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GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORTS
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ASSESSMENT REPORT ON THE REMOTE SENSING ANALYSIS

For The
GNAWED MOUNTAIN PROPERTY
By
Gower Thompson & Associates Ltd.
And
MineSat Explorations Ltd.

This report constitutes "Part two" of the Remote Sensing Study for the area.
For "Part one" refer to:
Getty Copper Remote Sensing Report, recorded on Oct. 14/94

The property consists of the following 4 post mineral claims:

GNAWED BRECCIA and the GNAWED OREBODY

Highland Valley Area, B.C.,
Kamloops Mining Division
Lat: 50 degrees, 26 minutes
Long: 120 degrees, 59 minutes

Prepared for
ROBAK INDUSTRIES LTD.
1000 Austin Ave
COQUITLAM, B.C.,
V3K 3P3

Report Written By,
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June 13, 1996

24,564
GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

OCT 04 1996
GOVERNMENT OF
KAMLOOPS
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STATEMENT OF COSTS

This report was prepared for Robak Industries Ltd., on a fixed cost basis. The following is a list of costs as claimed for assessment purposes. This report was written June 6 to 13, 1996.

TABLE 1 List of Applicable Costs for Assessment Purposes.

MineSat, use of data and preparation of image files.	\$ 4,500
Gower Thompson, preparation of geological base map.	\$ 2,500
MineSat, scanning base map and contours into images.	\$ 1,100
Gower Thompson, ground checking and geological interpretation.	\$ 2,500
Gower Thompson, preparation of linear and circular features.	\$ 4,000
Gower Thompson, preparation of report.	<u>\$ 2,300</u>
Total costs claimed for assessment purposes.	\$ 16,800

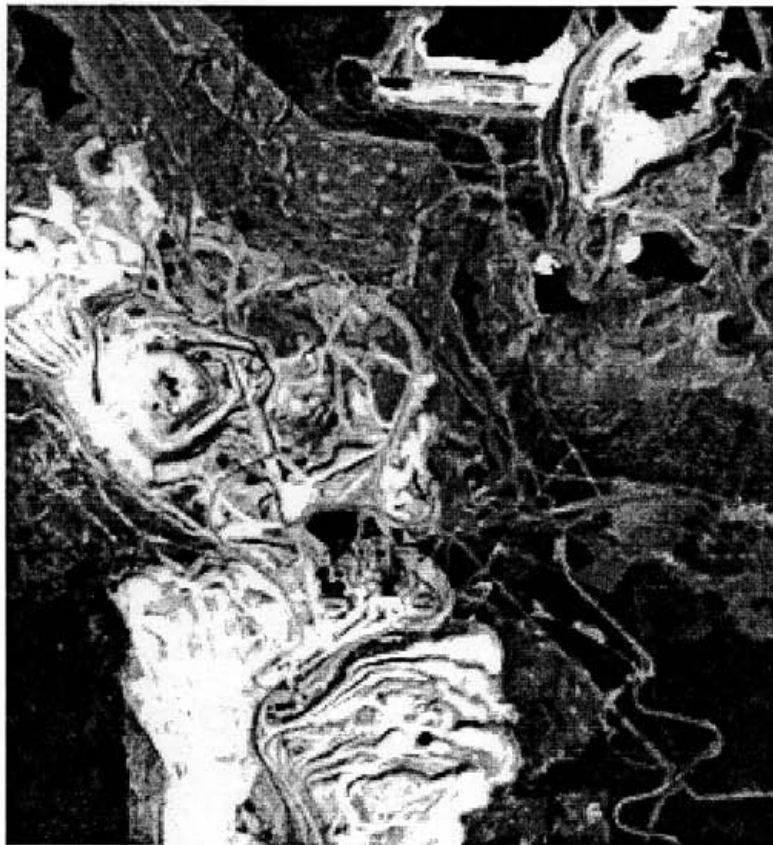
1.0 SUMMARY

The Thematic Mapper (TM) and Radar images and initial structural analyses were provided by Minesat Ltd. Gower Thompson and Associates Ltd. have integrated their field mapping and knowledge of the geology of the study area to enhance the analysis of the imagery. MineSat Explorations Ltd. and Gower Thompson & Associates Ltd., are actively continuing to research the analysis and interpretation of remote sensing satellite data. The understanding of analytical and interpretative procedures utilizing these data are rapidly improving as additional regions are studied.

The Guichon Batholith area was one of the first regions chosen by MineSat Explorations and Gower Thompson as a research project because of the high quality of geological mapping available in the public domain. This area, due to the intensive vegetation and drift cover, is a difficult area for air photo and satellite imagery analysis and provides a rigorous test of analytical and interpretive procedures used in satellite imagery programs.

The Landsat Thematic Mapper data used in this study was gathered from the Landsat 5 TM sensor and the synthetic aperture radar data was from the European Research Satellite (ERS - 1). These TM and radar image data sets, which are similar in appearance to conventional air photographs, were used to locate local and regional scale linear and circular features on satellite images.

Image 1. Satellite image of TM, Band 5 stretched. This image provides an excellent view of the Lornex and Valley open pits with near the clarity of an airphoto. Window is approximately 6.8 kilometers east - west, and 7.5 kilometers northsouth



(1)

2.0 CONCLUSIONS

The area underlying the Gnawed Mountain deposit claim area is situated adjacent to the open pits of the Highmont Mine. The Gnawed Breccia and Gnawed Orebody claims are underlain by Skeena granodiorite, that has been intruded by a southerly trending dyke named the Gnawed Mountain porphyry, (GMP).

The (GMP), averages about 200 meters in thickness, and appears to follow the Skeena - Bethsaida contact dipping about 75 degrees to the north. Offshoots from the (GMP) extend for up to 250 meters into the surrounding rock. A number of younger breccia bodies occur within the Gnawed Mountain porphyry. These breccia bodies form pipelike shaped outcrops ranging in size from 5 to 75 meters in diameter. The composition of these breccias consists of rounded clasts of granitic rock in a matrix of tourmaline, hematite and quartz. These bodies are too small to be identified on the satellite images.

Analysis of the remote sensing data indicates that the regional mineralization is structurally controlled. The Highmont ore bodies and the mineral zones on the Gnawed Mountain property are situated adjacent to the intersection of the north trending Lornex set of structures and the structural controls for the northwest -southeast trending Gnawed Mountain porphyry. A prominent set of linears indicating structure can be observed on the satellite images trending north-north - east towards the JA zone and the Bethlehem deposits.

Examination of the Thematic Mapper images in detail reveal that the mineral zones on the Gnawed Mountain claims appear to be the south - east and east extensions of the zones mined at the Highmont open pits.

The zone of structural weakness hosting the Gnawed Mt. porphyry body appears a series of well defined north west trending linears on the satellite images. Numerous north trending linears are observed adjacent to this north west linear that are spatially associated with the deposits at Highmont and Gnawed Mtn.

Study of published mineralogy of the Highmont zone and detailed examination of drill core from the Ann zone and outcrops over the Gnawed Mountain deposit, indicate that the copper in the discovery zones at Gnawed Mountain is higher in the hydrothermal system than the deposits that were mined at Highmont. The zone on the Gnawed Mt. claims has a higher copper content than at Highmont, while the molybdenite content is correspondingly lower.

This difference in grade between the Highmont and Gnawed Mt. deposits appears to be due to a well defined area of mineral zoning. In this proposed model, the copper is lowest in grade at surface, possesses an underlying zone of higher grade copper, and at depth grades into mineralization richer in molybdenite.

TABLE 2 Reserve Estimates, Gnawed Mt. Claims - From Gower Thompson Report June 1991.

<u>Zone</u>	<u>Tonnage</u>	<u>Copper grade</u>
Ann Zone	Approximately 50,000,000 tonnes	0.26%
Zone G	Approximately 5,000,000 tonnes	0.23%

3.0 RECOMMENDATIONS

The Gnawed Mountain property held by Robak Industries Ltd., deserves further work to test the potential to host a viable porphyry copper deposit. Three circular features located to the around and east of Gnawed Mt. form excellent exploration targets and deserve follow up.

The entire claim area should be surveyed using a high powered Induced Polarization system to determine chargeability and resistivity values. Due to the low total volume of sulphides in the Highland Valley deposits, any chargeability values above 5 volts per millivolt should be considered anomalous. The following specific recommendations were noted during this current study.

- Four circular features within the claim group were observed on the satellite imagery. One of these coincides with the large central breccia zone. These require ground checking . Soil geochemistry would be useful to check for the presence of copper in the overlying till.
- The intersection of major linears on the east portion of the claims is coincident with the presence of molybdenum and copper bearing quartz veins and requires detailed geological mapping, rock and soil geochemistry and possibly percussion drilling.
- The Ann zone is relatively untested and based on the apparent mineral zoning possesses the potential to increase in copper grade at depth.

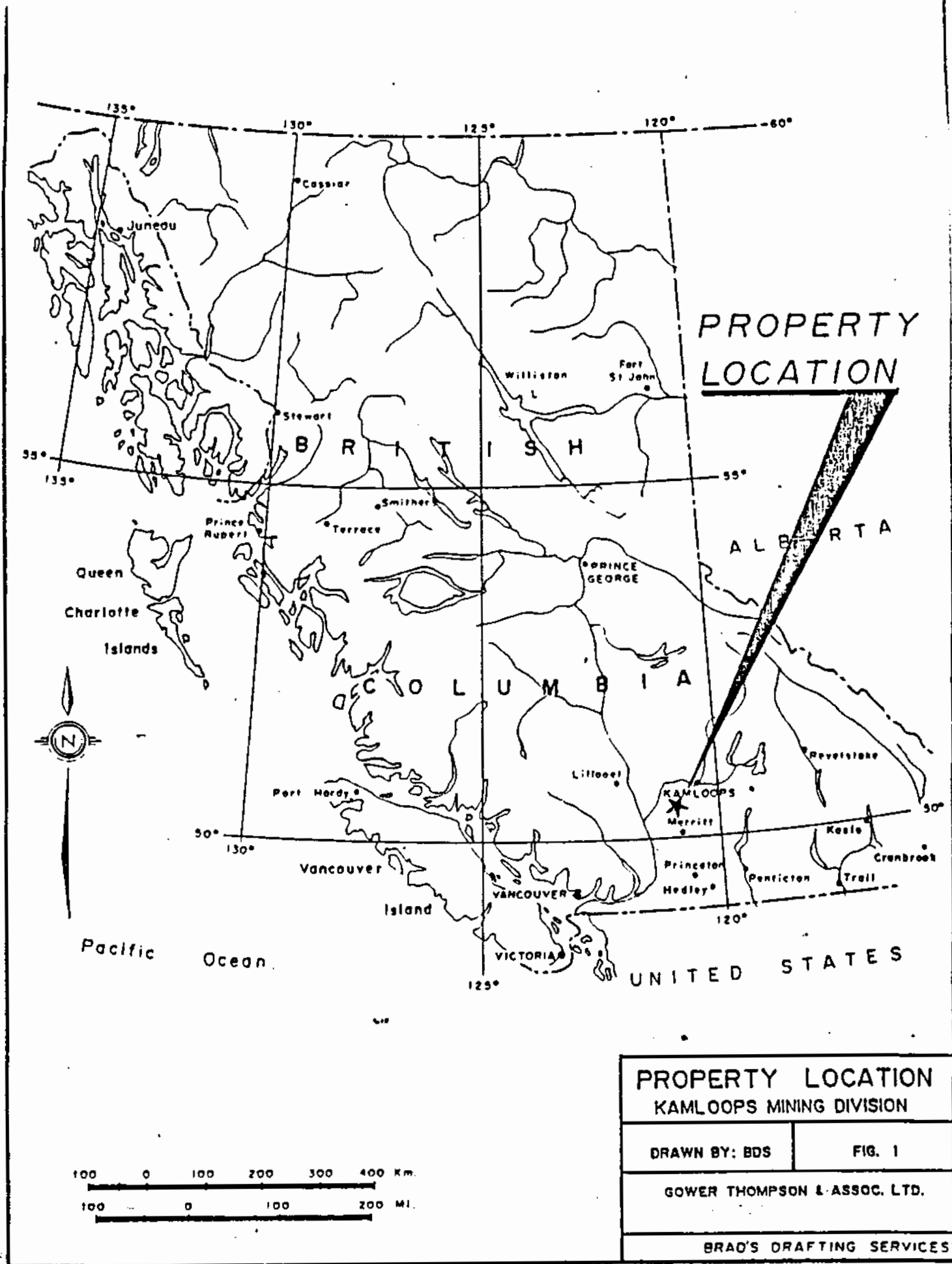
4.0 TERMS OF REFERENCE

Stephen Gower of Gower Thompson & Associates Ltd. in association with Minesat Explorations Ltd., was contracted by Robak Industries Ltd. to carry out a satellite remote sensing study for a window centered on the area surrounding the Gnawed Mountain. This report constitutes Part Two of the report prepared on January 10, 1995 by Gower Thompson & Associates Ltd., on the remote sensing centered on the Getty Copper property. The reader of this report is referred to the Minesat report included in the Jan 10, report for a detailed description of the methods used in the interpretation.

The preparation of the satellite data was carried out by K. E. Northcote of MineSat Explorations Ltd. A detailed geological map of the area was prepared by Gower Thompson & Associates Ltd., and digitized by MineSat personnel. Linears and circular features were plotted by Stephen Gower and Ken Northcote. Interpretation of these linear and circular features and subsequent geological interpretation was performed primarily by Stephen Gower.

The detailed geological mapping that forms the basis for the interpretation of the satellite data around the claims area was carried out during the period July 6 to July 23, 1990, by Stephen Gower and Elaine Thompson. Further ground checking and examination of regional features was also carried out during the fall of 1995.

Although this report has been prepared for assessment purposes, it cannot be warranted by the author to meet all government requirements. As such it should be submitted for assessment purposes well in advance of the anniversary date of the claims.



**PROPERTY
LOCATION**

PROPERTY LOCATION

KAMLOOPS MINING DIVISION

DRAWN BY: BDS

FIG. 1

GOWER THOMPSON & ASSOC. LTD.

BRAD'S DRAFTING SERVICES

4.1 Location and Access .

Access to the property has been blocked off by mining activity carried out by the Highland Valley Copper operation. At present the best way to reach the property is to start from Logan Lake, B.C. From this point a paved road is taken north west to the Lornex Highmont turn off. A gravel road leads to the old Highmont Mine and passes by the pits enroute to Gnawed Lake. This road has been blocked by mine waste on the north west side of Gnawed Mountain. The old exploration access road along Gnawed Mountain has grown in with alder and requires clearing for use by 4 wheel drive trucks. The property is easy to traverse on foot or by trail bike. The terrain is mostly park - like except for rugged topography which forms steep slopes along the north and east flank of Gnawed Mountain.

5.0 CLAIM STATUS

The property consists of the following four post claims owned 100% by Robak Industries Ltd. Client # 122996.

TABLE 3 *Claim Data and Assessment Costs.*

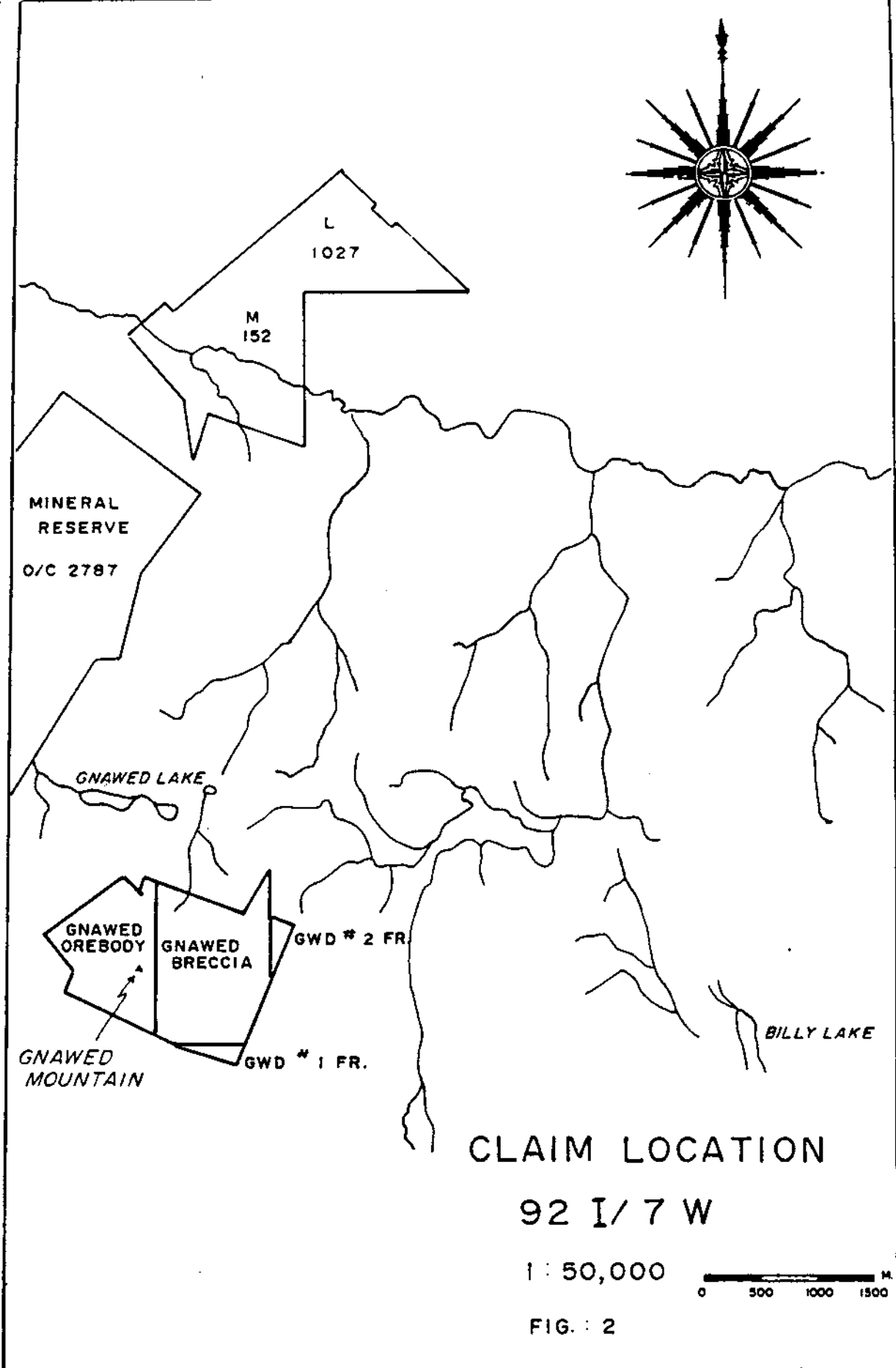
<i>Claim Name</i>	<i>Type</i>	<i>Units</i>	<i>GTD</i>	<i>Expiry</i>	<i>Tenure#</i>	<i>Tag</i>	<i>Cost/Year</i>
Gnawed Orebody	MC4	6	Oct. 28	1996	216683	2019	\$ 1,200
Gnawed Breccia	MC4	6	Oct. 28	1996	216684	2020	<u>\$ 1,200</u>
							\$ 2,400

A total of \$ 16,800 has been claimed for this report which, if approved will change the year of Expiry to 2003.

The legal corner post for the Gnawed Orebody and Gnawed Breccia claims has been removed and is believed to have been destroyed during the construction of the Highmont pit. The number 3 - south location post and the existence of the location line was verified in 1990 by staff of Gower Thompson & Associates Ltd.

The legality of these claims is the responsibility of the owner and is not warranted by Gower Thompson & Associates Ltd.

Acceptance or rejection of this report for assessment purposes is totally at the discretion of officers of the Mines branch, and can not be warranted by the author of this report.



CLAIM LOCATION

92 I / 7 W

1 : 50,000

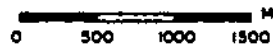
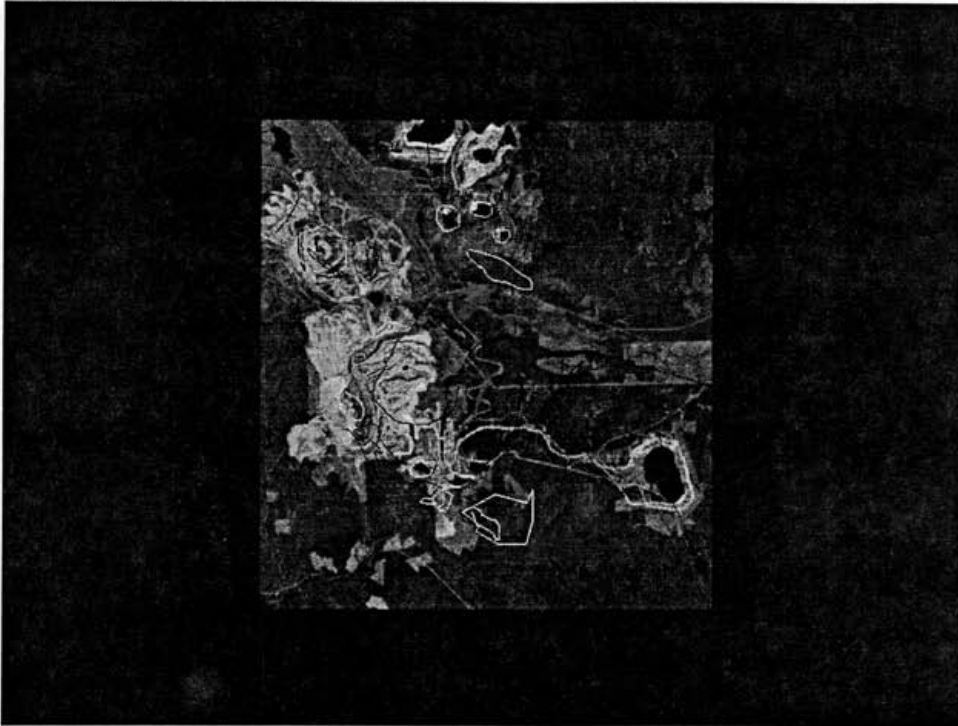


FIG. : 2

Image 2. Band 5 satellite image showing mining activities, roads, claims and the mineral deposits. Window is approximately 12 kilometers north-south and 14 kilometers east - west.



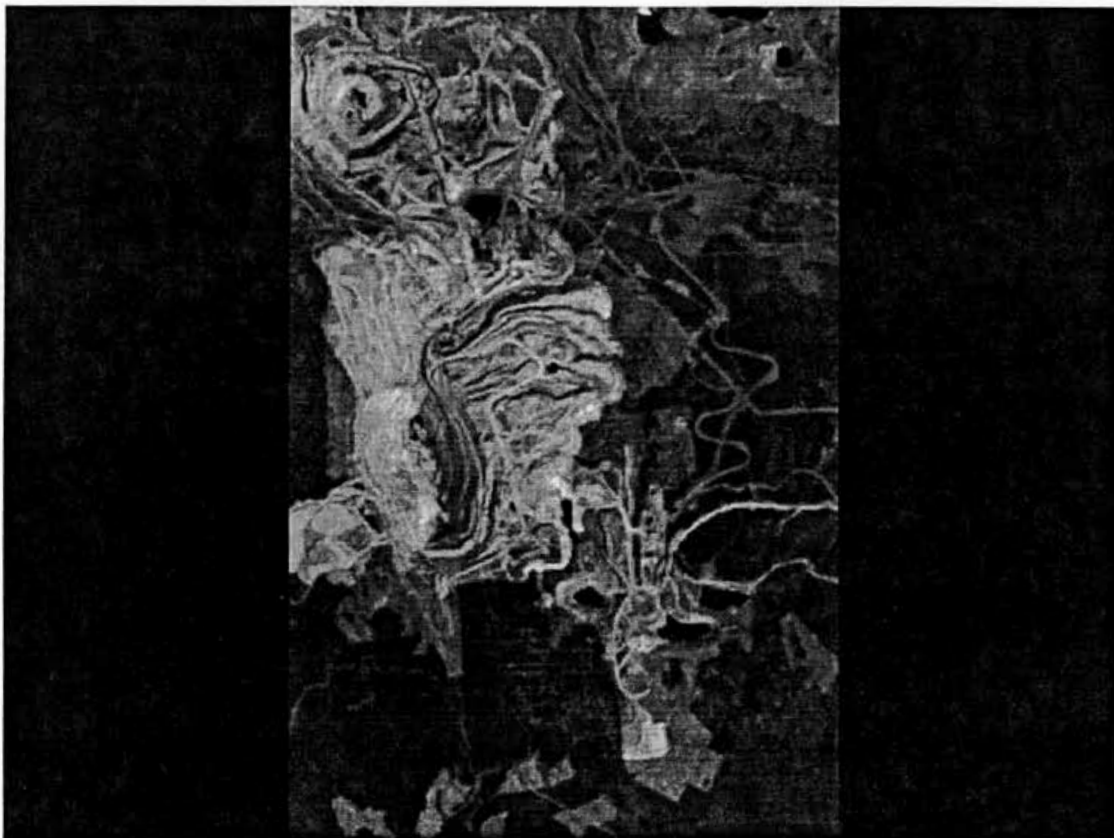
6.0 OVERVIEW OF REMOTE SENSING BY SATELLITE SENSORS

Remote sensing by satellite is a relatively new method of interpreting information about the earth's surface, without physically being on the ground. High resolution images are produced which are similar in appearance to conventional air photographs. It has the added advantage of allowing an operator to change scale during analysis and to further interpret features by integrating additional data from geological and geophysical sources. Satellite images are available from Synthetic Aperture Radar, and from the Landsat Thematic Mapper.

The Radar image is a generated scene using a radar beam that records phase and polarization of reflected microwave energy. The sensor is independent of illumination from sunlight and is capable of penetrating through clouds and rain. The radar beam is also sensitive to variations in surface roughness, moisture content and some electrical properties of the surface that may be indicative of underlying structures. The images reviewed in this study were from the European Research Satellite, (ERS-1), that operates from an orbital altitude of 785 kilometers. The most obvious use of Radar imagery is to provide interpretation of geological structure in areas of thick overburden and vegetation cover. The images can also be used for regional and local scale structural mapping. The major problem using SAR imagery is lateral distortion in areas of high relief. For this reason SAR imagery was used to supplement the TM images and the lineaments were visually transposed on to the 1:25,000 scale map.

The Thematic Mapper measures reflected sunlight from the earth's surface in the visible, near infrared, and Short-Wave mid infrared wave lengths of the electromagnetic spectrum. The images are superior to those from Radar due to the geographical coordination with the Universal Transverse Mercator Projection, (UTM). The Mapper is very useful in the interpretation of structure on a regional and detailed scale, and in areas of abundant outcrop can be used to define geological contacts.

Image 3. Satellite Image of Band 5, showing enlarged window over Lornex and Highmont pits. Gnawed Lake is evident just above the eastern Highmont pit near the southeast corner of the image. Window is approximately 6 kilometers east - west and 9.5 kilometers northsouth.



7.0 HISTORY Of The PROPERTY

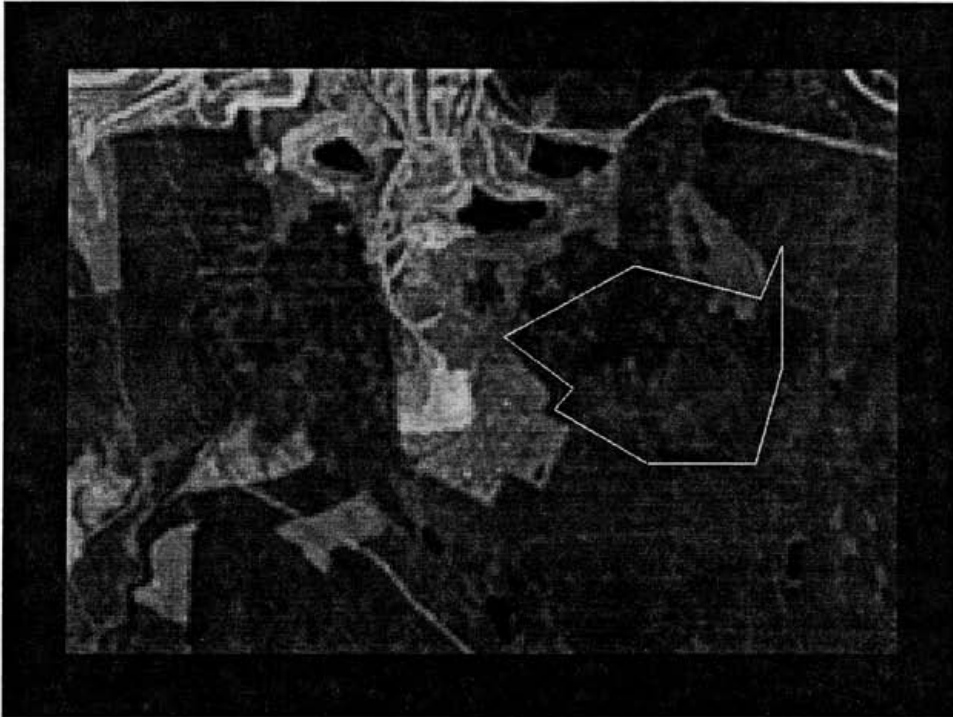
TABLE 4 *History of Work Performed on the Property.*

YEAR	OPERATING COMPANY	WORK PERFORMED
1957 - 1958	American Smelting and Refining	Geological mapping
1958	Kennco Explorations	Geology, geochemistry
1964 - 1965	Anaconda Brass	Geology, geochemistry, geophysics and diamond drilling.
1969	Trojan Consolidated Mines Ltd.	Diamond drilling.
1970	Canadian Superior	Drilling
1975 - 1977	New Minex	Drilling, soil sampling
1979	Lacana Mining Corp.	Geology, geochemistry
1984, 1990	Gower Thompson & Associates Ltd.	Geology, geochemistry
1995 - 1996	Gower Thompson & Associates Ltd.	Remote sensing, geology

Some of the above work is in the public domain and has been used in the preparation of the reports by Gower Thompson & Associates Ltd. in 1984 and 1990. Geological maps are based on work by Northcote, Carr and McMillan. Reports from the private files of Gower Thompson & Associates Ltd. were incorporated into this study.

The preparation of the geology map for a portion of the Guichon Batholith as incorporated into this report adds to the information available in the public domain. As such it may be used by the client for any purpose deemed helpful, however the geological map is not the property of any individual or company.

Image 4 Window of TM Band 5 Image showing claim outline, Highmont pits and Gnawed Lake. The window is approximately 5 kilometers east - west and 4 kilometers northsouth.



8.0 GEOLOGY AND GEOCHRONOLOGY OF THE GUICHON BATHOLITH

The Guichon Batholith is situated in the south central part of British Columbia near the town of Kamloops. The bedrock geology is well established (Northcote 1969, and McMillan et al, 1978). The batholith can be seen in outcrop over an area of 1000 square kilometers, centered near 50 degrees, 30 minutes north and 121 degrees 00 minutes west. The batholith has been classified as a composite, calc alkaline and I - type intrusion emplaced about 200,000,000 years ago. It was intruded into sedimentary and volcanic rocks of the Cache Creek Group and Nicola Group volcanics.

The batholith is enclosed almost entirely by a series of north - south and east - west trending structures. One such intersection of fracture sets is associated with the Valley Copper and Lornex ore bodies. Pleistocene glacial deposits cover the region with less than 3 percent of the batholith exposed as outcrop.

Five major porphyry copper deposits and a number of smaller deposits are known to exist in the central and north central portions of the Batholith. Most of these are associated with intermediate to younger phases of the batholith and are thought to represent products of differentiation of the magma. All of the mineral deposits in the Highland Valley are associated with intersection of fracture sets and fracture density is a primary ore control.

The geology of the Getty South, Getty North and Getty West was mapped initially by J.M. Carr and subsequently has been revised by a number of geologists including the author.

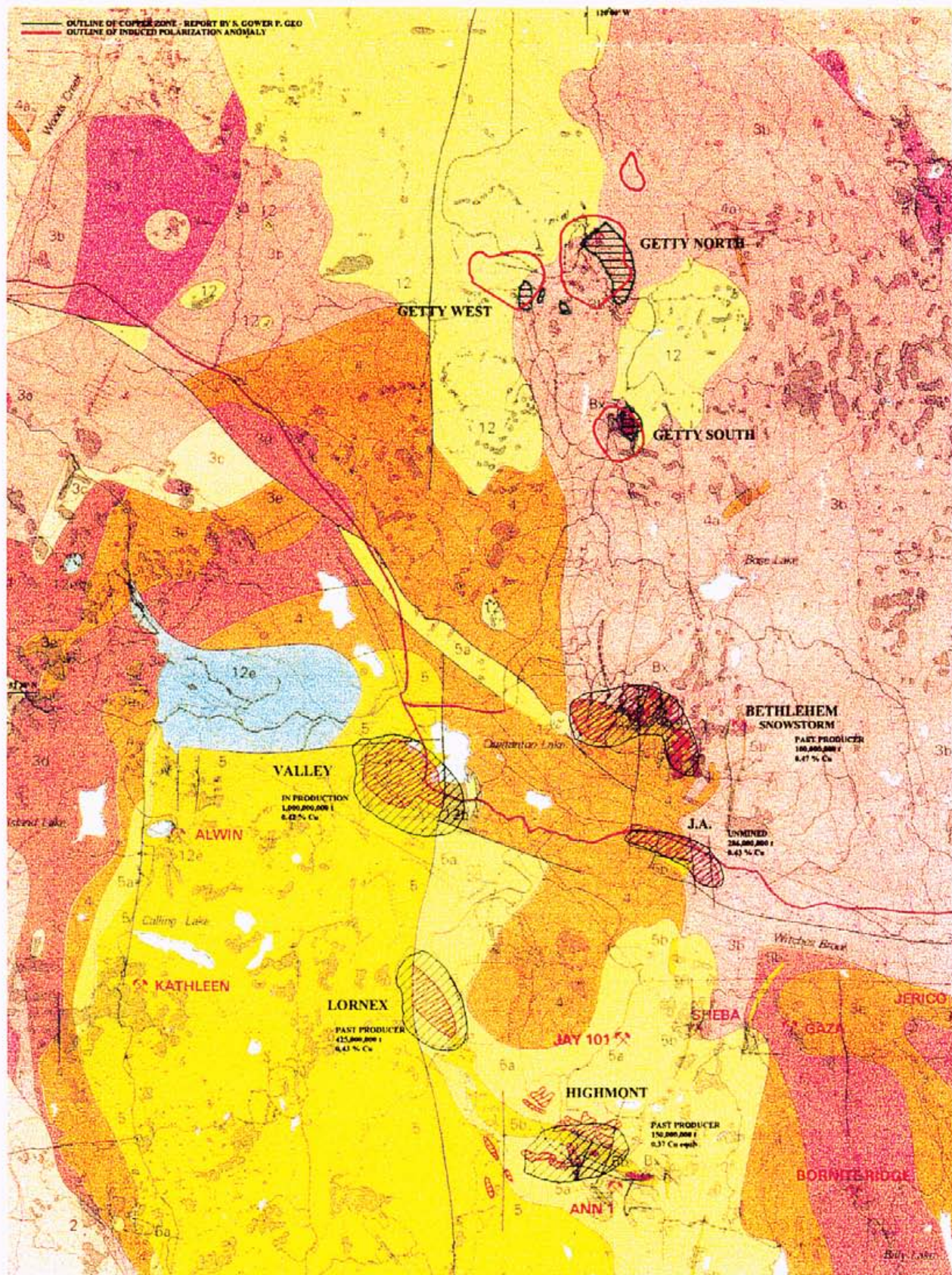
The general shape of the Batholith as defined by gravity methods indicate that the body is flattened and funnel shaped, with a plunging root coincident with the main five deposit. The Batholith has been divided into segments by major north - south and northwesterly trending fault zones. A significant system of northeast and east - west trending faults are observed to trend across the Batholith, and often are distorted close to the intersection with the north south trending faults.

The batholith consists of an outer zone of older quartz diorite and inner areas of younger quartz diorites. In the center of the batholith is a core of granodiorite and a younger porphyry stock. A swarm of porphyry dykes five to eight kilometers wide extends at least 16 kilometers north. Breccias are associated with some of the porphyries. Most of the deposits are spatially related to a porphyry stock or a zone of dyke swarms.

The batholith has been divided into phases based on texture and composition. The formal names and relative ages of the phases, CIA 200 my, were established by geological mapping and K/AR isotope studies (K.E. Northcote, 1969).

- The outermost border of the Batholith is referred to as the Hybrid phase. This phase varies in composition from amphibolite to monzonite.
- The Highland Valley phase is situated inside the Hybrid phase. It consists of the Chataway variety, (hornblende predominating over biotite), and the Guichon variety (mafic in approximately equal proportions) both with regular distribution.
- The Bethlehem phase is situated inside the Highland Valley phase. It consists of granodiorite containing approximately 8% mafics. The Bethlehem phase is identified by the irregular distribution of poikilitic hornblende. (the presence of fine grained quartz or feldspar contained within coarse grained mafics)
- The Bethsaida phase is in gradation contact with the Bethlehem phase. It varies in composition from granodiorite to quartz monzonite, and contains 6% mafics with characteristic coarse biotite books.
- The Skeena phase is the border phase between the Bethlehem and the Bethsaida phases. The composition is generally granodiorite with the mafic textures similar to the Bethlehem phase. It is distinguished from the Bethlehem on the basis of larger grain size, lower mafic content and coarser quartz grains.
- The youngest phase consists of a swarm of porphyry dykes.

THE HIGHLAND VALLEY COPPER DISTRICT BRITISH COLUMBIA



FROM 1978 MINISTRY OF MINES & PETROLEUM RESOURCES MAP
SCALE 1 : 100,000

ABRIDGED LEGEND

KAMLOOPS GROUP*





- 12a ARLINGTON VOLCANIC AND INTRUSIVE ROCKS BIOTITE QUARTZ
PLAGIOCLASE PORPHYRY INTRUSIVE AND EXTRUSIVE BRECCIA
- 12b STOCKS AND ASSOCIATED FLOWS OF BIOTITE HORNBLFNDI
PLAGIOCLASE PORPHYRY
- 22b/22c VOLCANIC PEBBLE CONGLOMERATE, SANDSTONE, MUDSTONE,
MINOR AMOUNTS OF DIATOMITE, AND SCATTERED LAVA FLOWS
- 12/12c PREDOMINANTLY INTERMEDIATE, SOME ACID AND BASIC LAVA
FLOWE, MINOR TUFFS AND VOLCANIC BRECCIAS.

GUICHON CREEK BATHOLITH







- 5/16 BETHSAIDA PHASE - QUARTZ MONZONITE TO GRANODIORITE
AND SLIGHTLY YOUNGER (?) PORPHYRY DYKES AND PLUGS
 - 5a SKEENA VARIETY - GRANODIORITE, INTERMEDIATE IN
COMPOSITION AND TEXTURE BETWEEN BETHLEHEM AND
BETHSAIDA PHASES
 - 6/16 BETHLEHEM PHASE - GRANODIORITE AND SLIGHTLY YOUNGER
PORPHYRY DYKES AND PLUGS
 - BRECCIA BODIES OF EXPLOSIVE ORIGIN
 - 32c ROCKS WITH TEXTURES AND COMPOSITIONS TRAN
SITIONAL BETWEEN HIGHLAND VALLEY AND BETHLEHEM
PHASES OF AREAS WITH SWARMS OF BETHLEHEM PHASE
DYKES IN HIGHLAND VALLEY PHASE
- ### HIGHLAND VALLEY PHASE
- CHATAWAY VARIETY - GRANODIORITE
 - 37 GRANODIORITES WITH TEXTURES AND COMPOSITIONS
TRANSITIONAL BETWEEN GUICHON AND CHATAWAY
VARIETIES
 - 36 GUICHON VARIETY - GRANODIORITE, INCLUDES AREAS
OF FINER GRAINED GRANODIORITE NEAR CHATAWAY
LAKE WHICH HAVE TEXTURES AND COMPOSITIONS LIKE
THOSE OF NORMAL GUICHON VARIETY
 - 35 GRANODIORITE TO QUARTZ DIORITE WITH TEXTURES
AND COMPOSITIONS TRANSITIONAL BETWEEN BORDER
AND HIGHLAND VALLEY PHASES
 - 7/16 BORDER PHASE - QUARTZ DIORITE TO GRANODIORITE
 - 34 DIORITE TO QUARTZ DIORITE WITH COMPOSITIONS AND
TEXTURES TRANSITIONAL BETWEEN NICOLA GROUP
ROCKS AND BORDER PHASE QUARTZ DIORITE

SYMBOLS

GEOLOGICAL

- OUTCROP 
 - GEOLOGICAL CONTACT 
 - FAULT 
 - DYKE 
 - DYKE SWARM AREA 
 - ORE OUTLINE 
- #### WORKINGS
- OPEN PIT 
 - MINE DUMP 
 - SHAFT 
 - ADIT 
 - TRENCH 

GEOGRAPHICAL

- HIGHWAY 
- TWO WHEEL-DRIVE VEHICLE ROAD 
- FOUR-WHEEL-DRIVE VEHICLE ROAD 
- TRAIL OR OVERGROWN ROAD 
- POWERLINE 
- CONTOUR INTERVAL 250 FEET 

9.0 SURFICAL GEOLOGY

Outcrop is sparse in the area of the satellite survey, and the cover of glacial debris ranges from slight to hundreds of meters. In areas of light drift cover, it commonly contains boulders similar to the underlying bedrock indicating short transport and partly residual soil.

Vegetation types range widely and include cultivated fields, grassy pasture land, sage covered fields, logging clear cuts and primary and secondary forests of lodgepole pine, aspen and fir, and in wetter areas dense spruce.

10.0 PORPHYRY COPPER DEPOSITS IN THE BATHOLITH

The porphyry copper deposits discovered to date in the batholith are as follows:

- **The Valley Copper deposit** - currently in production at approximately 135,000 tonnes per day. There is some concern about sloughing on the west side of the pit. Grade of the ore averages about 0.44% copper.
- **The Lornex deposit**, part of the Highland Valley Copper project. Slightly lower grade than the Valley Copper deposit, but has more molybdenite.
- **The Bethlehem deposit**, also part of the Highland Valley Copper project. Some reserves remain, but at a higher mining cost than the Valley Copper pit. There is an oxidized cap over some of the mineralization.
- **Highmont deposits**. Inactive at the present time due to the uncertain molybdenum market. Could reopen if conditions warrant. Grade is approximately 0.26% copper, 0.021 % molybdenum.
- **JA zone** - Deposit well situated close to the existing mill facility. However it is covered by deep valley drift. Grade of deposit averages 0.43% copper, 0.017% molybdenum.
- **Getty North deposit** - project is actively being explored. About 40,000 feet of diamond drilling has been carried out since 1993 by Getty Copper Corp. Extensive Induced Polarization anomaly remains to be tested.
- **Getty South deposit** - porphyry copper deposit hosted in a breccia system. Preliminary reserve estimates in the range of from 40,000,000 to 80,000,000 tonnes averaging over 0.4% copper can be mined by a single open pit. The deposit remains to be drill tested.
- **Getty West** - this relatively untested porphyry copper deposit is held by Globe Resources Inc. Preparations are underway to explore the Induced Polarization anomalies discovered in 1994.
- **Gnawed Mountain** - The Ann zone has been tested by a series of shallow, small diameter diamond drill holes. Further drilling is required to explore the mineralization to depth and along strike.
- **Minex zones** - This mineralization has not been defined. Further exploration is required to determine it's potential.

TABLE 5 Geological Characteristics of Highland Valley Mineral Deposits. (After Porphyry Deposits of the Northwestern Cordillera of North America, 1995)

Deposit	Host Rock	Intrusion	Confining Structures	Category
Valley Copper	Bethsaida	Minor felsite porphyry dykes	Fractures are northerly and southeasterly	Producing mine
Lornex	Skeena	Bethsaida	Gnawed Mt. dyke	Producing mine
Bethlehem	Guichon	Bethlehem	Dyke swarms, breccias	Inactive, reserves remaining.
JA	Guichon	Bethlehem Bethsaida	Dyke swarms	Presently too deeply buried for production
Highmont	Skeena	Bethsaida	Gnawed Mt. Dyke	Require stronger molybdenum prices.
Getty North	Guichon	Bethlehem	Dyke swarms, dislocation breccias	Presently under development
Getty South	Guichon	Rhyolite porphyry	Breccia pipe, dyke swarms	Exploration pending
Getty West	Guichon	Bethlehem	Dyke swarms	Exploration pending
Gnawed Mountain	Skeena	Bethsaida	Gnawed Mt. dyke	Requires exploration
Minex	Skeena	Bethsaida	Gnawed Mt. dyke	Requires exploration

TABLE 6 Reserve Information for Highland Valley Copper Deposits, (Source as above).

Deposit	Mined to Jan 1/94	Copper grade %	Recovered grade Au gms/tonne	Strip Ratio	Daily Rate Tonnes	Reserves includes inferred	Copper grade %
Valley Copper	284,000,000	0.44	0.0005	1.07:1	112,000	508,000,000	0.44
Lornex	341,000,000	0.42	0.0005	1.81:1	16,500	119,000,000	0.36
Bethlehem	93,000,000	0.50	0.012	1.93:1		43,000,000	0.40
JA						286,000,000	0.43
Highmont	34,000,000	0.22		1.53:1		88,000,000	0.26
Getty North	nil	being drilled	metallurgy underway	engineering in progress	engineering in progress	currently being calculated	currently being calculated

Sulphide zones and alteration minerals are not closely associated in the Highland Valley porphyry deposits. The alteration zone varies in mineralogy and placement in each deposit. For example, the bornite zones at Valley Copper and Lornex are associated with areas of Phyllic and argillic alteration. However, the bornite zones at Highmont and the Jersey ore zone at Bethlehem are associated with secondary biotite. At the JA and Getty North deposits the copper zones enriched with bornite are associated with argillic alteration. The only mineral present in all deposits is pyrite, where pyritization occurs coincident with the propylitic alteration.

TABLE 7 Alteration Assemblages Associated with Highland Valley Deposits, (Source as above).

Deposit	Quartz stockwork silicification	Potassic	Phyllic	Argillic	Propylitic	Tourmaline	Late stage veining	Sulphide and oxide zoning
Valley	stockwork	deep in system	assoc. with copper	assoc. with copper	Yes		Yes	concentric
Lornex	stockwork	Yes	assoc. with copper	assoc. with copper	Yes		Yes	elongate
Bethlehem		at Jersey		assoc. with copper	Yes	near breccia bodies	Yes	bornite core
JA		Yes	assoc. with copper		Yes		Yes	elongate
Highmont		Yes	assoc. with copper		Yes	near breccia bodies	Yes	elongate
Getty North	silicification	deep in system	adjacent to copper	assoc. with copper	Yes		Yes	elongate
Getty South					Yes	near breccias	Yes	
Getty West					Yes		Yes	
Gnawed Mt.					Yes		Yes	
Minex					Yes		Yes	

11.0 DETAILED GEOLOGY - GNAWED MOUNTAIN PROPERTY

The porphyry body referred to as the "Gnawed Mountain Porphyry" (GMR) in the C.I.M.M. special volume No. 15 a composite dyke consisting of a porphyritic quartz - eye variety of the Bethlehem phase, a leucocratic quartz porphyry and breccia. The (GMR) underlying the claims consists of quartz porphyry with younger cross cutting quartz plagioclase porphyry dykes and aplite dykes. The "Gnawed Mountain Porphyry" dyke has a width of about 200 meters and possesses steeply dipping margins. The deposition of the sulphides occurred after the emplacement of the GMR dyke, but prior to the intrusion of the younger breccia bodies. The copper mineralization adjacent to the dyke is zoned with bornite occurring in and adjacent to the GMR dyke and chalcopyrite and pyrite occurring at greater distances from the contacts.

The Ann zone mineralization appears to be continuous with the sulphide deposits located at the Highmont Mine. The Ann mineralization is usually hosted in Skeena quartz diorite except where it crosses the Gnawed Mountain porphyry to the north - west of Gnawed Mountain. Sulphide mineralization in the Ann zone consists of chalcocite and bornite with some local occurrences of chalcocite and molybdenite. Some secondary malachite has formed at surface. The sulphide minerals appear to be generally hosted in an older system of quartz veins, although some mineralization occurs along dry fractures. The grade of the copper and molybdenum appears to be directly related to fracture density. The highest grade material occurs where fracturing, jointing and shearing is the most intense.

12.0 STRUCTURE

The major structures evident in the general area are the Lornex and the Guichon fault systems. The Lornex fault in the vicinity of the Valley pit has a width of about 100 meters, with a north south strike and a dip steeply east. The fault separates Bethsaida granodiorite on the west from Bethlehem granodiorite on the east. The Highland Valley fault intersects the Lornex fault at the southeast margin of the Valley Orebody. The copper mineralization on the Ann Zone at Gnawed Mountain is localized in fracture zones probably related to the emplacement of Bethsaida granodiorite porphyries and breccias. These fracture zones host a quartz stockwork that is centered around the peak of Gnawed Mountain. The quartz stockwork appears to be enriched with molybdenum on the south and east side of Gnawed Mountain. The Ann zone is located to the west of the stockwork that forms prominent bluffs on the west side of Gnawed Mountain. This stockwork is barren at surface, however it may host mineralization at depth.

13.0 SATELLITE REMOTE SENSING

13.1 Results of Structural Analysis

The analysis of structural imagery was accomplished using precision geocoordinated Thematic Mapper imagery. A series of north - south to slightly north - northwesterly trending linears were observed that includes the Lornex Fault that displaces the Lornex and Valley Copper orebodies. Subsidiary near parallel faults pass through the Highmont, JA , Bethlehem , Getty South and Getty North deposits. These correspond to areas of dyke swarms that extend northerly and have been mapped by Carr, McMillan, Gower and others. SAR imagery shows three conspicuous north south linears passing through the same area. A number of additional short north south linears between the major linears are interpreted to be an extension of the dyke swarm and are part of a reactivated fault system present from pre - mineral to post Tertiary time

Image 5. Satellite image of Band 5 stretched showing individual linears. Window is approximately 12 kilometers east - west.



A series of strong continuous east west trending linears traverse the image. These linears are noted to be closely associated with the mineral deposits. A similar period of reactivation is suggested for this set of linears.

A northeasterly set of linears was noted to be present in the northern portion of the image. These linears were noted to be associated with the Getty North, Getty South and Getty West deposits. A reactivated fault system is also postulated for the northeasterly linears. It is suspected that these dominant fracture sets have been important in the localizing of centers of mineralization in the northern deposits.

A less well developed set of north westerly trending linears was noted that cross the areas underlain by Plutonic rocks and into the areas of thick volcanic cover. One of these is associated with the Getty South and Getty West deposits. A second passes through the Getty North deposit and a circular structure situated on the east side of Bose Hill.

As expected, the geological contacts can not be determined using the satellite imagery. However the zones of weakness associated with the emplacement of the Gnawed Mountain Porphyry can be observed on the Band 5 TM image. Due to the thick mineral cover the mineral zones cannot be identified on the images. Some anomalies were observed in the Valley Copper and the Lornex pits, that may be iron oxides or hydroxide alteration. Further study and ground checking is required to check these anomalies.

The Lornex fault shows up on the images as a major linear with numerous offsets and cross cutting features. It appears to be a major crustal break intersected by a series of pre and post mineral northwest, northeast, east and west structures. The structure can be traced through the main open pits, however the abundance of culture makes interpretation confusing. The detailed linears around the Lornex fault has not been included in this report. A significant observation about the imagery was the spatial relationships that exist between linears and the dykes swarms associated with the Highmont, the JA zone and the Bethlehem deposits.

13.2 Circular Features

A series of circular features can be observed on the Thematic Mapper and SAR images. The centers of some of these circular features are shown on Fig. 4. The margins of many of these features can be seen on the image, however for proper analysis of the image the live image on the computer screen is required.

Image

Image 6.

Centers of Circular Features on TM Band 5 stretched Image.
Window is approximately 12 kilometers east - west.



The most significant circular features on the Gnawed Mountain claims were plotted on the 1:25,000 scale map. Four circular features underlain by granitic rocks fall into this category. Recognition of circular features is of exploration significance, because of correspondence to mineralized breccia zone associated with the Gnawed Mountain porphyry and at the Getty South breccia. The cluster of circular features situated east of the Bethlehem deposits require further analysis and ground checking.

The location of the circular features on or adjacent to the Gnawed Mountain claims is provided in Table Four as follows.

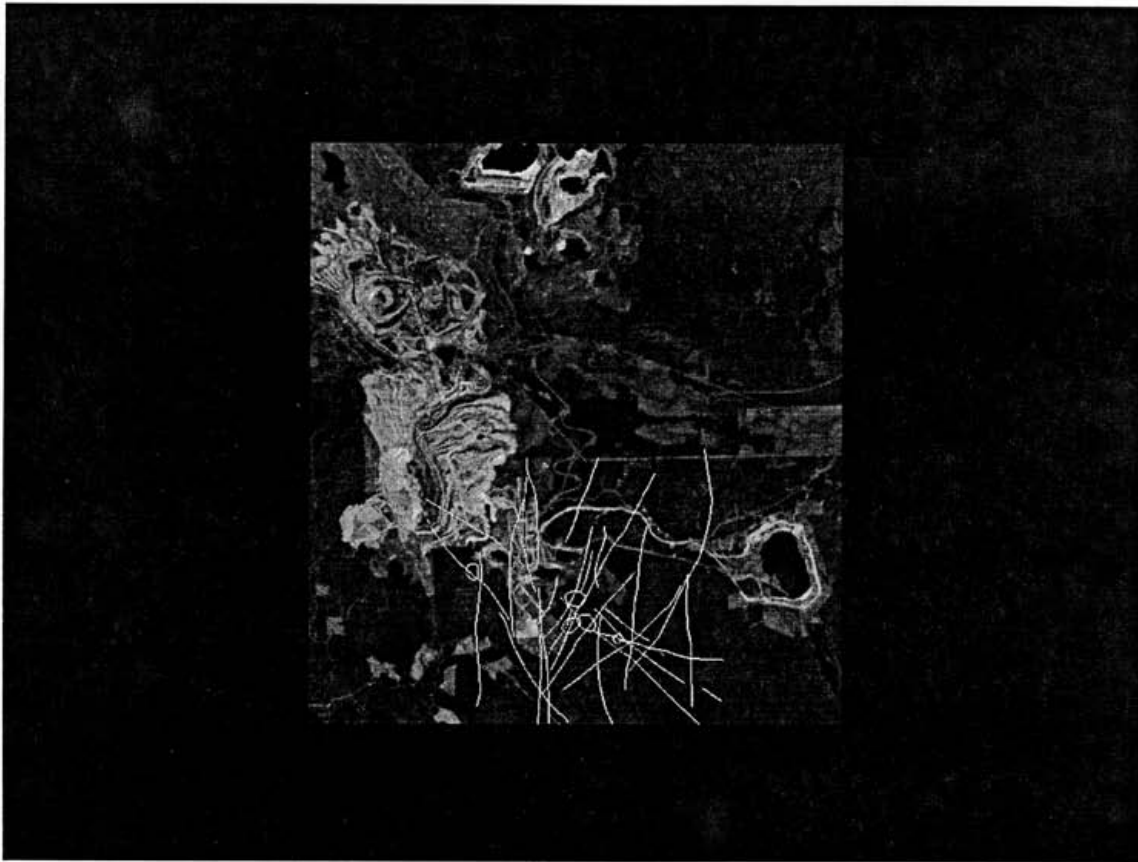
TABLE 8 Location and Description of Significant Circular Features On Claim Area.

Northing	Easting	Diameter	Notes
5587475	643225	500 meters	Surrounds main breccia
5587100	643300	550 meters	Associated with Ann zone
5586825	642750	550 meters	Partially on claim
5586875	643950	250 meters	Good exploration potential

13.3 Regional Structures From Satellite Imagery

- The most significant regional structures observed on the imagery is the Lornex fault system and its related family of north - south trending linears.
- A major semi - arcuate structure is evident on the TM image of Band 5 that extends in an easterly direction from Twenty - Four mile lake past the JA zone and off the image through Gump Lake. This structure is interpreted to be part of the Highland Valley fault system.
- Four major east west trending structures were evident on the images that have not been previously recognized by conventional airphoto analysis.

Image 7. Satellite image of Band 5 south window showing major linears indicating structure and circular features considered to have exploration potential. This image was used to create the linears shown on the 1:25,000 scale map. Window is approximately 12 kilometers east west.



14.0 TONNAGE & GRADE ESTIMATES - Gnawed Mountain Deposit

The drill indicated resource on the Gnawed Mountain property include the following estimates. These data are from work carried out by other operators and are not warranted by Gower Thompson & Associates Ltd. They are included in this report to give an idea of the potential of the deposits likely to be proven up with further exploration on the property.

The Ann zone underlying the Gnawed Orebody claim has an apparent length of about 1000 meters, a width of about 200 meters and a depth of at least 100 meters. Based on what is known about the suspected mineral zoning the potential exists to discover additional higher grade copper and molybdenum mineralization on the Ann zone. It is anticipated that this higher grade zone would be located under the shallow drilling carried out to date to define the current near surface resource.

TABLE 9 RESOURCE ESTIMATES - Gnawed Mountain and Adjacent Areas.

<i>ZONE</i>		<i>TONNAGE</i>	<i>GRADE, COPPER</i>
<u>Gnawed Mountain claims</u>			
Ann	approximately	50,000,000 tonnes	0.26%
Zone G	approximately	5,000,000 tonnes	0.23%
<u>Adjacent Highland Valley claims</u>			
Ide #2	approximately	11,500,000 tonnes	0.17%
Am #32 Fr.	approximately	12,500,000 tonnes	0.27%
Ide #10. Am #12, #14	approximately	12,000,000 tonnes	0.16%

The Ann zone is the most significant mineral deposit discovered to date within the Gnawed Mountain area. This zone occurs at the intersection of a northeast and a north - south trending fracture system located on the west side of Gnawed Mountain. The Ann mineralization comes to surface and forms a dip slope deposit that extends to the west of the claim boundary. The claims adjacent to the Robak Ground are controlled by Highland Valley Copper.

15.0 REFERENCES

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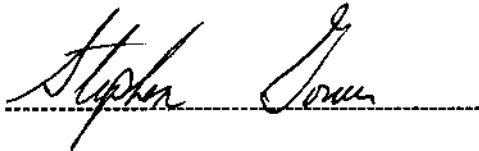
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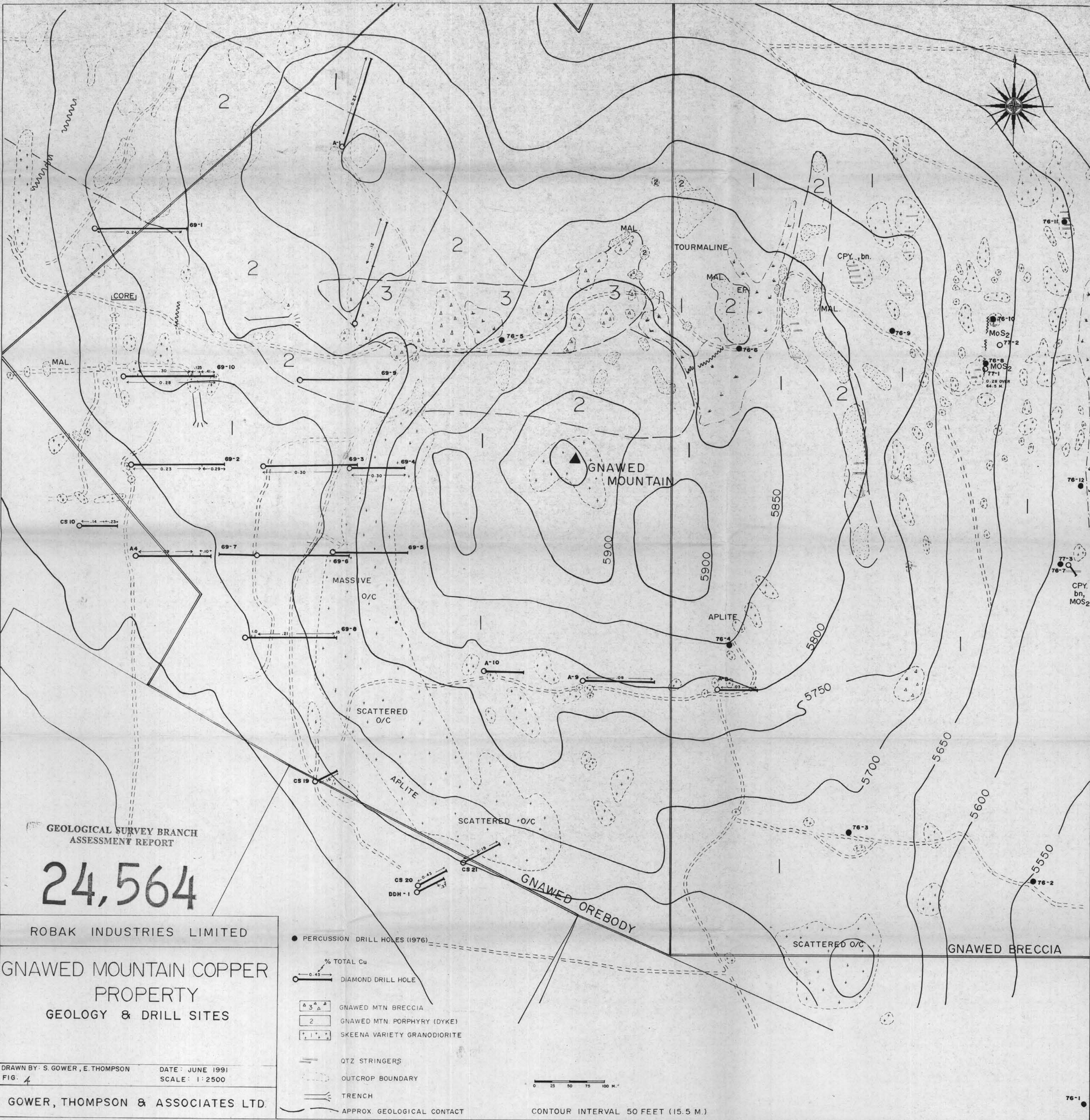
16.0 CERTIFICATE

I, STEPHEN C. GOWER, of 985 GATENSBURY Street, COQUITLAM, B.C., do hereby certify that :

- 1) I have been practicing my profession as geologist for a period of approximately 26 years working for mining exploration and consulting companies.
- 2) I obtained a B.Sc. in geology from U.B.C. in 1970 and have completed Masters courses in property evaluation and exploration.
- 3) I am a member of the Professional Engineers and Geoscientist of the Province of British Columbia and of the Geological Association of Canada.
- 4) I have carried out exploration in the Highland Valley for the past 12 years and have examined numerous deposits and showings in the vicinity of the present report.
- 5) The field work that constitutes the ground checking portion of this report was carried out by myself and Elaine Thompson during the period July 6 to July 13 1990 and during portions of the fall of 1995. This report was written during the period April 7 to May 15, 1996.
- 6) I was initially trained in the analysis of data from satellite sources by Dr. K. E. Northcote. Since that time , I have been carrying out satellite remote sensing analysis for a period of approximately 2 years.

Stephen C Gower, Professional Geoscientist





GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

24,564

ROBAK INDUSTRIES LIMITED

GNAWED MOUNTAIN COPPER
PROPERTY
GEOLOGY & DRILL SITES

DRAWN BY: S. GOWER, E. THOMPSON DATE: JUNE 1991
FIG. 4 SCALE: 1:2500

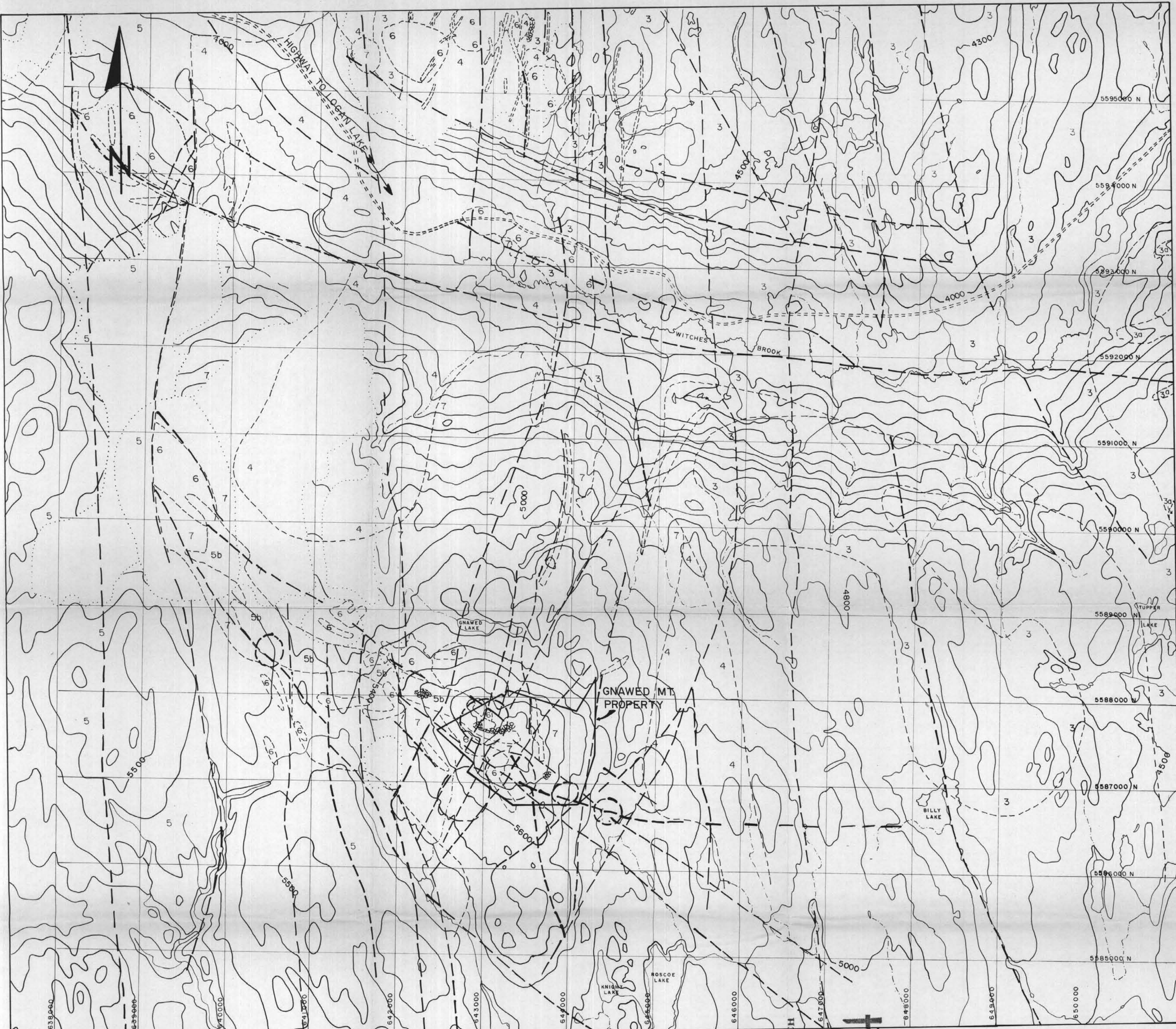
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- PERCUSSION DRILL HOLES (1976)
- % TOTAL Cu
- DIAMOND DRILL HOLE
- ▲ GNAWED MTN BRECCIA
- GNAWED MTN PORPHYRY (DYKE)
- SKEENA VARIETY GRANODIORITE
- QTZ STRINGERS
- OUTCROP BOUNDARY
- TRENCH
- APPROX GEOLOGICAL CONTACT

0 25 50 75 100 M.

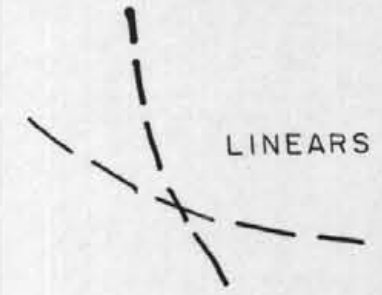
CONTOUR INTERVAL 50 FEET (15.5 M.)

76-1

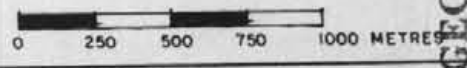


- 7 KAMLOOPS VOLCANICS
- 6 COPPER MINERALIZATION
- 5b GNAWED MT. PORPHYRY
- 5 BETHSAIDA
- BETHLEHEM AGE DYKES
- 4 BETHLEHEM
- 3 GUICHON
- 3a GUICHON HYBRID

- BRECCIA ZONE
- HIGHWAY
- WASTE DUMPS



5589000 N
 UTM COORDINATES
 5588000 N



GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

24,564
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**GNAWED MOUNTAIN PROPERTY
 GEOLOGY & TOPOGRAPHY
 SATELLITE LINEARS**

DRAWN BY: S.C. GOWER, E.M.T. DATE: JUNE 1996
 FIGURE: 5 SCALE: 1:25000

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