

K-Shell-lodgepole 77(1)A

82 6/1

Three Spots
Cont. Chances
No 440-445 inc.
Comes next in line

425



Shell Canada Resources Limited

Box 1440, Station 14
Calgary, Alberta
T2P 1K5
Telephone: (403) 242-1111

May 23, 1978

OPEN FILE

Dr. James T. Fyles
Deputy Minister of Mines
Department of Mines & Petroleum Resources
Parliament Buildings
Victoria, B. C.
V8V 1X4

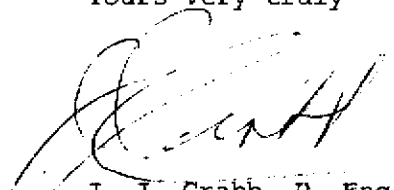
Dear Sir:

SUBJECT: Coal Licences 490-495 Lodgepole Creek Area

We are pleased to submit the enclosed report entitled "Third Report on Coal Licences NO. 490-495 Inclusive, Lodgepole Creek, Kootenay District" dated May 16, 1978 in support of our Application to Extend Term of Licences pursuant to Sections 19 and 21 of the Coal Act 1964.

It is our intention to undertake further field work of a similar nature this season. In addition, a diamond-drill program will be proposed and applied for in the area. The continuing activity should enable us to better assess the area's coal potential.

Yours very truly


J. J. Crabb, P. Eng.

Enclosure

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 425



Shell Canada Resources Limited

Post Office Box 100
Calgary, Alberta
T2P 2H5
Telephone: 232-3111

May 23, 1978

Mr. A. R. Corner
Administrator for Coal
Mineral Resources Branch
Dept. of Mines & Petroleum Resources
Parliament Buildings
Victoria, B. C.
V8V 1X4

Dear Sir:

SUBJECT: Application to Extend Term of Licences 490-495 (Inclusive),
Lodgepole Area

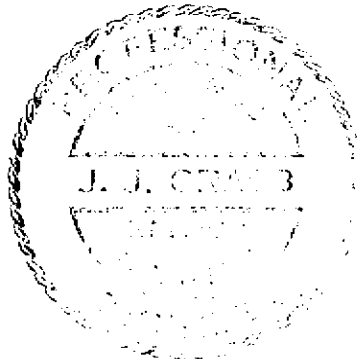
Enclosed herewith entitled "Third Report Coal Licences, No. 490-495 Inclusive, Lodgepole Area, Kootenay District" dated May 16, 1978 is our report containing results of work conducted on the above licences during 1977.

Exploration costs are summarized on page 21 with detailed backup presented in Appendix TWELVE.

Yours very truly

J. J. Crabb, P. Eng.

Enclosure



1977 FIELD WORK

INTRODUCTION

Geological ground mapping and trenching were conducted during the 1977 field season on all C.N.I. coal licences, as well as on adjacent areas. Richard Marsh, a U.B.C. Geology Graduate (1975) served as project geologist for the season. He was assisted by Peter Los, a third year geology student from Queens University. Seven high school students from Fernie were employed as "trenchers". Starting and termination dates for each employee are noted in Appendix TEN.

A TD15 "CAT" was used to clean out the two access roads; a Chevrolet Suburban was used for personnel transportation during the summer.

At the end of the field season, 3.2 hours were logged in a Bell G3B1 helicopter. The flight time was used for the following purposes:

- Geological correlation
- photography
- limited geological mapping

MAPPING / TRENCHING ACTIVITY ON C.N.I. COAL LICENCES

"WEST RIDGE" was stratigraphically mapped in detail from the Kootenay/Blairmore contact to the lowest known coal seam. Eight trenches were emplaced on this ridge and exposed up to seven coal seams (see Appendices FIVE & SIX for the compiled stratigraphic section).

Three trenches were dug and measured on "McLATCHIE RIDGE" (see Appendices FIVE & SEVEN). Of these, trenching exposed a "new seam" which was

FIGURE 3

TRENCHING CONDUCTED ON & ADJACENT TO C.N.I. COAL LICENCES
IN THE "LODGEPOLE AREA" DURING THE 1977 FIELD SEASON

AREA	TRENCH NO.	STATUS OF TRENCH			TRENCH PARTICULARS			REMARKS
		NOT MEASURED	MEASURED (GENERAL)	MEASURED (DETAIL)	TRENCH LENGTH (ft)	TRUE TH EXPOSED (ft)		
						SECTION	COAL	
LODGEPOLE RIDGE ("RIDGE 21": south of C.N.I. LICENCE 495	1+		x		48.0	43.8		} structurally complicated zone?....trenches abandoned
	2+		x		30.0	26.7		
	3 ^o	x			40.0			
	4 ^o	x			100.0			
	5*		x		31.0	23.0		not detailed or deepened...seam appears structurally "squeezed"
	6*			x	61.0	54.2	39.1	
	7 ^o	x			60.0			dug late in year; should be deepened prior to logging;
	8*			x	47.0	39.3	24.2	RELATIVE to TRENCH 5 ..lies in close proximity & explores the same seam
WEST RIDGE	9			x	95.0	47.9	32.5	
	10			x	28.0	20.3	15.9	
	11			x	23.0	14.1	9.2	
	12			x	13.0	8.9	2.7	
	13			x	10.0	4.2	4.2	
	14			x	22.0	16.1	15.3	
	15			x	42.0	24.9	19.6	
	16			x	26.0	16.0	5.6	
McLATCHIE RIDGE	17			x	16.0	15.4	12.4	
	18			x	55.0	54.6	40.1	
	19			x	60.0	58.8	22.3	

+ TRENCHES 1 & 2 are part of Geological Site: GS 8

* TRENCHES 5, 6 & 8 are part of Geological Site: GS 9

o TRENCHES 3, 4 & 7 LOCATION NOT KNOWN...not recorded in FIELD NOTES

measured, but may be liberally recorded. TRENCHES 17 and 18 exposed coal seams which had been previously trenched but the data collected can not be considered accurate as the trenches were not dug deep enough.

MAPPING / TRENCHING ACTIVITY ADJACENT TO C.N.I. COAL LICENCE

On "LODGEPOLE RIDGE" eight trenches were dug. TRENCHES 6 & 8 were dug in relatively "undisturbed" structure; from information gained, a stratigraphic section has been compiled (see Appendices FIVE & EIGHT). TRENCHES 1, 2 & 5 were not measured in detail but have been noted in Appendix NINE. TRENCHES 3 & 4 were dug but not measured; they reportedly occur in a very structurally complex area. TRENCH 7, dug late in the season, was not measured.

While known to be on "LODGEPOLE RIDGE", the exact locations of TRENCHES 3, 4 & 7 are not known; from available data, it was not possible to determine accurate locations.

In conjunction with the trenching activity, a reconnaissance geological mapping program was undertaken on land adjacent to the C.N.I. coal licences. GEOLOGICAL SITES (GS's) mapped have been denoted as areas of geological interest (other than "detail-sectioned" trenches) that lie outside of the C.N.I. Licences' Boundaries. Locations of the GS's have been plotted on GEOLOGY MAP NUMBER MI (see Pocket 1); descriptions of the GS's have been recorded in Appendix NINE.

TRENCHING ACTIVITY / SUMMARY

Thirteen trenches, totalling some 500 feet in length, and varying in depths from 2 to 10 feet, exposed 375 feet of measured stratigraphic section which contained 243 feet of aggregate coal (see Appendices

FIVE, SIX, SEVEN & EIGHT). Three trenches (TRENCHES 1, 2 & 5), totalling 109 feet in length and varying from 2 to 4 feet in depth, exposed 94.3 feet of unmeasured section. Three trenches (TRENCHES 3, 4 & 7) totalling approximately 200 feet in length and varying in depth from 2 to 6 feet were dug but were not measured.

Details of the '77 trenching activity has been presented in table form in FIGURE 3.

In addition, about 350 feet of numerous shallow trenches were dug to expose either previously trenched coal seams or coal seams exposed by road cuts but which had become slumped over. These expanded potholes were dug only to confirm seam thickness continuity and, in the case of the road cuts, to give cursory coal thickness measurement.

Along with the above shallow trenching over 1,000 potholes, were unearthed on C.N.I.'s coal licences and adjacent areas; of the total, approximately 700 potholes were dug on "WEST RIDGE". Located between trenches, the potholes provided data points to establish a continuous stratigraphic section.

REVIEW OF TRENCHING

1975 - 1977

<u>Year</u>	<u>No. of Trenches</u>	<u>Total length (ft)</u>	<u>No. of seams</u>	<u>Total coal exposed (ft)</u>	<u>Strata described (ft)</u>
1975	7	126	5	41	551
1976	23	754	5	242	2000
1977	19 and shallow trenches 1000 potholes	809 350	7	243+	2500+

REGIONAL GEOLOGY

This section of the report is a condensed version of published reports by R. A. Price, D. K. Norris and P. Glaister; the unpublished Cropco Reports; and the Marsh's field notes, and gives a general overview of the Lodgepole Area. The Geological Compilation Map, Figure FOUR, which accompanies this section is a condensed version of Marsh's geological map and published maps by R. A. Price.

STRATIGRAPHY

SPRAY RIVER FORMATION: TRIASSIC - 300'

Lower Spray River : 150'

- rust-brown and dark grey, colour-laminated, platy siltstone, calcareous siltstone, and silty shale; undergoes recessive weathering.

Upper Spray River - 150'

- light grey dolomitic/sideritic, argillaceous siltstone and fine grained sandstone; upper portion undergoes resistive weathering.

FERNIE GROUP: JURASSIC - 1,000 (?)

Lower Fernie: 250 - 300'

- dark grey, black, brownish black and dark greyish brown shale; undergoes recessive weathering.

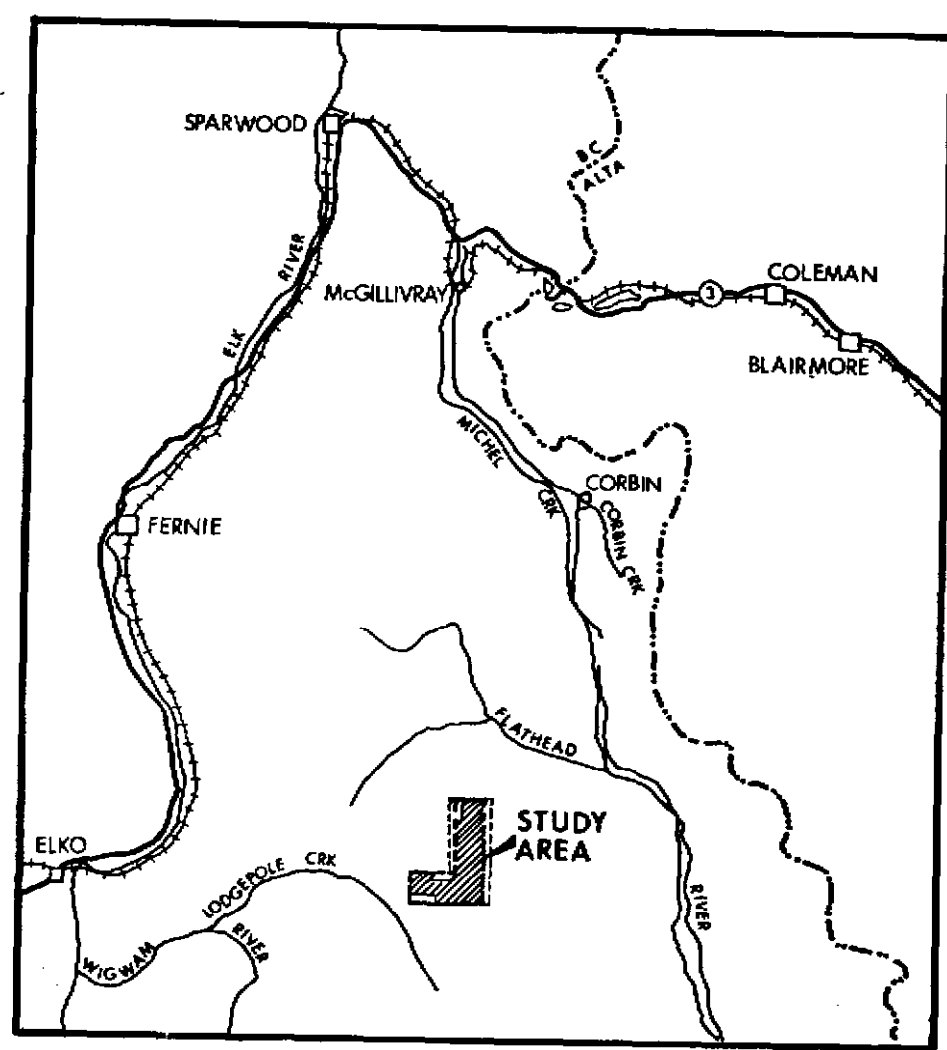
K- LODGEPOLE 71(1)A.

OPEN FILE



CROWS NEST INDUSTRIES LTD.

THIRD REPORT ON COAL LICENCES
NOS. 490 TO 495 INCLUSIVE



LODGEPOLE AREA KOOTENAY DISTRICT

THIRD REPORT ON COAL LICENCES

NOS. 490 TO 495 INCLUSIVE

LODGEPOLE AREA

KOOTENAY DISTRICT

MAP REFERENCE 82G/7: UPPER FLATHEAD

CROWS NEST INDUSTRIES LIMITED

FERNIE, B. C.

MAY 16, 1978

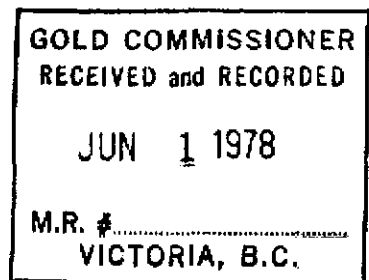


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- APPENDIX ELEVEN ✓ STRIKE & DIP MEASUREMENTS (LODGEPOLE AREA: 1977).
- APPENDIX TWELVE ✓ EXPLORATION CHARGES 1977

LIST OF POCKET ENCLOSURES

POCKET 1 ✓ GEOLOGY MAP NUMBER MI : SCALE 1: 10,000

POCKET 2 ✓ GEOLOGY MAP NUMBER MII : SCALE 1: 5,000

INTRODUCTION

Crows Nest Industries Limited (C.N.I.) of Fernie, B. C. holds coal licences 490 to 495, near the headwaters of Lodgepole and McLatchie Creek, in the southeast corner of British Columbia. These licences encompass an area of 3,320 acres (see Appendix ONE) and occur in the region termed the Lodgepole Area.

During the summer season of 1977 field work was again conducted on and adjacent to these licences and, as in previous years, investigations were carried out using the Imperial System of Measurements. At the end of the field season, however, a decision to change to S.I. (metric) Measurements was made. As a result, the accompanying geologic maps MI (Pocket 1) & MII (Pocket 2) are metric, as they were produced after the 1977 field season, while the data collected and compiled here is presented in the Imperial System.

OBJECTIVE

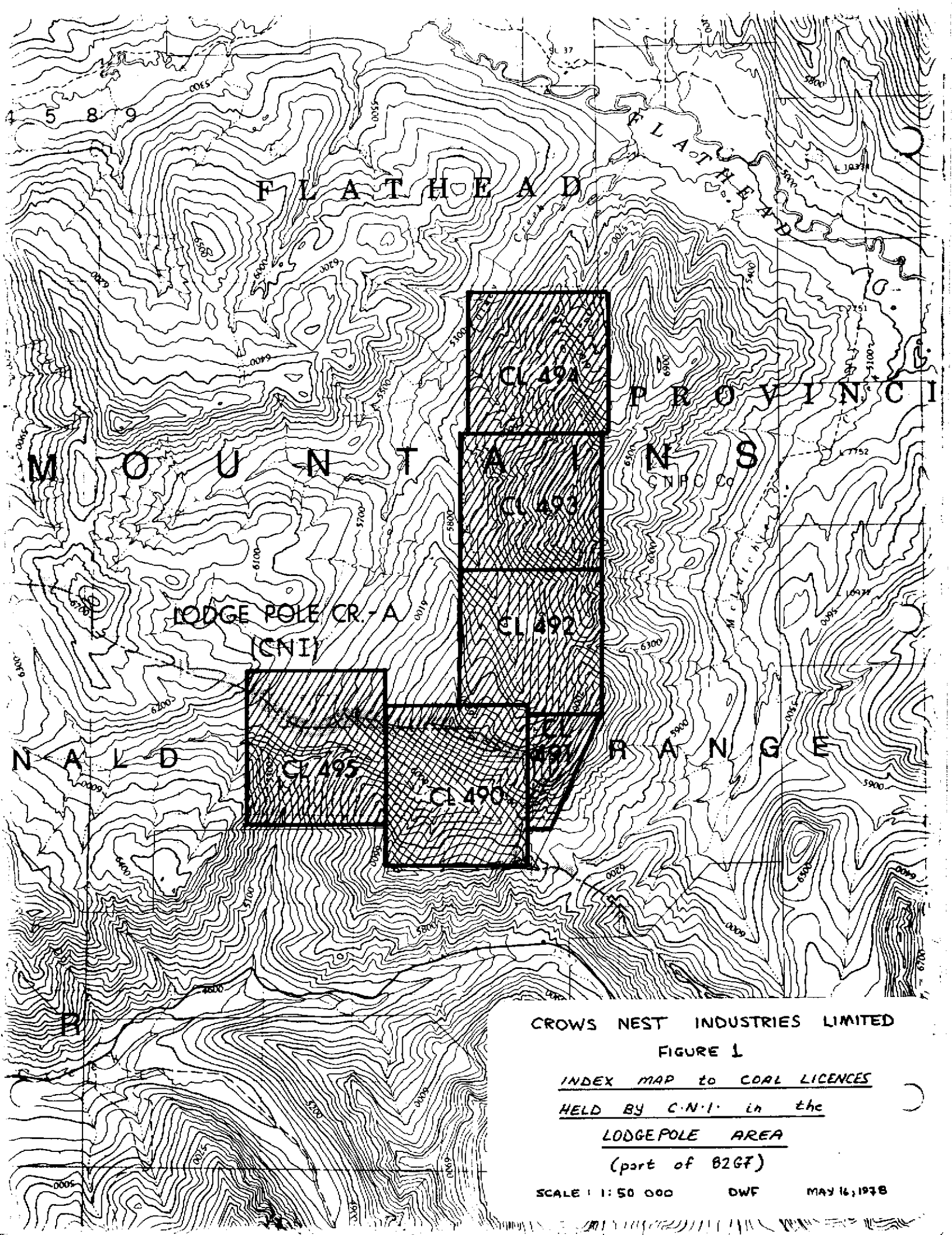
The purpose of the exploration work conducted in 1977 was to obtain geological information centering upon the occurrence of coal within and adjacent to C.N.I.'s coal licences. By means of geological mapping and hand trenching, a geological map was to be produced (Pockets 1 & 2). From this map and the data collected through hand trenching, a preliminary determination of the coal reserves in the McLatchie area was to be obtained. Possible mineable areas, future detail exploration program areas and possible drillhole sites were also to be determined and reported.

LOCATION

C.N.I.'s coal licences occur some 20 air miles southeast of Fernie. These licences are arranged in the shape of a "J" and are bounded on the east, southeast and south by C.N.I.'s 10,000 acre Parcel 81 Block. These licences approximately range in latitude from $114^{\circ}43'$ to $114^{\circ}47'$ and in longitude from $49^{\circ}18'$ to $49^{\circ}22'$ (Map reference 82G/7; Upper Flathead; 1:50,000). See Figure ONE.

ACCESS

Entrance to the coal licences may be obtained via two access roads (Figure TWO). Both are reached by travelling via the Southern Trans Provincial Highway No. 3 to the Morrissey turnoff (approximately 9 miles south of Fernie) and then travelling the Morrissey Forestry Development road to the Lodgepole Forestry Development road. The Lodgepole road is travelled to mile marker 24.3 (kilometer 38.9), as measured from C.N.I.'s Elko sawmill, where the first access road turns off north and stops in a hanging valley on licence 490, at an elevation of 6,000 ft. ASL. By travelling farther along the Lodgepole road and turning onto C.N.I.'s McLatchie Creek logging road, the second access road can be reached at Mile marker 34.3 (kilometer 54.9). This access road climbs up the eastern side of "McLatchie Ridge" - a new term - and stops in a saddle at elevation 7,200' on licence 493.



CROWS NEST INDUSTRIES LIMITED

FIGURE 1

INDEX MAP to COAL LICENCES

HELD BY C.N.I. in the

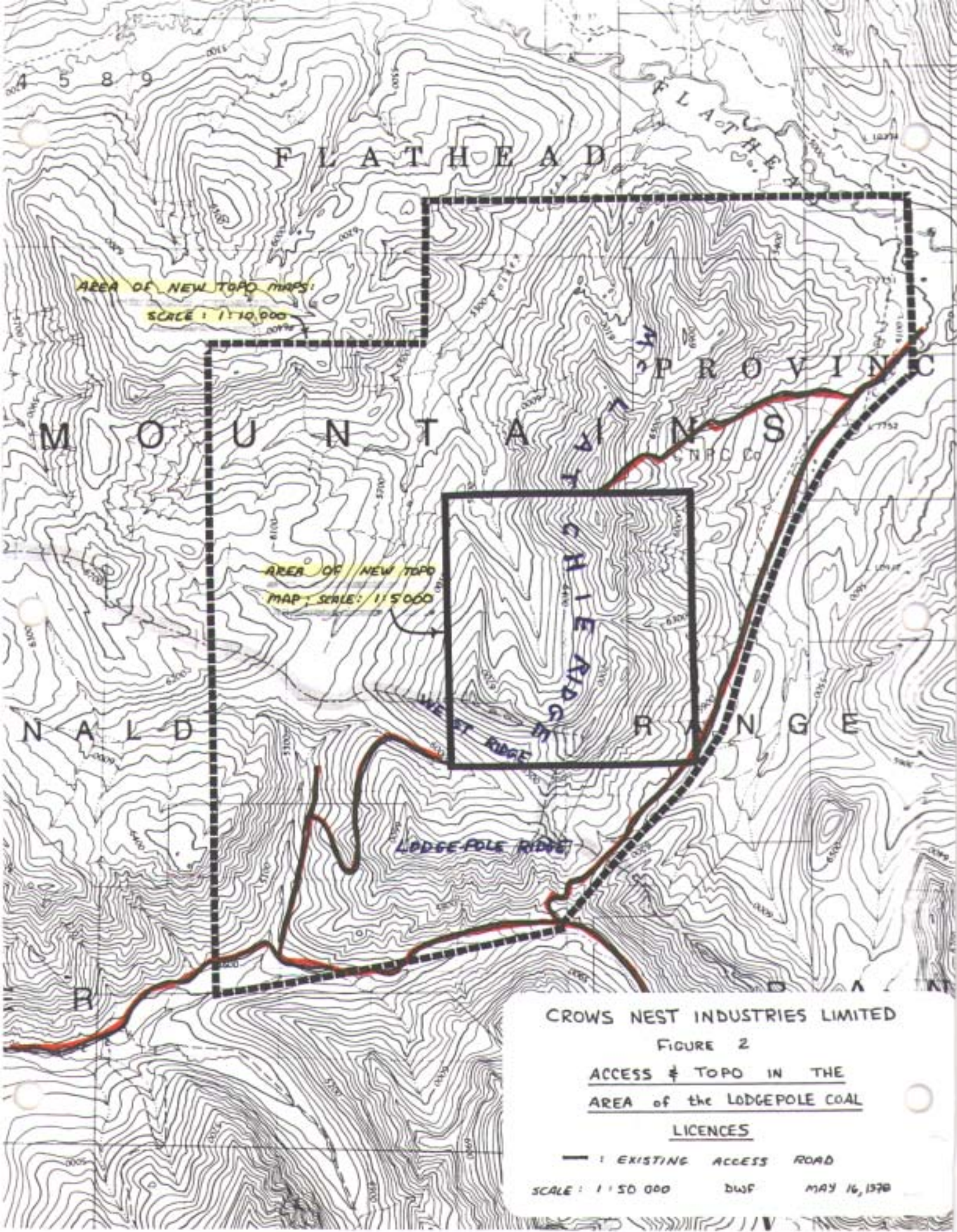
LODGEPOLE AREA

(part of B2G7)

SCALE 1:50 000

DWF

MAY 16, 1978



GEOGRAPHY

C.N.I.'s Lodgepole coal licences are located on the southeastern corner of Fernie Coal Basin between the northern end of McDonald Range and Flathead River. They occupy the top of and the northern slope of the newly designated Lodgepole Ridge together with the western slope of McLatchie Ridge (see Figure TWO).

In general the Lodgepole area is bounded on the north by the Flathead River, on the north-west and east by its tributaries Foisey and McLatchie Creeks and on the south and west by the forks of Lodgepole Creek.

The area is one of medium mountaineous relief. The Lodgepole and McLatchie Creek valleys range in elevation from 4,600 to 5,400 feet ASL and 5,100 to 6,000 feet ASL respectively. The adjacent ridges have elevation ranges of 6,500 to 7,000 feet ASL and 7,000 to 7,500 feet ASL respectively.

The main topographic features of the coal licences are the Lodgepole Ridge and the McLatchie Ridge with its western extension - the West Ridge. Associated with the ridges are three valleys: one in the very northern part of the licences breaks the McLatchie Ridge into the northern and central blocks; the other two valleys, in the middle and south, separate the West Ridge from McLatchie and Lodgepole Ridges.

The West Ridge and its continuation to the west and south forms the watershed line between Flathead and Wigwam Rivers.

BACKGROUND

PREVIOUS WORK

In the late 1950's and early 1960's, two major projects were conducted throughout the Crowsnest Basin. During the course of these investigations, the Lodgepole Area was geologically mapped as a part of the entire Basin evaluation. The first project in the Lodgepole Area was conducted by the Geological Survey of Canada under the direction of R. A. Price, who spent 3 days in the area. This project's purpose was to map all of the geology in the NTS 82 G/E₁ Block. The second project was conducted by Columbia Iron Mining Company (a subsidiary of U.S. Steel) and its aim was to economically evaluate the Basin. As a result, more attention was paid to the Kootenay coal measures. They spent an unknown amount of time in the area after Price, but were not, it is believed, in possession of his findings. Unfortunately, there exists major structural interpretation differences in the reports resulting from these investigations.

Kaiser Resources Limited holds coal licences adjoining to the C.N.I. licences. In the north and south they have constructed exploration roads to expose coal seams. This exploration is believed to have taken place in the late 1960's and early 1970's. These roads, as well as C.N.I.'s logging trails, have been placed on the Geological Maps MI & MII, accompanying this report (enclosed in Pockets 1 & 2).

C.N.I. began exploration work during the 1975 summer season. At this time "Ridge O", an east trending offshoot ridge from McLatchie Ridge, was hand trenched and sectioned (see Geologic Maps MI and Appendices TWO & THREE). A total of 551 feet of stratigraphy containing 41 feet of coal in possibly 5 seams was measured. Information was obtained by digging seven trenches, totaling 126 feet in length.

For part of the summer season of 1976, hand trenching and sectioning was again carried out on offshoot ridges from McLatchie Ridge (See Geologic Map MI and Appendices TWO & FOUR). At this time approximately 2,000 feet of aggregate stratigraphy was sectioned. Twenty-three trenches totaling 754 feet in length and varying in depth from 3 to 7 feet were placed across up to 5 seams and exposed an aggregate of 242 feet of measured coal.

The work conducted during 1975 and 1976 was carried out by high school students under the supervision of Mr. Raymond Hughes, a high school teacher and former university geology student. It is the opinion of Richard Marsh, B. Sc. ('77 Field Season: Project Geologist) that Mr. Hughes' work, although conscientiously conducted, may be partially erroneous due to the fact that some of the sectioned trenches may have been liberally measured. This being the case, the amount of coal reported is probably greater than the amount of coal that actually exists.

TOPOGRAPHIC MAPS

The published 1:50,000 National Topographic System (N.T.S.) map that includes the Lodgepole area is 82G/7; Upper Flathead, second edition.

For the summers of 1975 and 1976, a topographic base map with a scale of 1:12,000 and 50 feet contour intervals was constructed by Kenting Earth Sciences Limited of Calgary from existing B.C. Government photographs (series BC 5313). This map is labelled Lodgepole Coal Area and is listed as 162/1 in the C.N.I. map files.

At the end of the 1977 field season, Burnett Resource Surveys Limited of Calgary were contracted to produce a new expanded metric base map with a scale of 1:10,000 and contour intervals of 10 metres. A smaller scale map (1:5,000 with a 5 metre contour interval), essentially covering coal licence 493, was also contracted to Burnett. This smaller scale map covers the area believed to have the best mining potential. These maps were constructed using British Columbia Government photographs (series BC 7417) flown on July 29, 1972 (scale 1:12,000) and Burnett's own photographs flown on October 11, 1977 (scale 1:20,000).

C.N.I.'s Parcel 81 Block and coal licences were placed on these maps. Also placed on the Burnett maps was Kaiser Resources' Underhill Imperial Grid System and C.N.I.'s new metric grid system. This grid system is based on the premise that the Canada - U.S. Boundary (49° latitude) is considered to be zero metres north (0m N) and that longitude $114^{\circ} 45'$ is considered to be one hundred thousand metres east (100,000m E).

The larger scale map is labelled Lodgepole Coal Area, Number MI and the smaller scale map is labelled Lodgepole Coal Area, Number MII. These maps are listed as 162/7 and 162/8 respectively within the C.N.I. map files.

REPORTS

The reports resulting from the field work conducted by Price and Columbia Iron Mining Company were found to be valuable sources of information and are listed below:

Price, R.A.	Fernie Map-Area, East Half, Alberta and
1962:	British Columbia; <u>Geol. Surv, Canada,</u> Paper 61-24 (map 35-1961, 1 inch to 2 miles)
Price, R.A.	Fernie Map-Area, British Columbia and
1965:	Alberta; <u>Geol. Surv., Canada,</u> Memoir 336 (map 1154A, 1 inch to 1 mile)
Columbia Iron Mining Co.	Progress Report, Examination of the holdings of the Crows Nest Pass Coal Company, Ltd.; Fernie, Apr. 15, 1962 B.C., Canada; <u>Still & Still</u> ; Prescott, Arizona; (Cropco Report 1)
Columbia Iron Mining Co.	Progress Report; Cropco Project, 1961; British Columbia; (Cropco Report 2)
June 1962	

Cropco Reports are unpublished and are located in C.N.I.'s vault.

AIR PHOTOGRAPHS

During the summer seasons of 1975 and 1976 British Columbia Government photographs, series BC 5309 and BC 5313 (scale 1:24,000),

were used for the purpose of trench identification and limited geological mapping. In the early part of the 1977 field season it was learned that newer, larger scale (BC 7417 series) photographs were available. These photographs, borrowed from C.N.I.'s Forestry Operation, were used in the 1977 field season for exploration purposes. The photographs used were BC 7417: Nos. 60-63, Nos. 119-122, Nos. 162-166 and Nos. 236-241.

There are several series of B.C. government photographs in existence which cover the Lodgepole Area. From earliest to most recent, they are: BC 1536 & 1537; BC 4056 & 4057; BC 5309 & 5313 and BC 7417. The BC 7417 photographs are the best available and as a result one set of diapositives and two sets of photographs were ordered from the government. One of these sets of photographs and the diapositives were given to Burnett for the purposes of constructing the metric base map. Later, one set of photographs was ordered from the government at an enlarged scale of 1:10,000 to accommodate the new metric MI map (scale 1:10,000).

There are also several series flown by private companies. The companies involved are Spartan Air Services (Kenting), Burnett and Intera Environmental Consultants Limited of Calgary. The photographs by Spartan, flown in 1960, are:

YC 336 Nos. 27-30 and 56-58 1:60,000

YC 337 Nos. 36-42 and 48-54 1:24,000

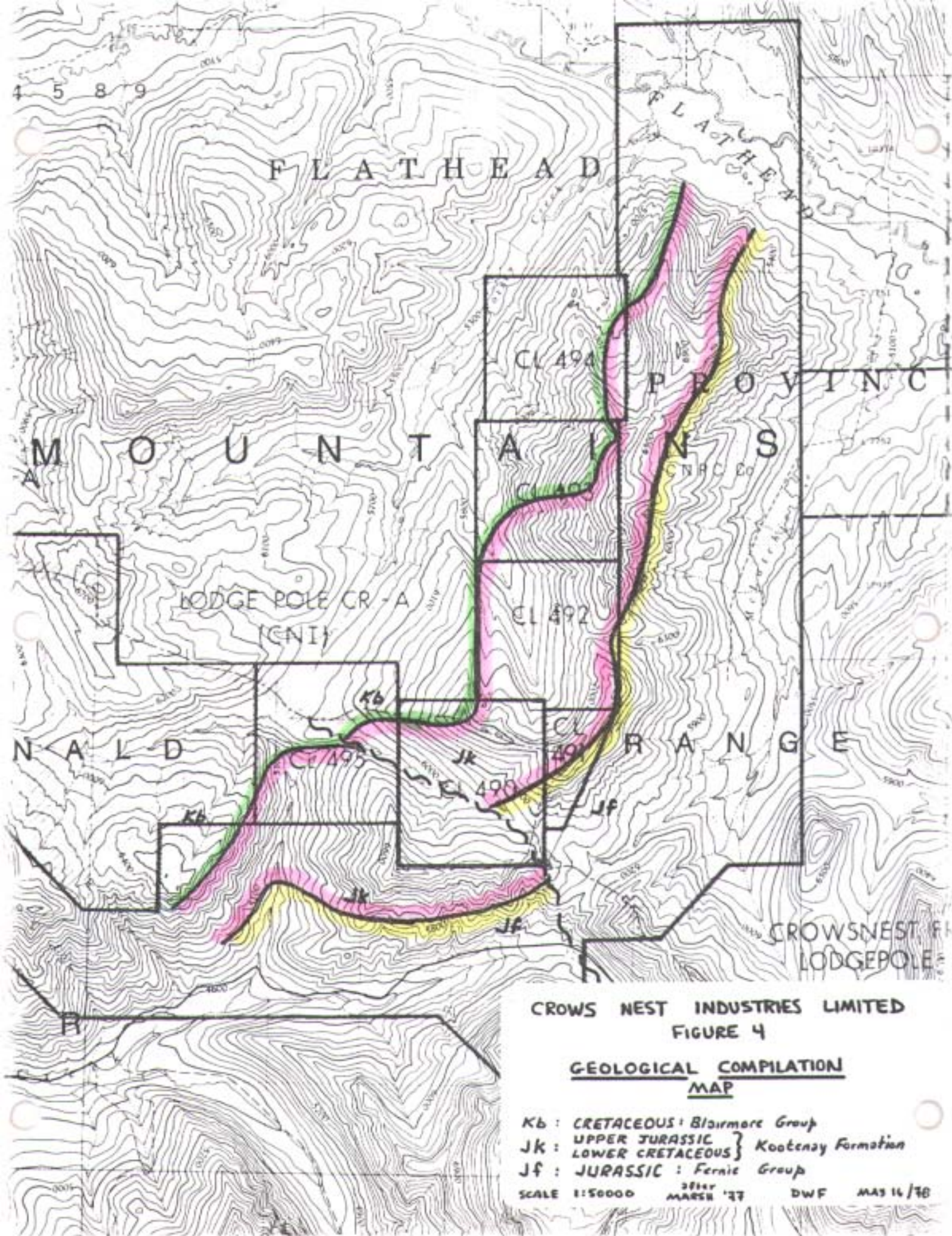
The photographs by Burnett are of good resolution but their small scale and partial snow cover limits their usefulness. These photographs are:

BR 77099: Nos. 157-169, 170-183 and 184-198 1:20,000

Intera flew their photographs on August 10, 1977. These photographs were initially intended for Kaiser Resources' Environmental Department, but when it was learned that they were to cover the Lodgepole Area, one set of the appropriate photographs was ordered by C.N.I.;

I 512:01 Nos. 16-18, 23-31 and 33-40 1:8,000 (approx.)

These are the largest scale photographs of the Lodgepole Area and are very recent. Unfortunately, there are gaps in the flight-lines, extensive cloud cover and poor resolution. As a result, these photographs are all but useless for the purposes of geological mapping.



Grey Beds: 300 - 600 (?) '

- light grey, silty, fine crystalline limestone with some shale, siltstone and sandstone; weathers yellowish grey; undergoes resistive weathering and forms a distinctive light coloured topographical unit.

Passage Beds: 300'

Lower Passage : 175'

- black, non-calcareous shale; a few spherical siderite concretions locally; undergoes recessive weathering.

Upper Passage: 125'

- greyish brown, fine to medium grained sandstone; distinctive brown colour separates this Fernie sandstone from the overlying Kootenay sandstone; undergoes relatively recessive weathering.

KOOTENAY FORMATION: UPPER JURASSIC & LOWER CRETACEOUS - 1200'

The Kootenay Formation in the Lodgepole Area does not correlate with the accepted type section proposed and measured by Norris at Grassy Mountain, Alberta. The following section for the Kootenay is very broad and is derived primarily from Marsh's West Ridge stratigraphic section supplemented by other measured locations within the Lodgepole Area.

Moose Mountain Member: 60 - 80 '

- dark grey, carbonaceous, medium grained, quartz-chert sandstone; due to heavy overburden, gravity and thrust faulting, and similar sandstone lithologies throughout the Kootenay, the identification, thickness determination and traceability of this member, in the

mapped area, is very difficult even though it is recognizable throughout the Fernie Coal Fields. This member is very resistive to weathering.

Coal Measures: 500'

Lower Measures: 50 - 100'

- directly above the Moose Mountain Member there is a carbonaceous unit consisting of a lower black carbonaceous mudstone, a middle coal seam (20 - 40') and an upper black carbonaceous mudstone. In some cases, the coal seam and upper mudstone unit is missing and in other cases, the upper mudstone is replaced by siltstone or fine grained sandstone. These mudstone units may also be replaced by shale units. This section weathers recessively.

Upper Measures: 400'

- this section generally is comprised of between three and six coal seams, of thickness greater than three feet, separated by units of brownish grey, fine grained, carbonaceous, thinly bedded, banded siltstone and black carbonaceous mudstone and shale. Brownish grey, carbonaceous, fine grained, sandstone may also be present. This section weathers recessively.

Middle Kootenay: 500'

- a section consisting mainly of brown to grey, fine to coarse grained, banded, calcareous sandstone and lesser amounts of siltstone and mudstone. Although there are a few occurrences of minor coal stringers, this section is generally devoid of coal and weathers resistively.

Upper Kootenay: 100 (?)'

- contains one or more thick mudstone units with interbedded sandstone units. This section may lie directly below the first

thick conglomerate bed which is here defined as the base of the overlying Blairmore Group. This section is lenticular and the mudstone units do not occur in all locations, however, they occur in enough spot locations to be included in the Formation description.

The Kootenay Formation, in general, contains local conglomerate lenses which occur sporadically throughout the entire Formation. It is believed that the Elk Formation of conglomerates does not exist in the Lodgepole Area. If any conglomerates are present, they have been mapped as part of the Blairmore Group.

BLAIRMORE GROUP: CRETACEOUS

Cadomin Formation (?) : 1000'

- varicoloured quartzite and chert sub-rounded pebble conglomerate in a coarse grained sandy matrix. The quartzite pebbles are white, yellow and grey while the chert pebbles are dark grey to black and rarely green (these green pebbles occur on West Ridge).

Lower Blairmore: 1000'

- non-carbonaceous, non-feldspathic, quartz-chert-quartzite conglomerates, sandstones, siltstones with grey and pale red silty mudstones.

STRUCTURAL GEOLOGY/REGIONAL

(Figure 4)

The Lodgepole Area is part of the East Kootenay synclinal Fernie Basin. The licences control a major portion of a "Fernie-Kootenay" thrust block located between two major normal faults on the south-eastern limb of McEvoy syncline.

The Kootenay outcrop generally strikes $N30^{\circ}E$ and is bound on the north side by the Flathead fault and intersected in the southern half of C.N.I. licences by the northwest striking normal Harvey fault. The fault is well exposed on the Lodgepole Creek valley slope - south of coal licence CL 490 - where it dips to the south-west and intersects the Kootenay, Fernie and Spray River Formations.

The stratigraphic separation along the fault is approximately 1000 feet (Price, 1962).

An additional fault branching off the Harvey fault and striking to the north has been suspected. It has been designated as "Cropco Fault" but the certainty of its existence is yet to be proven.

STRUCTURAL GEOLOGY/LOCAL

McLATCHIE AND WEST RIDGES

The coal-bearing segment of the Kootenay Formation maintains an overall northerly strike with an average dip of 24° West. Locally the dip varies from 15° to 45° (see Appendix ELEVEN).

Small to medium scale thrust faulting as well as normal faulting have been observed on many locations. Mapping of these has been initiated on four locations in 1977 but a more extensive and detail structural mapping program is required.

LODGEPOLE RIDGE

The Kootenay block of the Lodgepole Ridge is located on the south-western, downthrown side of the Harvey fault. The coal-bearing strata strike east-west and dip 30° to 45° to the North as measured on the southern slope of the ridge (see Appendix NINE). The dip appears to decrease on the lower northern slope of the ridge (south $\frac{1}{2}$ of coal licence CL 490).

COAL SEAMS

Mapping and trenching activities identified up to eight coal seams in the Project Area. These coal seams, measured at their outcrops, range in thickness from less than three feet to a maximum of 85 feet thick (as is exposed in trench T-26 on McLatchie Ridge 7). All seams belong to the lower Kootenay.

WEST RIDGE

A relatively complete stratigraphic section was measured in this area during the summer of 1977 (see Appendices FIVE & SIX). Eight coal seams were trenched and identified in ascending order from 1 to 7A and 7B. The lowermost seam is 48 feet thick (in trench T-9) and is about 150 feet above the basal Kootenay sandstone. Five seams range in thickness from 14 to 25 feet thick and two thinner seams are 4.3 and 8.8 feet thick.

All seams contain varying thickness of partings. In some instances, more detailed seam descriptions were prepared, but for the most part, the coal and partings relationship has been expressed by an observation judgement of "percentage-coal." Only two seams (6 and 7A) have been estimated to contain more than 90% of coal in full seam thickness. Aggregate thickness of all coal seams (incl. partings and shaly coal) in the section, is 152.5 feet.

McLATCHIE RIDGE

Up to five coal seams were exposed in this area (see Appendices TWO, THREE & FOUR). They range in thickness from 7 to 50 feet (if the 82.5 foot coal zone on Ridge 7 is excluded). The most complete section measured was located on Ridge 1; 5 seams were exposed. Appendix TWO shows the relationship of the measured stratigraphic sections on Ridges 0 through to 7.

The two lower seams on Ridges 0 and 3 may correlate with the two upper seams on Ridge 4 and the one seam exposed on Ridge 7. It should be noted that these two seams are in a comparable stratigraphic position (relative to basal Kootenay sandstone) to the two main seams indentified on both West Ridge and Lodgepole Ridge.

Aggregate thicknesses of coal exposed in the McLatchie Ridge area vary. Thickness exposed are as follows:

- * 37.2 feet on Ridge 4
- * 75.2 feet on Ridge 1
- * 88.5 feet on Ridge 7

LODGEPOLE RIDGE

Two seams, 45 and 27 feet thick, have been found and trenched on the southern slope of Lodgepole Ridge (see Appendices FIVE & SEVEN). The thicker, lower seam is about 150 feet above the basal Kootenay Sandstone and probably correlates with the 48 foot thick "SEAM 1" described on the West Ridge section; the thick seam on Lodgepole Ridge may also correlate to the lowermost correlatable seam of the McLatchie Ridge area.

The upper, thinner seam may correlate with "SEAM 2" of the West Ridge section; the correlation possibility is suggested by:

- * the stratigraphic distance between the two seams (125 feet compared to 180 feet),
- * their comparable thicknesses (27 feet and 20 feet)
- * the comparable sandstone unit that occurs in the middle of the stratigraphic interval between the seams.

Aggregate thickness of coal exposed in the Lodgepole Ridge area is 72 feet.

CONCLUSION

The presently available data indicate large coal resources potential and warrant an increased exploration expenditure in the area. The next exploration stage will aim at the following objectives:

- a) correlation of coal seam exposures in the McLatchie and West Ridge areas.
- b) obtaining a complete stratigraphic section in the Lodgepole Ridge area.
- c) obtaining an initial set of structural cross-sections supported by subsurface information.
- d) continue compilation of the 1: 10,000 geological map of the Lodgepole Area.
- e) determine the preliminary mineability conditions.

Recommendation on exploration 1978

- a) continue hand trenching to check the continuity of coal seams in the McLatchie Ridge area.
- b) combining trenching and the future access road expose coal bearing strata on east and west slopes of West Ridge.
- c) Survey coal seams exposures on the Lodgepole Ridge south slope access road.
- d) drill six holes on three sections spaces approximately 1000 m on the west slope of McLatchie Ridge and drill four holes on two 1000m spaced sections on the north slope of Lodgepole Ridge.

1977 EXPLORATION CHARGES

(Lodgepole Area - Licences 490 to 495)

The following is the summary of exploration expenditures incurred during the 1978 exploration season.

		<u>Cost</u>
Supervision		\$ 11,388.82
Vehicle Rental		
C.N.I. vehicle	\$ 1,750.00	
Other	<u>100.70</u>	
		\$ 1,850.70
Trenching		
Labor	\$ 19,729.07	
Contract	1,080.00	
Material	<u>122.20</u>	
		\$ 20,931.27
Mapping		
Contract	\$ 6,122.60	
Maps	510.66	
Misc.	<u>636.30</u>	
		\$ 7,269.56
	<u>Total expenditure:</u>	<u>\$ 41,440.35</u>

For detail information on the expenditures see Appendix 12.

APPENDIX ONE

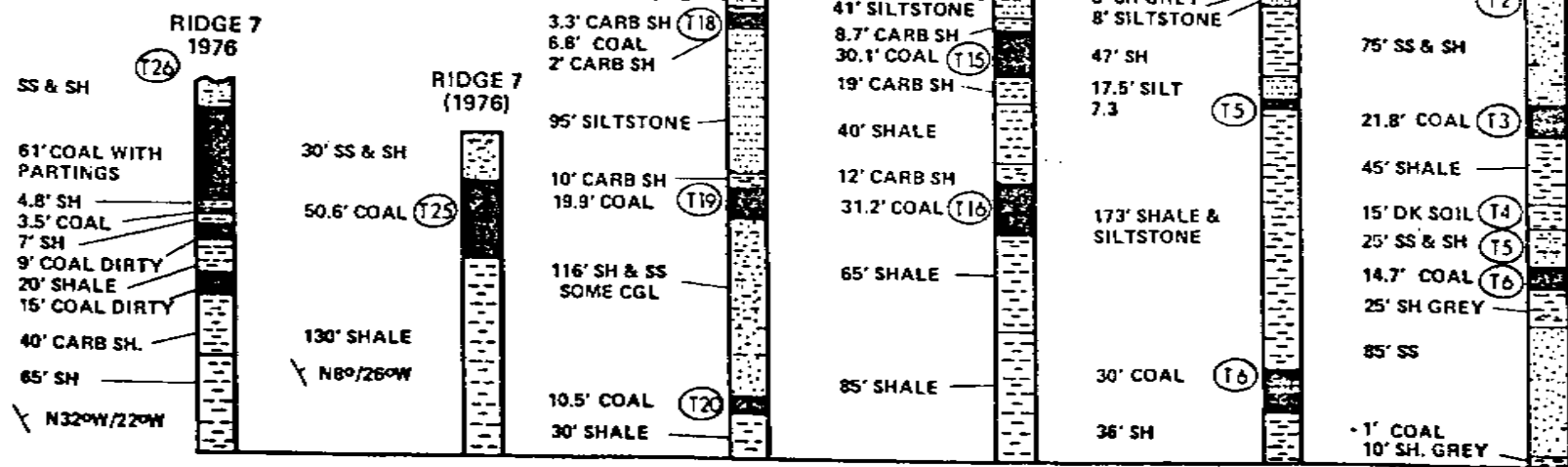
COAL LICENCES HELD BY CROWS NEST INDUSTRIES
LIMITED IN THE "LODGEPOLE AREA"

<u>COAL LICENCE</u>	<u>ACRES</u>
490	640
491	160
492	600
493	640
494	640
495	640
<hr/>	
TOTAL ACREAGE:	3320

LODGEPOLE (77(11A))
STRATIGRAPHIC SECTIONS MEASURED ALONG
WEST SIDE McLATCHIE CREEK VALLEY
1975-1976

-LEGEND-

(T 24) -- TRENCH No.



BASAL KOOTENAY SANDST
(MOOSE MTN. MEMBER)

VERTICAL SCALE

APPENDIX TWO

APPENDIX THREE

(RIDGE 0)

STRATIGRAPHIC SECTION MEASURED FROM TOP OF "RIDGE 0" DOWN
TO BASAL SANDSTONE (MOOSE MOUNTAIN MEMBER)
DURING THE 1975 FIELD SEASON

Thickness or Interval (ft.)	Lithology
185.0'	Interbedded Shales and Sandstones
	<u>Seam #7 (Trench #1, length 14 ft.)</u>
	Roof - blocky brown shale
0.9	Blocky black shale
0.3	Friable, carbonaceous shale
0.4	<u>Coal</u> - soft and dirty
0.3	Friable, carbonaceous shale
9.3	<u>Coal</u> - clean and medium hard
	Floor - blocky gray shale
30.0	Sandstone underlain by blocky shale and siltstone
	<u>Seam #6 (Trench #2, length 12 ft.)</u>
	Roof - Siltstone
5.0	Shale and coal stringers 75% and 25% respectively
2.7	<u>Coal</u> - containing three - 2" shale stringers
	Floor - dark shale
75.0	Sandstone underlain by shale
	<u>Seam #5 (Trench #3, length 40 ft.)</u>
	Roof - blocky brown shale
1.0	<u>Coal</u> (75%) with shale stringers (25%)
0.7	Blocky black shale
1.9	<u>Coal</u> - medium hard
0.3	Shale lenses - friable gray
13.7	<u>Coal</u> - very clean, medium hard
0.9	Friable brown shale
1.0	<u>Coal</u>
0.5	Friable brown shale
1.2	<u>Coal</u> - soft, clean
0.5	Friable carbonaceous shale
	Floor - Siltstone
45.0	Shale

..... Cont.

APPENDIX THREE

... cont ... (RIDGE O)

Thickness or Interval (ft.)	Lithology
	<u>Trench# 4, length 20 ft., depth 7 ft.</u>
	Abandoned - appears to lie in fault zone
15.0	Soil - like material
	<u>Trench# 5, length 10 ft.</u>
	Abandoned - also in faulted area - only small amounts of coal found.
25.0	Sandstone - forms a prominent mound above Trench 2 underlain by carbonaceous shale.
	<u>Seam# 4 (Trench# 6, length 27 ft.)</u>
	Roof - blocky gray shale
0.8	Mixture of finely banded shale and coal
0.6	Coal - soft
0.8	Friable gray shale
0.5	Shale with coal stringers (50% each)
2.0	Coal - clean, medium hardness
0.2	Rusty Siltstone
2.7	Coal - clean, hard
0.1	Rusty siltstone
2.8	Coal - clean, hard
0.1	Shale
0.5	Coal - clean, hard
0.5	Oolitic hematite
0.7	Coal and shale (50% each)
	Floor - shale
25.0	Blocky gray shale
85.0	Sandstone
	<u>Seam# 5 (Trench# 7, length 3 ft.)</u>
1.0	Coal
10.0	Shale - blocky gray Basal Kootenay (Moose Mountain) Sandstone

Summary:

549.0' : Total section measured
 40.8' : Total coal in section
 126.0' : Total length of Trenches

APPENDIX FOUR

STRATIGRAPHIC SECTIONS MEASURED

DURING THE 1976 FIELD SEASON

"LODGEPOLE AREA"

APPENDIX FOUR

(RIDGE 1)

STRATIGRAPHIC SECTION MEASURED FROM TOP OF
 "RIDGE 1" DOWN TO BASAL SANDSTONE DURING THE
 1976 FIELD SEASON

Thickness Interval (ft.)	Lithology
125.0	Sandstone
1.0	<u>Coal</u>
23.0	<u>Shale</u>
40.0	Sandstone
15.0	Shale - blocky, black, - carbonaceous
55.0	Sandstone - massive
17.0	Shale - blocky, black, carbonaceous
20.0	Sandstone
15.0	Shale - carbonaceous
44.0	Siltstone & shale
45.0	Sandstone - blocky, grey
1.0	<u>Coal</u>
20.0	Shale - carbonaceous
 <u>Trench T1 (76 R1 T1 S1)</u>	
12.0	Shale - blocky, brown weathered
0.4	Shale - friable
7.6	<u>Coal</u> - soft
5.6	Shale - blocky
3.8	<u>Coal</u> - soft
13.0	Sandstone - f.g. grey
15.0	Shale - blocky Seam thickness 17.0' Coal thickness 11.4'
 <u>Trench T2 (76 R1 T2 S1 A)</u>	
18.0	Shale and coal stringers (60% & 40%)
87.0	Shale and sandstone
 <u>Trench T3A (76 R1 T3 S2)</u>	
1.4	Shale - friable
6.0	<u>Coal</u> - Medium soft, fine bedded

APPENDIX FOUR

cont... (RIDGE 1)

Thickness Interval (ft.)	Lithology	
	<u>Trench T3B (76 R1 T3 B)</u>	
5.2	Shale - blocky, carbonaceous	
0.3	<u>Coal</u>	
0.1	Shale	
3.9	<u>Coal</u>	
0.2	Shale - grey brown, soft	
2.8	<u>Coal</u>	
0.1	Shale - soft, grey-brown	
0.9	<u>Coal</u>	
0.2	Shale - soft, grey-brown	
10.9	<u>Coal</u>	
3.0	Shale F.W.	
8.0	Siltstone - grey-brown	
47.0	Shale - friable, carbonaceous	
17.5	Siltstone - blocky, grey-brown	Seam thickness - 19.4'
		Coal Thickness - 18.8'
	<u>Trench T4 (76 R1 T4 S3)</u>	
1.7	Shale	
0.5	<u>Coal</u>	
0.8	Shale - grey, soft	
5.4	<u>Coal</u>	
173.0	Shale & siltstone	Seam thickness - 6.7'
		Coal thickness - 5.9'
	<u>Trench T6 (76 R1 T6 S4 A)</u>	
0.7	<u>Coal</u>	
0.1	Shale - brown, soft	
1.5	<u>Coal</u>	
0.1	Shale - brown, soft	
1.0	<u>Coal</u>	
0.3	Shale	
1.3	<u>Coal</u> - soft, dirty	
1.2	Iron oxide & coal (70% - 30%)	
0.1	Gumbo - (clay)	
2.3	<u>Coal</u>	
0.9	Iron oxide & coal (50% - 50%)	
1.0	<u>Coal</u>	
0.2	Iron oxide	

APPENDIX FOUR

cont...(RIDGE 1)

Thickness

Interval (ft.)

Lithology

Trench T6 (76 R1 T6 S4 A) - (cont'd)

0.6	<u>Coal</u>
0.7	Iron Oxide
3.1	<u>Coal</u>
0.7	Iron Oxide
2.0	<u>Coal</u>
0.2	Iron Oxide
6.0	<u>Coal</u>
0.1	Shale - brown, soft
4.3	<u>Coal</u>
0.7	Shale
0.9	<u>Coal</u>
36.0	Shale
-	Basal Kootenay Sandstone

Seam thickness - 30.0'

Coal thickness - 24.7'

APPENDIX FOUR

(RIDGE 2)

STRATIGRAPHIC SECTION MEASURED ON "RIDGE 2"
 DURING THE 1976 FIELD SEASON
 (measured top to bottom)

Thickness Interval (ft.)	Lithology
	<u>Trench T8 (76 R2 T8 S3 C)</u>
9.0	Sandstone - fine grained, dark brown
1.5	Shale - friable, carbonaceous
0.6	<u>Coal</u>
1.2	Shale - friable, carbonaceous
3.8	<u>Coal</u>
1.7	Shale - strained rust
3.8	<u>Coal</u>
	Shale F.W.
	Seam thickness - 11.1'
	Coal thickness - 8.2'

APPENDIX FOUR

(RIDGE 3)

STRATIGRAPHIC SECTION MEASURED ON
 "RIDGE 3" DURING THE 1976 FIELD SEASON
 (measured top to bottom)

Thickness Interval (ft.)	Lithology
5.0	Sandstone - fine grained, brown
6.0	Sandstone - fine grained, black
4.0	Sandstone - fine grained, buff to black
0.4	Sandstone - very thin - bedded
1.2	Shale - black
0.4	Shale - carbonaceous - platy
0.4	Shale - highly carbonaceous
<u>Trench T13 (76 R3 T13 S3)</u>	
0.4	<u>Coal</u>
0.3	Shale - carbonaceous
0.6	<u>Coal</u> - soft
0.5	Shale - fine bedded, carbonaceous
0.5	<u>Coal</u> - soft
0.9	Shale - dark brown
0.6	Shale - friable carbonaceous
1.1	<u>Coal</u>
0.2	Gumbo (clay) - carbonaceous
3.6	<u>Coal</u> - soft
	Seam thickness - 8.7'
	Coal thickness - 6.2'
1.1	Shale - brown strike N 12° W dip 31° SW
15.0	Siltstone & shale - weathers buff - good marker
11.5	Shale - carbonaceous
<u>Trench T14 (76 R3 T14)</u>	
0.3	<u>Coal</u>
1.0	Shale - carbonaceous, friable
1.4	<u>Coal</u> - soft, clean
10.0	Shale - carbonaceous & silty
41.0	Siltstone
8.7	Shale - carbonaceous

APPENDIX FOUR

cont... (RIDGE 3)

Thickness

Interval (ft.)

Lithology

Trench T15 (76 R3 T15)

1.8	<u>Coal</u>
0.2	Shale
0.7	<u>Coal</u> - soft
1.0	<u>Coal</u> - very hard & brittle
1.2	Shale - hard, carbonaceous
0.9	<u>Coal</u>
0.3	Shale
9.5	<u>Coal</u>
2.7	Shale & Coal - (90% - 10%)
4.0	<u>Coal</u> - very hard & brittle
7.8	<u>Coal</u> - hard & flaky

Seam thickness - 30.1'

Coal thickness - 25.7'

19.0	Shale - carbonaceous, blocky
40.0	Shale - brown weathering
12.0	Shale - carbonaceous

fault contact

Trench T16 (76 R3 T16)

0.4	<u>Coal</u>
0.3	<u>Bone</u>
0.9	<u>Coal</u>
0.1	Shale
1.2	<u>Coal</u>
0.1	Shale
24.0	<u>Coal</u> - 8 small shale stringers 1/4" or less
2.0	<u>Coal</u> with iron ore (bog iron)
1.5	<u>Coal</u>
0.1	Shale
0.6	<u>Coal</u>

Seam thickness - 31.2'

Coal thickness - 28.6'

85.0 Shale

Basal Kootenay Sandstone

APPENDIX FOUR

(RIDGE 4)

STRATIGRAPHIC SECTION MEASURED ON "RIDGE 4"
 DURING THE 1976 FIELD SEASON
 (measured top to bottom)

Thickness Interval (ft.)	Lithology
<u>Trench T17 (76 R4 T17)</u>	
	Exposed carbonaceous shale
<u>Trench T18 (76 R4 T18)</u>	
10.0	Siltstone
3.3	Shale - friable, carbonaceous
4.7	Shale & coal (60% - 40%)
2.1	<u>Coal</u>
2.0	Shale - friable, carbonaceous
95.0	Siltstone - mass - buff weathering
10.0	Shale - friable, carbonaceous
<u>Trench T19 (76 R4 T19)</u>	
2.0	<u>Coal</u> - dirty
0.8	Shale
1.0	<u>Coal</u>
0.2	Shale - brown
3.5	<u>Coal</u>
0.1	Shale
1.0	<u>Coal</u>
0.5	Shale
0.5	<u>Coal</u>
1.4	Shale
6.6	<u>Coal</u> - hard, clean
1.1	<u>Coal</u> - brittle, stained
1.0	<u>Coal</u>
0.1	Shale
0.1	<u>Coal</u>
	Seam thickness - 19.9'
	Coal thickness - 16.8'
116.0	Shale & sandstone with lenses of conglomerate

APPENDIX FOUR

cont... (RIDGE 4)

Thickness Interval (ft.)	Lithology
	<u>Trench T20 (76 R4 T20)</u>
5.1	<u>Coal</u>
0.1	Gumbo
0.6	<u>Coal</u>
0.1	Shale - strike N 38° W, dip 25° SW
0.7	<u>Coal</u>
0.6	Shale & Coal (70% - 30%)
2.5	<u>Coal</u> - soft
0.8	Shale - friable, soft, carbonaceous
	Seam thickness - 10.5'
	Coal thickness - 8.9'
30.0	Shale - blocky
	Basal Kootenay Sandstone

APPENDIX FOUR

(RIDGE 7)

STRATIGRAPHIC SECTION MEASURED ON
 "RIDGE 7" DURING THE 1976 FIELD SEASON

Thickness Interval (ft.)	Lithology
30.0	Sandstone & blocky shale
	<u>Trench T25 (76 R7 T25)</u>
1.0	Shale - friable, carbonaceous
2.2	Coal - friable, soft
1.4	Shale - yellow - brown stained
0.4	Coal - soft
0.2	Shale
0.4	Coal
0.1	Shale
0.3	Coal
0.2	Shale
2.1	Coal - hard, clean
0.1	Shale
2.0	Coal - hard, clean
0.1	Shale - yellow
0.2	Coal
0.1	Shale
3.0	Coal - hard, clean
0.1	Shale
3.6	Coal - hard, clean
0.3	Gumbo
1.0	Coal
0.1	Shale
1.2	Coal
0.2	Shale
0.4	Coal
0.2	Shale - yellow
2.5	Coal - soft
0.2	Shale
0.3	Coal
0.1	Shale
0.3	Coal
0.1	Shale
2.0	Coal - soft, clean
1.0	Gumbo - carbonaceous
11.0	Coal - medium hard, clean
0.4	Gumbo
1.0	Coal
0.3	Gumbo
5.0	Coal
2.0	Shale & coal stringers (50% - 50%)
2.6	Coal - soft, dirty
0.1	Iron band
1.8	Coal - soft, dirty
	Seam thickness - 50.6'
	Coal thickness - 43.3'
130.0	Shale - strike N 8° W, dip 26° W
	Basal Kootenay Sandstone

APPENDIX FOUR

cont...(RIDGE 7)

Thickness Interval (ft.)	Lithology
	Sandstone & blocky shale
	<u>Trench T26 (76 R7 T26)</u>
0.8	Shale - friable & carbonaceous
2.5	<u>Coal</u> - soft, clean
0.1	Shale
2.8	<u>Coal</u> - soft
0.1	Shale - yellow
9.3	<u>Coal</u> - soft
0.1	Shale
3.0	<u>Coal</u> - moderately hard
0.2	Shale
15.0	<u>Coal</u> - moderately hard
0.2	Shale
0.8	<u>Coal</u>
3.0	Shale & coal (50% - 50%)
3.2	<u>Coal</u>
0.1	Shale - orange stained
1.4	Shale & coal (20% - 80%)
1.8	<u>Coal</u>
1.3	Coal & Shale (50% - 50%)
14.0	<u>Coal</u>
0.5	Iron band
0.2	<u>Coal</u>
0.6	Coal & shale (50% - 50%) strike N 30° W, dip 43° W
0.8	<u>Coal</u>
4.8	Shale
3.5	<u>Coal</u>
7.0	Shale - friable, carbonaceous
9.0	<u>Coal</u> - soft & dirty
20.0	Shale
3.0	Coal & shale stringers (50% - 50%)
12.0	<u>Coal</u> - very dirty, bloom
40.0	Shale - friable, carbonaceous
60.0	Shale - Blocky - strike N 32° W, dip 22° W

Seam thickness - 115.5'

Coal thickness - 79.3'

Basal Kootenay Sandstone

APPENDIX FIVE

STRATIGRAPHIC SECTIONS MEASURED DURING
THE 1977 FIELD SEASON

STRATIGRAPHIC SECTION

DESIGNATION:

WR 77

PART 1 OF 1

PROJECT: LODGEPOLE

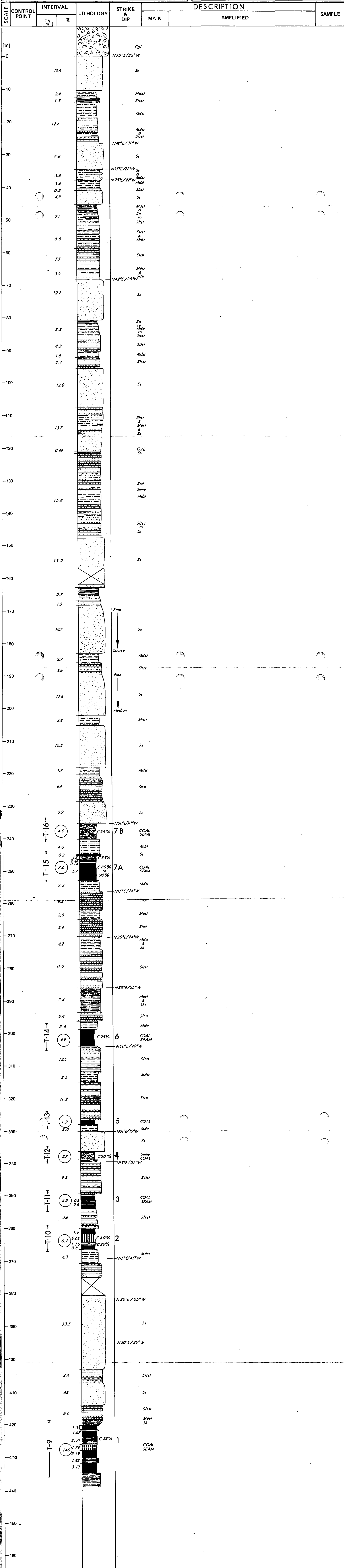
AUTHOR: R. MARSH

DATE: 1977

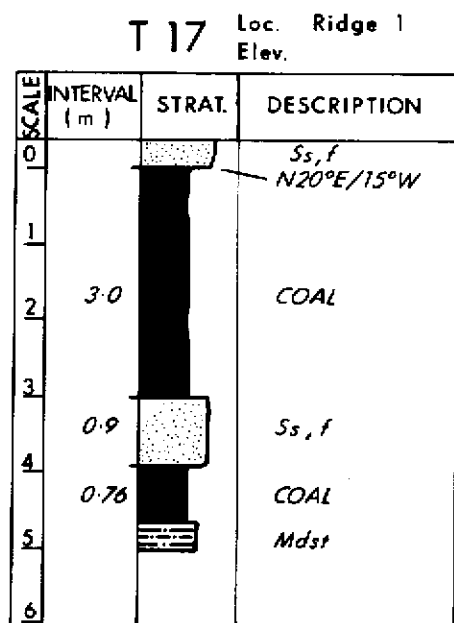
AREA: WEST RIDGE

SOURCE OF DATA: TRENCH DESCRIPTION,
FIELD NOTES

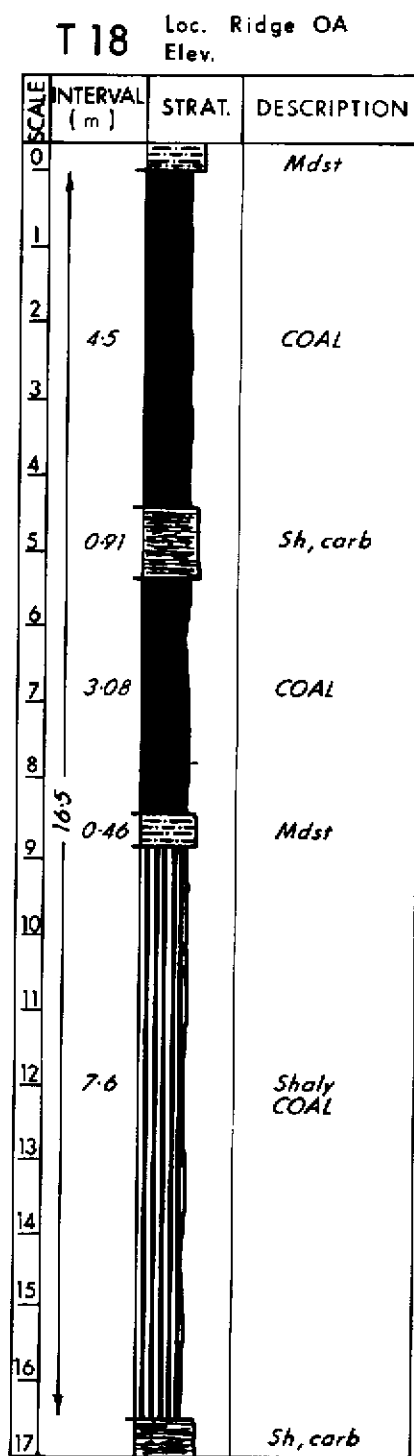
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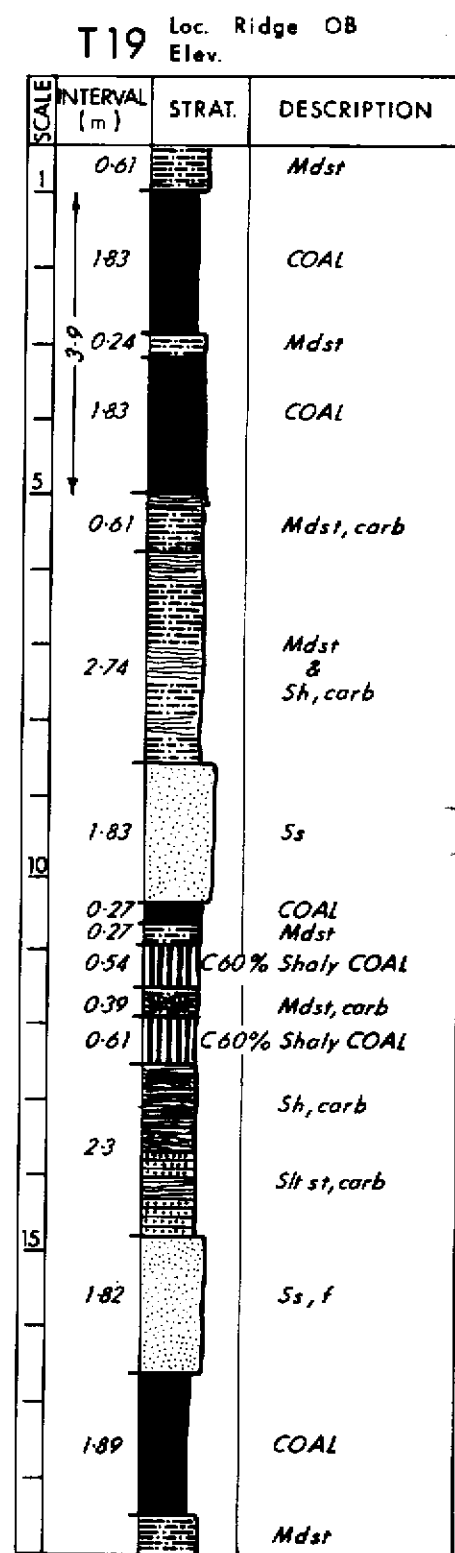
PROJECT : LODGEPOLE
AREA : McLATCHIE RIDGE



ORIGINAL 1:10



ORIGINAL 1:10



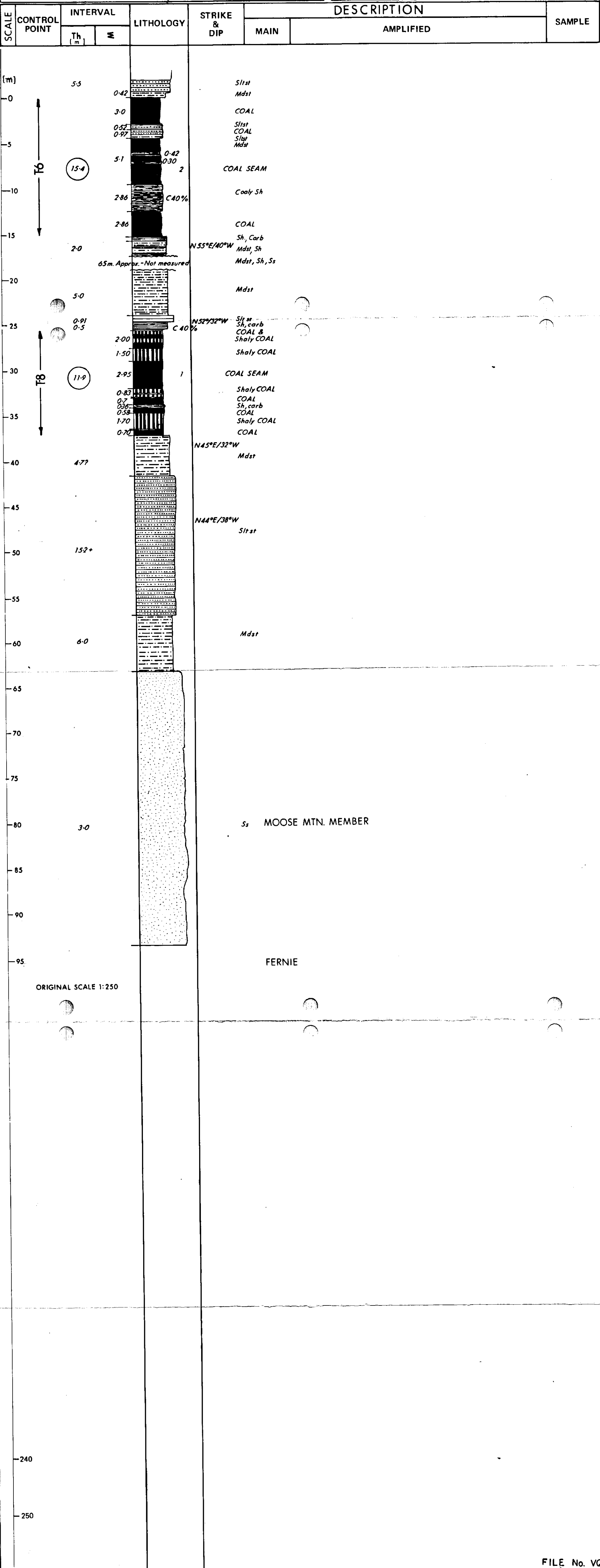
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DATE: SUMMER 1977

SOURCE OF DATA: Trench descriptions, field notes

STRATIGRAPHIC SECTION

DESIGNATION: LR 77	PART <u>1</u> OF <u>1</u>
PROJECT: LODGEPOLE	AUTHOR: R. MARSH
AREA: RIDGE 21" (LODGEPOLE RIDGE)	DATE: 1977
LOCATION:	SOURCE OF DATA: TRENCH DESCRIPTION, FIELD NOTES



425 map #3

STRATIGRAPHIC SECTION

DESIGNATION:

GS 8

PART 1 OF 1

PROJECT: LODGEPOLE

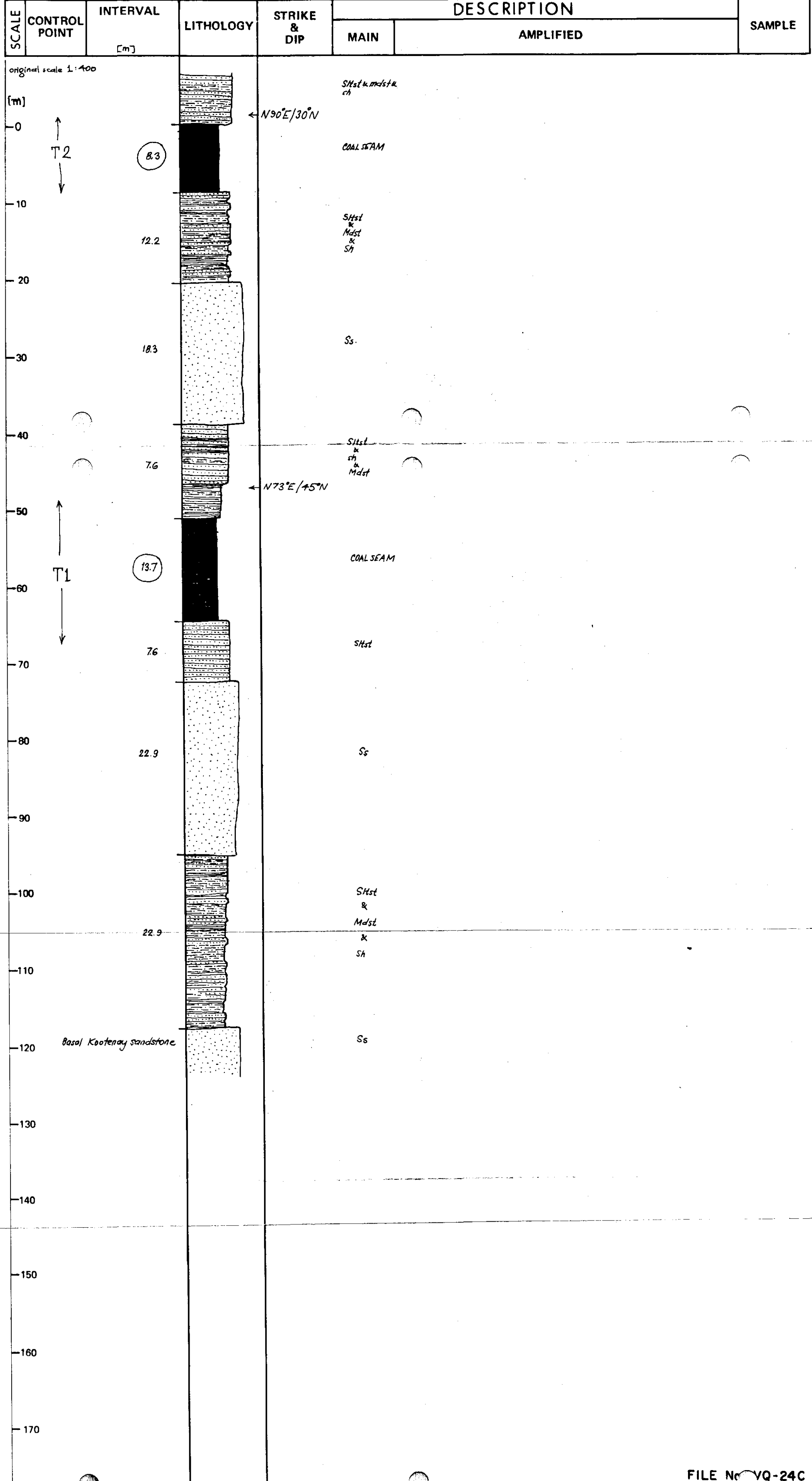
AUTHOR: R. Marsh

DATE: 1977

AREA: LODGEPOLE RIDGE

SOURCE OF DATA: Geol. description of trench and outcrop

LOCATION:



APPENDIX SIX

(WEST RIDGE)

STRATIGRAPHIC SECTION MEASURED ON
WEST RIDGE DURING THE 1977 FIELD SEASON

Interval Thickness (ft.)		Lithology
BLAIRMORE	CGL;	Non-feldspathic, glauconitic?, chert-qtz, pebble.
Possible contact attitude N25°E/22°W		
KOOTENAY		
35	S.S;	Dk. grey, salt & pepper (s/p), coarse gr., mod. sorted, massive, qtz-chert; weathered lt. grey with rust stains; N25°E/10°W.
8.0	MUD;	Black, banded, well fract., carbo.; contains very minor <u>COAL</u> fingers; grades into under- lying bed.
1.5	CHUST;	Carbonaceous Hard Unknown Siltstone; dk. grey, very fine gr., fossil./carbo., cherty, argillitic?; may grade into lower MUD bed.
41.5	MUD/SILT;	Black, well fract., MUD (40%?) probably grades into grey thinly bedded SILT (60%?); covered interval.
Contact attitude of underlying S.S. N 48°E/30°W; possible fault plane.		
25.7	S.S.;	Lt. grey, s/p, well sorted, med. gr., chert- qtz-qtzite; weathers orange; N15°E/22°W.
11.5	SS/MUD;	S.S. as above; black carbo. MUD containing very minor <u>COAL</u> fingers; interval covered by talus; contact hidden; at lowest part of this interval there is a 0.5' CHUST bed with attitude N25°E/22°W.
11.1	MUD;	Black, carbo; contains very minor <u>COAL</u> fingers; some SILT; covered by talus.
1.0	CHUST	
14.2	S.S.;	Grey, s/p, coarse gr., mod. sorted, massive, qtz-chert; weathers to tan and orange.

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)		Lithology
23.3	CHUST/MUD;	50%-50%, lower interval appears to grade from MUD to SH to an indurated fine gr. SILT; interval partially covered but CHUST beds o/c.
21.5	SILT/MUD/ SH/COAL;	Interbedded, mainly SILT; carbo MUD & SH. contain minor COAL beds & high density of leaf fossils and appear to occur at the top of the interval; covered interval.
18.0	SILT;	Greyish brown, med. gr., well sorted, massive, calc.; weathers rusty orange; covered interval.
12.8	MUD/SILT;	Interbedded; contains 2 foot S.S. bed which shows possible shearing of 145°; covered interval; N42°E/25°W.
40.0	S.S.;	Brown & grey, fine to med. gr., banded, graded bedding, calc.; covered by float, shrubs & trees.
17.4	SH/MUD/SILT;	Dk. grey, fine to med. gr., indurated, fissile, fossil./carbo. SH. grades into a MUD. and then into a SILT; essentially one unit; more fossil. (leaves)/carbo. at top of interval; covered by float, shrubs & trees.
14.2	SILT;	Greyish-brown, coarse gr., massive, calc; covered by small trees and float.'
6.0	MUD;	Black, covered interval
11.1	SILT;	Greyish-brown, coarse gr., massive, covered interval.
39.4	S.S.;	Dk. grey, coarse gr., mod. sorted, some graded bedding, chert-qtz (some calcite?); shows banded rust coloured banding; mostly covered by float & trees but o/c at bottom of interval.
45.0	SILT/MUD/S.S.;	Interbedded; non-carbo.
1.5	SH;	Black, carbo./fossil.; covered interval.
84.7	SILT;	Grey, fine to coarse gr., calc.; weathers brown: contains some MUD and S.S.; covered by trees and shrubs; coarser lower interval appears to grade into the underlying S.S. unit.

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)		Lithology
49.9	S.S.;	Brownish (?) grey, med. gr., well sorted, massive and thinly bedded, qtz-chert, s/p calc.; weathers rusty brown; coarser gr. to lower interval; covered interval but o/c at lower part.
12.9	SH;	Black, slightly carbo./fossil.; grades into MUD and then into underlying SILT; covered by float & talus
4.8	SILT;	Brownish grey, med. gr., well sorted; covered by trees, shrubs & float.
48.4	S.S.;	Lt. grey, fine grading to coarse gr., banded, calc., qtz-chert; covered by trees, shrubs & float; N15°E/25°W.
9.5	MUD;	Black, carbo.; grades into underlying unit; covered by talus.
11.8	SILT;	Brown weathered, banded; grades into underlying unit, covered by trees, shrubs & float.
41.5	S.S.;	Grey, med. gr., well sorted, banded, qtz-chert, calc., brown weathered; covered by trees, shrubs & float.
9.2	MUD;	Black, coarse gr.; carbo. at top of interval; covered by talus.
34.6	S.S.;	Grey, fine to coarse gr., mod. banded, well sorted, calc., qtz-chert; covered by trees, shrubs & float.
6.2	MUD;	Black, carbo., coarse gr.; covered by flowers and talus.
27.5	SILT;	Brownish grey, fine gr., micro. X-bedded, carbo./fossil.; covered by flowers and talus
22.8	S.S., <u>H.W.</u> ;	Grey, med. gr., well sorted, banded, brown weathered, calc., qtz-chert; covered by shrubs and float; N30°E/30°W.
16.0	<u>COAL SEAM #7 B</u>	<u>TRENCH #16</u>
	16.0 MUD/ 65%	Black, carbo.
	<u>COAL</u> 35%	Med. hard, friable, dirty.
TOTAL SEAM THICKNESS 16.0'		
AGGREGATED <u>COAL</u> THICKNESS 5.6'		

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)	Lithology	
15.2	MUD, <u>F.W.</u> ;	Brown, coarse gr., minor carbo.; covered by shrubs & talus.
1.0	S.S., <u>H.W.</u> ;	Brownish grey, med. gr., carbo., generally massive.
24.9	<u>COAL SEAM # 7 A</u>	<u>TRENCH # 15</u>
2.8	<u>COAL/</u>	50% Soft, friable, well fract.
	MUD	50% Mainly 0.1' bands, carbo./fossil, well fract.
1.2	<u>COAL/</u>	60%
	MUD	40%
1.4	<u>COAL/</u>	80% Mod. hard, mod. clean
	SH	20%
0.8	MUD/	50% Carbo./fossil.
	<u>COAL</u>	50% Mod. hard, friable.
2.1	<u>COAL/</u>	80% Hard, friable, massive
	SH	20% Carbo.
2.9	<u>COAL/</u>	90% Hard, friable, massive
	SH	10%
5.6	<u>COAL/</u>	80% Hard, friable, massive
	SH	20%
3.4	<u>COAL/</u>	90% Hard, friable, massive
	SH	10%
4.7	<u>COAL/</u>	85% Hard, friable, massive, slightly graphitic
	SH	15%
TOTAL SEAM THICKNESS 24.9'		
AGGREGATE <u>COAL</u> THICKNESS 19.6'		
10.9	MUD, <u>F.W.</u> ;	Dk. grey, fine to coarse gr., well fract.; covered by trees & talus: N15°E/26°W.
20.6	<u>SILT</u> ;	Dk. brown, med. gr., mod. thinly bedded, fossil., calc.; covered by shrubs & float; this is a very good <u>fossil locality</u> , showing leaves, ferns and stems.
6.7	MUD;	Black, carbo., med. gr.
17.6	<u>SILT</u> ;	Grey-brown, med. gr., thinly bedded; also micro. X-bedded; covered by talus with some o/c; N25°E/24°W.
13.9	MUD/SH;	Black, carbo., well fract.; covered interval.

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)	Lithology	
38.1	SILT;	Grey-brown, fine gr., micro. X-bedded, carbo./fossil;; probably contains some small beds of black carbo. MUD.; minor amount of o/c; covered by trees and talus; N30°E/25°W.
24.3	MUD/SH;	Black, carbo.; covered by talus, shrubs and trees; this may be a possible seam location, ie. this unit may grade laterally into <u>COAL</u> .
7.9	SILT, <u>H.W.</u> ?	Brown, fine gr., micro. bedded, carbo./fossil.; covered interval.
8.5	MUD;	Black, carbo.; covered interval; contains minor <u>COAL</u> fingers; part of underlying seam?
16.1	<u>COAL SEAM# 6</u>	<u>TRENCH# 14</u>
	16.1 <u>COAL</u> / SH	95% Mod. hard, clean, friable 5%
TOTAL SEAM THICKNESS 16.1'		
AGGREGATED <u>COAL</u> THICKNESS 15.3'		
1.0	MUD, <u>F.W.</u> ;	Black, coarse gr., carbo.; N20°E/40°W.
	- Note -	the steep dip angle (40°), from which the Total Seam Thickness was calculated, is generally inconsistent with the average dip angle (25°) of the majority of the beds of this ridge. Therefore, this seam may be thicker or thinner than is reported here. This change in dip angle may be due to drag folding.
43.2	SILT;	Brownish grey, med. gr., banded/X-bedded, calc; covered by trees and talus/float.
8.3	MUD;	Black, very fine gr., carbo., argill.; covered by trees & talus
38.4	SILT, <u>H.W.</u> ;	Lt. grey, fine gr.; contains some carbo. MUD; covered by talus & trees; grades into a grey, fine gr., banded S.S., of undetermined thickness, which forms the hanging wall for the underlying <u>COAL</u> seam.
4.2	<u>COAL SEAM# 5</u>	<u>TRENCH# 13</u>
	4.2 <u>COAL</u>	Clean, soft
TOTAL SEAM THICKNESS 4.2'		
AGGREGATED <u>COAL</u> THICKNESS 4.2'		

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)	Lithology	
2.0	MUD, <u>F.W.</u> ;	Grey, coarse gr.; N21°E/15°W
21.5	S.S., <u>H.W.</u> ;	Brownish grey, fine to med. gr., banded?, carbo.; covered by trees, shrubs & float.
8.9	<u>COAL SEAM #4</u>	<u>TRENCH #12</u>
8.9	SH & MUD/	70% Black, carbo., well fract.
	<u>COAL</u>	30% Mod. hard, argill.
TOTAL SEAM THICKNESS 8.9'		
AGGREGATE COAL THICKNESS 2.7'		
1.9	SH., <u>F.W.</u> ;	Grey, carbo./fossil.; covered by talus; N15°E/37°W
	- Note 4	Again the steep dip angle of the footwall may cause this seam thickness to be in error.
32.1	SILT, <u>H.W.</u> ;	Grey, fine gr., well sorted, thinly bedded; covered by trees & float; the bottom of this unit appears to grade into a brown carbo. SH. which forms the hanging wall of the underlying <u>COAL</u> seam; N20°E/25°W.
14.1	<u>COAL SEAM #3</u>	<u>TRENCH #11</u>
0.5	<u>COAL</u>	Soft, friable, argill.
0.3	<u>MUD</u>	Grey
5.0	<u>COAL</u>	Mod. hard, argill.
0.3	<u>COAL</u>	Soft, friable.
2.6	<u>SH.</u>	Dk. grey, friable, carbo.
0.7	<u>COAL</u>	Hard, friable, argill.
2.0	<u>SH.</u>	Grey, friable, carbo.
2.7	<u>COAL</u>	Mod. hard, friable, argill.
TOTAL SEAM THICKNESS 14.1'		
AGGREGATE <u>COAL</u> THICKNESS 9.2'		
1.0	MUD, <u>F.W.</u> ;	Brown, friable, very well fract.; an approximate thickness as this footwall is actually part of the underlying unit.
51.7	SILT, <u>H.W.</u> ;	Brown-grey, fine gr., carbo./fossil., well fract., possibly thinly bedded; covered by trees, shrubs and float; contains at least one carbo. MUD unit, which is two to three feet thick.
20.3	<u>COAL SEAM #2</u>	<u>TRENCH #10</u>
5.3	<u>COAL</u>	Hard, friable, relatively clean.
4.4	<u>COAL</u>	Hard, massive, dirty.

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)	Lithology	
4.2	<u>COAL/</u>	60% Hard, massive, dirty
	<u>MUD</u>	40% Carbo.
3.8	<u>MUD/</u>	70% Generally 0.1-0.2' beds, well fract.
	<u>COAL</u>	30% Hard, well fract., bedded
2.6	<u>COAL</u>	Very hard, generally massive
TOTAL SEAM THICKNESS 20.3'		
AGGREGATE <u>COAL</u> THICKNESS 15.9'		
14.1	<u>MUD, F.W.;</u>	Grey, coarse gr., carbo.; covered by talus; N15°E/45°W.
	- Note -	Once again the steep dip angle of the footwall may cause this seam thickness to be in error
110.0	<u>S.S.;</u>	Grey, s/p, med. gr., banded, qtz-chert; grades into a coarse gr. SILT. of undetermined thick- ness at top of interval (5 - 10'); covered by trees, shrubs and float: N30°E/25°W, N20°E/30°W.
13.0	<u>SILT;</u>	Dk. brown-black, med. gr., massive?/thickly bedded?; covered by trees, shrubs and float.
22.2	<u>S.S.;</u>	Grey, s/p, med. to coarse gr., banded, qtz-chert; covered by small trees.
19.8	<u>SILT, H.W.;</u>	Black, micro. banded, possibly carbo; lowest part of interval appears to grade into a dk. grey, slightly carbo., micaceous MUD which forms the hanging wall of the under- lying <u>COAL</u> seam.
47.9	<u>COAL SEAM #1</u>	<u>TRENCH #9</u>
0.5	<u>COAL</u>	Argill.
1.8	<u>COAL</u>	Soft.
2.4	<u>COAL</u>	Hard, very black
0.1	<u>SH</u>	
5.5	<u>COAL</u>	Hard, clean, friable
0.2	<u>MUD</u>	Weathered to clay
8.9	<u>SH/</u>	75% Weathered to clay?
	<u>COAL</u>	25% Soft, friable
2.5	<u>COAL</u>	50% Argill.
	<u>SH</u>	50% Carbo.
0.2	<u>MUD</u>	Lt. Brown
3.2	<u>COAL/</u>	50% Argill.
	<u>SH</u>	50% Carbo.
4.6	<u>COAL</u>	Argill, friable.
0.2	<u>MUD</u>	
2.4	<u>COAL</u>	Argill, friable
5.1	<u>SH</u>	Black, carbo./fossil, hard

APPENDIX SIX

cont.. (WEST RIDGE)

Interval Thickness (ft.)	Lithology
4.0 <u>COAL</u>	Very hard, friable
2.6 <u>COAL</u>	Very hard, friable, graphitic?
3.7 <u>COAL</u>	Mod. hard, friable, with 0.4' hematitic marker (?) bed
TOTAL SEAM THICKNESS 47.9'	
AGGREGATE <u>COAL</u> THICKNESS 32.5'	
SH./MUD., <u>F.W.</u> ;	Graphitic, yellow, stained, covered by talus and small trees; N10° E/30° W.

APPENDIX SEVEN

STRATIGRAPHIC SECTIONS MEASURED
ON McLATCHIE RIDGE DURING THE
1977 FIELD SEASON

Interval Thickness (ft.)	Lithology	
	<u>COAL SEAM #C4</u>	<u>TRENCH #17</u> (RIDGE 1)
	Footwall S.S.:	brown, fine gr.: N20°E/15°W
9.9	<u>COAL</u> :	soft, dirty
3.0	S.S.:	brown, fine gr., finely banded
2.5	<u>COAL</u> :	soft, well oxidized
	Hanging Wall MUD	brown
TOTAL SEAM THICKNESS 15.4'		
TOTAL COAL THICKNESS 12.4'		
	<u>COAL SEAM #A4</u>	<u>TRENCH #18</u> (RIDGE OA)
	Hanging Wall MUD:	black, fract., well sheared
15.0	<u>COAL</u> :	hard, waxy, argill.
3.0	SH:	black, carbo.
4.1	<u>COAL</u> :	med. hard, friable
6.0	<u>COAL</u> :	black, hard, waxy
1.5	MUD:	black, carbo.
25.0	<u>COAL</u> /	60%
	SH	40%
	Footwall ?	
TOTAL SEAM THICKNESS 54.6'		
TOTAL COAL THICKNESS 40.1'		
	<u>COAL SEAM #D4</u>	<u>TRENCH #19</u> (RIDGE OB)
	Hanging Wall	
2.0	MUD:	black
6.0	<u>COAL</u> :	med. hard, waxy, argill. friable
0.8	MUD:	brown
6.0	<u>COAL</u> :	med. hard, waxy, argill
0.3	MUD:	brown
2.0	MUD, F.W.:	carbo.
9.0	MUD/SH:	carbo.
6.0	S.S./H.W.:	brown

Interval Thickness (ft.)	Lithology		
0.9 <u>COAL</u> ;	waxy, argill		cont.. (RIDGE OB)
0.9 MUD;	carbo.		
1.8 <u>COAL</u> / MUD	60% 40%	waxy, argill	
1.3 MUD/ <u>COAL</u>	80% 20%		
2.0 <u>COAL</u> / MUD	60% 40%	med. hard, friable brown carbo.	
1.6 SH/ <u>COAL</u>	80% 20%	carbo.	
6.0 SILT/ <u>COAL</u>	80% 20%		
6.0 S.S;		fine gr., brown banded	
6.2 <u>COAL</u> ;		soft very friable	
Footwall MUD;		brown	
TOTAL SEAM THICKNESS	58.8'		
TOTAL COAL THICKNESS	22.3'		

APPENDIX EIGHT

(RIDGE 21)

STRATIGRAPHIC SECTION MEASURED ON
 "RIDGE 21" (LODGEPOLE RIDGE) DURING
 THE 1977 FIELD SEASON

Interval	Thickness (ft.)	Lithology
18.0	SILT, H.W.:	Light grey, fine gr., thinly bedded: has an attitude of N75°E/40°N and appears to sit "askew" of the coal seam & footwall (F.W.)
54.2	<u>COAL SEAMS #2</u>	<u>TRENCH #6</u>
1.4	MUD	Carbo.
9.9	<u>COAL</u>	Friable, med. hard
1.7	<u>SILT</u>	Fine gr., lt. grey, well fractured
0.3	<u>COAL</u>	Friable, soft
2.1	<u>SILT</u>	Fine gr., lt. grey, well fractured
1.0	<u>COAL</u>	Partly argillaceous, soft, friable
0.3	MUD	Light grey, carbo.
0.4	<u>COAL</u>	Argill, friable, hard
0.3	MUD	Well fract., rusty
4.9	<u>COAL</u>	Argill, friable, hard
1.4	SH	Carbo.
1.9	<u>COAL</u>	Friable, soft
1.0	SH	Fract., fine gr., grey
7.6	<u>COAL</u>	Friable
9.4	<u>COAL/</u> SH	40% beds are approx. 0.2 - 0.3 ft. thick 60%
5.9	<u>COAL</u>	Friable, mod. hard
3.5	<u>COAL</u>	Friable, mod hard, slightly argillaceous
1.2	SH	Carbo.
TOTAL SEAM THICKNESS 54.2'		
AGGREGATE COAL THICKNESS 39.1'		
-	MUD/SH F.W.	dark grey, carbo. attitude N55°E/40°NW
-	S.S.	lt. grey and brown, fine to med. gr., well sorted, mainly thin-bedded, buff weathered (mainly), calc., qtz-chert S.S.
30.0	MUD:	Black, well fract.
3.0	SILT, H.W.:	Black, very fine gr., soft, slightly carbo., well bedded, fract.: this bed appears to sit "askew" of the underlying <u>COAL</u> seam and this is probably due to tectonic movement: N52°E/32°W.

APPENDIX EIGHT

... cont ... (RIDGE 21)

Interval	Thickness (ft.)	Lithology	
39.3	<u>COAL SEAM #1</u>	<u>TRENCH #8</u>	
1.6	SH/	60%	
	<u>COAL</u>	40%	Argill., mod. hard, dirty
0.1	MUD		
1.3	<u>COAL/</u>	70%	Hard, graphitic, friable
	SH	30%	Carbo.
2.7	<u>COAL/</u>	70%	Hard, graphitic
	SH	30%	
2.7	<u>COAL/</u>	70%	Med, hard, blocky, graphitic
	SH	30%	
2.7	<u>COAL/</u>	60%	Med. soft, very friable
	SH	40%	Very hard, blocky, graphitic
2.4	<u>COAL/</u>	60%	Med. hard, minor peacock, argill
	MUD	40%	Black, carbo.
2.7	<u>COAL/</u>	90%	Very soft, friable
	SH	10%	
3.0	<u>COAL/</u>	80%	Med. hard, friable
	SH	20%	
0.5	<u>COAL</u>		Very soft, peacock
2.3	<u>COAL/</u>	70%	Hard, argill
	SH	30%	
1.3	<u>COAL/</u>	80%	Soft (charcoal like), minor peacock, slightly friable
	SH	20%	
1.8	<u>COAL/</u>	50%	Friable, hard, slightly argill
	SH	50%	Graphitic
0.1	MUD		
1.0	<u>COAL/</u>	50%	Friable, hard, slightly argill
	SH	50%	Graphitic
0.1	MUD		
2.3	<u>COAL/</u>	90%	Friable, slightly graphitic, med. hard
	SH	10%	
1.2	MUD/	60%	Black, carbo. in bands
	<u>COAL</u>	40%	Dense, friable, med. hard
1.7	<u>COAL/</u>	70%	Slightly graphitic, med. soft
	SH	30%	
1.3	<u>COAL/</u>	50%	Slightly argill, hard
	SH	50%	Carbo.
1.6	<u>COAL/</u>	60%	Slightly argill., hard
	MUD	40%	
2.6	SH/	50%	Carbo.
	<u>COAL</u>	50%	Argill., hard
2.3	SH/	80%	Carbo.
	<u>COAL</u>	20%	Hard

TOTAL SEAM THICKNESS 39.3'

AGGREGATE COAL THICKNESS 24.2'

15.0 (?)	MUD, F.W.:	Black, slightly carbo: N45°E/32°W
50.0+	SILT:	Well bedded: N44°E/38°W
20.0	MUD	Black, carbo.
100.0	S.S.	Grey, s/p (believed to be MOOSE MOUNTAIN MEMBER)

APPENDIX NINE

DESCRIPTION OF GEOLOGICAL SITES (GS's)

MAPPED DURING THE 1977 FIELD SEASON

NB: GS's have been denoted as mapped and/or described geological sites other than detail sectioned TRENCHES that lie outside of the C.N.I. Licences' boundaries.

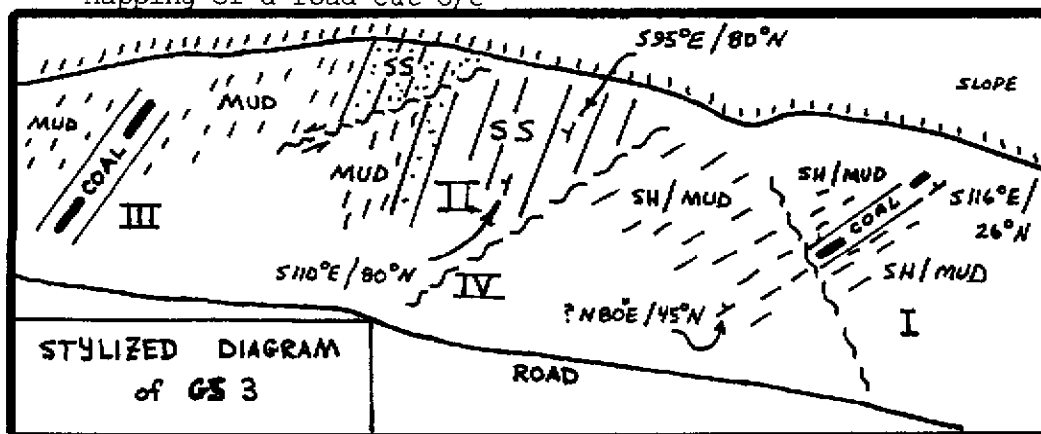
GEOLOGICAL
SITE NO.

DESCRIPTION

GS 1	silty limestone (Ferne Grey Beds)	grey, buff colored; weathered & well fractured; fine to medium grained; well sorted; brown inside weathering
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GS 2	SS (Ferne)	brown
------	---------------	-------

GS 3	Mapping of a road cut O/C	
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- | | | |
|-----|--|---|
| I) | SH/Coal | interbedded coal (0.2') & black, well fractured shale |
| | <u>Coal</u> | 3.7 feet thick; well fractured; friable; clean; hard |
| | Shale/Mud | grey, well fractured; no fossils evident; S116°E / 25°N |
| II) | SS / SH / Mud
(SS may be
Moose Mtn. Mbr) | dark grey; fine grained, well-sorted
qtz-chert SS w/ interbedded light
black SH / MUD; <ul style="list-style-type: none"> - SS shows excellent bedding plains & some cross bedding. * - SS attitudes S110°E / 80°N
S95°E / 80°N |

APPENDIX NINE

GEOLOGICAL

SITE NO.

DESCRIPTION

con't	III)	
GS 3	MUD	bedded; light grey
	<u>Coal</u>	11 feet thick; highly fractured; clean; moderately hard
	IV)	
	Thrust	"tilted" SS block occurs across the North Fork Lodgepole Creek ravine (westward);
	Fault (?)	there the SS is the Moose Mountain Mbr. & directly overlays the Fernie SS
GS 4	Silt	bottom of strata is fossiliferous & carbonaceous; dark grey, fine grained; weathers brown; contains shale stringers
	SS (overlies above siltstone)	dark grey; calcareous; banded; medium grained, mod. well sorted; unit is massive and poorly fractured; unit contains chert pebbles, shale stringers & is sporadically carbonaceous; unit becomes coarse grained in the center; increased X-bedding @ top of unit; attitude S150 - 160°E / 40 - 45°W; unit is approx. 90 feet thick
GS 5	<u>Coal</u>	overlies SS unit described in GS4; seam is approx. 32 feet thick; <ul style="list-style-type: none"> - upper part of seam is interbedded COAL & MUD / SH - lower part contains more coal
GS 6	<u>Coal</u>	better exposure of same seam as GS5; seam is approx. 35 feet thick
GS 7	Mapping of a road cut O/C.	
	F.W.: Silt	dark grey/black; fine grained; well sorted, blocky argillaceous
	<u>Coal</u>	soft, dirty; 5 feet thick
	H.W.: SS	dark brown; banded; fossil/carbo; fine grained
	SS	overlies the H.W. SS unit; grey to brown; fine grained; banded & cross-bedded, N05°E / 30°W

APPENDIX NINE

GEOLOGICAL
SITE NO.

DESCRIPTION

GS 8 measured stratigraphically older to younger

approx. th (feet)

20+	SS (Moose Mtn. Mbr)	dark grey, medium to coarse grained; moderately well sorted; sub-rounded, massive
75	Silt/Mud	with minor carbonaceous shale
75	SS	brownish grey; fine/medium grained; well sorted; sub-rounded
25	Silt; F.W.	dark grey, massive with interbedded argil- laceous, fine grained Silt; attitude N73°E / 45°N
45	<u>Coal</u>	hard; clean; trenched but not measured (TRENCH 1)
15	MUD/SH; H.W.	black
25	SS/Silt	brown, fine grained
60	SS	light grey, coarse grained; sub-angular, well-sorted; massive
40	Silt/Mud/SH; F.W.	black, fine grained
<u>27</u>	<u>Coal</u>	trenched but not measured (TRENCH 2)
less than 200	Silt/Mud/ SH/Coal	very minor coal
100+	SS	light grey; medium grained; moderately well sorted; massive; attitude N90°E / 30°N

GS 9 measured stratigraphically older to younger

approx. th (feet)

100+	SS	thick, grey, salt/pepper
20	MUD	black; carbonaceous with less than 1 foot coal seam @ top of unit
55	Silt	with minor interbedded mud

GEOLOGICAL

SITE NO.	DESCRIPTION	
con't GS 9		
	approx. th (feet)	
	24	<u>Coal</u>
		trenched but not measured (TRENCH 5); seam appears to be squeezed by underlying unit
	?	SS
		light grey & brown; fine/medium grained; well sorted
	54	<u>Coal</u>
		see Appendix SEVEN...TRENCH 6
	18	Silt
		light grey; fine grained; thinly bedded; attitude of N75°E / 40°N; appears to sit "askew" of the coal seam and footwall

GS 10 Mapping of a road cut O/C.

	MUD (F.W.)	Brown
3.0	<u>Coal</u>	Blocky, very hard, very argill, contains striations
0.3	SH	Brown, hemititic
1.0	Mud	Black
8.6	<u>Coal</u>	Blocky, very hard, very argill
9.5	<u>Coal</u>	Soft, dirty, no tabular structures
3.0	SH/80%	Black, carbo
	<u>Coal/20%</u>	Soft, dirty
3.0	Mud/80%	Black, carbo
	<u>Coal/20%</u>	Soft, dirty
2.5	Mud/50%	
	<u>Coal/50%</u>	
3.0	SH/80%	
	<u>Coal/20%</u>	
2.8	<u>Coal/70%</u>	Very hard, argill, contains striations
	SH/30%	
3.0	SH/70%	
	<u>Coal/30%</u>	
1.5	<u>Coal</u>	Soft, friable, dirty
3.0	Silt	Brown
1.0	<u>Coal</u>	Soft
0.8	SS	Brown, fine gr.
2.0	SH/55%	
	<u>Coal/45%</u>	Soft, dirty
7.0	Mud/60%	
	<u>Coal/40%</u>	
	SILT (H.W.)	Black

APPENDIX ELEVEN

STRIKE/DIP MEASUREMENTS (LODGEPOLE AREA: 1977)

WEST RIDGE

25/22
25/10
20/16
25/22
15/25
30/30
15/26
25/24
30/25
20/40
21/15
15/37
20/25
15/45
30/25
20/30
10/30
15/20
20/35
25/22
25/25

446/549

average: $21^{\circ}/26^{\circ}$

MCLATCHIE RIDGE

25/40
25/15
8/31
11/29
10/26
40/26
30/28
15/18
15/18
20/15
25/10
20/20
20/20
10/30
15/20
25/10
35/15
20/20
15/22
20/15
35/20
45/20

484/468

average: $22^{\circ}/21^{\circ}$

OVERALL AVERAGE: STRIKE : 22°
DIP : 24°

APPENDIX TEN

PERSONNEL UTILIZED DURING THE 1977 FIELD SEASON IN THE "LODGEPOLE AREA"

<u>PERSONNEL</u>	<u>STARTING DATE</u>	<u>TERMINATION DATE</u>	<u>POSITION</u>
Dave Pinnell	June 22	August 30	trencher
Doug Stuart	June 23	August 31	trencher
John Crabb	June 23	August 31	trencher
Bill Bryant	June 27	August 31	trencher
Guy Grove-White	July 6	August 31	trencher
Steve Berg	July 6	August 31	trencher
Bernie Hudyma	July 6	August 31	trencher
Peter Los	June 27	September 9	assistant geologist
Rick Marsh	June 13	December	geologist

APPENDIX TWELVE
Exploration Charges 1977

Fernie, British Columbia
Telephone: (604) 423-4464

CROWS NEST INDUSTRIES

May 8, 1978

MEMO to Jack Crabb
from B. Dootoff

Re: Crows Nest Industries
Exploration charges to Licence 490 - 495
Lodgepole Area
for 1977



Supervision		11,388.82
Vehicle Rental		
C.N.I. vehicle	1,750.00	
Other	<u>100.70</u>	
		1,850.70
Test Pit		
Labor	19,729.07	
Contract	1,080.00	
Material	<u>122.20</u>	
		20,931.27
Mapping		
Contract	6,122.60	
Maps & enlargements	510.66	
Misc.	<u>636.30</u>	
		<u>7,269.56</u>
	Total Expenditure	41,440.35

NB backups attached

General Offices
Ferne, B.C.

Minerals Division
Ferne, B.C.

Forest Products Division
Main Office
Ferne, B.C.

Elko Operations
Elko, B.C.

M. Crows Nest Industries

Lodgepole exploration (Licences #490 - 495)
TO **CROWS NEST INDUSTRIES LIMITED, DR.**

Remit to Treasurer, P.O. Box 250 Fernie, British Columbia, V0B 1M0

Referring to Bill No. _____

		FOR				
		1977 Supervision of Trenching Crew				
		& Geological Interpretation of Results.				
		personnel involved - R. Marsh, P. Loss				
		Salary Expense	June 1977	920.44		
			July	2,086.50		
			August	2,728.50		
			September	1,958.09		
			October	1,444.50		
			November	1,444.50		
			December	806.29		
			TOTAL			11,388.82

CORRECT

RATES, EXTENSIONS & FOOTINGS CORRECT

APPROVED FOR COLLECTION

R. Doot

Maker

Chief Accountant's Office

Treasurer

M Crows Nest Industries

Lodgepole Exploration (Licences #490-495)

TO **CROWS NEST INDUSTRIES LIMITED, DR.**

Remit to Treasurer, P.O. Box 250 Fernie, British Columbia, V0B 1M0

Referring to Bill No. _____

		FOR	Test nit excavation labor for 1977				
June	1977	258 hrs.	@ 7.13 + 17% overhead	\$2,152	26		
July		1119 hrs.	@ 7.13 + 17% overhead	9,334	81		
August		812.5 hrs.	@ 7.13 + 17% overhead	6,778	06		
September		175½ hrs.	@ 7.13 + 17% overhead	1,463	94		
			TOTAL LABOR EXPENSE			\$19,729	07

CORRECT

B. D. Smith

Maker

RATES, EXTENSIONS & FOOTINGS CORRECT

Chief Accountant's Office

APPROVED FOR COLLECTION

Treasurer

Treasurer

DESTINATION STATION Calgary		G591535		FORWARDING AGENT		GREYHOUND LINES OF CANADA LTD.	
CONSIGNEE Buckett Resources Survey		PHONE		TIME A.M. P.M.		MONTH DAY YEAR 11/9/77	
STREET ADDRESS 207 - 14th St. N.W.		CHARGE ACCOUNT	ACTUAL WEIGHT 11 LBS	TARIFF WEIGHT	DECLARED VALUE \$2.50	MAX. VALUE ACCEPTED \$500.00	
NO. OF PIECES 1		RECEIVED IN GOOD ORDER UNLESS SPECIFIED X		EXPRESS RECEIPT (NON-NEGOTIABLE)		POINT OF ORIGIN AND JUNCTION POINT ON LINES BELOW	
CONTENTS 21-3800-3800-112		EXPRESS CHARGES \$		COMPANY		TO	
SHIPPER'S NAME C.N.I. 01932		CHARGES ADJUSTED \$		COMPANY		TO	
STREET ADDRESS Fedex B.C.		DELIVERY CHARGES \$		COMPANY		TO	
ORIGIN CITY & PROV.		VALUE CHARGES \$		COMPANY		TO	
TOTAL PREPAID \$ 3.75		NO.		DATE		AMOUNT	

1. SHIPPER'S RECEIPT

LIABILITY LIMITED TO \$500 UNLESS GREATER VALUE DECLARED AND EXCESS CHARGE PAID

PREPAID

The Carrier agrees to carry and deliver the packages described herein upon the terms and conditions prescribed in the proper authority of the province in which this shipment originates and continuing on the right of the Carrier which is open for inspection by the public at the principal office of the Carrier and at the principal office of each carrier which the Carrier is required to operate and to which the Shipper agrees by accepting this receipt.

L-17

CROWSNEST HELICOPTERS LTD.

BOX 705, BLAIRMORE, ALTA.
BOX 959, FERNIE, B.C.
(604) 423-7611

No 059

CHARTER TICKET

DATE SEPT 15 19 77

CHARTERER'S NAME CROWSNEST LTD. LTD.

BILL TO FERNIE, B.C.

CHARTER AUTHORIZED BY Richard Marsh
(SIGNATURE OF CHARTERER)

PERSONS AND GOODS ARE CARRIED ONLY IN ACCORDANCE WITH THE TARIFFS OF CROWSNEST HELICOPTERS FILED WITH THE AIR TRANSPORT BOARD AND AVAILABLE FOR INSPECTION AT THE OFFICES OF CROWSNEST HELICOPTERS.

PARTICULARS OF FLIGHT

McCLATCHIE

CHARGES:

3.2 HOURS AT \$1800 /HOUR \$ 5760
STANDBY HOURS AT 4 /HOUR \$ 52.80
48.0 GAL FUEL AT 1.10 /GAL \$ 52.80

PILOT EXPENSES:

LODGING _____
MEALS _____
OTHER _____

SUB TOTALS
TOTALS

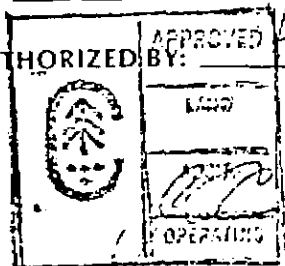
\$628.80

CASH
CHEQUE
CHARGE <input checked="" type="checkbox"/>

AIRCRAFT: CF-4MB

PILOT'S NAME: Jim Devore

FLIGHT AUTHORIZED BY:



Richard Marsh

Charge to CK's.
490 - 495 (Lodgepole)

21-3800-38051-112.

PROVINCE OF



BRITISH COLUMBIA

MAP PRODUCTION DIVISION

SURVEYS AND MAPPING BRANCH
B.C. LANDS SERVICE
VICTORIA, BRITISH COLUMBIA V8V 1X5

DATE OCT. 19	YOUR ORDER NO.	OUR REQUISITION NO.
LETTER INWARDS NO	MAIL X	PHONE X
	INVOICE NUMBER	Y 23685

TO . CROWS NEST INDUSTRIES LTD
FERNIE, B.C. OCT 24 1977
ATTEN: R. MARSH

MATERIAL SUPPLIED	AMOUNT
PC 7428 146-156 180-190	
244-254	
ALSO	
ENLARGEMENTS AS PER	
ATTACHED LIST	
21-3800 - 38051 - 20 - 220.69	
21-3800 - 38051 - 112 - 101.65	
8 52 ENLGRS @ 5.00	260.00
33 Aerial Photos @ 1.25	41.25
	301.25
DELIVERY APPROX. 4 WEEKS	
Charge:	
Coal licence	
264-276 \$220.69	
490-495 101.65	
\$ 322.34	
S.S. TAX	21.09
TOTAL	322.34
CASH RECEIVED WITH ORDER	
SIGNED BY	
BALANCE DUE	322.34
BALANCE OVERPAID	

Off Coal Leases
Chgo. Coal Leases #490-445

LESS
SIGNED E



BURNETT RESOURCE SURVEYS LTD.

ENGINEERS • PHOTOGRAMMETRISTS • SURVEYORS

DATE: November 30, 1977

Crownest Industries Ltd.
Ferne, B.C.

Attention: Mr. Rick Marsh

OUR FILE No.: 77-158

For mapping of the McClatchie block at the scale of 1:10000
and 1:5000

1.2% F.S.T.

\$ 5,500.00
\$ 66.00

\$ 5,566.00
=====

Coal license 4190-495
OK JK
21-3800-38051-112



E. & O. E.

HEAD OFFICE: 2973 LAKE CITY WAY, BURNABY, B.C. V5A 3A1 (604) 291-6421. TELEX 043-54643
BRANCH OFFICE: 207 - 14TH STREET, N.W. CALGARY, ALTA. T2N 1Z6 (403) 283-0731 TELEX 038-24774
TERMS: NET 30 DAYS, 2% PER MONTH 60TH DAY AFTER DATE OF INVOICE.

6027



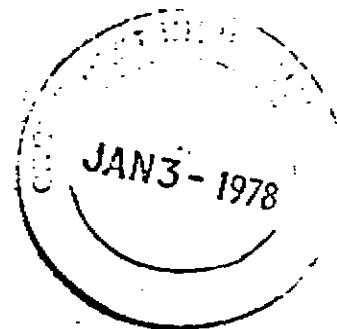
BURNETT RESOURCE SURVEYS LTD.

ENGINEERS • PHOTOGRAMMETRISTS • SURVEYORS

DATE: December 28, 1977

Crowsnest Industries Ltd.
Fernie, B.C.

Attention: Mr. J.J. Crabb
Vice President
Exploration



OUR FILE No.: 77-158

RE: MCCLATCHIE AREA

For extension mapping to 1:5000 manuscripts and 1
composite of 1:10000 mapping

1.2% F.S.T.

\$ 550.00
\$ 6.60

\$ 556.60

OK
Lucas
4190-495
21-3800-38051-112

E. & O. E.

HEAD OFFICE: 2973 LAKE CITY WAY, BURNABY, B.C. V5A 3A1 (604) 291-6421. TELEX 043-54643
BRANCH OFFICE: 207 - 14TH STREET, N.W. CALGARY, ALTA. T2N 1Z6 (403) 283-0731 TELEX 038-24774

TERMS: NET 30 DAYS. 2% PER MONTH 60TH DAY AFTER DATE OF INVOICE.

6070

I. G. S. HARDWARE

LINK DEALER

423-4496

441 - 2nd AVE.

FERNIE, B.C.

5294
2116

DATE July 23, 1977

NAME Oranville Industries

ADDRESS OK by Mr. Vinspice

QUANTITY	DESCRIPTION	AMOUNT
4	Pick handles	
	@ 5.29	21.16
	tax	11.48
		32.64
Purchase Order #		
15224C		
Richard Marsh		

RECEIVED BY	RC470	TAX
21-3800 - 35140 - 112	TOTAL	
CLERK	CASH	C.O.D.
CHARGE	ON ACCT.	MOSE. RET'D.
PAID OUT		

KOOTENAY OFFICE OUTFITTERS LTD., CRANBROOK, B.C. 1-13/72

15365

Purchased 2 pos
Sacks

Charge to McClatchie Expla

$$2 \times 11^{29} = 22^{58} \times 1.07 = \underline{\underline{\$23^{65}}}$$

Robert E. Bishop



ACKLANDS

SALE SUBJECT TO FEDERAL SALES TAX REFUND

CROWS NEST IND LTD
FERNIE BC
VOE IMO

4-69

23 6 77

31 21712 69013

BRANCH OR DEPT. COPY

CUSTOMER NO	CUSTOMER ORDER NO	SALESMAN NO	NO OF COPIES	CREDIT APPROVAL	TERMS	SHIPPING DATE
1	5012-C			1490	ea	425
<i>OK Rab</i>						
<i>McClellan</i>						
21-3800-38122-112						

175442

THE UNDERSIGNED HEREBY AGREES TO ACCEPT THE ABOVE MERCHANDISE ON A CONSIGNMENT BASIS PAYABLE THE EARLIER OF DATE OF SALE BY THE CONSIGNEE OR THE TENTH OF THE MONTH FOLLOWING DATE OF INVOICE

SUB TOTAL	4250
PROV. TAX	298
	4548

NO RETURNS WITHOUT PERMISSION. PLEASE QUOTE INVOICE NO. ON CORRESPONDENCE. INTEREST CHARGED AT THE RATE OF 1 1/4% PER MONTH (18% PER ANNUM) ON OVERDUE ACCOUNTS.

SIGNATURE

[Signature]

45.48



ACKLANDS

CROWS NEST INC LTD
WOL 1MO

6069

13 7 77

SHIP TO

31 21712

5203C 69-02-5

CUSTOMER NO. CUSTOMER ORDER NO. SALESMAN NO. NO. OF COPIES CREDIT APPROVAL TERMS SHIPPING DATE

QTY	UNIT	DESCRIPTION	CODE	UNIT PRICE	DISC	NET PRICE	EXTENSION
44		GMCR2 Shovels	2550			7.11	2844
21-3800 - 38140 112							

175593

THE UNDERSIGNED HEREBY AGREES TO ACCEPT THE ABOVE MERCHANDISE ON A CONSIGNMENT BASIS PAYABLE THE EARLIER OF DATE OF SALE BY THE CONSIGNEE OR THE TENTH OF THE MONTH FOLLOWING DATE OF INVOICE.

SUB TOTAL 2844
PROV. TAX 199

SIGNATURE

Richard Marshall

3043

NO RETURNS WITHOUT PERMISSION. PLEASE QUOTE INVOICE NO. ON CORRESPONDENCE. INTEREST CHARGED AT THE RATE OF 1 1/4% PER MONTH (18% PER ANNUM) ON OVERDUE ACCOUNTS.

INVOICE - CUSTOMER'S COPY

TOWNSEND'S GENERAL BULLDOZING
Ph. 429-3570 Joffray, B.C.

DATE JUNE 1977

M. C. N. I. (COAL DIV)

	ACCT. FWD.
JUNE HRS	
20 th = 9	
21 st = 9	
22 nd = 9	
23 rd = 9	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

36 hrs at
30⁰⁰ per hr.
\$1080⁰⁰

IT'S SETD.

JUL - 4 1977

4

© CROWK ZELLERBACH PAPER COMPANY LIMITED

OK RL

McClatchie Creek

Coal 21-3800-38015-112

CROWK ZELLERBACH PAPER COMPANY
JUL - 4 1977

Iertz System Licensee

SHOW RENTAL AGREEMENT NO
ON ALL CORRESPONDENCERENTAL AGREEMENT
CONTRAT DE LOCATION**Hertz**

H 1230550

J AND A WHITLOCK LTD

HERTZ LICENSE

112 S VAN HORN ST

CRANBROOK BC VIC 123

MENTION NO DE CONTRAT DE
LOCATION DANS TOUTE CORRESPONDANCE

G- 3742443

RATES DO NOT INCLUDE GASOLINE
TARIFS NE COMPRENNENT PAS ESSENCE

BASIC CHARGE 1 DAY PLUS MILEAGE/FRAS DE BASE 1 JOURNEE PLUS PA

CAR RETURNED TO STATION
POSTE DE RETOUR DE L'AUTO

CITY & PROV - VILLE & PRC

TO BE PAID BY	A ÊTRE PAYÉ PAR
CROWS WEST INDUSTRIES	
FERNIE	

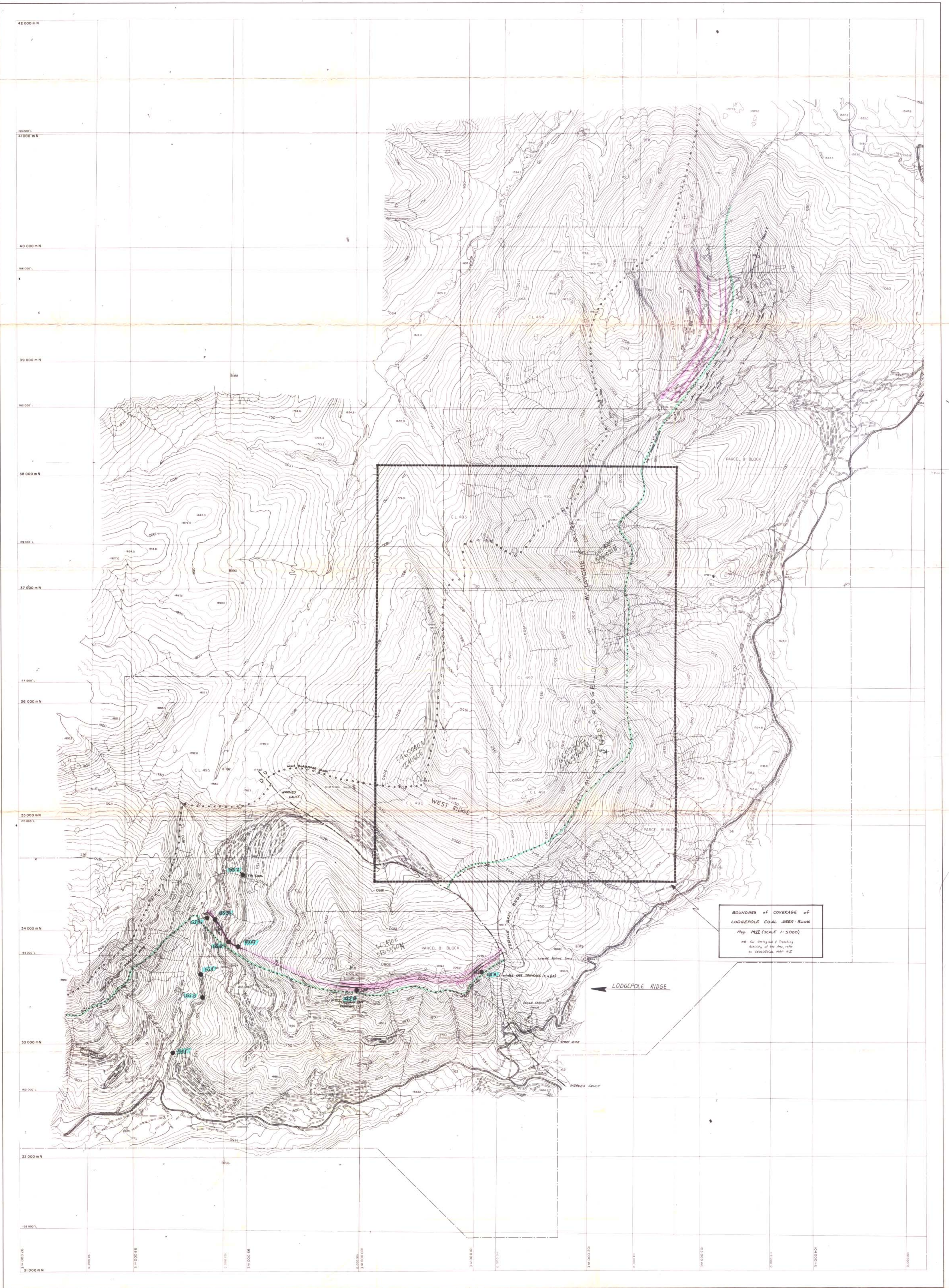
MINIMUM RENTAL LOCATION MINIMUM	DAYS - JOURS	TIME IN HEURE D'ARRIVÉE	9 15 AM
EXTRA DAYS @ JOURS EXTRA @	\$	TIME OUT HEURE DÉPART	9 45 AM
EXTRA HOURS @ HEURES EXTRA @	\$	GAS QUANTITY - QUANTITÉ ESSENCE	
		IN ARRIVÉE	E 1/8 1/4 3/8 1/2 5/8 3/4 7/8 F
		OUT DÉPART	E 1/8 1/4 3/8 1/2 5/8 3/4 7/8 F

RICHARD A. MARSH	
CREDIT CARD - CARTE DE CREDIT	NO. 1 CLUB NO. - NO DE CLUB AD 1
OTHER - AUTRE IDENTIFICATION	
DRIVER'S LICENSE NO. - PERMIS DU CONDUCTEUR	PROV. EXPIRES - EXPIRE
2080752	BC 11/17/77
MONITOR BUSINESS ADDRESS - ADRESSE RESIDENTIELLE OU D'AFFAIRES	
CITY AND PROV - VILLE & PROV	
CAR TO BE RETURNED TO (CITY & PROV) - STATION POSTE	
FERNIE	
CAR RENTED AT (CITY & PROV) - AUTO LOUÉE A (VILLE & PROV)	
LOCAL ADDRESS - ADRESSE LOCALE	
TELEPHONE - TELEPHONE	
ADDITIONAL AUTHORIZED OPERATORS - OPERATEURS AUTORISÉS ADDITIONNELS	
LIC. EXPIRES - LICENCE EXPIRE	

MILEAGE IN	LECTURE A L'ARRIVÉE	21402	MILES	21402
MILEAGE OUT	LECTURE AU DÉPART	20722	MILES	680
MILES DRIVEN	MILES PARCOURUS	680	HRS	12.63.60
MILES ALLOWED	MILES PERMIS	150	WKS	5%
MILES CHARGED	MILES CHARGÉS	530	MILES	93.55
LICENSE NO. - NO D'IMMAT	PROV	VMD 344 BC	SUB SOUS	5%
VEHICLE NO. - NO DU VEHICULE		17071	SUB SOUS	4.6%
CAR MAKE - MARQUE DE L'AUTOMOBILE		Chrysler	SUB SOUS	
OWNING CITY - VILLE PROPRIÉTAIRE		Cranbrook	INTERCITY FEE	
OWNING CITY LOC NO	RIH/LIT. %	60	CDW (PER DAY)	3.00
	OTHER - AUTRE		EDC (PAR JOUR)	3.00

COLLISION DAMAGE WAIVER (CDW)		EXONÉRATION DES DOMMAGES PAR COLLISION (EDC)	
BY INITIALING, CUSTOMER DECLINES OR ACCEPTS CDW AT RATE SHOWN IN ADJOINING COLUMN.		EN APPOSANT SES INITIALES, LE CLIENT REFUSE OU ACCEPTE L'EDC AU TARIF INDIQUE DANS LA COLONNE ADJACENTE.	
CDW IS NOT INSURANCE		EDC N'EST PAS UNE ASSURANCE	
PERSONAL ACCIDENT INSURANCE (PAI)		ASSURANCE ACCIDENT PERSONNELLE (AAP)	
BY INITIALING, CUSTOMER DECLINES OR ACCEPTS PAI AT RATE SHOWN IN ADJOINING COLUMN. ACCEPTANCE IS PROOF OF COVERAGE UNDER POLICY TC7MPAF-60164 OR REPLACEMENT, ISSUED TO LESSOR, AS OUTLINED IN SEPARATE SYNOPSIS.		EN APPOSANT SES INITIALES, LE CLIENT REFUSE OU ACCEPTE L'AAP AU TARIF INDIQUE DANS LA COLONNE ADJACENTE. L'ACCEPTATION CONSTITUE LA PREUVE DE COUVERTURE EN VERTU DE LA POLICE TC7MPAF-60164 OU REMPLACEMENT, ÉMISE AU LOCATEUR, TEL QUE PRÉCISÉ DANS LE SOMMAIRE SÉPARÉ.	
CUSTOMER AUTHORIZES LESSOR TO PROCESS A CREDIT CARD VOUCHER, IF ANY, IN HIS NAME FOR CHARGES HEREUNDER		LE CLIENT AUTORISE LE LOCATEUR À ÉMETTRE UN TALON DE CARTE DE CREDIT, S'IL Y A LIEU, EN SON NOM POUR LES FRAIS CI DESSOUS	
I HAVE READ THE TERMS & CONDITIONS ON PAGE ONE (OTHER SIDE) AND PAGE 2 OF THIS RENTAL AGREEMENT AND AGREE THERETO.		J'AI PRIS CONNAISSANCE DES CLAUSES ET CONDITIONS DE LA PAGE 1 (AUTRE CÔTÉ) ET DE LA PAGE 2 DE CE CONTRAT DE LOCATION ET JE LES ACCEPTE.	
X Richard Marsh		X Richard Marsh	
21-3800-38060-112-112		21-3800-38060-112-112	
RESERVATION I.D. NO.	RENTAL SOURCE	PREPARED BY	COMPUTER BY
21-112	38060-112	YES	YES
IT NO	COUPON NO. - NO DU COUPON		

DECLINES CDW REFUSE EDC	INITIAL ONE INITIALISEZ UNE CASE	ACCEPTS CDW ACCEPTE EDC	SUB TOTAL
		YES	96.55
DECLINES PAI REFUSE AAP	INITIAL ONE INITIALISEZ UNE CASE	ACCEPTS PAI ACCEPTE AAP	TAX - TAXE
		NO	7%
CASH REFUND - REMBOURSEMENT COMPTANT			PAI (PER DAY) AAP (PAR JOUR)
EXPLANATION - EXPLICATION	AMOUNT - MONTANT	2.39	
I ACKNOWLEDGE RECEIPT OF ABOVE AMOUNT J'ACCUSE RECEPTION DU MONTANT CI-MENTIONNÉ			GASOLINE
X Richard Marsh			2.40
DEPOSIT - DÉPÔT			TOTAL CHARGES TOTAL DES FRAIS
			102.40
			100.00
			NET DUE FRAIS NETS
			102.40
			LESS DEPOSIT (IF ANY) MOINS DÉPÔT (S'IL Y A)



BOUNDARY of COVERAGE of
LODGEPOLE COAL AREA 8-10-10
Map M12 (SCALE 1:5000)
N.B. For details of the
boundary of the area refer
to geological map M12

LEGEND

BUILDING
FORESTRY ROAD
ACCESS ROAD
EXPLORATION ROAD
TREE LINE
STREAM
CREEK
CONTOURS
SPOT ELEVATION
COAL LICENCE NUMBER
COAL LICENCE BOUNDARY
PARCEL B1 BLOCK BOUNDARY
CONTROL POINT
PHOTO CENTRE (BURNETT, B.C. Gov't)
METRIC GRID
KAISER / UNDERHILL GRID

CROWS NEST INDUSTRIES LIMITED

LODGEPOLE COAL AREA BRITISH COLUMBIA GEOLOGY MAP NUMBER MI

DATE NOVEMBER, 1977
K-SHELL LODGEPOLE 77 (1A) 425

SCALE 1:50,000
CONTOUR INTERVAL - 10m

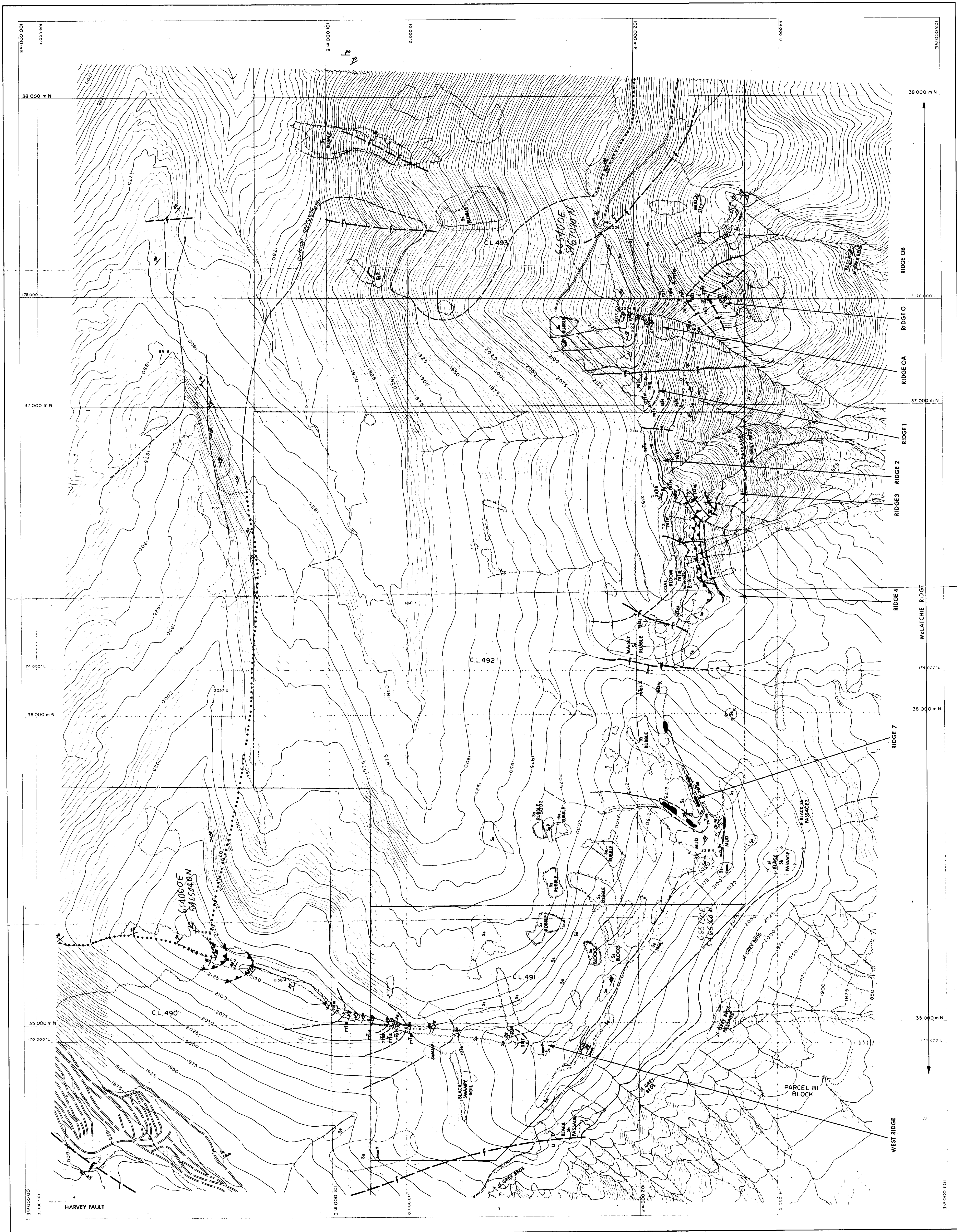


KEY

PROMINENT CONGLOMERATE
(BLAIRMORE/KOOTENAY CONTACT)
TOP OF MOOSE MOUNTAIN MEMBER
BOTTOM OF MOOSE MOUNTAIN MEMBER
(KOOTENAY/FERNIE CONTACT)
COAL SEAMS exposed, approx. assumed
OTHER UNITS — OUTCROP
CONTACT exposed, approx. assumed
FAULTS — GRAVITY exposed, approx. assumed
TEAR exposed, approx. assumed
THRUST exposed, approx. assumed
TRENCH & NUMBER
SYMBOLS
CGL SS SILT MUD SH COAL
GEOLOGICAL SITE MEASURED, 4th version 1979

NOTE: Metric Grid is based on 49° lat. equalling 0 m North and 114° 46' long, equalling 100,000 m East. Horizontal and Vertical information derived from N.T.S. 1:50,000 Map and selected Kaiser Resources Control Points.

FILE No. VP-24B



LEGEND	
BUILDING	
FORESTRY ROAD	
ACCESS ROAD	
EXPLORATION ROAD	
TREE LINE	
STREAM	
CREEK	
CONTOURS	
SPOT ELEVATION	
COAL LICENCE NUMBER	CL 493
COAL LICENCE BOUNDARY	
PARCEL 81 BLOCK BOUNDARY	
CONTROL POINT	
PHOTO CENTRE (BURNETT, B.C. Gov't)	
METRIC GRID	
KAISER / UNDERHILL GRID	

CROWS NEST INDUSTRIES LIMITED

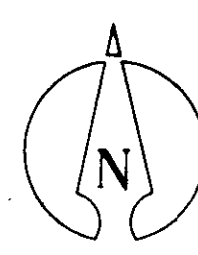
LODGEPOLE COAL AREA BRITISH COLUMBIA

K-SHEIL-LODGEPOLE 77 (1) &

NUMBER MII

DATE NOVEMBER, 1977

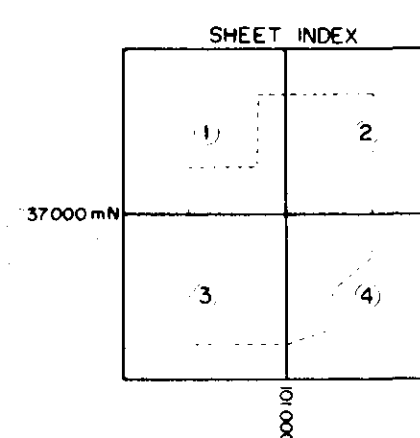
CONTOUR INTERVAL - 5 m
SCALE 1:5,000



LODGEPOLE COAL AREA

KEY	
PROMINENT CONGLOMERATE (BLAIRMORE/KOOTENAY CONTACT)	
TOP OF MOOSE MOUNTAIN MEMBER (KOOTENAY/FERNIE CONTACT)	
COAL SEAMS exposed, approx., assumed	
OTHER UNITS - OUTCROP	
CONTACT exposed, approx., assumed	
FAULTS - GRAVITY exposed, approx., assumed	
TEAR exposed, approx., assumed	
THRUST exposed, approx., assumed	
TRENCH & NUMBER	
SYMBOLS	

NOTE: Metric Grid is based on 49° lat. equalling 0 m North and 114° 45' long, equalling 100,000 m East. Horizontal and Vertical information derived from N.T.S. 1:50,000 Map and selected Kaiser Resources Control Points.



FILE NO. VP-14D