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SUMMARY GEOLOGICAL REPORT

on the

MINERAL HILL AND SUBSIDIARY EXPLORATION PROJECTS

in the

HOUSTON-WALCOTT AREA,

OMINECA MINING DIVISION, B.C.

for

MOLYMINE EXPLORATIONS LTD., (N.P.L.)

by

W.M. Sharp, P.Eng.

March, 1968

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March 5, 1968

President and Directors
Molymine Explorations Ltd. (N.P.L.)
c/o Mr. D.W. Small
Suite 201, 535 Thurlow Street
Vancouver 5, B.C.

Gentlemen:

This report results from the writer's study and evaluation of the data accruing from your Company's exploration programs on the Mineral Hill, Microwave Hill, and Hall properties. The report is principally concerned with the more comprehensive Mineral Hill program, and only deals briefly with work at the latter, relatively subordinate prospects — these having been very adequately described via independent reports by Manex Mining Ltd. field staff.

The writer thanks the principals and field staff of Molymine Explorations and Manex Mining Ltd. for their helpful provision of the relevant exploration data, and also for their personal assistance and observations in the field, all of which have contributed to this report.

Respectfully submitted,

W.M. Sharp

W.M. Sharp, P.Eng.

WMS/sd
encl.

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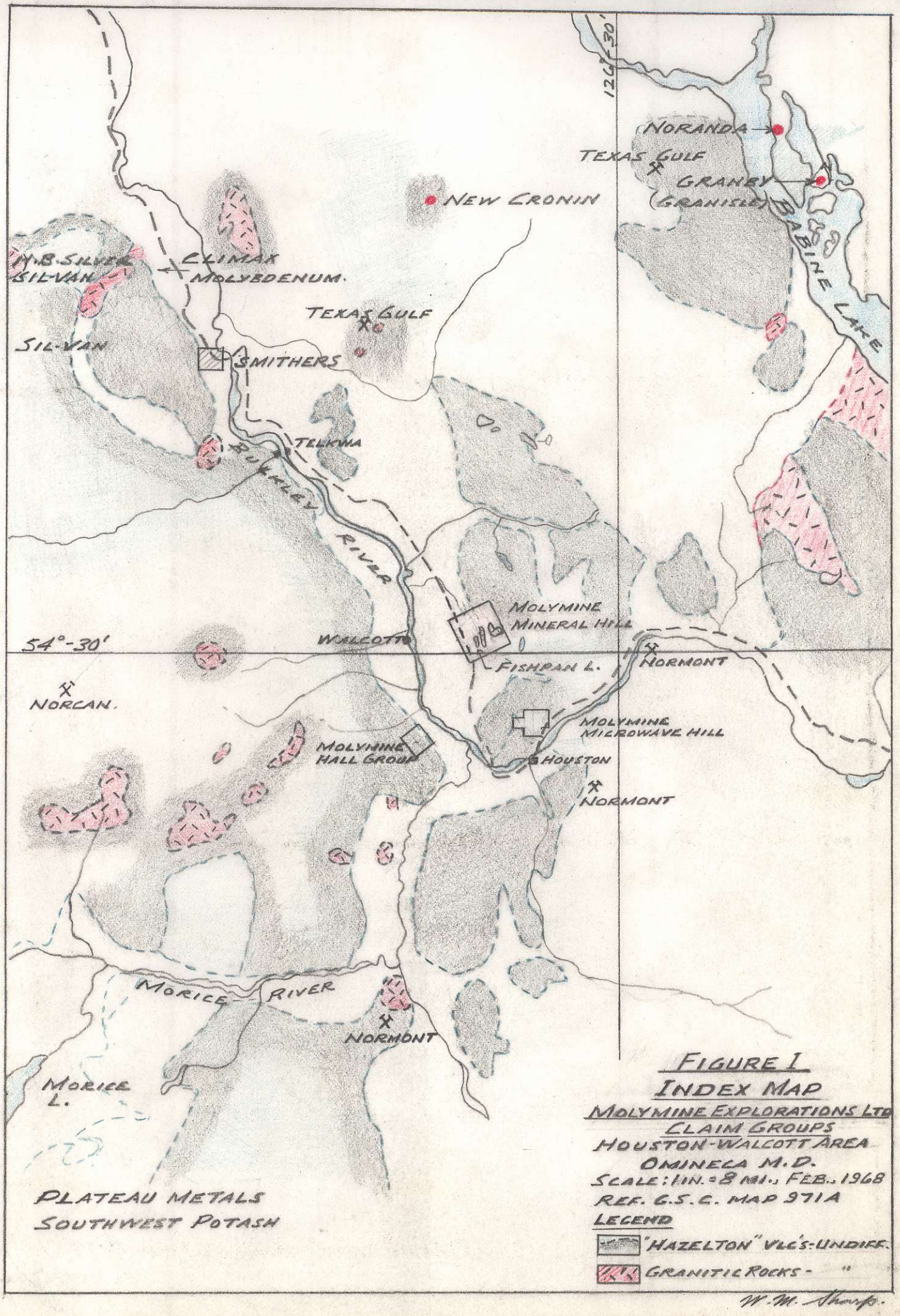

FIGURE I
INDEX MAP

MOLYMINE EXPLORATIONS LTD
CLAIM GROUPS
HOUSTON-WALCOTT AREA
OMINECA M.D.
SCALE: 1 IN. = 8 MI., FEB., 1968
REF. G.S.C. MAP 971A

LEGEND

"HAZELTON" VLC's-UNDIFF.
GRANITIC ROCKS - "

W.M. Sharpe.

SUMMARY

Part 1 - Mineral Hill Prospect

The property consists of one group comprising 128 full claims and 6 fractional claims situated approximately 8 miles northwest of Houston, B.C. and adjacent, but mainly to the east of B.C. Highway 16. Access to the property is via Highway 16 for about 30 miles southeast of Smithers, B.C. or, alternatively, for 10 miles from Houston. Off-highway access is provided by about 1 1/2 miles of good secondary road. The rectangular claim group measures approximately 17,500 by 16,000 feet--the long dimension bearing about N30°W.

The original claims were staked in May, 1955; the most recent were staked early in 1967.

Prior to, and concurrent with the Company's exploration programs, the property was optioned and rather superficially investigated by Southwest Potash Corp. (1960 and 1962), and by Canex Aerial Explorations Ltd. in 1964. Cominco optioned the property in 1966 and completed the preliminary diamond drilling and trenching program started by Molymine Explorations Ltd. (N.P.L.); Cominco also mapped the geology of the general claims area on a scale of 1" = 1,000'.

Comprehensive exploration has been accomplished principally within two separate, geologically different zones. The South zone is characterized by the occurrence of molybdenite and chalcopyrite in a fractured and quartz-veined irregular body of fine-grained alaskite (siliceous white granite) and the surrounding hornfelsic volcanics and sediments. Molybdenite and chalcopyrite, associated with iron sulphides, occur in quartz veins and seams, and as disseminations in the above rocks; they occur in apparently lesser amounts in a nearby granitic stock. The currently delineated alaskite-hornfels zone measures about ~~400~~ 1200 by 1,500 feet.

The second exploration area, the North zone, is a somewhat rectangular area (1,500 by 800 feet) of variably fractured hornfelsic rocks. This structurally composite zone has been strongly silicified, altered, and rather sparsely mineralized. Principal host structures comprise rough stockworks and random systems of quartz-veining and/or quartz-filled masses of breccia. Similar iron sulphide-molybdenite-chalcopyrite mineralization occurs similarly to that in the South zone, except for the random additions of younger, silver-bearing tetrahedrite within the North zone.

The currently indicated average grade of mineralization over the general South zone alaskite-hornfels complex approximates 0.10% MoS_2, 0.05% Cu. From evidence provided by the most recent drilling from the south end of the zone, the writer estimates that one specific zone of cross-veining will average 200 feet in width and grade in the vicinity of 0.15% MoS_2, and 0.05% plus Cu. This latter structure has a good potential for the occurrence of higher-grade mineralization within deeper sections of the alaskite-hornfels panel and contact regions of the main granitic stock.

The North zone mineralization has been investigated by rather localized trenching and drilling to relatively shallow depths. In general, mineralization has proved weaker than within the focal areas of the South zone; however, core and percussion drilling has provided preliminary indications of better-grade Mo-Cu mineralization within a 200-foot fracture panel lying closely south of the ~~supposed~~ inferred 'creek' fault. Within this area drilling has provided a number of intersections in the range of 0.1 to 0.2% MoS_2, with minor amounts of copper and minor, but generally appreciable amounts of silver. The geological and geochemical evidence indicates an extension of the potential ore structure for several hundreds of feet northeasterly of the explored interval of the structure.

The North and South zones, and parts of the intervening area have been explored by 27 diamond drill holes and 102 'O.D.' holes--the latter ranging from 70 to 120 feet in length, and consequently testing only a near-surface horizon of the bedrock.

In addition to conducting I.P. and magnetometer surveys of the principal, or evident exploration targets, the Company has carried out extensive semi-detailed soil sampling and reconnaissance exploration via silt sampling of the general drainage. The above prospecting efforts have disclosed a number of new exploration targets. Of particular and immediate interest is an area 2,000 feet east of the main stock, and on which several high silver-bearing quartz veins have been exposed by old work.

Part II - Microwave Hill Property

This recently-acquired 38-claim Zn-Cu-Ag-Pb prospect, situated about 2 miles due north of Houston, B.C., has been explored by soil-sampling and follow-up trenching during the past year.

Sparse mineralization occurs within fractured bedding sections adjacent to north-trending shears. The most promising zone of mineralization, returning 0.51% Cu and 0.96 oz/ton Ag over 25 feet, occurs in fractured felsic volcanics exposed by #2 trench.

Part III - Hall Prospect

This 31-claim copper prospect is situated 8 miles west, and slightly north, of Houston, B.C.

Chalcopyrite, with very minor gold and silver values occurs within moderately-dipping tuffs and rhyolite flows. The mineralized area lies adjacent to a small diorite stock. The copper mineralization occurs in tenuous association with magnetite.

The canyon showings and related occurrences were investigated via a grid-oriented magnetometer survey covering a large portion of the group. Follow-up trenching and sampling disclosed only minor sections of weak, spotty copper mineralization. To date, this property appears to have only minor ore potential.

RECOMMENDATIONS

I - Mineral Hill

(a) Explore the apparent N.E.-trending fracture panel between the alaskite zone and granitic stock by systematic contour-trenching between 28 S and 32 S. Follow this up with detailed mapping.

(b) Explore above zone at depth via (3) deep diamond drill holes collared per information from 1(a).

(c) Carry out soil-sample investigation of the major silt anomaly centering 3,000' S.E. of main granite stock, and extending this to include the known Ag-bearing quartz vein showings.

(d) Investigate above Ag-quartz vein zone by bulldozer stripping and trenching, with an added provision for exploration of anticipated soil anomalies.

(e) Similarly (as c & d) explore geochemical anomalies at 30S, 14E.

(f) Extend detailed soil sampling in North zone to investigate indicated N.E.-striking zone south of creek (and fault) for 1,000' upstream.

(g) Provision for I.P. survey per results of (f).

(h) " " stripping and trenching creek zone.

(i) " " diamond drilling creek zone.

(j) Provide for general supplementary geophysical survey equipment rentals and contracts.

II - Microwave Hill

(a) Perform I.P. survey of No. 2 trench copper zone.

(b) With, or without reference to (a) conduct bulldozer trenching across No. 2 trench zone.

(c) Carry out sampling of No. 2 trench zone via closely-spaced X-ray drill holes.

(d) Explore zone at depth by larger core drilling-provisional item.

ESTIMATED COSTS

I (a)	Ripper-bulldozer; estim.8 days @ $300/day, gross		2,400
(b)	Dia. drill, estim. 2500 l.f. @ $11/ft.		27,500
(c)	Grid preparation,12 lines @ 2,000'=4 1/2 mi @ 80.=	360	
	Analyses; 2,000' x 2,400'; 250 for Mo-Cu-Ag @ 4. =	1,000	
	Sample labour, 5 days @ 28.	140.	1,500
(d)	Ripper-'dozer, estim. 7 days @ $300.		2,100
(e)	" " " 5 days @ $300.		1,500
(f)	Estim. 2,400' x 1,200' area, silts & soils		1,000
(g)	Provision, I.P. Survey over 2,400' x 1,200'; 3 miles @ $800-plus		2,500
(h)	Ripper-'dozer, estimate 10 days @ $300.		3,000
(i)	Gross 4 holes @ 500' each, 2,000 l.f. @ $10.		20,000
(j)	Geophysical provision		5,000
	Provision for sample prep. & assays, 500 samples,		2,500
	" " supervision-engineering, vehicle		3,000
	Sub-total, Mineral Hill		$72,000
II (a)	Grid-preparation, 1 mile	100	
	I.P. survey, minimum	1,000	1,100
(b)	Ripper-bulldozer, estim. 3 days @ $300.		900
(c)	X-ray drill, estimate 500 l.f. @ $10.	5,000	
	Sampling & assaying, 50 @ $5.	250	5,250
(d)	Provision, diamond drilling, 1000 l.f. @ $10.		10,000
	Sub-total, Microwave Hill		$17,250
III	Hall group, general provision		2,500
	Total Exploration costs		$91,750
	General provision, administrative expense		5,000
			$96,750

Respectfully submitted,

W.M. Sharp

W.M. Sharp, P. Eng.

INTRODUCTION

The current report essentially summarizes the results of exploration recommended in the writer's March, 1967 report on these same properties. It also recapitulates the writer's subsequent interim report of August 3, 1967, at which time the recommended exploration program was in an early stage of progress.

The major portion of geological, geophysical, and geochemical field work and exploration was performed by Manex Mining Ltd. personnel under the general supervision of Mr. M.J. Beley. Mr. Beley, with assisting field staff, also supervised the concurrent rotary-percussion and diamond drill exploratory drilling programs at Mineral Hill. Messrs. Beley, Wetherley, and junior field staff have submitted technical reports on the separate projects, and on specific exploration pertaining to individual projects. The principal reports, as used by the writer to prepare this report, are listed below:

Mineral Hill

1. Geochemical Evaluation, M. Wetherley, July 7, 1967.
2. Progress Report, July 13-August 15, 1967, M.J. Beley.
3. Preliminary Report, M. Wetherley, November 13, 1967.

Microwave Hill

1. Geochemical Survey, M. Wetherley, July 5, 1967.
2. Progress Report, July 6-August 15, 1967, M.J. Beley.
3. Summary Report, Theo Kellner, August 23, 1967.

Hall Project

1. Progress Report, July 1-August 1, 1967, M.J. Beley.
2. Preliminary (Summary) Report, M.J. Beley, August 22, 1967.

To date, only moderately-scaled exploration programs have been carried out on the Microwave Hill and Hall properties. This preliminary exploration has not provided impressive indications of

significant mineral potential within either of these properties; consequently, they are only briefly described within the current report, and without accompanying maps.

Most of the data contained in the considerable number of exploration-progress and record maps provided to the writer have been compiled in detail on the drawings accompanying this report. The writer has attempted to combine distinct sets of data in such a way as to present the more obvious correlations of distinctive features--the objective being the clearer delineation of known and potential target zones for follow-up exploration. In this connection, the writer notes that the general lack of reliable topographic detail constitutes an unfortunate omission, and one which lessens the accuracy of specific correlations and interpretations of much of the geological, drill-hole, and geochemical data.

PART I - MINERAL HILL PROSPECT

Property

This consists of an approximately square block comprising 128 full claims and 6 fractional claims. By reason of the encouraging results obtained on exploration during the 1965-66 seasons, the original block of 33 claims was expanded to its present size.

The formal details of location, record, and status of individual claims comprising the group are available from the Company's Vancouver office.

Location & Access

The property lies adjacent to Highway 16 at some 8 miles northwest of Houston, B.C. It is also slightly under 30 highway-miles from the regional centre of Smithers, B.C.

The South prospect zone is reached via one mile of secondary road departing from Highway 16; an additional 3/4 miles of secondary road provides access to the North zone.

The property is also conveniently situated with regard to road, rail, and air transport facilities.

The generally moderato slopes and lightly timbered areas comprising the claim area allow relatively easy access for ground-based exploration.

History

The original 4-claim Mineral Hill group was staked (recorded May 15) in 1959 by P.J. Huber. Between this date and October 10, 1962 Messrs. Huber and W.D. Yorke-Hardy extended the group to a total of 33 claims.

In 1960 Southwest Potash Corp. briefly examined the property; this company returned to it in 1962 to carry out geochemical, geological, and magnetometer surveys of the present South zone

area. In addition they drilled, blasted, and chip-sampled many mineralized outcrops--mostly within the panel of hornfels lying between the alaskite and quartz feldspar porphyry zones. During 1962 and 1963 Mr. Yorke-Hardy did additional test-pitting and sampling. In 1964 Canex Aerial Explorations Ltd. optioned the property, did detailed geological mapping and additional geochemical surveying; they concluded their investigation with one 457' diamond drill hole in mineralized alaskite although, reportedly, additional drilling was recommended by the geologist-in-charge.

Molymine Explorations Ltd. was incorporated during February, 1965 to further explore the Mineral Hill prospect, and to conduct other general exploration within the Smithers-Houston area. From May, 1965 through 1967 the present company has vigorously explored the principal known mineralized zones by geological, geophysical, and geochemical methods, by trenching, and by both core and percussion drilling. During the spring of 1966 Cominco secured an option on the property, drilled 8 core-holes, extended bulldozer trenching within the South zone; they also did regional geological mapping on a scale of 1,000 feet to the inch.

General Geology

The following notes are supplementary to Fig. 1 and Dwg. 68-5.

The Mineral Hill area is underlain by Hazelton-Bowser group intercalated volcanic-sedimentary rocks of probable Jura-Cretaceous age. Andesites, as flows and fragmentals, comprise the predominant volcanic rock type; locally, they have red, brown, and green colourations. Ryholites, trachytes, basalts, etc. comprise minor, but widely-distributed components of the volcanic suite. The sedimentary members, at least locally, include argillite, quartzite, and bedded tuff (graywacke); locally, limy varieties of these occur.

The regional structural trend of the volcanic-sedimentary rocks is N.W. to N.N.W.; locally, as at intrusive contacts, cross-fault zones, and within brecciated areas folding and/or transverse bedding trends occur. The 1,000-scale mapping by Cominco indicates a complex pattern of regional faulting, predominant trends being N.N.E. and E-W. The relative ages of these are not deduced, or apparent. These structures appear to have been deduced from air-photo (topographic) lineaments and inferred lithologic relationships; therefore, they must be viewed as essentially inferred structures.

air photo lineaments

The South zone geology is characterized by the presence of a small stock, or plug of medium-grained to porphyritic leucogranite (quartz-feldspar porphyry) and a smaller finer-grained body of similar composition (locally, alaskite) outcropping some 1,000 feet to the west of the Q-F porphyry stock. Both bodies, as inferred from their contact relationships, appear to have been somewhat forcefully intruded. The smaller, or alaskite body is compositionally quite similar to the main stock; hence, from this and their spatial association, they appear to have either originated from one common magmatic source, or the alaskite body occurs as an apophyses of the larger Q-F porphyry stock.

The sedimentary-volcanic rocks in the vicinity of the South zone intrusives and North zone breccia have been metasomatically altered to generally hornfelsic types. This rock type is characteristically hard and brittle, and conducive to the development of fracture-breccia zones. Within the South (argillaceous) zone brown (biotite) hornfels appears most prominent; within the North (volcanic) zone green to black (chloritic) varieties are prevalent. The currently indicated extent of the general hornfels zone is roughly 8,000 by 8,000 feet.

The typical mineralization consists of pyrite, pyrrhotite, molybdenite, and chalcopyrite occurring with quartz and minor carbonates (siderite) in zones of close-fracturing and brecciation. Exploration to date indicates that alaskite and quartz (hornfels)

breccia constitute the more favourable rock types. However, significant amounts of mineralization have been noted within local areas of fractured and veined siliceous hornfels; therefore, hornfels cannot be ruled out as potential host rock--particularly in highly siliceous zones.

Kaolin and chlorite comprise the more readily visible products of hydrothermal alteration of alaskite and Q.F. porphyry. The former mineral occurs most generally; the latter appears most prominent within inclusions or at contact zones. Pyrite-molybdenite disseminations within alaskite and Q.F. porphyry are generally accompanied by obvious argillic alteration, and very locally by pink K-spar.

A younger phase of mineralization consisting of argentiferous tetrahedrite, with minor amounts of lead, zinc, and copper sulphides occurs within the North (Quartz-Breccia) zone, and within formerly explored shear-veins traversing the South zone hornfels panel.

EXPLORATION SUMMARY

Preliminary Exploration

Exploration in this category accomplished prior to 1965 has been summarized in the HISTORY section of this report. Recent areal geochemical reconnaissances, although related to this general category are described later under "Geochemical Surveys."

Geological Mapping

Most outcrops and excavations within the North and South prospect areas, including a number lying within the main granitic stock, have been mapped on scales of 100, or 50 feet to the inch. The regional mapping program by Cominco was compiled at 1,000 feet= 1 inch.

Geophysical Surveys

Preliminary magnetometer surveys of the South prospect area were performed by Southwest Potash Corp. and Canex Aerial Explorations during their respective option periods in 1962 and 1964. These comprised independent, uncoordinated surveys. Unfortunately, in each of these no specific datum stations, to which later surveys could be tied, were established.

The present company engaged Hunter Limited to carry out detailed Induced Polarization (I.P.) surveys of the South and North prospect zones, respectively, during 1965 and 1966. These surveys delineated the principal, or primary pyrite-pyrrhotite replacements--presumably a product of metasomatic processes accompanying the intrusion of the granite bodies--to granite-hornfels contacts and certain sections within the general hornfels panel; however, the surveys did not provide specific indications of the younger, more important pyrite-molybdenite mineralization, which does not necessarily conform with the primary concentrations. Nevertheless, when interpreted with regard to supplementary geological and geochemical features, the I.P. data has expedited the positioning of the preliminary drill holes.

A magnetometer survey of the general exploration grid from 32 N to 24 S, and including all of the North prospect zone and part of the South zone, was performed by the Company's exploration contractor during 1967. Unfortunately, this survey included only part of the South zone. The writer understands that it was conducted during a rather stormy period of weather, marked by frequent variations in the strength of the earth-field; hence, the survey will to some extent reflect these variations.

Geochemical Surveys (Dwg. 68-1)

An orientation survey, prior to undertaking the main survey, was carried out by Dr. John Walker of the Barringer Research Ltd. This, and subsequent profile sampling of the overburden over test areas within the North and South zones indicated that geo-

chemical disclosures of trace quantities of Mo, Cu, and Hg in the soil would provide fair to good evidence of subjacent Mo and Cu mineralization.

Soil sampling was accomplished by means of a drive-bar and auger. As the 'B' soil layer was generally not recognizable within the typically poorly-developed soil profile, samples were taken from the lower "A" horizons, or below the lowest soil layer containing appreciable quantities of organic (roots, etc.) material. About 650 samples were taken over the 3,000 by 6,000 foot grid. All samples were analyzed for total Cu and Mo, and about half for Hg, at the Barringer Research laboratory near Toronto.

The Mo, Cu, and Hg analyses were plotted and 'contoured' on a scale of 1"=200'. "Background", "threshold," and "anomalous" concentrations of total Cu were arbitrarily delineated as:

Background @ 0-60 parts per million (p.p.m.) Cu
Regional threshold @ 60-90 p.p.m. Cu.
Local threshold @ 90-200 " "
Locally anomalous @ 200-plus " "

The plotted Mo isograds represent:

Background @ 0-12 p.p.m. Mo.
Regional threshold @ 12-16 " "
Local threshold @ 16-45 " "
Anomalous @ 45-plus " "

The geochemical expressions of Cu and Mo rather closely match known areas of bedrock mineralization. In addition, the distribution of Cu and Mo are fairly coincidental. More positive geochemical expressions are evident over the South zone. The writer infers that this feature is at least partly due to the greater average thicknesses of overburden within the North prospect zone, and does not necessarily indicate stronger bedrock mineralization in the South zone. In his November, 1967 report, M. Wetherley relates a linear arrangement of Mo and Cu anomalies, particularly over South zone, to similarly oriented zones of bedrock fracturing - mineralization. After superimposing the approximate topographic

contours currently available, the writer feels that the above pattern more logically expresses local drainage features. In this connection, the writer has recommended that the slope direction be recorded at each sample station, if an adequately detailed topographic map is not available for interpretation of the geochemical data.

Bulldozer Stripping & Trenching

Drawing 68-1, 1"=200', shows the full extent of stripping and trenching accomplished; drawings 68-3 and 68-4, 1"=100', show geological details mapped in the respective South and North zone trenches.

This exploration was initiated within the South prospect zone, employing a light farm-type bulldozer to extend the several small hand-excavated trench and pit exposures within the mineralized alaskite-hornfels section. In most cases the stripped bedrock was additionally exposed by drilling and blasting, and cleaned up by pick and shovel. Because of the partly leached and friable character of the exposed Fe-Mo-Cu sulphide mineralization, and its erratic distribution within small quartz veins, seams, and localized disseminations, representative chip and bulk sampling was generally obviated. Over most of the exploration area stripping and trenching are necessary adjuncts to geological mapping and appraisal of the bedrock mineralization.

Over most of the area trenching between depths of 4 and 12 feet was required to expose bedrock. In several places the overburden was too thick and/or too hard for excavation to bedrock by even the larger equipment. This was a major factor in the subsequent decision to employ rotary-percussion drilling methods for extended near-surface exploration.

The extent of trenching over the South and North areas, respectively, is about 3,000 and 3,300 lineal feet.

Diamond Drilling

All holes, except 3 or more short X-Ray holes, are plotted, with principal assay-sections, on the accompanying 100, and 200-scale drawings.

The following schedule details diamond drilling accomplished to date. CX-1 was drilled with 8X wire line equipment, and all others with BQ wire-line.

Hole No.	Drilled by	Completion Date	Zone	Length, ft.	Estim. Core Recovery, %
CX-1	Canex	1964	South	457	85 approx.
1	Molymine	Feb. 1966	"	600	96.5
2	"	" "	"	560	96.4
3	"	" "	"	602	94.2
3A	"	Mar. 1966	"	399	98.4
4	"	" "	"	517	93.2
5	"	" "	"	500	92.6
6	Cominco	" "	"	413	92.2
7	"	" "	Stock	501	95 plus
8	"	Apr. 1966	"	508	97
9	"	" "	"	600	98 plus
10	"	June 1966	"	213	99
11	"	July 1966	South	543	98
12	"	" "	"	389	97
13	"	" "	(South)	388	98
14	Molymine	Dec. 1966	North	600	91.4
15	"	Jan. 1967	"	526	83.1
16	"	" "	"	550	88.4
17	"	" "	"	305	87.8
18	"	" "	"	98'/O.B.	no core
19	"	" "	"	50'/O.B.	no core
20	"	" "	"	521	87.4
21	"	May, 1967	"	265	88
22	"	" "	"	276	84
23	"	" "	"	200	88
24	"	June 1967	"	200	83
25	"	" "	South	500	96
26	"	" "	"	200	93
			Total	11,481	

Totals:	South (alaskite-hornfels) zone	6,068'
	Q.F. prophyry-granite stock	1,822'
	North (quartz breccia) zone	3,591'
	Gross	11,481'

Mineralized core sections were split, with one-half taken as samples for Mo or MoS_2, Cu, and Ag determinations; originally, some Zn and WO_3 assays were ordered, but the general experience has been that these metallics occur either too sparsely or too erratically to warrant assaying in all samples submitted. Sludge samples were taken during the initial diamond drilling only. Continuation of this was considered unnecessary, in view of satisfactory core recoveries being made.

Rotary-Percussion Drilling

All holes, with the more significant assay sections noted, are plotted on the 100 and 200-scale drawings.

This drilling was carried out to further investigate the North and South zone mineralization and possible extensions at relatively shallow depths, and to test several other overburdened areas where bedrock mineralization had been indicated by systematic geochemical soil surveys. This drilling was referenced to the newer grid established as control for the preceding magnetic and geochemical surveys.

A total of 9456 lin. ft. of drilling, on 102 holes, was carried out within three essentially distinct areas. Of this, 75 holes (6889'), or 72.9% of the total were drilled on the North prospect zone; 15 holes (1280'), or 13.5% of the total were drilled within the northerly part of the South zone; 12 holes (13.6%(were directed to exploration of a geochemically anomalous (principally Cu) about mid-way between the North and South zones. Drilling on the latter target disclosed only minor amounts of bedrock Mo and Cu mineralization; the assays show these metals to be present in about equal proportions, in spite of the geochemical indications of preponderant copper.

Average drill indicated overburden depths were: North zone @ 25 ft; South zone--north section @ 14'; and N-S intermediate @ 60 ft. Actual depths to weathered-broken bedrock surfaces would

be several feet less, as the drill-indicated depth represents the depth at which the first firm bedrock was effectively sampled by the rotary-percussion equipment.

The drill-sampling program utilized a standard Atlas Copco O.D. (overburden-drilling) unit. Drill bits of 2" diameter were used, following trials with 2 1/2" diameter bits on the first series of holes. The gross sample, consisting of a slurry of coarse to fine cuttings and fine sludge, was reduced to 1/8 volume by a mechanical splitter. This portion was led to series-arranged settling tubs where Separan, a chemical flocculent, was added to facilitate settling of 'fines'. The wet sample was collected, dried, and split again. Individual samples were contained in soil-sample bags for delivery to the analytical laboratories in Vancouver. Samples from holes No. 1-39, inclusive, were analyzed for percentages of Cu and Mo or MoS_2 by standard quantitative methods; No's 40-102 were run for Cu and Mo by the faster and cheaper semi-quantitative spectrographic method. In all, 670 samples were analyzed.

Unfortunately, the validity of the spectro analyses has not been checked by random quantitative checks. Also, direct checks--by drilling one or two O.D. holes closely parallel to selected diamind drill holes--of the relative sampling efficiency of the O.D. method are still pending. Also, the writer feels that conclusive tests of the amount of mineral (particularly fine MoS_2 flakes) losses to overflow and/or reject sample water are necessary for complete evaluation of the O.D. sampling method; in this connection, tests incorporating small amounts of detergent with the feed water plus Separan in the settling tubs should be made at the next opportunity.

A drilling rate of 3 holes per day has been recorded; comparisons of gross core-drill and O.D. sampling costs would constitute useful information on which to plan future specific programs.

Reconnaissance Geochemical Exploration

This is illustrated by Dwy. 68-5 @ 1"=1,000'. Eighty-four stream sediment samples were taken from the several permanent and seasonal stream courses within and close to the property boundaries. Samples were sent to Barringer Research Ltd. for determinations of total Mo, Cu, and Zn in p.p.m.

On the basis of the analytical data, the principal anomalous area (re. Mo, Cu, & Zn) appears to be one situated 2,000 to 4,000 feet S.E. of the granite-porphyry stock and extending some 7,500 feet in a N.E.-S.W. direction--including a main stream course and its headwaters area, together with the headwater tributaries of a stream flowing westerly into Fishpan lake. Within this region sediments contained the following range of metal concentrations: Mo, 2-14 p.p.m; Cu, 20-1050 p.p.m; Zn, 100-1400 p.p.m.

Two samples from successive west-flowing tributaries to the main stream traversing the North prospect zone indicate a significant Mo source within an undefined area adjoining, and extending for at least 2,000 feet N.E. of the currently defined easterly boundary of the quartz breccia zone. Also, this area appears to lie south of the main stream (fault?) course.

A tentative Mo-Cu-Zn source area is also indicated by sample #4 from a stream flanking the S.E. corner and side of the granite-porphyry stock.

Prospecting

M. Wetherley (Aug. 20 and Nov. 13, 1967) notes an occurrence of several quartz veins within an area roughly one mile east of the camp, or roughly centering on grid coords. 50S, 30E. Also, these would appear to lie closely N.W. (and down-slope) of the principal Cu-Zn anomaly noted in the previous section.

Sphalerite, galena, chalcopyrite, tetrahedrite, pyrite, and copper carbonates occur spottily along northerly-trending quartz veins of 6"-24" width; these dip flatly (20-30^{0}) east.

Three short adits, a shaft, and several shallow pits, all put in many years ago, have only superficially prospected this zone of small veins. Some large tonnage — low grade potential is indicated by the observed frequency of veining. The following are samples taken by M. Wetherley:

Sample No.	Location	Description	Ag oz/ton	Pb %	Zn %	Cu %
16426	1 mile E. of camp	Grab, quartz with massive spiral; spotty tetrah & stringers galena	26.0	2.69	48.69	0.55
16427	500' S. of 16426	Grab, quartz with diseem. chalco-pyrite				1.72
16428	1,000' S. of 16426	Grab, quartz with fine stringers of galena	52.2	13.19		

A. SOUTH ZONE EXPLORATION

Preliminary

This general zone includes at least three geologically distinct mineralized sections. The alaskite-hornfels complex, lying 700 to 1,000 feet west, and down-slope of the main granite-porphyry stock, has been closely explored by trenching, diamond drilling and some percussion-drill sampling. This has been done in fair to close detail along its northerly trend for some 1,500 feet, but only to a very minor extent to the south or within the 1,500 foot interval between it and the North zone. The specific alaskite-hornfels zone was explored to a depth of about 400 feet during the initial drill program; however, significant intersection of mineralized alaskite were limited to depths of less than 300 feet. Also, the principal diamond drill holes were aimed mainly to cross cut the strike of the intrusive, which may not be the trend of the

principal sets of mineralized quartz veins and fractures. Also, trenching and drilling so far accomplished has not adequately defined the subsurface configuration of the alaskite body, or bodies; this information is essential for geological estimates of mineral potential below the currently defined zones.

The central hornfels panel, situated between the main stock and the alaskite-hornfels zone, constitutes a distinct and relatively un-tested geological-structural unit. Evidence from drill cores indicates that it is--at least within some sections--strongly silicified and appreciably mineralized within the zone of alaskite intrusions and, to a lesser extent next to the main stock. However, the extent of these features and related structures at depth within central regions of the panel has not been decisively indicated by drilling done to date. Its principal mineral potential appears to hinge largely on its susceptibility to fracturing at depth, and also in its depth relationships with the local intrusive rocks.

The peripheral and/or contact zones of the main granitic-Q.F. porphyry stock comprise a third, less specific exploration target. These are almost totally obscured by heavy overburden; consequently, prospecting has been largely limited to general, or indirect exploration by geophysical and geochemical methods. To date, direct exploration has been mainly limited to the drilling of three holes which do not necessarily test all structural possibilities in each locality. Two sections of the contact warrant investigation by trenching or drilling. The area including the east edge of the stock and the probable N-S fault closely east of this contact constitutes a worthwhile exploration target. The second target comprises the west contact zone, which does not appear to have been tested adequately or efficiently by diamond drill holes #7 and #8 and the localized stripping and trenching.

Current Geological Interpretations

The alaskite intrusive has been approximately delimited over a N-S length of roughly 1,200 feet, and widths ranging between 200 and 400 feet. Correlations of existing surface exposures and drill-hole intersections indicate an irregularly pinching, swelling, and branching body. Within its presently-delimited vertical range, it appears to attain its greatest width near its south end; within this section it may also split into two branches--one as a near-vertical prong, and the other as a thick sheet dipping moderately to the east, or towards the main granitic stock. Within its northerly extensions it appears to occur as a more-or-less massive sheet which dips steeply eastwards. In this general area the main body is joined by, or becomes one of several N.E.-striking, steeply (east?) dipping alaskite dykes. More northerly, beyond d.d.h. #5, the intrusive appears to split into several thin sheets, with a composite trend towards the North zone. There is also a possibility that the various alaskite sheets coalesce with the indicated N.N.W.-trending tail of the main granitic stock.

The general pattern and trend of the alaskite intrusions, and their general coincidence with zones of shearing and flexuring, suggests that they have been, to some extent, structurally controlled. However, the present pattern of drill holes does not provide conclusive intersections from which major depth extensions of the zone may be inferred. Two, or more holes oriented for this purpose, and to prospect the zone at depth, are urgently required.

Molybdenite, generally associated with pyrite and/or pyrrhotite and minor amounts of chalcopyrite, comprises the economically important mineralization. Most of the mineralization occurs in quartz veins and seams traversing alaskite, granite porphyry and/or highly siliceous hornfels; lesser amounts occur as fine-grained disseminations bordering (selvedges) quartz veins in alaskite and coarser granitic rocks, and as fine to coarse grains and rosettes within the intrusive rocks. The disseminated variety of MoS_2 is usually found in close association with replacement

pyrite. Several different vein trends have been noted; however, the more significant occurrences of Fe-Mo sulphide mineralization appear to favour E-N.E. to N.E.-trending fracture and vein systems--this being generally apparent within the alaskite-hornfels zone, and locally so in other host rocks. This inference is at least locally substantiated by the higher grade intersections made by d.d.h. #26, which was directed to crosscut the assumed preferred structural trend, as compared to the relatively weaker intersections made by d.d. holes 1,3, and 3A, which all appear to intersect the better mineralized veins at acute angles.

Hydrothermal alteration minerals associated with sulphide mineralization in the granitic rocks include kaolinite, silica, pink K-feldspar, and minor chlorite; those normally occurring within the hornfelsic host rocks include silica, chlorite, and talc.

Geophysical Data

The recent magnetic survey does not extend over the main area of the south zone; however, in view of the fact that the general geology of this part of the property is fairly well delimited, the writer does not consider this to be a critical omission.

The I.P. survey has delineated a broad 15MS anomaly, including the alaskite zone, the westerly end of the main granitic stock, and the intervening hornfels panel. Another large 15MS anomaly includes the northeasterly portion of the stock. Within the former, narrower 20MS anomalies following the N.N.W. formational trend indicate significant concentrations of pyrite and pyrrhotite within the alaskite-hornfels complex, within the easterly part of the hornfels panel, and within hornfels adjacent to northwesterly part of the main stock. Because of the general preponderance of primary or 'formational' iron sulphide mineralization, it has been impossible to detect and define the less responsive, but economically more important zones and trends of Fe-Mo-Cu sulphide mineralization.

Geochemical Data

An extensive Mo anomaly situated within the hornfels panel appears to stem from a N.E. extension of the mineralized zone delineated by the main (30S) trench and d.d. holes No's 1, 3, 3A, and 26. This source would be further augmented by frequent occurrences of MoS_2 mineralization within veined silicified hornfels between 25-28 south.

The recent surveys have revealed a strong Mo-Cu anomaly in the general area of 1400 E, 2800-3400 S. This should be checked by more detailed soil-sampling and, possibly, by I.P. surveying before undertaking exploration by trenching and/or drilling.

Exploratory Drilling

Drawing No. 68-3, with plots of all diamond drill and percussion holes and related assay data, supplements the following text.

The more significant diamond drill intersections are compiled:

Hole No.	Interval, Ft.	Assay Length, Ft.	%MoS_2	%Cu
1	150-220	70	0.12	0.06
	220-290	70	.11	.06
3	200-280	80	.11	.05
	280-290	10 (vein)	1.47	.08
	290-300	10	.10	.04
	530-540	10	.13	.05
3A	30-50	20	.10	.04
	80-90	10	.18	.07
	150-220	70	.145	.07
	230-280	50	.12	.07
4	470-480	10	.14	.07
5	150-170	20	.11	.05
	280-300	20	.13	.04
26	20-130	110	.153	.06

By reason of the more conclusive intersection made by a d.d.h. #26, the assays can be considered more representative of the local tenor of mineralization than is indicated by the average accruing from holes 1, 3, and 3A. The correlated drill hole data suggests that the local mineralized section has a N.W.-S.E. width of some 200 feet; the writer currently infers that this will continue to depth with the general depth extension of the alaskite-siliceous hornfels complex.

On the basis of the inferred N.E. trend of the principal veining and mineralization, it is probable that d.d. holes No's 7 and 8 were collared to the south of the projected 'transverse' vein zone and essentially parallel with it; hence, the necessity for confirmatory drilling in this part of the South zone.

Fifteen percussion holes, ranging in depth from 70 to 100 feet were drilled within the northerly part of the South zone. Four of these intersected relatively short sections of fair to good MoS_2 mineralization--the best intersection being made in #43 (20' @ 0.23% MoS_2) which apparently penetrated the north tail of the granitic stock. However, the writer generally concludes that this pattern of short vertical holes is not suited for efficient testing of steeply-dipping vein and fracture zones, which are the probable source of the geochemical anomalies comprising the drilling targets.

B. - NORTH ZONE EXPLORATION

Preliminary

Drawing 68-4 supplements the following text:

Exploration by core/percussion drilling, bulldozer trenching, and magnetometer have currently established a composite fracture-breccia zone over an area of 1,500 by 800 feet. Eleven diamond drill holes (2 lost) ranging in depth from 200-600 feet and 75 percussion ("O.D.") holes to vertical depths of 70 to 120 feet have been drilled in the course of exploration. The latter drilling indicates that the average depth of overburden over the general area is about 25 feet; however, within the central mineralized area it may be somewhat less.

A southwesterly-flowing creek and deep alluvium-filled gully approximately bisects the long axis of the quartz-breccia area. A major fault has been postulated (Cominco investigation) for this lineament; current geological evidence, re the general trend of subordinate fractures, tends to substantiate this inference.

Current Geological Interpretations

Lithologically, the zone is a composite mass, comprising massive unaltered hornfels, slightly to highly-fractured and veined hornfels, and finely to coarsely brecciated and silicified (quartz-breccia) hornfels. In general, there is no consistent, readily evident structural pattern; however, some evidence that shearing and brecciation occur on N.E.-dipping planes and layers is provided by exposures in the northwesterly trenches. The more prominent, steeper quartz veins and shear fractures tend to occur on northeasterly trends, or generally parallel to the inferred "creek fault." Quartz comprises the principal vein filling and interstitial material of the brecciated sections; siderite, in smaller amounts, is frequently associated.

Metallic minerals occurring in veins and breccia are pyrite, chalcopyrite, pyrrhotite, molybdenite, tetrahedrite, and galena in order of decreasing abundance. Some hematite is also present--principally within the northwesterly part of the zone. Molybdenite, pyrite, and chalcopyrite occur as blebs and grains within quartz matrices; these sulfides are also found around and within altered fragmental material. Chlorite, epidote, kaolin, and minor amounts of sericite and pink K-spar are the principal products of hydrothermal alteration.

A second, younger system of quartz veins and lenses, containing argentiferous tetrahedrite, galena, and chalcopyrite transects the older Fe-Mo-Cu sulphide mineralization.

Some evidence of mineral zoning within the known extent of the breccia is apparent; Cu predominates over Mo within the northwesterly section, while the ratio is reversed within the southeasterly quarter of the breccia zone.—or closer to the creek fault

The general tenor of mineralization within the northwesterly breccia area is about 0.04 MoS_2, 0.08% Cu. Intersections of significantly better mineralization, by recent core and percussion drilling, have been obtained within the southeasterly section of the zone--but principally within a 400 by 400 foot area immediately southeast of the creek (and inferred fault). With this, there is substantial evidence that the zone is 'open' for several hundreds of feet upstream to the northeast. Several substantial diamond drill and O.D. intersections in this area range between 0.10% and 0.20% MoS_2. The writer estimates that actual grades of in-place mineralization will be higher than those indicated by the percussion drill samples. With this, significant amounts of silver are associated with frequent small tetrahedrite-bearing veins in this area.

The angular relationship between mineralized quartz veins and core axes, as observed in core obtained from drill holes No's 16, 21, 23, and 24 indicate a general northeasterly, or 'upstream' trend of mineralization. Future drilling should be

planned to crosscut this apparent trend, which appears essentially parallel to the inferred 'creek fault'--this possibly comprising the influential structure and principal conduit, respectively, in regard to the North zone breccias and mineralization.

Geophysical Data

The I.P. survey outlined four distinct anomalies, indicating specific zones of relatively heavy disseminated pyrite mineralization. All, except the 2N anomaly situated over the creek depression, have been investigated by diamond drill. The mineralized areas underlying the southeasterly and northwesterly trenches coincide with two of the indicated anomalies; the third anomaly, tested by d.d.h. no. 15 proved to be based on relatively barren pyritic mineralization.

A magnetic survey performed over the exploration area partly delimited the quartz breccia zone; however, an extensive 'low' continuous to the northwest was tested by subsequent percussion drilling, but with negative results in respect to possible extension of the zone in this direction. In summary, the geophysical exploration data have not been substantially helpful.

Geochemical Data

The investigations have been performed by soil-sampling over the local grid. No significant Mo or Cu anomalies reflecting actual bedrock mineralization known to occur within the zone, or indicating additional exploration targets resulted from this survey. It is generally conceded that excessive depths of overburden and a poorly developed soil profile generally masked all bedrock mineralization in all but a few minor areas.

Exploratory Drilling

Totals of 3591 feet of core drilling in 11 holes and 6889 feet of rotary percussion drilling in 75 holes have been accomplished on the direct exploration of the general North zone. The majority of the holes intersected only sparsely-mineralized bedrock. More encouraging results, however, have been obtained by the drilling accomplished within the area to the southeast of the creek fault; hence additional diamond drilling to investigate this postulated N.E.-trending mineral zone and extensions is required for a conclusive evaluation of this prospect area.

PART II - MICROWAVE HILL PROSPECT

Property

This consists of a single group of 38 full-sized claims, details of which may be obtained from the Company's Vancouver office.

Location & Access

The regional location is shown on Fig. 1.

The claims are situated over the southerly-facing slope and summit of the small mountain on which the B.C. Telephone relay station is located. The property and showings are easily accessible via 3 miles of gravel road which departs northerly from Highway 16 at roughly 1/2 mile east of Houston, B.C.

General Geology

Reference for the following is T. Kellner's report of August 23, 1967.

The property is underlain by Hazelton-Bowser group firmly-bedded sediments, and minor basalt and rhyolite flows. The sediments vary from cherts and argillites to fine conglomerates. The general formational strike is N20°E, and the dip 25°-40°E; however, pronounced local variations occur at several places. Bedding sections are frequently displaced by cross faults. Fracturing is predominantly N.N.E. in strike, with steep to vertical dips; a complementary set of fractures trends E-W, with steep dips. Mineralization, predominantly sphalerite with minor chalcopyrite and/or galena occurs as veinlets and dispersions--primarily within fractured cherts and rhyolites. The mineralization is associated with N-S trending shear zones.

Several narrow veins were prospected by stripping and trenching. These ranged from 2 to 5 inches in width, but were restricted to only a few feet in length.

Exploration

A preliminary soil-sampling survey was done by Anco Explorations Ltd. in 1966; a second, more precise survey was carried out by Manex Mining Ltd. (N.P.L.) during 1967 over grid areas 0-40 N, 0-15 E and 40-50 N, 0-15 W. Soil samples were analyzed for total p.p.m. Zn by Barringer Research Ltd. The results were plotted and correlated on a 200-scale plan, which has not been duplicated for this report.

Bulldozer stripping and trenching were performed on several geochemically-anomalous areas. In all 30 trenches, totalling 4800 lineal feet, were excavated. Trenches 1 to 7 exposed visible copper mineralization in the fractured bedrock; trenches 9, 28, and 29 contained visible, but minor copper-zinc mineralization; trenches 9A and 22-25, inclusive, exposed minor zinc mineralization. Following a personal inspection of this work, the writer concurs with the field staff that only the copper mineralization exposed in trench #2 warrants additional investigation. The 2 chip samples taken across this zone assayed:

25' @ Cu, 0.51%; Zn, 0.05%, Ag, 0.96 oz/ton; Au, 0.01 oz/ton.
30' @ ", 0.04%; " , trace, " trace ; " trace.

PART III - HALL PROSPECT

Preliminary

The map location of the claim group is shown on report Fig. 1.

The writer has not visited this property; the following text generally repeats Mr. M.J. Beley's "Preliminary Report, Hall Paoject," of August 22, 1967, with minor changes.

Claims, Location, Access

The Hall group comprising Walcott No's 1-30, inclusive, and Copper No. 2 (a total of 31 claims) lies approximately 8 miles west of Houston, B.C. The junction of the access road to the showings and the logging road into the area (grid point 46 + 10 S, 5 + 80 E) is about 12,000 ft. S 24° W. of the northerly end of the railway bridge across the Bulkley River. Access by crews working in the area has been via one vehicle from Houston to the railroad bridge; thence via a second vehicle, from the other end of the bridge, to the property, as road conditions would not permit access from Quick, B.C. (This road has since improved sufficiently to access by the latter route.)

General Geology

A series of (Hazelton Group) volcanic strata striking N.W. and dipping moderately to the N.E. include thin-bedded tuffs and rhyolite flows. Some andesites were noted by the Cominco geologist during 1966. A dioritic body outcrops west and southwest of the mineralized area. The contact between the volcanics and the intrusives lies in a drift-filled gully.

Mineralization

Mineralization generally occurs along bedding planes between tuffs and rhyolitic flows. Alteration in the area appears to be associated with this mineralization. Moderately intense silici-

fication is associated with the mineralization. Chalcopyrite, magnetite, pyrite, arsenopyrite, and copper carbonates occur. No obvious relationship concerning the association of magnetite and copper mineralization has been indicated. Work in progress may assist in interpreting the magnetic highs.

On August 18, 1967 the final phase of this program was started by Mr. R. McMichael. The field work, under the supervision of Mr. J. Irvine, was planned to be completed before the end of August, and followed by a report shortly after this date.

Conclusions

No definite conclusions regarding the property can be drawn at this time; however, some comments re recent sampling are made: six samples reveal appreciable copper mineralization. Of these, two are grab samples from the canyon, while the remainder are 2 and 3-foot chip samples--with the exception of 'Trench A', which is an 8-foot chip. Recent trenching with the D9 bulldozer will reveal the amount of mineralization between the areas of interest indicated above. Until the final assays are received, no definite recommendations re the property should be made.

The writer (W.M.S.), however, judges that the extent and grade of mineralization indicated by the following preliminary assays is too slight to justify a lot of additional work on the current showings.

ASSAY RESULTS - HALL PROJECT

Trench No.	Sample length, Ft.	Gold oz/ton	Silver oz/ton	Copper %
A	3	0.02	0.5	0.36
B	8	trace	trace	0.14
C	9	"	0.07	0.01
D	11	"	trace	0.01
E	21	"	"	0.03
F	25	"	"	0.02
G	6	"	"	0.05
H	26	0.008	"	0.09
I	11	trace	"	0.03
J	2	"	"	0.16
K	(Grab)	0.03	0.3	0.13
L	(")	trace	0.2	0.72
M	3	"	0.24	0.44

Respectfully submitted,

W.M. Sharp

W.M. Sharp, P. Eng.

CERTIFICATE

I, William M. Sharp, with business address in Vancouver, British Columbia and residential address in North Vancouver, British Columbia, do certify that:

1. I am a Consulting Geological Engineer.

2. I am a graduate of the University of British Columbia with B.A.Sc.(1945) and M.A.Sc.(1950) degrees in Geological Engineering.

3. I am a registered Professional Engineer in the Province of British Columbia.

4. I have practiced my profession since 1946 with Canadian mining companies until 1964, when I established my own consulting practice.

5. I have personally examined the Mineral Hill and Microwave Hill properties in the Omineca Mining Division and have examined all available technical data, including maps, reports, and correspondence pertaining to all three properties. In addition, I have discussed current developments with Molymine Exploration Ltd. (N.P.L.) and Manex Mining Ltd., (N.P.L.) staff and principals.

6. I have no interest, direct or indirect, in the properties or securities of the above company, nor do I expect to acquire any such interest.

Respectfully submitted,

W.M. Sharp, P.Eng.

Vancouver, B.C.
March, 1968