Smith, R.M., & Laub, D.G. - 1953 Final file: Mt. Wheeler (Tungsten)
BIMEA-2082 (Tungsten) IdmE 248
Mt. Wheeler Mines Inc.
Item 24

Location	Linear feet (horizontal)	Cars ore (1,750 lbs.)	Tons ore	Percent WO_3 (car samples)
Laterals A & B	109	103	90	2.25
1	41	125	109	0.62
2	12	40	(to waste)	0.12*
3	27	35	33	1.08
		20	17	2.96
4	40	2	2	24.00*
5	8	0	-	-
6	5	0	-	-
Total	242	325	251	1.43

All Time Total production to Mar. 16, 1953

*Omitted from average - lateral 2 is outside the ore zone; lateral 4 assays would raise the average to an unrealistic figure.

The Pole adit is nearly parallel to the strike of the Wheeler limestone bed and is driven in the Pioche shale, which underlies the Wheeler bed. As the strike of the contact between the limestone and the shale is about S. 80° E., lateral no. 6 is about 115 feet south of the projected position of the ore zone. Contract Idm-E248 did not provide enough footage to drive laterals this distance from the adit.

GEOLOGY

The rocks in the Pole Canyon area are all of Cambrian age, and include the Prospect Mountain quartzite, which is overlain successively by the Pioche shale, the St. Lawrence limestone and the Lincoln limestone. The beds strike S. 80° E. and dip 6°-10° south.

In Pole Canyon the Pioche shale is 350 feet thick and about 45 feet above its base it contains a 22 foot limestone member which has been named the Wheeler bed. The tungsten ore bodies are in the lower half of the Wheeler bed.

The "Mt Wheeler" quartz monzonite stock crops out about 2 miles northeast of Pole Canyon. A few quartz porphyry dikes, which strike northeast and probably dip steeply northwest, crop out near the top of the range east of the mine area.

Three sets of faults cut the sedimentary rocks: (1) north-striking fractures; (2) east-striking shear zones; and, (3) bedding shears. The north-striking fractures dip steeply either east or west. As the faults are normal and the greatest movements are along those that dip east, the area is step-faulted with the east side down. The largest fault cut by the adit is near lateral No. 6 and has a dip slip of about 25 feet, but movement along north-striking fractures generally has been less than 6 inches. In the shale these fractures are tight and inconspicuous, whereas in the limestone they are prominent, open or mud-filled fissures as much as 2 feet wide because of formation of solution cavities along the fractures subsequent to the scheelite mineralization. Some of the north-striking fractures contain calcite veins and stringers. The east-striking shear zones contain quartz stringers and veins generally less than 8 inches wide, but ranging from 1 inch to 5 feet in width. These shear zones generally dip steeply north and cut all the sedimentary rocks in the mine area. Some of the stringers contain scheelite, fluorite, and galena. Three shear zones have been exposed in the

mine area, and in two of these, the Pole adit zone and the North zone (fig. 5), scheelite-bearing stringers have been observed. The bedding shears locally contain quartz and calcite stringers.

ORE DEPOSITS

The ore bodies are irregular, nearly horizontal pipes--or a series of disconnected pods resembling a string of beads--as much as 10 feet in diameter and of unknown length. The tungsten deposits are in the basal 10 feet of the Wheeler limestone bed along east-striking quartz stringers. The best ore lies between 4 feet and 10 feet above the contact with the underlying shale. The ore bodies pinch and swell along their length. At intersections of the quartz stringers with north-striking fractures the pipes are of maximum size; between fractures the ore pinches or is absent. Around most of these intersections the limestone is brecciated in a zone of minor fractures. Scheelite occurs in the quartz stringers, in the minor fractures, and is disseminated in the limestone adjacent to the minor fractures.

In laterals A and B (fig. 2) scheelite is disseminated fairly uniformly in limestone over widths as much as 7 feet and heights as much as 6 feet; it occurs sporadically throughout the entire lateral. An 8 inch layer of dolomitized limestone, parallel to the bedding near the top of the ore zone, covers an area of about 30 square feet; it contains about 15 percent WO_3 as disseminated crystals of scheelite one-eighth to one-half inch in diameter.

In laterals 1 to 6, scheelite occurs sporadically in quartz stringers and is also disseminated in limestone in bodies as much as

10 feet high and 10 feet wide. Scheelite in commercial quantities is exposed in laterals No. 1, 3, and 4 where, in addition to being in the quartz stringers, it occurs in minor fractures near intersections and replaces limestone adjacent to the minor fractures. Unlike the occurrence in laterals A and B, the scheelite in laterals 1 to 6 replaces limestone only a few inches from the minor fractures. Where these fractures are closely spaced, as they are in the brecciated zones at intersections, the mineralized limestone constitutes ore.

Not all intersections of quartz stringers with north-striking fractures yield scheelite ore. The best showings are within an east-striking zone about 100 feet wide composed of three or more mineralized quartz stringers (fig. 2).

Sampling

The sampling procedure followed by the operator has been to take car samples as the work progressed. In order to check the car samples, 41 samples were cut by the examining engineer. The car samples are of a higher average than the channel samples, due partly to the spotty distribution of scheelite which is principally along the near fractures, partly to the extreme difficulty of cutting a channel sample in the limestone which is both dense and tough, and partly to the small size of the ore pods; much of each pod is removed by the exploratory work, leaving lower grade ore in the walls. Comparative average assays are summarized as follows: