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GEOLOGICAL REPORT ON
HARE GROUP OF MINERAL CLAIMS
HIGHLAND VALLEY AREA OF THE
KAMLOOPS MINING DIVISION
BRITISH COLUMBIA, CANADA
MAP SHEET M 921/11E

50°35' NORTH LATITUDE
212°05' WEST LONGITUDE

FOR
CENTURIAN EXPLORATION INC.
157 ALEXANDER STREET,
VANCOUVER, B. C.

V6A 1B8

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
10848
NO. _____

**PART
2 of 3**

N. L. TRIBE, P. ENG.,
KELOWNA, B.C.

NOVEMBER 15, 1980.

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INTRODUCTION

The purpose of this report is to assess the geological favorability of the Hare Group of Mineral Claims for the classic porphyry copper type deposits. It is based on a review of some of the papers available on the Highland Valley and the ideas which may be applied to the Hare Group.

The Hare Group of Mineral Claims is made up of Hare #1 to Hare #16 inclusive comprised of 306 units staked under the new metric system of 500 meter square units containing 25 hectares each. Overstaking along the boundaries and three old claims near the centre of the group would lessen the holdings by approximately 10 units, leaving approximately 296 units for a total of 7,400 hectares.

This report will discuss in a general way the regional geology of the area and relate it to structural development and how this may affect any mineralization.

It is recognized that an immense amount of information is available on the Highland Valley and the area of the Hare Group is not considered by most writers to be the most ideal environment for copper porphyry ore bodies based on the experience gained from the other discoveries. This report will attempt to demonstrate that some of the favorable geological and structural parameters exist within the area of the Hare Group.

LOCATION AND ACCESS

The Hare Group of claims is located approximately 20 miles south-east of Ashcroft, B.C. on the north side of the Highland Valley. The claims were staked in the late summer and early fall of 1980. The property is laid out in accordance with the new perimeter staking laws and the metric grid system based on units 500 meters square. The southern boundary of the Hare Group starts 5 km north of the Valley Copper ore body against the ground held by Valley Copper and extends a further 9 km to the north from there. The property can be reached by travelling east on Highway 1 from Vancouver to Ashcroft, B.C. and thence 25 km to the south-east on the Highland Valley Road. Access into the claims is by way of the Woods Creek and Cinder Hill roads which branch north, approximately 25 miles from Ashcroft. These roads provide 4-wheel drive access

into the area and are open throughout the summer. Access has not been maintained through the winter months.

HISTORY

The deposits of the Highland Valley, namely Bethlehem's ore body was initially discovered in 1896 and the original claims were staked in 1899. Numerous companies, together with the B.C. Department of Mines, drilled a number of holes and carried out several exploration programs during the next 50 odd years but the low grade of the ore and the low price of copper did not permit development of the property until the newly formed Bethlehem Copper Corp. Ltd. began surface trenching and bulk sampling in 1955. The first major construction was undertaken by Bethlehem Copper Corp. Ltd. with the aid of Sumatoma Metal Mining Company in 1960 and the first production began in December 1962.

The Highland Valley was the center of a tremendous amount of work during the next 18 years. Porphyry copper type mineralization was discovered in a number of areas. Some of these are the Highmont deposit, the Lornex ore body, which went into production in 1974, the Valley Copper ore body, the small deposits at South Seas and Krain. During this period many geochemical sampling programs and geophysical programs were undertaken and it can safely be assumed that anomalous conditions showing at surface and those responding to existing geophysical methods have been tested. Some occurrences such as the Jersey

ore body and parts of Valley Copper's deposits are covered with deep glacial overburden and could only be tested with grid drilling programs.

The areas of the Hare Group are also largely covered by tertiary volcanics of depths and glacial debris expected to be up to 500 meters. Some exposures occur in the south-west but even in this south-western portion of the claim group a significant part of the area is covered with glacial till and is, therefore, not amenable to surface-type prospecting.

GEOLOGY

In a very general way, the Highland Valley ore bodies are associated with the contact between the Bethlehem Phase and the Bethsaida Phase intrusives of the Guichon batholith and are localized in areas of favorable structure along faults and in breccia zones. Hollister, et al, 1975 shows how the various major ore bodies are associated with the structural hiatus at the junction of and the movements along the Lornex and Highland Valley faults and the various offsets that have taken place along the two fault systems. This model appears to fit well with all the major deposits with the exception of the two smaller Krain and South Seas deposits. These have a spacial relationship only to the Lornex Fault and do not appear to be associated with the Highland Valley Fault.

This general relationship is expressed again by McMillan, 1976 "However, all large deposits are either associated

with the dyke swarm north of Highland Valley or occur in or near the contact of the Bethsaida Phase and related dykes".

There does seem some possibility in the case of the Krain and South Seas deposits that the Bethsaida Phase intrusion in the form of dykes and small plugs continue north into the Guichon quartz diorite along the zone just east of the northward extension of the Lornex Fault noted as the area of the porphyry dyke swarms. This zone appears to continue north as far as the Barnes Creek Fault. However, most of this zone is covered by the tertiary volcanic and sedimentary rocks. The northward extension of this zone near the Barnes Creek Fault is co-incident with claims Hare #11 and #12. The general association of the Lornex Fault with all the known ore bodies in the Highland Valley makes the northward extension of the fault under the tertiary volcanics an interesting problem. This northward extension is interpreted to continue northward through Hare #1, #3, #5, #7, #9 near to where it intersects with the Barnes Creek Fault. This entire 10.5 km length of fault is covered by the tertiary volcanics and sedimentary rocks and as such will not have been tested due to the inadequate depth penetration of pre-existing geophysical instrumentation and the impracticability of grid drilling such a large area.

The Bethlehem Copper Ore Body, Krain and South Seas deposits are spatially related to the contact between the Guichon Variety quartz diorite and the Bethlehem Phase of the Guichon batholith. This contact can be traced from just west

of the Bethlehem Copper ore bodies northward to just west of the South Seas and Krain deposits and then curving to the west through the central portion of claim Hare #3. This contact from the Krain deposit to the north and west is again covered by the tertiary volcanics but would have to be considered a favorable environment, particularly as it nears the Lornex Fault.

Air photo interpretation of the main Hare Group reveals several lineaments passing through the area which is covered by Tertiary volcanics assumed to be fault-related. It is noted by McMillan, et al, 1976 that movement along the Highland Valley and the Lornex faults continued even after deposition of the ore bodies and probably into the tertiary. It would seem reasonable then that the air photo lineaments may represent faulting which is present not only in the tertiary volcanics but as an expression of faults in the basement.

The Barnes Creek Fault in particular is a major structure. That zone to the south of the Barnes Creek Fault and east of the Lornex Fault lies within the generally considered favorable environment of the porphyry dyke swarms. This is coincident with claims Hare #11 and Hare #12. The Barnes Creek Fault is parallel to the Highland Valley Fault and may have generated sufficient structural energy to encourage later (Bethsaida Phase) intrusions into the area of the junction between itself and the Lornex Fault and hence deposits of copper mineralization. However, this is unproven and the intrusive

relationships cannot be checked at surface due to the volcanic and sedimentary cover. Other lineaments - those numbered 6, 9, and 10 on the geology maps are also parallel to subparallel with the Highland Valley and Barnes Creek faults and their junctions with the Lornex Fault would form a structurally comparable setting to that at the junction of the Highland Valley and Lornex faults which has produced the major orebodies to the south and should prove to provide adequate ground preparation for mineral emplacement here: The small structures numbered 11 and 12 on the geology map (Figure 4) provide a miniature setting similar to the Lornex-Highland Valley intersection and could provide a favorable environment, particularly in view of the tongue-shaped intrusives of the Guichon variety protruding into this area from the south. These tongue-shaped intrusives are considered by some to indicate favorable environment. A second favorable setting would be that contact area between the Guichon Variety and the Bethlehem Phase intrusives in the area of Mineral Claim Hare #3. A number of the deposits appear to be positioned just outside the Bethlehem Phase intrusive in the surrounding country rock and as such that portion in the northern half of Hare #3, particularly in the vicinity of the Lornex Fault, would appear to be an interesting prospect. The tertiary volcanics and sedimentary rocks in this area are also expected to be less thick than those further to the north.

The cover of the tertiary volcanics and sediments sequence of course has prevented adequate testing of these

zones in the past. The Hare Group of Mineral Claims has established title to this area covered by the tertiary volcanics except for three small claims north-east of Cinder Hill.

The prospecting of this block would depend entirely on a deep sensing geophysical tool.

GEOPHYSICS

Sensing sulphides through deep conductive overburden has presented a problem for the geophysicist for many years. The problem became focused in the Australian nickel boom of the early 1970's where known favorable geological settings were masked to the known geophysical methods of the time. Within the past few years Harold Siegel's group and particularly Tony Howland-Rose has made a breakthrough by applying the well-established induced polarization techniques and adapting the sensing device to pick up the field produced by the discharge of the sulphide condenser model rather than attempting to measure the actual discharge through the overburden as was done in the traditional I.P. survey.

At this time this method has been used with some success in Australia but has not been used in Canada.

Mr. Howland-Rose has indicated (Appendix I) in his report that this technique will penetrate 300 meters or more of overburden.

CONCLUSIONS

The Hare Group of Mineral Claims covers a large area of ground just north of the known ore bodies in the Guichon batholith complex. The Lornex Fault passes through approximately 10.5 km of the Hare Group of Mineral Claims. Contacts between several rock units, the Bethlehem phase and the Guichon Variety quartz diorite rocks are exposed over short distances in and around claim Hare #1 and are interpreted to exist through several claims in the southern portion of the group. Several north-west trending structures appear to be in existence under the tertiary volcanics and these can be interpreted to be related to stresses similar to those responsible for the Highland Valley and Barnes Creek faults and, as such, could play an important roll in preparing the ground for porphyry copper type mineralization. The tertiary volcanics and sediments cover a great deal of the Hare Group and mask any surface indications which might be there. /

Although the geology of the Hare Group of Mineral Claims does not fit with all the structural and geological parameters of the other existing ore bodies, some of these conditions can be interpreted to exist on the property, and as such the property deserves a regional prospecting survey if it can be shown that a deep sensing geophysical tool has been developed. These surveys can be carried out over the entire group but should be concentrated on the eastern side of the group and to the south near the Guichon-Bethlehem phase contact.

The necessity of a deep sensing geophysical tool is thus a part of any further practical work on the group.

This deep sensing tool is available to us through Scentrix's Rapid Reconnaissance Magnetic Induced Polarization Method (RRMIP).

RECOMMENDATIONS

It is therefore recommended that the RRMIP surveys be carried out on the Hare Group as Phase I of an exploration program. It is estimated that 320 km of survey will be required. Phase II should consist of a Rotary Percussion drilling program of at least 5 holes to test the results of the RRMIP survey assuming that targets can be defined by this method.

COST ESTIMATES

Phase I - RRMIP Survey

Line cutting

320 km at 2 km per crew per day

160 crew days

Crew to consist of one compassman

@ \$10.00/hr. plus 1 helper @ \$6.00/hr.

\$128./day for 160 days \$ 20,480.

Accommodation @ \$36./man/day

160 x 2 x 36 11,520.

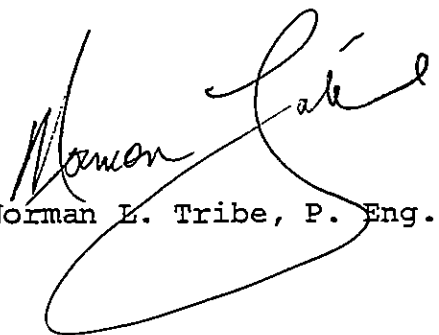
Transportation - one 4 x 4 vehicle

\$40./day x 160 days 6,400.

Contingencies at 25%	\$ 9,600.
RRMIP survey from report by A.W. Howland-Rose	117,375.
	<hr/>
Total Phase I:	\$ 165,375.

Phase II - Drilling Rotary Percussion

5 holes to approximately 400 m average or 2,000 meters of drilling Road building - 20 km D6 Cat 1 km per day @ \$600./day	\$ 12,000.
Drilling cost all up Estimated at \$60./meter	120,000.
Contingencies at 25%	33,000.
Geological supervision 20 days @ \$500./day	10,000.
Assays - 40 @ \$20. each	800.
Reporting	6,000.
Contingencies at 15%	2,520.
	<hr/>
Total Phase II:	\$ 184,320.
Total Phase I and Phase II:	<u><u>\$ 349,695.</u></u>



Norman E. Tribe, P. Eng.

NLT:st

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Highland Valley, British Columbia.

V.F. Hollister, J.M. Allen, S.A. Anzalone, R.H. Seraphim

Canadian Journal of Earth Sciences

National Research Council Canada.

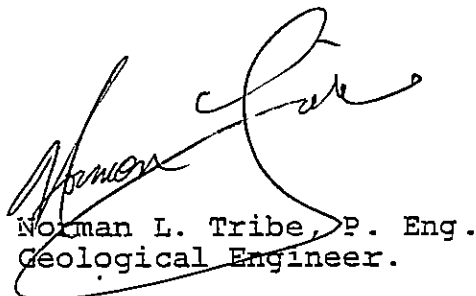
Volume 12, No. 5, 1975.

C E R T I F I C A T E

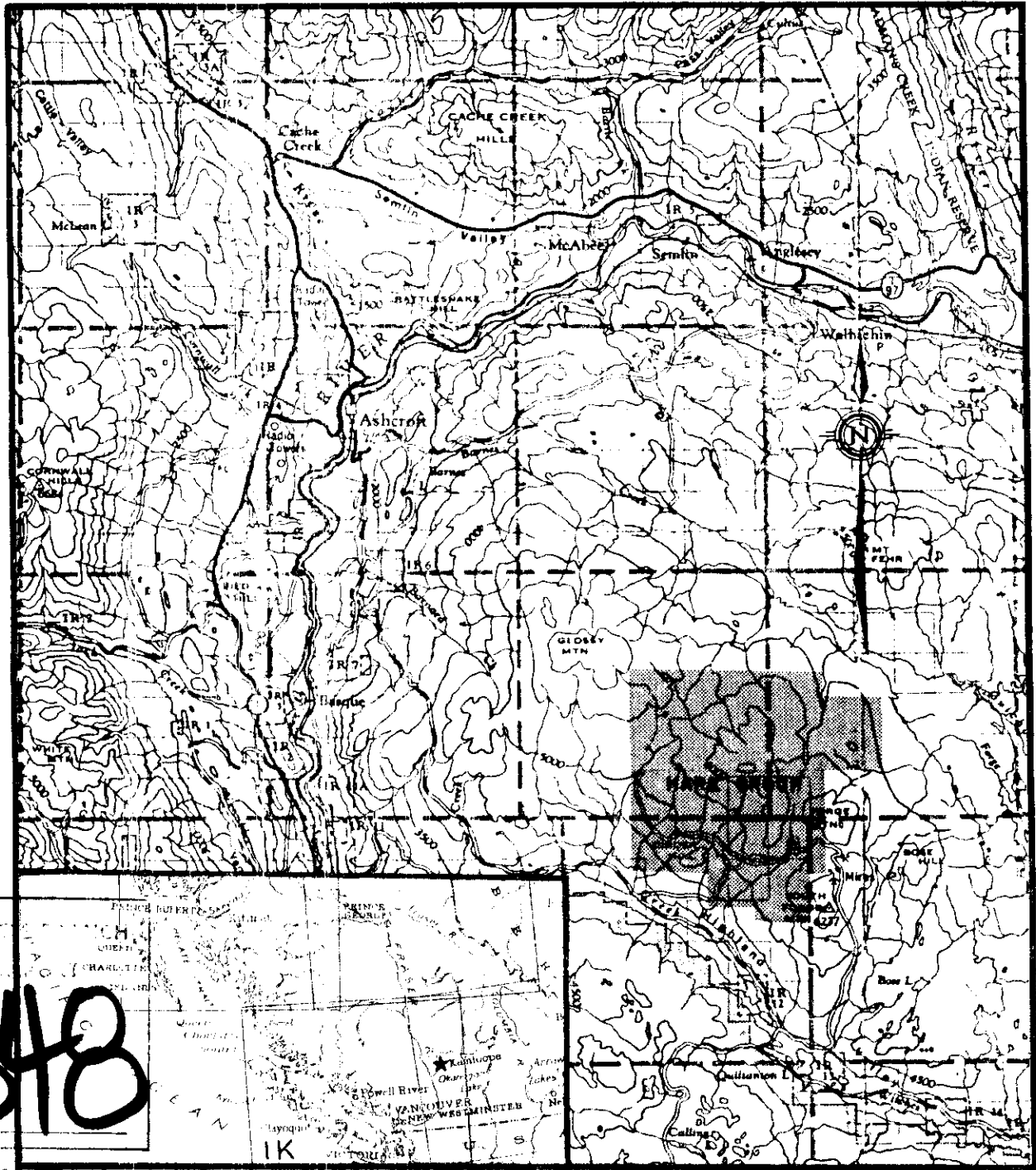
I, Norman Lloyd Tribe, of Kelowna, B.C., Canada hereby certify that:

1. I am a Consulting Geological Engineer living at 2611 Springfield Road, Kelowna, B.C.
2. I have practiced my profession for 16 years.
3. I am a registered Professional Engineer of the Province of British Columbia.
4. I have graduated with a degree of Bachelor of Applied Science in Geological Engineering.
5. I have no direct, indirect or contingent interest in the shares of Centurian Exploration Inc. or the mineral claims subject of this report nor do I intend to have any such interest.
6. This report dated November 15, 1980 is based solely on research of published data and perusal of air photographs of the area of the claims.

Dated at Kelowna, British Columbia this 15th day of November, 1980.



Norman L. Tribe, P. Eng.
Geological Engineer.

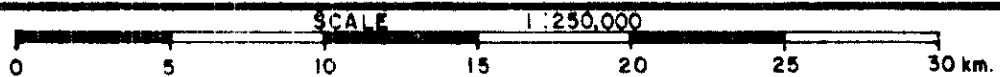


MINERAL RIGHTS
10,848

PART
2 & 3

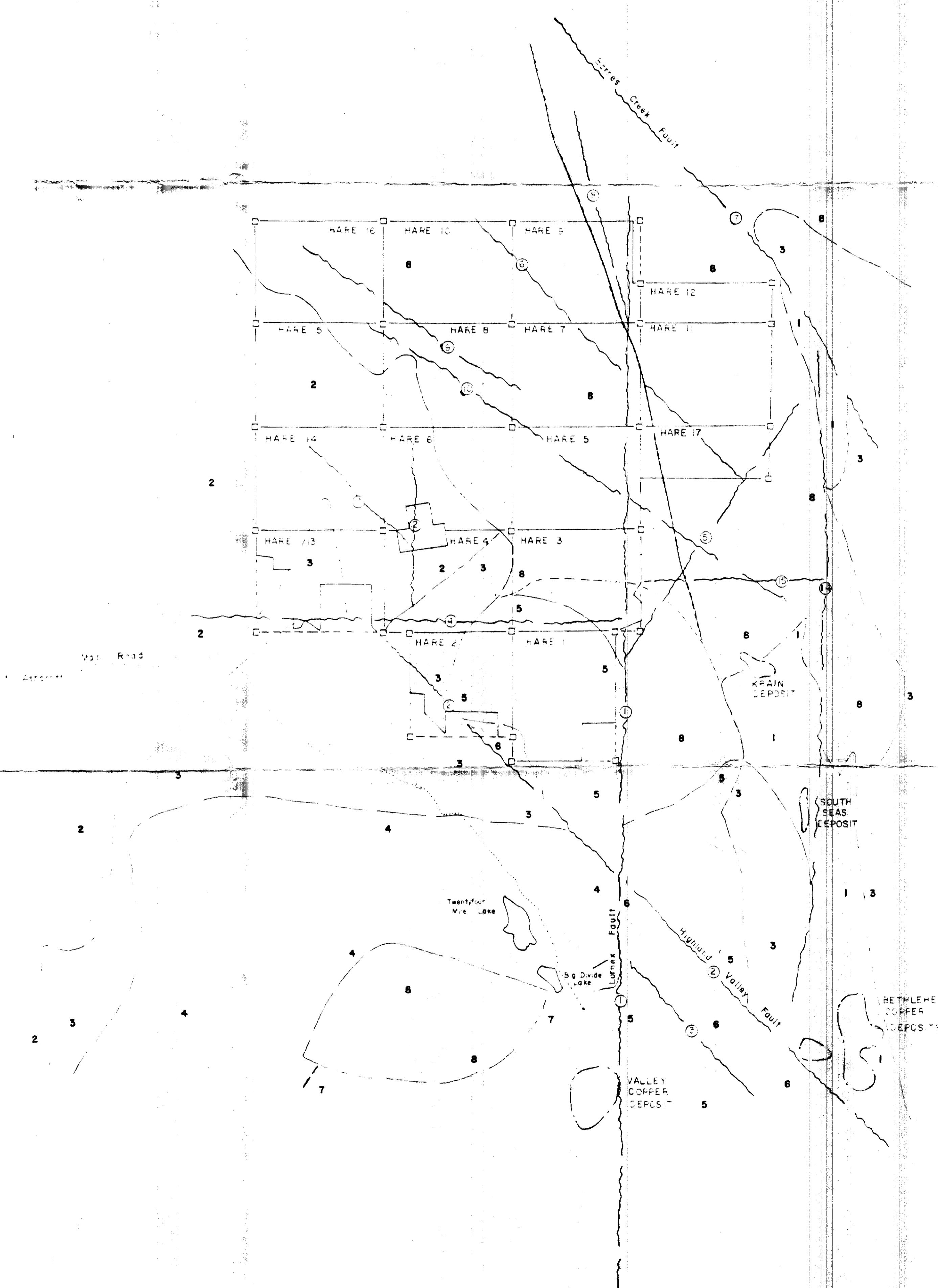
FIGURE NO 1

CENTURIAN EXPLORATION INC.
HARE GROUP OF MINERAL CLAIMS
LOCATION MAP



921/NW & NE

DATE: MAR. 15, 1983



LEGEND	
8	Volcanic and Sedimentary Rock
7	Beisada Phase
6	Seena Variety
5	Bethlehem Phase
4	Chataway Variety
3	Guichen Variety
2	Hybrid Phase
1	Porphyry Dyke Swarm
---	Geology, Contact
---	Guichen-Bethlehem Contact
---	Fracture Lineament or Known Fault
○	Known Mineral Deposits
---	Road
---	Camp Survey

MINERAL RESOURCES BRANCH
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SCALE 1:50,000
0 1 2 3 4 5 km

FIG. NO. 1
CENTURION EXPLORATION INC.
HIGHLAND VALLEY
GEOLOGY & CLAIM MAP
SCALE 1:50,000
DATE: 1985
GIBBS & ASSOCIATES LTD.