

JCS OFFICE

SHEEP CREEK MINE

NTS - 82F/3E

Owned by J.A.C. ROSS

by

J.T. SHEARER

674418

J.C.STEPHEN EXPL'NS LTD

December 16, 79

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1124 West 15th Street
North Vancouver, B.C.

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Table I - J.A.C. Ross list of Maps and cross sections.
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A review of data on the SHEEP CREEK MINE supplied by the present owner J.A.C. Ross was carried out with the following objectives in mind:

- (a) Check on ore readily accessible above flooded levels;
- (b) Define tonnage quoted in ore reserves;
- (c) Exploration potential, unexplored ground, parallel veins, applicability of geophysics, etc;
- (d) Controlling geological parameters;
- (e) Cost of re-opening.

REFERENCES:

Key references on the property used were:

THOMPSON, F. R., 1970 Private report for J.A.C. Ross
18 pp. Fig. 2 missing.

MATHEWS, W. H., 1953 Geology of the Sheep Creek Camp
94 pp. Bull No. 31 B.C. Dept. Mines.

Numerous plans, sections, assay sheets and drill logs supplied by J.A.C. Ross, including some that show work done during 1950.

(Refer to attached list, items 10 to 35 Table I)

NOTE: A systematic examination of drill records has not yet been made.

INTRODUCTION

The status of the property is outlined in F. R. Thompson's 1970 report. Thompson was associated with the Mine for 12 years and served from 1949 to shutdown in 1951 as Mine Manager. Mr. Ross owns 29 Crown grants which are the previous holdings of Sheep Creek Gold Mines. The claims to the north of Ross are the old Kootenay Belle property (coloured blue on the 1:50,000 map). More importantly, the old Gold Belt Mine (north of Kootenay Belle) has been rehabilitated in the last two years at the cost of over 1 million dollars. Accurate mining and other operating costs should be available from the project manager C. E. Gordon Brown in Salmo.

Not all maps on the list supplied by Ross were included in the data package; missing items are marked in Table I.

ORE RESERVES

Ore reserves as quoted on data item #35 (Ore Reserves Estimate, January 1, 1950) are shown on Table II attached.) There are a few minor discrepancies with the section views compared to the overall tabulation; basically the ore picture is: as of 1950 (presumably diluted to 3 ft. stopes - Section on records show higher grade over 1-2 feet)

<u>TYPE OF ORE</u>	<u>TONNAGE</u>	<u>GRADE</u> Oz. Au/Ton	<u>REFERENCE</u>
Unbroken (from Item #35)	43619	@ 0.291	Item No. 35
Unbroken (probably partially moved during 1950)	-26530 <u>Note:</u> this very likely was not entirely mined.	@-0.304	Section (No.25) as compared to 15,846 of Thompson
Unbroken (now left)	17089	@ 0.272	
Undeveloped (probable)	18802	@ 0.302	Item No.35
Undeveloped (marginal)	6545	@ 0.208	Item no.35
TOTAL in workings post 1951	42,436	@ 0.275	
F. R. Thompson TOTAL including marginal	59,686	@ 0.285	Thompson Report

The major difference is the 10,684 tons for production in 1950. Records were apparently not kept up to date after about May 1950, but Thompson's figure appears reasonable and he should know being the Mine Manager. I have put the January 1, 1950 ore reserve blocks on Thompson's Figure 3.1 to 3.10 from Item No. 35. No attempt has been made to re calculate these reserves from assay plans but this could be done at a later date

although not much of a change would be expected. As shown in Table II much of the remaining ore is in veins 81 and 92 and is relatively deep (below 7 level). Mathews (1953) quotes ore reserves as of May 31, 1949 - 50,578 tons @ 0.341 oz. Au/Ton. He then states 43,998 tons were mined in 1949 and 1950. It appears that Mathews figures do not accurately reflect the ore picture at the closure in 1951.

No readily accessible large block of ore as of 1950 is shown above 3 level (flooded) that can be produced without pumping out the workings. For completeness all diamond drill logs should be checked in this regard to make sure nothing has been overlooked.

Leassors have been active sporadically in the Sheep Creek Camp, the extent, if any, to which leasing has gone on in the Queen or 92 vein should be investigated. Thompson (page 4) mentions Russell Thompson on the Kootenay Belle property.

EXPLORATION POTENTIAL:

Exploration potential for extensions of known veins and new veins to the south appears excellent. There is 5,000 feet of unexplored ground south of 44 vein but any serious exploration would have to be underground. The targets are far too deep (> 3,000 ft.) and small for surface drilling. Thompson recommends 7 level for exploration to the south.

Although the vein structures and controls (or at least spatial configuration) of the ore shoots were fairly well understood in 1950, Mathews points out that very little exploration was taking place. Drilling and drifting was too wide spaced to eliminate the possibility

of small ore shoots even in the areas mined. Of particular interest is the concept of a "Favourable Limit" of ore shoots. Essentially the lower limit of vein systems has been incompletely explored.

The modern experience of Gold Belt on their northern ground, between Reno, searching for new veins would be directly comparable to a underground program south of 44 vein (the southern-most vein known in the Ross property.)

Mathews on the following pages covers the pertinent geological factors associated with vein formation and location of ore shoots:

<u>PAGE</u>	<u>SUBJECT</u>	<u>REMARKS</u>
21	Favourable stratigraphy.	Mainly Upper Nugget quartzites with Reno as a notable exception.
29	Gold in porphyry.	Very low values.
35	Metamorphism	Spotted schist at Reno.
36	Structure (folds)	<u>Western</u> <u>Central</u> <u>Eastern</u> Anticline Syncline Anticline
38 - 46	Faults	Spacing, displacement strike changes, dip slip
53 - 55	Veins	
60 - 63	Distribution of ore.	Summary
70	Geological concepts (past)	6 Points

Limited geophysical work on the Reno area is mentioned by Mathews (page 70). No details are known however, this survey is credited with discovery of the Bluestone vein. Geophysics may be helpful south of 44 vein only for near surface veins in the Laib carbonates (i.e. Ore Hill type) but would not pick up veins in the deeply underlying quartzites.

ESTIMATED COSTS

The cost of dewatering the workings to 7 level, equipping the shaft and rehabilitating the workings was estimated by Thompson (Page 17) at \$149,000 in 1970. A major consideration is the 50,000,000 gallons of water, most of which is above 7 level. Cost in 1980 would be at least twice (50%), say \$200,000 or greater. Again an accurate figure could be estimated on the recent experience of Gold Belt.

Operating costs, initially, would largely depend on shipping to Trail. A quote on smelting charges could be obtained from Cominco. This hinges on the number of penalties assessed. According to J.A.C. Ross, there have been few penalties for Sheep Creek ore in the past. Gold Belt will, if enough ore is developed, build their own mill some time in the future and may be a source of custom milling.

SUMMARY

Mine records show the average grade as 0.41 oz. Au/Ton. Remaining (1950) ore reserves are down to slightly less than 0.3 oz. Au/Ton. Very likely an even lower grade (not included in 1950 ore) could be produced from the underground workings above the watertable, although how much lower is difficult to assess. Some underground sampling would be needed. Mathews points out that most veins narrow considerably in the upper levels without an increase in grade and this is why they were not mined.

In summary, there are approximately 40,000 tons of 1950 ore, both probably and marginal, grading about 0.275 oz. Au/Ton. (Thompson 1970 estimates nearly 60,000 tons at 0.285 oz. Au./Ton; the true figure is between these two, say: 50,000 ton @ 0.280 oz. Au/Ton, or at

\$300 gold = \$84 rock; \$400 gold = \$112 rock.) Historically, stopes are 3 feet wide, rarely do the veins reach 3 feet, although the Queen vein was much wider than most. Much of this 50,000 ton is undeveloped and near the bottom (9 level) of the Mine.

Exploration potential for additional tonnage at a higher grade is excellent. However, a costly program of underground development would be necessary to prove this potential using long cross-cuts to the south and deeper levels, below 12 level, to sample the existing veins. A small 50-150 TPD operation with workers living in Salmo comparable to the Gold Belt situation. One disadvantage the Ross holdings have is the water inflow whereas the Gold Belt drain by Adit.

As Thompson (1970) points out, a mining cost factor below 2/3 ounce value (or now, even higher) would indicate a viable operation.

Respectfully submitted,

J. Shearer

JS:

KEY

UD - underdeveloped
 UDM - underdeveloped
 marginal (1950)
 UDP - underdeveloped
 probable
 UB - unbroken
 Jan. 1950

TABLE II

SHEEP CREEK

J.A.C. ROSS CLAIMS

(Source of info - Jan. 1, 1950 ore reserves)

<u>Vein</u>	<u>Location</u>	<u>Tonnage</u>	<u>Grade</u>	<u>Gold(oz.)</u>	<u>Remarks</u>
57	below 5 + 76	2790	@ 0.347	UB 368 oz.	April 1/50
	8	5740	@ 0.334	UB 1917 oz.	
Total					
64	between 7 + 99	4190	@ 0.309	UB 1295 oz.	May 1/50 - considerable work
	Total				
68	between 3 + 7	1000	@ 0.206	? 206 oz.	April 1/50
	4	700	@ 0.334	UB 234 oz.	
	5	960	@ 0.334	UB 321 oz.	
	5	1350	@ 0.266	UB 359 oz.	
	6	1817	@ 0.295		
	9	1187	@ 0.358	UDP 425 oz.	
	5	1900	@ 0.200	? 380 oz.	
Total					
75	between 3 + 54	1500	@ 0.300	UB 450 oz.	
	6	167	@ 0.309	UB 52 oz.	
Total					
76	between 2 + 62	670	@ 0.303	UDP 203 oz.	
	6	1250	@ 0.207	UDM 259 oz.	
Total					
81	between 2 + 94	5645	@ 0.245	UB 1383 oz.	Some work in May/50. Feb./50 Some mined. 1950? 1950? Some mined.
	5	1635	@ 0.250	UB 409 oz.	
	4	523	@ 0.287	UB 150 oz.	
	5	750	@ 0.465	UB 349 oz.	
	9	2328	@ 0.305	UDP 710 oz.	
	7	731	@ 0.200	UDP 146 oz.	
	7	1094	@ 0.230	UDM 252 oz.	
	9	1094	@ 0.230	UDM 252 oz.	
	10	5410	@ 0.367	UDP 1986 oz.	
	Total				

continued....

TABLE II - continued

<u>Vein</u>	<u>Location</u>	<u>Tonnage</u>	<u>Grade</u>	<u>Gold (oz.)</u>	<u>Remarks</u>
83	above 2	1163	@ 0.213	UDM 248 oz.	
	between 2 to 54	1400	@ 0.331	UB 463 oz.	
		200	@ 0.210		
		226	@ 0.400	? 90 oz.	
		600	@ 0.286	? 172 oz.	
		906	@ 0.314		
		950	@ 0.438	UDP 416 oz.	
Total					
85	between 2 + 95	500	@ 0.338	UDP 169 oz.	
	7	4070	@ 0.286	UB 1164 oz.	April 1/50 Recalculated Mined?
	9	1571	@ 0.228	UDP 358 oz.	
Total					
92	between 2 + 9	981	@ 0.261	UB 256 oz.	
	3 level			Unbroken 1957	
	4	945	@ 0.197	UDM 185 oz.	
	5	1250	@ 0.371	UDP 464 oz.	
	7	1250	@ 0.371	UDP 464 oz.	
	8	1000	@ 0.167	UDM 167 oz.	
	9 level	4488	@ 0.252	UB 1131	Recalculated (Mined)
Total					
Queen	between 8 + 10	3143	@ 0.180	UD(P) 566 oz.	
		1000	@ 0.200	UD(P) 200 oz.	

GRAND TOTAL TONNAGE: 68,967 (close to 60,732 of Thompson).

GRAND TOTAL OZ. GOLD: 19,755

GRAND TOTAL GRADE: .286 oz/ton

TOTAL ESTIMATE OF WORKED

ON IN 1950 (from section dates) 26,530 tons. (This compares to figure given by Thompson of 15,846 @ 0.328 oz. which includes 5,596 broken

Further subdivides as of 1950

Unbroken + (?)	43,619	@ 0.291
Unbroken (probably partially mined during 1950)	26,530	@ 0.304
Undeveloped (probable)	18802	@ 0.302
Undeveloped (marginal)	6,6545	@ 0.208
Unbroken (left) (?)	17,089	@ 0.272

MAPS & DRAWINGS OF
SHEEP CREEK QUEEN MINE

<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>
10	2	District claim map showing workings north half and south half	✓	1" = 500'
	1	District claim map (Queen, Kootenay Belle, Gold Belt, Reno, etc.)	✓	1" = 500'
	1	District - section summarizing all production from district 1901-1950		1" = 300'
	3	District plan of all workings Ore Hill to Reno - contour & geology		1" = 300'
	2	District plan regional geology		1" = 300'
11	1	District geology map (Queen, Kootenay Belle, Gold Belt, Reno, etc.)		1" = 500' <i>Good Informative</i>
12	3	Old claim maps		1" = 500'
	1	U/G workings of 75, 76, 81, 83, 92, Queen, Yellowstone, Midnight & Alexandra veins	1939	1" = 500' <i>not checked</i>
	1	Queen-Yellowstone group	1907	1" = 300'
	1	Vancouver & Alexandra	Aug. 1938	1" = 100'
13	11	Ore reserves - 57, 68, 75, 81, 76, 83, 85, 92, Queen	June 1, 1947	1" = 635' <i>looked at</i>
	11	ditto	Jan. 1, 1948	1" = 635'
	10	"	June 1, 1949	1" = 635'
	12	" (plus 64)	Jan. 1950	1" = 635'
14	3	Back fill - Longitudinal sections veins 81, 83, 92	Apr. 1, 1948	1" = 100' <i>checked</i>
15	2	Geological plan of Queen Mine		1" = 40' <i>no immediate use Jan 16/80</i>

not in this roll

<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>
16	1	Queen mine geological	Apr. 1934 (H.H. Yuill)	1" = 30'
	2	Assay plan (original & print)		<i>looked at</i>
	1	Geology - 7 level		1" = 100' <i>Some good</i>
	1	Geology - 75 vein - north wall		1" = 100' <i>but out dated info</i>
	2	Geology (?) 2 maps - unidentified		1" = 100'
17	1	Tracing - claim map & geology	July 1947	1" = 500' <i>not looked at</i>
	2	Prints - Geology of Queen Anne, Queen & Vancouver		1" = 500' <i>in detail</i>
18	1	81 Vein south wall geology		1" = 200' <i>checked</i>
	1	792 East to Alexandra - Geology		1" = 100' <i>checked</i>
19	1	Claim map - recent survey of Queen & Burlington surface lots (L. Ross)	Aug. 1970	1" = 300' <i>not checked</i>
20	1	Surface property	Nov. 2, 1937	1" = 100'
21	1	Proposed power line to Bonanza Fr.	Aug. 1939	1" = 100' <i>not looked at</i>
	1	Mill tailings line	Aug. 1947	1" = 100'
	1	Mill flow sheet		
22		MINE HARD PLANS		
	2	Mine composite with DDH's	1940-50	1" = 100' <i>outline plans</i>
	2	Veins 92-75 (duplicate)		1" = 40'
	1	" 68-57	1940-50	
	1	" Queen		1" = 40'
	1	" 92-81 (old)	1937-40	1" = 40'
	1	" 76-75 (old)	1938-39	1" = 40'
	1	" Alexandra	1942	1" = 40'

<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>
23		UNDERGROUND PLANS		
	1	2 level	May 1949	1" = 100'
	1	2 - 5 - 7 levels composite		1" = 100'
	1	5 & 7 levels	1938	1" = 100'
	2	5 level plans	May 1949	1" = 100'
	2	7 level plans	May 1949	1" = 100'
	2	9 level plans	July 1949	1" = 100'
24	2	Underground composite level plan (linen)	Jan. 1951	1" = 100'
	1	Underground composite level plan (old)		1" = 100'
25		UNDERGROUND SECTIONS OF VARIOUS VEINS		
	1	57 vein	1948-50	1" = 40'
	1	64 vein	1950	1" = 40'
	1	68 vein	1948-50	1" = 40'
	4	75 vein (2 old)	1943	1" = 40'
	1	76 vein	1942	1" = 40'
	2	81 vein (1 old)	1948	1" = 40'
	7	81 vein stope (2 old)	1944-50	1" = 40'
	2	85 vein stope	1949-50	1" = 40'
	6	92 vein stope (2 old)	1947-48	
	5	83 vein stope (3 old)	1946-50	1" = 40'
	2	Misc. sections		1" = 100'
26		LONGITUDINAL SECTIONS OF VEINS		
	1	Queen vein		1" = 100'
	2	92 vein	Oct. 1947	1" = 100'

outline plans only Jan 16/50

appear to be outlines only

Sections show some assays

Good assay information on one section but not other parts

ROLL NO.	NO. OF MAPS	DESCRIPTION	DATE	SCALE
26	(cont'd)			
	1	85 vein		1" = 100*
	3	83 vein		1" = 100'
	2	81 vein		1" = 100'
	1	76 vein		1" = 100'
	1	75 vein		1" = 100'
	1	68 vein		1" = 100'
	1	64 vein		1" = 100'
	1	67 vein		1" = 100'
27	58	Assay plans of mine workings	Various	1" = 40'
28		Alexandra plans and assays	1914-1940	Various
29	1	Hard plan of Hideaway, Vancouver & Midnight workings	1939	1" = 40'
	2	Yellowstone mine plan, section & assays	1899	1" = 50'
	2	Hideaway & Vancouver sections	1938	1" = 100'
30	7	Queen mine plans & sections by Arthur Lakes	1922-3	1" = 100'
31	6	Gold Belt property - claims & assay plans	1947	Various
32	10	Gold Belt property - claim, assay & mine plans		Various
33	6	Reno property - claims & geology maps		
34	1	Reno property - section of regional geology	Nov. 1943	Horiz. 1" = 200' Vert. 1" = 300'
		Reno claim map with U/G workings & geology		1" = 300'