GEOLOGY

STONEHOUSE GOLD DEPOSIT

REG PROPERTY

OF

SKYLINE EXPLORATIONS LTD.

IN THE ISKUT RIVER AREA

NORTHWESTERN BRITISH COLUMBIA

LIARD M.D., N.T.S. 104 B/11E

BY

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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 Mount Johnny on the Iskut River about 113 air kilometers northwesterly of Stewart, B.C., 64 air kilometers southeast of Bob Quinn Lake on the Cassiar-Stewart Highway, and 80 air kilometers from Wrangell, Alaska. The property is presently accessible by helicopter or fixed wing aircraft using a 1372 meter airstrip on the REG claims. Current activities at the mine site include construction of a 200 tonne per day concentrator, permanent camp buildings, driving a new, lower 600 meter long main haulage cross-cut plus an extensive surface and underground exploration program.

Published records suggest the first lode mineral prospecting along the Iskut River and at Mount Johnny 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 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 new areas and the discovery of many new mineral deposits. The mid 1960's wave of copper-molybdenum exploration touched on the Mount Johnny 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 Mount Johnny now includes 10 staked REG 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 1158 meters on the gentle northerly slope of Mount Johnny. This area is well above the local treeline and is covered by a thin, variable veneer of eluvial materials, and partly by ridges of thick lateral moraine.

Geological studies based upon sampling, trenching, core drilling and drifting within the Stonehouse Gold Deposit since 1981 have shown the presence of a major sulfide

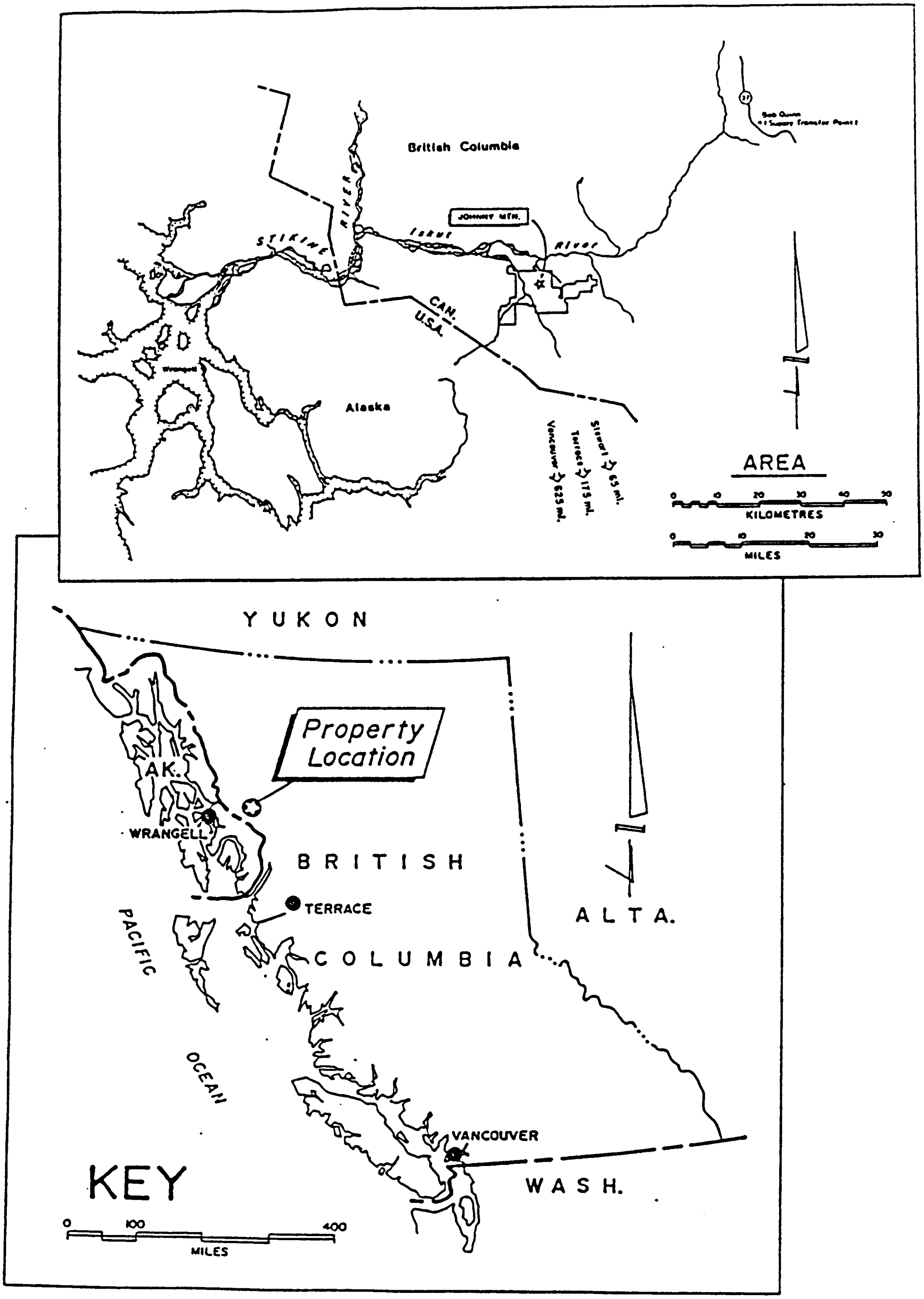
British Columbia
JOHNNY MTN.
STIKINE RIVER
Iskut River
CAN.
U.S.A.
Wrangell
Alaska
Stewart 65 mi.
Terrace 175 mi.
Vancouver 625 mi.
AREA
0 10 20 30 40 50
KILOMETRES
0 10 20 30
MILES
YUKON
Property Location
AK.
WRANGELL
BRITISH COLUMBIA
TERRACE
ALTA.
PACIFIC OCEAN
VANCOUVER
WASH.
KEY
0 100 400
MILES

FIGURE 1

mineral deposit in which gold is the major economic mineral. Estimates indicate a geological mineral potential of over 3 600 000 tonnes with a grade of about 17 grams per tonne gold plus silver and recoverable base metals. At this time the Gold Zone remains open to the east and west, and at depth.

Underground development of the Stonehouse Gold Deposit, started in 1986, has continued during 1987 by drifting and raising on the main 16 and Discovery veins, and by underground and surface core drilling. Underground development along the veins has confirmed lateral continuity and the high grade nature of the gold mineralization.

Work on the Bonanza Zone deposits found in 1984 has shown the presence of at least three stratabound polysulfide zones over a length of at least 1.5 km in a thick sedimentary sequence exposed along Bronson 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, 127 gm/tonne Ag, and 1.88 gm/tonne Au over a width of up to 7 meters. Grab samples from lenses within this zone have yielded assay values of up to 14.1 per cent Cu, 13903 gm/tonne Ag and 98.7 gm/tonne Au.

The new C-3 zone was partially tested in 1985 and in 1987 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, 82.6 gm/tonne Ag, and 61.4 gm/tonne Au.

The writer has worked in the Stewart District since 1964 studying the mineral deposits, local and regional geology.

LOCATION AND ACCESS

Skyline Explorations Ltd.'s 100% owned REG property lies about 80 km east of Wrangell, Alaska and 113 km 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 Mount Johnny on the south side of the Iskut River, a major tributary of the Stikine. Claim elevations range from 91 to 152 m ASL on Craig River and Bronson Creek to about 2286 m on the high ridge south of Mount Johnny. The main Stonehouse Gold Zone trends across the bouldery gently open slope between elevations 1128 m and 1280 m, well above the

local timber line and below the snow line. The Bonanza Zone lies along Bronson Creek between 610 and 808 m in light timber.

Access to the property from 1980-1985 was mainly by fixed wing aircraft from Terrace to Bob Quinn Lake on the Cassiar-Stewart Highway or directly to Snippaker strip which lies about 12.9 km 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 commenced on Johnny Flats below camp. The property is presently accessible only by helicopter or by fixed wing aircraft using the 1372 meter airstrip. In 1987 a new low elevation gravel strip built near the mouth of Bronson Creek was connected to the upper mine strip by a new road to provide secondary access. The property will be serviced primarily from Wrangell, Alaska, the Bob Quinn strip on the Dease Lake Highway and Terrace.

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.

HISTORY

In 1907 a prospecting party from Wrangell was reported to have recorded nine claims on Mount Johnny. Subsequent work by the owner, Iskut Mining Company, was reported in 1911 on the RED BLUFF and ISKOOT claim groups where drifting, trenching, and stripping had revealed a number of veins and stringers. Galena and gold-silver bearing mineralization were reported. By 1920 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 area. Sporadic work on the lower RED BLUFF showings were 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 gold-silver-lead-zinc float on the open upper slopes of Mount Johnny. 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.

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 Discovery exposure. The company also drilled eight core holes. The results were particularly encouraging confirming the continuation of the new Discovery sulfide zone and showing the presence of high grade copper mineralization and good gold and silver.

Skyline Explorations Ltd. continued drilling in 1982 extending the Discovery Zone and locating a new lens at first thought to be part of the Pick Axe. High grade gold including sections with visible 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 Discovery and Pick Axe zones and suggested continuity over 670 m. Sulfide float found at the east end of these anomalies was also sampled and the assay from 13 pyrite boulders averaged 96 gm/tonne gold. Samples of this material taken by two major companies averaged from 109.7 to 225.6 gm/tonne gold confirming the high grade nature of the McFadden Moraine.

In late 1982 Skyline entered into an agreement with Placer Development Limited whereby Placer was to expend $750,000 on the property during 1983 and $1,000,000 during 1984. Placer brought in Anaconda Canada Exploration Ltd. as a partner but continued as operator for the 1983 season. After the 1983 work program, Placer elected not to participate and opted out of the agreement and Anaconda continued as operator for

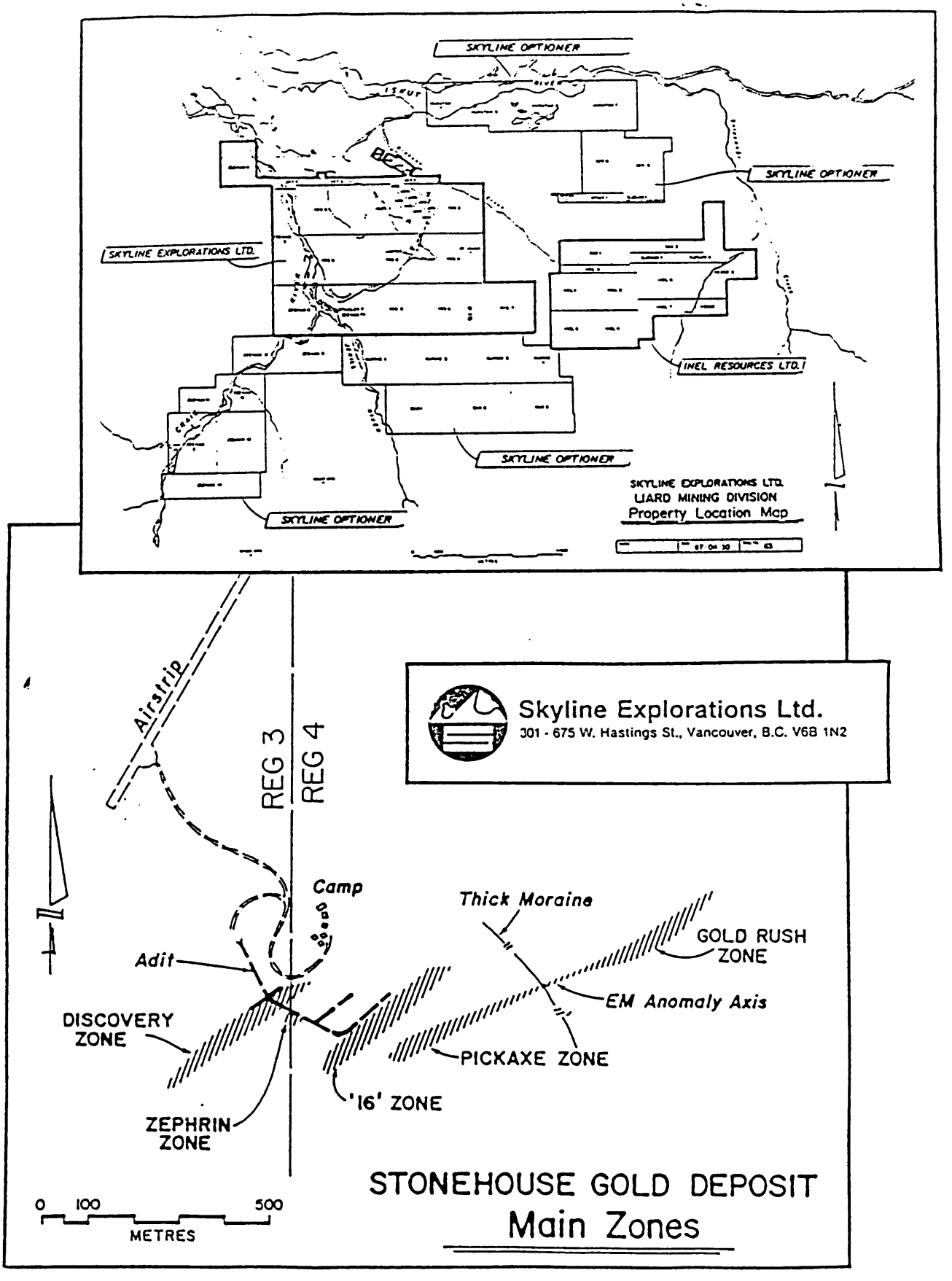
SKYLINE OPTIONER
SKYLINE OPTIONER
SKYLINE EXPLORATIONS LTD.
INEL RESOURCES LTD.
SKYLINE OPTIONER
SKYLINE OPTIONER
SKYLINE EXPLORATIONS LTD.
LIARD MINING DIVISION
Property Location Map
Airstrip
REG 3
REG 4
Skyline Explorations Ltd.
301 - 675 W. Hastings St., Vancouver, B.C. V6B 1N2
Camp
Thick Moraine
GOLD RUSH ZONE
Adit
EM Anomaly Axis
DISCOVERY ZONE
PICKAXE ZONE
'16' ZONE
ZEPHRIN ZONE
0 100 500
METRES
STONEHOUSE GOLD DEPOSIT
Main Zones

FIGURE 2

the 1984 program. The exploration agreement with Anaconda was not renewed after the completion of the 1984 program.

Work performed during 1983 comprised an overall saturation-type approach including resplitting some core and reassaying all the rejects from Skyline's work, 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 magnetics. The results of much of this work were such that Skyline resplit much of the '83 core for reassay, completed the geochemical soil/silt grid, and did most of the geological 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 trenches to expose bedrock and trenched a number of new sulfide rich showings beyond the known Discovery, 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 16 vein 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. A pulse E.M. survey conducted on Johnny Flats, Groove Ridge, and Bonanza grids consisted of 52 kilometers 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 program involved seven core holes totalling 746 m. Exploration of the sediment hosted poly-metallic 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 over-burden, but was sufficient to outline gold, copper bearing massive pyrite hosted by extensively altered sedimentary rocks.

Work on the main Stonehouse Gold Zone in 1985 included 24 core holes totalling about 1830 m resulting in the discovery of high grade gold mineralization in two veins and the extension of the Stonehouse Gold Zone another 183 m to the east for a total length of over 1448 m. This work added to the definition of the mineral deposit and allowed a substantial increase in all categories of mineral reserves, thereby warranting a very aggressive underground exploration program in 1986.

Underground development of the Stonehouse Gold Deposit at Johnny Mountain in 1986 comprised 310 meters of (2.7 m by 3 m) cross-cut adit and a total of 116 meters of drifting on the main Discovery and 16 veins. This work has continued into 1987 by drifting and raising on the main 16 and Discovery veins, and by surface and underground core drilling.

Underground development has now opened up the Discovery main vein over a length of 133 m (2.7 m by 3 m drift) and the 16 vein over a length of about 213 m. One raise (#1 Raise) was driven from the main cross-cut to surface mainly in the hanging wall of the 16 vein to provide mandatory access and ventilation. A second short raise (#2 Raise) was driven about 21 m along the 16 vein to test grade. Zephrin mineralization exposed along the main cross-cut has not yet been explored in detail.

Underground core drilling has concentrated on the western portion of the main 16 vein in order to define grade, vein width and continuity data in this sector. Core drilling was continuing from the HW 16 Drift at the time of writing.

Underground development along the 16 main vein to date has confirmed the lateral continuity of the vein and the high grade nature of the gold mineralization. Assay results from detailed panel sampling of this vein over a length of 146 m have yielded an average uncut grade of 45.36 gm/tonne gold plus an estimated 23.65 gm/tonne silver, plus copper, lead and zinc. Detailed geologic mapping indicates an average width of 1.44 m at the drift elevation. Assay results (Acme) from the 16 vein high grade #2 raise back samples over a length of 21.3 m have an uncut average grade of 168.5 gm/tonne gold which is considerably higher than both the drift and the drill core results indicated.

The Discovery vein Drift West has been extended to a total length of 132.6 m showing that although the mineralization is continuous at drift elevation a flat fault moves the vein a meter left or right. Several new occurrences of native gold were observed along the new drift extension suggesting a considerably higher overall gold grade than anticipated from core drilling. The grade of this vein heading has noe been determined at 23 gm/tonne gold.

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 seven years the writer has been studying a variety of 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.

The highly contorted, deformed nature of the Carboniferous strata can be seen in the steep cliffs between Bronson Creek and Snippaker Creek. The unconformable nature of the Carboniferous/Middle Jurassic overlap is well exposed on

TABLE I
SUMMARY TABLE OF FORMATIONS - ISKUT RIVER AREA

SEDIMENTARY AND VOLCANIC ROCKS

ERA:	PERIOD/EPOCH	FORMATION	LITHOLOGY
CENOZOIC -	Recent	Lava Fork	hotspring, ash, basalt flows
		Iskut	basalt flows, ash
		Hoodoo	basalt flows
		Unconformity	
MESOZOIC	Upper Jurassic	Nass Formation	siltstone, sandstone, conglomerate
	Middle Jurassic	Salmon River Formation	siltstone, greywacke, sandstone, conglomerate, carbonate
		Betty Creek Formation	rhyolite breccia, sandstone tuff, volcaniclastics, conglomerate, carbonate, volcanics
		Unconformity	
	Lower Jurassic	Unuk River Formation	volcaniclastics, siltstone, greywacke, porphyry, carbonate, rhyolite
		Unconformity	
	Upper Triassic	Stuhini Formation equivalent	volcaniclastics, volcanics, siltstone, sandstone, chert carbonate
		Unconformity	
PALEOZOIC	Permian		crinoidal limestone
		Unconformity	
	Pennsylvanian	not yet recognized	?
		Unconformity	
	Mississippian		crinoidal limestone, clastic sediments, volcanic
		Unconformity	
	Devonian		grey limestone
		?	
Basement Unknown			

PLUTONIC ROCKS - COAST PLUTONIC COMPLEX

ERA	PERIOD	LITHOLOGY
CENOZOIC	Late Tertiary	granodiorite, diorite, basalt
	Intrusive Contacts	
	Early Tertiary	quartz diorite, granodiorite, quartz monzonite, feldspar porphyry, granite
	Intrusive Contact	
MESOZOIC	Middle Jurassic	quartz monzonite, feldspar porphyry, syenite
	Intrusive Contact	
	Lower Jurassic	diorite, syenodiorite, granite
	Intrusive Contact	
	Late Triassic	diorite, quartz diorite, granodiorite
PALEO-ZOIC	? NOT DETERMINED	quartz diorite, ?

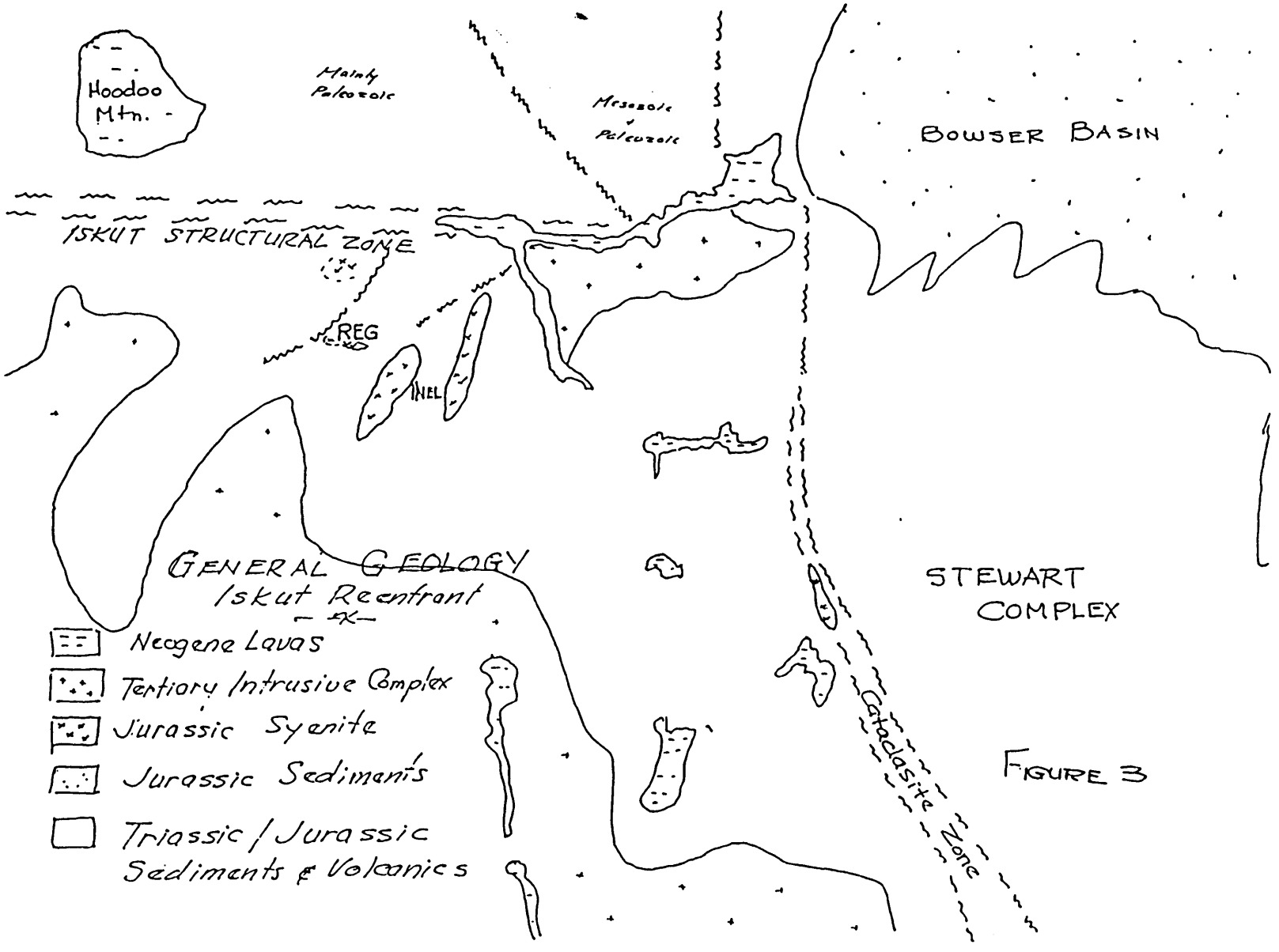
Hoodoo Mtn.
Mainly Paleozoic
Mesozoic & Paleozoic
BOWSER BASIN
ISKUT STRUCTURAL ZONE
REG
INEL
GENERAL GEOLOGY
Iskut Reentrant
STEWART COMPLEX
Cataclasite Zone
Neogene Lavas
Tertiary Intrusive Complex
Jurassic Syenite
Jurassic Sediments
Triassic / Jurassic Sediments & Volcanics

FIGURE 3

both sides of Snippaker Ridge north of Snippaker Peak. The same unconformable relationship between these major rock units 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 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 Unuk 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 Creek junction where it is offset to the east, and continues 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 truncated old structures. The intrusive contact is generally steep, but the presence of the satellite Tertiary plutons suggest 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 area.

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 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 approximates the vents 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.

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 volcaniclastic, mixed sedimentary rocks and intrusive feldspar porphyry. Most important, these rocks are marked by extensive mineralization and related alteration. The Stonehouse Gold Deposit lies in rocks below a regional unconformity marking the superposition of the widespread Betty Creek-like sequence. These underlying mineralized rocks have 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.

LOWER UNIT

The Stonehouse Gold Zone mineralization is confined to part of a sequence comprising mostly deformed sedimentary rocks

and syenite porphyry, partly exposed from the toe of Camp Glacier to the base of the slope where a local fault separates this sequence from a strongly folded predominantly greywacke, siltstone sequence. The Gold Zone host rocks trend about east-west and dip steeply north forming a sequence at least 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 syenitic feldspar porphyry members lying between the largely sedimentary units to the west and the 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. Widths of up to 137 meters were measured on several of these massive units. 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 K feldspar porphyry comprises phenocrysts in a very fine grained matrix which exhibits cataclasis. Alteration is typically fine grained biotite, sericite, quartz, and some calcite. Fine pyrite is ubiquitous with concentrations along hair-line fractures.

In the main Gold Zone sequence the resistant K feldspar porphyry members are sandwiched with less resistant medium to dark green sericite and biotite phyllonites. The bulk of these fragmental rocks are polymictic. The grain size ranges from sand-size particles through cobble and boulder size angular blocks.

Rocks on the west limits of the Camp Glacier cirque and Johnny Flats comprise a sequence of intercalated phyllitic grit, siltstone, and thin rhyolitic 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 porphyry. 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, and less deformed feldspar porphyry units.

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. 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 Discovery mineral zone.

On both the local and regional scale the Lower Unit members are unconformably overlain by a thick, gently dipping sedimentary/volcanic sequence similar to the Betty Creek Formation.

In summary, the Gold Zone strata underlying part of the north slope of Mount Johnny represent a thick variably deformed sedimentary sequence of probable Lower Jurassic age intruded by syenitic members.

UPPER UNIT

Betty Creek Formation equivalent strata form the bulk of Mount Johnny above the Stonehouse Gold Zone area and drape southerly 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.

STRUCTURE - REGIONAL

At present, rock structure is probably the least 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 length of 64 km representing a major structural zone terminated on the west by the Tertiary Coast Plutonic Complex and on the east by the Late Jurassic/Cretaceous Meziadin Hinge or Graben (Grove, 1973). The Iskut zone marks one of the 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 development of the Bowser Basin (Grove, 1972, 87). These major structures are exposed

in the REG area and probably represent only part of the region's complex tectonic development.

STRUCTURE - LOCAL

At the local scale the Stonehouse Gold Zone strata comprise a 1000 m thick sequence of apparently lenticular feldspar porphyry with intercalated cataclasites and minor fine grained sedimentary members. These K feldspar porphyry members form irregular lenses up to 137 m thick trending about 080°/65°N. A few bedding determinations in the 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 appears to separate the feldspar porphyry/volcaniclastic sequence from a thick, tightly folded, greywacke, lithic wacke, siltstone sequence. Movement on this fault is right lateral and exhibits about a 150 m offset.

Rocks in the Stonehouse 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 surface outcrop. Of these the north trending faults appear to be the most important. One northerly trending fault at the east end of the Gold Zone which cuts across the R-19 showing cuts across both the Upper and Lower Rock Units forming a steep fault scarp along the west edge of Johnny Glacier.

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. Kink-band zones trending 160°/V are common in the cataclasites and phyllonites are marked by late quartz-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 are 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.

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 uncertain particularly towards the Iskut River where the strata have been both intruded by several large stocks and extensively deformed under the sole of the major Iskut River thrust.

Work along Bronson Creek suggests 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°/45° 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 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 district lies crudely along the Iskut River where Paleozoic strata predominate.

STONEHOUSE GOLD DEPOSIT

Nomenclature of the various parts of the Stonehouse 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. 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 12 m 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, 289 gm/tonne silver, and 25.1 gm/tonne gold. Further sampling averaged 5.4% copper, 137.2 gm/tonne silver and 9.6 gm/tonne

gold across 9.1 m. 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 K feldspar porphyry. In 1984 Anaconda cleaned off a large area around the Pick Axe showing exposing a zone width of at least 21.3 m 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 Discovery mineralization was first reported from the P-12 prospect trench which revealed disseminated fine to medium grained pyrite and chalcopyrite veins in volcaniclastics. The assay results from this trench over a length of 12.2 m averaged 3.62 per cent copper, 43.2 gm/tonne silver and 11.28 gm/tonne gold across 2.2 m. Drilling in 1982 to outline the extension of the Discovery zone intersected high grade mineralization in holes 82-11, and in 82-14 which exhibited 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 Discovery drill core include:

		molybdenite
arsenopyrite (rare)	galena	pyrargyrite
bornite	native gold	pyrite
chalcopyrite	hematite	pyrrhotite
covellite	ilmenite	sphalerite
electrum	magnetite	stephanite
enargite	marcasite	tetrahedrite

Drifting has now exposed the main Discovery Vein over a length of 133 m showing lateral continuity. The vein mineralization comprises mainly pyrite with abundant coarse grained chalcopyrite. Together the sulfides form about 80 per cent of the vein with the gangue K feldspar and quartz forming stringers within the sulfide and along both the hanging and foot walls. Native gold occurs as irregular veinlets within these stringers and occasionally in pyrite.

As a result of trenching, mapping and drilling in the Discovery mineralization has now been shown to extend over a length of at least 400 m and now includes several gold-silver bearing sulfide lenses, one of which is 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 laterally and at depth.

The '16' 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. The mineralogy of the '16' sulfide veins is similar to the Discovery except that chalcopyrite is less abundant, and galena and sphalerite are more abundant. The '16' vein lies in the footwall of the Discovery and in the hangingwall of the Pick Axe mineralization and like the former lies along fractures cutting the country rocks which are marked by K feldspar flooding and general pyritization.

The main 16 vein has been exposed over a length of about 183 m by drifting and in three raises. 16 vein mineralization comprises 40-50 per cent sulfides with K feldspar and quartz forming the bulk of the vein stringers as well as hanging and foot wall zones. Native gold is relatively common in the gangue with 23 occurrences seen in the first 46 m drifted, and abundant free gold was encountered in the #2 stub raise.

The 1985 trenching and drilling showed that the R-19 and R-20 mineralization are part of a high-grade quartz-pyrite vein system which has now been traced on the surface over a length of 213 m below the toe of Johnny Glacier. The main Gold Rush vein has an apparent width of up to 2.44 m over this length and the footwall vein a width of up to 1.52 m over about 61 m. These veins are largely banded coarse pyrite, quartz and K feldspar with "abundant" free gold, scattered galena, tetrahedrite, and minor sulfosalts. Location of this "Gold Rush" vein system gave impetus to the 1986 underground program.

In summary, surface work and core drilling have shown that the Stonehouse Gold Deposit mineralization comprises a number of gangue minerals, simple sulfide minerals and native gold and electrum, localized as veins 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 1448 m with a width of at least 274 m which has so far been partly explored to a depth of only 160

m. A number of other mineralized showings exposed in the area south of the main showings have not yet been studied and suggest that the 1000 m thick syenite-volcaniclastic-volcanic section requires further examination.

ALTERATION

Staining of numerous rock slices has shown show that K feldspar alteration has effected replacement of from a few per cent to almost 100 per cent of both porphyry and cataclastic 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. Very fine black biotite makes up a significant part of the pyrite banding and forms most of the selvedges.

Detailed studies of the various crushed and altered rocks within the mine area now strongly suggest that both country rocks and syenitic intrusive rocks have been subjected to repeated deformation and alteration. Altered, deformed country rocks are recognized by the occurrence of epidote clasts, within both biotite and sericite phyllonites, and the intrusive syenite is recognized by numerous fine to coarse angular K feldspar clasts in both biotite and sericite phyllonite. All of these units have undergone fracturing and further K feldspar alteration related to several periods of gold bearing sulfide mineralization.

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. 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. Together these zones have been traced along the slope along a length of up to 1.5 km with widths of up to 20 meters.

These showings comprise essentially pyrite, pyrrhotite, 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, 13 903 gm/tonne Ag, and 98.7 gm/tonne 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, 127 gm/tonne Ag, and about 1.9 gm/tonne Au.

C-3 ZONE

The C-3 zone mineralization was first observed in 1983 but was not examined until 1985. The C-3 comprises a 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 6 m wide in K-feldspar, quartz, calcite alteration zones within the sediments. One pyrite lens assayed 61.37 gm/tonne Au across 30 cm. Other samples showed the presence of up to 120.3 gm/tonne Ag, and up to 5.8 per cent Cu plus minor lead and zinc.

The C-3 mineral zone lies near the westerly contact of a large salmon pink syenite porphyry first mapped by Kerr (1948). This mineralization, like that on the adjacent Cominco-Delaware property also appears to be spatially related to syenitic plutons and directly associated with complex K feldspar alteration.

MINERAL RESERVES

Underground development, and surface and underground drilling and assaying during 1986 added substantially to the Stonehouse Gold Deposit mineral reserves and to a more complete understanding of the geology of this deposit. This work proved the continuity of the veins and showed this mineralization to have a higher gold grade than indicated by surface drilling. Underground development during 1987 has further extended and confirmed the grade of the main 16 and Discovery veins. Total mineral reserve estimates as of June 18, 1987 remain the same as the last reported 1986 total because the focus of the 1987 underground work has been to increase both the Measured and Drill Indicated categories of mineral reserves by upgrading the Drill Inferred category.

In the classification scheme used here, "Measured" represents the highest category of reserves and is essentially equivalent to mineable reserves. "Drill Indicated" represents the second highest category which can be upgraded to "Measured" by development. "Drill Inferred" reserves represent possible to probable mineralization located around and between Measured and Drill Indicated reserves which can be upgraded by core drilling or development.

TABLE II

SUMMARY OF STONEHOUSE MINERAL RESERVES - JUNE 18, 1987

Classification	Gold gm/tonne	Silver gm/tonne	Estimated tonnes
Measured	42.720	71.315	110,069
Drill Indicated	25.543	33.257	146,882
Drill Inferred	22.320	22.629	594,206
Total/Weighted Average	25.749	30.857	851,157

Estimated Geological Potential Reserves
3 600 000 tonnes @ 17 gm/tonne Au (incl. Ag)
@ 0.75% Cu
+ Pb, Zn

MINERAL POTENTIAL OF THE GOLD DEPOSIT

Exploration has shown that the Discovery, '16' and Gold Rush portions of the major Stonehouse Gold Deposit 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 1450 m and a zone width of about 275 m within a geologically favourable sequence that has a measured thickness of 1000 m. 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, P-20, R-19/R-20, and several new lenses, exposed in 1984, 1985 and 1986 and all found within the main structure, with the Discovery-16 lenses together suggest a geological potential mineral resource of about 3 600 000 tonnes with an estimated grade of about 17 gm/tonne gold plus silver, copper, and minor lead and zinc.

Additional mineral potential has also been shown by surface soil, silt, and float sampling. The McFadden sulfide 'float zone', a moraine train about 350 meters long, and 40 meters in width, is estimated to contain about 27 000 tonnes of broken sulfide material. Assays of grab samples from this moraine average about 96 gm/tonne gold. 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 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 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 moraine 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 Deposit over the last seven 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. The presence of a large high grade 'broken reserve' in the McFadden moraine and the potential of the talus below Johnny Glacier is a unique situation where low cost surface methods could be employed.

Only a part of the potential of the Gold Deposit has been examined leaving a number of geochemical and geophysical anomalies and geological structures to be carefully explored. The unique coincident anomalies below Johnny Glacier suggest mineralization localized at the Upper-Lower contact or within the basal Lower Unit.

The Stonehouse Gold Deposit represents a distinct class of mineralization marked by a high sulfide to gangue ratio, a high copper content, and a high gold tenor related to Mesozoic syenite plutonism. Syenitic plutons are relatively common within the Stewart Complex ranging in composition from alaskite to the rare stock sized microclinite intrusive. All show associated copper or molybdenum (or

both) mineralization, and several have significant gold/silver/copper mineralization. These same deposits which once were examined as potential copper porphyry deposits but were abandoned because of the lack of road access have now opened the Iskut-Unuk area to mineral development because of the rediscovered gold potential.

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G.S.C. Map 9-1957

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