

GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORTS

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SELF POTENTIAL AND VLF SURVEYS  
OVER THE JAY GROUP,  
INVEREMERE AREA

GOLDEN MINING DIVISION,  
BRITISH COLUMBIA

NTS 82K/8W, 82K/9W  
LAT/LONG 50°30' - 116°18'

FOR

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BY

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CALGARY, ALBERTA

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**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

FILMED

24,025

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## INTRODUCTION

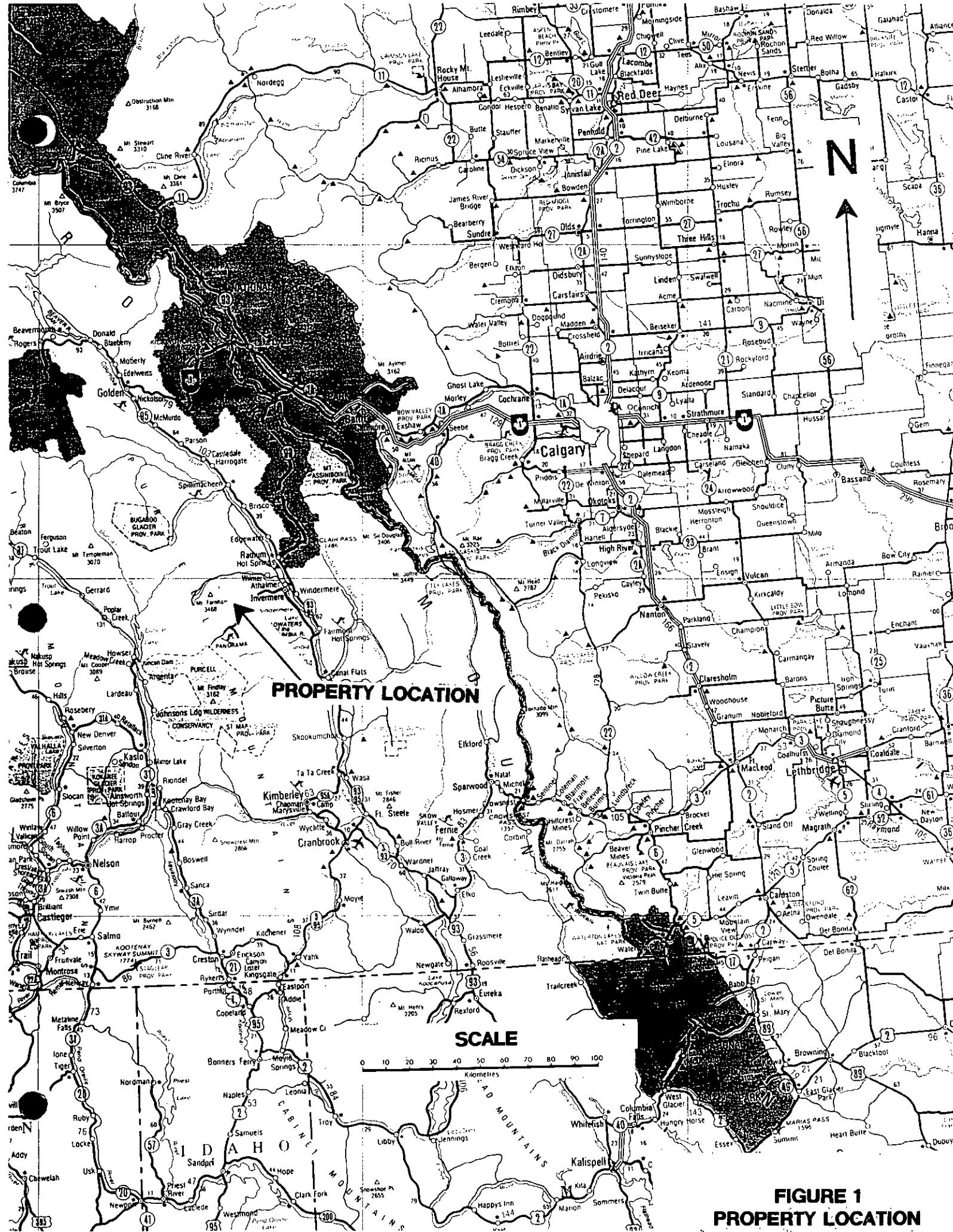
The property covered by this report consists of a total group of 52 units covered by the Jay #5, #6, and #7 claims. These claims are located approximately 20 kilometers directly west of Invermere, B.C., (Figures 1,2).

The author was contracted by W. Pochylko to conduct geophysical surveys over the property in order to locate lead-silver-zinc and copper veins in the area which had previously worked in the early 1900's. A large number of these veins were located by the early prospectors in the area between Toby Creek in the south to Law Creek in the north. The Paradise Mine, which adjoins the property on the south, was one of the more productive mines, ceasing operations in 1952. Production was 27,500 tons Pb-Zn ore at 18% Zn, 9% Pb and 7.8 oz/t Ag (Pope 1990).

Previous surveys in the general area using the self potential method has shown that it successful in locating the vein type deposits characteristic of the area. The main problem with the method are the ground conditions which consists mostly of steep scree slopes making ground contact difficult.

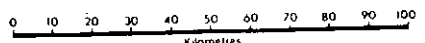
The VLF method was used for a limited period on a test basis but the approximately north-south strike for the major structures provides very poor coupling with the available VLF transmitters.

A number of anomalies have been identified and are shown on the profiles, Figures 5 - 8A, with their location included on a plan map (Fig 3). Extensions were run to the known deposits at the Paradise Mine and the Bald Eagle deposit for comparative purposes.



**PROPERTY LOCATION**

**SCALE**



**FIGURE 1  
PROPERTY LOCATION**



PROPERTY

The property consists of a total of 52 units registered to W. Pochylko, Stettler, Alberta and are listed as follows:

Claim Name	Record No	Tag No	Units	Expiry
Jay #5	325807	67601	20	May 31, 95
Jay #6	325808	67602	20	May 31, 95
Jay #7	325809	211714	12	May 31, 95

The claims are located in Golden Mining Division, 50°30' Lat, 116°18' Long., and in NTS map sheets 82K/8W and 82K/9W. (Figures 1 and 2).

ACCESS

The property is located approximately 20 kilometers directly west of Invermere, B.C. The property can be reached from the Bruce Creek logging road which is accessed from the town of Wilmer, just north of Invermere B.C. The property can also be reached from the Invermere to Panorama highway. An access road just east of the Panorama ski hill passes through the old Paradise Mine site, crosses the ridge and passes through the Jay claims to connect with the Bruce Creek road.

HISTORY

The claims were staked over the location of a number of old workings in the Bruce Creek area just north of the Paradise Mine. A number of crown grants were located in the area, many of which have now reverted. Some of the crown grants are shown in the wrong location on the claims map and the revised locations for the Pretty Girl and Sitting Bull group, which are the only ones that affect the Jay group, are shown in Figure 3.

The old prospects covered by the claim group with ore grades derived from selected samples reported in the Minister of Mines Annual Reports are as follows:

Delos (also includes Trojan)  
1898 - selected sample - 32% Cu

1916 - selected sample - 27% Cu, 3 foot sample - 9.6%  
Pretty Girl (contained within Jay #5)

1898 - selected sample - 26% Cu, 55 oz. Ag

1899 - selected sample - 22% Cu, 40 oz. Ag, \$3 Au.

Sitting Bull Group (adjoins and partially overlaps Jay #5)

Black Prince

1919 - selected sample - 14% Cu, 1.4 oz. Ag

Alps Group (location uncertain - see Pope geology map)

Prospects close to the claim group are:

Paradise Mine

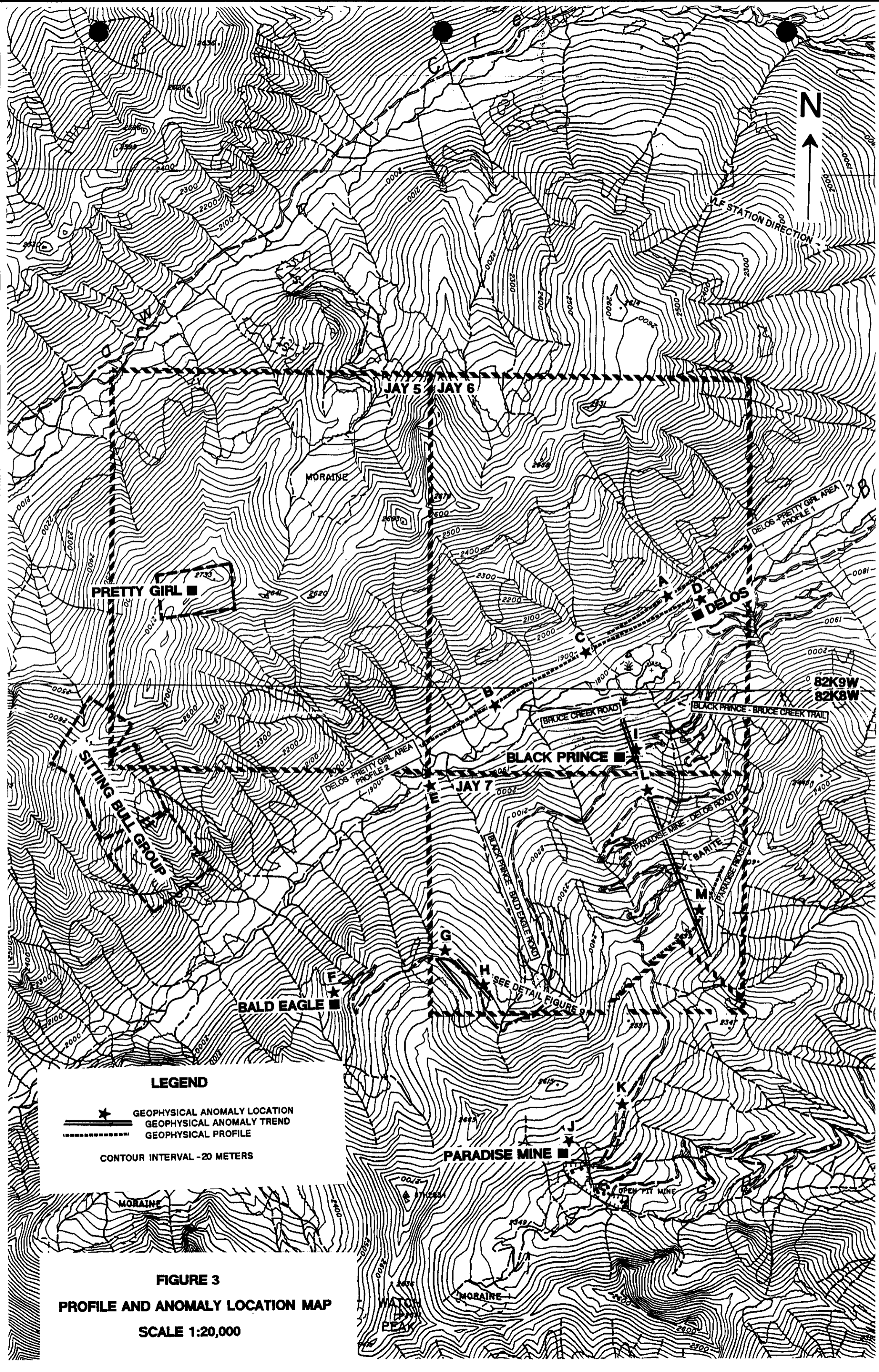
27,500 tons production at 18% Zn, 9%Pb, 7.8 oz Ag

Bald Eagle group

1919 - 1 foot sample - 52 oz. Ag, 20% Pb, 12% Zn

1921 - 2 foot sample - 11 oz. Ag, 33% Pb, 20% Zn

grab sample - 23 oz. Ag, 42% Pb, 24% Zn



PRETTY GIRL ■

MORaine

JAY 5 JAY 6

DELOS - PRETTY GIRL AREA  
PROFILE 1

DELOS ■

BRUCE CREEK ROAD

BLACK PRINCE - BRUCE CREEK TRAIL

SITTING BULL GROUP

DELOS - PRETTY GIRL AREA  
PROFILE 2

BLACK PRINCE ■

JAY 7

PARADISE MINE - DELOS ROAD

BARITE

BALD EAGLE ■

BLACK PRINCE BALD EAGLE ROAD

H SEE DETAIL FIGURE 9

PARADISE ROAD

PARADISE MINE ■

OPEN PIT MINE

MORaine

MORaine

WATCH  
PEAK

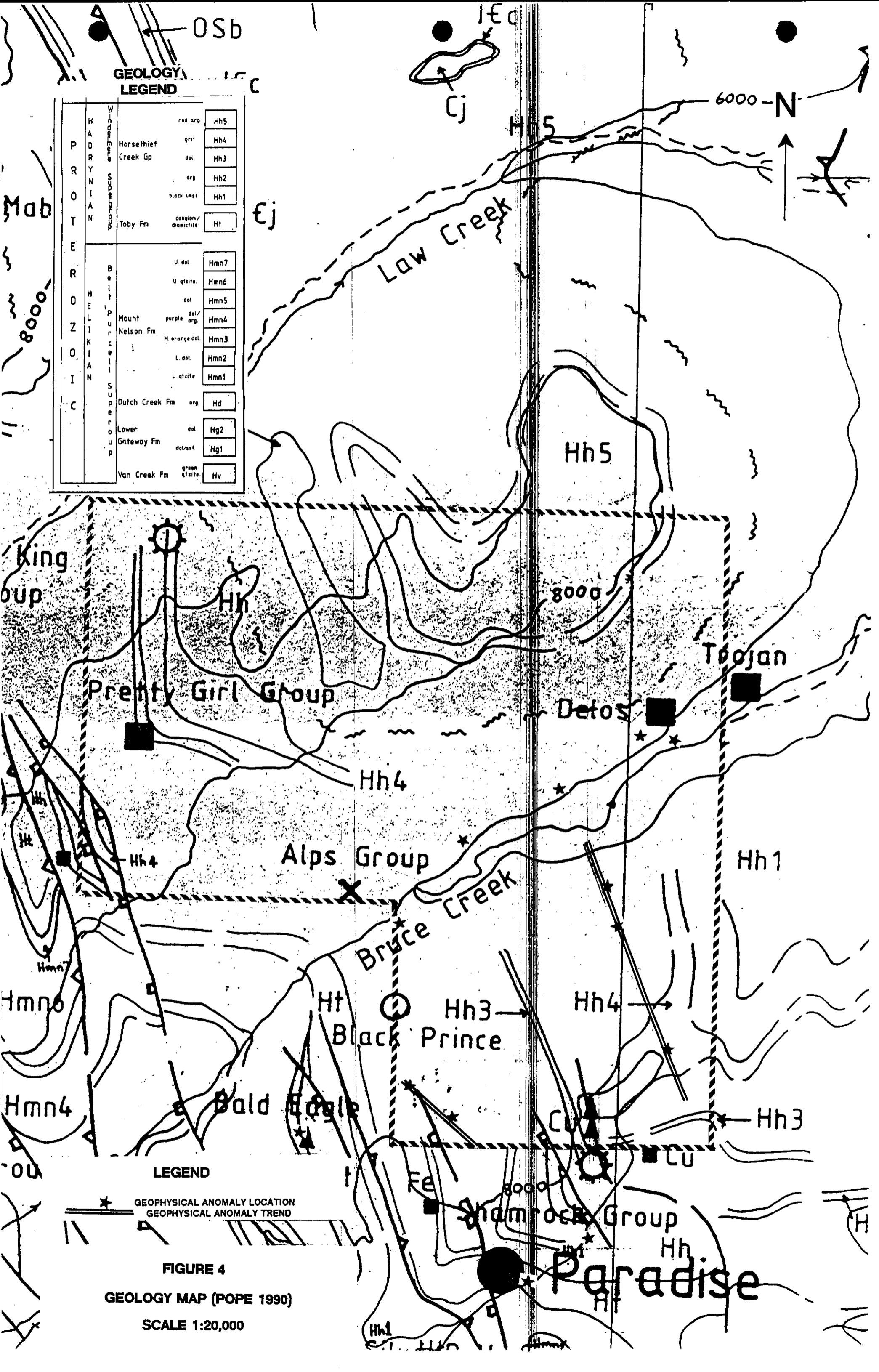
**LEGEND**

- ★ GEOPHYSICAL ANOMALY LOCATION
- ==== GEOPHYSICAL ANOMALY TREND
- GEOPHYSICAL PROFILE

CONTOUR INTERVAL - 20 METERS

**FIGURE 3**  
**PROFILE AND ANOMALY LOCATION MAP**  
**SCALE 1:20,000**





**GEOLOGY LEGEND**

P R O T E R O Z O I C	H A D R Y N I A N	rad. arg.	Hh5
		grit	Hh4
		dol.	Hh3
		arg.	Hh2
		black (ms)	Hh1
		conglom./diamicite	Ht
		Toby Fm	
E R O Z O I C	B E L T P U R C E L L S U P E R G R O U P	U. dol.	Hmn7
		U. quartzite	Hmn6
		dol.	Hmn5
		purple dol./arg.	Hmn4
		M. orange dol.	Hmn3
		L. dol.	Hmn2
		L. quartzite	Hmn1
		Dutch Creek Fm	Hd
		Lower Gateway Fm	Hg2
		dot/sst.	Hg1
Van Creek Fm	Hv		
	green quartzite		

**LEGEND**

- ★ GEOPHYSICAL ANOMALY LOCATION
- GEOPHYSICAL ANOMALY TREND

**FIGURE 4**  
**GEOLOGY MAP (POPE 1990)**  
**SCALE 1:20,000**

## GEOPHYSICAL SURVEYS

The topography in the area is relatively steep, ranging from 1800 meters at Bruce Creek to approximately 2700 meters at the Pretty Girl (Figure 3). The area south of Bruce Creek is heavily forested at the lower elevations with a number of roads and trails providing access. North of the creek there is limited forest and the terrain is mostly rock bluffs and very steep scree slopes.

The objective of the surveys was to cover all available roads and trails to determine if any response could be obtained from the known deposits as well as determine if any new locations would be discovered. Any anomalies discovered could then be detailed. Two profiles were conducted approximately along elevation north of Bruce Creek to cover the Delos deposit.

The Self-Potential method has been used previously in the general area and has been able to locate many of the vein type deposits characteristic of the region. The method and typical results have been described in a paper by Burr, 1982.

The VLF method was used on a limited basis as the regional strike would produce very poor coupling with the available VLF transmitters.

The survey was extended to cover the known deposits at the Paradise Mine and Bald Eagle for comparative purposes. The expenses to do this work are not included in the Statement of Costs.

### (A) SELF-POTENTIAL SURVEY

#### SPECIFICATIONS

The majority of the survey was conducted using a 40 meter cable connected to copper sulphate electrodes which are non-polarising. The separation was reduced to 30 meters on the profiles in the Delos area where more detail was required over the known deposit. The voltage measurements were made with a high input impedance digital voltmeter. The survey was conducted using the leap-frog method with the forward electrode maintained at each location with the rear electrode moved past for the next measurement. Where detail grids were conducted the survey proceeded in a series of closed

loops which were then drift corrected.

## RESULTS

The results are presented as a series of profiles, Figures 5 - 8A, with the results of a detail grid over two of the anomalies presented as a plan map, Figure 9. A total of approximately 20 kilometers were surveyed on the Jay group with an additional 3 kilometers to include the Paradise Mine and Bald Eagle deposits. An arbitrary base level was selected for each of the profiles and anomaly amplitudes are considered relative to the local background level.

## INTERPRETATION

A number of anomalous locations are obvious on the profiles and these have been identified by the letters A - M on both the profiles and on the plan map, Figure 3. These are summarised as follows:

ANOMALY	AMPLITUDE	COMMENTS
A	100 mv	Possible extension of Delos
B	140 mv	Possibly Alps group
C	160 mv	On strike with Black Prince
D	120 mv	Delos deposit
E	150 mv	
F	400 mv	Bald Eagle deposit
G	400 mv	See detail grid - Figure 9
H	550 mv	See detail grid - Figure 9
I	125 mv	directly over Black Prince workings
J	225 mv	At upper portal of Paradise Mine
K	250 mv	Near Paradise Mine - copper? (Pope)
L	175 mv	Southern extension Black Prince
M	70 mv	Extension of Black Prince? Small barite deposit in slate to north

Anomalies A - E will require further work in order to determine the strike and length of each but the similarity in amplitude provides the possibility of ore grades similar to the Delos, anomaly D.

Anomalies I, L and M are all apparently related to the same

structure which contains the Black Prince deposit and would give a strike of 340 degrees. Anomaly L would appear to be the best response on this structure.

Anomalies G and H produced the greatest amplitudes of the survey and the detail work shown in Figure 9 suggests two sub-parallel structures. The bounding fault to the Paradise Mine, located approximately 1200 meters to the south, is shown on the Pope geology map, (Figure 4), to extend northwards through this location. This fact make these anomalies of prime importance for further work.

### (B) VLF SURVEY

#### SPECIFICATIONS

A Geonics EM 16 was used for the survey. The transmitter at Annapolis, (NSS), was used as this would provide the best, although very poor, coupling with the regional structural direction, generally 340 degrees. Bearing to the transmitter was approximately 105 degrees. Due to the poor coupling with this configuration it was not anticipated that any significant anomalies would be obtained.

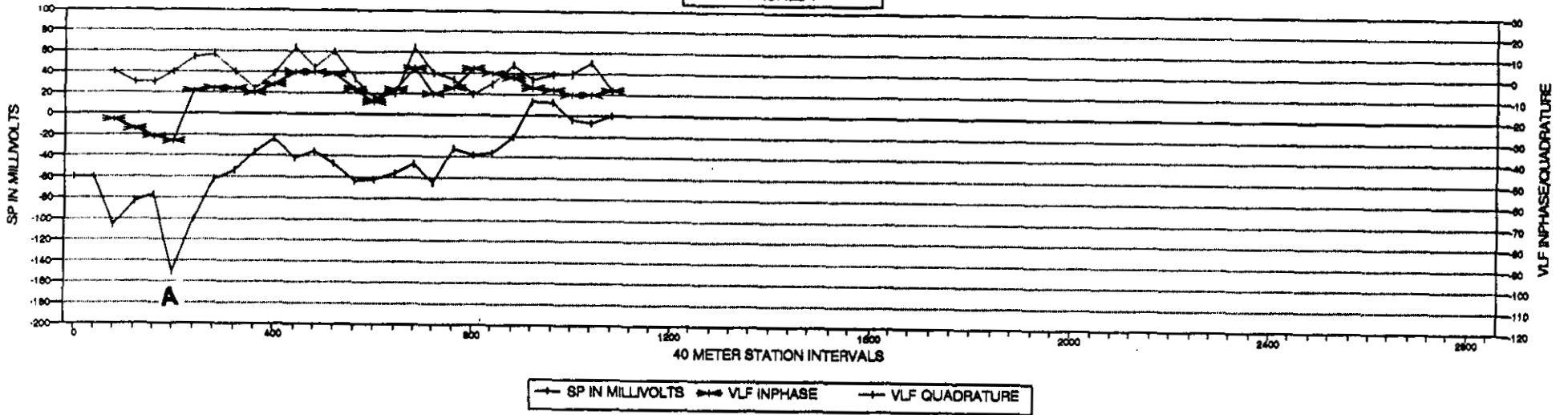
#### RESULTS

Only two lines were surveyed, approximately 2 kilometers in length, and the results are included with the self-potential profiles in Figures 5 and 8A. A plotting convention of positive to the right for a conductor axis was used when plotting the data.

#### INTERPRETATION

A very sharp cross-over corresponds with anomaly A as shown in Figure 5. This suggests that the strike of this anomaly is probably closer to that associated with the transmitter direction rather than the general regional structural direction. The possibility exists that this may indicate an extension of the Delos deposit located just to the east.

DELOS - PRETTY GIRL AREA  
PROFILE 1



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DELOS - PRETTY GIRL AREA  
PROFILE 2

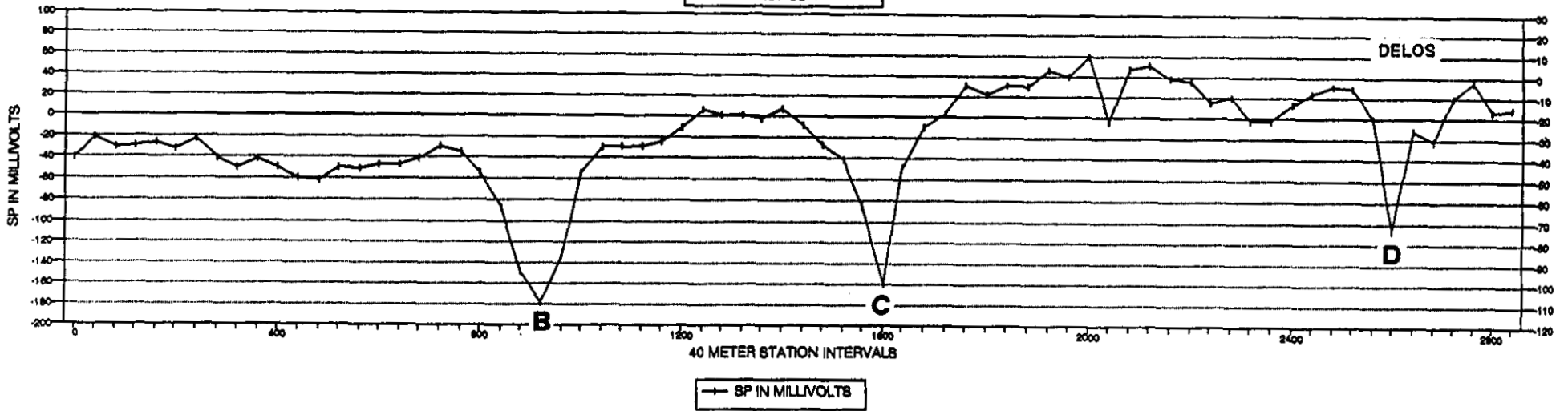
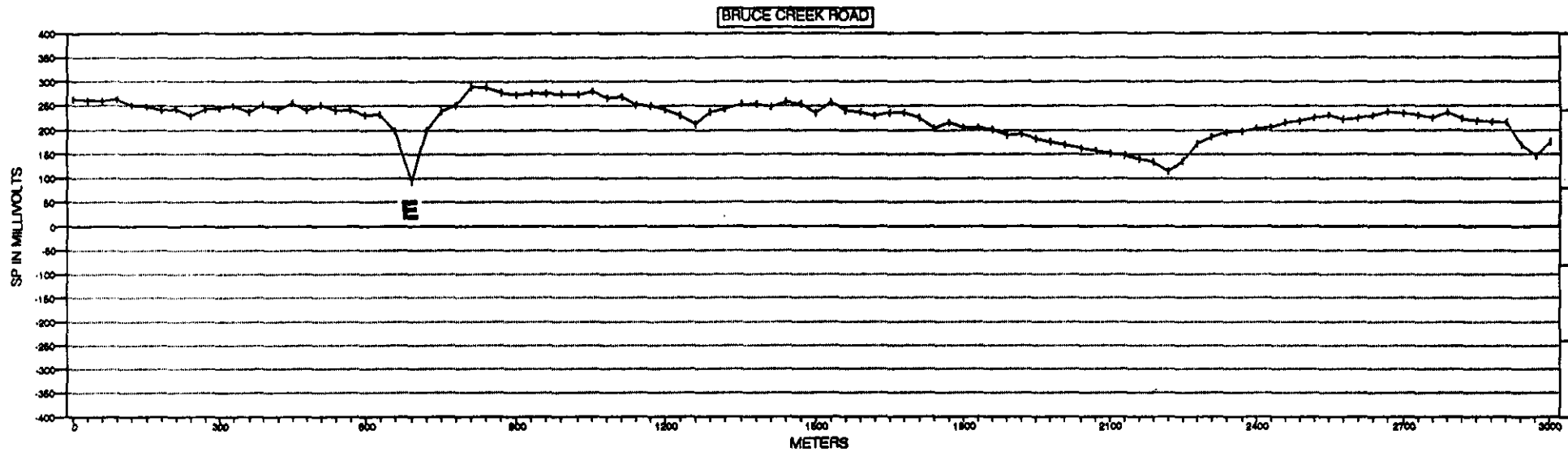
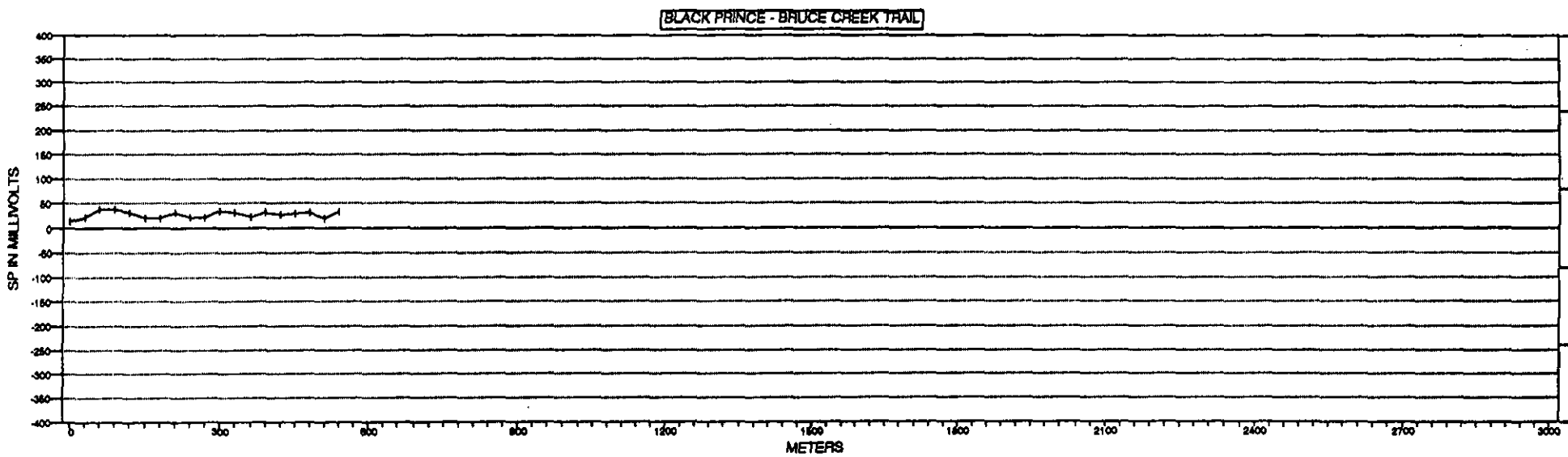


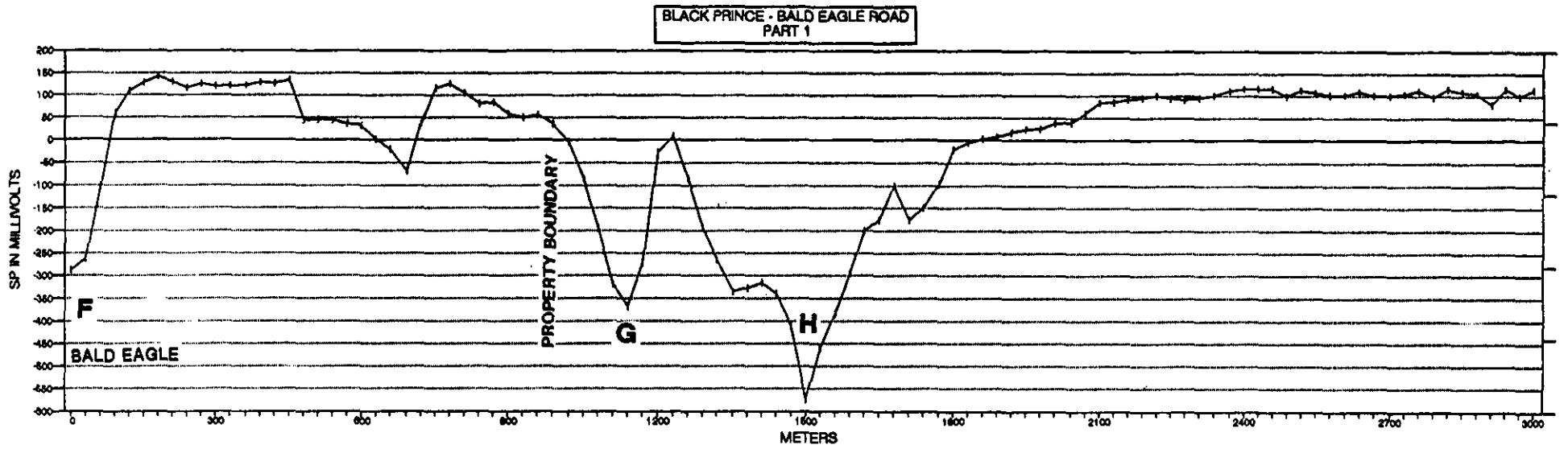
FIGURE 5



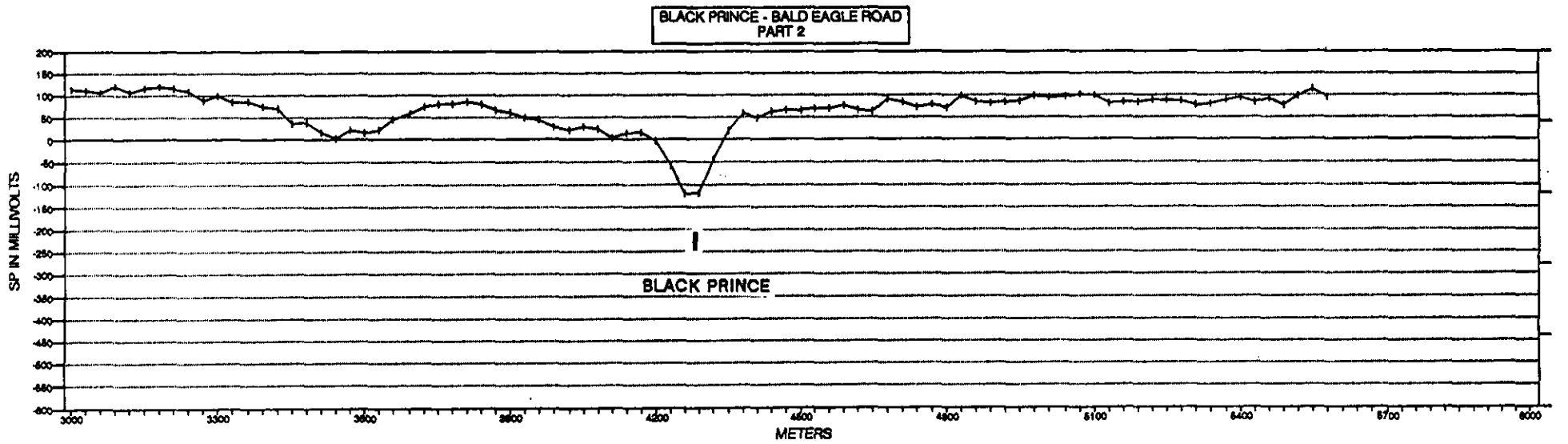
12



**FIGURE 6**

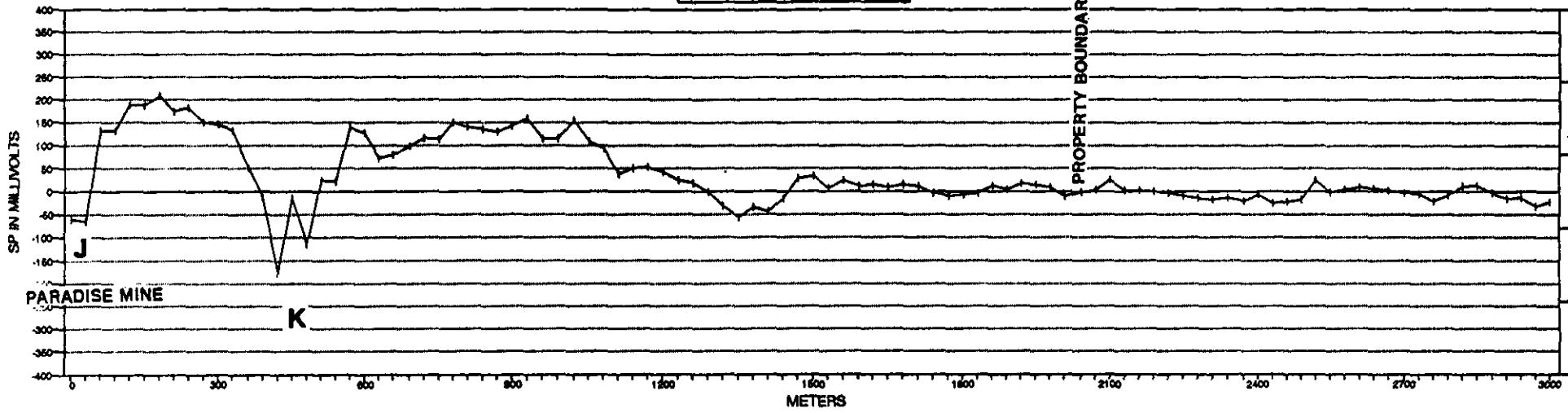


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**FIGURE 7**

PARADISE MINE - DELOS ROAD  
PART 1



14

PARADISE MINE - DELOS ROAD  
PART 2

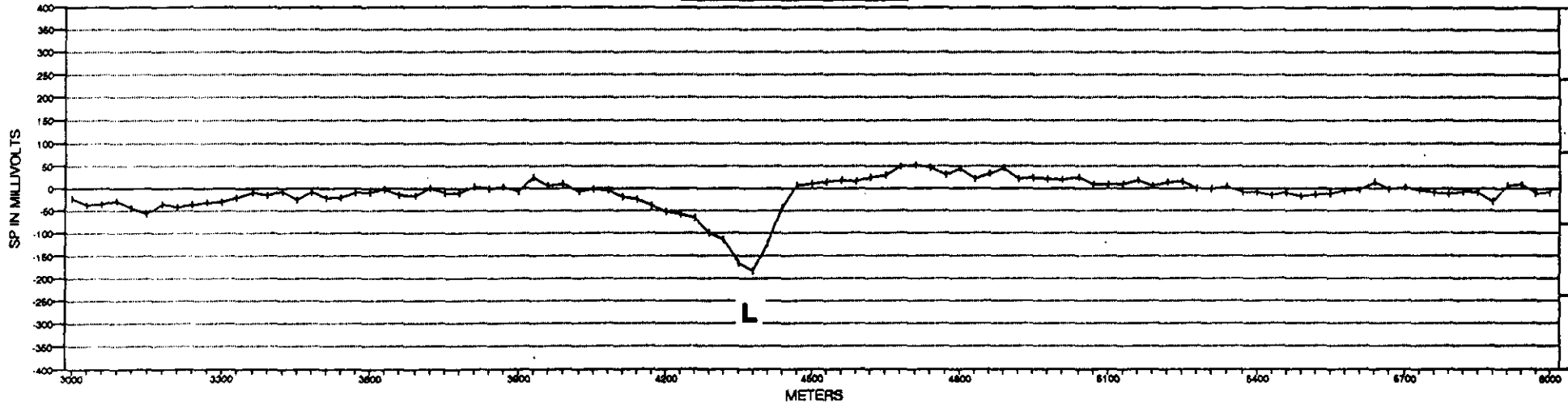
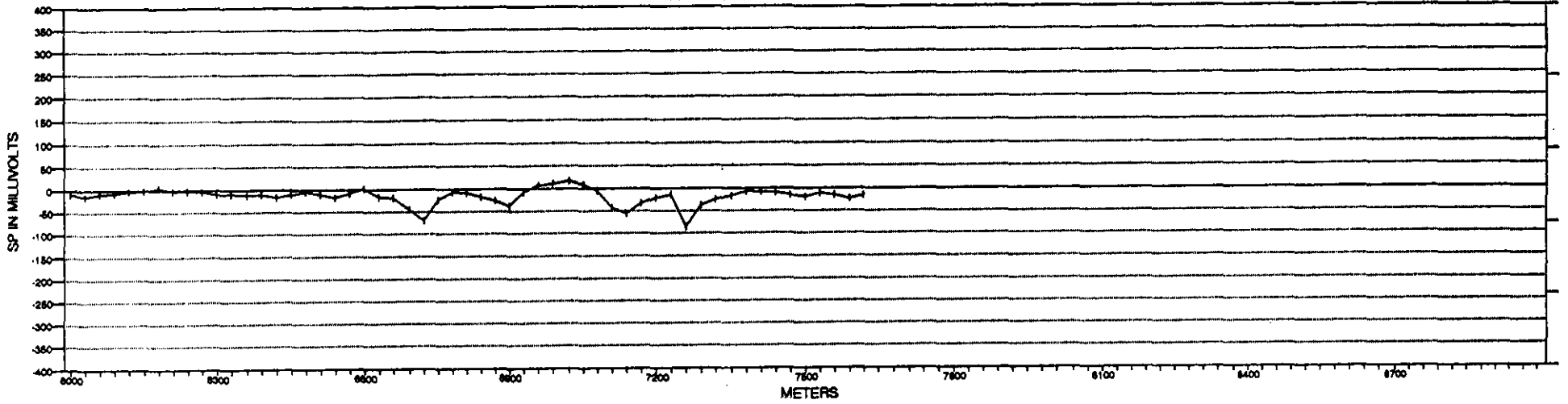


FIGURE 8



PARADISE MINE - DELOS ROAD  
PART 3



15

PARADISE RIDGE

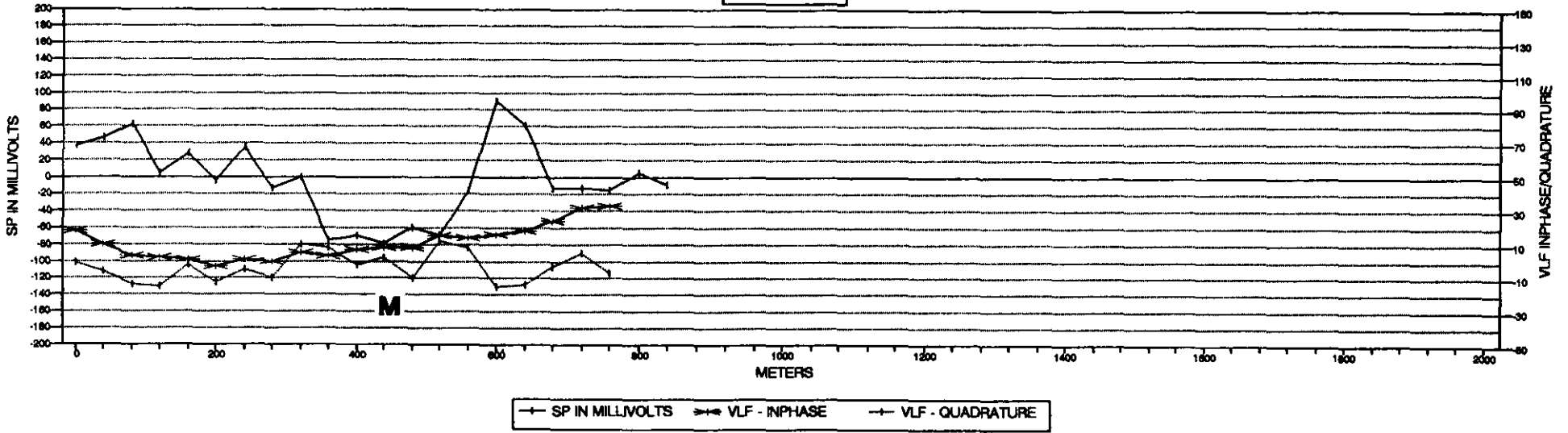
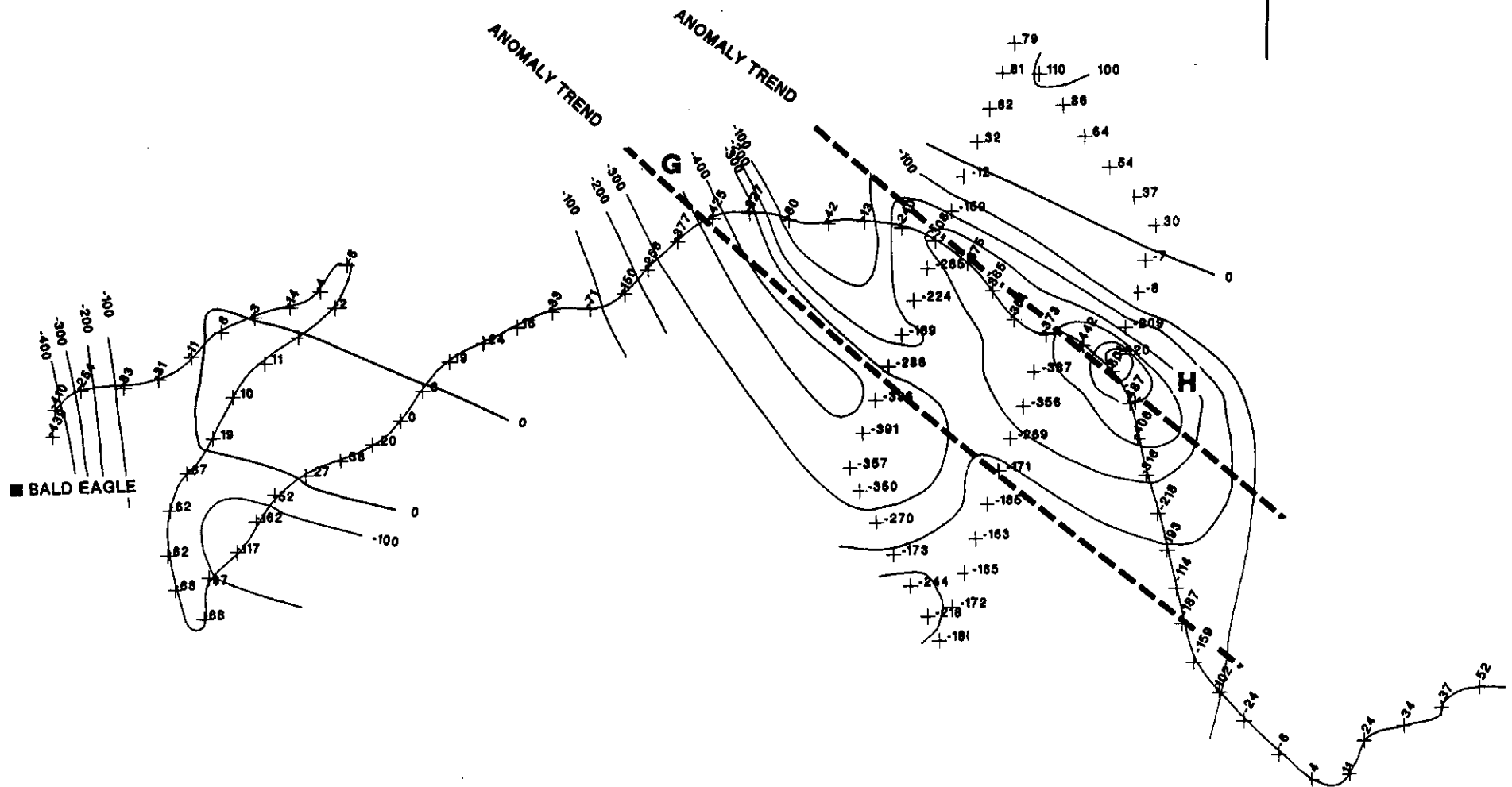


FIGURE 8A



**FIGURE 9**  
**SELF-POTENTIAL SURVEY**

DETAIL GRID  
 CONTOUR INTERVAL - 100 Millivolts  
 SCALE 1:5,000

## CONCLUSIONS AND RECOMMENDATIONS

A number of significant self-potential anomalies were located by the survey and when compared with the response over the Paradise Mine, indicate that this property has good merit. Not only was it possible to locate the old deposits and define the strike direction in some cases but a number of new locations have also been defined. A corresponding VLF conductor over one of the self-potential anomalies suggests that not all of the anomalies will conform to the regional structural direction.

Recommendations for further work are as follows:

(1) Detail grid over the Delos area, anomalies A and D, in order to determine the strike and limits using the self-potential method.

(2) Extend the detail grid over anomalies G and H in order to define northern limits. Geochemical analysis of soils or rock chips to determine if there is any concentration of minerals similar to that of the Paradise Mine.

(3) Detail anomalies B, C and E with self-potential utilising small grids to determine strike and possible extent.

(4) Determine if anomaly L, the extension of the Black Prince deposit, has sufficient grade and/or volume to respond to electromagnetic methods, either horizontal or vertical loop.

## REFERENCES

Burr S.V., 1982, A Guide to Prospecting by the Self-Potential Method, Ontario Geological Survey, Miscellaneous Paper 99.

Pope A., 1990, The Geology and Mineral Deposits of the Toby-Horsethief Creek Map Area, Northern Purcell Mountains, Southeast British Columbia (82K), Geological Survey Branch, B.C., Open File 1990-26.

STATEMENT OF COSTS

Mobilisation/Demobilisation			\$750.00
T.Dundas	Geophysicist	6 days @\$400.00	\$2,400.00
W.Pochylko	Assistant	6 days @\$250.00	\$1,500.00
	food & exp.	6 days @\$50.00	\$300.00
	SP rental	6 days @\$25.00	\$150.00
	VLF rental	4 days @\$35.00	\$140.00
	vehicle	6 days @\$50.00	\$300.00
	Report	2 days @\$500.00	\$1,000.00
			=====
			\$6,540.00

CERTIFICATE

I, Trevor R. B. Dundas do hereby certify that:

1. I am a practicing consultant geophysicist resident in Calgary, Alberta.
2. I have graduated with a B.Sc. degree in Geology from Queen's University, Belfast in 1965 and an M. Sc. degree in Geophysics from Imperial College, London University in 1967.
3. I have been actively consulting as a geophysicist since 1968.

Dated this 30 day of June 1978,

  
Trevor R.B. Dundas