UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
So. 157 Howard Street
Spokane 4, Washington

June 8, 1959

Memorandum

To: OME Field Team, Region I

From: Howard F. Albee, Geologist, U. S. Geological Survey

Subject: Application examination report, Docket No. OME-6031 (Lead) Crystal City Mining Company, Crystal City Mine, Lincoln County, Washington

The Crystal City Mining Company, E. 808 Sprague Avenue, Spokane, Washington, applied on April 2, 1959 to the Office of Minerals Exploration for aid to explore for lead and silver on their property in Lincoln County, Washington.

The company had applied in 1955 (Docket No. DMEA-3955) for aid to explore the same property for tungsten. The 1955 application contained a geologic report and maps by R. E. Leigh. The maps were used with the present examination and found to be excellent, especially map 3 showing the geology of the adit level at elevation 1,535 feet.

In May 1958 the applicant submitted an application (Docket No. DMEA-5054) for aid to explore for silver-lead ore on the same property but there was not sufficient time to complete processing this application prior to the termination of the DMEA program.

The property was examined June 2, 1959 in company with Mr. Luke Williams, Sr., president of the company, and Mr. Luke Williams, Jr.

The showings of sulfides consist largely of pyrrhotite with minor galena and chalcopyrite in sugary-textured dolomitic limestone. At one or two places, small pods of material are almost entirely massive galena. The sulfides are contained in lenses and pods that have replaced the limestone.

The ore-bearing material pinches laterally to narrow lenses and erratically distributed pods, but seems to have a somewhat greater continuity on dip. The deposits strike from north to northeast and dip 70°-80° southeast. The material has been stoped for about 20 feet above the adit level and both drilling and mapping (map 5 Leigh report, Docket DMEA-3955) indicate mineral to the 33 level. Two closely spaced and nearly parallel holes, which were drilled from the adit level near the shaft now full of water were directed down dip of the mineralized material and apparently bottomed on a muck sheet on the level below. The core was examined and shows over 20 feet of sulfide-bearing material.

The drill hole results carry no great significance inasmuch as the maps by Roy Leigh indicated that the replacement body extended to the intermediate 33 level. The map also shows that on the 100 level the vein is narrow and contains relatively small amounts of ore minerals. The bodies of sulfides on the adit level are massive but they are composed largely of pyrrhotite and do not contain much lead. From the assay results shown on Leigh's map 5 (Docket DMEA-3955), this appears to be true for the 100 level also.

Three samples were taken from the adit level. The assay results are as follows:

Sample No.	Width (ft)	Pb (%)	Ag (oz/t)	Zn (%)	Cu (%)
370-C	grab	18.5	12.3	0.1	0.05
371-C	2	0.2	0.5	0.1	0.18
372-C	grab	4.8	11.5	0.1	0.17

Sample 370-C is from the north end of the first showing (map 3, Leigh, DMEA-3955), 371-C is from the south end of that showing, and 372-C is from the east end of the northernmost showing. None are representative of a mining width. The only sulfides in the face where 370-C was taken was a pod of galena near the floor and this was sampled selectively. Both 371-C and 372-C were taken from massive sulfides about 8 feet above the drift floor. Except at the north end of the first showing where sample 370-C was taken, the ends of the showings do not reach the floor of the drift.

The applicant reported galena from the surface in a cut shown on the southwestern part of map 2 (R. E. Leigh, Docket DMEA-3955). The map shows a 2-inch lenticular shaped occurrence of galena and sphalerite. Because this is the area where the drilling was proposed, it was looked over carefully. No lead or zinc minerals were seen and therefore no samples were taken.

The showings of ore-bearing sulfides are lenticular and in places pod-like. The sulfide bodies lens out both laterally and down dip although they are somewhat elongate on dip. The sulfides consist largely of pyrrhotite with some galena and minor chalcopyrite and pyrite. Zinc was reported by the applicant but none was seen during the examination. The results of the samples shown by R. E. Leigh on map 5 (Docket IMRA-3955) and those taken during the examination show that the ratio of galena and chalcopyrite to pyrrhotite and pyrite is low. The probability of developing a body of ore-bearing sulfides of economic size does not appear good and denial of the application is recommended.

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