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April 4th 1972



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Prop. No. 100 on Fig. 4G

MINERALOGICAL BRANCH, DEPARTMENT OF MINES AND PETROLEUM RESOURCES
VICTORIA, BRITISH COLUMBIA

SUMMARY OF EXPLORATION AND DEVELOPMENT WORK
PERFORMED IN 1971
NON-PRODUCING PROPERTIES

This return is designed to provide data for long-term compilations of the mineral industry, and will be on permanent file with the department. Confidential information is not solicited.

Please complete as soon as possible and mail, in the enclosed self-addressed envelope, not later than January 15th.

NOTE.—A SMALL SKETCH-MAP GREATLY ENHANCES THE VALUE OF THE INFORMATION.

Exploration work done in 1971? Yes No

Property name ~~ALLENDALE LAKE~~ LYNX - LATE

Is it an old showing? Yes Former name(s)

Mining Division Osoyoos and Greenwood

Lat. 49° 23' Long. 119° 21' N.T.S. Map Sheet (e.g., 82N/9E) 82E/6W

Locality Twelve miles east of Okanagan Falls, on Allendale Rd.

Approx. altitude of showings 6000'

Total number and names of claims held LYNX 1-31; BUSH 1 and 2; TED 1-15; OTTER 1-20;
BONANZA 1-32; LATE #1-4

Access—From Okanagan Falls By Road Distance 12 miles

Owner of claims Bonanza Claims owned by Selco Exploration; others owned by various local prospectors

Principal (company paying for the work) Selco Exploration Co. Ltd.

Mailing address 55 Yonge Street, 6th Floor, TORONTO 1, Ontario.

Is property optioned? Yes Under agreement? Yes

ESSENTIAL GEOLOGY

Important metals present Copper

Brief geological description (i.e., mineralogy, type of deposit, host rock, alteration, etc.)

Scattered disseminated chalcopyrite in Syenite plug.

See attached

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Work supervised by I.G.L. Sinclair Position Geologist

Previous work done when? 1966 & 1968 By whom? General Resources Ltd., Gunnex Ltd.

TOPOGRAPHICAL AND LEGAL SURVEYS MADE IN 1971

Claim survey? Topo. map? Scale

Surface workings surveyed? Scale

Underground workings surveyed? Scale

GEOLOGICAL MAPPING DONE IN 1971

SURFACE

COMPANY	GEOLOGIST	NAMES OF CLAIMS MAPPED
Stokes Exploration Management Co. Ltd.	P. Anderson	All of the claims 1"

ANTICTON
Ellis CK

UNDERGROUND

GEOCHEMICAL WORK DONE IN 1971

METHOD AND BY WHOM	NAMES OF CLAIMS COVERED	INENCES NO. OF SAMPLES
Soil Sampling by Selco Exploration Co. Ltd.	Lynx Group	150 samples

GEOPHYSICAL WORK DONE IN 1971

METHOD AND BY WHOM	NAMES OF CLAIMS COVERED	Line miles NO. OF SAMPLES
I.P. survey by Seigel Associates	Lynx Group	8 miles

MILES OF ROAD CONSTRUCTED _____ **LOCATION** _____

SURFACE WORK DONE IN 1971

Trenching, total footage _____ On which claim(s)? _____

Stripping, total area _____ On which claim(s)? _____

UNDERGROUND WORK DONE IN 1971

Total footage _____ On which claim(s)? _____

DRILLING DONE IN 1971

Surface diamond drilling—by whom?	No. of Holes	Total Footage	On Which Claim(s)?
_____	_____	_____	_____
Underground diamond drilling—by whom?	No. of Holes	Total Footage	On Which Claim(s)?
_____	_____	_____	_____
Rotary drilling—by whom?	No. of Holes	Total Footage	On Which Claim(s)?
_____	_____	_____	_____
Percussion drilling—by whom?	No. of Holes	Total Footage	On Which Claim(s)?
_____	_____	_____	_____

ASSESSMENT REPORTS FILED IN 1971 Geological Geophysical Geochemical

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References M.P. OR 1968-217; Assessment report 2363

Author _____ Checked _____ Typed _____

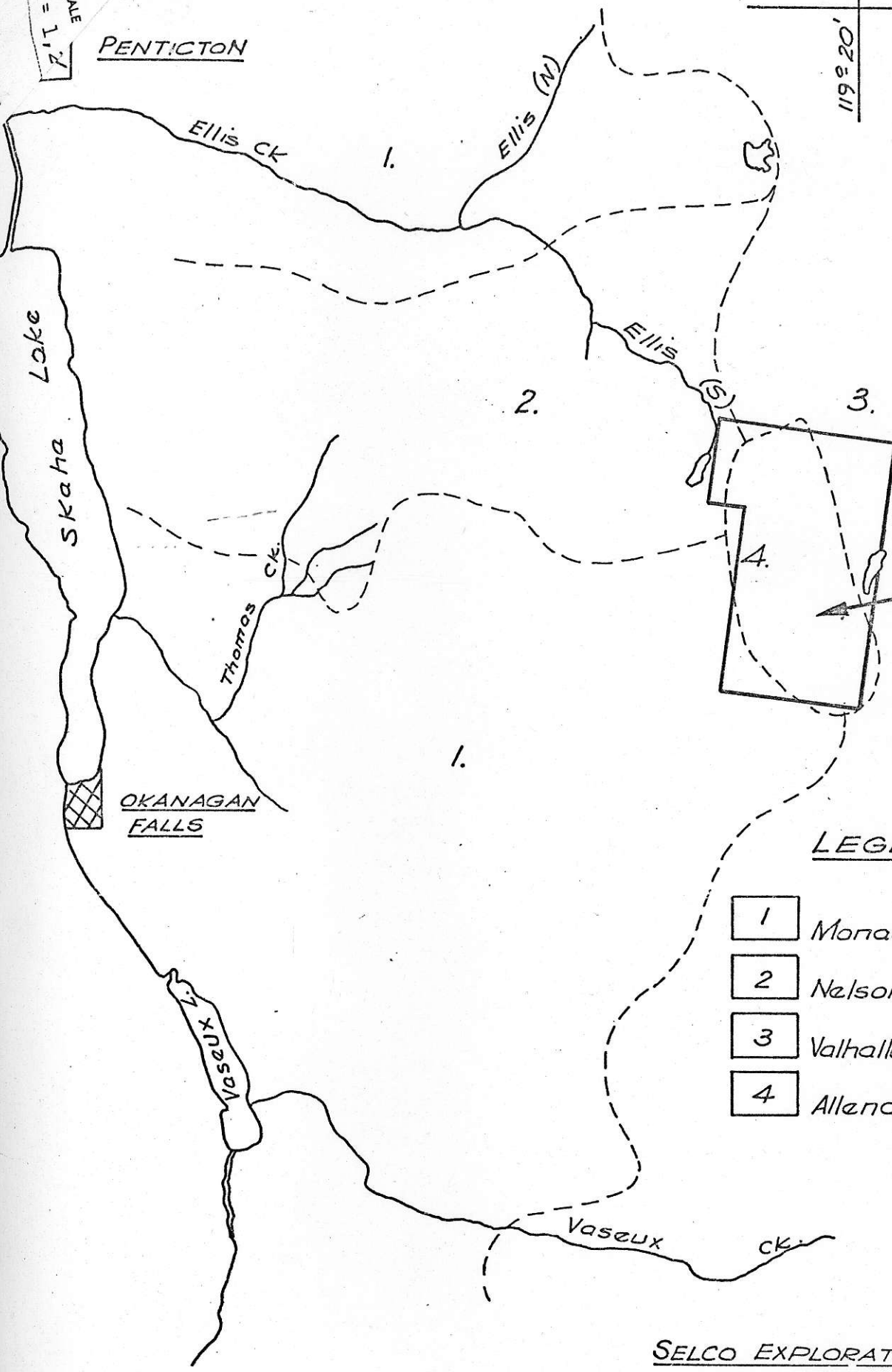
Date November 15, 1971 Signature I.G.L. Sinclair
 Company Selco Exploration Co. Ltd. Official position Geologist.

7.1" = 1" SCALE

PENTICTON

49°30'

119°20'



ALLENDALE L. AREA

LEGEND

- 1 Monashee Group
- 2 Nelson Plutonic Rocks
- 3 Valhalla Plutonic Rocks
- 4 Allendale Syenite

SELCO EXPLORATION Co. LTD.
ALLENDALE LAKE
 (Scale: 1" : 2mls) Sept. '71

9 polarization survey in the vicinity of the main showings. s10I and +4pts,
 0 jPHYSIOGRAPHY:sM,,,,,The area is in the Okanagan Highland physiographic subdivision

Special Instructions _____

1 1LYNX, LATE,,,,,(No. 108, Fig. G)s8M and roll back,
 2 rm480,By N. B. Churchs10M and +4pts,
 3 1LOCATION: Lat. 49! 23' Long. 119! 20.4'sroll back,
 4 rm420,(82E/6W)
 5 o OSOYOOS and GREENWOOD M.D.,,,At approximately 6,000 feet
 6 elevation on Allendale Lake, 12 miles northeast of Okanagan
 7 Falls.
 8 oCLAIMS: LYNX 1 to 31, LATE 1 to 4, BUSH 1 and 2, TED 1 to 15,
 9 OTTER 1 to 20, BONANZA 1 to 32.
 0 oACCESS: By road from Okanagan Falls, 12 miles.
 1 oOPERATOR: SELCO EXPLORATION COMPANY LIMITED, 6th Floor, 55 Yonge Street,
 2 Toronto 1, Ont.
 3 oMETAL: Copper.
 4 oDESCRIPTION:s10I and +4pts,
 5 jINTRODUCTION:sM,,,This report is intended as a review of an interesting copper
 6 prospect recently discovered in a young Coryell-type stock located 10 miles northeast
 7 of Okanagan Falls near Allendale Lake.s+4pts,
 8 jThe geological and mineralogical observatons which form the basis of this study
 9 were made during a one-week visit to the area by the writer in June 1971.s10I and +4pts,
 0 jHISTORY:sM,,,Scattered copper mineralization was discovered by R.,W. McLean in
 1 1966 on the hill immediately west of Allendale Lake in the area now included in the
 2 Lynx-Late claim block (Fig. ,,,). After some preliminary prospecting and sampling
 3 by McLean and his partner K.,G. Ewers, the property was optioned to General Resources
 4 Ltd. who reportedly spent \$25,000 mainly in construction of access roads and bulldozer
 5 trenching. Gunnex Limited acquired an option on the property in 1968 and completed
 6 detailed geochemical and magnetometer surveys. After a short period of inactivity
 7 in the area, Selco Exploration Company Limited optioned the property in late 1971,
 8 and began an exploration programme with geochemical silt sampling and an induced
 9 polarization survey in the vicinity of the main showings.s10I and +4pts,
 0 jPHYSIOGRAPHY:sM,,,The area is in the Okanagan Highland physiographic subdivision

Special Instructions _____

1 of Southern British Columbia, on the Okanagan Valley-Kettle River drainage divide.

2 The region is characterized by a glacially carved rolling landscape surmounted by a
3 few isolated crags.s+4pts,

4 jElevations range from 4,500 feet on Shuttleworth Creek, in the south part of the
5 map-area, to 6,400 feet on the east summit of Mount Christie, 3.5 miles to the

6 northwest. Maximum relief on the Lynx-Late claim block is about 1,000 feet,^{with slopes rising from Allendale Lake near at approximately 5100 feet}
7 the east boundary of the map-area, to a centrally located peak at an elevation of

8 6,100 feet, a few miles to the west.s+4pts,

9 jSouthwesterly moving Pleistocene glaciers were responsible for the erosion of
0 the broad U-shaped valleys found in the region, such as the one occupied by the most

1 westerly of the Clark Lakes in the west part of the map-area. The mean glacial striae
2 direction was found to be 208 degrees. In typical crag-and-tail fashion, the low

3 rounded hills in the vicinity of the most easterly of the Clark Lakes are strung out
4 on the lee side of the central mountain mass, a glacially resistant syenite^{is} stock.s+4pts,

5 jExcept for a small area of sandy glacial outwash and eskers immediately west and
6 northwest of Allendale Lake, the valleys and lower slopes are filled with coarse

7 boulder till. Good bedrock exposures are found mainly on the ridge tops.s+4pts,

8 jThe area is timbered with mature pine. Northwood Mills Ltd., a subsidiary of Noranda
9 Mines, Limited, is currently constructing a truck road through the region to connect

0 several logging operations with the company's saw mill at Okanagan Falls.s+4pts,

1 jOwing to dry summer conditions in the Okanagan Valley, many small lakes have been
2 dammed for irrigation control. Some of these, such as Allendale Lake, are stocked

3 with trout and are readily accessible to the general public by a network of gravel
4 and dirt roads.s10I and +4pts,

5 jGENERAL GEOLOGY:sM,,,,The geology of the area features at least three main lithological
6 units and a unique structural setting. A small Coryell-type stock is intruded at an

7 apparent point of structural weakness at the junction of the pre-Permian Shuswap
8 gneiss complex and Mesozoic Nelson and Valhalla granitic batholiths. These units

9 crop out on or near the Lynx-Late claim block except for the Nelson granite which
0 is exposed to the west on Mount Christie (Little, 1961).s10I and +4pts,

Special Instructions _____

1 jThe Shuswap Metamorphic Rocks:sM,, ,The Shuswap rocks are found in the area north
 2 of Shuttleworth Creek near the Clark Lakes. Typically the formation is medium grained
 3 with alternate layers composed of light-coloured granite gneiss and darker
 4 ferromagnesian-rich zones. The layers are generally gently dipping, however,
 5 contortions, complex refolds, and augen structures are locally conspicuous. Pegmatite
 6 dykes and segregations form a minor part of the formation.s+4pts,

7 jMicroscopically the gneissic units consist of subhedral quartz and plagioclase
 8 averaging 2 to 3 millimetres in diameter with scattered interstitial biotite,
 9 small patches of myrmekite, and irregular ragged concentrations of biotite and green
 0 amphibole. The remainder of the rock consists of accessory magnetite, apatite, and
 1 sphene, and, less commonly, zoisite. Potassic
K-feldspar is also accessory and is usually
 2 associated with quartz-rich segregations. Locally the rocks display cataclastic
 3 textures and evidence of retrograde metamorphism, such as chloritization of the
 4 ferromagnesian minerals.s10I and +4pts,

5 jThe Valhalla Intrusion:sM,, ,The so-called Valhalla granitic rocks are found to
 6 the north and south of Allendale Lake, near the east boundary of the map-area. These
 7 are leucocratic, foliated, and fine to medium grained. The rocks display both
 8 porphyritic and granoblastic textures with evidence of some crushing and mineral
 9 alignment due to cataclasis. Examination of four thin sections shows an average of
 0 40 per cent quartz and 50 per cent feldspar; the accessory minerals are amphibole,
 1 biotite, magnetite, apatite, sphene, and allanite, in order of decreasing abundance.
 2 Phenocrysts of orthoclase are scattered sparingly throughout the rock; these measure
 3 up to 6 millimetres in length and usually carry a few small plagioclase inclusions.s10
 4 I and +4pts,

5 jThe Coryell Intrusion:sM,, ,The Coryell intrusion is a small stock occupying much
 6 of the east central part of the map-area. According to Little (1961) this body is
 7 a satellite of the main Coryell batholith centred in the Rosslund area to the east.
 8 These rocks are typically alkaline and are probably co-magmatic with some of the
 9 Early Tertiary volcanic deposits of south central British Columbia (Fig. , , , ,).
 0 Various phases of the Coryell batholith were dated by Baadsgaard, sI, et al., sM, (1961)

Special Instructions _____

1 yielding ages of 54 and 58 million years, and more recently similar ages were obtained
2 from the Rosslund area by Fyles (personal communication).s+4pts,

3 jThe Coryell body found in the map-area is somewhat elongated and kidney-shaped
4 measuring about 3 miles between the north and south contacts and 1.5 miles in width.

5 The intrusion comprises syenite, monzonite, and shonkinitic phases.s+4pts,

6 jThe main phase of the intrusion is biotite-pyroxene monzonite. Typically the rock
7 is porphyritic consisting of a spongy framework of chunky alkali feldspar phenocrysts,
8 1 to 2 centimetres in diameter, with finer grained dark ferromagnesian minerals in
9 the interstices. In polished sections the large feldspar crystals are commonly
0 smoky grey, often having a bluish iridescence; small feldspar grains and the margins of
1 some phenocrysts tend to be milky or cream coloured.s+4pts,

2 jDetailed examination of numerous thin sections shows that most of the feldspar is
3 thermally re-ordered, resulting in exsolution of albite and relatively pure orthoclase
4 blebs from large plates of alkali feldspar. The typical perthitic bleb and antiperthitic
5 checkerboard textures have evidently formed from the unmixing of solitary crystals of
6 high temperature orthoclase and zoned orthoclase-anorthoclase individuals.s+4pts,

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Special Instructions _____

1 jThe interstitial mafic minerals constitute only about 10 or 15 per cent of the rock,
2 the rest being alkali feldspar. Green diopsidic augite and fresh brown biotite are
3 present in about equal amounts as single grains or, more commonly, in aggregates with
4 apatite, magnetite, and sphene. These minerals range from 1 to 6 millimetres in
5 diameter.s+4pts,

6 jThe chemical analysis of a representative sample of this rock is comparable with
7 Daly's analysis of the Coryell intrusion near Rossland (Nos. 1 and 2 in the
8 accompanying table of chemical analyses). Of special note, the lime and magnesia
9 content of these rocks is low whereas soda and potash is high. Calculations show that
0 the rocks are undersaturated in silica resulting in normative olivine and some
1 nepheline. Since olivine and nepheline are ^{not} found in thin sections it seems most
2 likely that the silica deficiency is taken up by the biotite. Also, it is noted that
3 the general absence of non-perthitic plagioclase is in keeping with the very low
4 normative anorthite content of these rocks.s+4pts,

5 jThe syenitic phase of the intrusion is in small pockets in the monzonite. Although
6 no analyses are available, the chemical composition of this rock is probably similar
7 to the phonolites of the White Lake basin (analysis No. 3). Characteristically both
8 the syenite and phonolite contain distinctive rhomb-shaped anorthoclase phenocrysts
9 (Plate , , , , and Geology, Exploration, and Mining in British Columbia, 1970, p.
0 396).s+4pts,

1 jA shonkinitic contact phase is exposed along the west and southwest margins of the
2 intrusion where it possibly forms a continuous zone ranging from several hundred to
3 a few thousand feet wide. This phase is relatively enriched in ferromagnesian
4 minerals; it is probably a basic differentiate of the monzonite. The rock is medium
5 grained composed essentially of intermixed anorthoclase or orthoclase perthite, about
6 80 per cent, and pyroxene, about 15 per cent. Microscopic examination shows that
7 biotite and hornblende are accessory occurring in clots with pyroxene, magnetite, and
8 apatite, or as poikilitic inclusions in large augite grains. Small grains of partly
9 altered nepheline, 1 to one-half millimetre in diameter, are disseminated sparingly
0 throughout the rock and in places form inclusions in anorthoclase crystals.s+4pts,

Special Instructions _____

1 jPegmatite dykes cut the syenitic and monzonite phases in the north, east central, and
2 south parts of the stock. In contrast with the host rock, the pegmatite is quartz-rich
3 and much of the feldspar consists of very coarse albite; the main ferromagnesian
4 minerals are biotite and actinolite. Sphene, allanite, and magnetite are accessory
5 minerals found as disseminations or in small clusters.s10I and +4pts,
6 jSTRUCTURE:sM,,,,As previously indicated, the Coryell stock is intruded at the
7 three-way contact of the Nelson granite, Valhalla granite, and Shuswap metamorphic
8 complex. This junction of major units was evidently a weak point - possibly a focal
9 point of major fractures which may have facilitated emplacement of the young stock.s+4pts,
0 jThe results of a statistical study of fractures and lineaments are shown on Figure ,,,,.
-
1 On the basis of 75 measurements the main fractures within the Coyrell stock have a mean
2 attitude of 035 degrees dipping 80 degrees southeast. Strong subsidiary fractures
3 strike about 065 degrees dipping 55 degrees northwest and two weaker sets are noted
4 striking roughly 010 degrees dipping 55 degrees northwest and 135 degrees vertical.s+4pts,
5 jAlthough a wide range of ~~optographic~~ ^{topographic ✓} lineaments are observed on airphotos of the
6 region, the only strongly developed trend lies between 010 and 040 degrees. This is
7 probably largely the expression of glacial striations (028 degrees), however, there is
8 a coincidence of lineaments with the strong northeasterly developed fracture system
9 as well as the weaker northerly trending set. The southeasterly trending fractures
0 and the ones striking between 060 and 070 degrees have apparently little topographic
-
1 expression. It seems possible that these are simply short cross-fractures which are
2 not readily recognized as lineaments owing to limitations in photographic resolution.s10I
3 and +4pts,
4 jMINERALIZATION:sM,,,,Mineralization within the Coryell stock is varied and widely
5 scattered, consisting mainly of sulphide replacements in xenoliths and disseminations
6 in the host monzonite. Although no economic deposit has been discovered, these
7 occurrences are unusual and warrant some detailed description.s+4pts,
8 jThe petrography of the main phases of the Coryell intrusion, outlined above, leaves
9 little doubt that these rocks are hypersolvus - that is, the original magma was
0 intruded at high temperature, perhaps as high as 900 degrees centigrade. Rapid

Special Instructions _____

1 cooling and dispersal of volatiles allowed preservation of the perthitic feldspars
 2 that characterize these rocks.s+4pts,
 3 jIt is believed that this early migration of volatiles within the intrusion resulted in
 4 the mineralization of the xenoliths. Metalliferous solutions trapped interstitially
 5 in the crystal mush of the solidifying magma is possibly responsible for the
 6 disseminated sulphide deposits.s+4pts,
 7 jThe effect of the Coryell intrusion on the surrounding country rocks, including the
 8 possibilities of sulphide replacements, is largely unknown because of poor bedrock
 9 exposure.s10I and +4pts,
 0 jMineralized Xenoliths:sM,,,,Xenoliths are locally abundant, forming clusters of small
 1 fragments or occurring as isolated blocks; they range from a few feet up to 30 feet
 2 long. Rounded, partially assimilated aplitic fragments are most common, however angular
 3 blocks of dark refractory gneiss are also present (Plate ,,,,). The source of this
 4 foreign debris appears to have been the Valhalla and Shuswap rocks which form the main
 5 walls of the stock.s+4pts,
 6 jThe most digested aplitic xenoliths are best mineralized. These are stained with
 7 malachite and azurite; internally they are commonly charged with blebs of bornite
 8 and chalcocite (Plate ,,,,).s+4pts,
 9 jAt station 'A,' shown on the ^{Fig?} accompanying map, mineralized xenoliths in syenite and
 0 monzonite are exposed over a length of about 200 feet. According to a company report
 1 the best sample from this area contained 0.75 per cent copper and 0.6 ounce per ton
 2 silver across 33 feet; other samples taken nearby contained much less copper. A
 3 well-mineralized grab sample collected by the writer from the same area contained
 4 2.42 per cent copper, 0.6 ounce per ton silver, and 3.60 per cent iron.s+4pts,
 5 jElsewhere some xenoliths are simply pyritized with no sign of copper.s10I and +4pts,
 6 jDisseminated Mineralization:sM,,,,Much of the prospecting in the area has been
 7 directed toward discovery of large tonnage disseminated copper sulphide deposits, the
 8 xenolith-type mineralization being considered only as an indication of a favourable
 9 geological environment.s+4pts,
 0

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Figure?

1 jAt station 'B' shown on the accompanying map, chalcopryite, and to less extent
2 bornite, are interstitial to large feldspar crystals in the monzonite. The sulphides
3 are distributed over several hundred square feet in concentrations ranging to 2 or 3
4 per cent of the rock. Close examination of polished samples, hows that chalcopryite
5 is sometimes associated with magnetite and replaces the ferromagnesian silicates,
6 forming grains usually less than 3 millimetres long. Also very small specks of
7 chalcopryite are visible along hairline cracks peripheral to large feldspar
8 phenocrysts. (Plate ,,,,).s+4pts,

9 jA typical well-mineralized sample of this rock submitted for assay shows 0.48
0 per cent copper, 0.2 ounce per ton silver, and 3.52 per cent iron.s10I and +4pts,

1 jSilt Geochemistry:sM,,,,Four silt samples were taken from streams draining the main
2 showings and the east part of the Coryell stock. Analyses yielded unexpectedly low
3 results with a range of 30 to 62 ppm copper. These low results are possibly due to
4 a masking effect of thick till deposits in the valleys.s+4pts,

5 oWORK DONE: Surface geological mapping, 1 inch equals 1,200 feet covering all
6 claims; geochemical soil survey, 150 samples covering Lynx claims;
7 induced polarization survey, 8 line-miles covering Lynx claims.

8 oREFERENCES: Baadsgaard, H., Folinsbee, R. E., and Lipson, J., 1961,sI, Geol.
9 Soc. America,sM, Bull., Vol. 72, No. 5, pp. 689-701; Church,
0 B.,N.,sI, B.C. Dept. of Mines & Pet. Res.,sM, G.E.M., 1970,
1 pp. 396-402; Daly, R.,A., 1912,sI, Geol. Surv., Canada,sM,
2 Mem. 38; Little, H. W.,sI, Geol. Surv., Canada,sM, Map 15-1961;
3 Mem. 308;sI, Minister of Mines, B.C.,sM, Ann. Rept., 1968, p. 217;
4 Assessment Reports 1741, 2363, 3481.s10B,

