale)
- correlation chart of stratigraphic sections
- composite stratigraphic section of the Coal-Bearing Member of the Kootenay Formation
- initial estimate of coal resources

It is now estimated that the North Block area contains a minimum of 140 million tonnes of in-place coal resources. The total includes both surface and underground mineable resources. The estimate

is very conservative since only four to five coal seams have been included in the calculation. In total, 10 seams ranging in thickness from 1.5 to 8.0 m (locally up to 10.5 m) have been identified. At least two additional seams are known to be present; because available data is limited, these additional two seams have not been included as part of the correlation chart.

The North Block coal is expected to be of coking quality and, in rank, to be similar to Fording Coal Ltd.'s, medium to high volatile bituminous coal.

Areas of open pit potential have been identified in three locations. The most accessible is a half km<sup>2</sup> area located in the triangle between Fording spurline, Chauncey Creek and the northern boundary of the licences. Four to five coal seams, dipping 15° to the east, into a gently rising slope, have been observed in this area. The seams correspond to the upper seams of the Coal-Bearing Member.

The bulk of the coal resources are underground mineable.

Limited flat to gently inclined structural conditions exist in the

Chauncey Creek area. Elsewhere steep conditions prevail, with dips

ranging from 25° to 55°. Five coal seams are consistently thicker than

4 m; one of these, over a large areal extent, has a thickness ranging

from 6 to 10 m. Hydraulic mining, therefore, should be given serious

consideration.

It is recommended that the next exploration season include core drilling of one to two deep holes in the Chauncey Creek area.

Geological mapping and stratigraphic surveying should continue to com-

<sup>\*</sup> to reach the Basal Kootenay Sandstone may require a hole some 800 m deep.

plete the 1:10,000 geological map. Areas of prime interest are Chauncey Creek Area and Green Slope Area (lying on the west side of the Fording River).

#### 1 INTRODUCTION

#### 1.1 LICENCES

Crows Nest Industries Limited (C.N.I.) of Fernie, British Columbia, formerly held, through its wholly owned subsidiary the Crows Nest Pass Oil and Gas Company Limited, coal licenses 264 to 276 inclusive (Figure 1).

In February, 1978, Shell Canada Resources Limited acquired

C.N.I. The noted licenses have since been transferred to Shell Canada

Resources Limited.

The licenses, lying on and in close proximity to the Fording River valley of southeastern British Columbia, encompass an approximate area of  $7840 \pm \text{acres}$  or  $3173 \pm \text{hectares}$ . (Appendix One). The block of licenses has been designated as NORTH BLOCK.

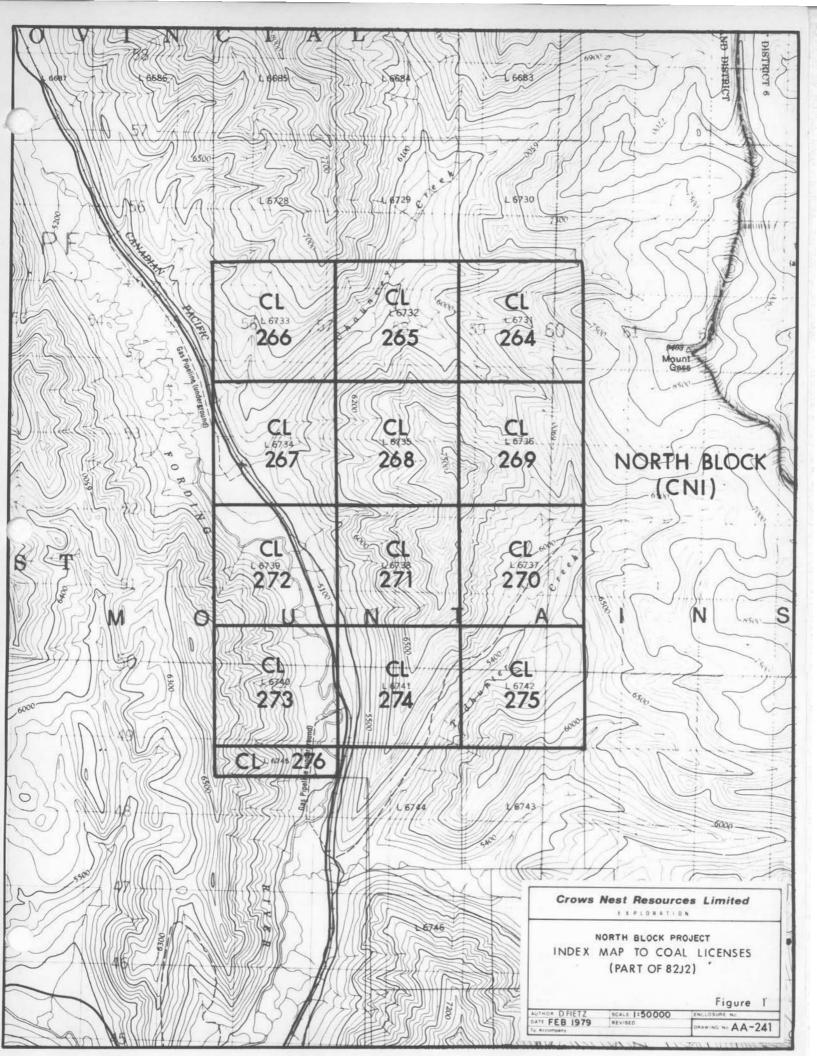
#### 1.2 PREVIOUS WORK

The most recent document is an internal C.N.I. geological report, "THE FORMER IMPERIAL COAL AND COKE PROPERTIES OF THE UPPER ELK VALLEY" by N.P. Elphinstone which was compiled in 1951. It is a reconnaissance report of a regional nature which deals with the NORTH BLOCK PROJECT area only very briefly (Appendix Two).

#### 1.3 OBJECTIVES

In 1978, exploration activity was designated to:

initiate geological mapping of the area



- establish a typical stratigraphic section of coal measures indicating relative positions and thicknesses of coal seams
- identify areas of potential coal mine development
- recognize areas requiring further exploration
   work.

#### 1.4 ACCOMPLISHMENTS

Field operations during the summer 1978 consisted of geological mapping, measuring stratigraphic sections, hand trenching and geodetic surveying.

Mapping on a reconnaissance level was conducted through the project area, while detailed mapping at a 1:10,000 scale covered 25% (5  $\rm km^2$ ) of the total North Block area or 40% of the land underlain by the coal-bearing Kootenay Formation.

Stratigraphic sections were measured at over thirty locations; these were located primarily within the area of detailed mapping.

Using the measured sections and the geological information plotted on aerial photographs, two correlation charts were compiled.

A composite type section of coal measures was also derived.

Three areas containing surface mineable coal seams have been identified.

#### 2 REGIONAL SETTING

#### 2.1 LOCATION

The North Block group of coal licenses is located in the Fording River valley; in terms of distance, they are located 9 air-kilometres north-west of Elkford or 3 km south of Fording Coal Ltd. (Figure 2). Geographically the licenses extend between:

 $50^{\circ}$  02' and  $50^{\circ}$  08' of northern latitude, and  $114^{\circ}$  45' and  $114^{\circ}$  50' of western longitude

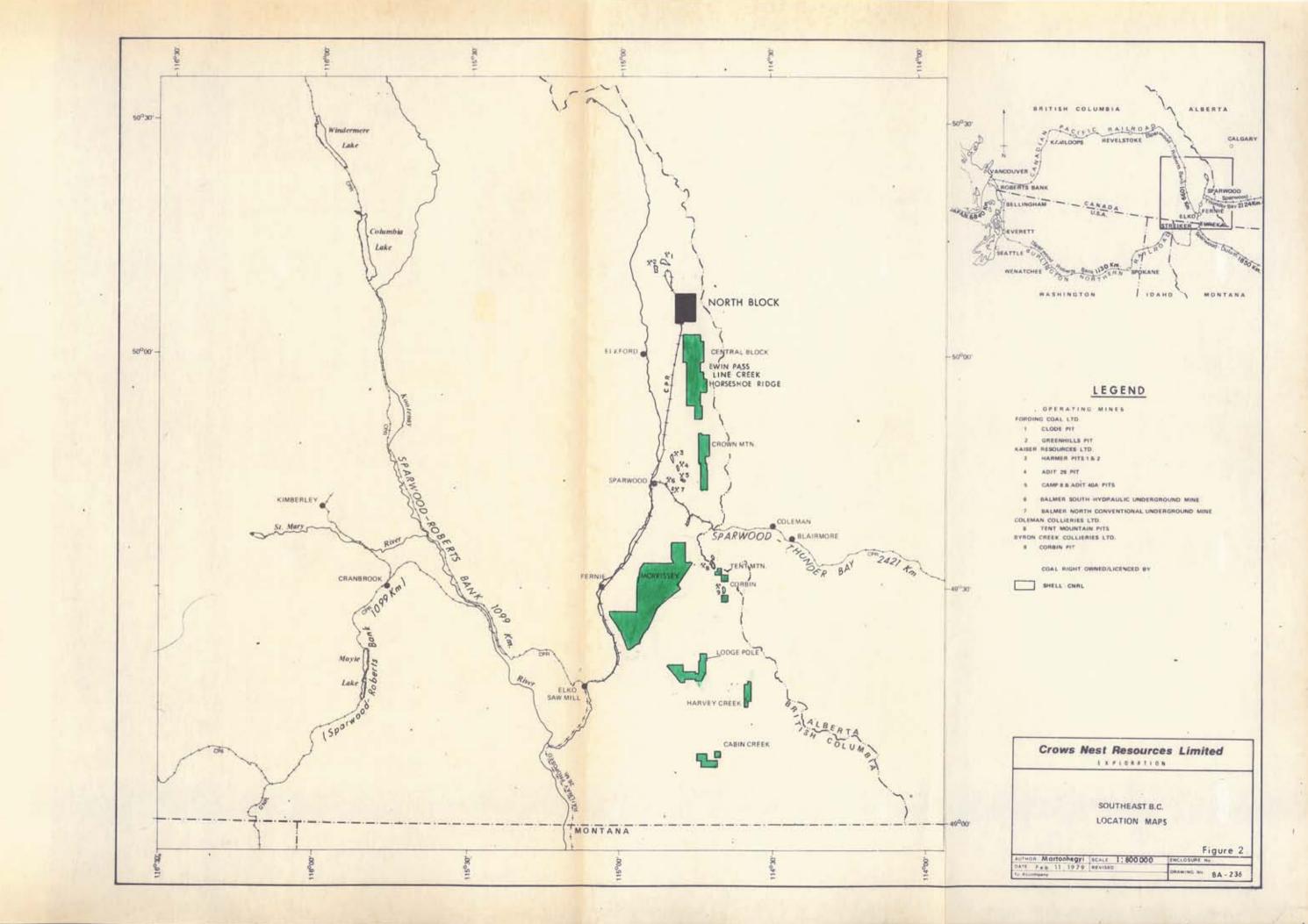
Locally the area includes all of the Bare Mountain Ridge between Todhunter and Chauncey Creeks; part of the north slope of Lone Mountain; part of the north side of the lower Chauncey Creek valley and also a small segment of the southern extension of Green Hill Ridge on the west side of Fording River.

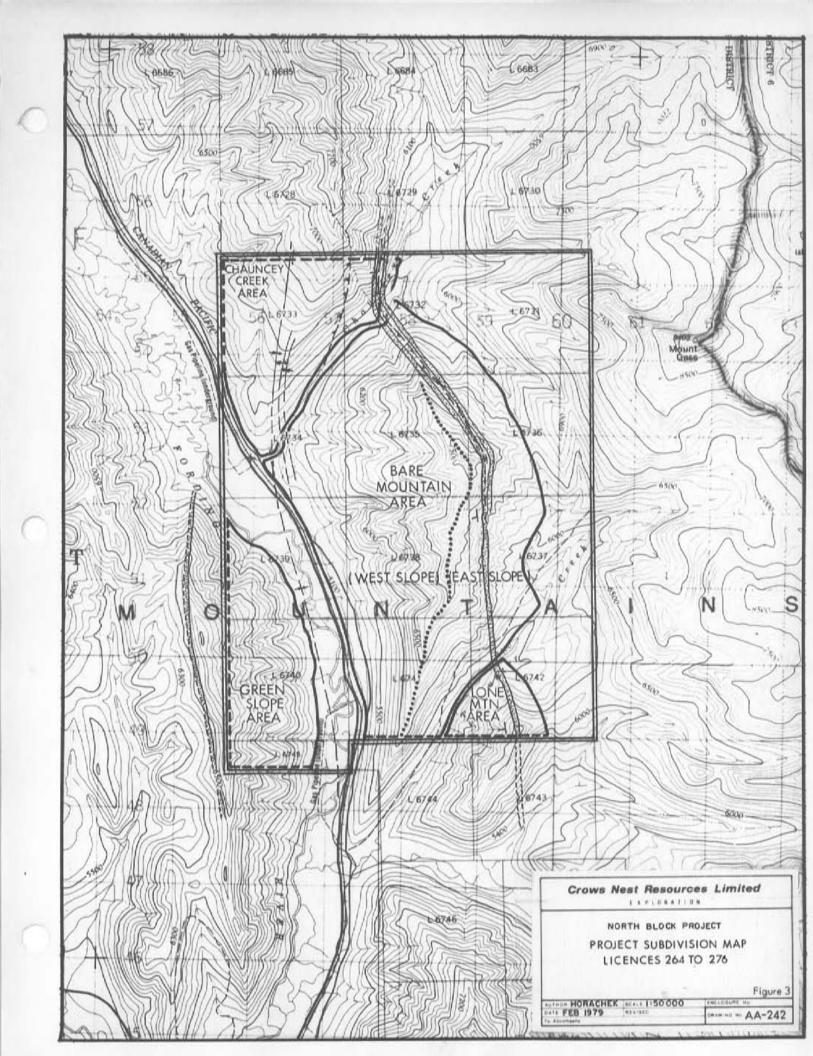
The North Block coal licenses are the most northern coal holdings of Shell Canada Resources Limited in the Elk River Basin.

#### 2.2 PROJECT SUBDIVISION

For purposes of easy reference and systematic orientation within the project area the following subdivisions, based on natural land forms and watersheds, have been used (see Figure 3):

- Bare Mountain Area East Slope
- Bare Mountain Area West Slope
- Chauncey Creek Area
- Lone Mountain Area
- Green Slope Area





Within each area, individual ridges, gullies and slopes were also named to identify the locations of measured stratigraphic sections, trenches and geological points.

#### 2.3 ACCESS AND INFRASTRUCTURE (Figure 4)

#### 2.3.1 ROADS

The west half of the project area is intersected by a paved road owned by Fording Coal Ltd. The private paved access, originating at Elkford, is a north-east extension of District Highway 4. The distance from Elkford to the North Block area is 22 kilometres. Two trails, leading off the paved roadway, provide access to the eastern bounds of the property:

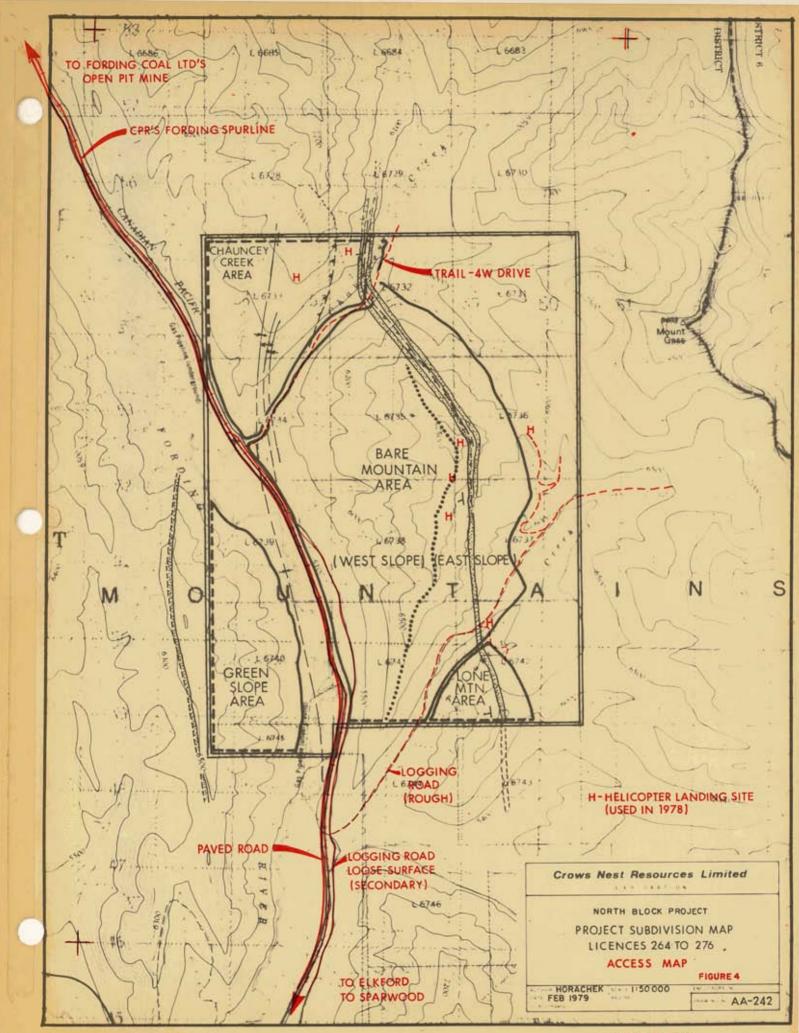
- for the southern half of the property, a rough logging road parallels Todhunter Creek.
- for the northern half of the property, a trail (fourwheel drive vehicle recommended) parallels Chauncey
   Creek.

#### 2.3.2 RAILWAY

The Canadian Pacific spurline to Fording Coal Ltd. traverses the project area. Unit trains currently haul 3.5 million tons of coal annually.

#### 2.3.3 TOWNS

The nearby, existing town of Elkford would be able to absorb

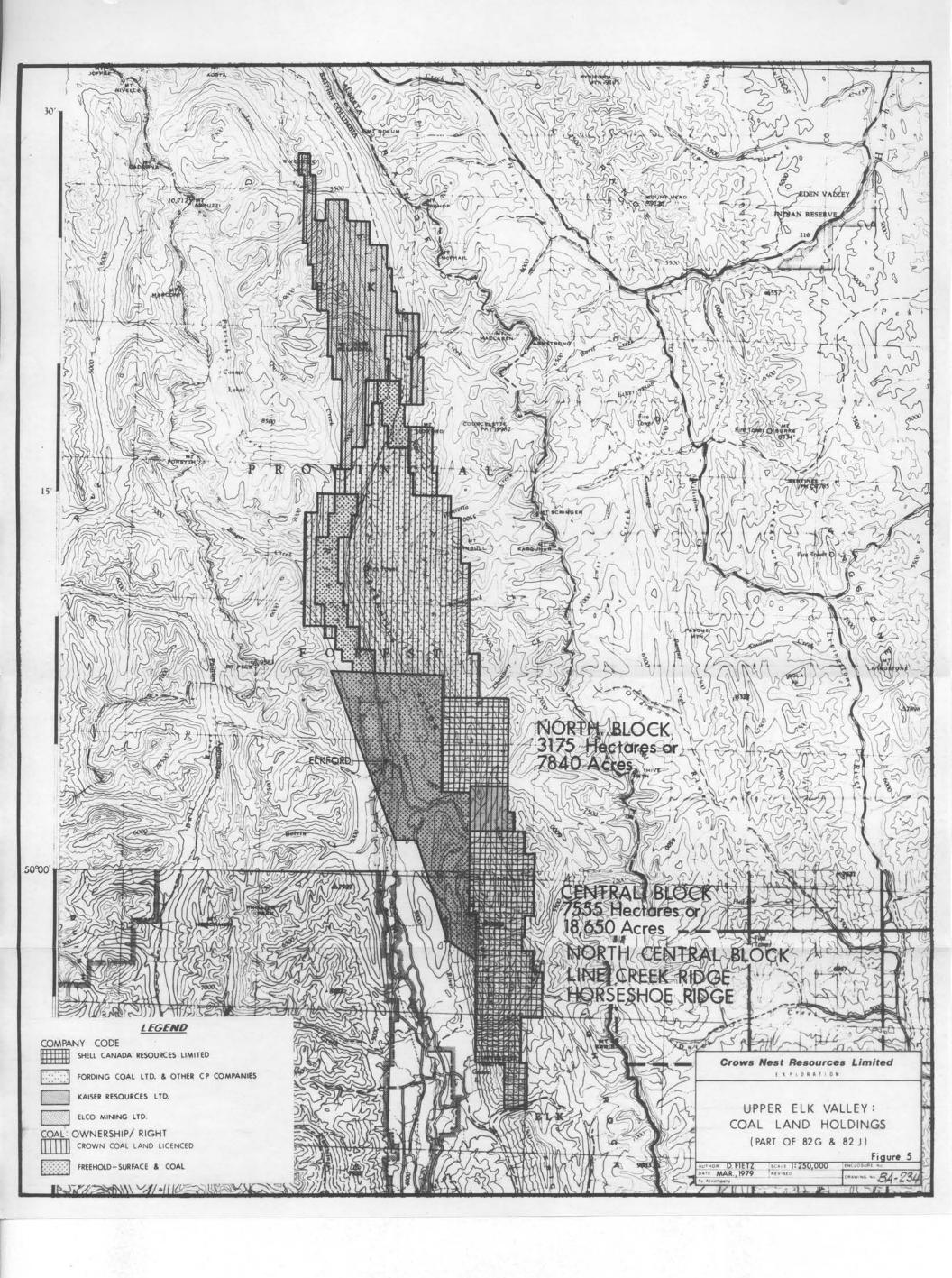


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additional population should a mine develop in the North Block area. Elkford is only 22 kilometers away and its present population is 3000 + .

The next closest town is Sparwood, 57 km to the south; it has a population of 4000.

Both Elkford and Sparwood are new coal mining communities.



#### 3 PROPERTY DESCRIPTION AND OWNERSHIP (Figure 5)

The coal licenses (nos. 264 to 276, inclusive) are located in the Upper Elk Valley of south-eastern British Columbia. The North Block licenses lie 3+ km (2 miles) north of a large block of coal licenses which are also held by Shell Canada Resources Limited; this southern grouping of licenses has been designated as the CENTRAL BLOCK and encompasses the following individual projects:

- North Central Block
- Line Creek Ridge
- Horseshoe Ridge

West of the North and Central Blocks, a large tract of freehold land is held by Shell Canada Resources Limited. The surface and coal rights of the area were assigned to Kaiser Resources Ltd. as per the 1969 agreement between Kaiser Resources Ltd. and C.N.I.

North-west of the North Block, coal licenses and freehold coal land are held by Fording Coal Limited. To the north, further up the Elk Valley, coal licenses are held by Elco Mining Ltd.

#### 4 GEOLOGICAL SETTING

#### 4.1 GENERAL STATEMENT

The North Block Project forms part of the "Upper Elk Coal Field". The coal measures, part of the Upper Jurassic - Lower Cretaceous Kootenay Formation, are located in a steep limbed asymmetric syncline. Locally, the structure is referred to as the "Fording River Syncline". The project area is located primarily on the east limb of the syncline.

4.2 TABLE OF FORMATIONS (Figure 6) .... See following page

#### 4.3 KOOTENAY FORMATION

The formation consists predominantly of a nonmarine, interstratified sequence of dark grey to greyish brown weathering siltstone, sandstone, shale, conglomerate and coal. The Kootenay ranges in age from Late Jurassic to Early Cretaceous. The Kootenay conformably but abruptly overlies interbedded sandstone, siltstone and shale of the Jurassic "Passage Beds" of the Fernie Formation. The formation is subdivided into the Moose Mountain Member, the Coal-Bearing Member and the Elk Member.

In the North Block area, the Coal-Bearing Member is some 500 m (1640 feet) thick. During the summer 1978, 460 m of this member were measured stratigraphically. Ten coal seams were identified.

<sup>+</sup> after GIBSON, 1977

# TABLE OF FORMATIONS

	PERIOD OR EPOCH		FORMATION	LITHOLOGY	THICKNESS (m)
ERA	Lower Cretaceous	KOOTENAY FORMATION	Cadomin Fm.	non-marine: sandstone, conglo- merate and shale	360 - 1980
MESOZOIC	LOWER CRETACEOUS AND JURASSIC		Pocaterra Creek Member	non-marine: sandstones, conglo- merate siltstone & shale	
			ELK MEMBER	non-marine:  interbedded medium to coarse grain sandstone, chert-pebble conglomerate with minor silt- stone, shale and coal	30 - 490
			COAL BEARING MEMBER	non-marine & brackish: interbedded coal, siltstones, shales and sandstones	70 - 610
			BASAL SANDSTONE UNIT OR MOOSE MOUNTAIN MEMBER (MMM)	non-marine: massive, cliff- forming sandstone	20 - 60
•	JURASSIC		FERNIE FM.	marine: shale, siltstone, sandstone & limestone	180 - 380

.... after GIBSON 1977; PRICE 1961, 1965

Thicknesses of the seams ranged from 1.5 to 8.0 meters (5 to 26 feet); aggregate thicknesses of the 10 seams totalled 46.5 meters (153 feet).

#### 5.1 GENERAL STATEMENT

Exploration activities, conducted on the North Block project during 1978, included:

- overall reconnaissance mapping at a 1:40,000 scale
- detail mapping at a 1: 10000 scale of 40% of the area underlain by the Kootenay Formation.

From data amassed during the field season, a type section of coal measures was established. In addition to geological mapping, a geodetic survey was conducted.

#### 5.1.1 PLANNING, EXECUTION & COMPILATION

In-office scheduling of the program commenced in mid-May, 1978.

The North Block Area was subject to field exploration activity from mid-June to early August. The field season continued through to October; during this time, other coal exploration programs in southeast B.C. (i.e., CABIN CREEK, HARVEY CREEK and LODGEPOLE) were transacted.

Interpretation of the amassed data, leading to the compilation of the technical report, including required drafting and typing commenced in early December. Due to changing priorities, time spent on the report was discontinuous, and the report was not completed until April, 1979.

#### 5.1.2 RESPONSIBILITY

Jack J. Crabb, Manager of Exploration, was responsible for all exploration activities conducted in 1978 by CNRL. Frank Martonhegyi, Staff Geologist, reported to J.J. Crabb and directed all exploration projects in southeast B. C.

For the NORTH BLOCK PROJECT, Jaro Horachek, P. Eng., Senior Geologist, was designated overall authority and team leadership.

Drafting services were provided by Shell Canada Resources Limited, more specifically, by Gerald Babiuk. Linda Anderson and Bette Olsen capably assumed responsibility for the typing of the report.

#### 5.1.3 MANPOWER

The geological field crew, assigned to the North Block Area, was comprised of the following people:

- Jaro Horachek, Senior Geologist (Project Geologist)
- Dale Fietz, Senior Geological Technologist
- Bob Aiello, Geological Technologist
- Ian Fraser, Field Assistant (U.B.C. student)

Hand trenching, as required, was provided by two labourers from Gleichen, Alberta, and five high school students from Fernie, B.C. Names and addresses of the "trenchers" are noted in Appendix Three.

In total, 235 field man-days were spent on the project. A breakdown of the total follows:

• GEOLOGICAL: 47 crew-days x 4 men : 183

• TRENCHING: 13 crew-days x 4 men (averaged) : 52

TOTAL <u>235</u>

#### 5.2 FIELD OPERATIONS

In-field execution of the project commenced on June 13 and concluded on August 2. Initial efforts concentrated on a general review of Bare Mountain and the adjacent area. Geological mapping was initiated and the first stratigraphic sections were measured. When the first trenching sites had been identified, hand trenching commenced. Initially, these duties were assumed by the two Alberta labourers. Later, as more trench sites were identified, five Fernie individuals were hired.

At the peak of the summer's work geological mapping, measuring of stratigraphic sections and trenching were all concurrent.

Nearing the end of the North Block activity the "trenchers" were transferred to another project, while the geological team continued mapping concentrating on the Chauncey Creek Area.

"Off-weather" days were spent in the field office to:

- draft up measured stratigraphic sections
- establish tentative correlations
- identify areas requiring immediate, further attention

#### 5.2.1 GEOLOGICAL MAPPING

The primary objective of the 1978 exploration project, to initiate geological mapping, was accomplished. A general geological map of the North Block Project has been prepared. A detail geological map, covering some 40% of the Kootenay Formation present within the Project area, has been compiled on a 1:10,000 air photograph.

The total cost of geological mapping was \$51,017.

#### 5.2.1.1 GENERAL GEOLOGICAL MAP

The main geological features have been plotted on a 1:40,000 scale air-photograph\* (photo designation: NW55678; 000-016 LINE 5-S).

From the photo the geology was then transferred onto a 1:50,000 NTS map (Figure 7). This map combines details of mapping with photo geological interpretation.

It is expected that the map will be further enhanced after the next stage of mapping, especially in the:

- lower slopes of "Bare Mountain West Slope" area
- "Green Slope" area
- "Chauncey Creek" area

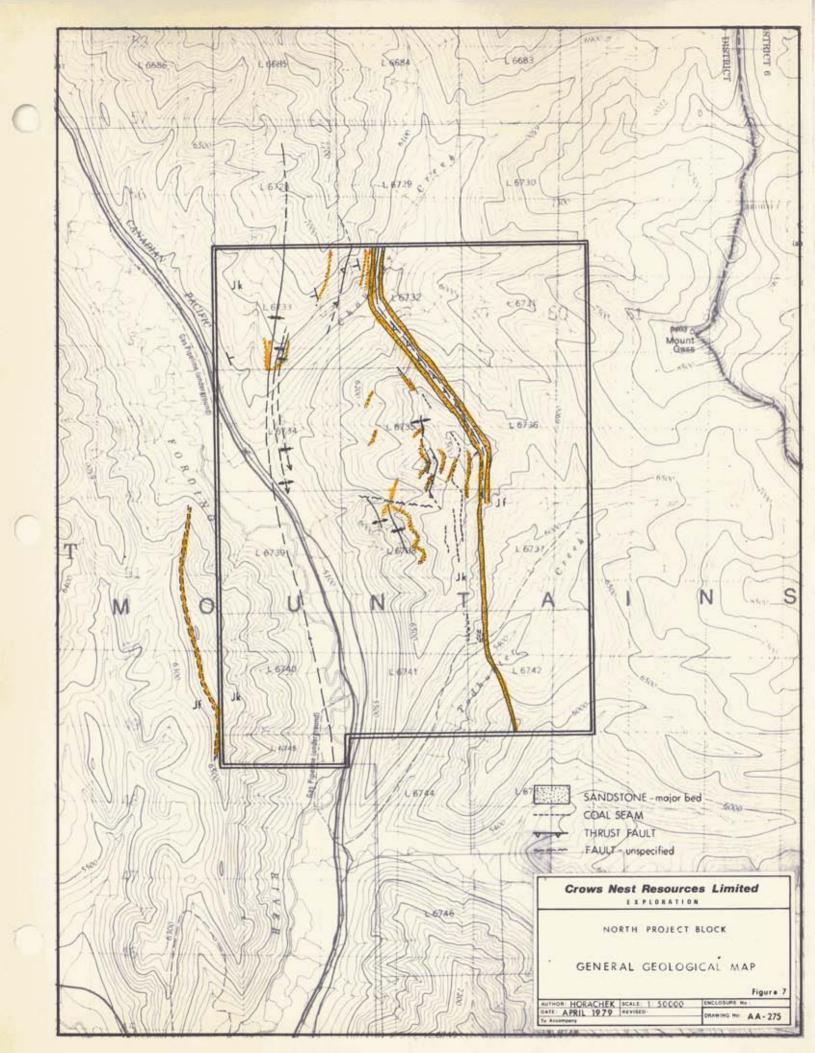
#### 5.2.1.2 DETAILED GEOLOGICAL MAPPING

To compile a geological map, on the 1:5,000 topographic map base, detailed mapping was initiated during the summer of 1978. The mapping duties were assumed by the Project Geologist, J. Horachek, P. Eng. Initially, the sandstone beds, appearing most continuous on the air-photographs, were mapped. These units were easily traceable when observed from:

- the air (helicopter), or
- the opposite slope of the valley.

Following the initial mapping, and concurrent with the measuring of stratigraphic sections, coal seams were systematically mapped.

<sup>\*</sup> flown by North West Survey Corp. (Yukon) Ltd. for Shell Canada Resources Limited during the summer of 1978.



In addition, the detailed stratigraphy was mapped on those ridges and gullies where it was well exposed. The minimum thickness of a stratigraphic unit, other than coal, noted on the field photographs was 5 m; the minimum thickness of noted coal seams was 1 m.

Information plotted on field photographs was transferred (on a 2 to 5 day basis) onto a second set of photographs maintained in the field office.

The up-dated photographs were used to compile the project geological map - Map NB-GM 1.

British Columbia Government photographs, BC 7428: No. 148 to 154, No. 180 to 187 and No. 247 to 253, were used during the field season as a base for geological mapping. They are of excellent quality and will probably be used again next season.

# 5.2.1.3 DETAIL GEOLOGICAL MAP (Map NB-GM 1)

The compilation of the NORTH BLOCK - GEOLOGICAL MAP 1 (NB-GM 1) was based on:

- "field office-update" photos and field photos
- measured stratigraphic sections
- noted structural geology

Data was plotted on a 1:10,000 scale air photo\*. The topographic maps, of 1:5,000 scale, became available prior to the completion of this report; they were not, however, used as a base for the geological map for the following reasons:

<sup>\*</sup> a 4x enlargement of the 1:40,000 scale photograph No. 555678; 000-016; Line 5S; dated 27-06-78.

- time contraint
- geological mapping has not yet been completed
- the geological map, at present, is meant for illustration purposes only; to that end the photograph is quite appropriate

#### 5.2.1.4 DETAIL STRATIGRAPHY SURVEY

The second main objective, for 1978, was to establish a type stratigraphic section of the area's coal measures.

Responsibility for nearly all of the stratigraphic survey was delegated to Dale Fietz, C.E.T.; he also supervised most of the trenching. Stratigraphy was measured at numerous locations within the area of detailed mapping. The best exposures were found along the main dividing ridge and on the eastern spurs of the Bare Mountain Area. Parts of the Chauncey Creek Area, primarily Eagle Ridge, and Zebra Slope also had good surface exposures. Elsewhere the stratigraphy was more obscurred by overburden. If in such areas stratigraphic data acquisition was considered important, hand trenching was employed. Prime areas of trenching activities were:

- Elad Slope
- Melissa Ridge (South Slope), and
- Strawberry Gully (South Slope)

In these, and many other locations, the hand trenching substantially enhanced the stratigraphic information. In total 47 individual stratigraphic sections and trenches were measured: this

represents 4900 m of stratigraphic survey. The results are presented in descriptive and graphic forms; they have been included in this report and form Appendix Four. The stratigraphic sections were tentatively correlated in the field office; the final correlation, however, was established back in the head office prior to the compilation of the technical report. The composite stratigraphic section of the Bare Mountain area was derived from the correlation chart, Enclosure One.

#### 5.2.1.5 IDENTIFICATION OF STRATIGRAPHIC SECTIONS

A system relating the location of a geological control point to its identifier has been used throughout the project areas. The stratigraphic sections and trenches have been designated according to the following formula:

NL - GCPi

NL ----- Name of Location; initials of a ridge, slope or gully

GCP ---- Type of Geological Control Point, i.e. Trench (T) or Strat. Section (S)

i ----- Sequence number of the geological control point in a given area.

To illustrate, a designation of ES-S1 translates to a stratigraphic section (No.1) measured on Elad Slope.

The system enables direct location reference. To best utilize it, one has to be well acquainted with names of ridges, slopes and gullies. In the North Block Area, these were named at random. The system could be vastly improved if topo forms were identified alphabetically on an air-photograph prior to the commencement of mapping.

#### 5.2.2 TRENCHING

Hand trenching was conducted during the latter half of July.

A maximum of seven trenchers were employed during the work period; the average crew size was four persons.

The objectives of the trenching program were to:

- prove or disprove presence of coal seams
- determine true thicknesses of the coal seams, where present, by exposing footwalls and hanging walls.
- provide necessary "fill-in" data in "covered areas" of measured stratigraphic sections.

The majority of the trenches were excavated in the area of detailed geologic mapping. Of the 38 trenches dug, 22 were incorporated into, and complement measured sections. The remaining 16 trenches are separate and complete in themselves.

In total, some 500 meters of trenching was realized. To minimize surface disturbances, trenches were kept narrow and shallow (Figure 8). To avoid any future erosional problems, all trenches, after description of exposed strata, were backfilled.

The total cost of trenching was \$12,650.

#### 5.2.3 AERIAL PHOTOGRAPHY AND TOPOGRAPHIC MAPS

North West Survey Corp. (Yukon) Ltd. from Edmonton, Alberta, was contracted to produce a new series of air photographs and new topographic maps of the project area in 1:5,000 scale. Ground control and related geodetic survey services were provided by the Survey Department: Shell Canada Resources Limited.

FIGURE 8 NORTH BLOCK PROJECT: 1978
HAND TRENCHING SUMMARY

		, , , ,	
TRENCH	LENGTH	WIDTH	DEPTH
DESIGNATION	(m)	(m)	(m)
DESIGNATION	(111)	(ш)	(=)
BBG-T1	21.2	0.5	1.0
BBR-T2*	25.0	not recorded	not recorded
DF/SR-T1*	17.0	0.3	1.5
ER-T4	19.1	0.3	0.5
ER-T5	·15.2	0.3	0.2
FC 71	12.2	not recorded	not recorded
ES-T1	13.2 22.0	0.6	0.5
ES-T2		· .	0.5
ES-T3	12.0	0.6	0.5
HP/NW-T1*	10.0	not recorded	not recorded
HP/NW-II*	2.6	not recorded	not recorded
HP/NW-T3*	7.1	not recorded	not recorded
ur/wm-12*	l '··	nor recorded	HOT LECOLOGO
HR-T1	14.5	0.3	0.3
HR-T2	17.0	0.3	0.3
HK-12	17.0		0.5
IR-T3	23.8	0.5	0.8
IR-T4*	17.6	0.05	0.1
IR-T5*	7.4	0.5	surf - 1.5 m
1R-T6*	5.2	0.3	0.3
IR-T7*	11.8	0.3	0.3
IR-T8*	10.4	0.3	0.8
	10.4	0.5	. 1.2
IR-T9*	18.5	0.3	0.8
IR-T10*	10.5	0.3	0.0
KR-T1*	18.1	not recorded	not recorded
	19.0	0.,7	0.8 - 1.6
MR-T1 MR-T2*	5.7		1.0
	17.0	0.6 not recorded	not recorded
MR-T3*	17.2	T .	not recorded
MR-T4	1/.2	not recorded	not recorded
SLG-T1*	23.0	0.4	1.0 -
SLG-T2	4.7	0.4	1.0
SLG-T3	27.4	not recorded	not recorded
	1		
SR-T1*	7.0	not recorded	not recorded
SR-T2*	5.0	not recorded	not recorded
SR-T3	9.0	not recorded	not recorded
J	1		
STG-T1*	9.4	0.5	1.5
STG-T2*	7.5	₹ 0.5	1.5
STG-T3*	3.0	0.4	1.0
STG-T4	9.6	1.0	2.0
STG-T5	6.0	0.4	1.0
	1		1
WG-T1*	10.6	0.7	1.0
	1		
38 trenches:	500.2		

trenches incorporated into, and complementing measured sections

į.

High altitude air photographs, at a scale of 1:40,000, are now available for the North Block Project. The photos, applicable to the area, are:

NW 55678: No. 15, 16 & 17

• Line: 5S

• Date: 27-06-78

The 1:40,000 photographs, combined with the ground survey, were used to produce the 1:5,000 topographic map. (Enclosure)

The total cost of North Block geodetic survey was \$29,440.

## 5.2.4 LOGISTICS

The Black Nugget Inn, Sparwood, B. C., was the base of the 1978 field operations. Mr. A.P. Sampietro, Field Foreman for CNRL, was responsible for control of manpower, costs and safety. In addition, all in-field expediting was authorized through Mr. Sampietro.

Two leased, four-wheel drive Chevrolet Blazers were used to transport personnel between Sparwood and North Block. A helicopter, subject to availability and adequate weather conditions, transported the crews from a predesignated landing site to the work area.

In-field communication channels were established through:

- in-vehicle radios that included:
  - mobile telephone channels
  - a 2 Way "SHELL" channel
  - a 2 Way "C.N.I. LOGGING" channel
  - a 2 Way "TONTO DRILLING" channel,

- 2 Way "walkie-talkies"
- "ground-to-air" radios, to serve as a communication link
   with the helicopter pilot (s).

Field schedules, for the geological field staff, were based on a "10 day-on, 4 day-off" cycle. Time-off was accrued for any scheduled holidays or extra days worked. The trenchers were retained on an hourly basis.

Rigid safety policies and procedures, as outlined at the outset of the field season, were generally adhered to by field personnel; on North Block, no serious injuries occurred.

## 6 EXPENDITURES

## 6.1 SUMMARY STATEMENT

The 1978 expenditure, on the 3173 hectares of the North Block Project, totalled \$93,107 this represents an expense of \$29.34 per hectare.

The majority of the expenses were affiliated with:

- salaries for mapping, trenching & report preparation;
  43%
- geodetic survey; 31%
- transportation; 15%

## 6.2 COST BREAKDOWN

	ITEM	\$ SPENT				
		Mapping	Trenching	Survey	Total	
	wages, admin. and overhead • 183 man-days @ \$125/day • 52 man-days @ \$125/day	22,875	6,500		29,375	
	ACCOMODATION & FUEL  • 188 man-days @ \$34/day  • fuel	6,392 2,400			8,792	
COSTS	TRANSPORTATION ,  3 truck-months @ \$1200/mo  1 truck-month @ \$1200/mo	3,600	1,200		13,800	
ON-PROPERTY	<ul><li>■ 16 helicopter-hours @ \$375/hr.</li><li>■ 8 helicopter-hours @ \$375/h</li></ul>	6,000 nr	3,000			
NO	MATERIALS SURVEY CONTRACTORS	1,000	200	29,440	1,200 29,440	
	тота	AL ON-PROPE	ERTY COSTS:		82,607	
ROPERTY	REPORT  70 man-days @ \$125/day  14 man-days @ \$125/day	8,750	1,750		10,500	
OFF-PROP COSTS	TOTA	AL OFF-PROP	ERTY COSTS:		10,500	
TOTA	NL	51,017	12,6.50	29,440	93,107,	

#### 7.1 GEOLOGICAL MAP AND THE CORRELATION CHART

The results of geological mapping, supported by photogeological interpretation, have been plotted on the 1:10,000 scale air-photo. Relating geological features to the terrain, Map NB - GM 1, at present, is the most accurate illustration of the project geology. It can also be readily used to record the next stage of geological mapping. The geological map, on a topographic base, will be produced towards the end of 1979; by then the majority of the geological mapping at a 1:10,000 scale will have been completed. Some of the major coal seams, as well as key sandstone marker horizons may, by that time, have been surveyed.

During the stages of geological mapping and detail stratigraphic surveying all lithological units were recorded. The map shows only the major sandstone beds, primary coal seams and main structural features. The confidence level of the geological mapping varied. Mapped contacts were distinguished as:

- well controlled
- stratigraphic horizon exhibited strong outcrop continuity; the unit could be walked and/or observed at a minimum of two outcrop locations per topo feature.
- semi-controlled
- the designated stratigraphic horizon could, with difficulty, be followed; the mapped unit was generally obscurred by

cover; outcrops were limited in number and magnitude.

assumed

• the contact was based only on geological knowledge from another area; the horizon shown has been assumed to be present although no outcrops were located.

The geological map's overlay provides the following:

- locations of the named, measured stratigraphic sections and trenches
- identifies, by names, the prominent ridges, gullies, slopes and mountain peaks mapped.

The geological map was an important background source in formulating two correlation charts of the measured stratigraphic sections (Enclosures One and Two). The more complete one pertains to the Bare Mountain Area; the second one, which is in a very preliminary stage, refers to the Chauncey Creek Area.

The relative positions of the stratigraphic sections as presented on the charts reflect their approximate locations, as if viewed from a location east of Bare Mountain. Horizontal distances depicted on the chart correspond to strike length of the main correlatable horizons. Vertically, the sections are located in their true stratigraphic position. The correlation lines, like the contacts of the geological map, indicate the level of geological confidence.

The correlation charts and the geological map clearly indicate areas requiring further attention; these data deficiencies should be eliminated in the exploration program of 1979.

## 7.2 STRATIGRAPHY

## 7.2.1 STRATIGRAPHIC SETTING AND TERMINOLOGY

The major stratigraphic units of the project area are the

- Triassic Spray River Formation
- Jurassic Fernie Formation
- Upper Jurassic Lower Cretaceous Kootenay Formation

The coal measures are contained within the Kootenay Formation which, according to Jansa (1972, p. 3199), represents a classic example of sedimentary sequences deposited by delta progradation.

The economic importance of the coal-bearing Kootenay Formation is given by laterally continuous coal seams up to 10 m thick.

The Kootenay Formation has been studied by various authors; the most recent reports are by Norris (1959), Newmarch (1953), Jansa (1972) and Gibson (1977). The nomenclature used has been presented in Figure 9. For this report and CNRL's mapping, certain geological names have been used somewhat interchangeably; i.e., Basal Kootenay Sandstone or Moose Mountain Member; Kootenay Formation: Coal-Bearing Member or Lower Kootenay.

The Cadomin Formation conglomerate, which normally overlies the Kootenay Formation, is not present in the North Block Project.

## 7.2.2 LITHOSTRATIGRAPHY

The Coal-Bearing Member, lying in the lower 500 m of the Kootenay Formation, received most of the attention in the 1978 mapping

## KOOTENAY FORMATION: NOMENCLATURE USED

	Norris 1959 ALBERTA CADOMIN FM.	Newmarch 1953 BRITISH COLUMBIA	Jansa 1972 ALBERTA – B.C.			Gibson 1977 ALBERTA – B.C.
	///////	CADOWIN FW.	<u>                                     </u>	CADOMIN FM.	H'	CADOMIN FM.
		ELK FORMATION		Elk Member		Creek Mbr.,  Elk  Member
/	Mutz		FORMATION		FORMATION	
FORMATION	Member Hillcrest Member	KOOTENAY FORMATION	KOOTENAY	Coal Bearing Member	KOOTENAY	Coal Bearing Member
KOOTENAY	Adanac Member					
	Moose Mountain Mbr.	Basal Kootenay Sand		Moose Mountain Mbr.		_ e e Unit A
	FERNIE	FERNIE FM		FERNIE FM		Range Per Unit A Sandstone Per Unit B Per Unit A Per Un

. . . . after GIBSON '77

program. Some 460 m of it was subject of detailed stratigraphic surveying.\*

## 7.2.2.1 MOOSE MOUNTAIN MEMBER (MMM)

This is a distinct, readily identifiable, sandstone unit.

Since in a normal stratigraphic sequence all economic coal seams are found in the overlying strata, the MMM serves as the lowermost stratigraphic marker unit. The top can be mapped easily while the bottom is not so clearly identifiable due to interbedding with shales of the Passage Beds of the Fernie Formation.

The MMM in the North Block area has been included in only a few measured stratigraphic sections (e.g. JR-S1, DR-S2 and SPG-S1).

The MMM is a massive sandstone unit with individually layered segments. It is fine to medium grained. The color varies from gray to dark gray; locally it may be light gray or salt & pepper. It is partially interbedded with siltstone.

Immediately above the Moose Mountain Member is the lowermost coal seam of the Kootenay Formation. It has been labelled No.  $10^{\frac{1}{5}}$  in accordance with the designation of seams in the Line Creek Project.

## 7.2.2.2 COAL-BEARING MEMBER

The economicially important part of the Kootenay Formation, the Coal-Bearing Member, is about 460 meters thick. It is a thick

<sup>\*</sup> It is anticipated the balance of the Coal-Bearing Member and the Elk Member will be mapped during the 1979 mapping program.

## succession of:

•	Sandstones	47%
•	Siltstones	37%
•	Coal Seams	9%
•	Shales	5%
•	Coal & Shales	2%

The bottom of the Coal-Bearing Member is a sharp, distinct and conformable contact with the Moose Mountain Member sandstone.

The top contact, though less distinct, is characterized by the conglomeratic sandstones of the Elk Member.

The sandstones beds are up to 30 meters thick. The thicker layers are important horizons for purposes of geological mapping. The outcrops, which are quite resistant, often form cliffs which can be readily mapped. In some locales the sandstone beds grade laterally into siltstones or silty shales; in these areas outcrops may become limited.

The sandstones range from very fine to coarse-grained.

Their colour is most commonly gray. Laminations (in fine grained layers) and cross-bedding (in coarser grained ones) are very common.

The thinner sandstone beds of the upper half of the Coal-Bearing

Member typically weather orange.

The siltstones are gray to black and often weather to small polygonal fragments. The "siltstone" has often been described as "mudstone"; analyses based on grain and petrographic tests conducted on "mud-

<sup>\*</sup> becomes an arbitrary decision, when mapping, whether to describe the unit as a "fine-grained sandstone" or a "siltstone."

stone" from Tent Mountain indicated that the rock contained over 90% of very fine silica grains, or silt. Therefore, the appropriate term would be "siltstone".

Shales are not too common. Where present, they are dark grey to black and often contain plant debris. Coaly lenses or fragments in shale layers are not uncommon.

Coal seams are present throughout the Coal-Bearing Member.

Ten seams have been mapped and identified in accordance with the designation of seams in the Line Creek Project. Outcrops of two or three additional coal seams, located in the Elk Member, have been observed but have not yet been mapped.

## 7.2.2.3 ELK MEMBER

The Elk Member stratigraphy was not mapped in 1978. Outcrops, of the Elk Member sandstones and of two or three coal seams, have been observed on the western slopes of the Bare Mountain Block.

The "Coal-Bearing - Elk Member" contact has been placed at the bottom of the massive, conglomeratic sandstone cliff which is located at the western extremes of the grassy slopes of "U" Ridge and Snow Ridge.

## 7.3 GEOLOGICAL STRUCTURE

The North Block Project is located on the most dominant structural element of the Kootenay Formation in the Upper Elk Valley - the Fording Syncline. This syncline extends from south of Crown Mountain to the Line Creek Project area, through the Central Block to North Block and further north to Grouse and Eagle Mountains.

In the North Block area the synclinal axis follows the Fording River to its junction with Chauncey Creek. From there it rises along the western slope of the Chauncey Creek area, consequently creating potential for:

- surface mineable reserves and,
- flat to gently inclined underground mineable reserves.

On the flanks of the syncline, the coal measures dip into the river valley creating dip slope conditions. Open pit mineable reserves are located in the:

- Green Slope area and,
- vicinity of Bare Mountain and Hammer Peak

The overall dip of both the west flank (Green Slope area) and of the east flank (Bare Mountain area) is  $45^{\circ}$ .

Within the Fording Syncline additional medium scale folding has occurred primarily in the eastern flank. Three such cases have been observed and mapped:

- the anticlinal drag fold on the upper western slope of the Bare Mountain Area
- the small syncline in the middle of the western slope
   of Bare Mountain Area
- the set of folds lying parallel to, and east of the Fording Syncline axis in the Chauncey Creek Area.

No smaller scale folding has been observed in the western flank of the major syncline, but the area has yet to be mapped in detail.

The thrust faults, mainly in the eastern flank, are steeply

inclined and westerly dipping. In some instances the fault planes are nearly parallel with the stratigraphic bedding plane; more commonly, the angle between the fault and bedding planes is around  $10^{\circ}$ .

Three major thrust faults have been observed and mapped:

- repetition of the Moose Mountain Member on the eastern slope below the Bare Mountain peak (see strat. section SPG-S1) and the Chauncey Creek valley (Figure 10).
- the drag fold, thrust and bedding plane thrust sequence on the upper western slope of Bare Mountain

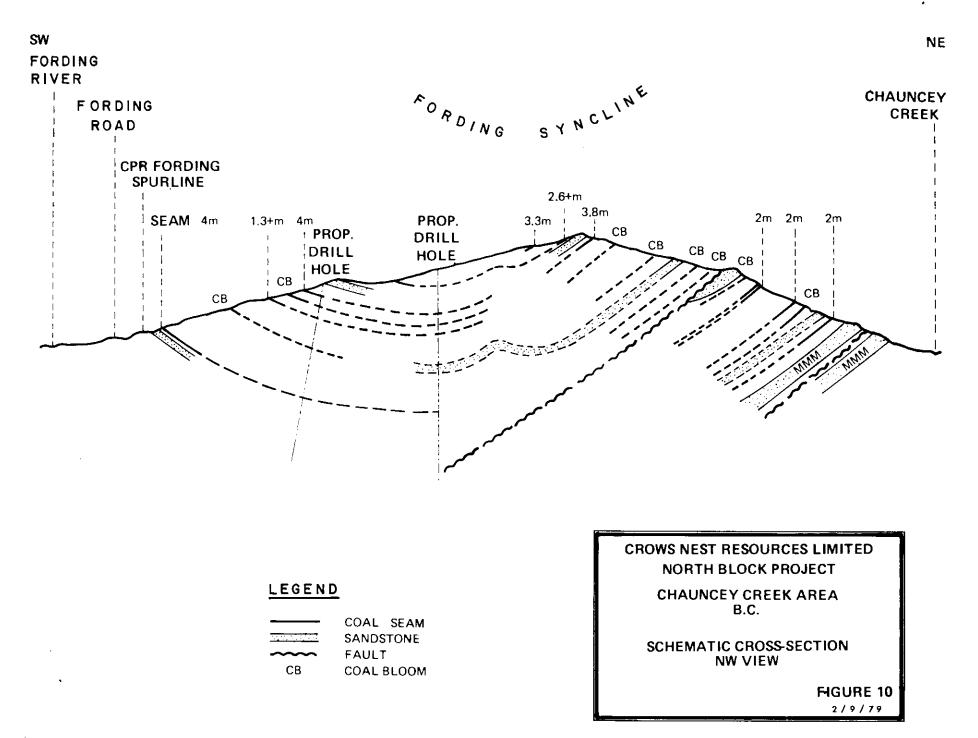
  Area (Hammer Peak cross-section: Figure 11).
- the major displacement of strata exposed on the eastern slope of the Chauncey Creek Area.

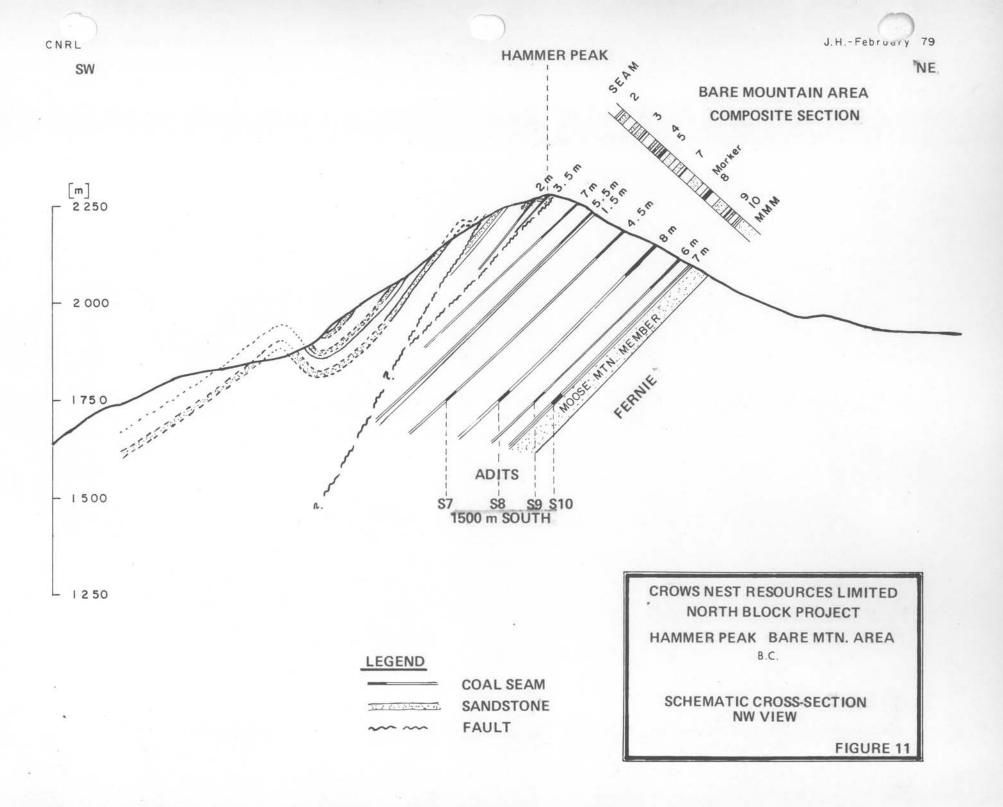
Additional smaller scale thrust faults have been observed at various locations but they have not yet been mapped.

Effects of faulting, as they pertain to coal measures and mineability conditions, are to be determined during future programs of detail mapping.

## 7.4 COAL SEAMS

coal seams were known to be present in the project area prior to the 1978 field mapping program. In addition to four coal seams exposed at adit sites above the main logging road in the Todhunter Creek valley, the most conspicuous coal seam outcrop was reported to the north of the Bare Mountain Summit. One million tons of coal at a stripping ratio of less than 2:1, from a seam 9.5 m thick, was





reported by N.P. Elphinstone in 1951. In 1978, this seam was measured at seven locations and the outcrop was traced for a distance of 1.6 km along strike. It proved to be the thickest seam on the property (Average Th: 8 m) and correlates to the No. 8 seam of the Line Creek area.

In total, ten coal seams, thicker than 1 m have been 10~ cated, trenched, measured and incorporated into a composite stratigraphic section (Figure 12). Based on thicknesses and stratigraphic positions of coal seams and major sandstone beds, the type section correlates very well with that of the Line Creek Area. Considering this, the North Block Area seams were designated according to the seam numbering system used in the Line Creek Project. The seams are numbered in a reverse numerical order. The lowermost seam, No. 10, is directly above the Moose Mountain Member. Seam No. 6 is missing and seam No. 1 has not yet been mapped.

Within the area mapped Seams No. 10, 8 and 7 are laterally the most continuous. Additional trenching may prove that seam No.s 9 and 7 are in the same category. Seam No. 8 maintains its thickness within a 6 to 10 m range, except in the Hammer Ridge area where it thins to 1.5 m (probably due to a fault). In general, this seam tends to thicken from south to north. Seam No. 7 which is 4.8 to 6.3 m thick south of Hammer Peak, thins to 1.3 m a short distance north of the Peak. It is also less than 4 m thick at the next control point on Snow Ridge (some 800 m to the north at SR-T3, Th = 3.5 m).

To elaborate on thickness variability of other seams would be premature due to the limited number of control points available at this

time.

The aggregate thickness of coal seams mapped to date and included in the composite stratigraphic section is  $46.5\ m.$ 

	GRAPH	ic	NUMBER OF CONTROL	LENGTH ALONG	REMARKS
THOLOGY	SEAM	AVERAGE THICKNESS	POINTS	STRIKE (m)	
	No. 2	2 m 3.5 m	2 3	500 850	These two seams have been trenched and mapped in the Hammer Peak-West and Dead Forest area; they are part of a folded and thrust faulted structure; more work is needed to further clarifty structural conditions and to establish continuity of the seams.
	No. 3	7 m		400	Located only on Hammer Peak, assuming this seam maintains its thickness, it will become one of the main mapping targets for the next exploration season.
	No. 4	5.5 m	5	350 35	Two to four seams split; orange weathering thin sandstones; good control in Hammer Peak and Hammer Ridge area; some control on upper Elad Slope but more work required along the strike on this strat horizon: these are the key points for
		là			seams No. 5 and No. 4. At this stratigraphic level No. 6 seam is present in the Line Creek area; no coal has been observed in the North Block area.
	No.7	4.5 m	10	1400	One of two surface mineable seams in the Bare Mountain - Hammer Peak Area, the seam is under good control between Snow and Bluebell Ridges; it may also be present in the Elad Slope Area as well as the fourth adit site; additional control is necessary on Melissa and Nancy Ridges.
	Marker	1.5m	3		Minor seam but helpful for No. 8 seam correlation.
	No. 8	8m	7	1800	This is the major seam of the project area; it maintains a thickness of 6 to 8 m from Snow Ridge area to Iron Ridge; to the south, it thins to 1.5 m on Bluebell Ridge — the last point where it was exposed; correlation to the adits area must be established. This seam is surface mineable in the vicinity of the Bare Mountain summit.
	No.9	óm	3	500	Observed only in the faulted, repeated sequence east of Bare Mountain, probably equivalent to the seam of the second adit.
	No. 10	7m & Shale	4	1700	Shaly where observed but more trenching needed in the
					southern part of east slope area and also in the vicinity of the first adit.  Crows Nest Resources Limited
S. (B	OOSE MANDSTOI asal Koot Sandsto	NE renay one)			NORTH BLOCK PROJECT: DISCUSSION OF COAL SEAMS BARE MOUNTAIN AREA
	1	T			
					FIGURE

## ECONOMIC CONSIDERATIONS

## 8.1 GENERAL STATEMENT

8

The North Block licence grouping controls a small portion of the Upper Elk Valley coal resources. The majority of the reserves are underground mineable; three locations, however, offer surface mining opportunities. One, the Bare Mountain - Hammer Peak area, is located on the mountain's top above tree line; it will, for the forseeable future, be considered environmentally very sensitive.

The coal is anticipated to be of metallurgical grade, ranging from medium volatile (lower seams) to high volatile (upper seams) bituminous; no sampling or analytical work was carried out during the 1978 exploration period since it is anticipated that core samples will be obtained in the next exploration season.

## 8.2 COAL QUALITY

No new quality data has been obtained. Elphinstone (1951) reports:

- 16 to 20% ash for No. 8 seam
- 6% ash for one of the upper seams

Since Fording Coal's open pit mine and exploration area is only 3 km north of the licences and, knowing that the coal seams are correlatable, coal of North Block is expected to be of similar quality. Raw coal data, for Fording Coal's mine area, according to 1977 TEX COKING COAL MANUAL:

COAL SEAM		ANALYTICAL DATA				
NORTH BLOCK EQUIV.	EAGLE MTN. (Fording Coal)	INH. M.	Ash %	V.M. %	S %	F.S.I.
8	47	0.8	11.2,	21.5	0.4	5
5	5 Clode	0.1	13.8	21.6	0.4	4
4	7 pit	1.0	16.0	22.9	0.5	5½
3	9)	1.1	15.2	24.4	0.6	5 <sup>1</sup> 2
upper seams	12)Hydraulic	n.a.	7.4	27.9	n.a.	4-9
not yet	13	n.a.	9.0	27.9	n.a.	8-9
located	15 mine	n.a.	6.5	30.9	0.4	8

From core drilling, recommended for next exploration season,
North Block coal quality data will become available.

## 8.3 COAL RESERVES

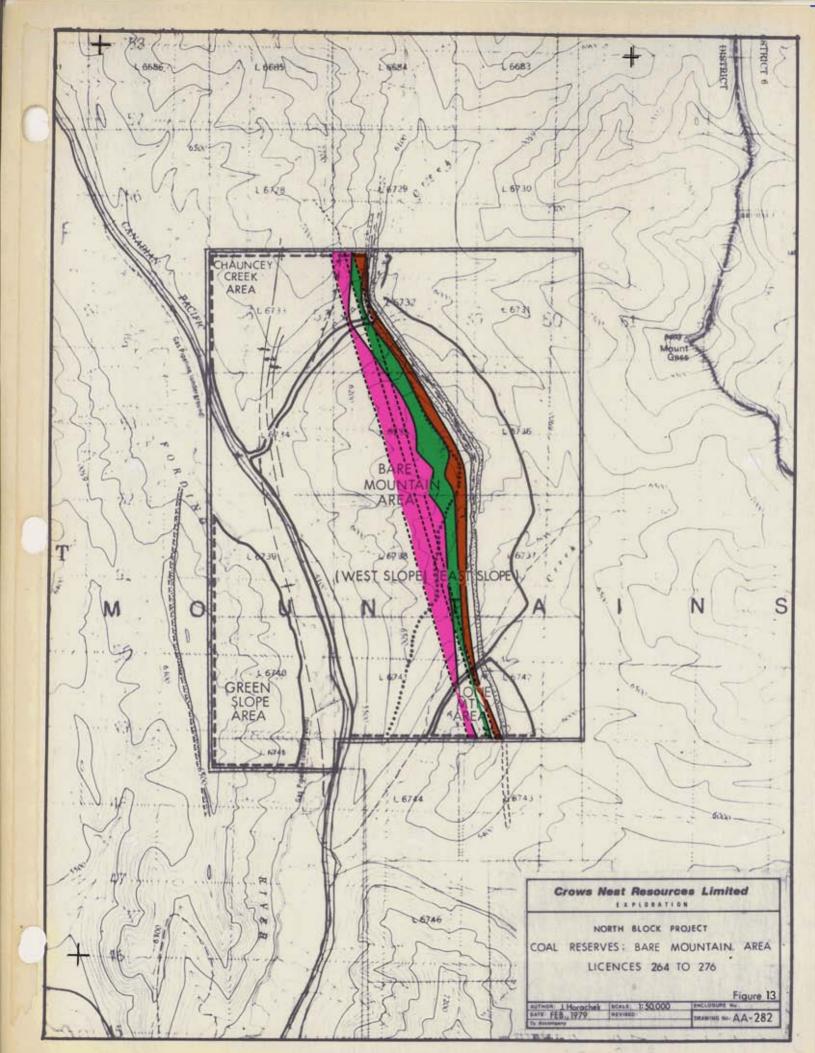
Total in-place coal resources of the North Block Project exceed one billion tonnes of coal, if all seams thicker than 1 m are included.

A more conservative estimate, which includes only selected seams, results in 140 million tonges of coal-in-place above the drainage level. A breakdown of this tonnage follows:

 Bare Mountain Area with extensions to the Chauncey Creek and Lone Mountain Areas (Figure 13).

Average dip: 45°

Coal Seams Included	Th(m)	Plan area (km²)	Tonnage (10 <sup>6</sup> t)
No. 4	5.5	1.7	17.1
No. 7	4.5	1.7	14
No. 8	8.0	1.5	21.8
No. 9	6.0	1.7	<u>18.7</u>
			71.6



Total: 70 million tonnes, in four seams 4.5 to 8.0 meters thick; includes 2.2 million tonnes of surface mineable coal at SR=4:1 in the "Bare Mountain - Hammer Peak" area.

## • Green Slope Area (Figure 14)

Average dip: 42°

Coal Seams Included*	Th(m)	Plan area (km²)	Tonnage (10 <sup>6</sup> t)
No. 4	5.5	1.0	10.0
No. 7	4.5	1.1	9.4
No. 8	8.0	1.2	17.7
No. 9	6.0	0.9	<u>10.1</u>
			47.2

Total: 50 million tonnes in four seams; the seams have been assumed to be similar to Bare Mountain Area, i.e. the seams are 4.5 to 8.0 meters thick.

## • Chauncey Creek Area - syncline (Figure 15)

Average dip: 25°

Coal seams used - seams as denoted by thickness on Chauncey Cr.

Area cross-section (Figure 10)

• upper two seams:

3.3 m and 2.6+m; Thickness used: 6 m

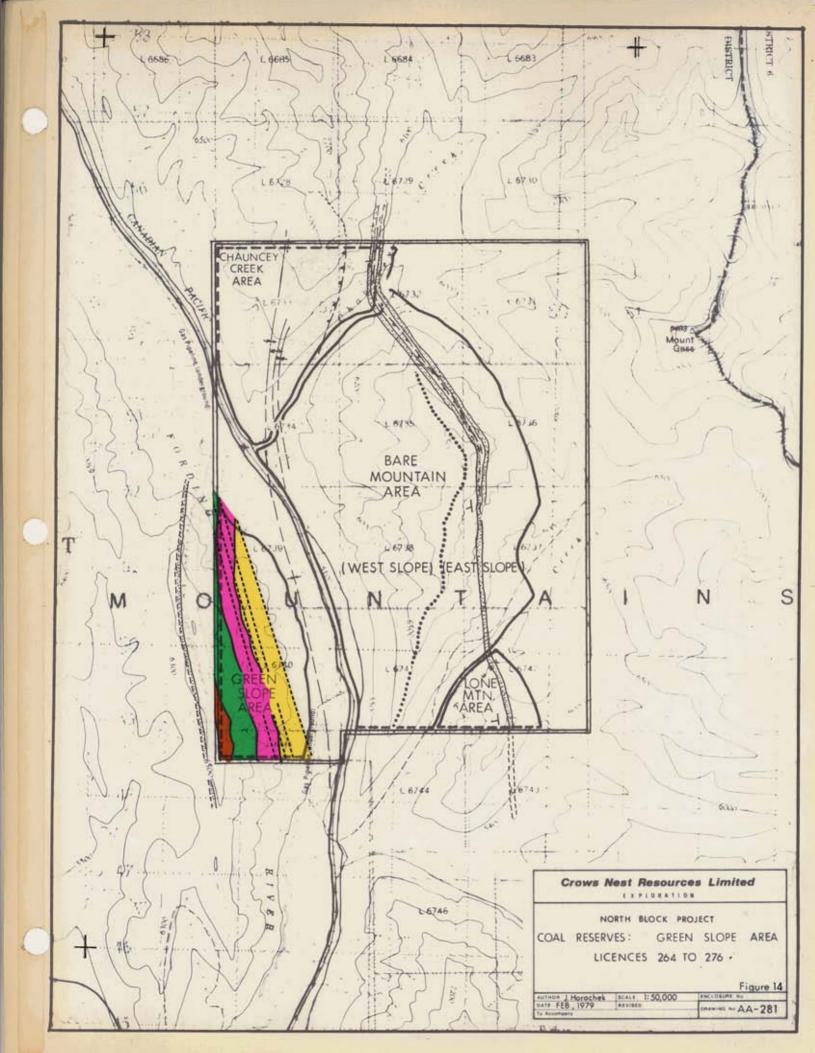
• middle seam:

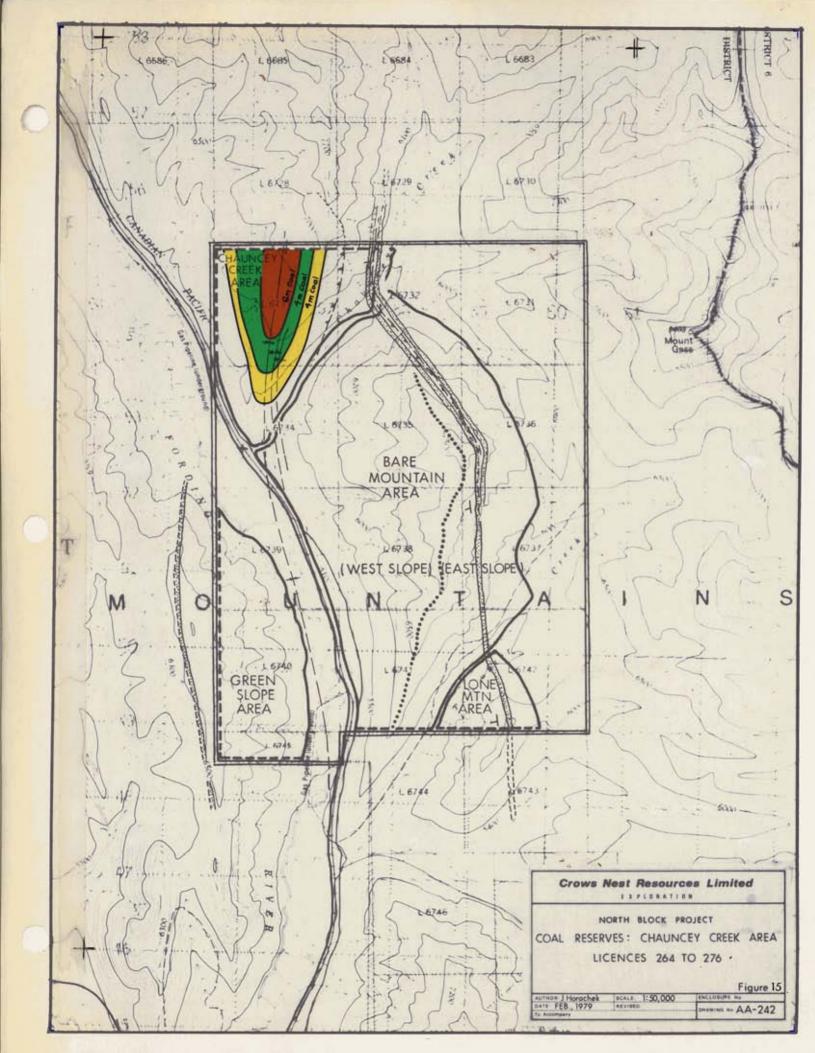
4 m; Thickness used: 4 m

• lower middle seams:

1.3 m and ?; Thickness used: 4 m

<sup>\*</sup> Bare Mountain coal seams assumed to be present.





Th(m)	Plan area (km²)	Tonnage (10 <sup>6</sup> t)
6 m	0.5	2.7
4 m	1.2	6.9
4 m	1.8	10.4
		20.0

Total: 20 million tonnes, in four to six seams 1.3 to 4 m thick.

## • Summary of Reserves

RESERVE AR	RESERVES	
		(10 <sup>6</sup> tonnes)
Bare Mountain A	70	
Chauncey Cr. Are	ea - syncline	20
Green Slope Are	a	50
TOTAL	140	
classification:	minimum resources in of the 10 coal seams (46.5 m aggregate thincluded in the resoculation	s mapped nickness);

## 8.4 MINEABILITY AND DEVELOPMENT POTENTIAL

## 8.4.1 SURFACE MINEABLE

Development potential of surface mineable reserves has been recognized at two easily accessible locations:

- Chauncey Creek Area syncline
- Green Slope Area and

one environmentally very sensitive location

• Bare Mountain - Hammer Peak Area

In all three locales, truck and shovel would be the most appropriate mining system. In the Chauncey Creek and Green Slope Areas, the footwall of the lowest seam mined would be the pit bottom; on Bare Mountain benching into the footwall would be required. Except for the footwall benching on Bare Mountain, the highwall strata would be inclined into the wall in all cases. Overburden would be comprised of sandstone beds. In the Bare Mountain Area a sandstone unit, up to 40 m thick, is present in the strata overlying the No. 8 seam.

#### 8.4.2 UNDERGROUND MINEABLE

Flat lying to gently inclined underground mineable reserves exist in three to four coal seams in the Chauncey Creek Area. The extent of structure with dips less than 15° has not yet been established due to a minimum of mapping in this area.

Elsewhere in the project area the coal seams dip from  $25^{\circ}$  to  $55^{\circ}$ .

Five seams are consistently thicker than 4 m. The No. 8 seam, over a large area, ranges in thickness from 6 to 10 meters. An additional four or five seams are consistently between 1 and 4 meters in thickness.

In the "Bare Mountain - Hammer Peak" area, lack of existing access and extreme environmental sensitivity provide major obstacles to mine development. Since the bulk of reserves is restricted to thick and steeply dipping seams, the most likely method of extraction would be hydraulic mining.

A number of options are available for an access into the coal

seams selected for mine development. Since the strike of coal measures is intersected by the valleys of Todhunter and Chauncey Creeks, seams outcrop in the vicinity of existing valley access roads. Alternatively, a new road built up the slopes would either expose fresh outcrops or provide a suitable location for a rock tunnel access. The Green Slope Area coal seams could be entered from outcrops on the west side of the Fording River.

Strata immediately adjacent to the coal seams are primarily shales or siltstone, and are usually quite firm and competent. Because the coal-rock separation, as observed in the trenches, was generally good, dilution should be fairly low.

Seam No. 9, while having a major sandstone in the hanging wall strata, has only a thin shale roof. The sandstone is cliff forming, strong and thickly layered; it would form a heavy roof resulting in stress concentration, periodic subsidence of mined out areas and the possibility of sudden stress release accompanied by "bumps". Similar conditions exist in seam No. 7 although the overlying sandstone is not as thick as in the case of No. 9 seam.

There is also a very thick sandstone in the overlying strata of No. 8 seam. It is, however, separated from the No. 8 seam by the Marker Seam (up to 2.5 m thick) and a sequence of interbedded shales, siltstones and sandstones. Regarding strata subsidence conditions, the lower section of the thick sandstone is interbedded with siltstone and should ease off the negative impact of the major sandstone bed above it. Mixed roof behaviour should be expected with problems of heavy roof developing in some areas.

## 8.4.3 DEVELOPMENT POTENTIAL

Considering such aspects as geological structure, environment and proximity to existing access and rail lines, the Chauncey

Creek Area has the highest development potential. It will be considered the top-priority area for the next exploration program.

The Green Slope Area, which received minimum attention in 1978, may offer very good conditions for an open pit development.

Underground hydraulic mine development may also be feasible due to the moderate dip of the strata. The area is easily accessible and lies in close proximity to the railway.

The Bare Mountain Area must be viewed as primarily an underground development area with very large reserves.

## 9 CONCLUSION

The objectives of 1978 exploration have been accomplished. It was the first year of systematic mapping which established a very good base for another season of geological mapping and stratigraphic survey in the same style as in 1978.

The North Block offers quite significant coal resources and in-spite of its relatively small areal extent, a number of mining concepts can be considered. Surface mineable potential and flat to gently inclined structural conditions for underground mining in the Chauncey Creek area definitely deserve further attention. The most attractive aspect of this area is its close proximity to the Fording Spurline.

## 10 RECOMMENDATIONS

While the North Block licences will remain in good standing for at least five years it is in the best interest of C.N.R.L. to complete the geological map and obtain fresh samples of coal seams to better assess the coal quality.

Continued geological mapping is required in the following sequence:

## Chauncey Creek Area

- primarily the western part: a number of hand trenches will be necessary.
- upgrade mapping of the south-eastern grassy slopes of this

  Area; additional hand trenching will be needed.
- correlation chart of the whole area must be greatly improved.

#### Green Slope Area

• very little work has been done; the area should contain coal seams No. 10 to No. 5, hand trenching will certainly be necessary.

## Bare Mountain Area

- southern end of East Slope: continue mapping south from Elad Slope.
- northern end of East Slope: attempt to follow the No. 8 seam
   from Snow Peak to the north as far as possible down the
   slope towards Chauncey Creek.
- central part of the West Slope: mapping of folds indicated

on map NB-GM 1 and locating any additional seams above the presently incomplete composite stratigraphic section; throughout the area, seam No. 3 (bottom of HP/NW-S3) should be traced to the south and north, and trenched on at least four new locations.

#### Lone Mountain Area

 map the outcrops and measure two to three sections; the south slope should have numerous exposures and locations for hand trenching; the north slope will be difficult due to dense forest.

Some of the existing data must be improved:

- section IR-S3 must be remeasured
- correlation of coal seam No. 9 and its overlying sandstone must
   be improved south of Jewel Ridge
- stratigraphic position of coal seams in trenches MR-T1 and
   MR-T4 must be established.
- structural and stratigraphic complications in the Dead Forest area should be resolved.

Two core holes should be drilled in the Chauncey Creek Area one in the vicinity of upper Yarrow Gully and one in the centre of
Yarrow Slope, close to the Fording syncline axis. Information from
these two holes will greatly improve the correlation between the western
and the eastern parts of the area. With the drill data, it should be
possible to draw, with confidence, a structural cross-section of the
area. In addition to testing the presence of surface mineable and underground mineable resources, the drilling activity should provide the first

fresh samples of coal seams; for these reasons, drilling of these two holes has priority over any other mechanical means of exploration.

Drilling in the Bare Mountain Area is not necessary until mapping is completed. Drilling of one or two holes on the lower elevations of the Green Slope area should be given serious consideration but should not be done until the area has been mapped.

Horachek, P. Eng.

## LIST OF REFERENCES

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- Gibson, D.W. (1977): The Kootenay Formation of Alberta and British Columbia a stratigraphic summary; in Report of Activities, Part A, Geol. Surv., Canada, Paper 77-1A, p. 95-106.
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## APPENDIX ONE

## COAL LICENSES HELD BY SHELL CANADA RESOURCES LIMITED IN THE "NORTH BLOCK" PROJECT AREA

LICENSE NO.	DATE ISSUED	DESCRIPTION	HECTARES +	ACRES +
264	1975-03-13	LOT 6731	259	640
265	1975-03-13	LOT 6732	259	640
266	1975-03-13	LOT 6733	259	640
267	1975-03-13	LOT 6734	259	640
268	1975-03-13	LOT 6735	259	640
269	1975-03-13	LOT 6736	259	640
270	1975-03-13	LOT 6737	259	640
271	1975-03-13	LOT 6738	259	640
272	1975-03-13	LOT 6739	259	640
273	1975-03-13	LOT 6740	259	640
274	1975-03-13	LOT 6741	259	640
275	1975-03 <b>-</b> 13	LOT 6742	259	640
276	1975-03-13	LOT 6745	65	1 <b>6</b> 0
		<b>*</b>	<del></del>	
13 licenses			3173	7840
			hectares	acres

#### APPENDIX TWO

# EXTRACT OF N.P. ELPHINSTONE'S REPORT (1951) PERTAINING TO "NORTH BLOCK PROJECT" (Pages 20 & 21)

## Bare Mountain (Between Chauncey and Todhunter Creek)

A potential strip mine exists on the top of this mountain at an elevation of 3100 feet. The coal is visible for 2000 feet as it follows the dip slope down toward the Fording River. The overburden ratio here is less than 2.5:1 but thereafter thickens rapidly. Using 1500 feet of this dip slope and a strike length of 800 feet as a basis of calculation approximately 1,000,000 tons of coal is available at a strip ratio of less than 2:1. (Calculations can be seen in the field book). A section of this potential strip mine shows:

True thickness	Description	
16.5 ft.	Coal )	Together give an ash con-
9.7 ft.	Shaly Coal)	tent of 15.9%
8.9 ft.	Shale	Not sampled
5.3 ft.	Coal	Ash content 20.2%

The sandstone above and below this coal has an attitude of Azimuth  $353^{\circ}/32^{\circ}W$ .

A twelve foot seam west of the above mentioned strip mine at an elevation of 6600 feet has an ash content of 6.7%. Six other coal seams were observed in the area 1200 feet south of the Strip prospect.

Two of these seams measured 8 feet each and one was five feet thick.

The thickness of the other three was not determined. Dowling (1915 pp.50) mentions Group 2 containing 11 coal prospects on Grouse Mountain.

This mountain is now known as Bare Mountain.

## APPENDIX THREE

# TRENCHERS UTILIZED DURING THE 1978 FIELD SEASON: NORTH BLOCK PROJECT

NAME	RESIDENCE
Stan, Big-O-Man	Gleichen, Alberta
Terry George	Fernie, B. C.
Guy Grove-White	Fernie, B. C.
Bernie Hudyma	Fernie, B. C.
James Leatcher	Fernie, B. C.
Sherman Yellowfly	Gleichen, Alberta
Al Zuffa	Fernie, B. C.

ESTRATIGRAPHIE

SECTIONS

BOOK 10FZ - 1978

437

#### APPENDIX FOUR

# INDEX TO MEASURED SECTIONS & TRENCHES OF NORTH BLOCK PROJECT, B.C. SUMMER '78

Bluebell Gully

- BBG-S1
- BBG-S2
- BBG-S3

 BBG-T1 (graphic section included as part of BBG-S2)

Bluebell Ridge

- BBR-S1
- BBR-S2
- BBR-T2

Dead Forest

- DF/SR-S1
- DF/SR-T1

Draft Ridge

- DR-S1 & S2
- DR-S3

Eagle Ridge

- ER-S1
- ER-S2
- ER-S3
- ER-S4 (graphic section included with SLG-S1)

— • ER-T4 & T5 — ≥

Elad Gully

• EG-S2 & S1

Elad Slope

- ES-S1
- ES-S2
- ES-S3
- ● ES-T1
- ● ES-T2
- ES-T3

Hammer Peak

- HP/N-S1
- HP/N-S2
- HP/NW-S3
- → HP/NW-T1
- HP/NW-T2
- HP/NW-T3
- HP/N-S4

Hammer Ridge

- HR-S2
- HR-S3

GEOLOGICHAL BRANCH

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Iron Ridge		_ I	R-T3
	• IR-S3	• I	R-T4
		- I	R-T5
		_ I	R-T6
			R-T7
			R-T8
			R-T9
			R-T10
Jewel Ridge	• JR-S1		
Kansas Ridge	• KR-S1	• K	R-T1
Melissa Ridge		_• M	R-T1
	<ul> <li>MR-S1-</li> </ul>	_ M	R-T2
		<b>→</b> M	R-T3
		_ м	R-T4
		•	14
Slingshot Gully	• SLG-S1	• S	LG-T1
			T C m2
			LG-T2 LG-T3
		- 5	LG-13
Snow Peak gully	SPG-S1		
Company Di lon	- CD C1	- (0	R-T1 & T2
Snow Ridge	• SR-S1	(3	R-11 α 12
*		- S	R-T3
Strawberry Gully	• STG-S1	_ • (S	TG-T1 & T2 & T3
, , , , , , , , , , , , , , , , , , , ,	• STG-S2		
4	• STG-S3		790
		_ • S	TG-T4 & T5
Windy Gully	• WG-S1 & S2 &	S3 > W	G-T1
ecra 5 35/	- 12 h		

22 m/x

# BLUEBELL GULLY

## 1978-06-25

#### BBG-S1

Th(m)	Lithology
43.0	Sandstone; N10°E/50°?; Sandstone interbedded with siltstone and shales; sandstone grey to brown in color; medium grain to fine grain; weathers orange; siltstone and shales grey and weather to small fragments
0.9	Shales; brown to grey to black; weathers orange c small fragments
1.3	Coal
15.8	Sandstone; N5 <sup>0</sup> W/50 <sup>0</sup> W; medium to coarse grain; salt and pepper; weathers light grey to brown; blocky formation: much slumped material

BBG-S2

- measured strat. lower to higher
- adjoins highest strat. interval measured in BBG-Sl

Th(m)	Lithology
13.5	Covered interval; grass; small shrubs; sandstone rubble
36.7	Sandstone; medium to fine grain; N15°W/65°W; grey and brown; weathers to a light grey c some orange stain; sandstone is cliff forming in some areas
5.8	Sandstone, siltstone and shales interbedded; grey in color; weathers to a light grey
0.3	Sandstone; fine grain; grey; weathers orange
1.1	Sandstone; very fine grain; grey; weathers to a light grey
0.3	Siltstone; grey; weathers bright orange
3.8	Sandstone and siltstones; grey; weathers to a light grey
8.1	Covered interval; sandstone, siltstone and shale rubble
3.4	Sandstone and siltstone interbedded; fine grained; grey; weathers light brown to orange
16.4	Covered
NOTE:	4.8 meters into the interval, coal was located; cover 1 - 1.5 m thick prevented exposure of the seam; from what could be determined, the seam is 2+ meters thick
16.0	Sandstone; medium grain; dark grey and brown; N20°W/65°W; weathers to light grey and orange
4.0	Covered interval; sandstone and shale rubble
7.9	Sandstone grading to a siltstone; fine grain; grey; weathers to a light grey and orange; $N10^{\circ}W/70^{\circ}W$
0.1	Shaley coal
1.1	Siltstone
0.5	Shale and coal
1.3	Coal with shaley partings

## page 2 of BBG-S2

Th(m)	<u>Lithology</u>			
0.7	Carbonaceous shale with coal			
37.9	Covered interval; dark grey; shale, sandstone and siltstone rubble			
2.2	Sandstone; fine grain; light brown and grey; weathers to a light grey and orange; N10°W/60°W			
8.9	Covered interval; sandstone, siltstone and shale rubble			
0.7	Coaly shale			
1.3	Coal			
0.5	Shale; black			
4.6	Covered interval; sandstone rubble			
2.2	Sandstone; fine grain; dark grey; weathers to a light grey and orange; minor drag folds; N20°W/56°W			

#### BBG-S3

- measured strat. lower to higher
- $\bullet$  section measured from the top of the Moose Mountain Member;  $\text{N10}^{\text{O}}\text{W}/\text{45}^{\text{O}}\text{W}$

Th(m)	Lithology
1.2	Coal with shale partings
4.4	Siltstone; grey; highly weathered
0.4	Coal with shale partings
1.6	Siltstones and shales; siltstone weathers bright orange
23.2	Covered interval; sandstone rubble
9.8	Sandstone; fine grain; grey and light brown; weathers light grey, some orange staining; N15°W/64°W
3.2	Siltstones and fine grain sandstones interbedded; grey
1.0	Sandstone; fine grain; dark grey; weathers bright orange
1.6	Siltstone; grey; weathers light grey
10.5	Siltstones and shales interbedded; shales very dark but not carbonaceous
3.0	Sandstone; fine grain; grey and brown; sandstone is highly weathered; weathers light grey and brown
26.0	Sandstone; fine grain; light brown and grey; weathering to a light buff grey and orange; cliff forming on the ridge; N5°W/55°W
10.3	Covered interval; sandstone rubble
11.0	Sandstone; fine grain; brown and grey; weathers light grey and orange; cliff forming; N20°W/49°W
	<ul> <li>adjoins lower strat. unit measured in BBG-S1</li> </ul>

#### BLUEBELL GULLY .

1.0

#### 1978-07-19

T	DC		'n	1
D	Dυ	_	1	T

- part of covered interval in measured section BBG-S2
- measured strat. lower to higher

• trench particulars: Az: 225°
Length: 21.2 m
Width: 0.5 m

Depth: 1.0 m

#### Th(m) Lithology 4.7 Siltstone; interbedded; grey to off-white; weathers orange to grey; fine grain; N15°W/65°W 1.1 Shale and carbonaceous shale interbedded with minor coaly debris 1.5 Coal 2.0 Shaley coal 4.7 Coal; high lustre 1.6 Coal; dull (relative to previous unit) 0.4 Coal and shaley coal 0.3 Siltstone; beige to grey; fragmented; weathers grey to orange 1.6 Siltstone and shale interbedded; dark grey to black; minor coaly debris; weathers to small fragments 0.7 Sandstone; weathers orange; grey on fresh surface; medium grain; block weathering

Siltstone interbedded; at 0.6 m from bottom of interval 0.1 m of coal; grey to black; weathers

orange; weathers to small fragments

PROJECT: NORTH BLOCK DATE: 1978 JULY 4 AUTHOR: D. FIETZ BARE MOUNTAIN - EAST SLOPE SOURCE OF DATA: AREA: FIELD BLUEBELL GULLY LOCATION: DESCRIPTION INTERVAL STRIKE CONTROL SCAL SAMPLE & LITHOLOGY POINT AMPLIFIED MAIN DIP [m] Ss, fg, Dk Gy weathers Lt Gy & Or, minor drags Strike 340°, Dip 56° W Covered interval; grass Sandstone rubble -0 2.2 Cooly Sh - 1.3 m Cool & 0.5 m Bk non-carb Sh 2.5 -10 Covered interval; grass Ss; Sitstn, Sh & rubble 8.9 Ss., fg , Gy . & LI Br , weathers to Lt. Gy . & Or. 2.2 -20 -30 Covered interval, grass & shrubs. Dk. Gy. Sh., Ss. & Sitsin rubble 37.9 -40 -50 Interbedded Cool & Sh. 3.6 -60 Ss; grading into a Sitstn; fg; Gy; weathers to a Lt. Gy & Or. Strike 350°, Dip 70°W Covered interval; grass Ss. & Sh. rubble -70 4.0 SECTION Ss., mg., Dk Gy. & Br. weather resistant weathers to a Lt. Gy. & Or. Strike 340° Dip 65° W -80 16.0 Sitstn; small Coal seam -90 Sitstn & Sh interbedded BBG-11 Cool, very high luster -100 Shaley Coal 2.0 Sh & Carb. Sh interbedded 1.1 5/151n, N 15° W/65° W 4.7 -110 Covered interval, grasses & shrubs Ss; Sltstn. & Sh. rubble present 8.1 Ss & Slisin; Gy weathers to a lighter Gy. March 4 (1995 ) (1995 ) (1995 ) (1995 ) 3.8 Sitstn; Gy. weathers bright Or. Ss;vfg; Gy; weathers Lt. Gy. Ss; fg; Gy; weathers bright Or. Interbedded Ss; Sitstn; Sh; Gy in color weather to a lighter Gy. -1200.25 0.3 1 SEC 11 SEE 1 SEE 1 SEE 1 SEE 1 SEE 1 5.8 -130-140 Ss; cliff forming; mg near base grading into 1g near the top of the formation.

Gy to Br in color; weathers to a Lt Gy; with some Or staining.

Strike 345° Dip. 65° W. 36.7 -150 -160 Covered interval; grass and shrubs; Ss. rubble -170 13.5 Ss; cliff forming; mg to cg; salt and pepper weathers Lt Gy. to Br very blocky formation with a lot of slump -180 material Strike 355°, Dip 50°W 15.8 -190 Shi, Br to Gy - Bk weathers Or into small fragments Ss, interbedded with Sitstn. & Sh. -200 Ss, mg to fg, Gy & Br color weathers Or. SECTION Sitstn & Sh ; Gy in color weathered into small fragments - 210 - 220 -230-240Ss; cliff forming ; fg; Br & Gy weathers Lt Gy & Or Strike 340°, Dip 49° W 11.0 -250Covered interval; Grass & shrubs 10.3 Ss rubble -260 Ss, cliff forming, fg, Lt. Br. to Gy weathers a Lt buff, Gy & Or Strike 355°, Dip 55° W -270 26.0 -280 Ss, fg; Gy. & Br. weathers a lighter shade of Gy. & Br. 3.0 Sitstn & Sh interbedded; highly weathered very -290 SECTION Dk Gy but not carb 10.5 Sitstn; Gy weathers Lt. Gy. Ss; fg; Dk. Gy weathers bright Or. Sitstn & Ss. interbedded; Ss; fg, Gy; weathers Gy. 1.6 -300 3.2 Ss; cliff forming, fg; Gy. & Lt Br weathers Lt Gy with minor amounts of Or staining Strike 345° Dip 64° W -310 9.8 -320Covered interval, grass & shrubs; Ss. rubble 17.4 -330Interbedded Sitsin & Shales, Sitsin weathers bright Or. 1.6 Cool 4.4 Sitstn, Gy, highly weathered small fragments Cool with Sh partings 1.2 - 340 Moose Mountain Member 5s. Strike 350° Dip 45° W -350 - 360 H11-211

DESIGNATION:

OF

PART

BBG - S1,2&3, incl. BBG - T1

STRATIGRAPHIC SECTION

#### BBR-S1

Th(m)	Lithology
1.0	Sandstone; coarse grained; salt and pepper; weathers light grey and red; Strike N18 W/54 W
1.1	Siltstone; light grey to brown; weathers to small fragments
0.3	Siltstone; reddish-brown weathering; grey color; nodular weathering
27.7	Sandstone c minor shale and siltstone beds; sandstone grades from a medium grain to a very fine grain near the top; brown-grey to grey; weathers grey to orange
2.1	Siltstone; grey; weathers to a lighter grey
0.5	Siltstone; brown; weathers orange
2.2	Siltstone; grey; weathers to a lighter grey and to small fragments
0.5	Sandstone; very fine grain; grey; weathers to a lighter grey and orange
1.9	Siltstone; grey; weathers light grey and to small fragments
0.4	Sandstone; very fine grain; grey; weathers to a light grey with a little orange staining
0.6	Shale c fine coal lenses; grading to a carbonaceous shale and coal
0.8	Siltstone; grey; weathers light grey and to small fragments
9.0	Sandstone; brown to grey; fine grain; weathers dark brown to dark grey; bottom 0.1 meter weathers orange
0.3	Shale; dark grey
0.3	Sandstone; brown to grey; fine grain; weathers dark brown to a dark grey
1.1	Siltstone; grey; weathers light grey and to small fragments

page 2 of BBR-S1

Th(m)	Lithology
0.1	Sandstone; fine grain; brown to grey; weathers to a light grey with some orange staining
0.7	Siltstone grading to a carbonaceous shale
0.3	Coal with shale stringers
0.3	Carbonaceous shale
5.2	Coal
1.6	Sandstone; fine grain; dark grey grading to a lighter grey; weathers grey and to small fragments
9.0	Covered; loose sandstone rubble
5.6	Sandstone; coarse grain; brown, black and white grains; mod-high resist.; N15°W/82°W; weathers light grey and pink

STRATIC	RAPHIC SI	ECTION		DESI	GNATION:	BBR-S1	PARTO	F
PROJECT:	TTORTH D	LOCK				AUTHOR: D. FIETZ	DATE: 1978 JUI	Y 6
AREA: BARE MOUNTAIN: EAST SLOPE SOURCE OF DATA:								
LOCATION: BLUEBELL RIDGE FIELD								
CONTRO	INTERVAL		STRIKE			DESCRIPTION		
S CONTRO POINT		LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
*								
[m]								
-0	5.6				weathers	own, block, white grains, m pink to grey 15° Dip 82°W	od-high resistance	
- 10	9.0	$\times$			Covered	grass; Ss. rubble		
45	1.6	ASSESSED OF THE PROPERTY.			Ss, fg; D	k. to Lt. Gy, weathers Gy into	small fragments	
- 20	(5,2)				Coal			
	1.8_		<b>3</b>		Interbedo	Carb. Shale - Coal with Sh led Ss., Sltstn., Shales; Ss. y. weathers Lt. Gy	fg., Br. to Gy. wear	her darker
- 30						r to Gy., weathers darker Gy., bottom 0.1m weathers		
_ 40	4.2 5.8				Strstn, (	led Ss., Sitstn. & Shales Gy., weather Lt. Gy. & som Gy. weathers into small fg ome Coal lenses y; weathers to a lighter Sm. is Br. and weathers	s.	
- 50					5s, grad Informati the base	es from mg, near base to volon contains minor Shale a is 0.3m of Sltstn., Gy illar weathering and reda	fg. near top, and Sitstn. beds. n color that	
					The Ss.	s Br. 10 Gy. in color and Or.	weathers	
- 60								
<b>—</b> 70								
	1.1=		342-54	w	Sh, It gy to be Ss, c.g., salt	, weathers It gy, fragments & pepper, weathers It gy & red		
- 80		-	*:				80	
				-			HH-21	

## BLUEBELL RIDGE

#### 1978-07-19

# BBR-S2 (including BBR-T2)

Th(m)	<u>Lithology</u> .
8.5	Sandstone; medium grain; tan-grey; tan weathering; N5 <sup>O</sup> W/64 <sup>O</sup> W; fine layering; cross-bedded
2.5	Sandstone; as above; medium thick bedding
2.6	Covered
0.7	Sandstone; cliff-forming
3.2	Siltstone; black
0.5	Sandstone
3.7	Siltstone
0.8	Sandstone; fine grain; orange weathering
0.2	Coaly shale
6.5	Coal
1.0	Siltstone
1.5	Sandstone; N20°W/55°W
1.2	Siltstone to shale to coaly shale
0.6	Coal
0.1	Shale parting
0.7	Coal
0.8	Shale c thin coal stringers
0.9	Coal
0.8	Siltstone
1.3	Sandstone
2.6	Siltstone and sandstone
3.7	Sandstone and siltstone
1.7	Sandstone; fine grain; orange weathering .
3.4	Covered
2.6	Siltstone

page 2 of BBR-S2 (including BBR-T2)

End of BBR-T2

Lithology
Sandstone
Siltstone; black
Covered probably sandstone in the middle
Covered; siltstone
Covered
Sandstone; fine grain; bottom weathers orange, top tan
Siltstone
Sandstone; orange weathering
Siltstone $\bar{c}$ a few thin sandstones
Siltstone and sandstone
Shale; lower portion silty
Coal
Sandstone
Silty shale
Coal
Coaly shale
Shale
Coal
Shale - siltstone interbeds

#### DEAD FOREST SLOPE

#### 1978-07-21

Start of

0.8

Coal

## DF/SR-S1 (including DF/SR-T1)

- measured strat. lower to higher
- starts on the sandstone outcrop west of folded sandstone (10+ m thick); medium grain; salt and pepper; redish weathered; cliff forming; N20 W/53 W

	pepper; redish weathered; till forming; N20 W/33
Th(m)	Lithology
7.0	Covered; upper part of interval is sandstone rubble; lower interval, black siltstone and shale
1.0	Siltstone with minor sandstone; beige to black
2.5	Siltstone; black; grades to carbonaceous shale at top of interval
2.5	Coal
2.0	Shale grading to siltstone to thin sandstone unit at mid-interval; shale and siltstone at top of interval
0.5	Covered interval
1.1	Siltstone and shale
0.4	Coal; FW N32°W/47°W
1.0	Covered interval
0.8	Sandstone; fine grain; orange weathering
1.5	Siltstone; brown; coal stringer at top of interval
1.0	Sandstone; red weathering
5.0	Covered interval; siltstone at base
0.8	Sandstone; beige to black; medium grain; weathers off-white; N10 W/58 W
5.9	Covered interval; prob. interbedded siltstone and shale
0.2	Sandstone; grey to black; medium grain; weathers off-white; N10°W/45°W
DF/SR-T1	
0.7	Siltstone; black; minor orange staining

page 2 of DF/SR-S1 (including DF/SR-T1)

Th(m)	Lithology
0.9	Siltstone; dark grey; weathers tan
1.2	Sandstone; fine grain; dark grey; weathers tan
2.5	Siltstone; black; minor orange staining
0.5	Sandstone; fine grain; grey; weathers orange
1.8	Siltstone and shales interbedded; black
1.0	Fire clay; red
End of DF/SR-T1	
	• trench particulars: Az: 260°
	Length: 17.0 m
	Width: 0.3 m Depth: 1.5 m
	νενιμ• ±•ν π

HG:II

	C SECTION		DF/SR-ST incl.	DF/3K-11		OF	
ROJECT: NORTH		CLORE	AUTHOR: JH, DF	A	DATE: 1978	JULY 23	
	JNTAIN - WEST FOREST/SOUTH			SOURCE OF DATA	A:		
				DESCRIPTION	INC		
CONTROL	LITHOLOGY		20000				SAMPL
1.5		DIP	MAIN	AMPL	IFIED		
1							
o <b>T</b>	1.0		Fine	Clarsfed.			
DF/SR-TI	1.8 0.5		5115 58. 5115				
(0.8)	0 5 2.5 1.2 0.9 0.9 0.2		\$8. \$1t	rtn.			
10			Ss. S/t. C99 S/ts Ss.	tn,			
	5.9 0.8		Cov Ss.	ered			
20	5.0			ered			
	1.0		5s. 5/1: 5s.	to.			
(0.4)	1.0 1.5 0.6 1.0 1.1 0.5 2.0		Cov. Coa Sits	to to Sh.			
7.5			Cov. Sh. Coa	tn.  pred  tn. to Sh.  pred  grading to Sitstn.			
	2.5		5/ts 5/ts	tn. grading to Carb. Si tn. with minor S.S.	h.:		
40	7.0		Cov	ered			
	10.0		5 5				
50							
50							
	11		3				

## DR-S1 & S2

Th(m)	Lithology
19.0	Sandstone; medium grain; beige to grey on fresh surface; weathers light grey; massivecliff forming N5 W/35 W
12.0	Sandstone; as previous unit but doesn't form cliff; good o/c's upslope interrupting vegetation growth; N5°W/28°
15.5	Covered interval but suspected to be interbedded sandstone and siltstone
10.9	Sandstone; medium grain; beige to grey on fresh surface; weathers light grey; abundant "iron-stained" coloured lichen; sandstone is massive, forms cliff; N7°W/45°W
5.2	Siltstone; fine grain; beige to dark grey; o/c that is exposed is rubbly and broken; N7°W/45°W; upper contact uncertain due to O/B and vegetation cover
2.7	Covered interval; primarily sandstone rubble and much coaly debris
5.3	Sandstone; fine grain; beige to grey; iron stained; $N7^{\circ}W/45^{\circ}W$
6.2	Covered interval
3.0	Coal and carbonaceous shale rubble
2.4	Siltstone; fine grain; beige to pink; o/c is rubbly and broken in most locations; N7 W/45 W
2.6	Coal; black; broken; friable
2.0	Covered interval
3.5	Sandstone; fine grain; beige to dark grey; cross-bedding; N15°W/50°W; interbedded with thin siltstone beds
19.4	Carbonaceous shale with minor coaly material; based on surface rubble, no intact o/c located
2.8	Coal with shale interbedded; based on surface rubble, no intact o/c located
1.6	Shale; olive-brown; o/c badly broken and rubbly
0.4	Sandstone; fine grain; grey to brown; iron-stained; N10°W/28°W
11.7	Covered interval; primarily shale; siltstone and sandstone rubble

Th(m)	Lithology
7.8	Coal and carbonaceous shale; black; appears to be greater % age of coal in upper half of interval
NOTE:	on slope, large fragments of sandstone rubble from cliff-forming sandstone higher in section
15.8	Sandstone; medium grain; grey to off-white; cross-bedded; weathers light grey with "iron-stain" colored lichen; sandstone is massiveforms cliff; N18 W/26 W
11.5	Sandstone and siltstone interbedded; medium grain to fine grain; weathers grey to iron-stain; much of interval covered by grass growth; N10°W/34°W
7.5	Siltstone and shale interbedded; fine grain; dark brown to grey; much of interval covered by grass
1.3	Sandstone and siltstone interbedded; medium grain to fine grain; weathers grey to "iron-stain"; siltstone is quite broken and rubble
0.8	Coal and carbonaceous shale; black to brown; badly broken; rubbly
2.4	Sandstone and siltstone interbedded; medium grain to fine grain; weathers grey to beige; beige on fresh surface; siltstone is rubbly
6.0	Sandstone; fine grain; beige to grey; weathered; iron stain; bedded; N10°W/28°W
0.7	Shale and siltstone; very fine grain; black; badly broken
10.0	Sandstone, siltstone and shale interbedded; fine grain to medium grain; grey to brown; some iron staining; interval partially covered by grass
5.0	Sandstone; very fine grain; beige; weathers grey to beige; thinly laminated; iron stain; N5°W/32°W
0.5	Siltstone to shale; black; carbonaceous; friable; broken
0.9	Sandstone; very fine grain; dark grey to beige; weathers grey to iron stain; thin bedding layers; N5 W/32 W



STRATIGRAPHIC SECTION DESIGNATION: DR - S1 & S2 PART OF							-				
PROJECT: NORTH BLOCK								AUTHOR: DF	DATE: 1978 JUNE	18	
				N - EAST	SLOPE				SOURCE OF DATA:		
	TION: D	INTERV		1	Plan II a service			L	DESCRIPTION		
ALE CO	NTROL	INTERV	AL	LITHOLOGY	STRIKE &		Т	_			SAMPLE
SCA					DIP	MAIN			AMPLIFIED		
[m]											
-0 (	Top of Ba	re Mtn.)	00	Top of measur	ed Section	DR - S1	lavers N	13	k. Gy. to Bg.; weath Gy. to		g
(1	Top of up	per Point)	0.5		7		Sitstn. t	0	Sh; Bl; carbonaceous; fri		
			+		ر ا		N5°W/	3	g; weath. Gy, to Bg; thinly 2° W		
- 10			10.0		= \		Interbedd	5	d Ss; Slista & Sh's; fg. t tainings; interval partiall,	omg; Gy to Br; covered by grass	
			10.0								
0.5			1. 7			6	Ss; fg; 8	89	i, weath. Gy. O/C badly broken.	ken & weath.; N55°	W/34°W
-20 (1	Top of Dr	aft ie)	6.0		_ \				8°W seathered Fe. s.	ain, bedded,	
			2.4		=	*)	5 8 5/1		ta: interbedded for to ma	weathers Gy to Ba	8g. on
- 30		(0.8)	0.8	VERALDE/2:34 ULTA			fresh sur	Co	ace, Sitstn. is pebbly.  arb. Sh, Bl. to Br; badly broken.  interbedded; mg. to fg; w.  quite rubbly & broken.	en; rubbly.	in.
			7.5		<u></u>		Sitstn. &	10	Sh interbedded; tg; Uk.	er. to Gy, much of	3.00 p.
							interval		covered by grass.		
- 40				<u> </u>	= )		5- 8 5/1		tn. interbedded; mg. to fg	weath Gv to"Fe.	stain":
			11.5				much of	1	interval is covered by gra	ss growth. N 10° W	/34°W
- 50											
50							Se . = =	6	y to off-white , crossbedded	weath It Go with	
			15.8				"Fe - stoi N 18° W	0/	ed" colored lichen; Ss.	s massive for	ms cliff,
-60			13.10								
							( Base o	01	f 3 rd cliff forming Ss.	above Kootenay Bos	01 55.1
							Cool &	C	arb. Sh. debris on ground	appears to be gre	arer ,
-70			7.8						e of coal in upper half of on slope from cliff for		
			1				Ss; mg;	G	y. to Br.; Fe. stained; interistant Sitstn; N10° W/2	rbedded with thin	, beds of
- 80			7. 8				much lai	rg	section	om cliff-forming 3	is;
3.5			7				50				
			11.7	$\times$	\		Covered	i	nterval , primarily Sh; Slt	tn & Ss. rubble	
- 90											
			0.4		1100		Sh; olive	0	Fy. to Br.; Fe-stained; NI -Br; O/C badly broken &	rubbly.	
		(2.8)	-		1		Coal wit	th	Sh. interbedded; (based of O/C located.)	on surface rubble;	
-100											
			19.4				Carb. S	h	with minor Goaly materi no intact O/C located.	al (based on surface	. e
-110							165515 6	ent.			
			3.5				Ssifgi	В	g. to Dk. Gy; X - bedded;	interbedded with to	hin
-120			2.0		Ī				eds; N 15°W /50°W interval.		
		(2.5)	2.4				Cool, B Sitstn;	1	; broken ; friable fg; 8g. 10 Pk; O/C is rubl ; N 7° W/45° W	ly & broken in mos	,
120		(3.0)	2.4	<u> </u>					a, N7° W/45° W arb Sh, rubbly		
-130			6.2		1		Covered	7	interval.		-
	÷		_								
-140			5.3		<b>\</b>		55; 69;	В	lg, to Gy; Fe stained; N 7° V	1/45° W	(4)
-			2.7		I				interval, primarily Ss. ru		
			5.2	1 mm 1 m			broken	7	g, Bg to Dk Gy; O/C tha N 7°W/45°W; upper cont n cover	act uncertain 0/8	17 8
-150										0.4Za 0.73.23 14.540	
			10.9				Ss; mg; obundan	8	g to Gy, on fresh surface "fe - stained" colored l liff; N7° W/45° W	s; weathers Lt. Gy; chen ;Ss is massiv	e ;
-160	D.P.	- S1	107775						2nd cliff forming Ss.ab	ove Kontenny Rosal	Ss /
		- 52					1 5038 0	S.	and curr terming as, ab	nooienay ousal	Training
							Covered & Sitst		interval but suspected to b	e interbedded Ss	
-170			15.5	12:33	- /		w vrist	ad (			
					===						
1202											
-180			12.0				good O	/	g to Gy on fresh surface, i C's exposed upslope betw 15° W/28° W	een vegetation	
							growin	/ 1	13 W/20 W		
-190			_								
							120	1		SHIP WORK	
			19.0				Ss; mg; Gy; mo	53	Bg to Gy, on fresh surface sive, cliff forming, N5°W	; weath. light / 35°W	
-200											
	W200 100						/Rasa	0.6	1st cliff forming Ss; above	e Kontenav Rasal Sell	
	(Btm. of	measured Section)	1 -	Adam				1		1	
-210				Adjoins top	DR - S3						
-220											

DR-S3

- measured strat. lower to higher
  - base of measured section: top of Basal Kootenay (MMM)

Th(m)	Lithology
2.6	Carbonaceous shale; black; broken; friable; minor coaly material
0.4	Siltstone; weathers red; very fine grain; grey on fresh surface; hard
3.4	Coal and carbonaceous shale
0.8	Sandstone; grey; weathers white-grey; very fine grain; laminated layers about $1-2$ cm thick on weathered surface; N5 $^{\circ}$ W/32 $^{\circ}$ W
4.5	Siltstone; with minor soft sandstone; beige; soft bottom 1 m interval contains carbonaceous material
0.8	Sandstone; grey; fine grain; weathers white-grey
1.1	Coal and carbonaceous shale
3.0	Covered interval
2.8	Sandstone and siltstone interbedded; very fine grain; weathers orange; beige on fresh surface; N10°E/27°W
5.1	Siltstone; beige; soft; intermixed with carbonaceous material; surface is black
0.8	Sandstone; beige; fine grain; weathers beige to grey; $\mathrm{N12}^{\mathrm{O}}\mathrm{E/26}^{\mathrm{O}}\mathrm{W}$
0.8	Sandstone and siltstone interbedded; very fine grain; beige; surface is black; intermixed with carbonaceous shale
0.3	Sandstone; fine grain; beige to grey; weathers red; bedding
4.1	Siltstone interbedded with carbonaceous material (black on surface)
1.1	Coal and carbonaceous shale; black on surface
8.0	Carbonaceous shale/siltstone; black; very fine grain; minor coaly debris; appears black on surface

# page 2 of DR-S3 ·

<u>Th (m)</u>	Lithology
2.1	Sandstone; fine grain to medium grain; grey to brown; orange weathering; $N5^{\circ}E/31^{\circ}W$
6.7	Carbonaceous shale/siltstone; black; very fine grain; appears black on surface; coaly material rarely present
10.8	Covered interval; vegetation and sandstone rubble
	End of measured section at base of cliff-forming sandstone (base of measured strat. section DR-S1 & S2)

STE	RATIGE	RAPHIC S	ECTION		ATION:		PARTC	OF		
PRO	OJECT: N	ORTH BLC	OCK				AUTHOR:	D. FIETZ	DATE: 1978 JU	JNE 20
LOC		<u>RE MOUNT</u> DRAFT RID		T SLOPE		SOURCE OF DATA: FIELD				
ш	CONTROL	INTERVAL		STRIKE			DESCR	IPTION		
SCALE	POINT		LITHOLOGY	& DIP	MAIN			AMPLIFIED		SAMPLE
[m] 0			Adjoins bo	tom of med	asured sectio	on DR-	52			
- 10		10.8	X		Со	vered ii	terval; ve	getation & Ss	rubble	
		6.7	2 10 10 10 10 10 10 10 10 10 10 10 10 10		Co	irb. Sh. iterial	/Sitstn., B rarely p	k; vfg., appear esent	s Bk. on surface; Coa.	/y
-20		2.1			Ss	., fg. 1	o mg., Gy.	to Br., Or. wear	thering ; N5°E/35°	W
		8.0			Co Bk	irb Sh on s	/ Sitsta., urface.	Bk; vfg; mino	r Cooly debris appea	res.
-30		4.1							aterial; Bk. on surfac	
		0.8 0.8							d; bedding eige; surface (s Bk., l to Gy; N12*E/26*W	
-40		2.8	OSTON ENTONINO		5 s	. & SI rfose ,			vith carb material; s weathers Or; beige o	
-50		0.8			Ss S/ co	; Gy; tstn. w ntains	carbonac	rs Wh - Gy soft Ss, bei eous material		
-60		3.4 0.4 2.6			Co	athere	I surface Carb. Sh. eathers re Bk; broke	N5°W/32°W nd; vfg; grey o n, friable, mi	laminated layers at on fresh surface; hard nor Coaly debris	,
					To	p of t	Basal Koot	enay Ss.		

ER-S1

Th(m)	Lithology
21.3	Sandstone; iron stained, medium grain; beige
4.5	Coal shale grading to carbonaceous shale (with siltstone interbeds)
	Sandstone;iron stained; medium grain

STRATIGRAPHIC SECTION DESIGNATION							ER-St	PART	OF
		ORTH BLOC					AUTHOR: DF	DATE: 19	78 JUNE 16
AF	REA: CHA	UNCEY CRE	EK AREA			SOURCE OF DATA:			
		AGLE RIDO							
				STRIKE			DESCRIPTION		
SCALE	POINT		LITHOLOGY	& DIP	MAIN		AMPLIFIE	0	SAMPLE
[m]	1	4							
-0				553		Ss., Fe st	aining ; Mg. ( though	not possible	
		4.5					grading to Coaly Sh nterbeds.	. with	
- 1	0	***	romari (			Slistn. ii	terbeds.		
-2	0	21.3		<b>)</b>		5s., Fe. s	raining , Mg., beige		
				}					
-3	0								
1,									HG-21M

\*

ER-S2

- measured strat. lower to higherstrat. lower than ER-S1

Th(m)	Lithology
	at base of sectionO/B and broken sandstone rubble
13.5	Sandstone; medium grain; dark brown to grey; silica cement; N10 W/50 W; massive; cliff-forming sandstone
3.0	Siltstone; fine grain; dark grey; interval is broken and friable; O/C covered with sandstone debris and minor vegetation growth.
7.2	Sandstone; medium grain; dark brown to dark grey; silica cement; minor coaly lens near top; N10°W/50°W; massive cliff forming sandstone
4.4	Sandstone and siltstone interbedded; fine grain; grey to beige to dark brown; more pronounced weathering than previous unit; 0/C is quite rubbly
4.8	Siltstone to silty shale; fine grain; dark grey to black; material is badly broken @ O/C
5.9	Siltstone; fine grain; dark brown-grey; blocky; N10°W/42°W
5.5	Covered by vegetation; dark shale, sandstone and coal fragments; badly broken rubble
1.0	Sandstone; medium grain; brown-pink to grey; silica cement; N15 W/45 W
2.1	Shale to silty shale; fine grain; dark grey to black; coal is prevalent; unable to trench deep enough to determine whether in place or sloughed from higher adjacent unit
2.3	Coal with iron stained shale parting; black; alternately bright to dull bands on fresh surface; friable
9.5	Covered interval; 1 m high shrub growth with ground vegetation cover; half way up interval coal and carbonaceous debris is replaced by sandstone rubble
19.0	Sandstone; brownish to tan grey; medium grain; massive; cliff forming; N5°W/55°W
4.9	Sandstone; very fine grain; grading to siltstone; dark brown

Th(m)	Lithology
1.4	Sandstone
0.6	Siltstone; dark-brownish grey
0.2	Sandstone; grey; fine grain
0.1	Siltstone
1.0	Sandstone; fine grain
1.7	Siltstone
0.2	Sandstone
2.3	Siltstone grading to black shale
7.7	Siltstone; interbedded with layers of sandstone and shale
1.1	Sandstone; grey; very fine grain; orange weathering
3.4	Siltstones and shale; dark brown to black
?	Coal seam $16.5~\text{m}$ above the sandstone cliff; may be thin outcrop; N7 $^{\text{O}}\text{W}$
6.0	Covered interval; dark grey siltstone and shale fragments
1.4	Sandstone and siltstone interbedded
37.0	Covered interval; mid-interval is overgrown by a grove of poplars
1.6	Covered interval
15.3	Covered interval; sandstone fragments
15.3	Sandstone
•	

STRATIGRAPH	HIC SECTION	DE	ESIGNATION: BBR - S2, incl. BBR -T2 PART	OF
PROJECT: NOR	TH BLOCK	AT 0: 005	AUTHOR: J. HORACHEK DATE: 19	)
OCATION: BLUE	MOUNTAIN - EA	ST SLOPE	SOURCE OF DATA:	
70.00	ERVAL	A secretarios and	DESCRIPTION	
CONTROL	LITHOLOGY	STRIKE & MAII		SAMPLE
			T.	
m)				
0 т		1	Sh to slistn	
	4.7		Coaly sh & coal Coal Slistn	
*1			Sx.	
-10 BBR-T2	(3.7)		Coal	
10	3.7		Sh Sitsin & ss	
			Silsin	
	Table   Tabl	20050501	Sx	
20 -	1 mm - mm - mm - 1 mm -	100 1 100 1	Sitsta	
			Ss	
-30		$\Rightarrow$	Covered	
			Covered prob slisin	
			Covered prob. ss	
- 40			Sitsin	
			Ss S/IsIn	
			Covered	
50			5s	
	1000		Ss & sitsin	
	0.9	anieromon)	Ss Coal	
-60	(1.3)		Cool Slistn Ss Slistn	
	(6.6)	1	Coal w/lower 15m coaly sh	
-70	NOTATION OF THE STATE OF THE ST	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ss Slisin	
	NO VINCENTIAL CONTRACTOR	00.0000000	Ss Slisin	
	30393-010-0040940-0040	HAMPINE ENTEN	Ss Covered	
-80				
			5s	
90				
100		(9.)		
-100				
				4
-110				
-120				
				9
-130			ř.	2
			N. Carlotte and Ca	
	1			

-	RAPHIC SE			DESIG	GNATION:	ER - S2	PART OF	
	NORTH BLC					AUTHOR: HORACHEK & FIETZ	DATE: 1978 JUNE	16
	RE MOUNT		AUNCEY	CREEK		SOURCE OF DATA: FIELD		
	INTERVAL	/L				DESCRIPTION	Т	
CONTROL	INTERVAL	LITHOLOGY	STRIKE &	MANIN		AMPLIFIED		SAMPLE
S POINT			DIP	MAIN		AMPENTED		
		NB : STRA	TIGRAPHICAL	LY LOWER	THAN	ER-51		
[m]								
-0	-	540000000000						
					Ss., this	is the 4 th Ss. bed on Engle	Ridge	
	15.3							
-10				12		0 8		
	-		1					
- 20			\					
	15.3	X			Covered	interval with Ss. fragments.		
-30	1.6		3		Covered	interval		
			Λ					
40			)					
40			)					
			(					
50	37.0				Covesed	interval, middle is overgrown	,_	
	57.0	$\wedge$			by a gro	ve of poplars growing on of softer material (Sh. or C		
14								
60								
		/				147		
-70	1.4	/	$\leq$		55 & 51	Itstn. interbedded		
	6.0					interval; Dk. Gy Slisin & Sl	5	
	(2)		_/			(?) probably thin; O/C	N7°W (lies 16.	5 m
80	3.4	HAMMADARAMANDONY				Sh; Dk Br. to Bk. vfg; Or. weathering		
		MORE CO.						
-90 DL	7.7	10000000000000000000000000000000000000			Sh.	interbedded with layers of	Ss & some	
CHINA NO.	2.3					rading into Bk. Sh. Itstn. interbedded; Dk. Br. 1	a Gr. fa	
	3.8 1.4	an of the second second			Ss.	rsin. Interbed dea; DK; Or: 1	5 57, rg-	
-100	4.9				5s ; Dk. 1	Br; vfg; grading to Sitstn.		
-110	19.0		\		Ss; broi	wnish or tan Gy, mg, massive	19	
						anterendones voca e a		
-120								
			1		vegetati	interval, Im high shrub ground on cover at top of lower Co	oal unit surface	
	9.5	$\mid \times \mid$	{		was und	ermined & Coal was found u val "Coal - Carb." debris i	nder growth; half w s replaced by Ss.	ay rubble
-130	(2.3)		2		Coal wi	th Fe stained Sh. partings; bands on fresh surface, fria	sk, alternately brig	ht
	2.1	AGUS EPLENANCIANOS E			Sh. to S	ilty Sh; fg; Dk. Gy to Bk, Bk. to Gy; mg; silica cemen	Coal debris presen	,
-140	5.5	=-	- 5		Covered	interval; vegetation, Dk. S. igments; badly broken rubble	Itstn; Ss. &	
	5.9	1				fg; Dk Br. to Gy; blocky; No Silty Sh, Dk Gy to Bk; ma		
150	4.8				broken	on 0/C	18	
	4.4				55. & 5/	tstn. interbedded; fg; Gy to ced weathering than lower un	Bg. to Dk. Br; more	rubb/y
-160			=\	*-	Se . ma .	Dk. Br. to Dk. Gy; Silica ce Cooly lens near top; N10	ment	
1,00	7. 2				cliff f	orming Ss.		
	3.0				Sitstn; covered	fg; Dk. Gr; interval is bro with Ss. debris & minor	vegetation growt.	h
-170			\		96.00	Dk Br. 10 Gy; Silica Cemen		
	13.5				N 10°W	150°W; massive cliff forming	g 5s_	
100			)					
-180		5.4.4.4.5.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	1		0/8 &	broken Ss. rubble		
-190	4							
			100					
		-					4	
								,,,,,
								1111

#### ER-S3

Th(m)	Lithology
9.1	Sandstone; medium grain; cliff forming; upper 3 m interbedded with siltstone
0.4	Sandstone; fine grain
1.6	Siltstone
1.1	Sandstone; dark grey; fine grain; orange weathering layers 2 - 4 cm thick
4.9	Siltstone; very dark brownish grey; weathers into small fragments
1.2	Sandstone; medium grain; orange stain on weathered surface; dark grey on fresh fracture; N25°W/44°W
0.6	Sandstone; medium grain; grey on weathered surface; dark grey to brown on fresh exposure
0.7	Silty shale; fine grain; dark grey to black; o/c is badly broken and rubbly
0.5	Sandstone; medium grain; grey on weathered surface; dark grey to brown on fresh exposure; N15 W/40 W
3.1	Silty shale to siltstone; fine grain; grey; minor iron staining; sandstone rubble scattered throughout; o/c is badly broken except at top of interval; N10°W/45°W; minor coaly lenses in upper 0.2 m
5.1	Covered interval; vegetation growth (primarily grasses); sandstone, siltstone rubble
1.4	Sandstone; medium grain; dark grey on fresh fracture; grey-pink on weathered surface; N20°W/45°W
68.1	Covered interval; vegetation growth (primarily grasses); sandstone, siltstone and shale with minor coaly lensesi.e., 2 mm thick
2.2	Sandstone; medium grain; brown-red to beige on fresh surface; weathers to pink-orange; calcareous (slight) cement; N20°W/44°W
7.5	Sandstone; very fine grain; beige to tan on both weathered and fresh exposures; slightly calcareous cement; N25°W/44°W
1.5	Siltstone; very fine grain; black to grey on fresh surfaces; weathers grey with orange iron staining; o/c is quite crumbly and rubbly except at top; N20°W/40°W

Th(m)	Lithology
10.6	Covered interval; primarily soil; sandstone rubble and grasses
2.3	Siltstone; very fine grain; beige to tan on both weathered and fresh surfaces; N25°/41°W
6.9	Sandstone; fine grain; beige to dark brown on fresh surfaces; weathers beige; calcite infilling in fracture plane; iron staining; N25°W/40°W
8.1	Covered area; sandstone rubble; black/grey; shale/ siltstone and small % of coaly particles
1.0	Shale; interbedded beige to black beds; o/c very badly broken; very minor coaly material in upper 0.3 m of interval
21.8	Sandstone; medium grain; dark brown to grey on fresh fracture; weathers beige to off-white; massive-forms cliff; calcite infillings in fracture planes; N20°W/47°
15.0	Covered
7.0	Sandstone; medium grain; dark brown to grey; weathers beige to off-white; massiveforms cliff; N20°W/45°W

ER-S3 STRATIGRAPHIC SECTION **DESIGNATION:** PART OF NORTH BLOCK AUTHOR: FIETZ & HORACHEK DATE: 1978 PROJECT: JUNE 16 CHAUNCEY CREEK AREA SOURCE OF DATA: AREA: LOCATION: EAGLE RIDGE DESCRIPTION INTERVAL STRIKE AL CONTROL SAMPLE LITHOLOGY & POINT AMPLIFIED MAIN DIP [m] -O Top of measured section. Ss; mg; Dk. Br. to Gy; weathers Bg to off white; massive .... forms cliff; N 20°W/45°W 7.0 -10 Covered interval 15.0 -20 Ss;mg; Dk Br to Gy, or fresh fractures; weathers Bg, to off-white; massive forms cliff; calcite in fillings in fract planes; N 20" W /47" W - 30 21.8 -40 Sh, interbedded Bg. to Bl. beds, O/C  $\overline{V}$  badly broken,  $\overline{V}$  minor Coaly material in upper 0.3 m of interval 1. 0 Covered interval; Ss. rubble; Bl. / Gy. Sh. / Slistn & small % of Coaly particles. 8.7 - 50 Ss; fg; Bg. to Dk. Br. on fresh surfaces; weathers Bg; Calcite infillings in fract planes; Fe. staining; N25° W/40° W 6.9 Sitstn; vfg; Bg. to ton on both weathered & fresh surfaces; N 25° W / 40° W - 60 2.3 Covered interval; primarily soil, Ss rubble & grasses 10.6 -70 Sitstn; vfg; Bk to Gy. on fresh surf, weathers Gy. with Or; Fe staining; O/C is quite crumbly & rubbly except at top; N20°W /40°W 1.5 Ss, vfg, Bg, to tan on both weathered & fresh 7.5 exposures; slightly calcareous cement; N 25° W/44° W -80 Ss; mg; Br-red to Bg. on fresh surface; weathers to Bk. - Or; calcareous (slight cement); N 20° W/45° W 2.2 -90 -100 -110 2 mm thick. ) 61.8 -120 -130 -140 -150 5s; mg; Dk. Gy, on fresh surface; Gy-8k on weathered surface; N 20° W /45° 1.4 Covered interval; primarily grass growth with Ss. & Covered interval; primarily grass growth with 3s. &
Slistn. rubble
Silts S. to Slistn.; fg; Gy, minor Fe staining; Ss. rubble scattered
throughout, O/C is badly broken except at top of interval, N 10°W/45°W
minor Coal lenses in upper 0.2 m.
Ss; mg; Gy. on weathered surface; fresh surface Dk. Gy. to Br.; N15°W/40°
Silty Sh.; fg; Dk. Gy. to Bk; O/C badly broken & rubbly.
Ss; mg; Gy. on weathered surface; fresh surf Dk. Gy to Br.
Ss; mg; Or stain on weathered surface
Slistn. very Dk; brownish Gy weathering into small fragments.
Ss; Dk. Gy; fg; Or weathering
Slistn (coarse) almost fg. Ss.
Ss; fg 5.1 3.1 0.5 0.7 -160 DF - ER - 53 JH - ER - 53 4.9 -1701.1 1.0 Ss; fg 0.4 Ss, mg; cliff forming; upper 3 m interbedded with Sltstn; N 12° W / 46° W 9.1 -180 Btm. of measured section. -190

HH-219

# 1978-07-22

Th(m)	Lithology
4.4	Sandstone; fine grain; grey; weathers orange; N6°W/54°W; forms prominent ledge
3.6	Sandstone and siltstone interbedded; beige to grey; fine grain; weathered material; rubbly
3.3	Sandstone; fine grain; grey to beige; weathers orange to grey
8.7	Siltstone; black; fine grain; weathers to small fragments
1.8	Sandstone; salt and pepper; fine grain; weathers to grey-beige; $N5^{\circ}W/43^{\circ}$
71.0	Covered interval
10.4	Sandstone; fine grain; dark beige to grey; thinly laminated; weathers tan; N5°W/45°W
41.0	Covered interval
34.5	Sandstone; massive; fine grain; cliff-forming; N20°W/45°W
6.6	Sandstone; fine grain; light grey; weathers orange to tan; less resistant unit than previous cliff-former; N25°W/45°W
13.1	Shale and siltstone interbedded; grey to beige to black; weathers to small fragments; orange weathering
2.0	Sandstone; fine grain; grey; weathers orange; N10°W/45°W
0.8	Coal
2.0	Sandstone and siltstone interbedded; grey; fine grain; weathers orange
4.5	Sandstone; fine grain; grey; weathers grey to orange; $N10^{\circ}W/45^{\circ}W$
3.2	Sandstone; as previous unit but is less resistant
3.3	Coal
4.3	Sandstone and siltstone; grey to black; fine grain; weathers off-white to orange

Th(m)	Lithology
25.2	Sandstone; fine grain; dark grey to beige; weathers off-white to orange; N15°W/45°W; interbedded with softer, less resistant thin sandstone and siltstone beds; forms sharp nose
5.0	Siltstone and sandstone interbedded; black to grey to beige; weathers grey to orange to black; 0.7 m of coal at 2.0 m from base of interval
10.0	Sandstone; fine grain; grey to beige; cross-bedded; weathers off-white to orange; forms prominent ledge
3.0	Siltstone and shale interbedded; grey to black; weathers to small fragments
0.9	Coal
4.0	Shale; hard; grey to blackinterbedded with siltstone; greyweathers to light grey
1.8	Siltstone and sandstone interbedded; dark grey; fine grain; weathers orange; bedded; siltstone primarily in lower 1/3 of interval
0.9	Coaly shale
0.6	Shale; brown
1.4	Coal; at 0.8 m from bottom of interval 0.2 m thick shale parting
13.0	Siltstone and shale interbedded; tan to beige; at 0.3 m from bottom of interval 0.5 m dirty coal seam; at 1.8 m from bottom of interval 0.5 m dirty coal seam
2.3	Sandstone; fine grain; grey to beige; weathers orange; cross-bedded; N20°W/40°
6.0	Covered interval
1.3	Siltstone; black; weathers to small fragments
0.6	Coal
2.0	Sandstone; fine grain; grey; weathers beige to orange
0.3	Coal; shaley
0.2	Coal
1.1	Shale and siltstone interbedded
2.0	Sandstone; fine grain; grey; weathers beige to orange

Th(m)	Lithology
7.3	Shale and siltstone interbeds; brown to beige
2.2	Sandstone; fine grain; grey to beige; weathers orange
4.8	Siltstone, shale and sandstone interbedded
1.4	Coal
2.7	Shale; grey to brown
40.0	Covered interval
1+	Coal(FW: Siltstone?)
25.0	Covered interval
4.8	Sandstone; fine grain; grey; weathers beige to orange; N25°/35°W; forms prominent ledge
17.6	Covered interval
34.3	Sandstone; fine grain to medium grain; grey-beige; weathers pink to beige; NO W/41 W; where sandstone is not prominent as ledgegrass covered (50/50 split)

0.9

ER-T4 & T5	• measured strat. lower to higher
	• start at major cliff forming sandstone below ER-T5
Th(m)	Lithology
29.0	Sandstone; fine-medium grain; salt and pepper; weathers off-grey; light pink; cliff-forming; laminated; N10°W/60°W
0.5	Siltstone; dark; weathers to small fragments
Start of ER-T5	
0.8	Sandstone; fine grain; beige; weathers to small fragments
0.2	Siltstone; dark; weathers bright orange
9.3	Siltstone, sandstone
0.8	Sandstone; fine grain; grey; weathers tan and pink
0.7	Sandstone; fine grain; dark grey; weathers to small fragments
0.8	Sandstone
0.5	Sandstone
0.3	Carbonaceous shale
1.8	Coal with minor shale parting
9.8	Covered
28.8	Sandstone
End of ER-T5	
Start of ER-T4	
0.7	Shale and siltstone interbedded
0.2	Coal
0.4	Siltstone; weathers orange
0.3	Shale
0.3	Coal

Sandstone interbedded with siltstone

page 2 of ER-T4 & T5

Th(m)	Lithology
0.7	Sandstone; fine grain; grey; weathers light grey
5.7	Sandstone interbedded with siltstone
0.7	Sandstone; fine grain; orange; weathers dark grey
7.8	Siltstone and shale interbedded
0.5	Carbonaceous shale
0.9	Coal and carbonaceous shale
End of ER-T4	

PROI	ECT. NIC	DTII	0.0	ECTION		DESI	IGNATION:	ER-T4 & T5	)	PART	OF
	CHAI							AUTHOR: BA		DATE: 1978	AUG 1
OCA	TION: E.	VOLE	PIDO	EEK AREA				SOURCE OF DATA	A:		
		INTER				_		DECCRIPTION	S		
COL	NTROL	IIVIEN	VAL	LITHOLOGY	STRIKE &			DESCRIPTION	N		
δ ·	S				DIP	MAIN		AMPL	FIED		SAMPL
n]											
T			0.9 3		4		Carb. Sh. Coal Carb. Sh.				
			7.8		3		Carb. Sh.				
8-74			7.0		1		Slistn. &	Sh. interbedded			
1 2			8.0		7		C/.4	eva :			
		0.25	Selver and		3			Slastn. near top &	Dollom		
10 T		(0.2)	0.7				Sh & SI13	tn. interbedded tn. interbedded			
							J. G J. 73	rn. Interbeaded			
0											
			28.8								
							51				
0											
0			+		-1.1						
53,455			9.8				Covered				
T	,										
0	(	1.8)	0.3	6729688888 B	384		Coal with Carb. Sh.	minor Sh. partin	95.		
R - T5			Ī		7	W.	***				
£			11.6		3		Ss. with .	Slista interbeds	near top & be	oftom	
			Į.						*		
-											
)					\ \			*			
			29.0			4	5.5.	*			
0											
			I								
0											
*											

EG-S2 & S1

- measured strat. lower to higher
- section begins at top of MMM; medium grain to coarse grain; salt and pepper; weathers grey; N15°W/63°W

<u>Th(m)</u>	Lithology
53.1	Covered; small amounts of sandstone and siltstone rubble
14.0	Sandstone formation; fine grain; predominately salt and pepper some light brown laminations; weathers to a light grey; Strike $350^{\circ}/63^{\circ}W$
74.3	Covered
9.0	Sandstone formation; fine grain; brown; dark grey and white; weathers light grey; bottom 3 m massive; balance thinly bedded and laminated; N6 W/53 W
80.0	Covered; coal bloom in lower 4 of section

		SECTION		DESI	GNATION:		S1 & EG		OF
PROJECT: N		NTAIN - EAS	ST SIODE				OF DATA:	& FIETZ DATE: 19	
LOCATION: E			J. JLOFE			Journal !	F	IELD	
	INTERVAL		STRIKE			DESCR	RIPTION	54	
SCALE CONTROL POINT		LITHOLOGY	& DIP	MAIN			AMPLIFIED	)	SAMPLE
									•
[m]									
- o -									
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<b>A</b>						
10			/ (				DK.	.,	
10								×: 1	
		\ /							
— 20									
			1		Covered	interval. (	Coal bloom i	n lower 1/4 of section	
- 30									
EG-\$1	79.	.7					č		
			)						
— 50									
								*	
60									
- 70									
_ /0									
			V						
- 80 <b>Y</b>					Ss fa	brown . Dk	Gr. & Wh.	, weathers to Gy.	
	9. (	o	}		Brm. Gr.	massive, t	op portion	, weathers to Gy. thinly bedded & lamino	ited.
- 90			$\overline{}$						60
		$\times$							
UCC .			7		Disturbed	Ss., thick	ness approx	ke .	
→ 100			1						
			//						
110			/ }						*
120									
	74	3			a 2		192	7 V W 7 1991	
					plants,	interval Ss. rubble	, di	sturbed Ss bedding.	
130		X							*
- 140									
								6.	
- 150									
130			\						
E G - S2									
- 160		/							
- 170	1.4	1.0			Ss., f.g.	salt & p.	N 10° W/	some Lt Br. laminations;	
		1							
- 180			/(					3	
			/ )						
- 190									
_ 200									
	5	3.1			Covered	interval,	plants, Ss	& Slisin rubble	
		/\							
- 210							¥		
- 220									
			V						
- 230		2			5s., m -	cg., salt 8	s pepper we	athers grey N15°W/63	° W
		?			(Moose	Mtn. )			
- 240			v or scally						
							92		
- 250									HH:21H
		10							1111 -197
1		**							
						2			

## ES-S1

Th(m)	Lithology
0.3	Sandstone; grey; weathers white-grey; fine grain
2.7	Covered; some sandstone
1.0	Sandstone; fine grain; disturbed; light grey
0.6	Sandstone, fine grain grading to siltstone; weathers in small fragments; grey
0.8	Coal
3.0	Sandstone; medium grain; light grey; laminated
7.0	Covered; soil; dark brown; some sandstone rubble
3.5	Siltstone with sandstone layers; light grey
0.2	Sandstone; light grey; orange weathering; fine grain; 1 cm coal stringer at top of interval
1.6	Siltstone; light grey
0.2	Sandstone; very fine grain; grey; some orange weathering
0.5	Coal stringers with sandstone; N5°W/57°W
1.7	Covered
3.3	Sandstone, very fine grain and siltstone; light grey
1.4	Sandstone; fine grain; dark grey; weathers white- grey and orange
3.9	Sandstone and some siltstone; fine grain; 0.5 to 3.0 cm thick layering
2.3	Siltstone with orange weathering layer of sandstone in lower half
6.2	Sandstone and siltstone interbedded; sandstone; fine grain
0.8	Siltstone; black
0.5	Siltstone; brown weathering
1.3	Siltstone; weathering to very fine fragments; . dark grey

page 2 of ES-S1

Th(m)	Lithology
0.5	Siltstone; black and orange weathering interbedded (onion skin weathering)
3.1	Siltstone; partially covered
0.6	Coal
9.0	Covered; slumped; light brown soil; some sandstone rubble
3.0	Coal (Adit #4)

STRATIGE	APHIC S	ECTION		DESI	GNATION:	E	S-S1		PART _	OF	
	ORTH BLO					-	J. HORACHE	к	DATE: 1	1978 JULY	10
AREA: BAR	E MOUNTA	AIN - EAST	SLOPE			SOURCE OF	DATA:	147			
LOCATION:	LAD SLO	PE									
CONTROL	INTERVAL	LITUOLOGY	STRIKE			DESCRI	PTION				CAMPLE
SCALE		LITHOLOGY	& DIP	MAIN			AMPLIFIED				SAMPLE
[m] —0	3.0				Adit 4	interval, slum	pe d				•
-10 -20	(0.6) 3.1 0.5 1.3 0.5 0.8					artiolly cover k; Or weather k Gy; weather weathering k hterbedded w		skin) igments.		14	
-30	6.2 2.3 3.9 1.4 3.3 1.7 0.7				Slistn. w Ss, fg, s Ss, fg, D Ss, vfg,	ith Or weath ome Sitsin ( )k.Gy; weath it Gy; has	ering layer 0.5 to 3 Cm. ers Wh. Gy. some Sitstn	Ss. in la layeri & Or.	ower half		aers with Ss
40 50 60	7.0 0.8 3.0 0.8 0.8				Sitstn, for Covered  Ss., mg., Coal, Ss., fg; Ss	interval; vfg, Gy, son Lt, Gy, I Cm Lt, Gy; weath ew Ss string interval; Dk Lt Gy, lamin Gy; grades if Gy; disturbed interval, Ss	ers, LI Gy. Br. soil; S nated nto Sitsin;	s rubbl weather	e s small	fragments	
1 1											
-70											*
										46214	

#### ES-S2

Th(m)	Lithology
	Covered; probably siltstone
2.5	Sandstone
2.6	Covered
3.7	Sandstone; fine grain; light grey (minor cliff-former)
2.0	Siltstone; dark grey; grading to very fine grain sandstone
3.7	Sandstone; silty at bottom
2.9	Siltstone with minor coal in lower part of interval
3.2	Sandstone; fine-medium grain; greyish-brown; medium - high resist.
1.2	Siltstone with sandstone layer; local disturbance may be minor thrust
1.0	Sandstone; very fine grain; thinly layered; light brown to grey
2.8	Siltstone with sandstone layer at mid interval
8.2	Siltstone and sandstone interbedded; more sandstone at bottom; sandstone is fine layered
3.7	As above
4.0	Sandstone; medium grain; greyish-brownish; fairly fine layered; locally resistant outcrop
	Covered; probably siltstone and shale

		RAPHIC S			DES	IGNATION:	:	ES-52	PART	OF	
_		ORTH BLC						OR: J. HORACHEK	DATE: 1978	JULY 10	
		ELAD SLOP		T SLOPE			SOUF	RCE OF DATA:			
		INTERVAL					DESCRIPTION				
SCALE	CONTROL POINT		LITHOLOGY	STRIKE & DIP	MAIN		DES	AMPLIFIED		SAMPLE	
S				DII	1						
(m	1										
-0		4.0	#6801285#	21		Se ma	G v R	r., thin layering			
		11.9						s. & Sitstn., Ss. fg. i	ayered		
- 10	)			200234 200234 200334							
			Branco Average	81110							
		2.8				Slistn. w	ith Ss	loyer			
- 2	0	1.0				Strate w	ilh Ss	& Gy. & thinly lay layer, local distu Gy Br. moderate t	rered.	rust ? )	
		3.2						Coal near bottom		ice	
- 30	,	3.9				55., silly					
- 30		2.0					- 60	v, grades to vfg.	Sa		
		3.7						r., minor cliff for	ming		
- 40		2.6		3777		Covered 5s. botto		val cliff formation			
			><					al, probably Sitst	n.		
	2					*					
- 51	0		1 1 1								
		1.0									
								- W - M			
		10.00									
										HG 21F	
										Charles and All	

• from profiling, able to establish a strat. section designated as ES-S3

ES-S3

- ullet measured strat. lower to higher
- begin section at top of sandstone bed in lower portion of ELAD GULLY

Th(m)	<u>Lithology</u>
51.0	Covered except for small sandstone o/c 10.0 m from base of interval
7.0	Sandstone; medium grain; beige to dark grey; bedded; weathers white-grey; o/c is orientated in many directions may not be in placelooking NW across gully, sandstone may be underlain by black, carbonaceous, fine grain siltstone
39.0	Covered except for small sandstone $o/c$ 14.0 m from base of interval
170.5	Coveredinterval is probably coal bearing based on gopher hole diggings
24.8	Sandstone; massive; N15°W/58°W; medium to coarse grain; beige to pink; weathers orange to pink
8.4	Covered; sandstone and black siltstone rubble
6.8	Sandstone; fine grain; light grey and beige; weathers orange; laminated and thinly bedded; N10 <sup>O</sup> W/58 <sup>O</sup> W
20.5	Covered; minor sandstone bed at 12.6 m from base of interval; sandstone rubble, from cliff forming sand higher in section, prevents measurement of "coaly debris" in 1st 2 m of interval
8.4	Sandstone; medium grain; salt and pepper with dark brown; weathers to a light grey; N20°W/60°W
50.5	Covered; coaly rubble at 21.6 m above base of intervalcover too thick to expose bedrock
5.5	Sandstone; fine grain; brown and dark grey; weathers a light grey-brown; laminated and thinly bedded; N20°W/70°W

STRATIGRAPHIC SECTION ES-53 **DESIGNATION:** PART OF PROJECT: NORTH BLOCK AUTHOR: D. FIETZ DATE: 1978 JULY 14 AREA: BARE MOUNTAIN - EAST SLOPE SOURCE OF DATA: **FIELD** LOCATION: ELAD SLOPE DESCRIPTION SCALE INTERVAL STRIKE LITHOLOGY SAMPLE & DIP **AMPLIFIED** MAIN [m] -0 55. 5.5 **○**1 **—** 20 Covered interval 50.5 - 40 - 50 55. 8.4 -60 <del>-</del> 70 Covered interval 20.5 -80 6.8 55. -90 Covered interval 8.4 -100 -110 24.8 5s. -120 30 نــا --140 L150 - 160 170 -180 <del>- 190</del> -200 -210 H 220 -240 **—** 250 267.5 Covered interval -260 <del>--</del> 270 - 280 290 - 300 - 310 **- 320 -33**0 - 340 350 360 -370 --- 380 - 390 400 <del>|- 410</del>

## ES-T1

Th(m)	Lithology
	Covered; grass and sandstone rubble
1.6	Sandstone; thin; siltstone and coaly shale; interbedded
7.0	Coal; friable; black; high lustre; brown on weathered surfaces
1.8	Shale; black; grading to light, fine grain siltstone; abundant sandstone rubble on surface
2.8+	Sandstone; medium - fine grain; salt and pepper; N10°W/52°W

STRATIGRAPHIC SECTION		DESIG	GNATION:		ES-T1	PART	OF
PROJECT: NORTH BLOCK			AUTHOR: D. FIETZ DATE: 1978 JULY 5				
LOCATION: ELAD SLOPE	SLOPE		SOURCE C	OF DATA:			
	STRIKE	TRIKE [			DESCRIPTION		
CONTROL POINT LITHOLOGY	& DIP	MAIN	AMPLIFIED				SAMPLE
[m]				4			
-0 2.8							· µ_
1. 8			Sh., Bk ; g	rades to	light, Fg 5/ts	tn., abundant.	
-10 (7.0)		3,4	Coal;	Bk;	high lustre;	Br. on weathered sur	face
1.6	i .		Ss; Sltsti				
-20			Covered ,	grass &	Ss rubble		
				- 4/			
				+			
						HG 21R	

ES-T2

- bottom of trenched interval is equiv. to 6.8 m sandstone bed (ES-S3)
- measured strat. lower to higher

Th(m)	Lithology
24.8	Sandstone; medium grain to coarse grain; massive; cliff forming; weathers orange to grey
4.9	Siltstone; dark grey; weathers light grey to brown - orange; minor sandstone layers, very fine grain
1.0	Coal with thin coaly shale parting at 0.3 m from bottom of interval
0.3	Siltstone grading to carbonaceous shale
2.2	Sandstone; fine grain; dark grey; weathers light grey; bedding layers are 1 to 5 cm. thick
0.4	Siltstone grading to sandstone; grey; weathers light grey
0.2	Coaly shale with coal lenses
0.7	Siltstone; dark grey; weathers light grey; 0.05 m thick coal seam at mid interval
4.0	Sandstone; fine grain; grey; weathers light brown to orange; thinly bedded; laminated; N10 W/60 W
2.4	Siltstone; grey; weathers light grey; minor sandstone at top and in centre; grey; weathers light grey; fine grain; some coaly partings near bottom of interval
1.2	Carbonaceous and coaly shales interbedded with dark grey siltstone
0.4	Coal; hard; bright
0.2	Siltstone; grey; weathers brown; soft; crumbly
0.2	Shale and coal; black; flakey
1.1	Sandstone; very fine to fine grain; grey; weathers light grey; 0.2 m thick shale at 0.4 m from top of interval; minor coaly lenses
0.5	Sandstone; fine grain; grey; weathers bright orange
0.9	Sandstone; very fine grain; grey; weathers light grey; brownish weathering in lower 0.15 m

# page 2 of ES-T2

Th(m)	Lithology
0.1	Siltstone; black; grading to sandstone
0.2	Coal
1.5	Siltstone; dark grey; weathers into small fragments Sandstone; dark grey; fine grain; cross-bedded; weathers white grey

OF

ES-T2 PART **DESIGNATION:** STRATIGRAPHIC SECTION JULY 14 **DATE:** 1978 AUTHOR: D. FIETZ PROJECT: NORTH BLOCK SOURCE OF DATA: SLOPE AREA: BARE MOUNTAIN - EAST LOCATION: ELAD SLOPE DESCRIPTION SAMPLE INTERVAL STRIKE AMPLIFIED LITHOLOGY & CONTROL SCALF MAIN DIP POINT Ss. & Sltstn. interbedded with 0.2m Coal 0.1m from btm. of interval Ss., v.f.g.
Ss; f.g.
Ss. with Sh. & Sltstn.
Coal
Shales & Sltstn. interbedded Coaly
Sltstn. with minor. Ss.
Ss. [m] -0 0.9 0.5 1.4 1.2 2.4 SItstn. with Coal lenses at bim 0.2m Ss. grading to SItstn. Ss. Carb. Sh. grading to SItstn. Coal 4.0 -10 0.9 0.4 2.2 0.3 Slistn. 4.9 -20 \_ 30 55. 24.8 - 40 - 50 HG-21G

#### ES-T3

#### • measured strat. lower to higher

<u>Th(m)</u>	Lithology
2.8	Siltstone and sandstone interbedded; grey; weathers light grey and orange; siltstone weathers to small fragments
1.3	Shale, silty; dark grey; grading to carbonaceous shale near top
0.4	Carbonaceous shale and coal interbedded
7.4	Coal; 0.3 m thick shale parting at 1.5 m from bottom of interval
0.4	Shale grading to siltstone; grey; weathers light grey
10.0	Covered interval to sandstone o/c

#### SUMMARY OF TRENCHING: ELAD SLOPE

• 2 shallow trenches: 6.0 m long

• 1 trench: 3.0 m long

0.6 m wide

0.5 m deep

• 1 pot hole: 2.0 m long

0.8 m wide

2.0 m deep

• 1 pot hole: 1.3 m long

0.6 m wide

1.5 m deep

STRATIGRAPHIC SECTION ES-T3 **DESIGNATION:** PART OF. PROJECT: NORTH BLOCK AUTHOR: D. FIETZ DATE: 1978 JULY 16 AREA: BARE MOUNTAIN - EAST SLOPE SOURCE OF DATA: LOCATION: ELAD SLOPE DESCRIPTION INTERVAL CONTROL STRIKE SAMPLE LITHOLOGY & DIP **AMPLIFIED** MAIN [m] -0 55 Covered 10.0 - 10 Sh. grading to Sitstn. 0.4 = (7.4) Coal with Sh. parting at 1.5 m from 8 tm. of interval -20 Sh. & Cool interbedded Slistn. & Ss. interbedded - 30 H4-118

## 1978-06-25

	/N-S:	N	/	P	Η
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- on the ridge north of Hammer Peak
- measured strat. lower to higher

Th(m)	Lithology
2.0+	Sandstone; fine grain; orange weathering (semi- resistant in this area)
17.0	Siltstone and fine grained sandstone interbeds; only partially exposed
5.3	Sandstone; dark grey; medium grain; semi-resistant to resistant
3.7	Siltstone; black to dark grey; iron weathering
3.2	Sandstone; fine to medium grain; orange weathering in the lower half of the interval
2.1	Coal
4.9	Covered
2.2	Sandstone; orange weathering
0.6	Sandstone; fine grain
1.3	Silty shale
1.3	Coal; somewhat dirty in lower 1/3 of interval
2.9	Siltstone grading to coaly shale; orange weathering sandstone bed in mid-interval
0.5	Shaley coal
0.4	Coal
0.7	Shale to coaly shale
6.0	Coal
2.6	Covered

STRATIGRAPHIC SECTION DESIGNATION						HP/N-S1 PART OF				
PROJECT: NORTH BLOCK						AUTHOR: JH DATE: 1978 JULY 4				
AREA: BARE MOUNTAIN - EAST SLOPE								SOURCE OF DATA:		
LC	CATION:  -	IAMM	ER PE	AK/NORT	'H					
E	CONTROL	INTER	RVAL	LITUOLOGY	STRIKE			DESCRIPTION		
SCALE	POINT	LITHOLOGY		& DIP	MAIN		AMPLIFIED .		SAMP	
[m										
1										
-0			6.0				Ss. cliff			
			2.6				Covered i	nterval		
- 10	)	6.0					Coal			
- 2	0	(a) (1.3)	0.7 3.4 1.3 2.8	) 	A .		Sh. & Cool Coal Sitstn, g mid-inter Coal, som Sh. silty	ly Sh. rading to Coaly Sh. val, top half meter ewhat dirty in lowe eathering for botton	Or. weathering Ss; b Sh. Coal or 1/3 of interval	ed in
			4.9		1			interval, possibly Slt.		
- 3	0	(2.1)			7		Coal			
			3.2				Ss., f.g. t	o m.g., Or. weathering	in lower half of i	nterval
			3.7		3		Strstn; b	Ik. to Dk. Gy., fine	weathering	4
- 4	0		5.3				5s., m.g., 8 = 75°	Dk. Gy., semi resist	ant to resistant.	
							Sitstn. &	fine Ss. interbedded	d - only partially e	xposed; parts
- 5	0		14.0				or inter	or covered.		
- 6	0		2.0				Ss., t.g.,	Or, weathering; ser	mi resistant in this	oreo
- 7	0									
								2 10		
										HG-2/K
1										770 27

#### HAMMER PEAK/NORTH

## 1978-07-12

#### HP/N-S2

Th(m)	Lithology
2.2	Covered but may be soft, brown, fine grain siltstone grading to shale
2.2	Sandstone; grey; weathers white-grey; finely layered; N20°W/57°W; minor orange staining
0.2	Sandstone; fine grain; grey to black; prominent orange staining; N15 <sup>O</sup> W/57 <sup>O</sup> W
2.1	Siltstone and shale interbedded; beige to brown weathers to fine fragments
0.3	Sandstone; fine grain; beige to grey; prominent orange staining; N15°W/45°W
1.6	Siltstone and sandstone interbedded; off-white to grey (weathered); dark grey on fresh fracture
0.8	Sandstone; fine grain; dark grey to black; weathers off-white to orange; N30°W/41°W
2.0	As above; N25°W/41°W; lower 1 m interval may be disturbed; minor flexures in bedding; N5°W/8°W; may not be in place?
4.9	Sandstone; beige to grey; weathers off-white to grey; cross-bedded; fine grain; N30°W/34°W; minor siltstone interbeds near top of interval
6.0	Covered; siltstone and sandstone rubble
4.0	Siltstone; black; fine grain; weathers to small fragments
2.7	Siltstone; brown; fine grain
2.2	Sandstone; dark brown to beige; weathers off-white to orange; fine grain; N20°W/38°W
3.0	Siltstone; brown; fine grain; minor coaly shale at bottom of interval; coaly debris % increasing at top of interval
1.0	Coal
2.6	Siltstone and sandstone interbeds; brown; fine grain; weathers to small fragments; N20°W/58°W
2.0	Siltstone; black; fine grain; weathers to very small fragments
3.9	Coal

Th(m)	Lithology
0.3	Shaley coal
2.0	Coal with thin shale partings
0.8	Coal .
8.0	Siltstone and sandstone interbeds; beige; soft; fine grain
1.9	Sandstone; fine grain; grey to beige; weathers offwhite to orange; $N20^{\circ}W/70^{\circ}W$
4.7	Covered; siltstone and shale rubble
1.0	Sandstone; fine grain; grey to beige; weathers orange; strike range: NO W to N30 W; dip range $50^{\circ}$ to $75^{\circ}$ W
1.2	Sandstone; fine grain; grey; weathers white-grey
5.8	Shale and siltstone interbeds; black; fine grain; weathers to small fragments
3.0	Sandstone; beige to grey; weathers off-white; grey- beige; outcrop is rubbly; fine grain
9.1	Sandstone; minor cliff forming; beige to grey; weathers off-white to grey; fine grain; minor flexures in bedding (structural?) at base of interval; N25°W/65°W
4.6	Siltstone with coaly shale and shale; black; weathers to small fragments
0.8	Siltstone; brown; soft; fine grain
0.5	Coal with thin shale stringers throughout
10.8	Siltstone and sandstone interbedded; fine grain; brown
0.7	Sandstone; beige; fine grain; weathers orange to red- brown
1.9	Siltstone; black; fine grain; weathers to small fragments
2.8	Sandstone; beige to grey; weathers off-white-pink-orange; fine grain; $N30^{\circ}W/46^{\circ}W$
4.8	Covered interval; surface rubbleinterbedded black siltstone and beige sandstone
4.6 FORMS TOP OF HAMMER PEAK	Sandstone; beige to grey; weathers off-white to grey; fine grain; local tentonic activity; minor flexures in beddingbeds dip E, W and vertical within a 5 m radius at top of HAMMER PEAK: N13 W
0.4	Siltstone; soft; brown; broken

Th(m)	Lithology
1.3	Coal
5.8	Siltstone and shale interbeds; fine grain; black; weathers to fine fragments
3.5	Coal
1.0	Siltstone; beige; fine grain; weathers to fine fragments
1.4	Sandstone; beige to grey; fine grain; weathers grey to orange
4.5	Siltstone and sandstone interbedded (largely covered unit)
5.9	Sandstone; beige to grey; fine grain; prominent orange to orange-red weathering; NO W/63 W
2.8	Siltstone; black; fine grain; weathers to small fragments
3.0	Siltstone; brown; soft; fine grain (much of interval covered)
0.9	Siltstone; black; fine grain; fragmented
0.7	Coal
3.0	Siltstone; black to brown; fine grain (much of interval covered)
1.0	Sandstone; beige to grey; fine grain; prominent orange weathering; N7 W/59 W
2.6	Sandstone and siltstone interbedded; very fine grain; dark grey; weathers to small fragments
1.5	Sandstone and siltstone interbedded; fine grain; grey to off-white
	Sandstone; beige to brown; fine grain; prominent orange weathering; N13 W/55 W

	ORTH BLO		C1 C 5=			DATE: 1978 JULY 14	
FOCATION: P	HAMMER	AIN - EAST PEAK/NORT	SLOPE		SOURCE OF DATA: FIELD		
	INTERVAL	LAKTION	PARTIES TO SER		DESCRIPTION		
CONTROL		LITHOLOGY	STRIKE & DIP	MAIN	AMPLIFIED	SA	AMPLE
0/							
[m]							
-O							
-0	1.5	6			Ss. & Slistn,		
	3.0		<b>)</b>		Ss; Or. weathering Ss. & Sitstn.		
-	0.7				Coal		
	3.0 2.8		3				
	5.9	9			Sltstn.		
	4.5	5			4		
	(3.5)				APPLICATION AND ADDRESS OF THE PARTY OF THE		
		**********			Coal seam		
	5.8		<del>)</del>		Sitstn. & Sh.		
	(1.3) 0.4				Coal seam Tectonic disturbance		
	4.8				Tectonic disturbance		
	2.8		3329		5s.		
	0.7				Slistn blk. Coal & Sh. partings. Ss. & Slistn. interbedded.		
	3.4 0.7				Ss. & Sitstn. interbedded.		
	10.0				Ss & Slistn interbedded		9
	10.1						
	0.5 0.8	200111220000	<b>]</b>		Coal & thin Sh. partings Sltstn.	×	
	4.6		1		Slistn; Coaly Sh, Sh.		
	9.1						
	3.0 5.8				Ss.		
					Sh. & Sltstn. interbedded		
	1.2				Ss. Ss.		
	1.9				Covered interval		
	8.0				Ss. Sitstn. & Ss. interbedded.		
	0.0	pankyitymiupiya	3				
	3.1				Coal, Coal & Sh, Shaly Coal.		
	(3.9)		<b>a</b> ;		Coal Sitstn; Bk		
	1.0				Coal; Shaly Coal Sitstn; Bk. Sitstn. & Ss; interbedded.		
	(1.0)				Sitstn. & Ss; interbedded. Coal Sitstn. & minor Coaly Sh. at base.		
	3.0	the state of the s			Ss.	4	
	2.7	COMPANIES AND ADDRESS OF THE PERSON NAMED IN			Sitsto , Br.		
	60		P		Sitstn; Bk		
	6.0				Covered interval		
	4.9				5s. with minor Sltstn near top.		
	2.0		===		Interbedded Ss & Sitsin		
	2.0 0.8 1.6 0.3 2.1 0.2 2.2				5s Interbedded 5listn. & Sh's 5s: fa; arey; weathers white aray & mino Ss: fa; arey; weathers	or Orange staining licely la	vered
	2.2		900		Ss. Ss; fg; grey; weathers white gray & mind N 20°W, Dip 54°W Covered interval, possibly soft, brown, fg, Slisin &	Shales	yerea,
					の 新 (株式的)		
					i-		
					AV.		

DESIGNATION: HP/N - S2

PART

OF

STRATIGRAPHIC SECTION

# HAMMER PEAK/NORTH WEST

## HP/NW-S3 (including HP/NW-T1, T2 & T3)

- measured strat. lower to higher
- lowest most interval adjoins highest measured strat. of HP/N-S2 (1978-07-12)

Th(m)	Lithology
7.1	Sandstone; beige to brown; fine grain; prominent orange weathering; high resist.; N13°W/55°W; minor fault of approx. 5 m displacement
6.8	Siltstones and shales interbedded; dark grey; brown; fragmented weathering
2.5	Coal
1.4	Sandstone; fine grain; beige to grey; weather bright orange; thinly bedded and thick laminations; moderately resistant; $N13^{\circ}W/55^{\circ}W$
3.3	Sandstone; fine grain; dark grey and beige; weathers to a white grey ${\bf c}$ some pink staining; low resistance
1.6	Sandstone; fine grain; beige to dark grey; weathers to a white-grey with some pink stain; low resistance; N10°W/53°W
2.7	Sandstone; fine grain; dark grey and beige; weathers to a white grey with some pink stain; low resistance
Start of HP/NW-T1	
0.7	Sandstone; fine grain; dark grey; weathers light grey and to small fragments
0.1	Siltstone; dark grey; weathers bright orange and to small fragments
0.2	Siltstone; dark grey; has shaley look when weathered
0.9	Sandstone; fine grain; dark grey; weathers light grey; blocky fragments
0.2	Siltstone; dark grey; weathers to small fragments
1.8	Sandstone; fine grain; dark grey; weathers lighter grey and to platy fragments
0.6	Coal
1.7	Shale; dark grey c some beige; weathers to a light grey c some orange staining; part of section may be carbonaceous

page 2 of HP/NW-S3 (including HP/NW-T1, T2 & T3)

Th(m)	Lithology
2.4	Coal
End of HP/NW-T1	
9.8	Covered; potholes reveal interbedded sandstone, siltstone and shales
Start of HP/NW-T2	
0.3	Siltstone; sandy; grey; weathers to orange; 3 cm fragments
0.4	Siltstone; dark grey
0.4	Shales; dark grey; weathers to an olive grey
1.5	Coal
End of HP/NW-T2	
3.0	Sandstone; fine grain; dark grey; weathers a lighter grey; has low resistance
1.2	Sandstone; fine grain; beige and dark grey; weathers to a light grey c some pink staining; finely bedded and laminated; low resistance; N12°W/61°W
2.0	Sandstone; fine grain; dark grey and beige; weathers white grey and to small fragments
9.5	Covered
Start of HP/NW-T3	
0.8	Coaly shale
2.8	Coal
0.6	Shale, sandy
1.0	Coal
1.3	Siltstone and sandstone interbedded
End of HP/NW-T3	

STRATIG	RAPHIC S	ECTION		DESIG	GNATION:	HP/NW - S3	PART	OF
PROJECT:	NORTH B	LOCK				AUTHOR: JH	DATE: 197	78 JULY 19
AREA:	BARE MC	NIATAU	: West	Slope		SOURCE OF DATA:		
LOCATION:	HAMMER	PEAK / N	VORTH				The second	
CONTROL	INTERVAL		STRIKE		DESCRIPTION			
CONTROL		LITHOLOGY	& MAIN			AMPLIFIED		SAMPLE
[m] -0 # HP/NV	9.5		₽,		Sitstn. & Coal Sandy Sh Coal Coaly Sh.	interval		
- 20 HP/N	W-T2 (1.5) 1.5 1.1 9.8				Ss; N 125 Ss Coal Sitstn. Covered	W/61°W interval		
- 40 HP/N	W-T1 2.3 5.3				6	O.6 m Coal seam at b	ase of interval	
- 50	2.7 1.6 3.3 1.4		}		Ss. Ss., N 13 Cool	° W 55° W		
- 60	6.8					& Sh. interbedded		
- 70	7.1	Adjoins JH-	HP/N = 52		Şs; N 13	° W / 55 ° W		
- 80		Walous Ju.	nr/ N = 3.4					

#### HP/N-S4

Th(m)	Lithology
17.0	Sandstone and siltstone interbedded with dark shales near the bottom of the interval; mostly sandstone, fine grain; salt and pepper; siltstone is dark grey; N15°W/55°W
8.6	Coal
1.3	Silty shale
0.2	Sandstone; fine grain; dark grey; weathers white- grey c some orange staining; N20°W/45°W
17.3	Sandstone and siltstone interbedded; some orange weathering
6.4	Sandstone; steeply dipping; appears contorted and could be faulted; medium grain; beige and dark; grey-banded; weathers grey and orange
5.3	Siltstone and sandstone interbedded
3.9	Sandstone; fine grain; light brown, grey and white; weathers light-grey and orange; anticlinal structure quite visible
4.4	Siltstone and sandstone interbedded; siltstone, grey to orange; sandstone grey, fine grain; bedded
36.8	Sandstone; medium to fine grain; grey-black and brown; weathers light grey c some pale orange staining; lower part of the formation is highly resistant; N15 W/49 W
10.0	Sandstone; fine grain; grey; weathers light grey; N10°W/55°V
1.7	Siltstone; grey; weathers light grey c small fragments
0.9	Sandstone; fine to medium grain; grey; weathers; $N17^{\circ}W/51^{\circ}W$ grey and pale orange; slightly resistant
4.5	Siltstone; darker grey; weathers lighter grey
1.3	Coal
0.5	Coaly shale grading to carbonaceous shale at top
2.1	Siltstone; orange weathering at top; grey near bottom; weathers to small fragments
1.9	Sandstone; fine grain; brown and grey; weathers light grey; N50°W/45°W

Th(m)	Lithology
6.3	Siltstone $\bar{c}$ minor sandstone; coaly material at 3.6 m from top of section; siltstone weathers orange
1.5	Sandstone; twisted; grey and brown; weathers light grey and orange; $N20^{\circ}W/80^{\circ}W$ to $80^{\circ}E$
13.9	Covered interval; siltstone and shale rubble
3.6	Sandstone; fine grain; dark grey; weathers light grey near bottom; top 2.1 meters of interval weathers orange; N25°W/55°W
6.0	Siltstone and shales interbedded; dark grey
18.3	Sandstone, siltstone and shales interbedded; partially covered interval
8.8	Sandstone; c minor sandstone bed in centre of interval (.3 cm thick); N20°W/60°W
2.3	Siltstone and sandstone interbedded $\bar{c}$ minor shale below coal seam
1.9	Coal
6.0	Siltstone; dark grey; weathers to small fragments
2.8	Sandstone; fine grain; brown and dark grey; weathers orange; $N25^{\circ}W/67^{\circ}W$
1.6	Siltstone; dark grey; weathers to small fragments
0.9	Coal
3.7	Siltstone; black; above coal, orange weathering then dark grey for rest of interval
9.8	Coal with shale and siltstone partings
2.3	Siltstone; dark grey; grading into a sandstone; N15°W/56°W; Top of interval is sandstone formation

PROJECT: NORTH BLOCK  AREA: BARE MOUNTAIN - EAST SLOPE  LOCATION: HAMMER PEAK/NORTH  SOURCE OF DATA: FIEL  CONTROL POINT  [m]  O  3.3  SItstn. grading into Ss.	DATE: 1978 JUL	Terranalis III
CONTROL POINT INTERVAL LITHOLOGY STRIKE & DESCRIPTION AMPLIFIED  [m]  -0	LD	- Ignapie u
CONTROL POINT INTERVAL LITHOLOGY STRIKE & DESCRIPTION AMPLIFIED  [m] -0		DESCRIPTION OF
[m] -0		-
m] -0		SAMPLE
-0 55.		
0 54		
5.5		
PASSAGE 1 TO THE PASSAGE STATE OF THE PASSAGE STATE		
10 (9.8) Coal with Sh. & Slistn. partings.		
3.7 *** Slista.		
Coal Sitste		
2.8 Ss.		
5.0 Slistn. & Sh. interbedded		
Coal	- C/- 51 -1 11-	
2.3 Siltstn. & Ss. interbedded, with minor top of Section.	cadly Sh. ar The	
3.1 Slistn with minor Ss. bed.		
0 8.8 5s.		
THIS PRINCE		
Partially covered Interbedded Ss; Strstn. & Shales.	2	
The last section of the la		
18.3		
Tomas - man		
Sltstn. & Shales. interbedded		
3.6		
Covered interval		
Sitsin. & Sh. rubble		
1.1 200000000000000000000000000000000000		
5.3 Sitstn. with minor Ss; Coaly mater	ial 3 5 m from htm of	raction
1.9	TO THE THE STATE OF	secrion
2.1 Sitstn; Or, weathering at bottom		
( ) the Y that Y think Y think Y think Y think Y		
0. 9 Constructive Control Control Control		
0 1.7 Slisin.	* .	
10.0		
0	×	
0 36.3		
0		
Sitstn. & Ss interbedded	(F	
3.9		
5.3 St. & Sitstn. interbedded.		
Ss; steeply dipping; may be faulte	rd.	
6.4	141	
Ss. & Sitstn interbedded		
17. 5		
0		
1.3 Shale		*
Coal		
0 (8.6)		
Ss. & Sitstn. interbedded.		
17.0		
0		
0		
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	HH-	

# HR-S2

Th(m)	Lithology
11.8	Sandstone; salt and pepper with brown grains; coarse grained; weathers light grey; massive; cliff; N20°W/65°W
6.5	Sandstone; fine grain; dark grey; weathers light grey and orange in places; less resistant; fine laminations
10.4	Sandstone and siltstone interbedded; dark grey; weathers light grey; weathers to small fragments; bright orange weathering siltstone at 6.3 m from bottom of interval
1.6	Sandstone; fine grain; grey; weathers brown and light-grey; 0.5 to 15 cm thick bedding; N25°W/40°W
1.8	Sandstone and siltstone interbedded; primarily siltstone; grey; weathers light grey; siltstone weathers to small fragments while sandstone is blocky; fine grain
1.7	Sandstone; fine grain; weathers to small fragments; grey; weathers light grey
0.3	Shale; carbonaceous
0.2	Coal and shale
0.3	Coal
0.3	Siltstone; dark grey; chunk weathering
4.0	Coal; hard
4.3	Covered; with coal and shale
10.0	Covered
0.2	Siltstone; grey
1.3	Coal
0.2	Siltstone; black
23.0	Sandstone; lower 12 m medium resist.; orange weathering at 5 m from bottom of interval; upper 11 m high resist., cliff forming, massive; brown and grey; fine-medium grain banded; weathers whitish grey with localized brown weathering; N15°W/58°W

STRATIGRAPHIC SECTION DESIGNATION					GNATION:	HR-S2 PART OF				
PROJECT: NORTH BLOCK				AUTHOR: J. HORACHEK DATE: 1978 JULY 16						
AREA: BARE MOUNTAIN - EAST SLOPE SOURCE OF DATA:										
LOCATION:	HAMMER	RIDGE					FIELD			
CONTROL	INTERVAL	LITHOLOGY	STRIKE		T-7.	DESCRIPTION				N2/27/27/24/24
SCALE		ETTTOLOGT	& DIP			AMPLIFIED			SAN	
[m]		Adjoins IR-TIO	(IR-S3)							
-0										
70										
-10	23.0		/		Ss; N 15	W / 58° W				
- 20										
	(1.7)				Coal; 0.2	?m Sltstn.at I	top & Btm. o	f interval		
- 30	10.0	$ \times $			Covered			41		
			<del>.</del>		80 N W	Sten				
- 40	4.3		3		Cool &	Sh.				
2	(4.0) 1:0 1:7	and the second s			Coal & S	hale				
	1. 7 1. 8 1. 6				Sitstn. Ss; N 25	°W/40°W				
- 50										
	10.4							1		
- 60	1		-5							
	6.5				55					
- 70					5s; N 20	°W / 65°W				
	11.8		(					2		
- 80										
									H4-21	P

## HAMMER RIDGE

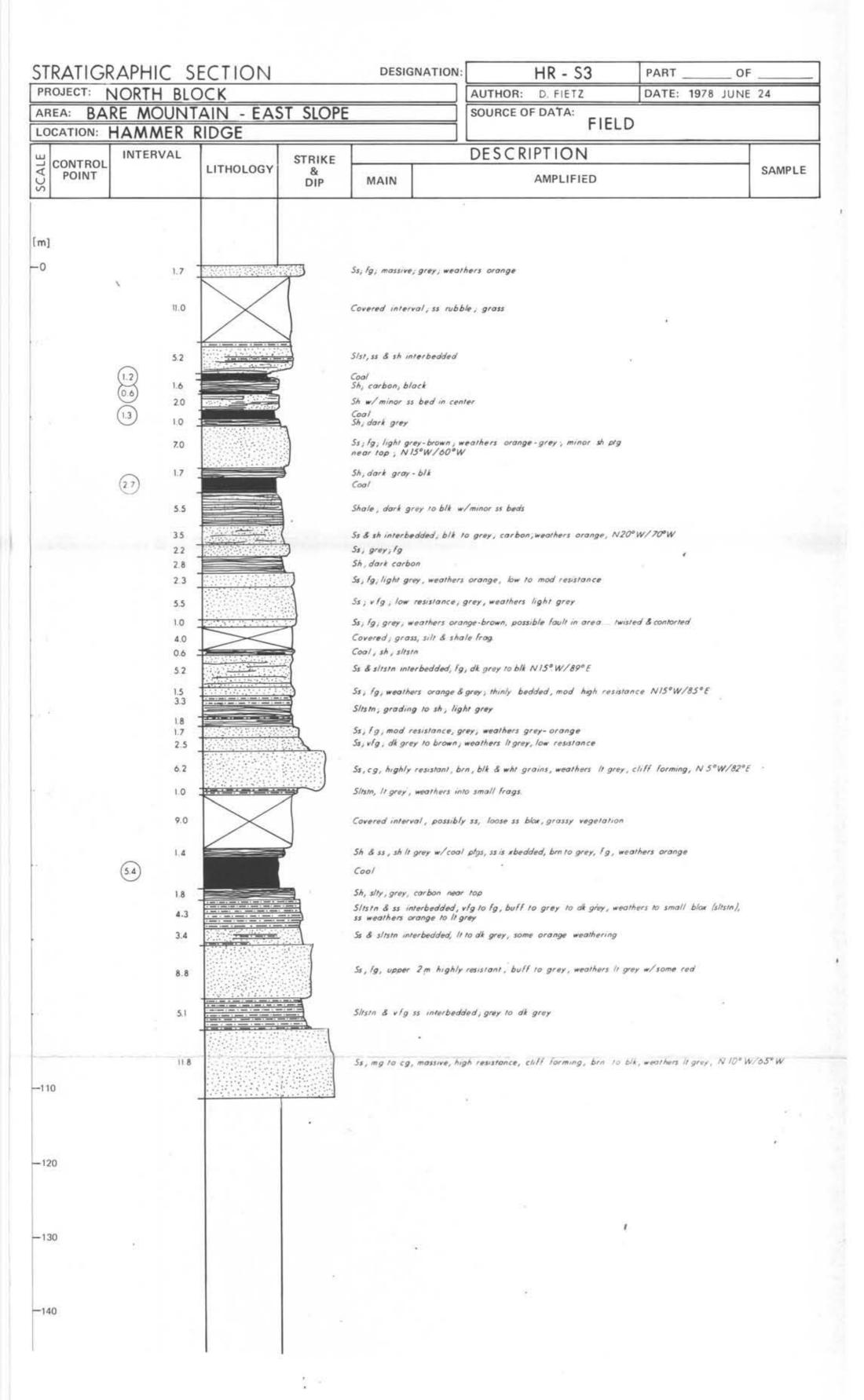
# 1978-06-24

## HR-S3

Th(m)	Lithology
11.8	Sandstone; medium-coarse grain; massive; high resistance; cliff-forming; brown to black; weathers light grey; N10°W/65°W
5.1	Siltstone with very fine grain sandstone interbedded; grey to dark grey
8.8	Sandstone; fine grain; 2 m of high resist. at top; buff to grey; weathers light grey with some red
3.4	Sandstone and siltstone interbedded; light to dark grey; some orange weathering
1.6	Siltstone; dark grey; weathers to small blocks
0.3	Sandstone; very fine grain; grey; some orange weathering
1.8	Siltstone; dark grey; weathers to small blocks
0.6	Sandstone; fine grain; buff to grey; fine bedded; weathers light grey
1.8	Shale; silty; grey; carbonaceous near top
5.4	Coal; with coaly shale partings
0.8	Shale; grey; with coaly partings
0.6	Sandstone; fine grain; cross-bedded; brown to grey; weathers orange
9.0	Covered interval; possibly sandstone; loose sandstone blocks; grassy vegetation
1.0	Siltstone; light grey; weathers to small fragments
6.2	Sandstone; coarse grain; high resist.; brown; black and white grains; weathers light grey; cliff forming; N5 <sup>O</sup> W/87 <sup>O</sup> E
2.5	Sandstone; very fine grain; dark grey-brown; weathers light grey; low resist.
1.7	Sandstone; fine grain; mod. resist.; grey; weathers grey-orange

Th(m)	Lithology
1.8	Siltstone and sandstone interbedded; very fine grain; light grey to dark grey; siltstone weathers to blocky fragments
3.3	Siltstone; grading to shale; light grey to dark grey
1.5	Sandstone; fine grain; grey; weathers orange; thinly bedded; med. high resist.; N15°W/85°E
3.5	Siltstone; dark grey; weathers to blocks; upper 0.5 m, orange weathering
0.5	Sandstone; fine grain; grey; weathers orange; bedded N15°W/89°E
0.2	Siltstone; black
0.4	Sandstone; fine grain; light grey-brown; weathers grey-orange
0.2	Siltstone; black; weathers to blocks
0.3	Coal
0.3	Shale grading to siltstone
4.0	Covered; grass; siltstone and shale fragments
1.0	Sandstone; fine grain; grey; weathers orange-brown; possible fault in area; twisted and contorted
5.5	Sandstone; very fine grain; low resist.; grey; weathers light grey
2.3	Sandstone; fine grain; light grey; weathers orange; low to med. resist.
2.8	Shale; dark; carbonaceous
2.2	Sandstone; grey; fine grain
0.5	Shale; black; carbonaceous
0.4	Sandstone; fine grain; grey; weathers orange; N20°W/70°W
0.5	Sandstone; fine grain; light grey; weathers light grey; bedded
0.2	Shale; black
0.3	Sandstone; light grey; fine grain
0.6	Shale; black

Th(m)	Lithology
0.2	Sandstone; fine grain; grey; weathers orange
0.4	Shale; black
0.4	Sandstone; fine grain; grey
5.5	Shale; dark grey to black; interbedded with minor sandstone beds
2.7	Coal
1.7	Shale; dark grey; black
7.0	Sandstone; fine grain; light grey-brown; weathers orange grey; minor shale partings near top; N15°W/60°W
1.0	Shale; dark grey
1.3	Coal
2.6	Shale with minor sandstone bed in center
0.6	Coal
1.6	Shale; carbonaceous; black
1.2	Coal
0.2	Sandstone; fine grain; light grey-brown; bedded; weathers light grey-orange
5.0	Siltstone; sandstone and shale interbedded
11.0	Covered interval; sandstone rubble, grass
1.7	Sandstone; fine grain; massive; grey; weathers orange; N15°W/75°W



HR-T1	<ul> <li>measured strat. lower to higher</li> </ul>			
	• trench particulars: Az: 255° Length: 14.5 m Depth: 0.3 m Width: 0.3 m			
Th(m)	Lithology			
4.6	Sandstone; $N25^{O}W/52^{O}W$ ; medium grain; grey to white; weathers grey			
Start of HR-Tl				
4.5	Sandstone and siltstone interbedded; fragmented; fine grain; grey to dark grey			
0.3	Sandstone; very fine grain; weathers orange to red; beige on fresh fract.; hard			
1.6	Sandstone and siltstone interbedded; fine grain; grey to black; fragmented			
1.1	Coal and carbonaceous shale interbedded			
6.3	Coal; minor cg (almost congl'); iron stained sandstone (0.03 m thick) at 1 m from base of interval; coal harder at base than at top; high lustre on fresh surface; HW contact uncertain			
End of HR-T1				
NOTE:	Cover too thick (greater than 1 m)still appears to be coal at last trenched location			
2.0	Covered interval			
9.5	Sandstone; beige to brown; weathers grey to off-white; fine grain to medium grain (near top of unit); N15°W/80°W; minor cliff former			

	RAPHIC S			DESI	GNATION:	HR-T1	PART	OF
	ORTH BLO				AUTHOR: D. FIETZ	DATE: 1978	JULY 23	
AREA: BAR	E MOUNTA	AIN - EAST	SLOPE			SOURCE OF DATA:		
	HAMMER F					FIEL	D .	
W CONTROL	INTERVAL		STRIKE		183	DESCRIPTION		
SCALE		LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
[m]								
-0		**************				NOT VINUENCE		•
	9.5				5s., N 15	° W / 80° W		
- 10 -	2.0				Covered			
	6.3				Coal wit	h 3 cm Fc staining S	s.	
- 20	1.1 =				Cool & C Ss. & SI	Carb. Shale interbedded.		
Ï	0.3 = 4.5 =				5s. & 51	tstn. interbedded.		
	4.6				5 s., N 2	5° W / 52° W		
-30 ₹								
	9							
40								
				*				
			*				h	
		ia .				8		
								HG-21
-60								

#### HAMMER RIDGE

1978-07-19

HR-T2

- ullet measured strat. lower to higher
- 250<sup>0</sup> • trench particulars: Az: 17.0 m 0.3 m 0.3 m Length: Width:

Depth:

Th(m)	Lithology
Start of HR-T2	
1.0	Sandstone; off-white to grey; weathers grey; N20 W/vertical; forms minor ledge
1.3	Sandstone and siltstone interbedded; dark grey to black; siltstone fragmentedsandstone hard
0.8	Coal and carbonaceous shale
0.9	Coal
1.6	Shale and siltstone interbedded; dark grey to black; fragmented on weathered surface
1.1	Shale with coaly debris; black
1.1	Siltstone and shale interbedded with minor coaly debris; dark grey to black
2.2	Coal and shaley coal interbedded
2.2	Siltstone; dark grey to black; fine grain; 0.2 m coal at 1.3 m from bottom of interval
2.9	Coal and coaly shale interbedded
1.1	Siltstone; fine grain; beige; weathers to small fragments
2.0+	Coal; cover too deepat end of trench, depth of cover 1 m; at end of trench still in coal

End of HR-T2

STRATIGRAPHIC S	ECTION		DESIG	SNATION:	HR-T2	PART	OF
PROJECT: NORTH BLOC				AUTHOR: DF	DATE: 19		
AREA: BARE MOUNTA	IN - EAST	SLOPE		SOURCE OF DATA:			
LOCATION: HAMMER RI							
ш INTERVAL					DESCRIPTION		
CONTROL	LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
[m]							
-0				Cooling	re present, cover too deep	,	9
(20)	Part Inches		*	Slesen	re present, cover 100 deep		
(2.0)	2 47 42 22 14 1			Coal 8 5	haly Coal interbedded		
-10 \(\frac{2}{\pi}\) \(\frac{2.7}{(2.2)}\)					ith a minor Coal seam Shaly Coal interbedded		
0.9 1.6 0.9 0.8 1.3		7		Shale wi Shale & Coal Coal & Ss & Sl	Shale with minor Coal th Coaly debris Sltstn. interbedded Carb. Shale tstn. interbedded W/S20°	debris	
(a)				33. 14 20	W / 3 20		
_ 30					E 10		
							HG-21J

IR-T3

- measured strat. lower to higher
- stratigraphically, the start of trench lies 3.4 m above the lower adjacent cliff forming sandstone (5°W/50°W)

• trench particulars: Az: 255° Length: 23.8 m

Width: 0.5 m Depth: 0.8 m

#### Th(m) Lithology Start of IR-T3 4.5 Siltstones with sandstone interbeds; fine grain; dark grey to black; weathers off-white to grey; minor orange staining 2.2 Siltstone; fine grain; dark grey to black; weathers to small fragments 6.3 Coal with thin shale partings; coal, in portions, is very hard 0.4 Carbonaceous shale with minor coaly particles 0.6 As above, but with more coaly particles 2.1 Unconsolidated debris...rubble is primarily beige fragmented siltstone 1.2 Siltstone; black to grey; fine grain; very fragmented 2.3 Carbonaceous and coaly shale 1.1 Coal and shaley coal interbedded; shale parting at 0.75 m from bottom of interval 4.0 Siltstone and sandstone interbedded; beige to grey to brown; minor thin coaly layers (0.02 m thick at

1.5 m from bottom of interval)

End of IR-T3

				ECHON		DES	IGNATION:	IK-13	PART	OF
PROJECT: NORTH BLOCK								AUTHOR: DF	DATE: 19	78 JULY 23
_	REA: BAR							SOURCE OF DATA:	ELD	
LC	CATION:	RON R	IDGE							
E	CONTROL	INTER	VAL	LITUOLOGY	STRIKE			DESCRIPTION		
SCALE	POINT			LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
[m]	ì					2				
-0			4.0	11.7.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1						
		(1.1)	1.1		_}		Coal & 1	Shaley Coal		
			2.3				Carb. & Sitstn.	Coaly Shales		•
- 10	0		2.1				Sitstn.	ale with minor Coal pa	rtings	
		6.3	,,,	7 8 10 4			Coal		-	
- 2	0		2.2		=		Slistn.			
			4.5		<del>-</del> 3		Ss. & S/1	stn. interbedded.		
	#E				A A					
- 3	0									
		3								
				1-						
	*									
						1				

146-214

 lowest strat. unit measured in IR-T10 adjoins highest unit (major cliff forming sandstone) measured in HR-S2

IR-S3 (including IR-T4, T5, T6, T7, T8, T9, T10)

• measured strat. lower to higher

IR-T10 • trench particulars: Az: 255°

Length: 18.5 m

Width: 0.3 m

Depth: 0.8 m

Th(m) Lithology

Start of IR-T10

O.4 Sandstone; fine grain; orange weathering; dark grey; N15°W/45°W

13.2 Sandstone and siltstone interbedded; beige; material is rubbly and broken; minor orange weathering; at 12.4 m from bottom of interval sandstone; N20 W/40 W

End of IR-T10

4.0 Sandstone; massive; cliff-forming; medium grain; salt and pepper; weathers grey to orange stain; N15°W/50°W

12.0 Sandstone; as above; 0.05 m coal seam at top of interval

12.8 Sandstone; as 1st interval; cliff-former except for upper 2 m

IR-T4 • trench particulars: Az: 255°

Length: 17.6 m
Width: 0.1 m
Depth: 0.1 m

Th(m) Lithology

Start of IR-T4

7.4 Sandstone and siltstone interbedded; grey; fine grain; weathers grey; interval is broken and rubbly

1.8 Sandstone; grey; fine grain to medium grain; weathers grey to orange; N10°W/57°W; forms ledge

7.7 Sandstone and siltstone interbedded; grey; fine grain; weathers grey to orange; interval is rubbly and broken

1R-T8	• trench particulars: Az: 250°  Length: 10.4 m  Width: 0.3 m  Depth: 0.8 m
Th(m)	Lithology
Start of IR-T8	· · ·
4.8	Siltstone; black to grey; fine grain; rubbly and broken
2.1	Siltstone and sandstone interbedded; grey to orange; broken and rubbly
0.6	Sandstone; grey; fine grain; weathers off-white; forms ledge; N15°W/vertical
0.8	Carbonaceous shale; black; minor coaly debris
0.6	Coal
1.3	Shale; grey; rubbly and broken
End of IR-T8	
0.9	Sandstone with 0.15 m thick black shale at mid- interval; sandstone is medium grain; grey to beige; weathers grey to orange; forms minor ledge; N15 W/vertical
IR-T9	• trench particulars: Az: 255°  Length: 10.4 m  Width: 0.5 m  Depth: 1.2 m
Th(m)	Lithology
Start of IR-T9	
0.9	Shale grading to siltstone; black; weathers to small fragments
1.3	Coaly shale; soft
0.4	Carbonaceous shale; hard; orange weathering
1.3	Coal; soft
0.3	Carbonaceous shale; hard; orange weathering
1.4	Coal with brown shale partings
1.0	Carbonaceous shale; orange weathering
1.0	Sandstone; medium grain to fine grain; beige to grey; weathers orange; N20°W/67°E

page 4 of IR-S3 (including IR-T4, T5, T6, T7, T8, T9 & T10)

Th(m)

1.8 Shale to siltstone; brown; material is broken and rubbly

Lithology

End of IR-T9

IR-T5	• trench particulars:	Az: Length: Width: Depth:	245° 7.4 m 0.5 m 1.5 m
Th(m)	<u>Li</u>	thology	
Start of IR-T5			
0.5	Sandstone and siltston weathers grey to orang		
1.0	Shale; brown; grading 0.3 m of coaly debris		
4.8	Coal; shale parting (Cobottom of interval)	.15 m thick a	at 0.30 m from
End of IR-T5			
3.4	Covered interval; too	deep to trend	ch
4.0	Sandstone; medium grai weathers grey; forms m		
IR-T6	• trench particulars:	_	260° 5.2 m 0.3 m 0.3 m
Th(m)	<u>Li</u>	thology	
Start of IR-T6			
5.0	Siltstone and sandstor base of interval, orar is broken and rubbly		
End of IR-T6	•		
IR-T7	• trench particulars:	Az: Length: Width: Depth:	255° 11.8 m 0.3 m 0.3 m
Th(m)	<u>L</u> 1	thology	
Start of IR-T7			
10.0	Siltstone and sandston weathering; material		
0.8	Siltstone; black to gr broken	ey; fine gra	in; rubbly and

STRATIGE	RAPHIC S	ECTION		DES	IGNATION:	IR-S3		PART	OF _	
	OJECT: NORTH BLOCK					AUTHOR: DF		DATE: 197	78 JULY 23	
The second secon	MOUNTA		SLOPE			SOURCE OF DAT	A:			
LOCATION:	RON RIDGE	1								
SCALE	INTERVAL	LITHOLOGY	STRIKE & DIP	MAIN	T	DESCRIPTION	JFIED			SAMPLE
05			9							
-10   -10	1.8 1.0 1.0 1.0 0.4 2.2 0.6 2.1 4.8 4.8 4.8 1.0 0.3 7.7 1.8 7.4 12.8		DIP	173-23000-0	Coal, Sh. Ss., N 15 Ss., N 15 Ss. & S/ts  S/tstn  Ss. & S/ts  Ss. & S/ts  Covered.  Coal, son Sh; Carb. Ss. & S/t  Ss. & S/t  Ss. N 10 Ss. & S/t  Ss. & S/t  Ss. N 20° W	tstn. W/67°E ha 0.3 m Sh ing to a Coaly S V/90° th; interbedded  th. interbedded  W/40°W  The small Sh. park at the top of th stn. interbedded.	parting.  h.  tings.  he interval			
		الماري والما								
								-		

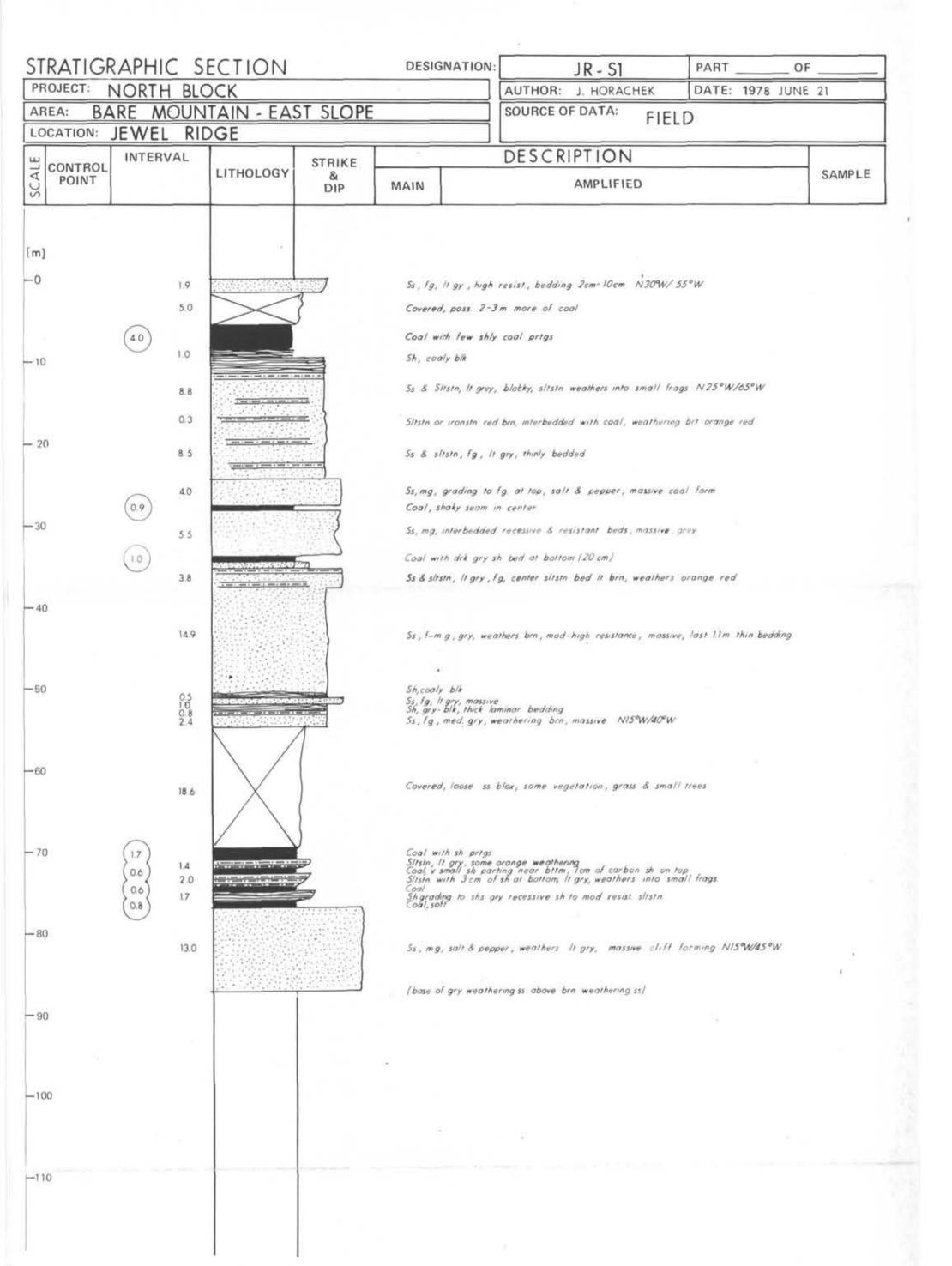
JR-S1

Th(m)	Lithology
13.0	Sandstone; MMM; massive; dark grey; salt and pepper; medium grain; small fault observed at right angles to bedding; displacement 2.5 m
0.8	Coal; bright; soft
0.9	Shale; light grey; recessive thin laminations; grading to siltstone
0.8	Siltstone; grey; medium resist.
0.6	Coal
0.3	Shale; grey
1.7	Siltstone; light grey; weathers to small fragments
0.5	Coal with small shale parting near bottom
0.1	Shale; carbonaceous
1.4	Siltstone; moderate resistance; light grey; some orange weathering
0.4	Coal
0.1	Shale parting
0.4	Coal with small shale parting near bottom
0.3	Shale with 0.1 m thick siltstone bed in centre
0.2	Coal
0.2	Shale; grey
0.1	Coal
18.6	Covered Section; loose sandstone
2.4	Sandstone; massive; fine grain; medium grey; weathering to brown; N15 W/40 W
0.8	Shale; medium resist; thick laminar bedding
1.0	Sandstone; massive; fine grain; light grey
0.5	Shale; coaly; black
15.0	Sandstone; massive; fine to medium grain; grey; weathers brown; thin layering near top; upper 3 m medium to high resist.

Th(m)	Lithology
1.9	Sandstone; fine grain; grey; thin bedding
0.4	Shale; dark grey
0.7	Sandstone; massive; laminar; very fine grain
0.3	Siltstone; grey
0.2	Siltstone; light brown; weathers orange-red
0.4	Siltstone; grey
0.7	Sandstone; light grey; fine grain
1.5	Siltstone; grey
0.2	Shale; dark grey
0.8	Coal
0.4	Siltstone; light grey
6.5	Sandstone; massive; interbedded recessive and resistant beds
0.1	Coal
0.5	Shaley coal
0.3	Coal
4.0	Sandstone; massive; cliff forming; salt and pepper; medium grain grading to fine grain at top
0.8	Siltstone; light grey; thinly bedded
7.3	Sandstone; massive; salt and pepper; fine-medium grain
0.4	Sandstone and siltstone interbeds
0.3	Siltstone with interbedded coal
0.5	Siltstone; light grey
0.8	Sandstone; salt and pepper; fine grain; massive; (possible fault in area) N25°W/65°W
1.2	Siltstone; light grey
0.3	Sandstone; blocky; weathers grey
0.9	Sandstone; blocky

page 3 of JR-S1

Th(m)	Lithology
3.8	Siltstone; recessive; weathers into small blocky fragments
1.0	Shale; black; coaly .
4.0	Coal with shaley coal partings
5.0	Covered possibly 2 - 3 m more of coal
1.9	Sandstone; high resist; light grey; fine grain bedding 2 to 10 cm thick: N30 W/55 W



## KR-S1 (including KR-T1)

Th(m)	Lithology
?	Coal; covered with soil and boulders
4.3	Covered interval
11.9	Sandstone cliffforms ridge south of Bare Mountain
5.1	Sandstone and siltstone; fine grain; interbedded with 3 - 0.5 m thick layers of minor cliff forming sandstone
7.3	Sandstone cliff; crossbedded; medium grain; salt and pepper; laminated
5.6	Siltstone; finely weathered fragments
0.9	Coal
2.6	Siltstone; finely weathered fragments; brown to grey
4.8	Sandstone
4.3	Sandstone and siltstone interbedded
36.6	Siltstone; very fine grain; fine weathering fragments; black
8.5	Sandstone; cliff-forming
14.0	Sandstone; interbedded with minor siltstone
3.3	Sandstone; fine grain; bottom 0.3 m interval orange weathering
6.8	Siltstone
0.8+	Sandstone; fine grain; fine bedding
3.5	Sandstone; cliff forming
5.7	Covered but may be siltstone
1.2	Sandstone
Start of KR-Tl	
3.6	Siltstone; black
10.5	Coal; N12°W/52°W

page 2 of KR-S1 (including KR-T1)

Th(m)	Lithology
3.8	Siltstone
0.2+	Sandstone; orange weathering

End of KR-Tl

STRATIGRAPHIC SECTION	DESIGNATION	KR - \$1	PART	OF
PROJECT: NORTH BLOCK		AUTHOR: J. HORACHEK	DATE: 1978 J	ULY 4
AREA: BARE MOUTAIN - East Slope	1	SOURCE OF DATA:	r .	
OCATION: KANSAS RIDGE	<u> </u>	DESCRIPTION	-	1
CONTROL INTERVAL LITHOLOGY & DIP	MAIN	AMPLIFIED		SAMPLE
m) 0 02 3.8 10 KR-T1 10.5	Coal, N12	weathering		
20 1.2	Ss Covered	orobably Slisin.		
3.5 3.6 3.8 3.3 3.3	Ss , cliff for Ss , f.g. , fine Sltstn	ming (minor), massive		
50	Ss , interb	edded with minor Sitstn		
60 8.5	Ss, cliff fo	rming		27
3.6		g., fine weathering fragments , blk		
70	Ss & Sirsir	n. interbedded		
4.8 2.6 5.6	Sitstn., fin Coal	ely weathered fragments, Lrown, grey e weathered fragments		
-90 7.3	Ss, m.g.,c	liff., solt & pepper laminated, X-bed	ded	
5.1	Ss. & Sitst of minor o	n., fg., interbedded with 3-0.5 m this cliff. forming Ss	ck loyers	
-100 11. <b>9</b>	Ss , cliff , i	forms ridge south of Bare Mtn.		
-110	Covered in	nterval		
-120	Coal, cove	ered with soil & rocks	•	

## MELISSA RIDGE

# 1978-07-13

## MR-T1

Th(m)	Lithology
3.2	Siltstone and shale
0.6	Coal; dirty
0.2	Coal; good
0.1	Siltstone
0.5	Coal; good
0.3	Sandy shale (siltstone)
0.6	Coal
3.4	Shale
0.6	Coal; dirtyclean at top
0.4	Siltstone - carbonaceous shale - sandstone parting
0.5	Coal; good
0.1	Shale
0.6	Coal; good
0.2	Coaly shale
0.2	Coal; very soft
0.2	Shale
0.6	Coal; good; fairly hard
0.2	Shale; HW
0.1	Siltstone
0.7	Shale, coaly; with a few very thin coal stringers
0.6	Shale; grading to siltstone
0.3	Siltstone
0.3	Coal seam
0.6	Shale

STR	ATIGH	RAPH	IC S	ECTION		DES	IGNATION:	MR-TI	PART	OF
PROJECT: NORTH BLOCK						AUTHOR: JH	78 JULY 14			
	A: BAR			IN (EAST	SLOPE)			SOURCE OF DATA: 1	,	
ш	ONTROL	INTER	RVAL		STRIKE			DESCRIPTION		
SCALE	POINT			LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
[m] -0		(0.25) (3.2) (2.4)	0.6 1.8 3.9				Sh.	h a few Sh. partings		Time to the state of the state
- 20			٠			1-				
	8									H6-21W

## MELISSA RIDGE

## 1978-07-13

# MR-S1 (including MR-T2 & MR-T3)

Th(m)	Lithology
Start of MR-T2	
1.9	Coal; 0.3 m below the top lies good coal; beneath it is 0.2 m shaley coal
0.2	Shale
3.6	Coal
End of MR-T2	
16.0	Sandstone; medium grain; cliff-forming
13.5	Covered; traces of coal
11.0	Sandstone; light grey; medium to fine grain; thinly layered; upper interval, orange-weathering cliff forming
Start of MR-T3	
2.1	Siltstone
0.4	Coal
3.4	Shale to siltstone
0.2	Sandstone
2.5	Siltstone
1.4	Coal; bottom 0.3 m rather shaley
0.4	Shale parting
2.1	Coal; dips 58°W
2.4	Siltstone; with minor sandstone
End of MR-T3	

STRATIGRAPHIC SECTION DESIGNATION: MR-S1 INCLUDES MR-T2 & T3 PART OF PROJECT: NORTH BLOCK AUTHOR: J. HORACHEK DATE: 1978 JULY 14 AREA: BARE MOUNTAIN-EAST SLOPE SOURCE OF DATA: FIELD LOCATION: MELISSA RIDGE DESCRIPTION INTERVAL SCALE STRIKE CONTROL LITHOLOGY SAMPLE & DIP POINT **AMPLIFIED** MAIN [m] -0 Slistn. & some Ss. 2.4 Sh. parting Coal seam, Shaly@bottom 0.3 meters. Sltstn. Ss. Coal seam 0.45 - 10 Sh. to Slistn. 3.4 Cool seam Slistn. 2.1 -20 55 11.0 -30 Covered interval 13.0 - 40 Sitsta , Bk 0.5 Cliff forming Ss. 16.0 -50 Cool seam Sh. parting Coal Seam -70 H6-21P

#### MELISSA RIDGE .

#### 1978-07-07

## MR-T4

Th(m)	Lithology
	Covered
0.8	Siltstone; dark grey; coarse fragments
7.8	Coal
0.4	Shale; grading to siltstone
2.0	Coal; lower 35.0 cm mixed with thin shale partings
5.0	Covered
0.5	Siltstone; dark grey; fine weathering
0.7	Sandstone; fine grain; orange weathering; N20°W/72°W

STRATI	GRAPHIC SI	ECTION		DESIG	SNATION:	MR-T4	PART	OF
PROJECT: NORTH BLOCK						AUTHOR: J. HORACHEK	DATE: 1978	JULY
	ARE MOUNT		T SLOPE		SOURCE OF DATA: FIELD			
LOCATION	N: MELISSA R	IDGE						
CONTR	INTERVAL		STRIKE			DESCRIPTION		OAMBLE.
SCALE	T	LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
[m]							14	
-0	0.7				s- 6- 0	or, weathering N 20° W /42° W		•
	0 .7 0 .5 5 .0		7		Sitstn; D	k. Gy; fine weathering		
	(2.0)		<u>ا</u>			er 35cm mixed with thin Shing to Slista	partings	
- 10	0.4					ng to Sitsin		
	(7.8)		ME LE		Coal			
1-2000	0.8		-		Sitstn; D	k. Gy; rather coorse fragm	ents	
-20						5)		
						× 161		
	•							
		- 10						
*			1					
	a							HG-210
2							9	
_60		5						

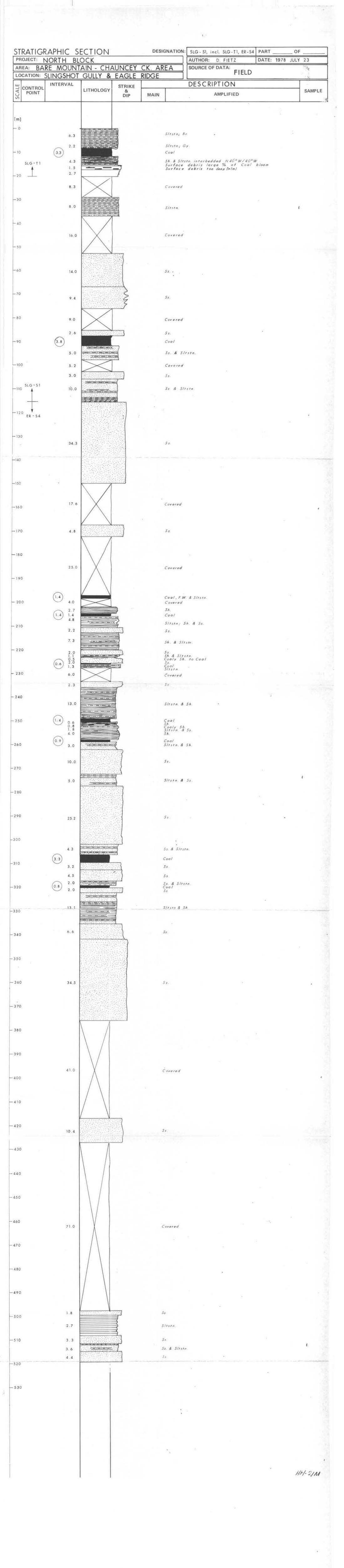
## SLG-S1 (including SLG-T1)

- measured strat. lower to higher
- $\bullet$  bottom of measured interval is higher stratigraphically and adjoins top measured sandstone in ER-S2

Th(m)	Lithology					
10.0	Siltstone and sandstone interbedded; black to beige- brown; fine grain; siltstone weathers to small fragments					
3.0	Sandstone; fine grain; grey; thinly laminated; weathers grey to beige; N25°W/48°W					
5.2	Covered interval					
6.0	Siltstone and sandstone interbedded; fine grain; beige to rust to black; material weathers to small fragments; FW is sandstonefine grain; grey; weathers light grey to rust; N25°W/45°					
3.8	Coal; upper 0.4 m shaley					
2.6	Sandstone; fine grain; olive brown; weathers pink to orange; N25°W/42°W					
9.0	Covered interval, but surface rubble would indicate siltstone and sandstone interbedded					
9.4	Sandstone; fine grain to medium grain; grey weathers orange to beige; forms prominent ledge; N25°W/49°W					
14.0	Sandstone; as above except does not form ledge					
16.0	Covered interval (sandstone?)					
8.0	Siltstone interbedded; beige to black; weathers to small fragments					
8.3	Covered interval					
Start of SLG-Tl						
2.7	Surface debris to 1 m deep					
1.5	As above, but with large % of coal bloom throughout; bedrock not exposed					
4.3	Shale and siltstone interbedded; brown; fine grain; weathers to small fragments; good separation with FW of coal seam with siltstone; N40°W/40°W					

page 2 of SLG-S1 (including SLG-T1)

Th(m)	Lithology
3.3	Coal; bottom 1.5 of intervalhigh ash coal
2.2	Siltstone; grey; fine grain; weathers off-white; weathers to small fragments
6.3	Siltstone; brown; fine grain; weathers beige; weathers to small fragments
End of SLG-T1	
SLG-T1	• trench particulars: Az: 245°  Length: 23.0 m  Width: 0.4 m  Depth: 1.0 m



#### SLINGSHOT GULLY

#### 1978-07-26

	.13	

- measured strat. lower to higher
- trench particulars: Length: 4.9 m Width: 0.4 m Depth: 1.0 m

Th(m)	<u>Lithology</u>
1.2	Sandstone; fine grain; beige and grey; weathers pink; N12°W/50°W
0.6	Coal
0.4	Shale
1.0	Coal
1.2	Siltstone and shale
1.5+	Sandstone; fine grain; beige and grey;

weathers orange

STRATIO	GRAPHIC S	ECTION			SLG - T2 AUTHOR: BA	PAR	10/15		
PROJECT:	PROJECT: NORTH BLOCK						DAT	E: 1978 AUG	1
AREA: C	AREA: CHAUNCEY CREEK AREA					SOURCE OF DATA	:		
LOCATION	LOCATION: SLINGSHOT GULLY								
W CONTR	INTERVAL		STRIKE			DESCRIPTIO	N		SAMPLE
SCALE	r r	LITHOLOGY	& DIP	MAIN		AMPLI	AMPLIFIED		
[m]									,
						*			0.54
-0	1.5	SACREMENT OF			Sh. & Sitst	n. Sh. parting			
	(2.0) 1.2	***************************************	TOTAL STATE		Ss.	Sm. parring			
- 10									
10									
			8						
	•								
1		l l							

14

# SLINGSHOT GULLY

# 1978-07-27

## SLG-T3

Th(m)	Lithology
4.0	Sandstone
6.5	Covered; probably sandstone and siltstone
4.0	Covered; probably sandstone
1.4	Siltstone grading to carbonaceous shale
0.5	Coaly shale
1.0	Coal
2.0	Covered
7.0	Covered c sandstone fragments
5.0	Sandstone

- + 6-1F

STRATIGE	APHIC SE	ECTION		DESI	GNATION:	SLG-T3	PA	ART	OF
PROJECT: NORTH BLOCK					AUTHOR: JH	DA	DATE: 1978 JULY 31		
AREA: CHAUNCEY CREEK AREA					SOURCE OF DATA:				
LOCATION: S	LINGSHOT	GULLY							
ш INTERVAL			STRIKE			DESCRIPTION			
CONTROL		LITHOLOGY	& DIP	MAIN		AMPLIFI	ED	SAMPLE	
[m] - 0	5.0				Ss.				
- 10 - 20	7.0 2.0 0.4 1.4 4.0 6.5				Covered Coal Coaly Sh Sitstn. Covered:	potholes show Ss.			
- 30	4.0				Covered:	probably 5s. & 5lts	ta.		
- 40									
_ 50									

## SPG-S1

Th(m)	Lithology
2.5	Sandstone; dark grey; fine grain; fine layered 0.5 - 5.0 cm; some layers orange weathering
2.6	Sandstone; as above; fine grain to medium grain but layers are 2.0 - 20.0 cm thick; cross-bedded; dark and tan brown laminations
0.9	Siltstone; dark grey; weathering to polygonal fragments; grading into following sandstone
1.0	Sandstone; grey; fine grained; massive; orange weathering
4.7	Sandstone; coarser and finer grained layers interbedded; some siltstone layers included
1.0	Sandstone; massive; medium grain; orange weathering; N25°W/33°W
0.6	Siltstone and shale; carbonaceous in the middle
0.7	Sandstone
0.4	Shale
1.0	Sandstone; massive; layers 2.0 - 15.0 cm. thick
NOTE:	in this area tear faults (almost perpen. to the strike) were observed; spacing along the slope - (horizontally) about 8 mdisplacement at one, approx. 1 m
1.1	Siltstone; interbedded with thin coaly shale and coal stringers
1.2	Sandstone; grey; fine grain
0.4	Shale; carbonaceous
2.4	Siltstone & shale interbedded
0.7	Sandstone; fine grain; thin layered; orange weathering
5.8	Sandstone; light grey; medium grain; N10°W/34°W; massive, cliff forming; layers up to 60.0 cm thick
1.8	Sandstone; thin layered 0.5 - 3.0 cm

Th(m)	Lithology
3.9	Siltstone; dark grey to black
0.8	Coal; bottom 15.0 cm shaley
3.0	Siltstone
2.1	Sandstone; minor cliff
0.8	Siltstone to carbonaceous shale
1.6	Siltstone; grading to fine grain sandstone
1.3	Siltstone
0.3	Sandstone; fine grain; light grey
0.3	Shale
0.3	Sandstone
0.5	Shale
0.7	Sandstone with orange weathering layers
1.2	Sandstone; cliff forming; fine grain; dark to light grey
0.3	Siltstone grading to sandstone; fine layers
0.5	Sandstone
2.9	Siltstone with minor sandstone layers; dark grey
2.3	Sandstone; N25°W/75°W; minor thrust fault displacement not significant
0.6	Siltstone; grey
0.2	Siltstone; orange weathering
1.6	Sandstone and siltstone interbedded
3.7	Siltstone grading to brown shale
0.1	Coal
0.4	Coaly shale
0.2	Coal
1.4	Coaly shale with coal layers
0.2	Siltstone; dark grey
3.9	Coaly shale grading to shale and siltstone

Th(m)	Lithology
4.5	Siltstone; dark grey to brown
0.9	Sandstone; weathers orange; very fine grain; massive; clean grey
2.3	Siltstone; black; weathering into tiny "needle-like" fragments
0.1	Sandstone; weathers orange; very fine grain
7.9	Siltstone; black; needle fragments
0.3	Coal
2.3	Siltstone; black; needle fragments
2.5	Sandstone; orange weathering; disturbed
2.3	Siltstone; black and brown layers; disturbed
1.4	Siltstone; disturbed; FAULT ZONE
1.9	Siltstone
0.6	Siltstone; more massive; dark grey to black; weathers to large polygonal fragments
4.7	Siltstone; very fine fragments; dark grey to black; upper 40.0 cm contains coaly stringers
0.4	Sandstone; very fine grain; grey; orange weathering
0.5	Siltstone; grading to shale
0.2	Shale; coaly
0.5	Siltstone; grading to shale
0.2	Shale; coaly
0.5	Coal interbedded with shale
0.9	Shale; N20°W/35°W
1.1	Coal; separation with floor is good; separation with roof is poor; coal is blocky
0.2	Siltstone
0.3	Coal; soft; roof is carbonaceous shale grading to siltstone
3.2	Siltstone; weathers to small fragments; thin stringer of coal in centre

Th(m)	Lithology
0.3	Sandstone; fine grain; orange weathering; grey
2.3	Siltstone; as above
0.1	Sandstone; orange weathering
0.8	Siltstone; black; fine fragments
0.1	Siltstone; chert-like; massive; milky blue weathering; minor thrust fault with 10.0 cm. displacement
9.7	Siltstone; dark grey; black; grading to sandy siltstone; in upper 1.5 m interval
1.2	Sandstone; N15°W/35°W; Fault N23°W/24°W; displacement 35.0 cm; Sandstone is fine grain, massive, grey, orange weathering
0.9	Siltstone grading to shale; dark grey to black
0.1	Coal
0.1	Shale; dark grey
1.0	Siltstone; black
0.8	Sandstone; weathers orange; red; fine grain
0.8	Shale grading to siltstone; black
0.3	Coal
0.1	Shale
0.1	Coal
0.3	Coaly shale
0.2	Coal
0.2	Shale
0.1	Coal
0.1	Shale
0.5	Coal
3.0	Coal
0.8	Shale; carbonaceous
0.2	Sandstone; fine grained; light grey

Th(m)	Lithology
0.4	Shale; coaly in the middle; dark grey
0.5	Sandstone
0.4	Shale; carbonaceous
6.1	Sandstone; cliff forming; lower half appearing grey; upper half orange weathering; thickness increased due to two or three minor thrust faults
5.6	Siltstone
0.3	Sandstone; N20°E/45°W
0.4	Siltstone; dark grey
0.3	Sandstone; thin layers; fine grain
0.8	Siltstone
1.2	Sandstone and siltstone; NO5°W/28°W
3.8	Siltstone; grey
0.3	Sandstone; weathers orange; fine grain; grey
NOTE:	Minor thrust fault suspected; displacement about 80 cm
0.5	Shale; dark grey
0.9	Coal
0.5	Sandstone; grey; fine grain; thin layers; soft
4.2	Sandstone; fine grained; cliff forming
3.0	Siltstone grading to sandstone
1.2	Sandstone; fine grain; cliff forming
0.5	Siltstone
0.5	Sandstone
1.1	Shale and siltstone with a coaly stringer at mid-interval
1.8	Sandstone; cliff forming; lower 40.0 cm. orange
0.7	Siltstone

Th(m)	Lithology
11.5	Sandstone; fine to medium grain; grey; cliff forming; interbedded with siltstone, less than 1 m thick; on the surface, the massive sandstone layers form terrace-like features
1.1	Siltstone; dark grey
0.3	Coal
0.4	Shale Shale
0.1	Coal
0.2	Shale
0.1	Coal
10.2	Sandstone; medium-coarse grain; forms a major cliff
1.6	Sandstone; grey; fine grain; orange weathering
1.8	Siltstone with minor sandstone layer
1.9	Siltstone and sandstone interbedded
1.1	Siltstone grading to very fine grain sandstone
0.4	Sandstone
4.3	Siltstone; dark grey
7.3	Sandstone with minor siltstone beds
15.0	Siltstone grading to shale
6.0	Coal

NORTH BLOCK AUTHOR: J. HORACHEK DATE: 1978 JUNE 18 BARE MOUNTAIN - EAST SLOPE AREA: SOURCE OF DATA: FIELD SNOW PEAK GULLY LOCATION: DESCRIPTION INTERVAL STRIKE CONTROL SCAL LITHOLOGY 8 SAMPLE POINT AMPLIFIED DIP MAIN [m] Covered by snow & grass & probably -0 (6.0) Cool -10 15.0 Sitstn. grading to Shale -20 Ss. with minor Sitstn beds. 7.3 -30 Sitstn; Dk. Gy 4.3 Sitsin interbedded with Ss; fg; Or weathering. 5.1 -40Ss; mg to cg; forms major cliff; top 157 m is Gy; fg. & weathered Or. 11.8 -50 Coal & Sh. interbedded; Coal/Zone Ratio : 0.47/1.02 m 1.0 Slistn; Dk. Gy. Ss; fg. to mg; Gy; cliff forming; interbedded with Slistn.
<!m thick; on the surface the massive Ss. layers form terrace like features. 11.5 LOST MALL SOLDER -60 THE RESIDENCE Sh. & Sltstn. interbedded; Coal stringer in centre. Ss. & Sltstn. interbedded. Ss; fg; resistant. 1.0 Sitstn; somewhat Shaly .... grading to Ss. 3.0 -70 Ss; fg; cliff - forming; btm. 0.45 m is Gy; fg, thinly layered & soft. 4.7 0.5 Shale, Dk. Gy. Ss.& Slistn. interbedded; fg; Gy; weathers Or. at bim. of interval N20°E/45°W; at middle of interval N5°W/28°W -80 7.0 Covered interval, although Sltstn. is suspected. 5.6 - 90 Ss; cliff forming; lower half Gy. upper half Or. weathering; thickness increased due to 2-3 minor thrust faults. 6.1 Sh. & Ss. interbedded; Ss - fg; Lt. Gy. 2.4 -100Coal. 3.5 Coal & Sh. interbedded; Coal/Zone ratio: 0.74 m/1.39 m Sh; grading to Sitstn; Bk. Ss; weathers Or-red; fg. 1. 4 8.0 Sltstn; Bk.
Sltstn; Dk. Gy. to Bk; 0.12 m of Coal 0.10 m from top interval
Ss; N 15° W / 35° W; fault N 23° W / 42° W displacement 35 cm;
Ss; fg; massive, Gy; Or. weathering. 1.0 -110 1. 2 9.7 Slistn.; Dk. Gy. - Bk. grading into sandy Slistn. in upper 1.5m. Sitstn; chert like massive; milky blue weathering; minor thrust with 10 cm. displacement noted on layers.
Sitstn; Bk; fine fragile. 0.04 -120 5.9 Strstn; weathering into small fragments; minor Ss; fg; Gy; Or weathering.
Coal; soft, roof, carbonaceous, Sh. grading into Slisin. 0.2 Coal; good; separation with floor, good with roof bad.
Sh; N 20° W/35° W
Coal & Shaly Coal interbedded.
Ss. & Slistn., Ss. is vfg; Gy; Or. weathering.
Slistn; very fine fragments; Dk Gy, to Bk; upper 40 cm.
Coaly stringers Sitstn. 0.9 -130 4.7 0.0 Cooly stringers. Coaly stringers.

Sitstn; massive, Dk. Gy. to Bk; weathering to large polygonal fragments Sitstn; almost normal.

Sitstn; disturbed fault zone Sitstn; Bk. & Br. layers; disturbed.

Ss; Or weathering; disturbed 1.4 -140 2.3 2.5 Sitstn; Bk; needle fragments. 2.3 0.3 Coal -150 7.9 Sirsin; Bk.; needle fragments. 0.9 Ss; weathers Or; vfg; massive; clean Gy. -160 4.5 Sirsin, Dk. Gy. 10 Br. Coly Sh; grading into Strstn. & Ss. 3.9 Sirsin; Dk. Gy. Coaly Sh. with Coal layers. Coal with Coal Sh. 1.4 -170 Sitsin; grading into Br. Sh. Ss. & Sitsin. Interbedded. Sitsin; Gy; Or. weathering. 3.9 1.6 minor thrust fault, N 25° W / 75° W, displacement? 2.3 Ss. & Sitstn. interbedded ; Dk. Gy. -180 3.7 Ss, cliff forming; fg; Dk to Lt. Gy. Ss. & Sh. interbedded; fg; Lt. Gy; Or. weathering in upper 0.7 m interval. 1.2 2.0 Strstn; in lower 1.6 m interval ... grading to fg. Ss. 2.9 Sitsin. . grading to carb. Sh. -190 Ss, fairly massive; minor cliff 2.1 Sitstn; interbedded with Sh. & thin layer of Ss at 1.6 m. above base of interval Coal, btm. 15 cm. Shaly Sitstn; Dk. Gy. to Bk. 3.0 0.8 3.9 Ss, thin layered 0.5 - 3.0 cm thick. - 200 1.8 Ss; Lr. Gy; mg; N10° W/34° W; massive cliff forming; layers to 60 cm thick 5.8 Ss; fg; thin layered; Or. weathering.
Slisin. & Sh. interbedded; lower 0.4 m of interval Carbonaceous. 0.7 2.8 -210 1.2 Ss; Gy, fg. Ss; Gy; fg.
Sltstn; interbedded with thin Coaly Sh. & Coal stringers.
Ss; mg; massive; layers 2-15 cm. thick; 0.4 m thick Sh. 1.0 m
from top of unit
Sltstn; carb. in middle
Ss; mg; Or. weathering; N25° W/33° W
Ss; fg to coarse grain layered interbedded; some Sltstn. layers.
Ss; Gy; fg; massive; Or. weathering.
Sltstn; Dk. Gy; polygonal fragments weathered.
Ss; Dk. Gy; fg. to mg; layered at 2.0 to 20 cm. thick; X-bedded; Dk. & tan Br. laminations. 2.1 0.6 4.7 -220 1.0 0.9 2.6 2.5 Ss; Dk. Gy, fg; f - layerered (0.5 - 50 cm); some layers. Or bedding layers ..... -230 -240 -250 HH-21F

DESIGNATION:

SPG - S1

PART

OF

STRATIGRAPHIC SECTION

PROJECT:

#### 1978-06-24

# SR-S1 (including SR-T1 & SR-T2)

## • measured strat. lower to higher

Th(m)	Lithology
0.8	Siltstone; dark grey to black; grading to fine grain sandstone
1.3	Sandstone; brown-grey; fine grain; orange weathering; semi-resistant; medium to fine bedding
9.4	Siltstone; black; interbedded with sandy shale; weathers to minute fragments; in centre of interval, orange weathering, fine grain sandstone
Start of SR-T1	
0.4	Shaley coal
0.4	Coal
0.2	Siltstone; fine grain
8.3	Coal
End of SR-T1	
0.7	Shale; highwall; separation with coal good
1.7	Shalesomewhat silty
6.6	Siltstone and sandstone interbedded
1.5	Sandstone; fine grain; orange weathering
2.6	Covered interval; probably siltstone
0.3	Sandstone; fine grain; very fine layered
Start of SR-T2	-
2.4	Shale grading to carbonaceous shale; blackjack at top of interval; FW separation good
2.5	Coal
End of SR-T2	
1.0	Sandstone
7.6	Sandstone; cliff; salt and pepper; hard; massive; N15 W/42 W

	GRAPHIC S			DESI	GNATION:	SR-SI INCLUDES SR-TI & T2	PART 0	F
PROJECT:	NORTH BLC	OCK			AUTHOR: D. FIETZ	DATE: 1978 JUN	E 24	
AREA: BARE MOUNTAIN - WEST SLOPE SOURCE OF DATA:								
LOCATION	SNOW RID	GE				FIELD	)	
CONTRO	INTERVAL		STRIKE		-	DESCRIPTION		
SCALE		LITHOLOGY	& DIP	MAIN		AMPLIFIED		SAMPLE
[m] -0								
-10 SR T	7.6 1.0 2.4 0.3 2.55 1.5				Ss Coal Sh, gradin Ss, fg., v Covered	; S&P, hard; massive N g to Carb Sh., blackjack at ery fine layered interval Or. weathering		/ separation good
-30 SR-T	6.6 1.7 0.7					Ss. interbedded  hat silty all; separation with Coal s	900d	
-40	0.2 0.4 0.4				Sltstn; fg Coal Sholy Co Sltstn; B minute fr fg; Ss. I	al  k; interbedded with sandy agments; in centre of inter	Sh; weathers to val, Or weathering	
-50	1.3 0.8				Ss; fg; Slistn;	BrGy;Or, weathering sen Ok. Gy. to Bk., grading to	ni-resist; med to fine fg. Ss.	bedding
-60			V					
								8 Ist
							03	* (1725) (24
							+	16-210

SNOW RIDGE

1978-06-24

SR-T3

• measured strat. lower to higher

Th(m)	Lithology
2.0	Siltstone
1.4	Coal
2.6	Shale with coal stringers
2.1	Coal

End of SR-T3

covered but mainly sandstone; fine grain; thin layered minor shale intervals

STRATIG	RAPHIC S	ECTION		DESI	GNATION:		SR-T3	PART	OF
PROJECT:	NORTH B	BLOCK				AUTHOR:	D. FIETZ	DATE: 1978 .	JUNE 24
AREA: LOCATION:		UNTAIN:	WEST R	IDGE		SOURCE C	F DATA:		i.
			STRIKE			DESCRIPTION			
LICONTROLL		LITHOLOGY	& DIP	MAIN		AMPLIFIED			SAMPLE
[m]									
-0					Canada	majalu Sa	for this lawses	d; minor Sh. interv.	
T	(2.1)	NAME OF THE OWNER OWNER OF THE OWNER	=3		Coal	mainly 3s;	r.g. Inin layere	a ; minor 3n. interv.	
-10 SR-T3	1.4 2.6		) <b>雪</b>			oal; rock;	Sh. with Coal .	stringers.	
<b>–</b> 20									
								2	
- 30									
100									
								H	6-21Z

## STG-S1 (including STG-T1, T2 & T3)

## • measured strat. lower to higher

Th(m)	Lithology						
8.3	Sandstone; grey; fine grain; weathers beige to orange; N25 W/42 W						
3.8	Covered interval						
2.3	Sandstone; very fine g	rain; black;	weathers dark grey				
5.3	Sandstone and siltstone interbedded; grey to beige; weathers white-grey to beige; siltstones are recessive and weather to small fragments; N15°W/44°W						
3.8	Covered interval						
0.7	Shale and siltstone in to black; weathers to						
0.5	Carbonaceous shale wit	h coaly debri	is				
3.4	Covered interval (may	be more of p	rev. unit?)				
12.3	Sandstone with siltstone interbedded; fine grain; grey to brown; laminated; N25°W/36°W						
5.3	Siltstone; black; weathers to small fragments; rubbly						
1.1	Sandstone; fine grain; to beige; N45°W/45°W	grey; weathe	ers white-grey				
STG-T1	• trench particulars:	Az: Length: Width: Depth:	255° 9.4 m 0.5 m 1.5 m				
Th(m)	Li	thology					
Start of STG-Tl							
6.5	Coal; at 1.3 m from ba parting; at 4.3 m from parting; at 4.75 m fro parting	base of inte	erval 0.2 m shale				
	HW - brown shale						
End of STG-T1							
3.2	Covered interval						
3.7	Sandstone with siltsto	ne interbeds	; grey; fine grain;				

weathers grey to orange

page 2 of STG-S1 (including STG-T1, T2 & T3)

Th(m)	Lithology
1.5	Sandstone; fine grain; grey; weathers orange; N35°W/40°
8.3	Siltstone with shale interbedded; grey to beige; fine grain; weathers to very small fragments
STG-T2	• trench particulars: Az: 275°  Length: 7.5 m  Width: 0.5 m  Depth: 1.5 m
Th(m)	Lithology
Start of STG-T2	
2.4	Coal
1.6	Siltstone; grey to black
3.0	Sandstone; fine grain; grey; N20°W/42°W
End of STG-T2	
14.3	Sandstone with siltstone interbeds; fine grain; black to grey; weathers grey to black to orange; N20°W/40°W
4.0	Siltstone with sandstone interbeds; fine grain; grey to beige to tan; weathers tan; weathers to fine fragments
1.0	Siltstone; very fine grain; black; minor coaly debris
4.2	Sandstone; fine grain; grey; weathers grey to orange; N25°W/38°W
4.5	Siltstone; fine grain; beige to black; weathers to fine fragments
0.3	Silty shale; brown to orange
STG-T3	• trench particulars: Az: 255°  Length: 3.0 m  Width: 0.4 m  Depth: 1.0 m
Th(m)	Lithology
Start of STG-T3	
0.4	Silty shale; black to grey; fine grain
0.5	Coal

End of STG-T3

page 3 of STG-S1 (including STG-T1, T2 & T3)

Th(m)	Lithology
0.7	Siltstone; fine grain; grey to orange; N20°W/37°W
4.9	Covered interval
3.9	Sandstone and siltstone interbedded; fine grain; grey; weathers rust to light orange
1.6	Silty shale; brown
9.3	Covered interval
2.3	Sandstone and siltstone interbedded; beige to grey
12.8	Covered
3+	Sandstone; fine grain; beige brown; N20°W/25°W

FIELD LOCATION: STRAWBERRY GULLY INTERVAL SCALE DESCRIPTION STRIKE CONTROL POINT LITHOLOGY & DIP SAMPLE AMPLIFIED MAIN [m] T 0 3.5 55. -10 31.5 Covered - 20 -30 7.5 Ss. -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 6.5 55. - 170 -180 -190 -200 74.2 Covered -210 -220 -230 -240 55 - 250 12.8 Covered 2.3 Ss. & Sitstn interbedded Covered 9.8 -270 Silty Sh. 1.6 Ss. & Slistn. 3.9 -280 Covered Slista. Coal Silty Sh. Slista 0.7 0.5 -STG-T3 4.5 -290 Ss. 4.2 Slistn 1.0 4.0 Sitstn & Ss. interbeds -300 Ss. & Sitstn. interbeds. 14.3 -310 3.2 Covered Cool, Sh.-HW -STG-T1 6.5 -320 Sitstn. & Sh. interbedded 8.3 - 330 Ss. weathers Orange 1.5 Ss. weathers grey - orange 3.7 3.0 Ss., N 20° W / 42° W Slistn - 340 1.6 -STG -T2 Coal ¥ 2.4 1.1 Sitstn. 5.3 -350 Ss. with Slistn interbeds. 12.3 - 360 Covered
Carb. Sh. with Coaly debris
Sh. & Slistn interbedded. 3.4 0.5 0.7 Covered 3.8 -370 Ss. & Sitstn. interbedded. 5.3 2.3 55. -380 Covered 3.8 8.3 55. - 390 -400 HH-21K

DESIGNATION: STG-S1, STG-S2, incl STG-T1,T2,T3 PART

AUTHOR: D. FIETZ

SOURCE OF DATA:

OF

DATE: 1978 JULY 26

STRATIGRAPHIC SECTION

AREA: BARE MOUNTAIN - CHAUNCEY CK. AREA

PROJECT: NORTH BLOCK

#### STRAWBERRY GULLY

#### 1978-07-25

STG-S2

- ullet adjoins top measured unit of STG-S1
- measured strat. lower to higher

Th(m)	Lithology
74.2	Covered
6.5	Sandstone; $N23^{\circ}W/30^{\circ}W$ ; coal bloom below sandstone (gopher hole)
123.0	Covered
7.5	Sandstone; fine grain; grey; $N25^{\circ}W/36^{\circ}W$ ; lower 4.2 m forms prominent ledge
31.5	Covered interval
3+	Sandstone; fine grain; brown to grey; weathers pink-white: N25°W/20°W

STRA	TIGR	APHIC S	ECTION		DES	IGNATION:	S1	G - S2	PART	OF	
PROJECT: NORTH BLOCK  AREA: BARE MOUNTAIN - CHAUNCEY CK. AREA									DATE: 1978	DATE: 1978 JULY 23	
AREA:	BAR ION: S	RE MOUNT STRAWBER	<u> FAIN - CH</u> RY GULLY	AUNCEY	CK. A	REA	SOURCE OF	PATA: FIEI			
H CON	TROL	INTERVAL		STRIKE		DESCRIPTION					
SCA	S CONTROL INTERVAL LITHOLOGY			& DIP	MAIN		SAMPLE				
-								::			
[m]											
-0		0 1.0 =		=		Sh. gradii	ng to Sitsin.				
		(2.6)		==	- 14	Coal Covered					
-10		5.5				Strsen.			*		
	-	0.5 ±			*:	Ss. Covered					
- 20											
		≃15.0				Ss.					
-30											
40											
-40					1		(4				
								t-			
				2							
							10				
								ė			
										HH-21C	

## STRAWBERRY GULLY .

## 1978-07-22

STG-S3

## • measured strat. lower to higher

Th(m)	Lithology
15.0	Sandstone cliff
4.5	Covered
0.5	Sandstone
5.5	Siltstone; upper 1.5 m interval covered
1.5	Covered
2.6	Coal
1.0	Shale

ST	RATIGE	RAPHI	C SI	ECTION		DESIGNATION		STG-S3	PART	OF	
PROJECT: NORTH BLOCK						AUTHOR:	J. HORACHEK	DATE: 1978 JULY 23			
AR	AREA: CHAUNCEY CREEK - NORTH SLOPE SOURCE OF DATA:										
LO	LOCATION: STRAWBERRY GULLY					FIELD					
LE.	CONTROL	INTER	VAL	LITUOLOGY	STRIKE		DESCR	IPTION			
SCALE	POINT		LITHOLOGY	DIP	MAIN		AMPLIFIED			SAMPLE	
[m] -0 -10		26)	1.0 1.5 5.5 0.5 4.5			Sh grading to slistn Coal Covered Slistn Ss Covered					
-30											
- 40											
-50		10					781				

1978-07-27

STG-T4 & T5

• measured strat. lower to higher

STG-T4

 lowest measured interval of STG-T5 adjoins and lies strat. higher than highest measured interval of STG-T4

• trench particulars: Az: 255°

Length: 9.6 m
Width: 1.0 m
Depth: 2.0 m

Th(m) Lithology

- 2.7 Coal
- 0.5 Surface rubble...shale
- 1.6 Coal
- 1.3 Shale; black; carbonaceous
- 0.5 Coal; dirty
- 1.4 Shale; grey
- 0.5 Shale; grey and brown; alternate banding
- NOTE: Trench stopped...cover too deep at FW end...did not get to FW of coal seam

STG-T5 • trench particulars: Az: 245°

Length: 6.0 m
Width: 0.4 m
Depth: 1.0 m

Th(m) Lithology

Start of STG-T5

- 1.4 Siltstone; fine grain; grey; weathers off-white; N20°W/33°W
- 3.4 Coal
- 0.9 Siltstone

End of STG-T5

NOTE: • Top measured interval of STG-T5 lies strat.

lower and adjoins bottom measured interval of STG-S1

STRATIGRAPHIC SEC		STG-T4 & T5	PART OF			
PROJECT: NORTH BLOC		AUTHOR: D. FIETZ	DATE: 1978 JULY	27 & 31		
AREA: BARE MOUNTAIN - CHAUNCEY CK.  LOCATION: STRAWBERRY GULLY  SOURCE OF DATA: FIELD						
CONTROL INTERVAL	STRIKE		DESCRIPTION			
CONTROL POINT L	ITHOLOGY & DIP	MAIN	AMPLIFIED	).	SAMPLE	
0.9 STG-T5 3.4 0.5 1.4 0.5 1.4 0.5 1.4 1.3	B: Trench stopped FW of Coal seam.	Sitstn. Coal Sitstn., N Shale Shale Coal; dirt Shale; blk Coal  cover too deep at.	-S1 .  20° W / 33° W (?)  , Carb.  FW. end			
		1:#	· e			
			A.			
No. of the last of						
-50			*			
M 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1			• *			
-60					÷	
				H	G-21E	

# 1978-07-27

# WG-S1, S2 & S3 (including WG-T1)

# • measured strat. lower to higher

Th(m)	Lithology				
8.5	Sandstone; medium grain; grey; weathers grey-white to orange; N15°W/45°W; forms prominent ledge				
16.5	Covered intervalthick cover in gully to south of Windy Gully; lower part of covered interval, black siltstone with sandstone interbeds				
3.4	Sandstone; medium grain; salt and pepper; N15 W/45 W				
7.0	Covered interval				
	FW Shale; dark grey to black				
0.8	Coal				
	HW Siltstone; grey				
19.5	Covered interval				
16.0	Sandstone; fine grain; dark grey to brown; N15°W/47°W; interbedded with black siltstone				
WG-T1	• measured strat. lower to higher				
	• trench particulars: Az: 255°  Length: 10.6 m  Width: 0.7 m  Depth: 1.0 m				
Th(m)	Lithology				
Start of WG-T1					
1.9	Silty shale; black; fine grain				
1.2	Coal				
3.7	3.7 Shale; black; with thin coal seams interbedded				
1.9	Coal				
2.6	Siltstone grading to fine grain sandstone at top of interval; beige; broken; minor coaly debris at mid interval				
End of WG-T1					

page 2 of WG-S1, S2 & S3 (including WG-T1)

Th(m)	Lithology
2.6	Sandstone with siltstone interbeds
1.6	Sandstone; fine grain; grey; N25°W/48°W; overlain by black siltstone
5.1	Covered interval
0.8	Sandstone; grey; fine grain; weathers orange; N13°W/45°W
2.8	Covered interval
2.0	Sandstone and siltstone interbedded; fine grain; beige to grey; N20°W/45°W; weathers grey to orange
15.2	Covered interval with brown siltstone, sandstone and shale rubble
4.1	Sandstone; fine grain; grey; weathers grey; N15°W/48°W
	base of prominent ledge forming sandstone (lowest measured interval in ER-S4)

STRATIGRAPHIC SECTION DESIGNATION: WG-S1, S2, S3 INCLUDING WG-TI PART OF PROJECT: NORTH BLOCK AUTHOR: DF DATE: 1978 JULY 27 & 31 AREA: CHAUNCEY CREEK AREA SOURCE OF DATA: LOCATION: WINDY GULLY INTERVAL DESCRIPTION STRIKE CONTROL LITHOLOGY & SAMPLE POINT MAIN **AMPLIFIED** DIP [m] Ss. ledge (lowest measured interval of - ER-S4) -0 Ss., N 15° W / 48° W -10 15.2 Covered interval -20 Ss. & Sitstn. interbedded; N 20° W / 45° W 2.0 Covered interval 2.8 5s., N 13° W / 45° W Covered interval -30 Ss., N 25° W / 48° W 1.6 Ss. with Slistn. interbeds 2.6 Sitstn. grading to fg. Ss. at top of interval -40 Sh., Bk. with thin interbedded Coal seams. Coal Silty Sh. -50 5s., fg., N 15°W / 47° W 16.0 -60 -70 Covered interval 19.5 -80 HW : Sltstn., Gy. 0.8 0.8 Coal FW: Sh., Gy. to Bk. Covered interval 7.0 -90 5s., N 15° W / 45° W 3.4 -100 Covered interval ( but may be Blk. Sltstn. with 16.5 Ss. interbeds. -110 55., N 15° W / 45° W 8.5 -120

-130

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