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1987

**GEOLOGICAL AND GEOPHYSICAL
ASSESSMENT REPORT**

RAM CLAIM

**SLOCAN MINING DIVISION
82F/10W**

LATITUDE: 49° 41'
LONGITUDE: 116° 44' 51.5'

OWNER: Lumberton Mines Limited
OPERATOR: Lumberton Mines Limited
Consultant: Mr. D. Thomas, P.Geol.
Consultant: Ms. M. Pudifin, B.Sc.
Author: John W. McLeod, P.Geol.

Submitted: January 15, 1987

FILMED

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

15,542

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1.0 INTRODUCTION

1.1 Geographic and Physiographic Position

The Ram property is located in southeastern British Columbia on the east shore of Kootenay Lake between Kootenay Bay and Walker's Landing.

The property is reached by Highway 3A and Highway 95A which follows the Kootenay Lake shoreline from the ferry slip at Kootenay Bay north to Riondel. Several logging roads provide good access within the central and eastern part of the claim block.

The terrain is relatively rugged and heavily treed. Logging areas occur throughout the claims.

1.2 Property Definition

The property consists of a total of 18 units within the Slocan Mining Division, NTS 82F/10W. The claim is six unit lengths north and three unit lengths east, comprising 450 hectares (1102.5 acres).

Ram was staked on February 4, 1986. To maintain this claim, exploration and development work valued at \$100.00 per unit for each of the first three years and an additional \$200.00 per unit for each subsequent year must be expended. To date the expenditures for assessment work on the property total \$14,264.48. A total of \$12,600.00 worth of assessment work is required to keep the claim in good standing for an additional five years. Ram is therefore in good standing until February 4, 1992.

The claim is held and was operated by Lumberton Mines Limited.

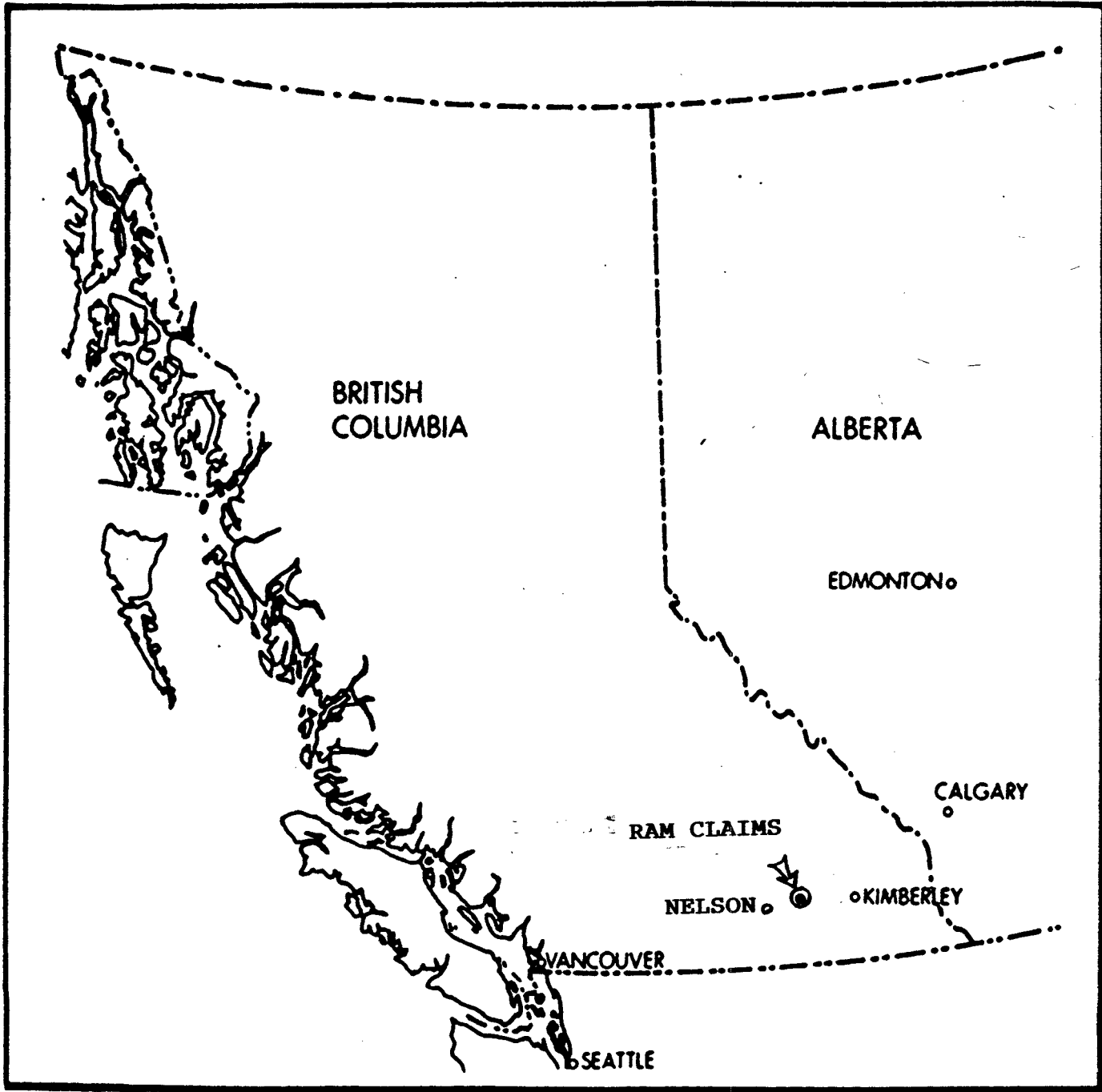


FIGURE 1
LOCATION MAP

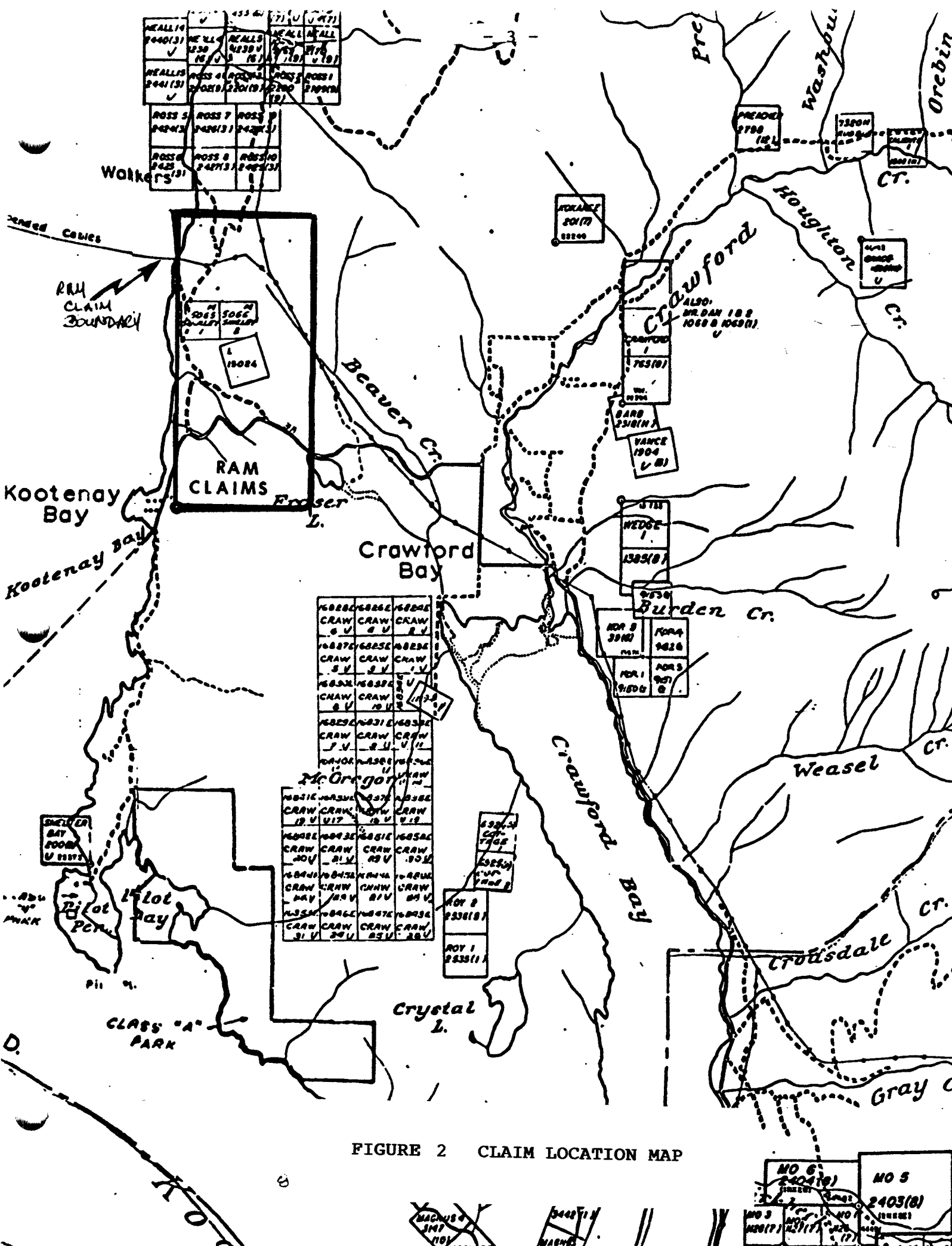


FIGURE 2 CLAIM LOCATION MAP

NO 6 2403(8)	NO 5 2403(8)
NO 3 2403(7)	NO 1 2403(7)

1.3 Summary

The Ram claims are situated on the east shore of Kootenay Lake at latitude 49°41' and longitude 116°44' within the Slocan Mining Division. Exploration on the Ram project was initiated by Lumberton Mines Limited, a wholly-owned subsidiary of Bearcat Explorations Ltd. on August 22, 1986 and continued until October 20, 1986. The main objective was to assess the economic precious metal potential, in particular, platinum and palladium, which was found to occur locally on a claim enclosed within the central area of the claim block. Work on the property consisted of prospecting, grid establishment, sampling, mapping at a scale of 1:1250 and operating a magnetometer survey.

Analytical results did not indicate significant or extensive enrichment in Pt and Pd. The magnetometer results delineated two magnetic terrains. The contoured Total Magnetic Field Map 2 shows higher magnetic intensity in the diorite-rich zones. These areas are most likely attributed to magnetite and possibly other sulfides. The other terrain shows lower magnetic relief in the gneiss where the anomalies are subtle but could represent disseminated pyrrhotite at a shallow depth.

Further investigation of the higher anomaly on line 2+00S/1+55W as well as two lower anomalies at 3+24S/1+88W and 2+40S/1+50E is recommended.

2.0 EXPLORATION

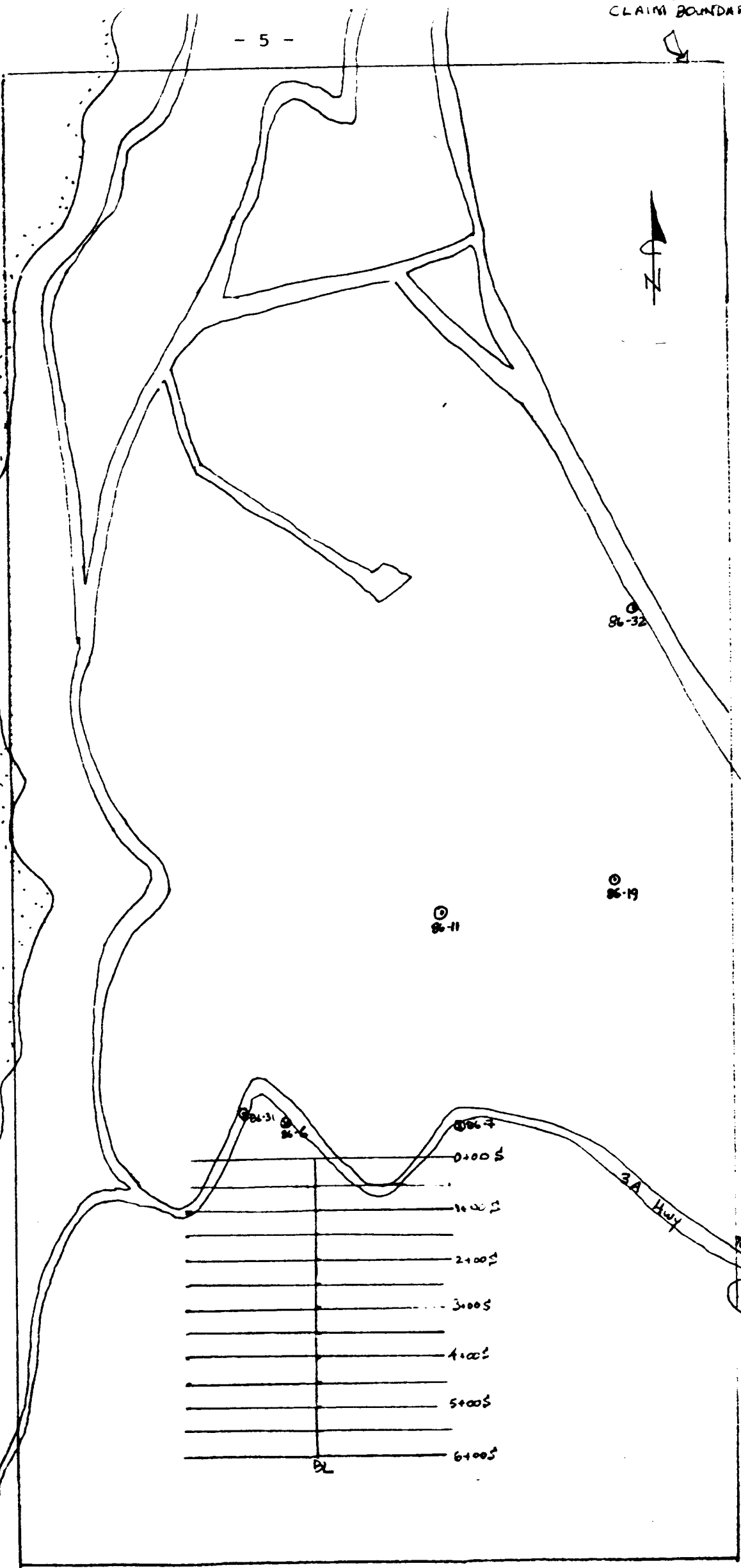
2.1 Previous Work

The only known recorded work within or adjacent to Ram was on a claim 15024 owned by C. Rossiter of Kaslo. This property is completely contained within the central part of the Ram claim.

KOOTENAY LAKE

KOOTENAY LAKE

KOOTENAY LAKE



© RAM 86-31 Sample location

NB. Measured distance on this copy multiplied by 50.5% should be 1:19,000

Fig. 3 Sample and Grid Location Map

Here, an 80 metre long adit was driven by the Consolidated Mining and Smelting Co. in 1930 to test mineralization below exposed altered rock. Platinum and palladium was found associated with pyrrhotite and chalcopyrite within a 40 m thick diorite dyke known as the "Mineral Dyke" or sill. The option was subsequently dropped due to "indefinite" results. (Annual Report, Minister of Mines, 1930).

No further work on the area has been recorded though several hand trenches were observed south of Walker's Landing, approximately 950 metres south of the Ram N.W. corner post. Within the northern half of the Ram block, the Shirley #1 and #2 claims were staked by F.W. Stainton in September, 1959 and cash in lieu of work has kept these claims in good standing since. In October, 1985 the K.D.H. claim was staked by B.C. Zeigler at the southeast end of Ram. Completely surrounding Ram, the Rock of Ages, Miro, Picasso and Goya claims were staked in June, 1986.

2.2 Objectives of the 1986 Program

The objective of the 1986 program was to investigate the "Mineral Dyke" and to evaluate the Ram claims for similar type platinum and palladium mineralization, and any other economic precious minerals.

2.3 Field Method

The field program, in 1986, was initiated August 22, 1986 until October 20, 1986. The program was supervised and operated by one geologist. A local assistant was hired later in the program.

The first month consisted of prospecting the entire property (450 hectares) at 100 m spaced E-W traverses. This was to delineate the most favourable areas for hosting metallic minerals such as platinum and palladium in diorite.

A flagged 13.75 line-km grid was then emplaced in the most interesting area south of Highway 3A, where the greatest abundance of diorite occurred.

With chain, compass and clinometer to correct for slope changes, a 13.75 km grid was established. The baseline is 600 m long trending N-S and is cut by E-W cross lines at 25 m intervals. Cross lines are flagged at 5 m spacing.

More detailed mapping at a scale of 1:1250 sampling and a magnetometer survey were subsequently conducted over an area of 330,000 m².

3.0 GEOLOGY

3.1 Regional Geology

This Regional Geology section is taken as per Hoy's (1980) summary of the Riondel area.

The Ram claims occur within the central part of the Kootenay Arc, a north trending arcuate structural zone that lies between the Shuswap Metamorphic complex to the west and the Purcell Anticlinorium to the east.

Rocks consist of Lower Paleozoic quartzites and schists which include the Hamill Group, overlain by calcareous schists,

quartzite and marble of the Mohican Formation, lower Cambrian Marble of the Badshot Formation and the Lardeau Group of inter-folded metasediments.

The general structural trend is north-south. A series of west dipping tight to isoclinal second phase folds overlie the inverted limb of a younger recumbant anticlinal structure, known as the Riondel Nappe. The sequence of rocks are inverted along the east shore of Kootenay Lake where older rocks occupy the cores of phase 2 synforms, and younger rocks, the cores of antiforms.

Three sets of faults consist of older, possibly reverse faults, trending north-south, followed by normal faults down thrown to the west and several steep, southwest trending transverse faults.

Metamorphic grade varies from upper green schist around $116^{\circ}40'$ increasing to upper amphibolite towards $116^{\circ}55'$.

The Bluebell deposit was the most important producer in the area, producing over 5 million tonnes of Pb-Zn-Ag ore until its closure in 1971. Magnesite, quartzite and granite are currently being mined near Crawford Bay and Sirdir.

3.2 Local Geology

i) Lithology & Age

Three rock types cover the grid mapped at a scale of 1:1250. Paleozoic units, L3 and L4, of the Lardeau Group are intruded by diorite.

L3 consists of a light grey to green calc-silicate gneiss with occasional minor layers of biotite gneiss, marble and boudinaged biotite-amphibole gneiss. The amphibolite-gneiss is sometimes crosscut by felsic dykes.

L4 weathers rusty brown and occurs as a biotite-quartz feldspar gneiss with occasional minor biotite schist layers, layers of quartzite and several very large boudins of amphibolite. Amphibolite consists predominantly of amphibole, hornblende with minor biotite and traces of feldspar. Small pegmatite lenses are present within this unit as well. The contacts between the pegmatite and gneiss is generally abrupt but can be irregular or transitional.

The diorite is generally red to greenish brown, fine grained, indurated and altered. Chloritization obliterates most primary textures. Most abundant exposures of the diorite occur in the southern part of the property where a grid was established (see Map 1). Although minor diorite intrusions were observed in unit L3, most of the diorite can be found intruding unit L4, as can be seen on the east side of the grid.

ii) Structure

Tight, often isoclinal toptygmatic folding is observed in the gneiss. The units generally dip to the west and trend north to northwest. Dips are between 20° and 30° in the southern part of the grid while they are more varied to the north (10°-70°).

Older, normal faulting trends north-south with the down-block to the east. Between 1+35W and 0+80W this faulting brings unit L3 in sharp contact with unit L4. The fault trace is offset by approximately 50 metres, thought to be caused by a NW trending

transverse fault. Topographic depressions adjacent to cliff faces, in association with more altered rock, substantiate the presence of transverse faulting.

iii) Mineralization

Although some iron staining was observed, negligible sulfides were found on the grid. Disseminated magnetite was found in the diorite at 4+80S/1+26E.

iv) Sampling Results

Out of all samples collected on the Ram project twelve samples were sent to Barringer-Magenta Laboratories for analyses.

The following rock samples were fire assayed for platinum and palladium:

	<u>Pt(ppb)</u>	<u>Pd(ppb)</u>	<u>Location</u>
Ram 86-27	<30.0	<20.0	1+90S/1+59W
Ram 86-28	<30.0	<20.0	2+20S/1+50W
Ram 86-29	<30.0	<20.0	2+95S/1+35W
Ram 86-33	<30.0	<20.0	1+50S/0+60E

(Location with respect to grid on Map 1)

Ram 86-6	<30.0	132.0
Ram 87-7	<30.0	136.0

(Location along Highway 3A seen on Fig. 3)

Ram 86-11	<30.0	<20.0
Ram 86-14	85.0	104.0

(Location in central part of claim seen on Fig. 3)

The following rock samples were analyzed for whole rock composition:

<u>Total %</u>	<u>Ram 86-32</u> <u>(Location see Fig. 3)</u>	<u>Ram 86-33</u> <u>(1+50S/0+60E)</u>
SiO ₂	73.3	41.9
Al ₂ O ₃	12.2	7.63
Fe ₂ O ₃	0.48	10.9
MgO	0.18	22.68
CaO	2.69	6.19
Na ₂ O	3.83	0.53
K ₂ O	1.35	11.01
TiO ₂	0.089	0.849
MnO	0.007	0.163
LOI	1.39	7.71
P ₂ O ₅	0.038	0.004

Fire assays for gold and silver were obtained in the following two samples:

	<u>Au(ppb)</u>	<u>Ag(ppb)</u>	<u>Location</u>
Ram 86-31	3.0	0.04	0+20S/1+32W
Ram 86-19	<2.0	<0.02	See Fig. 3

4.0 GEOPHYSICS

4.1 Method and Procedure

A Scintrex MP-2 proton precession magnetometer was used to measure the total magnetic field. Units were measured in nano-teslas and the instrument's accuracy was ± 1 nT.

Repeated readings at different times each day the survey was run, using base station BL/3+00S, were used as a control to correct for diurnal variations. A curve was drawn through the readings plotted as a function of time. Values were added or

subtracted from all other readings to correct for magnetic variation in a given time period.

Survey measurement intervals were spaced every 5 meters along E-W grid lines. The grid lines were spaced N-S at 25 metre intervals as can be observed on Map 2. Field and corrected measurements are located in the Appendix.

4.2 Results and Interpretation

Total field intensity is quite variable in the area surveyed. Most anomalies are not broad and therefore the sources are not very deep. The chosen base level as seen on Map 2, Total Magnetic Field, is 57000 nT. A 10nT contour interval is applied between 57700 nT and 57900 nT, while above and below this range, the contour interval is 100 nT.

Two magnetic terrains can be observed on Map 2. The more distinct magnetic anomalies (usually >100 nT above base level) are associated with diorite intrusions into gneisses. (Refer to Geology Map 1). Between line 4+75S and line 5+00S at 1+28E, diorite outcrop was attained by digging through a thin overburden cover. The high magnetic anomaly was attributed to magnetite. A similar anomaly on line 2+25S/1+55W may be due to magnetite as well. These anomalies appear to be consistently associated with a magnetic low which suggests a limited extent in the magnetic source. The second terrain shows lower relief with more subtle anomalies usually between 57800 and 57870 nT. These areas appear to occur mainly in unit L3, the calc-silicate gneiss. It is possible that disseminated pyrrhotite, which is less magnetic than magnetite, may be the cause of these disturbances.

5.0 CONCLUSIONS

Analytical results on the surveyed grid do not appear very encouraging. The diorite which was the target for anomalous Pt, Pd values associated with py and po is spotty in occurrence and no visible mineralization was observed. However, areas where diorite was mapped, showed anomalous spikey zones of magnetic relief. Another more subtle magnetic terrain was observed in the gneissic areas which may indicate pyrrhotite at a shallow depth, with associated Pt and Pd.

6.0 RECOMMENDATIONS

The magnetometer results warrant further investigation. It is recommended that the higher anomaly on line 2+00S/1+55W, as well as two lower anomalies, at 3+24S/1+88W and 2+40S/1+50E be tested to explain the magnetic signatures. This could be accomplished by trenching the areas to bedrock with a backhoe, cleaning the outcrop with a fire pump and sampling the rock. Should this work prove successful in locating pyrrhotite and other sulfides with associated platinum and palladium values, deeper test holes into the bedrock might be considered using a small backpack drill.

7.0 COST STATEMENT

Wages:

60 man-days @ \$150.00 per day =	\$9,000.00	
14½ man-days @ \$80.00 per day =	<u>1,160.00</u>	
	\$10,160.00	\$ 10,160.00

Food and Accommodation:

60 days @ \$14.35 per day =		861.00
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Transportation:

60 days @ \$4.59 per day =		275.19
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Instrument Rental:

7 days @ \$34.97 per day =		244.79
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Survey:

October 14-18; 5 days; Proton precession magnetometer;
13.75 line km (price included under wages and rental)

Sampling:

2 rock samples - analyzed for whole rock @ \$26.75 =	\$ 53.50	
8 rock samples - analyzed for Pt, Pd @ \$34.00 =	272.00	
2 rock samples - analyzed for Au, Ag @ \$12.00 =	<u>24.00</u>	
		349.50

Report Preparation:

Computer profiling and contouring of data	\$ 624.00	
Report compilation and writing	<u>1,750.00</u>	
		<u>2,374.00</u>

TOTAL		\$14,264.48
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8.0 STATEMENT OF QUALIFICATIONS

STEPHANIE MAIA PUDIFIN of Calgary, Alberta

- 1) Is a Staff Geologist with Bearcat Explorations Ltd. (Lumberton Mines Limited);
- 2) Has a B.Sc. degree in Geology from McGill University (1983);
- 3) Has been working in the field of mineral exploration since 1981; and
- 4) Has no financial interest in the property described herein.

DAVID V. THOMAS, of Calgary, Alberta

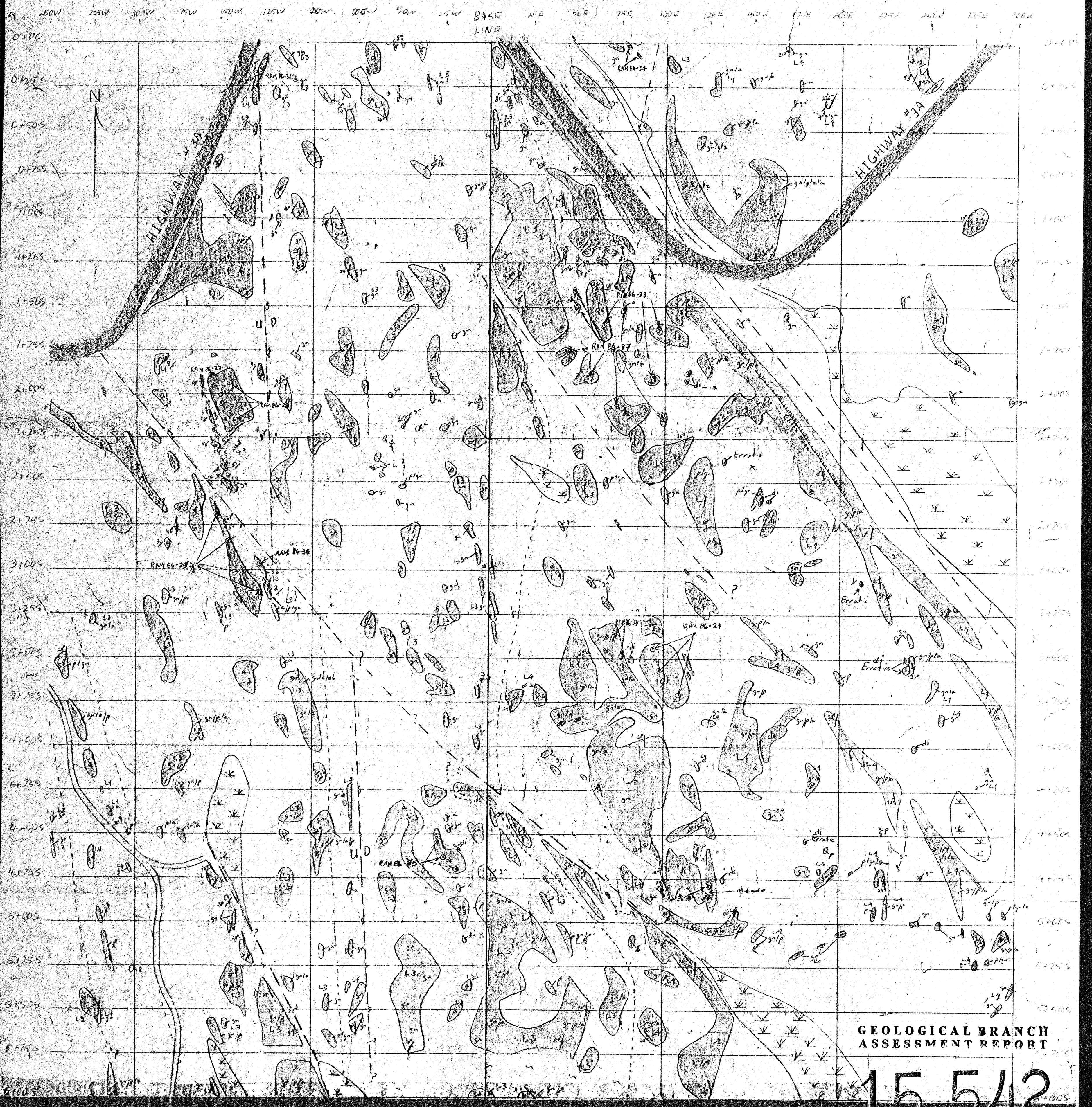
- 1) Is a Consulting Geologist in Calgary, Alberta;
- 2) Has a B.Sc. degree in Geology from the University of Alberta;
- 3) Has been working in the field of mineral exploration since 1981; and
- 4) Has no financial interest in the property described herein.

9.0 STAFF

Ms. M. Pudifin Calgary, Alberta	Project Geologist
Mr. D. Thomas Calgary, Alberta	Consulting Geologist
Mr. E.J. Phillips Cranbrook, British Columbia	Operations Supervisor
Mr. J. Randall Kootenay Bay, British Columbia	Field Assistant
Hardy BBT Ltd. Calgary, Alberta	Geophysical Consultants

10.0 REFERENCES

- Annual Reports, Minister of Mines, British Columbia, 1929, p. 325;
1930, p. 254.
- Hoy, T. (1980), Geology of the Riondel Area Central Kootenay Arc,
Southeastern British Columbia, MEMPR Bull. 73, p. 3
- Rice, H.M.A. (1941), Nelson Map Area, East Half, British Columbia,
GSC, Memoir 228, p. 60.

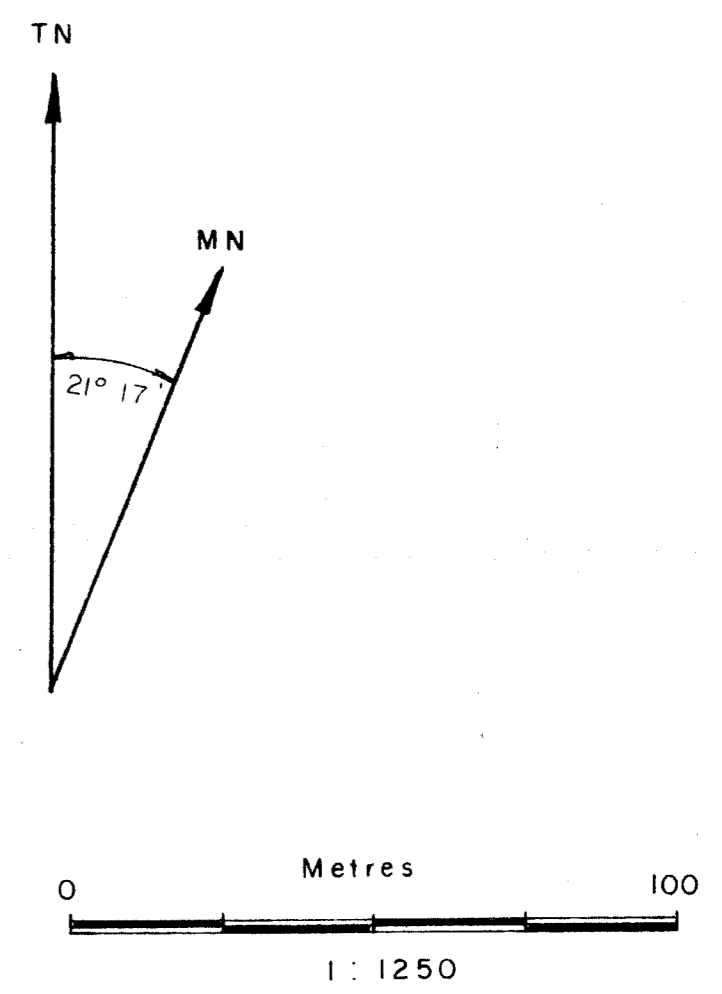
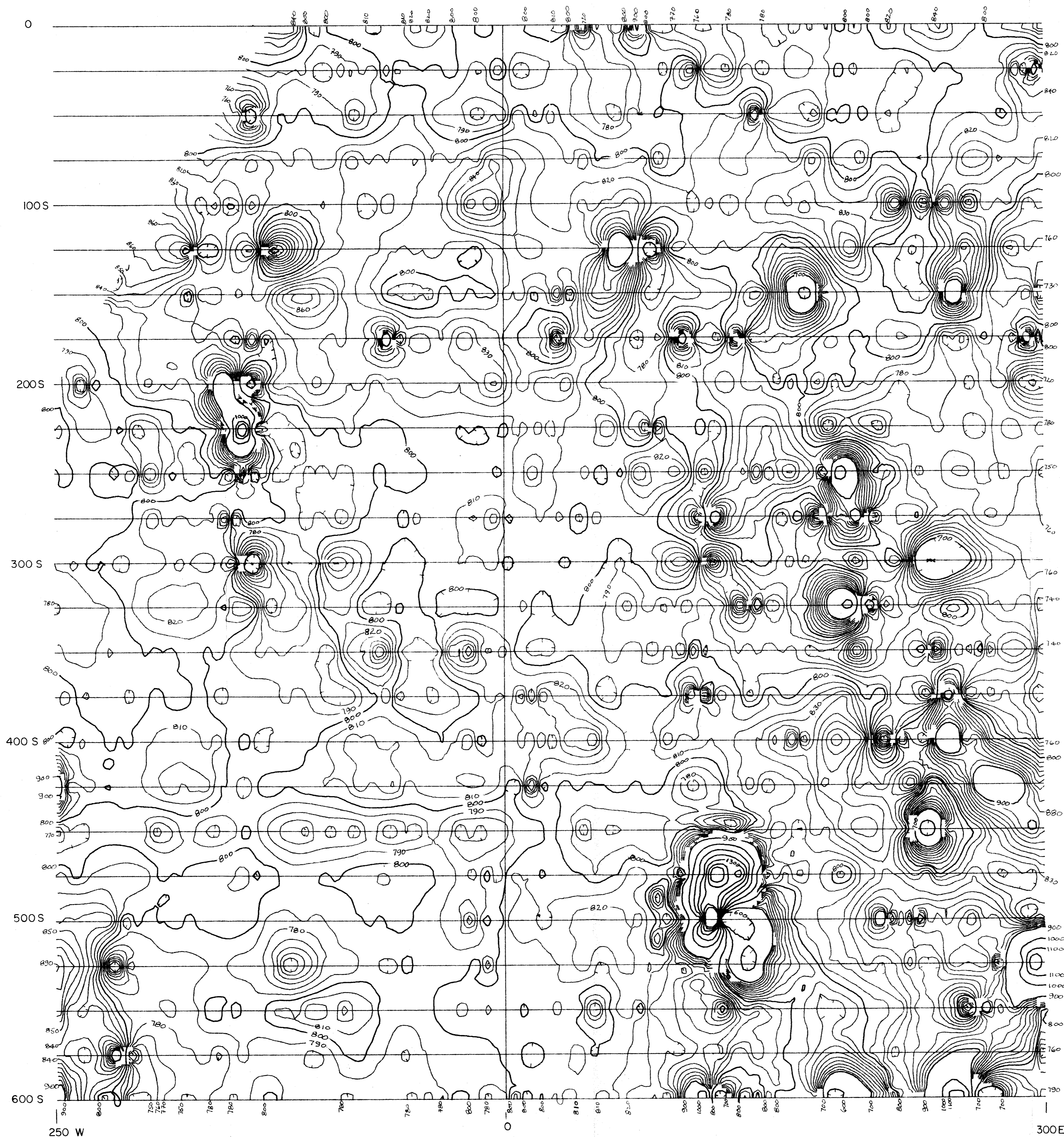


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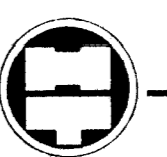
LEGEND	
d	Diorite Intrusives
gn L4	gn L4 granite - ortho - Feldspar gneiss
gn L3	gn L3 Calc. siliceous gneiss with amphibolite, marble and micaceous quartzite
p	pegmatite
a	amphibole gneiss
ab	amphibolite
qz	quartzite
k	karst/pond
- - -	Fault trace
- - -	Inferred geological contact
30°	strike - dip
●	Sample Location
==	Road

LUMBERTON MINES LTD.
RAM CLAIM
KOOTENAY BAY, SOUTH EASTERN B.C.
NTS 82 E / 10 W
GEOLOGY AND SAMPLING MAP
SCALE 1:1250
0 10 20 30 40 m
With Mr. A. Thomas Reed
JANUARY 1987
MAP 1



**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

15,542

	Hardy BBT Limited <small>CONSULTING ENGINEERING & PROFESSIONAL SERVICES</small>
	LUMBERTON MINES LTD. RAM CLAIM
KOOTENAY BAY, SOUTH EASTERN B.C. <small>(NTS 82 F/10 W)</small>	
TOTAL MAGNETIC FIELD CONTOUR INTERVAL — 100 Nanoteslas — 10 Nanoteslas BASE LEVEL 57000 Nanoteslas	
<small>JANUARY 1987</small>	<small>CP 12103 MAP 2</small>