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MINERAL RESOURCES BRANCH
DEPARTMENT OF MINES AND PETROLEUM RESOURCES

Box 877,
Smithers, B.C.
18 October 1974

Dr. S. S. Holland,
Chief, Geological Division,
Mineral Resources Branch,
Department of Mines and
Petroleum Resources,
Parliament Buildings,
Victoria, B.C. V8V 4S2

43L127(15W)-07
PROPERTY FILE

Dear Sir,

Please find enclosed two short reports entitled as follows:

- 1) Discussion on assay results from samples taken from the UPPER Showings - Cronin Mine, September 1974.
- 2) Discussion on geological report on the Cronin Mine by F. L. Croteau - dated 20 September 1974.

Yours very truly,

Tom Schroeter

Tom Schroeter,
District Geologist

TS/hh

Encls.

cc: Dr. N. C. Carter, Senior Geologist

DEPT. OF MINES AND PETROLEUM RESOURCES		
Rec'd OCT 21 1974		
<i>AS</i>		

DISCUSSION ON ASSAY RESULTS FROM SAMPLES TAKEN FROM
THE U P P E R SHOWINGS - CRONIN MINE, SEPTEMBER 1974

In general, the assays received were what I expected. Below I will briefly describe my opinions concerning the correlation between sample description and assay:

- C- 1 Significant assays from black mud overlying rhyolite.
 - would aid in further soil sampling programs in the
 area.

- C- 2 Weak assays in relatively barren looking rhyolite.
 Possible leaching.

- C- 3 Surprised. Wrong specimen or sample number?

- C- 4 Weak assays in relatively barren looking rhyolite.
 Possible leaching. Black mud overlying rhyolite-
 significant.

- C- 5 Weak assays. No observable mineralization.

- C- 6 Barren rhyolite.

- C- 7 'High-grade' primary sulphide material plus leached
 sulphide material (in rhyolite) taken along strike of
 Wardell vein. Compare with sample C-24 taken across
 the vein.

- C- 8 Barren rhyolite with minor quartz veining.

- C- 9 Weak assays in relatively barren looking rhyolite
 with the exception of small mineralized quartz veins.

DISCUSSION ON ASSAY RESULTS FROM SAMPLES TAKEN FROM THE UPPER SHOWINGS -
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- C-12 Good assays from well mineralized (PbS-ZnS) quartz vein in rhyolite.
- C-13 Good assays from rhyolite breccia zone consisting of numerous small mineralized (PbS-ZnS) quartz veins.
- C-14 Barren rhyolite breccia zone with small quartz veins. Possible leaching.
- C-15 Weak assays from chips taken over high-grade quartz vein (PbS-znS) plus leached rhyolite. Leaching is significant.
- C-16 Good assays from high-grade massive sulphide vein sampled 6 feet below surface (trench-dug-out). Silver content is lower than average. Gold content is interesting.
- C-17 Barren rhyolite. No mineralization observed. Possible leaching.
- C-18 Good lead assay from small quartz vein with galena. Very poor silver correlation. Therefore, silver-poor galena. Good correlation between lead and silver assays from other samples.
- C-19 Barren (post mineral) diorite lamprophyry dyke.
- C-20 Barren (post mineral) diorite lamprophyry dyke.

DISCUSSION ON ASSAY RESULTS FROM SAMPLES TAKEN FROM THE UPPER SHOWINGS -
CRONIN MINE, SEPTEMBER 1974.

- C-21 Good assays from high-grade quartz vein in sericite schist. Gold assay interesting. This quartz vein was the only relatively flat-lying or slightly dipping vein observed. The vein was near the contact of sericite schist and foliated black argillite.
- C-22 Weak assays from mineralized quartz vein in sericite schist.
- C-23 Good assays from grab sample of mineralization outside a caved adit in the vicinity of the Eureka Showings. Illustrates strike continuity of mineralization.
- C-24 Very high (above average) assays from high-grade massive sulphide sample (4 feet in width) containing galena, sphalerite and freibergite. Silver assay is particularly high. If lateral and vertical continuity existed for this Wardell vein, it would be very significant.
- C-25 Not much sphalerite in UPPER Showings. Sample assayed was the best one I could find.

AVERAGE ASSAY VALUES

From the limited assays obtained from the UPPER Showings sampling program and those quoted previously in reports about the Cronin Mine, the following assays may by 'typical' for the mine:

	<u>UNDERGROUND</u>	<u>SURFACE</u>
Au (oz./ton)	0.01 to 0.10	0.03 to 0.11
Ag (oz./ton)	12 to 22	7 to 30

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	<u>UNDERGROUND</u>	<u>SURFACE</u>
Pb (%)	8 to 20	7 to 15
Zn (%)	9 to 15	0.5 to 2
Cd (%)	0.25	< 0.01

No underground copper assays are included. All copper assays for surface samples are insignificant with the exception of C-24 (0.88% Cu).

Significantly, zinc and consequently cadmium assays are low on surface compared to underground.

The expected average width which the above assay figures might represent would be in the order of 3 to 4 feet.

SUGGESTIONS FOR FURTHER SAMPLING

The location and trends of the major sulphide-bearing quartz veins is pretty well established. Perhaps more detailed sampling of these veins could be done to test their lateral continuity. However, I don't think this would be necessary.

The next question is: "What about the areas in between the quartz veins, including rhyolite breccia zones where galena and sphalerite fill fractures?" I think that leaching and oxidation on surface has been profound and thus the sampling of such may not be of true value. In order to test the possibility of a large tonnage, low-grade type situation, a diamond drilling program is required.

CONCLUSIONS

Sampling of the UPPER Showings has demonstrated the existence of several "high-grade" sulphide-bearing quartz veins. It has also shown that much of the host rhyolite rock has been leached and oxidized. There appears to be little doubt as to the need for a well planned intensive diamond drill program to test the vertical continuity of known veins and also

page 5

DISCUSSION ON ASSAY RESULTS FROM SAMPLES TAKEN FROM THE UPPER SHOWINGS -
CRONIN MINE, SEPTEMBER 1974.

the possibility of outlining an area of high tonnage, low-grade
material.

Respectfully submitted,

A handwritten signature in cursive script that reads "Tom Schroeter". The signature is written in dark ink and is positioned below the typed name.

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

18 October 1974

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 in-competence 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.

SAMPLE DESCRIPTIONS - CRONIN MINE - 2 OCTOBER 1974

1. "New Talus Showing" - at end of across road diagonal across talus slope on way up to mine levels.
- abundant random quartz veining in folded, foliated black argillite.
 - main quartz vein 1 ft. thick with massive PbS, ZnS and tetrahedrite mineralization.
 - also sig. 'intergrowth' of tetrahedrite with quartz crystals.
 - Main mineralization is steel-grey tetrahedrite Next is typical resinous brown ZnS. Minor coarse grained 'cubed' PbS. Trace pyrite.
 - Boulangerite 'needles' - significant.
- Sa. No. C-26 - 'high-grade'.
-

2. 6 Level - end of subdrift
- climb down 150 ft. winze from No. 5 level.
 - Very massive, large (> 10 ft.) vein (plus quartz) of PbS and ZnS (eg. Balmat ZnS)
 - Minor cpy and sig. tetrahedrite ZnS>PbS>tetra>cpy>py
 - Trace pyrite
 - Good 'intergrowth' of quartz crystals with PbS and tetrahedrite
- Sa. No. C-27 - 'high-grade'
-

3. 3 Level - 521 Stope.
- Large (50 sq. ft.) open stope - leading down to No. level.
 - high-grade PbS (+ quartz) vein and ZnS and minor tetrahedrite and pyrite.
 - significant quartz crystal intergrowth with PbS and tetrahedrite
 - in places, tetrahedrite is significant.
 - at rhyolite - argillite contact
 - rhyolite has sericite plus veinlets and disseminations of PbS - also minor pyrite.
- Sa. No. C-28 - mineralization (high-grade)
- C-29 - mineralized - disseminated and fracture filling in rhyolite.

SAMPLE DESCRIPTIONS ÷ CRONIN MINE - 2 OCTOBER 1974.

4. No. 2 Level - adit about 30 ft. below No. 1 level

- high-grade PbS - ZnS vein. Minor cpy and py.

Sig. quartz intergrowth with Pbs

Sa. No. C-30 - 'high-grade'.

5. No. 1 Level - 'New' (1974) Face

- Opened up in Aug. 1974 at end of drift in development.

- High-grade PbS-ZnS-tetrahedrite vein (> 30 ft. wide).

- Abundant PbS fracture filling and disseminations in rhyolite also.

- Sig. PbS and tetrahedrite and pyrite. AnS is minor.

- Rock shows massive sulphide matrix with fragments of rhyolite in breccia.

- Abundant wuartz

- Sog. disseminations of cpy and PbS and py? in fresh medium grey rhyolite.

- Sig. fracture filling and disseminations PbS and ZnS and py in light grey rhyolite.

Sa. No. C-31 - 'High-grade' grab

C-32 - mineralization medium grey rhyolite - mainly fine grained disseminations.

C-33 - mineralization in light grey rhyolite - fracture filling and disseminated.

6. No. 3 Level - "In one entrance - out another".

- original old workings

- massive ZnS and tetrahedrite and PbS in quartz vein.

- sig. tetra (freibergite)

Sa. No. C-34 - 'High-grade' grab

7. No. 5 Level - No. 1 vein - lowest tunnel entrance.

Begin in well flt'd argillite (vertical) and then rhyolite.

Tremendous secondary orange-red zinc coating on walls.

- massive ZnS and tetra and PbS and cpy in quartz vein in rhyolite, 6" wide.

Sa. No. C-35 - 'High-grade'.

page 3

SAMPLE DESCRIPTION - CRONIN MINE - 2 OCTOBER 1974

8. No. 5 Level 'host' medium grey rhyolite

- disseminated PbS?

Sa. No. C-36 - rhyolite.

9. No. 5 Level - Bright orange-red zinc secondary coating on walls.

Sa. No. C-37 - X-ray and assay.

C-38 - "Needles" for boulangerite. (X-ray)

October 4, 1974

Tom Schroeter



DEPARTMENT OF MINES AND PETROLEUM RESOURCES
VICTORIA

DEPT. OF MINES
AND PETROLEUM RESOURCES
Rec'd OCT 24 1974

SAMPLE RECEIVED FROM T. SCHROETER

ADDRESS Box 877, Smithers, B. C.

LABORATORY No.	SUBMITTER'S MARK	LABORATORY REPORT					
		oz/T <u>Au</u>	oz/T <u>Ag</u>	% <u>Cd</u>	% <u>Cu</u>	% <u>Pb</u>	% <u>Zn</u>
14368M	C-26	0.05	1.3	0.020	0.027	7.2	1.18
14369M	C-27	0.03	39.3	0.64	0.37	24.5	36.8
14370M	C-28	0.04	83.1	0.17	0.45	28.1	10.4
14371M	C-29	Tr	1.1	0.001	0.008	0.09	0.07
14372M	C-30	0.02	22.2	0.15	0.093	21.7	9.75
14373M	C-31	0.03	32.2	0.11	0.33	7.8	7.24
14374M	C-32	Tr	Tr	<0.001	0.002	0.06	0.03
14375M	C-33	Tr	Tr	0.028	0.027	0.31	1.63
14376M	C-34	0.10	16.9	0.52	2.66	11.2	31.9
14377M	C-35	0.03	20.5	0.51	0.55	12.4	40.1
14378M	C-36	Tr	Tr	0.004	0.010	0.14	0.28
14379M	C-37	Tr	Tr	0.004	0.002	0.02	0.90
14380M	C-38	X-RAY REPORT TO FOLLOW (also on 14379M)					

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DATE October 24, 1974

N. M. Johnson

CHIEF ANALYST AND ASSAYER.