

CHEVRON MINERALS LTD.
DIAMET MINERALS LTD.
LIGHTNING CREEK MINES LTD.
JOINT VENTURE

TATS PROJECT

TATSAMENIE LAKE, BRITISH COLUMBIA

1987 SUMMARY REPORT

AL BRANCH
REPORT

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SUMMARY

The TATS project is a joint venture between Chevron Minerals Ltd., Diamet Minerals Ltd. and Lightning Creek Mines Ltd. The project area is comprised of the following claim groups: MISTY-NIE-EL, OUTLAW, INLAW, RAM-TUT-TOT, SLAM, and BANDIT. These properties adjoin, or are in close proximity to, the GOLDEN BEAR which will be put into production in late 1988 or early 1989 by Chevron Minerals Ltd. and North American Metals B.C. Inc.

In 1987, 40 diamond drill holes totalling 3,509 meters were completed. As well, geological mapping, trenching and 15 line kilometers of VLF-EM were carried out. The program was designed to test targets previously identified by Chevron.

The MISTY-NIE property covers the northern half of a 15 kilometer fault zone while the GOLDEN BEAR property covers the southern half. This fault zone has gold mineralization along its entire length and is characterized by fault slivers of limestone, tuff, diorite and ultramafic rocks.

Surface sampling along the fault has located three showings on the MISTY-NIE Claims which have gold values ranging from 10 grams/tonne to 61 grams/tonne. Along two kilometers of this fault, 30 diamond drill holes were targeted for a total of 1897 meters. The drill holes were spaced approximately 200 meters apart. If each hole represents 10 meters of ground, then only 2% of the fault on the MISTY-NIE has been tested. The trace element geochemical signature from the core is compatible with the geochemical halo present around the gold deposits at the GOLDEN BEAR. Further work on the trace element geochemistry is underway and will be reported at a later date. Additional drilling at depth along the fault zone is recommended to evaluate the property.

On the OUTLAW property, 4 diamond drill holes were completed. These holes were aimed at a large clay alteration zone associated with anomalous gold, arsenic, antimony and barium values previously identified in trenching. The clay alteration is thought to be evidence for an epithermal gold system where the alteration surrounds a central vein stockwork. The object was to define the vertical variation in gold and trace element values. The intense clay alteration caused numerous problems in drilling and resulted in poor recovery. The best intersection was 8.3 grams/tonne gold over 0.95 meters in hole 0-5, while hole 0-2 had several intersections of 2-4 grams/tonne gold over 1 to 3 meters. If the gold and the alteration are associated with the diorite, then there is potential for a significant deposit. Further drilling is recommended to test this hypothesis.

The RAM-TUT-TOT property was tested by 4 diamond drill holes totalling 674 meters. Three different targets were explored in rock types that are the same as those found on the GOLDEN BEAR property. The first target was a manto deposit at the top of the limestone. The upper section of the limestone is intensely silicified and contains good multilithic tectonic breccias. The silica-rich fluids have come up along a fault zone (feeder zone) and ponded below the overlying siltstone package. Anomalous gold values, up to 7 grams/tonne, have been obtained on surface. In 2 holes drilled into the manto, an increase in the thickness of silicification is evident. The two intersections obtained were 1 gram/tonne gold over 1.6 meters and 2.38 grams/tonne gold over 1.58 meters. Anomalous silver values (3-130 ppm) also occurred in the silicified zone. Surface trenching and mapping in the area indicate the potential for a deposit of significant size.

The other two targets were fault zones with abundant scorodite at surface. Grab and trench samples were very encouraging. The fault zone on TOT had an intersection of

3.81 grams/tonne gold over 2.26 meters with an associated arsenic anomaly of 500-1100 ppm over 4.79 meters.

Further diamond drilling is recommended on this property to delineate mineralization and alteration.

On the SLAM property, there is a large area of highly fractured, silicified limestone. A small portion of this altered rock has anomalous values of arsenic, antimony, mercury and gold. Of two diamond drill holes, only one was completed to depth due to drilling problems. The completed hole is believed to have strayed off course as it failed to intersect the same geology that was projected from surface. Two more drill holes are recommended to test this target.

The SLAM property adjoins the GOLDEN BEAR to the east and will be within 5 kilometers of the proposed all weather access road.

On the BANDIT property, trenching and bulk sampling identified a portion of the Ram Reef that has values in the range of 2 - 6.7 grams/tonne gold over widths varying from 10 centimeters to 1 meter. The host rock on the property is the Pre-Upper Triassic Siltstone Unit which overlies the Limestone Unit. At the top of the Limestone Unit the vein system may be more productive where regionally there is extensive alteration and structural preparation. The area is recommended for drilling next year.

Exploration work completed by Chevron since 1981 and by North American Metals since 1986 has shown that the area around Tatsamenie Lake and Bearskin Lake (Muddy Lake) has considerable potential. The intensity and extent of hydrothermal alteration and

mineralization is indicative of either a very large system or a number of smaller systems that could have produced several deposits. The style of mineralization, the structural setting and the geology are similar to those of the Mother Lode gold deposits in California.

INTRODUCTION

The TATS project is a joint venture between Chevron Minerals Ltd. and Diamet Minerals Ltd. The project is comprised of the following claim blocks:

OUTLAW
INLAW
RAM-TUT-TOT
MISTY-NIE-EL
SLAM
BANDIT

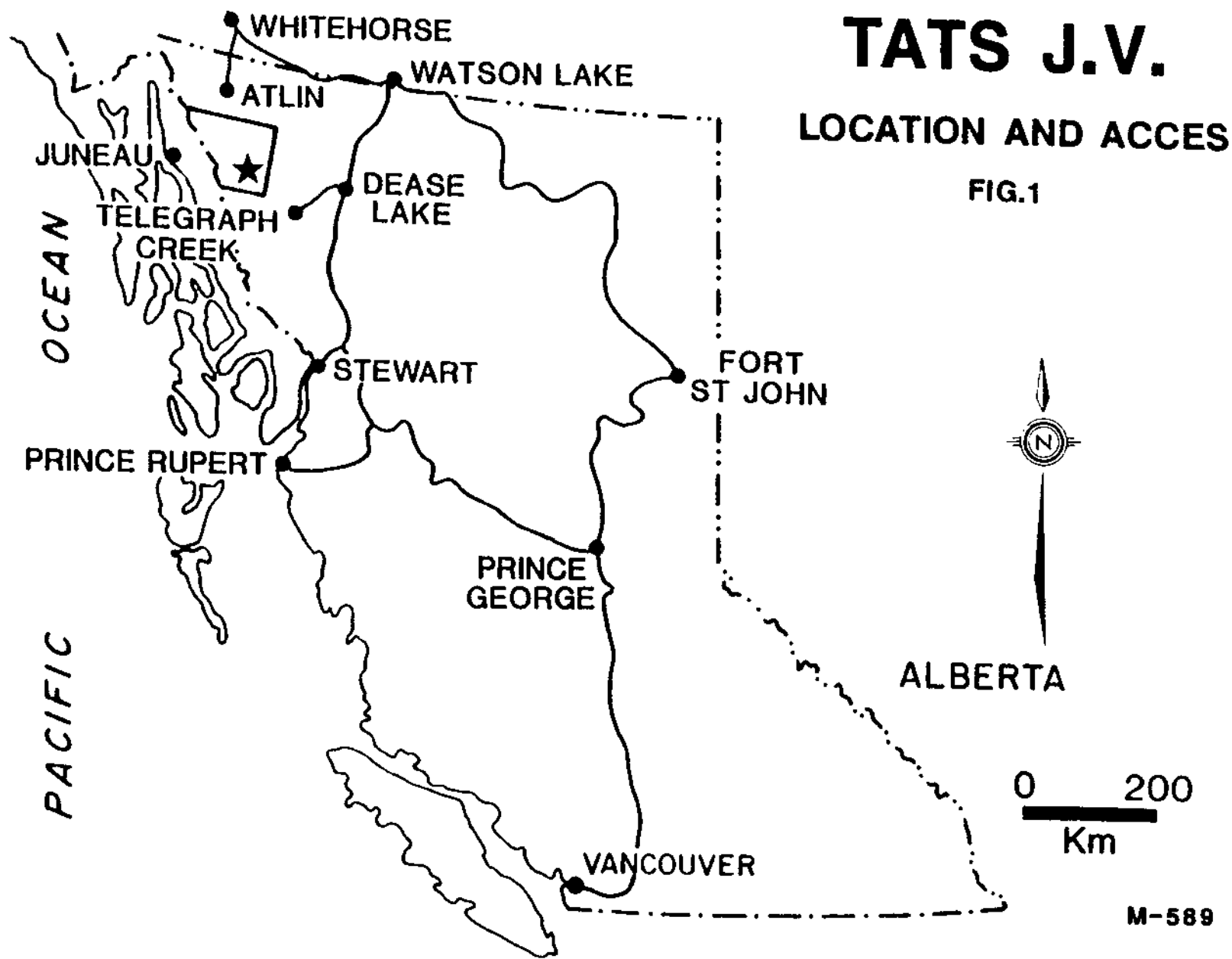
The joint venture allows Diamet to earn a 50% interest in the above claims by spending \$3.5 million over a three year period. This agreement enables Chevron to opt for a larger interest, up to 58%. It also permits Diamet to dilute its interest by bringing in additional companies. Diamet has made an agreement with Lightning Creek which allows them to earn two-thirds of Diamet's interest in the project.

Location and Access

The joint venture properties are located in the northwest corner of British Columbia, 140 kilometers west of Dease Lake and 80 kilometers northwest of Telegraph Creek. The project is centered at a latitude of 58°18'N and a longitude of 132°17'W (Figure 1).

Current access to the project area is by fixed wing aircraft from Dease Lake, Whitehorse or Terrace. Float planes can land at either Tatsamenie Lake or Bearskin Lake (Muddy Lake). Landing facilities are also available at the Muddy Lake airstrip or the Tatsamenie Lake airstrip. Travel within the area requires a helicopter. A base camp was established at Tatsamenie Lake to centralize crew and equipment.

The nearest all weather road is at Telegraph Creek although a winter bulldozer trail does connect Muddy Lake with Telegraph Creek. As part of the development of the GOLDEN



BEAR, an all weather road into Muddy Lake has been proposed by Chevron and North American Metals. Both the SLAM and the MISTY-NIE-EL properties adjoin the GOLDEN BEAR. The proposed road would lie within 5 kilometers of the SLAM property.

Physiography and Climate

The project area is located on the west side of the Coast Range mountains, a distance of 40 kilometers from tidewater. The area is rugged alpine terrain with elevations ranging from 600 to 2600 meters. The precipitation is variable throughout the year with sudden snow flurries or rainstorms being common. The transition from heavy coastal precipitation to the drier interior plateau environment takes place within the project area. Productive surface exploration can be carried out in low lying areas from June to September and in high alpine areas during July and August. The maximum surface exposure occurs in mid-August just prior to the first snowfalls.

History

Exploration activity in the Tatsamenie area has been sporadic. The earliest documentation dates back to the 1950's and 1960's when a rush for porphyry copper deposits occurred. At that time a large portion of the area, including the GOLDEN BEAR deposits, was staked. After the porphyry boom, the area was left untouched except for the occasional regional gold exploration program in the late 1970's. Chevron's venture into the area occurred in 1980. A two week program was designed and carried out to evaluate the Tulsequah map area, in particular the King Salmon Thrust Fault and the Nahlin Fault. Results warranted a major program in 1981. Though BEAR was considered a prime target by the end of 1982, Chevron still continued its regional exploration program until 1985. In 1984 and 1985, however, more exploration funds were channelled towards assessing the BEAR deposits.

To fully test the potential of the GOLDEN BEAR claim block, Chevron signed a joint venture agreement with North American Metals B.C. Inc. With the GOLDEN BEAR nearing the production stage, Chevron was able to concentrate on its other claims in the area. This exploration was undertaken by Chevron in partnership with Diamet Minerals Ltd.

Claim Status

The claims in this joint venture (Table 1) are presently 100% owned by Chevron Minerals Ltd. Assessment work applied to the claims in 1987 is shown in Table 1 under the heading "Expiry Date, Applied". The location of the claims is illustrated in Figure 2.

REGIONAL GEOLOGY

I. Stratigraphy and Tectonic Setting

The Tulsequah map area (Fig. 3) incorporates the eastern margin of the Coast Plutonic Complex and flanks variably deformed and altered, volcanic and sedimentary strata. The strata range in age from Permian to Recent and comprise the western margin of the Intermontane Belt, a belt of eugeosynclinal arc-type sedimentary and volcanic rocks. This belt hosts most of the known lode and placer gold deposits in the Cordillera.

Pre-Upper Triassic

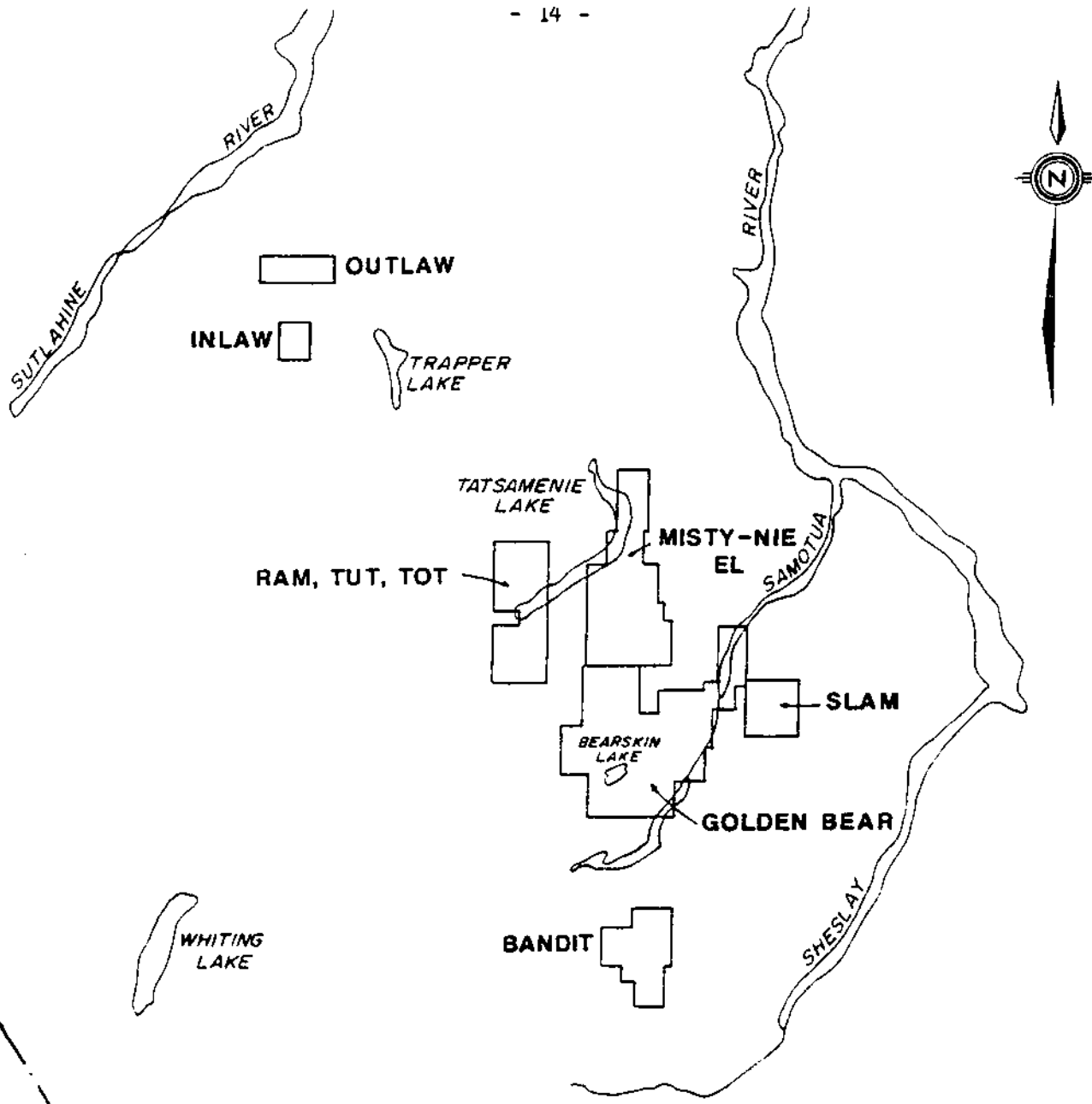
The oldest rocks exposed in the map area are small outcrops of high grade metamorphic gneiss, amphibolite and migmatites of unknown age. Most of the map sheet is underlain by oceanic rocks of Pre-Upper Triassic age. Fusulinids in limestones in these oceanic rocks have been divided into Tethyan and non-Tethyan affinities (Monger and Ross, 1971). On this basis, Pre-Upper Triassic rocks along the northern

Table I
TATS CLAIMS - M589

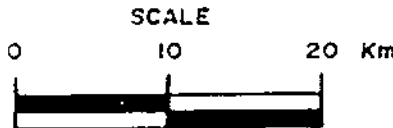
<u>Claim</u>	<u>Group</u>	<u>Grouping Date</u>	<u>Record No.</u>	<u>Record Date</u>	<u>Expiry Date</u>		<u>No. Units</u>
					<u>Approved</u>	<u>Applied</u>	
OUTLAW #1	OUTLAW	July 8/84	1339	July 9, 1981	1987	10 yrs. July 7/87	20
OUTLAW #2	"		1340	July 9, 1981	1987	10 yrs. July 7/87	20
INLAW 1	-		1983	August 16, 1983	1991		20
BANDIT 1	BANDIT	Aug. 16/83	1486	August 21, 1981	1987	1 yr. Aug.11/87	20
BANDIT 2	"		1487	August 21, 1981	1987	1 yr. Aug.11/87	20
BANDIT 3	"		1827	February 22,1983	1988	1 yr. Aug.11/87	20
BANDIT 4	"		1963	July 4, 1983	1988	-	5
HIJACK 1	"		1828	February 22,1983	1988	1 yr. Aug.11/87	16
HIJACK 2	"		1962	July 4, 1983	1988	-	18
GRAND	SLAM	Dec.22/83	2053	September 26,1983	1992		20
SLAM	"		2008	September 12,1983	1992		20
STRIKE	"		2052	September 26,1983	1992		16
RAM	TUT	Aug. 15/84	1483	August 21, 1981	1988		20
TUT #1	"		1292	March 5, 1981	1988		20
TUT #2	"		1293	March 5, 1981	1988		20
TUT #3	"		1294	March 5, 1981	1988		20
TUT #4	"		1295	March 5, 1981	1988		20
TOT 1	TOT	Dec. 23/83	1958	July 4, 1983	1987	1 yr. July 4/87	20
TOT 2	"		1959	July 4, 1983	1987	1 yr. "	20
TOT 3	"		1960	July 4, 1983	1987	1 yr. "	20
TOT 4	"		1961	July 4, 1983	1987	1 yr. "	20
NIE #1	ELNIE	Sept. 15/87	1539	September 18,1981	1987	10 yrs. Sept.15/87	20
NIE #2	"		1540	September 18, 1981	1987	10 yrs. "	20
EL 1	"		1729	September 15,1982	1987	10 yrs. "	16
EL 4	"		1746	September 22,1982	1987	10 yrs. "	20
EL 5	"		1747	September 22,1982	1987	10 yrs. "	4


Table I
TATS J.V. CLAIMS - M589

<u>Claim</u>	<u>Group</u>	<u>Grouping Date</u>	<u>Record No.</u>	<u>Record Date</u>	<u>Expiry Date</u>		<u>No. Units</u>	
					<u>Approved</u>	<u>Applied</u>		
NIE #3	NIE	Oct. 18/82	1541	September 18, 1981	1988	2 yrs.	Sept. 15/87	20
NIE #4	"		1542	September 18, 1981	1988	2 yrs.	"	20
NIE #5	"		1543	September 18, 1981	1988	2 yrs.	"	15
NIE #6	"		1544	September 18, 1981	1988	2 yrs.	"	10
NIE #7	"		1545	September 18, 1981	1988	2 yrs.	"	20
MISTY 1	MISTY	Sept. 12/84	1484	August 21, 1981	1987	10 yrs.	Aug. 11/87	20
MISTY 2	"		1485	August 21, 1981	1987	10 yrs.	Aug. 11/87	20














BRITISH COLUMBIA
ALASKA

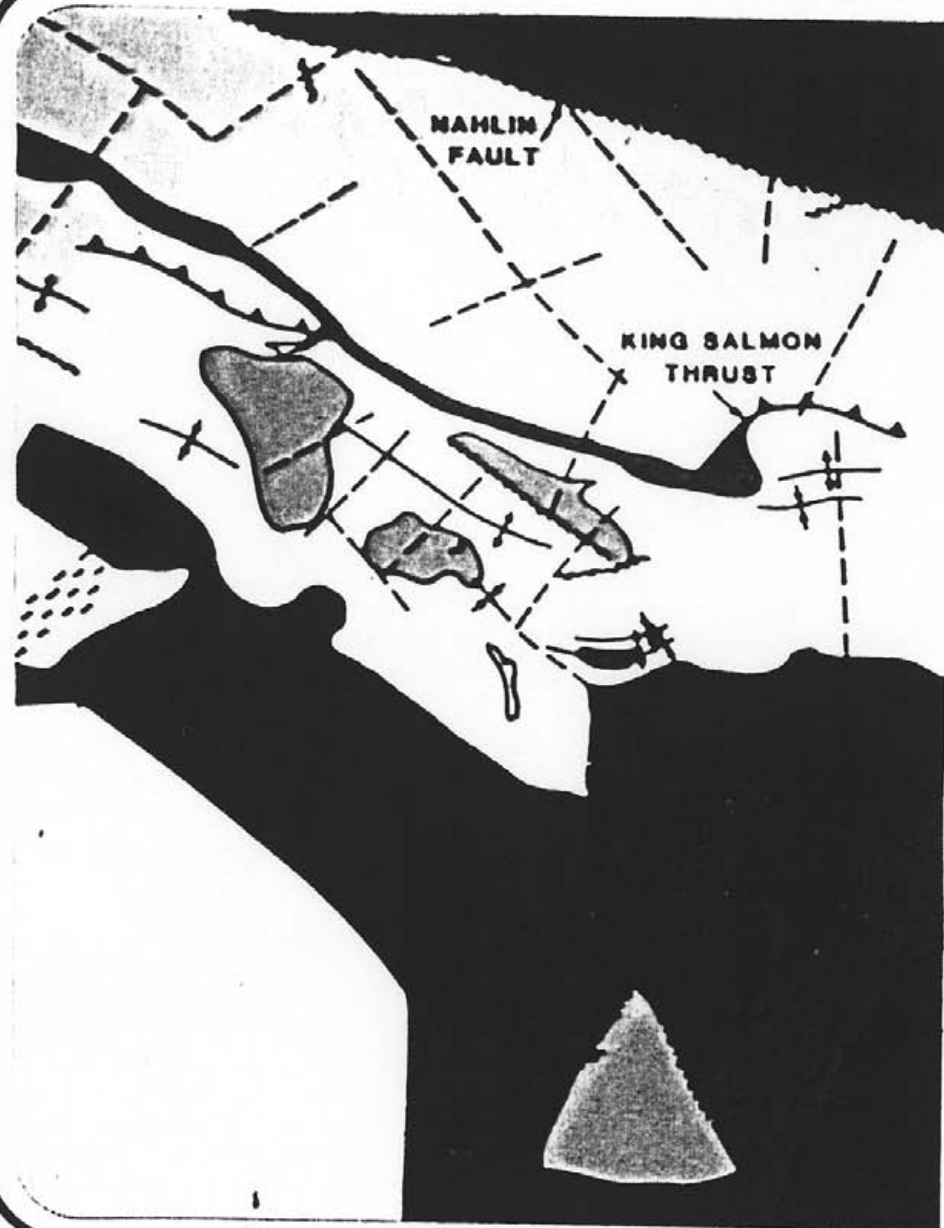


 Chevron Canada Resources Limited Minerals Staff			
<h2>TATS J.V.</h2> <h2>CLAIM BLOCKS</h2>			
FIGURE No 2		PROJECT No M-589	
DATE MAR 1987	REVISIONS		SCALE 1:500,000
NTS No			FILE No G-6
COMPILED BY JW			

TULSEQUAH-GEOLOGY

- | | |
|---|------------------|
|  | SLOKO GROUP |
|  | SINWA FORMATION |
|  | STUHINI, LABERGE |
|  | COAST COMPLEX |
|  | CACHE CREEK |
|  | STIKINE |
|  | THRUST FAULT |
|  | NORMAL FAULT |
|  | PHOTO LINEAR |
|  | FOLD AXIS |
|  | DYKE SWARM |

0 10km



boundary of the map area have been assigned to the Cache Creek Group and are Tethyan. Pre-Upper Triassic rocks in the central and southern parts of the district have been assigned the informal name Stikine Assemblage or Stikine Terrane and are non-Tethyan (Monger, 1977). The sutured boundary of the two oceanic units is possibly concealed by a zone of Upper Triassic to Jurassic volcanic and sedimentary rocks (Stuhini and/or Laberge Groups) but may be represented by the Nahlin Fault. Both oceanic sequences contain abundant mafic to intermediate volcanic rocks, associated volcanoclastic and epiclastic sediments and carbonate sequences. The Cache Creek Group has more extensive carbonates while the Stikine Assemblage contains more sedimentary units such as siltstones. The age of these two oceanic sequences is not known in detail but on the basis of fusulinid dates and correlation with similar rocks to the southeast, the bulk of the stratigraphy is Permo-Triassic with some older carbonates at the base of the sequence. These oceanic packages contain rocks which suggest an ocean island depositional environment. Overlying the oceanic rocks are strata of four main ages (Souther, 1971).

Ultramafic rocks of Permian age or older occur along the Nahlin Fault at the southern boundary of the Cache Creek Terrane and along steeply dipping faults in Stikine Assemblage rocks near Tatsamenie Lake. The ultramafic rocks are usually serpentized along fault boundaries. Smaller ultramafic bodies are completely serpentized. These bodies are thought to represent basenent rocks which have been brought to their present high crustal levels by tectonic activity along major deep-reaching fault zones. Such bodies flag deep-seated fault zones which may have channelled mineralizing solutions from greater depths into suitable host environments.

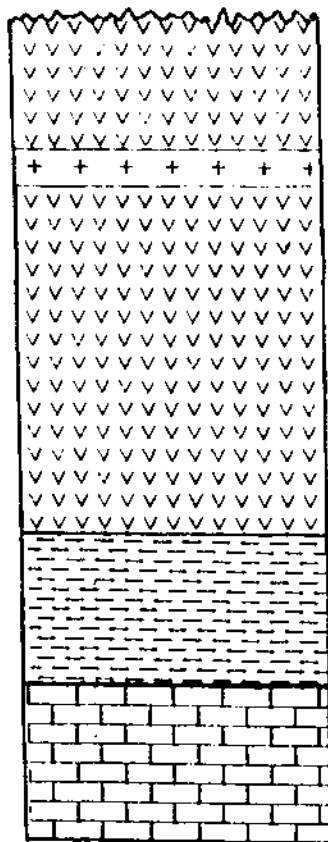
The stratigraphic column for the Pre-Upper Triassic is shown in Fig. 4. This column is a combination of work completed in the area by Souther (1971) and Chevron. No basement has been identified beneath the Limestone Unit and all of these rocks have been subjected to greenschist metamorphism.

Limestone Unit - rocks of this unit are collectively referred to as the Limestone Unit and include limestone, dolomite, quartz and argillaceous siltstone.

The bulk of this unit is a pure limestone, usually gray, but ranging from white to black. Colour variations in the limestone are probably controlled by the presence or absence of organic material. There are almost no impurities in the limestone to form platy silicates; consequently there is no development of a metamorphic sheet silicate foliation. Many outcrops of limestone have been thermally recrystallized, commonly associated with the loss of primary sedimentary features. Outcrops of limestone are typically massive with poorly defined bedding; compositional layering can often be better observed at a distance from the outcrop. Usually such layering is on a 0.5 to 1 meter scale. A homogeneous sugary texture is common in most limestone outcrops with grain size typically sand size (0.25 to 1.0 mm in diameter). Fossils present in the limestone include fusulinids, crinoids and minor coral debris. Local areas of possible algal laminations were observed. Permian ages have been assigned to fusulinids collected from the claims (Monger and Ross, 1971). The fauna typical of the limestone indicates a shallow marine environment with small reef development and breccias composed of reef material. Within the limestone sequence are areas which have been mapped as silicified limestone; usually these appear as alternating layers of limestone and silica. When silica occurs as obvious layers within a unit and in chert nodules, it is interpreted as representing chert

INTERPRETED STRATIGRAPHIC SECTION- STIKINE ASSEMBLAGE

PRE-UPPER
TRIASSIC



> 2000m thick

> 600m thick

> 700m thick

PERMIAN

???

TUFF UNIT

- augite porphyry
- chlorite phyllite
- gabbro sills
- basalt-andesite flows
- lapilli tuff
- laminated tuff
- siltstone

SILTSTONE UNIT

- pink limestone
- siltstones
- buff limestone
- tuff

LIMESTONE UNIT

- carbonaceous limestone
- white limestone
- dolomite
- siltstone

FIG. 4

bands that predate the hydrothermal silica alteration in the area. The type and intensity of silica referred to as 'quartz' occurs most commonly as irregular replacement of limestone and not in thin layers. Unfortunately, later remobilization of earlier silica and accompanying recrystallization with associated fracturing, infilling and vug formation have blurred the distinction between the two types of pervasive silica. The quartz texture ranges from chalcedonic to almost gritty with colours mimicking the replaced carbonate host. Hematite often accompanies the pervasive silica alteration of the carbonates giving various shades of reddish-orange to the rock.

Within the limestone unit are sedimentary layers which have been petrographically identified as argillaceous siltstones. These laminated buff coloured sediments form beds from 0.2 to 2 meters thick and are composed primarily of sericite and dolomite with lesser quartz (up to 15%). Much of the dolomite appears secondary in origin. These sediments usually contain 2% to 5% disseminated euhedral pyrite. The continuous nature of the argillaceous siltstones, combined with their distinctive appearance suggests that they would make good marker beds in an otherwise monotonous limestone sequence. Dolomites within the limestone unit appear to be related to an alteration phenomenon and will be described in more detail in the following chapter.

Siltstone Unit - Stratigraphically on top of the limestone sequence is a complicated assemblage of rocks referred to as the Siltstone Unit. Rock types represented in this unit include carbonaceous siltstone, buff argillaceous siltstone, carbonate and mafic tuff. Based on present mapping and interpretation, the Siltstone Unit also contains a sequence of felsic phyllites at this stratigraphic level. It appears to represent rapidly changing depositional environments ranging from anoxic basin

(carbonaceous siltstone) to marine bank (carbonate) to distal volcanic (fine grained mafic tuffs). This was not a gradual change as all the units appear interbedded with one another in varying proportions depending on the location of the section.

Much of the carbonaceous siltstone has a high silica content; however, it is not certain whether this silica is primary or hydrothermal. Some carbonaceous siltstone samples bear a resemblance to a crudely formed ribbon chert sequence. Pyrite is common in most rocks in the Siltstone Unit, usually disseminated up to several percent; it is often coarse (> 2 mm) and euhedral giving the impression of diagenetic pyrite.

The top of the Siltstone Unit represents the cessation of large scale carbonate deposition and the onset of extensive mafic volcanoclastic deposition. Both the bottom and top of the Siltstone Unit are gradual contacts over tens of meters. At the bottom of the Siltstone Unit the Limestone Unit becomes progressively more interbedded with Siltstone Unit lithologies. At the top of the Siltstone Unit there is an increasing amounts of mafic tuffs until the section becomes almost all mafic tuff and is assigned to the overlying unit.

Tuff Unit - This unit represents the advance of mafic volcanism until it becomes the dominating rock type in the stratigraphy. Included in this unit are lapilli tuff, banded tuff, crystal tuff, chloritic phyllite, siltstone and gabbro. Original textures in these rocks are usually obscured, especially in outcrop, because of extensive greenschist metamorphism. The growth of chlorite and epidote is pervasive in most of the fine grained matrix of these rocks; in spite of such alteration, bedding textures and outlines of lapilli are occasionally well preserved. Remnant textures are

best seen in drill core and sedimentary features such as cross-bedding, slump folding and graded bedding have been identified during diamond drilling on the GOLDEN BEAR. No definite original volcanic flow textures such as pillows, vesicular flow tops or columnar jointing have been identified; however, many examples of volcani-clastic textures have been noted, especially heterolithic lapilli fragments, layering and crystal fragments.

The most common rock type in the Tuff Unit is a fine to medium grained (0.1 to 1 mm), dark green tuff with little apparent banding or clastic textures. This lack of texture makes it difficult to determine bedding orientation of units. The lapilli tuff is common throughout the Tuff Unit. This rock has lapilli size clasts (2 to 50 mm) in a fine grained dark green matrix. The clasts are often amygdaloidal volcanics with calcite and minor chalcopyrite amygdules predominating.

Banded tuffs were mainly recognized in drill core. These rocks ranged in colour from light to dark green and the bands are marked by changes in grain size or colour. When the bands are 2 to 6 mm in thickness, the rock is called a laminated tuff. Good sedimentary features are rare in the banded tuffs, indicating little or no epiclastic reworking after deposition.

Dark gray to black, weakly calcareous, fine grained (≤ 0.2 mm) and often pyritic siltstones are found interbedded with the tuffs. These siltstones contain several percent euhedral disseminated pyrite as well as pyrite stringers and blebs. Often these rocks are pervasively siliceous; it is not clear if the silica is related to hydro-thermal processes. Due to the apparent lack of alteration in the enclosing tuffs, the present interpretation is that the silica is a syngenetic or diagenetic feature of the

siltstones. In some drill core, the siltstones exhibit well preserved sedimentary features including graded bedding, cross-bedding, flame structures and slump folds .

The chloritic phyllite is coloured in various shades of green, is very fine grained and well foliated. Locally the metamorphic grain size is almost coarse enough to warrant the term schist. It is not certain if the chloritic phyllite is derived from a distinctive lithology or is a product of extensive shear strain. Another rock type of uncertain nature is the crystal tuff (feldspar porphyry?). This rock type has been identified in both outcrop and drill core and is composed of variably altered feldspar laths in a fine grained chlorite matrix. A few examples of possible broken feldspar fragments and possible lapilli clasts have led to the tentative identification of this unit as a crystal tuff. Other examples of this rock type show apparent plutonic textures; further study is needed. The intensive greenschist overprinting on these rocks makes identification of subtle igneous textures difficult even using petrographic study.

Triassic

This Age includes the Stuhini Group, Sinwa Formation and a foliated diorite. The Stuhini Group is a predominantly volcanic package of andesite, basalt and agglomerate. A sedimentary unit called the King Salmon Formation is recognized as a mixed group of sediments deposited synchronously with the Stuhini volcanics. Distinction between the King Salmon Formation and other Stuhini Group rocks is difficult in many parts of the map area. The Stuhini Group rocks usually exhibit rapid lateral changes in thickness and lithology with local unconformities common.

Overlying this complex succession of rocks is the Sinwa Formation of Norian age. The Sinwa Formation is a regional limestone marker bed of extremely variable thickness which can be traced for hundreds of kilometers across northern B.C.

Diorite Unit - A foliated medium gray coloured diorite has been correlated with Lower to Middle Triassic plutonic rocks by Souther (1971). The diorite is resistant to weathering and forms blocky cliffs and ridges. Features observed on this contact include chilled margins in the diorite and development of amphibole alteration in the tuffs adjacent to the diorite. Between Muddy Lake and Tatsamenie Lake, fault contacts between the Diorite Unit and Tuff Unit are more typical. The metamorphic foliation in the Diorite and Tuff Unit rocks was possibly formed by the same event in the mid to late Triassic (Souther, 1971).

Jurassic

The Lower Jurassic Laberge Group is split into the Takwahoni and Inklin Formations. The Takwahoni consists predominantly of proximal coarse conglomerates and sandstone, while the Inklin consists mostly of distal laminated turbidite flows of gray-wacke and siltstone. These turbidites overlie the Sinwa Limestone unconformably. Both units of the Laberge Group have lithologically complex areas where distinction between the Takwahoni and Inklin Formations is difficult.

Cretaceous-Tertiary

Rocks deposited during this time period are felsic volcanics, volcanoclastic rocks, their intrusive equivalents and dykes of the Sloko Group. Most rocks in this group are pyroclastic, varying from coarse explosion breccias and agglomerates to finely banded tuffs and ignimbrites. Most Sloko strata are either flat-lying or gently

tilted, suggesting that there has been little compressive tectonic activity since their deposition.

Miocene-Recent

These rocks are found mainly within large stratovolcanoes on the eastern edge of the map sheet and range from basalt to rhyolite in composition. The Heart Peaks Formation is comprised predominantly of felsic lavas and tuffs which often weather bright red, yellow and orange. The Level Mountain Group is mainly composed of extensive flat lying basalt flows and interflow breccias.

Coast Plutonic Complex

Intruding the above rocks (with the exception of Miocene-Recent) is the Coast Plutonic Complex. This composite intrusive sequence ranges in age from Jurassic to Tertiary and is predominantly diorite to monzonite in composition. Most of the plutonic activity in the Coast Complex occurred in late Cretaceous to Eocene time. At the end of this period several kilometers of uplift formed a high plateau-like peneplane which was subsequently dissected by deep glacial erosion to form the present day rugged topography.

2. Structure

(a) Folds - major folds are common in all the rocks of Jurassic age or older on the map sheet. In the Stikine and Cache Creek rocks, these include isoclinal folds with well developed axial planar metamorphic fabric. Later generation folds are highly visible in the Jurassic and Triassic sediments and tend to be open to closed in shape and occasionally recumbent. These later folds do not have a well developed axial planar fabric.

Folds in the Stikine Assemblage rocks often occur in a north-south orientation while those in the Cache Creek Group tend to be northwest-southeast trending (Souther, 1971). This difference in orientation is further evidence that the two terranes are distinct geological entities. The Triassic-Jurassic sedimentary cover rocks usually show a northwest-southeast to east-west trend for most of the folding. Such folds are probably related to overthrusting from the northeast along the King Salmon Fault.

(b) Faults and Lineaments - major faults in the district strike mainly northwest-southeast and north-south. The northwest striking subvertical Nahlin Fault in the northeast corner of the area is a major regional fault with abundant alpine ultramafic bodies. The King Salmon Thrust Fault in the middle of the map area is variably dipping to the north (5 to 60°). It has thrust Upper Triassic carbonates (Sinwa limestone) over Lower to Middle Jurassic Takwahoni sediments. North-south faults are prominent in the triangular shaped exposure of Stikine Assemblage in the southeast corner of the map sheet and parallel to the predominantly north-south fold axis direction. Many smaller faults are common throughout the area, some related to the major regional faults. Others were formed in Eocene time during an extensional tectonic regime and are usually normal block faults. These block faults occur in many different orientations.

A pronounced northeast lineament direction can be observed over the entire district. These lineaments occur in all Pre-Miocene stratigraphic packages. Their expression ranges from the very distinct breakthrough of the Taku, Sutlahine and Whiting Rivers to the dyke swarm orientation north and northeast of Mt. Ogden, to lineaments occupying minor drainages. Northeast graben

faulting has been observed parallel to and south of Tatsamenie Lake which itself occupies a prominent northeast lineament. Bearskin Creek, draining Bearskin Lake (Muddy Lake), also occupies a strong northeast lineament.

3. Regional Metamorphism

Higher grade metamorphic rocks such as quartz-feldspar mica gneiss are found along the western edge of the map sheet (Souther, 1971). Local areas of amphibolite-migmatite rock are found associated with diorite intrusives. Both Cache Creek Group and Stikine Assemblage rocks have undergone regional greenschist facies metamorphism (Souther, 1971). Most of the mafic volcanic rocks are extensively altered to chlorite and epidote. In many cases this alteration obscures primary igneous textures. Sedimentary units in the Cache Creek Group and Stikine Assemblage are often less affected by this metamorphic event and may show primary bedding structures in greater detail. Rocks of Upper Triassic age and younger are unaffected by the regional greenschist metamorphic event.

4. Alteration and Mineralization

Hydrothermal alteration on a regional scale is extensive throughout the map area. Such alteration is usually manifested as bright orange, brown and red iron hydroxides reflecting carbonate zones of a size from 1 square meter to 1000's of square meters. These altered zones usually consist of 50 to 90% carbonate (usually ferroan), 10 to 40% silica and approximately 5% pyrite. While such alteration is widespread, it is not pervasive in a regional sense; rather it is focused along major zones. In areas of intense faulting, the alteration is pervasive while in areas of more widespread faulting, the alteration is often restricted to within meters of the fault. There does not appear to be any particular fault orientation which has preferentially localized the carbonate-silica alteration.

The GOLDEN BEAR hydrothermal system has a number of characteristics typical of gold-silver mesothermal deposits (Lindgren, 1933). The alteration suite consists of quartz, dolomite, ankerite, sericite and kaolinite. The mineralization suite is pyrite, gold with minor arsenopyrite and tetrahedrite. In the mineralized tuffaceous rock, the pyrite is massive. The style of mineralization and alteration that occurs on the GOLDEN BEAR, is associated with a 15 kilometer fault and is typical of gold deposits in the Motherlode Belt, California (Boyle, 1979 and Clark, 1970). This type of deposit has some spectacular mineralization and consistent gold values. The GOLDEN BEAR does not have any typical characteristics of epithermal deposits such as alunite, adularia and colloform banding and cockscomb structures.

There have been multiple generations of quartz and carbonate alteration on the GOLDEN BEAR. The localization of quartz-carbonate alteration is fault-controlled on the claims. Altered zones occur as linear trends along the strike of faults and intensity of alteration decreases as the hydrothermal system weakens away from the faults. The alteration mineral assemblage is host rock dependent; quartz, dolomite and calcite are typical of limestones while dolomite, ankerite and fuchsite with minor quartz (listwanite assemblage) are typical of mafic volcanic rocks. The extent of alteration away from fault structures is also host rock dependent. Areas of limestone are extensively altered over widths of hundreds of meters while areas of tuff are usually not altered more than 20 to 30 meters from a fault. The bulk of the alteration appears to be a regional carbonatization phenomenon which affects all rocks as young as Jurassic age. Current interpretation favours alteration by low salinity and CO₂ -rich metamorphic waters expelled through the stratigraphy along major deep-seated fault conduits. Superimposed on this carbonatization process is a silicification event which has primarily affected the carbonates. This process has

led to the formation of large areas of silicified carbonate (up to 1 km²). The source of this silica is uncertain; it may be derived from the carbonatization of tuffs.

Cross-cutting the last phases of dolomitization and silicification on the GOLDEN BEAR are calcite replacements. These replacements occur as pervasive sparry calcite, millimeter wide stringers and large crystal lined tubular caverns. These caverns appear to be conduits up to 5 meters in diameter, lined with coarse calcite crystals up to 20 centimeters in length. Most of the large conduits have been observed near faults in Fleece Bowl and Troy Bowl.

Within these large areas of carbonatization and silicification, which are regional in extent, are more restricted gold-bearing zones. The GOLDEN BEAR mineralization consists of pyrite, pyrrhotite, arsenopyrite and tetrahedrite with minor galena, sphalerite, chalcopyrite and tellurides (J. Heyse, 1984). Some native gold occurs as grains and fracture fillings in the 1 to 50 micron size range. Over half of the gold occurs as submicron size grains with unknown mineralogy. Interpretations as to the relationship between the gold and sulphide mineralization are varied. It has been suggested that the gold has been remobilized from the original iron sulphides and deposited along the edges and cracks of pyrite and arsenopyrite crystals which have undergone a complex tectonic history (J. Heyse, 1984). A second possibility is that the gold was deposited later than the pyrite with disseminated submicron size sulphides. Some of this material has been remobilized as the coarser native gold along fractures. The age of gold mineralization is uncertain; age dating of hydrothermal sericite from the BEAR Main Zone has produced an age of $177 \pm 5 \text{ Ma}$ (J. Armstrong, personal communication, 1984). It is not known if the dated sericite correlates directly with the gold mineralizing event. The fluid inclusion studies have suggested

that the hydrothermal fluids were low in salinity, 1 to 3% NaCl, and of low temperature, 180°C (J. O'Brient, B. Bodner, 1984).

The model for the GOLDEN BEAR mineralization requires the following features:

- (1) Major fault
- (2) Suitable structural trap
- (3) Heat pump (Jurassic intrusions and/or porphyry copper deposit)
- (4) Triassic volcanic rocks

These generalized features can now be made more specific for the GOLDEN BEAR mineralization. A major fault is required to channel the hydrothermal fluids both laterally and vertically. The Bear Fault and West Wall Fault are both major zones which have slivers of limestone, tuff, ultramafics and diorite along their length. The diversity of lithologies and the presence of fault slivers support the hypothesis that it is a major fault system and does tap deeper segments of the crust.

Hydrothermal fluids, either from intrusions or from local hot spots, will be able to move up and along these fault zones. The association between gold deposits and porphyry copper mineralization can be clearly documented. For example, in Chile, the Silica gold deposit is found 1000 meters vertically above the large porphyry copper deposit, El Salvador. This type of setting can be applied to the GOLDEN BEAR where there are numerous low grade porphyry copper deposits nearby. The hydrothermal system which created the porphyry copper deposits could also have caused the gold deposit at GOLDEN BEAR. In the Tatsamenie area, the Jurassic intrusions contained abundant volatiles as they were crystallizing. In the case of the RAM-TUT claims, the Jurassic diorite was albitized. The albitization process takes place in the waning stages of magmatic crystallization when the volatiles alter the

crystallized portion of the intrusion. The date of this albitization event is $171 \pm 5 \text{ Ma}$ (Hewgill, 1985), close to the sericite dated from the BEAR mineralization (177 Ma).

The host rocks are important both stratigraphically and structurally. Stratigraphically, the Triassic volcanics appear to be significant when considering gold deposits on a provincial scale as they may be the source for the gold. Structurally, the host rock, if it is not originally porous or permeable, will require some modification by brittle deformation. There are certain aspects that would make one set of fault systems more amenable to creating a more favourable host. They include rocks of varying competence, favourable geochemistry and porosity. Regionally, there may have been a number of feeder zones which have brought fluids up through the brittle limestone. In some cases, faults such as the West Wall Fault and Bear Fault have broken the contact between the Siltstone and Limestone Units. In other cases the contact has not been broken and the silica rich fluids have replaced the upper layers of the Limestone Unit to form a manto style deposit (e.g. RAM TUT).

After completion of the underground work at GOLDEN BEAR, it is clear that the hydrothermal fluids have travelled along the Bear Fault (a major fault system) and deposited the BEAR Main Zone at a change in strike and dip (structural trap) of the fault zone. The change in strike and dip is extremely well illustrated when structural contours are made of the fault plane (Hulstein, pers. comm. 1987). It is interesting to note that the bulk of the consistent high grade mineralization in the BEAR Main Zone is directly associated with this change in strike and dip and occurs just above the roll in the fault (Fig. 5). Once the fault becomes more regular in strike and dip, the grade is less predictable. The style of mineralization becomes more

GOLDEN BEAR MAIN ZONE IDEALIZED CROSS-SECTION SHOWING MINERALIZATION (LOOKING NORTH)

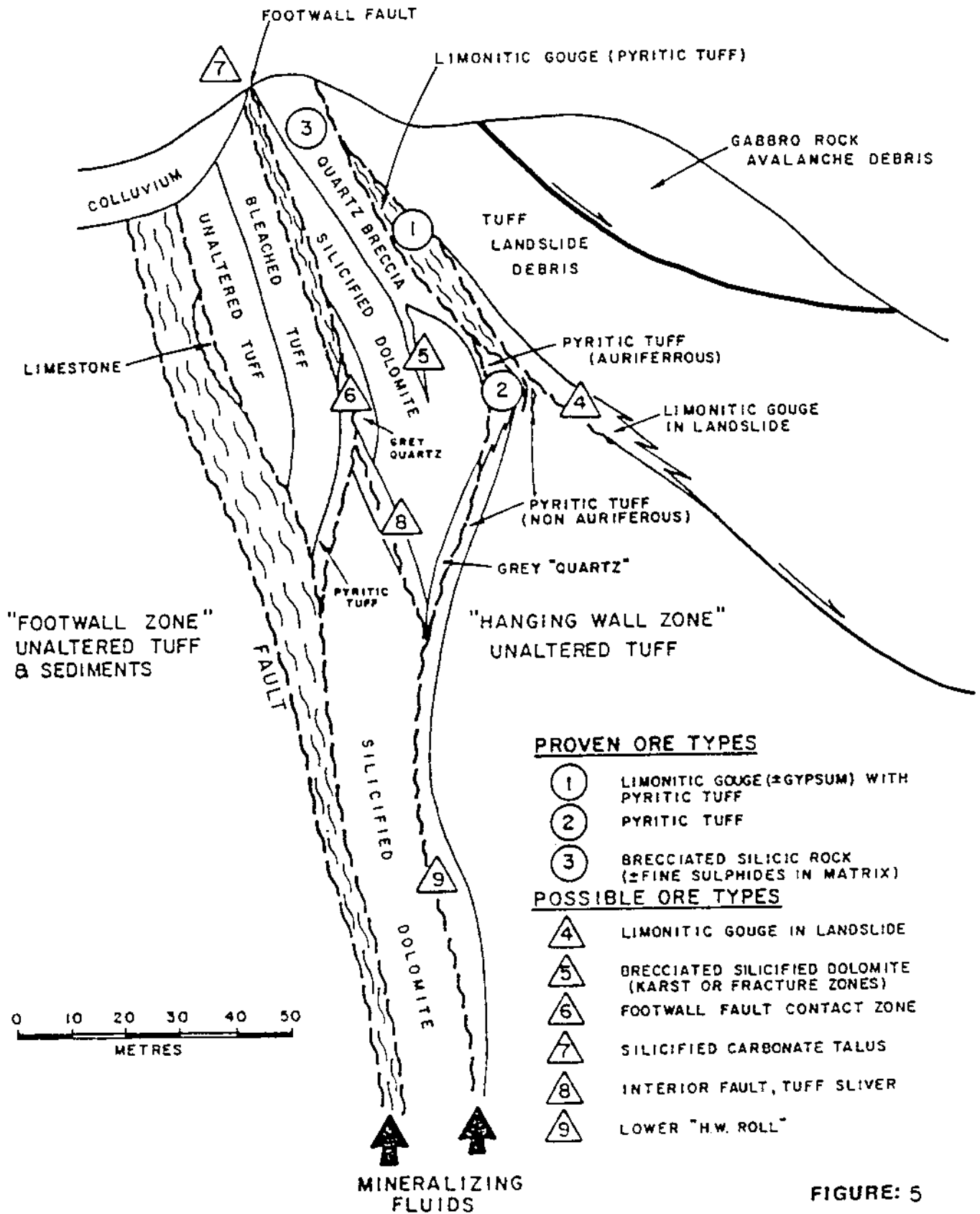


FIGURE: 5

typical of other gold deposits with respect to the difficulty in connecting drill hole intersections to make ore shoots. The ability to predict changes in strike and dip will be essential in finding another large deposit in the area.

PROPERTY GEOLOGY AND MINERALIZATION

The geology of each property will be discussed based upon the information from the 1987 drill core and surface mapping from 1981 to 1987.

MISTY-NIE

The MISTY-NIE claims are underlain by the Pre-Upper Triassic assemblage as shown on Figure 3. Detailed geological maps (Fig. 6ab, 7) covers the MISTY-NIE claims and includes the 1987 drill holes.

Pre-Upper Triassic

The stratigraphic column (Fig. 4) of the Stikine Assemblage is represented on the claims. The basal Limestone Unit occurs only as fault slivers along the West Wall Fault. These fault bounded slivers are predominantly unaltered. The limestone is generally equigranular and appears to have recrystallized. The limestone was intersected by hole N-38 and it was not possible to identify where in the stratigraphic column it came from.

The Siltstone Unit was intersected in the majority of the holes. It is represented by well bedded, graphitic mudstones to siltstones that exhibit soft sediment deformation. Soft sediment breccias were also observed in many of the holes. The fragments appear to have been silicified and the matrix is primarily composed of graphite. The silicification in the intraformational breccia and in parts of the siltstone is both pervasive and along banding.

Structurally, most of the slip has been taken up by this unit. In the siltstone, slickensides are visible on graphitic surfaces and in some gouge zones. Most of the fragments in the intraformational breccia have been elongated, probably during faulting.

The Siltstone represents a restricted anoxic basin where the mud and silt collected. This unit represents the transition from a reefal limestone to a major volcanic cycle. Within the layered siltstone, there is abundant fine yellow pyrite which is probably syngenetic. Much of the black component in the siltstone is graphite, although in some instances it does resemble the fine black sulphides observed in the BEAR deposit.

The Tuff Unit is very common on the MISTY-NIE. It is represented by intermediate to mafic, fine to medium grained tuffs and possibly flows. They range in colour from medium green to dark green to greenish gray. The tuffs are predominantly fine grained with rare lapilli fragments and are typically bleached when altered. The bleaching is caused by an introduction of dolomite and pyrite. Quartz and carbonate veining is also more common in the bleached zones. This type of alteration is typical of that on the GOLDEN BEAR property, peripheral to the mineralization.

On surface, ultramafic rocks have been mapped, although none were intersected in the core. These rocks are described by Souther (1971) as part of the Stikine terrane. On the claims they are typically serpentized amphibolite. A small sliver of ultramafic occurs on the NIE plateau adjacent to the West Wall Fault. The rocks are interpreted as alpine ultramafics rafted into their current structural position by major faulting. The largest of these ultramafic bodies is within what is now called the Ultramafic Fault on the east side of the NIE group.

Foliated Diorite

The foliated diorite is classified as Triassic by Souther (1971). It is generally medium grained, equigranular and has a weak to strong foliation. In most cases on the NIE claims, it is in fault contact with the Tuff Unit; however, on the GOLDEN BEAR property to the south, it has an intrusive contact with the Tuff Unit.

Non-Foliated Diorite

Souther (1971) has classified the non-foliated diorite as Jurassic. On the NIE group it is represented by a series of feldspar porphyry dykes, which have come up along the West Wall Fault. These dykes are probably related to the large body of Jurassic diorite that outcrops on Misty Mountain, just to the west of the NIE Claims.

In many of the drill holes, the intersected dykes were generally dark gray when least altered. The dykes are usually porphyritic with 80 - 90% feldspar, 5 - 10% mafics and 5 - 10% quartz. In the most intensely altered sections, the feldspar was totally clay altered with a green to white colour and the mafic content decreased to less than 5%. Away from the fault, the dykes are pinkish in colour and were originally thought to be syenitic. However, thin sections have shown the composition to be dioritic. The dykes have preferentially intruded the siltstones along the West Wall Fault.

From the best showing on the NIE Claims, a sample of the dyke was dated by Schroeter (1987) yielding an age of 156 $\bar{M}a$. These dykes are presumed to be part of the later phase of the Jurassic diorite intrusion (Schroeter, 1987). If the Jurassic intrusions are the heat pump which created the hydrothermal system to form the mineralization in this area (GOLDEN BEAR), then that system survived for approximately 50 $\bar{M}a$ (from 154 to 205 $\bar{M}a$). These dates, based on K-Ar dating of sericite in the diorites, were obtained from samples collected by Chevron and Schroeter (1987).

Level Mountain Basalts

These basalts are located on the upper plateau of the NIE Claims and are remnants of flows from the Hearts Peak and Level Mountain volcano. Originally a large portion of the area was probably covered by these basalt flows. Surface mapping located a few outcrops of columnar-jointed, vesicular basalts. Today a number of the cinder cones are still visible on Hearts Peak.

Mineralization

The gold mineralization discovered to date is associated with sulphides (primarily pyrite) along the West Wall Fault. In most cases, the surface grab samples assayed from 10 grams/tonne to 61 grams/tonne gold. The highest value was then trenched with resultant assays of 10 grams/tonne gold over 0.6 meters and 20 grams/tonne gold over 0.3 meters. This zone was intersected at depth in holes N-1 and N-3 and along strike in holes N-4 and N-6. Drill holes placed below the trench and below all of the showings produced no highly anomalous gold values.

A second fault, the Ultramafic Fault, is the locus of a series of grab samples from various locations along strike ranging in value from 3.4 to 8.6 grams/tonne gold. These samples are also rich in sulphides.

The style of mineralization expected on the MISTY-NIE Claims is similar to that on the GOLDEN BEAR property and is described earlier in this report. The mineralization on the MISTY-NIE has been interpreted as an indication that the fault is still fertile and has allowed mineralization to leak from depth. Although much of the area is covered by glacial moraines and ice, extensive sampling has ascertained that the deposit does not outcrop at surface. Regional alteration and the strong hydrothermal system at GOLDEN

BEAR are indicative of a very large system or several smaller systems. The size or extent of the system is conveyed by the widespread alteration (silicification) of the upper layers of the limestone. One key to finding the ore grade mineralization is to locate the feeder zone of the fluid. On the MISTY-NIE Claims, the West Wall Fault has been clearly identified as the feeder zone. Now it is essential to locate a structural trap similar to GOLDEN BEAR where the gold has been deposited.

OUTLAW

The OUTLAW Claims, illustrated in Figure 3, are underlain by Pre-Upper Triassic rocks, Stuhini volcanics, a Jurassic diorite and the Sloko Group volcanics. The geological map for the OUTLAW claim block (Figure 7) contains the following units:

Pre-Upper Triassic Unit
Stuhini Group
Takwahoni Formation
Biotite-hornblende Diorite
Sloko Group

"Pre-Upper Triassic" (?)

Although this unit is mapped by Souther (1971) as Pre-Upper Triassic, it could be interpreted as a hornfelsed portion of the Takwahoni Formation. Regional traverses by the author have located other areas of clearly Takwahoni Formation which have been contact metamorphosed by the Jurassic volcanic rocks. In some places the sediments can be traced from areas of low metamorphism through contact metamorphism and into the intrusion. The outcrops on the OUTLAW Claims are not the same as any of the stratigraphic sections that occur in the Pre-Upper Triassic. This section would have to be a completely different unit that has not been seen before. The relatively thinner layering is more indicative of the younger rock sequences.

This unit is well layered and gray to green to black with abundant chlorite-epidote alteration. It outcrops on the southern side of the diorite near the central portion of the claims. The rocks are well silicified on a broad scale and have been referred to in the field as the "Flintstone Unit". Locally the rock is cut by quartz veins which are up to one meter in width. A marker bed, traceable over one kilometer, was found in the sediments near the diorite contact. This marker bed consists of subrounded to subangular clasts of gray, black and white chert in a fine grained sericite matrix.

In drill core, these rocks are represented by a series of shales, siltstones, sandstones and occasionally conglomerates, which have been contact metamorphosed to hornfels. Subsequently the hornfels has been subjected to intense hydrothermal alteration and locally altered to clay. The clay altered hornfels tends to be bleached, crumbly, and locally limonitic. Montmorillonite and sericite were seen in the intensely altered areas, while pyrophyllite and possible talc occurred as fracture coatings and veinlets. Some gouge zones near the top of the holes contained more competent rock fragments.

Disseminated pyrite (0.5 to 2%) was common in the hornfels with local areas of fine, gray sulphides (1%). Trace amounts of chalcopyrite, pyrrhotite, arsenopyrite and stibnite were also found. Some extremely high values of antimony were obtained from drill core analysis.

Stuhini Group

This group is identified as Triassic by Souther (1971) and consists of a sequence of volcanic flows, flow breccias and subordinate volcanoclastic rocks. Dark green and maroon feldspar porphyry and augite-feldspar porphyry dominate the exposures. The volcanic breccia is polymictic and contains rounded limestone clasts. The rocks are generally fresh with minor chlorite-epidote alteration and veins of calcite.

Takwahoni Formation

Souther (1971) places this formation in the Lower to Mid-Jurassic. On the OUTLAW Claims it is represented by a series of shales, mudstones and siltstones. This formation is generally recessive and underlies the eastern portion of the property. The hornfels just south of the diorite is interpreted as part of the Takwahoni, although Souther (1971) identifies it as the Pre-Upper Triassic sequence.

Biotite-Hornblende Diorite

This stock has been identified as Jurassic by Souther (1971). Generally, it is coarse grained, equigranular and unaltered diorite on the surface with mafic content varying from hornblende rich in the center to biotite rich near the margins. In the drill holes, a highly altered version of the diorite was intersected making it difficult to differentiate between the hornfelsed sediments and the diorite. The contact zone was extremely pyritic (up to 10% coarse yellow pyrite) with high values of arsenic and antimony. In outcrop, however, there is no obvious increase in the pyrite mineralization of the diorite near the contact.

In core, minor veins of calcite and hematite were observed in the diorite. Where the diorite is recognizable, it is usually medium to coarse grained and locally porphyritic.

Sloko Group

The youngest rock type on this claim block, and to the north, is the Cretaceous to Tertiary Sloko Group. It is represented by rocks ranging from subvolcanic (high level intrusions) to extrusive flows and tuffs. The composition of the volcanic sequence is acidic with rock types varying from rhyodacite to rhyolite. The center of the volcanic complex is five to six kilometers north of the claims.

In the vicinity of the drilling, the Sloko is represented by a number of feldspar porphyry dykes. Their strike is parallel to the fracture system that appears to control the alteration and mineralization on the claims. These dykes have up to 2% coarse, euhedral yellow pyrite. In the rhyolite dykes, quartz eyes are visible.

Mineralization

The mineralization on the OUTLAW Claims is related to an area of intense clay alteration and a series of east-west fractures that are visible on the airphotographs and Landsat imagery.

Just west of the area drilled in 1987, a quartz vein system was trenched in 1983. These trenches produced no anomalous gold values although two samples assayed 15 and 16 grams/tonne silver. Surrounding the vein system is a narrow clay alteration zone. This vein system strikes east and appears to be the same system that was encountered in the area drilled. The only major difference between the two areas is in the intensity and extent of the alteration around the vein system. The highest values of arsenic and antimony are in soil samples found in the drill area.

Fluids could move along this east-west striking fracture system. The flow of fluids would have been greater in areas of higher porosity and permeability, as well as areas near the center of the hydrothermal system. As the fluids rose to the surface, they would have been able to percolate into the fractured sediments, altering them to clay. Some silica would have leaked along the fracture system and formed a vein system. The fluids carried arsenic, antimony, barium, gold and silver.

The alteration and mineralization of the OUTLAW Claims (Fig. 9) are characteristic of a classic epithermal style gold deposit: extensive acid clay alteration and gold-silver values

in veins with arsenic, antimony and barium geochemistry. The system is almost certainly Cretaceous to Tertiary age (related to Sloko) because (1) it appears to occupy a fracture system also occupied by the Sloko dykes, and (2) it has altered the Jurassic diorite after the hornfels was formed.

A second less favoured interpretation is that the alteration in the diorite and the hornfels is associated with the diorite. The alteration in the diorite is termed an endoskarn while the alteration in the hornfels is termed an exoskarn. If the alteration and mineralization is related to the Jurassic diorites, then there is significant potential for a bulk deposit in the area. The geochemistry of the soils indicates a large gold, arsenic and antimony anomaly which correlates well with the hornfels sediments. The large aerial extent of the anomaly would tend to support the hypothesis that the mineralization is related to the Jurassic stock.

RAM-TUT-TOT

The geological map for this claim block (Fig. 10) displays the following units:

- Pre-Upper Triassic Unit
- Diorite
- Sloko Group

Pre-Upper Triassic

The RAM-TUT-TOT Claims have the best exposure of Pre-Upper Triassic rocks in the area. From the top of the hill to the first bench, the Tuff Unit occurs in outcrop, followed by an exceptionally large section of sediments (the Siltstone Unit) and then the Limestone Unit.

The mountain tops on the RAM-TUT-TOT Claims are comprised of the Tuff Unit. On the RAM-TUT, the unit is quite fresh with a dark green colour while on the TOT Claims it is generally altered. The typical alteration is quartz-carbonate which gives a characteristic orange colour to the rock. The Tuff Unit was not encountered in the RAM-TUT or TOT drill holes.

The Siltstone Unit was intersected in drilling on the RAM-TUT and TOT Claims. The thickest sequence of siltstone is found on this claim group. Mapping in the region, identified two marker horizons: a pink banded limestone and some mafic sills.

In core, the siltstone is generally fine grained and medium to dark gray in colour except in bleached zones where it may vary from tan to green. Silicification is common in the drill core and may be patchy to pervasive. The siltstones are locally calcareous, hematitic, bleached and in the case of RAM-TUT very carbonaceous. Calcite and quartz veins are sporadic throughout the package. Disseminated cubic pyrite is present up to 3% in the siltstone.

The Siltstone Unit encountered in drilling and in outcrop on the RAM-TUT-TOT Claims is quite different from that on the GOLDEN BEAR and MISTY-NIE properties. The difference is in the depositional setting of the sediments. On the MISTY-NIE and GOLDEN BEAR the sediments were deposited in restricted basins while on RAM-TUT-TOT they were deposited in a beach or deltaic environment. The sediments are generally cleaner and more siliceous on RAM-TUT-TOT. Stratigraphically above the Limestone Unit there is a black carbonaceous limestone which may be directly correlatable with the carbonaceous siltstones on the GOLDEN BEAR and MISTY-NIE properties.

The Limestone Unit is primarily comprised of gray carbonaceous limestone. Below this layer is a white coarse grained limestone (marble). The carbonaceous limestone is medium to dark gray and well laminated to thinly bedded. Coarse euhedral pyrite as well as disseminations are present in minor amounts in the more carbonaceous zones. Quartz veining is rare. The marble is typically coarsely crystalline and white to light gray in colour with darker, partially silicified bands. Generally it is thickly bedded with some graphitic laminations and fine to medium bands on a local scale.

The Limestone Unit has undergone two phases of folding which have been identified in the area (Fig. 8). The first phase is a tight isoclinal fold which has a horizontal fold axis. The second phase is an upright more open fold. This second phase is identified as the Tatsamenie fold and was mapped by Souther (1971) on the RAM-TUT-TOT Claims.

Diorite

The diorite on the RAM-TUT and adjacent ground is assigned to the Jurassic by Souther (1971). The diorite is coarse grained and locally porphyritic with 5 - 10% mafics consisting of biotite and hornblende. An albitite sill on the RAM-TUT was dated and also found to be Jurassic (Hewgill, 1985). The albitite is actually a sodium metasomatized variety of diorite. During albitization the mafics were removed so that the sill is composed almost completely of albite feldspar. Albitization is a late magmatic process occurring in magmatic bodies which have high volatiles and the correct chemistry.

Sloko Group

The Sloko Group is represented by feldspar porphyry basaltic dykes. On the TOT Claims, there are some rhyolite dykes which are also part of the Sloko. The basalt dykes have intruded northerly trending faults on the TOT Claims and northeasterly trending faults on

the RAM-TUT. One of these dykes, intersected in hole R-37, occurs adjacent to a silicified zone with abundant arsenopyrite.

Mineralization

Gold mineralization on the RAM-TUT Claims is associated with silicified limestone at the top of the Limestone Unit. There is a large gold, arsenic and antimony soil anomaly which originates up slope in the Siltstone Unit.

The RAM-TUT model for mineralization is illustrated in Figure 11. Hydrothermal fluids have come up along a fault zone (a feeder) in the Limestone Unit and ponded below the Siltstone Unit. The fault manifests itself in the Siltstone Unit as a series of small fractures filled with quartz-sulphide veinlets which appear to be the origin of the geochemical soil anomaly. The silica-rich fluid has replaced the limestone layers that are just below the siltstones. Tectonic brecciation was observed in core where fragments of tuff, limestone and siltstone are surrounded by silica, pyrite and fine black sulphides.

The gold mineralization associated with these silica-rich fluids would be deposited close to the feeder zone, near the top of the limestone, in what is termed a manto type deposit. The gold would typically stay near the top of the feeder although the silica-rich fluid and trace elements may continue well beyond the fault.

Drill holes R-31 and R-34 did not intersect this feeder zone. However, an increase in the thickness of the silicified zone was encountered as would be expected when the feeder was approached. When combined with gold values in outcrop and good tectonic breccias in drill core, it forms strong support for the model. Further drilling should intersect the desired feeder.

SLAM

The following units outcrop on the SLAM Claims:

Pre-Upper Triassic Unit

Diorite - Foliated

Diorite - Non-foliated

Sloko Group

Descriptions by Walton (1984) are supplemented by drill core information.

Pre-Upper Triassic

Most of the claim group is underlain by the Tuff Unit. This unit consists of the following: mafic foliated and phyllitic tuffs, laminated tuffs, phyllitic sediments, felsic phyllites, foliated augite porphyry and non-descript greenstone. The best exposures of the Tuff Unit are on the northeast flanks of the plateau in the western and southern areas of the grid. Mafic phyllitic and foliated tuffs occur in the northeast section of the grid. These tuffs are fresh, dark green, fine to medium grained and often laminated. The southern area of the grid also contains mafic phyllitic tuffs but the outcrops are mainly felsic phyllite. The felsic phyllite is buff coloured with a sandstone-like texture and is well fractured and foliated. This phyllite may have been a sandstone or volcanic sandstone. It has been intruded by many irregular creamy-buff to black chalcedony veins. Fresh, dark gray to black, fine grained phyllitic siltstones occur sporadically throughout the claims.

The Limestone Unit underlies a significant part of the property. The main exposure lies just off the grid to the north of the SLAM Claims. The limestone is fresh, light to medium gray, well bedded, generally medium grained and contains minor chert beds. Intruding the limestone are some coarse grained quartz veins up to a few centimeters wide. There are also minor occurrences of a carbonaceous limestone. This limestone

appears fresh, dark gray with a greenish hue, fine grained and thinly bedded. It is moderately well fractured and contains calcite veins up to 1 centimeter wide.

Most of the limestone on the SLAM Group is pervasively silicified although some is dolomitized. The silicified limestone is Permian, although the age of the silicification is uncertain. This rock is compact, usually light gray and fine grained. It contains irregular lenses, beds or zones of medium gray to black cherty layers and/or zones of pyrite or carbon. Limonitic material in the weathered silicified limestone results in pervasive light orange "stain". Layering or remnant bedding is often well preserved.

Local areas of brecciation within the silicified limestone are likely depositional. These small zones of brecciation contain angular, rotated fragments of silicified limestone. Tectonic polymictic quartz breccias containing chert, silica, and occasionally siltstone (greenstone?) fragments are also found in the silicified limestone. The best occurrence of these breccias lies below the cliffs of silicified limestone at 20+50N, 5+50E.

Brownish-buff dolomitized limestone is often intensely stockworked by quartz veins. Chert beds also occur within the dolomite as well as trace amounts of pyrite. Although dolomitization appears to have destroyed layering, some dolomite outcrops in the southern part of the grid are laminated.

Diorite - Foliated

The diorite, identified as Triassic (Souther, 1971), is fresh, medium to coarse grained, weakly chloritized, often magnetic and occurs in eastern areas of the grid. From 0+00N to approximately 1+50N on the baseline is a 20 meter wide zone of rusty, limonitic diorite in contact with Sloko rhyolite on its west side. In this rusty limonitic zone magnetite has

been destroyed. Between 3+50N, 5+50E and 5+50N, 6+50E is an intensely clay-limonite altered zone of diorite. In this area the diorite contains a stockwork of creamy-buff chalcidony and jasper. Some jasper veins may be up to 0.5 meters wide. The intrusive texture is still apparent in some clay-limonite altered diorite zones.

Diorite - Non-foliated

The non-foliated diorite is known in the district as Jurassic. On this claim there are two varieties of diorite, one has less than 10% quartz and the other has greater than 10% quartz. Both are fresh, fine grained and occur as dykes aligned with each other. They are in contact with silicified limestone in the southwest area of the grid. The diorite is dark gray while the quartz diorite is light gray and sugary textured. Both rock types contain sulphides (pyrite up to 1%) while the diorite also contains pyrrhotite and is very magnetic as opposed to the quartz diorite which is weakly magnetic. This diorite and quartz diorite may be related to gabbroic to dioritic intrusions outcropping on the edges of the plateau around the western and southern areas of the grid.

Sloko Group

Mapping identified the following units within the Sloko Group on this claim block:

Polymictic Breccia
Purple Rhyolite
Volcanic Breccia
Feldspar Porphyry

(i) Polymictic Breccia

The polymictic breccia unit is in contact with the older foliated diorite to the east and outcrops between 8+00N, 7+00E and 3+50N, 5+00E also extending south of 2+00N, 4+00E. Though this unit may be 100 meters wide(?) its long, linear shape and

abundant fracture surfaces with slickensides, indicate the probability of a fault breccia origin. Clay alteration and local silicification suggest hydrothermal activity. The breccia contains clay altered fragments (Sloko rhyolite?), limonitic (clay) altered fragments (diorite?) and greenish fragments (fuchsite). Trace amounts of pyrite are present. Fragments are angular to rounded and generally matrix supported. Irregular chalcedony veins occur within the polymictic breccia. The matrix is dark gray to black, possibly milled and either siliceous or silicified. Moderate to strong silicification of the polymictic breccia occurs from 3+50N, 5+50E to 5+00N, 6+00E.

(ii) Purple Rhyolite

This rhyolite is fresh with a fine grained, purple groundmass and consists of up to 10% feldspar phenocrysts. The feldspar phenocrysts are 1-2 mm long and lightly to intensely clay altered. The rhyolite also contains trace quartz eyes and black, biotite-like phenocrysts generally less than 1 mm. Limonitic stains are confined to fractures.

(iii) Volcanic Breccia

The main occurrence of the volcanic breccia unit is 100 meters south of 0+00N on the baseline. These breccia occurrences are probably pipe-like bodies within the Sloko Group. They are in contact with the purple rhyolite and contain purple and buff to gray (clay altered) rhyolite fragments. Fragments are angular to sub-rounded, averaging less than 1 cm in length with local variations up to 20 cm. The breccias also contain limonitic fragments that may be of dioritic origin. Irregular jasper veins intrude the breccia locally. The matrix is fine grained and dark gray to black.

(iv) Feldspar Porphyry

The feldspar porphyry dykes cut the main area of silicified limestone and are intensely clay altered causing the rock to be very crumbly. They are commonly pink with 1 - 6 mm white feldspar phenocrysts that contain a fine limonitic stockwork. Quartz veining is weak to moderate with veins varying from 2 - 30 mm in width. Dark gray sulphides are present as stringers and disseminations, up to 1%.

Mineralization

The gold mineralization on the SLAM Claim block is limited to one area (200 meters x 30 meters) within a well fractured zone of silicified limestone. Associated dark gray fine sulphides are present in this area. Good multilithic tectonic breccias occur on the SLAM but do not carry the significant mineralization that they would on the GOLDEN BEAR.

The SLAM claim block differs from the GOLDEN BEAR as there does not appear to be one main fault system controlling silicification. Interpretation of VLF and geology has revealed a structurally prepared area of intensely brecciated rock that has allowed alteration to occur along the numerous fractures and faults.

With such a large system, the first drill hole was targeted at the area with the best gold and trace element geochemistry. This area had very anomalous arsenic, antimony, mercury and gold values associated with the contact between the silicified limestone and the altered tuff. A significant portion of highly altered feldspar porphyry was intersected in the diamond drill hole. Some minor quartz veins and gray sulphide veins were visible in core. Due to drilling problems encountered, the silicified limestone outcrop was not intersected at depth. Therefore, this site remains untested.

Vast areas of silicified limestone which have some gold and significant trace element (arsenic, antimony and mercury) anomalies, indicate that the claim block has other potential and requires further exploration.

BANDIT

The BANDIT Claims are underlain by Pre-Upper Triassic rocks (Souther, 1971) and consist primarily of the Siltstone Unit and the Tuff Unit.

A large section of primarily siliceous siltstone could correlate well with the siliceous siltstones on the RAM-TUT and TOT Claims. Two markers have been identified elsewhere in this unit; however, they have not been found on the BANDIT Claims.

Overlying the Siltstone Unit is the Tuff Unit which occurs at the top of the mountain on the BANDIT Claims. The tuff is fresh, dark green, massive and has no quartz carbonate alteration as it does elsewhere in the package.

Structural mapping in the area indicates that there is a phase 2 antiform which is similar to the structural setting at RAM-TUT-TOT. On the BANDIT, the antiform is overturned towards the southeast; consequently layers on both limbs dip towards the northwest (Shaw, Thicke, 1983). The conjugate set of fractures has been preserved in the rock indicating later brittle deformation. Many of these fractures show fabric evidence of movement between adjacent blocks (Shaw, Thicke, 1983).

Mineralization

The gold mineralization occurs in the Ram Reef on the BANDIT Claims. The Ram Reef is a vein system that strikes 070° for two and a half kilometers. It is visible on airphotos and soil geochemical maps. In 1983, sixteen trenches were blasted over the one kilometer of this vein that outcrops. The assays were generally low with sporadic anomalies. The style of mineralization present on the BANDIT claims is probably a vein system which may have vertical or near vertical ore shoots in the Siltstone Unit. As the Siltstone-Limestone contact is approached, there could be an enhancement of the mineralization. The contact could be in excess of 1000 feet below the top of the mountain.

There are a number of silica veins and zones of quartz carbonate alteration in the siltstone that are indicative of mineralization elsewhere in the district. Grab samples from the silica zones have assayed up to 10 grams/tonne gold.

The vein system and associated gold values could be interpreted as an ore shoot or leakage zone above a more significant deposit at depth. As the leakage halo is large, mineralization would be expected over an extensive area.

1987 PROPERTY ACTIVITY AND RESULTS

Objectives, activities and results of the 1987 program will be discussed in detail for each of the properties. References to the geological and mineralization models pertain to those previously outlined in Property Geology.

Table 2 provides a listing of all the 1987 drill holes with the following property identifications:

- N = NIE property
- M = MISTY property
- O = OUTLAW property
- T = TOT property
- R = RAM-TUT property
- S = SLAM property

Table 3 summarizes the 1987 activities by property and outlines the following: number of drill holes, total footage, number of core samples, rock samples, drill sites, trenching, VLF-EM surveys and areas of mapping.

The majority of the drilling was carried out using NQ core; however, OUTLAW and SLAM required HQ core due to difficult ground conditions. Core storage facilities are located at the Tatsamenie Lake base camp.

MISTY-NIE

On the MISTY-NIE, drill holes were planned every 200 meters along the length of the West Wall Fault for a total of 1830 meters (6000 feet). The objective of the systematic drilling was to define the area that has the best geochemical gold and trace element response. Each of the showings on the West Wall Fault would have three holes drilled below it. The assumption was that this defined area would be proximal to a buried deposit. The proposal was to split any altered core in the zone and analyse it for gold, arsenic and antimony as well as the following 24 element I.C.P. package: silver, barium, manganese, bismuth, tungsten, molybdenum, copper, zinc, lead, strontium, cadmium, vanadium, cobalt, nickel, chromium, phosphorous, iron, magnesium, aluminum, beryllium, calcium, titanium, sodium, potassium.

TABLE 2
DRILL HOLE SUMMARY

<u>Drill Hole Number</u>	<u>UTM Coordinates</u>	<u>Grid Coordinates</u>	<u>Collor Elevation (m)</u>	<u>Azimuth</u>	<u>Dip at Collar</u>	<u>Depth of Hole (m)</u>
N-1	6464425N 656450E	4338S 305W	1885	270°	-45.0°	152.10
N-3	6464425N 656450E	4338S 305W	1885	270°	-70.0°	194.16
N-4	6464425N 656450E	4338S 305W	1885	312°	-44.0°	171.91
N-6	6464425N 656450E	4338S 305W	1885	226°	-45.0°	185.93
N-7	6463250N 656440E	5529S 362W	1925	270°	-44.5°	92.96
N-9	6463250N 656440E	5529S 362W	1925	317°	-45.0°	95.45
M-10	6461874N 657266E	8001S 400E	1997	-	-90.0°	5.79
M-11	6461875N 657240E	8000S 374E	2000	-	-90.0°	6.40
M-12	6461874N 657216E	8001S 350E	2003	-	-90.0°	6.10
M-13	6461827N 657170E	8031S 300E	2000	-	-90.0°	5.49
M-14	6461826N 657145E	8032S 275E	2003	-	-90.0°	6.10
M-15	6461823N 657129E	8035S 259E	2006	-	-90.0°	5.49
M-16	6461820N 657107E	8038S 237E	2009	-	-90.0°	6.10
M-17	6461819N 657085E	8039S 215E	2012	-	-90.0°	3.66
M-18	6461820N 657062E	8038S 192E	2015	-	-90.0°	3.96

TABLE 2
DRILL HOLE SUMMARY

<u>Drill Hole Number</u>	<u>UTM Coordinates</u>	<u>Grid Coordinates</u>	<u>Collor Elevation (m)</u>	<u>Azimuth</u>	<u>Dip at Collar</u>	<u>Depth of Hole (m)</u>
M-19	6461693N 657228E	8197S 349E	1955	-	-90.0°	5.49
M-20	6461690N 657205E	8200S 326E	1960	-	-90.0°	9.75
M-21	6461690N 657180E	8200S 301E	1965	-	-90.0°	6.71
M-22	6461562N 657282E	8319S 395E	1925	-	-90.0°	5.18
M-23	6461543N 657257E	8338S 370E	1925	-	-90.0°	6.71
M-24	6461517N 657237E	8364S 350E	1925	-	-90.0°	5.18
M-25	6461498N 657224E	8383S 337E	1925	-	-90.0°	4.88
M-27	6461350N 657305E	8558S 430E	1875	272°	-45.0°	111.52
N-29	6464120N 656355E	4654S 371W	2025	271°	-44.0°	119.48
N-30	6463970N 656350E	4800S 332W	2055	269°	-45.0°	135.94
N-32	6463775N 656330E	4997S 428W	2075	272°	-45.5°	129.84
N-33	6463575N 656310E	5196S 491W	2085	273°	-46.0°	114.60
N-35	6463490N 656335E	5283S 466W	2080	256°	-44.5°	142.65
N-36	6463050N 656510E	5705S 306W	1815	272°	-45.0°	44.20
N-38	6465380N 656015E	3396S 715W	1540	271°	-45.5°	<u>113.08</u>
					Total m	1896.81m
					Total ft	6223.13ft

TABLE 2
DRILL HOLE SUMMARY

<u>Drill Hole Number</u>	<u>UTM Coordinates</u>	<u>Grid Coordinates</u>	<u>Collar Elevation (m)</u>	<u>Azimuth</u>	<u>Dip at Collar</u>	<u>Depth of Hole (m)</u>
0-2	6489906N 631960E	155N 840W	1850	185°	-52.5°	232.26
0-5	6489906N 631960E	155N 840W	1850	185°	-69.5°	196.60
0-8	6489836N 631960E	50N 839W	1790	006°	-52.0°	111.86
0-26	6489836N 631960E	50N 839W	1790	006°	-78.0°	113.39
T-28	6466000N 650460E		1110	250°	-44.5°	239.57
R-31	6462220N 651320E	279S 213E	1525	100°	-64.5°	197.82
R-34	6462220N 651320E	279S 213E	1525	100°	-40.0°	181.36
R-37	6462480N 650970E	188S 216W	1265	147°	-45.0°	55.47
S-39	6459600N 671000E	1970N 627E	1665	002°	-47.0°	111.86
S-39A	6459600N 671000E	1970N 627E	1665	002°	-46.5°	<u>171.60</u>
					Total m	1611.79m
					Total ft	5288.0 ft

TABLE 3
1987 WORK SUMMARY

<u>Property</u>	<u>No. of Drill Holes</u>	<u>Total Meterage (m)</u>	<u>No. Core Samples</u>	<u>Drill Sites Prepared</u>	<u>Trenching (m)</u>	<u>Trench Samples</u>	<u>Geochem Samples</u>	<u>Grid Lines (km)</u>	<u>VLF Survey (km)</u>	<u>Approx. Area of Mapping (m)</u>
OUTLAW	4	654.11	438 core 44 sludge	2						300 x 300 @1:1000
TOT	1	239.57	187 core 17 sludge	1						200 x 100 @1:500
RAM-TUT	3	434.65	224 core	3		7	1 rock	5.55		900 x 500
SLAM	2	283.46	48 core	1						500 x 300 @1:2000
BANDIT					25x1.5x0.5 19x2.0x1.5	22	18-bulk talus fines 18-reg. talus fines			trench at 1:100
MISTY-NIE	30	1896.81	940 core 15 over-burden	7 3 (3 unused)		2 2		17.0	15.7	250 x 600 @1:2000 250 x 1600 @1:2000

A total of 30 NQ diamond drill holes (Fig. 14) was completed on the MISTY-NIE Claim block (Table 2). Two kilometers of the seven kilometer strike length of the West Wall Fault were tested. If each hole can be said to represent the 50 meters around it then only eleven percent of the fault zone on the MISTY-NIE has been tested to date. This test covers ground up to 50 meters below the topographic surface.

Drill holes N-1, 3, 4 and 6 were all drilled below the main showing where a 2 oz. grab sample had been obtained prior to the trenching in 1984. The holes were designed to test directly below the showing at depths of 50 and 100 meters and at 50 meters depth below the showing, to the north and south. The same lithologies found at surface were intersected at depth; however, no gold values were obtained (Fig. 15a-e).

Drill holes N-7 and 9 were drilled below the next showing which occurs to the south. N-7 (Fig. 15f) went directly below the outcrop and did not intersect the silicified limestone present on surface. From the same set-up, N-9 (Fig. 15g) bearing northwest and dipping -45° did intersect the silica zone; however, no gold values were obtained.

Drill holes M-10 to 25 (Fig. 15h-k) are a series of short holes drilled on the MISTY plateau. The objective was to obtain 3 meter samples of bedrock at spacings of 15 - 25 meters across the fault. Three lines of drill holes were laid out based on the best estimate of the fault location from the VLF-EM data.

Drill hole M-27 (Fig. 15 l) was drilled below the southernmost showing which is just northwest of the MISTY Legal Corner Post. This showing contained two anomalous gold values: 39 grams/tonne and 9 grams/tonne. M-27 intersected gouged tuff and altered porphyritic diorite in the fault instead of siltstone. Once out of the fault the tuff was unaltered. The

hole was drilled well beyond the fault as one of the anomalous surface samples occurred 50 meters west of the fault zone.

Drill holes N-29, 30, 32, 33 and 35 (Fig. 15m-q) were all drilled on the NIE plateau between the two northernmost showings. These holes were inclined at -45° to intersect the fault 50 meters below the surface. The highest value on the NIE, 1 gram/tonne over 1.0 meter, was obtained from hole N-29, just on the northern edge of the NIE plateau. All of the holes intersected a sequence of tuff, siltstone and porphyry. Exceptionally good correlation existed between surface and drill hole data.

Drill hole N-36 (Fig. 15r), collared next to the MISTY glacier, was unable to penetrate the overburden and was therefore abandoned.

Hole N-38 (Fig. 15s) was drilled approximately 1 kilometer north of the main showing. It was targeted to drill below the outcrop of limestone slivers which is surrounded by favourable gold, arsenic and antimony soil geochemistry and a strong VLF-EM signature.

In addition to the diamond drilling, geological mapping and VLF-EM surveys were carried out. A detailed map (Fig. 7) of the key area along the West Wall Fault was compiled using previous geological mapping, drill hole information, soil geochemistry and VLF-EM surveys.

This year's VLF-EM work extended an earlier survey to complete coverage of the entire length of the West Wall Fault on the MISTY-NIE Claims. Of the 17 new line kilometers put in on the grid, it was only necessary to conduct VLF-EM surveys over 15.7 kilometers. This was sufficient to fill in gaps and complete the VLF-EM picture on the MISTY-NIE. Profiles for the new lines are shown in Figures 16 a-i.

Soil geochemistry for gold, arsenic and antimony has been contoured at a scale of 1:10,000 for correlation with geology, VLF-EM and the 1987 drill holes. These maps (Figures 17 to 19) are compiled from data collected in 1984 and 1987. Both the Fraser Filtered VLF-EM data (Fig. 14) and the soil geochemistry outline the West Wall Fault. This combined data was utilized to plan the 1987 diamond drilling program.

The geological and mineralization model previously discussed is still viable and has been enhanced by the geological and geochemical data collected this year. The next phase can now be planned with greater confidence, utilizing a more concrete data base.

OUTLAW

On the OUTLAW, holes 0-2, 0-5, 0-8 and 0-26 (see Figs. 20, 21a,b and Table 2) were completed for a total of 550 meters (1800 feet). The objective was to intersect the mineralization associated with the clay zone mentioned previously in this report.

Although the diamond drill holes were started with HQ core, due to poor ground conditions they were reduced to NQ core for completion. Two drill sites were prepared with holes 0-2 and 0-5 drilled from the upper site and 0-8 and 0-26 from the lower site. Drill hole 0-5 had the best gold intersection of 8.3 grams/tonne over 0.95 meters. Many other values in the range of 1 - 3 grams/tonne gold with some high silver values (11 to 89 ppm) occurred throughout the core. The gold histograms are displayed in section with the geology (Fig. 21a,b). Trace elements such as antimony and arsenic are highly anomalous and can be correlated with the stibnite and arsenopyrite visible in drill core.

All of the holes were drilled along the same section to provide information about the vertical continuity of mineralization and to verify the location of the precious metal zone. Holes 0-2 and 0-5 provided the best information and most anomalous gold values.

One and a half days were spent re-examining the area after drilling to determine if any more geological information could be obtained. No new data was acquired and no other interpretation was apparent.

RAM-TUT-TOT

On this claim block, 3 drill holes on RAM-TUT and 1 on TOT were completed totalling 674 m (2200 feet). The objective had been to drill 6 holes for a total of 732 m (2400 feet). These holes were targeted at three different areas: on the RAM-TUT, a buried manto style deposit at the top of the Limestone Unit and a silica and scorodite rich fault zone and on the TOT Claims, a scorodite stained fault zone.

The RAM-TUT holes (R-31, R-34, R-37) are illustrated in Figure 22. R-31 and R-34 (Fig. 23, 25a) were drilled into the manto deposit previously described. The true thickness of the silicified limestone intersected in R-34 is greater than that of the silicified limestone exposed at surface and in hole R-31 (Fig. 25a). This thickening of the silicified limestone indicates proximity to a feeder zone. The breccia zone at the top of the holes contains fine, dark sulphides in the matrix, a variety of rotated fragments and is interpreted to be tectonic in origin. Detailed geological mapping (Fig. 23) has linked the area drilled with the 1983 trenches TR-1 and TR-2. The trenching showed breccias similar to those in the drill holes at the same stratigraphic and structural position. Correlation between the drill holes and the trenching location (Fig. 23) is difficult because of the sporadic outcrop.

R-37 (Fig. 23, 25b) was a very short hole drilled into a southeasterly trending fault which contained abundant scorodite and silica. The core was mineralized with fine arsenopyrite; however, no anomalous values were obtained. This fault zone strikes southeasterly up the hill and intersects the contact between the limestone and the siltstone. The intersection

between the mineralized fault and the silicified limestone at its contact with the siltstone has extremely high potential to host some significant mineralization.

The TOT drill hole, T-28 (Fig. 27) was drilled across the fault zone (Fig. 28) and had anomalous arsenic values associated with each fault intersection. Gold values, ranging from 1-3 grams/tonne over 1.0 - 3.5 meters, were always directly down-hole from each arsenic value. Although the drill core was only weakly silicified, with 1% pyrite, numerous arsenic, antimony and gold values were obtained.

SLAM

The objective of work on the SLAM property had been to drill 4 holes for a total of 365 meters (1200 feet). The target was silicified limestone which had surface gold values up to 3.8 grams/tonne along with very high arsenic, antimony and mercury values.

Hole S-39 was drilled using HQ core but still encountered severe problems and was lost at 111.86 meters. The drill was moved back one foot and S-39A was collared. It was tri-coned to 111.86 meters and then cored to the end of the hole. A surprising amount of highly clay altered feldspar porphyry was encountered in this hole despite the fact that none was found on surface. A good intersection of silicified limestone had been anticipated. It appears that the drill hole glanced off the side of the silicified limestone. The rods whipping in the hole probably caused it to deviate from the intended azimuth. This would suggest that the target was never tested.

BANDIT

The objective of work on these claims was to re-examine the trenches and to determine potential sites for future drilling. Having accomplished the above, two trenches were blasted in the Ram Reef (Fig. 30) where previous anomalies had been located. Bulk talus sampling was also carried out with the intention of finding the highest grade zone along the vein. A total of 18 bulk samples were collected along a one kilometer length of the Ram Reef (Fig. 30). Figure 31 is a map of trench RR-17 that includes assay results.

INLAW

Prior to any drilling on this property, trenching is required to delineate targets. Due to a lack of time and manpower, this objective was not fulfilled.

The programs on each of the properties have added a vast amount of data from which further work will benefit. As more evidence is acquired a better understanding of the geological models is gained.

CONCLUSIONS

These conclusions are based on the geology, geophysics and preliminary evaluation of the geochemistry for each property. A comprehensive review of the drill hole geochemistry is pending from Chevron. As well, a structural study of the regional folds and projection of the limestone below the MISTY-NIE is currently being prepared by Dr. D. Shaw. These two additional reports will be required to develop the program for next season.

A total of 30 NQ diamond drill holes was completed along the West Wall Fault on the MISTY-NIE Claims. This fault has been identified by Chevron as the northern extension of the BEAR Fault. The structural and stratigraphical geology on the MISTY-NIE is exactly the same as that found on the GOLDEN BEAR. The BEAR Fault hosts the mineralization in the BEAR Main Zone. GOLDEN BEAR will be going into production within a year to eighteen months. The mineralization located by Chevron along the West Wall Fault on the MISTY-NIE Claims indicates: (1) the hydrothermal system which deposited the BEAR mineralization is extensive and (2) that there is potential for buried deposits. The mineralization expected on the MISTY-NIE will be the same as that on the GOLDEN BEAR.

Seven kilometers of strike length of the West Wall Fault are located on the MISTY-NIE Claims. Fault slivers of limestone, diorite and alpine ultramafics are found along this fault which are similar to those slivers found on the GOLDEN BEAR. Gold mineralization on the GOLDEN BEAR is closely associated with some of these slivers. Characteristic to the zone are fault slivers which add credence to the hypothesis that the fault is deep seated.

Diamond drilling, at a spacing of 200 meters, tested a total of 2 kilometers of the length of the West Wall Fault on the claims . If each hole represents 50 meters along the fault, then 11% of the horizontal portion of the fault has been tested to a vertical depth of 50 meters below the current topographic surface. Geostatistical work at BEAR suggests that each drill hole is only valid for 15 to 20 meters in the main deposit and considerably less in the surrounding more sporadic mineralization. With this in mind, only 2 to 5% of the length of the fault may have been tested.

Drilling on the MISTY-NIE intersected a zone of graphitic siltstone, feldspar porphyry, bleached tuffs and gouge. Although the highest gold value was 1 gram/tonne, various sections of the zone yielded a good response in arsenic, antimony, barium and manganese. These anomalous values require further geostatistical analysis to extract all of the information and will be compared to the geochemical halo which occurs around the GOLDEN BEAR.

MISTY-NIE has the following characteristics that indicate the potential for a deposit buried below the surface: the fault up to 30 meters in width, favourable host rocks, mineralization and geochemistry.

On the OUTLAW Claims, 4 HQ, NQ holes were drilled for a total of 654 meters. These holes were all drilled in one section within a clay altered zone which had anomalous gold and trace element geochemistry in surface trenches. They all intersected variably altered hornfelsed sedimentary rocks as well as diorite. The alteration in a number of cases was so intense that it was difficult to identify the original rock type. Drill hole 0-2 had gold values in the 2-4 grams/tonne range over 0.5 to 3 meters while hole 0-5, drilled below it had values up to 8.3 grams/tonne over 0.95 meters. Holes 0-8 and 0-26 had low

gold values; however, the whole system is extremely anomalous in arsenic (1000 - 7500 ppm) and antimony (100 - 1000 ppm) with some silver (11 - 89 ppm) values.

Drilling has confirmed the vertical extent of the system and mineralization at depth; however, it is all in one section. Further drilling along strike is required to be certain of the along strike potential of the mineralization. Gold values are associated with the clay altered, microporphyry dioritic dykes and the coarse, silicified stockwork in the hornfels.

OUTLAW has two possible styles of mineralization: (1) a typical epithermal gold deposit with an acid clay alteration or (2) an exoskarn and endoskarn associated with the Jurassic diorite. The first style of mineralization would be associated with the Cretaceous to Tertiary Sloko volcanism where the feeder system (the vein) has developed a large clay alteration halo. Definition of the precious metal zone within the vein is important in assessing the potential of an epithermal gold deposit. On surface the clay alteration appears fairly limited in aerial extent although the talus cover makes it difficult to ascertain. The second hypothesis would correlate well with the soil geochemistry which has large gold, arsenic, antimony and smaller silver anomalies in the hornfels zone around the intrusion. If the extensive alteration of the hornfels and diorite was a late stage magmatic or metasomatic process then there is potential for a large bulk deposit. A number of deep holes would be required to test this second alternative. Further work with the trace element geochemistry would help support one or the other of these hypotheses.

On the RAM-TUT-TOT Claims, 4 NQ drill holes were completed totalling 674 meters. Three targets were explored on these claims within the same stratigraphic packages of rock that occur on the GOLDEN BEAR property.

The first target was a manto type deposit where there is considerable silicification at the top of the Limestone Unit in the Pre-Upper Triassic package. The silica is presumed to have come up along a fault or faults and spread laterally, replacing the limestone below the impermeable sediments. A few veinlets, anomalous in gold, cut the sediments and may be surface indicators of a buried fault zone. A large multi-element (Au, As, Sb) geochemical anomaly covers the surface and appears to originate near the vertical projection of this fault zone.

The two drill holes directed at this target intersected a significant thickness of silicified limestone with some tectonic brecciation that contained fine black sulphides in the matrix. Although the feeder zone was not intersected, the increased thickness of the silicified limestone indicates proximity to the feeder. This silicified zone was noticeably enriched in silver (3 - 130 ppm) and antimony (30 - 160 ppm). Two weakly anomalous gold intersections of 1 gram/tonne over 1.6 meters and 2.38 grams/tonne over 1.58 meters were obtained in the silica zone. Recovery was very poor in these zones, ranging from 29 - 60%.

The second target on the RAM-TUT was a fault zone containing an altered silicified limestone breccia. Abundant scorodite and limonite is visible on surface where trenching has produced samples with values up to 1.6 grams/tonne gold. The one drill hole below this zone produced no anomalous gold values although abundant arsenopyrite is visible in core.

The third target located on the TOT claims, was a fault zone with abundant scorodite at surface. Grab and trench samples assayed up to 5 grams/tonne gold along the fault. One NQ diamond drill hole was completed across the zone and highly anomalous gold and arsenic values were obtained. The highest occurrence was 3.31 grams/tonne gold over

2.26 meters with 500 ppm to 1100 ppm arsenic. Other fault strands intersected had very anomalous arsenic but no gold values.

On the SLAM property, 2 HQ holes were drilled totalling 283 meters. The target on this property was a large body of silicified limestone which had been geologically mapped, sampled and trenched. Surface grab sampling produced values up to 3.8 grams/tonne gold with extremely anomalous values of arsenic, antimony and mercury at the fault contact between the silicified limestone and the bleached tuffs.

The lack of one definitive fault zone to channel the fluids has slowed exploration on this property. The VLF-EM survey indicates the area has been intensely fractured. The silica rich fluids are interpreted to have come up along fracture systems. The presence of significant trace element and gold geochemical values in the area drilled indicates that the hydrothermal system was fertile.

The silicified limestone observed in outcrop was not intersected in drilling so the hole is considered to have missed its target because of drilling problems. The intense clay alteration of the porphyry is encouraging although no gold values were obtained.

Two trenches were blasted on the BANDIT Claims to further evaluate the Ram Reef mineralization. This zone consists of a quartz vein system which outcrops for one kilometer and is geochemically visible for two and half kilometers. The detailed trench values peaked at 6.7 grams/tonne gold over 0.7 meters. The bulk sample taken below the trenches confirmed that the best area was from 2+00W to 8+50W, approximately 100 meters down slope from the baseline. The new trenching has returned values consistent with the previous trenching.

At surface the vein system is hosted by the Siltstone which may not have the correct physical and chemical characteristics to form a significant deposit. However, if this vein is followed down to the Limestone-Siltstone contact it could develop into a strongly mineralized system.

Over the TATS project area there is good evidence for the previous existence of numerous active hydrothermal systems which have been gold-bearing and focused by faults. Suitable host rocks occur which have been structurally prepared. A gold mine has been proven and will be going into production within a year and a half. Therefore, each of the properties has significant potential to host more economic gold mineralization.

RECOMMENDATIONS

The following program is recommended based on the drill results, geological mapping, geophysical (VLF-EM) surveys and geochemistry.

On MISTY-NIE (Fig. 32) more diamond drilling (approximately 1650 meters) is recommended to test the remainder of the fault zone to the north towards Tatsamenie Lake. This program would complete the initial proposal for 1987 and provide invaluable information to assess the rest of the fault zone. The location of drill holes is tabulated in Table 4. In addition, some consideration should be given to two deep drill holes totalling 1000 meters. This part of the program would test the area where the West Wall Fault intersects the top of the limestone. Dr. D. Shaw's forthcoming report should be consulted to obtain estimates of depth to this intersection from surface.

On OUTLAW (Fig. 33) three more holes (1000 meters) are recommended to evaluate the clay zone along strike from the current section. Since much difficulty was experienced in developing drill platforms, it is recommended that the upper drill site from the 1987 program be utilized. These holes should continue to intersect the main body of diorite and, therefore, provide widespread information on the gold associated with it. This test could validate one hypothesis or the other.

On the RAM-TUT-TOT (Fig. 34) further drilling is recommended to test the three targets. On the TOT, three holes are recommended: one below and one on either side of T-28. These holes would evaluate the strike and dip continuity of the mineralization. The program would entail 370 meters of drilling. The manto area on RAM-TUT warrants further drilling both up slope from R-31 and R-34 and along the slope towards the intersection of the top of the limestone with the mineralized fault cut by R-37.

Table 4
POSSIBLE FUTURE DRILL SITES

<u>Approximate UTM Coordinates</u>	<u>Approximate Grid Coordinates</u>	<u>Drilling Direction</u>	<u>Comments</u>
6466990N 655205E	1700S 1485W	W &/or E	Site requires levelling and logging. Improve path (old claim line) to nearest heli-pad.
6466775N 655240E	1900S 1550W	E	Heli-pad - needs minor work.
6466690N 655210E	2000S 1490W	E	Sloping outcrop, trees to cut. Levelling required.
6466670N 655310E	2025S 1375W	W &/or E	Heli-pad - also could be used as a drill pad.
6466600N 655230E	2100S 1500W	E	An intermediate site. Near break in slope, levelling and logging required.
6466445N 655335	2300S 1385W	E	Level outcrop at break in slope. Trees to cut.
6466170N 655405E	2500S 1315W	E	Approximately level, wet ground, heli-pad is nearby.
6465870N 655705E	2865S 998W	E	Site already prepared, landing spot nearby.
6465740N 655945E	3004S 769W	W	Site already prepared, landing spot nearby prepared.
6465665N 656010E	3100S 750-725W?	W	Intermediate site. Minor levelling. Can be used for drill site or heli-pad.
6465560N 655965E	3210S 735W	W	Level drill site. Landing sites nearby.
6465385N 655890E	3390S 845W	E	Prepared site. Drill at -45° or as shallow as the topography allows. Formations dip 70-80°E.
6461080N 657425	8815S 515E	W	Level site near outcrop. No preparation required.

Note: most drill sites were selected to be approximately 50-70 m horizontally from VLF target. All holes are intended to be drilled at -45°. The holes are intended to be drilled to a depth of 122 m (400 ft.). The sites were selected based on the VLF, soil (As, Sb, Au) geochemistry, geology and the availability of easily prepared sites.

On the SLAM (Fig. 35) three more holes (650 meters) are recommended to test the target. The first hole should be drilled from the top of the large trench on the south side of the main silica zone. This hole would provide a very shallow test of the silicified limestone and would be completed prior to drilling two deeper holes. These 2 holes should be directed at the main body of silica utilizing the S-39/39A drill set-up.

On BANDIT, one hole (200 meters) is recommended to test the Ram Reef in the vicinity of the test trench RR-17. This hole could evaluate the structure and might indicate the depth potential for the mineralization.

Further drilling is warranted on all of these properties. Priorities, however, should be established and those with the highest likelihood of success and closest to infrastructure should be explored in the next phase. The total of the recommended drilling on all properties is approximately 5000 meters. The number could change once more definite plans are made.

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