GEOLOGY AND GEOPHYSICAL REPORT

on the

PERCY & BC-1 CLAIMS
KAMLOOPS MINING DIVISION

MAP 82 M/5 W
51°20'N, 119°54'W

A Cu-Zn Prospect

by

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Consulting Geological Engineer.

November, 1980

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PERCY & BC-1 CLAIMS
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INTRODUCTION

a) General

At the request of Mr. Ronald B. Stokes, a field evaluation was made of the Percy and BC-1 claims by John G. Payne, PhD, and Brian Hatelt on September 13th and 14th, 1980. The purpose was to determine if the Cu-Zn deposits on the property and on nearby properties were of volcanogenic origin, and what further exploration would be warranted. A brief summary report of the property was prepared by the author from the literature in February, 1980, and parts of that report are included in this one. A base map on a detailed scale was not available, and a 1"=400' geology map from an earlier report by J.R.Woodcock was used for much of the property, and an inaccurate 1"=100' map was used as a base in and near the trenches on the Percy claim. Most of the outcrops on these maps were examined an reinterpreted, and some additional outcrops were added. A new logging road cuts across the southwestern part of the property and exposes a few new outcrops; however, much of its route is through thick glacial till. Detailed magnetometer surveys were run in the region of the trenches on the Percy claim, and along some old logging roads in the BC-1 claim.

b) Location and Access (see Figure 1)

The property occurs just northwest of the North Barriere Lake road, which turns off Highway 5 at Barriere. The property is 26.4 km from Barriere. A new logging road turns left off the main road about 0.6 km before the road crosses Birk Creek. At 1.2 km this logging road crosses Birk Creek and climbs up the side of the hill to the north, with three major switchbacks. At the third, 4.9 km from the North Barriere Lake road, the old road to the showings on the Percy claim branches off to the right (a muddy ditch may have to be bridged at this point). The old road climbs through a series of switchbacks for 1.8 km where it reaches the main showings on top of the ridge at an elevation of about 4000 feet. The lower part of the property can be reached by turning right down an old logging road just before the major switchback at 4.9 km, or can be reached from North Barriere Lake road by a series of old logging roads, one of which turns off just beyond the bridge over Birk Creek.

c) Vegetation, Topography, and Climate

The area has moderate relief, from North Barriere valley at 2100' to the top of the ridge at the northwest corner of the property at 5000'. The south-facing slope is moderately forested with cedar, hemlock, spruce, and Douglas fir, and is being actively logged. Parts of the slope represent an old burn, and are covered by a dense growth of small birch, fir, and spruce, making traversing difficult. Much of the south-facing slope is covered by thick glacial till, which includes abundant very large boulders of the Barriere Batholith granodiorite, which outcrops on the ridge at the north side of the property. Snowfall and rainfall are moderately high.

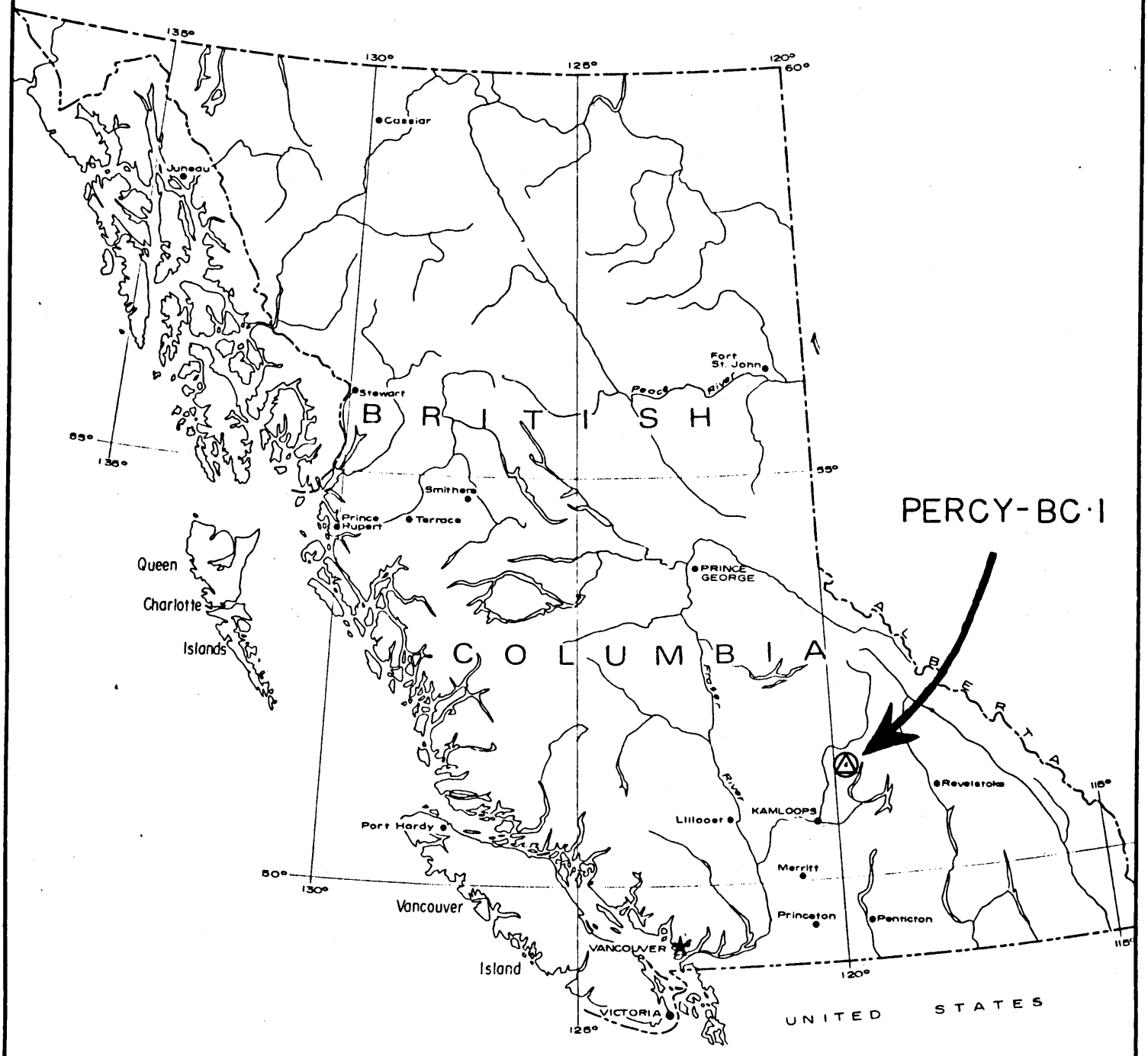


Figure 1. Location Map, Percy and BC-1 Claims

ALTAIR drafting services ltd.

d) Claim Status (see Figure 2)

The property consist of the following two units:

Percy	Record No. 2830(7)	9 units	staked July 1980
BC-1	Record No. 2306(12)	15 units	staked December, 1979

The BC-1 claim is valid until December 6, 1980.
The claims are owned by Ronald B. Stokes.

e) History of the Property

1) the region has been intermittently staked and prospected since the early 1900's, but until 1950 no detailed studies were done.

2) In 1951, S.H. Ward of McPhar Geophysics did several surveys over the property and surrounding claims for Kennco Explorations. He discovered two major parallel, steeply? dipping conductors, which he believed were caused by graphitic phyllite.

3) In 1969-70, 2000 feet of bulldozer trenches were cut on the Percy claim by Cambridge Mines. No record of geology or assays from this study are available.

4) In 1971-72, J.R.Woodcock supervised a soil geochemical survey of the properties for Ducanex Resources Ltd. He found a Cu-soil anomaly which correlated well with an outcrop zone of schists containing chalcopyrite and sphalerite. In 1972, 4 diamond drill holes were sunk near the south end of the claim group into schists containing chalcopyrite; the best intersection in this study was 0.85% Cu over 5.5 feet. Ducanex also did geophysical surveys, and found two areas of low resistivity and high chargeability which corresponded to outcrop belts of graphitic phyllite. (These probably are the same zones outlined by the McPhar survey in 1951.)

5) In 1973, N.B.Vello supervised a soil geochemical survey (Cu,Pb,Zn,Mo), a geological survey, and several geophysical surveys for Craigmont Mines Ltd. He found weak Zn soil anomalies with central zones of higher Zn and Pb anomalies. A magnetic survey generally gave a flat response with local highs representing small dipoles. An E.M. survey showed several weak to moderate conductors, most trending west-northwest across the lithologic contacts.

6) In 1977, S.C.Gower of Kennco Explorations Ltd. supervised a soil and rock geochemical survey, and cleaned and sampled the trenches of Cambridge Mines. This study showed a strong Cu-Zn soil anomaly overlying the zone of chalcopyrite-sphalerite bearing schists, and a moderate to strong Zn with lesser Pb and Ag anomalies in the hanging wall (southwest) of this unit.

7) In 1977, Mr Stokes acquired the property after it was dropped by Kennco. The Percy claim was restaked over the Ralph claim in 1980, and the BC-1 claim was staked over the Dark claim in 1979, both at the expiry of the former claims. Minor exploration work was done before the present examination.

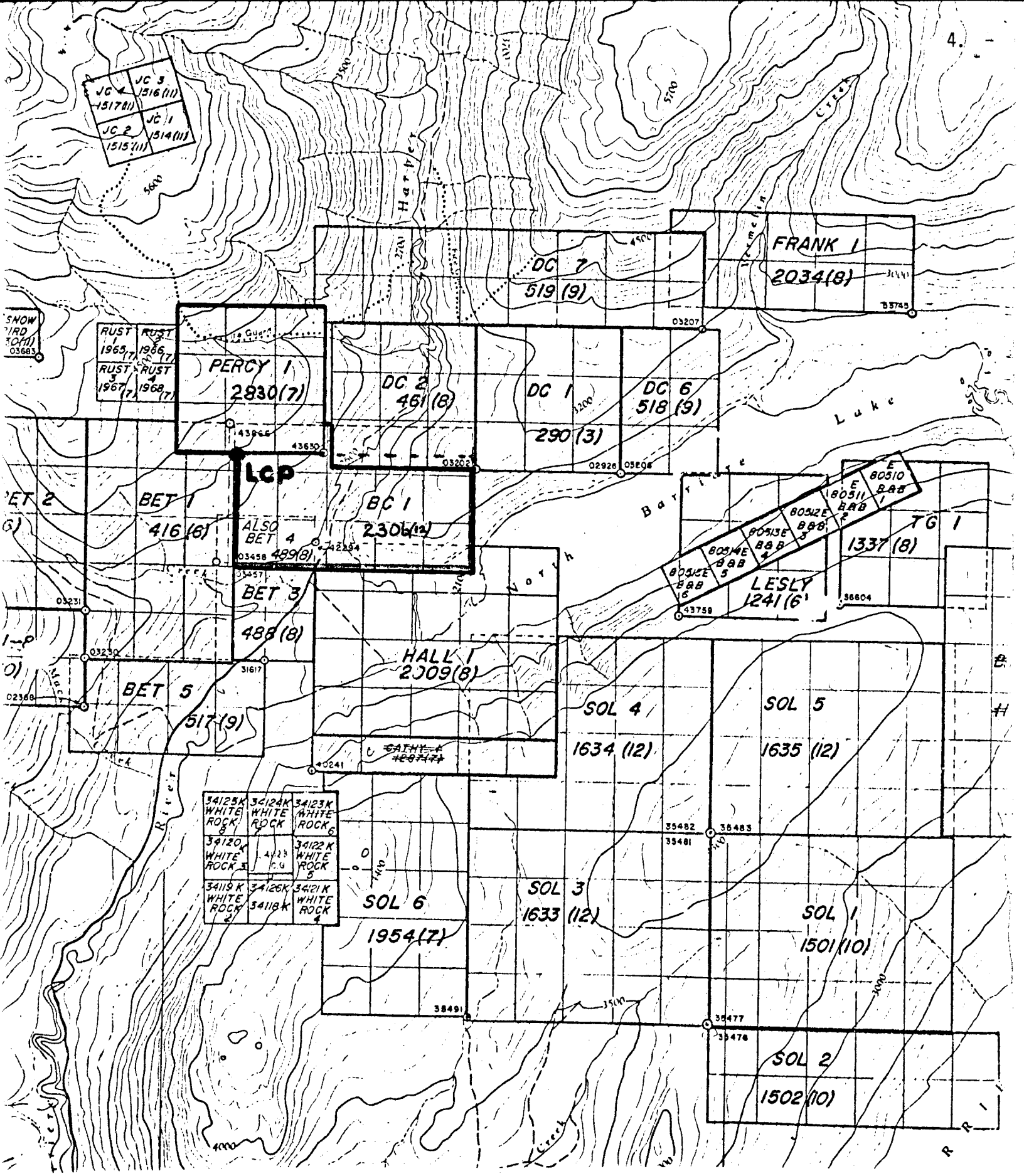


Figure 2. Claim Location Map

GEOLOGY

a) Regional

The Percy and BC-1 claims are underlain by metamorphosed volcanic and lesser sedimentary rocks of the Eagle Bay formation of probable Mississippian age (Preto, 1980). Volcanic rocks are dominated by a major felsic unit of tuffs and flows, including quartz porphyry rhyolite. Other rocks are dacitic to andesitic tuffs and sedimentary rocks, and carbonaceous, in part graphitic, phyllite (after mudstone), with minor limestone and quartz exhalite.

The rocks trend northwest across the property, with a prominent foliation generally dipping moderately to the southwest, and locally swinging to the west or steepening to 50-60^{0} in dip. Minor folds trending northwest and plunging gently northwest locally contort the metamorphic foliation.

The rocks are intruded by a few small stocks of fine grained, commonly porphyritic granodiorite to quartz diorite, the largest of which outcrops on the lower road of the magnetic survey shown in figure 4.

North of Mabel Creek is the Barriere Batholith, a massive, coarse grained, in part porphyritic granodiorite, which forms prominent cliffs, and which is the source of the very abundant coarse boulders in the glacial till on much of the property. Its contact with the metamorphic rocks is obscured by gravel in Mabel Creek. However, the presence of secondary biotite in the adjacent volcanic and related rocks indicates that it was intruded into these rocks, and the latter were contact metamorphosed along its margin.

b) Trench Area (see Figure 3; inside back cover)

Outcrop is restricted mainly to the trenches. The units strike northwest to north-northwest and dip from 20 to 60^{0} southwest, with compositional layers parallel to a strong metamorphic foliation. A stratigraphic sequence is as follows (from bottom to top):

1) Main mineralized zone: this consists of thinly layered rocks with units up to a few meters across.Rocks consist mainly of two units as follows:

   i) felsic volcanic rocks, probably rhyolite to rhyodacite tuffs and lesser flows, including some quartz porphyries, and

   ii) chlorite-biotite altered? rocks, which originally may have been felsic to andesitic flows and tuffs, depending on the amount of alteration.

   Less abundant, but important units, include quartz exhalite in thin layers, generally interlayered with felsic tuffs, and limestone. Also present are fine grained tuffaceous sediments of intermediate composition, which grade into carbonaceous and locally graphitic phyllite.

2) Hanging-wall unit: this consists of a felsic gneiss (quartz-feldspar-biotite), probably after a felsic flow. It contains scattered pyrite porphyroblasts, but no chalcopyrite or recognizable hydrothermal alteration. It is best exposed in Trenches 4, 5, and 6.
   Locally, in trenches 2 and 3, a thin limestone unit marks the upper contact of the main mineralized zone.

3) Poorly exposed carbonaceous, locally graphitic, phyllite (after mudstone) occurs west of the trenches.

The quartz exhalite units generally average 5-10 cm thick, and are interlayered with fine grained, commonly porphyritic felsic tuffs. The exhalite units were mapped previously (Woodcock, 1971) as quartzites, which indeed they are, but their origin is considered to be related to the hydrothermal activity which

accompanied the felsic volcanism, and which produced the sulfide mineralization.

Almost all the chalcopyrite and sphalerite in this part of the sequence occurs in the main mineralized zone, from which the following assays of earlier studies are shown in Table 1. These represent the best assays from the previous work.

Table 1. Assays from Earlier Studies

Trench No.	Sample No.	Width (ft)	Cu%	Zn%	Pb%	Ag(oz/T)	Au(oz/T)
7	4059	3.0	1.09	n.d.	n.d.	0.31	0.003
	4060	3.0	1.07	n.d.	n.d.	0.29	0.004
4	48048	3.0	0.41	0.05	n.d.	0.17	0.005
	48043		0.60	0.19	n.d.	0.17	0.003
3	48036		0.27	0.27	n.d.	0.11	0.002
	48037		0.63	0.05	n.d.	0.15	0.005
	48038		2.75	0.59	n.d.	0.56	0.004
	48028		0.03	1.28	0.38	0.57	0.002
9	48050		0.55	0.13	n.d.	0.26	0.003
2	48024		1.13	0.08	n.d.	0.32	0.003

n.d. = not determined

all samples are from felsic tuff and altered (chlorite-biotite) felsic and intermediate tuff, except sample 48028 in Tr-3, which is in limestone.

c) Birk Creek Area

Along Birk Creek and extending up the slope west of Paul Creek is a major rhyolite unit, now represented by quartz-sericite schist. It commonly contains relic quartz phenocrysts, and several zones contain abundant pyrite as disseminated grains, wispy lenses, and locally as thick layers up to 1 mm in thickness. Old assays show scattered high values in Cu, Pb, and Zn.

Massive pyrite beds up to 1 m thick are exposed in a few old adits in cliffs of the rhyolite along the south bank of Birk Creek about 2.8 km west of where the new logging road crosses the creek. The showings are accessible by a good trail along the north side of the creek. Previous assays from this zone gave the following:

Cu 0.3-0.4%, Ag 0.30 oz/T, Au 0.01 oz/T.

GEOPHYSICS (see Figures 4, 5)

The detailed magnetometer traverses done by Mr. Hatelt showed three small intense anomalies in the region of the trenches (Figure 4). These probably are produced by small bodies of magnetite near the surface, although no magnetite was recognized at the centers of these anomalies. The anomalies show as strong dipoles, with high positive values flanked by about equally low negative values.

The broader survey on old logging roads to the south (Figure 5) showed a flat magnetic response, with only one positive anomaly near the east end of the traverse.

GEOCHEMISTRY

The earlier geochemical surveys showed a strong Cu-Zn soil anomaly overlying the main mineralized zone in the trenches. This soil anomaly extends southeastward down the slope through an area of scattered outcrops of felsic tuff, generally with moderate to strong Fe-stain. To the west and southwest, a moderate to strong Zn and weaker Pb and Ag anomalies overlie the carbonaceous phyllite.

Because of the generally thick glacial till, soil geochemical results may be misleading. The values over the mineralized zone are unusually high considering the relatively low values of these elements in the underlying rocks, especially for Zn. No specific center of alteration can be recognized in the main mineralized zone, although the region southeast of Trench 8 has the highest soil values.

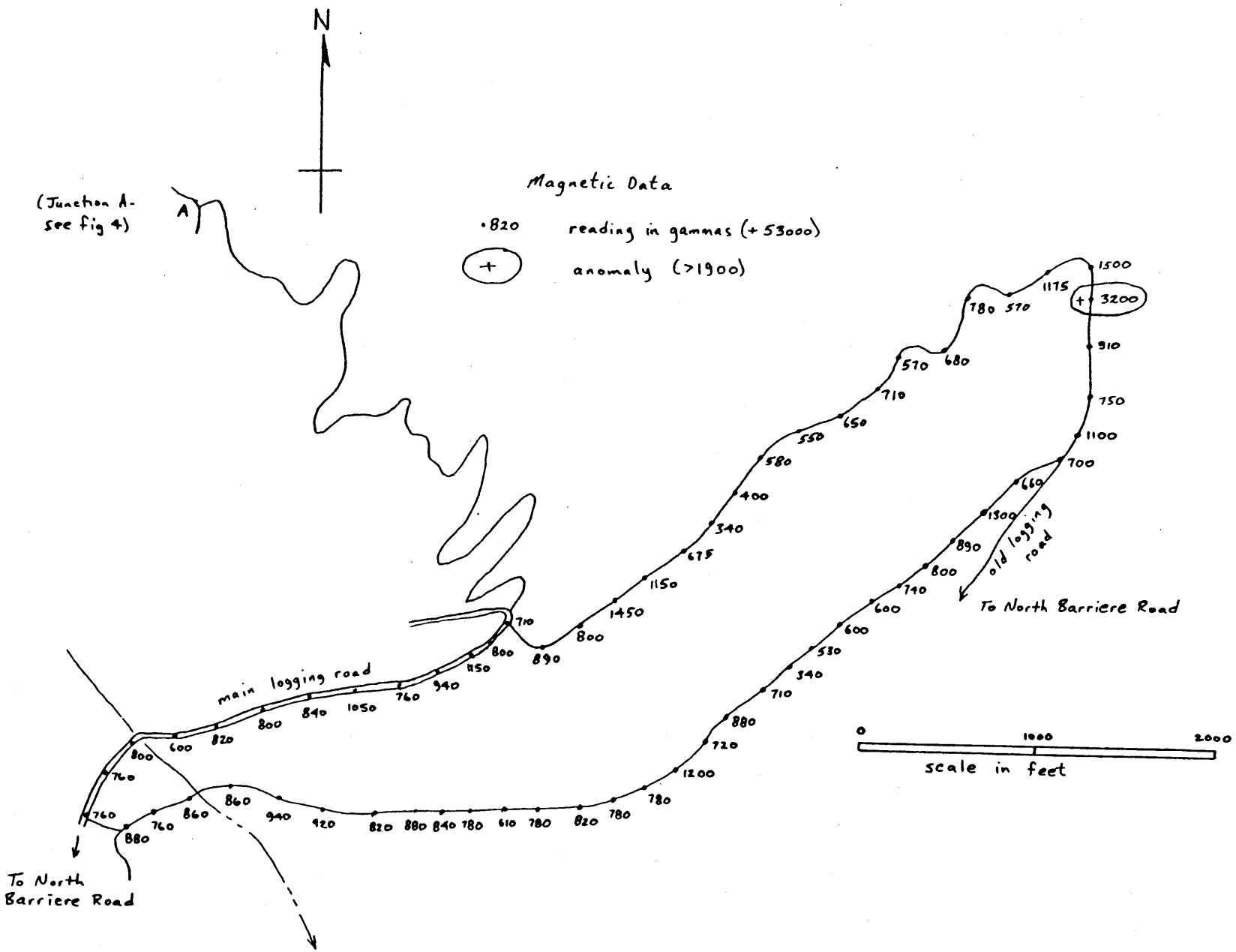


Figure 5. Magnetometer Data, Lower Logging Road Survey

DISCUSSION and CONCLUSIONS

1. The region is reinterpreted in terms of the volcanogenic massive sulfide model; the data fit this model well, and indicate targets for further exploration.

2. Two distinct volcanic units contain significant base-metal sulfides. These include the main mineralized zone on the Percy-BC-1 claims, and the rhyolite unit along Birk Creek (west of Paul Creek).

3. In the volcanogenic model, the main mineralized zone would represent the top of a volcanic sequence. Here it is represented by thinly interlayered tuffs and lesser sediments probably of variable composition. Quartz exhalite occurs locally, and is a significant lithologic unit indicating that hydrothermal solutions were active at the close of the volcanism. The sulfides were formed from hydrothermal solutions, with chalcopyrite and sphalerite concentrated in the upper levels of the volcanic and related sedimentary rocks below the seawater interface, and with sphalerite, galena, and Ag-minerals (possibly Ag in galena) concentrated in the overlying carbonaceous mudstone, which presumably formed shortly after volcanism ceased.

   Although no massive sulfide is present in the main mineralized zone, the extent of Cu-Zn mineralization in rocks and soils indicates that the zone is favorable for such deposits, and that covered areas might warrant further exploration. The main region for testing would be the lower part of the south-facing slope; this region has a thick cover of glacial till, which would hamper such exploration.

4. The felsic unit along Birk Creek would represent a second episode of felsic volcanism. This is by far the largest concentration of felsic volcanic rocks in the sequence, and it also contains the largest concentrations of sulfides in the region. Based on the known distribution of sulfides and the volcanogenic model, the greatest potential would be at the upper contact of the felsic unit with overlying slate-phyllite?. This contact is not exposed, and probably lies between Birk and Mack Creek (2 km southwest of Birk Creek). This region is covered by the BET 1, 3, and 5 claim blocks.

RECOMMENDATIONS

1. If further work is done on the Percy and BC-1 claims it should include a detailed magnetometer survey, followed by trenching and drilling in the region of high soil geochemistry southeast of the present trenches. The purpose would be to attempt to locate a massive sulfide deposit along the stratigraphically controlled "main mineralized zone".
2. Further regional work might be warranted to try to follow out the main mineralized zone and the upper contact of the upper felsic zone southwest of Birk Creek. The EBL property 8 km to the east of the Percy-BC-1 claims is on the same lithologic belt of felsic volcanic rocks, and is also reported to contain numerous showings of pyrite and some of chalcopyrite. At the southern end of this property, on the southeast shore of East Barriere Lake, the Grizzly deposit is reported to contain 100,000 tons grading 0.25 Cu in "gneiss". The entire belt might warrant additional study, with emphasis placed on the upper contacts of felsic units.

REFERENCES

Preto, V., 1980. Regional Interpretation of the Barriere Lakes area, Abstract and paper. Geol. Assoc. of Canada Cordilleran Section, Symposium, January, 1980.

Stokes, R.B., 1977. Summary report of work done on Percy and BC-1 claims. Unpublished report, Stokes Exploration Management Co.

CERTIFICATE of ENGINEER

I, John G. Payne, PhD, of North Vancouver, B.C. do hereby state:

1. I am a consulting geological engineer. I graduated from Queen's University, Kingston, Ontario in 1961 with a BSc degree in Geological Engineering. I received a PhD degree in Geochemistry from McMaster University in 1966.
2. My address is 877 Lillooet Road, North Vancouver, B.C., V7J 2H6.
3. I am under contract for this report to Stokes Exploration Management Co., Ltd., #713 - 744 West Hastings Street, Vancouver, B.C., V6C 1A5.
4. I have practiced geology since graduation for 14 years, mainly in the North American Cordillera.
5. My report is based on a 2 day visit to the PERCY-BC·1 CLAIMS in September, 1980.
6. I have no direct or indirect interest in the PERCY and BC-1 Claims.
7. This report may be used by Mr. R.B.Stokes in a Statement of Material Facts or Prospectus for public financing.

Dated at Vancouver, British Columbia, the 30th day of November, 1980.

John G. Payne, PhD.,
Consulting Geological Engineer

COST STATEMENT

Item		Cost
Motel and Food		$ 250.06
Truck rental (5 days @ $20/day)		100.00
Office cost		150.00
Phone calls		35.00
Flagging, sample bags, etc.		50.00
Mileage and gas		75.00
Wages		
Mike Michowsky	3 days @ 91.00/day (Jul 21-23)	273.00
Jerry Polahovic	3 days @ $70/day (Jul 21-23)	210.00
Brian Hatelt	2½ days @ $84/day (Sept 1-30)	210.00
John Payne	2.6 days @$350/day (Sept 10-23)	910.00
	1.5 days @$350/day (Nov 1-30)	525.00
Ron Stokes	1 day @ $300/day (Nov 1)	300.00
	TOTAL	$ 3238.06

John Payne

R Blatchford

Barriere Batholith
(granodiorite)

Mabel Creek

Gravel

At?
chl, py
alteration

28

A-Dt

Tr-1

Gravel

40

RD-Dt
py, chl variable

RDt (chl variable)

RD-Dt

22

RD-Dt

Tr-2

Rt (Q phenos)

Qtz
porphyry

Qv

RD-D

RD

Qexhalite

RD

RD (py, chl alteration)

Tr-3

Qexhalite

RDt (chl, py)

limestone

steep slope

56

altered rock (RDt)
chl, py, cpy

Tr-4

Qex +
Rt

55

disseminated cpy

At

50

41

0 100 200 300

scale in feet

N

LEGEND

R	rhyolite
RD	rhyodacite
D	dacite
A	andesite
t	tuff
f	flow
Q	quartz
Qv	quartz vein
	boundary of outcrop or trench in outcrop
	boundary of trench in overburden
	road - dirt
30	foliation with dip
5 F₁	fold axis with plunge

steep slope

2-5 cm Qexhalite layers in RDt + Qv

46

Rt

45

Rt

thin beds with very abundant py

RD-Dt

Rt

Tr-9

chloritic

high pyrite

Dt?
chloritic gneiss-schist
abundant py lenses

30

Rt-f (bi)
massive
PO

29

Tr-5

36

RDf
(bi, py-po)

Rt-f 32
(bio)

Junction A
(see fig 5)

10

Tr-8

A

RD-Dt
chl. alteration
abundant py lenses
disseminated po patches

To North
Barriere Road
≈ 6.5 km

Tr-6

27

RDt (str. altered)

RDf

Qv, py lenses
py lenses

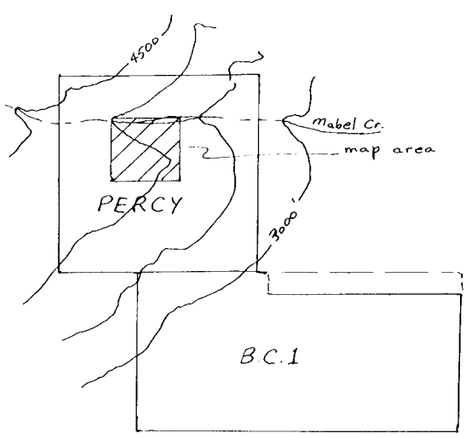
5
F₁

41

Tr-7

RDf

RDt,
cp, PY, po



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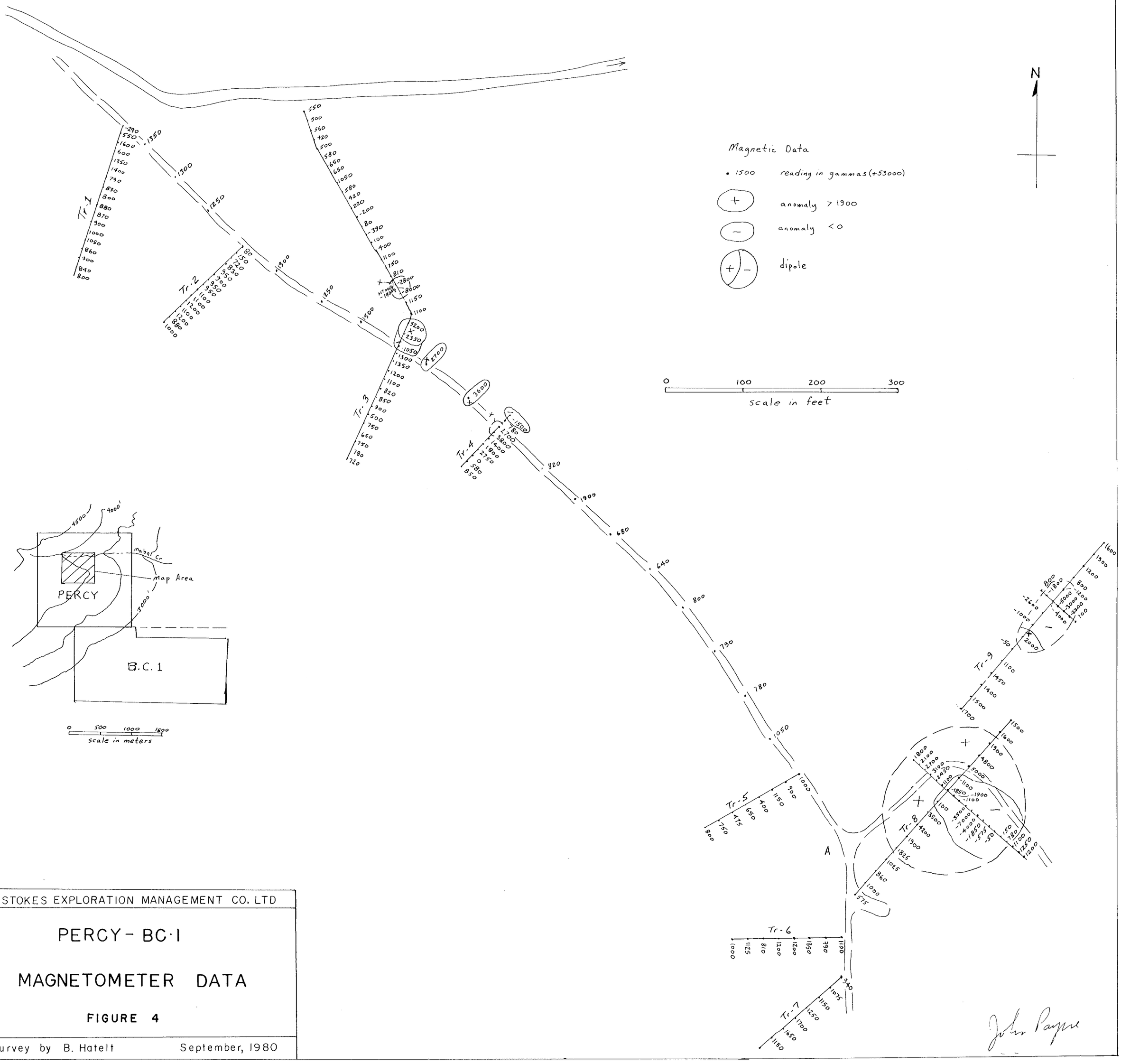
PERCY - BC·1

GEOLOGY : MAIN SHOWING

FIGURE 3

Geology by J. Payne, PhD September, 1980

John Payne



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MAGNETOMETER DATA

FIGURE 4

Survey by B. Hatelt September, 1980