

GEOLOGICAL SURVEY OF WYOMING

SUMMARY REPORT

FIELD EXAMINATION OF BLACK BUTTE LEAD DEPOSIT, CROOK COUNTY, WYOMING

Location.-The Black Butte lead deposit is located in secs. 23 and 26, T. 50 N., R. 62 W., Crook County, Wyoming, about 10 miles southeast of Sundance, and is 4.5 miles by dirt road from the main highway connecting the towns of Newcastle and Sundance. The deposit lies within the boundary of the Black Hills National Forest.

Nature of the ore.-The ore is chiefly lead carbonate, some cerussite and possibly a rarer carbonate, plus a small amount of galena. Some zinc carbonate or silicate (?) may be present.

Mode of occurrence.-The occurrence is apparently a contact metamorphic deposit formed by the intrusion of andesite porphyry into Paleozoic limestone, with the partial replacement of the limestone by the lead carbonate, galena, and probably quartz.

The occurrence of the ore is extremely erratic, pockety, and definitely unpredictable, in which respect it is similar to the Tri-State and Southeastern Missouri zinc-lead ores. Some of the limestone has been brecciated and ore has formed as a cement, or between the fragments. Most of the ore, however, has formed by replacement of the limestone.

Development.-The principal workings (see sketch map) consist of two trenches which are connected by a "cross-cut". There are other pits, trenches and shafts in the vicinity, some of which contain a small amount of ore. L. L. Fletcher is the present operator.

Possibilities for commercial development.- There is no indication that the ore continues in depth; neither is there evidence to the contrary. Lack of any vein system, or change in mineralogy in depth, makes it impossible to predict, or even make an intelligent guess concerning possible depth. Also, the thickness of the limestone was not determined, nor what unit lies beneath it.

The irregular character of the ore and the similarity to other lead-zinc deposits suggests a relatively shallow deposit. Also, the only shaft of any depth (45 feet) showed no change in the character of ore at depth, except possibly, according to Mr. Fletcher, there may have been a little more galena. This could not be substantiated because the shaft is now caved. In a vein deposit this would suggest that the surface material is lead carbonate and beneath is a sulphide zone. In this type of deposit the assumption is unfounded.

The only way more definite data could be obtained is by core drilling. The area is heavily forested so nothing can be told of the dip of the limestone. Perhaps one deep core (100 feet) in a selected spot would give the necessary information regarding extension in depth. Several shallow holes, 25 feet deep, would probably do much to locate ore, but to find additional ore further drilling would have to be done. It would probably be best to put in core holes in a few locations and to just continue mining the entire mass and then sort out the high-grade material.

Under the present economic conditions, the possibilities of the deposit are not bright. Mr. Fletcher spent \$1,000 sinking the shaft several years ago and got nothing in return. Recently, to date, he has

spent an additional \$500 and received \$300 for the ore shipped. There is perhaps another \$300 represented in the ore bins.

Even with the \$2.50 per ton gratis offered by the Metals Reserve this property can just break even. With an increased Metals Reserve bonus it may yield a profit. Estimates of ore reserves are pure guess-work--several carloads at least after hand sorting.

Returns on picked ore.-- Attached are the returns on a shipment of 25 tons of picked ore--the only ore shipped with the exception of one carload in the 1880's. How well the ore was sorted is not known. Mr. Fletcher says he did not supervise the sorting and loading, since he was undergoing an operation, but that a relatively inexperienced man did the sorting.

September 12, 1942

A. F. Hagner  
Assistant State Geologist

American Smelting and Refining Company

East Helena Plant

Sept. 8, 1942

Gold Oz/ton	Silver Oz/ton	Wet lead Percent	Copper Percent	Insoluble Percent	Iron Percent	Manganese Percent
0.002	2.0	13.9	0.02	33.2	6.5	0.3

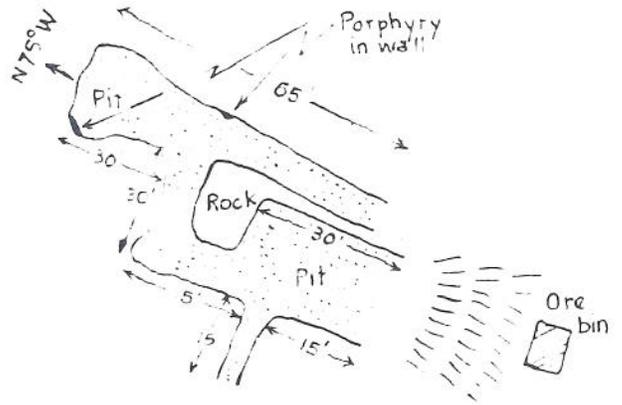
Sulfur Percent	Zinc Percent	Arsenic Percent	Antimony Percent	CaO Percent
4.0	5.7	0.05	0.05	9.5

<u>Weight</u>	<u>Values per ton</u>	<u>Deductions per ton</u>
50500	Silver less oz. @ .70 5/8 ..... 0.71	Base charge ..... 3.00
	Lead less 1.5 90% @ 6.50 - 1.50 ..... 11.16	Zinc penalty waived
	11.87	
Less moisture 0.6%	Less total deduction ..... 3.00	Total deductions... 3.00
Dry wt. 50197	Pounds..... 8.87	Per ton ..... \$222.62
	Freight per wet ton @ \$6.41 (Under 30.0).. \$161.85	
	Demurrage to N.P.R.R. Co..... 2.20	
		Total ..... \$164.05
		NET PROCEEDS..... \$58.57



A few pits and trenches  
here to the west and  
southwest.

(distances estimated)



SKETCH MAP-BLACK BUTTES LEAD DEPOSIT  
CROOK CO., WYOMING