MAP NO.: 115 H 7	ASSESSMENT REPORT X PROSPECTUS CONFIDENTIAL X OPEN FILE	DOCUMENT NO: 092857 MINING DISTRICT: WHITEHORSE TYPE OF WORK: Mapping

REPORT FILED UNDER: AURORA GOLD Ltd.

DATE PERFORMED: Oct 1-5, 1989; June 2-8, 1990 DATE FILED: June 27, 1990

LOCATION: LAT.: $61^{o}22'$N AREA: Aishihik

LONG.: $136^{o}57'$W VALUE $: 4722.06

CLAIM NAME & NO.: HOP 75-102

WORK DONE BY: J.C. Stephen Exploration Ltd.

WORK DONE FOR: Aurora Gold Ltd.

DATE TO GOOD STANDING:

REMARKS: prospecting and mapping of a series of skarns sub-parallel to the Whitehorse Copper Belt but lying a few miles to the West was done . The skarns are associated with marble horizons within Proterozoic and/or Proterozoic metasediments intruded by the Coast Range batholith. Mineralization consists of copper, gold and silver within the skarn horizons.

CONFIDENTIAL

PRELIMINARY GEOLOGICAL REPORT

ON THE

HOP 75 - 102 QUARTZ CLAIMS

YB 26329 - 356

NTS 115 H / 7

LATITUDE 61° 22'   LONGITUDE 136° 57'

BY

J.C. STEPHEN EXPLORATIONS LTD.

FOR

AURORA GOLD LTD.
Calgary, Alberta

092 5

Work Done
October 1 - 5, 1989
June 2 - 8, 1990

[illegible] was examined by
the Geological Evaluation Unit
for [illegible] Quartz
[illegible] and is [illegible] as
[illegible] work in the amount
of $4,722.06

for [illegible]

for Regional [illegible], Exploration and
[illegible] for Commissioner
of Yukon Territory.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

MAP

SUMMARY

Skarn deposits in the Whitehorse Copper belt have yielded over 10 million tons of ore grading approximately 1.5% copper and 0.02 - 0.03 ounces gold per ton with minor silver values from underground and open pit operations.

The Whitehorse Copper belt deposits are hosted by Triassic and Jurassic sediments and volcanics intruded by granitic rocks of the Coast Range batholith. Mineral showings hosted by skarn formations are found over a northwest-southeast belt nearly 100 kilometres long.

Subparallel to the Whitehorse Copper belt and lying a few miles to the west but trending more northwesterly is a similar series of skarn deposits. These skarns are associated with marble horizons within Proterozoic and/or Paleozoic metasediments intruded by the Coast Range batholith. Copper, gold, silver, zinc and tungsten mineralization is known to be associated with several of these skarn deposits.

Aurora Gold Ltd. (25%) and Casau Explorations Ltd. (75%) entered into a joint venture agreement on the optioned HOP 1-74 and ACME 1-13 claims covering the long known "Giltana" or "Hopkins Lake" copper, gold skarn showing on Franklin Creek.

Subsequently, Aurora (75%) and Casau (25%) entered into a joint venture on the HOP 75-102 claims (the subject of this report) which were staked to cover prospective ground with known mineral occurrences adjoining the HOP-ACME claims.

Prospecting in October 1989 relocated several mineral occurrences and produced significant assays for copper and gold particularly but with minor values in silver and tungsten.

Preliminary geological mapping was undertaken in June 1990 to assess the mineral occurrences, investigate their structural settings and potential significance, and to formulate an exploration program to be followed to further investigate these occurrences.

Extensive skarn deposits were located on HOP 97-100 which carry significant copper values with geochemically anomalous gold, silver and molybdenum. These zones are on strike north of the skarn horizons on the HOP-ACME property and warrant intensive exploration.

West of Hopkins Lake a number of copper, gold, silver, tungsten bearing mineral occurrences have been located and significant assay values have been obtained. Only one of the occurrences located to date shows a size of possible economic significance and detailed sampling and mapping will be required to demonstrate its value. An unusual geological structure is postulated as a result of the current mapping which suggests the possibility of the presence of significant mineralization. A program of mapping and geophysical surveying is recommended to investigate this structure.

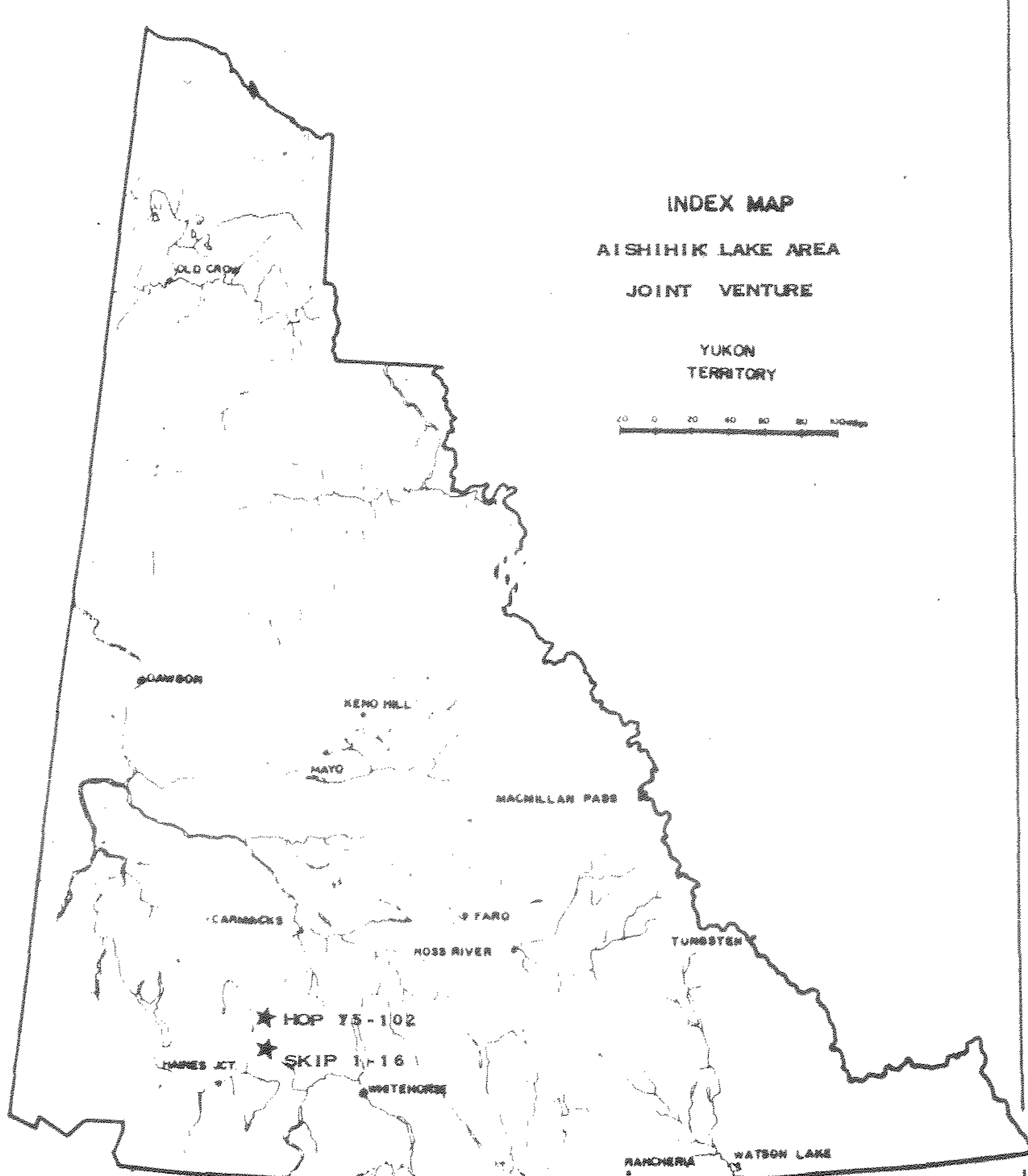

INDEX MAP
AISHIHIK LAKE AREA
JOINT VENTURE
YUKON
TERRITORY
OLD CROW
DAWSON
KENO HILL
MAYO
MACMILLAN PASS
CARMACKS
FARO
ROSS RIVER
TUNGSTEN
HOP 75-102
SKIP 1-16
HAINES JCT.
WHITEHORSE
RANCHERIA
WATSON LAKE

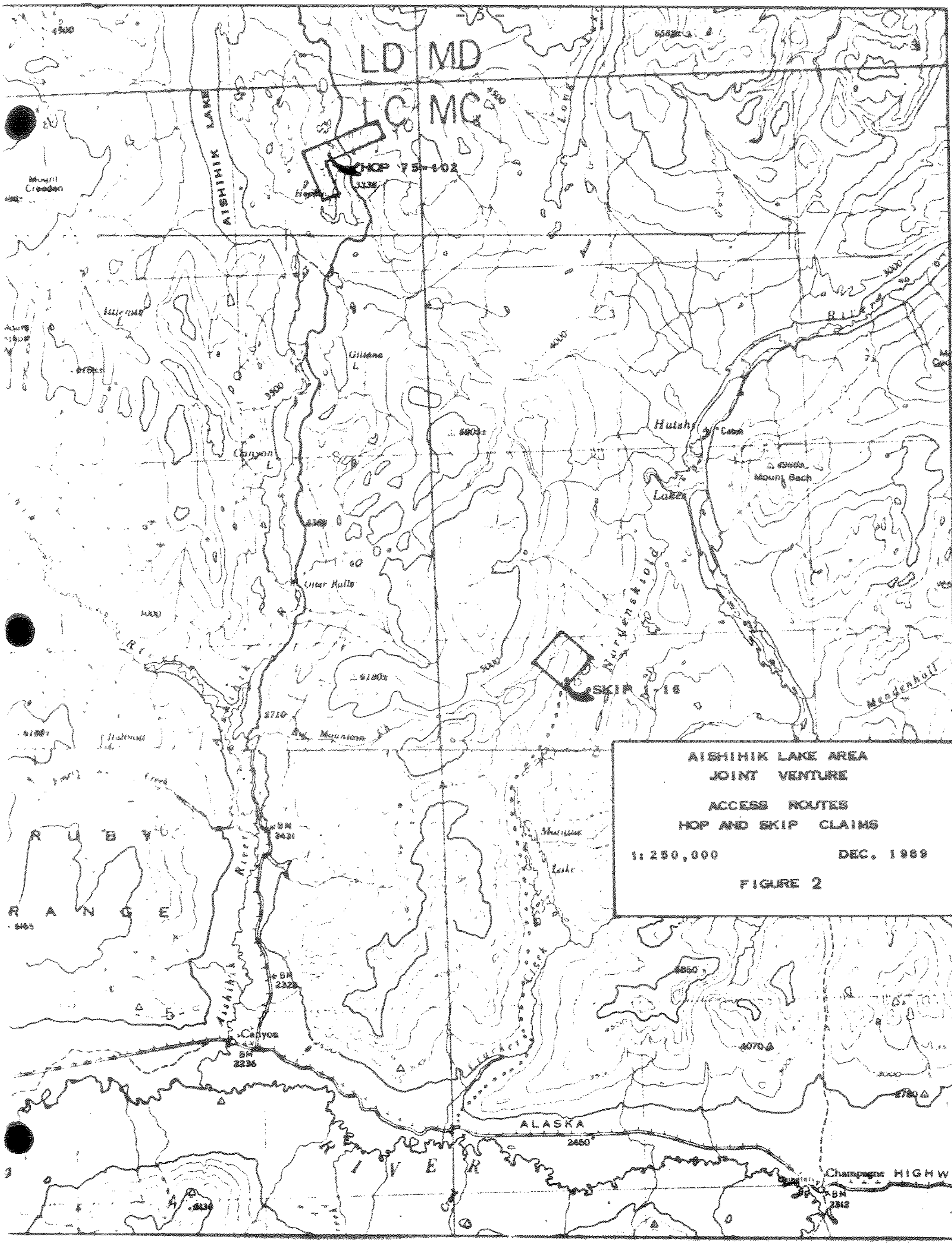
FIGURE 1.

ACCESS AND TOPOGRAPHY

The HOP 75-102 Yukon Quartz claims are located east of Aishihik Lake in south-central Yukon adjoining the HOP-ACME claim group on the north and west. The property can be reached by gravel road north from the paved Alaska Highway at the Otter Falls or Aishihik turn off. Total road distance from Whitehorse is about 175 kilometres and travel time is about 2.3 hours.

The HOP 75-102 claims form a 2 claim wide strip with part of the property covering relatively low ground surrounding the north end of Hopkins Lake in an area occupied by glacial moraine and outwash deposits. West of Hopkins Lake rock ridges consist mainly of limestone. The northeast portion of the claim group covers rugged hillsides underlain by Yukon schists intruded by granodiorite. Extensive skarn zones exist in this area. Overall relief ranges from 990 to 1,375 metres elevation.

The access route by way of the Alaska Highway and Aishihik (Otter Falls) road is illustrated by Figure 2.


AISHIHIK LAKE AREA
JOINT VENTURE
ACCESS ROUTES
HOP AND SKIP CLAIMS
1:250,000
DEC. 1989
FIGURE 2
LD
MD
LC
MC
HOP 75-102
SKIP 1-16
AISHIHIK LAKE
Mount Creedon
Gillans L
Canyon L
Otter Falls
Hutshi Lakes
Mount Bock
Nordenskiold
Mendenhall
RUBY RANGE
Aishihik River
Canyon
BM 2236
BM 2431
BM 2328
ALASKA
2460
Champagne
HIGHWA
BM 2312
RIVER
Lake

CLAIM STATUS

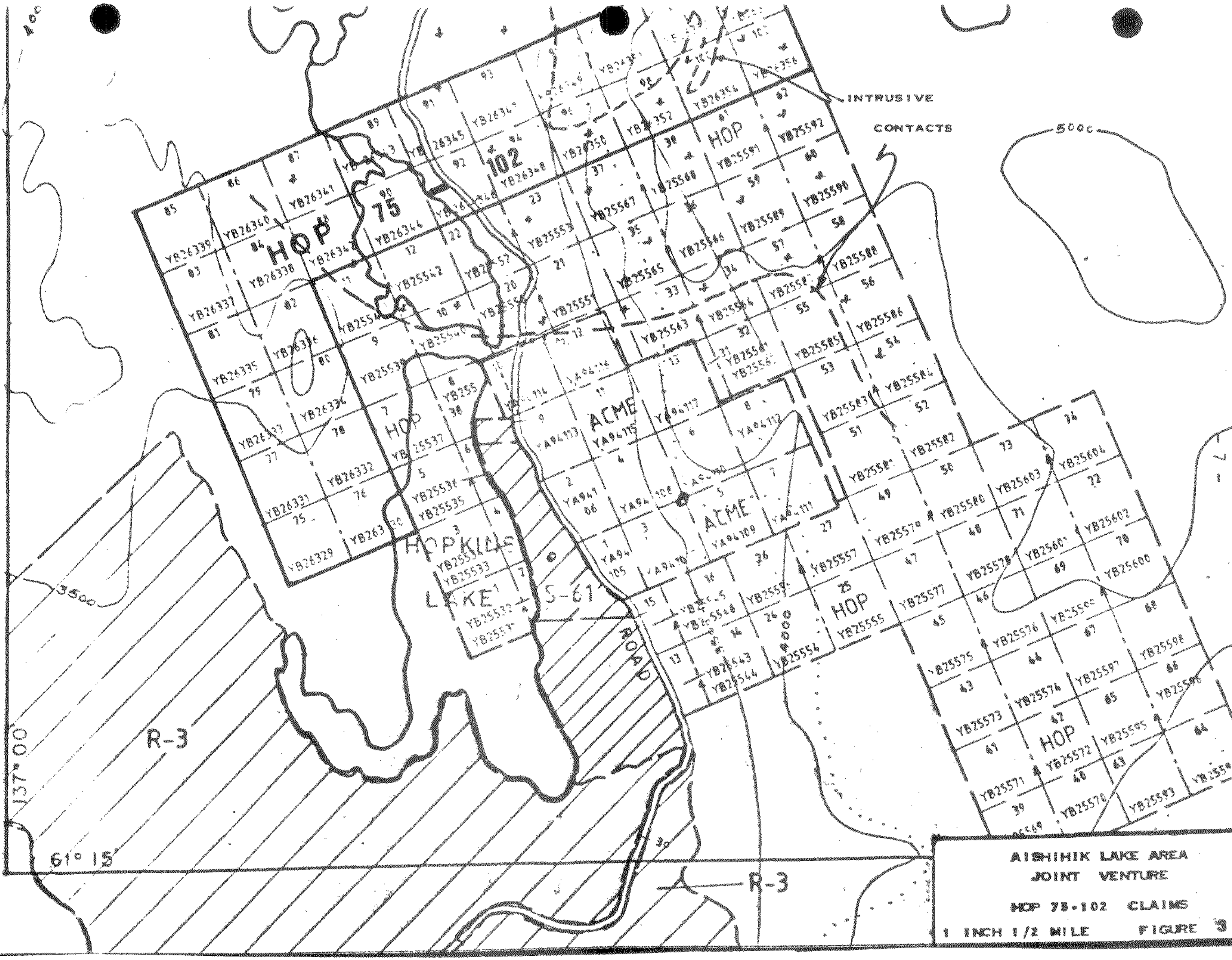
The HOP 75-102 claims were staked as "Area of Mutual Interest" claims under a letter agreement of May 4, 1989. Interests in the claims are 75% Aurora Gold, 25% Casau Exploration.

The following is a tabulation of the claims and their current status.

Claims	Record Number	Date of Record	Recorded Owner
HOP 75-102	YB 26329 - 356	29 June 1989	Aurora Gold LTd.

Figure 3 illustrates layout of the claim group.

As required by the Yukon Quartz Act all claim posts have been tagged with their appropriate metal tags.



AISHIHIK LAKE AREA
JOINT VENTURE
HOP 75-102 CLAIMS
1 INCH 1/2 MILE FIGURE 3

REGIONAL GEOLOGY

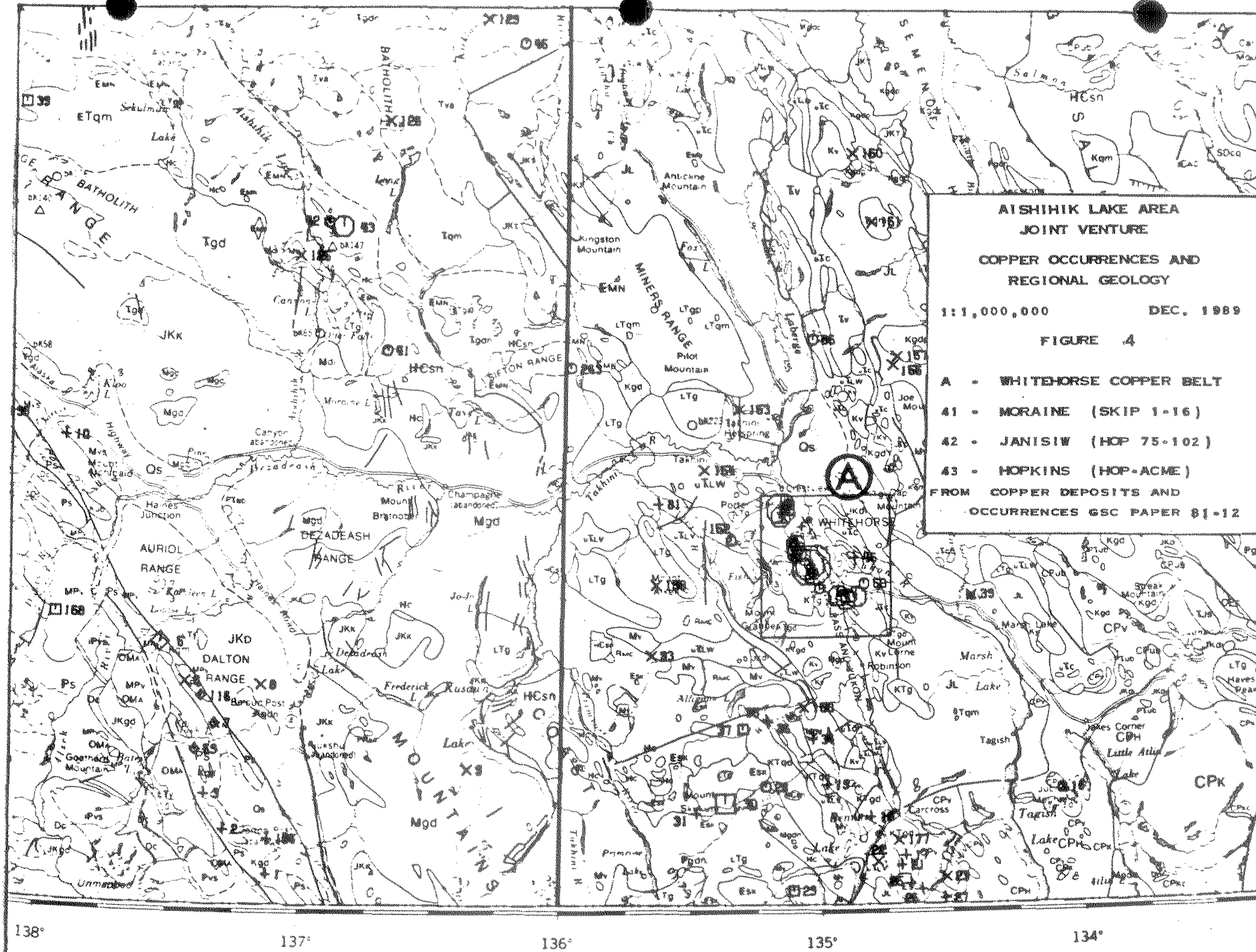
The HOP 75-102 property is shown on Figure 4 Regional Geology (Occurrence 42) in relation to intrusive bodies and mineral occurrences in the region.

The claim group lies within a series of highly metamorphosed sediments considered to be of Proterozoic and/or Paleozoic age and commonly considered part of the Yukon Metamorphic Complex. Locally this complex consists of grey brown weathering biotite quartz schist, micaceous quartzite, marble and skarn.

The biotite schist is in contact with granodiorite of Triassic age and has been intruded by stocks of granodiorite of Cretaceous age. It is cut by younger feldspar porphyry dykes.

To the east, the Yukon Metamorphic Complex is in fault contact with the Upper Triassic age Lewes River Group volcanics and sediment and with the Jurassic age Laberge Group conglomerates, greywackes and siltstones. These sedimentary and volcanic formations are intruded on a regional scale by granitic rocks of the Triassic-Cretaceous Coast Intrusions.

Within both the Yukon Metamorphic Complex and the Lewes River - Laberge Group, iron, copper, gold skarn deposits have been formed where limey sedimentary rocks are in proximity to intrusive stocks related to the Coast Intrusives. Thus mineralized skarns may occur both in roof pendants within the Coast batholith and adjacent to intrusive stocks at considerable distance to the northeast of the main batholith contact. Cockfield (1926) concluded that "... the mineral deposits of the region occur in a belt following the eastern margin of the batholith ..." and "It follows that on the whole the eastern margin of the batholith ... slopes gently eastward with recurrent upward projections whose summits have been laid bare to the east of the main margin".


AISHIHIK LAKE AREA
JOINT VENTURE
COPPER OCCURRENCES AND
REGIONAL GEOLOGY
1:1,000,000
DEC. 1989
FIGURE 4
A - WHITEHORSE COPPER BELT
41 - MORAINE (SKIP 1-16)
42 - JANISIW (HOP 75-102)
43 - HOPKINS (HOP-ACME)
FROM COPPER DEPOSITS AND
OCCURRENCES GSC PAPER 81-12
WHITEHORSE
DEZADEASH RANGE
DALTON RANGE
AURIOL RANGE
MINERS RANGE
SIFTON RANGE
138°
137°
136°
135°
134°

The mineralogy of the skarn deposits is, in general, similar whether they occur in the older Yukon Metamorphic rocks or in the Triassic and possibly Jurassic rocks. Magnetite, sometimes with hematite as in the Macks deposit, chalcopyrite, with considerable bornite in some of the Whitehorse Copper deposits, and gold with low values in silver are the more important minerals. Pyrrhotite is common as a minor and sometimes major constituent. Traces of molybdenite and scheelite occur in some skarns.

Although exploration of the copper gold skarns has been concentrated on their economic viability for copper production, it was the purpose of the regional exploration portion of the Aurora - Casau joint venture to explore for gold bearing skarns possibly similar to the Fortitude deposit, Nevada (P.R. Wotrub, et al, 1987). The demonstrated gold content of the copper skarns at Whitehorse and Aishihik Lake support this view and the occurrence of rich gold deposits of Tertiary epithermal type in the Mt. Skukum area, together with very late stage epithermal type "chalcedony breccias" on the HOP-ACME claims suggests a possible late stage gold enrichment is possible.

The HOP 75-102 property was glaciated and extensive unsorted glacial till, with many large boulders, covers some of the elevated portion of the property. Glacial kames, kettles and variable till deposits occupy the low ground along the Hopkins Lake valley.

PROPERTY GEOLOGY

Procedure

Mapping in the main outcrop areas of the claim group was done by hip chain and compass using Xerox reproductions of airphotos A14861-36, 37 and 38. Data from airphotos and field notes has been plotted on Map I which is an enlargement of a portion of the available 1:50,000 scale topographic map 115H/7H. Map I is at a scale of 1:10,000. Future mapping will require establishment of grid lines or use of orthophoto maps. Prior to the current mapping, insufficient information was available to justify the expenditure required to provide either survey base.

Outcrop Distribution

Spotty rock outcrops occur east of the Aishihik road north of HOP 93 and near the boundary of HOP 93 with HOP 95. To the east, steep rock slopes rise through HOP 95-98 which were assumed to consist of granodiorite. However, mapping high on that slope on HOP 97, 98 located extensive skarn horizons within quartzites and micaceous gneiss. The slopes below these exposures deserve more detailed examination, particularly northeast of the main airphoto linear where horizontal, light coloured structures have been noted from a distance. In the plateau area on claims 99 - 102, mapping was severely hampered by rain and dense fog. Visibility was cut to less than 50 metres. There is considerable overburden (glacial till) on claims HOP 101, 102.

No outcrop was found on HOP 84, 87 - 92. This area is underlain by parts of Hopkins Lake and by glacial till, kames and potholes. Outcrop may occur in the southeast corner of HOP 94. That area has not been traversed.

Claims HOP 75 - 77 and 79 have not been traversed except along the claim line between HOP 77 and 78. The ridge in central HOP 75 and 77 may have outcrop but none was observed from the higher slopes. The ridges running from central HOP 77 through central HOP 79 show dark outcrop assumed to be gneiss with feldspar porphyry dykes. Morin's map (p. 99, Yukon Geology and Exploration, 1979-80) indicates schist, amphibolite and feldspar hornblende porphyry dykes along these ridges.

The extensive limestone exposures west of Hopkins Lake received most attention because of the copper, gold assays obtained in that area. The underlying schist, gneiss complex is well exposed in part of this area. More intrusive dykes were encountered within the schist-gneiss than within the limestone. No evidence was found to confirm the main intrusive contact in the vicinity of HOP 10-12, 86-88 indicated on Morin's map.

Rock Units

6	Chalcedony Breccia
5	Feldspar Porphyry Dykes
4	Hornblende Biotite Granodiorite a) Monzonite
3	Skarn
2	Limestone
1	Quartz Mica Schist, Gneiss a) Quartzite

Unit 1 Quartz Mica Schist

Morin describes this gneiss as "greyish brown weathering and grey on fresh surface, the gneiss has medium to coarse grained flakes of mica aligned along the gneissosity and 2 to 5 mm thick bands of quartz and minor feldspar are between these mica rich layers. The rock commonly breaks along the foliation and fragments display a lustrous sheen."

The schist varies gradationally from a dark "dirty" nearly black rock through all gradations to quartzite. Schistosity, imparted by varied amounts and degree of development of micaceous partings, is parallel to bedding unless modified by later shearing. Locally thin beds of finer grained mica schist occur within the quartz mica schist.

Unit 1(a) Quartzite

The quartz mica schist grades through quartzitic schist to clean quartzite. This change may be observed both laterally along strike and vertically. On occasion a complete transitional section from quartz mica schist through quartzite schist to "clean" quartzite may be observed. Beds are generally thin, in the order of a few millimeters to a couple of centimetres as a rule. Much quartzite splits along apparent bedding showing sparkling surfaces lightly coated with sericite. The quartzite is generally fine grained although locally broken surfaces across bedding will reveal relatively coarse sand grains.

Unit 2 Limestone

Beds of limey rock which scratch easily and effervesce with cold, dilute (10% - 15%) hydrochloric acid have been classified as limestone. Limestone horizons vary from about one metre to about 30 metres in total thickness. Individual beds, where bedding is apparent, are generally thin. Exposures of a rather friable, easily fragmented limestone were mapped as "thin bedded" limestone. The weathered surface is marked by small "shards" of limestone often crumbly or sugary in texture. The limestone is white to light grey in colour.

Unit 3 Skarn

Major skarn horizons occur on claims HOP 97, 98, 99 interbedded, where mapped, with thin bedded impure quartzites and, just west of the small pond on HOP 99, with thin bedded limestone. These skarns are extremely variable in composition over relatively short distances with coarse red garnets, epidote, tremolite or magnetite being locally predominant. Copper mineralization as chalcopyrite and malachite was noted particularly on HOP 98.

On the east side of the pond on HOP 99 the skarns are cut by several zones of "chalcedony breccia" and are overprinted by a strong tan rusty coloration.

Within the thick limestone horizons west of Hopkins Lake the skarns are generally small in size with lenses (boudins) of pale green tremolitic skarn being fairly prominent on the east side of the main limestone ridge. These boudins range up to 10 metres long and 3 metres thick and may be compressed out at their ends to a long tapering tail. A series of these probably represent a once continuous bed. No mineralization of importance was seen with this skarn occurrence.

On the west side of the main limestone ridge a thin, 1 metre thick, copper bearing skarn was encountered above the south trending fault well within the limestone. This skarn has sharp upper and lower contacts with limestone. It is possible this horizon corresponds to the fragmented and broken skarn, dyke, breccia complex with heavy pyrrhotite, minor chalcopyrite mineralization to the south on HOP 80. Further mapping is warranted.

At several locations within the limestone complex small knots of skarn and sulphide occur. These may be in the order of 0.3 to 1 metre long and 0.2 metres thick.

At several other locations local skarn occurrences are associated with dykes of andesitic, feldspar porphyry or grey granodiorite composition. At these locations copper mineralization in the form of chalcopyrite and malachite and/or azurite may occur.

On HOP 83 two lenses, or short beds, of dark green diopside? skarn were observed within the limestone. A small dark garnetiferous skarn occurs associated with a dyke of hornblende feldspar porphyry.

Unit 4 **Hornblende Biotite Granodiorite**

Northeast of Hopkins Lake areas of hornblende biotite granodiorite occur on HOP 93 - 102 as well as on the HOP-ACME claims to the south. This rock type is generally magnetic. Grain size varies from medium fine to medium coarse and colour from dark to light grey. In general the rock is fresh but in certain areas it is seen to intrude an older diorite? phase of dark fine grained intrusive. The granodiorite in such areas may be somewhat darker, finer grained and contains angular to rounded fragments of the dioritic intrusive.

Where the granodiorite intrudes the schist-gneiss complex the contact may be somewhat gradational with some apparent assimilation of the schist.

On the east and west sides of the local rounded peak on HOP 98 the granodiorite is perhaps darker in colour, strongly jointed vertically trending north and, near the contact, jointed at dips of 20° to 45° to the south. In these areas some joints are lightly coated with malachite though the rock itself is fresh and unmineralized between the joints. It is assumed the malachite is a result of assimilation of, or weathering of, nearby copper bearing skarns.

Narrow dykes of granodiorite were observed on HOP 9, 11, 82 intruding limestone. Contacts are sharp and may, or may not, have skarn in the vicinity.

Unit 4(a) Monzonite

The long narrow ridge east of the fault and creek on HOP 101, 102 and extending onto HOP 61 - 62 within the tractor trenches consists of a dark grey to black fine to coarse grained basic looking rock. A specimen containing chalcopyrite was found on HOP 61 and a petrographic report identifies the rock as monzonite. This rock is intruded by the hornblende biotite granodiorite. No mineralization was seen on the HOP 101 - 102 claims.

A copy of the petrographic report is included in Appendix I.

Unit 5 Feldspar Porphyry Dykes

The schist-gneiss and limestone complex has been intruded by numerous dykes ranging in width from 0.3 to 20 metres in width. Most of these dykes trend north to north 20° east and contacts, although sometimes irregular, appear to be near vertical. Varieties include a fine dense black basaltic variety with pale creamy feldspar phenocrysts, grey fine to medium grained hornblende biotite feldspar porphyry and fine grained greenish grey andesitic? dykes.

Margins are generally finer grained to chilled. Basaltic and andesitic dykes intrude the monzonite and granodiorite in the south portions of HOP 100, 102 and it is generally assumed this family of variable intrusive dykes is younger than the stock-like intrusive bodies. West of the southwest corner of HOP 85 the dyke-like intrusive beside the postulated fault (linear) seems to change composition from basaltic feldspar porphyry to granodiorite. More detailed mapping might locate contacts between these phases however, North of HOP 93 small aplitic dykes intrude the schist/gneiss complex and the main intrusive body is assumed to underly these outcrops.

Unit 6 Chalcedony Breccia

The term "chalcedony breccia" is adopted from mapping on the HOP-ACME claims. This unit consists of variable jointing, fracturing, brecciation, "ankerite" rusty alteration, quartz and chalcedony veining along steep north trending zones generally 1 to 10 metres wide. On the HOP 75 - 102 claims these zones are particularly prominent in the northeast wall of the south trending fault on HOP 98, east of the pond on HOP 99 and on the spur on the west side of the limestone ridge on HOP 82. Many other occurrences exist.

In general, where reasonably well developed, these zones contain white quartz veining, drusy quartz and chalcedony near the middle of the zone flanked by fractured rock, apparently altered to a fine grained "ankerite" tan rusty colour. It is generally difficult to obtain a fresh surface for examination in this altered zone. Usually no significant sulphide mineralization is evident although a little fine pyrite may be found.

These "chalcedony breccia" zones on HOP-ACME include breccias with sharp to rounded fragments rimmed with silica and sometimes fine quartz crystals. These zones have been found to cut all rock types including skarns, granodiorite and all varieties of dykes.

Wide zones of skarn are altered by these chalcedony breccias east of the pond on HOP 99. The granodiorite east of the fault in the west portion of HOP 98 is cut by multiple zones giving the area a light tan rusty appearance. The major alteration zone on the spur on HOP 82 is cut by multiple zones and the character of the original rock is nearly obliterated.

Mineralization

Exploration on the HOP-ACME claims has outlined significant showings of copper-gold mineralization in skarns. On the HOP 75-102 claim group prospecting and mapping has concentrated on locating similar skarn mineralization. The "chalcedony breccia" zones appear favourable for precious metals but experience to date indicates no economic values.

Minor occurrences of chalcopyrite and molybdenite in intrusive rocks suggest the possibility of porphyry copper style mineral deposits but, to date, no significant amount of such mineralization has been located.

Copper - Gold Bearing Skarn

The most extensive skarn development observed occurs on HOP 97-98. Initial observations indicate two main skarn bands up to 10 m thick separated by quartzite. Chalcopyrite and malachite occur sporadically. Prospectors' grab samples returned 0.93% Cu, 75 ppb Au, 3.4 ppm Ag on the claim line and 665 ppm Cu, 435 ppb Au, less than .2 ppm Ag about 200 metres to the south. A composite sample of the main skarn has been taken for 32 element ICP analysis. This sample is made up of random prices along 180 metres of strike and is not representative of exposed mineralization. Significant values include 8123 ppm Cu, 12.1 ppm Ag, 40 ppb Au, 61 ppm Mo, 112 ppm W.

On HOP 80 and 82 two separate exposures of copper bearing skarn were noted which lie on trend with each other and may prove to be a continuous band. This skarn is thin, 1 to 5 metres in thickness, and is mineralized with chalcopyrite and malachite where enclosed by limestone and by massive pyrrhotite, chalcopyrite, pyrite and arsenopyrite where brecciated and intruded by dykes near a SE trending fault. Assay of large talus fragments returned 0.73% Cu, 0.06 oz. Ag and 0.009 oz. Au.

Prospecting sample 10-4-1 was taken from a highly oxidized skarn within limestone at the contact of a feldspar porphyry dyke. A 5 m x 3 m pit had been blasted here. Mineralization, heavily oxidized, includes pyrrhotite and fairly massive chalcopyrite. The sample assayed 0.016 oz. Au, 5.83 oz. Ag, 19.2% Cu, 0.22% WO_3. Sample 10-4-2, 80 metres to the north of 10-4-1, was taken from similar skarn with magnetite and chalcopyrite. That sample assayed 0.162 oz. Au, 1.41 oz. Ag, 7.92% Cu and 0.03% Mo. This site was not positively identified during mapping but this or similar small skarn pods were observed in the vicinity. These pods have no significant size but occur in fractured areas of limestone or on the contacts of intrusive dykes.

Sample 10-2-5 from dark green skarn on HOP 80 assayed 410 ppb Au, 10.2 ppm Ag, 0.72% Cu, 0.159% WO_3, 0.09% Mo. Lenses of skarn in this area are generally limited to boudin remnants of former beds.

On the east slopes of the limestone ridge on HOP 78, 80, 82 copper minerals occur in skarns associated with massive limestone, feldspar porphyry dykes and faulting. Sample 10-4-3 assayed 80 ppb Au, 5.0 ppm Ag, 0.38% Cu while Sample 10-4-4 assayed 125 ppb Au, 23.2 Ag, 1.54% Cu, 0.10% WO_3.

Copper Bearing Granodiorite

A specimen of chalcopyrite bearing monzonite had been found on HOP 61 which assayed 0.46% Cu. Tractor trenches in that general area were examined during this mapping program without finding similar mineralization.

On HOP 98 strong jointing exists which is lightly coated with malachite in certain areas. The granodiorite between the joints is fresh, massive and unmineralized. No material was seen which might contain economically significant copper values.

"Chalcedony Breccia" Zones

North striking fracture zones had been located on the HOP-ACME claims. These zones exhibit a characteristic tan rusty "ankerite" alteration over varied width outward from quartz veining varying from thin quartz stringers to silicified and quartz veined zones to breccia zones with silicified fragments, silica rimmed fragments, drusy quartz veining, limonite and hematite alteration.

Similar zones are widespread on the HOP 75-102 claims. Widths of single zones range up to 10 metres. Certain areas, however, contain multiple zones and result in wide, altered, rusty looking areas. These are most marked within skarns east of the pond on HOP 99, within the jointed granodiorite in the west portion of HOP 98 and on the spur on the west side of the limestone ridge on HOP 82. Other strong zones occur on the east side of the ridge on HOP 78, the nose of the limestone ridge on HOP 80 and the east face of the ridge on HOP 81, apparently below the limestone contact.

These zones rarely contain fine pyrite mineralization. On HOP 78, 80, 81 they also contain minor copper mineralization, primarily malachite.

The following samples were taken from extensively buff altered rocks cut by "chalcedony breccia" on the face of the spur, west side of the limestone ridge, HOP 82.

Prospectors Sample	Gold ppb	Silver ppm	Copper ppm	Mo ppm	As ppm
10-2-1	5	0.2	309	7	-
10-2-2	560	1.0	497	28	256
10-2-3	435	0.2	665	16	-

Copper in Limestone

Chalcopyrite and malachite occurs on fractures in limestone in areas close to strong faulting on both sides of the limestone ridge HOP 80 and in fairly extensive talus above the spur on HOP 82.

Limestone Breccia

A persistent zone of brecciated limestone on the west slopes of the ridge, HOP 82, reaches widths of 15 metres. Minor silicification and the presence of limonite suggested the possibility of epithermal precious metal mineralization. A sample containing no visible sulphides returned 238 ppm Cu, 5 ppb Au, 20 ppm Mo.

Structure

Mapping on the HOP-ACME claims had located small scale isoclinal folding within the schist gneiss complex in the lowest stratigraphic exposures below the skarn limestone horizons within the grid area east of Hopkins Lake. Good exposures of similar isoclinal folding on a small but complex scale west and northwest of HOP 85 shows fold crests plunging 15° at N20°E. West limbs dip at about 10°-15° west while east limbs dip about 65° west.

On claims HOP 83, 85 dips and strikes observed in the massive limestone areas, including narrow beds of skarn and an outcrop of schist, indicate dips of 10° to 30° east on the west side and top of the ridge but 75° west on the east side of the ridge.

On claims HOP 80, 82 the limestone dips east at about 30° to 35° on the west side of the ridge. No satisfactory dips were recorded on the east side of the ridge.

Overall the rock sequence is considered to be a complex of isoclinally folded schists and gneiss overlain by a thick and variable sequence of limestone and skarn with interbedded schist and quartzite. East of Hopkins Lake this sequence strikes north and dips east at 10° to 30°. It is overlain by similar schistose metasediments.

The sedimentary sequence is intruded by fine grained dark diorite? and monzonite as seen on HOP 99-102. These rocks are all intruded by more extensive grey granodiorite as a stock like intrusive east of Hopkins Lake and by granodiorite dykes in other areas.

A younger family of feldspar porphyry dykes, of varied appearance and composition, intrudes the schist, limestone, skarn, granodiorite complex. These dykes, and possibly sills, strike north or slightly east of north, have sharp chilled to brecciated contacts and sometimes exhibit silicification or quartz veining along their contacts.

A late series of north trending fractures contain quartz veins, drusy quartz, chalcedony, silicified breccias and relatively wide zones of bleaching and tan coloured alteration. These are essentially vertical and cut all rock types.

Airphoto linears mark topographic structures which are thought to reflect fault structures. These fall into several overall trends at about N30°W, N05°-20°E and N45°-75°E. Relative movement on these faults is uncertain. Slickensides were observed on north trending faults which indicated horizontal movement. In general it is presently thought that movement is generally west side down.

INTERPRETATION

The author considers that the only mineralization of economic significance so far indicated in the Hopkins Lake area consists of copper, gold, silver mineralization associated with skarn horizons.

The skarns appear to have developed within chemically reactive sedimentary beds of variable thickness and extent within a basin of interbedded limestone, reactive sediments, greywackes and quartzite. The sequence of sedimentation appears to have been repetitive and, on the HOP-ACME claims, some five or more separate horizons of extensive skarn development are evident within a 300 metre vertical section of sediments. Limestone horizons within the package show rapid facies changes to metagreywackes and quartzites - currently mica schist and gneiss. Thickness of skarn development has no direct relationship to the thickness of associated limestone. In certain areas strong skarn development has no apparent associated limestone and vice versa.

On HOP 78-86 considerable thicknesses of limestone occur with only thin skarn horizons many of which have been disrupted by deformation and now occur as boudins. Along certain skarns, within isolated lenses, near the contacts of certain dykes of varied composition (granodiorite, basaltic feldspar porphyry, hornblende feldspar porphyry and andesite) and along "chalcedony breccia" zones as well as on fractures within massive limestone sulphide mineralization and copper carbonates occur. Values in copper, gold, silver, tungsten and molybdenum have been obtained from reconnaissance rock sampling.

Intensive fracturing and alteration occurs in outcrops below the limestone ridge on HOP 80 and into the east facing hillside on HOP 81. Mineralization appears to be restricted to these zones and to fracture systems above the lower limestone contact in this restricted area.

Limestone, small skarns, intrusive dykes and fracture systems along the ridge north from HOP 81 through HOP 83 and 85 are barren.

Intrusive dykes within the schist-gneiss complex west of HOP 85 show no mineralization.

It is proposed that there may be a substantial mineralized structure below the limestone ridge on HOP 80, 82 and that the mineralized occurrence on that ridge consist essentially of "leakage" upward along faults and intrusive dykes.

The copper stain occurring on joints in the granodiorite on HOP 98 is considered to be derived from intrusion of granodiorite into older copper bearing skarn horizons.

RECOMMENDATIONS

(1) The skarn horizons on HOP 97-100 warrant detailed mapping and rock chip sampling.

(2) Copper geochemical anomalies indicated by exploration conducted by Mitsubishi in 1968 indicate that mapping and sampling should be carried out on HOP 95, 96 and to the south.

(3) Soil sampling and more detailed mapping should be conducted in the alteration area and lower limestone horizons below elevation 3,700 feet on HOP 78-82. This work should be controlled by a picket line grid.

(4) If mobilization costs can be kept to a minimum, it would be desirable to fly HOP 78-84 with a precise magnetometer survey at two elevations. One survey should be at constant 4,000 ft. elevation and the second, on the same flight lines, at about 4,300 - 4,400 ft. elevation. The resulting profiles should help define the lower contact of the limestone and the presence of any substantial skarn, or possibly porphyry, type mineralization.

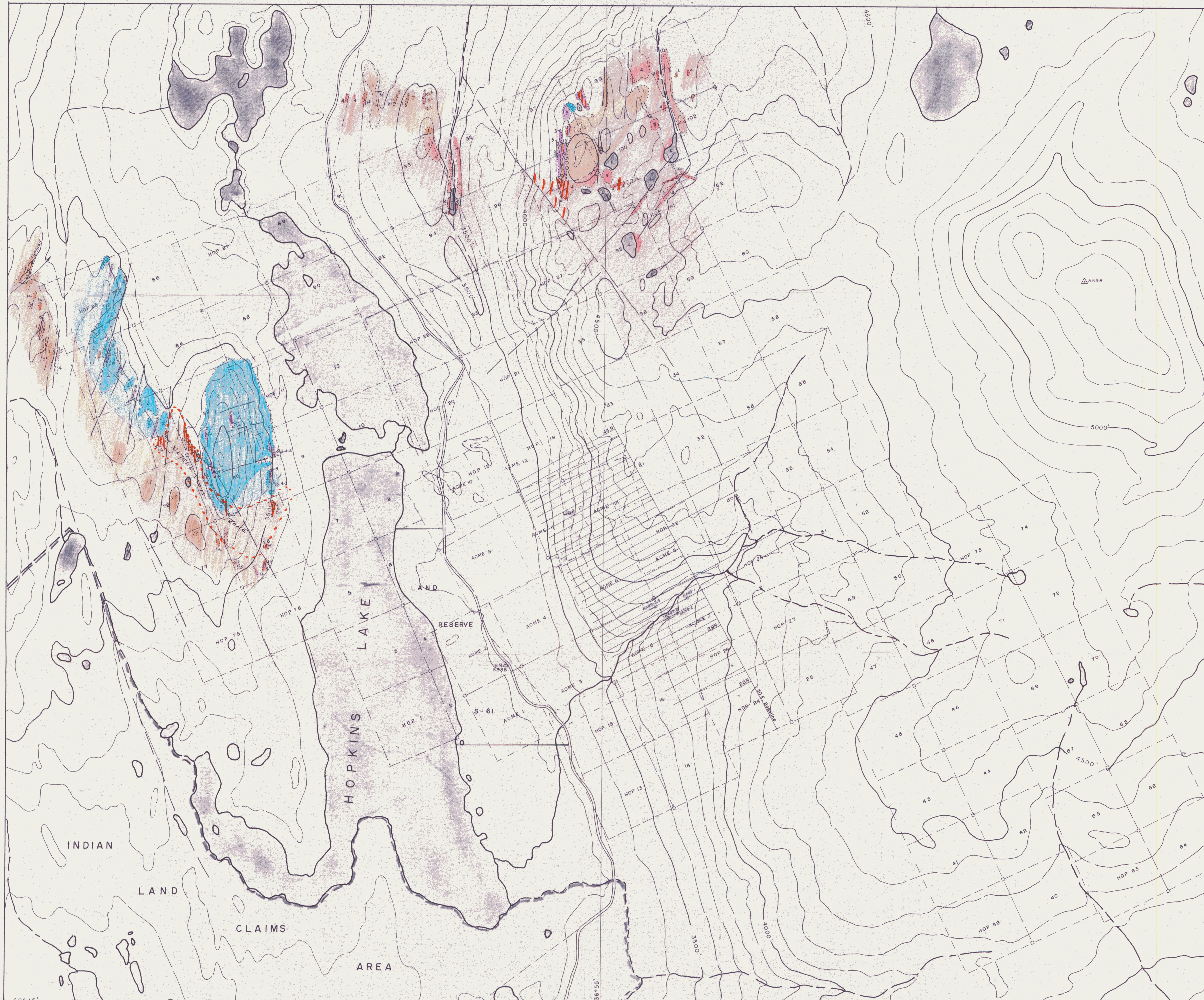
COST STATEMENT

HOP 75 - 102 CLAIMS

Claim tagging and prospecting		
L. Brault, October 1-5, 1989		$ 900.00
J.C. Stephen, October 3, 4, 1989		437.50
Chemex Labs		334.79
1989 Camp Costs not included		-
Geological mapping		
J.C. Stephen, June 1-8, 1990 and report		2,000.00
Vehicle rental and operation within Yukon		
June 3-8: 6 days at 35	210.00	
1,504 km at $0.35	526.40	
Gas: 188 l at $0.56	105.20	841.68
Camp, food, fuel		121.01
Rossbacher Labs		87.08
Hotels, travel outside Yukon not included		-
		$ 4,722.06

This report respectfully submitted
J.C. Stephen Explorations Ltd.

J.C. Stephen
June 20, 1990



LEGEND

- 5 CHALCEDONY BRECCIA
- 5 FELDSPAR PORPHYRY DYKES
- 4 HORNBLENDE BIOTITE GRANITE MONZONITE
  - a
- 3 SKARN
- 2 LIMESTONE
- 1 QUARTZ MICA SCHIST, GNEISS
  - a QUARTZITE
- BRECCIA
- AIRPHOTO LINEAR
- FAULT

N

100 0 200 500
metres

MAP#115H/7 Doc#092857 169

HOP 75-102

J.C. STEPHEN EXPLORATIONS LTD.

CASAU EXPLORATION LTD.
HOP-ACME OPTION & JOINT VENTURE
WHITEHORSE M.D. NTS 115H/7

CLAIM LOCATIONS
GEOLOGY

SCALE 1:10,000
ELEVATIONS IN FEET.
092857
JUNE 1990
OCTOBER 1989

MAP I

APPENDIX I

ROCK SAMPLE RECORDS
PETROGRAPHIC REPORT

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET — ROCK GEOCHEM SAMPLING

NTS 115 H 7

SAMPLER LARRY BRAULT

PROJECT CASAU EXPLORATION HOPACME PROJECT LINE

DATE SEPT. 29 TO OCT. 2

AIR PHOTO No.

	SAMPLE NUMBER	LOCATION	ROCK TYPE	ALTERATION	MINERALIZATION	STRIKE / DIP	ADDITIONAL REMARKS	APPARENT WIDTH	TRUE WIDTH	ASSAYS Au ppb	Ag ppm	Cu ppm	Mo ppm
(1)	66639 A	235M. S/E OF #2 HOP 14	SILICIFIED ZONE	SILICIFICATION CALCITE CRYSTALS	NONE NOTED		FIELD SAMPLE # 9-30-1 DRUSY QUARTZ VEINS			10	<.2	9	2
(2)	~~66640 A~~	~~[illegible] #2 HOP 61~~	ANDESITIC WALL ROCK	F.G. DARK GREY,	DISSEMINATED		PY. & CPY						
(3)	66640A	ON OLD CAT TRAIL #2 HOP 61	C.G. DIORITE BOOKS BIOTITE	NARROW QTZ + APLITE VEINS MoS2 CPY	DISSEM. & FRACTURE & CPY		FIELD SAMPLE 10-1-1 ROCK MAGNETIC			.001 oz/t 40	.05 2.0	0.46% 4500	23
(4)	67339	SEE MAP FOR LOCATION	DIOPSIDE CALC SILICATE SKARN		MAGNETITE + CPY		GRANITIC + BASALTIC DYKE BELOW FIELD SAMPLE 10-4-3			.002 80	0.13 5.0	0.38% 4090	<1
(5)	67340	FROM ADIT #1 HOP 11 3.5m @ 247° + 15am @ 180°	CALC SILICATE SKARN		MALACHITE, CPY MINOR OXIDIZED, AZURITE LITTLE		PITS BLASTED, ON CLIFF FACE LIMESTONE FOOTWALL FOUND 10-4-4		WO3 0.100	.004 125	0.70 23.2	[illegible] 1.54 10,000	[illegible] 209
(6)	67341	35N 25+75E TRENCH #1	MAG SKARN		MAGNETITE		SEE NOTES 1			10	2.0	1190	<1
(7)	67342	"					" " 2			10	0.6	892	<1
(8)	343	"					3			<5	<.2	146	<1
(9)	344	"					4			50	1.0	835	9
(10)	345	"					5			<5	0.4	33	<1
(11)	346	"					6			<5	0.4	105	2
(12)	347	"					7			<.002 5	0.03 1.6	0.39% 3660	<1
(13)	67348	TRENCH 3			MAGNETITE + CPY		8			.004 100	0.03 1.8	0.32% 3150	<1
(14)	67349	TRENCH 2			MAGNETITE		9			.014 510	<.01 0.2	0.01 125	<1
(15)													
(16)													
(17)													
(18)													
(19)													
(20)													

J.C. ST[illegible]HEN EXPLORATIONS LTD.

GEOCHEMICAL DATA S[illegible]ET — ROCK GEOCHEM SAMPLING

NTS 115 H7

SAMPLER LARRY BRAULT

PROJECT AURORA - HOP 75 TO 102

LINE

DATE OCT. 1 & 2, 4

AIR PHOTO No.

	SAMPLE NUMBER	LOCATION	ROCK TYPE	ALTERATION	MINERALIZATION	STRIKE / DIP	ADDITIONAL REMARKS	APPARENT WIDTH	TRUE WIDTH	ASSAYS Au ppb	Ag ppm	Cu ppm	Mo ppm
1)	66641A	#1 HOP 101	THIN BEDDED QTZ. MICA SCHIST + CALC SILICATE		DELIM. CPY & PY		FIELD SAMPLE 10-1-2 NON MAGNETIC			<5	<.2	124	<1
2)	66642A	120M. EAST #1 HOP101 CR. BED	DARK GREY F.G. ANDESITE		DELIM. PYRRY		FIELD SAMPLE 10-1-3			20	<.2	76	<1
3)	66643A	#1 HOP 99	SCARN DIOPSIDE		MAGNITITE		FIELD SAMPLE 10-1-4			40	<.2	269	3
4)	66644A	200M. WEST OF #2 HOP95	SCARN C.G. PYROXENE?		MALICITE C.PY SPOTTY MAGNETIC		FIELD SAMPLE 10-1-5			<.002 75	.07 3.4	0.93 >10000	57
5)	66645A	200M. WEST OF #2 HOP95	CALC SILICATE	SILICIFIED	MINOR MALICITE TAN TO ORANGE BROWN	- MIN. SC	FIELD SAMPLE 10-1-6			<5	<.2	1290	150
6)	66646A	232M SE OF #2 HOP 81	ANDESITE DYKE		MINOR DECIMATED PYRITITE		FIELD SAMPLE 10-2-1			<5	0.2	309	7
7)	66647A	230M. S/E OF #2 HOP 81	F.G. TREMOLITE SCARN POROUS YELLOW TAN		MINOR MALICITE OXIDISE		FIELD SAMPLE 10-2-2			.016 560	.04 1.0	0.05 497	As 25 28
8)	66648A	280M. S/E OF #2 HOP95	POROUS GOSSAN ZONE DARK RUSTY		CLEAR TO YELLOWISH STRIATED CRISTALS IN CAVITY	= GYPSUM	FIELD 10-2-3			.012 435	.07 <.2	0.06 665	16
9)	66649A	300M. S/E OF #2 HOP 79	DARK GREEN GREY F.G. SCARN		LIME & SPLASHES CPY		FIELD SAMPLE 10-2-5		WO3 0.159%	.010 410	0.29 10.2	W 1130 0.72% 7470	Zn .090 556
10)	67336	340M. S/E OF #2 HOP 78	DARK LIMEY SCARN		MALICITE - CPY PYRITITE		FIELD SAMPLE 10-2-6			.002 60	0.19 5.6	0.58% 5650	18
11)	67337	72° FROM No1 HOP TOP OF RIDGE	DIOPSIDE SKARN		MALACHITE AZURITE MASSIVE CPY		PIT 5m x 3m HEAVILY OXIDIZED FIELD SAMPLE 10-4-1	WO3	Zn 0.07% 0.221%	As 145 .016 570	5.83 >200	Zn 1385 19.20% >10,000	W 730 3
12)	67338	80m @ N10E FROM 10-4-1	DIOPSIDE SKARN		MAGNETITE & CPY		4m BAND OF SKARN 0.5m THICK. AS FOOTWALL 10-4-2			As 68 0.183 3450	1.41 61.2	Zn 654 7.92% >10,000	W 86 0.03 227
13)													
14)													
15)													
16)													
17)													
18)													
19)													
20)													

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET — ROCK GEOCHEM SAMPLING

NTS 115 H/7

SAMPLER JCS

PROJECT CASAU - AURORA JV
HOP 75-102.

LINE

DATE JUNE 3-8 1990

AIR PHOTO No.

	SAMPLE NUMBER	LOCATION	ROCK TYPE	ALTERATION	MINERALIZATION	STRIKE / DIP	ADDITIONAL REMARKS	APPARENT WIDTH	~~TRUE WIDTH~~ Co ppm	Au ppb	As ppm	Cu ppm	Ag ppm
1)	30301	HOP 61	"EPITHERMAL" FRACTURE ZONE	ANKERITIC			EPITHERMAL QTZ VEINING IN MID ZONE. TRACTOR TRENCH	10 m.	6	5	29	57	0.1
2)	302	HOP 98	COMPOSITE SAMPLE SKARN	RED GARNET, EPIDOTE, + MISC SKARN TYPES.	MAGNETITE CPY, MAL		LOWER OBSERVED SKARN HORIZON ALONG 180 m. W. FACE		16	40	17	8123	12.1
3)	303	HOP 99	COMPOSITE SAMPLE OF SKARN AND EPITHERMAL ANKERITIC & QTZ VEINED ALTERATION ZONES				EAST OF POND		1	5	23	99	0.1
4)	304	HOP 80	LIMESTONE BRECCIA ZONE WITH OXIDATION AND SOME SILICIFICATION.		LIMONITIC		222 m NORTH OF No 1 POST HOP 79, 80, EAST OF CLAIM LINE	15 m	4	5	2	238	0.1
5)	305	HOP 80	SAMPLE OF HEAVY PYRR, PY, ASPY?, CPY TALUS FRAGMENTS FROM ZONE IN CLIFF FACE. (AT FAULT 135°			35° SW)	348 m NORTH OF No 1 POST HOP 80 EAST OF CLAIM LINE	5 m?	113	—	2	6039	2.3
6)	~~306~~												
7)													
8)													
9)													
10)													
11)													
12)													
13)													
14)													
15)													
16)													
17)													
18)													
19)													
20)													

SAMPLE 66640A MONZONITE

Estimated mode

Plagioclase	45
K-feldspar	18
Quartz	1
Sericite	1
Biotite	10
Hornblende	17
Carbonate	4
Chlorite	2
Sphene	trace
Apatite	trace
Opaques	2

This rock is a coarse-grained, quartz-poor igneous rock of typical intrusive aspect.

It consists essentially of an intergrowth of plagioclase and K-feldspar with clumpy segregations of mafics.

The plagioclase is in the form of coarse, well-twinned subhedral grains, 1.0 - 5.0mm or more in size. Accessory K-feldspar (orthoclase) occurs as intergrown patches of somewhat finer-grained, anhedral mode. Traces of quartz are seen as interstitital threads and clusters of tiny pockets.

The plagioclase is essentially fresh but for faint local dustings of sericite and occasional threads of carbonate. The K-spar is totally fresh.

Mafics consist of intimately intergrown masses of hornblende and biotite, with the biotite tending to form aggregates of smaller grains peripheral to coarser subhedra of hornblende.

The biotite is mostly fresh, but locally shows chloritization - especially in contact with opaques. The hornblende shows more extensive pervasive alteration, to fine-grained carbonate.

Euhedral apatite and rare sphene are typical accessories, most often associated with the mafic clumps.

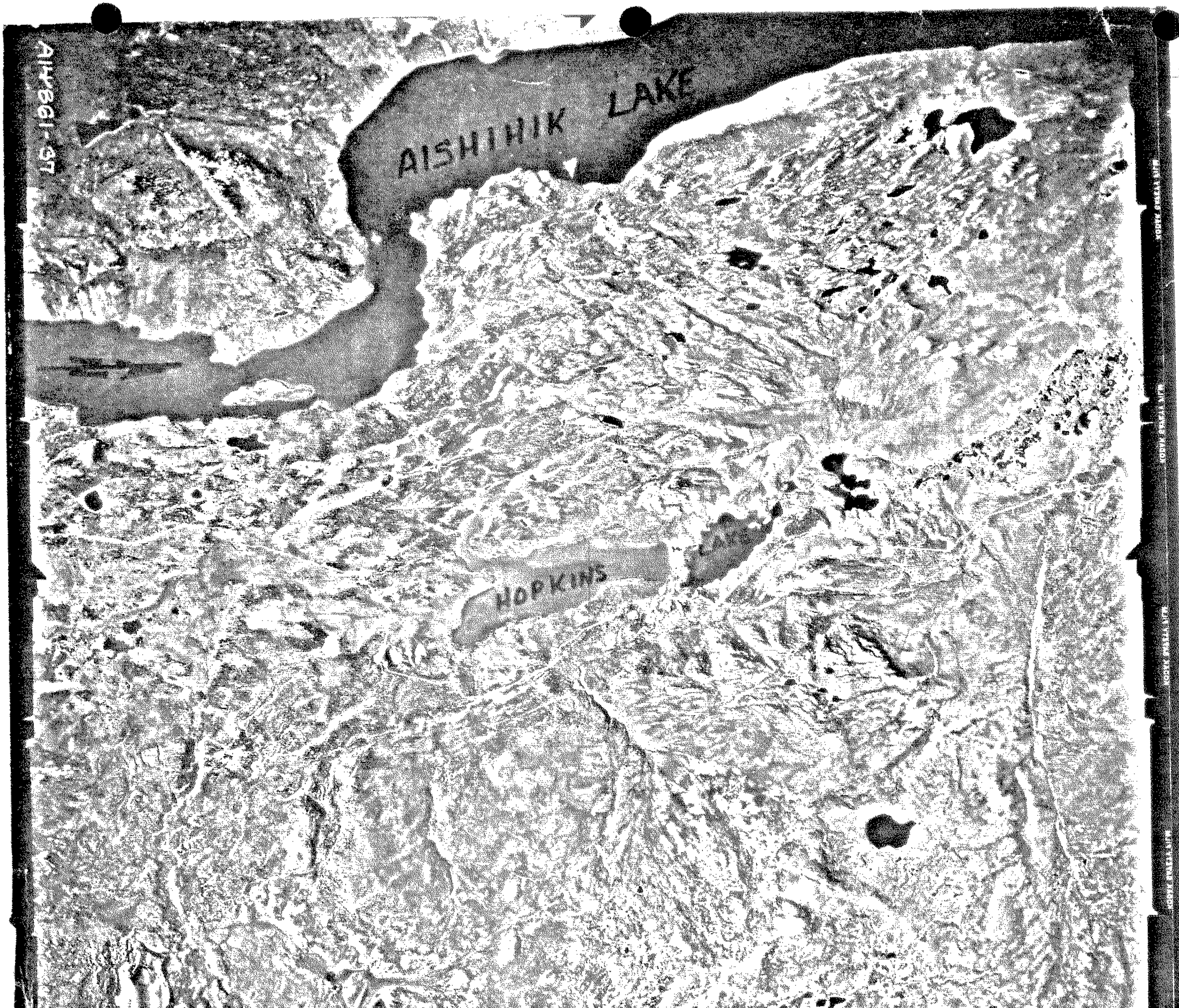
Opaques are relatively abundant - again in close association with the mafics, as equant/irregular grains 0.05 - 1.0mm or more in size. They consist predominantly of pyrite and partially hematized magnetite - mostly independent, but sometimes intergrown. Minor chalcopyrite is also seen, mainly as tiny flecks and clumps in the silicate host, marginal to pyrite clumps.

The rock is cut by hairline veinlets of carbonate and minor chlorite in microfractures. Concentrations of sulfides occur with these features.

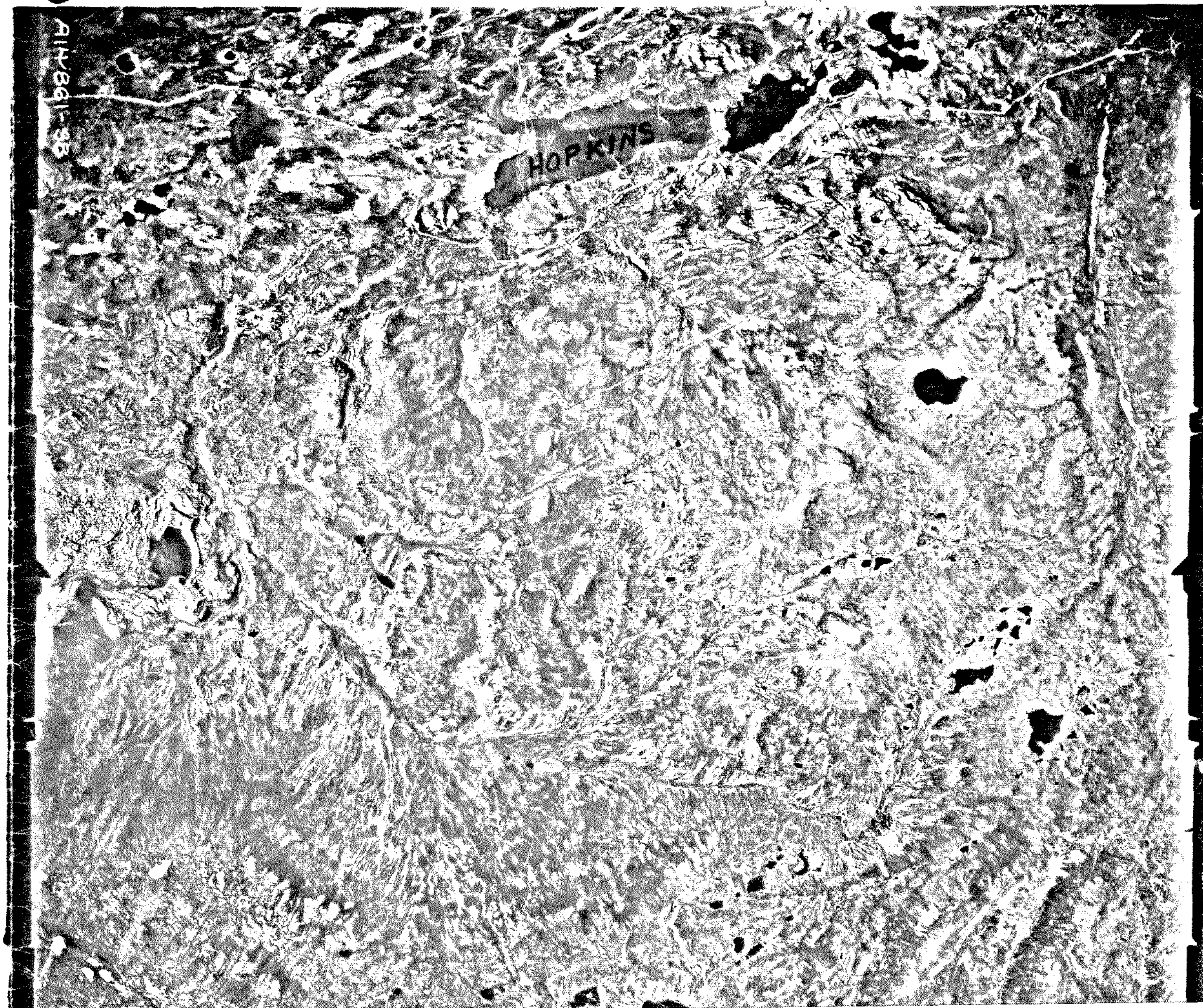
APPENDIX II

AIRPHOTO XEROX COPIES


AISHIHIK LAKE
HOPKINS



A14861-97
AISHIHIK LAKE
HOPKINS LAKE


HOPKINS

ROSSBACHER LABORATORY LTD.

CERTIFICATE OF ANALYSIS

2225 S. Springer Ave., Burnaby,
British Columbia, Can. V5B 3N1
Ph:(604)299-6910 Fax:299-6252

TO : CASAU EXPLORATION LTD.
746 REGAL CRESCENT
NORTH VANCOUVER, B.C.
PROJECT : NOT GIVEN
TYPE OF ANALYSIS : ASSAY

CERTIFICATE # : 90225A
INVOICE # : 10335
DATE ENTERED : 90-06-15
FILE NAME : CEL90255.A
PAGE # : 1

PRE FIX	SAMPLE NAME	oz/t Au	oz/t Ag	% Cu
A	30305	0.009	0.06	0.73

CERTIFIED BY :

ROSSBACHER LABORATORY LTD.

2225 S. Springer Ave., Burnaby,
British Columbia, Can. V5B 3N1
Ph:(604)299-6910 Fax:299-6252

CERTIFICATE OF ANALYSIS

TO : CASAU EXPLORATION LTD.
746 REGAL CRESCENT
NORTH VANCOUVER, B.C.

PROJECT : NOT GIVEN.
TYPE OF ANALYSIS : ICP

CERTIFICATE # : 90225
INVOICE # : 10335
DATE ENTERED : 90-06-15
FILE NAME : CEL90225
PAGE # : 1

PRE FIX	SAMPLE NAME	PPM MO	PPM CU	PPM PB	PPM ZN	PPM AG	PPM NI	PPM CO	PPM MN	% FE	PPM AS	PPM U	PPM AU	PPM HG	PPM SR	PPM CD	PPM SB	PPM BI	PPM V	% CA	% P	PPM LA	PPM CR	% MG	PPM BA	% TI	PPM B	% AL	% NA	% SI	PPM W	PPM BE	PPB Au AA
A	30301	4	57	1	46	0.1	44	6	1132	3.17	29	NA	ND	ND	272	1	2	2	28	6.75	0.06	4	19	3.18	86	0.01	140	0.30	0.01	0.04	1	2	5
A	30302	61	8123	3	2	12.1	20	16	446	11.62	17	NA	ND	ND	12	1	8	7	22	2.76	0.06	11	1	1.08	47	0.01	203	0.71	0.02	0.10	112	2	40
A	30303	1	99	3	12	0.1	7	1	977	4.46	23	NA	ND	ND	106	1	2	2	12	5.82	0.09	3	7	1.04	36	0.01	91	0.24	0.01	0.18	42	1	5
A	30304	20	238	7	43	0.1	8	4	951	2.54	2	NA	ND	ND	314	1	3	2	10	14.71	0.03	2	1	6.38	85	0.01	84	0.12	0.01	0.04	1	2	5
A	30305	1	6039	10	28	2.3	44	113	249	16.98	2	NA	ND	ND	143	1	3	6	1	1.17	0.06	1	1	0.82	1	0.01	2208	0.12	0.01	0.15	1	1	-
A	30306	1	122	7	49	0.2	64	1	297	2.78	2	NA	ND	ND	86	1	3	2	53	0.45	0.05	5	72	1.37	40	0.01	106	1.49	0.02	0.09	1	2	5

CERTIFIED BY : [signature]