

OPEN FILE

FLATHEAD RIDGE

COAL LICENCES 500-506

808

PROGRESS REPORT

MAY, 1981

East Kootenay Land District

N.T.S. Sheet 82 G/7

Centering Approximately: $49^{\circ}19'30''$ N. Latitude
 $114^{\circ}48'30''$ E. Longitude

Held and Operated by B.C. Coal Ltd.

For Work Completed October, 1980

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

John A. Huryn
Geologist
B.C. Coal Ltd. *[Signature]*

Approved by:
L.B. Samuelson *[Signature]*
Principal Geologist
B.C. Coal Ltd.

00 304

1 of 2

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APPENDIX I

B.C. Coal Geolog of D.D.H. F.H.-1

APPENDIX II

Laboratory Data for Diamond Drillhole F.H. -1 *

POCKETS

Surface Geology Map	Drawing No. 123-16-2
Index Map	Drawing No. 123-16-3
Lithographic Log of D.D.H.F.H.-1	Drawing No. 123-16-4
Illustrative Cross-Section	Drawing No. 123-16-5
Illustrative Stratigraphic Column	Drawing No. 123-16-6
D.D.H. F.H.-1 Bedding Angles	Drawing No. 123-16-7
Gamma, Neutron, Density, Deviation Logs	

REFER TO: Confidential Coal Analysis K-Flathead Ridge 80(4)B

INTRODUCTION

Location And Access:

Coal licences 500 to 506 are on Flathead Ridge located in the southwest flank of the Crowsnest Coal Field of southeastern British Columbia. They are approximately 30 kilometres southeast of Fernie, B.C. and 26 kilometres west of Elko, B.C. (Location Map). Lodgepole Creek runs to the south of Flathead Ridge and McLatchie Creek bounds it to the east.

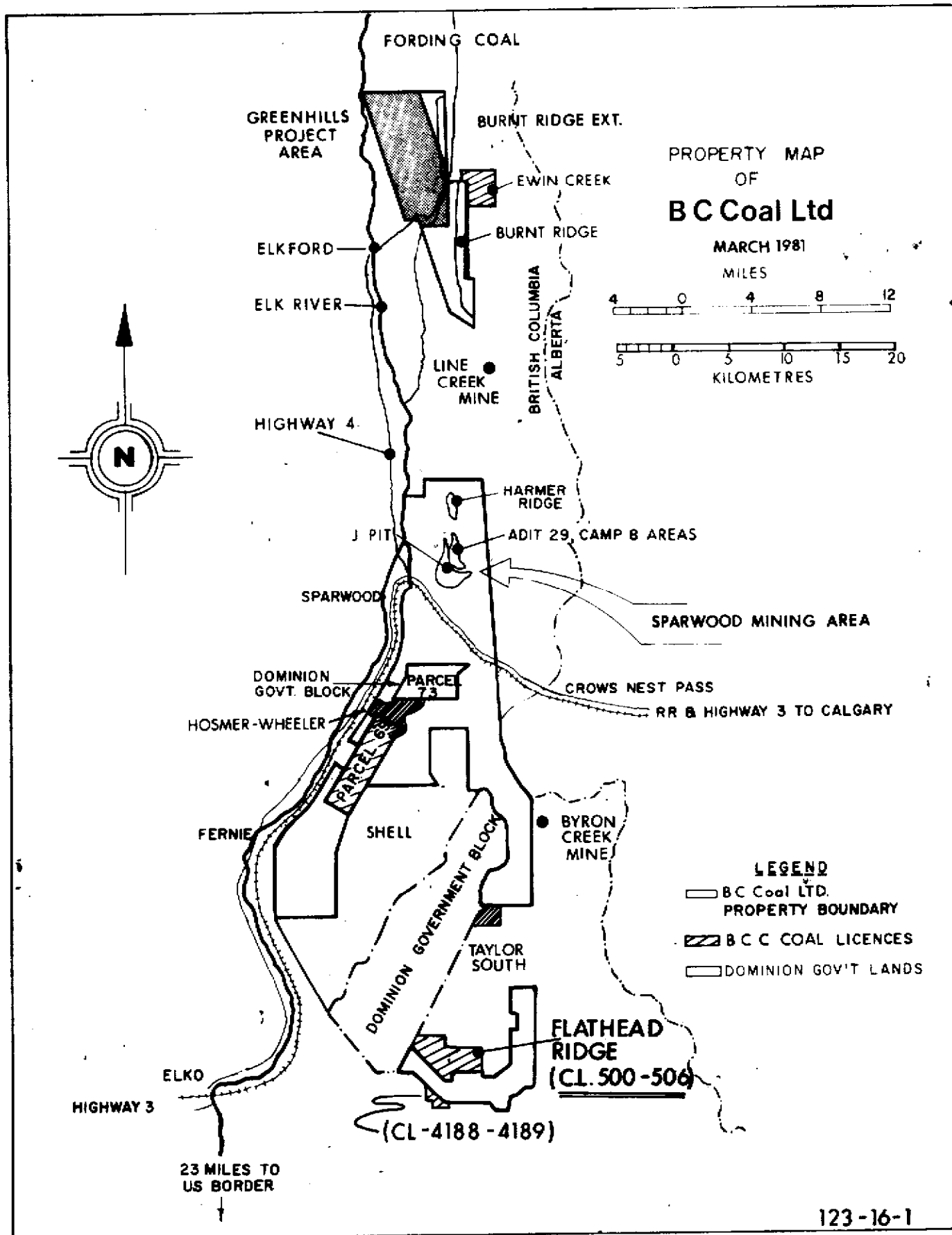
Access to the area can be gained either from the north through Corbin and Flathead or from the west through Morrisey and the Lodgepole Creek drainage via the C.N.F.P. Logging roads. Four-wheel drive access to the licences can be made via the Alberta Natural Gas Pipeline road from which B.C. Coal exploration roads lead to the licences.

Land Description and Ownership:

During February of 1968 Kaiser Resources Ltd. acquired the coal rights to 43,725 hectares of coal-bearing lands from Crowsnest Industries Ltd. The Flathead Ridge area is made up of freehold land as well as coal licences. Coal Licences 500-506 are 1171 ha of the total 4040 ha of coal-bearing lands. During February of 1981 Kaiser Resources Ltd. became B.C. Coal, a member of the B.C. Resources Group, ^{which} and is the owner and operator of these licences.

Utilities:

Power and telephone lines follow along Highway #3 some 13 kilometres west of the western property boundary. The Canadian Pacific Railway follows along the east bank of the Elk River some 13 km west of the licences. The Alberta Natural Gas Pipeline crosses Flathead Ridge approximately 2.4 km west of the west property boundary.



Exploration Work:

Exploration work was carried out from July through October, 1979. This included a mapping and survey program within the licences. Access road was also constructed to and within the coal licences. Details of the 1979 exploration work are contained in the report titled, "Exploration Report, Coal Licences 500-506" written by J.A. Huryn, July 1980.

From July 25 to August 25, 1980 one diamond drillhole (FH-1) was drilled in coal licence 505 and reached a depth of 740 metres. The drill rig was a Boyles 56A utilizing HQ (88.9 mm diameter) drill-rods and a triple tube wireline core barrel. The drill used a mud-water mixture as part of the drilling procedure with mud mixing tanks set up beside the rig. The drill is owned and operated by D.W. Coates Enterprises Ltd. of Richmond, B.C..

Core samples were collected through the entire hole and packed in core boxes. The core was taken back to Sparwood where it was logged and stored. A copy of the lithology log is contained in Appendix I. A stratigraphic column (Pocket) was constructed from the lithology log and shows all the units intersected by F.H.-1. Gamma Ray, Neutron, Density and bore hole deviation logs were done on F.H.-1 by Roke Oil Enterprises Ltd. of Calgary, Alberta. Copies of these logs are contained in a pocket.

Prior to moving the drill rig onto Flathead Ridge, all access roads were opened and upgraded by a dozer and grader. The drill-pad was also constructed by a dozer and two dozers were used to skid the rig from the valley bottom to the drill site.

Reclamation Work:

From August to October of 1980 reclamation work was periodically carried out on the coal licences. This work included clearing, contouring and seeding the drill site and blocking off the access road to the licences. Dozer work was required for the reclamation program and is incorporated in the Statement of Costs.

GENERAL GEOLOGY

The lower Cretaceous Kootenay Formation was divided into three members, the Moose Mountain, the coal-bearing and the Elk (Jansa, 1972). The outcrops within coal licences 500-506 are made of beds belonging to the Elk Member. Outcrops of the coal-bearing member, the Moose Mountain Member and the Fernie Formation occur lower down on Flathead Ridge in the freehold land.

The Blairmore Group, which overlies the Kootenay Formation was not recognized within the boundary of the coal licences.

The characteristics of the Jurassic and Cretaceous in the Flathead Ridge area are outlined below:

Stratigraphy:

Jurassic-Fernie Formation:

In the Flathead Ridge area the Fernie Formation is 381 metres thick and is composed of dark grey silty shale containing thin layers of ankeritic siltstone in the lower part of the formation (Price, 1965).

The upper part of the formation is composed of rhythmically interbedded fine grained sandstone, siltstone and shale. Sandstones in the upper part of the Fernie Formation are ankeritic or calcareous and are commonly laminated. Beds up to 0.30 metres in thickness occur within the Fernie Formation but they are more commonly 10 to 75 millimetres thick (Jansa, 1972).

Cretaceous-Kootenay Formation:

The Kootenay Formation is divided by Jansa (1972) into three members, the Moose Mountain Member, the coal-bearing member and the Elk Member.

The Moose Mountain Member is the lowest member of the Kootenay Formation. It ranges in thickness from 43 metres on the western end of Flathead Ridge to over 120 metres on the ridge between McLatchie and Foisey Creeks. The Moose Mountain Member is medium to fine grained sandstone with occasional shale or siltstone interbeds. The sandstone is generally cross-bedded and occasionally shows ripple marks.

The coal-bearing member in the Flathead Ridge area is 425 to 550 metres of sandstone, siltstone, mudstone and coal. Conglomerate occurs as lenses up to 1 metre thick and a few hundred metres long in the upper part of the coal-bearing member. The sandstones are fine to coarse grained, are usually cross-bedded and occur in beds from 0.6 to 12 metres thick. The siltstones are finely laminated and show occasional cross-bedding. The mudstones range from light gray to black in color with the darker mudstones having plant detritus preserved along the bedding planes. Thin, limonitic shale bands occur near the top of the coal-bearing member. Coal seams of commercial quality occur throughout the coal-bearing member.

In the Flathead Ridge area the Elk Member outcrops along the top of the ridge to form a resistant cap. The lower 210 metres of the Elk is composed of interbedded medium to coarse grained sandstone, siltstone and silty mudstone with conglomerate lenses in some localities. About two and one-half kilometres west of the B.C. Coal licence boundary a cut has been made through the Elk Member where the Alberta Natural Gas Pipeline crosses Flathead Ridge. No coal seams greater than 1 metre thick were observed in the pipeline cut and it can be assumed that seams of commercial thickness do not occur within the Elk Member on Flathead Ridge.

Cretaceous - Blairmore Group:

The Blairmore Group lies unconformably on the Kootenay Formation. In the centre of the coal basin 140 to 170 metres of conglomerate and conglomeratic sandstone occur at the base of the Blairmore group. The middle and upper beds are composed of interbedded conglomerate, sandstone, varicolored siltstone, mudstone and shale (Price, 1962). The Blairmore Group was not recognized within the Flathead Ridge licences.

Structure:

The beds within the licences lie on the west limb of the McEvoy Syncline. The general strike of the beds is northwest-southeast and dip between 20 and 35 degrees to the northwest. Variations occur in individual attitudes, due to primary depositional features and minor faulting. The minor faults observed in the licence area are probably due to adjustments made during the formation of the McEvoy Syncline.

The diamond drillhole F.H.-1 intersected shattered zones at 370 m and 600 m thought to be caused by faulting. These zones are characterized by the broken nature of the core, low core recovery and marked changes in the bedding attitude. Drawing 123-16-7 illustrates the changes of the bedding attitude in the fault zones (Pocket).

ECONOMIC GEOLOGY

Coal Quality:

The coal quality data for F.H.-1 is contained in Appendix II and is summarized on Table I as well as on the graphic lithology log contained in the pocket.

Six coal seams from F.H.-1 were sampled and taken to the B.C. Coal Ltd. Laboratory for proximate, washability and petrographic analysis. By using the coal quality data from F.H.-1 and the data from the B.C. Coal adits on Flathead Ridge, a seam correlation was made. In F.H.-1 the coal seam at 550.91 m - 566.16 m is thought to be #7 Seam and the coal at 609.03 m - 617.07 m is thought to be #3 Seam.

The raw ash ranged from 17.9% to 57.3% on the seams sampled. The volatile matter (V.M.) on a dry, ash-free (d.a.f.) basis ranges from 19.0% in #3 Seam to 27.1% in the stratigraphically highest seam sampled. The F.S.I. decreased down hole, with the higher seams around 8 and the lower seams ranging from 1 to 4. The yields on the sampled seams ranges from 19.0% to 68.3% with a difficulty range of 10.2 to 48.1 when cleaned at 1.50 S.G..

Interpretation:

Drillhole F.H.-1 was collared in the Elk Member of the Kootenay Formation. The contact between the Elk Member and coal-bearing member is thought to occur just above the last major coal seam in F.H.-1 at 280 metres. Above this coal seam numerous sandstone and conglomerate units occur, with siltstone and mudstone interbeds and few minor coal seams. The remaining 460 m of F.H.-1 are in the coal-bearing member of the Kootenay Formation.

An illustrative stratigraphic column taken from work done on the freehold land of Flathead Ridge shows the relative positions of the coal seams and their interlying strata (pocket). By comparing the interval thickness between #3 Seam and #7 Seam in the freehold land an apparent loss of section was discovered in F.H.-1. This zone is also an area of faulting so a normal fault was proposed.

A thrust fault is thought to occur higher up section which would help to account for the steep dips encountered in F.H.-1 in this zone. Cross-section A-A' illustrates the seam correlation between the adits and drillhole as well as the proposed faults.

The cross-section was drawn for illustrative purposed only and is not a conclusive interpretation. It is very likely that numerous faults occur through the coal licences and the structure becomes more complex towards the axis of the McEvoy Syncline. More drillholes are required in the licences to delineate the extent of the major coal seams and the complexity of the structure.

STATEMENT OF COSTS

FLATHEAD RIDGE
COAL LICENCES 500-506
May - December, 1980

Salaries (\$147/day Burden included)	\$ 3,675
Wages (Including burden)	5,875
D-7 Caterpillar tractor @ \$63/hr. x 152 hrs.	9,576
D-8 Caterpillar tractor @ \$84.85/hr. x 48 hrs.	4,073
3/4 ton 4x4 pickup (geologist)	285
3/4 ton 4x4 pickup (dozer operators)	508
Fuel and supplies	1,602
D.W. Coates Enterprises Ltd. (D.D.H. F.H.-1	84,472
Roke Oil Ltd. (Borehole logging)	3,481
Tom Dennie Trucking (14 E Grader @ \$48/hr.)	3,528
Radio Communications	59
Mobilization of dozers & grader	800
Reclamation work	6,618
Lithology logs (geologists time)	3,381
Report preparation	882
Drafting & survey plots	441
Sampling and testing	<u>5,051</u>
TOTAL	\$134,307

STATEMENT OF QUALIFICATIONS

J.A. Huryh

B.Sc., Geology, University of Calgary,
Calgary, Alberta 1979.

Practical: 3 summers coal mapping experience
as a student and 2 years in coal mapping,
structural interpretations and reserve estimations
with Kaiser Resources Ltd. and B.C. Coal Ltd.

REFERENCES CITED

- HURYN, J.A. 1980 Exploration Report Coal Licences 500-506
- JANSA, LUBOMIR 1972 Depositional History of the Coal-Bearing
Upper Jurassic - Lower Cretaceous Kootenay
Formation, Southern Rocky Mountains,
Canada. Geologic Society of America,
v.83, pp 3199-3222
- PRICE, R.A. 1962 Fernie Map Area, East Half, Alberta and
British Columbia - Geological Survey of
Canada, Paper 61-24.
- 1965 Flathead Map Area, British Columbia and
Alberta, Geological Survey of Canada
Memoir 336, pp 55-64.
- SAMUELSON, L.B. 1973 Flathead Ridge Progress Report.
February, 1973.

A P P E N D I X I

AREA: Flathead Lake C.L. 500-506 HOLE No: FH-1 LOGGED BY: A.K. DATE: 80/08/05 PAGE: 1 OF: 1

Q - 18 X 3 - 18 X 4

KRL GEOLOG

AREA: LODGE POLE HOLE No: FH #1 LOGGED BY: AK DATE: Aug 6 PAGE: 2 OF: 2

[illegible]

KRL GEOLOG

AREA: LODGE & POLE HOLE No: FH #1 LOGGED BY: AK DATE: Aug 7/80 PAGE: 3 OF: 3

[illegible]

AREA: WODGEPOL HOLE No: FH#1 LOGGED BY: AK DATE: Aug 8/80 PAGE: 4 OF: 4

0 - 013 - 0

KRL GEOLOG

AREA: _____ HOLE No: FH # 1 LOGGED BY: _____ DATE: Aug 12/80 PAGE: 5 OF: _____

[illegible]

KRL - EXP - 9

KRL GEOLOG

AREA: LODGE POLE

HOLE No: FI #1

LOGGED BY: AK

DATE: Aug 12/80 PAGE: 6 OF:

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: F-14 # 1 LOGGED BY: _____ DATE: Aug 13/80 PAGE: 7 OF: _____

[illegible]

KRL GEOLOG

AREA:

HOLE No:

FH 41

LOGGED BY:

DATE: Aug 19

PAGE: 8 OF:

[illegible]

KRL GEOLOG

AREA: _____ HOLE No.: 711 #1 LOGGED BY: _____ DATE: Aug 13 / 80 PAGE: 2 OF: _____

[illegible]

KRL OLOG

AREA: _____ HOLE No.: FH #1 LOGGED BY: AK DATE: Aug 18 PAGE: 10 OF: _____

[illegible]

KRL GEOLOG

AREA: LODGE POLE HOLE No: FH #1 LOGGED BY: _____ DATE: Aug 14/80 PAGE: 11 OF: _____

[illegible]

KRL CEULOG

AREA: _____ HOLE No: FA #1 LOGGED BY: KE DATE: Aug 13/86 PAGE: 12 OF: _____

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: FH #1 LOGGED BY: _____ DATE: Aug 15/80 PAGE: 13 OF: 14

[illegible]

QOLOG

AREA: _____ HOLE No: F#1 LOGGED BY: _____ DATE: Aug 15 PAGE: 14 OF: _____

[illegible]

KRL GEOLOG

AREA: FLAT HEAD

HOLE No:

LOGGED BY:

DATE:

PAGE: 1 OF: 1

[illegible]

KRL GEOLOG

AREA: FLATHEAD

HOLE No:

LOGGED BY:

DATE: AUG 20

PAGE: 16 OF:

[illegible]

KRL GEOLOG

AREA: _____ HOLE No.: FMH 1 LOGGED BY: _____ DATE: 6/11/80 PAGE: 17 OF: _____

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KRL GEOLOG

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KRL COLOG

AREA: _____ HOLE No: PH #1 LOGGED BY: DK DATE: Aug 21/89 PAGE: 17 OF: _____

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KRL OLOG

AREA: _____ HOLE No: PH-1 _____ LOGGED BY: _____ DATE: _____ PAGE: 2 OF: _____

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: EH #1 LOGGED BY: AK DATE: Aug 21 / 80 PAGE: 21 OF: _____

[illegible]

KRL GEOLOG

AREA: LODGE POLE HOLE No: HL # 1 LOGGED BY: _____ DATE: Aug 22/8 PAGE: 22 OF: _____

[illegible]

KRL CATALOG

[illegible]

KRL GEOLOG

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HOLE No:

FH #1

LOGGED BY:

45.

DATE: Aug 22/80

PAGE: 24 OF:

[illegible]

FH #1

HOLE No:

LOGGED BY:

DATE:

PAGE: 25 OF:

[illegible]

KRL GEOLOG

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[illegible]

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[illegible]

FH #1

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DATE:

PAGE: 20 OF:

1041 - EVD - 0

KRL GEOLOG

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[illegible]

KRL GEOLOG

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[illegible]

FH #1

HOLE No:

LOGGED BY:

DATE:

Sept. 10/80

PAGE: 31 OF:

[illegible]

KRL GEOLOG

FH #1

AREA:

HOLE No:

LOGGED BY:

DATE:

Sept. 11

PAGE: 32 OF:

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: PH-1 LOGGED BY: _____ DATE: 10/1/71 PAGE: 33 OF: _____

[illegible]

KRL GEOLOG

AREA:

Box 108

HOLE No:

FH H1

LOGGED BY:

DATE: Sept. 11/80 PAGE: 34 OF:

[illegible]

FA #1

35

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: FA #1 _____ LOGGED BY: _____ DATE: SEP 12 _____ PAGE: 31 OF: _____

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: FH #1 LOGGED BY: _____ DATE: _____ PAGE: 37 OF: _____

[illegible]

KRL GEOLOG

AREA:

HOLE No:

FH#1

LOGGED BY:

DATE:

Sept. 15/87

PAGE: 38 OF:

[illegible]

KRL GEOLOG

AREA: _____

HOLE No: _____

FH # 1

LOGGED BY: _____

DATE: _____

Sept. 15/80

PAGE: 39

OF: _____

PRIMARY CONTROL			DEPTH TO END OF INTERVAL DESCRIBED		RECOVERY %		ROCK I CHARACTERISTICS														ROCK II				STRUCTURE										CORE RECOVERY		
							ROCK % OF INTERVAL		ROCK NAME		MAJOR QUALIFYING MATERIAL		MINOR QUALIFYING MATERIAL		BED THICKNESS		TEXTURE		COLOUR		ROCK % OF INTERVAL		ROCK NAME		QUALIFYING MATERIAL		FRACTURES				FOOTAGE OF C-B ANGLE MEASUREMENT		CORE RECOVERY				

KRL GEOLOG

AREA: _____ HOLE No: FH# 1 LOGGED BY: _____ DATE: _____ PAGE: 40 OF: _____

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: FH#1 LOGGED BY: _____ DATE: _____ PAGE: 41 OF: _____

[illegible]

KRL GEOLOG

AREA: _____ HOLE No: PH 21 LOGGED BY: _____ DATE: _____ PAGE: 72 OF: _____

[illegible]

KRL C-LOG

AREA: _____ HOLE No: PH 51 _____ LOGGED BY: _____ DATE: _____ PAGE: 92 OF: _____

[illegible]

FH 41

FH 41

KRI - Exp - Q

KRL CATALOG

AREA:

HOLE No:

FH #1

LOGGED BY:

DATE:

PAGE: 45 OF

45

OF

[illegible]

C_OLOG

AREA: _____ HOLE No: F# 1 _____ LOGGED BY: _____ DATE: _____ PAGE: 46 OF: _____

[illegible]

FH #1

Sept. 18

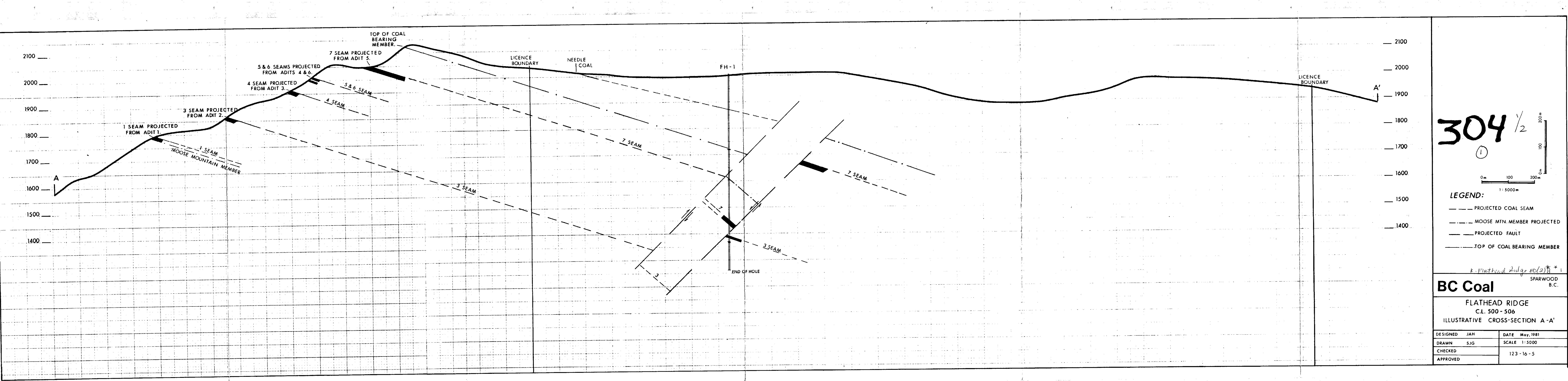
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6 - 873 - 9

CEOLOG

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304 1/2
①

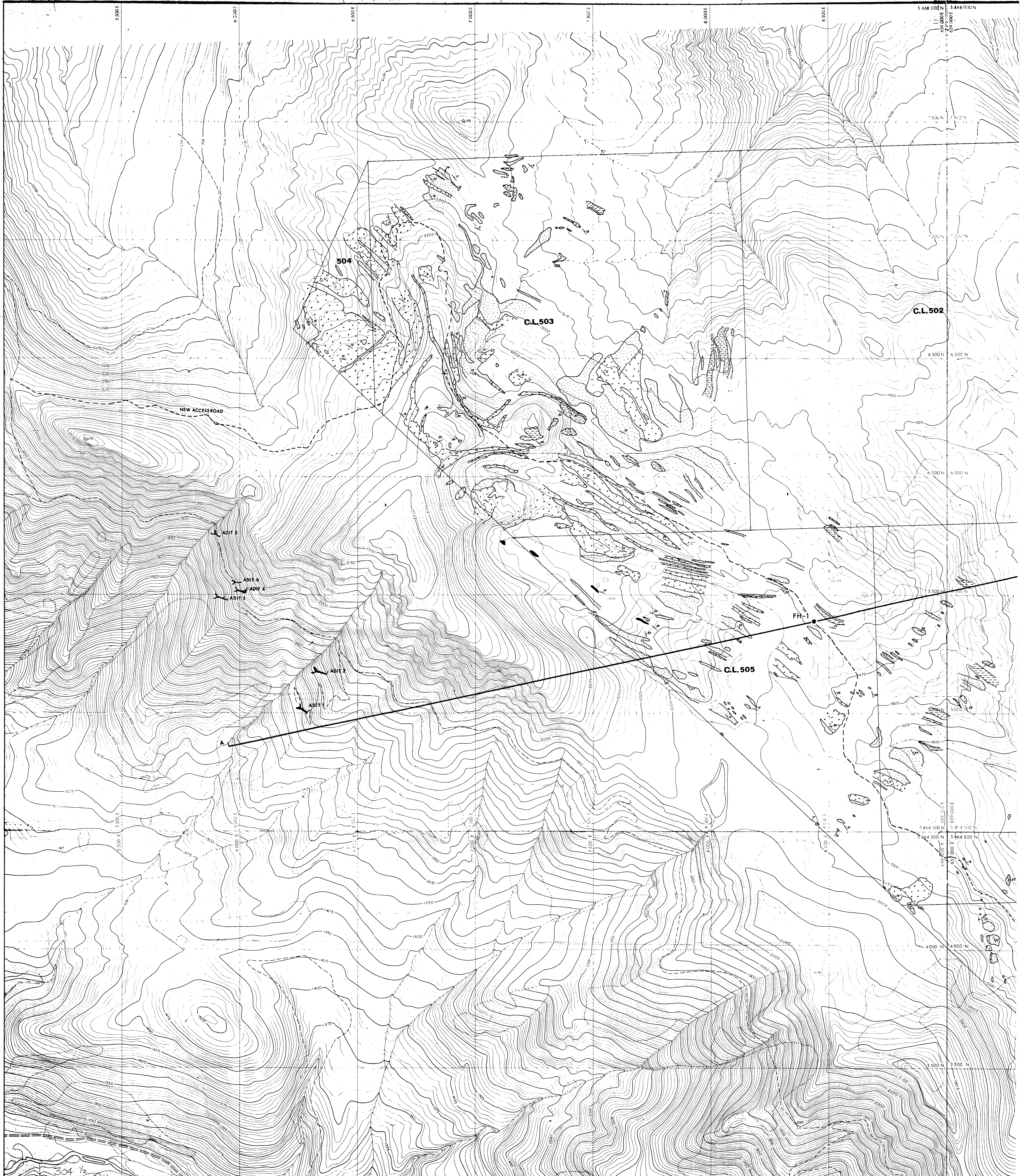
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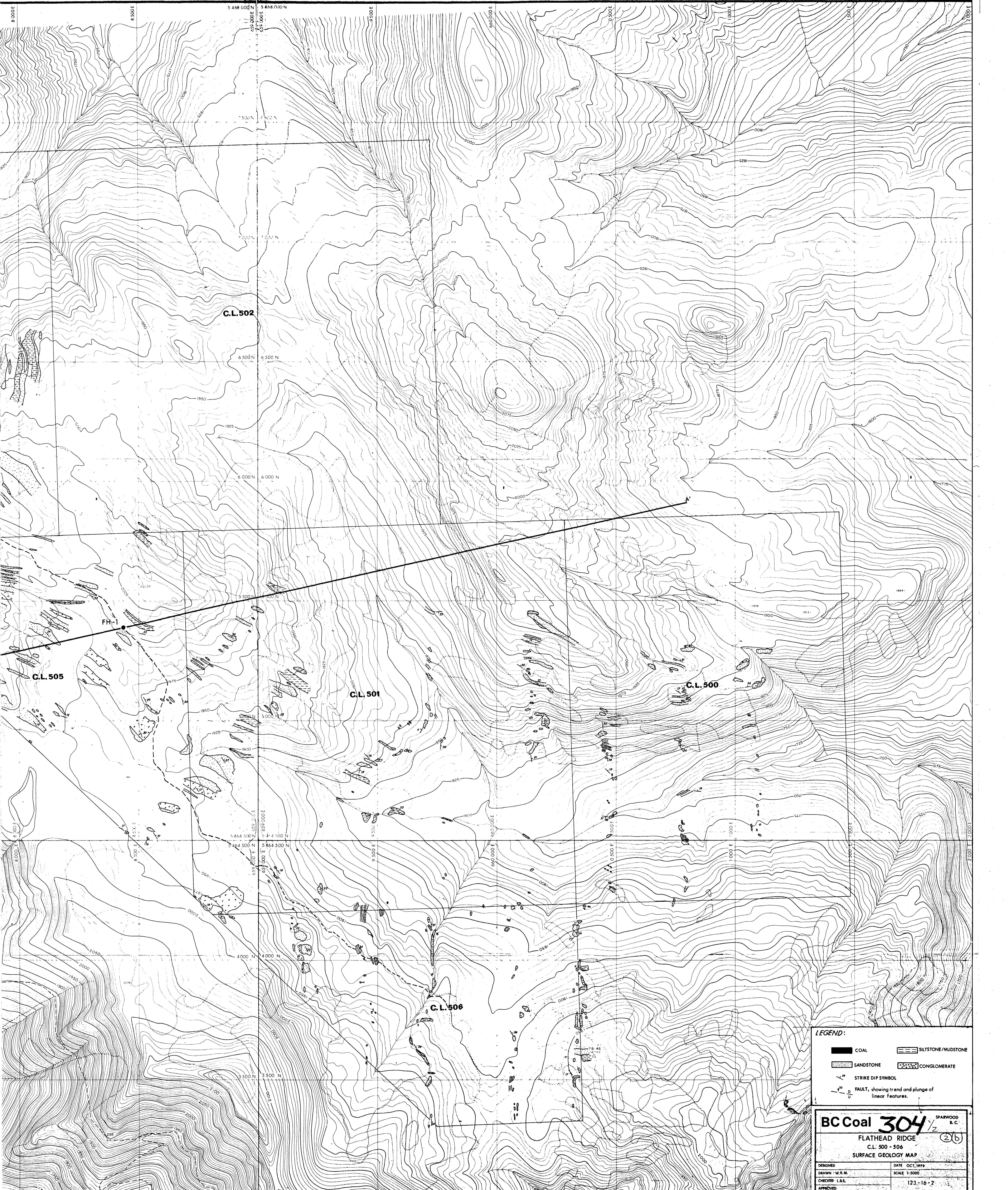
- LEGEND:
- PROJECTED COAL SEAM
 - MOOSE MTN. MEMBER PROJECTED
 - PROJECTED FAULT
 - TOP OF COAL BEARING MEMBER

K-Flathead Ridge 50(2)*
BC Coal SPARWOOD B.C.

FLATHEAD RIDGE
C.L. 500 - 506
ILLUSTRATIVE CROSS-SECTION A-A'

DESIGNED	JAH	DATE	May, 1981
DRAWN	SJG	SCALE	1:5000
CHECKED			
APPROVED			123-16-5





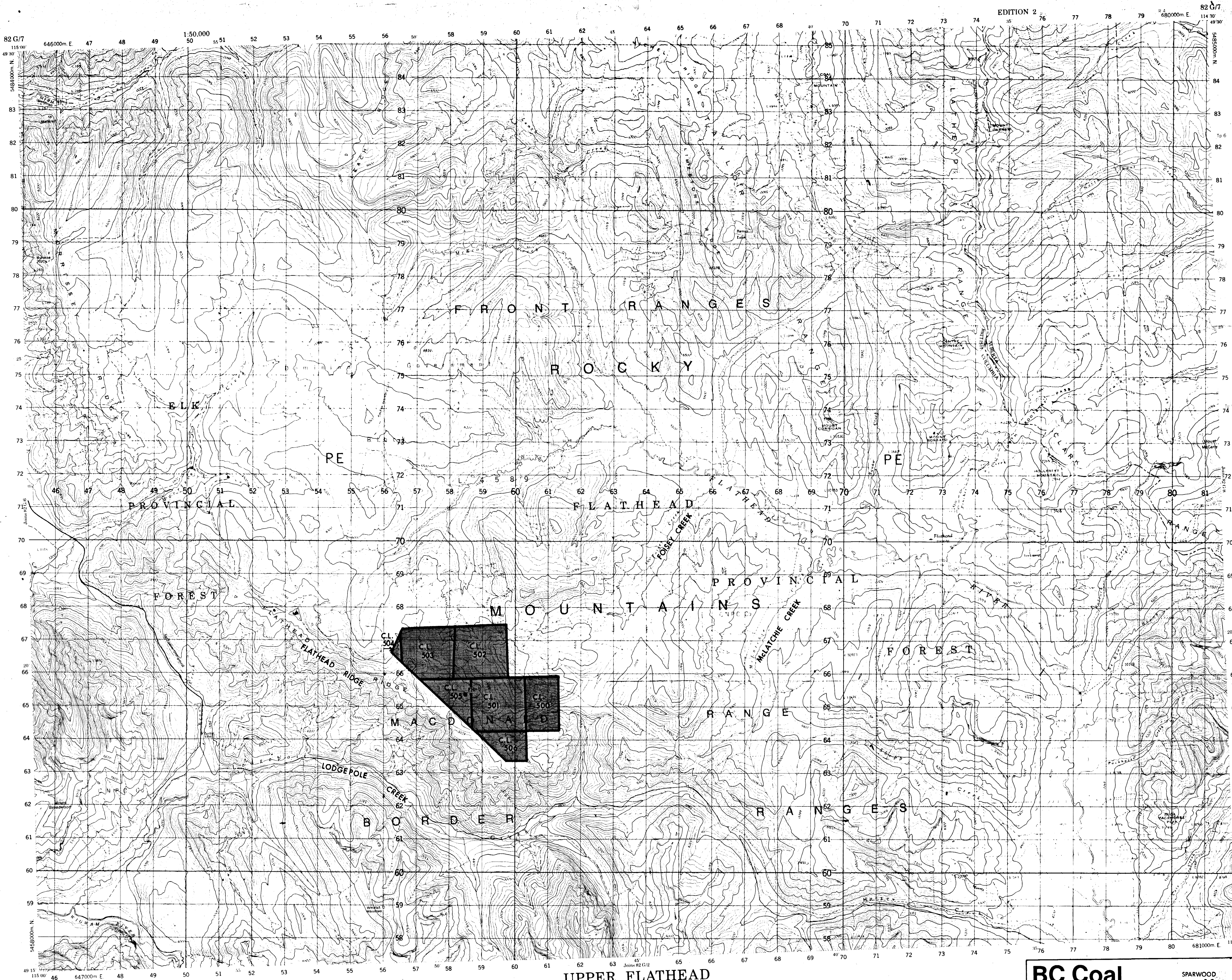
LEGEND:

COAL	SILTSTONE/MUDSTONE
SANDSTONE	CONGLOMERATE
STRIKE DIP SYMBOL	
FAULT, showing trend and plunge of linear features.	

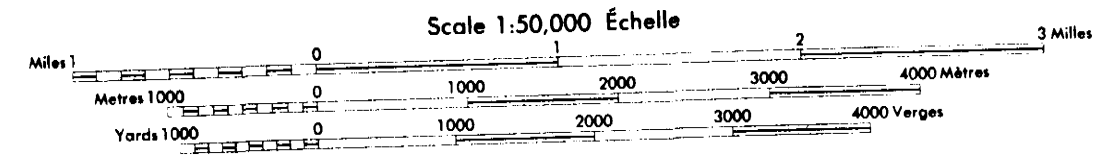
BC Coal 304 1/2 SPARWOOD B.C. (26)

FLATHEAD RIDGE
C.L. 500 - 506
SURFACE GEOLOGY MAP

DESIGNED	DATE OCT, 1979
DRAWN - W.R.M.	SCALE 1:5000
CHECKED L.B.S.	123-16-2
APPROVED	



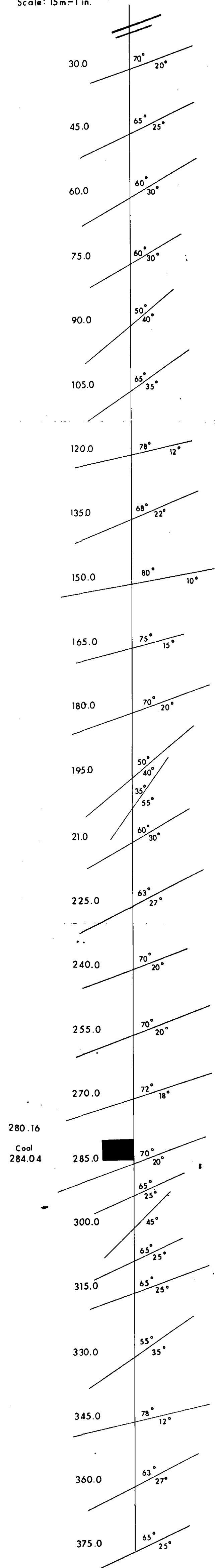
UPPER FLATHEAD
BRITISH COLUMBIA - ALBERTA
WEST OF FIFTH MERIDIAN - OUEST DU CINQUIEME MERIDIEN



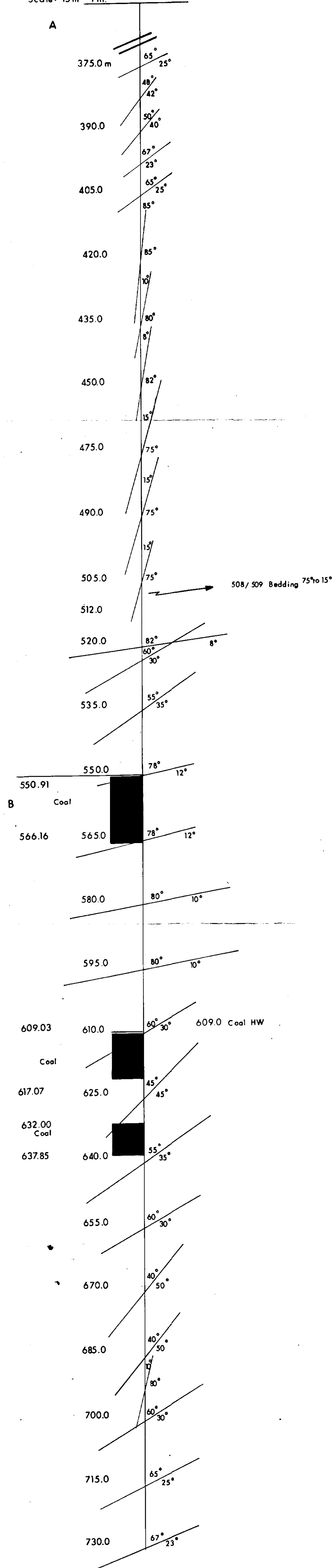
BC Coal		SPARWOOD B.C.	
FLATHEAD RIDGE			
C.L. 500-506			
INDEX MAP			
DESIGNED	JAH	DATE	APRIL, 1981
DRAWN	SJG	SCALE	1:50,000
CHECKED		123 - 16 - 3	
APPROVED			

K-Flathead Ridge 800-18 +1
304 1/2 (3)

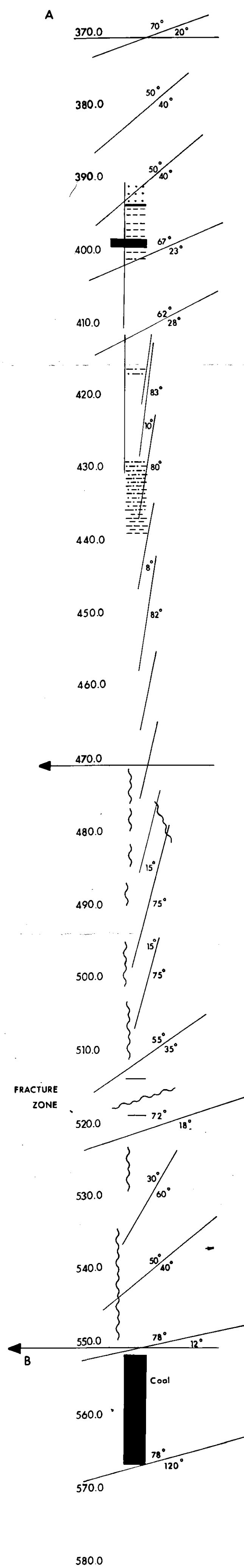
Scale: 15m = 1 in.



Scale: 15m = 1 in.



EXPANDED SCALE
1 in. = 10m.



LEGEND:

Coal

Mudstone

Sandstone

Siltstone

Fracture Zone

304 1/2

4

CB <

65° 25'

Bedg <

Kaiser Resources

SPARWOOD B.C.

FLATHEAD HOLE
BEDDING ANGLES

JULY/AUG, 1980

AUTHOR AGK

SCALE

DRAWN SJG

DATE OCT. 1980

123-16-7

BC Coal

HOLE NUMBER FH001

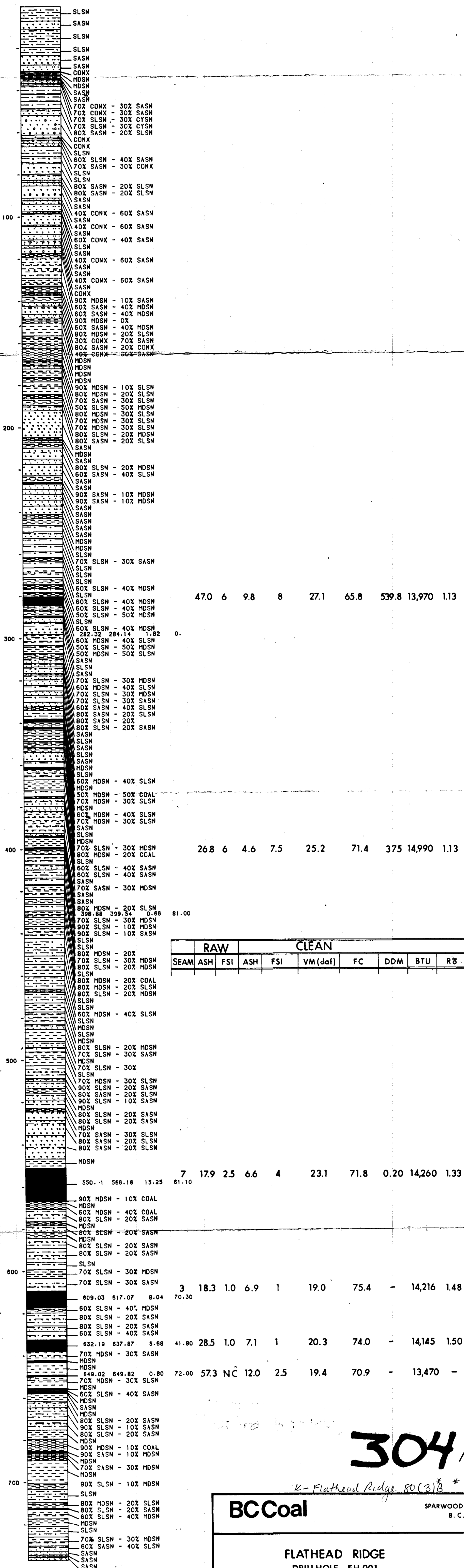
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VERTICAL SCALE= 1CM TO 1000 c COMPLETED= 80-8-23

GEOLOGIST = AGK MEASUREMENTS IN METRIC

TOP ELEV = 2000.16

RAW			CLEAN						
SEAM	ASH	FSI	ASH	FSI	VM (daf)	FC	DDM	BTU	R 6



RAW			CLEAN						
SEAM	ASH	FSI	ASH	FSI	VM (daf)	FC	DDM	BTU	R 6

304 1/2 (5)

K-Flathead Ridge 80(3)B * 1

TOTAL DEPTH = 736.58

BC Coal		SPARWOOD B. C.
FLATHEAD RIDGE DRILLHOLE FH001		
DESIGNED JAH	DATE MAY 1981	
DRAWN —	SCALE AS NOTED ABOVE	
CHECKED	123 - 16 - 4	
APPROVED		

304

COMPANY : KAISER RESOURCES LIMITED

LATITUDE : 5465388.44

DATE SURVEYED : 23 AUG 1980

DRILLHOLE : FH001

DEPARTURE : 658435.31

SURVEY BY : JOHNSON

LOCATION : LODGE POLE

ELEVATION : 2000.13

FIELD : SPARWOOD

MAGNETIC DECLINATION : 18 5 0

PROVINCE : BRITISH COLUMBIA

CORRECTION OF : 18.08

FOR UTM

GRID

NO.	CABLE	ANGLE	AZIMUTH		COURSE		TOTAL		COURSE		TOTAL		COORDINATES			POLAR COORDINATES		
		OF																
	DEPTH	INC.	OBS.	COR.	CABLE	VERT	DEPTH	LAT.	DEP.	LAT.	DEP.	LATITUDE	DEPARTURE	ELEVATION	RAD	AZMTH	COURSE	
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20	30.0	0.4	268.6	286.7	15	15.0	30.0	0.0	-0.1	0.0	-0.1	5465388.5	658435.2	1970.1	0.1	308.7	0.1	
30	45.0	1.0	231.1	249.2	15	15.0	45.0	-0.1	-0.2	-0.0	-0.2	5465388.4	658435.1	1955.1	0.2	270.0	0.2	
40	60.0	1.0	182.3	200.4	15	15.0	60.0	-0.2	-0.1	-0.3	-0.3	5465388.2	658435.0	1940.1	0.4	233.3	0.3	
50	75.0	1.0	185.5	203.6	15	15.0	75.0	-0.2	-0.1	-0.5	-0.4	5465387.9	658434.9	1925.1	0.7	221.2	0.3	
60	90.0	0.3	184.8	202.9	15	15.0	90.0	-0.2	-0.1	-0.7	-0.5	5465387.8	658434.8	1910.2	0.9	216.5	0.2	
70	105.0	0.5	170.3	188.4	15	15.0	105.0	-0.1	-0.0	-0.8	-0.5	5465387.7	658434.8	1895.2	0.9	214.9	0.1	
80	120.0	0.3	179.9	198.0	15	15.0	120.0	-0.1	-0.0	-0.9	-0.6	5465387.6	658434.8	1880.2	1.0	212.4	0.1	
90	135.0	1.4	183.5	201.6	15	15.0	135.0	-0.2	-0.1	-1.1	-0.6	5465387.4	658434.7	1865.2	1.2	211.1	0.2	
100	150.0	1.6	175.7	193.8	15	15.0	150.0	-0.4	-0.1	-1.5	-0.7	5465387.0	658434.6	1850.2	1.6	206.8	0.4	
110	165.0	1.6	195.0	213.1	15	15.0	164.9	-0.3	-0.2	-1.8	-1.0	5465386.6	658434.4	1835.2	2.0	207.7	0.4	
120	180.0	2.0	183.7	201.8	15	15.0	179.9	-0.4	-0.2	-2.2	-1.1	5465386.2	658434.2	1820.2	2.5	206.6	0.5	
130	195.0	2.6	169.2	187.3	15	15.0	194.9	-0.6	-0.1	-2.8	-1.2	5465385.6	658434.1	1805.2	3.1	203.2	0.6	
140	210.0	2.8	171.7	189.8	15	15.0	209.9	-0.7	-0.1	-3.5	-1.3	5465384.9	658434.0	1790.2	3.7	200.7	0.7	
150	225.0	2.8	193.4	211.5	15	15.0	224.9	-0.6	-0.4	-4.1	-1.7	5465384.3	658433.6	1775.2	4.5	202.3	0.7	
160	240.0	3.4	184.5	202.6	15	15.0	239.9	-0.7	-0.3	-4.9	-2.0	5465383.6	658433.3	1760.3	5.3	202.4	0.8	
170	255.0	3.8	173.7	191.8	15	15.0	254.8	-0.9	-0.2	-5.8	-2.2	5465382.6	658433.1	1745.3	6.2	200.7	0.9	
180	270.0	2.9	167.1	185.2	15	15.0	269.8	-0.9	-0.1	-6.7	-2.3	5465381.8	658433.0	1730.3	7.1	198.8	0.9	
190	285.0	3.6	182.5	200.6	15	15.0	284.8	-0.8	-0.3	-7.5	-2.6	5465380.9	658432.7	1715.4	7.9	199.0	0.9	
200	300.0	3.4	169.9	188.0	15	15.0	299.7	-0.9	-0.1	-8.4	-2.7	5465380.1	658432.6	1700.4	8.8	197.9	0.9	
210	315.0	2.7	179.4	197.5	15	15.0	314.7	-0.8	-0.2	-9.1	-2.9	5465379.3	658432.4	1685.4	9.6	197.9	0.8	
220	330.0	3.6	170.2	188.3	15	15.0	329.7	-0.8	-0.1	-10.0	-3.1	5465378.5	658432.3	1670.4	10.4	197.1	0.8	
230	345.0	3.0	181.8	199.9	15	15.0	344.7	-0.8	-0.3	-10.8	-3.4	5465377.7	658432.0	1655.5	11.3	197.3	0.9	
240	360.0	3.1	174.0	192.1	15	15.0	359.6	-0.8	-0.2	-11.5	-3.5	5465376.9	658431.8	1640.5	12.1	196.9	0.8	
250	375.0	3.5	176.2	194.3	15	15.0	374.6	-0.8	-0.2	-12.4	-3.7	5465376.1	658431.6	1625.5	12.9	196.8	0.9	
260	390.0	3.7	169.3	187.9	15	15.0	389.6	-0.9	-0.1	-13.3	-3.9	5465375.1	658431.4	1610.6	13.9	196.2	1.0	
270	405.0	3.5	174.2	192.3	15	15.0	404.5	-0.9	-0.2	-14.3	-4.1	5465374.2	658431.3	1595.6	14.8	195.9	1.0	
280	420.0	3.5	177.4	195.5	15	15.0	419.5	-0.9	-0.2	-15.2	-4.3	5465373.3	658431.0	1580.6	15.7	195.9	0.9	
290	435.0	3.7	170.1	188.2	15	15.0	434.5	-0.9	-0.1	-16.1	-4.4	5465372.4	658430.9	1565.6	16.7	195.5	0.9	
300	450.0	4.1	156.8	174.9	15	15.0	449.4	-1.0	0.1	-17.1	-4.4	5465371.3	658431.0	1550.7	17.7	194.3	1.0	
310	465.0	4.2	156.4	174.5	15	15.0	464.4	-1.1	0.1	-18.2	-4.2	5465370.3	658431.1	1535.7	18.7	193.2	1.1	
320	480.0	4.2	153.1	171.2	15	15.0	479.4	-1.1	0.2	-19.3	-4.1	5465369.2	658431.2	1520.8	19.7	192.0	1.1	
330	495.0	3.7	160.5	178.6	15	15.0	494.3	-1.0	0.0	-20.3	-4.1	5465368.1	658431.3	1505.8	20.7	191.3	1.0	
340	510.0	3.7	158.1	176.2	15	15.0	509.3	-1.0	0.1	-21.3	-4.0	5465367.2	658431.3	1490.8	21.6	190.6	1.0	
350	525.0	3.7	162.3	180.4	15	15.0	524.3	-1.0	-0.0	-22.2	-4.0	5465366.2	658431.3	1475.9	22.6	190.2	1.0	
360	540.0	3.9	155.4	173.5	15	15.0	539.2	-1.0	0.1	-23.2	-3.9	5465365.2	658431.4	1460.9	23.6	189.5	1.0	
370	555.0	4.2	147.4	165.5	15	15.0	554.2	-1.0	0.3	-24.3	-3.6	5465364.2	658431.7	1445.9	24.5	188.5	1.1	
380	570.0	3.7	158.7	176.8	15	15.0	569.1	-1.0	0.1	-25.3	-3.6	5465363.1	658431.8	1431.0	25.6	188.0	1.0	
390	585.0	4.1	149.5	167.6	15	15.0	584.1	-1.0	0.2	-26.3	-3.3	5465362.2	658432.0	1416.0	26.5	187.2	1.0	
400	600.0	3.7	150.3	168.4	15	15.0	599.1	-1.0	0.2	-27.3	-3.1	5465361.2	658432.2	1401.1	27.4	186.6	1.0	
410	615.0	4.1	153.4	171.5	15	15.0	614.0	-1.0	0.2	-28.3	-3.0	5465360.1	658432.3	1386.1	28.5	186.0	1.0	

ROKE

WALL DENSITOG

ENGINEERING LID. CALSONIK, MEDENIA

athead Ridge 80(3)B¹

[illegible]

NO.	FROM	TO	MIN	SEC	SETTINGS	DIV. L OR R	PER LOG DIV.	SEC.	SETTINGS	DIV. L OR R
001	0	347.5	7		COAL SCALE			0.2	5 X	2.65 R
002	0	347.5	7		HARD ROCK SCALE			0.2	5 X	2.62 R

REMARKS		HOLE BRIDGED AT 348 METERS		DENS TOOL #128AS	

ROKE

UTRON LOG
FROM

25
FOR
N-S
IN

PROVINCE JALISCO	COMPANY _____	MASTER RESOURCES LIMITED
	WELL _____	DW-1
	LOCATION _____	LORDE ROSE
	FIELD _____	SANABOBO
		(7)
		304 <i>/12</i>
PRODUCTION DATE _____	GROUND LEVEL _____	FEET _____
DATE OF SAMPLE _____	GROUND LEVEL _____	ADDER FROM DATING _____
MIN. DEPTH MEASURED FROM _____	GROUND LEVEL _____	GL _____
Rin. No.	ONE	
Date	23 APR 1980	
Last Reading	616 N	
Facing Logged	616	
Depth Reached	616.3	
Depth Driller	238	
Coring Rate	9	
Logging Driller	AKA/CMA	
Logging Level	25.5	
Min. Depth	N/A	
Rin #		
Operating Time	3 HOURS	
Truck No.	37	
JOHNSON	Whitney By	MURPHY

ISO FILE NO.
 SEC TYP WTP RGE M M
 FIELD LOCATION LOGRE MODE

OPERATING TIME
 TRUCK NO.

JOHNSON
 WHITNEY BY
 MURPHY

PROVINCE JALISCO

PRODUCTION DATE GROUND LEVEL FEET

DATE OF SAMPLE GROUND LEVEL ADDED FROM DATING

MIN. DEPTH MEASURED FROM GROUND LEVEL GL

RIN. NO. ONE

DATE 23 APR 1980

LAST READING 616 N

FACING LOGGED 616

DEPTH REACHED 616.3

DEPTH DRILLER 238

CORING RATE 9

LOGGING DRILLER AKA/CMA

LOGGING LEVEL 25.5

MIN. DEPTH N/A

RIN #

OPERATING TIME 3 HOURS

TRUCK NO. 37

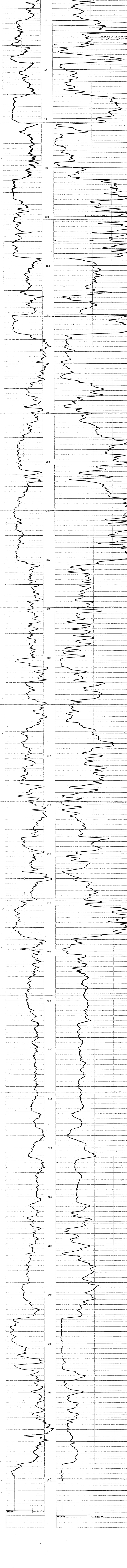
JOHNSON Whitney By MURPHY

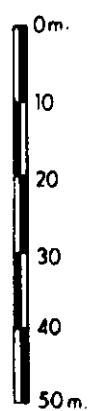
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	TWO
TOOL MODEL NO.		LOG TYPE	
DIAMETER	1.25 INCH	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	4 INCH	TYPE	
DISTANCE TO N. SOURCE	6.7 FT.	LENGTH	
		SOURCE MODEL NO.	
GENERAL		SERIAL NO.	
HUSTR TRUCK NO.	37	SPACING	
INSTRUMENT TRUCK NO.	37	TYPE	
	1254003	LENGTH	

LOGGING DATA
GAMMA RAY

RUN	DEPTH		SPEED M/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
	FROM	TO									
ONE	0	24	4	4	100	0 L	16 API	3	1000	4 L	400 API
	24	100	4	4	100	0 L	16 API	3	500	0 L	200 API
	100	616	4	4	100	0 L	16 API	3	500	0 L	200 API
REMARKS 100-120-000 A- 616-3 M											
GAMMA RAY			DEPTH	NEUTRON							
GAMMA RAY INCREASES				NEUTRON INCREASES							

[illegible]



304 $\frac{1}{2}$
(8)

LEGEND:

SANDSTONE



SILTSTONE



MUDSTONE



COAL



COVER



K. Flathead Ridge 80(2)B *

BC Coal

SPARWOOD
B.C.

FLATHEAD RIDGE

C.L. 500-506

ILLUSTRATIVE STRATIGRAPHIC COLUMN

AUTHOR J.A.H.

SCALE 1:1000

DRAWN S.J.G.

DATE APRIL, 1981