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SUMMARY REPORT  
NORTHERN GOLD PROJECT

M504

GEOLOGY AND GEOCHEMISTRY RESULTS  
FROM 1982 PROGRAM IN TULSEQUAH MAP AREA

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## TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. STRUCTURE	2
III. NAHLIN REGION	4
A) HARLUCK CLAIM ✓	5
B) GOAT CLAIMS ✓	5
C) GRINGO CLAIM ✓	7
IV. KING SALMON REGION ✓	7
A) BARB CLAIMS ✓	8
B) TARDIS CLAIMS ✓	9
V. TRAPPER LAKE REGION ✓	11
A) EMU CLAIM ✓	12
B) OUTLAW CLAIMS ? ✓	12
C) VEIN CLAIMS ✓	14
<i>No Report - or Ass Rpt - in file</i>	
VI. TATSAMENIE REGION	15
A) EWE CLAIM	16
B) TUT-RAM CLAIMS	16
C) NIE #8 CLAIM	17
D) NIE CLAIMS	17
E) MISTY CLAIMS	18
F) BEAR-TOTEM CLAIMS	19
G) BANDIT CLAIMS	21
<i>Missing from this report.</i>	
<i>did this end up being Golden Bear?</i>	
<i>No Report -</i>	

## I. INTRODUCTION

This report details field work carried out during June 1 to September 15, 1982 on the Northern Gold Project (M504). Results from the 1981 field season are contained in the summary report for M504. This report covers the second field season of work on a major grass roots precious metal exploration program. Initial results obtained during 1981 led to the staking of over 700 units in 10 separate claim groups. Work during 1982 was divided between detailed property sampling, follow-up of anomalous 1981 reconnaissance samples and new reconnaissance prospecting. The main base camp at Trapper Lake was supplemented by fly camps at the GOAT and BANDIT claims. Items such as physiography, climate, logistics and field methods are discussed in the 1981 report.

The purpose of this report is to broadly outline the 1982 program with a discussion of key results. The details of individual results on specific properties are available in the assessment reports which have been filed for each claim group. Exploration is divided into four main regions in the Tulsequah area; Nahlin region, King Salmon region, Trapper Lake region and Tatsamenie region (Figure 1).

# NORTHERN GOLD PROJECT

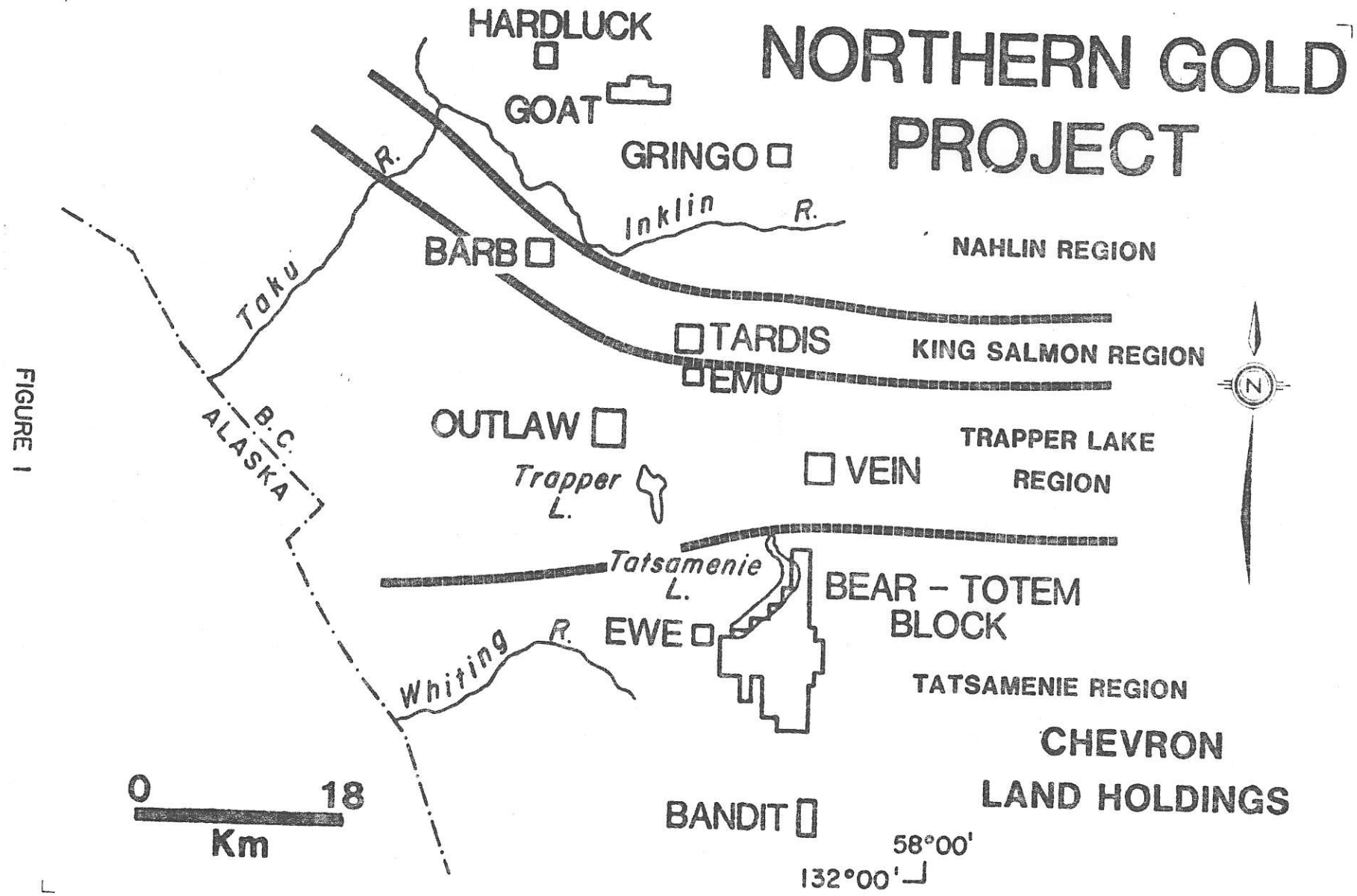


FIGURE 1

0 18  
Km

58°00'  
132°00'

## II. STRUCTURE

Structural features in the Tulsequah map sheet are dominated by northwest trending faults (Figure 2). These faults include the Nahlin Fault, a large strike-slip fault separating the Cache Creek Terrane and Stikine Terrane to the south. Another large northwest striking fault is the King Salmon Thrust Fault which was formed by overthrusting from the northeast. These major faults divide the map sheet into three major lithotectonic assemblages.

The northernmost assemblage is the Cache Creek Terrane which is a mafic volcanic sequence and associated limestones with extensive faulting parallel to the Nahlin Fault. These faults contain diapirically emplaced serpentine pods which are hydrothermally altered to quartz-carbonate and chrome-mica locally. Sites of such hydrothermal alteration were the main exploration targets in this region.

The central lithotectonic assemblage covers the region from the Nahlin Fault, south to the King Salmon Thrust Fault. This region is overlain by Jurassic sediments of the Inklin Formation. These sediments are deformed by abundant northwest trending open folds which exhibit axial planar cleavage. In the immediate vicinity of the King Salmon Thrust Fault, the intensity of folding increases dramatically and isoclinal folds are common. Small northwest trending shear faults associated with the folding are common.

# NORTHERN GOLD M504 STRUCTURE-TULSEQUAH

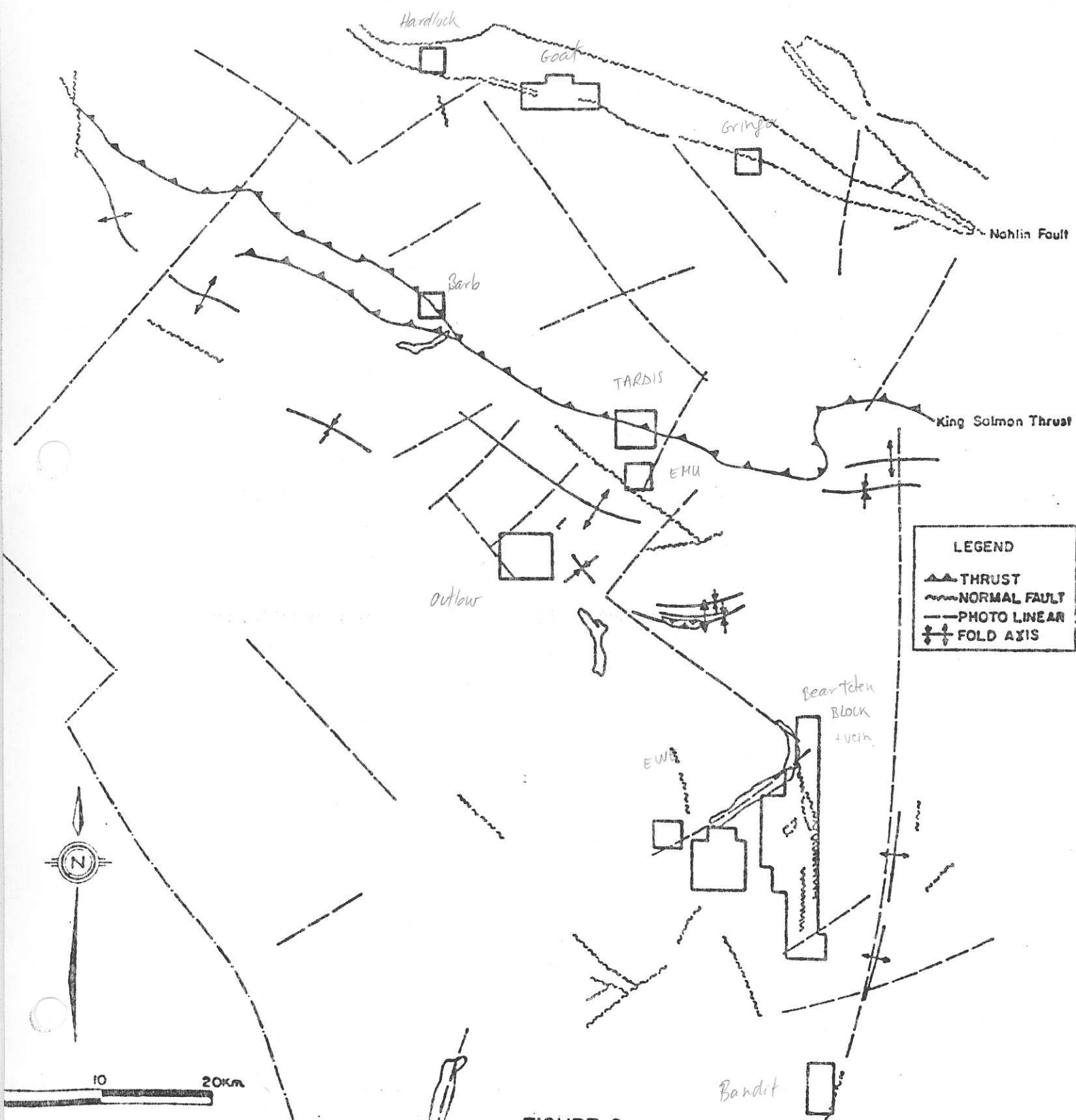


FIGURE 2

South of the King Salmon Thrust Fault are the first exposures of the Stikine Terrane which forms an extremely complex assemblage of rock units. Structures in the area include abundant northwest-southeast and north-south faulting and folding as well as northeast-southwest faulting. Both the northwest-southeast and northeast-southwest fault directions have major rhyolite dyke swarms associated with them. Exploration in this region to date has concentrated along north-south and northwest-southeast trending faults which exhibit evidence of hydrothermal systems.

### III. NAHLIN REGION (maps in folder)

Exploration in the Nahlin region has been focused on two main exploration targets. Foremost is the Nahlin Fault which is a large strike-slip fault with abundant alpine ultramafic bodies along its length. Quartz, carbonate and chrome mica alteration zones have been reconnaissance sampled along the fault (samples 100-300 m apart). This sampling resulted in the staking of the HARLUCK and GRINGO claims. Results to date have not been encouraging; the few arsenic-antimony anomalies discovered have no associated gold-silver mineralization. No further exploration on these altered zones is planned at this time.

The second major target in the Nahlin region is the Jurassic Inklin sediments. Intrusions of felsic Cretaceous-Tertiary rocks are known in the Jurassic belt, and such intrusions could be the focus of hydrothermal systems developed in permeable zones in the sediments. Sampling of the Inklin Formation to date has been of a strictly reconnaissance nature. Results have been mixed; some areas such as south of Yeth Creek have produced values as high as 900 ppb Au within favourable rock types such as silica breccia. This area (now called HO creek) will be subject to detailed geological mapping and sampling in 1983. Other areas have been less favourable with geochemical results being at background levels. The immense size of the region presents a problem using reconnaissance soil sampling. Possibly some areas could be eliminated by first doing a regional silt survey using multi-element analysis and identifying target areas based on the results. This would enable the soil sampling to be done in a more focused manner.



A) HARDLUCK (maps in folder)

This claim is situated on the southern edge of the Nahlin Fault zone. Pods of serpentinite have been emplaced along this fault zone and have undergone limited alteration to a quartz-carbonate rock often with abundant chrome mica. It was in one of these quartz-carbonate altered zones that a rock sample containing 1125 ppb Au was collected in 1981. The sample contained abundant grey chalcedony stringers.

Work in 1982 was limited to one day of sampling in the vicinity of the original 1125 ppb Au anomaly. A total of 11 rock and 10 soil samples were collected on and around the discovery quartz-carbonate outcrop. All the gold values of the follow-up samples were at background levels. The original anomaly could not be duplicated. Given the limited extent of the quartz-carbonate zones in the serpentinite and the lack of gold values in the rock samples, it is recommended that no further work be done on this claim.

B) GOAT (maps in folder)

The GOAT claims are situated on the southern edge of the Nahlin Fault zone. Jurassic siltstones underlie the central and southern portion of the claims with serpentinite rubble being confined to the northern edge of the claims. Intruding the siltstone are quartz-feldspar porphyry dykes of Cretaceous-Tertiary age.

Near the margins of some of these intrusive bodies, well developed diatremes have formed ranging in composition from dominantly plutonic to dominantly sedimentary. Possibly the diatremes containing mainly quartz-feldspar

porphyry fragments are from deeper in the hydrothermal system than diatremes containing mainly sedimentary fragments which may have formed as surface ejection phenomena.

Mineralization discovered in 1981 consisted of minor quartz-pyrite veins, quartz-sphalerite veins and disseminated pyrite with trace gold values. A float boulder with 4950 ppb Au was found in the creek draining the central portion of the claims. This boulder is described as silicified Inklin siltstone with abundant pyrite disseminations and veins.

The goal of the 5-day work program in 1982 was to discover the source of the gold-bearing float boulder and map the extent of the diatremes. No source was found for the float boulder and exposures of diatreme outcrop are minimal. No mineralization was found associated with the diatremes. The quartz-sphalerite and quartz-pyrite veins are only centimetres in width and contain minor precious metal values.

Geological mapping during 1982 showed that the serpentinite on the northern part of the claims occurs as rubble (talus glacier?) which is covering the siltstones and quartz feldspar porphyry. Work in 1983 should involve detailed mapping and sampling of the diatreme breccias to see if a zoning pattern about a central vent can be developed. Close attention to mineralization of fragments in the breccias may give a clue as to the potential for buried mineralization.

C) GRINGO (maps in folder)

The GRINGO claim is situated on the south side of the Nahlin Fault zone and covers a wedge of Triassic andesite bordered to the north by serpentinite and the south by Jurassic siltstone. The claims were originally staked in 1981 to cover a 355 ppb Au anomaly in soil overlying the Triassic andesites. Rocks in the vicinity of the soil anomaly appear sheared, weakly silicified and pyritized. A soil grid was put in during 1982, and sampling and mapping were carried out over a two day period. The original soil anomaly was not duplicated by the grid. On the southeast corner of the grid, weakly anomalous values of gold and silver were obtained, but these may be related to organic-rich soils in the area.

Follow-up work for 1983 should consist of detailed sampling and mapping in the south-east corner of the grid to determine the source of the gold-silver anomaly.

IV. KING SALMON REGION (maps in folder)

Exploration in the King Salmon region has been focused along the King Salmon Thrust Fault. This major fault juxtaposes Triassic limestone over Jurassic sandstones and conglomerates. In several places along the fault the limestone is silicified and has pronounced Hg, F, As and Sb soil and rock geochemical anomalies.

Work to date has centered on the TARDIS claims; however, at least one other area of high As and Sb has been identified (on north side of One-Way Creek). No precious metals have been found associated with these As, F, Hg and Sb

bearing silicified limestones. The data will be evaluated with D. Glanzman (Denver office) when he arrives in the field in 1983 and possibly some new ideas can be generated. Currently the samples from the TARDIS claim are being run for 24 elements in an effort to further define the nature of the hydrothermal system.

The BARB claims are also along the King Salmon Thrust Fault. Mineralization on the BARB claims appears associated with magnetite bearing skarn pods rather than the As, Sb, Hg, F hydrothermal systems along One-Way Creek.

A couple of As and Sb anomalies in the Inklin sediments, south of the Inklin River, also merit follow-up (vicinity of JA-584); however, no extensive sampling is planned in the KING SALMON region for 1983.

A) BARB (maps in folder)

The BARB claims have been under option since 1981 originally as a copper-gold-silver massive sulphide exploration target. Initial work on the massive sulphide target was discouraging; however, geochemical sampling on the property uncovered a zone of anomalous As and Sb along the King Salmon Thrust Fault. The Sinwa limestone, adjacent to the fault, is skarnified with pods of magnetite carrying up to 700 ppb Au. Exploration on the claims in 1982 was concentrated along the thrust fault and consisted mainly of a soil grid with lines every 200 m and stations at 50 m on the lines. An area of anomalous Au, Ag and As was outlined in the central portion of the claims. This region is underlain by Sinwa limestone and Jurassic-Cretaceous diorite. The geochemical anomaly may be a reflection

of large bodies of buried skarn mineralization. To test this hypothesis, a detailed magnetometer survey is planned for 1983 to locate any large magnetite bodies near the surface. In conjunction with the magnetometer survey, detailed geological mapping of all outcrops in the central portion of the claims will be carried out.

B) TARDIS (maps in folder)

The TARDIS claims are situated along the King Salmon Thrust Fault. The claims cover an area of altered Triassic limestone which is bounded on the north by Jurassic siltstones and on the south by Jurassic siltstone and sandstone. The King Salmon Thrust Fault occurs at the base of the Triassic limestone. In 1980 an outcrop of silicified Triassic limestone was sampled and found to contain high levels of mercury, fluorine, antimony and arsenic. Limited sampling was undertaken in 1981 after staking the property. A large soil grid was put in during 1982 and sampling and mapping for a period of four days was carried out.

Anomalies of F, As, Sb, Hg clearly follow the strike of the King Salmon Thrust Fault northwest across the claims. In the central part of the claims the thrust fault is either folded or faulted several hundred metres to the north. This offset does not appear to affect the Hg, Sb, As, F anomalies indicating that the structure which localized the hydrothermal system on the claims was active post-thrusting (or post-mid-Jurassic). The low amounts of Au and Ag present in altered rocks in the centre of the hydrothermal system may be a reflection of the fact that this is the very top of the system and the precious metal zone could be up to 1000 m below.

Work planned for 1983 includes gold panning as a check for presence of gold in the soils and ICP-26 element analysis on rock and soil samples from the claim. The purpose of the multi-element geochemistry will be to clearly define the components of the hydrothermal system in an effort to categorize it as a certain deposit type (i.e. F-Hg-Sb, Sb-As, Sb-As-W-Au, etc.). Additional information that can be derived from the ICP data includes estimation of present erosion level of the hydrothermal system and estimation of the strength of the system as a function of increases in element concentration over background. Any further work in 1983 will depend on analysis of above results; drilling if merited will wait until 1984.

V. TRAPPER LAKE REGION (maps in folder)

Exploration in this region has been guided by using some of the following criteria; presence of existing mineralization (i.e. known porphyry Cu deposits), existing Chevron claim groups (working peripherally to these) and favourable geology (as defined by the exploration model). Results to date have been encouraging with a number of mineralizing centres identified.

The area around the OUTLAW claims seems to have the greatest potential and size at this time. Extensive areas of As, Sb, Au and Ag anomalies suggest that this is a region of widespread hydrothermal activity. As such, this region should be sampled and prospected on a fairly intensive basis during the summer of 1983. This suggestion is supported by bulk sample results which give high gold values in the -200 +60 HN fraction in the OUTLAW area.

Another region with some very encouraging results to date is the headwaters of Rodney creek on the north side. Some vein mineralization running greater than 0.3 oz/t Au has been discovered. Favourable hosts in the area such as limestone and highly fractured greenstone have the potential for larger tonnage mineralization. Detailed mapping and prospecting should be concentrated at the headwaters of Rodney Creek.

At the south end of Tatsamenie Lake, on the north shore, are some silicified zones with up to 4000 ppb Au. The extent and nature of these zones should be determined and possibly several trenching targets can be identified.

A) EMU (maps in folder)

The EMU claim is situated on the contact between a biotite-hornblende quartz-monzonite and Jurassic siltstone. Most of the claim is underlain by the quartz monzonite unit which is Cretaceous-Tertiary in age. The claim was staked in 1981 to cover a small area of quartz-galena veins. Follow-up work in 1982 explored the extent of the quartz-galena veins and also located narrow quartz-carbonate altered zones along the quartz monzonite-siltstone contact. The small size and low silver values in the veins make them a low priority target. The narrow contact zones with Fe-carbonate and quartz alteration also returned low precious metal values and appear to have little size potential. No further work is recommended on this claim.

B) OUTLAW (maps in folder)

The OUTLAW claims cover an area of complex geology which includes Stikine Assemblage basement rocks, Triassic volcanics, Jurassic sediments and intrusions and Cretaceous-Tertiary felsic volcanics and dykes. The claims were staked to cover a large arsenic anomaly outlined using the Otokompu XRF in the field during 1981. Further prospecting picked up bits of silicified float which contained up to 1320 ppb Au.

The program for 1982 was to clearly define the Au, Ag, As, Sb anomaly on the claims and locate its source. It appears that most of the anomaly is due to mineralization in a hornfels zone which is peripheral to a diorite plug in the centre of the claims. Rock samples from the hornfels zone do not contain enough Au or Ag to be of economic interest (usually <600 ppb Au



and < 5 ppm Ag). Geological mapping on the claims has indicated the potential for Hedley-type gold skarn mineralization. The large area of skarnified As, Sb, Ag and Au bearing rocks combined with the highly anomalous Au values obtained for -60 +200 HN fraction bulk samples in the area suggests further prospecting in 1983 is warranted. This prospecting will be concentrated both on the claims around existing mineralization and to the east towards the highest bulk sample gold values. Further work planned for 1983 will include trenching of a pyritic rhyolite dyke which contains 2400 ppb Au and 26-element ICP analysis of samples from the Mancuso vein. This vein is a 1-5 metre wide vuggy quartz-chalcedony zone running sub-parallel to parallel with foliation in the enclosing rocks (possibly a replacement feature).

Gold and silver values obtained from the vein to date are negligible; perhaps trace element geochemistry from the ICP data will provide a further insight as to why there is no gold (too high in the hydrothermal system perhaps?). The work program on the claims will mainly involve detailed mapping and sampling in the area of the highest gold soil geochemical anomaly and in the vicinity of rock samples which contained anomalous quantities of gold. When this is completed, mapping and prospecting to the east will start in an effort to locate the source of the anomalous bulk sample gold values.

C) VEIN (maps in folder)

This claim group was staked in 1982 to cover several small quartz-arsenopyrite veins assaying up to 0.20 - 0.23 oz/t Au. A large Sb soil anomaly was detected in the vicinity of the veins so the area was staked. Two days were spent doing initial prospecting and mapping. One of the interesting discoveries of this mapping was the presence of chalcedony breccias in the Jurassic siltstones and sandstones on the property. These breccias indicate the potential for hydrothermal fluids to have produced bulk tonnage mineralization in a permeable host.

Work during 1983 will concentrate on detailed mapping and prospecting of the entire claim group, paying close attention to veins, silicified zones and breccias.

VI. TATSAMENIE REGION (maps in folder)

This region has been reconnaissance sampled based mainly on geological criteria derived from the exploration model. Results to date have been successful with the discovery of gold-bearing quartz veins on the RAM, TOTEM, BEAR, THOR, BANDIT and HIJACK claims. Many areas remain to be tested. The exploration plan for 1983 is to do detailed mapping, prospecting and sampling in the entire region south of Tatsamenie Lake. We presently know that there are large gold-bearing structures in the area; the objective of the 1983 program will be to acquire all ground which has the size and grade potential for bulk tonnage gold deposits. Any vein type discoveries of potentially economic interest will also be staked.

The area with highest priority will be the region between the BEAR and BANDIT claims. Potential for strike extensions of BEAR-TOTEM type mineralization is excellent; this ground shall be prospected and mapped thoroughly. Next in priority comes north and northwest striking fault structures with adjacent limestone bodies. These could host mineralization similar to the BEAR-TOTEM type. Remaining exploration will concentrate on altered areas of Stikine Assemblage rocks especially those with pervasive silicification.

A) EWE (maps in folder)

The EWE claim was staked in 1981 to cover two creeks which had float boulders which contained 10000 and 2050 ppb Au respectively. Further prospecting in 1982 found no further mineralization in the creek with the 10000 ppb Au, and as the float appears to be massive quartz-galena-sphalerite-pyrite vein material the target would probably be small. The creek which contained the other anomalous sample was prospected thoroughly, but the only positive result was the discovery of two more float boulders similar to the sample found in 1981. These boulders contained 3950 ppb Au. Sample appears to be a brecciated pyritic quartz-carbonate vein which probably has limited bulk tonnage potential. Other targets discovered on the claims were carbonate-quartz altered zones in the enclosing greenstones. Precious metal values in these zones were low. No work is currently planned for 1983 on the claim itself; however, detailed mapping and prospecting will be carried out on the periphery of the claim.