GEOLOGY OF THE BECHTOL LEAD MINE

STEVENS COUNTY, WASHINGTON

By Charles D. Campbell

The Bechtel mine is in the NW¼ sec. 26 and the SW¼ sec. 23, T. 39 N., R. 41 E., 14 miles by road southeast of Northport, Wash. A half mile of trail climbs 600 feet northeast from Deep Lake to the lower end of the property which lies at elevations between 2,400 and 2,800 feet (pls. 2 and 14).

The mine has been worked intermittently since 1896 when William and David Bechtel located the claims. Bancroft[1] referred to it in 1910 under one of the claim names, N. J. Bryan, and a good description of it was given by Jenkins in 1924.[2] The entire output of the mine has probably been less than 300 tons of ore. According to Jenkins[3] 80 tons of galena ore had been reported shipped before 1924. Of this, information is definite only on the following, shipped by wagon to the Northport smelter:

Year	Tonnage	Percent Lead	Ounces Silver per ton
1917	6.034	73.1	---
1918	5.307	73.0	1.2

"Mineral Resources" for 1925, and "Minerals Yearbook" for 1937 and 1940 also report shipments; one of the owners says that 77 tons was mined in 1940.

1/ Bancroft, Howland, The ore deposits of northeastern Washington: U. S. Geol. Survey Bull. 550, p. 59, 1910.

2/ Jenkins, O. P., Lead deposits of Pend Oreille and Stevens Counties, Wash.: Washington Dept. Cons. and Devel., Div. of Geology, Bull. 31, pp. 98-99, 1924.

3/ Jenkins, O. P., op. cit., p. 98.

The property consists of three claims, a fractional claim, and 20 acres of patented land belonging to the estate of William Bechtol and B. J. Hofer of Northport. The workings, most of which were developed by 1924, consist of a crooked 1,090-foot tunnel, a 150-foot tunnel, a 100-feet 45° incline with small stopes and 370 feet of drifts and crosscuts, a surface stope 50 feet long, and many cuts and pits.

From the east limit of the Bechtol workings westward for 1,500 feet to Deep Lake, light-gray cherty dolomites of the upper unit of the Metaline limestone of Cambrian age are incompletely exposed (pl. 2 and 2a.) In the mine area this part of the formation contains two 50-foot beds in which pea-shaped, light-gray chert nodules form half the rock, but most of the other dolomites contain only scattered nodules and thin beds of chert. The beds strike between due north and N. 30° W., and are nearly vertical. Stratigraphically lower beds of the middle unit of the formation are exposed sparingly in the higher slopes east of the mine area, and consist of white dolomite containing streaks and blocks of dark-gray dolomite.

The rocks are considerably broken by faults, which chiefly form two sets. One set is parallel to the beddings and the other strikes N. 30° to 50° E. and dips 45° to 90° NW., though a few of its component faults dip southeast at the same angles. The few remaining faults strike between N. 30 W., and west, and dip from 50° to 90° north or northeast, though one dips southwest. These are so diverse in orientation that they probably should not be called a set.

The ore bodies were formed by replacement of shattered dolomite along any of these faults. Siderite and galena are the common primary minerals. Along several of the mineralized faults the dolomite has been silicified to a light-gray jasperoid, which in texture and color closely resembles the chert nodules. In the northeasternmost cut, 3 feet of jasperoid along a bedding-surface fault merges with the chert nodules in such a way as to suggest that the two have a common origin.

The lead ore consists of lumps of coarse galena as much as a foot in diameter, imbedded in earthy and crusted limonite. Most of the lumps are coated with 1/16- to 1/8-inch selvages of very thin banded, dark-gray anglesite which is in turn overlain by a layer of cerusite needles.

The main ore body lies along a fault which strikes N. 45° E. and dips 45° N.W. near the surface, but flattens to almost horizontal at the bottom of the incline which follows it down dip. The ore is irregularly distributed in the limonitic gouge which almost universally marks the fault; no control localizing the lead deposition within the main fault could be determined. The dimensions of the lead ore body, therefore, cannot be fixed, but they are small, judging from the past small production of the mine. The dimensions of that part of the fault zone known to be mineralized, irrespective of lead content, are 100 by 150 by 6 feet, but the mineralized block undoubtedly extends beyond this.

A more weakly mineralized fault, followed by the 150-foot tunnel, is about parallel to the main ore body and 170 feet in its footwall. Even the iron mineralization is discontinuous along this fault. Three faults that were mineralized even less belong to the set striking parallel to the bedding.

Surface trenching or bulldozing along the projection of the main ore body southwest of the incline should be the most feasible method of exploration for extensions of the ore.