

CROJIN MINE PRODUCTION

YEAR	ORE SHIPPED OR TREATED	PRODUCT SHIPPED	GOLD	SILVER	LEAD	ZINC	CADMIUM
	tons		oz.	oz.	lb.	lb.	lb.
1972	700	Lead conc., 76 tons Zinc conc., 82 tons	10	8,865	99,069	105,034	1,228
1971	216	Lead conc., 91 tons Zinc conc., 125 tons	14	11,731	103,431	159,441	1,385
1970	1,746	Lead conc., 87 tons Zinc conc., 104 tons	27	11,800	111,351	117,382	1,432
1969	300	Lead conc., 24 tons Zinc conc., 28 tons	2	2,485	30,570	34,346	341
1968							
1967	750	Lead conc., 56 tons Zinc conc., 84 tons	6	4,675	74,064	104,770	1,091
1966	1,000	Lead conc., 91 tons Zinc conc., 137 tons	7	10,045	110,926	177,243	2,293
1965	775	Lead conc., 109 tons Zinc conc., 152 tons	5	12,214	139,933	196,140	2,572
1964	500	Lead conc., 45 tons Zinc conc., 79 tons	8	5,473	60,957	91,696	1,049
1963	362	Lead conc., 27 tons Zinc conc., 36 tons	7	3,498	30,946	41,463	562
1962		Not Operational					
1961	1,212	Lead conc., 80 tons Zinc conc., 93 tons	14	11,572	116,673	106,542	1,377
1960	1,015	Lead conc., 79 tons Zinc conc., 66 tons	16	9,054	91,720	76,002	948
1959	1,000	Lead conc., 82 tons Zinc conc., 66 tons	11	9,716	108,055	81,374	969
1958	123	Crude ore, 123 tons Lead conc., 9 tons	6	6,169	70,481	68,143	---
1957	5,917	Lead conc., 445 tons Zinc conc., 742 tons	63	66,625	693,941	848,354	10,782 *

* Copper: 10,840 lb.

SPRING MINE PRODUCTION

YEAR	ORE SHIPPED OR TREATED tons	PRODUCT SHIPPED	GOLD oz.	SILVER oz.	LEAD lb.	ZINC lb.	CADMIUM lb.
1956	4,200	Lead conc., 450 tons Zinc conc., 470 tons	40	46,167	647,765	607,251	7,622
1955							
1954							
1953							
1952							
1951	61	Crude ore from old dump	3	2,009	28,195	35,632	—
1950							
1949							
1948							
1947							
1929		Ore mined: 30 tons		673	13,013	14,550	
1917		Ore mined: 79 tons		4,257	57,462		
<u>TOTALS</u> (1972)	<u>1917-1972</u> 19,841	<u>1956-1972</u> Pb - 1751 Zn - 2264 plus { 1929 } { 1917 }	<u>1951-72</u> 239	<u>1917-72</u> 227,048	<u>1917-72</u> 2,600,572	<u>1929-72</u> 2,865,368	<u>1956-72</u> 34,151
<u>1973</u>	4,739		100	23,818	269,394	285,054	3,752
<u>TOTALS</u> (to Dec. '73)	24,580		339	250,866	2,869,921	3,150,422	37,903
						plus Cu - 20,977 lb.	

October, 1974
Tom Schroeter

'EARLY' HISTORY OF DEVELOPMENT OF THE CRONIN MINE 1909 - 1950

- 1909 - "Dibble" gp. - acquired under bond by Babine - Bonanza
- consid. devel. work - 9 men summer and 6 winter.
- 1914 - Devel.
- 1915 - Devel.
- 1916 - Devel. - machinery shipped in.
- 1917 - Detailed Descrip.
- 1918 - Short work time.
- 1919 - Consid. work done.
- 1920 - Babine - Bonanza Mining and Milling Co.
- Steday devel.
Tunnel in about 1000 ft. - encountered ore 6 to 12 ft.
Map - N66 - Tunnel No. 1 was first driven as a drift-tunnel
developing a 4-ft. qtz. vein. Later the contact ore-body was
partially developed by tunnels A and B. X-cuts were then run
from tunnel No. 1 to explore contact body, and finally tunnel
C, which is on the same level as No. 1 was driven.
- 1921 - Steady devel. again carried out. - gang of 10 men all summer.
Upper workings consist of a No. of shafts and tunnels down to
150 to 200 feet. Lower X-cut tunnel, No. 2 made 225 ft. below No. 1.
- 6 to 8" clean PbS.
- 1923 - Under supervision of James Cronin - a crew of 10 to 12 men.
- 1924 - No work but examined by 2 engineers for possible purchasers.
- 1928 - Repair of sleigh rd from Telkwa, property last operated in 1923

'EARLY' HISTORY OF DEVELOPMENT OF THE CRONIN MINE 1909 - 1950

1929 - Babine Bonanza Metals, Ltd. incorporated on May 15, 1929 under Dominion Charter, for purpose of acquiring, among other things, the control of the Babine Bonanza Mining and Milling

- Hand mining.
- New strikes on vein No. 2. Tunnel C advanced 72 ft. in continuous ore, connecting with tunnel No. 1. The vein-width in this area approaches 7 ft. and width of ore is ~5 ft.
Assay: Au - 0.08 oz.; Ag - 32 oz.; Pb - 22%; Zn - 18%.
- Tunnel B advanced 60 ft. on No. 2 vein, of which first 30 ft. showed continuous ore between 4-1/2 and 5 ft. in width.
- Vein appeared to be interrupted by a rhyolitic intrusion where the ore pinched out, and for the remaining distance driven the tunnel swings to the north.
- Shipments of hand-sorted ore to Trail.
- Assistance by B.C.D.M. in road building to Telkwa.

1930 - Small-scale operations by Babine Bonanza Metals, Ltd.

In No. 2 tunnel (No. 2 vein) a raise was started at a point about 100 ft. south of the main tunnel. The distance raised was 40 ft. Good ore was continuous and a width of 38 inches shows in the back of the raise.

Tunnel B was cont'd about 160 ft. and showed ore all the way about 1/2 way up the face. Width of 20 inches.

Junction of Mos. 1 and 2 veins appear to take place near the face of tunnel No. 1.

Diagram P. A 142.

1948 - Cronin Babine Mines Ltd. formed.

- 2 diamond drills - 1 surface - 1 underground.

1949 - Detailed report. - p. A 94.

1950 - Road construction.

October 21, 1974

Tom Schroeter

DEVELOPMENT AND PRODUCTION AT CRONIN MINE 1951 - 1974

1948 - 1952 - Operated by Cronin Babine Mines Ltd.

1952 - 1953 - Leased to and operated by New Cronin Babine Mines Ltd.

Price - \$250,000 out of 10% net smelter returns.

1956 - 1959 - Paul Kindrat operated under lease as a high-grade operation from Babine Bonanza for 20% net smelter.

1960 - 1968 - Kindrat operated from New Cronin in consideration for development work and a percentage of smelter returns.

1969 - 1972 - Kindrat operated under option to purchase mill and property dated 18 August 1969 from New Cronin Babine Mines Ltd. Terms were \$90,000 with 15% guaranteed minimum from smelter returns. New Cronin has 5% override on all future net smelter returns.

1972 - present - Bought by Hallmark Resources.

- Development and production.

PAST PRODUCTION AND DEVELOPMENT

- about 4500 ft. development work.

<u>LEVELS</u>	<u>FEET</u>
# 6	200
# 5	1600
# 3	2000
# 2	300
# 1	300

DRILLING - Underground

928'	-	1964	
1007'(4)	-	1963	
1355 (11)	-	1948	(at 5000' level)
Surface			
1290 (5)	-	1948	

* For production figures - see accompanying list.

October, 1974
Tom Schubert

DISCUSSION ON GEOLOGICAL REPORT ON THE CRONIN MINE

by F. L. Croteau - dated 20 September 1974

INTRODUCTION

I believe that the report written by F. L. Croteau on behalf of Hallmark Resources is a good report and I agree with all of his conclusions and recommendations.

GEOLOGY

Key Phrases: "During intrusion intense shearing and fracturing has taken place in all rock formations".

"The main northeasterly trending fracture has a tendency to follow the rhyolite-sericite schist contact and passes entirely into the sericite schist to the southwest".

Rhyolite: "assumes a bleached and slightly oxidized appearance in the vicinity of strong mineralization".

"There is another rhyolite stock lying about 1500 feet north-east of the main body. This stock is also mineralized".

Sericite Schist: "The sericite schist is undoubtedly a derivative of the intrusive metamorphism. It cannot be classed as favourable a host rock as the rhyolite".

STRUCTURAL GEOLOGY

Key Phrases: "The entire structural concept and control that exists for the orebody.....must be related to the effects created by the intrusion of the igneous stocks into volcanic and sedimentary beds".

"The predominant fault direction is north-easterly".

"Only close detail work will establish this premise" (i.e. significance of faulting).

"The fault pattern developed in the ore zone will in all likelihood tend to be erratic based on the competence and incompetence of the rock being traversed".

Discussion on Geological Report on the Cronin mine by F. L. Croteau dated 20 September 1974.

MINERALIZATION

Key Phrases: "Oxidation products are present on and near the surface".

"Yellow staining that may be attributed to cadmium or arsenic is commonly present".

"Leaching of mineral components in the surface veins is not uncommon and it is necessary to trench the rock surface to obtain a proper appreciation of the mineral potential".

"There are indications from limited sample analysis that the sphalerite and freibergite content increases with depth in relationship to the galena. This can be considered as a favourable feature for depth continuity of the ore occurrences".

"There are also indications that two and possibly three different ages of mineralization can be recognized". (requires further detailed study).

ECONOMIC CONSIDERATIONS

The table showing samples with assays (pg. 11) is meaningless without exact positions shown on a map and a description of the true nature of the sample taken.

Key Phrases: "High-grade ore continues to be a common occurrence in the mine workings".

VEIN SYSTEM

Key Phrases: "There is no particular doubt as to the basic reason for the fractures but it is imperative to establish the primary and the secondary fractures as entities, establish their trend direction, secure knowledge of their length and ultimately establish map control through which proper survey control will allow extrapolation of the system into the lower levels of the mining operation".

page 3

Discussion on Geological Report on the Cronin Mine by F. L. Croteau dated 20 September 1974.

CONCLUSIONS

I agree with every point of Croteau's conclusions with the exception of Pt. 4. I would tend to say that management of the operation has been immature and poor. The operation may have been more successful if managed by competent, experienced personnel.

RECOMMENDATIONS

I agree with all recommendations cited by Croteau. All recommendations should be followed, not just a few of them and forget about the remainder.

SUMMARY

Prior to any further development work at the Cronin Mine, an intensive exploration diamond drilling program should be undertaken to assess its true mineral potential. This program would entail both surface and underground drilling. The holes should be long enough to test both lateral and vertical continuity within the mine.

Respectfully submitted,

Tom Schroeter

Tom Schroeter,
District Geologist,
Department of Mines and
Petroleum Resources,
Smithers, B.C.

Dr. J.T. Fyles,

Associate Deputy Minister.

October 29

74

PF.93L/15W & M-12

Re: CRONIN MINE (93L/15W)

I enclose a report by Mr. Tom Schroeter on an examination and sampling of the "Upper" (surface) showings at the Cronin Mine near Smithers; comments by Schroeter on assay results from his samples taken from the Upper showings, Cronin Mine, September 1974, and on a geological report on the Cronin Mine by F.L. Croteau, P.Eng., dated September 20th, 1974; and other summary data.

CONCLUSION

The property has the makings of a small silver mine which if only the vein material were mined would require a large number of working places to provide ore for a small concentrator. In the light of Hutter's report of October 22nd to J.W. Peck, I would recommend that the investigation of the open-pit mine possibilities be pursued first. However, before any physical work is done it is recommended that the Homes Lake (L.1859), Eureka (L.1861), Buckley Pioneer (L.1864) and Bonanza (L.1860) claims be geologically mapped, and that further detailed geological mapping and sampling of veins exposed on surface and in underground workings be done in order to correlate surface exposure of veins with those explored underground.

SUMMARY OF PROPERTY INFORMATION

Recent bulldozer stripping in an area of about 300 feet wide and 2,000 feet long exposes silver-lead-zinc mineralization in quartz veins and fracture fillings in rhyolite and sericite schist its altered and foliated equivalent.

The Cronin Mine was worked in 1917 and 1929 and fairly steadily between 1951 and 1972 (inclusive). Ore mined was 24,580 tons having a calculated average recovered grade of gold, 0.014 oz. per ton; silver 10.21 oz. per ton; lead, 5.84 percent; zinc 6.41 percent; and cadmium 1.54 lbs. per ton.

This material was mined from a number of veins extending through a vertical range of several hundred feet.

The "Upper" showings at elevation of 5,200 feet because of some high silver assays across several of the exposed veins seem to have enhanced the potential of the mine. Two exploration possibilities should be

Dr. J.T. Fyles,
Associate Deputy Minister.

October 29th, 1974.

considered, that is (1) the potential for developing ore mineable by open-pit and (2) the exploration of a number of individual veins and the development of adequate tonnages of mineable grade to support a small concentrator.

For the purpose of a preliminary evaluation the Croteau report of September 20th, 1974, is completely useless as an engineering document, inasmuch as it presents no useful data of any sort. An appendix to it, pages 22-33 contains a description of the vein system by E. Livgard but is unintelligible unless it is accompanied by detailed surface and underground maps of the veins. As a consequence Schroeter's report and sketch map of the surface provide the only reliable data available at this time for a preliminary appraisal of the property.

To assess the potential of the currently known veins in terms of tonnage and grade requires detailed mapping of the geology, the veins, and the vein structures both on the surface and in adjacent underground workings. This information is not available but should be done before a programme of underground exploration and underground diamond drilling is undertaken.

In order to assess the possibilities for developing open-pit ore, Schroeter took nine samples of rhyolite wallrock from the vein zone. Some were fractured and mineralized with quartz and some were not. The numerical average of the nine assay results was:- silver 1.1 oz. per ton; lead, 0.24 percent; and zinc 0.23 percent. Inasmuch as an open-pit would include a number of veins of higher grade, it is clear that three dimensional sampling in a selected area would be required to determine the tonnage and grade of material available for an open pit mine operation. This could best be done by a programme of percussion and diamond drilling in a 300 by 400 foot area in the vicinity of the Wardell vein. Such an area to a depth of 100 feet possibly could develop 1 million tons of ore.

STUART S. HOLLAND,
Chief Geologist, Geological Division,
Mineral Resources Branch.

SSH/jr

Encls: Reports

EXAMINATION AND SAMPLING PROGRAM OF THE "UPPER" SHOWINGS

GROWIN MINE - SMITHERS, B.C.

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2. Location and Access-Detailed

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1. "UPPER" Showings - Geology and Sampling

TABLE

1. Description of Samples

3 October 1974

Tom Schroeter,
District Geologist,
Department of Mines and
Petroleum Resources,
Smithers, B.C.

INTRODUCTION

On September 18th and 19th I examined and systematically sampled an area located on a plateau above the present mine workings at the Cronin Mine in the Babine Range near Smithers. This area I will refer to as the "UPPER" showings. The area was trenched and stripped during the summer of 1972 and 1973 by Hallmark Resources who bought control of the Cronin Mine in 1972. Hallmark, under their consulting geologist Egil Livgard, sampled parts of the area and received interesting and significant silver and lead values from mineralized quartz veins. Much of the trenching hit bedrock, however, rubble obscures some of it. Therefore, I was very careful to only sample bedrock exposures and not rubble. Most samples taken were chips across a measured interval. The direction of sampling was designed to cross quartz veins and other structures at or near right angles. However, in some instances this could not be done for practical reasons. A total of 25 samples were taken for assay. Lead, zinc, silver, gold, copper and cadmium are the elements which will be assayed for.

ACCESS

The "Upper" showings are reached by a good rocky road which continues past the present mine workings at the No.1 level up the ridge and along the Hyland Basin. The road runs through the middle of the area examined. An 1800 foot long base line marked at 50 foot intervals, and used by Hallmark, served as my baseline. Other than that, no surveying was done and thus the position of various data is only approximate. Sampling intervals, however, were measured.

The Upper showings lie at 5200 feet in elevation. As such, snow comes early and leaves late. I have returned to the area on September 27th and October 2nd, only to find it covered under 5 inches of snow.

GEOLOGY

The mineralization is found in a complex zone of intrusive rhyolite,

sericitic schist and intensely folded black argillite. The main body of light greyish-green coloured rhyolite is roughly 3000 feet by 2000 feet in surface expression (Hallmark data). The major mineralization has been uncovered at or near its northwestern border. Most recently mineralization has been uncovered over continuous lengths along its western border. The western border of the rhyolite body has been altered to a sericite schist with strong southeasterly trending foliation with steep dips. In the vicinity of the Upper showings, the rhyolite is intrusive into argillite and in places may contain pendants of argillite. The argillite is strongly foliated and locally intensely folded. A strong easterly trending quartz vein system is exposed over a length of 2000 feet and a width of 500 feet. The dip of the veins is either vertical or approximately 50° to the north. One such quartz vein was traced over a 250 foot length with an average width of 2 feet.

Northerly trending diorite lamprophyre dykes intrude all other rocks. The widest dyke observed was 6 feet.

MINERALIZATION

The mineralization consists of argentiferous galena and sphalerite with relatively minor pyrite and chalcopyrite. Boulangerite, freibergite and arsenopyrite have been noted elsewhere in the mine area but have not been identified as yet on the Upper showings. The minerals are found in quartz veins, or as massive veins, breccia zones or fracture filling in the rhyolite with little quartz. Massive veins exist up to 2 feet in width. The major veins strike southwest-northwest and dip 45 to 65 degrees to the northwest. The significance of structural control (i.e. faulting) with relation to ore control is not known at present. One major quartz vein with an average width of 2 feet containing massive high grade mineralization has been traced on the surface over a length of 250 feet.

Three main showings have been known for a number of years along this system. They are: the Wardell, the Homestake and the Eureka. Of these, the Wardell appears to have the best potential. Recent channel samples

est?

taken from the northwest portion of the present surface exposures gave the following results (release to Vancouver Stock Exchange by Hallmark on 20 September 1974):

NUMBER	LOCATION	% LEAD	% ZINC	oz./ton SILVER	oz./ton GOLD	% COPPER	% CADMIUM
66	15' of Wardell vein	5.00	0.66	10.2	0.08	0.03	0.013
67	128' of fracture west of #66	3.79	1.16	7.35	0.03	0.03	0.018
67A	12' of Wardell vein 60' NE of #66	52.2	8.95	110.00	0.10	0.11	0.135
68	5' of ore 35' NE of #67A	18.9	12.5	121.90	0.06	0.41	0.170
69	Leached fracture mineralization 66' wide 460' NE of #68	6.84	3.01	7.51	0.01	0.44	0.051

These samples were presumably taken in the immediate area of the Wardell showing. Assays from samples taken by myself in the same area should be examined and compared.

Leaching and oxidation on the surface appears to be significant. The rhyolite is orange-pink to cream-green in colour. The fresh surface of the rhyolite as seen underground is light to medium grey. The quartz veins and the areas of rhyolite breccia exhibit an apple green colour. This apple green colour is probably a secondary product of galena (?). One 2 foot wide quartz vein with massive sulphide was dug down to a 10 foot depth with the aid of a backhoe. The effect of this leaching with depth was observed.

Overall, for the mine, the silver values are associated with the lead and usually run about 2 oz. silver per percentage lead. Cadmium is associated with the zinc and runs about 0.15% per percentage zinc.

Egil Livgard, Hallmark's consulting geologist, has noted that "there appears to be some evidence of zoning between surface (5200') and the lowest level of the mine (4650'), with an increase in the zinc to lead ratio." There is considerably more galena than sphalerite found at surface. The percentage ratio of freibergite, the silver mineral, appears

to increase with depth, ranking with sphalerite in the zonal pattern.

STRUCTURE

The structural pattern over the Upper showings and the entire mine area is not complex with the exception of the immediate contact zone between the rhyolite and argillite. Here there is often intense folding and crenulation within the strongly foliated argillite. The argillite may even approach a phyllite in appearance. A sericite schist unit which sometimes separates the rhyolite and argillite is also strongly foliated. In general, the foliation trends 115° with near vertical dips or slightly to the north. Faulting within the area may be important. The probable trend of the faulting is south-southeasterly.

Fracturing has been intense in the rhyolite. The limits of the fracture mineralization has not been reached in the stripping. The width of known veins and mineralized fractures north of the Wardell showing is about 300 feet. The total length is unknown but is in excess of 2000 feet.

EXPLORATION POTENTIAL

The overall potential of the Cronin Mine has been enhanced by the uncovering of the Upper showings. Any attempt, of course, to develop the Upper showings in any manner would have to be carried out on an integral basis with the rest of the mine. As such, an extensive feasibility study would be required. However, before any such study is initiated, much more exploration development should be carried out, both on surface and underground, to assess the potential of the mine. Diamond drilling would best test the area and should be the first step.

The possibility of operating the mine as an open pit operation has been considered by the Hallmark people. Accessory considerations with regard to this matter would be the rugged terrain and the extreme weather.

SUMMARY

The Cronin Mine has been producing intermittently since 1917. All of

the work has been of the small, high-grade nature. There has been virtually no exploration development except for a few diamond drill holes back in the late 1940's. The uncovering of the Upper showings has added a new dimension to the picture. It is time that an extensive exploration program including extensive diamond drilling be undertaken to assess the mineral potential of the Cronin Mine, both underground and open pit.



DEPARTMENT OF MINES AND PETROLEUM RESOURCES
VICTORIA

SAMPLE RECEIVED FROM..... T. SCHROETER

ADDRESS..... Box 877, Smithers, B. C.

LABORATORY NO.	SUBMITTER'S MARK	LABORATORY REPORT
14302M	C-25	<p>Sphalerite</p> <p>Zn = 48% - Spec</p> <p>Relative error = 15%</p> <p><i>Other as the sample for which assays of</i> $5.5 \pm 1\%$ Fe and $1.0 \pm 0.25\%$ Cd. were obtained.</p>

THIS DOCUMENT, OR ANY PART THEREOF, MAY NOT BE REPRODUCED
FOR PROMOTIONAL OR ADVERTISING PURPOSES.

DATE..... October 29, 1974.....

W. M. Johnson
CHIEF ANALYST AND ASSAYER.