

84-#179 - 12135
01/85

BRIEF GEOLOGICAL REPORT

DUCHESS 1 AND 2 MINERAL CLAIMS

Record Numbers 4975, 4976.

Howson Basin Area, Smithers B.C.

OMINECA MINING DIVISION

Mapsheet 93 L - 6W

Lat: 54 27'N/Long 127 25'W.

for:

JOYCE LEE WARREN

P.O. Box 662

Smithers, B.C. VOL 2ND

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

by:

12,135

BARRY J. PRICE, M.Sc., F.G.A.C.

RAPITAN RESOURCES INC.

2121 W. 5th Ave, Vancouver, B.C.

V6K 1S1

December 16, 1983

RECEIVED

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GOVERNMENT AGENT
SMITHERS, B.C.

SUMMARY

On June 15, 1983, the writer inspected the Duchess property, situated in the Howson Basin, 36 km. south southwest of Smithers, B.C. Six assay samples were taken, and two traverses were made with a Phoenix VLF-EM instrument.

The property has been explored intermittently since 1905, and has approximately 1224 feet of underground workings in two adits. The upper adit encountered good copper-silver mineralization, averaging 4 - 5 % copper in the first 90 feet, after which the zone is cut off by faulting. Only narrow mineralized zones were found in the lower adit.

Mineralization consists of fairly massive chalcopyrite, pyrite and hematite, with lesser quartz and tetrahedrite in a shear zone with feldspar porphyry and basaltic or lamprophyric dykes. The zone cuts andesitic volcanics of the lower Jurassic Telkwa Formation.

Other zones with disseminated mineralization occur east and west of the Duchess zone.

Because no maps have yet been located for the property, geological mapping is the first priority in further recommended work. Magnetometer surveys and EM surveys are also suggested.

Several property descriptions are included in the appendices for completeness.



Barry J. Price

Barry J. Price, M.Sc.
Consulting Geologist.

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BRIEF GEOLOGICAL REPORT

DUCHESS PROPERTY

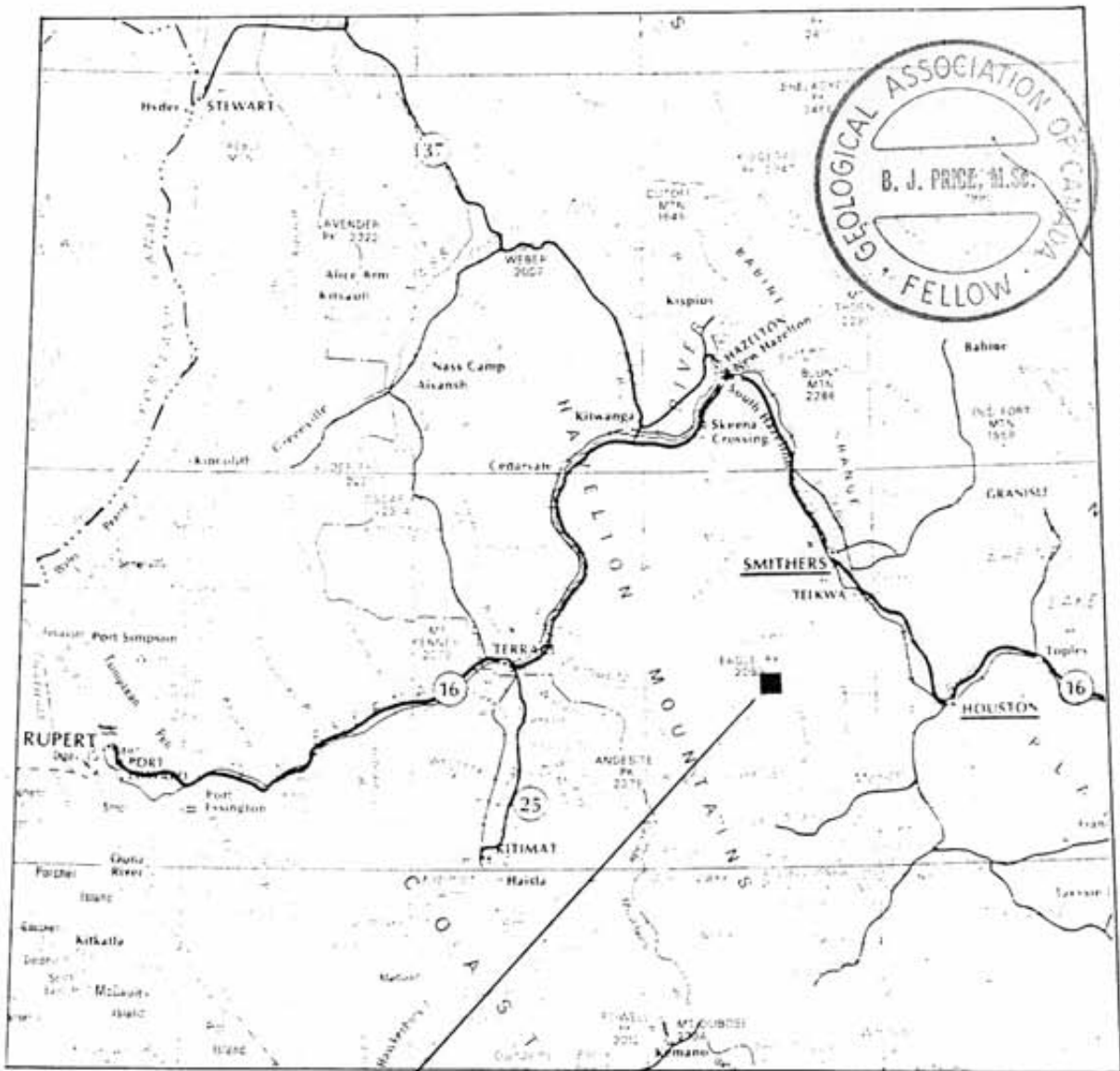
INTRODUCTION:

The Duchess copper-silver property in the Howson Basin has been explored intermittently since 1905. This report describes a brief property inspection by the writer on June 15, 1983, which involved resampling the mineralization at the upper portal, a rough survey of the road connecting the upper and lower portals, and an orientation with a Phoenix VLF Electromagnetic receiver.

Numerous reports on the property exist; much of the information from these reports (listed in the bibliography) has been used to provide a geologic background for evaluation of the property, but costs applied for the current assessment work involve only those incurred by the writer for the 1983 visit and preparation of the report.

LOCATION ACCESS ETC.

The Duchess 1 and 2 claims are situated in the Howson Basin, near the headwaters of Howson Creek, which flows westerly near the claims but swings northerly to enter the Telkwa River. The property is 23 miles (36 km) south-southwest of Smithers, B.C. Access at present is by helicopter from Smithers or from Houston. A mining road first constructed in 1916 to the Santa Maria property near Mooseskin Johnny Lake, 4 km east of the Duchess claims, was improved in 1967 to provide access directly to the property, but the road is in poor shape and would require



DUCHESS 1+2 CLAIMS.

DUCHESS PROPERTY
 FIGURE 1
 LOCATION MAP

SCALE 1cm:20 km.

B. J. PRICE HSC

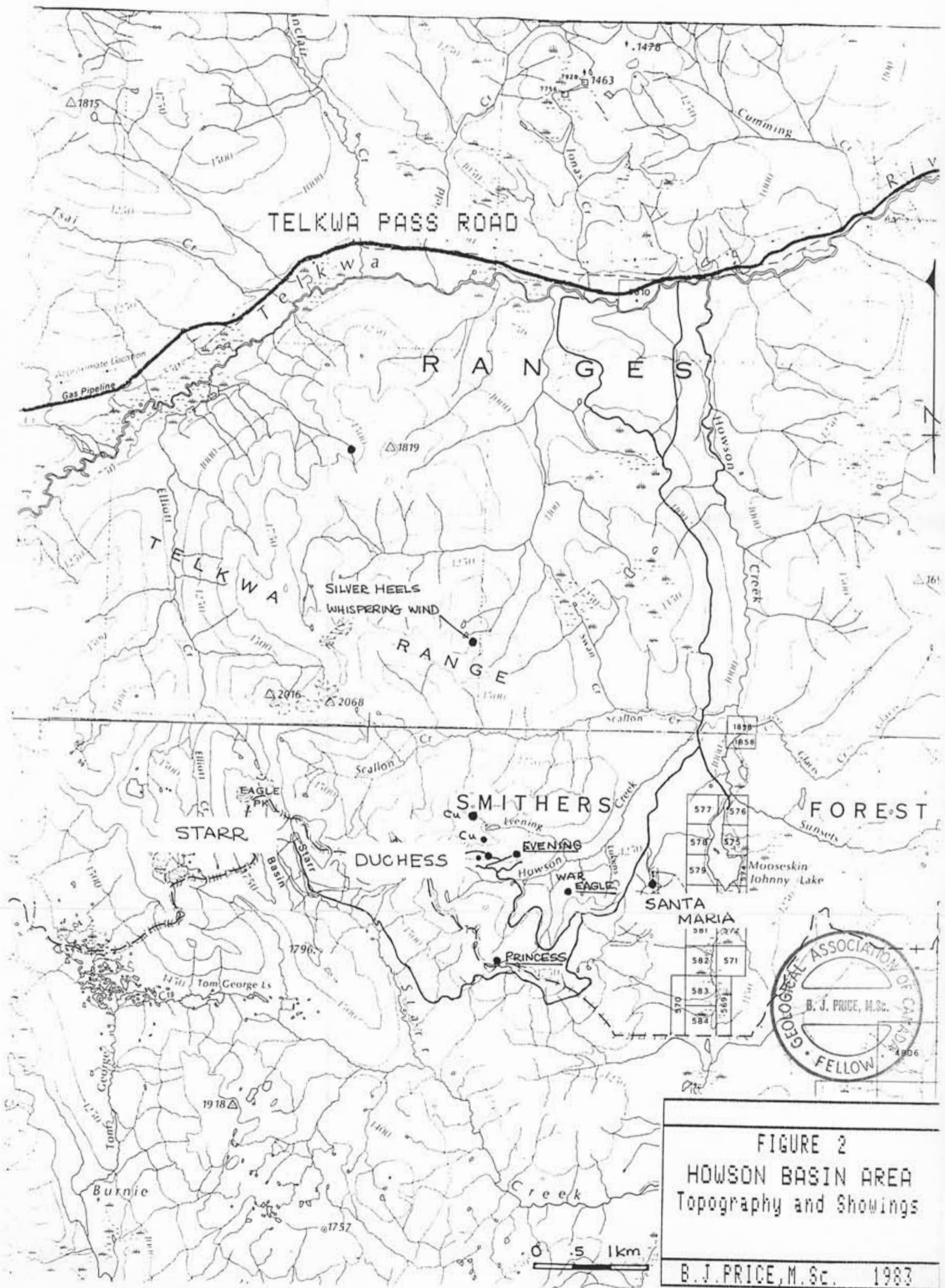


FIGURE 2
 HOWSON BASIN AREA
 Topography and Showings

B. J. PRICE, M.Sc. 1983

work, including construction of a new bridge across the Telkwa River. Mooseskin Johnny Lake is accessible to float-equipped aircraft, and it is conceivable that exploration could be done with the aid of trail bikes during the summer, when the roads are reasonably dry.

Smithers is serviced by daily jet flights from Vancouver. All supplies and services are available in the district including a considerable pool of labour with mining and exploration experience.

Figures 1 and 2 illustrate the position of the property and the road access and topography. The claims, on the south facing relatively steep slope above Howson Creek, lie between elevations 1300 meters (4264 ft.) and 1750 meters (5740 ft.). Vegetation varies from dense timber at creek level to alpine at the crest of the ridge above the claims. Winters are severe and work is limited to the period between late May and October.

CLAIMS:

The property at present consists of two 2-post mineral claims, the Duchess 1 and 2, record numbers 4975 and 4976. The claims were staked January 25, 1983 and were recorded January 26, 1983, and are owned by Joyce Warren, P.O. Box 662, Smithers, B.C.

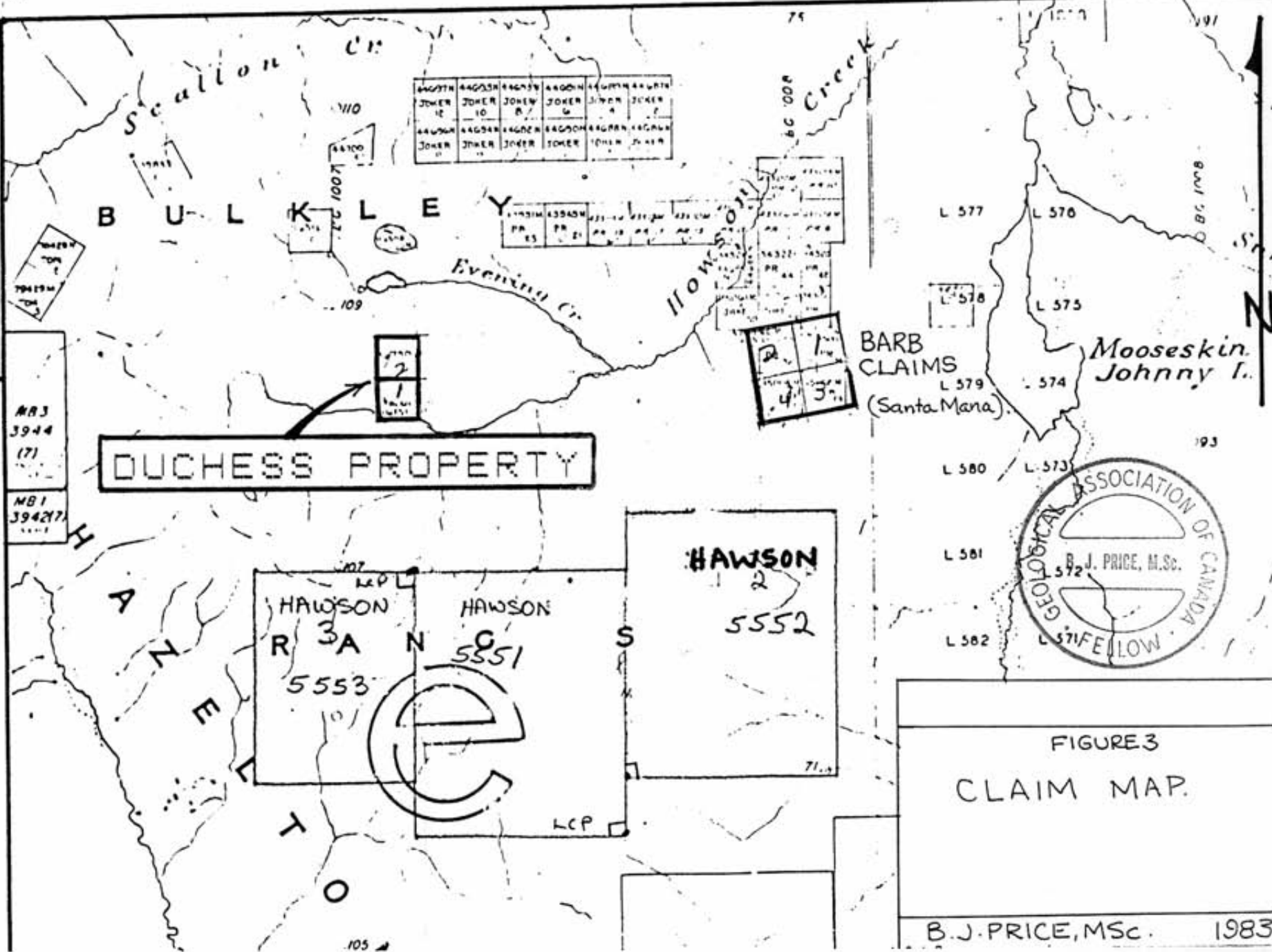
Upon acceptance of the assessment work represented in this report, the claims will be in good standing for 4 years (to Jan 26, 1987).

Claims are shown in figure 3 on the following page.

127 30'

54 30'

M93L/6W



MB3
3944
(7)

MB1
39427

DUCHESS PROPERTY

HAWSON
5552

HAWSON
R 3 A N
5553

E



FIGURE 3
CLAIM MAP.

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HISTORY OF THE PROPERTY:

The Duchess claim was first staked on July 9, 1905 by E.E. Topping and recorded in Hazelton on July 29 of the same year. In the first year, \$700 worth of assessment work included 8 miles of trail and numerous rock cuts and shallow shafts. The work was done by Telkwa Mines Ltd., who were exploring the numerous copper-silver showings in the Howson Basin area. Additional rock cuts to the value of \$800 were completed in 1906 and in 1907, two tunnels 30 and 42 feet long each had 150 feet of cross-cutting.

In 1908, the claim was surveyed and the following year it was crown-granted. (NOTE: the grant reverted in 1921 and the survey was cancelled in 1939).

By 1908 the upper tunnel had been advanced for 60 feet, following the footwall of a mineralized dyke. In 1915, the Jefferson-Dockrill Syndicate, which was working on the adjacent Santa Maria Property, bonded the Duchess property and did some development, but allowed the bond (option) to lapse. At this time the upper tunnel had followed the mineralized zone for 90 feet, where the drift passed out of ore. The drift was continued to 253 feet and several crosscuts were completed but failed to pick up any continuation. The lower tunnel, 167 feet below the upper one, had advanced 60 feet in 1917, but had not encountered the mineralization.

In 1928 the Consolidated Mining and Smelting Company (Cominco) acquired an option on the property and did 926 lineal feet of

underground drifting and crosscutting in the lower workings, but only encountered narrow mineralized zones and relinquished the option in 1929.

Little or no further work was done on the property until the 1960's when porphyry copper reached a peak and several major companies were exploring in the Telkwa Mountains. A large area including the Santa Maria, War Eagle, Duchess, Evening and Prospect showings was staked by Norcan Mines Ltd. An excellent summary of the various prospects was prepared by S.J.Hunter, P.Eng. for the Norcan Prospectus for 1966. Exploration work commenced in 1966, under the supervision of W.Tompson, geologist. An aerial EM survey done by Geocal Ltd. confirmed conductors present on the Duchess zone, and bulldozer trenching and sampling were done and an underground inspection of the upper workings was done by S.J.Hunter. In 1967, exploration continued under the supervision of D.K.Cutler; most work was done on the Santa Maria and War Eagle zones but six BC-size diamond drill holes were drilled on the Duchess zone (Freto, 1967). (Note: An unpublished report by Ivor Watson describes only 4 holes totalling 327 feet). Late in 1967, the properties were optioned by Bethex Ltd., who continued exploration 1968. Prospecting, geological mapping and sampling were done, a small grid was sampled over the Duchess and Evening zones, access roads and trenches were dug and previous trenches rehabilitated.

No record exists of any work done later than 1968. The present owner acquired the claims by staking in January 1983.

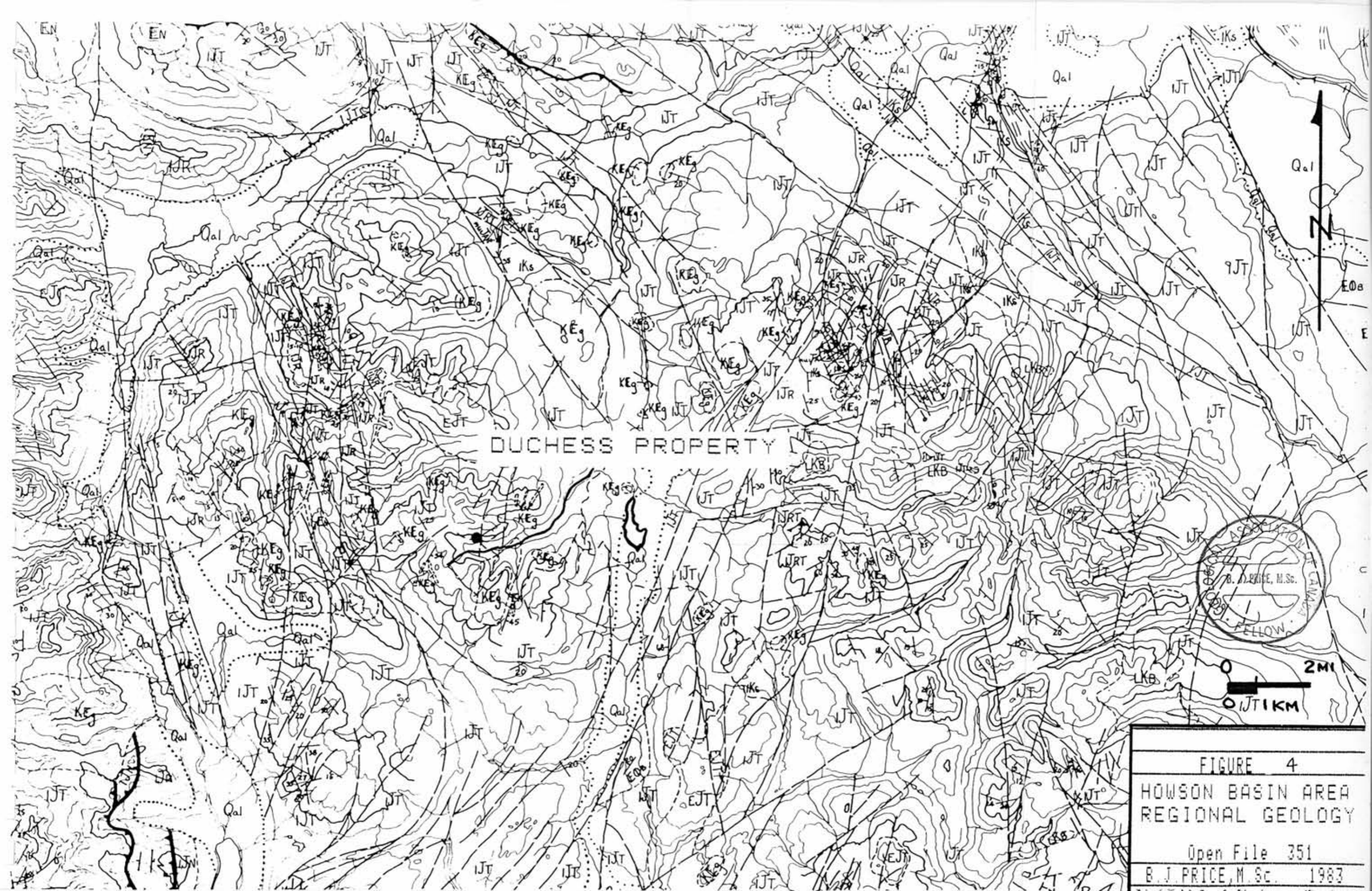
REGIONAL GEOLOGY:

The district was first mapped by W.W. Leach of the Geological Survey of Canada in 1906 (Rept No. 988, 1907). The most recent map compilation for the area was done by Tipper and Richards, 1977, Open File #351., a portion of which is reproduced on the following page.

The property lies about 30 miles east of the main mass of the Coast Crystalline Complex. Much of the area is underlain by andesitic volcanics of the lower Jurassic Telkwa Formation, the lowermost unit of the Hazelton Group, described by Tipper and Richards as a nearly continuous sequence ranging in age from Early to Late Jurassic. Overlying the Hazelton Group in the Telkwa area are coal-bearing measures of the Skeena Group, a succession of interbedded volcanics and continental to marine clastics of Cretaceous age.

Intrusive rocks include numerous stocks of Cretaceous and Tertiary age, many of which have associated porphyry copper or molybdenum mineralization. Dykes and sills varying in composition from basic and lamprophyric to felsic are ubiquitous.

In the Smithers area, Hazelton Group volcanics and sediments are involved in isoclinal to open folds. Strong faulting is present everywhere, with both reverse and normal faults. Three stages of deformation are present in the Telkwa Coal area. (Cameron and Handy, 1983). The Telkwa Mountains lie in a strongly mineralized belt related to several ages of intrusive porphyries and regional faulting. Copper-silver deposits are common.



DUCHESS PROPERTY



FIGURE 4
HOWSON BASIN AREA
REGIONAL GEOLOGY
Open File 351
B. J. PRICE, M.Sc. 1983

LEGEND FOR FIGURE 4

- Qal QUATERNARY: Alluvium, Till, Gravel
- EOb TERTIARY: Eocene-Oligocene Buck Creek Volcanics:
Andesite, Dacite flows and breccias, minor
Basalt and Sediments
- En Newman Volcanics: Dacitic to rhyolitic flows
and breccias
- KEg CRETACEOUS OR EOCENE: Granitoid, dioritic to felsic
plutons
- 1Ks CRETACEOUS: Skeena Group: Greywacke, shale, conglomerate
and coal.
- 1Kb Brian Boru Formation: varicolored
tuffs, breccias and flows.
- muJa MIDDLE/UPPER JURASSIC: Ashman Formation: black shale, sand-
stone, greywacke, chert pebble
conglomerate.
- EJt EARLY JURASSIC: Topley Intrusions: Quartz diorite to
Quartz monzonite.
- 1JR LOWER JURASSIC: Nilkitkwa Formation: Red Tuff member
- 1JT Telkwa Formation: Maroon- Grey-green
breccia, tuff, and flows of basaltic
to rhyolitic composition.

GEOLOGY OF THE DUCHESS PROPERTY:

Detailed geology of the property is described by Hunter (1966), Watson (1968) and Preto (1967), but as yet no geological map has been filed for assessment, and the writer has only a bare plan of the underground workings. No doubt geological maps and property descriptions are present in Cominco corporate files from their 1928-29 investigations. Bethex Explorations Ltd entered voluntary liquidation in 1969-70 and it is not known what became of their files. A good description of the most important geological features is given by Preto (B.C.D.M. Ann Rept, 1967, p.91-99.) and this is reproduced on the following pages.

Duchess.—The main Duchess workings consist of two adits and of several crosscuts. Recently Norcan Mines Ltd. has done a considerable amount of bulldozer trenching and, to the time of the writer's visit, had put down six diamond-drill holes using BQ wireline equipment.

The Duchess vein, a northerly trending shear zone mineralized with chalcopryrite, pyrite, hematite, and quartz, is exposed at the upper portal. Tetrahedrite is also reported from the vein. The shear is localized near the contact between a fine-grained green epidotized andesite to the west and fine-grained purplish-brown to olive-brown tuff to the east. The width of mineralization ranges up to 12 feet. Highly broken and sheared, buff-coloured feldspar porphyry dykes cut the volcanic rocks and carry only very minor amounts of sulphides. A few feet above the upper

portal, a narrow vesicular basaltic dyke parallels the vein and cuts through the middle of the mineralized zone.

Faulting and shearing of pre- and post-mineral age is evident throughout the rock exposures created along the recent trenches and at the portals of the two adits. Approximately 180 feet east of the lower portal, along the bulldozer trail, a major shear zone trending north 30 degrees east and dipping very steeply is exposed. Low copper and silver values are reported from this zone by company officials. Approximately 500 feet west of the Duchess adits a major fault strikes north 10 to 15 degrees west and dips at approximately 70 degrees to the west. The fault is exposed along the bottom of a steep gully, where it is paralleled by a narrow basaltic dyke and is marked by discontinuous narrow zones of a bluish-grey breccia. A zone of quartz-garnet-epidote skarn extends from the west side of the gully eastward to the workings, and its easternmost exposures may be found at the west end of the upper bulldozer trench. From the Duchess area the fault may be traced northward to the northern rim of the cirque west of Evening Lake and southward at least as far as the Princess showings. Together with several other subparallel smaller faults and shears, this fault forms a well-marked fracture system which is prominent in the western portion of the claim block. Although the relationships between known occurrences of mineralization and these northerly trending faults are at the present time not fully understood, at least their spatial relation is evident on Figure 9. That the generation of this set of fractures pre-dates mineralization and that these fractures served as conduits for hydrothermal fluids is indicated by the formation of skarn along and near the main fault and by the concordance in attitude between the fault and the mineralized shears at the upper Duchess adit.

Evidence of post-mineral movement, possibly subsidiary to later movements along the northerly trending faults, is also found at the Duchess. Company officials report a fault which truncates the main lode 90 feet from the portal along the upper adit. This structure is reported to trend north 75 degrees west and to dip steeply south. Although company reports speak of solid sulphide mineralization between this fault and the portal, three inclined diamond-drill holes, driven in a northwesterly direction from points on the bulldozer trail a very short distance to the east of the portal and designed to intersect the vein a few feet below the floor of the adit, went well past the projected intersection and failed to encounter the lode. A sharp slip surface which trends north 50 degrees east and dips at approximately 45 degrees to the southwest is exposed a few feet west of the portal and probably represents a set of fractures which is responsible for some of the displacement of the mineralized veins. The mullion structure on this later fault pitches at a moderate angle to the southwest, but the sense of movement could not be determined. Another fact which remains as yet unexplained, but which is obviously of vital importance to further development of the Duchess vein, is that although the lower adit was driven on the supposed location of the vein as projected from above, it and several crosscuts apparently failed to intersect the lode.

The upper tunnel was examined by Hunter in 1966; the mineralization exposed at the portal of the upper tunnel at elevation 4825 feet A.S.L. (1471 meters), is reported to be 12 feet wide and persistent over the width of the drift for the first 90 feet, after which it is abruptly faulted off. A grab assay from an undisclosed location in this zone by Hunter assayed 8.05% copper and 3.2 oz./ton silver. Surface samples reported by Norcan Mines Ltd. in their 1968 Annual Report are:

<u>WIDTH</u>	<u>COPPER</u>	<u>SILVER</u>
24 FT.	3.94%	2.72 oz/t
26 Ft.	1.05%	0.78 oz/t
25 Ft	3.61%	1.80 oz/t

Although Preto reports that "three inclined drill holes, driven in a northwesterly direction from the bulldozer trail a very short distance east of the portal and designed to intersect the vein a few feet below the floor of the adit, went well-past the projected intersection and failed to encounter the lode", the annual report for 1968 reports "all four of the shallow test-holes into the Duchess zone encountered silver-copper mineralization", and reports assays for DDH - 4 as follows:

<u>INTERSECTION</u>	<u>COPPER</u>	<u>SILVER</u>
2 FT.	11.31%	4.4oz/t
2	8.12	3.0
2	6.42	4.3
2	17.23	7.8
2	19.80	8.0
2	8.01	3.4
2	1.07	0.8
2	0.37	0.32
2	0.18	0.18
2	0.17	0.22
32	0.26	0.12

Position of the drill holes is not known. Drill hole number 4 was a vertical hole, and it is suspected that the position was a few feet west of the portal (following three holes with possibly less important intersections east of the portal). At this point, if the zone dips westward, true thickness of the zone may be considerably less than the core intersection of 52 feet. Weighted average of the entire hole, nevertheless, is 2.95% copper and 1.32 oz/ton silver. The top 10 feet averages 11.8% copper and 5.9 oz/ton silver. The writers samples taken as two chip samples across the top of the portal, assayed as follows:

<u>NO.</u>	<u>WIDTH</u>	<u>COPPER</u>	<u>SILVER</u>
DU 1	9ft.	0.56%	0.61 oz/t
DU 2	7.5ft	1.87%	3.06 oz/t

Samples taken by Norcan from the first 90 feet in the upper portal in 1968 were:

<u>WIDTH</u>	<u>COPPER</u>	<u>SILVER</u>
14	6.35 %	2.90 oz/t
5	3.25	2.65
7	0.5	0.65
10	1.2	1.05
6.7	0.7	1.3
10.5	4.25	2.65
17.0	3.70	tr
24.0	0.45	0.40
4.0	0.40	0.20

A full assay plan may exist for the upper tunnel, and every effort should be made to locate this for complete evaluation of the zone.

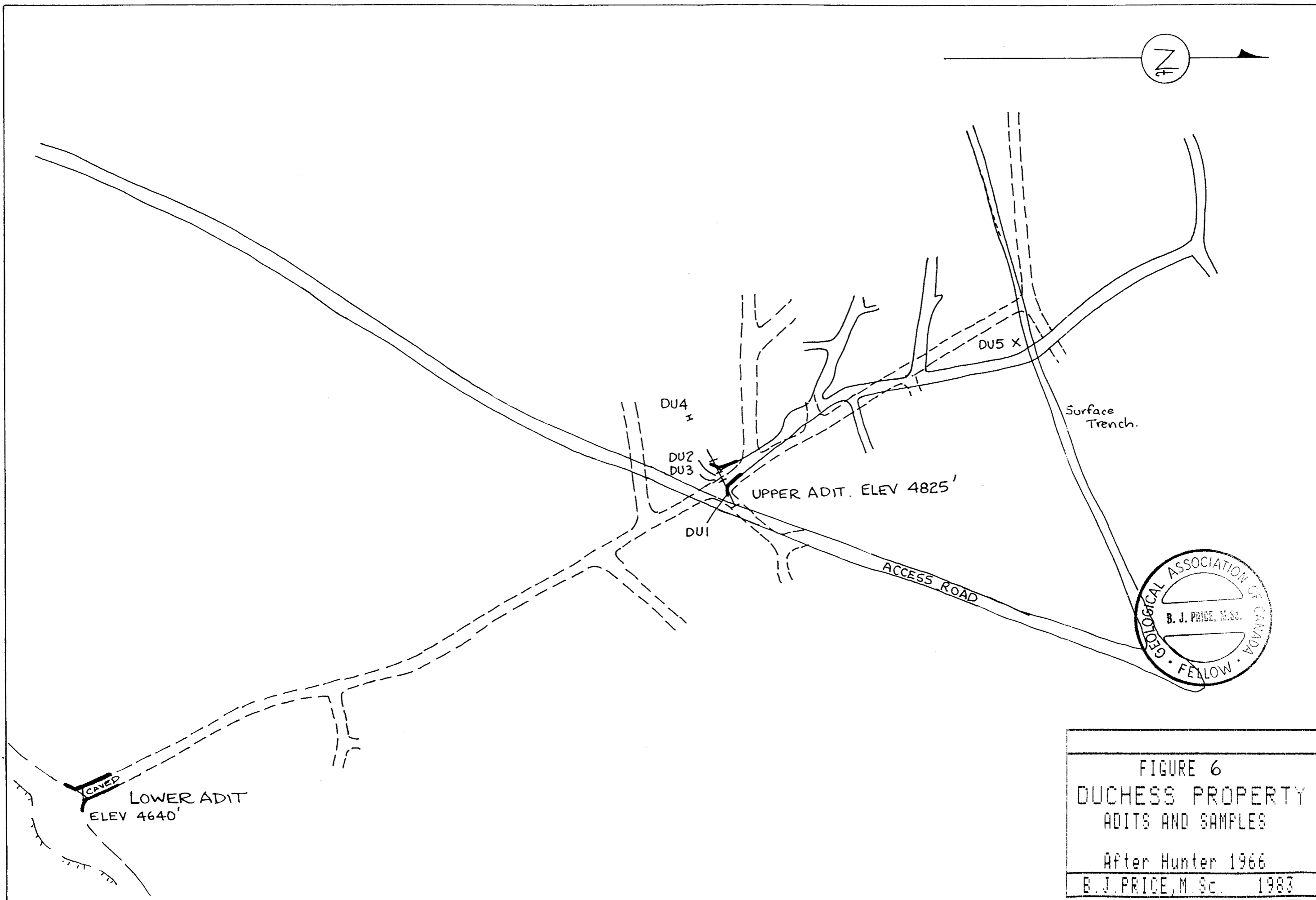


FIGURE 6
 DUCHESS PROPERTY
 ADITS AND SAMPLES
 After Hunter 1966
 B. J. PRICE, M.Sc. 1983

1983 WORK PROGRAM:

On June 15, 1983 the writer examined the Duchess property. Six rock samples were taken from the upper portal area. Two traverses were made with a Phoenix VLF-EM 2 instrument; the upper traverse follows a bulldozer trench cut across the projected strike of the upper portal mineralized zone approximately 400 feet above the portal, and the second traverse follows the cat road from the origin of the first traverse to the corner west of the lower adit.

The No 1 post for the two claims was examined and the claims are staked in accordance with the mineral act and its regulations.

Mineralization observed at the Upper portal consists of chalcopyrite and hematite in a green andesitic volcanic. Other reports indicate the mineralization occurs in a shear zone occupied by intermittent feldspar porphyry dykes and dark green basaltic or lamprophyric dykes.

At the portal two samples taken from east to west across the mineralized zone (5 meters wide), samples DU1 and DU 2, averaged 1.15 % copper and 1.72 oz/ton silver, with .002 to .004 oz/ton gold. A higher grade section on the west side of the adit contained 7.15% copper and 5.74 oz/ton silver. A piece of float taken from the trench above the adit , DU 5, contained 5.01% copper and 2.67 oz/ton silver. Assays are tabulated on the following page.

The EM traverses produced no conductive zones, but the test is not considered definitive.

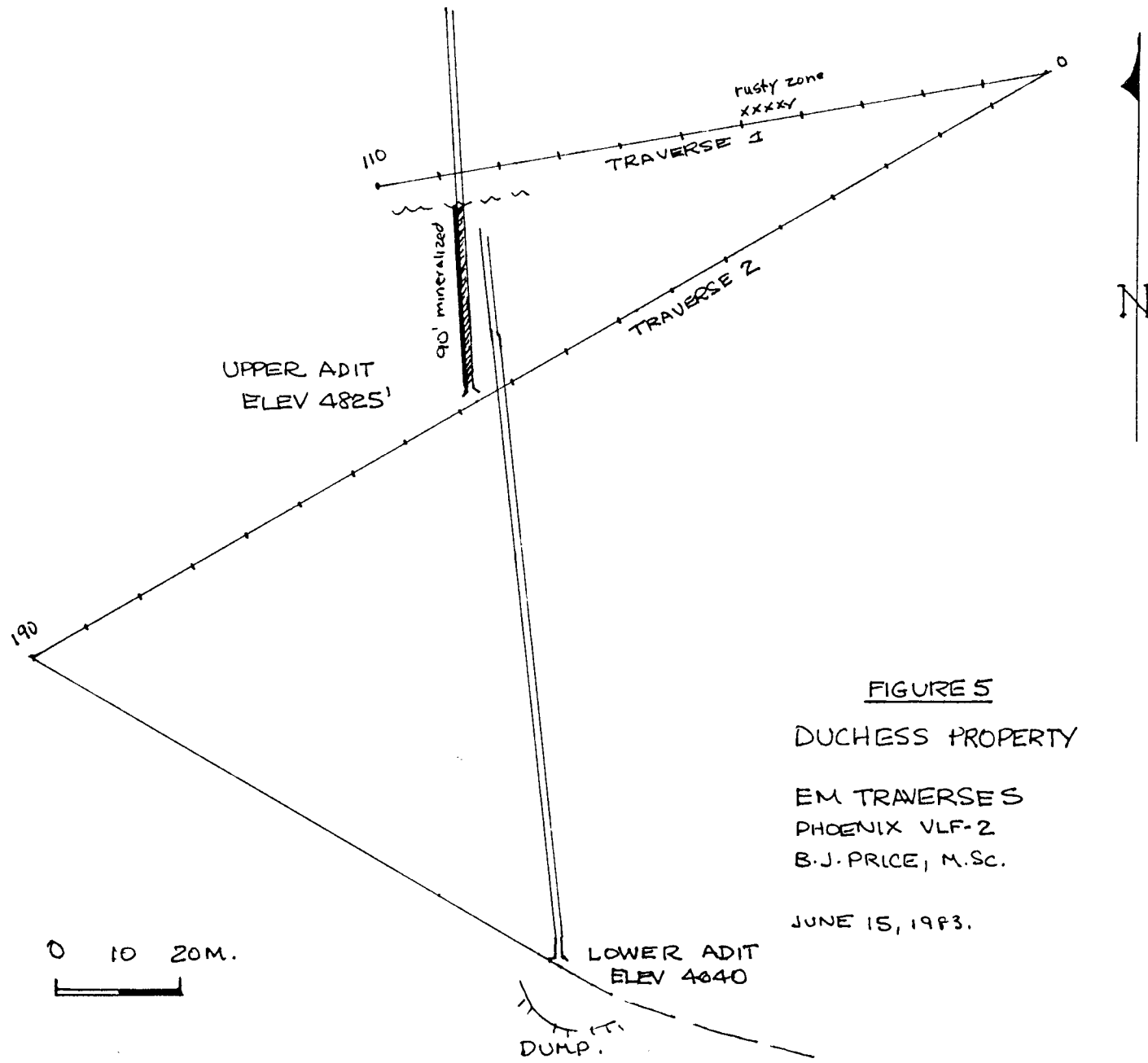


FIGURE 5

DUCHESS PROPERTY

EM TRAVERSES

PHOENIX VLF-2

B.J. PRICE, M.Sc.

JUNE 15, 1983.



0 10 20M.



DISCUSSION:

Other zones are reported to have some economic potential on the property; to the west of the Duchess zone, on a creek known locally as "George" or "Gorge" Creek, mineralized showings containing chalcopyrite, malachite, pyrite and specularite occur within a series of 2-3 ft. wide lamprophyre dykes within a north-easterly striking shear zone (Watson 1968). Other weakly mineralized outcrops occur along the creek. Preto (1967) noted skarnification of the volcanics extending from this zone eastward to near the Duchess workings. About 180 feet east of the lower portal, a major shear zone trending N 30 E contains low copper and silver values.

Many of the showings in the Howson Basin appear to be controlled by a major north-trending shear zone, as shown on the accompanying map (Appendix 1). Other fault systems have disrupted continuity of mineralized zones, and thorough study of the faults may enhance the possibility of finding further mineralization.

As yet, no comprehensive map of the property is available, although some mapping seems to have been done by Watson, and previous mapping may have been done by Cominco in 1928-30. Attempts to recover maps from these sources could be successful.

RECOMMENDATIONS:

Further work on the property should involve detailed geological mapping, compiling an assay plan of all trenches, and determination of ore-controls (i.e. is the mineralization

controlled by lamprophyre dykes or by feldspar porhyry dykes, or by skarns or shear zones?) Increasing the claim size to include the other showings would seem wise, in view of the fact that significant widths of mineralization were reported by Watson from the Evening zone.

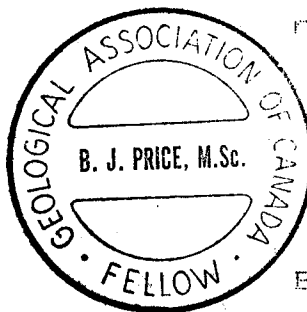
Magnetometer and EM surveys may help in location of basic dykes and shear zones.

Underground mapping of the upper adit would be of prime importance in determining the economic importance of the property.

It would be difficult to justify development of anything less than 2 million tons of 4% copper and 4 oz/ton silver at present metal prices (\$.70/lb copper and \$9/oz silver), unless: 1) further reserves were found in nearby deposits; or 2) Metal prices improve, or 3) Significant gold accompanies other metals.

Exploration should proceed with these parameters in mind as a minimum target.

respectfully submitted



Barry Price

Barry Price, M.Sc.

Consulting Geologist

BIBLIOGRAPHY

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- Tipper, H. and Richards, T. (1976). Smithers Map Area, Open File No. 351 Geol. Surv. Can.
- Carter, N.C. and Klein, G.H. (1977) Porphyry Copper and Molybdenum Deposits of North-Central British Columbia. GAC-MAC Guidebook, Joint Ann Meeting, April 1977.

ITEMIZED COST STATEMENT

DUCHESS PROPERTY - HOWSON RANGE - OMINECA M.D.

CONSULTING FEES:

B.J.Price, M.Sc., June 15 field examination, 1 day

Mobilization/Demob June 14,16 total 1/2 day

Geological report December 15,16,1983 total 1+1/2 days

TOTAL TIME SPENT; 3 DAYS @ \$300/DAY\$900.00

DISBURSEMENTS (ROOM, MEALS ETC)

Estimated 25% of June 19 invoice plus 5% service chg...\$ 87.34

RENTALS:

T.C.Scott Datsun pickup 4 wheel drive, 1 day.....\$ 35.00

Phoenix VLF EM instrument 1 day.....\$ 25.00

ASSAY CHARGES:

Acme Analytical Lab: 6 rock samples est \$20/ea.....\$120.00

HELICOPTER:

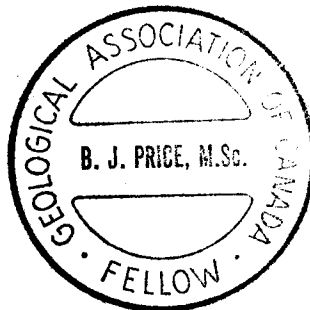
Glacier Helicopters Jet Ranger invoice No 143

50 % of total time 2.5 hrs @ \$360.00, plus fuel.....\$519.70

MISCELLANEOUS

Telephone, typing, xeroxing etc.....\$ 25.00

TOTAL AMOUNT.....\$1712.04



Barry Price

BARRY J. PRICE, M.SC. FGAC.

APPENDIX 1

ASSAY DATA

SILVER HILL MINES FILE 83-0859B

PAGE# 3

SAMPLE	MO %	CU %	PB %	ZN %	AG OZ/TON	AU OZ/TON	W %
DU-1	-	.56	.08	.10	.61	.004	-
DU-2	-	1.87	.02	.03	3.06	.002	-
DU-3	-	7.15	.01	.02	5.74	.002	-
DU-4	-	.24	.01	.02	.51	.002	-
DU-5	-	5.01	.09	.08	2.67	.002	-
	Cu	Pb	Zn	Ag	Au	Mo	W
DUCHESS	2.68	.01	.01	1.98	.002	.01	.01

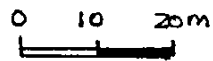
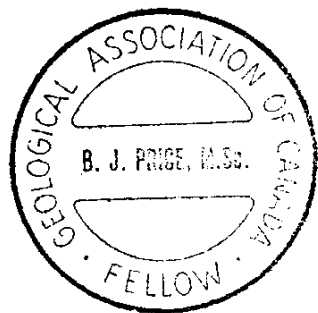
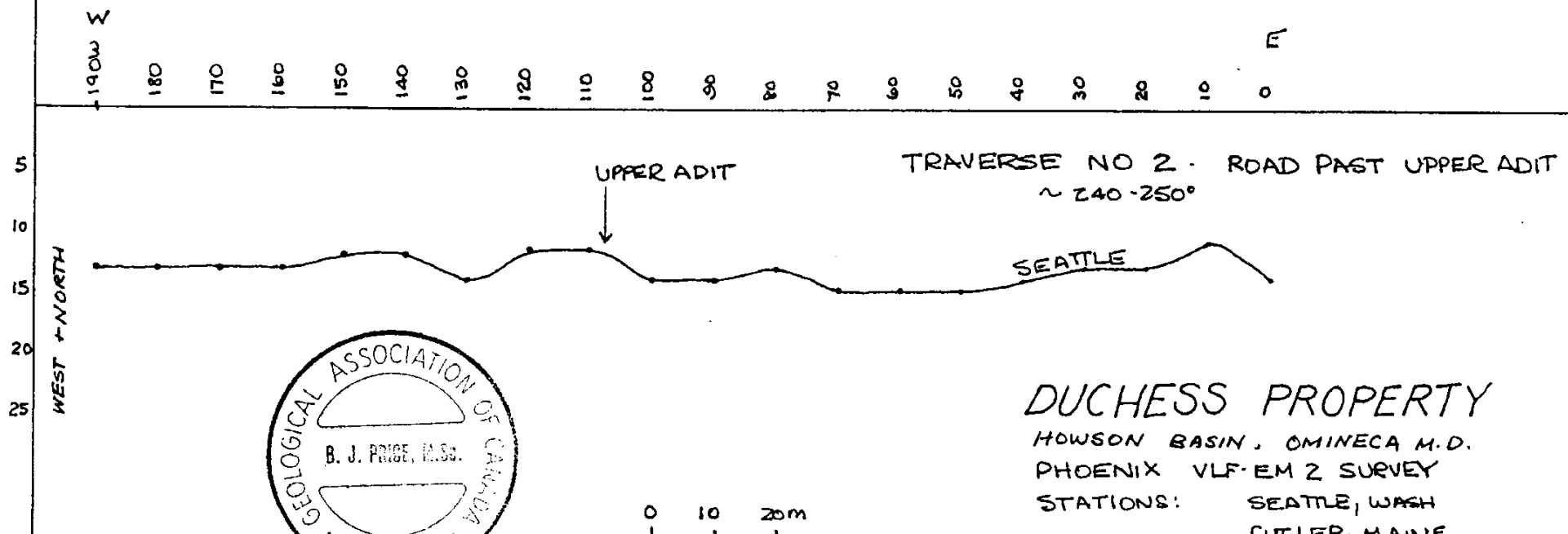
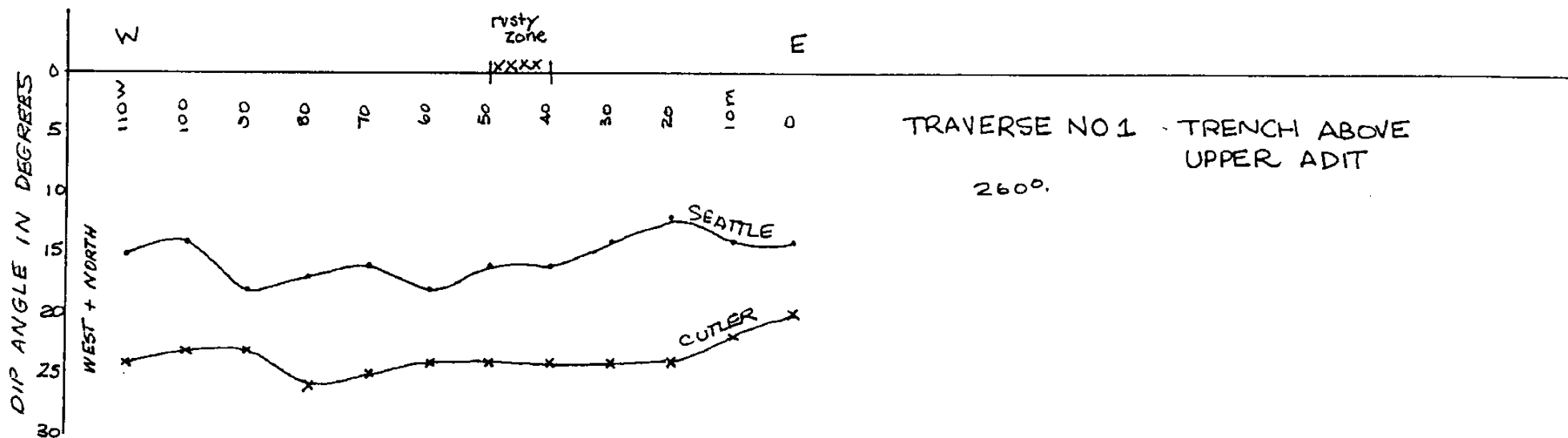
SAMPLER: B. PRICE
 CODE: Du 1-5
 MAPSHEET: _____

PROJECT: DUCHESS
 AREA: Howson Range
 COMPANY: M. Levasseur
 DATE: June 15/83
 NO. OF SAMPLES: 5

SAMPLE NO.	TYPE	DESCRIPTION	Au oz/T	As	Cu%	Pb%	Zn %	Ag oz/T
Du 1	Rx	Upper adit. 9' chip sample from east wall eastward.	0.004		0.56%	0.08	0.10	0.61
Du 2	Rx	Upper adit 7 1/2' chip westward across top of portal from east wall. Well mineralized with chalcopyrite	0.002		1.87%	0.02	0.03	3.06
			Note. wtd. avg over 16.5' is 1.16% Cu 1.72oz/T Ag 0.003 Au. Gross metal value \$43.58					
Du 3	Rx	Chip across 1ft of high grade mineralization on west side of portal upper adit. Chalcopyrite, sphalerite (?) hematite.	0.002		7.15%	0.01	0.02	5.74
Du 4	Rx	1" stringer of min 20' west of upper adit.	0.002		0.24	0.01	0.02	0.51
Du 5	Rx	Well-mineralized float open cut ~ 400' above upper adit.	0.002		5.01	0.09	0.08	2.67

APPENDIX II

VLF - EM PROFILES AND DATA



DUCHESS PROPERTY
 HOWSON BASIN, OMINICA M.D.
 PHOENIX VLF-EM 2 SURVEY
 STATIONS: SEATTLE, WASH
 CUTLER, MAINE

OPERATOR: B. J. PRICE, M.Sc. June/83

APPENDIX III

PROPERTY DESCRIPTIONS

056

706

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

0002000

LI

RESOURCE DATA SECTION

NAME(S) DUCHESS

N.T.S. 093L06W

MI 09:

LAT 5427.9

UTMZ

LONG 12726.9

UTMN XL

ELEVATION 1733

UTME XL

MINING DIVISION DMIN

MINERAL STATUS

LOCATION ACCURACY 1

DEPOSIT TYPE

MINDERID

COMMODITIES PRESENT CU

AG

MINERALS PRESENT

CLCP

AU

TRDR

CAPSULE GEOLOGICAL COMMENT

CHALCOPYRITE, TETRACEDRITE, PYRITE, NEMATITE, AND QUARTZ OCCURS IN A NORTHERLY TRENDING SHEAR ZONE NEAR THE CONTACT OF FINE-GRAINED GREEN EPIDOTIZED ANDESITE AND A PURPLISH-OLIVISH-BROWN TUFF, BOTH OF THE MAZELTON GROUP. SHEARED FELDSPAR PORPHYRY DYKES AND A NARROW VESICULAR BASALTIC DYKE PARALLEL THE VEIN, CUTTING THE MINERALIZED ZONE.

NATIONAL MINERAL INVENTORY NO.93L6 CU3

BIBLIOGRAPHY

- 1 BCDM OPEN FILE
- 2 BCDM MMAR 1906-99, 1907-79, 1911-114, 1916-125, 1917-117, 1926-138,
- 3 1928-168, 1929-169, 1952-95, 1966-92
- 4 BCDM ASS RPT 929, 919, 918
- 5 BCDM GFDL COMP MAP 69-1 #66
- 6 CSC P 44-23
- 7 GSC MAP 44-23, 971A, 989

"iron-cap" which is a marked feature of the outcrops. The gangue in which the metallic minerals occur is the volcanic rock, together with a little quartz and calcite; alteration of the principal constituents of the volcanic rock has caused the occurrence of epidote, chlorite, sericite, and other secondary minerals.

This property is situated at the head of Howson creek and is owned by the Telkwa Mines, Limited; the claims constituting the group were Crown-granted some years ago. In 1913 the Jefferson-Dockrill Syndicate bonded the property and developed it for a year, but finally allowed the bond to lapse.

The ore-zone is prospected by two tunnels, but owing to the irregular nature of the mineralization and surface features it is by no means certain that the true strike of the ore-zone has been ascertained. Apparently at the upper tunnel (elevation 5,300 feet) the strike is N. 5° W., and the tunnel after going in on the ore for 90 feet passes out into country-rock which continues to the face, a total distance of 253 feet. At a point 90 feet in the tunnel a half-crosscut going west to the west is in ore. All the rock exposed along this first part of the tunnel (90 feet) can be called ore and would probably average 4 to 5 per cent. copper. Beyond this point the tunnel passes out of the ore, and although several crosscuts were made no continuation of the ore-zone was found. In-all, the tunnel workings total about 500 feet.

The lower tunnel is 167 feet below the upper one and is supposed to be driven on the strike of the same ore-zone. It is 60 feet long and throughout its length is in altered volcanic rock of a diabase type. Very little mineralization is apparent; specks of chalcopyrite occur disseminated through the rock, together with some pyrite.

At an elevation of 5,700 feet a large cut 20 feet in length and with a 20-foot face shows a clean-cut dyke of dioritic affinities, which is 4 feet wide, cutting the volcanic rocks. On either side of this dyke a little mineral, consisting of pyrite, specular iron, and chalcopyrite, is developed.

In the main (upper) tunnel the rock formations exposed consist of both acid and basic volcanic rocks, with the latter type predominating. Some of these rocks may be fine-grained dykes or sills injected into the volcanic members, but the exact relations are difficult to ascertain. The supposition has been that this ore-zone was a large dyke cutting through the older rocks, which dyke had been mineralized. It seems much more likely that mineralization has followed along lines of fracturing and cross-fracturing in the volcanic rocks and possibly intercalated dykes; and so very irregular ore-bodies might be expected.

A careful study of the property from this view-point might repay the time spent. By abandoning the "dyke" idea and tracing up the fracture-lines and doing some surface prospecting, much information as to the origin of the mineralization might be obtained, which would result in more extensive ore-bodies being found. The writer only had time to spend an hour on the property, so that these ideas are simply put forward as suggestions, not opinions.

The Telkwa Mining, Milling, and Development Company owns 41 Crown-granted mineral claims situated near the head of Howson creek; the most important of these is the *Evening* group. At an elevation of 5,500 feet and on the sloping face of a bluff an open-cut working has been made which shows some mineralization. At this point there occurs a contact between andesite and diabase, with 6 inches of crushed rock and gouge along the contact. The diabase is mineralized in an irregular and bunched manner with chalcopyrite, and it is apparent that as a whole the mineralization is not sufficient to constitute the rock-matter as being ore.

Numerous other similar showings have been slightly prospected on these claims, but time was not available to see them.

Two claims—the *Silver Heels* and *Whispering Wind*—constitute this group, *Silver Heels*, which is situated at the head of Silver Heels basin, which drains into Howson creek. Jefferson & Dockrill are the owners and the claims are held by annual assessment. The main showing is on the *Silver Heels* claim, at an elevation of 5,900 feet. There is here a fairly well-defined mineralized zone 10 to 15 feet wide, striking N. 35° W. and occurring in andesite rock. A sample cut across 11 feet assayed: Gold, trace; silver, 1 oz.; copper, 2.3 per cent.

No other showings in the Howson Basin camp were examined, but there are said to be many occurrences of disseminated chalcopyrite. The possibilities for the camp are that some of these may on development prove to contain considerable tonnages of low-grade copper ore.

spent two weeks under the direction of M. J. Beley, geologist, making geological, geochemical, and magnetometer surveys and blasting 10 trenches totalling 175 feet.

Copper-Molybdenum

Rock (54° 127° S.E.) Company office,
Noranda Exploration Company, Limited 1050 Davie Street, Vancouver 5.
 By W. G. Clarke B. O. Brynelsen, western manager.

The Rock group of 45 claims, owned by the company, is on Loljuh Creek, 28 miles from Smithers. Access is by helicopter. Three men spent two months under the direction of Gavin E. Dirom making geophysical and geochemical surveys and diamond drilling 296 feet in seven holes.

Copper-Silver-Gold

TELKWA RANGE

Meg, Web, Silver Hill (54° 127° N.E. and S.E.) Com-
Canadian American Mining Company, Inc. pany office, 823 Northeast 190th
 By W. G. Clarke Street, Seattle, Wash. 98155. The

Meg, Web, and Silver Hill groups of 67 claims are owned by Canadian American Mining Company, Inc., and are in Hunter Basin in the Telkwa Range 16 miles by road from Telkwa. Two men spent four months on the property under the direction of Otto E. Haaland. An airborne magnetometer survey and ground induced polarization survey were made. Trenching of an induced polarization anomaly was begun, and access roads were built to the open cuts and old portals.

[Reference: Assessment Report No. 1086.]

Copper-Silver

Joker, PR, SQ (54° 127° S.E.) Company office, 411, 470 Granville
Norcan Mines Ltd. Street, Vancouver 2. C. F. Anderson, president; S. J.
 By V. A. G. Preto Hunter, consulting mining engineer. The property is located at the head of Howson Creek, 22 miles south-southwest of Smithers. The present holdings consist of approximately 255 mineral claims held by record, and cover the area which is locally known as the Howson Basin. In November, 1967, Bethex Explorations Ltd. optioned the holdings from Norcan Mines Ltd. and undertook to carry out exploration work during 1968. Old Crown-granted claims around which the present claims are located were the Duchess, Santa Maria, War Eagle, Jefferson, Evening, etc. Figure 8 shows the approximate location of the claim block and of the more important mineral occurrences.

At the time of the writer's visit in early September, a crew of five men under the direction of D. K. Cutler was engaged in diamond drilling and trenching on the Duchess zone.

The earliest records of mining activity in the area date back to 1905. For a summary of the work done in the early stages of exploration and for a fairly comprehensive description of the Santa Maria zone, reference is invited to the Minister of Mines Annual Report for 1917, page 118. For a brief history of mining activity in the Howson Basin and for a summary of the work done recently by Norcan Mines Ltd., please refer to the Minister of Mines and Petroleum Resources Annual Report for 1966, page 92. A list of references is given at the end of the present report.

The country rocks in the area are flows and pyroclastic strata of the Hazelton Group, cut by numerous basic and acid dykes and locally strongly altered and mineralized. In the region north of Howson Creek, the strata dip to the south at moderate angles; to the south of Howson Creek, dips are easterly and generally some-

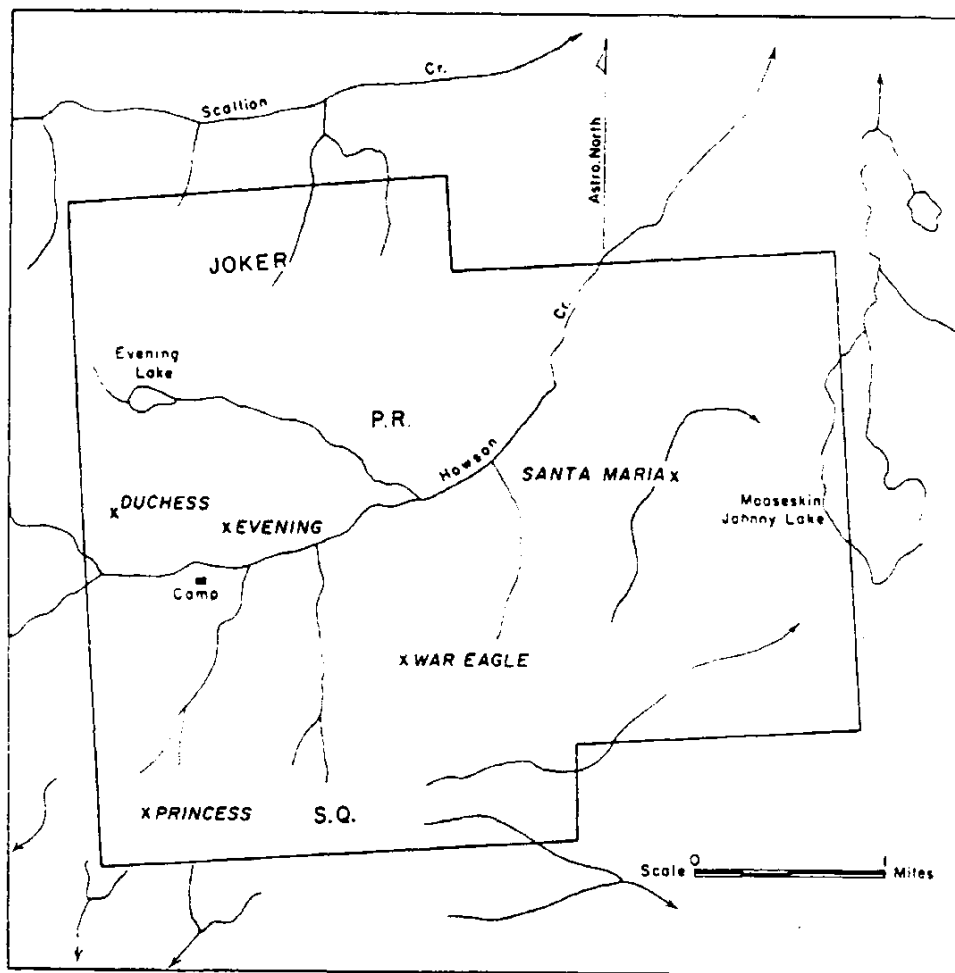


Figure 8. Norcan Mines Ltd. Sketch-map showing the location of the mineralized showings in Howson Basin.

what steeper. Since the early days of exploration, mining activity has been concentrated in three zones—the Duchess, the Evening, and the Santa Maria. Norcan Mines Ltd. has recently done work on two additional zones of mineralization—namely, the War Eagle and the Princess. A brief description of the geology and mineralization at these localities is given below.

Duchess.—The main Duchess workings consist of two adits and of several crosscuts. Recently Norcan Mines Ltd. has done a considerable amount of bulldozer trenching and, to the time of the writer's visit, had put down six diamond-drill holes using BQ wireline equipment.

The Duchess vein, a northerly trending shear zone mineralized with chalcopyrite, pyrite, hematite, and quartz, is exposed at the upper portal. Tetrahedrite is also reported from the vein. The shear is localized near the contact between a fine-grained green epidotized andesite to the west and fine-grained purplish-brown to olive-brown tuff to the east. The width of mineralization ranges up to 12 feet. Highly broken and sheared, buff-coloured feldspar porphyry dykes cut the volcanic rocks and carry only very minor amounts of sulphides. A few feet above the upper

portal, a narrow vesicle of the mineralized

Faulting and shear rock exposures create. Approximately 180' shear zone trending N-S copper and silver vein, approximately 500 feet west and dips at approximately the bottom of a steeply marked by discontinuous garnet-epidote skarn and its easternmost trench. From the rim of the cirque west showings. Together fault forms a well-defined of the claim block. Mineralization and the stood, at least this set of fractures conduits for hydrothermal the main fault and mineralized shears at the

Evidence of along the northerly report a fault which adit. This structure south. Although this fault and the direction from the portal and design well past the projected surface which trend the southwest is composed of fractures which veins. The null southwest, but the remains as yet undevelopment of the supposed location apparently failed to

Evening.—which are known feet to the east records show that degrees east also by Norcan Mines irregular shears highly epidotized and (or) flows

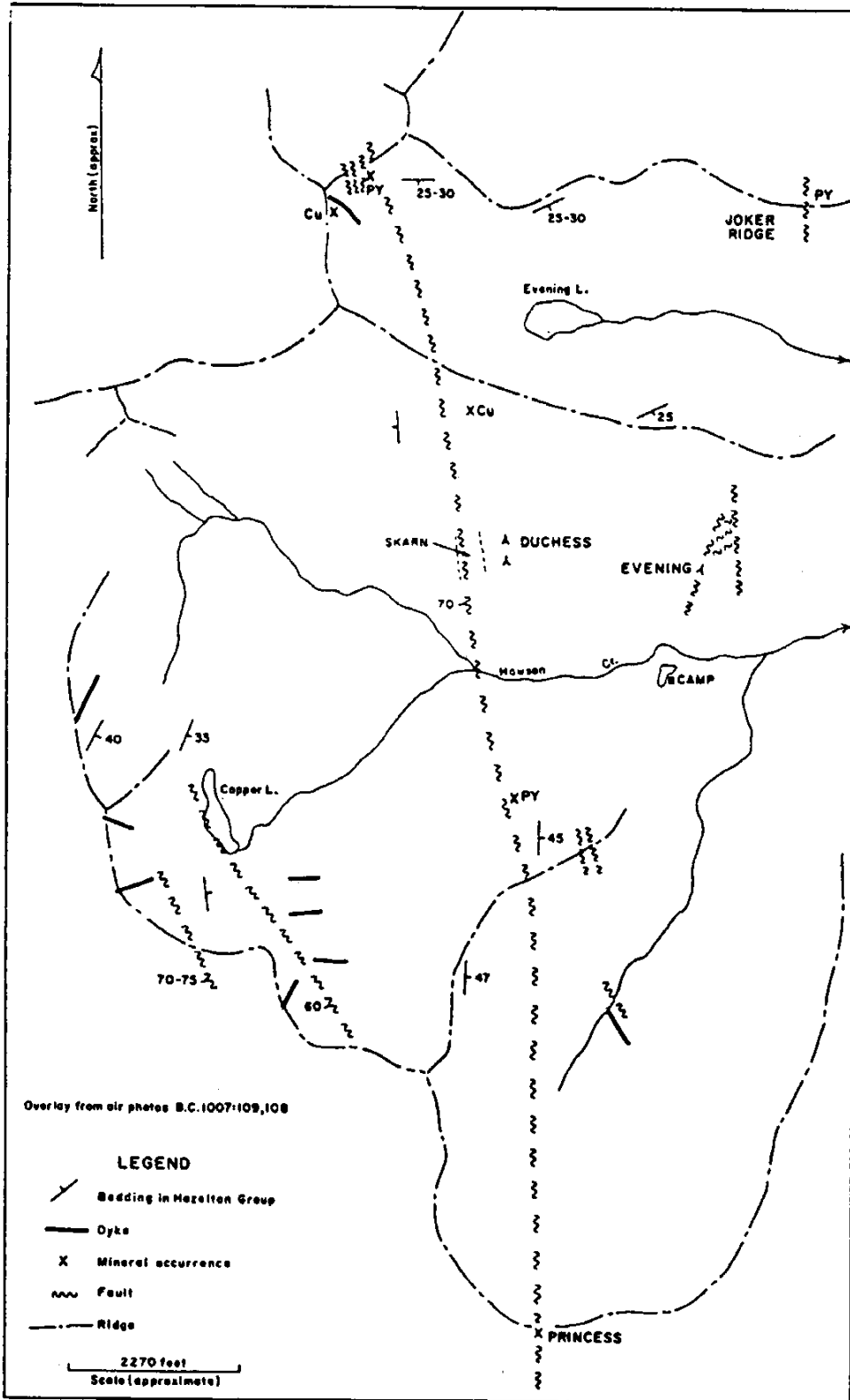


Figure 9. Norcan Mines Ltd. Sketch showing the relative positions of mineralized showings and northerly trending faults.

east and dip at moderate narrow gullies faults which probably Santa Maria.— exploration consists main vein to a depth levels in the shaft. shipment of 239 tons ton silver, and trace Mines Ltd. carried diamond drilling as

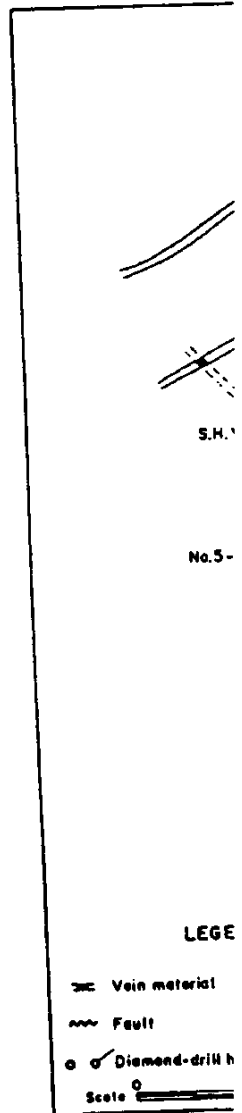


Figure 10. Norcan

east and dip at moderate angles to the north. They are found between two precipitous narrow gullies and may represent fractures subsidiary to northerly trending faults which probably follow the gullies.

Santa Maria.—Work done on the Santa Maria zone during the early stages of exploration consists of an inclined shaft, which by 1917 had been sunk along the main vein to a depth of 120 feet, and of approximately 300 feet of drifting from two levels in the shaft. From these workings some stoping was done, and in 1917 a shipment of 239 tons of hand-sorted ore grading 17 per cent copper, 9.5 ounces per ton silver, and traces of gold was made to the Anyox smelter. In 1966 Norcan Mines Ltd. carried out approximately 5,300 feet of trenching and 3,742 feet of diamond drilling as well as geochemical and geophysical surveys.

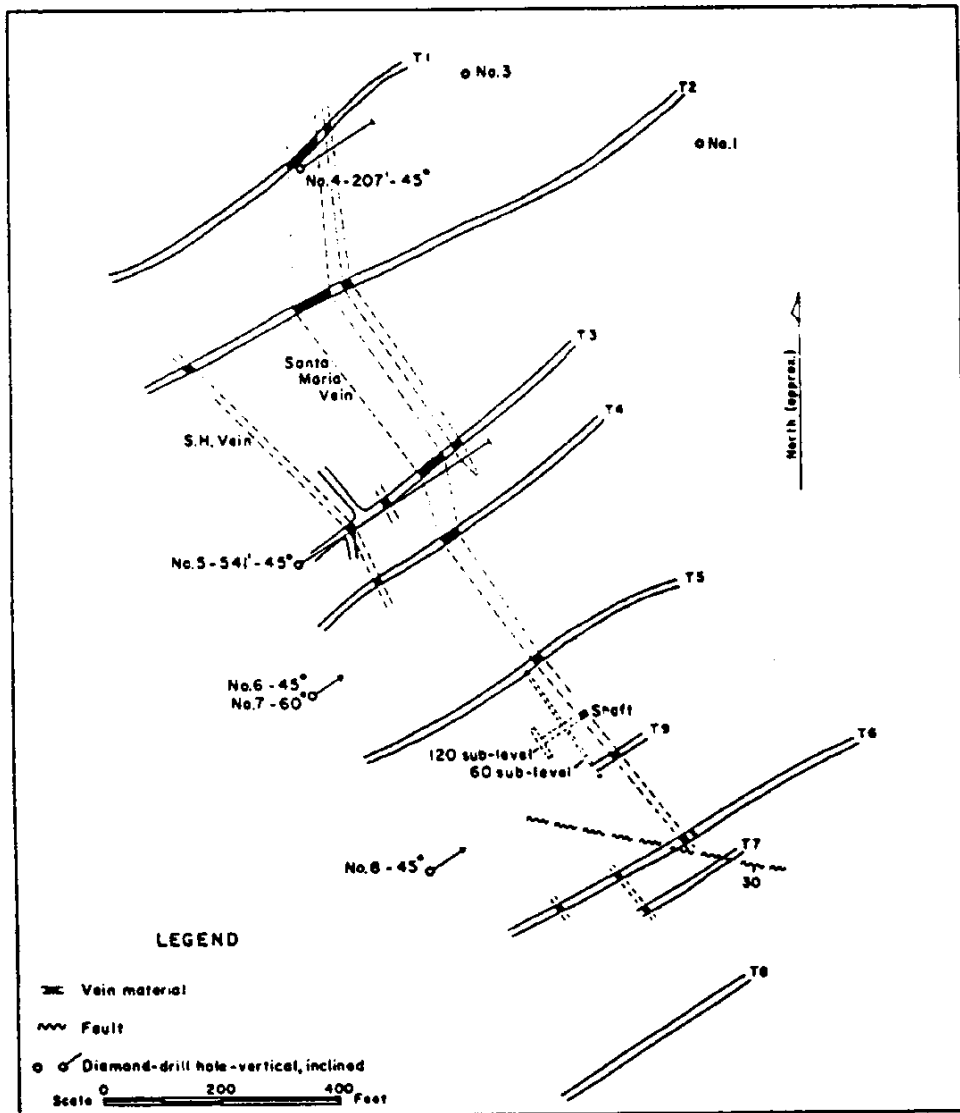


Figure 10. Norcan Mines Ltd. Sketch showing surface trenches and diamond-drill holes on the Santa Maria.

Mineralization at the Santa Maria consists of quartz veins, carrying chalcopryrite, pyrite, chalcocite, and bornite, which have been traced by trenching for a strike length of more than 1,700 feet. In addition to the long-known Santa Maria vein, a description of which may be found in the Minister of Mines Annual Report for 1917, page 118, another parallel vein, the S.H. vein, and other minor veins have been found through diamond drilling and recent trenching. The vein system strikes approximately north 30 degrees west and dips southwesterly at moderate to steep angles. The veins occur over a surface width of 250 to 300 feet and follow a zone of intensely altered and sheared pyroclastic rocks of the Hazelton Group. These comprise reddish lapilli tuff and volcanic breccia, and buff to greenish fine-grained highly altered andesitic lava or intrusive rock. In addition to these rocks, several dykes of buff, cream, and brick red rhyolite porphyry are found. The dykes are crudely parallel to the vein structure, are generally strongly altered, and may be sparsely mineralized with sulphides. In addition to the strong shearing and alteration within the vein zone, an extensive amount of saussurite alteration of the country rocks accompanied by sparsely distributed silicification and sulphide mineralization was noted on either side of the main zone of shearing.

Naturally occurring exposures at the Santa Maria are virtually non-existent, but from an examination of the trenches and of company maps (*see* Fig. 10) it is evident that here, as at the Duchess, faulting and shearing along a northerly trending zone have played an important role in displacing the mineralized veins, so as to greatly complicate the picture.

War Eagle.—At the time of the writer's visit, no work was being carried out on the War Eagle zone. Norcan Mines Ltd. has, however, done some trenching as well as geophysical and geochemical surveys on the property. Records of the latter may be found in Assessment Reports Nos. 917, 918, and 919. Assessment Report No. 929 carries a generalized geological map as well as a brief description of the geology by W. G. Stevenson, P.Eng. The writer examined briefly one of the bulldozer trenches recently dug in the northern part of the area, as well as the rock exposures on the wall of the cirque which bounds the War Eagle Plateau to the north. The country rocks belong to the Hazelton Group and include fine-grained green andesitic or basaltic lava, buff and purple tuff, and volcanic breccia. Rock fragments up to 12 inches in their greatest dimension were observed in the latter. Layering of these strata trends in several directions, from east-west to northerly. Dips are generally moderate to steep to the north, northeast, or east. Some southwesterly dips were observed locally. Numerous narrow feldspar porphyry dykes, some of which are intensely epidotized and sparsely mineralized with sulphides, cut the volcanic rocks in an easterly direction. What mineralization was seen in the ground that was examined consists of scattered narrow shears trending northeasterly and northwesterly and mineralized with pyrite, chalcopryrite, hematite, bornite, and, locally, low-iron sphalerite. A prominent shear trends north 50 to 60 degrees west across the cirque wall and is marked by a 50- to 75-foot zone of reddish tuff, abundantly stained by iron oxide and mineralized with pyrite and very minor chalcopryrite. Later narrow veins of coarse-grained calcite follow this zone.

Princess.—Development work done to date on the Princess zone is limited. Kennecott examined the showing in 1952, and several hand trenches, mostly badly caved, remain as a sign of their work. No work other than sampling and very minor trenching had been done by Norcan Mines Ltd. to the time of the writer's visit.

The showings are found on the rim of the cirque which is located at the head of a northerly flowing tributary of Howson Creek, in the southwestern corner of the claim block. Mineralization consists of several narrow shears and veinlets of hematite, iron-rich sphalerite, and chalcopryrite in a gangue of white calcite and quartz.

The host rock is high of the Hazelton Group 200 feet along the is the southern exposure [References: 1907, p. 79; 1911 1928, p. 168; 1917, 918, 919, and

Molybdenum-Copper

Fog, Fly

Noranda Mines
By A. Sutherland Brown

property was located the previous year, ing. In 1967 de electromagnetic s cover a porphyry south of Smither proaches to with

The Telkwa ton Group, probable sequence of intercoloured. There and several small pluton, occurs in sequence, which doming to the re description that of the Sunsets p

Figure 11 : Sunsets Creek p the range of layers laterally into a foliated flow te proximity to the plagioclase, act palimpsest of o in regard to op through a bioti

Intruding sills, and some These are most dominant, but

The Sunse some evidence Dykes of similar during the final posed entirely This is a light-tabular to oval

Norcan Mines Ltd. (N.P.L.)

REPORT

HOWSON BASIN PROPERTY

TELKWA RIVER AREA

OMINECA MINING DIVISION

BRITISH COLUMBIA

Submitted to NORCAN MINES LTD. N.P.L.
1500 Royal Bank Building
675 West Hastings Street
Vancouver, B.C.

Vancouver, B.C.
July 23, 1966.

S. J. Hunter, P.Eng.,
Consulting Mining Engineer.

INTRODUCTION

At the request of Norcan Mines Ltd. (N.P.L.) a reconnaissance examination was made of their Howson Basin Property by S. J. Hunter, Consulting Mining Engineer, accompanied by Mr. W. D. Tompson, Geologist, over the period July 20, 21 and 22, 1966 in order to assess the mineral potential of the property and to formulate plans for an exploration program.

The Howson Basin Property is situated 22 miles southwest of Telkwa, British Columbia on the east fringe of the Coast Range. The area was first developed between 1905 to 1917 and has been mapped by the Geological Survey of Canada.

The information obtained from this visit together with data from the reports of the Geological Survey of Canada, - - W. W. Leach and V. Dolmage - -, as well as from a review of the Minister of Mines Reports, British Columbia, and from reports of the Consolidated Mining and Smelting Company of Canada, form the basis of the report submitted herewith.

SUMMARY AND RECOMMENDATIONS

The Howson Basin Property of Norcan Mines Ltd. (N.P.L.) is located in the Telkwa Mountains of central British Columbia on the east margin of the Coast Range. Drainage in this area is to the east to join the Bulkley River at Telkwa. Elevations range from 4000 feet A.S.L. in the valley to 6000

feet A.S.L. on the rim of Howson Basin.

Access to the property is direct and simple by helicopter from the town of Smithers, a distance of 24 miles to the north-east. An old wagon road leads up the Telkwa River Valley to within 8 miles of the site.

The property comprises 196 located claims recorded in the Omineca Mining Division and owned by Norcan Mines Ltd. (N.P.L.), 675 West Hastings Street, Vancouver, B.C.

Active exploration is being conducted in this area by the Phelps Dodge Company, and American Metal Climax Inc.

The geology of the district is essentially the Hazelton Series of Volcanics and Sediments intruded by the batholith of the Coast Range which consists of mainly granodiorites and syenite porphyries.

Mineralization occurs as copper sulfides in the form of chalcocite, bornite and chalcopyrite together with measurable silver content in shear zones in the sediments and volcanics.

Exploration developments from the time of the discovery of mineral in this area in 1905 to the last period of interest in 1929 have revealed several attractive prospects which have been acquired by Norcan Mines Ltd. (N.P.L.) and encompassed by their claim staking. These prospects include the Santa Maria, War Eagle, Duchess, Evening and Cache zones first developed by the Telkwa Mining, Milling and Development Company and Telkwa Mines Ltd. from 1906 to 1917 and latterly by the C. M. & S. Company in 1928-29.

Assay samples obtained from these prospects by the author have values ranging

as follows over 3 feet to 7 feet widths:

Ag (ozs.)	Cu (%)
0.15 to 11.30	0.25 to 15.6

Historically, this district has remained dormant since the completion of the Grand Trunk Pacific Railway in 1910 and the selection of its route through the Bulkley Basin and through the Skeena Valley to Terrace and thence to Prince Rupert. The shorter route — by 60 miles — through the Telkwa River Valley — Zymoetz River Valley to Terrace was appraised but abandoned at the time. Today with the advent of the Peace River Power Grid and the Gas Trunk Lines to serve the rapidly expanding Central B.C. Communities, the Telkwa River Route is once more being considered and it is likely that it will be favoured for the route developments for power, gas and roads. This then places the copper deposits of the Howson Basin and Copper River areas once again in the economic limelight.

Coupled with the above considerations are the area developments of the huge molybdenum deposit on Hudson Bay Mountain at Smithers by American Metal Climax, the advent of the 5000 tons per day Granisle Copper Mine of Granby in the Babine area, and the development of the 15,000 tons per day Endako Molybdenum Mine by Placer Development — all of which have resulted in a re-evaluation of this district for metal potential.

Exploration and development of the Howson Basin Property of Norcan Mines Ltd. (N.P.L.) is therefore justified in consideration of the following factors:

1. favourable assay indications from the several mineral occurrences found to date.
2. excellent structural and geological conditions and rock types.
3. favourable and apparently long term markets and price structures for copper and silver.
4. possible development of road access, power line transmission and gas trunk line transmission within 8 miles of the property.
5. nearness to a tide-water, deep-sea port by rail and road transport — 75 miles.
6. development of other major ore deposits in the area with resulting economies in transportation, man-power availability, community services, etc.

It is therefore recommended that an exploration programme be conducted during 1966 to test the mineral deposits for continuity, grade and tonnage by prospecting and mapping, geophysical surveys, trench-

ing, and diamond drilling in order to determine their economic worth for possible development as producing mines.

In order of priority, the programme will be classified as follows:

1. Santa Maria Zone.
2. War Eagle Zone.
3. Duchess Zone.
4. Other prospects.

It is estimated that a sum in the amount of \$92,350.00 will be required in the preliminary financial budget.

July 23, 1966
Vancouver, B.C.

S. J. Hunter, P. Eng.,
Consulting Mining Engineer

GENERAL CONDITIONS

Location

Latitude 54 deg. 27 min. North
Longitude 127 deg. 25 min. West

The Howson Basin refers to the district around the headwaters of the South Fork of the Telkwa River and Howson Creek in Central British Columbia.

This area occupies the westerly slope of the Telkwa Mountains, which are a branch of the Coast Range, and forms the drainage area for the Telkwa River draining to the east and the Zymoetz River flowing to the west. A distinct pass through the Limonite Creek Valley connects the two river valleys.

The nearest settlement is at Telkwa which lies a distance of 22 miles to the east. To the north of Telkwa is the town of Smithers. The Howson Basin is about 40 miles due east of the small city of Terrace.

Accessibility

The Howson Basin Area has the attractiveness of simple, direct and cheap access.

The northern section of the Canadian National Railways passes through Telkwa, Smithers and Terrace on its route through the Bulkley-Skeena Valleys to the deep-sea ports of Prince Rupert and Kitimat.

The Trans Provincial Highway Number 16 is routed through these communities.

Both Smithers and Terrace have large commercial airports and receive daily aeroplane communications from Vancouver.

Helicopters are based near Smithers so that quick transport is available to the property.

It would be a simple matter to provide access by means of vehicles up the old road which passes up the Telkwa River Valley to within 8 miles of the property. The former access route up the South Fork or Howson Creek is being used by logging trucks and could be re-activated over the remaining few miles, quite cheaply. This alternative should be investigated.

Topography and Surface Features

The district comprises the Telkwa Mountains which are essentially a dissected plateau in appearance with extensive, flat ridges bordering the valleys at 6000 feet elevation. The valley floors are broad and are occupied by stream and lakes—Moose-skin Johnny Lake being the major drainage feature in the Howson Basin.

In the immediate claim area, the slopes are gently inclined to the east and west, except for the immediate basin which rings the headwaters of the Howson Creek. Here-in the slopes are steep and precipitous. Characteristically, however, the tops of the ridges are flat, mountain meadows and are easily traversed.

Timberline extends above 5000 feet, however, prospecting is provided with lots of rock exposure.

Creek drainage is to the east and north from Howson Basin.

There are no glaciers in the area of Howson Basin.

Climate

The climate in this district is essentially north temperate in type and is moderated by proximity to the coast.

The summers are short and hot, and winters are long, however, temperatures are not extreme.

Precipitation is high in winter and snow depths reach 8 to 10 feet. Annual precipitation would be over 150 inches.

The prospecting season extends from June through to September. Mine development work could proceed throughout the year in this area.

Water and Timber

The valleys of Howson Creek and Scallon Creek have extensive stands of commercial timber mainly spruce, balsam, pine and hemlock. Mine timber can be found

around the Santa Maria and Duchess workings. Logging is being carried on in the lower Howson Valley.

Water is present in abundant supply in the creek valleys; however, the upper slopes become quite dry in mid-summer or mid-winter so that it would be necessary to pump from the nearby streams.

Facilities

The old buildings which formed the Howson Camp of the original Jefferson-Dockrill Syndicate have collapsed and are no longer serviceable. Norcan Mines Ltd. have established a fine tent camp adjacent to the original site.

The nearest commercial facilities are to be found at Smithers where an extensive community has developed.

Should the Telkwa River Route be selected as the through route for the gas trunk line and the Peace River Power Lines, then key facilities will be within 8 miles of the claim holdings.

Plant and Equipment

There are no plant and equipment remaining at the several properties.

HISTORY OF THE AREA

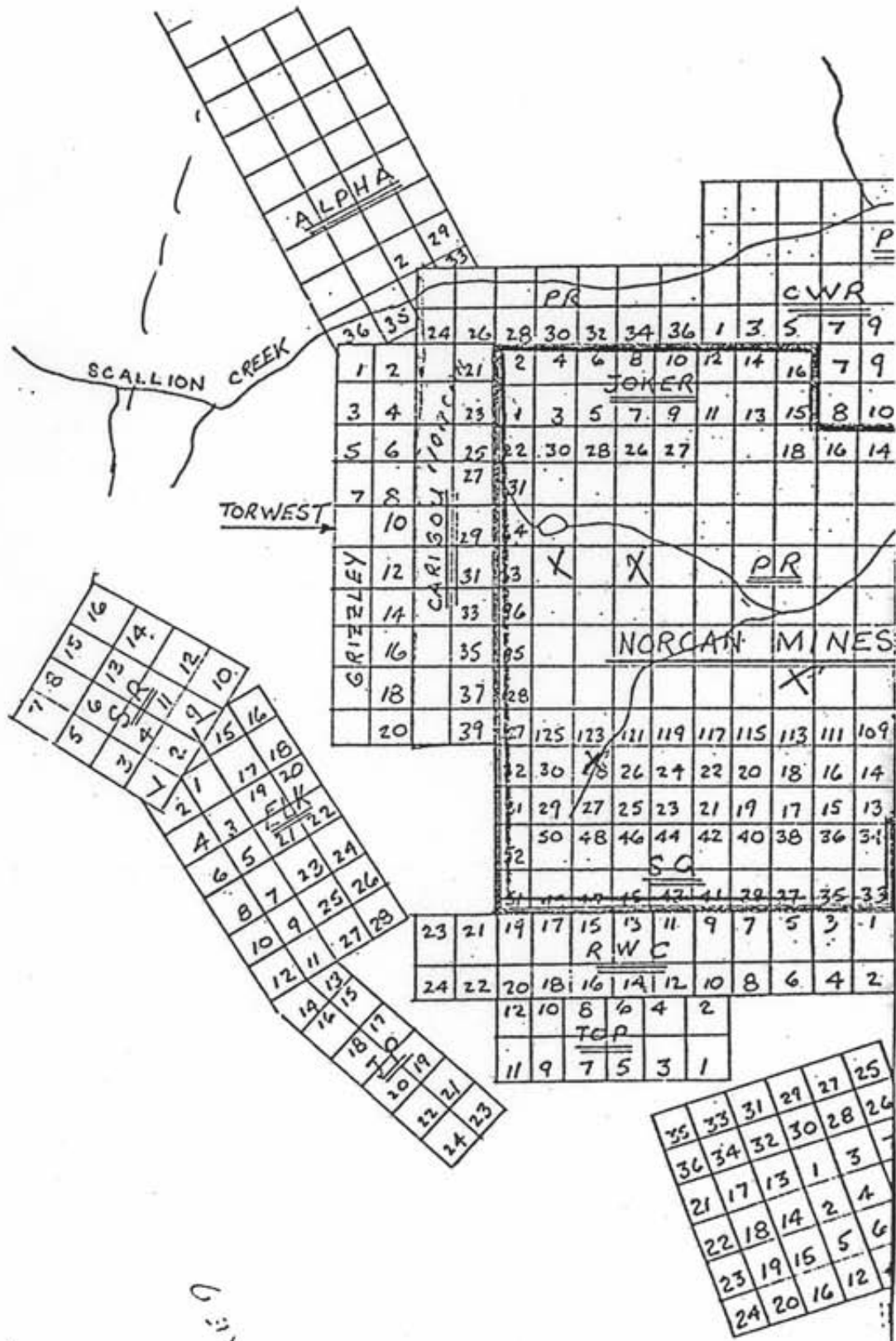
The early history of the Telkwa River Valley and Howson Basin was linked with the search for placer gold before the turn of the century. Needless to say, this area does not have potential for placer operations.

With the advent of construction of the Grand Trunk Pacific Railway from 1900 to 1910, there was a renewed interest in potentially commercial acquisitions so that prospectors moved into the Copper River and Telkwa River Districts once again. Many claims were staked.

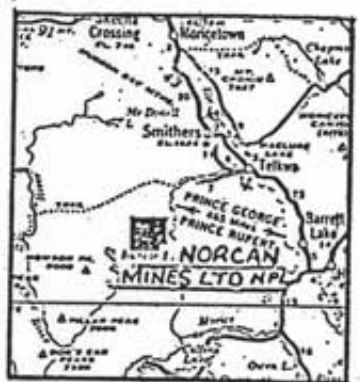
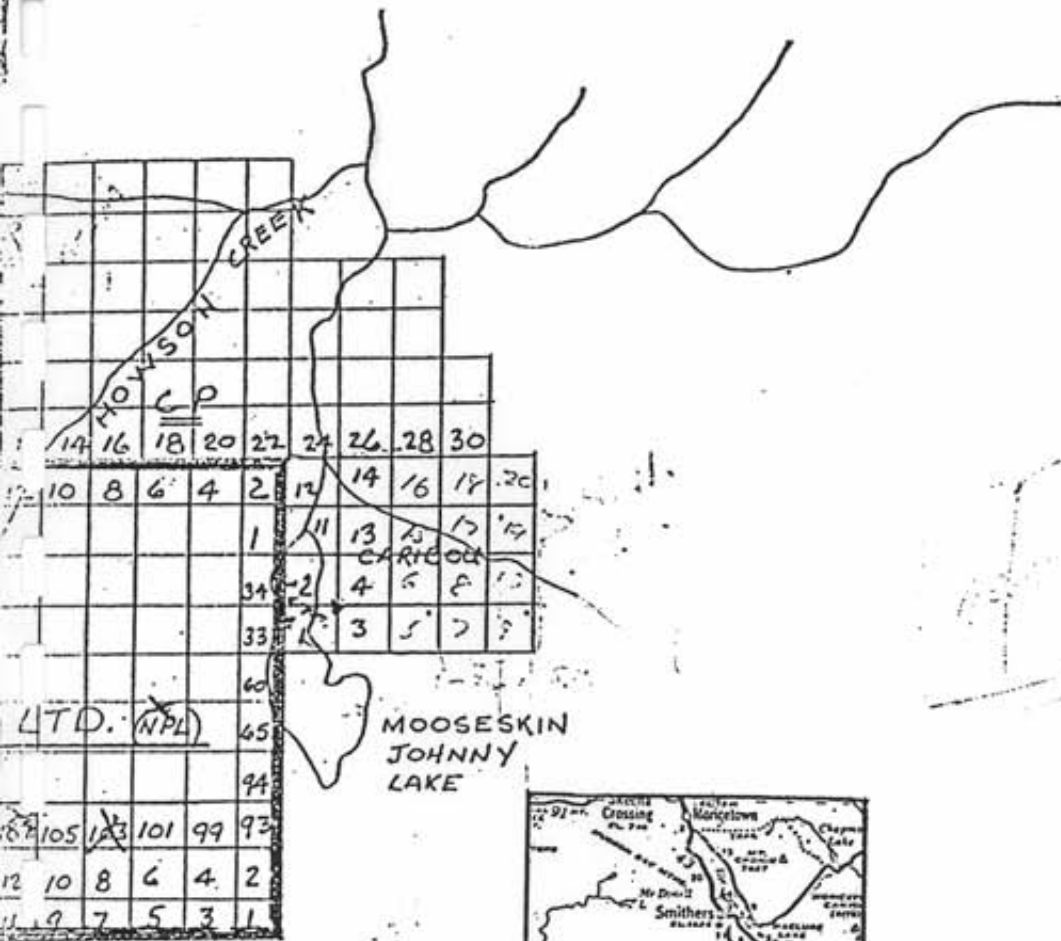
About this time the copper-silver deposits of the Hunter Basin at the head of Cabinet Creek, the copper, silver, lead, zinc deposits of Hudson Bay Mountain and the mineral deposits of the Howson Basin were discovered.

Several Syndicates were organized including the Telkwa Mining, Milling and Development Company and the Telkwa Mines Ltd. to explore the deposits of the Howson River Basin. Surface prospecting and trenching were initiated from 1905 onwards on the Duchess, Anna Eva, Evening, War Eagle and many other claim groups.

HELP DODGE



SIAHIG



S. J. HUNTER & ASSOCIATES LTD. CONSULTING ENGINEERS VANCOUVER-BRITISH COLUMBIA	
PR, SQ AND JOKER CLAIMS - HOWSON BASIN AREA, B.C.. NORCAN MINES LTD. NPL	
SCALE: 1" = 1 1/2 MILES	DATE: JULY 26, 1966
PROJECT No. 23	EXAMINED BY S. J. HUNTER P. ENG.
DRWG. No. 2	APPROVED BY

10E
 PHELPS
 DODGE
 10

In 1916 the Jefferson-Dockrill Syndicate from Telkwa, in conjunction with the Provincial Government, built a road up the Telkwa River then up Howson Creek to the Santa Maria Property. A camp was built at the Santa Maria and equipment was moved in. During 1916-17 an incline shaft was sunk on the Santa Maria for 120 feet from which level development was carried on and two stopes were developed to surface, from which 239 tons were sorted and shipped to the Anyox Smelter. Work was curtailed at the close of the First World War.

In 1928-29, the Consolidated Mining and Smelting Company acquired an option on the Duchess Group and did 926 feet of lineal development on the lower tunnel in an attempt to define the Duchess ore zones aside from encountering several narrow ore zones their efforts were not successful. Their apparent objective was to drive an adit to the north through the Duchess zone to encounter and investigate the contact between the andesite series and syenite porphyrys to the north in the hope that this area would generate adequate shear structure to accommodate large, low grade ore zones. They did not reach their objective, and their programme terminated with the start of the economic recession of the 1930's.

In 1952 the Kennecott Company conducted an exploration programme around the Howson Basin area with the resultant discovery of zinc mineralization some 2 miles to the south of the Duchess Property. They abandoned their efforts after exposing a considerable area of sphalerite with the metal price decline of the early 1950's. This property lies on the Norcan Mines claim groups.

There has been little if any activity in the district until recently when rising prices and metal markets fostered an interest in the district by Phelps Dodge, Amex and Noranda.

PROPERTIES AND OWNERSHIP

The following located claim groups are owned by Norcan Mines Ltd. (N.P.L.) and are recorded as a contiguous group in the Omineca Mining Division:

Name of Group	Number of Mining Claims	Total
PR Group	1 - 128	128
SQ Group	1 - 52	52
Joker Group	1 - 16	16
	Total	196

GENERAL GEOLOGICAL FEATURES OF THE AREA

The district was mapped by W. W. Leach of the Geological Survey of Canada in 1906-10. Subsequently further geological studies were made by G. Hanson and R. H. B. Jones in 1925, E. J. Lees in 1936 and E. D. Kindle in 1939. Geological compilation and description were made by J. E. Armstrong in 1944.

The properties are described in detail in the Geological Survey Memoir 223, reference to which is made hereto.

From the studies of W. W. Leach the Howson Basin area comprises volcanics and sediments of the Hazelton Group of Upper Jurassic Age and consisting mainly of andesitic, dacitic, rhyolitic and basaltic flows, tuffs and breccias. To the west of the area and forming the heart of the Telkwa Mountains is a plug of Upper Cretaceous Intrusives of the Coast Range Batholith consisting in the main of granodiorite, granite, and diorite, porphyritic phases and rhyolite.

Tongues from this intrusive mass have been injected into the Hazelton sediments in complex dikelets.

Leach divides the rocks of the Telkwa Valley area into 4 main divisions:

1. crystalline rocks of the Coast Range.
2. porphyritic rocks.
3. coal bearing beds.
4. eruptive series.

The first are the granites and gneisses of the Coast Range.

The porphyritic rocks constitute the bulk of the rocks in the area and comprise tuffs, andesites and agglomerates. Their thickness is estimated as 5000 feet. The rocks vary in colour from red to green. These rocks are important in that most of the mineral outcrops of the district occur in them.

The coal bearing beds lie above the porphyritic rocks and are mainly clay shales. These are noteworthy in that the coal reefs of Telkwa and the coal beds near the Howson Basin occur within them. Coal beds are found adjacent to the Howson Basin in the Denys Creek Valley, at the headwaters of the Thautil River and near Burnie Lake.

The newer eruptives consist of coarse porphyritic rocks which have thrown out dikes in all directions. At the head of Scallon Creek the eruptives are a pink syenite porphyry. The eruptives appear to have a marked influence on ore deposition accord-

ing to Leach since most deposits occur within the vicinity of these intrusions and hence may have provided the channels for ore solutions.

Extensive shear zones in the form of fine grained acidic dikes were noted around the Howson Basin and some chalcopryrite and galena were found adjacent to them. The basin is wide open for prospecting since an extensive shear system could contain low grade mineralization in this area.

DESCRIPTION OF MINERALIZED ZONES AND PREVIOUS DEVELOPMENT

Mineralization occurs in vein shears both paralleling the bedding and at right angles to the bedding and is varied in that bornite and chalcocite appear with hematite, and then chalcopryrite occurs with hematite, and in places chalcopryrite is mixed with massive sulfides of pyrite and pyrrhotite.

Santa Maria

The Santa Maria zone may be described as a vein replacement in the contact between a quartz porphyry and an andesite porphyry.

It has been trenched on the surface for over 1500 feet of strike length and an incline shaft and sub surface development were carried on in one section. The vein is well defined and regular as seen in the workings. The strike is north-south and dips appear to be around 45 degs. to the west.

A sample taken by the author from the south stope at the top of the incline shaft assayed as follows:

Width	Ag (ozs.)	Cu(%)
3.0 ft.	11.3	15.6

A sample cut from an open cut by the author some 150 feet south of the shaft assayed as follows:

Width	Ag (ozs.)	Cu(%)
3 ft.	5.6	5.7
4 ft.	0.95	0.55

The minerals consist of high grade chalcocite and bornite with some hematite in a quartz matrix with considerable epidote. Widths vary from 4 feet to 7 feet and in places mineralization appears to extend into the footwall.

An open cut excavated 800 feet south of the shaft contains chalcopryrite over 4 feet of apparent width.

The development completed by the Telkwa Mines Ltd. in 1916-17 is described by the Mines Department as follows: "120 feet of incline shaft was sunk from which at the 60 foot level 120 feet of drift was driven south and 102 feet of drift to the north. A 40 foot stope was carried to within 12 feet of the surface from the south drift and a 20 foot stope was carried up from the north drift. From this stoping 239 tons of ore were shipped to Anyox and averaged 17% copper and 9.5 ozs. silver. Certain sections of the stope reportedly assayed 12% copper over 2 ft. to 5 ft. widths."

"The ore steepened to 70 degs. at the bottom of the shaft and became lower in grade so that development was limited."

The author inspected the shaft and found it flooded to within 20 feet of the collar. The shaft timbers are rotted and the headframe has collapsed. The author was able to go down into the south stope, however, and found an excellent vein with good massive chalcocite and bornite throughout the length of the sub drift. The walls are spalling and the stope was backfilled.

Duchess

The author inspected the Duchess zone and examined the upper tunnel. The lower tunnel has caved so it was not possible to enter. The buildings are completely destroyed.

The mineralization consists of fairly massive replacement by chalcopryrite and pyrite in a shear zone in the volcanics. The mineralization is exposed at surface in the upper tunnel and in several open cuts up the face of the mountains and striking north of the tunnel.

In the upper tunnel elevations 4825 feet A.S.L. the ore is 12 feet wide at the collar and steeply dipping and persists over the first 90 feet of the tunnel over full width of the opening. A grab assay from the ore zone by the author ran as follows:

Ag (ozs.)	Cu(%)
3.2	8.05

At 90 feet from the collar the ore is abruptly faulted. Several cross cuts were driven to the east and west on the fault to explore for the ore and the drift was advanced a further 163 feet to the north beyond the fault, and further east-west cross-cuts driven, but the ore zone was not encountered. It is apparent that the zone was traversed by a series of E-W striking and steeply dipping faults. There is no evidence of diamond drilling. This work was done by the Telkwa Mines Ltd. between 1906-10.

The lower tunnel contains 971 feet of development and the work was done by the C. M. & S. Company in 1928-29. The elevation of the collar is 4640 feet A.S.L. Development of the lower tunnel includes 500 feet of main drift on a north azimuth and 471 feet of cross cuts driven to explore and develop ore shoots. Only minor mineralization was encountered on the lower level in narrow vein shears.

On the Duchess, mineralization has followed fracture patterns apparently, and will thus be irregular.

War Eagle

Mineralization on the War Eagle consists of disseminated chalcopyrite and hematite in a shear zone seemingly crossing the volcanics at right angles to the strike of the sediments. Surface oxidation is intense.

There are several open cuts over the outcrops of the zone. The strike appears to be N80 deg. E and the dip 60 deg. NW. The author examined the zone in an open pit overlooking the Howson Creek Valley and found evidence of mineralized shears over a width of 15 feet. A sample from this pit taken by the author assayed as follows:

Width	Ag(ozs.)	Cu(%)
12.0 ft.	0.85	0.56

Some 300 feet east of the above pit another open cut was grab sampled by the author and assayed as follows:

Ag(ozs.)	Cu(%)
0.15	0.25

This pit was badly caved so that solid rock was not evident.

A further open cut was observed at a distance some 1000 feet to the east. This was not examined.

Cache Zone

The Cache Zone which lies on the rim of the Howson Basin, an approximate distance of 2 miles south of the Duchess zone, is apparently the zinc deposit exposed by Kennecott's exploration work. The author examined several open cuts and deep pits on the ore which shows evidence of zinc, iron and copper mineralization in a wide east-west striking shear which dips steeply to the south. The zone is at 6200 feet elevation A. S. L.

A grab sample from one pit assayed as follows:

Zn(%)	Cu(%)	Ag(ozs.)
7.75	0.50	0.70

Evening Zone

The author did not examine the Evening zone, but it is described by Leach as being in the Howson Basin to the east of the Duchess Group and to have been developed by open cuts to expose a shear zone containing chalcopyrite, pyrite and hematite, with widths up to 25 feet, and to have been traced for over 1500 feet of strike length.

Prospect Zones

A further mineralized shear zone was encountered above Copper Lake on a ridge at 6200 feet elevation.

A grab sample by the author ran as follows:

Ag(ozs.)	Zn(%)	Cu(%)
3.1	N.A.	2.3

CURRENT DEVELOPMENT

Currently Norcan Mines Ltd. have constructed a serviceable tent camp including one cookery tent and 4 sleep tents.

A control line grid has been cut over the area of the Santa Maria ore zone in preparation for an IP. survey which is being conducted at this time in order to ascertain likelihood of parallel structures and to determine possibility of extending the vein shear.

The claim lines have been checked and a survey will be made to determine possibilities of fractions.

An aerial EM survey is being scheduled in the lower, heavily timbered valleys and on the ridges.

Prospecting is being carried out on the claim area.

EXPLORATION AND DEVELOPMENT POSSIBILITIES

The Howson Basin claims of Norcan Mines Ltd. offer a broad area for exploration prospecting, in addition they have included several positive targets which have indicated substantial evidence of commercial metal and which require a detailed investigation.

As has been developed in this report thus far, the area demonstrates definite geological worth and encouraging mineral occurrences which in the main have been evaluated on a limited scale to date. It remains to be done that an embracing pro-

gramme investigate the known zones, look for other zones and then work out the economics of subsequent development on the basis of the whole picture.

Conditions and facilities are changing and improving so rapidly in this district so that exploration targets once considered totally unfeasible and uneconomic are now realized to be of sound investment worth.

RECOMMENDED PRELIMINARY PROGRAM

In the writer's opinion, a programme of exploration and development should be conducted on the following target areas:

1. Santa Maria.
2. War Eagle.
3. Duchess.
4. Property Prospecting to develop other targets.

The object should be that over the season's exploration period in 1966 sufficient information is gathered and adequate facts obtained to limit the attention to the development of a specific target.

The programme should be pressed into the late fall of 1966, but should not continue through the winter unless results of the exploration dictates otherwise.

The programme is recommended as follows:

1. The access should be improved by advancing a tote road to the property with Government assistance. A 4x4 vehicle should then be acquired to service the programme. Contracts could be committed for helicopter standby on the property once the venture starts rolling.
2. Bulldozer stripping should proceed on the Santa Maria and War Eagle zones. Access routes should be established to other operative areas such as the Duchess and the upper Howson Basin. Sampling of vein exposures can parallel the stripping. Long reconnaissance trenches could be run occasionally to test for parallel vein structure.
3. The above work can be paralleled with an aerial EM of the property and surface prospecting and soil sampling to attempt to locate other targets.
4. A surface geophysical survey using either EM or IP equipment should be run over the Santa Maria and War Eagle zones as a forerunner to the bulldozer stripping.
5. The Duchess area should first be pros-

pected and mapped on surface and the lower portal re-opened and mapping should be done in both tunnels.

All ore exposures should be sampled.

6. Following an assessment of the mapping of the Duchess, a geophysical survey should be made of this area.

7. All aerial defined targets and ground located targets should be located, examined and scheduled for later prospecting and geophysical assessment, trenching and sampling.

8. Following a complete review of the geological and logistical facts on the developed targets finally a limited exploratory diamond drill programme should be instigated.

ESTIMATED REQUIREMENTS AND COSTS

Conditions of Estimate:

1. The work to be conducted under competent supervision and guidance.
2. The work to proceed as scheduled.
3. Contracting of geophysical work and diamond drilling.
4. Rental of major equipment such as bulldozers and other large service items.
5. Time period — 1966 season.

Personnel Required

- 1 Engineer in charge.
- 1 Assistant to above—surveyor, etc.
- 1 Prospector.
- 2 General Help.
- 1 Bulldozer Operator (Contract).
- 2 Geophysical force (Contract).
- 1 Cook.
- 4 Diamond Drillers (Contract).

Camp and Facilities

- 1 Cook Tent.
- 4 Sleep Tents.
- 1 Storage Tent.
- 1 Dry Tent.

Equipment requirements and Material

- 1 Four Wheel Drive Vehicle (Rental).
- 1 Light Plant (Purchase).
- 1 Radio (Rental).
- 1 D-7E Caterpillar C/W hydraulic dozer and winch (Rental).
- 1 Pack sack diamond drill plus steel.

Costs

Labour, supervision, compensation and fringe benefits.

Engineer	\$ 800.	
Assistant	750.	
Prospector	600.	
2 Helpers	1000.	
Cook	550.	
Per month	<u>\$3700.</u>	
Plus Benefits	550.	
For 4 months	<u>\$4250.</u>	\$ 17,000.

Equipment Rentals

D9 Cat		
375 hrs at \$40.	\$15000.	
4x4 Vehicle		
4 mos. at \$500	2000.	
Radio 4 mos. at \$25	100.	
Light Plant		
4 mos. at \$150	<u>600.</u>	17,700.

General Expenses

Cookery 10 men		
\$4/day x 30 x 4	4800.	
Fuel & Gasoline		
4 x \$300	1200.	
Assaying 4 x \$200.	800.	
Tools	<u>100.</u>	6,900.

Administration & Overhead

Tel & Tel		
4 mos. at \$200.	800.	
General Office		
4 at \$700.	2800.	
Travel Expense		
4 at \$500.	2000.	
Consultants	2400.	
Insurance	<u>300.</u>	8,300.
Freight 4 at \$600.		2,400.

Geophysical Programme

EM Aerial Survey		
6 days at \$150	900.	
EM Ground Survey		
35 line miles at \$120.	4200.	
IP Ground Survey		
15 days at \$120.	1800.	
Line Cutting		
35 line miles at \$50.	<u>1750.</u>	8,650.

Helicopter Support

50 hrs. at \$120.		6,000.
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Diamond Drilling

3000 ft. at \$7.	21000.	\$ 21,000.
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Mobilization

Fares	1200.	
Equipment	1000.	
Servicing	<u>1000.</u>	3,200.
Additional Claim Staking		<u>1,200.</u>

Estimated total		<u>\$ 92,350.</u>
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A sum in the estimated total of \$92,350. will be required to complete the preliminary programme of exploration on the Howson Lake Property of Norcan Mines Ltd. (N.P.L.).

GENERAL STATEMENT AND CONCLUSIONS

The property of Norcan Mines Ltd. (N.P.L.) in the Howson Basin District of British Columbia has sufficient merit to justify the programme recommended in this report, and with the adequate evidence of copper-silver mineralization should provide with an effective exploration programme the basis for continuing development of base metal ore bodies.

S. J. Hunter, P.Eng.
Consulting Mining Engineer.

July 26, 1966.
Vancouver, B.C.

BIBLIOGRAPHY

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- Geological Survey of Canada—The Copper Silver Veins of the Telkwa District, British Columbia—V. Dolmage—1918.
- Geological Survey Map 44-23—Smithers—Coast District.
- Consolidated Mining and Smelting Company of Canada—Reports on Duchess and Contenton Telkwa, B.C.—1929.
- Reports of the Minister of Mines, British Columbia—1918.

ADDENDUM

Subsequent to the examination of the properties described in this report, a complete aerial Electromagnetic survey has been made of the properties and induced polarization and ground electromagnetic surveys have been run over the area of the War Eagle and Santa Maria Zones. Soil sampling is complete over the Santa Maria and is proceeding on the War Eagle. In addition a bulldozer has been moved into the claim area to trench over the known zones and over the new anomalous areas. Results are summarized below and they have been discussed and reviewed with both the geophysicist and resident geologist on the job.

Aerial EM

The aerial EM survey indicated 21 anomalous sections, and had, in addition, confirming EM anomalies over the Santa Maria, War Eagle and Duchess zones. The aerial EM also located the Evening Zone which was known before but had not been pinpointed on the property.

Ground EM

A ground EM was run over the Santa Maria with confirming results on the vein structure, and also indicated a new and highly anomalous area a distance of 800 feet northeast of the old shaft. EM lines were run at 200 foot intervals over the Santa Maria for 1500 feet beyond the vein on either side.

Ground EM is presently being run over the War Eagle.

Vancouver, B.C.
Dated Aug. 18, 1966

Ground IP

Ground IP was run over the Santa Maria and War Eagle with positive response to confirm EM results. In addition the IP confirmed a strong EM anomaly some 800 feet northeast of the Santa Maria. The IP results extended the known zone of the War Eagle N 80 degs. E on strike of the general anomaly.

The total extent of the War Eagle zone indicates a 4000 foot length of zone.

Geo Chem Results

Soil sample results have been received over the Santa Maria area and over the new anomaly to the northeast and an indicated high of 8400 p.p.m. have been indicated over backgrounds of 10 to thresholds of 100 in copper. These results confirm the EM and IP results on the Santa Maria and the new zone 800 feet to the northeast. Soil sampling work is now progressing upon the War Eagle zone.

Bulldozing

Bulldozing is being directed over the Santa Maria zone at the moment.

In view of these encouraging and successful results to date, and in view of the shortness of the season remaining it is my recommendation that an early drill target should be selected and that diamond drilling commence this fall.

S. J. Hunter, P.Eng.,
Consulting Mining Engineer.

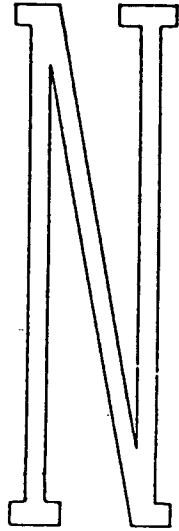
CERTIFICATION

I, Stanley John Hunter, of Vancouver, B.C., do hereby certify that:

1. I am a Consulting Mining Engineer with residence at 6476 Churchill Street, Vancouver, B.C.
2. I am a Registered Professional Engineer in the Provinces of British Columbia and Ontario.
3. I am a graduate of the University of British Columbia in Mining Engineering and have practised my profession for 18 years.
4. I am not a vendor, member of the Board of Directors, or a regular employee of Norcan Mines Ltd. (N.P.L.) to which this report is directed.
5. I have no interest, direct or indirect, in the properties or securities of Norcan Mines Ltd. (N.P.L.), nor do I expect to have any such interest.
6. The information contained in this report was obtained from an examination of Norcan Mines Ltd. (N.P.L.) Howson Basin Property over the period July 20, 21, 22, 1966 and from a study of reports of the Geological Survey of Canada and the B.C. Department of Mines Bulletins.

S. J. Hunter, P.Eng.
Consulting Mining Engineer.

Vancouver, B.C.
July 26, 1966.

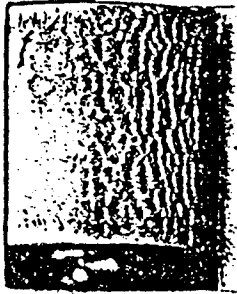


NORCAN MINES
LTD. (N.P.L.)

ANNUAL REPORT

for the year ended March 31st

1968



In brief summation, over 7000 feet of bulldozing and 500 feet of hand trenching was carried out on the Duchess-Evning zones. In addition 326 feet of diamond drilling in the form of four short holes using wireline equipment and a B.Q. drill were accomplished on the Duchess main outcrop.

A further 18,000 feet of bulldozer trenching was directed towards the Princess and War Eagle zones and in other areas.

Following are a few of the interesting assay results:

Duchess Underground (4885 level)

<u>Width (ft)</u>	<u>Ag (Oz)</u>	<u>Cu (%)</u>
14.0	2.90	6.35
5.0	2.65	3.25
7.0	0.65	0.50
10.0	1.05	1.20
6.7	1.30	0.70
10.5	2.65	4.25
17.0	Tr	3.70
24.0	0.40	0.45
4.0	0.20	0.40

Duchess Surface

<u>Width (ft)</u>	<u>Ag (Oz)</u>	<u>Cu (%)</u>
24	2.72	3.94
26	0.78	1.05
25	1.80	3.61

All four of the shallow test holes into the Duchess zone encountered silver - copper mineralization. Unfortunately they encountered excessive faulting which terminated the drilling.

Following is a description of Drill Hole No. 4:

Drill Hole No. 4

<u>Intersection</u>	<u>Ag (Oz)</u>	<u>Cu (%)</u>
2	4.4	11.31
2	3.0	8.12
2	4.3	6.42
2	7.8	17.23
2	8.0	19.80
2	3.40	8.01
2	0.80	1.07
2	0.32	0.37
2	0.18	0.18
2	0.22	0.17
<u>20</u>		

The remaining 32 feet of the vertical hole assayed 0.12 oz. Ag and 0.26% Cu.

Work on the Evening area revealed extensive mineralization in silver - copper.

Following are sample assay results from the portal of the old tunnel:

<u>Width (ft)</u>	<u>Ag (Oz)</u>	<u>Cu (%)</u>
12	0.20	0.45
12	0.25	0.40
12	0.25	0.70
14	0.30	0.30
<u>14</u>	<u>0.25</u>	<u>0.50</u>
64	0.25	0.52 (Composite)

Many high grade outcrops were sampled above the Evening tunnel. However, the slopes in this area were too steep for extensive bulldozer work and drilling here was too costly for the budget funds available.

In the Princess area, simple hand trenching was executed and results from one trench are submitted hereby:

<u>Length (ft)</u>	<u>Ag (Oz)</u>	<u>Cu (%)</u>	<u>Zn (%)</u>
70	0.62	0.89	10.69

The soil samples taken at 100 feet intervals along the major bulldozer trench revealed several promising anomalies.

Finally, prior to the end of 1967, the access road to the property was made suitable for Bombardier traffic right into the claim area.

As you are aware, the Company has entered into an exploration agreement with Bethex Exploration Ltd. (N.P.L.). Under the agreement, Bethex has undertaken to spend \$75,000. in the property in the 1968 season, and in, subject to its right of withdrawal, increasing amounts in succeeding years. Bethex can earn a 70% interest in the property if production is attained by December 31, 1974. Norcan retains a 30% interest in the property.

Bethex now has a 10 man crew on the property under the supervision of I. Watson, geologist, carrying out a programme of geological mapping, soil sampling and trenching. The work has been in the area of the Santa Marie, War Eagle zones and more recently in the Duchess and Evening zone areas. The target areas located by the mapping are now being subjected to follow-up work with bulldozer stripping.

Road work has completed 13 miles of access to the property as well as several miles of road within the claim block. This is the first time that a road suitable for the transportation of supplies and equipment has been pushed right to the property and it will substantially reduce exploration costs. Interim reports will be issued when further exploration reports are received from Bethex.

DATED at Vancouver, British Columbia, this 9th day of August, 1968.

C.F. ANDERSON, President,
on behalf of the Directors.

NORCAN MINES LTD. (N.P.L.)

AUTHORIZED AND ISSUED CAPITAL - 5,000,000 shares of a nominal or par value of 50 cents each are authorized, of which 1,710,005 shares are now issued and outstanding.

REGISTERED OFFICE:

The Royal Bank Building,
675 West Hastings Street,
Vancouver, B.C.

BUSINESS OFFICE:

411 The Rogers Building,
470 Granville Street,
Vancouver 2, B.C.

OFFICERS:

President	-	C.F. Anderson
Secretary	-	E.F. Horsey

DIRECTORS:

C.F. Anderson	628 Westview Place, North Vancouver, B.C., Businessman
C.H. Anderson	2640 Bowen Road, Nanaimo, B.C., Engineer, S. Madill Ltd.
G.R. Fay	555 West 50th Avenue, Vancouver, B.C., Director, Carlisle, Douglas & Co. Ltd.
E.F. Horsey	1575 Laurier Avenue, Vancouver, B.C., Lawyer, Bull, Housser & Tupper.

AUDITORS:

Peat, Marwick, Mitchell & Co.,
900 West Hastings Street, Vancouver, B.C.

REGISTRAR AND TRANSFER AGENTS:

The Royal Trust Company,
626 West Pender Street, Vancouver, B.C.

SOLICITORS:

Bull, Housser & Tupper,
1500 - 675 West Hastings Street, Vancouver, B.C.

During the winter of 1966-1967 several plans were considered for the property development and eventually it was decided to assess the property merits in the Duchess-Evening area on a reconnaissance basis only and to further check as much of the whole property as possible rather than to test further during 1967 the Santa Maria zone. This was settled upon as it would place the property in the best position for further financing or for subsequent interest by a major financing partner.

To this end, a programme of surface bulldozing, trenching and limited test drilling was instituted in May 1967 and continued until September. Work was also conducted upon an access road.

PEAT. MARWICK MITCHELL & CO.
 CHARTERED ACCOUNTANTS
 900 WEST HASTINGS STREET
 VANCOUVER 1
 BRITISH COLUMBIA

AUDITORS' REPORT TO THE SHAREHOLDERS

We have examined the balance sheet of Norcan Mines Ltd. (N.P.L.) as of March 31, 1968 and the related schedule of deferred exploration, development and administrative expenses and the statement of source and application of funds for the year then ended. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the company at March 31, 1968 and the source and application of its funds for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding period.

Peat, Marwick Mitchell Co.

Vancouver, British Columbia
 May 27, 1968

Chartered Accountants

NORCAN MINES LTD. (N.P.L.)

Balance Sheet

March 31, 1968

(With comparative figures for 1967)

		<u>Assets</u>	
		<u>1968</u>	<u>1967</u>
Current asset:			
Cash		\$ 3,076	-
Total current assets		3,076	-
Mineral claims, at cost, acquired by the issue of 760,000 shares and \$2,000 cash (Note)		382,000	387,000
Deferred exploration, development and administrative expenses, per Schedule 1		327,669	221,742
Incorporation expense		<u>1,847</u>	<u>1,847</u>
		\$ <u>714,592</u>	<u>605,589</u>
<u>Liabilities and Shareholders' Equity</u>			
Current liabilities:			
Bank loan, secured by securities pledged by a director		\$ 30,000	17,000
Bank overdraft		-	409
Accounts payable and accrued expenses		<u>14,590</u>	<u>18,178</u>
Total current liabilities		44,590	35,587
Shareholders' equity:			
Capital stock:			
Authorized 5,000,000 shares with a par value of 50c each.			
Issued:			
	<u>Shares</u>	<u>Par value</u>	<u>Discount</u>
For mineral claims	760,000	\$ 380,000	
For cash:			
Issued at March 31, 1967	700,005	350,002	160,000
Issued during the year ended March 31, 1968	<u>250,000</u>	<u>125,000</u>	<u>25,000</u>
	<u>1,710,005</u>	<u>\$ 855,002</u>	<u>185,000</u>
		670,002	570,002
		\$ <u>714,592</u>	<u>605,589</u>

See accompanying note to financial statements.

Approved on behalf of the Board:

C. J. Anderson Director *P. J. Horsey* Director

NORCAN MINES LTD. (N.P.L.)
Statement of Source and Application of Funds

Year ended March 31, 1968

(With comparative figures for the period
April 22, 1966 to March 31, 1967)

	1968	1967
Funds provided:		
Capital stock issued for cash	\$ 100,000	190,002
Funds used:		
Mining claims	-	382,000
Less capital stock issued therefor	-	380,000
	-	2,000
Exploration, development and administrative expenses	105,927	221,742
Incorporation and organisation expense	-	1,847
Total funds used	105,927	225,589
Increase in working capital deficiency	\$ 5,927	35,587

See accompanying note to financial statements.

NORCAN MINES LTD. (N.P.L.)

Schedule

Deferred Exploration, Development and Administrative Expenses

Year ended March 31, 1968

	Balance at beginning of year	Expenditures during the year	Balance at end of year
Exploration and development expenses:			
Assaying	\$ 4,995	2,916	7,911
Camp supplies and maintenance	13,062	2,926	15,988
Diamond drilling	43,180	5,802	48,982
Equipment and parts	2,585	10,404	12,989
Expediting	1,132	164	1,296
Freight	714	5,228	5,942
Line cutting	2,018	-	2,018
Miscellaneous	802	1,268	2,070
Recording fees	4,055	81	4,136
Road building	24,986	14,782	39,768
Room and board	5,964	1,918	7,882
Staking claims	2,348	75	2,423
Surveys	24,286	4,698	28,984
Telephone	1,942	1,316	3,258
Transportation	25,474	16,886	42,360
Trenching	19,810	-	19,810
Wages and benefits	33,022	23,776	56,798
	<u>210,375</u>	<u>92,240</u>	<u>302,615</u>
Administrative expenses:			
Accounting and audit	1,800	2,451	4,251
Honorarian	375	-	375
Interest and bank charges	189	1,348	1,537
Legal	5,302	3,932	9,234
Miscellaneous	197	81	278
Office	946	1,975	2,921
Prospectus	810	-	810
Publicity	1,242	425	1,667
Transfer and stock exchange fees	506	3,475	3,981
	<u>11,367</u>	<u>13,687</u>	<u>25,054</u>
Total deferred exploration, development and administrative expenses	\$ 221,742	105,927	327,669

See accompanying note to financial statements.