

4438

GEOPHYSICAL REPORT

ON

LAD 1 - 88 MINERAL CLAIMS

CARIBOO MINING DIVISION

BRITISH COLUMBIA

1^o quadrilateral 53^o 121^o N.W.

by

N.D. McKechnie, P.Eng.

93H / 13W

Claims held by John Grzyb

Work done between June 21 and June 24, 1972 inclusive

Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 4438 MAP

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Property	1
Location	1
Access	1
Survey Control	2
Instrumentation	2
Personnel	2
Geology	2
Scintillometer Survey	4
Recommendations	4
Apendix - scintillometer readings	7
Certification	11

LIST OF ILLUSTRATIONS

- Fig. 1 #1 Location and Claim Maps
Fig. 2 #2 Section at Garraway Mine
Fig. 3 #3 Scintillometer Readings, Lad 2, 4, 6 and 8
Fig. 4 #4 Scintillometer Readings, Lad 66
Fig. 5 #5 Proposed Diamond Drilling

Geophysical Report on the
Lad 1 - 88 Mineral Claims
Cariboo Mining Division

INTRODUCTION

The following report on the Lad 1 - 88 Mineral Claims, hereinafter referred to as the Lad Group, was prepared on instructions from Mr. A.J. Garraway.

This report is based on data obtained by the writer from scintillometer surveys at two locations, the first on Lad 2, 4, 6 and 8 claims, the second on Lad 66 claim.

Supplementary data from records of the Garraway Mine of Northern Coal Mines Ltd., two and one half miles northwest of the Lad Group, was supplied by Mr. Garraway.

The object of the investigation is to explore for an extension of uranium-bearing beds known to occur at the Garraway Mine.

PROPERTY

The property is comprised of 88 mineral claims held by record as Lad 1 - 88, in the name of John Grzyb. Registration numbers were not available at time of writing:

<u>Claims</u>	<u>Tag Nos.</u>	<u>Date Recorded</u>
Lad 1 - 20	223111M - 223130	April 24, 1972
Lad 21 - 48	319969M - 319996	April 24, 1972
Lad 49 -	279260M - 279299	May 31, 1972

LOCATION

The claims lie on the southwestward side of the Bowron River (Fig. 1) at some 30 miles upstream from its confluence with the Fraser River. Topographically, they are near an eastward margin of the Fraser Plateau which, northeastward, merges with the northwestern extremity of the Cariboo Range. Elevations on the property range from under 2500 feet to about 2700 feet above mean sea level.

Topography on the scale of 1:50,000 is shown on Map 93H/13W, Hutton, available from the Department of Lands, Victoria.

ACCESS

The claims group is reached by automobile via Highway 16 to 22 miles east of Prince George and thence southeastward on a logging road along the Bowron River Valley for about 30 miles to the property. Living accommodation is provided at present at the Garraway Mine camp, 28 miles from Highway 16.

SURVEY CONTROL

On claims Lad 2,4, 6 and 8 a base line was cut out for 6000 feet along the centre line of the claims. Cross lines were cut at 200 foot intervals for a distance of 100 feet on either side of the base line. Check measurements were taken by a plastic-coated, graduated, nylon line, 300 feet long, along the base line and the cross lines as the scintillometer readings were taken. Cross lines L14 and L30 were extended to 800 feet and 675 feet westward, and 700 feet and 700 feet eastward respectively. Scintillometer readings were taken at 25 foot intervals along the cross lines and for the first thousand feet along the base line. Directional control was by hand compass.

On the Lad 66 claim (Fig. 4) lines were measured along two bulldozer trenches in overburden, and a third line was measured across the trenches. Scintillometer readings were taken along all three lines at 25 foot intervals. Directions were read by hand compass.

INSTRUMENTATION

The instrument used was a McPhar scintillometer, serial number 168-09, rented from McPhar Geophysics Ltd., Vancouver.

Readings were taken on the XI and X10 settings at T2 (uranium plus thorium). Background readings ranged from 30 to 40 counts per minute.

PERSONNEL

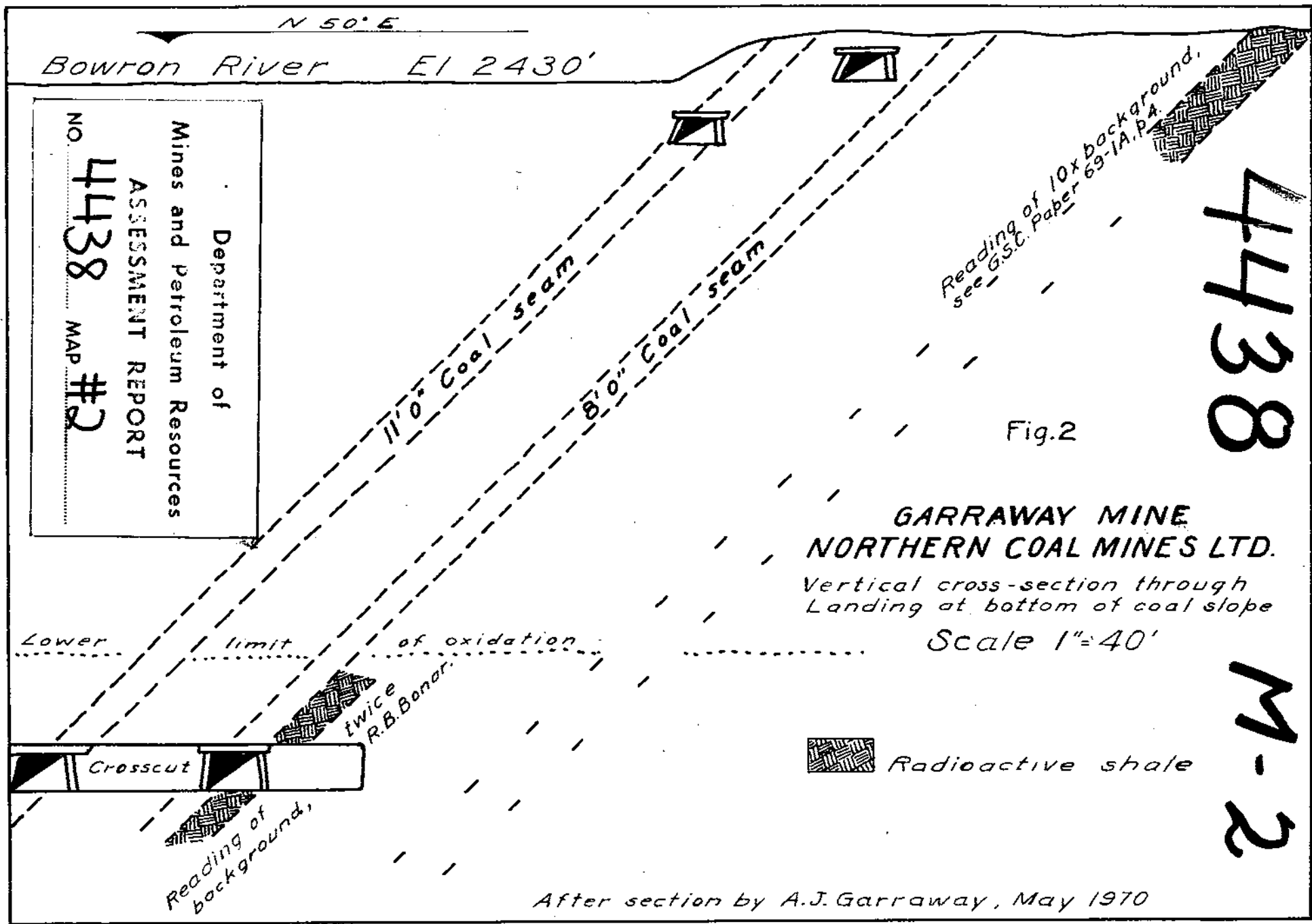
The following were engaged in the survey:

N.D. McKechnie, P.Eng.,	scintillometer
John Grzyb)	chain
Albert Kary)	

GEOLOGY

The general geology of the area is shown on a map in G.S.C. Paper 68-1, p 17, McBride Map Area, West Half. Rocks along the Bowron River are shown as sediments of Mississippian age, correlative with the Antler and Guyet formations of the Slide Mountain Groups.

The area of the claim group is overlain by coarse gravels, in part at least of glacial origin, having a thickness of not less than 30 feet and possibly considerably more. The claim group lies within the Bowron Coal Basin and geological data are confined to those exposed in the Garraway Mine and in limited outcrops along the Bowron River. The geology is described in the Annual Reports of the Minister of Mines of B.C. for 1914, pp 67-71; 1948, pp 233-240; 1967, p. 459; and 1970, p. 527. Of these, the 1948 and 1967 reports are the more informative, that of 1970 is a summary.




Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO 4438 MAP #2

**GARRAWAY MINE
NORTHERN COAL MINES LTD.**

Vertical cross-section through
Landing at bottom of coal slope

Scale 1"=40'

 Radioactive shale

After section by A.J. Garraway, May 1970

4438

M-2

Reading of 10x background,
see G.S.C. Paper 69-1A, P.A.

Fig.2

Reading of
background,

Briefly summarized from the above reports and from data in Northern Coal Mines Ltd. records, the geology of the coal basin is as follows:

A sequence of conglomerates, sandstones, shales, and coal, thought to be of Mid-Tertiary age and about 2000 feet thick lie in a northwesterly oriented lineal basin some 15 miles long and $1\frac{1}{2}$ miles wide. The basin is bordered by tuffs, breccias, amygdular and porphyritic lavas, minor chert and limestone of the Mississippian Slide Mountain Group. The known coal seams lie near the base of the sedimentary unit. The southwestern margin of the basin is a normal sedimentary unconformity but the northeastern one is a down-dropped fault, possibly active during deposition. There is also evidence, notably at a ventilation shaft southeast of the Northern Coal Mines camp, of steep normal faulting striking north 10 to 20 degrees west. The sedimentary beds strike about north 40 degrees west and dip from 45 degrees at the southwestern contact to about 10 degrees at 1500 feet into the basin. Drill-holes indicate good continuity of strata but with a down-drop on the southeastern side of the north 10-20 degrees faults.

Prospecting by A.J. Garraway in 1958 (Ann. Rpt. M.M. 1960 p. 239) found radioactivity in strata on the riverbank immediately south of the main coal showing and tests also showed radioactivity in churn-drill cuttings drilled in 1954. Thucolite, a carbonaceous mineral containing uranium oxide, was identified in a sample of shale sent to Ottawa. In 1968 Dr. P.A. Haquebard of the Geological Survey of Canada (Paper 69-1, Report of Activities Part A, p. 4) obtained a scintillometer reading of 10 times background at the surface exposure (Fig. 2). In February, 1970, Mr. R.B. Bonar, P.Eng. tested the 10 feet of shales lying below the lower coal seam and obtained results described, in his report of May 4, 1970, in the following words: "During the above visit I had the use of scintillometer. I took three readings above ground in the vicinity of the mine buildings and recorded a background count of 30-35. Underground readings near the face indicated a high of 85. The scintillometer was not equipped with a probe so the count indicated would be general".

The presence of germanium in the radioactive exposure tested by Dr. Hacquebard was indicated by assay of six samples, taken by Northern Coal Mines Ltd., which returned the following results, calculated at \$0.29 per gram: \$0.72, \$0.92, \$3.60, \$5.45, \$9.10 and \$54.00 per ton.

The accompanying section from one prepared by A.J. Garraway for Northern Coal Mines Ltd., indicates the relative stratigraphic positions of the radioactive shale beds to the coal seams. (Fig. 2)

The Garraway Mine was flooded and inaccessible at the time of the writer's visit.

SCINTILLOMETER SURVEY

The grid (Fig. 3) Lad 2, 4, 6 and 8 and the trenches on Lad 66 (fig. 4) are some 700 feet plus into the coal basin from the sharp topographic drop-off that marks the contact between the softer coal measures and the resistant Slide Mountain volcanic rocks and this is the only marker available in the claim group area. It was expected that the area covered by the scintillometer readings in each place would encompass the nearest approach to surface of the coal seam-radioactive shale sequence.

Background counts taken over the volcanic rocks ranged from 30 to 40 counts per minute. Taking the higher figure as a base, counts of twice background or better were recorded, on the grid (Fig. 3) on Lines 0, 4, 10, 30 and 44; if the median figure of 35 is taken as base, then counts of twice background or better were recorded on Lines 0, 2, 4, 6, 8, 10, 12, 14, 18, 22, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 54. At the trenches on Lad 66 using the median of 35 as base, 11 out of 13 readings in the westward trench were twice background or better; in the eastward trench 5 out of 13 readings were twice background or better; on the cross-line 6 out of 23 readings were twice background or better. The westward trench is the deeper and so maybe nearer bedrock, and the eastward trench is on the down-dip side, the cross-line is on the surface of the overburden.

The presence of radioactive material in the vicinity of the scintillometer readings is, in the writer's opinion, sufficiently well indicated to warrant exploration for the presence on the Lad Group of the radioactive shale beds occurring in and near the Garraway Mine workings. Because of the heavy overburden and the relatively steep dip of the beds near the edge of the basin, it is unlikely that more scintillometer readings would give more definite results. It is recommended, therefore, that a program of diamond drilling be undertaken as initial exploration of the sediments underlying the Lad Group.

RECOMMENDATIONS

Explorations for and development of radioactive shale beds on the Lad Group should be undertaken in three stages, each with defined objectives. Decision to proceed with each succeeding stage would be governed by the results of the completed stages.

- Stage 1:
- (a) The ground between the northeast boundary of the Lad Group and the Bowron River should be for protection down-dip; this would require 92 claims.
 - (b) Vertical diamond-drilling should be done in six sections 3000 feet apart as indicated on Fig. 5. The footage would amount to about 1600 feet per section, or 10,000 feet in all.

Costs of Stage 1 are estimated at staking and recording 92 claims	\$ 3,000.00 ✓
10,000 feet of diamond drilling with access and clearing, at 10.00/ft	100,000.00
Engineering and geological work, consulting fees, etc.	26,000.00
Camp Maintenance and local transportation	<u>24,000.00</u>
Cost of Stage 1	\$153,000.00

Stage 2:

When data from Stage 1 warrant the step, preparations should be made to sink a 20% slope 1000 feet for the purpose of obtaining bulk samples, of 1000 tons each for determinations of grade, from drifts on radioactive shale beds. About 1000 feet of sample drifts would be required and these would be below the zone of oxydation as indicated by the Garraway Mine workings. Concurrently, following completion of the Stage 1 drilling, 3 vertical holes on sections 6000 feet apart should be drilled near the present northeast boundary of the claim group as shown on Fig. 5. The holes would each be about 1500 feet deep and their purpose would be to confirm the north-eastward extension of radioactive shale beds indicated by the drilling of Stage 1.

Costs of Stage 2 are estimated at:

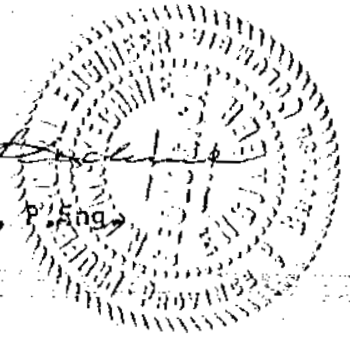
3 diamond drill holes, 4500 ft. @ 10.00/ft.	\$ 45,000.00
Slope sinking, 1000 ft. @ 120.00/ft.	120,000.00
Sump and landings	20,000.00
Sampling drifts, 1000 ft. @ \$100.00/ft.	100,000.00
Equipment, surface buildings, etc.	200,000.00
Sampling, crushing, containers, shipping	45,000.00
Camp accommodation, supplies, transport	30,000.00
Engineering	60,000.00
Contingencies, 10%	<u>60,000.00</u>
Cost of Stage 2	\$ 680,000.00

Stage 3:

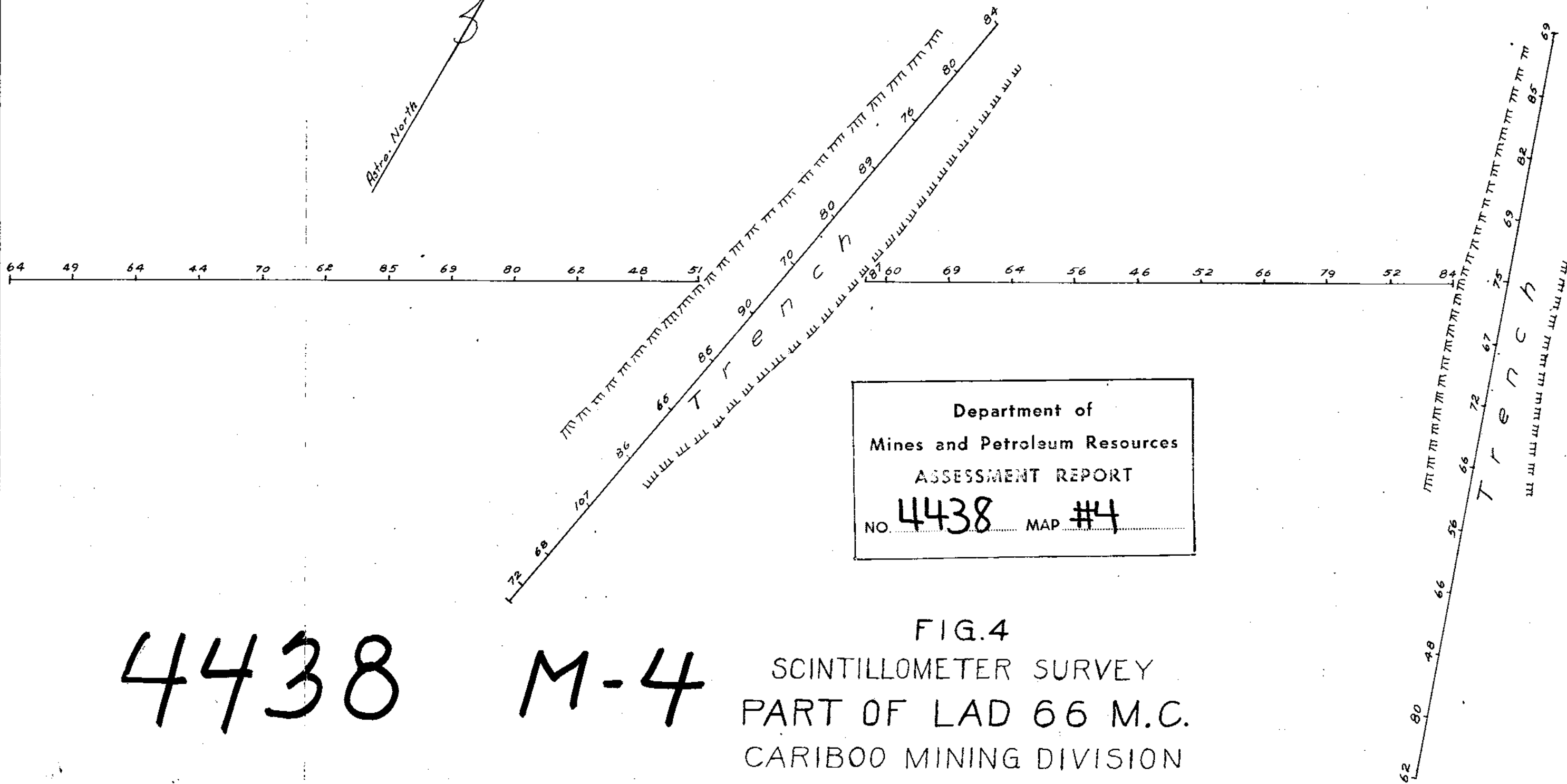
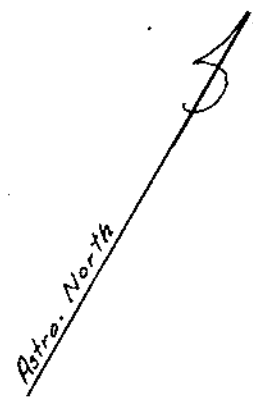
On completion of Stage 2 a Feasibility Study should be made to determine the economics of putting the property into production. An estimate of costs for this stage at this time would have little meaning and will not be attempted.



N.D. McKechnie, P. Eng.



Victoria, B.C.
July 17, 1972

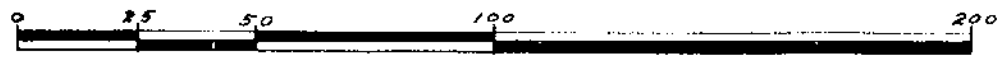


Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4438 MAP #4

4438

M-4

FIG. 4
 SCINTILLOMETER SURVEY
 PART OF LAD 66 M.C.
 CARIBOO MINING DIVISION
 Scale of Feet



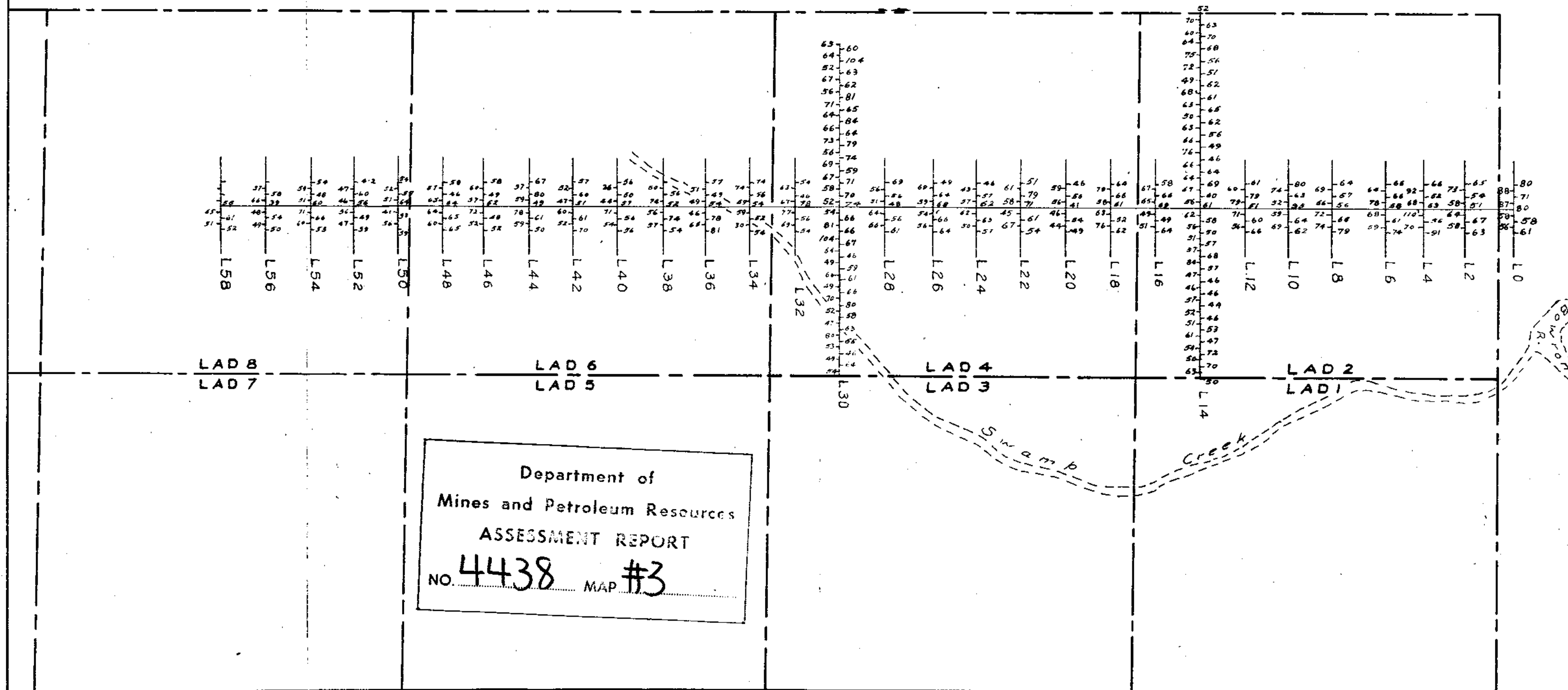
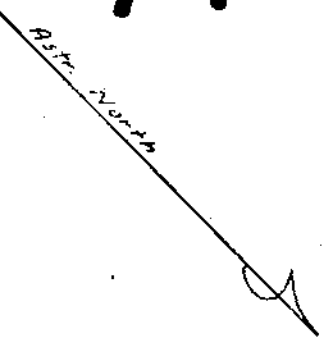
64. Counts per minute

FIG 3
 SCINTILLOMETER SURVEY
 LAD 2,4,6,8, M.C.
 CARIBOO MINING DIVISION

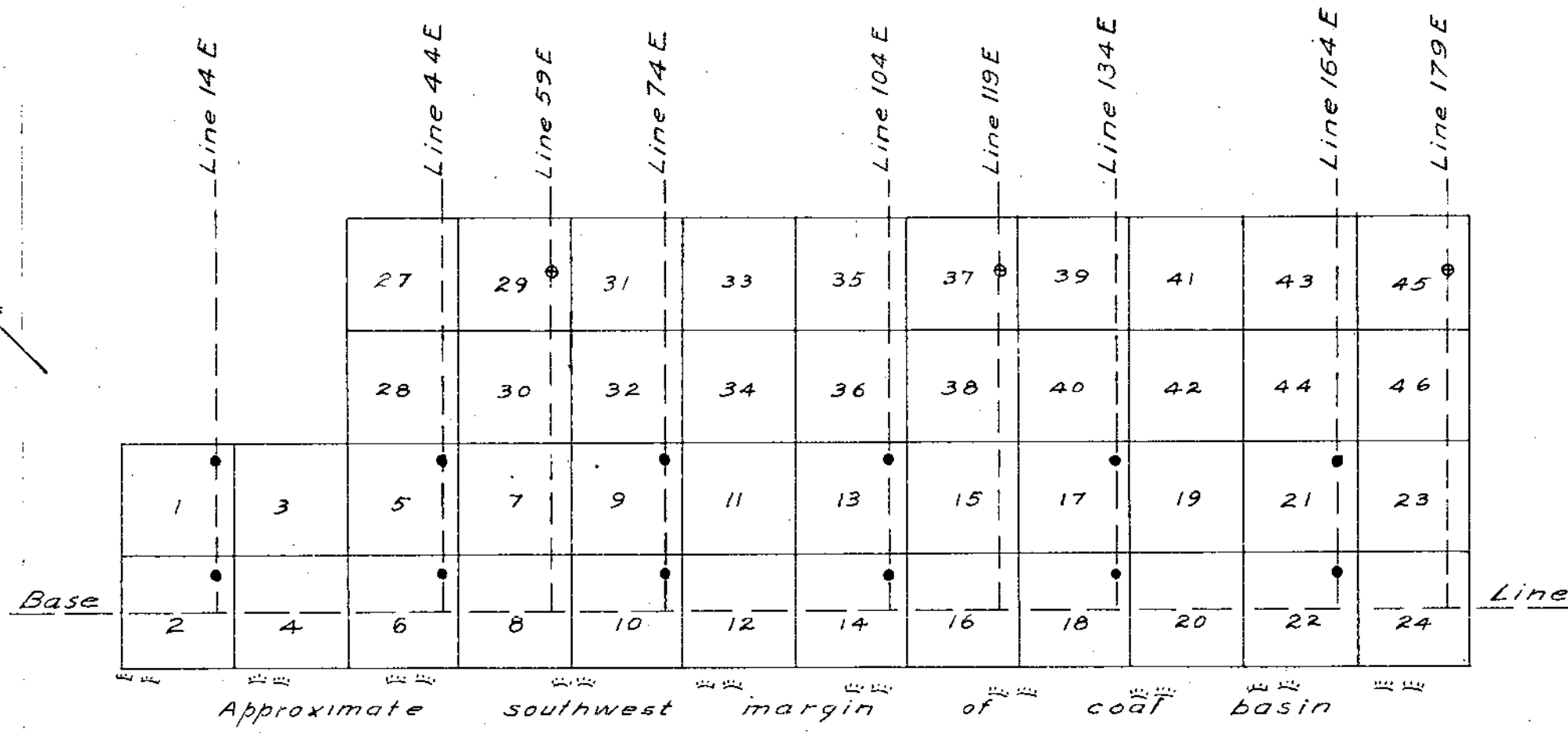
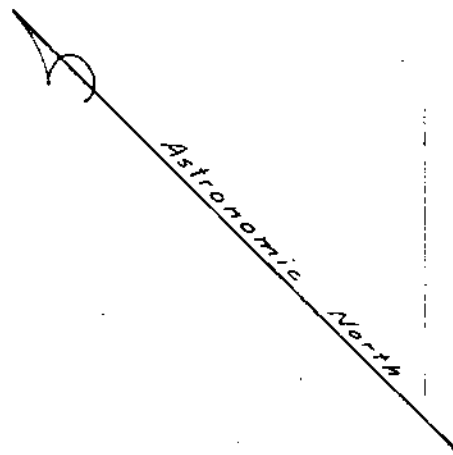
4438

M-3

Scale of Feet



Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 4438 MAP #3



4438 M-5

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4438 MAP #5

FIG. 5

- First stage drilling.
- ⊕ Second stage drilling.

PART OF LAD GROUP
SHOWING
PROPOSED DIAMOND DRILLING
SCALE 1in. = 2000 ft.

APPENDIX

SCINTILLOMETER READINGS

COUNTS PER MINUTE

Claims 2, 4, 6 and 8

Base Line, from Line 0:

<u>Dist</u>	<u>C/M</u>	<u>Dist</u>	<u>C/M</u>	<u>Dist</u>	<u>C/M</u>	<u>Dist</u>	<u>C/M</u>
0	80	275	62	536	58	800	62
25	73	300	76	550	74	825	59
50	64	325	61	575	86	850	80
75	70	350	57	600	72	875	74
100	62	375	63	625	54	900	78
125	75	400	62	650	60	925	95
150	64	425	63	675	78		
175	61	450	74	700	70		
200	51	475	62	725	58		
225	108	500	94	750	69		
250	64	525	70	775	59		

Line 0

<u>Dist</u>	<u>C/M</u>
0	80
25W	87
50W	71
75W	88
100W	80
25E	58
50E	58
75E	56
100E	61

Line 2

<u>Dist</u>	<u>C/M</u>
0	51
25W	58
50W	54
75W	73
100W	75
25E	64
50E	67
75E	58
100E	63

Line 4

<u>Dist</u>	<u>C/M</u>
0	63
25W	68
50W	52
75W	92
100W	66
25E	110
50E	56
75E	70
100E	91

Line 6

<u>Dist</u>	<u>C/M</u>
0	58
25W	78
50W	66
75W	64
100W	66
25E	68
50E	61
75E	59
100E	74

Line 8

<u>Dist</u>	<u>C/M</u>
0	56
25W	66
50W	57
75W	69
100W	64
25E	72
50E	66
75E	74
100E	79

Line 10

<u>Dist</u>	<u>C/M</u>
0	95
25W	52
50W	63
75W	74
100W	80
25E	59
50E	64
75E	69
100E	62

Line 12

<u>Dist</u>	<u>C/M</u>
0	51
25W	79
50W	79
75W	60
100W	61
25E	71
50E	60
75E	56
100E	66

APPENDIX

Line 14

<u>Dist</u>	<u>C/M</u>	<u>Dist</u>	<u>C/M</u>	<u>Dist</u>	<u>C/M</u>	<u>Dist</u>	<u>C/M</u>
0	61	225W	76	450W	61	675W	64
25W	56	250W	49	475W	68	700W	70
50W	60	275W	66	500W	62	725W	60
75W	67	300W	56	525W	49	750W	63
100W	59	325W	63	550W	51	775W	70
125W	64	350W	62	575W	72	800W	52
150W	64	375W	50	600W	56		
175W	66	400W	65	625W	75		
200W	46	425W	63	650W	68		
25E	62	200E	68	375E	57	550E	47
50E	58	225E	84	400E	44	575E	54
75E	56	250E	57	425E	52	600E	72
100E	50	275E	47	450E	46	625E	50
125E	51	300E	46	475E	51	650E	70
150E	57	325E	46	500E	53	675E	63
175E	57	350E	46	525E	61	700E	50

Line 16

<u>Dist</u>	<u>C/M</u>
0	69
25W	65
50W	66
75W	67
100W	58
25E	49
50E	49
75E	51
100E	64

Line 18

<u>Dist</u>	<u>C/M</u>
0	61
25W	58
50W	66
75W	79
100W	64
25E	63
50E	52
75E	76
100E	62

Line 20

<u>Dist</u>	<u>C/M</u>
0	41
25W	56
50W	56
75W	59
100W	46
25E	46
50E	54
75E	44
100E	49

Line 22

<u>Dist</u>	<u>C/M</u>
0	71
25W	58
50W	79
75W	61
100W	51
25E	45
50E	61
75E	67
100E	54

Line 24

<u>Dist</u>	<u>C/M</u>
0	62
25W	58
50W	79
75W	61
100W	51
25E	45
50E	61
75E	67
100E	54

Line 26

<u>Dist</u>	<u>C/M</u>
0	68
25W	57
50W	57
75W	53
100W	46
25E	62
50E	63
75E	50
100E	57

Line 28

<u>Dist</u>	<u>C/M</u>
0	48
25W	51
50W	56
75W	56
100W	69
25E	64
50E	56
75E	66
100E	61

APPENDIX

Line 30

Dist	C/M
0	74
25W	52
50W	70
75W	58
100W	71
125W	67
150W	59
25E	54
50E	66
75E	81
100E	66
125E	104
150E	67
175E	64

Dist	C/M
175W	69
200W	74
225W	56
250W	79
275W	73
300W	64
325W	66
200E	46
225E	49
250E	59
275E	66
300E	61
325E	-
350E	49

Dist	C/M
350W	84
375W	64
400W	65
425W	71
450W	81
475W	56
500W	62
375E	66
400E	70
425E	80
450E	52
475E	58
500E	47
525E	63

Dist	C/M
525W	67
550W	63
575W	52
600W	104
625W	64
650W	60
675W	63
550E	80
575E	66
600E	53
625E	46
650E	49
675E	64
700E	54

Line 32

Dist	C/M
0	78
25W	67
50W	46
75W	63
100W	54
25E	77
50E	56
75E	69
100E	64

Line 34

Dist	C/M
0	54
25W	59
50W	56
75W	74
100W	74
25E	59
50E	52
75E	30
100E	54

Line 36

Dist	C/M
0	54
25W	49
50W	49
75W	51
100W	57
25E	46
50E	78
75E	65
100E	81

Line 38

Dist	C/M
0	52
25W	74
50W	56
75W	58
100W	-
25E	56
50E	74
75E	57
100E	54

Line 40

Dist	C/M
0	57
25W	44
50W	60
75W	36
100W	56
25E	71
50E	56
75E	54
100E	56

Line 42

Dist	C/M
0	51
25W	47
50W	60
75W	52
100W	57
25E	60
50E	61
75E	52
100E	70

Line 44

Dist	C/M
0	49
25W	59
50W	80
75W	57
100W	67
25E	78
50E	61
75E	59
100E	50

Line 46

Dist	C/M
0	62
25W	57
50W	49
75W	60
100W	58
25E	72
50E	48
75E	52
100E	52

APPENDIX

Line 48

<u>Dist</u>	<u>C/M</u>
0	64
25W	65
50W	46
75W	57
100W	58
25E	64
50E	65
75E	60
100E	65

Line 50

<u>Dist</u>	<u>C/M</u>
0	64
25W	51
50W	57
75W	52
100W	54
25E	41
50E	43
75E	56
100E	59

Line 52

<u>Dist</u>	<u>C/M</u>
0	56
25W	46
50W	60
75W	47
100W	42
25E	56
50E	49
75E	47
100E	59

Line 54

<u>Dist</u>	<u>C/M</u>
0	60
25W	51
50W	48
75W	59
100W	54
25E	71
50E	66
75E	60
100E	53

Line 56

<u>Dist</u>	<u>C/M</u>
0	39
25W	66
50W	58
75W	57
100W	-
25E	48
50E	54
75E	49
100E	50

Line 58

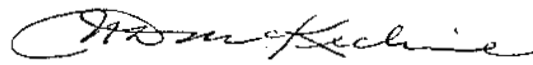
<u>Dist</u>	<u>C/M</u>
0	56
25W	-
50W	-
75W	-
100W	-
25E	65
50E	61
75E	51
100E	52

CERTIFICATION

I, Neil Douglas McKechnie, of 1932 St. Ann St., in the City of Victoria, British Columbia, certify that:

1. I am a member in good standing of the Association of Professional Engineers of British Columbia.
2. I hold the degrees of Bachelor of Science in Geology, Queen's University, 1932, and of Master of Applied Science in Geological Engineering, University of British Columbia, 1933.
3. I am a Fellow of the Geological Association of Canada, a Member of the Canadian Institute of Mining and Metallurgy, and a Member of the Society of Economic Geologists.
4. I have practised my profession as a geological engineer continuously for thirty-nine years.
5. I personally performed the scintillometer survey upon which this report is based between the dates of June 21 and June 24, 1972 inclusive.
6. I have no interest, direct or indirect, in the Lad 1-88 mineral claims, nor do I expect to receive any.

DATED this 17th Day of July, 1972.



N.D. McKechnie, P.Eng.



4438

M-6

ZULU EXPLORATIONS LTD. (N.P.L.)

Bowron Property

INTERIM REPORT

June, 1974

J. E. Hughes and H. S. Haslam

[Handwritten marks and scribbles at the bottom of the page, including a large 'X' on the left and various lines and symbols.]

The Bowron Property, located 35 miles south-east of Prince George, British Columbia, contains 110 Mineral Claims, 30 of them held in trust for Zulu Explorations Limited, and 80 assigned to this Company. Coal Licences covering the property are applied for, on behalf of the Company - these are for Lots Nos. 4844, 4845, 4846, 4868, 9590, 9594, 4869, 9595, and lot adjoining and south of 9590.

The Bowron Property is underlain by coal measures of Tertiary age, extending from surface to 1,600 feet depth. These are of economic interest for their coal, deposits of resins, and concentrations of metals - notably germanium in coals, and uranium in the underlying shales.

These minerals occurrences were reported from exploration by Northern Coal Mines Ltd., during their former tenure of this property. However, previous exploration was incomplete: drilling was limited mostly to the limit of subcrop: underground work was abandoned before its objective, or advantages were realized: and values of germanium, and uranium received less attention.

Exploration work by Zulu, 1973, 1974 and presently continuing, has included:

- (1). a radiometer survey, for which Mr. N. D. MacKechnie, P.Eng., outlined a trend of gamma radiation of the order of X2 background, over a thick cover of alluvium (80 feet).

.....2.

(2). a drilling programme, started in 1973 and continuing - for a total of 3,900 feet in 7 drillholes already completed.

The results of this drilling, sampling and assays are now under examination.

At present view, the Bowron Property merits active exploration, and full investigation. The property offers a substantial prospect for coal, combined with values in resin, and germanium, together with additional prospects for uranium.

COAL.

Bituminous coal occurs in two, and in places three seams, for which reasonable and cautious projection allows a potential for one (1) million tons of annual production for a life of 20 years or more. The coals are of good quality, with low to moderate ash.

RESINS.

There are two resins in the coal; the amber resin and the dark resin, and each type amounts to about 3% to 4% of the coal in one seam. Resins also occur in the other seams.

GERMANIUM.

Germanium occurs in the Bowron coals, and six samples to date assayed GeO_2 in the range of 0.001% to 0.03%.



URANIUM.

Radioactive shales, with radiation of x20 above background, occur 120 feet below the basal coal seam: a sample here was reported to assay 0.032% U_3O_8 . A second zone of radioactive shales directly below deserves further investigation.

It is expected that the distribution of germanium and uranium is extensive, but their concentrations may be variable.

RECOMMENDATIONS are to continue the current drilling, with emphasis on detailing occurrences, distribution and values of germanium and uranium, together with two or three diamond drill holes in the south sector and four or five holes in the north sector of the property. There is need at future progress for a comprehensive study and report on the Bowron Property, in order to assess its full potential and to set grounds for major financing in support of underground exploration and development drilling.

The writers are pleased to comment most favourably upon the initiative, skills and standards of exploration and drilling shown by Mr. Garroway, and the staff of Zulu Explorations Ltd.

We have confidence in the ability of Zulu's staff to undertake future exploration, both surface and underground.

SIGNED:

J. E. Hughes

J. E. Hughes,

P.Eng., Ph.D., M.A. (Cantab.), M.C.I.M.

H. S. Haslam

H. S. Haslam,

P.Eng., Eng., C.Eng., F.I.Min.E., F.I.Civil E.,
F.I.Mech.E., M.C.I.M., A.I.M.E.

Certified Colliery Manager under the Laws of the
Province of British Columbia, Province of Nova
Scotia, and the United Kingdom of Great Britain
and Northern Ireland.

DATED at Victoria, British Columbia,

on June 14th., 1974.

X
15
40/7
2
100
2/2