104B107 #30

019291

GEOLOGICAL REPORT, EXPLORATION

AND

DEVELOPMENT PROPOSAL

ON THE

SKYLINE EXPLORATIONS LTD.

REG PROPERTY

IN THE

ISKUT RIVER AREA, NORTHWESTERN BRITISH COLUMBIA

LIARD M.D.

N.T.S. 104 B11/E

BY EDWARD W. GROVE, Ph.D., P.Eng.

VICTORIA, B.C.

APRIL 20,1986

Prove Consultants Ltd.

TABLE OF CONTENTS

	PAGE
SUMMARY. RECOMMENDATION. INTRODUCTION. LOCATION AND ACCESS. REG PROPERTY. HISTORY. GENERAL GEOLOGY. UNUK RIVER FORMATION. BETTY CREEK FORMATION. LOCAL GEOLOGY. INTRODUCTION. UNUK RIVER FORMATION (LOWER UNIT). BETTY CREEK FORMATION (UPPER UNIT). STRUCTURE - REGIONAL. LOCAL. MINERAL IZATION. STEWART DISTRICT. STONEHOUSE GOLD ZONE. ZONING. ALTERATION. BONANZA ZONE. C-3 ZONE. C-3 ZONE. GEOCHEMICAL AND GEOPHYSICAL SURVEYS - 1985. MINERAL RESERVES. MINERAL POTENTIAL OF THE GOLD ZONE. CONCLUSION.	1 3 4 7 9 10 13 18 19 19 19 19 19 19 19 23 24 25 24 25 29 30 31 31
1986 EXPLORATION & DEVELOPMENT BUDGET REG STONEHOUSE GOLD ZONE REFERENCES	E.4Ø
CERTIFICATE	.43
FIGURES 1. Location Map	.1eeeeeeeeett kkkkkkeeett
TABLE ISummary of Formations - Iskut River Area14 &TABLE IIMineral Reserves - Cloutier LensesTABLE IIIMineral Reserves - '16' LensesTABLE IVMineral Reserves - Pick AxeTABLE VMeasured Mineral ReservesTABLE VISummary - Mineral Reserves - Stonehouse Gold Zone	.32 .34 .35 .36
	- Angel

のため、日本のないので、日本のこの

mine Marcuss

4

Ö.

SUMMARY

This report provides a complete up date on the mineral exploration activities of Skyline Explorations Ltd. on the REG property at Johnny Mountain with emphasis on the status of the major Stonehouse Gold Zone deposit.

The REG property includes 25 staked mineral claims and 13 Crown granted mineral claims. All the claims are in good standing and are 100% owned by Skyline Explorations Ltd. Mineral exploration in this part of northwestern B.C. dates to 1907 when placer gold prospectors found copper-gold-silver-leadzinc mineralization above Bronson Creek and recorded the RED BLUFF and ISKOOT claims. In 1956 Hudsons Bay Mining & Smelting Company prospectors discovered the Pick Axe copper-rich massive sulfide in open ground just below the receding Johnny glacier. Cominco and Texas Gulf explored portions of the ground in the mid 1960's and early 1970's for lead-zinc and copper/molybdenum In 1980 Skyline Explorations restaked the area for deposits. gold completing the cycle and opening a new era seeing the development of the first potentially commercial major goldsilver-copper deposit in the Stewart District in many years.

Since 1980 Skyline Explorations Ltd. with partners Placer Development Ltd. in 1983, Anaconda Canada Exploration Ltd. in 1984, and separately in 1985 has drilled and shown the extensive good to high grade nature of the Stonehouse Gold Zone, and has uncovered a number of new sulfide showings including the extensive Bonanza silver-gold-lead-zinc zone, as well as promising new gold/sulfide showings in the north and west parts of the property in what now appears to include both strata-bound and porphyry-like situations. Good detailed prospecting led to the Bonanza discovery while the others have resulted from stream silt/heavy mineral, detailed soil geochemistry, and combined geophysical techniques.

These major discoveries lie about 70 kilometers east of Wrangell, Alaska, and 100 kilometers north of Stewart, B.C. at Johnny Mountain on the south side of the Iskut River. The property has been supplied by boat and aircraft from Wrangell and by truck and aircraft from Terrace, B.C.

Surface sampling, trenching and about 16,000 feet of core drilling on the Stonehouse Gold Zone have outlined at least seven gold bearing sulfide rich mineral lenses and veins within only a small part of a 3,200 foot thick host rock sequence. Core drilling has now confirmed gold mineralization over a length of 4,750 feet and a width of 900 feet to a depth of 525 feet within the Gold Zone. The mineral lenses are marked by an alteration envelope of K feldspar, quartz and calcite veining, by geochemical indicators, and by geophysical anomalies. A number of strong local anomalies within the Gold Zone area remain to be investigated.

As a result of the work on the R-19 and R-20 high grade veins in 1985 the calculated geological mineral reserves in the drilled portion of the Stonehouse Gold Zone now include over 19,000 measured tons grading about 2.00 ounces/ton gold; 152,691 drill indicated tons grading 0.65 ounces/ton gold; and 587,000 inferred tons grading 0.50 ounces gold/ton.

Only a fraction of this favourable geologic mass has yet been explored in sufficient detail to allow tonnage/grade determinations. The Pick Axe, P-10, P-13, and several new lenses, exposed late in 1985 and all found within the main structure together with the Cloutier, '16', and R-19/R-20 lenses suggest a potential geological mineral resource of about 3,300,000 tons with an estimated grade of about 0.30 ounces gold/ton plus silver, copper, and minor lead and zinc.

Additional measurable geological mineral reserves have also been shown by surface soil, silt, and float sampling. The McFadden sulfide float 'zone', a moraine train about 350 meters long and at least 40 meters in width, is estimated to contain up to 30,000 tons of broken sulfide material. Assays of grab samples from this moraine average about 2.80 ounces of gold/ton. The source of the rich McFadden float has not yet been located and remains a potential resource of considerable importance.

A second resource also outlined by the surface exploration includes an extensive blanket of gold bearing eluvial material extending downslope from the east end of the main gold structure. Preliminary work suggests this surface material has an area of at least 260,000 square meters (more than 64 acres) with a minimum depth of from one to two meters. So far, only the -80 fraction has been assayed in detail and averages 1.5 parts per million gold.

Both the McFadden float and eluvial blanket are uniquely accessible resources which require further detailed study, but represent materials recoverable by simple methods.

The new Bonanza Zone found in 1984 was explored in more detail in 1985 by trenching, mapping, core drilling and by both geochemical and geophysical methods. This work has now outlined three stratabound-type sulfide zones over a strike length of about 4,600 feet within alteration zones up to 60 feet wide in a thick sedimentary sequence exposed along Bronson Creek. This sulfide mineralization comprises mainly sphalerite, galena, chalcopyrite, and pyrite with overall grades averaging 0.7 per Ì.

cent Cu, $\emptyset.6$ per cent Pb, 3.5 per cent Zn, 3.7 oz./T Ag and $\emptyset.055$ oz./T Au. Selected material has assayed as high as 405.4 oz./T Ag, and 2.884 oz./T Au.

A new area, the C-3 zone, was also tested in 1985 by preliminary trenching, mapping and a geochemical soil survey. This work showed the presence of extensive massive pyrite zones within sediments. One pyrite lens assayed $\emptyset.36$ % Cu, 2.41 oz./T Ag and 1.79 oz./T Au across 12 inches.

Skyline Explorations Ltd. continued exploration and development of the REG property in 1985 has shown the potential for development of several types of mineral deposits. At the present, the major Stonehouse Gold Zone which was extended in 1985 by new work on the high grade R-19/R-20 veins represents the best deposit for commercial development.

In order to develop the Stonehouse Gold Zone the writer has recommended a combined surface and underground program estimated to cost about \$1.5 million.

RECOMMENDATION

Exploration core drilling in the REG Stonehouse Gold Zone has intersected gold bearing mineralization to a depth of at least 525 feet below surface over a length of at least 4,500 feet. The mineral lenses outlined are still open on the ends and to depth indicating further core drilling is warranted to expand the current reserves. Continued drilling using surface equipment is slow, expensive, and involves long holes because of the shallow slope of the surface and steep dip of the mineral lenses. The short field season in this area is also an impediment to effective exploration.

Because of the above factors it is recommended that development of the main Gold Zone proceed from underground headings at the 1100 meter level. This will involve a crosscut heading about 500 meters long, and drifting both east and west along the 1100 level roughly below the greatest portion of the current drill indicated mineral reserves. It is suggested that the west drift proceed in the footwall of the Cloutier mineralization to give the maximum burden and best situation for exploration drilling. The east drift should extend along the hangingwall of the '16' mineral lenses to allow deep drill exploration. Together the cross-cut, drift headings and crosscuts to sample the mineral zone are proposed to total about 1300 meters. The method, that is, track or trackless, will depend upon cost and timing.

In addition to this underground development which will

include core drilling it is recommended that a surface drill be used to explore the R-19/R-20 vein systems to depth.

It is also suggested that surface exploration of the main Gold Zone be continued and, in particular, the untested geochemical anomalies should be examined in detail, including geological mapping of the surface. The puzzle of the McFadden high grade float requires further work, particularly sampling of the lateral moraine and geological study of the Johnny Glacier cirque.

In order to expedite this program as well as future development it is suggested that a gravel airstrip be constructed on the bank of the nearby Craig River.

The program recommended for development of the Stonehouse Gold Zone in 1986 is estimated to cost about \$1.5 million.

INTRODUCTION

The REG mineral property represents the most promising new gold/silver mineral development in the Stewart District since the discovery of the Silbak Premier mine in 1912. The REG claims are located on the north side of Johnny Mountain on the Iskut River about 70 air miles northwesterly of Stewart, B.C., 40 air miles southeast of Bob Quinn Lake on the Cassiar-Stewart Highway, and 50 air miles from Wrangell, Alaska.

Although only a short distance from the navigable lower Stikine and the coast, the lack of a road has retarded the exploration and development of this mineral rich area for decades. To date access to the REG property has been mainly by aircraft from Terrace to Bob Quinn Lake and the Snippaker airstrip, then by helicopter to the camp at Johnny Mountain. In 1983 a large part of the fuel and supplies was boated up river from Wrangell to Johnson Landing and then lifted by helicopter to camp, thereby providing a somewhat more economical transport.

Published records suggest the first lode mineral prospecting along the Iskut River and at Johnny Mountain took place in 1907 when gold placer miners staked the RED BLUFF and ISKOOT claim groups. Sampling and bulk shipments in 1909 showed the presence of significant copper, gold and silver mineralization. Modern exploration of the area started in 1954 when Hudsons Bay Mining & Smelting Co. Ltd. prospectors working on Johnny Mountain discovered the Pick Axe showing, which is now part of the much more extensive Stonehouse Gold Zone. Rapid ablation of the small local snow patches and glaciers in this area since the early 1930's has allowed exploration of extensive

***i **

-4-

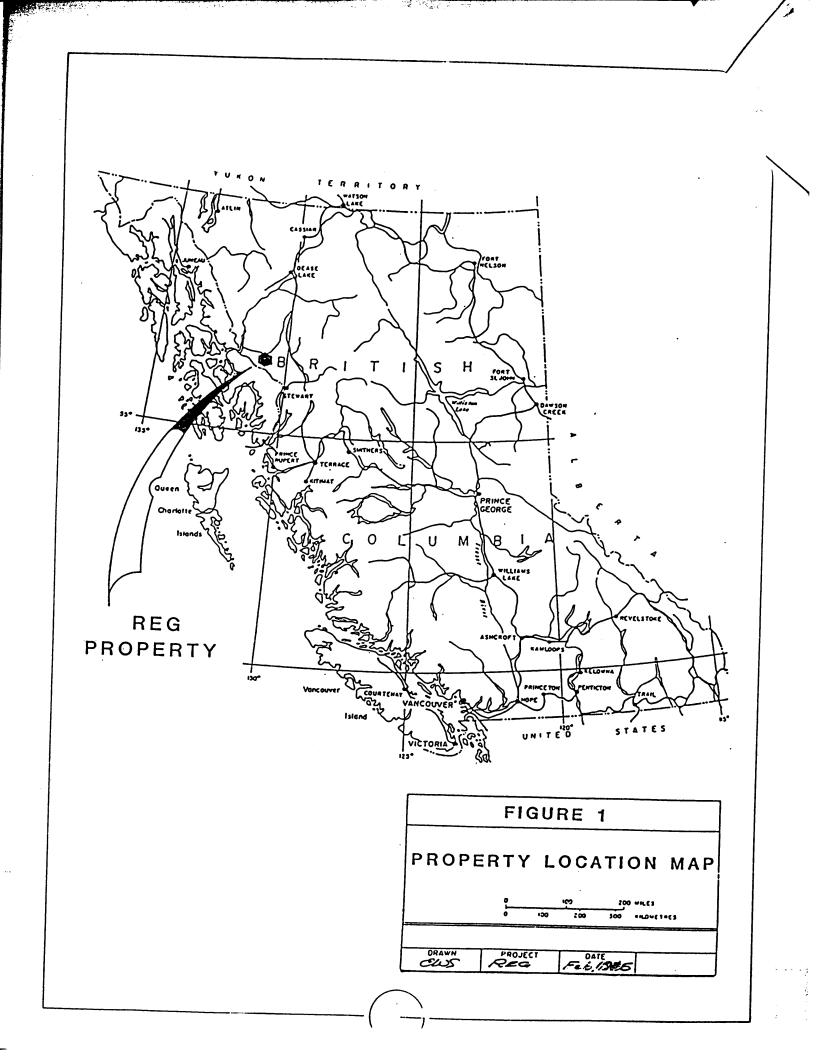
new areas and the discovery of many new mineral deposits. The mid 1960's wave of copper-molybdenum exploration touched on the Johnny Mountain mineralization briefly showing the presence of significant copper along with accessory gold and silver as well as scattered lead, zine and rare cadmium. It wasn't until 1980 when Skyline Explorations Ltd. personnel restaked the property that the gold potential of the deposit was recognized.

The REG property, owned 100% by Skyline Explorations Ltd., at Johnny Mountain now includes 25 staked mineral claims, and 13 Crown granted mineral claims. The Stonehouse Gold Zone lies mainly on the REG 4 claim and extends northwesterly onto REG 3 and southeasterly onto REG 6 at about elevation 3,800 feet on the gentle northerly slope of Johnny Mountain. This area is well above the local tree line and is covered by a thin but variable veneer of eluvial materials, and partly by ridges of thick lateral moraine.

Geological studies based upon sampling, trenching, and core drilling of the Gold Zone since 1981 have shown the presence of a major sulfide mineral zone in which gold is the major economic mineral. The presence of low temperature gold and silver minerals, K feldspar, quartz and carbonate alteration and overlapping mineral lenses shows the similarity of the REG 'Gold Zone' to the Silbak Premier. Conservative estimates based almost exclusively upon the core drill results indicate a geological mineral reserve of over 3,000,000 tons with a grade of about 0.30 ounces per ton gold plus silver and recoverable base metals to a drilled depth of 525 feet. Results of this work suggest that the Gold Zone remains open to the east and west, and at depth.

Work on the new Bonanza deposits found in 1984 has now shown the presence of at least three stratabound polysulfide zones over a length of at least 4,500 feet in a thick sedimentary sequence exposed along Benson Creek. Drilling, trenching and mapping suggest that the upper Bonanza Zone mineralization has an estimated average grade of about 0.7 per cent Cu, 0.6 per cent Pb, 3.5 per cent Zn, 3.7 oz./T Ag, and 0.055 oz./T Au over a width of up to 23 feet. Grab samples from lenses within this zone containing tetrahedrite, argentite, and electrum have yielded assay values of up to 14.1 per cent Cu, 405.5 oz./T Ag and 2.88 oz./T Au.

The new C-3 zone was partially tested in 1985 by geochemical sampling, trenching and mapping. The results showed the presence of extensive pyritization, K feldspar alteration, and quartz veining in sedimentary rocks overlain by a volcanic/ volcaniclastic sequence. One pyrite vein assayed 0.36 per cent Cu, 2.41 oz./T Ag, and 1.79 oz./T Au.



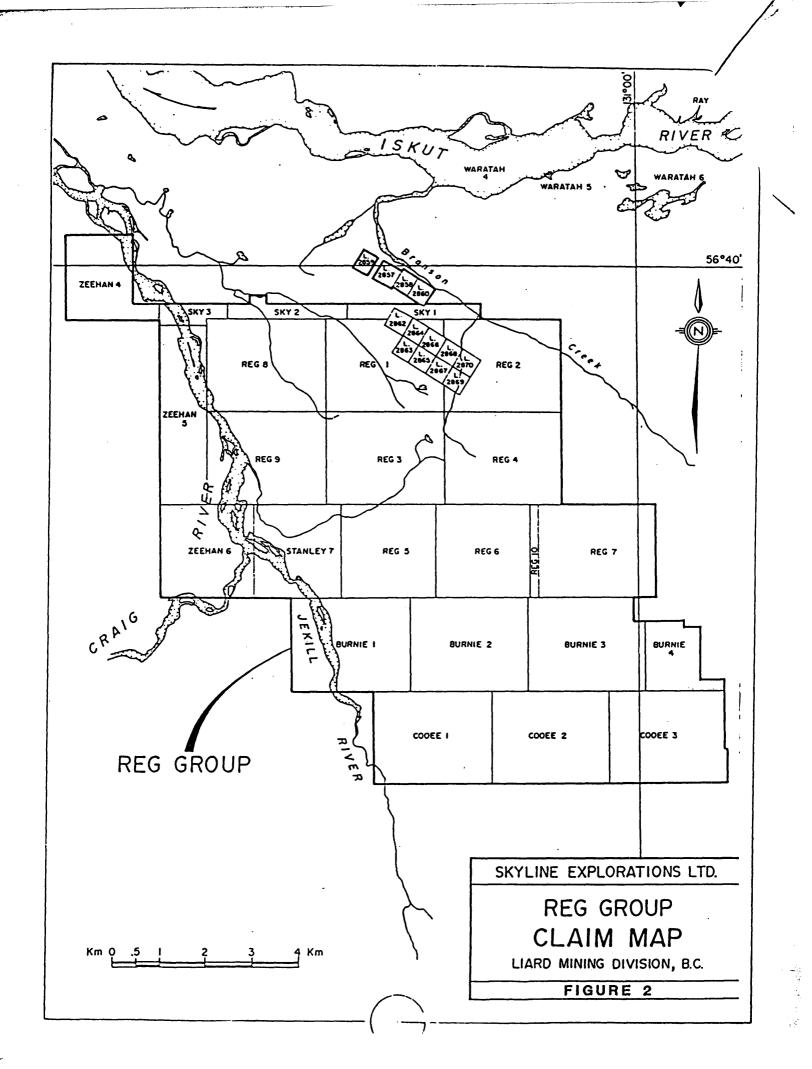
Two distinct geological/geochemical environments have now been recognized on the REG property within Lower Jurassic Unuk River Formation strata. Host rocks for the major Stonehouse Gold Zone mineral deposit comprise intercalated rhyodacitic feldspar porphyry and polymictic volcaniclastics. The second, extending from Johnny Creek north to the Iskut River comprises a thick sequence of folded sedimentary strata cut by small stocks, and dikes which have been variously deformed and faulted. A number of silver-zinc-lead, zinc-silver and goldquartz showings have been found throughout this sequence from Craig River on the west to Bronson Creek on the east including the extensive Bonanza showings and the C-3 zone.

The writer has worked in the Stewart District since 1964 studying the mineral deposits, and local and regional geology. This report was compiled at the request of Mr. R.E. Davis, President, Skyline Explorations Ltd. and is based upon work at the property in 1981, 1983, 1984 and 1985. The writer has logged and supervised splitting and sampling of much of the drill core. The report describes the work carried out to date, the results obtained, an interpretation of the observations, and recommendations for further work.

LOCATION AND ACCESS

Skyline Explorations Ltd.'s 100% owned REG property about 50 miles east of Wrangell, Alaska and 70 miles lies northwest of Stewart in northwestern British Columbia at the north end of the mineral rich Stewart District (Figure 1). The mineral claims lie across the gently sloping north slope of Johnny on the south side of the Iskut River, a major Mount tributary of the Stikine. Claim elevations range from 300 to 500 feet ASL on Craig River and Bronson Creek to about 7,500 feet on the high ridge south of Mount Johnny. The main Stonehouse Gold Zone trends across the bouldery gently open slope between elevations 3,700 feet and 4,200 feet, well above the local timber line and below the snow line. The new Bonanza Zone lies along Bronson Creek between 2,000 and 2,650 feet in light timber.

Access to the property has since 1980 been mainly by fixed wing aircraft from Terrace to Bob Quinn Lake on the Cassiar-Stewart Highway or directly to Snippaker strip which lies about 8 miles by helicopter east of the REG camp. In 1983 a large portion of the fuel and supplies was shipped from Wrangell on the coast by river boat to Johnson Landing on the Iskut River, and then by helicopter to camp. Late in the 1983 season an airstrip was partly finished on Johnny Flats below camp which allowed fuel to be delivered on the snow strip in early 1984 and 1985.



Construction of a gravel airstrip on the REG property about 2.5 miles west of camp near the junction of the Jekill and Craig rivers would facilitate development of the property by allowing quick access from Wrangell. This strip and tote road connection to the present camp area would enjoy a considerable advantage weather- and cost-wise over the usual routes.

In addition to abundant timber resources on the lower slopes the REG property has a number of small streams and rivers which could be harnessed to provide abundant year-round hydro electric power.

REG PROPERTY

The REG property consists of 25 staked mineral claims and the thirteen ISKODT and RED BLUFF Crown Granted mineral claims (Figure 2):

Claim	<u>Units</u>	Record No.	Expiry Date
RED BLUFF HOMESTAKE RED BIRD MERMAID EL ORO DISCOVERY or S GOLDEN PHEASAN BROWN BEAR ISKOOT SILVER DOLLAR MARGUERITE BLU GROUSE COPPER QUEEN REG 1 REG 2 REG 3 REG 4 REG 3 REG 4 REG 5 REG 5 REG 6 REG 7 REG 6 REG 7 REG 8 REG 7 REG 10 SKY 1 SKY 2	ILVER KING T 20 20 20 20 20 20 20 20 20 20 20 20 20	Lot 2857 Lot 2878 Lot 2859 Lot 2860 Lot 2862 Lot 2863 Lot 2864 Lot 2865 Lot 2865 Lot 2866 Lot 2867 Lot 2868 Lot 2868 Lot 2869 Lot 2870 1247 1248 1249 1250 1251 1252 1929 2033 2034 2544 2568 2569	April Ø1, 1993 April Ø1, 1993 April Ø1, 1993 April Ø1, 1993 April Ø1, 1993 April Ø1, 1993 April Ø1, 1993 July , 1993 August , 1993 August , 1993 September 13, 1988 September 13, 1988
SKY 3 ZEEHAN 4	20 20	257Ø 2979	September 13, 1988 October 13, 1986
ZEEHAN 5 ZEEHAN 6	16 16	278ø 2781	October 13, 1986 October 13, 1986
ZEEHAN 7	16	2982	October 13, 1986

<u>Claim</u>	<u>Units</u>	Record No.	Expiry Date
STANLEY 7	16	258Ø	September 13, 1988
BURNIE 1	20	2564	September 13, 1988
BURNIE 2	20	2565	September 13, 1988
BURNIE 3	2Ø	2566	September 13, 1988
BURNIE 4	16	2567	September 13, 1988
COOEE 1	2Ø	2541	October 13, 1986
COOEE 2	20	2542	October 13, 1986
COOEE 3	2Ø	2543	October 13, 1986

HISTORY

In 1907 a prospecting party from Wrangell was reported to have recorded nine claims on Johnny Mountain. Subsequent work by the owner, Iskut Mining Company, was reported in 1911 on the RED BLUFF and ISKOOT claim groups where drifting, trenching, stripping had revealed a number of veins and stringers. and Galena and gold-silver bearing mineralization were reported. By 192Ø work by the Iskut Mining Company had ceased. It was reported that a trench on the Iskoot Group at elevation 2,100 feet had exposed quartz, pyrite, chalcopyrite stringers which returned \$1.20 in gold, 44.2 oz. silver, and 12.45 per cent copper per ton from hand cobbed material. Argentite was reported as present in the stringers. Traces of gold were also reported over a width of 800 feet in schists below the trenched Sporadic work on the lower RED BLUFF showings were area. reported to yield low values in copper, a trace of gold and silver over a 30 foot width.

In 1954 prospectors employed by Hudsons Bay Mining & Smelting located the Pick Axe showing and high grade goldsilver-lead-zinc float on the open upper slopes of Johnny Mountain. In 1961 five core holes totalling 810 feet were drilled by Hudsons Bay in the Pick Axe area. The program was suspended and the claims then allowed to lapse.

In 1964 the Johnny Mountain property was restaked jointly on behalf of Cominco, Copper Soo Mining Ltd., and Tuksi Mining and Development Co. Ltd. Cominco personnel carried out geological mapping of the claim group and sampling of the showings (Assess. Rept. 630). In 1965 geological mapping of the claims accompanied by 1,100 feet of core drilling was completed by Cominco (Assess. Rept. 769). Further detailed geological work was performed on the property by Cominco in 1968 (Assess. Rept. 1657). The area was examined by Texas Gulf Inc. personnel in 1973 and 1974.

-10-

In 1980 Skyline Explorations Ltd. restaked the area and concentrated on the known Pick Axe showing and on collecting float samples. Several new sulfide bearing outcrops were also found suggesting more widespread mineralization than noted by the Cominco and Texas Gulf work.

In 1981 Skyline continued prospecting and began a series of exploration trenches to examine several of the pyritic zones found in outcrop including the new Cloutier exposure. The company also drilled six core holes (81-1 to 81-6); two on the Pick Axe and four on the new Cloutier showing. The results of the latter were particularly encouraging confirming the continuation of the Cloutier sulfide and showing the presence of high grade copper mineralization and good gold and silver.

Skyline Explorations Ltd. continued drilling in 1982 completing holes 82-7 through 82-16 extending the Cloutier Zone and locating a new lens at first thought to be part of the Pick High grade gold including two core sections with visible Axe. free gold intersected in holes 82-11, 82-14, and 82-16 proved the potential importance of this new discovery. In addition to the major extension of the known mineralization by drilling, a detailed ground E.M. survey outlined two continuous conductor axes which were correlated to the Cloutier and Pick Axe zones and suggested continuity over 2,200 feet. Sulfide float found the east end of these anomalies was also sampled and the at assay from 13 pyrite boulders averaged 2.80 ounces gold per ton. Samples of this material taken by two major companies averaged from 3.20 to 6.58 ounces gold per ton confirming the high grade nature of the McFadden Moraine.

In late 1982 negotiations with Placer Development Ltd. produced an agreement by which Placer was to expend \$750,000 on the property during 1983, and \$1,000,000 in 1984 plus other terms. Placer then brought in Anaconda Canada Ltd. as a partner but continued as operator for the 1983 season.

Work performed during 1983 comprised an overall saturation-type approach including resplitting some core and reassaying all the rejects from Skyline's work with satisfactory results, drilling 23 new core holes, bulldozer trenching, rock and trench sampling, detailed geochemical soil and silt sampling of three small areas, ground geophysics and a regional airborne geophysical survey including VLF-E.M., resistivity and The results of much of this work were such that magnetics. Skyline resplit much of the '83 core for reassay, completed the soil/silt grid, and did most of the geological geochemical mapping. Some work was attempted on locating the origin of the McFadden float including two core holes drilled through Johnny Glacier.

In 1984 Anaconda cleaned out the various trenches exposing bedrock and a number of new sulfide rich showings beyond the known Cloutier, 16, and Pick Axe mineralization. However, the sampling and mapping were not completed. Anaconda drilled four core holes, 84-40 through 84-43, in the general area of the main gold zone but mainly concentrated their drilling and funds searching for the McFadden 'lode'. Seven holes, 84-44 through 84-50, were drilled through Johnny Glacier intersecting only basal moraine and Betty Creek Formation. Anaconda's prospecting beyond the main gold zone was limited, but fruitful locating new gold showings to the northwest and east of the main Gold Zone. The new Bonanza showing found on the steep hillside above Bronson Creek was also cored with hole 84-51 indicating a potentially extensive new gold/silver shear. When Anaconda left the field Skyline Explorations returned to the main Stonehouse Gold Zone and drilled four deep holes, 84-52 through 84-55, under the Cloutier mineralization proving the continuity of the sulfide lenses to depth.

In 1985 Skyline Explorations Ltd. continued surface exploration on the Stonehouse Gold Zone, the new Bonanza Zone and the untested C-3 area. During June and July a pulse electro magnetometer survey was conducted over three portions of the REG property. The work on Johnny Flats, Groove Ridge, and Bonanza grids consisted of 52 kilometers (32.3 miles) of coverage from seven transmitter loop setups. Interpretation of the results suggested numerous conductive zones with a broad range of strength and character on the Johnny Flats grid. Two moderate to strong conductors were indicated on the Groove Ridge grid, and two strong shallow zones of which one correlated to a surface sulfide exposure were detected by the Bonanza grid survey. Conductors in the Bonanza and Johnny Flats areas were followed up by trenching, mapping, sampling and core drilling. Physical work on the Bonanza Zone involved soil sampling, mapping, trenching and sampling. In addition, several of the strongest conductors in the Johnny Flats grid area were tested by trenching, core drilling and mapping. This phase of the 1985 involved seven core holes totalling 2,446 feet. program Exploration of the sediment hosted polymetallic sulfide deposits was terminated in mid August in order to resume drilling on the Stonehouse Gold Zone and to make an initial test on the C-3 area.

Preliminary testing on the broad C-3 pyrite zone included a geochemical soil survey, mapping and some trenching. This work was limited because of steep terrain and heavy overburden, but was sufficient to outline massive gold, copper bearing massive pyrite hosted by extensively altered sedimentary rocks. Work on the main Stonehouse Gold Zone resumed in August starting with drilling the R-19 exposure. This was followed by drilling on the Pick Axe, '16', and Cloutier mineralization. In late September trenching and drilling was resumed on the R-19 and R-20 showings resulting in the discovery of high grade gold mineralization in two veins and the extension of the Stonehouse Gold Zone another 600 feet to the east for a total length of over 4,700 feet. In 1985 drilling on the Stonehouse Gold Zone included 24 core holes totalling about 6,000 feet. This work added to the definition of the mineral deposit and allowed a substantial increase in all categories of mineral reserves.

This report provides an overall interpretation of results from the various programs. The various geologic interpretations and calculations have been made by the writer from a growing, extensive data file.

GENERAL GEOLOGY

The writer's detailed and regional studies in the Stewart District have extended from the Iskut River to Alice Arm and have resolved many of the perplexing stratigraphic and lithostructural problems which still confuse most of the current workers (Table I). During the past four years the writer has been studying several mineral deposits found along the Iskut River east of Craig River. These rocks were mapped as pre-Permian and Triassic by Kerr on the basis of appearance. The shaly units forming Snippaker Mountain are fossiliferous and appear to represent variably deformed thick slabs of Carboniferous strata trending along the river and dipping northerly down the slope very much like the zone west of Craig River. The ridge east of Snippaker was also mapped in some detail in 1983 and 1984 and deformed units which include blocks of crinoidal Mississippian limestone form the crude dip slope. The property mapping provides information which suggests that these Carboniferous slope forming slabs unconformably overlie correlatives of the Middle Jurassic Betty Creek Formation and Lower Jurassic UnuK River Formation mapped as extending from Tom McKay Lake southeasterly through Stewart to Alice Arm.

contorted, nature The deformed of the highly strata can be seen in the steep cliffs between Carboniferous Bronson Creek and Snippaker Creek. The unconformable nature of the Carboniferous/Middle Jurassic overlap is well exposed on both sides of Snippaker Ridge north of Snippaker Peak. The same these major rock units unconformable relationship between appears to extend from Forrest Kerr Creek west along the Iskut River to the Stikine River junction. Present interpretation suggests an east-west trending thrust along the axis of the Iskut River which like the King Salmon Thrust Fault pushed up

-13-

-14-

TABLE I

SUMMARY TABLE OF FORMATIONS - ISKUT RIVER AREA SEDIMENTARY AND VOLCANIC ROCKS

		JC.	DIMENTARY AND VUL	
ERA	:):	PERIOD/EPOCH	: : FORMATION	: : LITHOLOGY
C E N	:		: : Lava Fork	: : hotspring, ash, basalt flows
0	:	Recent	: Iskut	: basalt flows, ash
Z O I	:		: : Hoodoo :	: basalt flows
С 	:		: Unconformi	: tv
	: : :H		: Nass Formation	: siltstone, sandstone,
	:a :z :e :1	: : Middle	: Salmon River : Formation :	: siltstone, greywacke, sand- : stone, conglomerate, : carbonate
0	:t :o :n :	:	Betty Creek Formation	<pre>: rhyolite breccia, sandstone : tuff, volcaniclastics, : conglomerate, carbonate, : volcanics</pre>
Z O I	:G :r :o :u	: : : Lower : Jurassic	Unconformi : : Unuk River : Formation Unconformi	<pre>volcaniclastics, siltstone, greywacke, porphyry, carbonate, rhyolite</pre>
С	:p : : :	: : Upper : Triassic :	: Stuhini Formation equivalent	<pre>volcaniclastics, volcanics, siltstone, sandstone, chert carbonate</pre>
P	:	Permian	Unconformi	: crinoidal limestone
A L E	:	Pennsylvanian	recognized	: ? :
0 Z D	:	Mississippian		: crinoidal limestone, : clastic sediments, volcanic
I C 	:	Devonian	Unconformi : :???	ty : grey limestone :

Basement Unknown

TABLE I CONTINUED

SUMMARY TABLE OF FORMATIONS - ISKUT RIVER AREA

PLUTONIC ROCKS

COAST PLUTONIC COMPLEX

		~~~~~~~~~~~~	
ERA	:	PERIOD	: : LITHOLOGY
C E N O Z	:	Late Tertiary	: granodiorite, diorite, basalt :
0 I C	:	Early Tertiary	<pre>Intrusive Contacts</pre>
M	:	Middle Jurassic	Intrusive Contact : quartz monzonite, feldspar porphyry, : syenite : Intrusive Contact
S O Z O I	:	Lower Jurassic	: diorite, syenodiorite, granite :
C	:	Late Triassic	Intrusive Contact : : diorite, quartz diorite, granodiorite :
P A L E O Z O I C	:	? NOT DETERMINED	: quartz diorite, ? : : : : :

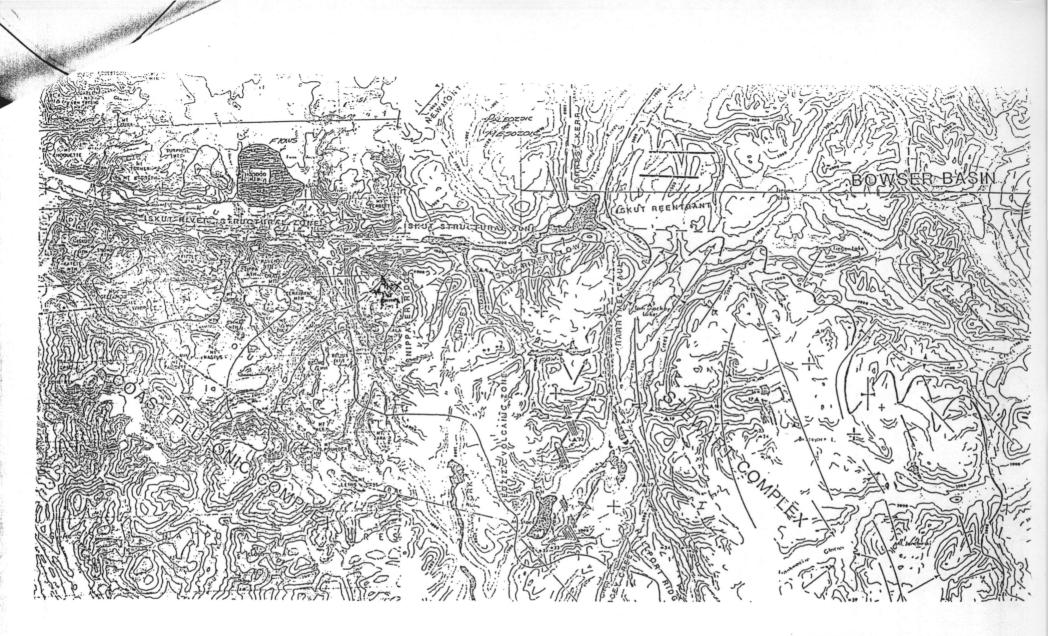


FIGURE 3

GEOLOGICAL FRAMEWORK

NORTHWESTERN BRITISH COLUMBIA

E. W. Grove Consultants Ltd.

and over to the south. However, this is probably only part of the explanation of the Iskut River Structural Zone, and only part of the tectonic record exposed in the area.

Together these geological studies including the detailed mineral deposit programs have served to define a geo-entity termed the Stewart Complex which along with the Bowser Basin, the Coast Plutonic Complex, and a number of other features combine to form the framework of this part of northwestern British Columbia (Figure 3).

The Stewart Complex lies along the contact between the Coast Plutonic Complex on the west, the Bowser Basin on the east, Alice Arm on the south and the Iskut River on the north. The western limit of the Stewart Complex, including the Anyox and Georgie River pendants extends from Belle Bay north along the Portland Canal to Stewart, then swings northwesterly to intersect the Iskut River. Portland Canal separates the massive, granitic Hyder pluton, localized along the eastern margin of the Coast Plutonic Complex, from the gneiss complex between Belle Bay and Stewart. At Stewart, the Portland Canal lineament extends inland along the Bear River-American Creek Valley and intersects the Bowser River lineament at the Todd junction where it is offset to the east, and continues Creek northerly along Scott Creek. In the Bear River valley at Stewart, the Portland Canal lineament is marked by the narrow Bear River cataclasite zone. In the American Creek and Scott Creek areas a graphite shear zone marks the presence of the lineament. The field data indicates that the Portland Canal lineament which forms the southwest boundary of the Stewart Complex, represents a normal fault over a large part of its length.

The west boundary of the Stewart Complex is marked by the intrusive contact between the Coast Plutonic Complex and the country rocks. The contact exhibits irregular to angular undulations, and marked reentrants in the Unuk and Leduc River areas represent old structures which have been truncated. The intrusive contact is generally steep, but the presence of the satellite Tertiary plutons suggests that the Plutonic Complex actually underlies part of the Stewart Complex at depth. It is suggested that the Anyox and Georgie River pendants represent an intrusive level comparable to the projected deep contact between the Stewart Complex and the underlying intrusives in the Unuk-Leduc River section.

The northerly boundary of the Stewart Complex is approximately along the Iskut River. Extensive chlorite to sericite schists developed along the easterly trending Iskut River Valley indicate a major fault which has offset the

-17-

northerly trending Forrest Kerr-Harrymel Creek fault. The locus of the easterly trending Iskut River zone, the northerly Forrest Kerr-Harrymel zone and the north-northeasterly Iskut River zone forms the vent of the Quaternary Iskut River lava flow. The southerly limit of the Stewart Complex is marked by the line of Quaternary volcanic flows that occur just south of the east-northeasterly trending Alice Arm-Illiance River lineament.

In summary, the Stewart Complex is bounded on the west by the intrusive margin of the Coast Plutonic Complex, and on the south, east, and north by high angle normal faults which are major regional tectonic features. It appears that the Stewart Complex has been essentially frozen to the east margin of the Coast Plutonic Complex, and has been involved in major uplift along with the Coast Geanticline, whereas the adjacent basin is separated by major normal faults and exhibits a relative depression.

#### UNUK RIVER FORMATION

The Lower Jurassic Unuk River Formation (Grove, 1973) is described here as a stratified volcanic sedimentary sequence. Scattered areas of uppermost Unuk River Formation in the Stewart and Portland Canal districts of the Stewart Complex were mapped in the past by early workers as Bear River Formation or Hazelton Group. As a result of the writer's study of the Lower Jurassic the Unuk River Formation now rocks of the Stewart Complex, supersedes and replaces the previous descriptions and The lithology, age, nomenclature. and structural relations of the formation are now fairly well known. This formation is the oldest of the Hazelton Group and unconformably overlies Triassic and older units. In turn, the Unuk River Formation is overlain members of the Hazelton Group with angular by the younger unconformity.

Within the Stewart Complex the formation is best exposed in the Unuk River area where this formation as well as the Upper Triassic rocks are strongly deformed. The base of the formation has not been identified outside the Unuk River- Treaty Creek area. The Unuk River Formation includes diagnostic Hettangian, Upper Pleinsbachian, and Lower to Middle Toarcian fossil assemblages, spans most of the Lower Jurassic period, and is a mappable unit throughout the Stewart Complex, distinguished and delimited on the basis of lithologic characteristics. In the type area this formation has a measured cumulative thickness of over 43,000 feet showing its importance in the development of the region.

#### BETTY CREEK FORMATION

The Middle Jurassic Betty Creek Formation was first recognized and mapped by the writer in the Stewart area and later extended throughout the Stewart Complex from the Iskut River to Alice Arm. This distinct volcaniclastic unit was not recognized by previous workers in the region. Recognition of this unit and its stratigraphic relationship to the underlying Unuk River Formation has provided a key to understanding the tectonic development of the region and in particular has been important in recognizing mineral deposit forming episodes. The recognition of the Betty Creek, together with the Lower Jurassic Unuk River, Middle Jurassic Salmon River, and Upper Jurassic Nass Formation, has made it possible to establish and formalize the terminology of the Hazelton Group.

Two Middle Jurassic units, both part of the Hazelton Group, and defined by the writer (1973) as the Betty Creek and Salmon River Formations, were first traced as mappable units in the Stewart Complex. The Betty Creek Formation is characterized by the common intercalation of planar bedded, bright red and green volcaniclastics, with intercalated, andesitic volcanic pillow lavas, tuffs, flows, breccias, sedimentary members and carbonate lenses. inluding chert, Fossil collections made from the various sedimentary units have defined the age of the unit as lower to middle Bajocian, that is, lower Middle Jurassic. In the type area the formation has a thickness of 2,500 feet, but at Sulphurets Creek it exceeds 4,500 feet, and in the Anyox area exceeds 8,000 feet. Apart from these regional variations which reflect warps, old topographic surfaces, and provenance the overall Betty Creek sequence maintains an unusual continuity from the Iskut River to Alice Arm and in the Smithers area.

In the Stewart Complex the Betty Creek sequence can be used as a reliable major marker horizon because of its common occurence as structural remnants. Most important to this report is the fact that in a number of situations such as at Silbak Premier, Big Missouri, and Sulphurets Creek, Betty Creek strata formed lithostructural traps, or dams, controlling mineralizing fluids, and causing the formation of major ore deposits.

#### LOCAL GEOLOGY

#### INTRODUCTION

Erosion through part of the Iskut Structural thrust zone complex on the north slope of Mount Johnny has opened a window to a partly deformed sequence of intercalated

#### -19-

volcaniclastic, feldspar porphyry and mixed sedimentary rocks (Figure 4). Most important, these rocks are marked by extensive mineralization and related alteration. The Stonehouse Gold zone lies in rocks below a regional unconformity marking the superposition of the widespread Betty Creek Formation. Fossils collected from sedimentary rocks below the Betty Creek strata in 1984 have now been identified as Toarcian making the early tentative correlation to the Lower Jurassic Unuk River Formation positive. These underlying mineralized rocks have strong similarities lithologically and structurally to the Unuk River Formation, a complex sequence in which the Silbak Premier, Big Missouri, Scottie, Granduc and several hundred other mineral deposits are now known to occur.

#### UNUK RIVER FORMATION (LOWER UNIT)

The Stonehouse Gold Zone mineralization is confined to part of sequence comprising mostly volcaniclastics a and feldspar porphyry partly exposed from the toe of Camp Glacier to the base of the slope where a major fault separates this sequence from a strongly folded predominantly greywacke, siltstone sequence. The Gold Zone host rocks trend about east-west and dip steep; north forming a sequence at least 3,200 feet (1000 meters) thick. So far only a small fraction of this thick sequence has been examined in detail, mainly in drill core, because of the scant rock exposure.

Massive, extensive andesitic to rhyolitic feldspar porphyry members of the 'crackle breccia' type lying between the largely sedimentary units to the west and the deformed rhyolitic cataclasites form mappable units at the local scale. Most are marked by a close-spaced fracturing with fine grained pyrite typically outlining the fracture pattern. Chalcopyrite was found associated with the pyrite in a small number of areas and heavy sulfide was found localized along the contact of these units with intercalated deformed volcanics. Widths of up to 100 meters were measured on several of these massive units. The persistent autometamorphic textures found in these members suggest they were sills. Close-spaced quartz veining is typical of these rocks particularly at and near the upper contacts with sediments and volcaniclastics.

In thin section the feldspar porphyry comprises plagioclase phenocrysts in a very fine grained matrix which exhibits signs of crushing. Alteration is typically fine grained sericite, quartz, and some calcite. Fine pyrite is ubiquitous with concentrations along hair-line fractures.

In the main Gold Zone sequence the ridge forming feldspar porphyry members are sandwiched with less resistant medium to dark green volcaniclastics. The bulk of these fragmental rocks are polymictic, containing as many or more than twelve diverse types. The grain size ranges from sand-size particles through cobbles to boulders and angular blocks. Rhyodacite forms a ubiquitous member of many of the units mainly as a groundmass, and in a few forms the bulk of the member. Primary structures are rare in these rocks, but in a few outcrops and drill cores bedding and cross-bedding indicate water borne transport. Some of these rocks are therefore bulk epiclastic while the appear to be mudflows and fanglomerates. Tuff and ash are not prominent and form only a small part of the sequence.

Rocks on the west limits of the Camp Glacier cirque and Johnny Flats comprise a sequence of intercalated phyllitic grit, siltstone, and thin rhyolite members. These appear to grade conformably to the north and east into the main bowl of the cirque through a mixed sandstone/limestone band to massive andesite and rhyodacite porphyrys (crackle breccia type). Within the main bowl of the cirque and towards the base of the upper slope the rocks comprise a variety of phyllitic to schistose cataclasites, volcanic breccias, and less deformed feldspar porphyry units. Thin diorite and porphyritic olivine gabbro lenses are scattered through the main volcanic sequence but because of deformation are not easily recognized except under the microscope in thin section.

Microscopic study of the sedimentary units along the far northwest side of the Gold Zone indicates that many of the phyllitic rocks were originally siltstone. Very fine grained biotite and sericite now form the matrix of these rocks and impart a strong foliation to them. In the transitional zone between the bulk of the sediments and the volcanics, creamy to bluish limestone is present as discrete lenses and boudins a few centimeters to a meter wide within a distinctive brown siltstone /sandstone member. So far these sedimentary rocks have been intersected in only one core hole (84-43) drilled at the far west end of the Cloutier mineral zone. Sediments in this hole have been variably altered/deformed to phyllite, semi-schist and lie intercalated between a number of brecciated feldspar porphyry lenses. The present interpretation indicates that the sedimentary units lens or pinch-out within the thick feldspar porphyry-volcaniclastic package. That is, the sedimentary sequence expands and becomes dominant to the west and northwest, and overlies the feldspar, volcaniclastic sequence to the north. The eastern extension of this sequence and its relationship to the sedimentary rocks easterly is unknown because of the extensive thick overlying Betty Creek Formation.

Si Le

Simple volcanic flow rocks are also fairly rare in this At first pass many of the rocks in the host rock sequence. mineralized sequence were thought to be rhyolite flows. Subsequent drilling and petrographic studies have shown that these were cataclastically deformed and altered rhyolitic volcaniclastics. Rhyolite breccia has now been recognized in 84-55 drilled at hole the deep east end of the '16' mineralization where it is intercalated with feldspar porphyry.

The overall composition of the Gold Zone sequence of rhyodacitic to andesitic members suggests a primarily acidic volcanic sequence. Deformation in these rocks has been variable with textures ranging from fine schistose to coarse breccias found over short distances. Some of these cataclasites were originally porphyritic but crushing has reduced the rocks to a chert-like aspect. Sericitization, carbonatization, and pyritization are seen as ubiquitous alteration products in thin section. Fine grained secondary biotite was seen in many of the rocks possible reflecting post deformation mineralization.

Work on the Bonanza Zone mineralization in 1985 provided considerable information about the mainly sedimentary sequence which lies north of the Gold Zone and forms the bulk of the Johnny Flats escarpment. Scattered outcrop on the Flats suggested a deformed sequence comprising mainly dark wacke and thin bedded siltstone units. Drill hole 84-51 and subsequent detailed mapping on the steep slope above Bronson Creek has disclosed a section aggregating at least 2,600 feet of intercalated argillaceous siltstone, sandstone, and conglomerate. The massive, thick units generally lack bedding features and show simple upright open folds. The thin bedded, fine grained units display abundant slump features related to rapid deposition and basin subsidence. These country rock sediments have been cut by a number of small stocks and dikes on Johnny Flats and by a large syenitic pluton located at the north between the REG property and the Iskut River. These sedimentary rocks are also partly overlain along Bronson Creek and in the C-3 area by Neogene basalt flows.

On both the local and regional scale the Unuk River Formation sequences are unconformably overlain by Lower Middle Jurassic Betty Creek Formation strata.

In summary, the Gold Zone strata underlying part of the north slope of Mount Johnny represent a 3,200(+) foot thick variably deformed, volcanic sequence of probable Lower Jurassic age. The sedimentary members include siltstone, sandstone, minor limestone, and intercalated thin rhyolite flows. The mainly volcanic sequence comprises massive sill-like porphyritic andesites, and massive to crudely bedded thick volcaniclastics. Lenticular highly deformed diorite and olivine gabbro units scattered throughout this sequence represent thin sills, flows and perhaps dikes. Upwards, this largely volcanic-volcaniclastic sequence becomes a mainly clastic sedimentary series with a measured thickness of at least 2,600 feet. Both sequences are overlain unconformably both locally and regionally by the Lower Middle Jurassic Betty Creek Formation.

#### BETTY CREEK FORMATION (UPPER UNIT)

\$

Betty Creek Formation strata form the bulk of Mount Johnny above the Stonehouse Gold Zone area and drape northerly to cover the lower slope above Johnny Flats. The lower portion of this gently dipping unit has been mapped in Camp and Johnny Glacier cirques and on parts of the adjacent ridges. Through most of the local Gold Zone area the basal unit comprises rhyolitic to polymictic volcanic breccia overlain by well stratified volcanic sediments, rhyolites, bedded tuffs and polymictic boulder conglomerate. Primary bedding features are common indicating that tops are up, that the strata are flat to gently north dipping and lie with profound unconformity across the full extent of the steep dipping Lower Unit.

In 1983 Placer drilled two core holes through Johnny Glacier in an attempt to locate the origin of the McFadden sulfide float. Both holes intersected only shallow dipping volcanic sandstone and lithic tuff. In 1984 Anaconda drilled seven more holes through the ice intersecting only tuff, volcanic sediments, and agglomerate. Core from these holes show some alteration which includes induration, quartz-chlorite veining and weak cataclasis.

At the base of the slope, east of the main Gold Zone, the Betty Creek and the underlying Lower Unit strata both exhibit strong planar deformation apparently formed by gravity sliding. Slipping of the thick Betty Creek sequence downslope on the old erosion surface is now expressed by a thin but variable dark phyllite that is partly preserved to the north and west on Johnny Flats. Some weak K feldspar veining was observed thin sections of Betty Creek overlying the east end of the in This suggests that like other parts of Gold Zone '19' showing. the Stewart Complex the Betty Creek strata may have been one of the structural contols trapping mineralizing fluids in Unuk River Formation strata and preparing these country rocks for the Gold Zone mineralization.

#### STRUCTURE - REGIONAL

present, rock structure is probably the least At studied and understood element in the local geological picture, probably because of the apparent simplicity of the system. The deeply eroded Iskut River valley trends due east-west over a representing a major structural zone length of 40 miles on the west by the Tertiary Coast Plutonic Complex terminated the east by the Late Jurassic/Cretaceous Meziadin Hinge and on (Grove, 1973). The Iskut zone marks one of the or Graben region's major thrusts involving Paleozoic strata that have been pushed southerly across Mesozoic units. Prior to this major event mass gravity sliding of Middle Jurassic and younger rocks across Lower Jurassic and Triassic strata took place during the Bowser Basin (Grove, 1972, 73). These major development of structures are exposed in the REG area and probably represent part of the region's complex tectonic development. only

#### STRUCTURE - LOCAL

At the local scale the Stonehouse Gold Zone strata comprise a 3,200 foot thick sequence of dominantly lenticular feldspar porphyry with intercalated volcanic conglomerate and minor fine grained sedimentary members (Figure 4). These feldspar porphyry members form irregular lenses up to 450 feet thick trending about 080°/65°N. A few bedding determinations in the epiclastic and sedimentary members of this sequence confirm this general attitude. At the west end of the Gold Zone the thinned out sedimentary bands expand to the northwest and swing to attitude 100°/55°N marking the facies lens-out. Below the main Gold Zone the juncture of the hillside slope and hummocky Johnny Flats is marked by a strong northeast trending fault that separates the feldspar porphyry/volcaniclastic sequence from a thick, tightly folded, greywacke, lithic wacke, siltstone Movement on this fault is right lateral and exhibits sequence. about a 500 foot offset.

Rocks in the Gold Zone sequence have been cut by a number of discrete faults as well as more complex shears. Although numerous faults and narrow shears have been logged in the drill core only a few have been mapped in the surface outcrop. Of these the north trending faults appear to be the most important, but no major offsets have been determined. One northerly trending fault at the east end of the Gold Zone which cuts across the R-19 showing cuts across both the Betty Creek and underlying Unuk River Formation rocks forming a steep fault scarp along the west edge of Johnny Glacier. The Betty Creek strata have been dropped down on the east side suggesting a 400 feet near the head of vertical offset of about 300 to Johnny Glacier cirque.

Small scale structural features in the Gold Zone rocks include various cataclasites, semi-schists, minor schists, and fractures. The deformation features are marked by the development of secondary biotite and sericite imparting a strong foliation to the crushed rocks which is sub-parallel to rock contacts. No detailed studies of the fracture systems have yet been made but strong sets are present in all the various rock Kink-band zones trending 160°/V are common types. in the volcaniclastics and are commonly marked by late guartz-green chlorite veins and veinlets. Other late vein sets are also possibly in part representing local remobilization in and around the major sulfide lenses which now also appear to be controlled by major fracture zones trending 050°-055°/60°-80°N.

Extensive outcrop areas are rare on Johnny Flats and along the steep slopes of Bronson Creek where Skyline explored a number of polymetallic sulfide showings in 1985. Scattered outcrop and trenches on Johnny Flats have revealed a ubiquitous flat to rolling phyllitic structure imposed upon the sedimentary rocks which has obscured primary structure. As previously indicated this structural feature which is sometimes marked by sericite relates to gravity sliding of the thick Betty Creek Formation strata down and across the underlying Unuk River strata.

Scattered outcrop along Bronson Creek below the phyllite zone show open upright folds in the massive wacke and conglomerate and complex slump folds in the intercalated fine grained banded sedimentary members. The overall fold structure in this thick sedimentary package is still uncertain except that deformation becomes more complex towards the Iskut River where the strata have been both intruded by at least one large stock and extensively deformed under the sole of the major Iskut River thrust.

Work along Bronson Creek has disclosed that the Bonanza Zone sulfide mineralization is confined to strong, throughgoing shears cutting sharply across the folded sedimentary rocks. Three parallel shears have now been investigated by surface mapping, trenching and geophysics and by drill hole 84-51 and found to trend uniformly at about,  $110^{\circ}/45^{\circ}$  W. Each of these shears is marked by sericite, calcite, quartz and sulfide alteration and replacement.

#### MINERALIZATION

#### STEWART DISTRICT

More than 500 mineral deposits have been found within the various rocks forming the Stewart Complex. Of these, 70 deposits have shown some production including the world class Hidden Creek and Granduc copper mines, the B.C. Molybdenum mine, the Silbak Premier gold-silver base metal mine, and the Torbrit-Dolly Varden silver mine, as well as 16 other major B.C. producers. All of these mineral deposits plus several hundred other small or poorly explored showings are located in Mesozoic and Cenozoic units bounded by the Coast Plutonic Complex on the west and the Upper Jurassic strata forming part of the Bowser Basin on the east. The northerly limit of this irregular area lies crudely along the Iskut River where Paleozoic strata predominate.

#### STONEHOUSE GOLD ZONE

Nomenclature of the various parts of the Gold Zone still retains the flavour of the original prospect finds. These showings include the original Pick Axe, P-10, P-13, No. 16, R-19, and R-20 (Figure 5). Early work on the original Pick Axe find included two short drill holes and a narrow trench which exposed a four foot wide massive sulfide lens over a length of about 40 feet comprising coarse grained pyrite with inclusions of altered country rock cut by lenses, pods and irregular veins of chalcopyrite, quartz and calcite. This material gave assays of up to 11.0 per cent copper, 8.42 ounces/ton silver, and 0.732 ounces/ton gold. Further sampling averaged 5.4% copper, 4.0 ounces silver and 0.28 ounces/ton gold across 30.0 feet. Subsequent review of the core from holes 81-1 and 81-2 confirmed the grade and showed that the host rock was a strongly brecciated, altered feldspar porphyry. In 1984 Anaconda cleaned off a large area around the Pick Axe showing exposing a zone width of at least 70 feet in which pyrite and chalcopyrite are found disseminated and as lenses, pods and veins.

In 1985 these showings were mapped and Skyline drilled five short core holes through the western end of the original Pick Axe showing. This work has revealed a zone of extensive pyritization, pods and lenses of chalcopyrite/pyrite, extensive K feldspar alteration and abundant late quartz-chlorite veining. This mineralized rock is marked by low angle cataclastic deformation and by several low angle faults. At present this portion of the zone represents only a small fraction of the overall mineral reserves.

The Cloutier mineralization was first reported from the P-12 trench prospect which revealed disseminated fine to medium grained pyrite and chalcopyrite veins in volcaniclastics. The assay results from this trench over a length of 40 feet averaged 3.62 per cent copper, 1.26 ounces silver and 0.329 ounces/ton gold across 7.2 feet. Drilling in 1982 to outline the extension of the Cloutier zone intersected high grade mineralization in

holes 82-11, and in 82-14 which included visible free gold. Core rejects from this 1982 drilling were examined by Placer geologists who recognized a wide variety of sulfide and sulfosalt minerals.

Metallic minerals identified from the high grade Cloutier drill <u>core</u> include:

arsenopyrite (rare)′	galena [*]	molybdenite 🗸
bornite ′	native gold	pyrargyrite
chalcopyrite / covellite J	hematite ilmenite	pyrite - sphalerite -
electrum /	magnetite	stephanite
enargite	marcasite	tetrahedrite/

As a result of trenching, mapping and drilling in 1983, 1984, and 1985 the Cloutier mineralization has now been shown to extend over a length of 1,300 feet and now includes four goldsilver bearing sulfide lenses three of which are included in the mineral reserve calculations. The general trend of the mineralization which is 053°/65°N cuts across the host country rocks at an acute angle reflecting a strong fracture control. This mineral system remains open horizontally and at depth but the relationship to the '16' mineralization has yet to be determined.

The '<u>16'</u> mineralization was indicated by a surface V.L.F.-E.M. anomaly and confirmed by drill holes 82-15 and 82-16 which intersected good to high grade gold-silver/sulfide mineralization. Four sulfide lenses have now been outlined over a length of about 500 feet and more lenses are indicated which remain to be drilled. The mineralogy of the '16' sulfide lenses is similar to the Cloutier except that chalcopyrite is less abundant, and galena and sphalerite are more abundant. The '16' lenses lie in the footwall of the Cloutier and in the hangingwall of the Pick Axe mineralization and like the latter lie along fractures cutting the volcaniclastic and volcanic country rocks which are marked by K feldspar flooding and general pyritization.

The 1985 trenching and drilling showed that the R-19 and R-20 mineralization which had been previously disregarded in spite of the strong geochemical gold anomaly are part of a highgrade quartz-pyrite vein system which has now been traced on the surface over a length of 700 feet below the toe of Johnny Glacier. The main vein has an apparent width of up to eight feet over this length and the footwall vein a width of up to five feet over about 200 feet. These veins are largely banded coarse pyrite and quartz with "abundant" free gold, with scattered galena, tetrahedrite, and minor sulfosalts.

-27-

C ann

ne

The attitude of these new veins as well as the strong V.L.F.-E.M. conductor axis suggest that this mineralization represents the easterly extension of the broad low grade Pick Axe showing. Most of the 850 foot long interval between these showings is covered by thick marginal moraine leaving the easterly extension for further surface trenching and core drilling.

In summary, surface work and core drilling have shown that the Stonehouse Gold Zone mineralization comprises a number of gangue minerals, simple sulfide minerals and native gold and electrum, localized as overlapping lenses within a steep, complex fracture system cutting across altered country rocks. The fracture zone has now been shown to have a length of at least 4,750 feet with a width of at least 900 feet which has so far been partly explored to a depth of only 525 feet. A number of other mineralized showings exposed in the area south of the main showings have not yet been studied and suggest that the 3,200 foot thick volcaniclastic-volcanic section requires further examination.

#### ZONING

Drilling has confirmed that there are at least seven overlapping sulfide-rich lenses with a similar mineralogy in the Cloutier-16 portion of the Gold Zone. The proposed outline of each of these lenses based upon the available core drilling is shown here in a composite longitudinal projection (Figure 6). Unfortunately most of the 1983 holes were drilled to intersect geophysical rather than geological targets and, as a result, some were too short or in the wrong place to intersect the mineralization. Therefore, the proposed outlines reflect only drill limits, not mineral boundaries. These flexible boundaries reflect gold assay results above 3 grams/tonne, but as can be seen by the projections, high, medium, and low grades are apparently scattered within the lens outlines. Obviously, further core drilling is required to test and extend these limits.

Most of the cores were assayed for copper, silver, and gold and some were tested for a variety of elements including lead, zinc, and mercury. Contouring of these available results has produced the indication that first, the mineral content varies from lens to lens, and second, that there are high grade shoots within each lens. Copper content appears to be strongly variable with an average 1.55% in the Cloutier Main lens and only 0.01% in the Cloutier Footwall lens. Copper content also ranges from 0.54% in the '16' Hangingwall lens to 0.04% in the Footwall lens. With regard to metal concentration, contouring all the available assay data for each lens suggests that copper and gold minerals together form crudely overlapping shoots plunging 40° to 50° northwesterly within both main lenses and in the '16' Hangingwall lens. The silver as well as the available zinc values appear to crudely follow lens outlines, but also appear to extend beyond the current outlines. Mercury results are very incomplete, but unlike gold, silver, copper, lead and zinc, mercury appears to cut across the Stonehouse Gold Zone in a roughly east-west direction forming a crude halo involving the Pick Axe, '16' and Cloutier lenses. Taken together these various clues provide possible guidance for further exploration.

#### ALTERATION

Macroscopic examination of the drill core revealed three major rock types including feldspar porphyry and volcanic conglomerate which are the major hosts to the local gold mineralization. The pyrite, chalcopyrite and other sulfides are intimately associated with quartz veins, calcite, biotite, sericite, K feldspar, epidote, and chlorite in late quartz veins. The writer stained 160 rock slices from 28 holes and also examined thin sections from each slice. The results of the staining show that K feldspar alteration has effected replacement of from a few per cent to almost 100 per cent of both porphyry and volcaniclastic rocks hosting the sulfides. Very fine quartz veinlets and stockwork with sulfides have cut the early K-fledspar alteration and have in turn been cut by later sulfide and calcite veins and veinlets. Rock forming minerals have also been altered to calcite, sericite, epidote and biotite clusters and lenses. Fine grained dark brown to black biotite is present throughout the mineral zone but generally in only scant amounts except in the R-19/R-20 veins. These veins comprise banded quartz and dark massive pyrite with dark selvedges against the country rock host. Very fine black biotite makes up a significant part of the pyrite banding and forms most of the selvedges. Together with the greater amount of quartz, and lesser K feldspar, this abundant dark biotite alteration marks an apparent change in the type and character of the Stonehouse Gold Zone mineralization to the east.

Although still incomplete, this study shows that the Gold Zone sulfide mineralization has an envelope of extensive K feldspar alteration and a biotite tail involving both volcaniclastics and feldspar porphyry. Because this envelope is broader and more extensive than the mineralization it provides a useful tool for local exploration.

Cataclastic deformation has imposed a platy or foliated fabric on these rocks which in part exhibit hartscheifer/recrystallization texture. Epidote is prominent in many of the volcaniclastic members ranging from small grains and pebbles to cobble sized clasts. These are mainly detrital and secondary epidote is minor and largely associated with carbonate. Almost all of the chlorite is found as blebs, streaks, clots and veins in late quartz-calcite stringers which cut virtually all rocks in the general area including Betty Creek strata.

#### BONANZA ZONE

Exploration on the REG property concentrated on the Bonanza showings during the early part of the 1985 field season. This work involved tracing extensions of the 1984 Bonanza showing by ground geophysics, soil geochemistry, mapping, and trenching. Compilation of the 1984 trenching and core drilling suggested that the polymetallic showing was localized within a strong shear (Figure 7). Soil sampling, mapping and sampling on a detailed grid showed the extensive nature of the mineralized zone, and revealed the presence of two similar sub-parallel mineralized shears at lower elevations (Figures 8, and 9). Together these zones have been traced along the slope a length of over 4,600 feet with widths of up to 60 feet.

These showing comprise essentially stratabound pyrite, pyrhotite, chalcopyrite, sphalerite, galena plus tetrahedrite replacement mineralization which shows evidence of sulfide remobilization into secondary fractures and kink folds. The shears cut sharply across the folded sedimentary sequence at about 110° and dip about 45° westerly. Alteration includes sericitization, carbonatization, silicification and pyritization which together have produced a bleached envelope in the otherwise dark sediments. Grab samples have assayed as high as 14.1% Cu, 405.5 oz./T Ag, and 2.88 oz./T Au, but the overall results from the trenching suggest a large tonnage that would grade about 0.7 per cent Cu, 0.6 per cent Pb, 3.5 per cent Zn, 3.7 oz./T Ag, and about 0.055 oz./T Au.

Skyline's work on the Bonanza area has shown the potential for large tonnages of relatively low grade mineralization. Continued exploration would be expensive because of the structure and location, and not pressing because of the current market conditions.

#### C-3 ZONE

The C-3 zone mineralization was first observed in 1983 but was not examined until 1985. The C-3 comprises a 3,600 foot wide pyritic alteration zone localized in sedimentary rocks near the north boundary of the REG property. Work in 1985 involving soil geochemistry, trenching, and mapping concentrated on a small accessible area west of the main Sky Creek showings. Results from this work showed the presence of massive pyrite lenses 20 feet wide in K-feldspar, quartz, calcite alteration zones within the sediments (Figure 10). One pyrite lens assayed 1.790 oz./T Au across 12 inches. Other samples showed the presence of up to 3.51 oz./T Ag, and up to 5.8 per cent Cu plus minor lead and zinc. The C-3 zone is very large, has relatively easy access early in the season and could be explored when other priorities are satisfied.

#### GEOCHEMICAL AND GEOPHYSICAL SURVEYS - 1985

In 1985 geochemical soil surveys were successfully combined with a pulse electromagnetometer survey on the Bonanza area in order to trace the new sulfide zone (Figures 8, 10, 11). The geophysical work on Johnny Flats located a number of strong conductors which mainly reflected pyritic/pyrrhotitic lenses and shears with relatively low amounts of commercial sulfides, gold and silver as disclosed by trenching and core drilling. The Groove Ridge conductors were not correlated to any specific structure or mineral zone.

The V.L.F.-E.M. conductor axis connecting the Pick Axe and R-19/R-20 showings remains the most interesting feature worth exploring. This in conjunction with the strong geochemical soil gold anomaly overlying the R-19/R-20 vein system at the toe of Johnny Glacier, and the overlapping McFadden moraine train provide a good target area for further surface trenching and drilling.

#### MINERAL RESERVES

Sufficient surface work, core drilling and assaying have now been completed to make a preliminary estimate of the mineral reserves of the Stonehouse Gold Zone. Surface drilling carried out over a length of 4,700 feet within part of the Zone over a width of 900 feet to a depth of 525 feet has now confirmed the presence of at least eight gold bearing sulfide lenses and indicates the presence of several more.

Considerable work has also been done on the compilation of drill core sections and plans showing geology, mineralization and assay values (Figure 12). This material is voluminous and is not included here but has been reduced to vertical longitudinal sections to show the relative location of the drill holes, the relationship of the mineral lenses within the drilled zone and the true widths and grades of the assay intersections (Figure 6).

Both Placer and Anaconda surveyed the drill hole sites but these show differences in location of up to ten meters as well as variations in direction. In addition, the Gold Zone

-31-

survey is 'floating' and does not agree with the current topographic map. This poses a small problem with regard to mineral reserve calculations and could become a major problem if the proposed underground development and surface data are not tied precisely.

The calculations shown in the following reflect common operating practice, terminology and methodology. Core intersections grading 3.0 ppm Au and greater have been included as lens boundaries and internal material grading less than 3.0 ppm have also been included. No cut-off grade has yet been applied to the calculations, but this should be done when underground results are available. Likewise, no dilution factor has been applied to the tonnage calculations as this will probably vary from lens to lens and with mining methods. Tonnage has been calculated based upon a 65 foot (20 meter) square block, and a tonnage factor of 10 cubic feet per ton has been applied because of the generally heavy sulfide content.

#### REG PROPERTY

#### MINERAL RESERVES - 1985

#### TABLE II

DRILL	INDICATED	MINERAL	RESERVES	5 - CLOU	TIER	MAIN LE	ENS
Drill Hole No.	True Width Ft.		 /Ton Ag	Per Cu	===== Се РЪ	ent Zn	Tons
3, 4, 5, 6 9 10 11 13 14 18 25 31 80	av. 1Ø 16.5 29.5 32.8 9.8 19.Ø 9.8 6.6 6.8 13.Ø	.216 .134 .271 .436 .388 3.418 .167 .10 .232 .107	.415 1.06 1.25 .31 .26 1.55 .284 .27 .07 .41	1.23 3.46 3.48 .32 .37 .74 2.32 1.01 .01	.Ø1 - - - - - - - - - -	.Ø1    	4,238 7,063 10,171 14,126 2,851 8,475 4,238 2,825 2,851 5,595
81	25.0	.540	.360		-		10,716
					т	OTAL	73,194
Average (x		.668	.663	1.55( <u>+</u>	) -		
Average (c	ut to 2x)	.427	.637	1.50(+	) —	-	

#### MINEDAL

....continued

-32-

# TABLE II (Cont.d)

No.	True Width Ft.	Au		Cu		n t Zn	Tons
DDH-12 72		.641	.28	Ø.Ø1	-	-	2,152
	) ut to 2x)			- - -	- - =====	DTAL - -	4,977
	ICATED MINE						
Drill Hole No.	True Width Ft.	oz./ Au	Ton Ag	Per Cu	Сe	n t	
DDH-71	6.0	.332	.19	-			2,582
Lens		oz./	Top	Per		n t	
			Ag				Tons
		Au  .668	Ag 	Cu	РЬ	Zn _	73,194
Main Footwall® Footwall		Au .668 .795	Ag	Cu	РЪ - - -	Zn - - -	Tons 73,194 4,977 <u>2,588</u> 80,753
Footwall¤ Footwall¹ Average (x		Au .668 .795 .332 .665	Ag .66 2.35 .19 .749	Cu 1.55( <u>+</u> ) - 1.55( <u>+</u> )	РЪ - - -	Zn - - -	73,194 4,977 _2,582
Footwall ^e Footwall ¹ Average (x Average (c DRILL INFER	) ut to 2x) <u>RED</u>	Au .668 .795 .332 .665 .665	Ag .66 2.35 .19 .749 .697	Cu 1.55( <u>+</u> ) - 1.55( <u>+</u> ) 1.55( <u>+</u> )	РЬ - - ТОТ	2n - - TAL	73,194 4,977 <u>2,588</u> 80,753
Footwall ^e Footwall ¹ Average (x Average (c DRILL INFER	) ut to 2x)	Au .668 .795 .332 .665 .665	Ag .66 2.35 .19 .749 .697	Cu 1.55( <u>+</u> ) - 1.55( <u>+</u> ) 1.55( <u>+</u> )	РЬ - - ТОТ	Zn – TAL n t	73,194 4,977 <u>2,588</u> 80,753
Footwall ^e Footwall ¹ Average (x Average (c DRILL INFER Lens Lans	) ut to 2x) <u>RED</u>	Au .668 .795 .332 .665 .665	Ag .66 2.35 .19 .749 .697 ========	Cu 1.55( <u>+</u> ) - 1.55( <u>+</u> ) 1.55( <u>+</u> ) Per	Pb - TOT	Zn - - TAL n t Zn -	73,194 4,977 <u>2,588</u> 80,753 ======== Tone 225,000
Footwall ^o Footwall ¹ Average (x Average (c DRILL INFER Lens Lens Tain Footwall ^o	) ut to 2x) <u>RED</u>	Au .668 .795 .332 .665 .665 .665 	Ag .66 2.35 .19 .749 .697 ========= Ton Ag .60 .60	Cu 1.55( <u>+</u> ) - 1.55( <u>+</u> ) 1.55( <u>+</u> ) Per Cu	Pb - TOT	Zn - - TAL n t Zn -	73,194 4,977 <u>2,588</u> 80,753 ========= Tons 225,000 27,000
Footwall ^e Footwall ¹ Average (x Average (c DRILL INFER	) ut to 2x) <u>RED</u>	Au .668 .795 .332 .665 .665 .665 	Ag .66 2.35 .19 .749 .697 ========= Ton Ag .60	Cu 1.55( <u>+</u> ) - 1.55( <u>+</u> ) 1.55( <u>+</u> ) Per Cu	Pb - - - - - - - - - - -	Zn - - TAL n t Zn -	73,194 4,977 <u>2,588</u> 80,753

-33-

.....

# 

.

»_"*

### TABLE III

DRI	LL INDICATE	D MINER	AL RESERV	VES - '1	6' MAI	N LENS	;
		=======				======	*******
Drill Hole			/Ton		Сe	n t	
No.	Width Ft.	Au	Ag	Cu	РЬ	Zn	Tons
15	 6	a 104	Ø.57	ø.24			2 000
16	9.8		Ø.522				2,800
							4,238
26	4		1.725				-
27	9.8	0.495		Ø.42			-
29	3.3	Ø.12Ø		1.10			- • •
52	1Ø	Ø.351		Ø.415	<.1Ø	.91	4,240
53	9	Ø.657	Ø.198	Ø.Ø23	<.1Ø	.22	4,236
54	9.8	Ø.466	Ø.174	Ø.185	-	-	4,238
69	5	.528	.22	Ø.17	.ø2	.1Ø	2,152
73	23	1.430	.53	-	-	-	9,898
75	6	.144	.64	-		-	2,825
76	21.5	.463	8.14	_	-	-	9,238
					TOTA	L.	50,927
Average (:	x)	.866	2.Ø34	-	-	-	
	cut to 2x)			_			
		*******				======	
DRILL IN	NDICATED MI	NERAL RI	ESERVES -	- '16' H	IANG I NG	WALL L	ENS
							*******
	True						<b>T</b>
No.	Width Ft.	AU	Ag	Cu	РЬ	Zn	Tons
36		Ø.392	2.613	Ø.71	.09	.15	2,825

38		6		Ø.498	1.579	Ø.36	.Ø3	.05	2,800
43		1	.2	Ø.144	Ø.47	-	-	-	425
77		_6		2.150	1.19		-	-	2,800
							TOTA	۹L	8,850
Average	(x)			.737	1.316	-	-	-	
Average	(cut	to	2x)	.574	1.32	-	-	-	
22222222	======	===:		2222222			.======	======	*******

DRILL INDICATED MINERAL RESERVES - '16' FOOTWALL LENS Drill Hole True oz./Ton Per Cent

DITTI HO	IE	i r u	e	02	. / / 0//	гег	しせ	nu	
No.	W	idth	Ft.	Au	Ag	Cu	РЪ	Zn	Tons
28		6.	5	Ø.273	ø.12	.Ø4	.Ø1	.10	2,825
52		9.	Ø	Ø.357	Ø.66	-	-		4,236
							TOT	AL	7,061
Average	(x)			Ø.344	Ø.444	-	-	-	
Average	(cut	to	2x)	Ø.344	Ø.444	-	-	-	
	=====	====	====				******		

and the second second

-34-

/

# TABLE III (Cont.'d)

SUMMARY '16' LENSES - 1985 MINERAL RESERVES

DRILL INDICATED

h

Lens		/Ton	Per	Cent	
	Au	Ag	Cu*	Pb* 2	n* Ton
Main	.866	2.Ø34			50,92
Hangingwall	.737	1.316	-		8,85
Footwall	.344	- 444			7,06
				TOTAL	66,83
Average (x)		1.753	*.30( <u>+</u> )		
Average (cut to 2x) *incomplete	.668	1.212			
'16' LENSES - DRILL IN					
essaassessessessesses Lens		 /Ton	Per	Cent	=======================================
	Au	Ag	Cu	Pb Z	n Tons
 Main	.50	1.00	-		130,000
Hangingwall	.50	1.00( <u>+</u> )	-		70,00
	.25	.10	-		15,000
-ootwail	• 드 J	•••~			
Footwall				TOTAL	215,000
Footwall Average (x)	.50	.90	======================================	TOTAL	215,000
Average (x)	.50  T/ ATED MIN	.90 ABLE IV NERAL RES	ERVES - I	PICK AXE	215,000
Average (x)	.50 Tr Ated Min	.90 ABLE IV NERAL RES	ERVES - I	PICK AXE	215,000
Average (x) DRILL INDICA	.50 Tr ATED MIN	.90 ABLE IV NERAL RES	ERVES - I Per	PICK AXE	
Average (x) DRILL INDICA Drill Hole True	.50 TA ATED MIN oz.7 Au	.90 ABLE IV NERAL RES /Ton Ag	ERVES - I Per	PICK AXE	
Average (x) DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5	.50 TA ATED MIN oz.7 Au	.90 ABLE IV NERAL RES Ton Ag .61	ERVES - I Per Cu	PICK AXE Cent Pb Zi 	n Tons 2,554 2,554
Average (x) DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5	.50 TA ATED MIN oz.7 Au .172 .144	.90 ABLE IV NERAL RES (Ton Ag .61 .05	ERVES - 1 P e r Cu 1.89 .15	PICK AXE	n Tons 2,554 2,554
Average (x) DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5 Average	.50 TA ATED MIN oz.7 Au .172 .144 .168	.90 ABLE IV NERAL RES (Ton Ag .61 .05 .33	ERVES - 1 P e r Cu 1.89 .15 1.02	PICK AXE C e n t Pb Zu  TOTAL	n Tons 2,550 <u>2,550</u> 5,100
DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5	.50 TATED MIN oz.7 Au .172 .144 .168	.90 ABLE IV NERAL RES (Ton Ag .61 .05 .33	ERVES - 1 P e r Cu 1.89 .15 1.02	PICK AXE C e n t Pb Zu  TOTAL	n Ton 2,55 <u>2,55</u> 5,10
Average (x) DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5	.50 TA ATED MIN 02.7 Au .172 .144 .168 RED MINE	.90 ABLE IV NERAL RES (Ton Ag .61 .05 .33 ERAL RESE	ERVES - 1 P e r Cu 1.89 .15 1.02 RVES - P	PICK AXE	n Ton 2,550 2,550 5,100
Average (x) DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5 Average DRILL INFERF	.50 TA ATED MIN 0Z.A Au .172 .144 .168 RED MINE	.90 ABLE IV NERAL RES (Ton Ag .61 .05 .33 ERAL RESE	ERVES - 1 Per Cu 1.89 .15 1.02 RVES - P	PICK AXE C e n t Pb Zi  TOTAL ICK AXE	n Ton 2,550 2,550 5,100
Average (x) DRILL INDICA Drill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5 Average DRILL INFERF	.50 TA ATED MIN 0Z.A Au .172 .144 .168 RED MINE	.90 ABLE IV NERAL RES (Ton Ag .61 .05 .33 ERAL RESE	ERVES - 1 Per Cu 1.89 .15 1.02 RVES - P	PICK AXE C e n t Pb Zi  TOTAL ICK AXE	n Tons 2,554 <u>2,554</u> 5,104
DRILL INDICA rill Hole True No. Width Ft. 67 (HW) 5 67 (FW) 5 verage DRILL INFERF	.50 TA ATED MIN 0Z.A Au .172 .144 .168 RED MINE	.90 ABLE IV NERAL RES (Ton Ag .61 .05 .33 ERAL RESE	ERVES - 1 P e r Cu 1.89 .15 1.02 RVES - P P e r Cu	PICK AXE C e n t Pb Zi  TOTAL ICK AXE	2,550 2,550 5,100

Ţ

# TABLE V

# MEASURED MINERAL RESERVES

========					
		ounces	/Ton	%	
Trench	Width (Ft)	Au	Ag	Cu	Tons
P-1	30.0	ø.28ø	4.0	5.40	 7ø6
P-12	6.5	Ø.394	Ø.92	2.85	6,458
P-20	4.Ø	Ø.382	Ø.16	Ø.Ø6	1,162
R-19/R-20	5.Ø	3.541	5.76	-	9,938
(Main -	· Surface S #	ampling, cu	t to 2x)		
R-19/R-20	5	1.522	1.47		
(Main -	Surface S	ampling, ex	treme highs	deleted,	cut to 2x)
R-19/R-20 (Footwall		1.680	1.38	-	1,100
(FUU CWAII	,				
				тот	AL 19,364
Average #		2.08	3.50	1.ØØ( <u>+</u> )	,
Average		1.Ø19	1.29		

-36-

# TABLE VI

#### MINERAL POTENTIAL OF SKYLINE EXPLORATIONS LTD.

# JOHNNY MOUNTAIN, ISKUT RIVER AREA

			S - STONEH			
Status	ounce Au		Per Cu		n t <del>"</del> Zn	Tons
			1.00( <u>+</u> )			19,364
Cloutier			1.55( <u>+</u> )			<b>-</b> 8Ø,753
'16' Drill Indicated		1.212	Ø.3Ø( <u>+</u> )	-	_	66,838
Pick Axe Drill Indicated		Ø.33	1.02( <u>+</u> )	-	-	5,100
TOTAL DRIL INDICATED	0.650		1.ØØ( <u>+</u> )*		********	152,691
Cloutier			1.00( <u>+</u> )	-	-	262,000
'16' Inferred	Ø.5Ø	0.60	_	-	-	215,000
Pick Axe Inferred	ø.1ø	ø.2ø	ø.7ø	-	-	10,000
R-19/R-20 Pick Axe Extension		Ø.3Ø	Ø.50	_	_	100,000
TOTAL INFERRED	* Ø.50( <u>+</u> ) =======		Ø.75( <u>+</u> )*	i		587,000
* values c	ut to 2x		ays incomp	lete		
		tons Ə Ø.3 Ə Ø.5	<u>Mineral R</u> Ø ounces/s Ø ounces/s Zn, Pb	t Au	<u>'5</u>	

日本の大学の記録の

----

#### MINERAL POTENTIAL OF THE GOLD ZONE

Core drilling has shown that the Cloutier, '16' and R-19/R-20 portions of the major Stonehouse Gold Zone contain substantial reserves of good to high grade gold, silver, copper, zinc, lead mineralization within only a small portion of the main structure. So far, surface exposures of gold bearing mineralization have been exposed over a length of at least 4,750 feet, and a zone width of about 900 feet within a geologically favourable sequence that has a measured thickness of 3,200 feet. Only a fraction of this favourable geologic mass has yet been sufficient detail allow tonnage/grade explored in to determinations. The Pick Axe, P-10, P-13, P-20, R-19/R-20, and several new lenses, exposed late in 1984 and 1985 and all found within the main structure, with the Cloutier-16 lenses together suggest a potential geological mineral resource of about 3,000,000 tons with an estimated grade of about 0.30 ounces gold/ton plus silver, copper, and minor lead and zinc.

Additional measurable mineral reserves have also been shown by surface soil, silt, and float sampling. The McFadden sulfide float 'zone', a moraine train about 350 meters long, 40 meters in width, with a 1 meter depth is estimated to contain about 30,000 tons of broken sulfide material. Assays of grab samples from this moraine average about 2.80 ounces of gold/ton. The source of the rich McFadden float has not yet been located and remains a potential resource of considerable importance.

A second resource also outlined by the surface exploration includes an extensive blanket of gold bearing eluvial material extending downslope from the east end of the main gold structure. Preliminary work suggests this surface material has an area of at least 260,000 square meters (more than 64 acres) with a minimum depth of from one to two meters. So far, only the -80 fraction has been assayed in detail and averages 1.5 parts per million gold (Young, 1984).

Both the McFadden float and eluvial blanket are uniquely accessible resources which require some further detailed study, but represent materials recoverable by simple methods.

#### CONCLUSION

Skyline Explorations Ltd.'s exploration work on the REG Stonehouse Gold Zone over the last five years has resulted in the development of a major tonnage deposit with good gold grades plus accessory silver, copper, lead and zinc. The mineral reserve picture presented here is basically conservative as is the geological reserve forecast. The presence of a large high grade 'broken reserve' in the McFadden moraine and the huge potential of the talus below Johnny Glacier is a unique situation where low cost surface extraction methods could be employed almost at once.

Only a small fraction of the potential of the Gold Zone has been examined leaving a number of geochemical anomalies and geological structures to be carefully explored. The unique coincident anomalies below Johnny Glacier suggest mineralization localized at the Betty Creek - Unuk River contact or within the lower Betty Creek. The McFadden high grade moraine train deserves detailed geological study before more drilling funds are wasted and should entail a more careful examination of the lateral moraine as well as mapping upstream. This should be accompanied by detailed geologic mapping of the 3,200 foot thick Gold Zone sequence including both cirques.

Studies of the Stonehouse Gold Zone deposit suggest that in many respects this new deposit compares favourably to the Silbak Premier near Stewart. The geological environment, the presence of low temperature sulfosalts, sulfide minerals, and native metals, extensive related mineral alteration and strong fracture control are similar aspects also reflecting sub-volcanic genesis.

To date, the Silbak Premier mine has produced over 5 million tons grading about 0.40 ounces gold and 8.0 ounces/ton silver plus copper, lead and zinc. Current studies by Westmin have blocked out a further 6.0 million (plus) tons of low grade indicating the potential for renewed production from an open pit. Like most mines in the Stewart District, the original Premier mine did not realize its potential until underground exploration and development proved the size and grade of the orebodies.

The short season imposed upon work at the Gold Zone by weather and by the lack of reasonable access should be examined with consideration given to building a gravel strip on the east side of the Craig River connected to the development site on Johnny Mountain by a short tote road.

-39-

-40-

3

١

r i

. <u>Underground Development</u> Cross cut adit, drifting, 1000 m (all costs including camp in cor	
Underground drilling, 1500 meter \$40/meter @ 30 meter and greater	
spacing (all found)	60,000
1 Surveyor and helper	<u>25,000</u> \$985,000
2. <u>Camp</u> (Skyline personnel)	
Camp manager	20,000
Maintenance, new equipment	25,000
1 Cook	15,000
Room & Board, 8 men 0 \$60/day	40,000
Fuel and propane	<u>22,000</u> 122,000
Surface core drilling	
R-19/R-20 vein system, 1000 m a	
Assaying	<u>5,000</u> 45,000
<ul> <li><u>Geology</u>, mapping general area, C</li> <li>Johnny Glacier cirques, undergro</li> <li>core logging</li> <li>1 Geologist</li> <li>Sampling and assaying</li> </ul>	
. <u>Tote Road and airstrip</u> - Craig R	liver 150,000
. <u>Transportation</u> to and from prope local helicopter	erty,
Equipment & supplies to camp	40,000
. <u>Geological engineering</u>	
Supervision and reports	25,000
Sub-Total	1,400,000
Contingencies	100,000
PROPOSED BUDGET FOR 1986 EXPLORA DEVELOF	TION & PMENT PROGRAM \$1,500,000

Grove, E.W. (1984): Geological Report on Certain Structural Features in the Iskut River Region, for B.C. Hydro and Power Authority, April 25, 1984.

> (1985): Geological Report, Mineral Reserves and Development Proposal on the Skyline Explorations Ltd. REG Property, Stonehouse Gold Zone, February 28, 1985.

(1985): Geological Report, Exploration and Development Proposal on the Skyline Explorations Ltd. REG Property, April 3, 1985.

(1986): Geology and Mineral Deposits of the Unuk River Salmon River, and Anyox Map Areas; B.C. Min. of Energy, Mines & Pet. Res., Bull. 63 (in press).

Kerr, F.A. (1948): Lower Stikine and Western Iskut River Areas, British Columbia; Geol. Surv. Can. Memoir 246.

Kikauka, A. (1985): Geological Report on the Bonanza Zone, Skyline Explorations Ltd.

(1985): Geological Report on the C-3 Zone, Skyline Explorations Ltd.

Young, R.J. (1984): Placer-Anaconda-Skyline Joint Venture, Johnny Mountain Gold Prospect, Iskut River Area, April 1984.

G.S.C. Map 9-1957

#### CERTIFICATE

I, Edward W. Grov**e, of the Municipality of Central** Saanich, do hereby certify that:

- 1. I am a consulting geologist with an office at 6751 Barbara Drive, Victoria, British Columbia.
- 2. I am a graduate of the University of British Columbia (1955) with a Master's degree, Honours Geology (M.Sc. Hon. Geol.) and a graduate of McGill University (1973) with a doctorate in Geological Sciences (Ph.D.).
- 3. I have practiced my profession continuously since graduation while being employed by such companies as the Consolidated Mining and Smelting Co. of Canada Ltd., British Yukon Exploration Ltd., the Quebec Dept. of Natural Resources, and the British Columbia Ministry of Energy, Mines and Petroleum Resources. I have been in corporate consulting practice since January 1981.
- 4. I have no direct interest in the property described herein but E. W. Grove Consultants Ltd. has acquired 50,000 shares of Skyline Explorations Ltd. at market value pursuant to a letter of undertaking dated the 5th of November, 1985.
- 5. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.
- 6. I consent to the use of this report in connection with a Prospectus or Statement of Material Facts.

April 19, 1986 Victoria, B.C.

Edward W. Grove, Ph.D., P.Eng.