Crows Nest Resources LIMITED
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February 28, 1991

Ministry of Energy, Mines and
Petroleum Resources
525 Superior Street
Victoria, B.C.
V8V 1X4

To Whom It May Concern:

Enclosed please find our report on the M.S.A. North Project.

This report has been prepared by Mr. T. Hannah, who is employed by Crows Nest Resources Limited as a geologist.

Mr. T. Hannah, B. Sc. P. Geol., graduated in Geology from the University of New Brunswick in 1973. Since graduation, Mr. Hannah has spent 18 years working for Shell Canada Ltd. and Crows Nest Resources on a wide variety of coal exploration projects in B.C. and Alberta. His present position is that of Senior Geologlist, Development Engineering Group, Line Creek Mine.

In my opinion, this person is fully qualified, by training and experience to prepare this report.

Yours truly,

CROWS NEST RESOURCES LTD.

R. Williams, P.Eng.
Manager, Engineering

enclosure

GE2 GA1
910125(TH/jb)

MINE SERVICES AREA NORTH
SOUTHEASTERN BRITISH COLUMBIA
1990 GEOLOGICAL REPORT

BRITISH COLUMBIA COAL LEASE 4
AND COAL LICENCES 291, 288 AND 289

OWNED BY:

SHELL CANADA RESOURCES LIMITED

OPERATED BY:

CROWS NEST RESOURCES LIMITED

KOOTENAY LAND DISTRICT

NTS 82G/15 AND 82J/2

LATITUDE: 49° 57' NORTH

LONGITUDE: 114° 45'30" WEST

TED HANNAH
FEBRUARY 1991

TABLE OF CONTENTS

LIST OF ENCLOSURES

NUMBER

1.0 SUMMARY

The Mine Services Area North (M.S.A.N.) Project is part of the Upper Elk Coal Field in the Rocky Mountains of southeastern British Columbia. It is located north of the Line Creek Mine under the Line Creek valley bottom and up onto the eastern slope of Mount Michael. M.S.A.N. is encompassed by British Columbia coal lease 4 and coal licences 291, 288 and 289. It extends from 0.5 kilometres north of the Mine Services Building of the Line Creek Mine to 3.4 kilometres north, and is 12.5 kilometres away from the mine's preparation plant.

In regional geological terms, M.S.A.N. is contained in the footwall of the Ewin Thrust Fault which causes a repeat of the lower section of the Mist Mountain Formation that is contained on the eastern limb of the Alexander Creek Syncline. The Main Pit of the Line Creek Mine is located on the western limb of this syncline. M.S.A.N. stratigraphy is expected to be contiguous with the seams of the Horseshoe Ridge and Ewin Pass Projects. The general geological structure dips into the topographic slope and a dip slope situation is not prevalent. However, thick seams in six coal zones outcrop along the strike length of the Mt. Michael slope.

The 1990 geological program entailed geological mapping on a 1:2000 scale. Three sections of new road were constructed to provide access to nine drill sites and fourteen holes were drilled on existing roads. Coal intersections in the drill holes were sampled and geophysical logging consisted of natural gamma and deviation. One backhoe trench and a test pit were also dug to obtain samples for coal quality analysis. Initial analytical results of these samples indicate a medium volatile bituminous

coal of metallurgical quality. Total cost for the M.S.A.N. project was $198,000.

2.0 INTRODUCTION

2.1 LOCATION AND PHYSIOGRAPHY

Enclosure 1: Index Map

The Mine Services Area North coal licences are located 14 kilometres southeast of Elkford, British Columbia, in the front ranges of the Rocky Mountains in southeastern British Columbia. These licences consist of CL 291, 288 and 289 and are centred at approximately:

Latitude 49° 57' North

Longitude 114° 45' West

These coordinates are located on NTS map sheet 82G/15 and 82J/2. CL 291, 288 and 289 cover an area of approximately 518 hectares.

The M.S.A.N. property extends from the Line Creek valley bottom up onto the east-facing slope of Mount Michael. The project area elevation varies from 1580 metres - 2100 metres (ASL). Natural outcroppings of resistant sandstone units are fairly abundant and the Mist Mountain Formation/Morrissey Formation contact can be traced over most of the property. Coal seam exposures are restricted to road cuts and hand trenches.

2.2 ACCESS

Vehicular access is via; exploration roads on Horseshoe Ridge, mine service roads in the valley bottom north of the Mine Services Building, the 1989 exploration road into the M.S.A. North area and the Ewin Pass Road.

3.0 SUMMARY OF WORK DONE

3.1 PREVIOUS WORK

Between 1975 and 1976 Crows Nest Industries Ltd. built the Ewin Pass access road, mapped the Mt. Michael and Ewin Pass areas at a scale of 1:12,000 and drilled nine reverse-circulation rotary holes in the Ewin Pass area.

In 1978 Shell Canada again mapped the area at scales of 1:24,000 and 1:12,000. Some coal seams were hand-trenched.

In 1979 additional detailed scale (1:2,000) mapping was done and 150 metres of trenching and three adits were driven for bulk samples in the Ewin Pass area to the north.

Additional drilling, trenching and sampling was done in Ewin Pass during 1980 and 1981. Six diamond holes and five rotary holes were drilled, sampled and geophysically logged. Some of this data will be extrapolated into the M.S.A.N. area as the geological interpretation develops.

The 1981 Mount Michael Geological Report by A. White covered the north central area of Mount Michael and some of his findings were extrapolated into the Mine Services Area North Project area.

The 1989 program, as reported on by Sharma, consisted of geological mapping (1:2000), four rotary drill holes, backhoe trenching and road upgrading in a small portion of the M.S.A.N. area 1.4 km north of the Mine Services Building.

3.2 WORK DONE IN 1990

Field operations were supervised by T. Hannah and J. Kinnear of Crows Nest Resources Ltd. and included:

- 370 metres of road construction
- geological mapping (1:2000 scale)
- 190 metres of backhoe trenching
- 4279 metres of CSR rotary drilling in 23 holes
- one bulk sample site (Test Pit)

Mapping was limited to road exposures due to inclement weather.

The backhoe trench was dug along one of the new roads using a 225 track-mounted backhoe. Minimal overburden was encountered and it was possible to collect coal samples from below the "bloom" zone of each seam.

All drilling was done with a truck-mounted reverse-circulation rotary drill utilizing a down hole hammer as much as possible. Coal seams were

sampled in one metre increments and analyzed for raw ash and FSI. On seven drill sites, two holes (one vertical and one angled) were drilled from each site. All holes were geophysically logged with at least natural gamma and inclination through the drill steel and deviation through the open hole when possible.

The bulk sample pit was excavated using two D-9 cats, a 988 front-end loader, a 225 track-mounted backhoe and a fleet of four 30 ton coal haulers. The bulk sample site had dimensions of approximately 100 metres by 100 metres, with a maximum depth of 16 metres. Four major coal zones were encountered and sampled. Each seam was stockpiled separately and when time permitted was run through the Line Creek preparation plant to determine its cleaning characteristics.

4.0 GEOLOGY

4.1 REGIONAL STRATIGRAPHY

Enclosure 2: Table of Formations

The Mist Mountain Formation of the Kootenay Group of Upper Jurassic-Lower Cretaceous age is the coal bearing sequence in southeastern British Columbia. It is a thick sequence of clastic sediments representing delta progradation over marine shales, siltstones and sandstones of the Jurassic Fernie Formation.

Withdrawal of the Fernie Sea northeastward and an epeirogenic uplift of the source area in the southwest initiated deposition of Kootenay Group strata.

The Kootenay Group has been subdivided into three formations; the lower Morrissey Formation, consisting of Moose Mountain and Weary Ridge Members; the Mist Mountain Formation, and the uppermost Elk Formation.

The ***Moose Mountain Member*** is a resistant, generally cliff forming unit comprised of massive, medium to coarse grained, medium gray weathering sandstone. There are commonly two coal horizons within this sandstone, but their small thickness (rarely over one metre) and the overlying massive sandstone make them unattractive for economic consideration. The distinctive nature and prominence of this unit makes it an easily traceable marker horizon throughout the Crows Nest Coal Field of southeastern British Columbia.

The ***Mist Mountain Formation*** is the main coal bearing unit of the Kootenay Group. It overlies conformably but abruptly the Moose Mountain Member.

It is comprised of a generally recessive, interbedded sequence of brownish tinted sandstones, gray to brown siltstones, gray and black shales, gray mudstones and coal seams. In the Elk Coal Field this formation ranges in thickness between 400 metres and 660 metres. The coal seams attain a thickness of up to 10 metres and a lateral extent of several kilometres.

The ***Elk Formation*** lies conformably but abruptly over the Mist Mountain Formation. It consists of an interbedded sequence of cliff forming

sandstones, shales and siltstones and thin (less than one metre), sporadic coal seams.

The exact base of the Elk Formation is somewhat arbitrary as it is defined as being "the base of the first major sandstone or conglomerate above the uppermost major coal seam in the Mist Mountain Formation" (Gibson, 1979). Therefore the stratigraphic position of the Mist Mountain-Elk formational contact may vary slightly from project to project.

4.2 REGIONAL STRUCTURE

Enclosure 3: Regional Geological Map

Coal bearing Mist Mountain Formation occurrences in the front ranges of southeast British Columbia are preserved in north/south trending synclines referred to as the Crowsnest Coal Field. The structure within the synclines is complicated to varying degrees by thrust faults, and to a lesser extent normal faults.

The Crowsnest Coal Field can be subdivided into three coal bearing areas. From south to north they are the Flathead Coal Field, the Fernie Coal Field and the Upper Elk Coal Field (where this project area is located).

Upper Elk Coal Field

The Upper Elk Coal Field is an elongate basin composed of two major synclines (Greenhills and Alexander Creek) separated by an anticline and the northern extension of the Erickson Normal Fault.

Line Creek is located at the southern end of the northerly plunging Alexander Creek syncline. The Ewin Thrust Fault causes a repeat of the east limb of this syncline. The Mine Services Area North Project is located in the footwall of this thrust fault.

4.3 MINE SERVICES AREA NORTH

Enclosure 4: Drill Hole Location and Geology Map

Enclosure 5: Geological Cross-Sections (16)

Enclosure 6: Typical Stratigraphic Section

Enclosure 8: Drill Hole Geophysical Logs

The Mine Services Area North (M.S.A.N.) project covers an area of 1.8 km^2 under the Line Creek valley bottom and on the east-facing slope of Mt. Michael. The west-dipping Moose Mountain Member outcrops along almost the entire length of the project, with bedding attitudes ranging from 45° to 60° west. Up section, the bulk of the interesting coal occurs in the lower 100 metres to 250 metres of the Mist Mountain Formation. There are six zones containing mineable seams, with individual seams ranging in thickness from 1.0 metres to 11.0 metres. The coal seam nomenclature has been extrapolated from the Line Creek Pit and Ewin Pass areas into this project. Stratigraphic changes are evident along the strike from south to north. As well as seam changes within zones, complete zones move up and down in the stratigraphic section or appear to be replaced completely by major sandstone units. The geophysical log signature of the seams are consistent enough to allow relatively easy correlation throughout the project and into the adjacent Ewin Pass data to the north.

The following are details on the rock stratigraphy from the Moose Mtn. sandstone up to 7 Seam, as interpreted from geophysical logs.

4.3.1 Stratigraphic section from the top of Moose Mountain sandstone to the top of 9 Seam (25 - 45 m.):

- interburden between coal seams is composed primarily of shale and siltstone (50% of each) with some thin (<1.0 m.) sandstone layers (not correlatable)

- throughout most of the area, the bottom coal seam is separated from the Moose Mountain sandstone by a coarsening downward (shale → sandstone) sequence

4.3.2 Stratigraphic section from the top of 9 Seam to the top of 8 Seam (50 - 80 m.):

- coal seam hanging wall and footwall rock is primarily shale

- at the south end of the project, the interburden between 8 and 9 Seam is composed of interbedded shale, siltstone, and correlatable thin (1.0 - 3.0 m.) coal seams

- in the middle and north area of M.S.A.N., the thin seams have been replaced by a correlatable fine-grained sandstone.

- in the Ewin Pass area, two distinct sandstone units have developed; one coarsening up, the other coarsening down

- the balance of the interburden is interbedded shale and siltstone

4.3.3 Stratigraphic section from the top of 8 Seam to the top of 7 Seam (95 - 115 m.):

- coal seam hanging wall and footwall rock is primarily shale

- in the middle area of M.S.A.N., there is a 10 metre sandstone unit near the bottom of this section, with the balance of the interburden being interbedded shale and siltstone

- to the north, two major correlatable sandstone units develop, with the balance of the interburden composed of shale and siltstone

Correlation of the drill hole geophysical logs also shows ample evidence of a number of west-dipping, low angle thrust faults which affect both the Mist Mountain Formation and the Moose Mountain Member. Seam repeats are common. Attempts have been made to correlate these faults from one cross-section to the next, but more mapping and drilling is needed to properly interpret these structures. Displacement on these faults ranges up to 20 metres vertically and 100 metres horizontally.

5.0 COAL QUALITY

Enclosure 9:	Increment Quality Data
Enclosure 10:	Composite Quality Data
Enclosure 11:	Loring Quality Data
Enclosure 12:	Petrographic Data
Enclosure 13:	Test Pit Quality Data

In 1990 coal samples for analyses were obtained from reverse-circulation rotary drill holes, the backhoe trench and the test pit. A variety of tests were done on these samples by the Crows Nest Resources Ltd.'s lab, Loring Laboratories Ltd., and David E. Pearson and Associates Ltd. All of the data is included in the above enclosures, but as of yet no summary of the data on a seam-by-seam basis is available. The following comments are preliminary but serve to give some idea of the basic quality:

- Based on CSR drill hole data
  - raw ash varies from 15% - 35%
  - volatiles (at 1.6 S.G.) are in the 21 - 22% range
  - sulphur (at 1.6 s.g.) is low (0.3 - 0.5%)
  - RoMax (at 1.6 S.G.) ranges from 1.21 - 1.29
  - Calorific values range from 7400 - 7800 Kcal/kg

- There is evidence of "layering" within seams of "Met." and "Thermal" coal (based on raw FSI values), and therefore some of these seams may have potential for selective mining to optimize the reserves.

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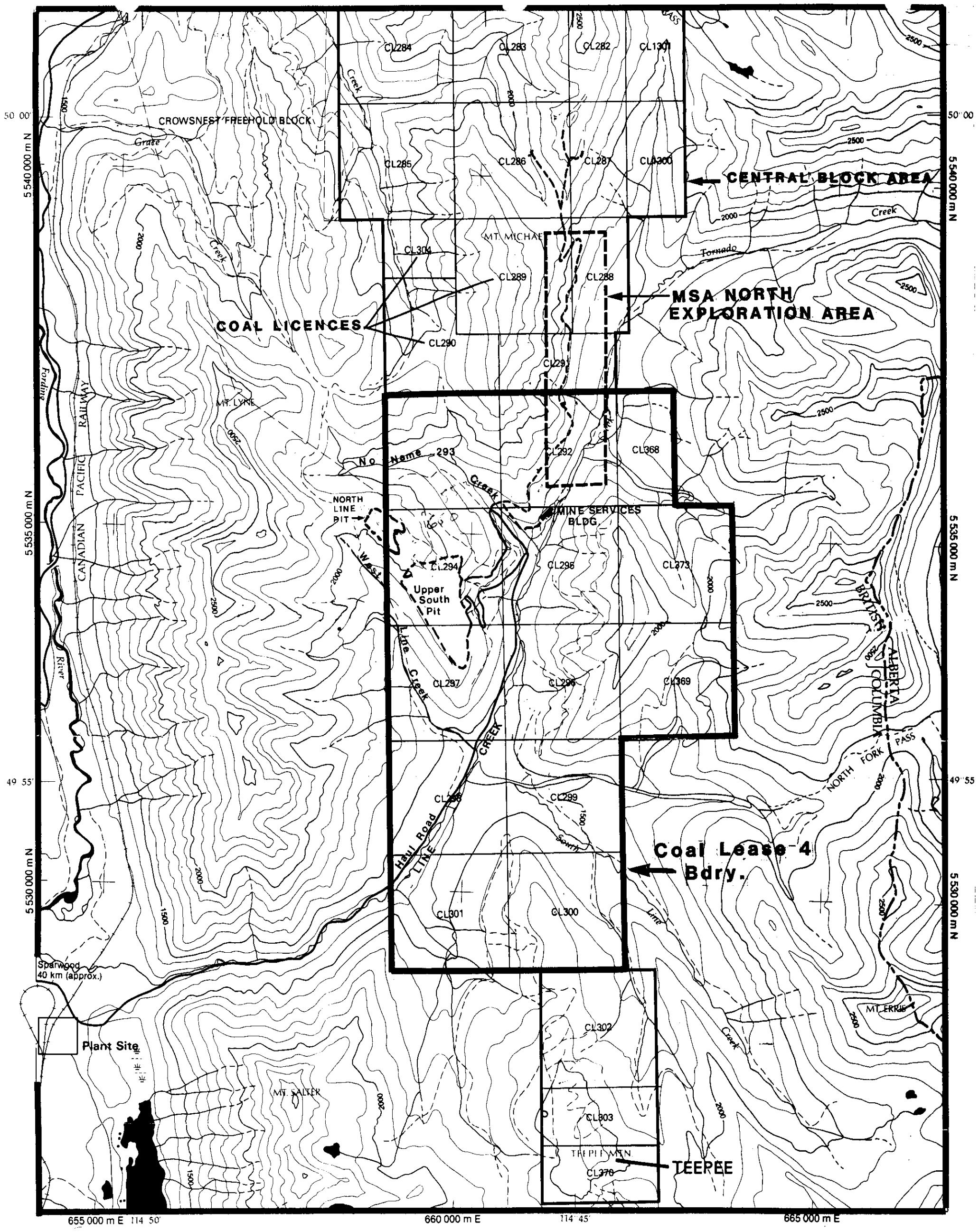
Price, R.A. (1961) - Fernie Map Area, East Half Alberta and British Columbia, 82G/E. 1/2 Geological Survey of Canada Paper 61-24

White, A.M. (1981) - Mount Michael Project, Southeastern British Columbia, 1981 Geological Report, Crows Nest Resources Limited, Internal Report

Sharma, A. (1989) - Mine Services Area North, Southeastern British Columbia, 1989 Geological Report



Reference map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources in 1975 and updated from 1979 Province of British Columbia 1:100 000 mapping. Metric contours were manually interpolated.

Scale 1:50 000

Kilometres 0.5 0 0.5 1.0 1.5 2.0 2.5 3.0 Kilometres

Miles 0.5 0 0.5 1.0 1.5 2.0 Miles

Contour Interval 100m

Transverse Mercator Projection

Universal Transverse Mercator Grid Zone II

Legend

- Road; Highway, Main road
- Road; Loose surface, Dry weather
- Track or trail
- Railway
- River
- Stream
- Contours (2000, 1500)
- Licence boundary
- Licence group boundary

T.N. 1°43' Grid North

Crows Nest Resources Limited

INDEX MAP

MSA NORTH

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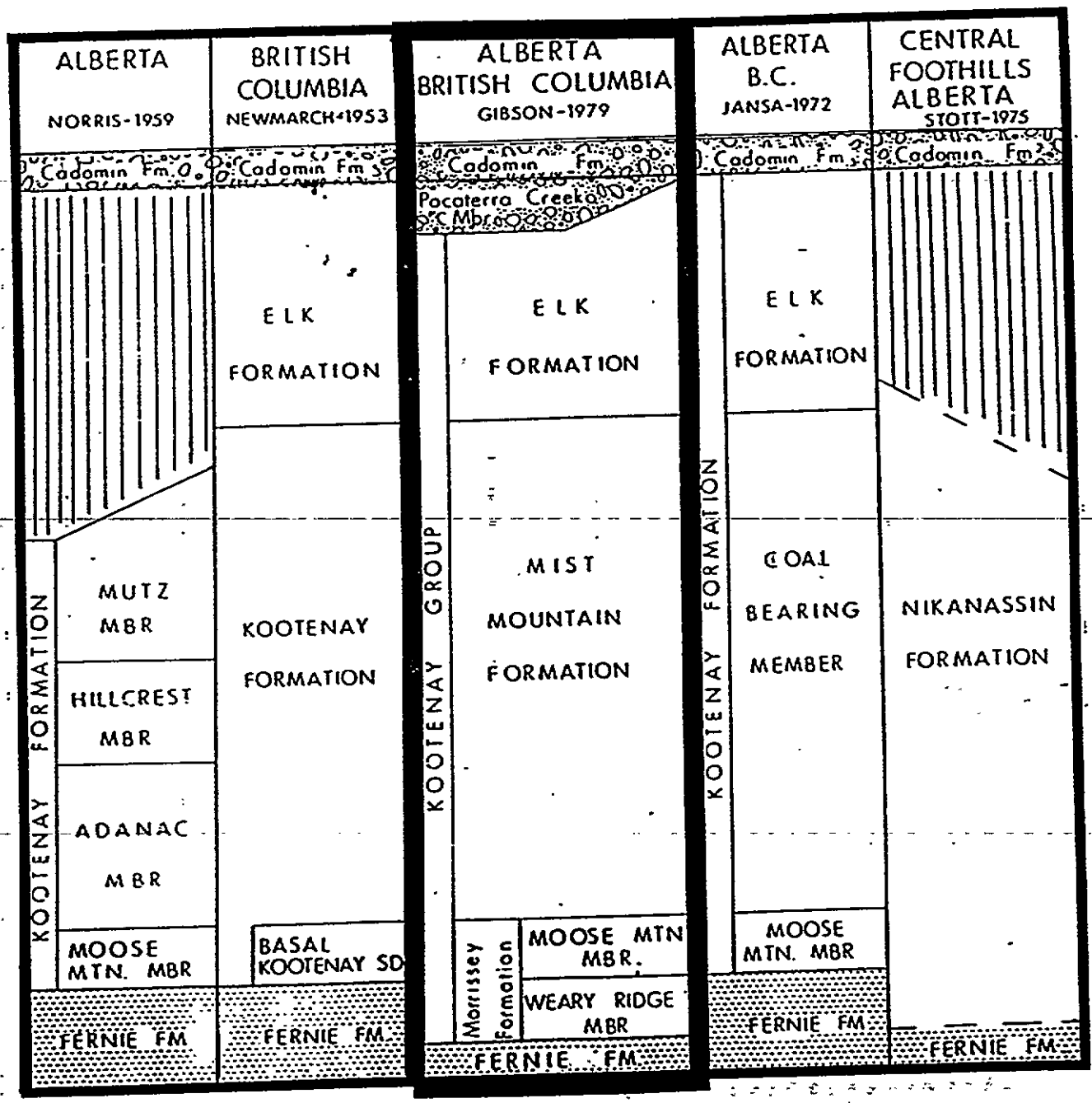
To Accompany		

ENCLOSURE # 1

TABLE OF FORMATIONS

Nomenclature of the Kootenay Group (after Gibson, 1979)



ENCLOSURE 2

CL285

CL286

CL287

CL1300

CL304

CL289

CL288

MSA NORTH
EXPLORATION AREA

CL290

CL291

COAL LEASE #4

JKe

JKmm

JKm

NORTH LINE
PIT

UTM 553500 N

UPPER PIT

COAL LEASE No. 4

REGIONAL
GEOLOGY MAP

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LEGEND

UTM 660000E

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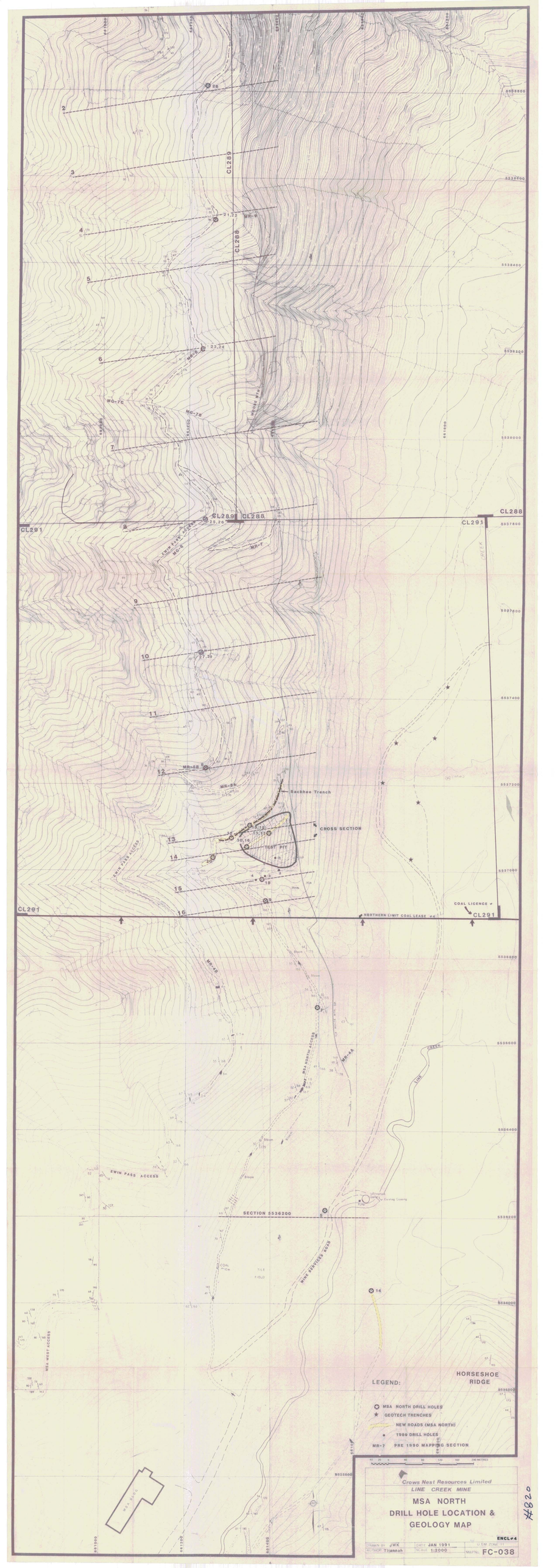
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CL288
CL291
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MR-7
MR-6B
MR-6A
MR-4A
MG-7C
MG-7B
MG-6
EWIN PASS ACCESS
MSA NORTH ACCESS
MSA WEST ACCESS
MINE SERVICES ROAD
Backhoe Trench
CROSS SECTION
TEST PIT
NORTHERN LIMIT COAL LEASE #4
COAL LICENCE #
SECTION 5536200
HORSESHOE RIDGE
LEGEND:
MSA NORTH DRILL HOLES
GEOTECH TRENCHES
NEW ROADS (MSA NORTH)
1989 DRILL HOLES
MR-7 PRE 1990 MAPPING SECTION
Crows Nest Resources Limited
LINE CREEK MINE
MSA NORTH
DRILL HOLE LOCATION &
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AUTHOR: Tiannah
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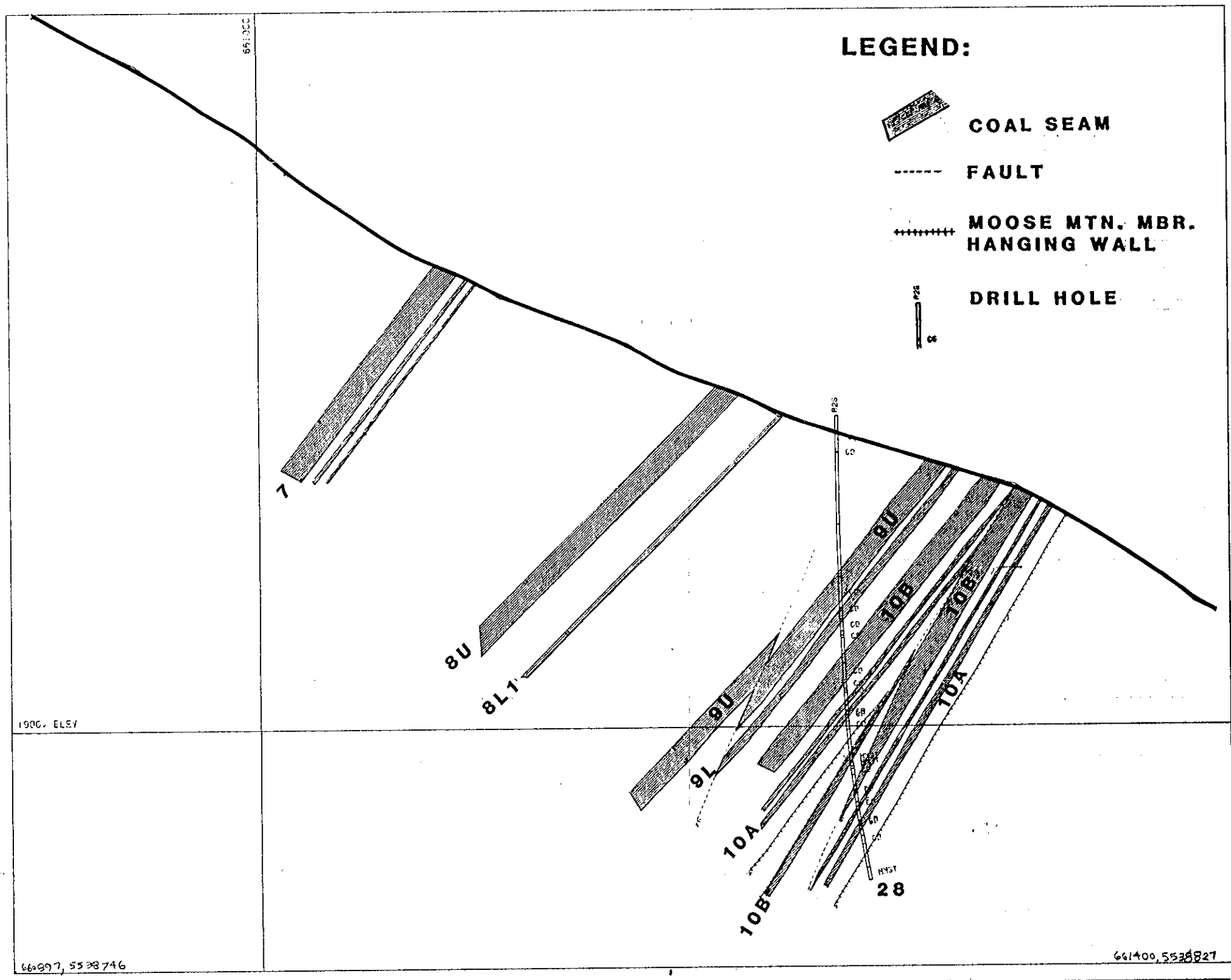

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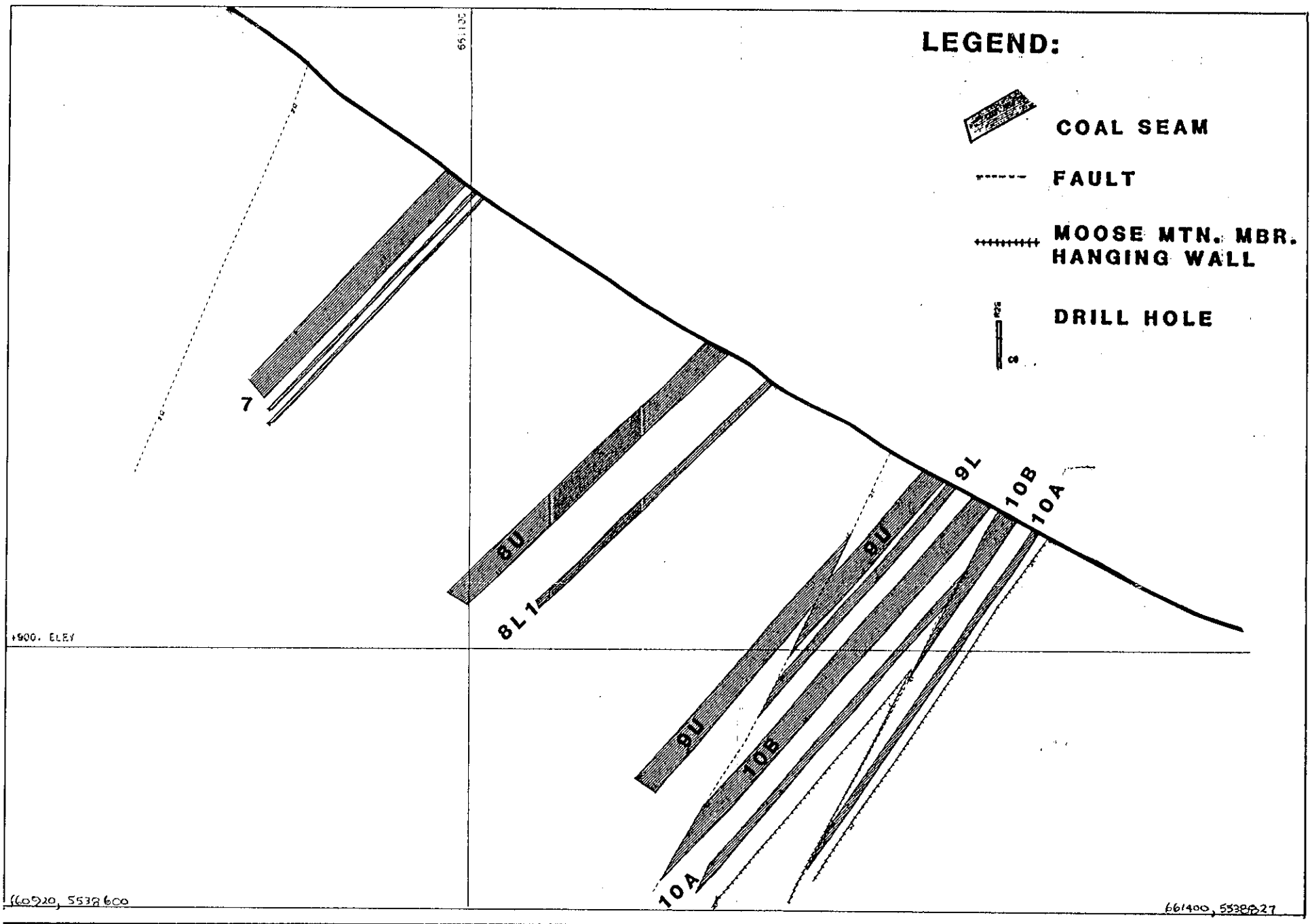

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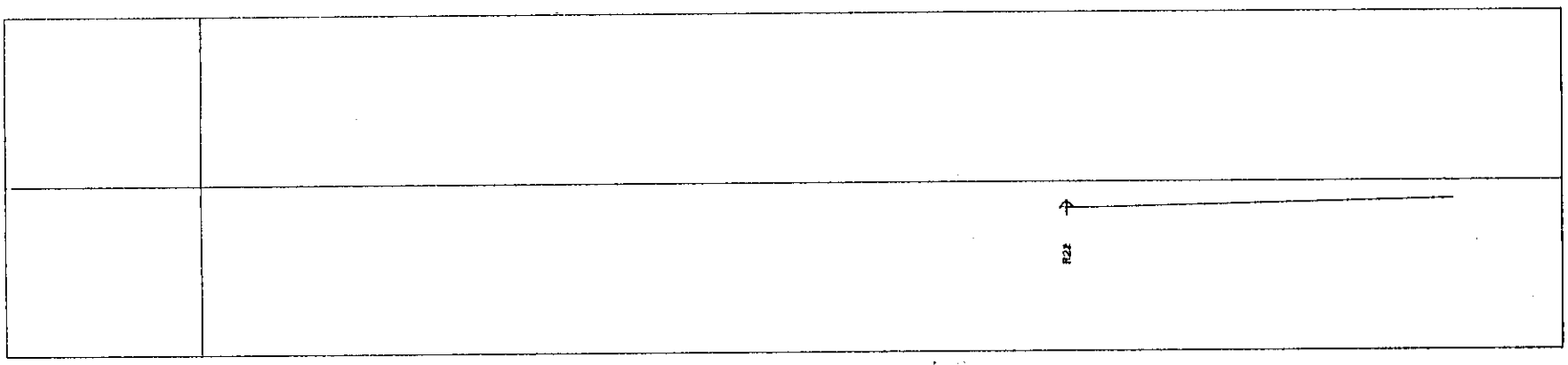

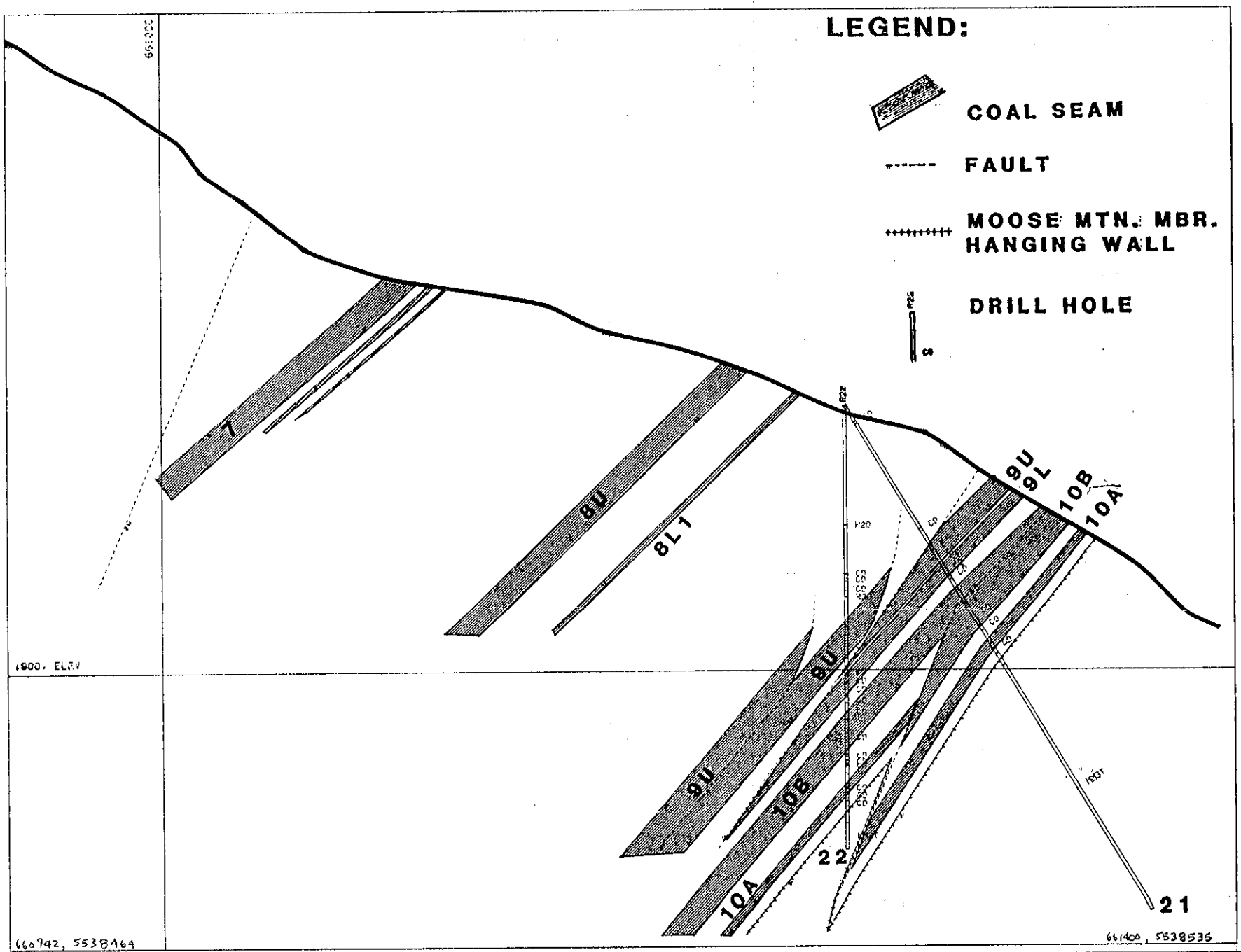

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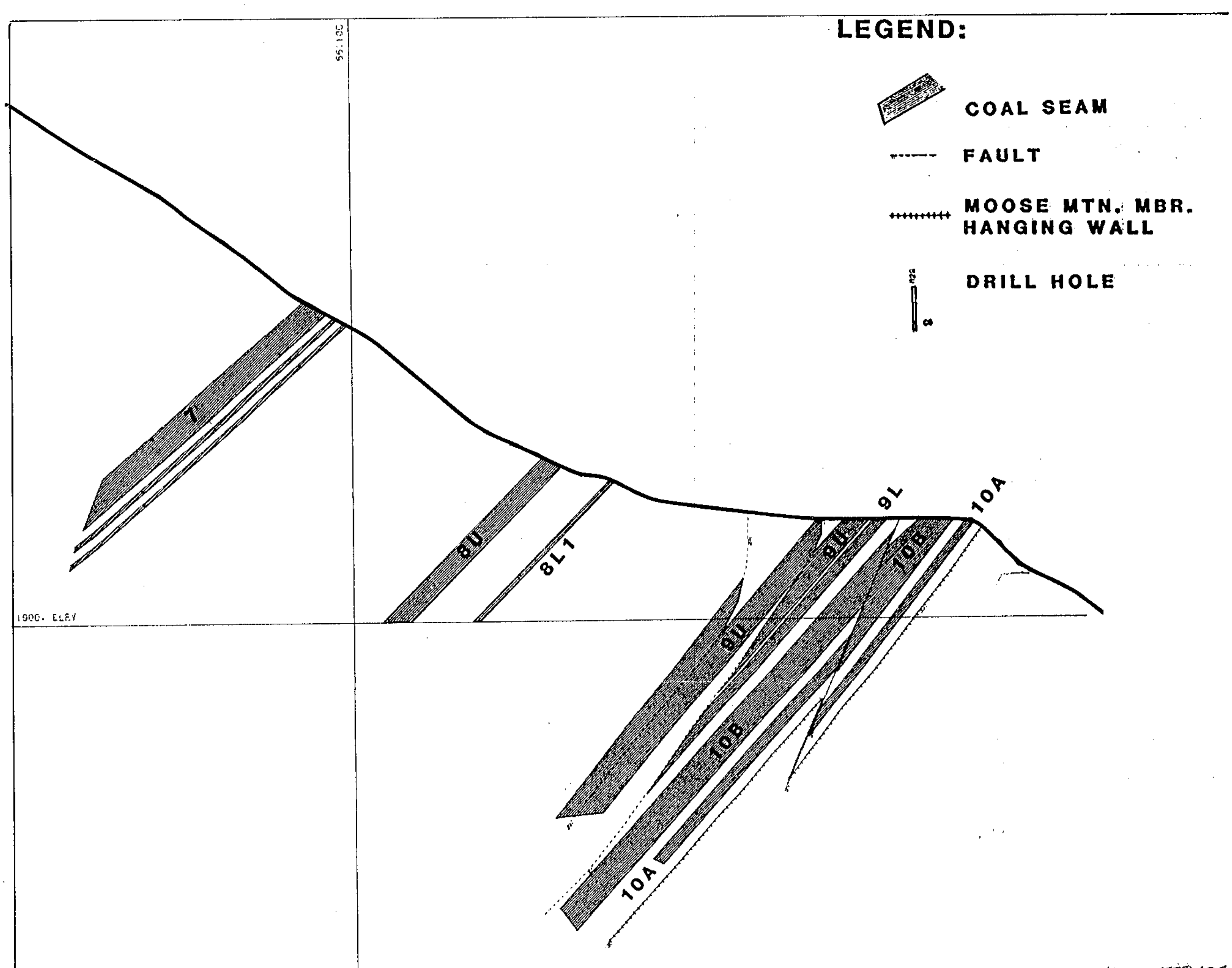

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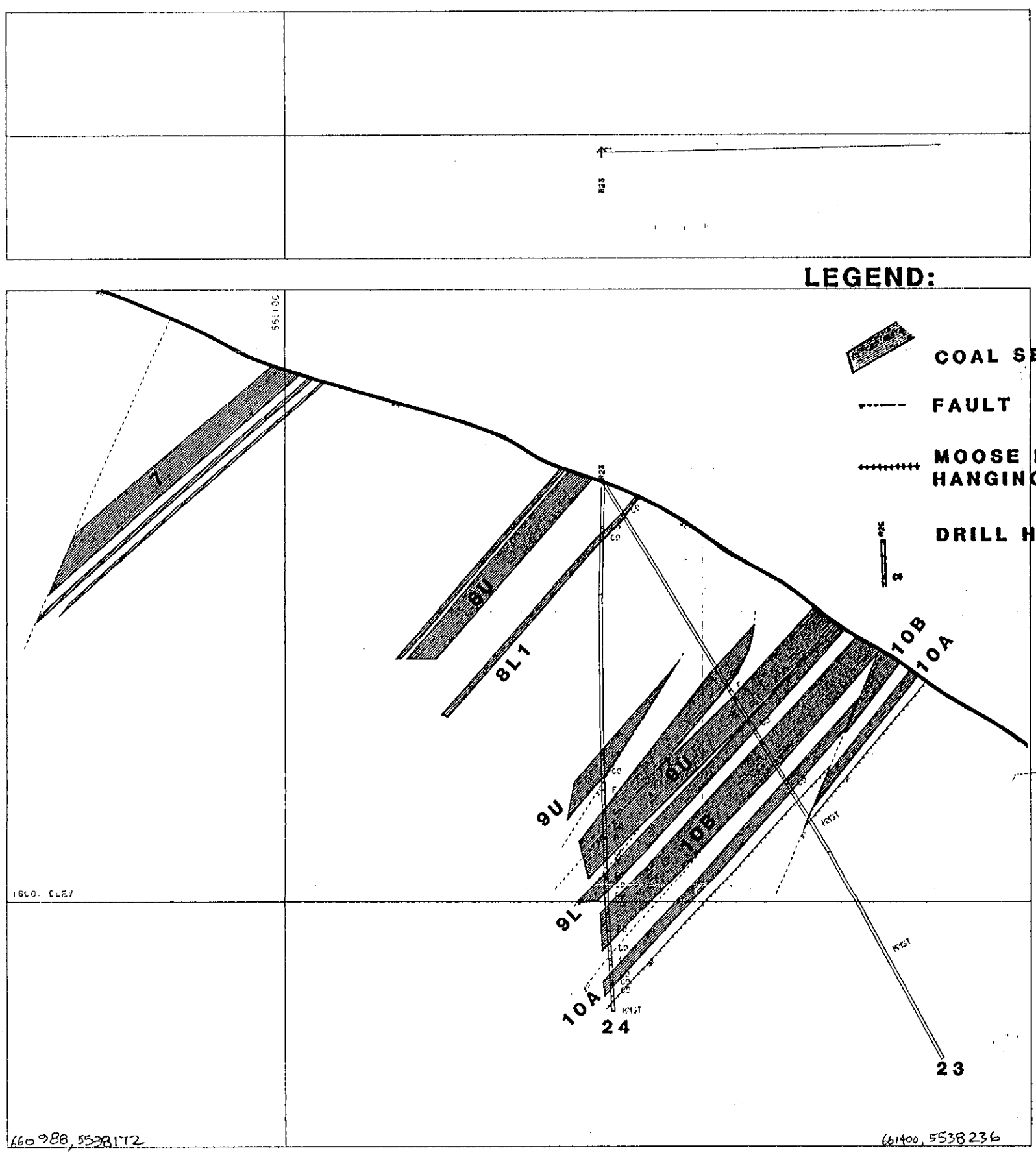

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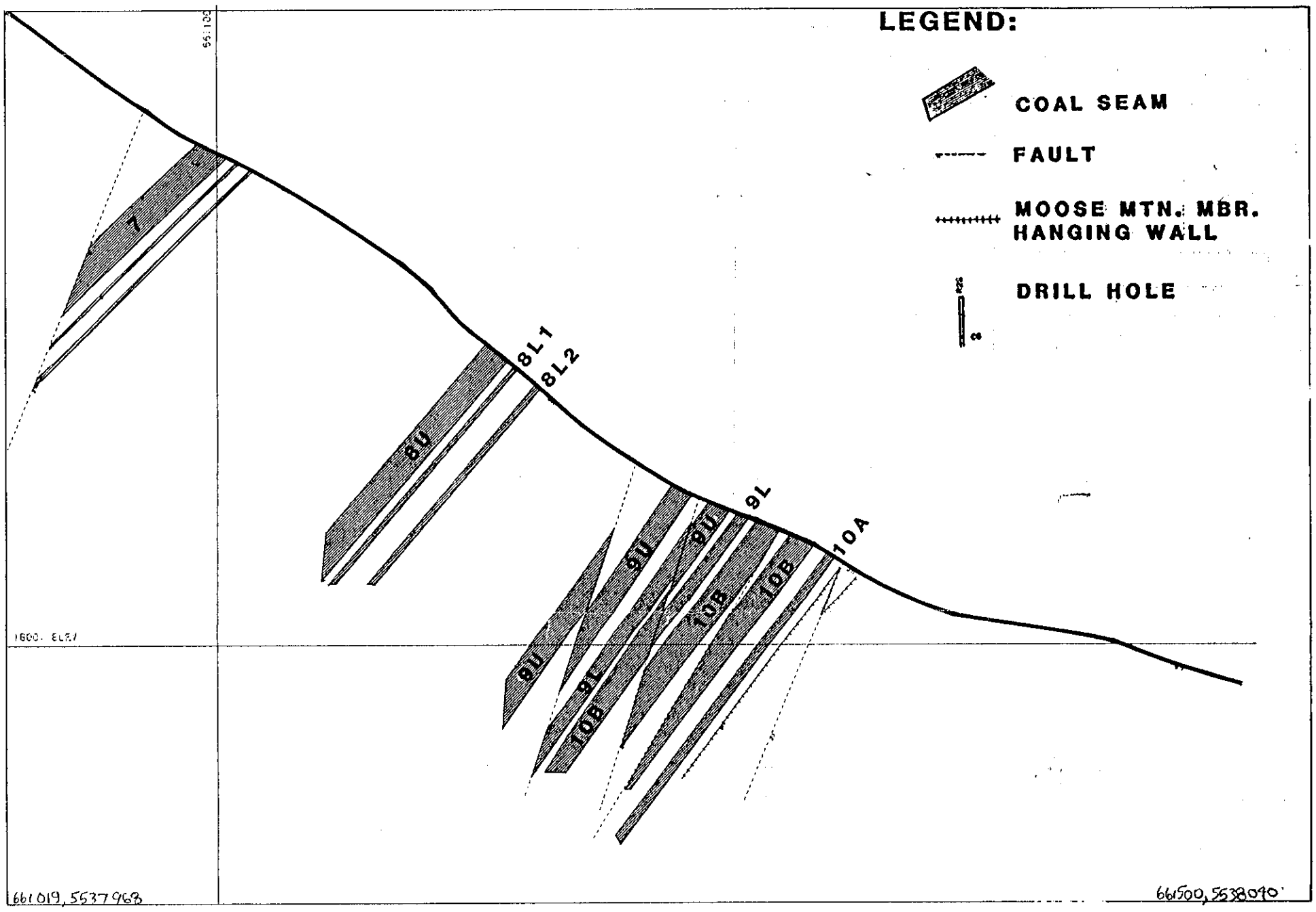

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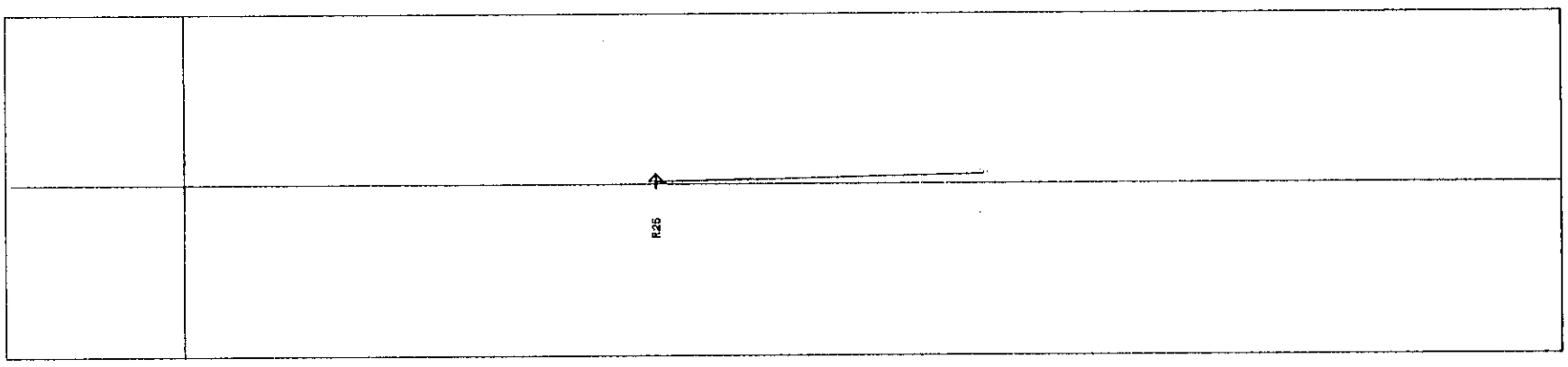

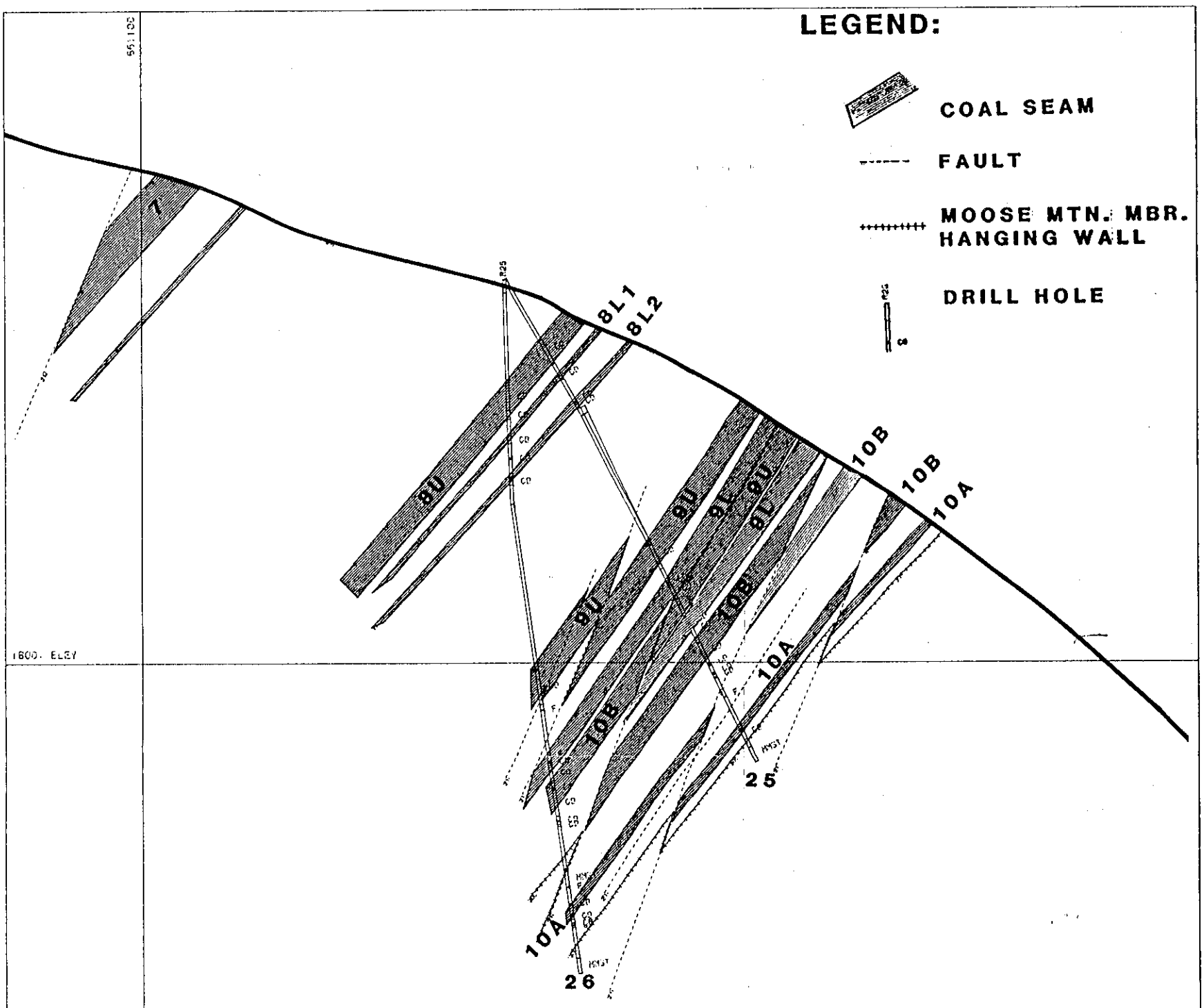

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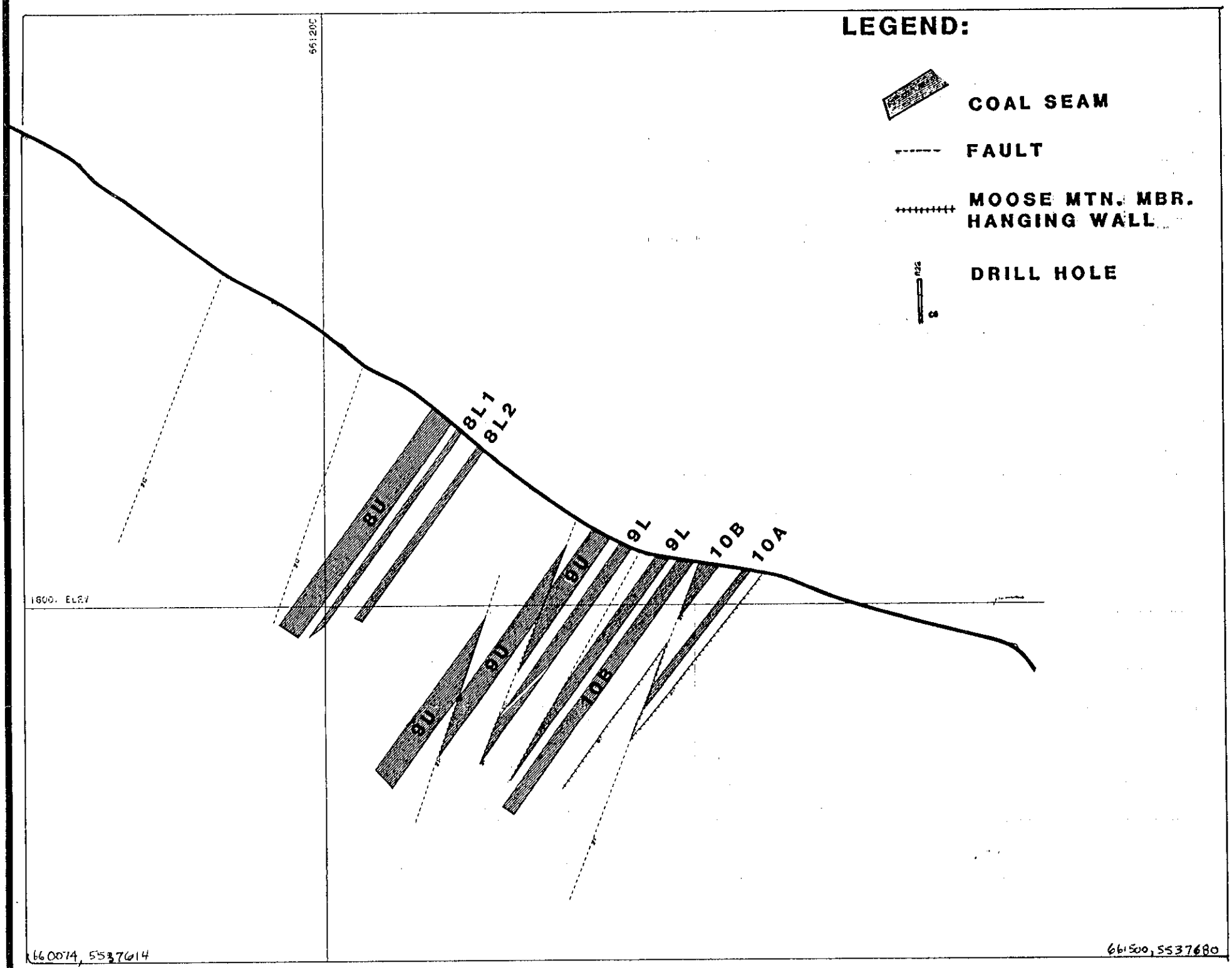

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CROWS NEST RESOURCES
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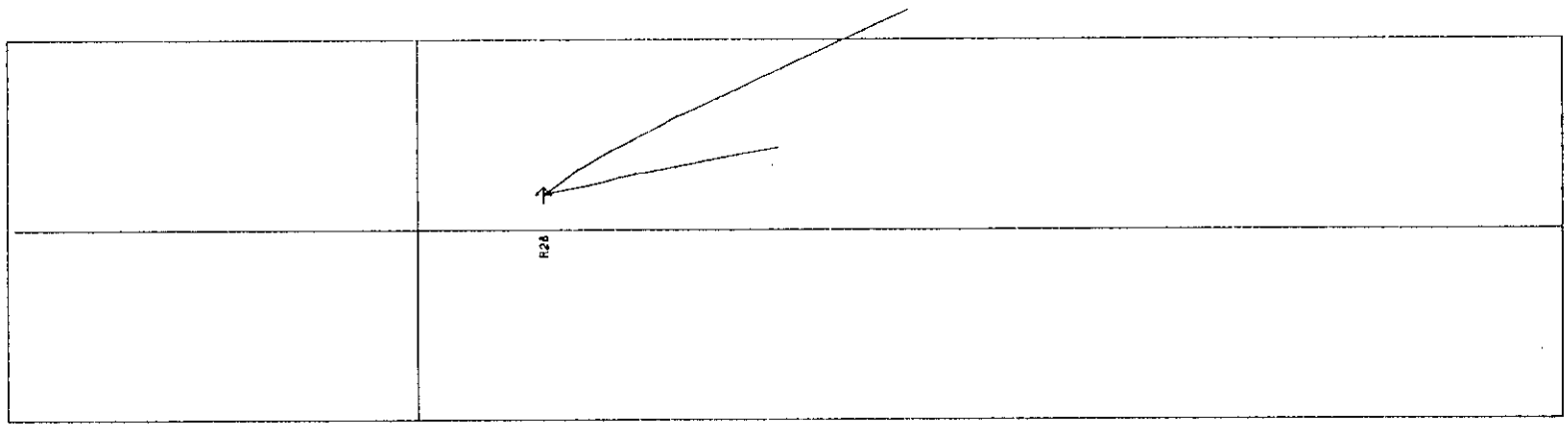

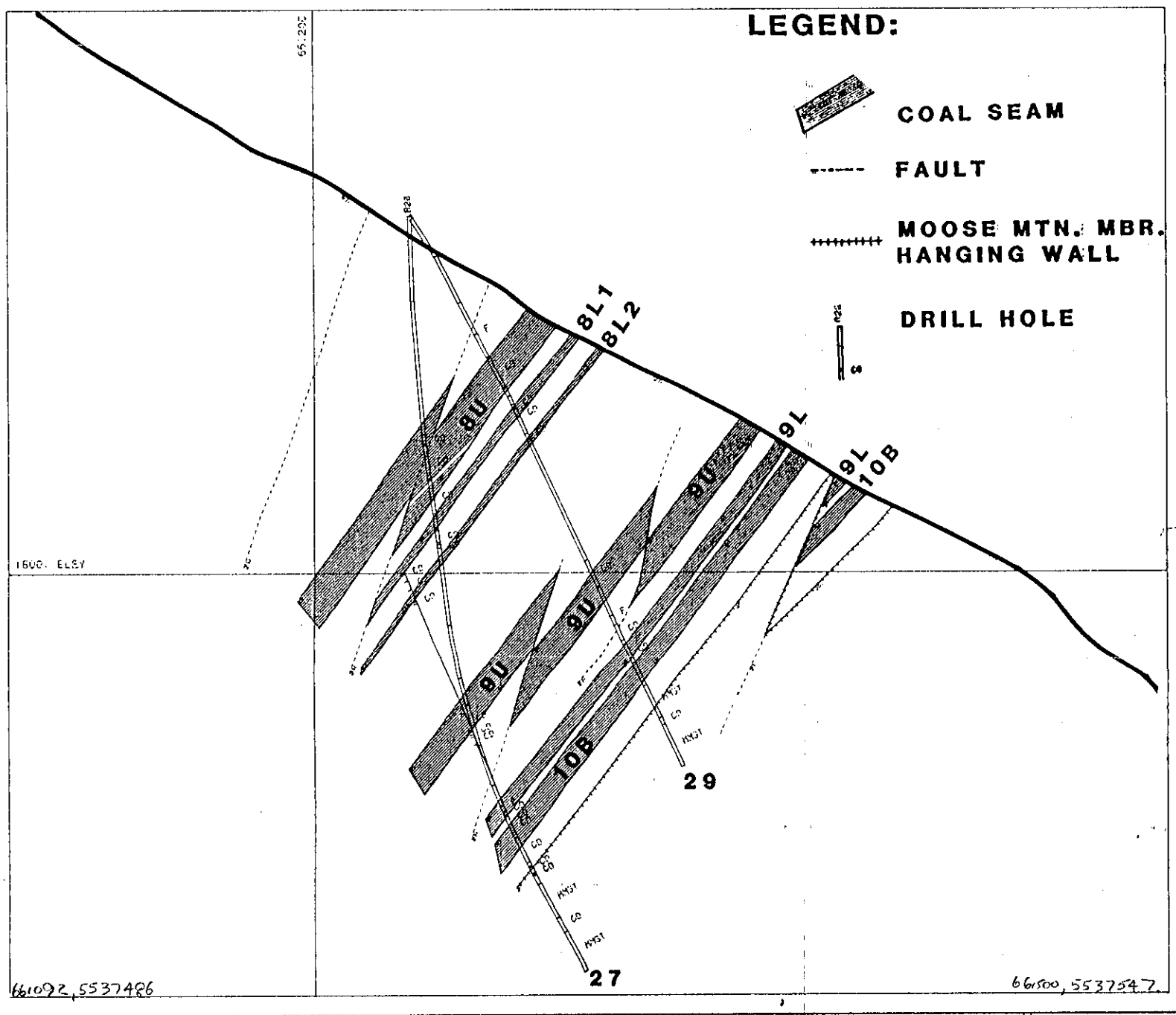

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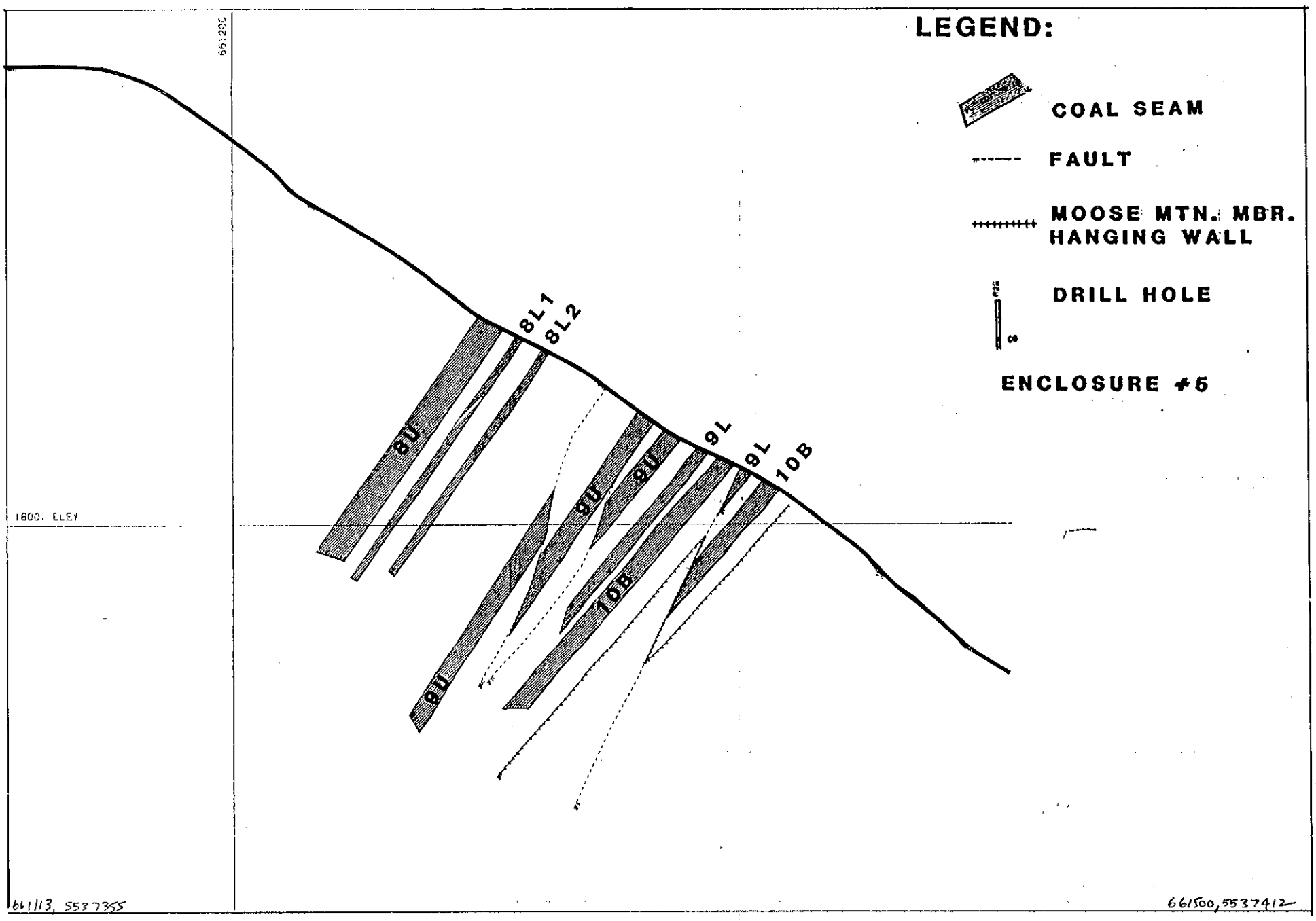

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	82-10-31			

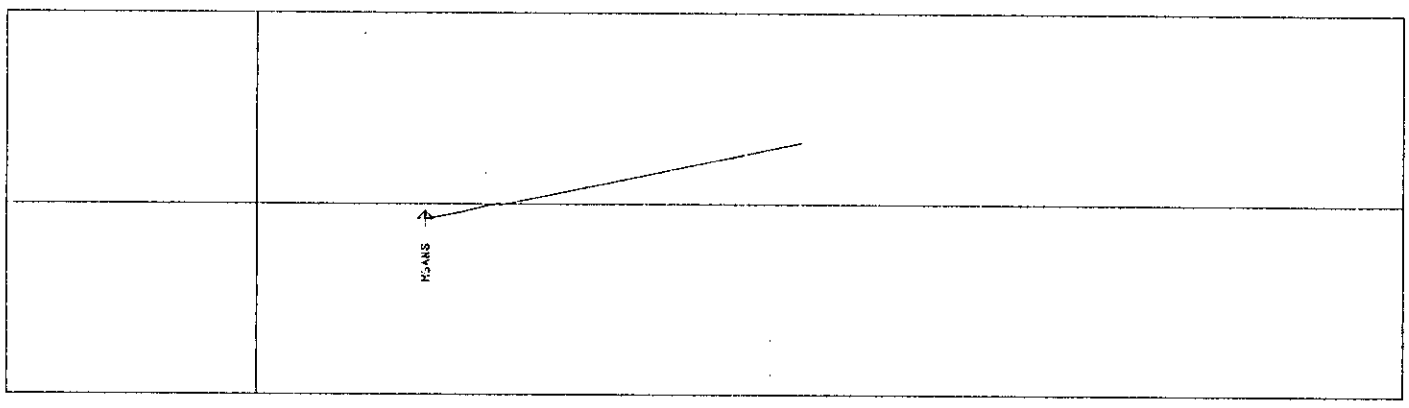
CROWS NEST RESOURCES
LINE CREEK MINE

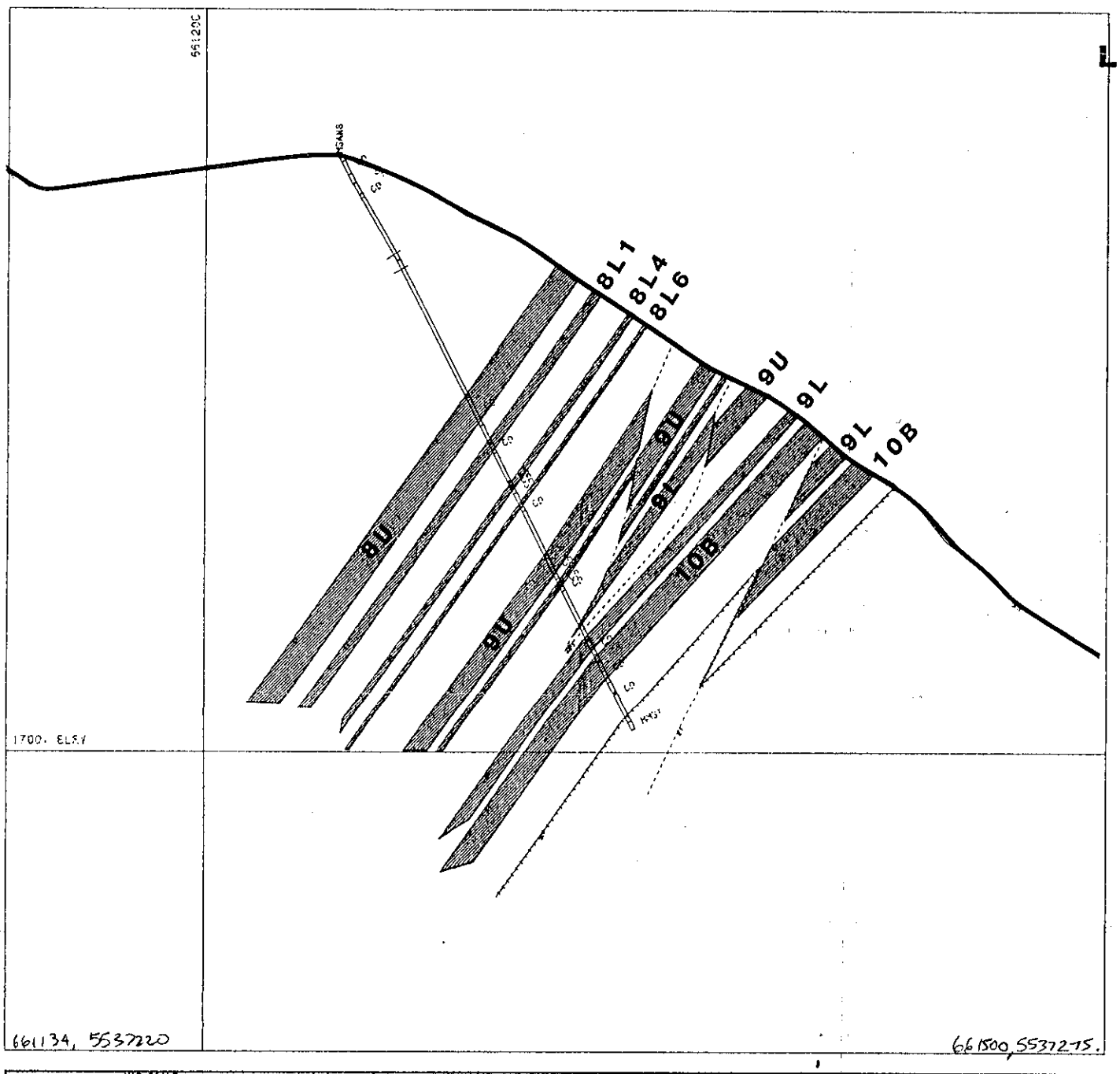
OFFICE	DEPARTMENT

MSA NORTH EXTENSION
SECTION 11

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE #5





LEGEND:

- COAL SEAM
- FAULT
- MOOSE MTN. MBR. HANGING WALL
- DRILL HOLE

MAP SCALE: 0 10 20 30 40 50 60 70

REVISIONS	No.	DATE	MADE BY	DESCRIPTION
	1			
	2			
	3			
	4			
	5			

DATE	DRAWN BY	CHECKED	APPROVED
02-10-21			

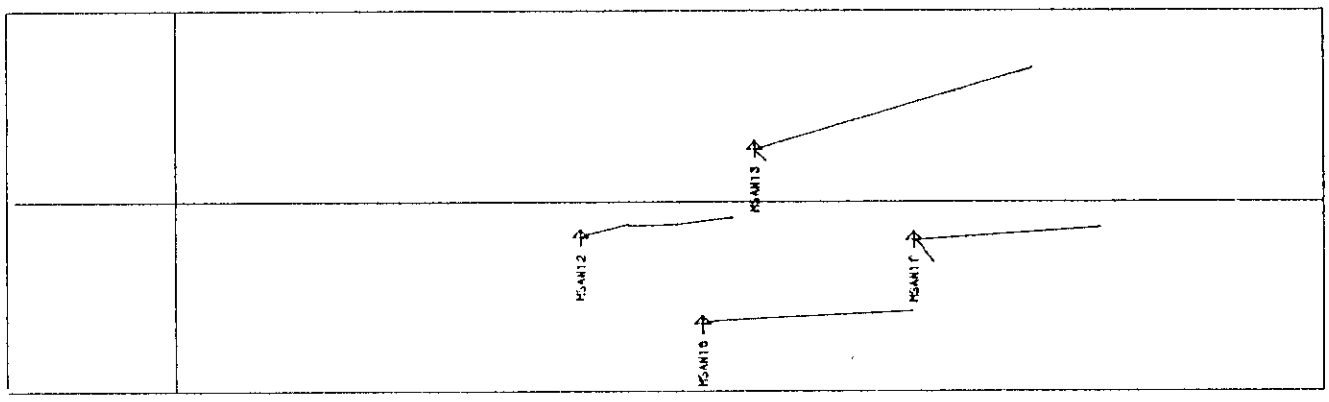
CROWS NEST RESOURCES
LINE CREEK MINE

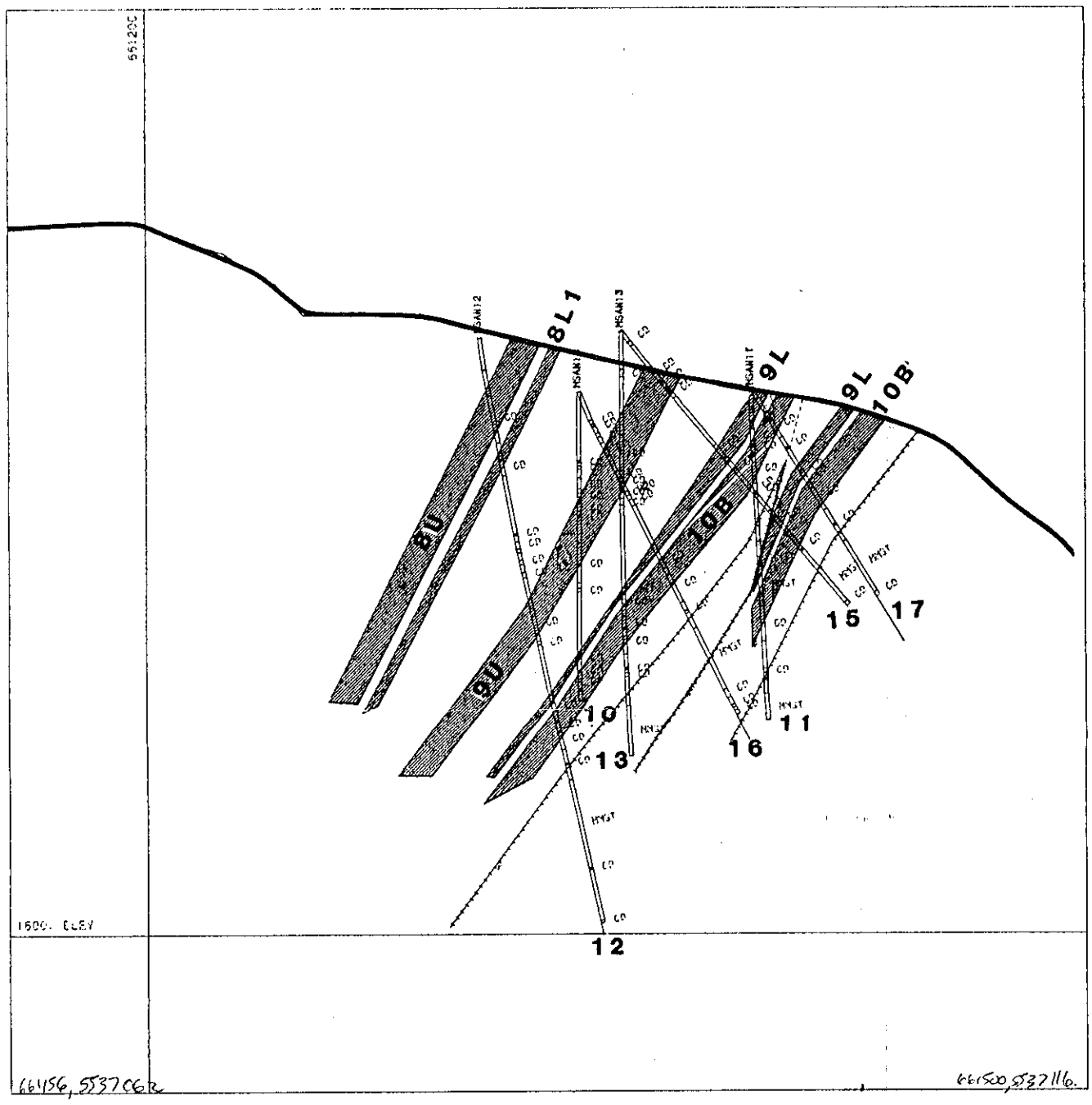
OFFICE | DEPARTMENT

MSA NORTH EXTENSION
SECTION 12

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE #5





LEGEND:

- COAL SEAM
- FAULT
- MOOSE MTN. MBR. HANGING WALL
- DRILL HOLE

MAP SCALE	REVISIONS			
0 10 20 30 40 50 70	No.	DATE	MADE BY	DESCRIPTION
	1			
	2			
	3			
	4			
	5			

DATE	DRAWN BY	CHECKED	APPROVED
02-10-21			

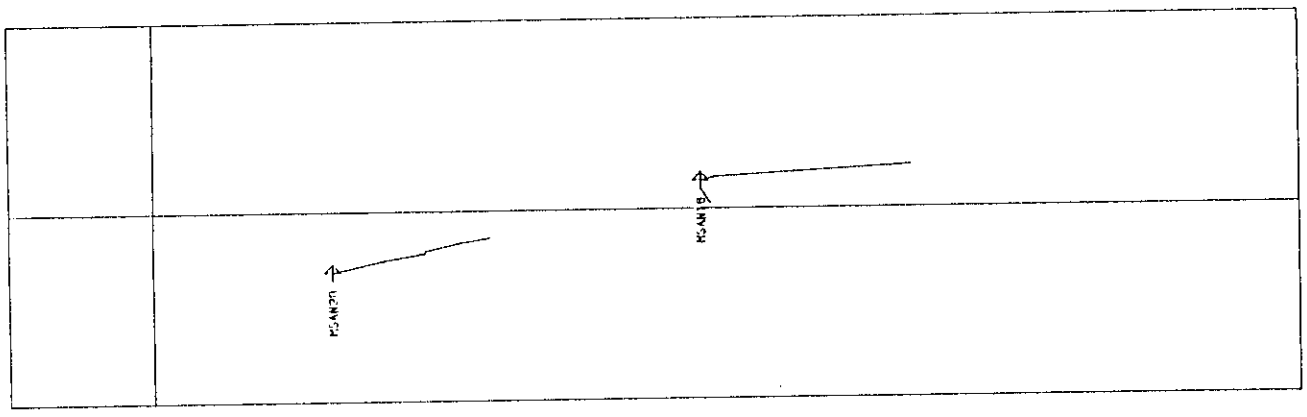
CROWS NEST RESOURCES
LINE CREEK MINE

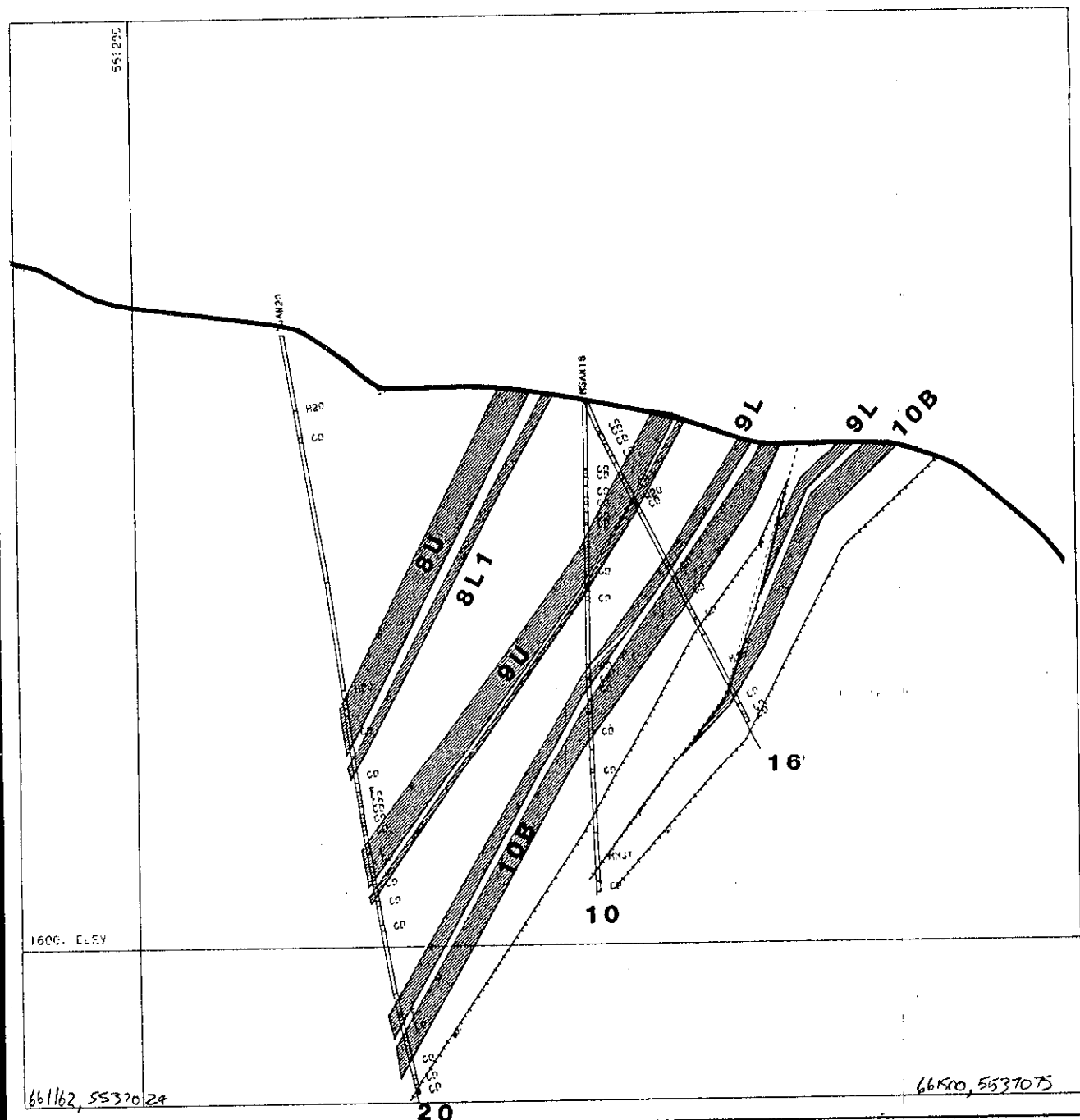
OFFICE	DEPARTMENT

MSA NORTH EXTENSION
SECTION 13

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE #5





LEGEND:

- COAL SEAM
- FAULT
- MOOSE MTN. MBR. HANGING WALL
- DRILL HOLE

MAP SCALE: 0 10 20 30 40 50 60 70

REVISIONS No.	DATE	MADE BY	DESCRIPTION
1			
2			
3			
4			
5			

DATE	DRAWN BY	CHECKED	APPROVED
02-18-91			

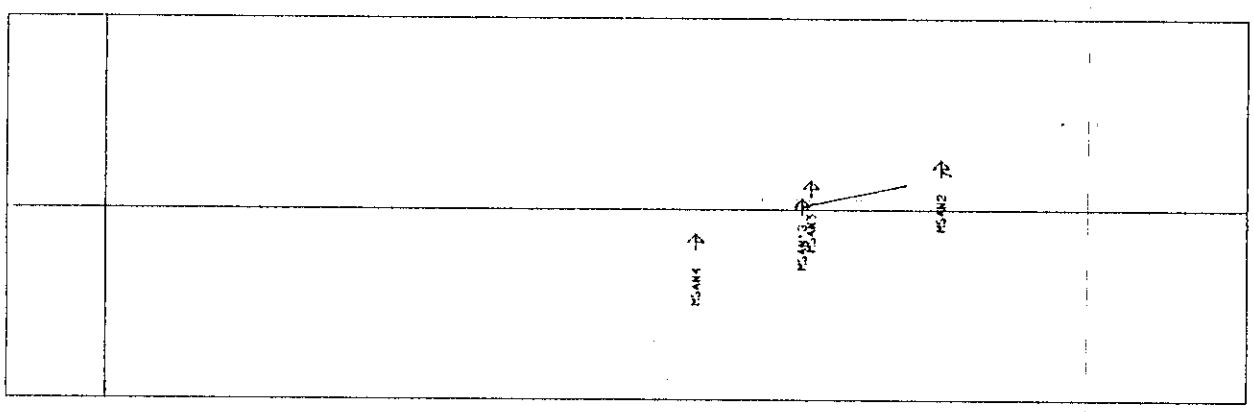
CROWS NEST RESOURCES
LINE CREEK MINE

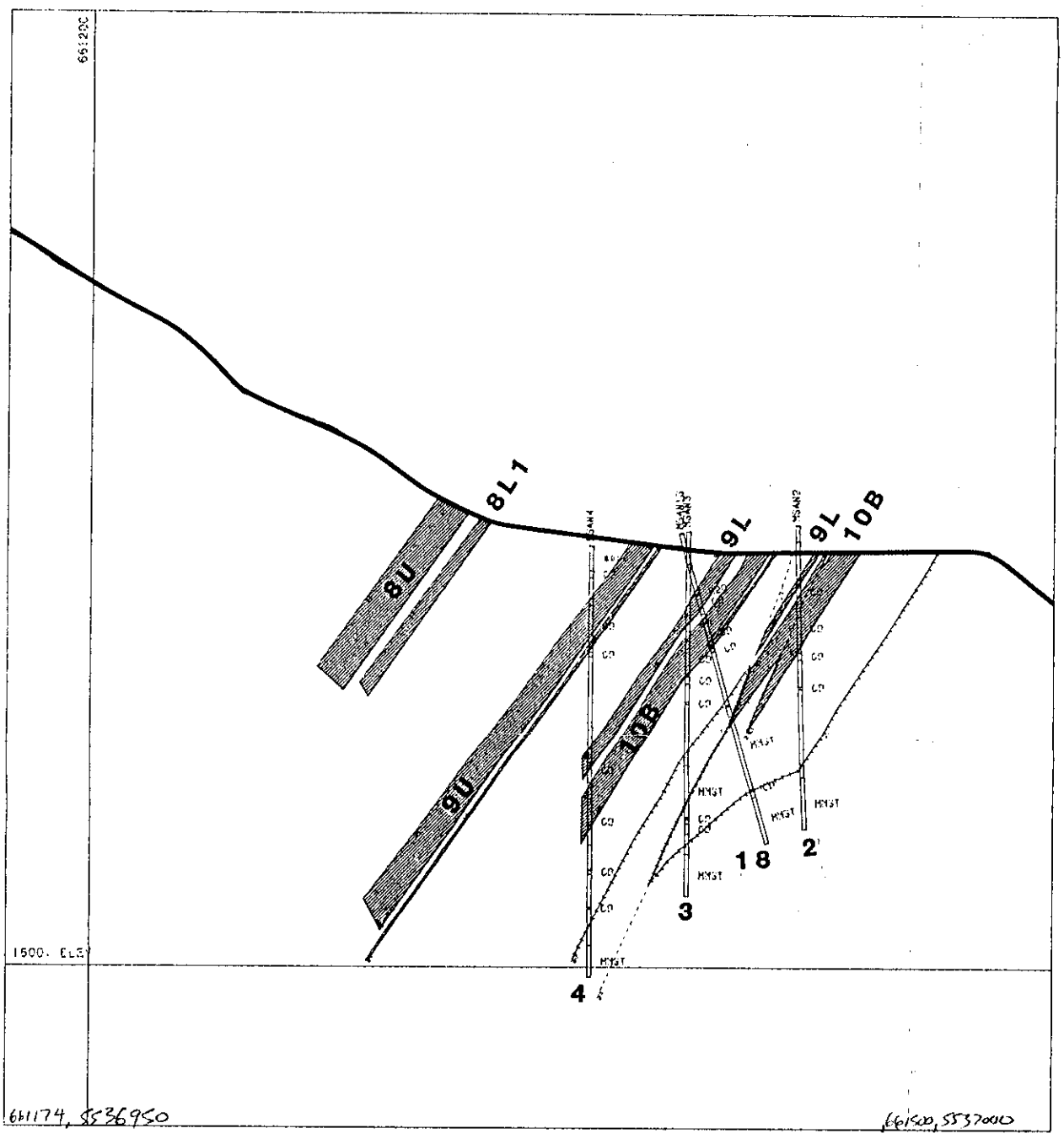
OFFICE | DEPARTMENT

MSA NORTH EXTENSION
SECTION 14

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE #5





LEGEND:

- COAL SEAM
- FAULT
- MOOSE MTN. MBR. HANGING WALL
- DRILL HOLE

MAP SCALE

0 10 20 30 40 50 60 70

REVISIONS No	DATE	MADE BY	DESCRIPTION
1			
2			
3			
4			
5			

DATE	DRAWN BY	CHECKED	APPROVED
02-18-11			

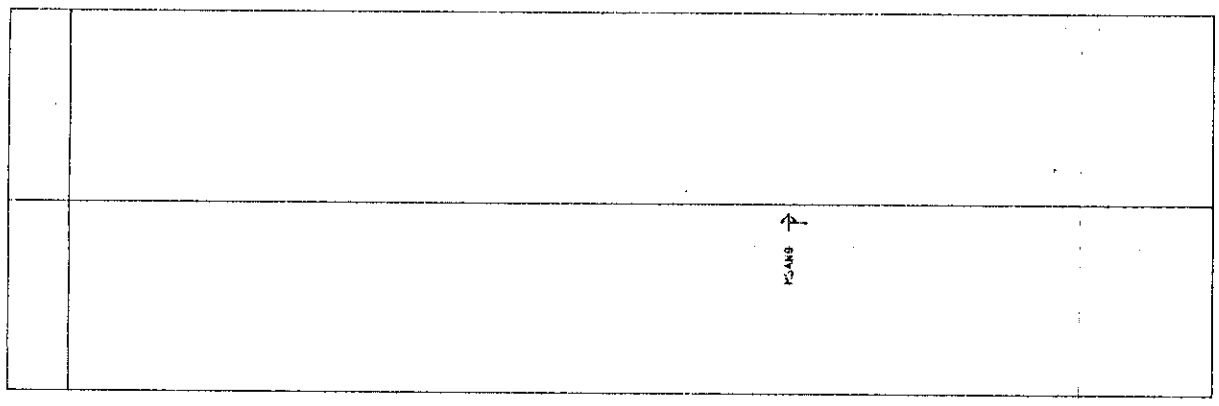
CROWS NEST RESOURCES
LINE CREEK MINE

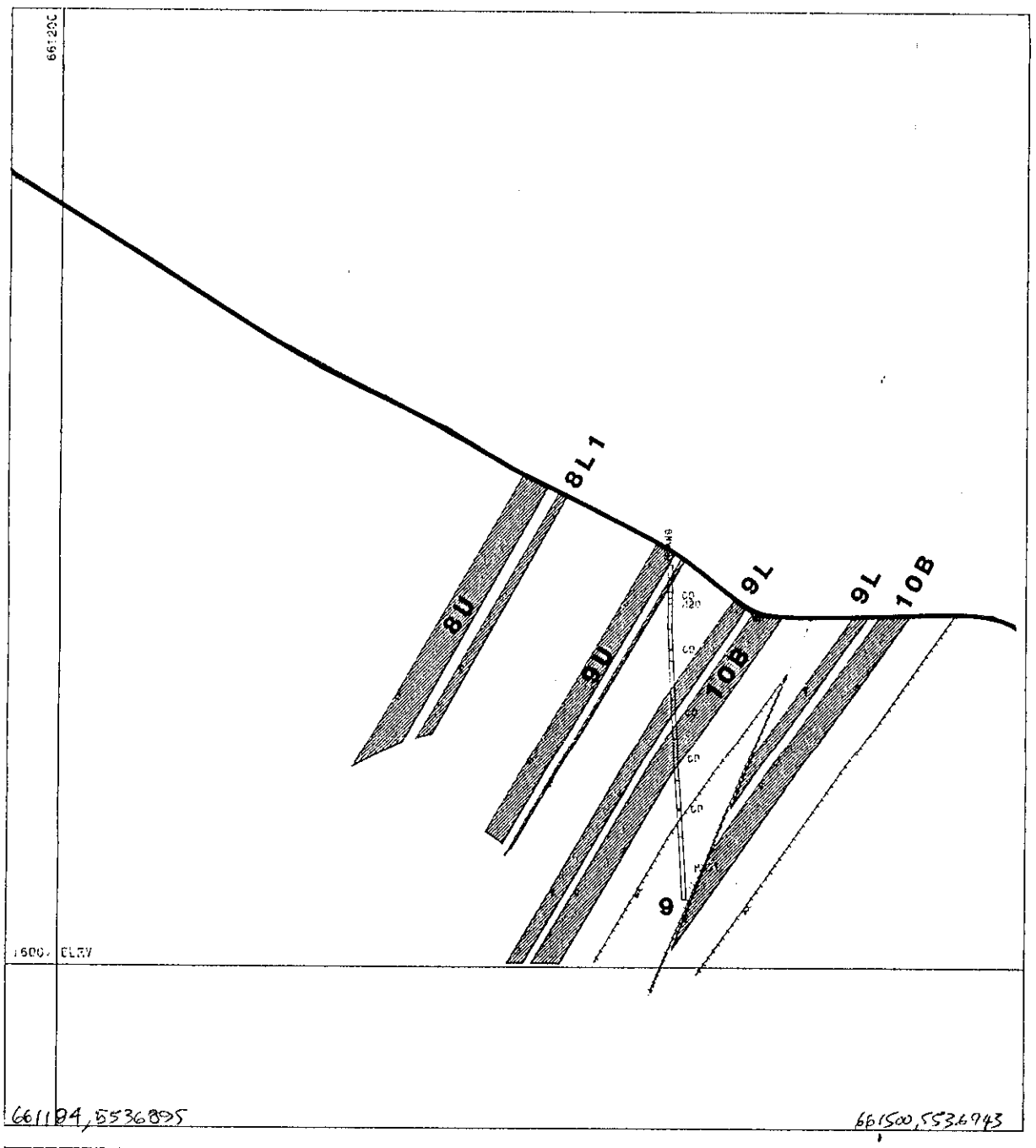
OFFICE | DEPARTMENT

MSA NORTH EXTENSION
SECTION 15

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE #5





LEGEND:

COAL SEAM

FAULT

MOOSE MTN. MBR. HANGING WALL

DRILL HOLE

MAP SCALE

0 10 20 30 40 50 60 70

REVISIONS No	DATE	MADE BY	DESCRIPTION
1			
2			
3			
4			
5			

DATE	DRAWN BY	CHECKED	APPROVED
92-10-31			

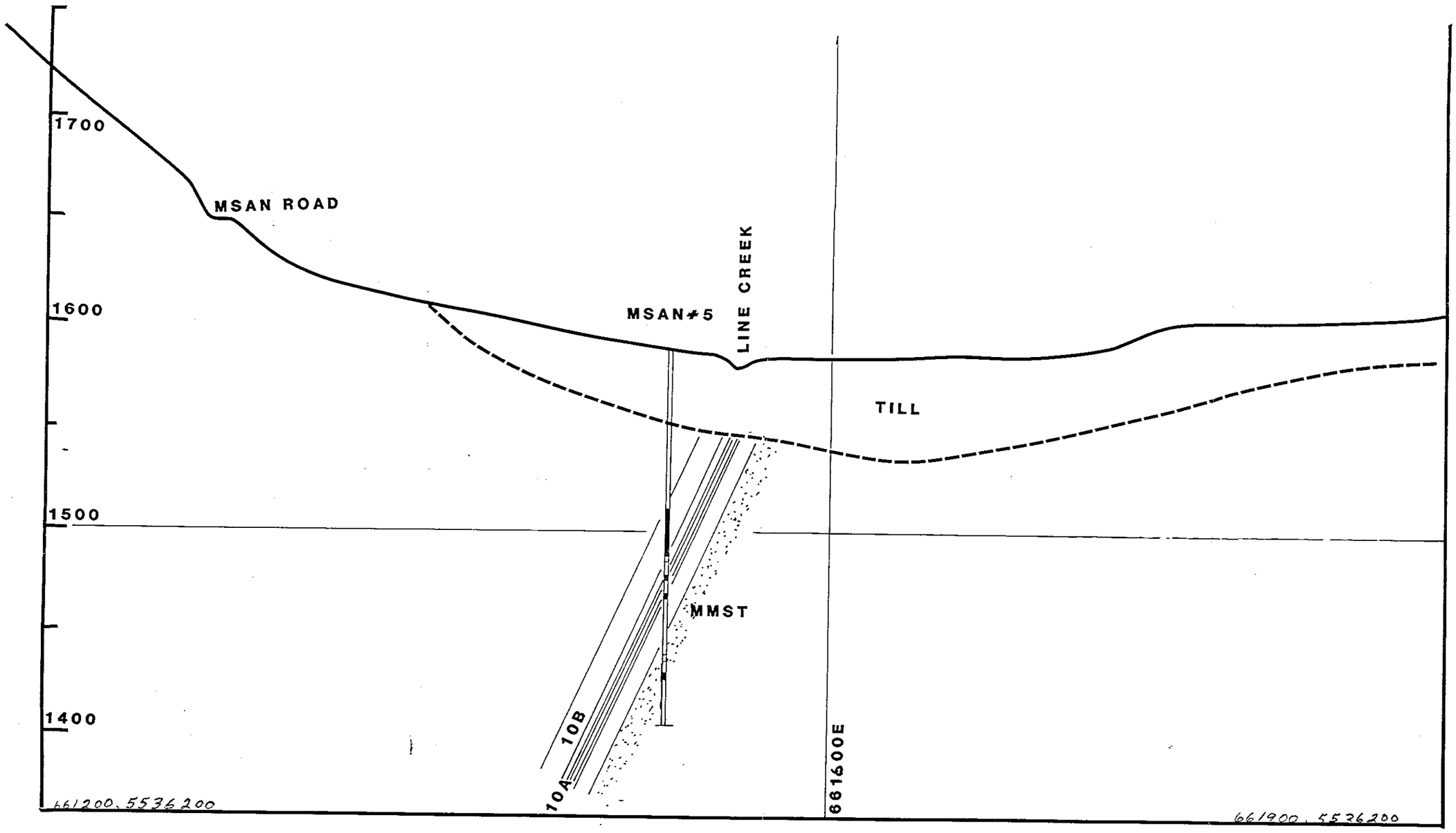
CROWS NEST RESOURCES
LINE CREEK MINE

OFFICE	DEPARTMENT

MSA NORTH EXTENSION
SECTION 16

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE #5



MAP SCALE

0 10 20 30 40 50 60 70

REVISIONS	No.	DATE	MADE BY	DESCRIPTION
	1			
	2			
	3			
	4			
	5			

DATE	DRAWN BY	CHECKED	APPROVED
92-14-91			

CROWS NEST RESOURCES
LINE CREEK MINE

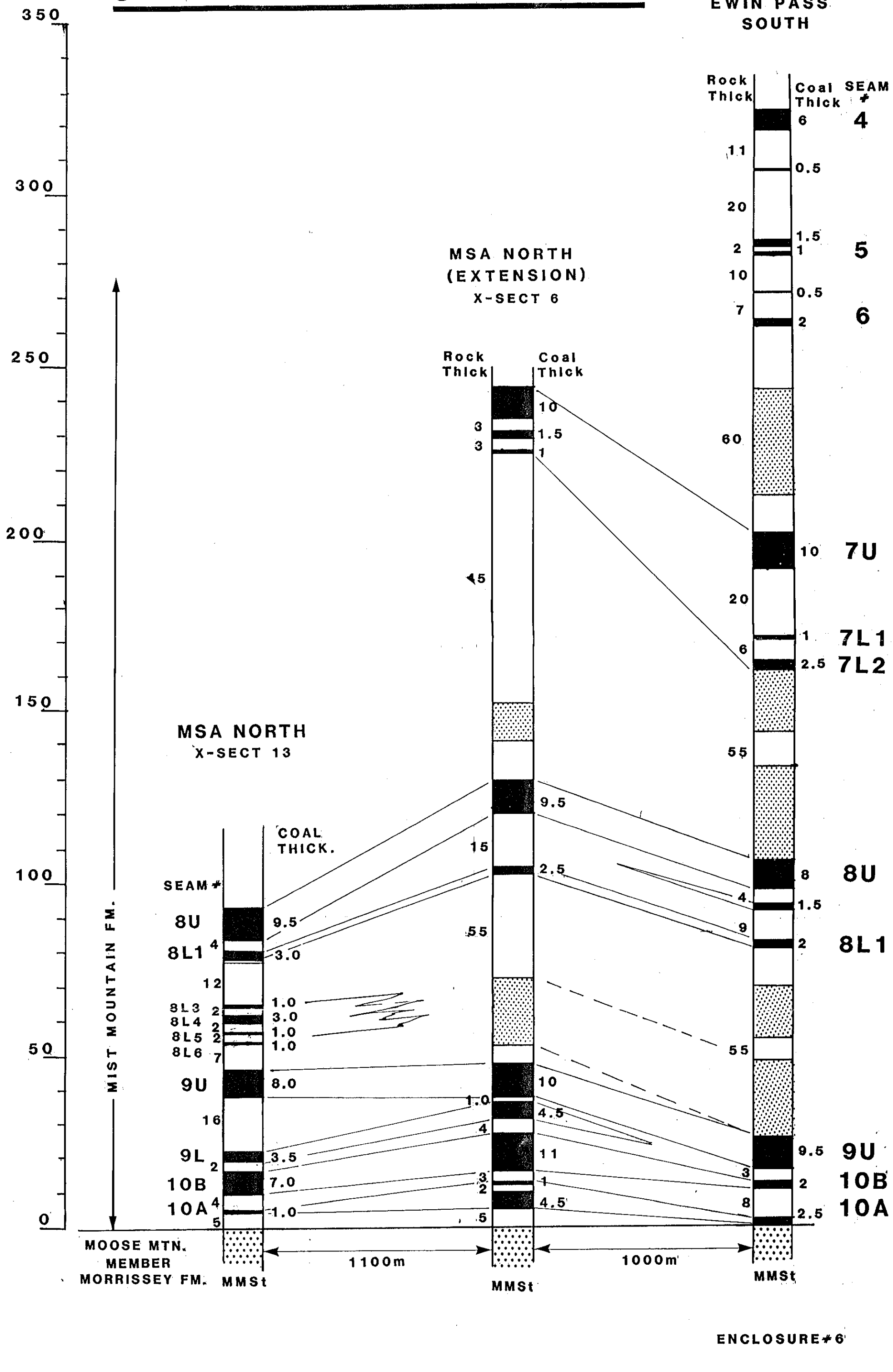
OFFICE | DEPARTMENT

MSA NORTH EXTENSION
SECTION **5536200**

MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1:2000. M	

ENCLOSURE#5

STRATIGRAPHIC CORRELATION



ENCLOSURE #6

DRILL HOLE SUMMARY

PROJECT: MSAND
HOLE: 1
EAST: 661405.09
NORTH: 5537031.79
ELEVATION: 1753.84
AZIMUTH: 141
PLUNGE: 81
DATE DRILLED: 11/30/89
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
10B	7.0	18.3	R	15.3	1.0	21.2	0.3	1.29	A2	
"	18.8	20.2	1.6	7.7	1.0	21.9				
"	22.0	23.1	R	46	0.5					
10A	29.6	30.2	R	67	1.0				A1	
10B	47.0	50.2								
"	50.2	51.9							A2R	
"	51.9	52.6								
"	53.3	59.0	R 1.6	21.0 10.1	3.5 6.5	19.8 21.6				
10A	64.5	65.5	R	28	5.0				A1R	
	80.6	81.5								
	81.5	85.5								
	85.5	86.5								
MM	76									
TD	95.5									

5/12/89
#1 [redacted] MSAU
open hole
logged up

BEARING	289.5
HORIZ DIST	1.6
VERT DEPTH	0.1

DEPTH	INCLN	DIR
16	1.2	199
50	0.7	121
100	0.6	45
150	0.7	05
200	0.5	125
250	1.7	158
300	3.1	151
350	3.6	134
400	4.2	125
450	4.8	107
500	4.1	110
550	5.2	130
600	6.0	135
650	6.5	141
700	5.6	114
750	6.2	136
800	6.7	132
850	7.6	136
900	8.2	141
950	8.9	141

BEARING	130.9
HORIZ DIST	67.9
VERT DEPTH	930.4

DEPTH INCLN DIR

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 2
EAST: 6614/8.4
NORTH: 5537000.1
ELEVATION: 1739.7
AZIMUTH 140
PLUNGE: 82

DATE DRILLED: 12/4/89
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
9L	19.5	22.2							A3R	
10B	24.6	42.2	R 1.6	14.3 7.5	2.5 3.0	20.4 21.5	0.35	1.29	A2R	
10A	50.5	51.2							A1R	
MM	79.8									
TD	96.2									

BEARING 48.7
HORIZ DIST 75.6
VERT DEPTH 892.2

DEPTH	INCLN	DIR
960	7.6	246
950✓	7.5	141
900	7.0	53
850	101.1	50
800	5.5	20
750✓	6.3	138 ~~[illegible]~~
700	6.1	96
650	5.2	34
600✓	5.0	133
550	4.5	14
500	3.9	227
450	2.9	02
400✓	2.1	108
350	1.0	275
300	0.7	75
250	1.1	116
200	1.2	122
150	1.7	91
100	1.6	194
50✓	1.2	180
6	1.4	298
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0
DEPTH INCLN DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

11/4/89

USE NOS. WITH ✓

#2 [redacted]
MSAN

TD 97.4

TB4-RODS

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 3
EAST: 661385.0
NORTH: 5536989.8
ELEVATION: 1737.6
AZIMUTH
DATE DRILLED: 12/6/89
PLUNGE: VERT.
DATE INPUT:
CORRECTED:
DEV. TOOL NOT WORKING PROPERLY

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
9L	26.2	28.4	R	29.1	1.0	18.4	0.33	1.26	A3	
"	29.0	31.3	1.6	9.0	2.5	20.4				
10B	34.4	45.5	R 1.6	15.8 8.8	3.0 3.0	21.4 21.2	0.32	1.28	A2	
"	45.5	47.6	SHALEY							
10A	53.3	54.0							A1	
10A	90.4	91.1	R	33.9	1.0	16.3			A1R	
"	92.4	95.7	1.6	14.7	3.0	19.6				
MM	74									
+	102									
TD	115									

6	0.7	121
100	0.9	217
200	0.8	210
300	1.1	102
400	3.6	08
500	4.8	306
600	5.4	35
700	7.5	62
800	7.9	26
900	12.0	205
1000	8.1	279
1100.1	7.1	124
1146	8.1	219

6/12/89
#3 EPS
Logged up
stopped every 10 m

1146	8.1	219
1100	7.2	125
1000	8.6	234
900.2	11.9	203
800	8.7	10
700.2	7.9	58
600.2	6.3	29
500.3	5.0	282
400.2	3.6	26
300.1	1.2	206
201	0.7	179
102.1	0.8	217

6/12/89
#3 [redacted] MSA-N
Logged down
stopped every
10 m

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 4
DATE DRILLED: 12/7/89
DATE INPUT:
EAST: 661356.7
CORRECTED:
NORTH: 5536972.1
ELEVATION: 1733.0
AZIMUTH:
PLUNGE: VERT.

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
8L6	7.8	10.0	E	EC	4.5				C1	
9U	18.8	31.7	R 1.6	25.3 13.5	3.0 5.5	20.3 21.5	0.35	1.23	B2	
"	33.4	34.8	E	3.4	4.5				B1	
9L	67.2	75.0	R 1.6	17.1 8.9	1.5 3.5	19.3 20.6			A3	
10B	80.0	94.5	R 1.6	17.2 8.7	3.5 4.5	20.8 21.2			A2	
10A	102.4	103.6							A1	
10A	114.0	114.6								
MM	126									
TD	136									

DEPTH	INCLN	DIR
1360	5.6	107
1350	5.7	21
1300	5.3	109
1250	4.8	65
1200	4.3	105
1150	3.2	335
1100	4.0	331
1050	3.7	150
1000	3.8	04
950	3.8	133
900	3.8	21
850	3.6	207
800	3.3	22
750	2.9	182
700	2.5	104
650	1.9	333
600	1.6	261
550	1.2	257
500	1.4	27
450	1.6	281
400	1.8	295
350	1.9	350
300	1.6	52
250	1.4	67
200	0.8	30
150	888.8	8888
100	0.7	61
50	0.8	06
6	0.7	357

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

7/12/89
#4 EPS
TD 138
logged
down.
TRB
Rods

DRILL HOLE SUMMARY

PROJECT: MSAND - VALLEY BOTTOM.
HOLE: 5
DATE DRILLED: 6/14/90
DATE INPUT:
CORRECTED:
EAST: 661529.3
NORTH: 5536211.7
ELEVATION: 1587.0
AZIMUTH:
PLUNGE: VERT.

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
BEDROCK	33.5									
COAL	59.5	DRILLER								
9L	76.8	86.0								
"	86.8	88.4	↑ NOT SAMPLED						A2	
10B	89.8	98.5								
"	99.7	100.9								
10A	108.3	110.4								
10A	118.0	120.2							A1	
MM	141									
	157	161	DRILLER							
TD	181									

HORIZ DIST 22.5
VERT DEPTH 1799.8

DEPTH	INCLN	DIR
1810	6.6	237
1800	6.6	324
1750	6.2	266
1700	6.0	129
1650	5.3	54
1600	5.2	349
1550	5.7	234
1500	5.3	176
1450	4.1	40
1400	5.6	318
1350	5.3	00
1300	4.2	357
1250	6.0	104
1200	5.0	35
1150	5.4	303
1100	5.4	81
1050	4.5	359
1000	3.2	313
950	4.8	140
900	3.0	02
850	4.4	266
800	3.2	112
750	3.4	288
700	3.2	257
650	2.2	292
600	2.2	262
550	1.8	74
500	1.4	145
450	1.1	218
400	1.1	221
350	1.1	320
300	0.8	79
250	1.0	267
200	1.1	40
150	1.7	190
100	0.9	55
50	1.1	263
6	0.8	13
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

14/6/90
MSA #5
TD 183
TRU
Rods

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 7
DATE DRILLED: 6/15/90
DATE INPUT:
CORRECTED:
EAST: 661510.6
NORTH: 5536685.4
ELEVATION: 1696.7
AZIMUTH:
PLUNGE: VERT.

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
9L	1.6	4.5							A3	
"	5.5	7.4		27.4	0.0					
10B	11.3	111.9							A2	
"	15.9	17.4		27.9	1.5					
10A	24.4	25.3		22.2	1.0				A1	
MM	32.5									
	56	60.5	DRILLERS LOG							
	74.	76	"							
TD	138.5									

BEARING 214.2
HORIZ DIST 3.0
VERT DEPTH 1357.5

DEPTH	INCLN	DIR
1364	2.5	276
1350	2.5	255
1300	2.4	195
1250	2.2	353
1200	0.6	94
1150	1.9	332
1100	2.1	303
1050	0.9	312
1000	2.1	132
950	2.0	29
900	1.4	17
850	2.2	170
800	1.7	119
750	0.6	143
700	1.5	46
650	2.2	57
600	1.3	352
550	0.3	189
500	2.0	229
450	1.7	173
400	1.8	58
350	1.4	230
300	1.5	95
250	1.3	176
200	1.7	131
150	0.5	258
100	0.9	172
50	1.4	292
6	1.0	77
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0
DEPTH INCLN DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

15/6/90
MSA #7
TD 138.5
TRU
RODS

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 8
DATE DRILLED: 7/24/90
DATE INPUT:
EAST: 661244.9
CORRECTED:
NORTH: 7232.3
ELEVATION: 1794.2
AZIMUTH 070
PLUNGE:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
	1.8	6.6	R	27.3	0.0			*		
	14.2	15.6								
8u	91.3	101.8	R 1.6	14.9 7.2	3.0 4.0	18.8 20.2				
8L1	108.5	112.2	R 1.6	28.9 6.8	4.5 7.0	18.5 23.8			L1	
8L3	122.5	123							C4	
"	124	124.4							C3	
8L4	125.1	127.2							C2	
8L6	132.4	133.8	R	44.4	1.0				C1	
9u	151.5	159.2	R 1.6	32.7 10.8	3.0 7.0	21.4 22.2			B2	
"	160.2	160.7								
"	162.1	163.8	R 1.6	26.3 8.0	2.0 4.0	21.0 21.8			B1	
9L	182.6	187.7	R 1.6	21.2 8.5	2.0 3.0	19.3 21.2			A3	
10B	190.2	198.4	R 1.6	22.7 8.5	2.5 5.0	19.8 21.4			A2	
10A	202.3	203							A1	
MM	214									
TD	217									

456.7
VERT DEPTH 1896.6

DEPTH	INCLN	DIR
2170	27.2	191
2150	27.1	296
2100	27.2	19
2050	27.3	35
2000	27.6	165
1950	27.1	06
1900	27.6	35
1850	26.1	292
1800	27.8	15
1750	28.0	191
1700	27.6	18
1650	28.4	352
1600	27.6	17
1550	28.1	355
1500	27.6	17
1450	28.3	205
1400	27.9	20
1350	28.9	209
1300	28.4	22
1250	29.0	262
1200	29.0	18
1150	28.9	07
1100	29.1	17
1050	28.7	229
1000	29.0	31
950	28.7	321
900	28.1	63
850	26.1	151
800	30.2	66
750	30.6	05
700	30.7	359
650	30.8	20
600	31.0	358
550	30.9	13
500	30.9	203
450	30.5	43
400	30.3	23
350	30.2	177
300	28.9	17
250	29.1	18
200	29.8	10
150	30.6	07
100	30.1	206
50	29.5	140
6	28.2	139
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

6	28.2	139
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 9
EAST: 6161389.8
NORTH: 5536921.5
ELEVATION: 1726.7
AZIMUTH
DATE DRILLED: 7/16/90
PLUNGE: VERT.
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
9U	8.4	10.3	R	19.8	1.0				B1	
H_2O	12									
	26.3	26.8								
9L	42.2	50.5	R 1.60	22.6 8.9	2.5 3.0	12.6 21.0			A3	
10B	54.6	68.2	R 1.6	21.2 8.3	2.5 3.5	21.1 22.1			A2	
10A	77.1	77.7							A1	
MM	86.0									
TD	105.6									

BEARING 63.8
HORIZ DIST 9.1
VERT DEPTH 1046.9

DEPTH	INCLN	DIR
1054	2.0	280
1050	2.2	303
1000	3.4	19
950	3.6	67
900	2.6	00
850	3.3	212
800	3.6	33
750	3.0	42
700	3.3	49
650	2.6	325
600	3.4	128
550	2.1	205
500	2.8	326
450	3.0	93
400	2.2	192
350	1.1	55
300	2.6	204
250	1.6	229
200	2.1	127
150	2.0	207
100	0.4	224
50	1.4	100
6	1.0	304
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

16/7/90
MSA 9
TD107
TR4
Rods

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 10
EAST: 661342.6
NORTH: 5537058.3
ELEVATION: 1775.6
AZIMUTH:

DATE DRILLED: 7/3/90
PLUNGE: VERT.

DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
8L3	22.0	22.6	R	68	1.0				C3	
"	23.6	24.7								
8L4	27.6	31.2	?	36.4	3.5				C2	
?	32.5	33.5 ?								
8L6	36.0	38.4	R	40.8	3.5				C1	
?	39.5	40.2 ?								
9U	48.6	61.5	R 1.6	28.0 13.3	1.5 3.0	20.0 21.0			B2	
"	63.2	64.4		27.7	4.0				B1	
?	85	86 ?								
9L	89.5	96.1	R 1.6	13.2 10.5	1 0 1.0	19.7 20.3			A3	
10B	100.6	112.6	R 1.6	17.0 9.4	2.5 3.0	20.9 21.2			A2	
10A ?	119.4	120.6?					::		A1	
MMSST	140									
10A	155.7	159	R 1.6	23.0 14.5	2.5 4.0	19.9 21.4			A2R.	
TD	168									

LWC1

BEARING 149.6
HORIZ DIST 57.6
VERT DEPTH 1662.2

DEPTH	INCLN	DIR
1680	2.7	119
1650	2.7	104
1600	3.8	119
1550	2.8	150
1500	4.2	121
1450	3.3	149
1400	3.6	147
1350	4.1	138
1300	4.5	130
1250	4.4	130
1200	4.5	135
1150	2.7	158
1100	2.6	121
1050	3.6	148
1000	1.7	130
950	2.6	164
900	1.5	138
850	3.0	187
800	2.2	143
750	1.0	170
700	2.6	200
650	2.3	155
600	0.9	136
550	2.4	211
500	2.0	162
450	0.7	175
400	2.1	214
350	1.4	146
300	1.7	215
250	1.5	249
200	0.4	15
150	1.1	170
100	1.3	236
50	0.9	54
16	1.0	286
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

3/7/90
NSA #10
T.D 1678

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 11
EAST: 661376.4
NORTH: 5537022.2
ELEVATION: 1776.2
AZIMUTH
DATE DRILLED: 7/4/90
PLUNGE: VERT (DEVIATED 5° TO S.E.)
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
	5.6	6.6	R	21.2	1.0					
9L	7.3	12.5	R 1.6	21.9 9.5	1.0	19.6 20.8			A3	
"	13.6	16.1								
	17.9	18.5								
10B	20.4	33.5	R 1.6	17.4 8.5	2.0 2.5	19.7 21.6			A2	
10A	41.6	42.5							A1	
10B	70.0	81.2	R 1.6	17.6 8.9	3.5 4.5	21.4 22.0			A2R	
10A	90.0	91.2	R	40.2	2.5				A1R	
DMM	49									
DMM	98									
FAULT	66									
TD	107									

BEARING 123.9
HORIZ DIST 63.0
VERT DEPTH 1051.5

DEPTH	INCLN	DIR
1070	4.1	103
1050	5.6	116
1000	4.9	132
950	3.8	119
900	5.6	125
850	3.8	120
800	4.5	106
750	5.1	130
700	3.3	121
650	4.8	110
600	5.0	133
550	4.6	152
500	4.3	107
450	4.9	115
400	3.7	146
350	3.2	113
300	3.7	120
250	3.8	138
200	1.3	173
150	1.1	68
100	1.1	166
50	1.0	316
16	1.0	353

DEPTH	INCLN	DIR
0	1.0	353

DECLINATION E 18.0
PRESET DEPTH 16.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

18/7/90
MSA11

TD107
OPEN
Hole

DRILL HOLE SUMMARY

PROJECT: MSA North
HOLE: MSAN-12
EAST: 661307.4
NORTH: 5537076.1
ELEVATION: 1792.6
AZIMUTH: 065
DATE DRILLED: 6/29/90
PLUNGE: 80
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
8U	18.6	34.0	R	17.2	3.0		.30	1.21	D2	
8L1	39.6	44.7	R	28.1	3.5				D1	
8L3	63.8	64.4	R	48.6	2.0				C4	
8L4	66.4	68.8	R	39.7	2.0		.61	1.26	C3	
8L5	72.5	74.0	R	11.6	6.0				C2	
8L6	76.6	78.3	R	37.2	1.5				C1	
9U	88.6	99.2	R	26.6	4.0				B2	
"	100.2	100.6	R	50.0	2.5				B1	
9L	119.8	122.6	R	21.3	2.0				A3	
10B	126.0	136.0	R	16.0	4.0				A2	
10A	140.5	141	R	38.9	0.5				A1	
MM	146.0									
10A	174.9	175.6	R	38.6	3.5				AIR	
	192.4	193.2								
TD	197									

LWCT

5.8
HORIZ DIST 421.6
VERT DEPTH 1871.9

DEPTH	INCLN	DIR
1970	12.7	85
1950	11.9	85
1900	12.2	79
1850	12.1	89
1800	11.6	79
1750	12.9	86
1700	11.2	86
1650	13.2	85
1600	12.0	89
1550	12.8	88
1500	13.5	81
1450	13.5	86
1400	14.5	86
1350	13.5	81
1300	13.5	76
1250	12.6	77
1200	13.0	80
1150	12.2	84
1100	11.9	85
1050	11.6	72
1000	11.8	83
950	11.0	73
900	11.7	83
850	12.0	73
800	10.3	78
750	11.1	81
700	11.6	74
650	81.1	72
600	11.7	68
550	10.8	62
500	11.0	72
450	11.4	63
400	10.5	71
350	9.5	66
300	10.7	56
250	11.2	61
200	11.0	63
150	11.0	64
100	9.1	57
50	10.4	42
16	7.5	16
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

DRILL HOLE SUMMARY

PROJECT: MSFO

HOLE: 13

EAST: 661349.1

NORTH: 5537105.8

ELEVATION: 1796.4

AZIMUTH

DATE DRILLED: 6/26/90

PLUNGE: VERT.

DATE INPUT:

CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
	11.4	13.8	R	18.7	1.0				C1	
9u	32.6	44.0							B2	
"	46.0	48.0	R 1.6	29.2 11.3	4.0 7.0	20 22	.43	1.21		
"	50.0	51.2							B1	
"	52.9	55.0								
9L	85.6	87	R	33.6	1.0				A3	
10B	91.1	103.2	R	20.4	2.5				A2	
"	107.5	108.2	R.	47.2	2.0				A1	
10A	109.2	110.4								
MMSST	120									
TD	137									

BEARING 152

HORIZ DIST 41.0
VERT DEPTH 1253.0

DEPTH	INCLN	DIR
1370	2.7	123
1350	3.1	107
1300	4.4	116
1250	4.6	132
1200	4.8	133
1150	2.6	121
1100	3.7	107
1050	3.6	114
1000	3.3	122
950	2.5	124
900	2.3	164
850	0.3	132
800	2.6	144
750	2.6	148
700	2.1	171
650	1.7	111
600	1.8	127
550	2.0	153
500	0.9	231
450	0.5	84
400	1.7	152
350	89.7	198
300	1.7	207
250	1.3	244
200	90.1	18
150	0.5	64
100	0.9	59
50	1.2	79
16	1.0	357

DEPTH INCLN DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

DEPTH INCLN DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

DEPTH INCLN D

DECLINATION E 18
PRESET DEPTH 6
DEPTH INCLN DI

DECLINATION E 18.0
PRESET DEPTH 6.0

27/6/90
MSA 4/3
TD 138

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 14
EAST: 661610
NORTH: 5336049
ELEVATION: 1585
AZIMUTH: 085°

DATE DRILLED: 9/27/90
PLUNGE: 58° (AT CELLAR)
38° (AT T.D.)

DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
GRAVEL	0	3								
CLAY	3	10								
ROCK ?	10	17								
CLAY	17	57								
SST	57	75								
SST+SLTST	75	103								
SH	103	107								
SST	107	130								
SST +SLTST	130	167								
SST	167	194								
SST+ SLTST	194	218								
TD	220									

BEARING 34.2
HORIZ DIST 800.0
VERT DEPTH 1727.3

DEPTH	INCLN	DIR
6	32.3	25
50	31.7	12
100	34.3	25
150	31.3	24
200	32.1	196
250	30.2	181
300	29.9	14
350	31.1	152
400	29.1	22
450	28.6	359
500	30.0	11
550	27.9	72
600	29.1	337
650	26.8	34
700	27.2	191
750	27.9	25
800	27.8	22
850	28.8	212
900	28.4	355
950	29.1	109
1000	30.0	00
1050	30.7	230
1100	29.7	19
1150	30.8	194
1200	31.2	23
1250	31.9	176
1300	33.1	32
1350	34.8	04
1400	35.5	13
1450	41.5	193
1500	40.7	54
1550	42.9	53
1600	45.4	358
1650	47.7	02
1700	48.0	206
1750	49.4	197
1800	49.2	21
1850	49.9	196
1900	50.2	28
1950	51.0	189
2000	50.9	19
2050	51.7	18
2100	52.0	190
2150	52.0	17
2180	52.7	190
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0
DEPTH INCLN DIR

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 15
EAST: 661349
NORTH: 5537106
ELEVATION: 1794.4
AZIMUTH: 060
DATE DRILLED: 7/9/90
PLUNGE: 50° EAST.
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
	4.5	6.0	R	25.4	0				C1	
9U	15.1	21.4							?	
"	22.0	23.2	R 1.6	28.7 10.9	.5 1.0	20.2 21.2			B2	
"	24.3	25.1								
"	26.2	27.7							B1	
9L	48.2	53.7	R 1.6	20.8 8.4	2.0 3.0	19.5 21.2			A3	
10B	53.5	63.0	R 1.6	23.1 8.5	2.0 4.0	21.5 21.7			A2	
"	68.3	69.1	R	49.2	1.0				A1	
FAULT	76.0									
10B	77.1	86.7	R 1.6	20.7 8.2	3.0 4.0	20.2 22.1			A2R	
10A	92.6	93.1	R	44.5	2.5				A1R	
MM	101									
	115	116.5	R.	45	1.0				DRILLERS LOG	
	128.5								DRILLERS LOG	
TD	166									

68.8
HORIZ 062.1
VERT DEPTH 1264.1

DEPTH	INCLN	DIR
1670	37.0	71
1650	37.6	72
1600	36.2	75
1550	36.9	66
1500	38.3	70
1450	38.2	73
1400	38.6	73
1350	38.7	73
1300	39.4	73
1250	38.7	73
1200	40.0	65
1150	40.3	70
1100	40.5	71
1050	39.9	74
1000	41.1	64
950	42.0	70
900	42.0	71
850	40.6	73
800	40.0	70
750	43.0	67
700	41.7	71
650	39.9	70
600	36.8	79
550	42.4	65
500	42.0	67
450	42.2	67
400	41.9	66
350	42.0	68
300	41.6	68
250	40.6	69
200	39.7	65
150	41.3	59
100	41.4	58
50	41.0	61
16	39.3	61
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 16.0

11/7/90
MSA 15
TD 168
open Hole
ANGLE HOLE

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 16
EAST: 661342.6
NORTH: 5537058.3
ELEVATION: 1775.6
AZIMUTH: 075
PLUNGE: 70
DATE DRILLED: 7/10/90
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
8L3	11.4	12.2							C3	
8L4	12.6	14.8	R	31.4	.5					
8L5	16.0	18.4	R	24.5	.5				C2	
8L6	20.4	22.8	R.	42.1	4.0				C1	
9U	28.4	35.5							B2	
"	36	37	R 1.6	29.3 11.7	2.5 5.0	20.5 21.7				
"	38.6	40.9							B1	
9L	60	63.6	R 1.6	32.1 11.4	1.0 2.0	18.0 20.8			A3	
10B	66	75.8							A2	
10A	78.8	79.6							A1	
MM	85									
10B	10.7	110	COAL + SHALE						A2R	
10A	112.6	113.6							A1R	
"	114.7	116.3	R	47.2	1.5					
TD	126									
H_2O	37									
FAULT										

BEARING 10.6
HORIZ DIST 237.7
VERT DEPTH 1096.1

DEPTH	INCLN	DIR
1240	27.5	177
1200	27.9	08
1150	27.6	33
1100	27.1	172
1050	28.4	29
1000	28.0	236
950	27.8	217
900	28.8	27
850	28.1	21
800	27.6	309
750	28.5	33
700	28.0	315
650	28.2	178
600	27.5	25
550	26.9	120
500	25.7	327
450	27.0	13
400	27.6	32
350	27.4	355
300	27.3	283
250	27.3	04
200	26.7	31
150	26.3	41
100	26.5	24
50	26.1	186
6	25.9	18
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

10/7/90
MSA 16
TD 126
TRU
Rods
ANGLE
HOLE

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 17 DATE DRILLED: 7/11/90 DATE INPUT:
EAST: CORRECTED:
NORTH: SAME AS #11
ELEVATION:
AZIMUTH PLUNGE:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
9L	3.7	8.9	R	14.7	0				A3	
10B	11.6	18.4	R	18.3	1.0				A2	
10A	22.0	22.6							A1	
9L	30.8	32.9	R 1.6	12.1 6.4	2.5 3.0	21.8 22.3			A3R	
"	33.4	35								
10B	37.3	45.6	R 1.6	19.7 8.9	2.5 3.5	20.9 22.0			A2R	
10A	50.9	51.6	R	44.2	2.5				A1R	
MM	52.5									
	76.6	78.2		26	2.0					
H_2O +	64									
BROKEN										
FAULT										
TD	95									

[illegible]	1.0
HORIZ DIST	290.3
VERT DEPTH	780.5

DEPTH	INCLN	DIR
924	31.9	217
900	31.5	25
850	30.1	18
800	32.4	272
750	31.0	21
700	31.5	213
650	31.6	20
600	33.1	218
550	32.1	17
500	32.1	342
450	31.7	24
400	30.7	42
350	32.0	22
300	32.3	293
250	32.6	22
200	32.4	308
150	32.3	28
100	32.3	24
50	30.8	34
6	31.3	330
DEPTH	INCLN	DIR

DECLINATION E	18.0
PRESET DEPTH	6.0

DEPTH	INCLN	DIR

DECLINATION E	18.0
PRESET DEPTH	6.0

11/7/90
MSA 17
TP 95
TRU Rods
Angle Hole

DRILL HOLE SUMMARY

PROJECT: MSAW
HOLE: 18
DATE DRILLED: 7/12/90
DATE INPUT:
EAST: 661383.3
CORRECTED:
NORTH: 5536984.8
ELEVATION: 1737.0
AZIMUTH 070
PLUNGE: 73

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
9L	20.4	26.4	R 1.6	23.7 8.4	2.0 3.0	18.5 20.9			A3	
10B	29.3	37.7	R 1.6	21.0 9.0	2.5 3.5	18.0 19.1			A2	
"	38.4	38.9								
H_2O	20									
BROKEN	~56-58									
	84.5	85								
MM	56.5									
+	87.0									
TD	102									

BEARING 15.5
HORIZ DIST 168.9
VERT DEPTH 969.4

DEPTH	INCLN	DIR
1020	19.9	39
1000	19.7	16
950	18.4	65
900	19.2	353
850	16.8	231
800	18.7	02
750	16.5	234
700	18.2	348
650	17.7	36
600	16.7	11
550	16.9	16
500	16.9	24
450	16.8	113
400	16.1	340
350	16.5	143
300	17.2	24
250	17.0	348
200	16.6	51
150	16.1	313
100	15.3	353
50	15.0	103
6	15.8	358
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0
DEPTH INCLN DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

12/7/90
MSA18
TD104
TRU
RODS

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 20
EAST: 661249.4
NORTH: 5537021.0
ELEVATION: 1796.8
AZIMUTH: 070

DATE DRILLED: 7/19/90
DATE INPUT:
CORRECTED:

PLUNGE:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
BROKEN – FIRST 20m +										
H_2O	24									
	32.8	34.4	R	27.9	6.5					
DRY	75									
H_2O	115									
8U	121	136.8	R 1.6	20.1 7.6	3.5 6.0	20.4 22.6	.32		D	
8L1	141.5	146					.32	1.22		
FAULT	149									
8L3	150	151.5							C	
	152.6	153.4	R	35.7	4.0					
8L4	154	156.2								
8L5	157.4	158.9	R 1.6	36.5 12.1	2.0 7.0	19.4 21.8	.56	1.23		
8L6	161.3	163								
FAULT	169									
9u	169.4	173.5							B	
"	175.2	176.6								
"	179	179.8	R 1.6	32.4 10.8	3.0 7.0	18.6 21.7				
"	184.5	186.1								
	192.4	194.4								
FAULT	222									
9L	222.9	230.6	R 1.6	16.6 8.4	2.0 2.5	19.3 20.1			A	
10B	233.4	242	R 1.6	15.2 8.7	2.5 3.5	19.5 20.8				
"	243.2	244								
10A	247.3	248								

MM : 254.5

TD : 268

MAJOR SST. UNITS 62 – 79, 79 – 99, 99 – 118 } FINING-DOWN SEQUENCES.

HORIZ DIST 186.3
VERT DEPTH 2631.2

DEPTH	INCLN	DIR
2680	17.4	200
2650	16.7	316
2600	15.7	41
2550	14.9	225
2500	14.1	117
2450	12.6	13
2400	11.7	71
2350	12.1	101
2300	12.8	19
2250	12.6	23
2200	12.5	112
2150	11.5	21
2100	10.4	352
2050	9.6	232
2000	10.6	228
1950	9.5	312
1900	10.0	26
1850	10.1	334
1800	10.0	42
1750	9.9	355
1700	9.5	03
1650	9.2	10
1600	8.8	170
1550	8.8	32
1500	8.5	63
1450	8.3	319
1400	8.2	03
1350	7.9	116
1300	7.3	337
1250	7.9	103
1200	7.5	63
1150	7.6	327
1100	7.0	27
1050	7.6	41
1000	7.2	30
950	7.8	210
900	7.9	21
850	7.7	16
800	9.7	[illegible]
750	9.8	[illegible]
700	9.0	[illegible]
650	8.8	[illegible]
600	9:3	[illegible]
550	10.6	[illegible]
500	10.5	[illegible]
450	10.5	[illegible]
400	10.2	[illegible]
350	10.5	302
300	9.9	07
250	10.1	06
200	10.3	278
150	13.7	188
100	9.8	22
50	9.3	74
6	9.7	19
DEPTH	INCLN	DIR

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 21
EAST: 661255.7
NORTH: 5538505.2
ELEVATION: 2000.3
AZIMUTH: 080
PLUNGE: 59°
DATE DRILLED: 11/7/90
DATE INPUT:
CORRECTED:

GAM. ONLY THRU RODS.

HORIZON / SEAM	TOP	BASE	QUALITY S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX	MISCELLANEOUS	
	7.4	8.4								
	54.6	55.6								
FAULT 64.0 9U	64.2	71.2								
9L	71.8	75.2								
"	75.6	76.7								
10B	81.6	87.6								
FAULT 87.7 10B	89.0	97.6								
"	98.0	100.0								
10A	106	110.6								
MMST	115.5									
TD	223									

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 22
EAST: 661255.7
NORTH: 5538505.2
ELEVATION: 2000.3
AZIMUTH
DATE DRILLED: 11/8/90
PLUNGE: VERT.
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
H_2O	45									
	63.1	63.5								
	65.0	66.0								
	68.4	69.8								
H_2O	72									
9U	83.8	98.9								
9L	100.5	101.9								
FAULT	102 +	105.2								
9L	103.9	105.1								
"	105.3	110.1								
"	110.7	112.9								
	115.9	116.6								
10B	119.2	131.9								
"	132.2	132.8	THIN HIGH ASH.							
"	134.2	135.3								
"	135.8	136.3								
10A	144.4	144.8								
10A	146.5	148.5								
"	149.4	151.6								
MMST	158									

TD 168

DRILL HOLE SUMMARY

PROJECT: MSAN EXT.
HOLE: 23
EAST: 661228.7
NORTH: 5538202.0
ELEVATION: 1970.1
AZIMUTH: 080
DATE DRILLED: 11/20/90
PLUNGE: 60
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
	15	17.4								
9U	88	98.2								
FAULT	98.4									
9U	102.2	113.4								
9L	114	119								
	122.2	122.9								
10B	124	137								
10A	140	140.9								
11	142.6	147.7								
MMST	153									
TD	272									

VERT DEPTH 2337.8

DEPTH	INCLN	DIR
2721.8	29.8	329
2700	29.7	353
2650	29.6	309
2600	28.9	18
2550	29.1	329
2500	28.3	10
2450	28.8	195
2400	28.3	250
2350	27.8	23
2300	28.2	139
2250	27.7	37
2200	27.8	198
2150	28.5	19
2100	28.1	07
2050	28.6	10
2000	28.7	244
1950	28.9	135
1900	28.7	15
1850	29.6	97
1800	30.5	48
1750	31.4	22
1700	33.3	201
1650	31.6	208
1600	31.8	31
1550	32.4	196
1500	31.9	18
1450	32.7	38
1400	32.1	28
1350	32.2	190
1300	31.7	16
1250	31.9	49
1200	31.7	02
1150	31.1	129
1100	31.0	227
1050	31.0	25
1000	31.1	20
950	31.2	167
900	31.0	17
850	30.8	10
800	31.5	278
750	31.3	59
700	31.5	50
650	31.5	75
600	31.7	49
550	31.8	169
500	32.3	17
450	31.9	91
400	32.0	21
350	32.2	291
300	31.3	10
250	31.7	146
200	31.7	13
150	31.4	20
100	31.6	21
50	30.4	220
6	30.1	23

DEPTH	INCLN	DIR

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 24
EAST: 661228.7
NORTH: 5538202.0
ELEVATION: 1970.1
AZIMUTH
DATE DRILLED: 12/10/90
PLUNGE: VERT.
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
	17.6	18.4								
	20	23.9								
9U	109.4	110.2								
9U	111.4	121.4								
FAULT	124									
9U	132.7	133.4								
FAULT 143.5 9U	134.1	155.4								
9L	157.6	159.6								
FAULT 160 9L	160.3	165.4								
"	165.9	168.3								
10B	175.4	188								
"	188.8	190.4								
10A	193.7	194.5								
FAULT	196									
10A	199.6	201								
"	202.7	204								
"	204.5	208.9								
MMST	215									
TD										

BEARING 65.7
HORIZ DIST 36.3
VERT DEPTH 2182.7
OPEN HOLE

DEPTH	INCLN	DIR
2199.8	4.7	95
2150	4.7	94
2100	3.0	88
2050	3.1	87
2000	2.9	84
1950	2.8	77
1900	2.2	77
1850	2.4	88
1800	2.6	86
1750	2.0	77
1700	2.4	88
1650	2.0	78
1600	2.1	75
1550	2.1	85
1500	1.9	81
1450	1.8	71
1400	1.9	73
1350	1.7	82
1300	1.2	63
1250	1.6	75
1200	0.8	62
1150	1.2	59
1100	1.4	65
1050	1.2	68
1000	0.8	47
950	0.6	34
900	0.5	24
850	0.4	24
800	0.7	55
750	0.3	53
700	0.2	325
650	0.4	06
600	0.2	19
550	0.6	292
500	0.5	331
450	1.3	298
400	1.1	296
350	1.1	306
300	1.5	298
250	1.5	289
200	1.6	309
150	1.8	306
100	1.9	287
50	2.3	299
16	1.2	281
DEPTH	INCLN	DIR

DRILL HOLE SUMMARY

PROJECT: MSAD
HOLE: 25
EAST: 661237.0
NORTH: 5537809.5
ELEVATION: 1945.8
AZIMUTH ~080
DATE DRILLED: 12/13/90
PLUNGE: 60
DATE INPUT:
CORRECTED:

HORIZON / SEAM	TOP	BASE	QUALITY S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX	MISCELLANEOUS	
8U	27.1	37.6								
8L1	42.8	44.4								
8L2	54.0	54.4								
"	55.2	57.0								
9U	115.0	125.2								
9L	131.2	132.4								
"	133.0	138.5								
FAULT	140.5									
9U	140.6	146.4								
9L	148.0	149.0								
"	149.6	154.6								
10B	157.2	165.8								
"	166.4	167.0								
10B	169.8	170.6								
"	171.6	172.0								
FAULT	180									
10A	194.0	197.9								
MMST	201.4									
TD	207.6									

11	27.1	17
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.1

1150	27.2	26
1100	27.1	50
1050	27.5	34
1000	27.5	348
950	28.0	00
900	28.2	13
850	28.4	18
800	28.4	23
750	28.7	19
700	29.2	35
650	29.3	31
600	29.4	22
550	29.1	294
500	28.6	10
450	29.4	115
400	29.5	16
350	29.8	16
300	30.0	357
250	29.5	22
200	29.7	89
150	30.0	110
100	30.4	26
50	30.6	11
6	29.8	47
DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

MSAU #25
TD 207.60
THRU RODS

DEPTH	INCLN	DIR

DECLINATION E 18.0
PRESET DEPTH 6.0

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 26
EAST: 661237.0
NORTH: 5537809.5
ELEVATION: 1945.8
AZIMUTH
DATE DRILLED: 12/18/90
PLUNGE: VERT.
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
8U	39.3	53.4								
8L1	59.7	62.4								
	67.4	68								
8L2	74.8	77.6								
9U	149.4	162.4								
FAULT	164.5									
FAULT	182									
9L	184.7	185.4								
"	186.2	193.3								
10B	195.4	195.9								
"	196.3	206.4								
"	208.0	208.4								
"	209.6	210.4								
MMST	227	233.5								
FAULT	233.6									
10A	239.8	240.6								
"	244.2	246.0								
"	247.4	248.2								
MMST	261									
TD	267									

```
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
    9.6     2.7   86
 DEPTH    INCLN  DIR

DECLINATION  E0018.0
   50       2.6  128
   11.5     2.5  281
 DEPTH    INCLN  DIR

DECLINATION  E0018.0
PRESET DEPTH      6.0
    9        2.6   39
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
PRESET DEPTH      6.1
  200        2.3  349
  150        2.0  165
  100        2.0   27
   50        2.2  225
    6        2.1  346
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
PRESET DEPTH      6.0
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
PRESET DEPTH      6.1
   50        2.0   30
    6        1.6  337
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
PRESET DEPTH      6.0
   11.2      1.5   18
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
PRESET DEPTH      6.0
   11.4      1.5   62
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
PRESET DEPTH      6.1
  400        1.8  137
  350        1.9   08
  300        1.6   59
  250        1.5   82
  200        1.3  306
  150        1.4   28
  100        1.2   17
   50        0.9  119
    9.4      0.8   35
 DEPTH    INCLN  DIR

DECLINATION  E  18.0
```

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 27
DATE DRILLED: 12/20/90
DATE INPUT:
EAST: 661231.7
CORRECTED:
NORTH: 5537516.1
ELEVATION: 1925.7
AZIMUTH:
PLUNGE: VERT.? * SEE DEVIATION

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL	SULPHUR	ROMAX		
8U	76.7	105.0								
FAULT	93.0									
8L1	111.2	115.3								
"	116.0	117.4								
	122.6	123.1								
8L2	125.5	128.8								
	133.2	134.0								
9U	177.4	184.0								
"	184.6	185.6								
"	186.4	189.4								
9L	215.1	215.4								
"	216.5	223.3								
10B	225.4	235.2								
"	236.5	237.1								
"	239.3	240.4								
MMST?	244									
	257.7?	263.5								
TD	278.8									

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 28 DATE DRILLED: 12/8/90 DATE INPUT:
EAST: 661236.9 CORRECTED:
NORTH: 5538805.8
ELEVATION: 2029.7
AZIMUTH PLUNGE: VERT.

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX		
	14.7	15.2								
9U	67.0	81.5								
9L	84.8	89.7								
"	91.5	92.4								
10B	103.0	113.7								
"	114.5	115.5								
10AU	123.1	125.2								
10AL	127.9	131.2								
MMST	141									
FAULT	146.5									
10B	147.7	150.2								
10A	156.6	157.0								
FAULT	157.4									
FAULT	161.5									
10B	161.6	163.4								
10AU	169.3	171.4								
10AL	176.0	179.5								
MMST	189.5									

TD 195

NSA # 28
trm rods
TD 195
DEC 8/90
JWR

BEARING	34.9
HORIZ DIST	80.5
VERT DEPTH	1942.5

DEPTH	INCLN	DIR
1955.9	10.8	185
1950	10.8	185
1900	10.4	70
1850	9.9	35
1800	9.3	27
1750	9.1	45
1700	9.4	24
1650	8.6	33
1600	8.0	15
1550	7.0	358
1500	6.9	13
1450	6.1	25
1400	5.6	13
1350	5.2	17
1300	4.7	211
1250	3.9	67
1200	3.4	60
1150	3.1	356
1100	2.9	102
1050	2.4	12
1000	2.3	150
950	2.4	8
900	2.2	131
850	2.	349
800	1.6	253
750	1.8	4
700	1.9	340
650	1.3	329
600	1.4	62
550	1.4	68
500	0.9	8
450	0.8	1
400	0.3	23
350	0.2	11
300	0.3	109
250	0.4	49
200	0.4	49
150	0.9	42
100	1.1	302
50	1.2	279
6	0.9	253

DEPTH INCLN DIR

DRILL HOLE SUMMARY

PROJECT: MSAN
HOLE: 29
EAST: 661231
NORTH: 5537516
ELEVATION: 1925.7
AZIMUTH: 050
PLUNGE: 60°
DATE DRILLED: 12/21/90
DATE INPUT:
CORRECTED:

HORIZON			QUALITY						MISCELLANEOUS	
SEAM	TOP	BASE	S.G.	ASH	F.S.I.	VOL.	SULPHUR	ROMAX	SAMPLES MISSING	
8U	59.2	72.3							✓	
8L1	78.7	80.6							✓	
	83.4	83.9								
8L2	90.3	92.5								
9U	141.0	151.5							✓	
9L	166.7	172.8								
10B	174.3	182.1								
MMST.	192									
	204.7	207.6								
TD	224									

* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWSNEST RESOURCES
FIELD OFFICE : CALGARY
DATA FROM :
MAG. DECL. : 1.700

HOLE ID. : MSAN-29
DATE OF LOG : 12/21/90
PROBE : 9055A . 245
DEPTH UNITS : METERS LOG 9

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
0.0	0.00	0.00	0.00	0.0	0.0	0.0	0.0
10.0	9.01	2.82	2.30	3.6	39.2	30.0	47.6
20.0	17.65	6.21	6.03	8.7	44.1	30.1	47.9
30.0	26.34	9.40	9.80	13.6	46.2	28.5	56.2
40.0	35.05	12.28	13.79	18.5	48.3	29.2	55.9
50.0	43.77	15.08	17.47	23.1	49.2	28.8	58.3
60.0	52.51	17.62	21.60	27.9	50.8	28.8	58.5
70.0	61.27	20.13	25.73	32.7	52.0	28.8	59.6
80.0	69.99	22.68	29.90	37.5	52.8	29.1	59.7
90.0	78.64	25.24	34.21	42.5	53.6	31.0	59.8
100.0	87.18	27.83	38.72	47.7	54.3	32.4	59.1
110.0	95.56	30.57	43.42	53.1	54.9	33.2	63.4
120.0	103.85	33.45	48.23	58.7	55.3	34.3	59.7
130.0	112.11	36.40	53.02	64.3	55.5	35.0	55.2
140.0	120.40	39.38	57.76	69.9	55.7	33.8	58.0
150.0	128.71	42.31	62.48	75.5	55.9	34.2	56.9
160.0	137.06	45.22	67.16	81.0	56.0	33.4	57.7
170.0	145.43	48.09	71.80	86.4	56.2	33.1	56.2
180.0	153.83	50.89	76.45	91.8	56.4	32.6	60.8
190.0	162.19	53.28	81.36	97.2	56.8	33.4	68.3
200.0	170.56	55.40	86.41	102.6	57.3	32.8	67.5
210.0	178.96	57.49	91.41	108.0	57.8	33.5	65.3
220.0	187.30	59.59	96.50	113.4	58.3	34.5	63.8
225.4	191.74	60.78	99.15	116.3	58.5	0.0	0.0

HC 07V

1701	266	29.6	22
1700	265	29.6	350
1650	260	29.1 29.0	24
1600	255	28.6	17
1550	250	28.8	18
1500	245	28.7	16
1450	240	28.2	18
1400	235	27.3 26.7	18
1350	230	26.3	10
1300	225	25.2	30
1250	220	24.3	30
1200	215	22.8 23.2	04
1150	210	22.1	32
1100	205	20.5	26
1050	200	19.7 19.6	65
1000	195	18.6	44
950	190	17.9	321
900	185	16.9 17.0	13
850	180	16.1	27
800	175	14.7 14.1	263
750	170	13.5	348
700	165	12.3	350
650	160	11.4	29
600	155	10.4 11.0	36
550	150	9.7	23
500	145	9.0	44
450	140	8.9	70
400	135	8.7	135
350	130	8.7	27
300	125	7.9	126
250	120	8.1	22
200	115	7.9 7.8	287
150	110	7.7	07
100	105	7.7	13
50	100	7.3	73
6		7.2	178

DEPTH	INCLN	DIR
		6.0
950	7.0	29
900	7.3	36
850	6.7	03
800	6.4	95
750	6.4	02
700	6.4	45
650	6.3	10
600	6.0	342
550	5.6	05
500	5.5 4.9	114
450	5.1	261
400	4.4	03
350	3.4	177
300	2.2	94
250	1.0	15
200	0.9	262
150	1.4 2.0	43
100	2.3	42
50	1.6	45
6	2.0	205
DEPTH	INCLN	DIR

M.S.A. NORTH ([redacted]) ROTARY SAMPLES

(5) ICED = LAB COMPS

[redacted]
MSAN-1

900130

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI
928	1355	10B	9	10	25.1	0.0
	1356		10	11	15.5	0.0
	1357		11	12	19.1	0.5
	1358		12	13	22.1	1.0
	1359		13	14	5.9	3.0
	1360		14	15	4.5	4.5
	1361		15	16	8.5	0.5
	1362		16	17	10.5	0.5
	1363		17	18	9.8	2.5
	1364		18	19	41.0	0.5
	1365		19	20	24.4	1.0
	1366		20	21	54.7	0.0
	1367		22	23	46.5	0.5
926	1368	10A	29	31	66.9	1.0
927	1369	10B	47.5	49	24.4	1.0
	1370		49	50	31.4	1.0
	1371		50	51	63.2	1.0
	1372		52	53	55.0	0.5
	1373		53	54	57.0	0.5
	1374		54	55	44.1	1.0
	1375		55	56	15.2	2.0
	1376		56	57	15.8	2.5
	1377		57	58	19.6	5.5
	1378		58	59	29.2	1.0
	1379		59	60	38.1	4.0
	1380	10A	64	65	28.2	5.0
	1381		65	66	41.8	2.0
928	1382		82	83	75.0	0.5
	1383		83	84	82.0	0.0
	1384		85	86	66.5	0.5
	1385		86	87	65.3	1.0
	1386		87	88	68.4	1.0
	1387		88	89	73.9	0.0
	1388		89.5	90	87.3	0.0

13.8; 23.8; 15.3/1.0; 7.7/1.0; 70%; 1.5; 1.0; 9 ✓; 42.4; .5; 1.0; 27.3; 24.8; 21.0/3.5; 10.1/6.5; 73%; 3.5; 10

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M.S.A. NORTH (~~EES~~) ROTARY SAMPLES

900130

~~EES~~ MSAN-2

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)		FSI		
929	1389	10B	27	28	19.0		1.0		
	1390		28	29	11.7	13.6/1.0	1.0		
	1391		29	30	6.0	7.2/1.0	3.5		
	1392		30	31	15.5	70%	3.0	2.0	
	1393		31	32	14.4		1.0		
	1394		32	33	17.2		1.0		3.0
	1395		33	34	16.4		4.5		
	1396		34	35	17.6		4.5		
	1397		35	36	12.3	14.4/5.5	3.0		
930	1398		36	37	8.9	7.2/6.0	7.5	4.0	
	1399		37	38	12.3	66%	2.5		
	1400		38	39	13.7		4.0		
	1401		39	40	12.2		6.5		
	1402		40	41	29.3		3.0		
	1403		41	42	32.8		1.0		

16.3 14.1 11.7

10

M.S.A. NORTH ([redacted]) ROTARY SAMPLES

900130 [redacted] MSAN-3

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI
931	1404	9L	27	28	8.5	2.0
	1405		28	29	46.4	1.0
	1406		29	30	29.5	1.0
	1407		30	31	12.5	1.0
	1408		31	32	45.0	1.0
	1409		32	33	62.2	1.0
932	1410	10B	35	36	17.9	1.5
	1411		36	37	13.8	3.0
	1412		37	38	21.0	1.0
	1413		38	39	18.7	2.5
	1414		39	40	7.7	5.5
	1415		40	41	13.3	6.0
	1416		41	42	17.3	2.0
	1417		42	43	10.1	1.5
	1418		43	44	19.6	4.0
	1419		44	45	33.3	1.0
	1420		45	46	65.8	0.0
	1421		47	48	64.4	0.0
933	1422	10A	90.5	91	39.5	3.5
	1423		92.5	93	40.8	1.0
	1424		93	94	28.8	1.0
	1425		94	95	28.1	1.0
	1426		95	95.5	38.7	1.0
934	1427		104	105	61.1	1.0
	1428		105	106	22.7	3.5

M.S.A. NORTH ([redacted]) ROTARY SAMPLES

[redacted] MSAN-4

900130

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI
935	1429	8L6	8	9	38.0	5.5
	1430		9	10	31.7	3.0
	1431	9u	19.5	21	10.4	8.5
	1432		21	22	39.4	1.0
	1433		22	23	21.1	4.0
	1434		23	24	28.5	6.5
	1435		24	25	30.7	2.5
	1436		25	26	20.1	1.0
	1437		26	27	22.2	6.5
	1438		27	28	32.9	4.0
	1439		28	29	23.3	1.0
	1440		29	30	25.2	1.0
	1441		30	31	45.2	1.0
936	1442		33	34	33.7	4.0
	1443		34	35	58.3	1.5
	1444		35	36	73.6	0.0
	1445	9L	67	68	11.3	1.0
	1446		68	69	12.2	2.0
	1447		69	70	8.3	1.0
	1448		70	71	12.9	3.5
	1449		71	72	36.0	2.0
	1450		72	73	26.6	1.5
	1451		73	74	21.9	1.5
	1452		74	75	11.9	1.0
	1453		75	76	43.7	2.5
937	1454	10B	79	80	29.4	1.0
	1455		80	81	16.1	2.5
	1456		81	82	30.3	2.0
	1457		82	83	24.1	1.5
	1458		83	84	5.6	6.5
	1459		84	85	7.3	7.5
	1460		85	86	10.5	7.0
	1461		86	87	20.2	2.5
	1462		87	87.5	10.8	2.5
937	1463		88	89	10.2	5.5
	1464		89	90	7.6	4.0
	1465		90	91	9.0	3.0
	1466		91	92	28.2	3.5
	1467		92	93	12.5	3.0
	1468		93	94	31.3	1.5
	1469		94	95	69.3	0.0

MINE SERVICES AREA ROTARY SAMPLES

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900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI
1419	7277	9L	78	79	24.7	1.0
	7278		79	80	20.6	1.5
	7279		80	81	28.1	1.0
	7280		81	82	31.2	1.0
	7281		82	83	45.8	1.5
	7282		83	84	34.5	2.0
	7283		84	85	27.8	1.0
	7284		85	86	31.8	1.0
1420	7285	10A	119	120	50.8	1.5
	7286		120	121	60.0	1.0
	7287		121	122	84.1	0.0
	7288		122	123	84.6	0.0
	7289		123	124	85.6	0.0
	7290		124	125	86.5	0.0
	7291		125	126	87.3	0.0
1421	7292		157	158	34.7	4.5
	7293		158	159	31.0	5.0
	7294		159	160	14.9	0.0
	7295		160	161	22.6	0.0

30.9

1.5

MINE SERVICES AREA ROTARY SAMPLES

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900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1422	7296	9L	2	3	12.0	0.0	
	7297		3	4	7.2	0.0	
	7298		4	5	55.2	0.0	0.0
	7299		5	6	41.1	0.0	
	7300		6	7	8.9	0.0	
	7301		7	8	58.9	0.0	
	7302		8	8.5	69.3	0.5	
	7303	10B	9	10	11.0	1.0	
	7304		10	11	13.2	1.0	
	7305		11	12	35.8	2.5	
	7306		12	13	22.2	1.0	1.5
	7307		13	14	6.2	0.0	
	7308		14	15	13.2	0.5	
	7309		15	16	59.0	1.0	
	7310		16	17	46.3	3.5	
	7311		17	18	55.4	1.5	
	7312	10A	24	25	22.2	1.0	1.0
	7313		56	57	31.3	1.5	
	7314		57	58	25.0	1.5	
	7315		58	59	22.8	2.5	
	7316		59	60	13.7	5.5	
	7317		60	60.5	19.6	6.0	
	7318		74	75	38.5	3.0	
	7319		75	76	52.0	1.0	

27.4

27.9

22.2

MINE SERVICES AREA ROTARY SAMPLES

8

900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1504	7673		2	3	34.1	0.0	
	7674		3	4	39.8	0.0	
	7675		4	5	21.2	0.0	0.0
	7676		5	6	16.8	0.0	
	7677		6	6.5	16.2	0.0	
1505	7678		14	15	51.8	0.0	
	7679		15	15.5	28.8	1.0	
1506	7680	8U	92	93	22.8	1.5	
	7681		93	94	14.4	6.5	
	7682		94	95	14.0	1.5	
	7683		95	96	23.3	1.0	3.0
	7684		96	97	9.1	4.5	
	7685		97	98	13.4	4.0	
	7686		98	99	15.3	4.0	
	7687		99	100	7.4	3.5	
	7688		100	101	12.9	2.0	
	7689		101	101.5	65.6	0.0	
1507	7690	8L1	108	109	22.3	5.5	
	7691		109	110	18.7	2.5	
	7692		110	111	34.0	5.0	5.0
	7693		111	112	37.2	6.0	
	7694		112	113	66.3	1.0	
1508	7695	8L6	132	133	44.4	1.0	1.0
1509	7696	9U	151.5	152	35.0	1.5	
	7697		152	153	26.5	7.0	
	7698		153	154	28.2	1.0	3.5
	7699		154	155	29.1	6.5	
	7700		155	156	31.5	3.5	
	7701		156	157	36.6	1.0	
1510	7702	9U	162	163	19.4	1.0	2.5
	7703		163	164	28.9	3.5	
1511	7704	9L	182.5	183	13.8	1.0	
	7705		183	184	17.1	1.5	
	7706		184	185	12.1	2.5	2.5
	7707		185	186	19.6	3.5	
	7708		186	187	21.4	5.0	
	7709		187	188	25.8	1.0	
1512	7710	10B	190.5	191	15.5	4.5	
	7711		191	192	18.2	2.0	
	7712		192	193	16.1	2.5	
	7713		193	194	14.8	7.0	3.5
	7714		194	195	8.3	6.5	
	7715		195	196	10.0	2.5	
	7716		196	197	25.2	2.5	
	7717		197	198	17.9	2.5	
	7718		198	199	46.8	1.0	

MINE SERVICES AREA ROTARY SAMPLES

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900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1482	7611	9L	9	10	20.6	1.0	1.0
	7612		10	11	18.9	1.0	
					19.8		
1483	7613		25.5	26	71.6	1.0	
1484	7614	9L	43	44	15.7	1.5	
	7615		44	45	15.9	1.5	
	7616		45	46	16.1	1.5	
	7617		46	47	16.7	3.0	2.5
	7618		47	48	9.7	5.0	
	7619		48	49	18.4	1.0	
	7620		49	50	54.2	4.0	
	7621		50	51	26.1	1.5	
	7622		51	52	56.9	1.0	
					22.7		
1485	7623	10B	55	56	13.5	3.0	
	7624		56	57	17.9	2.0	
	7625		57	58	17.3	5.0	
	7626		58	59	13.7	4.5	
	7627		59	60	6.7	8.5	
	7628		60	61	21.0	7.5	4.0
	7629		61	62	13.1	5.5	
	7630		62	63	28.6	2.0	
	7631		63	64	6.8	5.5	
	7632		64	65	18.2	1.5	
	7633		65	66	9.7	4.5	
	7634		66	67	37.2	2.0	
	7635		67	68	20.9	1.0	
	7636		68	69	33.2	1.0	
					18.9		

MINE SERVICES AREA ROTARY SAMPLES

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900726

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI
1432	7359	8L3	24	25	65.4	1.0
	7360		25	25.5	72.6	1.0
1433	7361	8L4	27.5	28	31.6	5.0
	7362		28	29	47.2	1.0
	7363		29	30	26.5	2.0
	7364		30	31	18.4	2.5
1434	7365		32.5	33	61.4	1.0
	7366		33	33.5	78.0	0.0
1435	7367	8L6	36.5	37	39.6	4.5
	7368		37	38	41.4	2.0
	7369		38	38.5	64.0	0.0
1436	7370	9U	48.5	49	39.0	1.0
	7371		49	50	40.3	1.0
	7372		50	51	13.4	8.0
	7373		51	52	32.9	4.0
	7374		52	53	31.1	1.0
	7375		53	54	11.3	1.0
	7376		54	55	21.2	5.5
	7377		55	56	25.2	5.5
	7378		56	57	39.2	1.0
	7379		57	58	15.5	1.0
	7380		58	59	45.4	2.5
	7381		59	60	37.3	2.0
	7382		60	61	20.5	1.5
	7383		61	61.5	15.6	1.0
	7384	9L	63.5	64	27.7	4.0
	7385		64	65	60.0	1.5
1437	7386	9L	90	91	11.5	1.0
	7387		91	92	11.5	2.5
	7388		92	93	18.8	1.0
	7389		93	94	19.2	1.5
	7390		94	95	7.6	0.5
	7391		95	96	12.0	1.5
	7392		96	97	52.3	1.0
1438	7393	10B	100.5	101	57.4	1.0
	7394		101	102	16.1	1.0
	7395		102	103	14.6	1.0
	7396		103	104	14.9	2.5
	7397		104	105	6.2	7.5
	7398		105	106	28.2	3.0
	7399		106	107	31.1	1.0
	7400		107	108	8.6	6.0
	7401		108	109	8.8	6.0
	7402		109	110	9.7	3.0
	7403		110	111	14.5	5.5
	7404		111	112	11.5	2.0
	7405		112	113	20.1	3.5
1439	7406	10A	155.5	156	23.7	2.0
	7407		156	157	22.6	3.5
	7408		157	158	26.9	2.0
	7409		158	159	23.1	2.5

MINE SERVICES AREA ROTARY SAMPLES

900726

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1440	7410	9L	8.5	9	18.8	0.5	
	7411		9	10	18.9	1.5	
	7412		10	11	9.1	1.0	
	7413		11	12	9.4	1.0	1.0
	7414		12	13	11.5	1.5	
	7415		13	14	51.9	1.0	
	7416		14	15	35.3	1.0	
	7417		15	16	14.9	1.5	
	7418		16	17	8.2	1.5	
	7419		17	18	68.6	0.0	
1441	7420	10B	21.5	22	11.8	5.0	
	7421		22	23	17.5	2.0	
	7422		23	24	5.7	5.5	
	7423		24	25	12.0	7.0	
	7424		25	26	23.9	2.5	
	7425		26	27	5.9	5.0	3.5
	7426		27	28	7.3	1.5	
	7427		28	29	11.5	6.0	
	7428		29	30	10.2	4.5	
	7429		30	31	13.9	2.5	
1442	7430		31	32	61.3	1.0	
	7431		32	33	18.1	1.0	
	7432		33	34	27.0	1.5	
	7433		34	35	49.5	1.0	
	7434		35	36	59.8	1.0	
	7435		36	37	70.5	0.0	
	7436	10B	70.5	71	17.4	2.5	
	7437		71	72	15.7	2.0	
	7438		72	73	25.7	2.5	
	7439		73	74	16.3	3.5	
	7440		74	75	8.0	8.0	4.0
	7441		75	76	19.3	4.5	
	7442		76	77	11.1	5.5	
	7443		77	78	6.3	7.0	
	7444		78	79	11.9	3.0	
	7445		79	80	8.9	8.0	
	7446		80	81	32.9	1.5	
	7447		81	82	31.5	1.5	
	7448		82	82.5	56.0	1.5	
1444	7449	10A	91	92	40.2	40.2	2.5

MINE SERVICES AREA ROTARY SAMPLES

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900726

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1449	7491	8U	18.5	19	33.4	1.0	
	7492		19	20	21.4	3.0	2.5
	7493		20	21	38.2	2.5	
	7494		21	22	8.3	3.0	
	7495		22	23	12.1	1.5	
	7496		23	24	26.1	0.5	
	7497		24	25	22.9	1.0	1.5
	7498		25	26	6.2	2.5	
	7499		26	27	22.3	2.0	
	7500		27	28	12.4	0.0	
1447	7471		28	29	20.0	5.0	
	7472		29	30	14.9	3.5	
	7473		30	31	6.2	6.0	
	7474		31	32	7.9	3.5	5.0
	7475		32	33	10.2	4.5	
	7476		33	34	5.4	4.0	
	7477		34	34.5	26.6	7.5	
1446	7463	8L1	39	40	52.5	1.0	
	7464		40	41	28.7	2.0	
	7465		41	42	22.1	2.0	3.5
	7466		42	43	13.6	5.0	
	7467		43	44	44.5	4.5	
	7468		44	45	52.5	1.0	
	7469		45	46	70.8	1.0	
	7470		46	46.5	77.1	0.5	
	7520	8L3	64	64.5	48.6	2.0	2.0
1452	7507	8L4	66.5	67	43.3	1.5	
	7508		67	68	42.8	1.5	2.0
	7509		68	69	34.6	3.0	
1454	7514	8L5	72.5	73	54.3	1.5	
	7515		73	74	11.6	6.0	6.0
1451	7503	8L6	75.5	76	67.4	0.5	
	7504		76	77	62.6	0.0	
	7505		77	78	37.2	1.5	1.5
	7506		78	78.5	61.8	0.0	

3.0

1448	7478	9u	88	89	33.5	1.5	
	7479		89	90	25.7	4.0	
	7480		90	91	17.4	8.0	
	7481		91	92	36.8	3.5	
	7482		92	93	20.0	1.0	
	7483		93	94	27.6	5.5	4.0
	7484		94	95	39.4	4.0	
	7485		95	96	13.4	6.0	
	7486		96	97	14.4	4.5	
	7487		97	98	35.2	4.5	
	7488		98	99	23.4	2.5	
	7489		99	100	57.5	1.5	
	7490		100	100.5	50.1	2.5	
1453	7510	9L	120	121	9.6	4.0	
	7511		121	122	29.5	1.0	2.0
	7512		122	123	23.5	1.0	
	7513		123	124	58.0	2.5	
1445	7450	10B	125.5	126	61.8	1.0	
	7451		126	127	20.7	3.0	
	7452		127	128	33.6	1.0	
	7453		128	129	13.0	4.5	
	7454		129	130	12.6	6.5	4.0
	7455		130	131	18.6	3.5	
	7456		131	132	11.7	4.0	
	7457		132	133	5.5	7.0	
	7458		133	134	12.4	2.5	
	7459		134	135	10.6	7.0	
	7460		135	136	17.1	2.5	
	7461		136	137	65.4	1.0	
	7462		137	138	66.0	0.0	
1450	7501	10A	140.5	141	38.9	0.5	0.5
	7502		141	142	77.2	1.0	
1455	7516	10A	175	176	38.6	3.5	3.5
	7517		176	176.5	64.2	0.5	
?	7518	?	92	93	16.1	1.0	
?	7519	?	93	94	57.1	2.0	

MINE SERVICES AREA ROTARY SAMPLES

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900726

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1426	7320		13	14	14.6	1.0	1.0
	7321		14	15	22.5	1.0	
1427	7322	9u	34.5	35	52.6	1.0	
	7323		35	36	23.2	6.0	
	7324		36	37	12.9	8.5	
	7325		37	38	22.3	8.5	
	7326		38	39	45.9	1.0	
	7327		39	40	20.7	1.0	3.5
	7328		40	41	13.3	1.0	
	7329		41	42	32.7	3.0	
	7330		42	43	46.5	2.5	
	7331		43	44	19.9	1.5	
	7332		44	45	22.6	1.5	
	7333		45	46	63.5	1.0	
1428	7334		47	48	19.3	7.0	
	7335		48	49	20.5	7.5	
	7336		49	50	70.9	1.0	
	7337		50	50.5	71.6	1.0	
	7338	9u	51	52	20.6	4.5	
	7339		52	52.5	68.0	1.0	3.0
	7340		54.5	55	29.2	1.0	
	7341		55	56	16.0	4.5	
1429	7342	9L	87.5	88	7.6	1.0	1.0
	7343		88	89	43.9	1.0	
	7344		89	89.5	67.4	1.0	
1430	7345	10B	92	93	19.9	2.0	
	7346		93	94	20.2	2.0	
	7347		94	95	21.2	2.5	
	7348		95	96	11.4	4.0	
	7349		96	97	17.4	5.0	2.5
	7350		97	98	18.4	2.5	
	7351		98	99	14.0	2.0	
	7352		99	100	48.2	3.5	
	7353		100	101	7.6	2.5	
	7354		101	102	9.4	2.5	
	7355		102	103	13.9	2.5	
	7356		103	104	33.0	1.0	
	7357		104	105	21.0	1.5	
1431	7358	10A	111	111.5	47.2	2.0	2.0

MINE SERVICES AREA ROTARY SAMPLES

15

900725

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1456	7521		5	6	12.8	0.0	0.0
	7522		6	6.5	47.0	0.0	
1457	7523	9U	17	18	27.7	0.5	
	7524		18	19	18.0	0.5	
	7525		19	20	46.8	0.5	
	7526		20	21	21.1	0.5	0.5
	7527		21	22	42.0	0.5	
	7528		23	24	24.2	0.5	
	7529		24.5	25	26.8	0.5	
	7530		25	25.5	41.0	0.5	
	7531		26.5	27	29.0	0.0	0.5
	7532		27.5	28	21.7	0.5	
	7533		28	28.5	69.2	0.0	
1458	7534	9L	49	50	19.7	1.0	
	7535		50	51	13.2	2.5	
	7536		51	52	17.9	3.0	2.0
	7537		52	53	43.0	1.0	
	7538		53	54	13.7	2.0	
	7539		54	54.5	55.3	2.0	
1461	7556	10B	56.5	57	23.3	2.0	
	7557		57	58	19.8	2.5	
	7558		58	59	19.0	4.5	3.0
	7559		59	60	18.0	2.5	
	7560		60	61	10.3	3.5	
	7561		61	62	21.2	3.5	
	7562		62	63	34.8	1.0	
	7563		63	64	63.5	1.0	
	7564		64	65	66.2	0.0	
	7565		68	68.5	49.2	1.0	1.0
1459	7540	10B	77.5	78	21.4	2.0	
	7541		78	79	10.6	2.5	
	7542		79	80	35.6	1.5	
	7543		80	81	25.6	1.0	2.5
	7544		81	82	11.9	6.0	
	7545		82	83	10.4	2.5	
	7546		83	84	7.5	2.5	
	7547		84	85	13.4	4.5	
	7548		85	86	37.1	1.0	
	7549		86	87	33.4	1.5	
	7550		87	88	62.4	1.0	
	7551		88	89	72.9	0.5	
	7552		89	90	74.1	0.0	
	7553	10A	93	93.5	44.5	2.5	2.5
1460	7554		115	116	41.4	1.0	
	7555		116	116.5	50.5	1.5	

MINE SERVICES AREA ROTARY SAMPLES

16

900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1462	7637	8L4	12	13	40.8	0.0	
1463	7638		13.5	14	37.1	1.0	0.5
	7639		14	15	17.1	1.0	
					31.4		
1464	7640	8L5	17	18	32.7	0.0	0.5
	7641		18	19	15.4	1.0	
					24.5		
1465	7642	8L6	21.5	22	50.4	2.5	4.0
	7643		22	23	37.7	5.0	
	7644		23	23.5	72.0	0.0	
					12.1		
1466	7645		26.5	27	80.5	0.0	
1467	7646	9U	29.5	30	30.3	1.0	
	7647		30	31	30.8	4.5	
	7648		31	32	34.7	1.5	3.0
	7649		32	33	15.4	1.0	
	7650		33	34	37.2	3.5	
	7651		34	35	28.5	7.0	
	7652		35	36	55.3	1.0	
					29.7		
1468	7653		37	38	31.6	3.5	2.0
					25.0		
1469	7654		39.5	40	14.1	1.0	
	7655		40	41	23.2	1.0	
	7656		41	42	62.3	1.0	
1470	7657	9L	61	62	21.3	1.0	1.0
	7658		62	63	13.6	1.0	
	7659		63	64	32.1	1.5	
	7660		64	65	61.2	1.0	
					22.7		
1471	7661	10B	66.5	67	53.6	1.0	2.0
	7662		67	68	45.6	1.0	
	7663		68	69	15.0	2.0	
	7664		69	70	16.1	6.0	
	7665		70	71	19.9	2.5	
	7666		71	72	11.8	2.0	
	7667		72	73	7.6	3.5	
	7668		73	74	39.4	1.0	
	7669		74	75	16.9	1.0	
	7670		75	76	31.4	1.0	
	7671		76	77	54.2	0.5	
					23.6		
1472	7672	10A	116	117	47.2	1.5	1.5
					47.2		

MINE SERVICES AREA ROTARY SAMPLES

17

900725

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1473	7566	9L	7	8	10.1	0.0	
	7567		8	9	14.7 23.2	0.0	0.0
	7568		9	10	9.9	0.0	
1474	7569	10B	13	14	30.1	0.0	
	7570		14	15	7.3	0.5	
	7571		15	16	18.3 20.4	1.0	1.0
	7572		16	17	13.9	1.0	
	7573		17	18	9.2	1.0	
	7574		18	19	25.8	1.0	
	7575		19	19.5	42.4	1.0	
1475	7576	9L	32	33	12.1 8.6	1.5	2.5
	7577		33	34	15.4	3.5	
	7578		34	35	59.6	1.0	
	7579		35	36	10.5	4.0	
1476	7580	10B	38	39	18.8	1.0	
	7581		39	40	27.3	1.0	
	7582		40	41	7.5	5.0	2.5
	7583		41	42	19.1 13.7	4.0	
	7584		42	43	9.3	3.5	
	7585		43	44	9.6	3.0	
	7586		44	45	30.5	2.5	
	7587		45	46	26.9	1.0	
	7588		46	47	24.1	1.0	
	7589		47	48	74.1	0.5	
1477	7590	10A	52	53	44.2 44.2	2.5	2.5
1478	7591		78	79	26.0	2.0	

MINE SERVICES AREA ROTARY SAMPLES

18

900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1479	7592	9L	21	22	9.6	1.0	
	7593		22	23	17.2	1.0	
	7594		23	24	9.4	3.0	3.0
	7595		24	25	39.4	4.0	
	7596		25	26	22.6	1.5	
	7597		26	27	36.2	6.5	
	7598		27	28	78.7	0.0	
1480	7599	10B	29.5	30	22.7	1.5	
	7600		30	31	28.5	2.0	
	7601		31	32	23.4	2.5	
	7602		32	33	12.7	7.0	3.5
	7603		33	34	15.7	4.0	
	7604		34	35	15.1	4.0	
	7605		35	36	16.9	2.0	
	7606		36	37	13.4	3.0	
	7607		37	38	18.3	3.5	
	7608		38	39	66.8	1.0	
	7609		39	39.5	66.9	0.5	
	7610		85.5	86	89.6	0.0	

23.3

18.5

MINE SERVICES AREA ROTARY SAMPLES

20

900801

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1486	7719		34.5	35	37.8	18.2	8.0	6.5
	7720		35	36		46.0	4.5	
1487	7721	8U	122	123		34.9	2.5	
	7722		123	124		28.9	3.5	
	7723		124	125		39.9	1.0	
	7724		125	126		11.8	6.0	
	7725		126	127		15.7	3.5	
	7726		127	128		16.3	3.5	4.0
	7727		128	129		36.6	1.5	
	7728		129	130		10.1	6.0	
	7729		130	131	20.4	12.0	3.5	
	7730		131	132		22.1	7.0	
	7731		132	133		16.7	3.0	
	7732		133	134		10.7	4.0	
	7733		134	135		5.9	3.5	
	7734		135	136		9.0	3.5	
	7735		136	137		11.9	4.0	
	7736		137	137.5		41.4	6.0	
1488	7737	8L1	142	143		28.2	3.5	
	7738		143	144		15.6	4.5	
	7739		144	145	21.3	14.3	5.0	5.5
	7740		145	146		15.8	7.5	
	7741		146	147		31.0	7.0	
1489	7742	8L3	151.5	152		50.0	1.0	
1490	7743		153.5	154	35.7	35.7	4.0	4.0
1491	7744	8L4	155	156		33.4	1.5	2.0
	7745		156	157	26.3	18.5	2.0	
1492	7746	8L5	158.5	159		34.1	3.5	3.0
	7747		159	159.5	37.0	39.8	2.5	
1493	7748	8L6	162	163		51.8	1.0	1.0
	7749		163	164	51.4	50.9	1.0	
1494	7750	9U	170	171		16.8	4.0	4.0
	7751		171	172	19.6	19.9	6.5	
	7752		172	173		21.9	1.0	
	7753		173	174		50.0	2.0	5.0
	7754		174	174.5		39.9	5.5	
1495	7755		176	177	34.9	26.1	7.0	
	7756		177	177.5		45.8	2.5	
1496	7757		180	180.5	28.3	28.3	7.0	7.0
1497	7758		185	186		28.7	2.5	2.0
	7759		186	187	33.6	38.2	1.5	
1498	7760		187.5	188		66.0	0.0	

1499	7761		192	192.5	58.9	0.0	
1500	7762	9L	223	224	19.0	1.0	
	7763		224	225	9.5	2.0	
	7764		225	226	13.6	2.0	
	7765		226	227	10.6	1.5	
	7766		227	228	9.8	4.0	2.5
	7767		228	229	25.2	4.0	
	7768		229	230	24.2	2.5	
	7769		230	231	12.4	2.5	
	7770		231	232	63.6	1.0	
1501	7771	10B	234.5	235	17.4	1.5	
	7772		235	236	22.0	2.0	
	7773		236	237	17.8	2.5	
	7774		237	238	13.0	2.5	
	7775		238	239	5.7	5.0	3.0
	7776		239	240	9.4	2.5	
	7777		240	241	36.2	2.0	
	7778		241	242	14.1	3.0	
	7779		242	243	41.0	3.5	
	7780		243.5	244	58.4	1.0	
1502	7781		244.5	245	51.8	0.5	
	7782		246.5	247	55.7	1.0	
	7783	10A	248	249	54.6	1.0	
1503	7784		253	254	82.0	0.0	

15.8

20.6

M.S.A. NORTH (EPS) ROTARY SAMPLES

#21

901126

FIELD #	LAB #	SEAM	TOP	BASE		ASH (ADB)	FSI	
1628	11334	9U	64.5	66		31.5	4.5	
	11335		66	67		29.0	3.0	
	11336		67	68		24.5	7.0	
	11337		68	69		12.8	7.5	
	11338		69	70		12.3	4.0	5.5
	11339		70	71	20.4	12.3	7.5	
	11340	9L	71	73		16.2	3.0	
	11341		73	74		24.6	7.0	
	11342		74	75		15.9	5.0	
	11343		75	76		48.6	1.0	
1627	11318	10B	81	83		21.0	1.0	
	11319		83	84		7.8	7.0	
	11320		84	85	13.2	14.5	4.5	5.0
	11321		85	86		7.9	6.5	
	11322		86	87		5.1	6.0	
	11323	10B	88.5	90		25.5	2.0	
	11324		90	91		10.2	3.5	
	11325		91	92		11.6	7.5	
	11326		92	93		13.3	2.0	
	11327		93	94	14.6	8.6	6.0	4.0
	11328		94	95		6.8	2.0	
	11329		95	96		13.0	4.0	
	11330		96	97		20.1	4.0	
	11331		97	98		46.6	2.0	
	11332		98	99		49.3	1.0	
	11333		99	100		56.6	0.5	
1629	11344	10A	105.5	107.5		22.3	7.0	
	11345		107.5	109	23.9	23.2	2.0	3.5
	11346		109	110		27.9	2.0	

M.S.A. NORTH (EPS) ROTARY SAMPLES
#22

901126

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)	FSI	
1630	11347		69	70	45.8	2.5	
	11348	9u	88.5	90	19.3	5.0	
	11349		90	91	24.6	5.5	
	11350		91	92	25.7	4.5	
	11351		92	93	27.5	2.5	
	11352		93	94	19.7 27.3	5.0	5.0
	11353		94	95	19.6	4.5	
	11354		95	96	19.6	6.5	
	11355		96	97	8.9	6.5	
	11356		97	98	12.9	2.5	
	11357		98	99	8.7	8.0	
	11358		99	100	43.0	1.5	
1631	11359	9L	106	107	14.9	6.0	4.0
	11360		107	108	27.8 25.8	2.5	
	11361		109	110	14.0	6.5	
	11362		112.5	113.5	36.8	3.0	
1632	11363	10B	119	120	17.8	1.5	
	11364		120	121	14.2	1.0	
	11365		121	122	23.9	2.0	
	11366		122	123	9.6	2.5	
	11367		123	124	6.5	8.0	
	11368		124	125	15.3 25.7	1.5	
	11369		125	126	19.9	1.5	3.5
	11370		126	127	13.1	5.0	
	11371		127	128	16.9	3.0	
	11372		128	129	9.0	4.5	
	11373		129	130	8.9	5.5	
	11374		130	131	12.9	4.5	
	11375		131	132	17.7	3.5	
1633	11376		132	133	46.4	1.5	
	11377		133	134	55.1	1.0	
	11378		134	135	60.5	0.5	
	11379		135	136	50.3	1.0	
	11380		136	137	46.3	2.5	
	11381		137	138	63.8	1.0	
	11382		138	139	50.6	0.5	
	11383		139	139.5	74.7	0.0	
1634	11384	10A	146.5	147	29.3	2.5	
	11385		147	148	39.4	4.0	
	11386		148	149	36.7 41.0	5.0	2.5
	11387		149.5	150	51.3	1.0	
	11388		150	151	28.0	1.0	
	11389		151	152	33.1	1.0	

M.S.A. NORTH (EPS) ROTARY SAMPLES

#23

910102

FIELD #	LAB #	SEAM	TOP	BASE	ASH (ADB)		FSI	
1661	12075	9u	89.5	90		18.4	1.0	
	12076		90	91		25.4	6.0	
	12077		91	92		16.4	6.5	
	12078		92	93	19.6	15.2	3.0	4.5
	12079		93	94		22.4	7.0	
	12080		94	95		25.1	7.0	
	12081		95	96		31.2	4.0	
	12082		96	97		11.7	2.0	
	12083		97	98		7.2	5.0	
	12084		98	98.5		42.3	3.5	
1662	12085	9u	103	104		37.3	1.0	
	12086		104	105		15.7	4.5	
	12087		105	106		12.8	1.5	
	12088		106	107		9.4	5.5	
	12089		107	108	16.5	10.0	4.0	4.0
	12090		108	109		16.3	4.0	
	12091		109	110		14.0	6.0	
	12092		110	111		15.7	3.5	
	12093		111	112		19.9	6.0	
	12094		112	113		9.9	3.5	
	12095		113	113.5		50.2	1.5	
	12096	9L	114.5	115		18.2	6.0	
	12097		115	116		10.0	3.5	
	12098		116	117	23.9	8.6	5.0	4.0
	12099		117	118		45.2	1.0	
	12100		118	119		17.3	4.0	
	12101		119	119.5		43.9	4.5	
1663	12102	10B	125	126		26.4	1.0	
	12103		126	127		16.4	1.5	
	12104		127	128		8.2	6.0	
	12105		128	129		5.3	7.5	
	12106		129	130		9.0	4.5	
	12107		130	131	16.9	16.0	3.0	4.0
	12108		131	132		6.0	6.5	
	12109		132	133		8.9	3.0	
	12110		133	134		7.4	4.0	
	12111		134	135		13.8	3.5	
	12112		135	136		26.9	5.5	
	12113		136	137		47.1	1.0	
	12114		137	137.5		16.1	3.5	
1664	12115	10A	144	145		42.5	2.0	
	12116		145	146	31.1	28.1	1.0	2.0
	12117		146	147		21.1	3.0	
	12118		147	147.5		72.2	1.0	
1666	12119		164	165		25.8	7.0	

AT TRENCH SAMPLES 10/18/90

SEAM 10A		Fsi	Rm	V/m	cal V/m
J3-1	RAW ASH 18.92	0.0	2.49	26.72	24.23

SIEVE ANALYSIS

	%	wt	
1	3.8	361.0	
1x1/2	15.9	45.3 1496.4	
1/2x1/4	13.4	1260.5	
1/4x4.75	12.2	1145.1	
-4.75	54.7	5149.0	

-4.75 ASH = 19.24

FLOAT SINK ON +4.75 AT 1.60

	%	wt	ASH	Rm	V/m	cal/m	cal/gm
FLOAT	77.7	3214.3	9.75	.38	24.34	2396	6554
SINK	22.3	924.6	60.41	-	-	-	-

AT TRENCH SAMPLES 10/18/90

SEAM 10B		Fsi	R/m	u/m	calc u/m
A2-3	RAW ASH 11.19	0.0	2.92	26.58	2366

Sieve Analysis

	%	wt	
1	3.6	489.5	
1x1/2	16.0	2151.3	
1/2x1/4	12.7	1703.9	42.8
1/4x4.75	10.5	1403.7	
-4.75	57.2	7665.2	

-4.75 ASH = 11.09

Float sink on +4.75 at 1.60

	%	wt	ASH	R/m	u/m	calc u/m	cal/gm.
Float	82.9	4674.4	10.74	1.00	23.23	22.23	6579
Sink	17.1	967.5	43.55	—	—	—	—

SEAM 10B		Fsi	R/m	u/m	calc u/m
A2-4	RAW ASH 14.29	1.00	3.14	29.81	26.67

Sieve Analysis

	%	wt	
1	2.4	88.1	
1x1/2	7.5	270.5	25.8
1/2x1/4	6.5	236.2	
1/4x4.75	9.4	341.6	
-4.75	74.2	26903	

-4.75 ASH = 13.31

Float sink on +4.75 at 1.60

	%	wt	ASH	R/m	u/m	cal/u/m	cal/gm
Float	70.2	6608	8.95	1.40	2553	25.13	6455
Sink	29.8	280.2	79.41	—	—	—	—

PIT TRENCH SAMPLES 10/18/90

SEAM 10B

			R/m	V/m	CAL/LM
A2-1	RAW ASH 16.37	FSI 0.0	4.01	24.60	20.59

SIEVE ANALYSIS.

	%	wt	
1"	14.5	1262.0	
1x½	26.4	2290.5	62.0
½x¼	13.0	1129.5	
¼x4.75	8.1	706.7	
-4.75	38.0	3302.3	

-4.75 ASH = 14.61

FLOAT SINK ON +4.75

	%	wt	ASH	R/m	V/m	CAL/m	CAL/gm.
Float	81.0	4375.0	10.13	.61	23.13	22.52	6555.53 6720
SINK	19.0	1025.8	60.96	—	—	—	

SEAM 10B

		FSI	R/m	V/m	CAL/m.
A2-2	RAW ASH 29.55	00	1.63	22.70	21.07

SIEVE ANALYSIS.

	%	wt	
1	5.6	275.4	
1x½	12.7	627.8	84.9
½x¼	10.4	514.0	
¼x28	56.2	2773.4	
28x48	7.2	357.4	
48x100	3.6	177.8	
100x200	2.3	112.5	
-200	2.0	94.3	

FLOAT SINK ON +28

	%	wt	ASH	R/m	V/m	CAL/m	CAL/gm.
Float	55.3	2241.6	13.26	.19	22.91	22.72	6600
SINK	44.7	1813.3	59.93	—	—	—	

PIT TRENCH SAMPLES 10/18/90

			R/M	V/M	cal/g M	FSI
SEAM 9U						
B2-3	RAW ASH	24.69	2.21	22.02	19.84	0.0

SIEVE ANALYSIS

	%	wt
1"	7.8	668.1
1 x 1/2"	15.9	1362.0
1/2 x 1/4"	11.0	939.4
1/4 x 28"	49.9	4258.5
28 x 48	7.6	649.0
48 x 100	3.6	308.3
100 x 200	3.9	333.0
-200	.3	21.9

84.6

FLOAT SINK ON +28 MESH AT 1.60

	%	wt	ASH	R/M	V/M	V/mcalc	cal/gm.
FLOAT	71.5	4692.0	12.65	.77	21.83	21.06	6859.62
SINK	28.5	1869.1	51.36				

PIT TRENCH SAMPLES 10/18/90

				R/M	VOL	(CAL/VOL)	FS
SEAM 9u							
B-1	RAW	ASH	23.01	3.40	24.04	20.64	0.0

SIEVE ANALYSIS

	%		wt
1"	10.9		422.5
1 x ½	23.7	85.6	916.5
½ x ¼	12.5		482.6
¼ x 28	38.3		1480.3
28 x 48	5.8		224.4
48 x 100	3.7		143.6
100 x 200	2.4		92.2
-200	2.7		104.6

Float sink on +28 mesh At 1.60

	%	wt	ASH	R/M	V/M	cal V/M	cal/gm
Float	78.4	2565.7	10.23	.64	22.51	21.87	6716.86
Sink	21.6	707.4	57.63				

B2-1	ASH	29.98	FS: 0.0	SEAM 9u
B2-2	ASH	49.12	FS: 0.0	SEAM 9u

ASAN SEAM 8&6

	Fsi	R/m	V/m	calc V/m
C-1 RAW ASH 29.31	0.0	1.35	20.49	19.14

Sieve Analysis

	%	wt
1"	14.5	1499.5
1x1/2	16.0	1649.9
1/2x1/4	11.0	1130.9
1/4x28	45.9	4737.3
28x48	5.2	540.6
48x100	3.2	335.0
100x200	2.5	258.2
-200	1.7	160.6

Float Sink on +28 at 1.60

	%	wt	ASH	R/m	V/m	calc V/m.	Gal/gm
Float	60.00	5314.0	13.81	.48	22.33	21.85	7199
Sink	40.00	3546.7	58.51				

SEAM 5&5

	Fsi	R/m	V/m	calc V/m
C-2 RAW ASH 14.89	0.0	1.19	21.98	20.79

Sieve Analysis

	%	wt
1"	20.3	1038.5
1x1/2	25.3	1291.5
1/2x1/4	10.3	525.1
1/4x4.75	7.5	383.4
-4.75	36.0	1869.9

Ash on -4.75 = 12.01

Float sink on +4.75 at 1.60

	%	wt	ASH	R/m	V/m	calc V/m	Gal/
Float	89.8	2950.2	9.84	.58	21.72	21.14	738
Sink	10.2	334.2	61.55				

AT SAMPLES 10/18/90

TRENCH

SEAM & LI		ASH	ES	(calc) Vol	RM	Vol	T.M.
D-1	RAW	18.46	0.0	33.28	~~4.53~~ 2.62	4461	17.6
	%	wt					
1"	9.4	1110.2					
1" x 1/2"	19.5	2288.7					
1/2 x 1/4	12.3	1444.0					
1/4 x 4.75	9.3	1096.8					
-4.75	49.5	5813.8					

50.5

on -4.75 6315.35

(C/U on Float 7019.86 Cal/gm)

+4.75

RAW	ASH
+4.75	31.08
-4.75	13.84

Float Sink At 1.60

	wt	%	ASH	RM	Vol.
Float	2938.3	57.9	9.00	1.15	22.69
Sink	2132.6	42.1	62.32	-	-

SEAM 8U		ASH	ES	(calc) Vol	RM	Vol	T.M.
D-2 FW	RAW	12.89	0.0	27.39	~~10.64~~ 6.53	38.03	16.9
	%	wt					
1"	.6	39.7					
1" x 1/2	5.4	365.4					
1/2 x 1/4	9.1	619.6					
1/4 x 4.75	14.4	978.4					
-4.75	70.5	4790.1					

29.5

on -4.75 5120.11

(C/U on Float 5939.05 Cal/gm)

+4.75

RAW	ASH
+4.75	14.66
-4.75	13.73

Float Sink At 1.60

	wt	%	ASH	RM	Vol
Float	1247.1	75.6	10.37	2.25	27.94
Sink	401.5	24.4	41.40		

PIT SAMPLES 10/18/90
TRENCH.

SEAM & U		Ash	FSI	(calc) Vol	Rlm	Vol
D2-2	RAW	16.14	0.0	30.92	7.44	38.36

	%	wt.	
1"	2.9	377.6	
1" x 1/2"	5.3	697.5	23.8
1/2 x 1/4"	6.0	778.9	
1/4 x 4.75	9.6	1258.0	
-4.75	76.2	9937.1	OD -4.75 4411.71 (C/U ON Float 5684.87 Cal/gm) +4.75 ~~NO SINK~~

Float sink at 1.60

RAW	Ash
+4.75	19.02
-4.75	13.97

	wt	%	Ash	Rlm	Vol.
Float	1752.4	76.1	10.99	2.70	27.90
Sink	551.0	23.9	69.54	-	

SEAM & U		Ash	FSI	(calc) Vol	Rlm	Vol
D2-3	RAW	15.85	0.0	21.25	3.13	24.38

	%	wt	
1"			
1" x 1/2	4.4	242.3	
1/2 x 1/4			
1/4 x 4.75			
-4.75	95.6	5250.3	OD -4.75 4101.69 (C/U on Float 5178.90 Cal/gm) +4.75

Float sink at 1.60

RAW	Ash
+4.75	29.90
-4.75	15.09

	wt	%	Ash	Rlm	Vol
Float	123.0	58.4	14.27	3.91	27.50
Sink	87.7	41.6	57.11		

DRILL HOLE COMPOSITES BY CORE LABS. — ALL ANALYSIS @ AIR DRY BASIS

HOLE#	INTERVAL	LAB#	Coal Type	%RM. (ADM)	%ASH	%VOL. (VM)	%FC.	FSI.
5	78-86	-7277	RAW	.71	29.3	17.9	52.1	1.0
9L		7284	1.6 FLT	.71	9.1	20.0	70.2	1.5

%YLD= 68.4 : Kcal/Kg 7657

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
13	34.5-56	7332-7335	RAW	.39	29.2	20.0	50.4	4.0
9U		7338-7341	1.6 HT	.85	11.3	22.0	65.8	2.0

%YLD= 60.6 : Kcal/Kg 7506

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
12	64-78.5	7520, 7505, 7505	RAW	.48	36.2	20.7	42.6	1.0
8L		7507-7509	1.6 FLT	.76	11.6	20.8	66.8	3.5

%YLD= 53.2 : Kcal/Kg 7438

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
12	18.5-34.5	7491-7500	RAW	.50	21.4	19.5	58.6	2.0
8U		7471-7477	1.6 FLT	.95	7.2	21.9	70.0	4.0
		7464-7467						

%YLD= 70.7 : Kcal/Kg 7763

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
18	21-27	7592-	RAW	.44	23.7	18.5	57.4	2.0
9L		7597	1.6 FLT	.82	8.4	20.9	70.0	3.0

%YLD= 68.1 : Kcal/Kg 7712

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
18	29.5-38	7599-	RAW	.52	21.0	18.0	60.5	2.5
10B		7606	1.6 FLT	.76	9.0	19.1	71.1	3.5

%YLD= 75.7 : Kcal/Kg 7671

1/61.

A.D.B.

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
8	92-101	7680-	RAW	.68	14.9	18.8	65.6	3.0
8L		7688	1.6 FLT.	.74	7.2	20.2	71.9	4.0

%YLD= 78.0 : Kcal/Kg 7801

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
8	108-112	7690-	RAW	.40	28.9	18.5	52.2	4.5
8L1		7693	1.6 FLT.	.92	6.8	23.8	68.5	7.0

%YLD= 62.6 : Kcal/Kg 7892

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
8	151.5-157	7696-	RAW	.38	32.7	21.4	45.5	3.0
9L		7701	1.6 FLT	.57	10.8	22.8	65.8	7.0

%YLD= 62.0 : Kcal/Kg 7548

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
8	162-164	7702-	RAW	.60	26.3	21.0	52.1	2.0
9L		7703	1.6 FLT	.74	8.0	21.8	69.5	4.0

%YLD= 66.0 : Kcal/Kg 7772

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
8	182.5-188	7704-	RAW	.54	21.2	19.3	59.0	2.0
9L		7709	1.6 FLT.	.96	8.5	21.2	69.3	3.0

%YLD= 72.6 : Kcal/Kg 7715

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
8	190.5-199	7710-	RAW	.69	22.7	19.8	56.8	2.5
10B		7718	1.6 FLT.	.98	8.5	21.4	69.1	5.0

%YLD= 73.0 : Kcal/Kg 7707

2/6/

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
20	122-132.5	7721-7736	RAW	.62	20.1	20.4	58.9	3.5
8L	142-147	7737-7741	1.6 FLT	1.02	7.6	22.6	68.8	6.0
+8L1			%YLD=75.3	KCAL/K6	7806			

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
20	153.5-164	7743-	RAW	.42	36.5	19.4	56.3	2.0
8L		7749.	1.6 FLT	.81	12.1	21.8	65.3	7.0
			%YLD=54.4	KCAL/K6	7447			

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
20	170-187	7750-	RAW	.42	32.4	18.6	48.6	3.0
9L		7759.	1.6 FLT	.86	10.8	21.7	66.6	7.0
			%YLD=63.7	KCAL/K6	7553			

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
20	223-231	7762-	RAW	.57	16.6	19.3	63.5	2.0
9L		7769.	1.6 FLT	.82	8.4	20.1	70.7	2.5
			%YLD=82.1	KCAL/K6	7748			

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
20	284.5-243	7771-	RAW	.48	15.2	19.5	64.8	2.5
10B		7779	1.6 FLT	.88	8.7	20.8	69.6	3.5
			%YLD=77.5	KCAL/K6	7724			

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
9	43-51	7614-	RAW	.69	22.6	18.6	58.1	2.5
9L		7621.	1.6 FLT.	.68	8.9	21.0	69.4	3.0
			%YLD=76.3	KCAL/K6	7673			

8/6
20=21

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
9	55-69	7623-	RAW	.44	21.2	21.1	57.3	2.5
10B		7686	1.6 FLT	.46	8.3	22.1	69.1	3.5

%YLD= 78.3 : Kcal/K6 = 7746

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
16	29.5-41	7646-	RAW	.32	29.3	20.5	49.9	2.5
9L		7655	1.6 FLT	.93	11.7	21.7	65.7	5.0

%YLD= 60.2 : Kcal/K6 = 7430

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
16	61-76	7657-	RAW	.51	32.1	18.0	49.4	1.0
9L		7670	1.6 FLT	.87	11.4	20.8	66.9	2.0
+10B								

%YLD= 59.3 : Kcal/K6 = 7444

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
10	48.5-61.5	7370-	RAW	.54	27.9	20.0	51.6	1.5
9L		7383	1.6 FLT	.82	13.3	21.0	64.9	3.0

%YLD= 62.5 : Kcal/K6 7267

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
10	90-96	7386-	RAW	.50	13.2	19.7	66.6	1.0
9L		7891	1.6 FLT	.92	10.5	20.3	68.3	1.0

%YLD= 84.6 : Kcal/K6 7484

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
10	101-113	7394-	RAW	.60	12.0	20.9	66.5	2.5
10B		7405	1.6 FLT	.91	9.4	21.2	68.5	3.0

%YLD= 78.9 : Kcal/K6 7613

4/6
Dec 11

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
10	155.5-159	7406-		.40	23.0	19.9	56.7	2.5
10A		7409		.54	14.5	21.4	63.6	4.0

%YLD= 73.6 : Kcal/Kg = 7248

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
11	8.5-17	7410-		.29	21.9	19.6	57.7	1.0
9L		7418		1.10	8.5	20.8	69.6	1.0

%YLD= 71.1 : Kcal/Kg = 7676

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
11	21.5-34	7420-		.51	17.4	19.7	62.4	2.0
10B		7432		.82	8.5	21.6	69.1	2.5

%YLD= 72.4 : Kcal/Kg = 7688

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
11	70.5-82	7436-		.53	17.6	21.4	60.5	3.5
10B		7447		.67	8.9	22.0	68.4	4.5

%YLD= 80.6 : Kcal/Kg = 7695

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
15	17-28	7523-		.56	28.7	20.2	50.5	0.5
9U		7532		1.03	10.9	21.2	66.9	1.0

%YLD= 64.1 : Kcal/Kg = 7332

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
15	49-54	7534-		.52	20.8	19.5	59.2	2.0
9L		7538		.75	8.4	21.2	69.7	3.0

%YLD= 76.5 : Kcal/Kg = 7729

5/6.1

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
15	565-63	7556-		.65	23.1	21.5	54.7	2.0
10B		7562		.76	8.5	21.7	69.0	4.0

%YLD= 74.4 Kcal/K6 7207

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
15	77.5-82	7540-		.58	20.7	20.2	58.5	3.0
10B		7549		.62	8.2	22.1	69.1	4.0

%YLD= 77.9 Kcal/K6 7765

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
17	32-34	7576-		.60	12.1	21.8	65.5	2.5
9L		7577		.76	6.4	22.3	70.5	3.0

%YLD= 80.7 Kcal/K6 7874

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
17	38-47	7580-		.48	19.7	20.9	58.9	2.5
10B		7588		.52	8.9	22.0	68.6	3.5

%YLD= 71.0 Kcal/K6 7210

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD= Kcal/K6

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD= Kcal/K6

6/6/11

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 1	9-18		RAW	.21	15.28	21.21	63.30	1.0
10B			1.6 FLT	.11	7.71	21.89	70.29	1.0
			%YLD= 70.00					

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 1	55-60		RAW	.16	21.03	19.79	59.02	3.5
10B			1.6 FLT	.15	10.09	21.65	68.11	6.5
			%YLD= 72.76					

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 2	27-33		RAW	.19	13.56	20.52	65.73	1.0
10B			1.6 FLT	.15	7.24	21.60	71.01	1.0
			%YLD= 70.15					

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 2	33-42		RAW	.22	14.43	21.12	64.23	5.5
10B			1.6 FLT	.42	7.18	22.20	70.20	6.0
			%YLD= 66.18					

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 2	27-42		RAW	.17	14.26	20.39	65.18	2.5
10B			1.6 FLT	.20	7.52	21.50	70.78	3.0
			%YLD= 64.88					

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 3	27-32		RAW	.43	29.10	18.41	52.06	1.0
9L			1.6 FLT	.97	9.00	20.43	69.60	2.5
			%YLD= 56.05					

DN.21

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 1	9-18		RAW	.21	15.28	21.21	63.30	1.0
10B			1.6 FLT	.11	7.71	21.89	70.29	1.0

%YLD= 70.00

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 1	55-60		RAW	.16	21.03	19.29	59.02	3.5
10B			1.6 FLT	.15	10.09	21.65	68.11	6.5

%YLD= 72.76

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 2	27-33		RAW	.19	13.56	20.52	65.73	1.0
10B			1.6 FLT	.15	7.24	21.60	71.01	1.0

%YLD= 70.15

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 2	33-42		RAW	.22	14.43	21.12	64.23	5.5
10B			1.6 FLT	.42	7.18	22.20	70.20	6.0

%YLD= 66.18

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 2	27-42		RAW	.17	14.26	20.39	65.18	2.5
10B			1.6 FLT	.20	7.52	21.50	70.78	3.0

%YLD= 64.88

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS# 3	27-32		RAW	.43	29.10	18.41	52.06	1.0
1L			1.6 FLT	.97	9.00	20.43	69.60	2.5

%YLD= 56.05

DA1.21

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS#3	35-45		RAW	.12	15.82	21.40	62.66	3.0
10B			1.6 FLT	.41	8.82	21.18	69.59	3.0

%YLD= 65.08

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS#3	90.5-95.5		RAW	.35	33.92	16.30	49.43	1.0
10A			1.6 FLT	.50	14.20	19.60	65.20	3.0

%YLD= 47.99

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS#4	95-31		RAW	.47	25.31	20.27	53.95	3.0
9U			1.6 FLT	.54	13.54	21.53	64.39	5.5

%YLD= 61.25

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS#4	67-75		RAW	.40	17.13	19.32	63.15	1.5
9L			1.6 FLT	.57	8.87	20.58	69.98	3.5

%YLD= 66.25

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS#4	79-83		RAW	.28	24.03	20.29	55.40	1.5
10B			1.6 FLT	.13	11.76	21.06	67.05	2.0

%YLD= 59.00

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPS#4	83-93		RAW	.12	11.50	21.90	66.48	3.5
10B			1.6 FLT	.18	7.82	21.88	70.12	4.5

%YLD= 72.26

Jmc

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.
EPst 4.	79-94		RAW	.48	17.20	20.08	62.24	3.5
10 B			1.6FLT	.51	8.71	21.21	69.57	4.5

%YLD= 64.40

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD=

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD=

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD=

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD=

HOLE#	INTERVAL	LAB#	Coal Type	%RM.	%ASH	%VOL.	%FC.	FSI.

%YLD=

DMR

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ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # : 33573
DATE : AUGUST 16, 1990
REPORT BY : ARNO HOOGVELD

SAMPLE TYPE: Trench

P.O.# R0635

RAW SCREEN ANALYSIS

SAMPLE ID	SIZE	% RECOVERY	
ZONE	+ 1"	10.09	
~~AR~~	1"x 1/4"	40.95	86.74
	1/4"x28mesh	35.70	
10B	28x100mesh	10.64	
	100x325mesh	2.04	13.26
	- 325mesh	0.58	

SAMPLE ID	SIZE	% RECOVERY	
ZONE	+ 1"	3.70	
~~A~~	1"x 1/4"	29.33	85.54
	1/4"x28mesh	52.51	
10B	28x100mesh	10.57	
	100x325mesh	2.87	14.46
	- 325mesh	1.03	

SAMPLE ID	SIZE	% RECOVERY	
ZONE	+ 1"	2.23	
~~B~~	1"x 1/4"	22.48	80.03
	1/4"x28mesh	55.32	
9A	28x100mesh	15.68	
	100x325mesh	2.59	19.97
	- 325mesh	1.71	

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FILE # : 33573
DATE : AUGUST 16, 1990
REPORT BY : ARNO HOOGVELD

SAMPLE TYPE: Trench

P.O.# R0635

PAGE: 3

SCREEN ANALYSIS

SAMPLE ID	SIZE	% RECOVERY	
ZONE	+ 1"	3.33	
~~C~~	1"x 1/4"	27.26	82.97
	1/4"x28mesh	52.38	
8L	28x100mesh	13.49	
	100x325mesh	2.94	17.03
	- 325mesh	0.60	

SAMPLE ID	SIZE	% RECOVERY	
ZONE	+ 1"	0.46	
~~B~~	1"x 1/4"	13.20	76.15
	1/4"x28mesh	62.49	
8U	28x100mesh	19.59	
	100x325mesh	3.75	23.85
	- 325mesh	0.51	

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PROJECT : MSAN - RIDGE AREA
(TRENCH)

FILE # : 33573
DATE : AUGUST 9, 1990
REPORT BY : ARNO HOOGVELD

P.O.# R0635

PAGE 1

RAW PROX.

SAMPLE ID	BASIS	% H2O	% V.M.	% ASH	% F.C.	F.S.I.
HEAD PULP ~~AR~~ 10B	A.R.	29.88	17.11	9.45	43.57	
	A.D.	3.66	23.50	12.98	59.86	0
	D.B.	-----	24.39	13.47	62.13	

SAMPLE ID	BASIS	% H2O	% V.M.	% ASH	% F.C.	F.S.I.
HEAD PULP ZONE ~~A~~ 10B	A.R.	30.90	15.02	18.82	35.25	
	A.D.	2.62	21.17	26.53	49.68	0
	D.B.	-----	21.74	27.24	51.02	

SAMPLE ID	BASIS	% H2O	% V.M.	% ASH	% F.C.	F.S.I.
HEAD PULP ZONE ~~B~~ 9U	A.R.	29.27	17.79	17.38	35.55	
	A.D.	6.98	23.40	22.86	46.76	0
	D.B.	-----	25.16	24.58	50.27	

SAMPLE ID	BASIS	% H2O	% V.M.	% ASH	% F.C.	F.S.I.
HEAD PULP ZONE ~~C~~ 8L	A.R.	38.21	13.43	19.88	28.48	
	A.D.	3.03	21.07	31.20	44.70	0
	D.B.	-----	21.73	32.17	46.10	

SAMPLE ID	BASIS	% H2O	% V.M.	% ASH	% F.C.	F.S.I.
HEAD PULP ZONE ~~D~~ 8U	A.R.	27.00	19.86	17.30	35.83	
	A.D.	6.90	25.33	22.07	45.70	0
	D.B.	-----	27.21	23.71	49.09	

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PROJECT : MSAN - RIDGE AREA

FILE #: 33573
DATE: AUGUST 22, 1990
REPORT BY: ARNO HOOGVELD

SAMPLE TYPE: Trench

P.O.# R0635

PAGE : 4

SCREENED 1.60 FLT

SAMPLE ID	BASIS	%H2O	%V.M.	%ASH	%F.C.	%S	CAL/GM	F.S.I.
AR +1/4"	A.D.	3.43	22.46	8.23	65.88	0.25	6871	0
10B	D.B.	----	23.26	8.52	68.22	0.26	7115	
AR +28mesh	A.D.	3.45	23.23	8.13	65.19	0.27	6804	0
	D.B.	----	24.06	8.42	67.52	0.28	7047	
AR +1/4"	A.D.	3.58	23.04	9.71	63.67	0.26	6496	0
	D.B.	----	23.90	10.07	66.03	0.27	6737	
10B AR +28mesh	A.D.	3.80	24.40	7.74	64.06	0.31	6561	0
	D.B.	----	25.36	8.05	66.59	0.32	6820	
B +1/4"	A.D.	3.79	23.42	13.61	59.18	0.32	6107	0
9U	D.B.	----	24.34	14.15	61.51	0.33	6348	
B +28mesh	A.D.	3.99	24.67	11.29	60.05	0.30	6144	0
	D.B.	----	25.70	11.76	62.55	0.31	6399	
C +1/4"	A.D.	2.08	21.90	17.25	58.77	0.65	6399	0.5
8L	D.B.	----	22.37	17.62	60.02	0.66	6535	
C +28mesh	A.D.	2.58	23.66	12.59	61.17	0.73	6692	0.5
	D.B.	----	24.29	12.92	62.79	0.75	6869	
B +1/4"	A.D.	5.14	26.32	10.41	58.13	0.21	6058	0
8U	D.B.	----	27.75	10.97	61.28	0.22	6386	
+28mesh	A.D.	4.77	28.85	8.75	57.63	0.27	6046	0
	D.B.	----	30.30	9.19	60.52	0.28	6349	

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ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE #: 33573-1
DATE: SEPTEMBER 7, 1990
REPORT BY: ARNO HOOGVELD

P.O.# R0635

SAMPLE TYPE: Trench SCREENED PROX.

PAGE : 1

SAMPLE ID	BASIS	%H2O	%V.M.	%ASH	%F.C.	%S	CAL/GM	F.S.I.
AT 10B -28 mesh	A.D.	5.80	25.28	9.77	59.15	0.43	6245	0
	D.B.	----	26.84	10.37	62.79	0.46	6629	
10B -28 mesh	A.D.	4.05	24.51	14.22	57.22	0.31	5885	0
	D.B.	----	25.54	14.82	59.64	0.32	6133	
9U -28 mesh	A.D.	7.74	25.24	15.81	51.21	0.31	5179	0
	D.B.	----	27.36	17.14	55.51	0.34	5613	
8L -28 mesh	A.D.	5.19	24.31	18.65	51.85	0.64	5746	0
	D.B.	----	25.64	19.67	54.69	0.68	6061	
8U -28 mesh	A.D.	8.23	26.96	13.32	51.49	0.30	5456	0
	D.B.	----	29.38	14.51	56.11	0.33	5945	

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PROJECT : MSAN - RIDGE AREA
(Trench samples)

SINK/FLOAT

SAMPLE ID : ZONE ~~A~~ 1B

FILE #: 33573
DATE : AUGUST 21, 1990
P.O. # RD635

HEAD	H2O%	ASH%	V.M.%	F.C.%
(AIR DRIED)	3.66	12.98	23.50	59.86

SIZE FRACTION : + 1/4"

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H2O%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	1.11	4.01	1.11	4.01	1.93	22.76	71.38	2.5
1.30x1.40	32.51	4.74	33.62	4.72	2.99	22.31	70.10	0
1.40x1.50	47.72	9.48	81.34	7.51	3.89	22.06	64.94	0
1.50x1.60	7.70	21.37	89.04	8.71	3.35	21.03	54.97	0
1.60x1.70	2.58	34.82	91.62	9.44	2.66	18.34	45.11	0
1.70x1.80	0.18	38.81	91.80	9.50	3.45	16.48	42.60	0
1.80x1.90	0.92	48.71	92.72	9.89	3.02	16.24	33.50	0
1.90x2.00	0.14	56.03	92.86	9.96	3.00	16.11	26.54	0
2.00 SNK	7.14	80.88	100.00	15.03	1.65	10.43	8.37	0

9.5

SIZE FRACTION : + 28 mesh

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H2O%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	3.52	2.37	3.52	2.37	1.68	22.75	73.24	2.5
1.30x1.40	30.92	3.75	34.43	3.61	2.93	22.44	70.99	0
1.40x1.50	44.03	9.09	78.47	6.68	4.04	22.20	65.04	0
1.50x1.60	9.28	18.12	87.74	7.89	4.40	22.08	56.20	0
1.60x1.70	2.90	33.04	90.64	8.70	3.28	19.59	45.17	0
1.70x1.80	1.78	41.16	92.42	9.32	2.75	16.91	40.31	0
1.80x1.90	2.01	49.25	94.43	10.17	3.14	16.42	32.74	0
1.90x2.00	0.23	56.10	94.66	10.28	3.63	16.25	26.06	0
2.00 SNK	5.34	80.87	100.00	14.05	1.66	10.61	8.20	0

9.5

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PROJECT : MSAN - RIDGE AREA
(Trench samples)

FILE #: 33573
DATE : AUGUST 22, 1990
P.O. # R0635

SAMPLE ID : ZONE A 10B

HEAD	H2O%	ASH%	V.M.%	F.C.%
(AIR DRIED)	2.62	26.53	21.17	49.68

SIZE FRACTION : + 1/4"

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H2O%	AIR DRIED V.M.%	AIR DRIED F.C.%	AIR DRIED F.S.I.
1.30 FLT	0.37	3.24	0.37	3.24	2.64	24.89	69.32	1.5
1.30x1.40	14.15	3.71	14.52	3.70	2.96	24.57	68.87	0
1.40x1.50	36.86	8.52	51.39	7.16	3.45	23.48	64.84	0
1.50x1.60	10.61	20.22	62.00	9.40	2.91	21.95	55.51	0
1.60x1.70	5.18	33.04	67.18	11.22	2.41	18.93	46.42	0
1.70x1.80	1.92	41.38	69.09	12.05	2.31	17.01	40.26	0
1.80x1.90	3.73	50.59	72.83	14.03	2.00	17.49	30.93	0
1.90x2.00	2.75	61.86	75.58	15.77	1.38	13.06	24.55	0
2.00 SNK	24.42	82.26	100.00	32.01	1.52	9.60	7.87	0

SIZE FRACTION : + 28 mesh

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H2O%	AIR DRIED V.M.%	AIR DRIED F.C.%	AIR DRIED F.S.I.
1.30 FLT	0.03	1.65	0.03	1.65	3.27	24.93	70.20	1.5
1.30x1.40	18.01	2.55	18.04	2.55	3.05	24.81	69.67	0
1.40x1.50	40.02	7.84	58.05	6.20	4.36	23.66	64.48	0
1.50x1.60	12.20	16.51	70.25	7.99	3.86	23.05	57.22	0
1.60x1.70	5.30	30.50	75.55	9.57	2.90	20.27	47.21	0
1.70x1.80	1.02	38.66	76.57	9.95	3.37	18.89	40.38	0
1.80x1.90	3.39	49.91	79.96	11.65	2.65	15.16	33.60	0
1.90x2.00	1.03	58.68	80.98	12.24	2.39	13.97	26.36	0
2.00 SNK	19.02	81.18	100.00	25.35	1.68	10.20	8.30	0

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PROJECT : HSAN - RIDGE AREA
(Trench samples)

FILE #: 33573
DATE : AUGUST 21, 1990
P.O. # R0635

SAMPLE ID : ~~8~~ 94

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HEAD	H20%	ASH%	V.M.%	F.C.%
(AIR DRIED)	6.98	22.86	23.40	46.76

SIZE FRACTION : + 1/4"

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H20%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	0.14	2.17	0.14	2.17	1.90	24.46	71.51	2
1.30x1.40	2.73	7.49	2.87	7.22	2.48	24.22	66.00	0
95 ~~1~~0x1.50	30.40	9.67	33.27	9.46	3.96	23.51	63.24	0
~~1~~.50x1.60	24.44	19.26	57.71	13.61	3.69	23.33	54.43	0
1.60x1.70	6.99	32.26	64.70	15.63	3.03	21.10	44.59	0
1.70x1.80	5.29	42.61	69.99	17.67	2.30	20.49	35.58	0
1.80x1.90	6.54	48.80	76.53	20.33	2.10	19.83	30.29	0
1.90x2.00	2.50	56.55	79.03	21.47	1.75	17.52	25.17	0
2.00 SNK	20.97	80.02	100.00	33.75	1.25	10.97	8.76	0

SIZE FRACTION : + 28 mesh

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H20%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	0.70	2.09	0.70	2.09	2.42	25.32	70.22	0
1.30x1.40	7.31	3.87	8.00	3.71	2.80	25.25	68.19	0
95 1.40x1.50	25.71	8.78	33.71	7.58	3.62	25.05	62.87	0
1.50x1.60	31.81	15.91	65.52	11.62	3.98	24.69	56.05	0
1.60x1.70	9.46	29.27	74.97	13.85	3.15	22.15	46.35	0
1.70x1.80	5.09	38.69	80.06	15.43	2.31	21.31	38.58	0
1.80x1.90	4.63	47.88	84.69	17.16	2.47	18.73	32.88	0
1.90x2.00	1.56	57.39	86.25	17.89	2.71	17.45	24.01	0
~~1~~0 SNK	13.75	78.05	100.00	26.16	1.46	12.29	9.34	0

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PROJECT : HSAN - RIDGE AREA
(Trench samples)

FILE #: 33573
DATE : AUGUST 27, 1990
P.O. # R0635

SAMPLE ID : C 8L

HEAD	H20%	ASH%	V.M.%	F.C.%
(AIR DRIED)	3.03	31.2	21.07	44.70

SIZE FRACTION : + 1/4"

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H20%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	0.29	1.30	0.29	1.30	1.61	25.17	71.94	3
1.30x1.40	6.22	7.72	6.51	7.43	2.02	23.49	66.93	1.5
1.40x1.50	25.28	14.73	31.79	13.24	2.25	21.76	61.59	0.5
1.50x1.60	13.58	26.30	45.37	17.15	2.24	20.89	51.16	0.5
1.60x1.70	8.57	35.17	53.94	20.01	2.11	20.27	43.19	0
1.70x1.80	7.00	44.79	60.94	22.86	1.94	17.86	36.28	0
1.80x1.90	3.94	52.47	64.89	24.66	2.26	16.27	30.19	0
1.90x2.00	3.95	60.88	68.84	26.74	1.75	13.13	25.31	0
2.00 SNK	31.16	81.93	100.00	43.93	1.23	8.30	9.55	0

SIZE FRACTION : + 28 mesh

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H20%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	3.24	1.25	3.24	1.25	2.25	24.73	71.80	2.5
1.30x1.40	12.64	4.73	15.88	4.02	2.39	24.60	68.39	1
1.40x1.50	22.22	11.70	38.11	8.50	3.34	23.39	61.96	0
1.50x1.60	13.84	23.42	51.95	12.47	3.11	22.16	52.04	0
1.60x1.70	8.41	33.85	60.36	15.45	2.84	20.68	43.59	0
1.70x1.80	2.97	42.03	63.33	16.70	3.35	19.24	36.79	0
1.80x1.90	7.69	51.17	71.02	20.43	3.17	17.01	30.27	0
1.90x2.00	3.51	61.12	74.53	22.35	2.47	14.28	23.64	0
2.00 SNK	25.47	79.79	100.00	36.98	1.81	9.44	10.40	0

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA
(Trench samples)

FILE #: 33573
DATE : AUGUST 29, 1990
P.O. # R0635

SAMPLE ID : # 84

HEAD	H2O%	ASH%	V.M.%	F.C.%
(AIR DRIED)	6.9	22.07	25.33	45.70

SIZE FRACTION : + 1/4"

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H2O%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	0.00	1.43	0.00	1.43	2.30	24.43	71.87	0
1.30x1.40	9.65	4.90	9.65	4.89	3.80	23.68	67.81	0
1.40x1.50	25.07	8.22	34.72	7.29	6.17	26.93	59.19	0
1.50x1.60	13.64	16.89	48.36	10.00	5.74	26.11	52.23	0
1.60x1.70	3.85	31.37	52.21	11.58	4.40	22.94	42.67	0
1.70x1.80	1.35	40.84	53.56	12.32	4.90	20.04	36.22	0
1.80x1.90	9.66	51.01	63.22	18.23	3.03	16.84	30.67	0
1.90x2.00	1.99	60.20	65.21	19.51	2.93	14.97	23.66	0
2.00 SNK	34.79	82.16	100.00	41.30	1.40	9.98	7.61	0

SIZE FRACTION : + 28 mesh

SPECIFIC GRAVITY	DRY BASIS FRACTIONAL WT%	DRY BASIS FRACTIONAL ASH%	DRY BASIS CUMULATIVE WT%	DRY BASIS CUMULATIVE ASH%	AIR DRIED H2O%	AIR DRIED V.M.%	AIR DRIED F.C.%	F.S.I.
1.30 FLT	0.07	1.55	0.07	1.55	2.55	26.22	69.72	0
1.30x1.40	8.48	3.22	8.55	3.21	2.85	25.51	68.51	0
1.40x1.50	31.29	6.86	39.83	6.08	5.40	28.22	59.89	0
1.50x1.60	25.72	13.58	65.56	9.02	5.80	28.20	53.21	0
1.60x1.70	7.44	26.45	73.00	10.80	4.53	25.50	44.72	0
1.70x1.80	2.22	36.97	75.21	11.57	4.71	22.43	37.63	0
1.80x1.90	6.19	47.30	81.40	14.28	3.76	19.65	31.07	0
1.90x2.00	1.80	56.41	83.20	15.19	3.51	17.84	24.22	0
2.00 SNK	16.80	79.47	100.00	25.99	1.39	11.79	8.45	0

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TO : CROWSNEST RESOURCES LTD.
ATTN.: TED HANNAH
PROJECT : MSA NORTH

FILE # : 33150
DATE : MARCH 5, 1990
SAMPLE TYPE : COAL

* PETRO LIL NOS. FROM CNRL LAB
AIR DRY.

PAGE : 2 A

1.6 S.G. PROX.

HOLE	SEAM	SAMPLE DEPTH	BASIS	% H2O	% ASH	% VOL.	% F.C.	% S	KCAL/KG	F.S.I.
1	~~A2~~ 10B	9 - 18	A.D.	1.25	7.56	22.05	69.14	0.30	7696	1.5
			D.B.	----	7.66	22.33	70.02	0.30	7793	
				0.11	7.71	21.89	70.29			1.0
2	~~A2R~~ 10B	27 - 33 [redacted]	A.D.	0.92	7.18	20.96	71.02	0.42	7913	3.0
			D.B.	----	7.17	21.15	71.68	0.42	7986	
				0.15	7.24	21.60	71.01			1.0
2	~~A2R~~ 10B	33 - 42 [redacted]	A.D.	0.65	7.02	22.01	70.32	0.30	7964	5.0
			D.B.	----	7.07	22.15	70.78	0.30	8016	
				0.42	7.18	22.20	70.20			6.0
3	~~A3~~ 9L	27 - 32	A.D.	0.96	8.84	20.94	69.26	0.33	7711	2.5
			D.B.	----	8.93	21.14	69.93	0.33	7786	
				0.97	9.00	20.43	69.60			2.5
3	~~A2~~ 10B	35 - 45	A.D.	0.80	8.68	21.25	69.27	0.32	7769	4.0
			D.B.	----	8.75	21.42	69.83	0.32	7832	
				0.41	8.82	21.18	69.59			3.0
4	~~B2~~ 9U	19.5 - 31 [redacted]	A.D.	0.92	13.41	21.91	63.76	0.35	7343	5.0
			D.B.	----	13.53	22.11	64.35	0.35	7411	
				0.54	13.54	21.53	64.39			5.5

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # 33629
DATE : SEPT. 4, 1990
SAMPLE TYPE : CLEAN COAL, 1.6 FLOAT

GIESELER FLUIDITY TEST

HOLE :	SEAM	STARTING TEMP. DDPM	STARTING TEMP. (DEG.C)	MAXIMUM TEMP. DDPM	MAXIMUM TEMP. (DEG.C)	FINAL TEMP. DDPM	FINAL TEMP. (DEG.C)	RANGE
5	9L	1	418	2	451	0	493	75
12	8L	1	407	6	444	0	492	85
12	8U+L	1	426	2	447	0	494	68
13	9U	1	424	5	460	0	490	66
20	8L	1	411	11	460	0	494	83
20	8U+L	1	427	2	460	0	494	67

DILATATION TEST

		ST (DEG.C)	MDT (DEG.C)	MC %	MD %	G
5	9L	404	--	18%@488 Deg C	--	--
12	8L	----------	NO ACTIVITY	----------		
12	8U+L	416	--	20%@485 Deg C	--	--
13	9U	392	465	22	-12	0.7754
20	8L	395	467	19	-11	0.7615
20	8U+L	410	--	21%@482 Deg C	--	--

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TO : CROWSNEST RESOURCES LTD.
ATTN.: TED HANNAH
PROJECT : MSA NORTH

FILE # : 33150
DATE : MARCH 8, 1990
SAMPLE TYPE : COAL

PAGE 3A

			FLUIDITY TEST						
HOLE	SEAM	SAMPLE DPTH	START. TEMP. DDPM	(DEG.C)	MAXIM. TEMP. DDPM	(DEG.C)	FINAL TEMP. DDPM	(DEG.C)	RANGE
53	B	10.5 - 48	1	385	7	444	0	482	97
58	B	14 - 52	1	427	7	450	0	479	52
58	C1	67.5 - 70	1	371	431	450	0	487	116
58	C2	72 - 77.5	1	379	110	450	0	486	107
59	C2	66.5 - 72	1	411	36	452	0	480	69
61	B4	23 - 38	1	423	5	453	0	480	57
61	C2	61 - 71	1	376	33	450	0	478	102
46	B	92.5 - 123	1	411	65	449	0	487	76
1	10B	9 - 10	1	442	--	--	--	--	--
2	10B	27 - 33	1	449	--	--	--	--	--
2	10B	33 - 42	1	432	9	456	0	487	55
3	9L	27 - 32	1	408	4	429	0	483	75
3	10B	35 - 45	1	410	11	459	0	488	78
4	9L	19.5 - 31	1	414	8	456	0	491	77

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ATTN.: TED HANNAH
PROJECT : MSA NORTH

FILE # : 33150
DATE : MARCH 8, 1990
SAMPLE TYPE : COAL

PAGE 3B

HOLE	SEAM	SAMPLE DPTH	ST (DEG.C)	MDT (DEG.C)	MC%	MD%	G
			---------- DILATATION TEST ----------				
53	B	10.5 - 48	398	--	18 % @ 449 DEG.C		
58	B	14 - 52	410	--	20 % @ 455 DEG.C		
58	C1	67.5 - 70	380	452	21	100	1.059
58	C2	72 - 77.5	386	455	20	31	1.018
59	C2	66.5 - 72	407	467	11	-4	0.872
61	B4	23 - 38	387	--	15 % @ 455 DEG.C		
61	C2	61 - 71	389	467	23	17	1.176
46	B	92.5 - 123	395	470	25	25	1.000
			---------- NO ACTIVITY ----------				
1	10B	9 - 10	422	--	17 % @ 491 DEG.C		
2	10B	27 - 33	404	467	21	-12	0.769
2	10B	33 - 42	413	--	26 % @ 497 DEG.C		
3	9L	27 - 32	398	464	22	-16	0.673
3	10B	35 - 45	412	479	19	-17	0.425
4	9U	19.5 - 31					

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # 33573
DATE : AUG 29, 1990
REPORTED BY : ARNO HOOGVELD

PAGE : 11

1.6 FLT

SAMPLE	SIZE	%SiO2	%Al2O3	%TiO2	%Fe2O3	%CaO	%MgO	%Na2O	%K2O	%P2O5	%SO3	%Undet.
		MINERAL ANALYSIS OF ASH										
10B	+1/4 "	54.91	33.58	1.25	2.76	3.72	0.68	0.14	0.45	1.30	0.54	0.67
10B	+28 mesh	56.23	31.78	1.57	2.35	3.98	0.75	0.15	0.61	0.90	0.80	0.88
10B	+1/4 "	57.51	29.96	1.15	7.27	1.83	0.62	0.11	0.48	0.25	0.47	0.35
	+28 mesh	55.14	31.08	1.56	5.21	3.03	1.13	0.20	0.54	0.42	0.92	0.77
9U	+1/4 "	52.02	30.44	1.09	8.02	3.74	1.51	0.11	0.59	1.20	0.66	0.62
9U	+28 mesh	54.39	30.47	1.52	4.17	4.63	1.89	0.07	0.40	0.62	1.16	0.68
8L	+1/4 "	54.25	28.06	0.96	7.09	3.96	0.67	0.15	0.94	2.70	0.53	0.69
8L	+28 mesh	56.12	26.52	1.44	5.66	4.41	1.43	0.13	1.15	1.06	1.73	0.35
8U	+1/4 "	51.13	24.56	1.24	1.07	12.10	4.98	0.17	0.99	1.26	2.06	0.44
8U	+28 mesh	44.30	21.55	1.52	1.03	20.01	6.31	0.19	0.79	1.02	2.94	0.34

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # 33573-1
DATE : SEPTEMBER 21, 1990
REPORTED BY : ARNO HOOGVELD

MINERAL ANALYSIS OF ASH

SAMPLE	SIZE	%SiO2	%Al2O3	%TiO2	%Fe2O3	%CaO	%MgO	%Na2O	%K2O	%P2O5	%SO3	%Undet.
1DB	-28 mesh	50.50	26.82	1.80	7.36	6.83	1.68	0.15	0.69	0.45	3.29	0.43
1DB	-28 mesh	55.85	27.97	1.57	6.46	2.44	1.00	0.11	1.13	0.27	2.26	0.94
9U	-28 mesh	52.89	26.29	1.63	7.70	4.52	1.83	0.21	0.93	0.59	2.63	0.78
8L	-28 mesh	55.56	20.85	1.46	6.99	5.99	1.72	0.11	1.34	0.87	4.33	0.78
8U	-28 mesh	48.09	25.45	1.73	2.23	12.41	4.01	0.12	0.73	0.56	4.19	0.48

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : NSAN - RIDGE AREA

FILE # 33629
DATE : SEPTEMBER 7, 1990
REPORTED BY : ARND HOOGVELD

1.6 FLT

HOLE	DEPTH	SEAM	MINERAL ANALYSIS OF ASH										
			%SiO2	%Al2O3	%TiO2	%Fe2O3	%CaO	%MgO	%Na2O	%K2O	%P2O5	%SO3	%Undet.
5	78 - 86	9L	57.54	32.32	2.15	2.04	2.30	0.31	0.07	0.39	1.34	0.35	1.19
12	64.5 - 78.5	8L	62.67	28.37	1.96	1.57	1.55	0.23	0.08	0.51	1.45	0.22	1.39
	18.5 - 34.5	8U+L	60.95	29.94	2.03	0.81	1.57	0.23	0.05	0.46	1.71	0.38	1.87
13	34.5 - 56	9L	62.21	28.93	1.61	1.84	2.00	0.30	0.06	0.64	1.63	0.29	0.49
20	153.5 - 164	8L	62.34	28.51	2.02	1.11	1.93	0.39	0.06	0.67	1.39	0.62	0.96
20	122 - 137.5 142 - 147	8U+L	59.37	28.46	2.10	1.58	2.78	0.68	0.10	0.38	1.81	1.90	0.84

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TO : CROWSNEST RESOURCES LTD.
ATTN.: TED HANNAH
PROJECT : MSA NORTH

FILE # : 33150
DATE : MARCH 9, 1990
SAMPLE TYPE : COAL

PAGE #: 4A.

			ASH ANALYSIS										
HOLE	SEAM	SAMPLE DEPTH	%SiO2	%Al2O3	%Fe2O3	%MgO	%CaO	%Na2O	%K2O	%TiO2	%P2O5	%SO3	%Undet.
53	B	10.5 - 46	59.28	30.29	3.48	0.39	1.89	0.07	0.40	1.84	0.23	0.34	1.79
58	B	14 - 52	61.81	28.50	2.21	0.50	2.23	0.06	1.00	1.69	0.65	0.37	0.98
58	C1	67.5 - 70	63.78	28.13	1.24	0.45	1.08	0.06	0.96	2.00	0.67	0.27	1.36
58	C2	72 - 77.5	63.83	29.64	0.83	0.26	0.73	0.07	0.63	1.95	0.40	0.10	1.56
59	C2	66.5 - 72	65.38	29.27	1.03	0.33	0.51	0.06	0.63	1.61	0.18	0.19	0.81
61	B3	18 - 23	62.34	28.89	1.76	0.45	1.62	0.06	0.82	1.67	0.19	0.28	1.92
61	B4	23 - 38	56.66	29.54	4.73	1.02	4.03	0.05	0.31	1.91	0.10	1.15	0.50
61	C2	61 - 71	63.22	30.93	1.31	0.26	0.62	0.06	0.46	2.11	0.18	0.26	0.59
46	B	92.5 - 123	56.04	29.41	4.19	0.89	4.21	0.08	0.41	2.01	0.75	1.39	0.62
1	10B	9 - 10	55.65	31.14	2.99	0.45	4.34	0.07	0.34	1.80	1.63	0.75	0.84
2	10B	27 - 33	55.99	32.06	2.74	0.29	3.58	0.07	0.35	1.35	2.02	0.30	1.25
2	10B	33 - 42	57.30	32.38	1.62	0.19	3.04	0.08	0.31	1.76	1.78	0.14	1.40
3	9L	27 - 32	59.64	30.52	3.33	0.37	1.71	0.05	0.38	1.68	0.88	0.27	1.17
3	10B	35 - 45	58.56	33.71	2.14	0.24	0.96	0.06	0.24	1.99	0.46	0.27	1.37
4	9U	19.5 - 31	60.49	30.89	2.90	0.39	1.13	0.05	0.51	1.79	0.55	0.50	0.80

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # 33573
DATE : AUG 29, 1990
REPORTED BY : ARNO HOOGVELD

PAGE 10

1.6 FLT

SAMPLE	SIZE	ULTIMATE ANALYSIS %H2O	%C	%H	%N	%ASH	%S	%O
10B	+1/4 "	3.43	73.34	3.64	0.82	8.23	0.25	10.29
10B	+28 mesh	3.45	72.14	3.39	0.88	8.43	0.27	11.44
10B	+1/4 "	3.58	70.19	3.31	0.62	9.71	0.26	12.33
10B	+28 mesh	3.80	71.07	3.72	0.76	7.74	0.31	12.60
9U	+1/4 "	3.79	65.51	3.10	0.60	13.61	0.32	13.07
9U	+28 mesh	3.99	67.29	3.24	0.65	11.29	0.30	13.24
8L	+1/4 "	2.08	67.94	4.13	0.74	17.25	0.65	7.21
8L	+28 mesh	2.58	70.46	3.93	0.83	12.59	0.73	8.88
8U	+1/4 "	5.14	65.68	2.89	0.71	10.41	0.21	14.96
8U	+28 mesh	4.77	66.93	3.19	0.69	9.19	0.27	14.96

NOTE: Hydrogen and oxygen do not include H and O from sample moisture.

Value of oxygen by difference.

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # 33573-1
DATE : SEPT. 10, 1990
REPORTED BY : ARNO HOOGVELD

		ULTIMATE ANALYSIS						
SAMPLE	SIZE	%H2O	%C	%H	%N	%ASH	%S	%O
10B	-28 mesh	5.80	68.29	4.02	0.94	9.77	0.43	10.75
10B	-28 mesh	4.05	64.67	3.23	0.93	14.22	0.31	12.59
9U	-28 mesh	7.74	59.54	3.32	0.58	15.81	0.31	12.70
8L	-28 mesh	5.19	62.36	3.37	0.69	18.65	0.64	9.10
8U	-28 mesh	8.23	60.83	2.97	0.77	13.32	0.30	13.58

NOTE: Hydrogen and oxygen do not include H and O from sample moisture.

Value of oxygen by difference.

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TO : CROWSNEST RESOURCES LTD.
ATTN : TED HANNAH
PROJECT : MSAN - RIDGE AREA

FILE # 33629
DATE : SEPTEMBER 7, 1990
REPORTED BY : ARNO HOOGVELD

1.6 FLT

HOLE	DEPTH	SEAM	ULTIMATE ANALYSIS %H2O	%C	%H	%N	%ASH	%S	%O
5	78 - 86	9L	0.92	78.07	4.00	0.71	9.48	0.35	6.47
12	64.5 - 78.5	8L	0.99	77.09	4.84	0.82	11.66	0.61	3.99
12	18.5 - 34.5	8u+L	1.06	78.57	4.31	0.89	7.39	0.30	7.48
13	34.5 - 56	9L	0.96	76.03	4.95	0.80	11.27	0.43	5.56
20	153.5 - 164	8L	0.97	72.85	4.47	0.84	11.24	0.56	9.07
20	122 - 137.5 142 - 147	8u+L	0.98	79.32	4.46	0.88	7.23	0.32	6.81

NOTE: Hydrogen and oxygen do not include H and O from sample moisture.

Value of oxygen by difference.

Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM 10B

Laboratory number M10119

Sample AR +28 mesh TRENCH SAMPLE

Ash 9.50% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.27 ← LOWER THAN DRILL HOLES.
Composition Balance Index		2.73
Calculated Strength Index		4.70
Calculated Stability Index		44
Estimated Coke Strength DI 30/15		91.6
Predicted Free Swelling Index		5

DISTRIBUTION OF VITRINITE TYPES

V-11	%	14
V-12	%	49
V-13	%	36
V-14	%	1

REACTIVE COMPONENTS

Vitrinite	%	32.9
Exinite	%	0.1
Reactive Semifusinite	%	22.2
Total Reactives	%	55.2

INERT COMPONENTS

Macrinite	%	1.5
Inert Semifusinite	%	27.6
Fusinite	%	6.8
Inertodetrinite	%	3.7
Mineral Matter	%	5.2
Total Inerts	%	44.8

Analysis Completed : September 13, 1990 11:00 AM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM 10B

Laboratory number M10123

Sample A +28 mesh TRENCH SAMPLE

Ash 9.50% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.27
Composition Balance Index		2.50
Calculated Strength Index		4.73
Calculated Stability Index		46
Estimated Coke Strength DI 30/15		92.2
Predicted Free Swelling Index		5

DISTRIBUTION OF VITRINITE TYPES

V - 11	%	10
V - 12	%	57
V - 13	%	33

DIFFERENT DISTRIBUTION

REACTIVE COMPONENTS

Vitrinite	%	36.5
Exinite	%	0.0
Reactive Semifusinite	%	20.8
Total Reactives	%	57.3

INERT COMPONENTS

Macrinite	%	2.4
Inert Semifusinite	%	27.4
Fusinite	%	5.9
Inertodetrinite	%	1.8
Mineral Matter	%	5.2
Total Inerts	%	42.7

Analysis Completed : September 13, 1990 7:59 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM 10B

SAMPLE IDENTIFICATION

Laboratory number M9579
MSA North Hole 2 [redacted]
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.29
Composition Balance Index		3.56
Calculated Strength Index		4.71
Calculated Stability Index		35
Estimated Coke Strength DI 30/15		88.2
Predicted Free Swelling Index		<4

DISTRIBUTION OF VITRINITE TYPES

V - 11	%	10
V - 12	%	39
V - 13	%	47
V - 14	%	4

REACTIVE COMPONENTS

Vitrinite	%	28.1
Exinite	%	0.0
Reactive Semifusinite	%	21.6
Total Reactives	%	49.7

INERT COMPONENTS

Macrinite	%	0.8
Inert Semifusinite	%	42.8
Fusinite	%	1.7
Inertodetrinite	%	0.0
Mineral Matter	%	5.0
Total Inerts	%	50.3

Analysis Completed : March 14, 1990 12:30 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM. 10B

Laboratory number M9580

MSA North Hole 2 [redacted]

Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.29
Composition Balance Index		2.25
Calculated Strength Index		5.02
Calculated Stability Index		52
Estimated Coke Strength DI 30/15		93.4
Predicted Free Swelling Index		6

DISTRIBUTION OF VITRINITE TYPES

V - 11	%	7
V - 12	%	46
V - 13	%	45
V - 14	%	2

REACTIVE COMPONENTS

Vitrinite	%	39.1
Exinite	%	0.0
Reactive Semifusinite	%	21.7
Total Reactives	%	60.8

INERT COMPONENTS

Macrinite	%	0.3
Inert Semifusinite	%	30.4
Fusinite	%	2.8
Inertodetrinite	%	0.7
Mineral Matter	%	5.0
Total Inerts	%	39.2

Analysis Completed : March 14, 1990 2:27 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM 10B

Laboratory number M9578
MSA North Hole 1 9-18m
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance....%	1.29
Composition Balance Index....	2.57
Calculated Strength Index....	4.88
Calculated Stability Index....	47
Estimated Coke Strength DI 30/15....	92.4
Predicted Free Swelling Index....	5.5 - 6

DISTRIBUTION OF VITRINITE TYPES

V - 11....%	8
V - 12....%	47
V - 13....%	44
V - 14....%	1

REACTIVE COMPONENTS

Vitrinite....%	37.6
Exinite....%	0.1
Reactive Semifusinite....%	19.7
Total Reactives....%	57.4

INERT COMPONENTS

Macrinite....%	1.0
Inert Semifusinite....%	32.7
Fusinite....%	3.2
Inertodetrinite....%	0.7
Mineral Matter....%	5.0
Total Inerts....%	42.6

Analysis Completed : March 13, 1990 7:06 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM 10B

SAMPLE IDENTIFICATION

Laboratory number M9582
MSA North Hole 3 35-45m
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance....%	1.28
Composition Balance Index....	2.87
Calculated Strength Index....	4.77
Calculated Stability Index....	43
Estimated Coke Strength DI 30/15....	91.3
Predicted Free Swelling Index....	5

DISTRIBUTION OF VITRINITE TYPES

V-11....%	8
V-12....%	49
V-13....%	42
V-14....%	1

REACTIVE COMPONENTS

Vitrinite....%	33.8
Exinite....%	0.1
Reactive Semifusinite....%	20.7
Total Reactives....%	54.6

INERT COMPONENTS

Macrinite....%	2.1
Inert Semifusinite....%	35.3
Fusinite....%	2.7
Inertodetrinite....%	0.3
Mineral Matter....%	5.0
Total Inerts....%	45.4

Analysis Completed : March 14, 1990 5:20 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM 9L.

SAMPLE IDENTIFICATION

Laboratory number M10131
Hole #5 7277-7284
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance.....%	1.28
Composition Balance Index.....	4.93
Calculated Strength Index.....	4.64
Calculated Stability Index.....	19
Estimated Coke Strength DI 30/15.....	78.3
Predicted Free Swelling Index.....	<<4

DISTRIBUTION OF VITRINITE TYPES

V - 11.....%	7
V - 12.....%	47
V - 13.....%	45
V - 14.....%	1

REACTIVE COMPONENTS

Vitrinite.....%	20.5
Exinite.....%	0.4
Reactive Semifusinite.....%	20.5
Total Reactives.....%	41.4

INERT COMPONENTS

Macrinite.....%	4.7
Inert Semifusinite.....%	42.8
Fusinite.....%	3.7
Inertodetrinite.....%	2.4
Mineral Matter.....%	5.0
Total Inerts.....%	58.6

Analysis Completed : September 4, 1990 10:28 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM 9L

SAMPLE IDENTIFICATION

Laboratory number M9581
MSA North Hole 3 27-32m
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance..... %	1.26
Composition Balance Index.....	2.80
Calculated Strength Index.....	4.56
Calculated Stability Index.....	41
Estimated Coke Strength DI 30/15.....	90.6
Predicted Free Swelling Index.....	4.5

DISTRIBUTION OF VITRINITE TYPES

V - 11..... %	5
V - 12..... %	70
V - 13..... %	25

REACTIVE COMPONENTS

Vitrinite..... %	31.6
Exinite..... %	0.2
Reactive Semifusinite..... %	22.6
Total Reactives..... %	54.4

INERT COMPONENTS

Macrinite..... %	2.3
Inert Semifusinite..... %	35.1
Fusinite..... %	2.4
Inertodetrinite..... %	0.8
Mineral Matter..... %	5.0
Total Inerts..... %	45.6

Analysis Completed : March 14, 1990 3:58 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM 9U

Laboratory number M10121

Sample B +28 mesh TRENCH SAMPLE

Ash 9.50% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.19
Composition Balance Index		2.84
Calculated Strength Index		4.09
Calculated Stability Index		33
Estimated Coke Strength DI 30/15		87.2
Predicted Free Swelling Index		<4

LOWER THAN DRILL HOLES.

DISTRIBUTION OF VITRINITE TYPES

V - 10	%	4
V - 11	%	43
V - 12	%	47
V - 13	%	6

DIFFERENT DISTRIBUTION THAN DRILLHOLE

REACTIVE COMPONENTS

Vitrinite	%	31.5
Exinite	%	0.1
Reactive Semifusinite	%	19.4
Total Reactives	%	51.0

LOWER THAN DRILLHOLES

INERT COMPONENTS

Macrinite	%	3.2
Inert Semifusinite	%	26.7
Fusinite	%	11.4
Inertodetrinite	%	2.5
Mineral Matter	%	5.2
Total Inerts	%	49.0

HIGHER

Analysis Completed : September 13, 1990 2:08 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM 9U.

SAMPLE IDENTIFICATION

Laboratory number M9583
MSA North Hole 4 19.5-31
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.23
Composition Balance Index		1.63
Calculated Strength Index		4.70
Calculated Stability Index		55
Estimated Coke Strength DI 30/15		93.7
Predicted Free Swelling Index		7

DISTRIBUTION OF VITRINITE TYPES

V - 10	%	1
V - 11	%	21
V - 12	%	66
V - 13	%	12

REACTIVE COMPONENTS

Vitrinite	%	47.6
Exinite	%	0.3
Reactive Semifusinite	%	17.9
Total Reactives	%	65.8

INERT COMPONENTS

Macrinite	%	3.9
Inert Semifusinite	%	22.6
Fusinite	%	2.0
Inertodetrinite	%	0.7
Mineral Matter	%	5.0
Total Inerts	%	34.2

Analysis Completed : March 14, 1990 7:39 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM 9u

Laboratory number M10132
Hole #13 7322-7341
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance....%	1.21
Composition Balance Index....	1.56
Calculated Strength Index....	4.62
Calculated Stability Index....	55
Estimated Coke Strength DI 30/15....	93.7
Predicted Free Swelling Index....	7

DISTRIBUTION OF VITRINITE TYPES

V - 11....%	36
V - 12....%	57
V - 13....%	7

REACTIVE COMPONENTS

Vitrinite....%	49.5
Exinite....%	1.3
Reactive Semifusinite....%	15.3
Total Reactives....%	66.1

INERT COMPONENTS

Macrinite....%	1.9
Inert Semifusinite....%	21.6
Fusinite....%	4.6
Inertodetrinite....%	0.8
Mineral Matter....%	5.0
Total Inerts....%	33.9

Analysis Completed : September 4, 1990 10:42 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SAMPLE IDENTIFICATION SEAM 8L

Laboratory number M10125

Sample C +28 mesh TRENCH SAMPLE

Ash 9.50% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.22
Composition Balance Index		1.37
Calculated Strength Index		4.62
Calculated Stability Index		58
Estimated Coke Strength DI 30/15		93.9
Predicted Free Swelling Index		8

← LOWER THAN DRILL HOLES

DISTRIBUTION OF VITRINITE TYPES

V - 10	%	1
V - 11	%	28
V - 12	%	69
V - 13	%	2

REACTIVE COMPONENTS

Vitrinite	%	56.0
Exinite	%	0.0
Reactive Semifusinite	%	13.0
Total Reactives	%	69.0

← HIGHER THAN DRILL HOLES

INERT COMPONENTS

Macrinite	%	1.5
Inert Semifusinite	%	19.0
Fusinite	%	4.6
Inertodetrinite	%	0.7
Mineral Matter	%	5.2
Total Inerts	%	31.0

Analysis Completed : September 14, 1990 9:24 AM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAMS 8L TOTAL

SAMPLE IDENTIFICATION

Laboratory number M10130
Hole #12 7505-7520
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.26
Composition Balance Index		2.49
Calculated Strength Index		4.61
Calculated Stability Index		45
Estimated Coke Strength DI 30/15		91.9
Predicted Free Swelling Index		5

DISTRIBUTION OF VITRINITE TYPES

V - 11	%	8
V - 12	%	70
V - 13	%	21
V - 14	%	1

REACTIVE COMPONENTS

Vitrinite	%	39.0
Exinite	%	0.4
Reactive Semifusinite	%	17.6
Total Reactives	%	57.0

INERT COMPONENTS

Macrinite	%	2.0
Inert Semifusinite	%	30.4
Fusinite	%	3.6
Inertodetrinite	%	2.0
Mineral Matter	%	5.0
Total Inerts	%	43.0

Analysis Completed : September 4, 1990 6:13 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM BL TOTAL

SAMPLE IDENTIFICATION
Laboratory number M10129
Hole #20 7743-7749
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance.....%	1.23
Composition Balance Index.....	1.98
Calculated Strength Index.....	4.50
Calculated Stability Index.....	49
Estimated Coke Strength DI 30/15.....	92.9
Predicted Free Swelling Index.....	6

DISTRIBUTION OF VITRINITE TYPES

V - 10.....%	1
V - 11.....%	24
V - 12.....%	69
V - 13.....%	6

REACTIVE COMPONENTS

Vitrinite.....%	43.3
Exinite.....%	0.1
Reactive Semifusinite.....%	17.5
Total Reactives.....%	60.9

INERT COMPONENTS

Macrinite.....%	2.2
Inert Semifusinite.....%	27.0
Fusinite.....%	3.8
Inertodetrinite.....%	1.1
Mineral Matter.....%	5.0
Total Inerts.....%	39.1

Analysis Completed : September 4, 1990 5:59 PM

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Petrographic Analysis

for

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SAMPLE IDENTIFICATION SEAM 8u

Laboratory number M10127

Sample D +28 mesh TRENCH SAMPLE

Ash 9.50% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance	%	1.19
Composition Balance Index		1.87
Calculated Strength Index		4.38
Calculated Stability Index		49
Estimated Coke Strength DI 30/15		92.9
Predicted Free Swelling Index		5.5 - 6

LOWER THAN DRILL HOLES

DISTRIBUTION OF VITRINITE TYPES

V - 10	%	10
V - 11	%	39
V - 12	%	45
V - 13	%	6

LOWER THAN DRILL HOLES.

REACTIVE COMPONENTS

Vitrinite	%	43.2
Exinite	%	0.0
Reactive Semifusinite	%	17.8
Total Reactives	%	61.0

INERT COMPONENTS

Macrinite	%	1.0
Inert Semifusinite	%	23.9
Fusinite	%	8.3
Inertodetrinite	%	0.6
Mineral Matter	%	5.2
Total Inerts	%	39.0

Analysis Completed : September 14, 1990 11:38 AM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM Bu

SAMPLE IDENTIFICATION

Laboratory number M10133
Hole #12 7464-7500
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance..... %	1.21
Composition Balance Index.....	1.67
Calculated Strength Index.....	4.49
Calculated Stability Index.....	53
Estimated Coke Strength DI 30/15.....	93.5
Predicted Free Swelling Index.....	6.5

DISTRIBUTION OF VITRINITE TYPES

V - 10..... %	3
V - 11..... %	35
V - 12..... %	60
V - 13..... %	2

REACTIVE COMPONENTS

Vitrinite..... %	46.9
Exinite..... %	1.1
Reactive Semifusinite..... %	16.2
Total Reactives..... %	64.2

INERT COMPONENTS

Macrinite..... %	1.5
Inert Semifusinite..... %	25.7
Fusinite..... %	2.6
Inertodetrinite..... %	1.0
Mineral Matter..... %	5.0
Total Inerts..... %	35.8

Analysis Completed : September 4, 1990 10:57 PM

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Petrographic Analysis

for

Crows Nest Resources Ltd.

SEAM 8.u

SAMPLE IDENTIFICATION

Laboratory number M10128
Hole #20 7721-7741
Ash 9.00% Sulphur 0.40%

PETROGRAPHIC INDICES

Mean Maximum Reflectance.....%	1.22
Composition Balance Index.....	2.44
Calculated Strength Index.....	4.34
Calculated Stability Index.....	42
Estimated Coke Strength DI 30/15.....	91.0
Predicted Free Swelling Index.....	4.5 - 5

DISTRIBUTION OF VITRINITE TYPES

V - 11.....%	29
V - 12.....%	65
V - 13.....%	6

REACTIVE COMPONENTS

Vitrinite.....%	40.7
Exinite.....%	0.9
Reactive Semifusinite.....%	14.1
Total Reactives.....%	55.7

INERT COMPONENTS

Macrinite.....%	3.2
Inert Semifusinite.....%	30.6
Fusinite.....%	4.2
Inertodetrinite.....%	1.3
Mineral Matter.....%	5.0
Total Inerts.....%	44.3

Analysis Completed : September 4, 1990 3:34 PM

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ENCLOSURE 13: TEST PIT QUALITY DATA

The M.S.A.N. test pit was intended to be an attempt to obtain bulk samples of individual seams that would be large enough to run through either the thermal or the metallurgical plant to obtain some idea of their individual cleaning characteristics. It was hoped that this data would then be used to determine how these coals could be blended with other Line Creek seams and still match the sales contract quality specifications.

Samples were collected from the following seams:

8U, 8L1, 9U, 9L and 10B.

Unfortunately, due to inadequate coordination at the Plant, the 8U and 8L1 sample was mixed with other coals and not processed by itself. Therefore there is no data available for these seams.

Samples were processed for seams 9U, 9L and 10B with data being obtained for 9U through the metallurgical plant, 9L through the metallurgical and thermal plants and 10B through the thermal plant.

All available data is attached:

9U SEAM - Bulk sample processed through Line Creek Metallurgical Plant

Feed Ash - 35.6%
Raw FSI - 1.0

Size Distribution

+1"	8.5%
1"x 1/2"	12.4%
1/2" x 1/4"	10.4%
1/4" x 28	45.5%
28 x 48	13.4%
48 x 100	3.4%
100 x 200	3.7%
-200	2.7%

	RAW ASH	WEIGHT	CLEAN ASH	YIELD	REJECT ASH
+ 28 mesh	39.9%	76.8%	14.6%	58.7%	75.8%
- 28 mesh	18.4%	23.2%	13.8%	60.9%	28.2%

Coarse clean coal - 14.6% ash
Bird product - 13.8% ash
Coarse reject - 75.8% ash
Belt press - 28.2% ash

Total clean coal - 13.6% ash
- 0.57% Res. Moist.
- 21.16% volatiles
- 6467.07 cal/gm

Coarse circuit recovery - 58.7%
Fine circuit recovery - 68.1%
Overall - 60.9%

9L SEAM - Bulk sample processed through Line Creek Metallurgical Plant

Feed Ash - 26.2%
Raw FSI - 0.5

Size Distribution

+1"	2.7%
1"x 1/2"	3.4%
1/2" x 1/4"	2.5%
1/4" x 28	87.0%
28 x 48	2.0%
48 x 100	0.8%
100 x 200	0.9%
-200	0.7%

	RAW ASH	WEIGHT	CLEAN ASH	YIELD	REJECT ASH
+ 28 mesh	38.8%	95.6%	14.0%	61.7%	78.3%
- 28 mesh	16.8%	4.4%	12.2%	69.5%	27.3%

Coarse clean coal - 14.0% ash
Bird product - 12.2% ash
Coarse reject - 78.3% ash
Belt press - 27.3% ash

Total clean coal - 13.92% ash
- 0.71% Res. Moist.
- 21.77% volatiles
- 7301.19 cal/gm

Coarse circuit recovery - 61.7%
Fine circuit recovery - 69.5%
Overall - 62.0%

9L SEAM - Bulk sample processed through Line Creek Thermal Plant

Feed ash - 22.2%
Raw FSI - 0.0
Raw Moist. - 11.92%

+ 4.75	508.5 tonnes	(59.82%)
- 4.75	341.5 tonnes	(40.18%)
	850.0 tonnes	

Prewet screen	-	18.9% ash	0.5 FSI
Coarse clean coal	-	10.9% ash	0.5 FSI
Coarse reject	-	74.1% ash	0.0 FSI
Raw coal undersize	-	17.2% ash	0.0 FSI

Clean coal - 1.15% Resid. Moist.
- 21.03% volatiles
- 15.1% Ash
- 0.5 FSI
- 6718.26 cal/gm
- 11.5% Moist.

10B SEAM - Bulk samples processed through Line Creek Thermal Plant - Samples numbered (1), (2) and (3)

SAMPLE NO.	1	2	3
Feed Ash %	21.2	22.3	21.0
Raw FSI	0.5	0.5	-
Raw Moist. %	11.59	9.57	-

SAMPLE NO.	1	2	3
+ 4.75	482.5 t. (48.25%)	1392.4 t. (63.29%)	487.5 t. (32.5%)
- 4.75	517.5 t. (51.75%)	807.6 t. (36.71%)	1012.5 t. (67.5%)
	1000.0 t.	2200.0 t.	1500.0 t.

SAMPLE NO.	1	2	3
Prewet Screen	25.1% ash	20.5% ash	21.7% ash
Coarse Clean Coal	14.1% ash	12.7% ash	9.8% ash
Coarse Reject	71.6% ash	75.1% ash	74.8% ash
Raw Coal Undersize	16.5% ash	16.0% ash	14.9% ash

CLEAN COAL

SAMPLE NO.	1	2	3
Resid. Moist.	0.38	0.69	-
Volatiles	20.62	21.70	-
Ash	15.1	15.9	15.1
FSI	0.5	0.5	-
cal/gm	6549.79	6922.84	-
Moisture	11.5	15.1	-