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REPORT

ON

PRELIMINARY SAMPLING

OF

TAILINGS AND STOCKPILES

AT THE

SURF INLET MINE

53° 05' 128° 53' 103 H/2W

BY

J.T. SHEARER, M.Sc.

FOR

FLEET DEVELOPMENTS LTD.

January 15, 1986
Vancouver, British Columbia

Field work conducted between
November 6 and November 11, 1985.

Good!

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SUMMARY

1. The Surf Inlet Area is on Princess Royal Island, approximately 160 km southeast of Prince Rupert and has been a major source of gold, silver and copper in the past. The main period of operation was between 1917 and 1926.

2. The Surf and Pugsley mines produced to the end of 1942 a total of 1,091,131 tons from which were recovered 382,351 ounces of gold, 208,752 ounces of silver and 6,314,341 pounds of copper. The average head grade was 0.425 ounces per ton gold. Mill recoveries averaged between 88% and 92%.

3. The ore was mined from underground workings. Access below 900 level is from internal inclined shafts. The entire operation was electrified from a nearby lowhead hydroelectric plant.

4. Gold mineralization is localized along an extensive, complex shear system that cuts gneiss and diorite. Gold associated with pyrite occurs in quartz-ankerite-sericite-sulfide veins.

5. Low grade stockpiles are located outside the 550 level of the Surf Mine. Two large, shallow trench samples were collected during the present program. These assayed; West dump: 0.151 oz/ton Au and East dump: 0.067 oz/ton Au. There are approximately 400,000 tons of dump material around the 550 level portal as estimated by Freeze (1981).

6. Sampling by Cominco in 1981 on the 550 level stockpiles gave the following results: West dump: 0.102 oz/ton Au, East Dump: 0.051 oz/ton Au.

7. Several very large samples were collected of the tailings from previous milling operations which average assay result of nineteen large samples was 0.061 oz/ton gold.

8. The samples collected during the present program were submitted for metallurgical testing to evaluate gold recoveries by various techniques. The results are contained in Hawthorne (1986).

9. A large volume of stockpile and tailings material containing important gold values is present at the Surf Inlet Minesite. More detail sampling is warranted on both the tailings and stockpiles.

10. The size and distribution tailings area and contained gold values should be evaluated more fully by:

    (a) air photograph analysis of the Paradise Creek delta and braided lower creek areas;
    (b) shallow coring of the delta and lower creek on a regular grid basis using a lightweight core drill or auger;
    (c) shallow coring of the swamplands adjacent to the lower reaches of Paradise Creek.

11. The size and distribution of 550 level Surf Mine stockpiles and contained gold values should be evaluated more fully by:

    (a) excavating close spaced hand trenches along the top and edges of each dump, ensuring large, unbiased samples are collected;
    (b) accurately surveying the extent of each dump and estimating the probable thickness;
    (c) evaluating the railbed sections between Surf and Pugsley Mines.

12. The existing 1:20,000 air photography should be compiled into a 1:1,000 orthophoto base map with 2 m contours.

INTRODUCTION

A preliminary sampling program was conducted in November 1985 to obtain representative material from mill tailings and mine stockpiles at the Surf Inlet Mine on Princess Royal Island.

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The Surf Inlet-Pugsley Mines are the seventh largest source of gold in British Columbia, having produced a total of 1,091,131 tons of ore with overall recoveries of 0.350 ounces gold, 0.18 ounces silver and 0.29% copper per ton. Mill recoveries were approximately 88%-92%. Only Bralorne-Pioneer, Rossland, Premier, Nickle Plate-Mascot, Island Mountain-Cariboo Gold Quartz and Phoenix have produced more gold. Britannia Island Copper

Very little published geological information is available on the Surf Inlet area or the ore bodies which were mainly mined in the period 1917-1926. However, a detailed collection of private reports, plans and sections documenting the geological and extraction processes have been saved by the present owners; Matachewan Consolidated Mines Ltd.

Gold mineralization is localized along an extensive, complicated shear system that has developed in intrusive and gneissic volcanics and metasediments of the Coast Plutonic Complex. Gold associated with pyrite occurs in quartz-ankerite-sericite-sulfide veins. Distribution of ore shoots within the veins depend on late stage fault adjustments and flexures during which veins along certain shear surfaces and zones were factured and mineralized.

Current interest is focussed on applying modern metallurgical leaching processes for enhancing gold recovery from dump material, exploration of down-dip extensions of the Pugsley and Surf ore bodies and the possibility of new ore zones south of the Pugsley workings as suggested by surface mineralization.

LOCATION AND ACCESS

The Surf and Pugsley Mines are located near the head of Surf Inlet on Princess Royal Island approximately 160 kilometers southeast of the main supply base at Prince Rupert. The property is at 53° 05' N latitude and 128° 53' W longitude in mapsheet NTS 103 H/2W about 105 km southwest of Kitimat and 115 km northwest of Bella Bella. The nearest sizeable community is Hartley Bay, 44 km northeast. The docking facility at Butedale on the east coast of Princess Royal Island is a port of call for ships travelling the "Inside Passage" between Vancouver and Prince Rupert. Butedale is 16 km east of the Surf Inlet minesite. Ocean-going ships were able to call on the wharf at the head of Surf Inlet when the mines were in production. Currently the most active center of mineral exploration near Surf Inlet is Trader Resource Corp.'s gold project on Banks Island, 90 km to the northwest.

The Surf and Pugsley ore bodies, located on the north and south sides of Paradise Creek, are 11 km from the wharf and hydro-electric power site at the outlet of Cougar Lake. In the past, electric tramways and barges formed the supply link from the mines to tidewater. A tug and barge carrying fifteen 1-ton mine cars operated on the lake. At the mouth of Paradise Creek an overhead trolly electric railroad ran to the camp on an even grade. An incline from the ocean dock to the lake, a distance of 314 feet, and equipped with an electric hoist completed the transportation. Fixed wing aircraft with floats can land on Paradise Lake and a short foot-trail connects Paradise Lake to the minesites.

Topography in the area is very rugged with steep sided peaks rising to a maximum elevation of 1100 m ASL. The lowest level in the Pugsley Mine is the 1500 level which is 500 feet (152 m) below sea level. The lowest level on the Surf Mine is the 1400 and is 275 feet (84 m) below sea level.

HISTORY

The original discovery of gold in the Surf Inlet Area was made in the late 1800's by tracing white quartz float from the bottom of the valley which enters Bear Lake from the east, up to where the vein outcrop on the north and south sides of the valley. The first claims were located in 1898 and are the oldest in the Skeena Mining Division exclusive of the Queen Charlotte Islands (McConnell, 1914).

Trial shipments of the ore were first made in 1902, and although these yielded excellent values in gold (about 5 oz per ton) and copper (about 3%), subsequent work was discouraging (Roddick, 1970). There is no record of the tonnage or value produced in this period and some doubt arose as to the average grade of the ore. Activity on the property remained at a low level until 1912 when a more vigorous development program began. The property was initially known as the "D.L.S. Group" and was owned by Surf Inlet Mines Limited who optioned them to the Belmont Canadian Mines Ltd. in March 1914. The Belmont Canadian Mines Ltd., a subsidiary of Tonopah-Belmont Development Company, developed and bought the property by reorganizing into the Belmont-Surf Inlet Mines Ltd. The property produced continuously from September 1, 1917 to June 30, 1926. Records show that 848,883 tons of ore were produced from which 322,297 oz of gold, 176,734 oz of silver and 5,244,772 pounds of copper were recovered (Dolmage, 1946).

The 1918 Minister of Mines Annual Report indicates a mill recovery of 92%. Dolmage (1946) reports for the period 1916-1926:

> During that period, 848,883 tons of ore were mined, of which 57,632 came from the Pugsley. The average grade of this ore was 0.425 ounces of gold, 0.30 ounces of silver and 6 pounds of copper per ton. The maximum daily production was 400 tons and the average operating costs were $5.20 per ton. To the end of 1925, detail records show that from 822,233 tons of ore mined, 307,452.9 ounces of gold; 169,348 ounces of silver and 5,083,530 pounds of copper were recovered.[1]

[1] The above figures are taken from reports by Charles Mentzel.

These figures quoted by Dolmage indicate approximate gold recoveries of 88% assuming an average head grade of 0.425 oz/ton. The operators felt that there was no remaining ore when the mine closed in 1926.

HISTORY (cont'd)

In 1934, after the price of gold was raised, a new company was formed, Princess Royal Gold Mines by J.B. Woodworth, to acquire, rehabilitate and operate the property. This attempt failed and in 1935 the mine was again closed. The company was refinanced in 1936 and its name changed to Surf Inlet Consolidated Gold Mines Ltd. The old mill was originally rated at 300 tons per day but much of the machinery was removed prior to 1934 or had become obsolete. Milling resumed at 50 tons per day in 1936 and was gradually stepped up to a little over 100 tons per day by 1940 (Honsberger, 1973).

Overall, to the end of 1942 when the mine was closed by a scarcity of labour and general war conditions, total recorded production from the property amounted to 1,091,131 tons, of which 169,886 tons came from the Pugsley and the remaining 921,245 tons from the Surf ore body. From this ore were recovered 382,351 ounces of gold, 208,752 ounces of silver and 6,314,341 pounds of copper (Dolmage, 1946).

When the mine was in operation, power was obtained from an efficient low head hydro-electric plant constructed in 1916 using a reinforced concrete dam of the Ambursen patent type. The dam is high enough to raise the level of the lower lake to make a continuous waterway from the head of the dam to the foot of the mountain, about 1.6 km from the mine.

TAILINGS SAMPLINGS

Samples were collected of typical tailings material from the recently built delta of Paradise Creek, Figure 2, using a shovel. The tailings are usually light brown, sandy and well compacted but easy to dig with the shovel. Each sample group is described below with corresponding assay results:

				Assay Results	
H1 at northwest side of delta				Gold oz/ton	Silver oz/ton
H1	A	10 cm depth		0.049	0.09
	B	25 cm	some orange banding	0.055	0.06
	C	40 cm	some orange banding organic material	0.055	0.03
	D	60 cm	in water table green-grey colour	0.053	0.09
	E	75 cm	green-grey colour	0.055	0.06
	F	80 cm	grey-white colour	0.055	0.06
	G	90 cm	grey-white colour	0.052	0.03
	H	100 cm	grey-white colour	0.052	0.06
	I	110 cm	grey-white colour	0.055	0.06
H2 at southwest side north side of creek underwater					
	A	0 cm		0.058	0.09
	B	20 cm	grey	0.065	0.06
	C	30 cm		0.064	0.06
	D	40 cm		0.064	0.09
	E	50 cm	white-grey with streaks	0.064	0.09
H3 60 meters upstream from H2					
	A	0-15 cm		0.067	0.09
	B			0.084	0.06
	C		5 bags all from	0.064	0.06
	D		same level	0.075	0.03
	E			0.075	0.06
			average	0.061	
H4 near H3 but on land Dirt - perhaps 150 year old delta Large cedar trees				0.046	0.03

The samples represent relatively fine grained, homogenous material with small inherent sampling errors.

STOCKPILE SAMPLING

The Surf Mine 550 level stockpile dumps were briefly investigated to obtain a sample for metallurgical testing and to confirm the more extensive sampling carried out by Cominco in 1981.

The samples in the present program were collected along the edge of the stockpile, Figure 3, as continuous chips of all rock types encountered in a 5 meter interval. The samples and corresponding assay values are described below:

	Assay Results	
East Surf I	Gold oz/ton	Silver oz/ton
Mostly chloritic fine-grained altered rock minor medium chrystalline diorite relatively abundant white quartz one piece of pyrite + quartz one piece of pyrite + NoS^2 + quartz	0.067	0.29
Chip along 5 meters at lip of dump 3 bags full A, B, & C		
West Surf I 20-30% abundant rusty pyritic quartz 10-15 white bull quartz common gneissic diorite - 50% chloritic alteration phase - 10%	0.151	0.20
Chip along 5 meters of dump		

Due to the relatively coarse grain size of these stockpiles, special care must be taken in estimation of average grades.

CONCLUSIONS

A large volume of stockpiled mineralized broken rock containing important gold values is present outside the 550 level of the Surf Mine. Tonnage estimates by Freeze (1981) are at least 400,000 tons. Previous estimates of the stockpile average grade was 0.087 oz/ton gold which was calculated by combining the 0.102 oz/ton gold assay from the west dump with the substantially lower grade of 0.051 oz/ton gold from the east dump.

These preliminary results by Cominco are confirmed in the present sampling program with results of 0.151 oz/ton gold from the west dump and 0.067 oz/ton gold from the east dump. More sampling is warranted to accurately define the gold content of the stockpiles.

The resource potential of the old tailings has been ignored or not recognized by previous owners. Preliminary sampling by Fleet Development Ltd. in November 1985 has indicated a large area underlain by tailings near the delta and lower portion of Paradise Creek. Nineteen samples of tailings from various depths and locations gave an average of 0.061 oz/ton gold. Interestingly, the highest grade samples come from farthest upstream.

Grab samples of massive pyrite located over 400 meters west of the Surf Mine have been submitted for assay and results are pending.

Any economic appraisal of the Surf Inlet Area should include the following items:

(a) stockpile resource;
(b) tailings resource;
(c) deep level primary ore reserves;
(d) south exploration potential;
(e) exploration potential between Surf and Pugsley Mines;
(f) deep level exploration potential;
(g) potential for parallel sulfide zones to the west.

RECOMMENDATIONS

A systematic sampling program should be conducted over the stockpiles. Special efforts must be made to ensure representative samples are collected. This will involve excavating large trenches through the stockpiles at regular intervals. An accurate transit survey is required to estimate the thickness of each stockpile.

Sampling of the tailings area should be extended on a regular grid using a power-auger or light-weight core drill. The distribution of tailings along the braided lower parts of Paradise Creek and within the delta-swamp complex should be determined by an air photo interpretation and careful ground mapping. All results should be plotted on a 1:1,000 scale plan map with 2 m elevation contours which can be manufactured from the 1:20,000 air photo coverage.

A cost estimate for this program is outlined in Appendix I.

Respectfully submitted,

J.T. Shearer, M.Sc., FGAC

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APPENDIX I

COST ESTIMATE FOR PROPOSED SAMPLING 1986

APPENDIX I

COST ESTIMATE FOR PROPOSED SAMPLING PROGRAM

4 man crew, 25 days, tent camp, rental of lightweight core drill or power auger.

Wages and Benefits		
Geologist - $200 per day for 25 days	=	5,000
Sampler - $160 per day for 25 days	=	4,000
Labourer - $140 per day for 25 days	=	3,500
Labourer - $140 per day for 25 days	=	3,500
Total	=	16,000
Transportation - Fixed Wing		
Vancouver - Prince Rupert		1,300
Prince Rupert - Surf Inlet		4,800
Helicopter		
4 hours @ $511 per hour		2,044
Equipment Rental		2,000
Food		1,450
Camp		1,600
Field Supplies		400
Analytical		4,500
Drafting		800
Air Photo and 1:1,000 Contour Map		4,500
Compilation and Report Writing		1,400
Word Processing and Reproduction		500
Contingencies - 10%		4,000
Total	=	45,294
or approximately		45,000

APPENDIX II

STATEMENT OF QUALIFICATIONS

J.T. SHEARER, M.Sc., F.G.A.C.

STATEMENT OF QUALIFICATIONS

I, Johan T. Shearer of the City of Port Coquitlam, in the Province of British Columbia, do hereby certify:

1. I graduated in Honours Geology (B.Sc. 1973) from the University of British Columbia and the University of London, Imperial College (M.Sc. 1977).

2. I have practiced my profession as an Exploration Geologist continuously since graduation and have been employed by such mining companies as McIntyre Mines Ltd., J.C. Stephen Explorations Ltd. and Carolin Mines Ltd. I am presently employed by TRM Engineering Ltd.

3. I am a fellow of the Geological Association of Canada. I am also a member of the Canadian Institute of Mining and Metallurgy, the Geological Society of London and the Mineralogical Association of Canada.

4. I consent to the use of this report in or in connection with the prospectus or in a Statement of Material Facts relating to the raising of funds for this project.

5. I have visited the property on June 8, 1985 and between November 6-11, 1985 and examined diamond drill core, underground workings and collected samples. I have also reviewed reports and other documents relating to the property.

Dated at Vancouver, British Columbia

J.T. Shearer, M.Sc., F.G.A.C.

January 15, 1986

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