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REPORT

ON

HAIDA GOLD (BLUE MULE) GOLD PROPERTY

HEAD OF KOOTENAY INLET
NTS 103/C 16E
MORESBY ISLAND, QUEEN CHARLOTTE ISLANDS, B.C.

FOR

STARSCOPE MINERAL ENTERPRISES INC.

#330; 890 WEST PENDER STREET
VANCOUVER, B.C.

BY

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ABSTRACT

The Kootenay Inlet (Blue Mule, Haida Gold) property consists of a subparallel set of easterly striking steeply southeast diping quartz veins in shears cutting easterly striking, moderately southerly dipping massive Triassic Karmutsen greenstones. Samples from workings sampled range in the .01 to .9 oz/ton Au range, averaging perhaps .25 oz/ton for the No. A-2 Adit vein. Veins outcrop more or less contouring an east-west 45° (southward sloping) hillside just north of the east end Kootenay Inlet, on the west side of Moresby Island, Queen Charlotte Islands, B.C. Uphill direction bevels down-section through the volcanic flows. Conformally overlying limestone is found at the bottom of the hill, just south of the lowest workings.

Three adits were found on the property: the first at 250 ft. elevation, runs northward across structure into the hill (sloughed at time of visit) reported to be several hundred feet in length. The second, 200 ft. in elevation above the first, cuts northward 20 feet, then turns eastward to parallel a one to four foot quartz vein for 250 ft.: this one was entered and the vein sampled. The third adit, at about 720 ft. elevation and 1/4 mile to the west of the other two, enters northward a few feet into the hill to meet another east-west quartz stinger vein and shear zone, in which a one-foot 'iron dyke' is also present. The upper two adits, muck, "B.S." (specimen piles) and dumps were sampled.

Recommendation is to make a 3 mile rough pilot road to connect to the Sewell Inlet logging road network, bulk sample the veins by enlarging existing openings, and conduct an exploratory drill program to test for structural extensions of the vein system. Another 5' vein to the west and at higher elevations then visited was discovered by the current property owner, but could not be visited in the short time available. The property

belongs to Mr. Ken Foote of Sandspit, who accompanied Mr. Brett and the author on his August 8, 1983 visit to the property.

The existence of minable widths of quartz, for which assays to date show an approximate average .25 oz/tenure, in clean quartz veins and their chloritized greenstone margins, bearing a very small amount of sulphides, leads to the belief that a test-mining operation, with transportation of quartz by rough road to Sewell Inlet, and barging to Tacoma Smelter for sale as gold bearing silica flux would give the deposit the best chance to make economic sense for a small 50 TPD scale operation. This route would require a minimum of startup capital, since accommodations and utilities at Sewell could be used, and a mill could thereby be avoided.

A 53-point soil geochem traverse in an area of 500 m x 500 m over the lava limestone contact area just downhill from the A-1 portal yielded five significant Zn-Ag-Au anomalies of > 15 ppb Au, the highest being 35 ppb Au. The same work reported only low assays from the main vein at the north end of the (reopened) A-1 adit. (Assay Sheet 3).

A budget of $305,000.00 for a two-stage program is suggested to follow the project up.

PROPERTY VISITS, SOURCES FOR REPORT

A one-day visit to the property was made Sunday, August 8, 1983 by the author, accompanied by Mr. Guil Brett of Starscope Mineral Enterprises Inc., and Mr. Ken Foote, property owner. Weather was calm, clear and sunny. Access was by Bell 206 helicopter from Sandspit airport on Moresby Island, where a scheduled commercial flight from Vancouver lands. A helicopter landing pad has been brushed out on the dump of the lower (N-S) A-1 adit at 250' elevation. The adit area on the property is

between 250' and 720' elevations, approximately 1/2 mile northeast of the head of Kootenay Inlet's south arm. (Fig. 2 & 3), on the units 2 & 3 of the Swindle claim.

B.C. Minister of Mines reports (for example 1934) and Sutherland Brown's (1968) - B.C. Dept. of Mines Bulletin 34, both report on the property, specifically, and other works by D.B. Dowling, and G.M. Dawson (1878) were generally helpful. Mr. Foote, property owner, assisted in showing off the salient points of the workings. Field observations and assays obtained by the author are included. Results of a preliminary 1983 geochem traverse in the area, by Starscope personnel following the author's visit, are also included in this report, as are some results of vein samples in the lower adit reopened by them.

LOCATION, ACCESS, PHYSIOGRAPHY

Location: 1/2 mile northeast of the head (west end) of Kootenay Inlet, on the northern part of the west coast of Moresby (South) Island, on the Queen Charlotte Islands, some 30 miles south-southwest of Sandspit. NTS reference is 103/C 16E, West Central B.C. The property is on an east-west contour, 30-40° - south sloping treed rock hillside. From the head of Kootenay Inlet - a narrow 4 mile long inlet with a narrows near the mouth, there is a low east-west pass which crosses a low height of land 6 miles to the western most tip of Sewell Inlet, on which Sewell camp (a logging camp and dock) is located. Three miles of road-building over the low pass would connect the property with the end of the Sewell logging road network, which in turn is connected to Sandspit. The road at the three mile point would pass close to the northend (head) of Newcombe Inlet, which opens south into Tasu Inlet, site of Falconbridge's recently shut-down magnetite mine.

Terrain is the east side of the Southwest Ranges region

of Moresby Island. Heavy rainfall has virtually denuded 40° slopes on the volcanics of soil: a forest of small to medium yellow cedars grows on the steeper slopes, and larger spruce and hemlock grow on till at lower elevations and on flats. Local fauna are said to consist of occasional black bears, plentiful deer and small game. Crabs, shellfish, flounder, halibut, cod and salmon are locally plentiful as marine species. Present access is by helicopter from Sandspit. The original miners came in by boat up Kootenay Inlet.

CLAIMS INFORMATION

Claim block consists of the 8 unit plus 3 small fraction Swindle claim, a 2 x 4 (elongate northward block), Record No. 1289(3), and the west-adjoining 2 x 4 (8 unit) Gill claim, Record No. 3763(2). Adit 1 is on the southern portion (Units 3 & 4) of the Swindle claim: LP is southwest (Swindle) southeast (Gill), at same location, just north of the small northward cove at the East Kootenay Inlet. Claims are on NTS 103C/16E. Owner is Mr. Ken Foote, of Sandspit, B.C. Claims are in good standing. An overstake, the K1 [Record No. 3764(2)] over part of the Gill claim, while shown on the claims map (Fig. 2), has been disallowed in favor of that portion of the Gill.

The claims are currently under option to Starscope Mineral Enterprises Inc. of Vancouver, B.C. on whose behalf the author visited the property.

HISTORY OF PROPERTY AND REGION

G.M. Dawson (1878) of the Geological Survey of Canada first mapped portions of Moresby Island, though his map only indicates the mouth of Kootenay Inlet. Dawson reported, inter alia, on the Early Bird mine, a small gold quartz vein workings

in Karmutsen Volcanics in Mitchell Inlet (then known as Kuper Inlet) off the south side of Moore Channel. This was the first quartz mine in B.C., first worked by Captain Mitchell for the Hudson's Bay Company in 1852. Small shipments of quartz with up to 10 oz/ton Au were reported. The present property is first reported in the B.C. Minister of Mines reports for 1920. Tasu Sound, 8 miles to the southwest down the coast of Moresby Island, is the site of the Tasu magnetite mine (with some associated copper), which was operated until recently by Falconbridge Ltd., shipping iron ore to Japan. Another mineral of regional interest is coal in the Skidegate area, which, however has not been brought to commercial exploitation. The region is mainly notable for its magnetite iron deposits, timber, and fishing industry.

The property has been opened up by two main adits and other short adits, pits and cuts. The helicopter pad (No. A-1) adit, at 250' elevation, is reported to crosscut several veins, as it cuts northward into the hillside for three hundred and fifty feet. Its mouth was sloughed at the time of the August 8, 1983 visit, but was subsequently reopened and sampled by Starscope personnel during a August 18-26, 1983 visit. Only low values were reported from the vein the old timers drifted on in the back of the adit (Samples S2-S5 incl., Assay Sheet 3). The No. A-2 adit is 200' uphill, at 550' elevation, up a 30° hillside. This adit enters northward in a creek cut, then follows 250' eastward along the strike of a quartz vein of between 1-4' in width, and was sampled by the author.

The original tunnel miners had a small cabin just west of the No. A-2 adit, which is now in ruins. They also had a very small Hardinge-type (Lab scale) grinding mill, driven by a water wheel, and an equally small sample crusher. Adits were railed. No shipments from the property are recorded. Crusher, handcar, mill and water-wheel are still on the property, but have become of only archaeological interest. Rail might be re-usable. Timber is plentiful on the property, as is water. Drainage is into the

head of Kootenay Inlet.

REGIONAL GEOLOGY

A thick (up to 15,000 feet thick) sequence of Triassic seabottom lavas, the Karmutsen Volcanics, is overlain conformably by limestone then lime-shale. Section strikes northeast by east, and dips 30-50° southward.. The downhill direction bevels up-section through lava flows. The veins are a subparallel ramifying vein systems in minor eastwest/steeply south dipping shears in the Karmutsen. A few miles to the south, the same Karmutsen-Limestone contact is the site of important magnetite (plus minor chalcopyrite, pyrrhotite, pyrite, sphalerite, skarn) deposits, mostly strata-bound near the lime-volcanic contact. These iron rich solutions accessed up stock works from intrusive plutons reworking the high primary iron content of the Karmutsen, in conjunction with the fluxing action of the limestone.

Sutherland-Browns' Abstract: Charlottes (Ref. 1)

> The Queen Charlotte Islands are at the western edge of the continental shelf seaward of central British Columbia. The Islands have a land area of about 3,840 square miles, which is divided into three main physiographic units: the Queen Charlotte Ranges on the southwest, Skidegate Plateau in the centre, and Queen Charlotte Lowlands on the northeast. In the Pleistocene the Islands were intensively glaciated.
>
> The fundamental structural unit of the Queen Charlotte Islands is a thick (15,000+ feet) pillowed basalt of Late Triassic age. The basalts are separated by a flysch-like sequence of Latest Triassic and Early Jurassic age from an explosive porphyritic andesite of Middle Jurassic age and largely marine deposition. Two Cretaceous sedimentary units, the first flysch-like and the second molasse-like, were deposited and are successively less involved in deformation. A final Early Tertiary period, largely of subaerial volcanism, deposited some 18,000 feet of intercalated columnar alkali basalt floods and sodic rhyolite ash flows. These are gently warped, eroded, and

overlain by up to 6,000 feet of Mio-Pliocene sands and shales. Large lineal bodies of hornblende diorite to quartz diorite were emplaced in the Mid to Late Jurassic and a varied sequence of quartz diorite to sodic granite in the Early Tertiary, mostly along major lineal faults.

Crustal fracturing has been the dominant mechanism of deformation, controlling volcanism, sedimentation, intrusion, and secondary folding. Major northwesterly lineal faults form a pattern related to the Queen Charlotte fault. The trace of the latter is along the continental slope. The major northwesterly faults have been active since at least the Early Cretaceous, and generally they combine right-hand wrench movement with normal east-block-down displacement.

The mineral resources of the islands are extensive. At present pyrometasomatic iron-copper deposits are the most important by several orders of magnitude. Mineable reserves have a gross value of about $200 million. Production has come from two main properties -- Tasu and Jedway.

Gold Veins (Ref. 1) p.173

Gold-bearing veins are not rare in the Queen Charlotte Islands, but none have proved large enough to support a continuing operation. Five properties have fairly extensive workings -- Early Bird on Mitchell Inlet, Blue Mule on Kootenay Inlet, Cumshewa on Cumshewa Inlet, Southeaster near Skidegate, and Ellen on Shuttle Island. The setting of these deposits is varied, but they are normally in volcanic rocks, either Karmutsen basalts or Yakoun agglomerates or volcanic sandstones. The veins are not distributed in any obvious relation to plutons of either type nor to major fault or fold structures. However, all are stringer vein systems associated with steeply dipping minor faults. In several the amount of quartz present is small, and carbonate, vein breccia, and gouge are as prominent. They are sparsely mineralized with pyrite, traces of chalcopyrite, and some fine free gold. Wallrocks are slightly chloritized and silicified. The Southeaster is in many ways the largest, with a quartzfilled vein 2 to 20 feet wide and about 1,000 feet long which contains lenses of sulphides. In contract the Early Bird has explored over 200 feet of a ramifying narrow stringer vein system with little quartz or sulphide but occasional concentrations of free gold. No new

development has occurred since World War II, so that access to workings on these properties is not generally good.

[Since 1968, gold prices have increased dramatically.]

PROPERTY GEOLOGY

B.C. Minister of Mines (1934) PB3-4 (Haida Gold Mines) and Sutherland Brown (1978) p.173 (Gold Veins), p.218 (Blue Mule property) describe the salient features:

Blue Mule

This property has been held by recorded claims much of the time by the Stevens family, of Skidegate. It has also been called the Kootenay, Rupert, and Haida gold mines. It is three-quarters of a mile north of the east end of the south arm of Kootenay Inlet. It was discovered in 1919 by Jones, Wiggs, and McRae, of Queen Charlotte and Skidegate, and received most exploration about 1931 and 1932. The workings consist of a series of open cuts. Massive greenstones of the Upper Karmutsen Formation which strike easterly and dip about 40 degrees south form the country rock. In these rocks a reticulate quartz vein system is developed, which strikes northeast and dips steeply southeast. Individual veins have been traced 100 to 400 feet and are 6 inches to 5 feet wide. Five veins occur within 350 feet across strike. The vein walls are slightly silicified and chloritized but otherwise unaltered. The veins are composed mostly of quartz with sparse sulphides, pyrite, and chalcopyrite with some fine free gold. Values reported by Mandy (Ann. Rept., 1932) range from 0.2 to 0.6 ounce per ton.

(References: Minister of Mines, B.C., Ann. Rept., 1920, p.43; 1923, pp. 41-42; 1932, pp.38-40.)

Appendix I includes details given in 1920-34 B.C. Minister of Mines reports on the property. The present property has been known as Haida Gold or Blue Mule property (see these publications).

The author's observations during his August 8, 1983 visit essentially concur with the above property descriptions. Fig. 4 give a rough sample plan sketch map of the workings and features noted during the visit showing sample locations. Since the time of the author's visit, the No. A-1 adit, cross cutting several veins including that drifted on in the No. A-2 adit, has been made accessible (by Starscope personnel, proposed during their August 18-26, 1983 work). Quartz veins in slight shears look as if shears were chiefly strike-slip (mullion at -30° plunge westward along the footwall fault of No.A-2 adit vein was noted). Shearing and local brecciation of the greenstone occurred with the formation of a chlorite-type alteration but no appreciable fault gouge, and was followed by quartz injection "wedging" in between rubble fragments and shear laminae under considerable pressure. The vein quartz also contains some small irregular drusy vugs, showing that initial quartz injection under pressure must have been replaced by tension in later stages of deposition. Only occasional small sulphide discolorations were in evidence: the quartz looks rather barren. It is clear to white and surrounds a matrix of small sharp volcanic fragments.

In the No. A-3 adit, the shallow adit furthest up the hill (at 720' elevation) 1/4 mile west of the No. A-1 shearing was slightly more prominent. An "iron dyke" of fine grained pyritic pale green volcanic material, 1' thick, had come up the fault before the quartz stringers entered. Samples of vein plus "iron dyke" ran over 1/3 oz/ton gold. The 5' width, strong white quartz vein further uphill and west, reported by Mr. Foote, was not inspected, but should be looked at.

DISCUSSION AND RECOMMENDATIONS

The highest grade sample taken by the author (from the "B.S." pile outside the old cabin near adit No. A-2) ran

.93 oz/ton Au, and showed some slight sulphide staining in a laminated to fragmental-filled vein quartz. Samples from the dump of No. A-1 and No. A-2 adits, which ran lower than wall samples, were of very white coloured quartz and volcanic fragment quartz infill. It would thus appear there is some correlation between gold values and sulphides, even though the total amount of sulphides present is very small. Whether gold values come in with the pre-vein shearing and/or small iron dykes, or only with the (later) quartz, is a matter of some speculation, which will require further investigation. As regards "cut-off" policy - quartz only, or quartz plus some margin?

The best values obtained in this visit come from the No. A-2 adit vein and from the No. A-3 adit vein/shear/iron dyke up the hill.

The No. A-2 adit vein should be bulk sampled, and by careful dip projection, vein width and geometry of No. A-1 and No. A-2 adits, ascertained in the No. A-1 adit cross cut. The intersection in the No. A-1 adit would give 250' of back on this vein. It is not yet clear whether the 5' vein encountered and followed at the back end of A-1 adit is identifiable with the A-2 vein or not. Extending the A-1 adit another 50' would decide this, as there are other rather barren parallel veins surfacing just south (downslope) of the A-2 vein in the creek below the A-2 portal. The Zn-Au geochemical correlation is interesting, since sphalerite is noted by Sutherland Brown in his analysis of the margins of the magnetite bodies at Tasu on the same Karmutsen-Limestone contact.

Other veins may well further exist up the hill: the Karmutsen seems to dip 50°+ south on the hillside. The hill slopes south at 40°, tiny creeks cut across the strike: additional shear and/or veins should be prospected for by float tracing and/or exploratory stream sediment geochemical sampling for gold on the tiny creeks running down the eastwest ridge.

In developing this property, the logistics cost of using helicopters or boats coming around the (exposed) westside of Moresby, could be prohibitive in time loss and flying costs, in view of the general lack of flying weather due to fog and wind in the Charlottes and frequent rough seas on the exposed westside of Moresby. A rough land link to Sewell Inlet camp would seem most important: requiring 3 miles of pilot road building over reasonably good terrain. This would allow trucking of any production to a sheltered harbour on the east (inside) side of the island, avoiding the big waves of the west coast and the narrows at the mouth of Kootenay Inlet. In any case, Sewell camp is already an existing community, with power and housing facilities, plus phone and road connections to Sandspit. A potential mining operation, involving mining from veins on the property, initially through existing openings with quartz hauled to Sewell and barged thence as silica-flux gold ore to Tacoma Smelter would minimize startup capital and potential mill capital cost and operation problems: smelter charges at highly efficient smelters approximately equal yield losses by milling quartz onsite. Barge transport cost per ton is less than amortization costs on a mill for a small deposit.

For quartz of 0.25 oz/ton gold content and anticipated $500/ton gold values, the following approximate cost projections could be applied:-

Gross Value in quartz .25 x $500	=	$ 125/ton
Smelter allowable, estimated of 90% of this		$ 112.50
Mining costs		$ 20/ton
Truck to Sewell		$ 5/ton
Barge to Tacoma		$ 20/ton
Estimated smelter charges, clean quartz flux		$ 25/ton
Expected Direct Costs:	=	$ 70/ton
Projected Gross return/ton		$ 42.50/ton

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Over the first 20,000 tons, say, startup capital costs of say $100,000 work out to another $ 5/ton to amortize. Over the initial 20,000 ton block of the operation, holding heads grade of 0.25 oz/ton and the above cost schedule would suggest a $37.50/ton gross return on the operation. This estimate would also indicate a breakeven or "cut off" grade of about 0.16 oz/ton gold. A total startup cost projection of $305,000. would require a breakeven tonnage of about 7,000 tons to return project costs out of smelter returns.

A detailed evaluation is thus warranted to refine the property's average grade and project cost figures. Estimated average grade by BCDM (1934) is in order of 0.2 oz/ton. The author's preliminary sampling results show somewhat better (.25 oz/ton range). A 20,000 ton "block" geologically inferred between adit 2 and adit 1, level on the vein system (particularly on the No. A-2 adit vein). The estimate use approximate vein widths, dips and exposed lengths noted in the field examination, coupled with the 1934 observation that the No. A-1 adit cuts the vein system inside the hill. Since the August 18-26/83 sampling of the 5' vein drifted on at the back end of the reopened No. A-1 adit showed low values - in the order of .01 - .063 oz/ton, it is important to ascertain whether this 5' vein <u>is</u> the No. A-2 adit vein, or one of the parallel lower grade ones "in front" of it - encountered just downhill in the creek below A-2. The bearing on economics of this identification is 'make or break'.

STAGED PROGRAM

I	Access Road	$ 30,000.00
	Additional Prospecting, Geology, Geochem	$ 10,000.00
	Drilling for structural extentions of vein system 4 holes x 400' x $40/ft. loaded	$ 64,000.00
	Rehab adits, bulk sample (compressor, blast, truck to Sewell)	$ 20,000.00
		$ 124,000.00
	Contingency 10%	$ 16,000.00
		$ 140,000.00
II	Mining starting from existing openings (50 TPB approx. scale)	
	Mine car, compressor	$ 15,000.00
	Truck 10-20 ton/capacity	$ 15,000.00
	Front end loader	$ 15,000.00
	Mining startup supplies (dynamite, fuse, diesel, etc.)	$ 15,000.00
		$ 60,000.00
	Contingency 10%	$ 5,000.00
		$ 65,000.00

TOTALS:

Stage I	$ 140,000.00
Stage II (contingent on I)	$ 65,000.00
Start-up capital contingency (2 months) $50,000 plus of first 1/2 barge charge ($20/T x 5000 T x 1/2)	$ 100,000.00
TOTAL BUDGET PROVISION:	$ 305,000.00

Stage II would be contingent on the reasonable success of Stage I.

Yours respectfully,

William D. Groves.

W.D. Groves, Ph.D., P.Eng.

September 7, 1983

CERTIFICATE

I, William D. Groves, do hereby certify that:

1. I, William D. Groves am a consulting engineer (geological) with an office at #152; 890 West Pender Street, Vancouver, B.C.

2. I am a graduate of the University of British Columbia (B.A.Sc. in Geological Engineering, 1960). I am a graduate of the University of Alberta (B.Sc. in Chemical Engineering in 1962) and of the University of British Columbia with a Ph.D. in Chemical Engineering in 1971.

3. I am a registered Professional Engineer in the Province of British Columbia.

4. I have practiced my profession since 1960.

5. I visited the Blue Mule property: now the Swindle-Gill claim area August 8, 1983 with the property owner and Mr. C. Brett of Starscope, and took samples of dumps and adits where accessible, and reffered to earlier works of Dawson, BCD Mines, etc. (References), and reviewed results of a geochem grid and sampling of the No. 1 adit reopened August 18-26, 1983 after my visit to the property.

6. I have not received directly or indirectly, nor do I expect to receive any interest, direct or indirect, in the Swindle-Gill group of claims nor do I beneficially own, directly or indirectly any securities of Starscope Mineral Enterprises Inc., nor do I expect to receive any such interests.

7. I hereby consent to the use of this report in a Prospectus or Statement of Material Facts to be filed with the Vancouver Stock Exchange and Superintendent of Brokers for British Columbia.

Respectfully submitted,

William D. Groves

W.D. Groves, Ph.D., P.Eng.

September 7, 1983

REFERENCES

1. B.C. Department of Mines and Petroleum Resources, Bulletin No. 54, 1968.
A. Sutherland-Brown: Geology of the Queen Charlotte Islands, B.C.

2. Map of the Queen Charlotte Islands, G.M. Dawson, Geological Survey of Canada, 1878. 1:506,880

3. Geological Road Atlas of British Columbia, B.C. Department of Mines

4. B.C. Department of Mines - Annual Report 1934, p. B3, B4. ("Haida Gold Mines, Ltd.")