GEOLOGICAL AND GEOCHEMICAL REPORT

PRIMROSE PROJECT

(Ram Claims 11-58 Inclusive)

Latitude: 60°11'30"N - Longitude: 136°42'30"W

NTS: 105-D-4

091383

YUKON MINING DISTRICT OF WHITEHORSE

W. Manson
Copper Cliff, Ontario
October 1982

This report has been examined by the Geological Evaluation Unit under Section 53 of the Yukon Quartz Mining Act and is acceptable as representation work in the amount of $ 4,800

P.W. Watson

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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Figure 1 - Epithermal Alteration Model (L. Buchanan)

SUMMARY

The RAM 11-58 claim group is located approximately 69 kilometres south southwest of Whitehorse, Yukon on NTS 105-D-4 (Map 1 - Location Map). The area is accessible by helicopter from Whitehorse, Yukon. Part of the RAM 11-58 group is subject to the Canico-Kreft Agreement - May 30, 1980. The claims adjoin the RAM 1-10 claim group (Kreft Option) and were acquired by staking in November 1981 (Map 2).

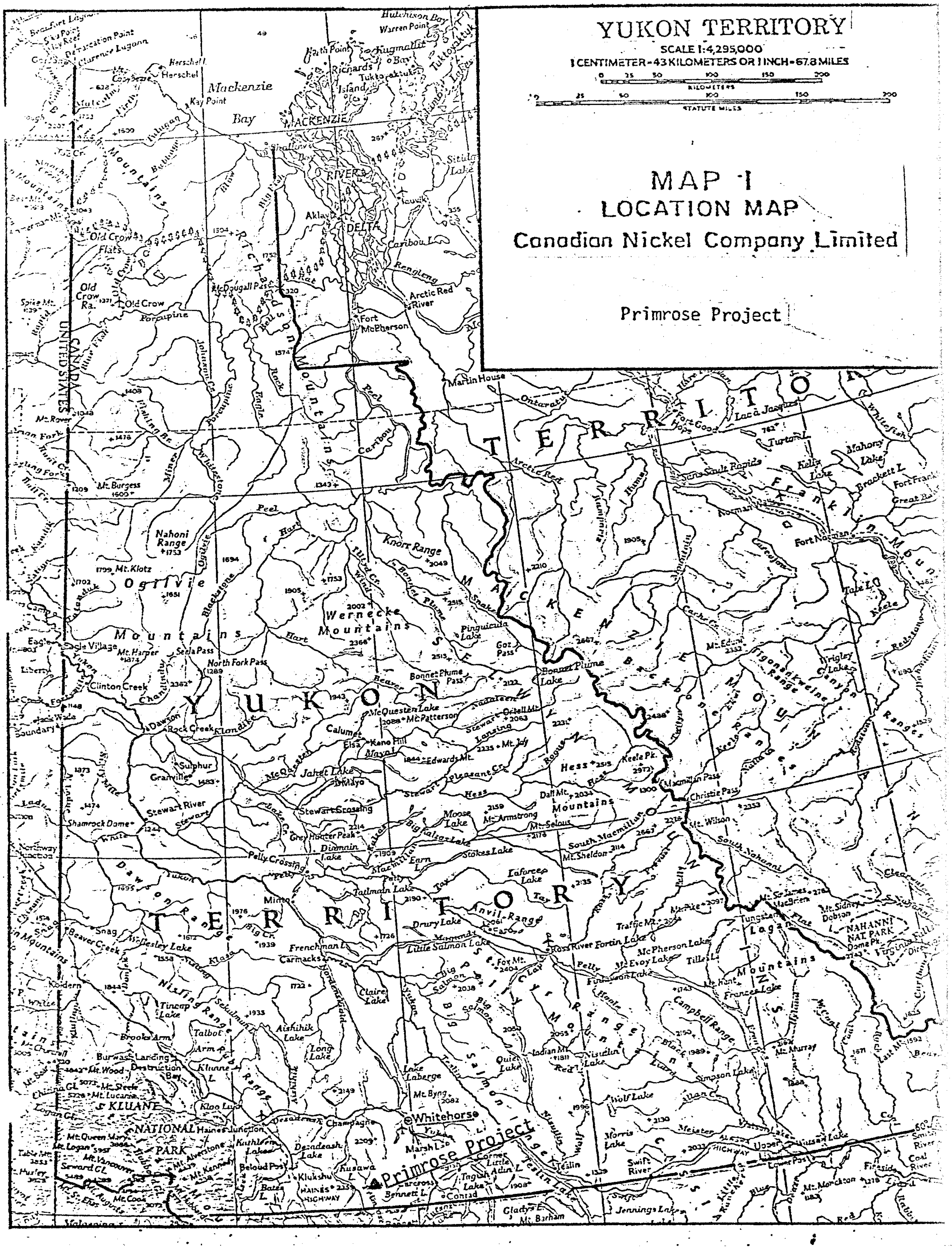
The claims were acquired to protect areas of hydrothermal alteration in Tertiary Quartz Feldspar Porphyry intrusives. These alteration zones were potentially caldera subsidence related epithermal stockworks, which could host precious metal deposits of the type proposed by L. Buchanan. No precious metal occurrences were previously known on the property, but are numerous in areas a few miles to the east, i.e. Mount Skukum, Carbon Hill areas.

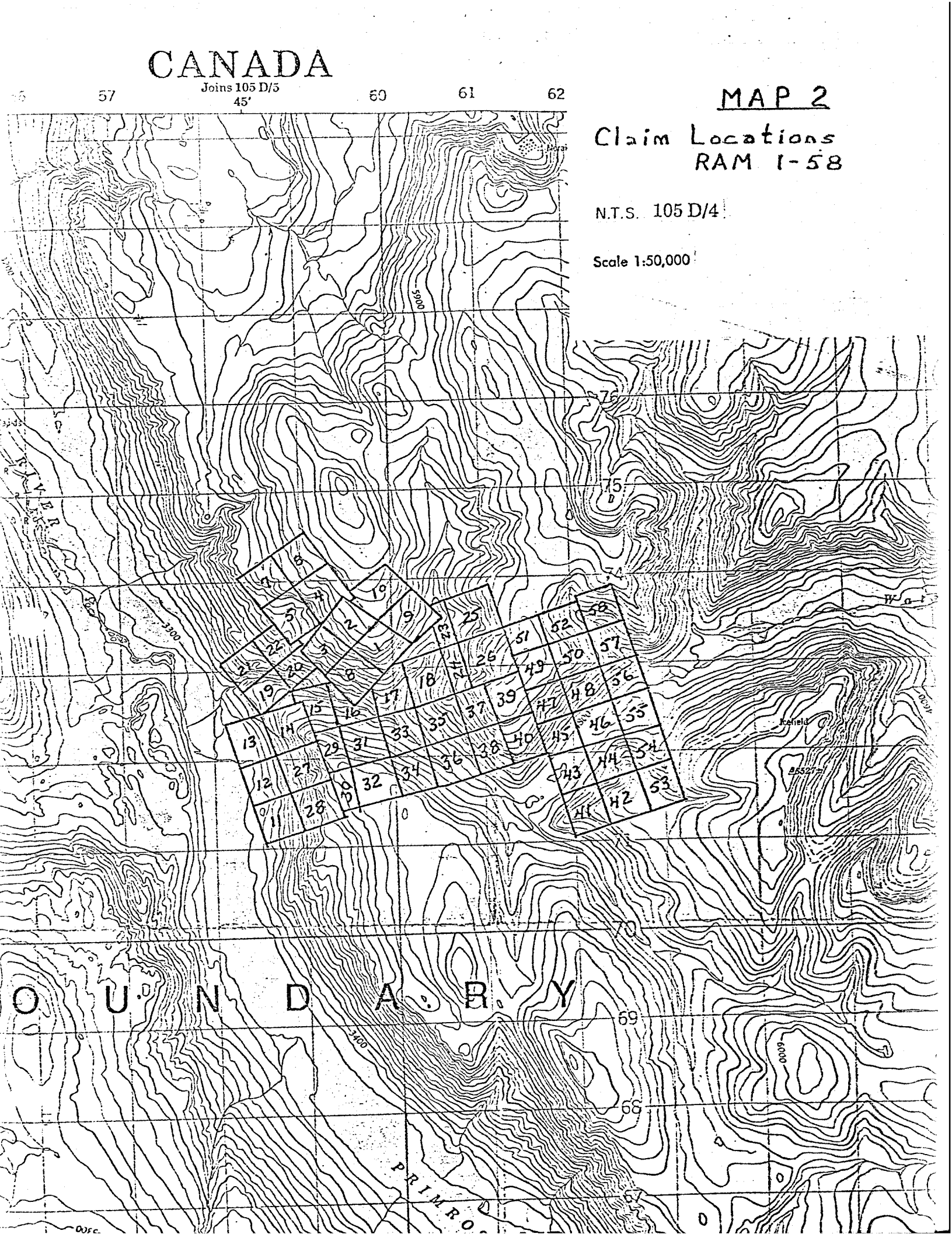
The general geology of the property consists of Pre-Mississippian Yukon Group metasediments, Cretaceous Coast Intrusions, early Tertiary Skukum Group volcanics and late Tertiary Quartz Feldspar Porphyry intrusives which contain local zones of hydrothermal alteration.

During June 1982 the area was mapped at a scale of 1:5000 using a contoured orthophoto for topographic control. The boundaries of the lithological units and the zones of hydrothermal alteration were delineated by ground traverses. Three zones of hydrothermal alteration within the Quartz Feldspar Porphyry were located and designated Zones 1, 2 and 3. The alteration zones are characterized by extensive (up to 200 metres x 600 metres) yellow-brown gossanous areas within which are narrow (1-2 metre and less) sheared and brecciated zones with varying amounts of clay alteration, sericite and quartz veinlet stockworks. Gossanous areas in the Skukum Group volcanics are apparently related to groundwater and surface weathering of the volcanic rocks rather than any hydrothermal activity. This gossanous area is designated as zone 4.

A total of 176 samples was collected of which 64 are from the alteration zones and gossanous areas around them.

Geochemical analyses for Cu, Pb, Zn, Ag, Au and Sb were carried out on the 64 samples from in and around the alteration zones. The results of the geochemical analyses did not indicate that the alteration zones are anomalous in gold. Zone 1 is locally anomalous in base metals and silver returning a best assay of 6600 ppm Cu, 244 ppm Pb, 415 ppm Zn, 8.6 ppm Ag, less than 5 ppb Au and less than 2 ppm Sb. A qualitative field test indicated the presence of the alteration mineral alunite at some locations in zone 3. Anomalous base metal values and weakly anomalous gold values were encountered in the Skukum Group volcanics in zone 4 just outside the eastern claim boundary, however these areas do not appear to be related to areas of hydrothermal activity. Best values were obtained from a weathered rhyolite (?) which produced 70 ppm Cu, 6800 ppm Pb, 5050 ppm Zn, 14.6 ppm Ag, 15 ppb Au and 26 ppm Sb.


YUKON TERRITORY
SCALE 1:4,295,000
1 CENTIMETER = 43 KILOMETERS OR 1 INCH = 67.8 MILES
KILOMETERS
STATUTE MILES
MAP 1
LOCATION MAP
Canadian Nickel Company Limited
Primrose Project
YUKON TERRITORY
MACKENZIE
UNITED STATES
CANADA
Primrose Project
Whitehorse
Dawson
Mayo
Carmacks
Teslin
KLUANE NATIONAL PARK
Ogilvie Mountains
Wernecke Mountains
Selwyn Mountains
Logan Mountains
Mackenzie Bay


CANADA
Joins 105 D/5
45'
57
60
61
62
MAP 2
Claim Locations
RAM 1-58
N.T.S. 105 D/4
Scale 1:50,000
RIVER
O U N D A R Y
PRIMRO
Kelield
5000
3200
3400
6000

Some samples (9) from the alteration zones have been submitted for thin section and x-ray diffraction studies to determine amounts and types of alteration minerals. Of these (6) some were also submitted for fluid inclusion study to determine formation temperature, salinity, fluid composition, etc.The results of the thin section, x-ray diffraction and fluid inclusion studies were not completed at the time of writing.

Geological field observations and analytical data have not provided sufficient information to determine if the alteration zones on the RAM claims have any economic potential for epithermal vein stockwork, precious metal deposits. Also unanswered on the basis of present data is the question of whether the alteration zones represent a caldera related epithermal system or if they are related to a late stage fluid phase of the intrusive emplacement, i.e. a porphyry system. Information from thin section, x-ray diffraction and fluid inclusion studies could possibly provide data enabling such a distinction to be made.

INTRODUCTION

The RAM 1-10 mineral claims were acquired by Canadian Nickel Company Limited from owner Erwin Kreft under an option agreement dated May 30, 1980. Exploration for skarn hosted Pb/Zn/Ag deposits was carried out during 1980-81 and included geochemistry and diamond drilling. Examination of gossanous areas of a Tertiary Quartz Feldspar Porphyry, on RAM 8, indicated a potential existed for epithermal vein stockwork precious metal deposits. To protect adjacent areas of gossanous quartz-feldspar porphyry a further 48 (RAM 11-58) claims were staked in October of 1981.

During June 1982 a Canadian Nickel Company crew completed geological mapping, prospecting and sampling of the area covered by the additional claims. The results of the 1982 work are summarized in this report.

LOCATION AND ACCESS

The RAM 11-58 claims are located (Map 1 and 2) approximately 69 kilometres south-southwest of Whitehorse, Yukon and abut the northeast part of Primrose Lake. They are centered about north latitude 60°11'30" and west longitude 136°42'30" on N.T.S. sheet 105-D-4.

Access to the property is by helicopter from Whitehorse. Primrose Lake is suitable for landing of float equipped fixed-wing aircraft. Road access is possible to within 30 kilometres east of the property via the Annie Lake Road to the Wheaton River.

During the course of the exploration program helicopter service was provided, on a casual charter basis, by Trans North Turbo Air from the Whitehorse airport.

PHYSIOGRAPHY

The claim group lies along the northern edge of the Coast Mountains. The terrain is characterized by gently undulating uplands which are dissected by steeply incised U-shaped valleys with V shaped tributaries. The elevations range from 1600-1800 metres on the uplands to just below 1000 metres at Primrose Lake. Most of the property is above tree line. Alder and willow occupy most of the stream valleys below 1300 metres and white spruce is common in the Primrose Lake Valley. The headwaters of the Watson River commence in a small lake in the eastern portion of the claim group.

PROPERTY STATUS

The RAM 11-58 claims form a contiguous group adjoining the RAM 1-10 claims (Map 2). The property lies within the Yukon Mining District of Whitehorse. The RAM 11-58 claims are held by Canadian Nickel Company Limited, Copper Cliff, Ontario, POM 1NO.

Claim Name	Grant Number	Record Date	Renewal Date
RAM 11-58	YA 74225-YA 74272	November 6, 1981	November 6, 1982

Part of the RAM 11-58 claim group is subject to the Canico-Kreft Agreement - May 30, 1980. These are as follows, RAM 11-40 inclusive (YA 74225-254) and RAM 45-52 inclusive (YA 74259-266).

All ground surrounding the RAM 1-58 claims is open for staking.

HISTORY

The mineralization on the RAM claims was discovered by Erwin Kreft in late August 1976 during a hunting expedition. RAM 1-2 claims were staked, with RAM 3-7 being staked several days later. Minor rock and soil geochemical sampling were completed by Kreft.

The claims were optioned to United Keno Hill Mines in July 1977 after initial field visits confirmed the presence of the lead-zinc-silver mineralization. During 1977 and 1978, UKHM carried out geological mapping, rock and soil geochemical sampling, limited I.P. and EM-16 geophysical surveys and seven trenches totalling 341 linear feet. The results of this exploration are contained in the UKHM assessment report dated January 25, 1979.

Following a property examination on September 28, 1979, Canadian Nickel Company Limited optioned the RAM 1-10 claims. Subsequent exploration consisted of grid re-establishment (12.4 km), limited prospecting and diamond drilling of one 173 foot hole in 1980. During 1981, a detailed soil sampling program, geological mapping and rock-chip sampling were completed.

A Tertiary quartz feldspar porphyry (QFP) stock which outcrops in the south-west portion of the RAM 1-10 group was found to be locally brecciated and altered. The alteration zones included clay mineral and sericitic alteration with small scale veins and vein stockworks of quartz-carbonate. Base metal sulfides were also observed in some of these alteration zones. This geological setting was similar to those hosting known epithermal vein type PM deposits in the southwestern U.S.A. A review of the geology in the RAM 1-10 area indicated further alteration zones related to Tertiary age subvolcanic quartz-feldspar porphyry intrusives. It was further revealed that these intrusives may be related to regional volcanic caldera subsidence. The RAM 11-58 claims were staked to protect several altered QFP zones known to exist in the adjacent area. The 1982 program was initiated to map, prospect and sample these QFP alteration zones in order to assess the possible potential for epithermal vein stockwork precious metal deposits.

The general area of caldera subsidence has a long (turn of century) history of precious metal occurrences, but of very limited production. The epithermal PM potential of other portions of the caldera are currently the object of a major exploration effort by AGIP Canada Ltd.

GENERAL GEOLOGY

The regional geology of the area is summarized by J. O. Wheeler in GSC Memoir 312 and on the GSC Map 1093A, Geology Whitehorse, scale: 1:253,440. More recently the mineral occurrences have been summarized by D.I.A.N.D. Open File EGS 1979-6, Metallogenic Map, Whitehorse Map Area, scale: 1:253,440 by G. Morrison.

The area is underlain by schists and gneisses of the pre Mississippian Yukon Group metasediments. These metasediments have been intruded by granites, granodiorites and diorites of the Cretaceous Age Coast Intrusions. Locally overlying the above are the rhyolitic to basaltic sequences of the early Tertiary Skukum Group volcanics. Intruded into the above rocks are stocks, plugs and dikes of late Tertiary quartz feldspar porphyry. In some places all of the older rocks are capped by the Quaternary Age Miles Canyon basalts.

Volcanic caldera are known in the area, particularly around Lake Bennett, Montana Mountain and Mount Skukum. A possible volcanic caldera subsidence feature may also occur around and to the southwest of Mount Skukum (see Map 3). The RAM claim group occurs along the southwest part of this feature.

ECONOMIC GEOLOGY

Late Tertiary quartz feldspar porphyry intrusions occur on the RAM claims. Within these intrusions are zones of clay alteration with brecciation and silicification. The alteration is typical of precious metal (Au/Ag) vein deposits, which fill fractures related to collapsed caldera environments, in the southwestern U.S.A. (e.g. Comstock and Creede). The Primrose Lake - Wheaton River area contains a possible caldera subsidence feature (Map 3). The RAM claims lie along the southwest edge of this feature.

A model for the vein stockwork precious metal deposits of the southwest U.S.A. has been developed by Larry J. Buchanan and associates. This model is summarized below:

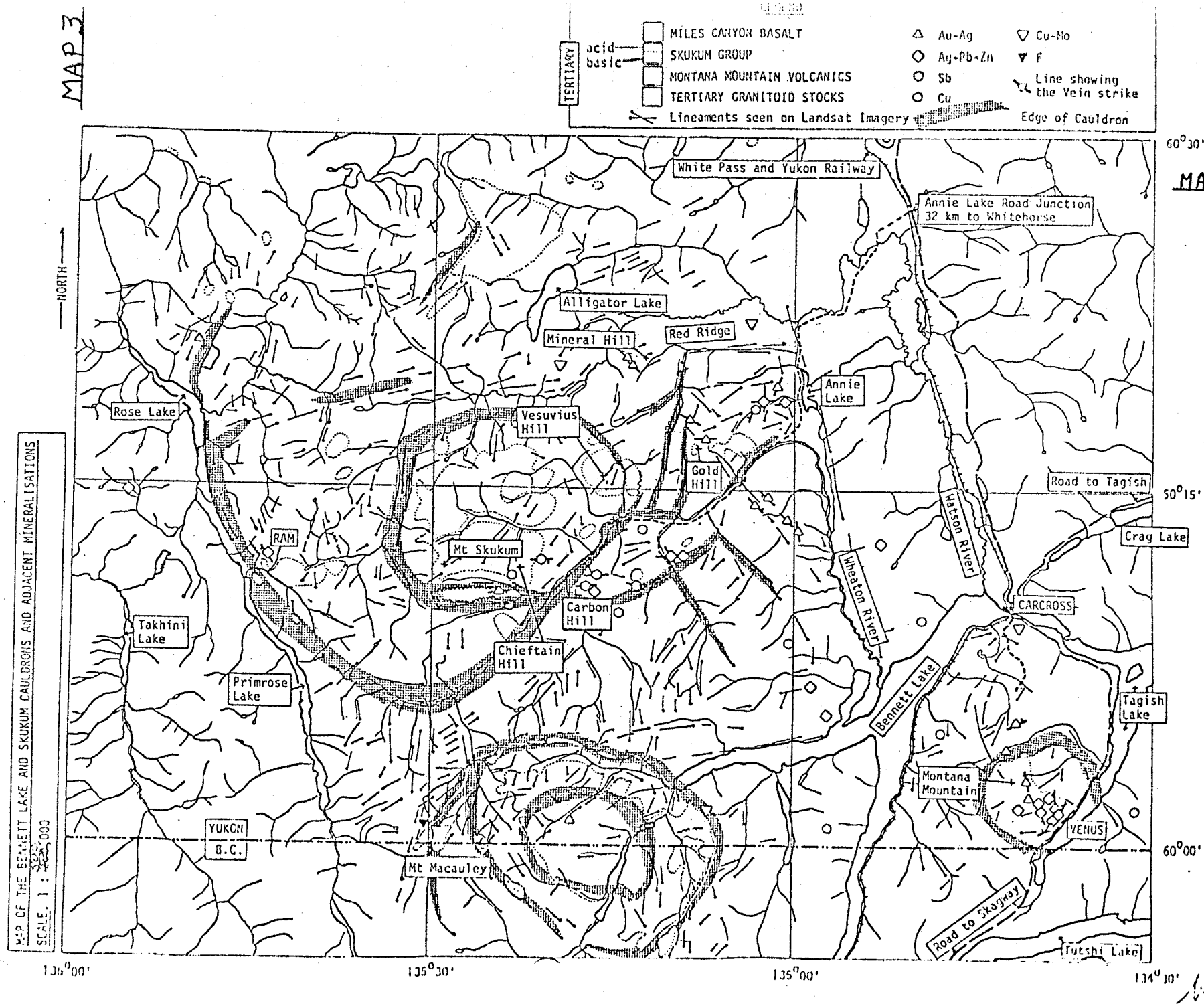
(i) Host rocks are largely Tertiary calc-alkaline extrusions with associated hypabyssal intrusions. Andesites are the most common host to ore shoots.

(ii) Generally there are pre-ore felsic tuffs, volcanogenic sediments, dykes, sills and plugs often in a cauldron.

(iii) The PM veins are vertically zoned as follows (see Figure 1).

- Top
  - Agate & clay near paleosurface;
  - passing into barren calcite;
  - then quartz and calcite;
  - then quartz, calcite, adularia and PM's;
  - then quartz, adularia and base metals.
- Bottom

MAP 3


TERTIARY
acid
basic
MILES CANYON BASALT
SKUKUM GROUP
MONTANA MOUNTAIN VOLCANICS
TERTIARY GRANITOID STOCKS
Lineaments seen on Landsat Imagery
Au-Ag
Ag-Pb-Zn
Sb
Cu
Cu-Mo
F
Line showing the Vein strike
Edge of Cauldron
MAP OF THE BENNETT LAKE AND SKUKUM CAULDRONS AND ADJACENT MINERALISATIONS
SCALE, 1 : 250,000
NORTH
White Pass and Yukon Railway
Annie Lake Road Junction
32 km to Whitehorse
Alligator Lake
Mineral Hill
Red Ridge
Annie Lake
Rose Lake
Vesuvius Hill
Gold Hill
Road to Tagish
Watson River
Crag Lake
RAM
Mt Skukum
Wheaton River
Carbon Hill
CARCROSS
Takhini Lake
Chieftain Hill
Primrose Lake
Bennett Lake
Tagish Lake
Montana Mountain
VENUS
YUKON
B.C.
Mt Macauley
Road to Skagway
Tutshi Lake
60°30'
60°15'
60°00'
136°00'
135°30'
135°00'
134°30'

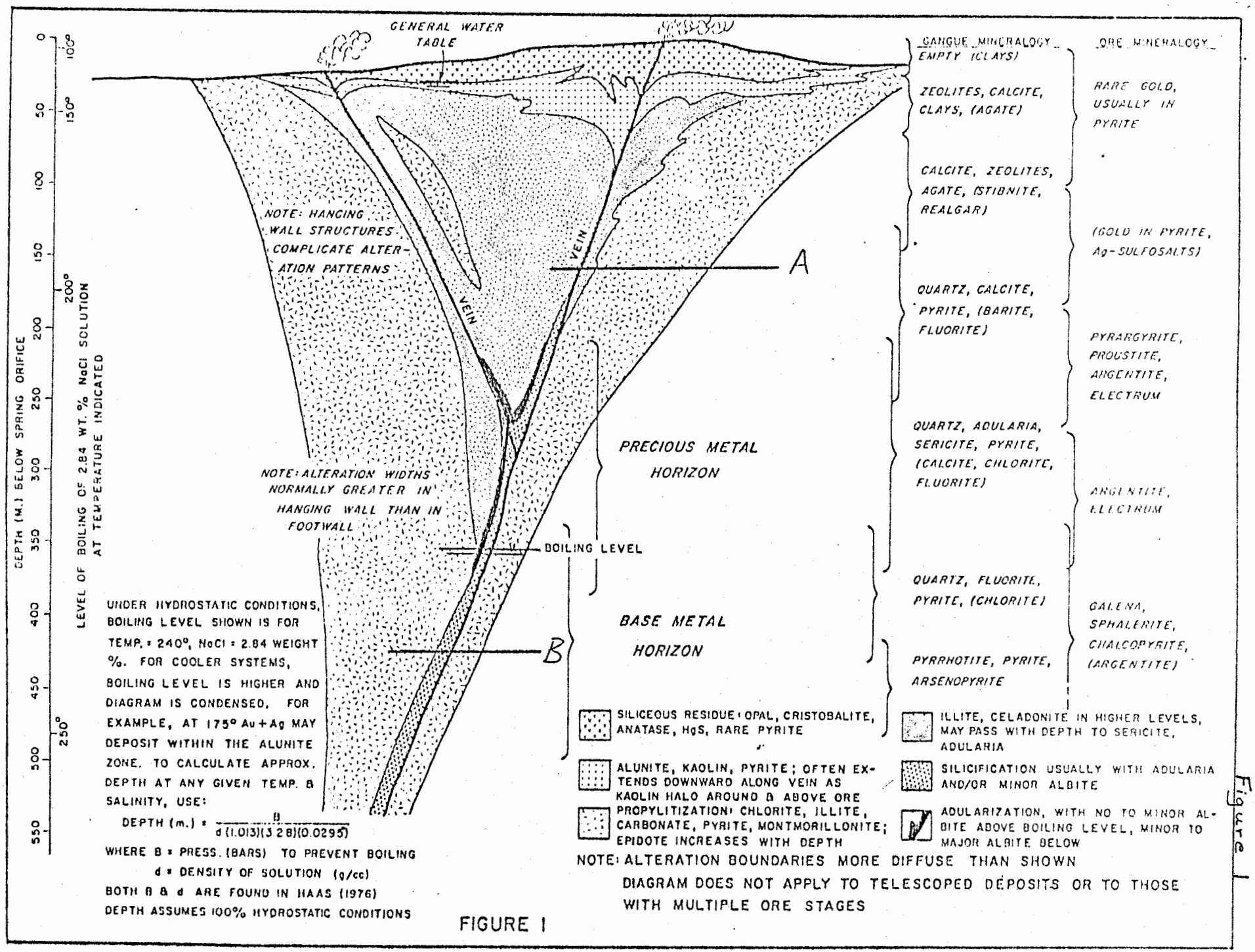


FIGURE 1

EPITHERMAL ALTERATION MODEL (L. Buchanan)

Figure 1

(iv) The interface between the upper precious metals and the lower base metals seems to be the zone of episodic boiling. At this level, CO_2 and H_2S are released to the vapour phase, pH rises in the remaining fluid and $f(O_2)$ increases. This results in the release of base metals firstly, silver sulphide secondly and gold finally in the temporal sense and the vertical sequence sense.

(v) Episodic sealing of the fracture, followed by refracturing (faulting) causes episodic boiling and mineral deposition at depths greater than normal hydrostatic conditions normally allow (shock release into instant openings). This produces intra-mineralization brecciation, banding of the ore and grading of blocks. Sudden boiling causes fluidization of breccia and separates larger blocks towards the footwall of the vein and smaller blocks towards the hanging wall.

(vi) A low pH assemblage genetically related to the PM mineralization can be recognized. Alteration assemblages are as follows:

- widespread propylitic alteration, namely, chlorite, pyrite, carbonate, montmorillonite and illite forms a halo around most ores.

- silicified walls, often adularia or albite can form a thick selvage around PM-bearing veins. This selvage can be wide or 1 m or less. The width of this selvage diminishes upwards and vanishes just above the ore zone.

- silification, in general, has a great vertical extent both above the ore and well below.

- neither the widespread propylitic alteration nor the more restricted silicification/adularization/albitization serve as very useful ore guides. The former is much too widespread and the latter too narrow, often being found where ore is found.

- What Buchanan suggests is a target that is directly related to PM deposition and extends well above the ore horizon. This is his low pH assemblage consisting of one or more of the following: Alunite, sericite, illite, kaolinite, montmorillonite, or any of the kaolin clay minerals. This is often referred to as bleaching and forms a halo around the cap of PM ore shoots. It is virtually absent below the PM horizon. It forms a narrow but ever widening halo in the hanging wall of the ore shoot.

(vii) The PM horizon has a restricted vertical interval averaging close to 350 m. Often this interval forms a discrete level in a district (if post ore faulting is taken into account).

(viii) Though quartz extends above the ore horizon, it may be represented at the top by agate, chalcedony or a paper-thin fracture coating.

Buchanan and others emphasis the importance of boiling for deposition of ores of the epithermal class. Studies of several deposits in the southwestern USA and Mexico have shown that the zone of boiling occurs at the base of the precious metal zone (top of the base metal zone). In complex systems (i.e. more than one hypothermal episode) boiling was noted only in those zones of precious metal mineralization, and not in the base metal zones. Most of the evidence for boiling has been taken from fluid inclusion studies done on these deposits.

The above model as proposed by Buchanan and others provided the basis on which the exploration program, on the RAM 11-58 claims was initiated and carried out.

GEOLOGICAL/GEOCHEMICAL SURVEYS

During June 1982, geological and geochemical surveys were carried out on the RAM claim group. The objective of the surveys was to delineate the lithological units on the property and to locate and sample all areas of hydrothermal alteration. It was further intended that these surveys should try to determine the possibility of a relationship of the alteration zones to epithermal activity associated with a possible caldera subsidence feature (see Map 3). A further requirement of the survey was to evaluate the economic potential of the alteration zones, for epithermal vein stockwork precious metal deposits based on the model proposed by L. Buchanan.

Mapping and sampling control was accomplished by the use of a 1:5000 scale contoured (20 metre) orthophoto which proved to be very satisfactory in this rugged terrain. Geological/geochemical traverses were completed to cover most areas of bedrock (felsenmeer) exposure. Some areas are extremely rugged and were not traversed for safety reasons. A total of 176 rock samples was collected from the various traverses. Of the 176 samples collected 64 samples were from areas of hydrothermal alteration. From the 64 samples of altered zones 9 were submitted for further study by thin section and x-ray diffraction methods. From the 9 samples 6 were submitted for fluid inclusion study. The results of these studies have not been completed at the time of writing and therefore are not discussed in this report.

The geological information, traverse routes, sample locations and assay numbers are shown on the 1:5000 scale Geological Survey plans (sheets 1 and 2) included in pockets at the back of this report. The geochemical results are shown on the 1:5000 scale Geochemical (Rock) Survey plans included in pockets at the back of this report.

(a) Geological Results

The geological survey was able to delineate areas within the claim group which are underlain by the pre-Mississippian Yukon Group metasediments (map units 1a and 1b), Cretaceous Age Coast Intrusions (map units 2 and 3), early Tertiary Skukum Group volcanics (map units 4a, 4b, 4c, 4c1 and 4d) and by late Tertiary quartz feldspar porphyry intrusives (map unit 5a), which are locally altered by hydrothermal activity (map unit 5b). The

characteristics of these lithologic units are described below, and their distribution is shown on the 1:5000 scale Geological Survey plans (sheets 1 and 2).

The Yukon Group metasediments consist of quartz-mica schists, quartzite, limestone and minor amphibolite. In the vicinity of intrusive rocks these metasediments undergo some further alteration to hornfels. This hornfels alteration is evident primarily in the limestone units which are commonly altered to skarns. The skarn units locally host Pb/Zn/Ag mineralization on the RAM 1-10 claims. The Yukon Group metasediments have been deformed into steeply dipping, complexly folded series of anticlines and synclines. The structural trends of the folding and of the schistosity is northwest-southeast trending. The age of these metasediments is probably pre-Mississippian and may in part be Precambrian.

The Coast Intrusions are part of the Coast Plutonic Complex. On the property these intrusives are primarily quartz-diorite to granodiorite with minor diorite and granite. The contacts of this intrusive complex with the Yukon Group metasediments are rarely seen and the attitude is not known. Locally large xenoliths and/or roof pendants of Yukon Group metasediments were observed within the Coast Intrusion rocks. Structurally these rocks are massive to weakly foliated on a local scale. The age of the Coast Intrusions is thought to be Cretaceous.

Recent work completed by P. H. Watson, has determined Rb-Sr whole rock age dates for foliated granite of the Coast Range intrusives at 143-200 Ma while K-Ar dates for hornblende and biotite from a granodiorite are 106 $\pm$ 4 Ma and 53.7 $\pm$ 1.9 Ma, respectively. An Eocene porphyritic microgranite stock (Tertiary quartz feldspar porphyry) yielded a Rb-Sr whole rock age date of 43 Ma and has probably reset the biotite K-Ar date in the Coast Range intrusive granodiorite.

The Skukum Group Volcanics were observed only on the very eastern portions of the property. In that area they consist of basalt-andesite flows, rhyolite flows, minor dacitic flows and a thick series of basaltic-andesitic tuffs - lapilli tuffs. Bedding attitudes were not observed due to the rubbly frost heaved nature of the outcrops. The rhyolitic flow rocks are locally brecciated and may be weakly altered in these breccia zones. The alteration appears related to groundwater staining of fracture surfaces rather than hydrothermal alteration.

The volcanic rocks of the Skukum Group are tentatively assigned an early Tertiary age. They must however predate the Quartz Feldspar Porphyry which has intruded them. The Quartz Feldspar Porphyry was determined by P. H. Watson to have a Rb/Sr whole rock age date of 43 Ma.

The Quartz Feldspar Porphyry intrudes all of the previous rock units described. It occurs as stocks and as smaller plugs and dikes. The rock contains quartz and feldspar phenocrysts ranging from 1-5 mm in a fine grained to aphanitic ground mass. Texturally the rock is massive, strongly

jointed and non foliated. In general the rock is intrusive but locally appears rhyolitic although no flow textures were observed. The colour is pale brown with the quartz phenocrysts being light grey to glassy. The contacts with the enclosing rocks were rarely seen but appear to be sharp, irregular and in general, steeply dipping. Locally this intrusive has brecciated the adjacent diorite and blocks and fragments of the diorite are present as inclusions in the QFP. Within the QFP are local zones of brecciation up to 2-3 metres in width and of undetermined length (maximum observed length is ± 25 metres). These zones exhibit varying amounts of clay and sericitic alteration with small scale quartz, ± calcite, ± fluorite (?) veins and vein stockworks. Minor pyrite and malachite have been observed in these zones. These alteration zones are probably associated with hydrothermal events and could be of economic significance for epithermal vein type precious metal deposits. The age of these quartz-feldspar intrusions has been determined by P. H. Watson, from whole rock Rb/Sr data, to be about 43 Ma, i.e. mid Tertiary.

The Alteration Zones related to hydrothermal activity were found to be confined to the Tertiary quartz feldspar porphyries and to the rhyolite phase of the early Tertiary Skukum Group volcanics. Four areas of hydrothermal alteration were located on the property and these have been designated as zone 1, 2, 3 and 4 on the 1:5000 scale Geological Survey plans (sheets 1 and 2). Map unit 5b outlines alteration within the quartz feldspar porphyry and map unit 4c1 outlines the alteration within the Skukum Group Volcanics.

Zone 1 occurs on a steep southward facing slope. The area comprises about 15-20% outcrop with the remainder being talus covered. The area of outcrop and talus occurs as a large 200 metre x 300 metre buff coloured gossan. The quartz feldspar porphyry in the area is strongly fractured, local zones within the gossanous area are brecciated and sheared. These brecciated and sheared zones have acted as conduits for hydrothermal fluids and gases. These conduit zones now include a significant amount of alteration features such as bleached appearance, clay minerals such as kaolin, sericite, veins and vein stockworks of quartz ± carbonate. Minor base metals, i.e. malachite and pyrite have been observed in some of the sheared breccia zones (e.g. sample site RW-17). The zones of alteration are 2-3 metres maximum width but are generally less than 1 metre. They trend in a general north south direction and have near vertical dips and are tracable over a maximum 20 metre strike length. The trace of the strike length was terminated by talus or till cover and not by a ceasation of the breccia zone itself.

Zone 2 is limited to two or three small areas of altered outcrop along a talus and felsenmeer covered slope. Outcrop of the zones of clay/sericite, quartz vein alteration is of very limited extent. The alteration is similar to that in zone 1 and also occurs in sheared breccia zones. Strike of the zones is roughly north-south and they are steeply dipping.

Zone 3 is very similar to zone 1. It is a large gossanous zone about 200 metres x 600 metres on a steep west facing slope, some of which is not accessible by normal traversing. Clay, sericite, quartz veining ± calcite, ± fluorite (?) occur as alteration features associated with sheared and brecciated zones of similar scale as those in zone 1. The zones generally strike north-south and have near vertical dips. Most of the zones observed were one metre or less in width and traceable over 15-25 metres, here again the zones were not traceable over their full strike length due to talus or inaccessible terrain.

Zone 4 differs in that it is associated with bleached rhyolitic volcanics of the Skukum Group. Alteration is not strongly developed. The rhyolite unit is strongly jointed but brecciation and shearing are not obvious. The gossanous appearance of this rock may be due to fracture plane staining by groundwater as freshly broken rock is generally not altered. This unit is poorly exposed in a stream outbank, otherwise it is generally overlain by younger more mafic volcanics. Occasional intermediate dikes and sills were also observed within the mafic units.

The large extent of the gossanous areas relative to the size of the actual altered zones is possibly a factor of steepness of slope which produces non-vegetated talus slopes and outcrop areas and of the strongly jointed nature of the quartz feldspar porphyries in areas of hydrothermal activity. The fractures associated with the jointing are quite open to groundwater migration and have been stained by oxidation processes and by deposition of clay minerals transported by groundwater. In most places where the rock appears on its surface to have clay alteration present a freshly broken surface will show little if any alteration. It is also probable that other zones of hydrothermal alteration occur on the property but were not located due to vegetation and talus cover. This could be especially true in areas where slopes are shallow enough for talus to have stabilized sufficiently for tundra type vegetation to conceal the alteration from observation.

(b) Geochemical Results

In conjunction with geological mapping samples were also collected for geochemical analysis. A total of 64 samples was collected from areas of hydrothermal alteration, adjacent areas, and from some areas of suspected alteration. These samples were analysed geochemically for Cu, Pb, Zn, Ag, Au and Sb. The analyses were done at the Whitehorse Yukon laboratory of Bondar-Clegg and Co. with the exception of Sb analyses which were carried out at the Vancouver B.C. laboratory of Bondar-Clegg and Co. The digestion and analysis methods used by Bondar-Clegg for each element is described in Appendix A, Analytical Methods and Results. In Buchanans model for an epithermal precious metal system the alteration mineral alunite is commonly present in the upper portions of the alteration zone (refer to Figure 1). The presence of alunite as an alteration mineral can be determined qualitatively by relatively simple field test (see Appendix B Alunite Field Test). This test was applied to eleven samples from the various alteration zones. The samples tested were those which exhibited the most abundant clay or

clay like alteration minerals. The results of the geochemical analyses and alunite tests of samples of altered rocks from the areas of hydrothermal alteration are summarized and discussed for each of the alteration zones that have been located on the RAM claim group.

Zone 1: Of the 39 samples collected from this zone a total of 17 of the most strongly altered was submitted for geochemical analysis and 4 were tested for the presence of alunite. The following table 1 summarizes the results of these analyses.

Table 1

Sample No.	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppb Au	ppm Sb	qualitative pH
RX 037601	28	24	196	0.6	5	L2	weakly alkaline
RX 037602	36	38	1050	0.6	L5	3	
RX 037603	10	28	45	0.4	L5	L2	
RX 037604	22	14	45	0.1	L5	L2	
RX 037605	92	30	95	1.4	L5	L2	
RX 037606	800	124	360	2.6	L5	L2	
RX 037607	50	184	60	4.6	L5	5	
RX 037608	6600	244	415	8.6	L5	L2	weakly alkaline
RX 037609	300	68	65	1.7	L5	L2	
RX 037610	100	36	70	0.5	L5	L2	
RX 037611	475	24	70	2.4	L5	4	
RX 037612	115	42	70	2.2	L5	L2	
RX 037613	190	104	100	4.4	L5	L2	
RX 037614	70	50	50	0.4	L5	L2	neutral
RX 037615	12	22	20	0.4	L5	L2	
RX 037616	8	30	30	0.3	L5	4	
RX 037817	24	12	30	0.3	L5	L2	
RW-29	-	-	-	-	-	-	weakly alkaline

* L - denotes less than

Geochemically this zone is anomalous in base metals and silver, but very low in gold and antimony. No low pH values were indicated, therefore alunite is probably not present. These results suggest that the samples were collected from a level stratigraphically below the precious metal zone of Buchanans model. Another alternative is that the alteration is related to a fluid phase evolved in late stages of intrusive implacement and therefore related to a porphyry system rather than a caldera related epithermal system.

Zone 2: Of the 11 samples collected from zone 2 a total of 7 were submitted for geochemcial analysis and 1 was tested for the presence of alunite. The following table 2 summarizes the results of these analyses.

Table 2

Sample No.	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppb Au	ppm Sb	qualitative pH
RX 037706	12	24	15	0.2	L5	7	
RX 037707	16	16	30	0.4	L5	7	
RX 037708	52	16	25	L0.1	L5	4	
RX 037806	8	165	45	0.4	16	L2	
RX 037820	8	14	15	0.2	L2	L2	
RX 037821	L1	12	10	0.5	4	L2	
RX 037822	L1	4	5	0.4	L2	L2	neutral

* L - denotes less than

Geochemically this zone is weakly anomalous in gold and antimony. Although this zone shows weakly anomalous gold and antimony values the magnitude of the anomaly is still very small. Alunite was not detected in the single sample which was tested. None of the geochemical data is indicative of where this zone may be located in either an epithermal or a porphyry system.

Zone 3: From a total of 33 samples collected from zone 3, 18 samples were submitted for geochemical analysis and 5 were tested for the presence of alunite. The results of these analyses are summarized in table 3 below.

Table 3

Sample No.	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppb Au	ppm Sb	qualitative pH
RX 037617	8	24	20	0.4	L5	L2	very weakly acid
RX 037618	6	8	20	0.3	L5	L2	weakly alkaline
RX 037619	6	8	30	0.2	L5	L2	strongly acid
RX 037620	4	12	10	0.2	L5	4	
RX 037621	5	54	45	0.2	L5	L2	
RX 037622	50	24	40	1.8	L5	8	
RX 037701	4	8	5	0.3	L5	3	
RX 037702	2	12	5	0.5	L5	5	
RX 037703	4	10	10	0.6	L5	5	
RX 037704	4	16	2	0.2	L5	3	
RX 037705	3	16	5	0.4	L5	8	very strongly acid
RX 037809	4	10	50	0.2	2	3	
RX 037810	2	6	25	0.3	L2	L2	
RX 037811	5	18	75	0.2	L2	L2	
RX 037812	3	8	10	0.7	L2	3	
RX 037813	2	8	110	0.4	L2	4	
RX 037814	3	22	195	0.4	L2	L2	
RX 037818	2	4	5	0.2	L2	L2	
N-37	-	-	-	-	-	-	neutral

* L - denotes less than

Geochemically zone 3 appears very weakly anomalous with respect to antimony although the actual values are quite low (i.e. 5-8 ppm). Alunite is probably present in at least two of the samples tested. The presence of alunite

may indicate that those samples represent the upper portion of a possible epithermal system. Samples collected up to 200 metres stratigraphically and topographically lower do not suggest any significant increase in gold values. A very slight increase in base metal and silver values is exhibited by sample RX 037622 collected about 100 metres below those giving the positive alunite indication. As is the case in zones 1 & 2 it is difficult to distinguish whether the hydrothermal event we see recorded here is related to a porphyry system or an epithermal system.

Zone 4: Of the 23 samples collected in this zone 22 were submitted for geochemical analysis. The following table 4 is a summary of the analytical results.

Table 4

Sample No.	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppb Au	ppm Sb	Remarks
RX 028067	37	16	77	0.6	5	3	rhyolite
RX 028068	3	14	55	0.3	L5	L2	rhyolite
RX 028069	7	16	110	0.4	L5	3	rhyolite
RX 028070	4	12	80	0.2	L20	L2	Small sample size, rhyolite
RX 028071	5	9	85	0.2	L5	L2	rhyolite
RX 028072	12	10	18	0.8	L5	L2	granodiorite
RX 028073	6	19	20	0.2	55	L2	dacitic dike
RX 028074	4	8	15	0.2	25	L2	dacite dike
RX 028075	65	2550	1500	6.2	L5	3	dacite-andesite flow
RX 028076	25	468	2610	0.7	L5	L2	dacitic dike
RX 034292	5	54	160	0.2	20	4	rhyolite
RX 034293	3	28	70	0.4	10	L2	rhyolite
RX 034294	8	24	60	0.1	L5	L2	rhyolite
RX 034295	2	13	55	L0.1	L5	3	rhyolite
RX 034296	4	25	90	0.2	L5	L2	rhyolite
RX 034297	6	8	30	L0.1	L5	4	tuff (andesitic)
RX 034298	4	16	31	L0.1	L5	L2	rhyolite
RX 034299	3	12	8	0.1	5	L2	rhyolite
RX 034300	8	16	90	0.3	L5	L2	rhyolite
RX 037801	70	6800	5050	14.6	15	26	rhyolite
RX 037802	18	1950	185	4.7	6	11	rhyolite
RX 037803	10	650	105	1.8	2	L2	rhyolite

* L - denotes less than

The anomalous gold values in zone 4 are related to a sequence of dikes and flow rocks of the Skukum Group volcanics. Most of the gold anomalies are coincident with base metal anomalies or in small intermediate dikes. The anomalous values in zone 4 do not appear to be related to an epithermal system. It is possible that they are related to some late stage fumerolic activity of the Skukum volcanic event. All of these anomalies occur along but just outside of the property boundary.

CONCLUSIONS AND RECOMMENDATIONS

The geological survey was able to delineate the major geological units on the property and to locate the zones of hydrothermal alteration. The hydrothermal alteration is limited to portions of the late Tertiary Quartz Feldspar Porphyry intrusions. No directly observable field evidence was found to indicate whether the alteration zones are related to caldera subsidence epithermal events, or to a late stage fluid phase during the intrusive emplacement of the Quartz Feldspar Porphyry, i.e. a porphyry system. The alteration zones 1-3 are locally anomalous in base metals and silver, and locally include alunite as an alteration mineral. No significant gold anomalies were encountered in these alteration zones. These anomalous base metal values could indicate either a lower portion (below the precious metal zone) of an epithermal system, or a base metal porphyry system. The presence of alunite could indicate the uppermost (above the precious metal zone) portion of an epithermal system on the outer portions of a porphyry system. None of the geochemical data or field observations acquired to date offer any positive indications that the alteration zones located within the Quartz Feldspar Porphyry have an economic potential for epithermal vein stockwork precious metal deposits.

Further studies by thin section, x-ray diffraction and fluid inclusion methods could provide information as to types and amounts of alteration minerals, temperatures of the hydrothermal events and possibly composition of the hydrothermal fluids. This data may enable an interpretation of which type of hydrothermal system is involved and of the possible economic potential.

BIBLIOGRAPHY

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2. Buchanan, L. J., 1981: Precious Metal Deposits associated with Volcanic Environments in the Southwest; in Relations of Tectonics to Ore Deposits in the Southern Cordillera; Arizona Geological Society Digest, Vol. XIV, Tuscon, Arizona.

3. Debicki, E. J., December 1981: Geological Survey and Diamond Drilling Report on RAM 1-10 Claims (Kreft Option) Primrose Lake Area - Whitehorse Mining District - Yukon Territory. Canadian Nickel Company Limited Report filed for assessment.

4. Watson, P. and Roy, R. J., 1978-79: Geological, Geochemical and Geophysical Report on the RAM 1-45 Mineral Claims, Whitehorse Mining District. United Keno Hill Mines Report filed for assessment.

5. Watson, P., Godwin, C. T., and Armstrong, R. L., 1981: Geology, Mineralization and K/Ar and Rb/Sr Isotopic Study of the RAM zinc-lead-silver Property, Yukon Plateau, Southwest Yukon Territory (105-D-4) in: Yukon Geology and Exploration 1979-80, Geology Section, D.I.A.N.D. pp. 123-127.

6. Wheeler, J. O., 1961: Geology of the Whitehorse Map Area, NTS: 105-D GSC Memoir 312, and Map 1093A, scale: 1:253,440.

7. Morrison, G. W., 1979: Metallogenic Map, Whitehorse Map Area, Yukon. D.I.A.N.D. Open File EGS 1979-6. Scale: 1:253,440.

APPENDIX A

ANALYTICAL METHODS AND RESULTS

BONDAR-CLEGG & COMPANY LTD.
136B Industrial Rd.,
Whitehorse, Yukon
Y1A 4X1

APPENDIX

KEY NOTATIONS

Type: R=rock D=drillcore S=soil L=stream sediment C=concentrate W=water V=vegetation X=standard P=pulp

Sieve Size: Default= -80 mesh 1= -80 mesh A= pulverized B= -60 mesh C= -40 mesh D= -20 mesh V= vegetation ash X= unknown or as received.

Digestion/Analysis codes: Each entry corresponds to one element of the same column number.

Digestion	Code	Analysis	Code
Fire Assay	F	Atomic Absorption	1
HNO3	B	Colorimetry	2
HNO3-HC104	D	Fluorimetry	3
Multi acid	C	Carbon Rod AA	4
Iodide Fusion	I	X-Ray Flourescence	6
Evaporation Preconc.		Specific Ion	5
+ HNO3	G		
Aqua Regia	A		
Fusion	T		
HBr-Br	E		

All other Digestion/Analysis codes will be defined at the end of written reports, and in the "Header" portion of transmitted reports.

Element Values: All element concentrations are in PPM (parts per million), unless otherwise noted.

Alpha characters will denote the following:

=Blank, for a normal value.
G=Greater than the limit of detection.
H=Interference (numerical field will show best estimate under circumstances).
L=Less than the limit of detection.
N=Undetected (numerical fiel blank).
Q=Interference and small sample.
R=Analysis done on a reduced sample size relative to sample population.
S=Insufficient sample (numerical field blank).
T=Detection limit on small sample size.
Z=Value is forthcoming.

Digestion/Analysis code is combined: with digestion code first, e.g. A2 is $HClO_3$ digestion with colorimetric analysis; Emission Spec, X-Ray, and Neutron Activation will have a "blank" as digestion code, unless they are performed ona portion of the sample that differs from "as received".

CLIENT: CANICO
GEOLOGIST: MANSON, W AGEOLOGIST: ,
NUMBER OF SAMPLES: 33 PRIORITY: P
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REPORT NUMBER: G42-131
PROJECT: RAM 61010-14030
DATE: JULY 06, 1982

REC# /	SAMPLE NUMBER		/ T/ S	CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM	AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
0001	RX28067	R1	R A	37	16	77	0.6	5	3
0002	RX28068	R2	R A	3	14	55	0.3	L 5	L 2
0003	RX28069	R3	R A	7	16	110	0.4	L 5	3
0004	RX28070	R4	R A	4	12	80	0.2	L 20 *	L 2
0005	RX28071	R5	R A	5	9	85	0.2	L 5	L 2

* 2.3 g. sample wt.

---END---

CLIENT: CANICO
GEOLOGIST: MANSON, M AGEOLOGIST: ,
NUMBER OF SAMPLES: 33 PRIORITY: P
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REPORT NUMBER: G42-131
PROJECT: RAM 61010-14030
DATE: JULY 06, 1982

SAMPLE NUMBER	/ T/ S	CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM	AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
N10 RX28072	R A	12	10	18	0.8	L 5	L 2
N11 RX28073	R A	6	19	20	0.2	55	L 2
R6 RX28074	R A	4	8	15	0.2	25	L 2
R7 RX28075	R A	64	2550	1500	6.2	L 5	3
R8 RX28076	R A	26	468	2610	0.7	L 5	L 2

---END---

CLIENT: CANICO
GEOLOGIST: MANSON, W AGEOLOGIST: ,
NUMBER OF SAMPLES: 33 PRIORITY: P

REPORT NUMBER: G42-131
PROJECT: RAM 61010-14030
DATE: JULY 06, 1982

SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REC# /	SAMPLE NUMBER / T/ S		CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM		AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
0011	N 1	RX34292 R A	5	54	160		0.2	20	4
0012	N 2	RX34293 R A	3	28	70		0.4	10	L 2
0013	N 3	RX34294 R A	8	24	60		0.1	L 5	L 2
0014	N 4	RX34295 R A	2	13	55	L	0.1	L 5	3

---END---

CLIENT: CANICO
GEOLOGIST: MANSON, W AGEOLOGIST: ,
NUMBER OF SAMPLES: 33 PRIORITY: P
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REPORT NUMBER: G42-131
PROJECT: RAM 61010-14030
DATE: JULY 06, 1982

REC# /	SAMPLE NUMBER	/ T/ S	CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM		AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
0015	N 6	RX34296 R A	4	25	90		0.2	L 5	L 2
0016	N 7	RX34297 R A	6	8	30	L	0.1	L 5	4
0017	N 8	RX34298 R A	4	16	31	L	0.1	L 5	L 2
0018	N 9	RX34299 R A	3	12	8		0.1	5	L 2
0019	N 5	RX34300 R A	8	16	90		0.3	L 5	L 2

---END---

RAM CLAIMS

CLIENT: CANICO
GEOLOGIST: MANSON, W GEOLOGIST: , REPORT NUMBER: G42-122
NUMBER OF SAMPLES: 22 PROJECT: PRIMROSE 61010-14030
PRIORITY: P DATE: JULY 01, 1982
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

SAMPLE NUMBER / T/ S		CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM	AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
[illegible]	RW 4 RX37601 R A	28	24	196	0.6	5	L 2
0002	RW 6 RX37602 R A	36	38	1050	0.6	L 5	3
0003	RW 8 RX37603 R A	10	28	45	0.4	L 5	L 2
0004	RW 13 RX37604 R A	22	14	45	0.1	L 5	L 2
0005	RW 14 RX37605 R A	92	30	95	1.4	L 5	L 2
0006	RW 15 RX37606 R A	800	124	360	2.6	L 5	L 2
0007	RW 16 RX37607 R A	50	184	60	4.6	L 5	5
0008	RW 17 RX37608 R A	6600	244	415	8.6	L 5	L 2
0009	RW 18 RX37609 R A	300	68	65	1.7	L 5	L 2
0010	RW 21 RX37610 R A	100	36	70	0.4	L 5	L 2
0011	RW 27 RX37611 R A	475	24	70	2.4	L 5	4
0012	RW 28 RX37612 R A	115	42	70	2.2	L 5	L 2
0013	RW 31 RX37613 R A	190	104	100	4.4	L 5	L 2
0014	RW 35 RX37614 R A	70	50	50	0.4	L 5	L 2
0015	RW 37 RX37615 R A	12	22	20	0.4	L 5	L 2
0016	RW 38 RX37616 R A	8	30	30	0.3	L 5	4
0017	RW 40 RX37617 R A	8	24	20	0.4	L 5	L 2
[illegible]	RW 41 RX37618 R A	6	8	20	0.3	L 5	L 2
[illegible]	RW 44 RX37619 R A	6	8	30	0.2	L 5	L 2
0020	RW 45 RX37620 R A	4	12	10	0.2	L 5	4
0021	RW 46 RX37621 R A	5	54	45	0.2	L 5	L 2
0022	RW 47 RX37622 R A	50	24	40	1.8	L 5	8

---END---

CLIENT: CANICO
GEOLOGIST: MANSON, W AGEOLOGIST: ,
NUMBER OF SAMPLES: 29 PRIORITY: P
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REPORT NUMBER: G42-136
PROJECT: PRIMROSE 61010-14030
DATE: JULY 06, 1982

SOIL /	SAMPLE NUMBER	/ T/ S	CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM	AG/A1 PPM	~~WF2~~ PPM	AU/F1 PPB	SB/ 6 PPM
0014	RW49 RX37701	R A /	4	8	5	0.3		L 5	3 /
0015	RW50 RX37702	R A /	2	12	5	0.5		L 5	5
0016	RW53 RX37703	R A /	4	10	10	0.6		L 5	5
0017	RW63 RX37704	R A /	4	16	2	0.2		L 5	3
0018	RW65 RX37705	R A /	3	16	5	0.4		L 5	8
0019	RW72 RX37706	R A /	12	24	15	0.2		L 5	7
0020	RW73 RX37707	R A /	16	16	30	0.4		L 5	7
0021	RW74 RX37708	R A /	52	16	25	L 0.1		L 5	4

---END---

CLIENT: CANICO
GEOLOGIST: MANSON, W ASSOCIATE GEOLOGIST: ,
NUMBER OF SAMPLES: 15 PRIORITY: P
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REPORT NUMBER: G42-147
PROJECT: PRIMROSE 6101-14030
DATE: JULY 19, 1982

REC#	SAMPLE NUMBER	/ T/ S	CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM	AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
0008	YT 2	RX037801 R A	70	6800	5050	14.6	15	26
0009	YT 3	RX037802 R A	18	1950	185	4.7	6	11
0010	YT 4	RX037803 R A	10	650	105	1.8	2	L 2
0011	N 46	RX037804 R A	4	660	110	1.4	2	3
0012	N 49	RX037805 R A	4	220	72	0.4	L 2	5
0013	N 18	RX037806 R A	8	165	45	0.4	16	L 2
0014	N 19	RX037807 R A	2	90	50	0.3	L 2	L 2
0015	N 25	RX037808 R A	2	40	32	0.1	2	L 2

---END---

CLIENT: CANICO
GEOLOGIST: MANSON, W AGEOLOGIST: ,
NUMBER OF SAMPLES: 19 PRIORITY: P
SEE APPENDIX FOR EXPLANATION OF DIGESTION, ANALYSIS, SAMPLE TYPE, AND SIEVE SIZE CODES.

REPORT NUMBER: G42-150
PROJECT: PRIMROSE 61010-14030
DATE: JULY 21, 1982

SEQ /	SAMPLE NUMBER	/ T/ S	CU/A1 PPM	PB/A1 PPM	ZN/A1 PPM	AG/A1 PPM	AU/E4 PPB	SB/ 6 PPM
3006	N29	RX037809 R A	4	10	50	0.2	2	3
3007	N 32	RX037810 R A	2	6	25	0.3	L 2	L 2
3008	N36	RX037811 R A	5	18	75	0.2	L 2	L 2
3009	N38	RX037812 R A	3	8	10	0.7	L 2	3
3010	N 40	RX037813 R A	2	8	110	0.4	L 2	4
3011	N41	RX037814 R A	3	22	195	0.4	L 2	L 2
3012	R12	RX037815 R A	14	16	15	0.3	L 2	3
3013	LO 12	RX037816 R A	94	24	20	0.6	L 2	L 2
3014	Rw-21	RX037817 R A	24	12	30	0.3	L 2	L 2
3015	Rw 51	RX037818 R A	2	4	5	0.2	L 2	L 2
30	Rw 75	RX037819 R A	2	32	25	0.1	L 2	6
3017	Rw 81	RX037820 R A	8	14	15	0.2	L 2	L 2
3018	Rw 83	RX037821 R A	L 1	12	10	0.8	4	L 2
3019	Rw 84	RX037822 R A	L 1	4	5	0.4	L 2	L 2

---END---

APPENDIX B

ALUNITE FIELD TEST

The following method was used as a field test to qualitatively determine the presence of the mineral ALUNITE.

Step 1 Obtain approximately 5 grams (sugar cube size) sample of the test material.

Step 2 Pulverize the sample to a fine powder in mortar and pestle or commercial rock crusher.

Step 3 Place sample in a pyrex test tube (20 ml size).

Step 4 Heat the sample with a hot flame (e.g. butane torch) until sample is red hot and a condensate forms around the mouth of the test tube.

Step 5 Using litmus paper (pH paper) test the pH level of the condensate.

Step 6 A pH level in the range of pH 1-2 will indicate the presence of the mineral ALUNITE.

APPENDIX C

LIST OF PERSONNEL

Personnel employed during the course of the work covered by this report.

Name	Address
W. O. Manson	19 Market Street Copper Cliff, Ontario POM 1NO
R. Leonard	345 St. Laurent, West Longuevil, Quebec J4H 1M8
S. Anderson	553 King George Highway Newcastle, New Brunswick E1V 1N2
N. Nemeth	48 - 6453 Colborne Street Niagara Falls, Ontario L2J 1E7
J. Mehltretter	295 Beechfield Road Oakville, Ontario L6J 5H9
M. Parris	455 Kirkwood Drive Sudbury, Ontario P3E 1X1
W. Marsaw	1699 Virginia Drive Sudbury, Ontario

APPENDIX D

STATEMENT OF EXPENDITURES

RAM CLAIMS 11-58

STATEMENT OF EXPENDITURES

JUNE 1 - JUNE 24, 1982

General		
Salaries & Fringes	2,100.00	
Personnel Expenses	300.00	
Misc. Supplies, Services & Rentals	351.70	$ 2,751.70
Geological Surveys		
Salaries & Fringes	9,166.50	
Personnel Expenses (Meals & Accommodations)	4,050.00	
Transportation (Helicopter & Truck)	15,383.25	
Supplies and Equipment	1,305.04	
Drafting	944.19	
Orthophoto	2,737.80	33,586.78
Geochemical Surveys		
Salaries & Fringes	1,018.50	
Personnel Expenses (Meals & Accommodations)	450.00	
Transportation (Helicopter & Truck)	1,709.25	
Supplies and Equipment	145.52	
Drafting	104.91	
Orthophoto	304.20	
Analytical Services	830.55	4,562.93
Total Field Cost		$40,901.41
Overhead @ 10% of 40,901.41 =		4,090.14
Grand Total		$44,991.55

APPENDIX E

CERTIFICATE OF QUALIFICATIONS

Certificate of Qualifications

I, WAYNE O. MANSON, of the City of Sudbury, in the Province of Ontario, HEREBY CERTIFY

1. That I reside at 19 Market Street, Copper Cliff, Ontario, POM 1NO.

2. That I am a graduate of the University of Saskatchewan, Saskatoon, Saskatchewan, with a degree of Bachelor of Science (1974).

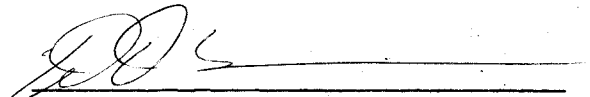
3. That I am a Project Geologist with the Canadian Nickel Company Limited, (subsidiary of Inco Limited) of Copper Cliff, Ontario, POM 1NO.

4. That I have practised my profession as a geologist since 1974, having worked in Ontario, Quebec, Saskatchewan, the Northwest Territories and the Yukon Territory.

5. That I visted the areas discussed in this report and that the work described in this report was carried out under my supervision.

6. That I am a member of the Canadian Institute of Mining and Metallurgy.

Dated at Copper Cliff, Ontario, this 21st. day of October, 1982.



WAYNE O. MANSON

RAM 58
YA74272

RAM 57
YA74271

RAM 56
YA74270

RAM 55
YA74269

RAM 54
YA74268

RAM 53
YA74267

RAM 52
YA74266

RAM 51
YA74265

RAM 50
YA74264

RAM 49
YA74263

RAM 48
YA74262

RAM 47
YA74261

RAM 46
YA74260

RAM 45
YA74259

RAM 44
YA74258

RAM 43
YA74257

RAM 42
YA74256

RAM 41
YA74255

RAM 40
YA74254

RAM 39
YA74253

RAM 38
YA74252

RAM 37
YA74251

RAM 26
YA74240

RAM 25
YA74239

ZONE 4

Watson River

W.L. 1424

W.L. 1450

W.L. 1442

x 4/660/110/1.4/2/3

4/220/72/0.4/<2/5 x

2/13/55/<0.1/<5/3 x

x4/25/90/0.2/<5/<2
3/12/8/0.1/5/<2

5/9/85/0.2/<5/<2 x
4/12/80/0.2/<5/<2 x
7/16/110/0.4/<5/3

5/54/160/0.2/20/4

37/16/77/0.6/5/3

4/25/90/0.2/<5/<2

x6/8/30/<0.1/<5/4

3/14/55/0.3/<5/<2 x

x8/16/90/0.3/<5/<2

x8/24/60/0.1/<5/<2

x 3/28/70/0.4/10/<2

x10/650/105/1.8/2/<2
x70/6800/3050/14.6/15/26
x18/1950/185/4.7/6/11

x12/10/18/0.8/<5/<2

x6/19/20/02/55/<2

26/468/2610/0.7/<5/<2
x64/2550/1500/6.2/<5/3

x4/8/15/0.2/25/<2

LEGEND

Cu/Pb/Zn/Ag/Au/Sb
x6/10/23/19/5/2 Sample site and assays
Au assays are in ppb
All others are in ppm

☐ Claim post

Contour interval: 20m
Elevation data by Pacific Survey Corp. (Primrose L.)

2

0 25 50 100 200 300 400 500
METRES

091B/3

Canadian Nickel Company Limited Copper Cliff, Ontario POM 1NO

GEOCHEMICAL (ROCK) SURVEY

SHEET 1

FIGURE

Project: PRIMROSE (KREFT OPTION)

Area: WHITEHORSE, YUKON TERRITORY

Supervisor: W.O. Manson

Instrument:

Survey date: June, 1982

Compiled by: W.O. Manson, et al

Drawn by: W.E. Marsaw

Date drawn: Oct., 1982

Revised:

Scale: 1:5000

File:

N.T.S. 105D 4

RAM 6
YA8223

RAM 7
YA8224

RAM 4
YA8221

RAM 10
YA23043

RAM 5
YA8222

RAM 2
YA8189

RAM 9
YA23042

RAM 25
YA 74239

RAM 1
YA8188

RAM 22
YA74236

RAM 3
YA8220

RAM 23
YA74237

ZONE 1
800/124/360/2.6/<5/<2
x50/184/60/4.6/<5/5
x600/244/415/8.6/<5/<2
x300/68/65/1.7/<5/<2
22/14/45/0.1/<5/<2 x
92/30/95/1.4/<5/<2x
x 100/36/70/0.4/<5/<2
x 475/24/70/2.4/<5/4
x94/24/20/0.6/<2/<2
x28/24/196/0.6/5/<2
x 115/42/70/2.2/<5/<2
36/38/1050/0.6/<5/3x
x190/104/100/4.4/<5/<2
x24/12/30/0.3/<2/<2
x10/28/45/0.4/<5/<2
x70/50/50/0.4/<5/<2
x12/22/20/0.4/<5/<2
x8/30/30/0.3/<5/4

RAM 8
YA19718

RAM 21
YA74235

RAM 20
YA74234

ZONE 2
x12/24/15/0.2/<5/7
x16/16/30/0.4/<5/7
x52/16/25/0.1/<5/4
x8/165/45/0.4/16/<2
x8/14/15/0.2/<2/<2
x<1/12/10/0.8/4/<2
x2/32/25/0.1/<2/6
x2/90/50/0.3/<2/<2
x<1/4/5/0.4/<2/<2

RAM 26
YA74240

RAM 24
YA74238

RAM 18
YA74232

RAM 19
YA74233

RAM 17
YA74231
x14/16/15/0.3/<2/3

RAM 15
YA74229

RAM 16
YA74230

RAM 37
YA74251

RAM 35
YA74249

RAM 14
YA74228

RAM 33
YA74247

RAM 13
YA74227

ZONE 3
(LOW pH)
x3/16/5/0.4/<5/8

RAM 31
YA74245

RAM 38
YA74252

x 1558
4/16/2/0.2/<5/3

RAM 29
YA74243

x4/10/10/0.6/<5/5
x 2/4/5/0.2/<2/<2
x 2/12/5/0.5/<5/5
4/8/5/0.3/<5/3

4/12/10/0.2/<5/4
5/54/45/0.2/<5/<2
x 6/8/30/0.2/<5/<2
(LOW pH)

RAM 27
YA 74241

(LOW pH)
8/24/20/0.4/<5/<2
6/8/20/0.3/<5/<2

RAM 36
YA74250

x50/24/40/1.8/<5/8

RAM 34
YA74248

RAM 12
YA74226

RAM 32
YA74246

x4/10/50/0.2/2/3

RAM 30
YA74244

ZONE 3
x2/6/25/0.3/<2/<2
x 3/8/10/0.7/<2/3
x5/18/75/0.2/<2/<2
x3/22/195/0.4/<2/<2
x2/8/110/0.4/<2/4

RAM 28
YA74242

RAM 11
YA74225

Primrose

Lake

LEGEND

Cu/Pb/Zn/Ag/Au/Sb
x6/10/23/19/5/2 Sample site and assays
Au assays are in ppb
All others are in ppm

☐ Claim post

0 25 50 100 200 300 400 500
METRES

091388

Contour interval : 20m
Elevation data by Pacific Survey Corp. (Primrose L.)

2 | 1

Canadian Nickel Company Limited Copper Cliff, Ontario POM 1NO

GEOCHEMICAL (ROCK) SURVEY	SHEET 2	FIGURE

Project: PRIMROSE (KREFT OPTION)	Area: WHITEHORSE, YUKON TERRITORY		
Supervisor: W.O. Manson	Instrument:	Survey date: June, 1982	
Compiled by: W.O. Manson, et al	Drawn by: W.E. Marsaw	Date drawn: Oct., 1982	Revised:
Scale: 1:5000	File:	N.T.S. 105D 4	

RAM 25 YA74239
RAM 26 YA74240
RAM 37 YA74251
RAM 38 YA74252
RAM 39 YA74253
RAM 40 YA74254
RAM 41 YA74255
RAM 42 YA74256
RAM 43 YA74257
RAM 44 YA74258
RAM 45 YA74259
RAM 46 YA74260
RAM 47 YA74261
RAM 48 YA74262
RAM 49 YA74263
RAM 50 YA74264
RAM 51 YA74265
RAM 52 YA74266
RAM 53 YA74267
RAM 54 YA74268
RAM 55 YA74269
RAM 56 YA74270
RAM 57 YA74271
RAM 58 YA74272

ZONE 4

Watson River

W.L. 1424
W.L. 1450
W.L. 1442

LEGEND

LITHOLOGY

TERTIARY
- 5 — Quartz-feldspar porphyry
  - a-quartz-feldspar porphyry, locally rhyolitic
  - b-local areas of hydrothermal alteration
- 4 — Skukum Group volcanics
  - a-basalt-andesite
  - b-trachyte-dacite
  - c-rhyolite
  - cl-altered rhyolite
  - d-mafic lapilli tuff

CRETACEOUS
- 3 — Coast intrusion granite
- 2 — Coast intrusions Diorite, quartz-diorite, granodiorite

MISSISSIPPIAN-PRECAMBRIAN
- 1 — Yukon Group
  - a-quartz-mica schist and gneiss, quartzite, crystalline limestone
  - b-skarn

SYMBOLS
- Traverse location
- Geologic boundary (interpreted)
- Alteration zones (limit known, unknown)
- 70° Foliation (dip known, unknown)
- Jointing (inclined, vertical)
- xN-54 Sample site and field number
- xRX034291 Assay number
- Claim post
- sp Sphalerite
- gal Galena
- mal Malachite

See Geochemical Plans for assay results

Contour interval: 20m
Elevation data by Pacific Survey Corp. (Primrose L.)

091383

0 25 50 100 200 300 400 500 METRES

Canadian Nickel Company Limited Copper Cliff, Ontario POM 1NO

GEOLOGIC SURVEY	SHEET 1	FIGURE

Project: PRIMROSE (KREFT OPTION)	Area: WHITEHORSE, YUKON TERRITORY		
Supervisor: W.O. Manson	Instrument:	Survey date: June, 1982	
Compiled by: W.O. Manson, et al	Drawn by: W.E. Marsaw	Date drawn: Oct., 1982	Revised:
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YA74248

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YA74226

RAM 32
YA74246

RAM 30
YA74244

RAM 28
YA74242

RAM 11
YA74225

Primrose

Lake

LEGEND ON SHEET 1

0 25 50 100 200 300 400 500
METRES

091383

Canadian Nickel Company Limited — Copper Cliff, Ontario POM 1NO

GEOLOGIC SURVEY

SHEET 2 | FIGURE

Project: PRIMROSE (KREFT OPTION) | Area: WHITEHORSE, YUKON TERRITORY

Supervisor: W.O. Manson | Instrument: | Survey date: June, 1982

Compiled by: W.O. Manson, et al | Drawn by: W.E. Marsaw | Date drawn: Oct., 1982 | Revised:

Scale: 1:5000 | File: | N.T.S. 105D 4

Contour interval: 20m
Elevation data by Pacific Survey Corp. (Primrose L.)