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Item 3

FREIBERG DISTRICT

LOCATION

The Freiberg (Worthington) mining district is located on the north end of the Worthington Mountains in northwestern Lincoln County. The historic silver-base metal part of the district is in central T1N, R57E, at the foot of Freiberg Peak. The more recent tungsten prospects are located northwest of there, on the northwest tip of the range.

HISTORY

According to Thompson and West, 1881, ore was discovered here in the fall of 1865 and the Worthington district was organized at that time. No work was done in the area until 1869, when additional discoveries were made and the district was renamed Freiberg. A mineral belt three miles long by one mile wide and containing eight parallel veins with values up to $800 per ton is described in the 1881 account. The earliest recorded production from the district, however, is 1919 when a little oxidized iron ore containing silver and lead was shipped from the Roadside property. More ore was shipped in 1921, other shipments were made up through 1948, but the total recorded production through 1968 is given as only $18,000 (Tschanz and Pampeyan, 1970). The tungsten deposits on the northwest side of the district were discovered much later than the silver-lead deposits, but there is no record of production from them.

There was no activity in the district at the time of our examination (fall, 1983), but a heap-leach silver operation was active at the Freiberg mine between 1980-1982. Most of the properties in and around the old district are within the New Freiberg Project, controlled by the Freiberg Mining Corp. Ore for the leach operation was apparently mined from a pit at the old Freiberg mine site.

GEOLOGIC SETTING

Rocks in the Freiberg district consist of complexly faulted lower Paleozoic carbonate rocks which have been intruded by two granite stocks. Many granitic and lamprophyre dikes cut the area, and the most of the limestone around the stocks have been converted to marble. Except for the tungsten prospects in the contact aureole of the western stock, and of the mines and prospects of the district are in limestones of the Ordovician Pogonip Group near the contact of the eastern stock.

ORE DEPOSITS

Two types of ore deposits have been explored within the Freiberg district; small, irregular replacement lenses or veins in altered limestone which contain silver-bearing sulfides, and skarn deposits which contain scheelite. The silver-bearing, base-metal sulfide veins are marked on surface by jasperoid-gossan zones which cut silicified and silicated (to weak skarn) limestone.

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Galena, sphalerite, and pyrite occur in calcite-cemented limestone breccia along fault zones. The oxidized portions of the breccias contain cerrussite, malachite, and iron manganese oxides. These deposits were mined mainly for their silver-lead content, although some gold was also recovered.

In the skarn deposits on the northwest tip of the district, sparse scheelite occurs in an epidote-calcite-diopside-quartz skarn. The skarn zone is very weakly developed, and there has been no tungsten production from the deposit.

GEOCHEMICAL RELATIONSHIPS

Sample taken of ores from the Freiberg district were high in lead, zinc, copper and cadmuim with low silver values. Some, but not all showed high arsenic and antimony associated with the lead-zinc-copper and tin was present in five out of the six samples taken in the east part of the district. The one sample taken on the skarn deposit reported molybdenum as well as tungsten to be present. Low arsenic and antimony accompany the tungsten and molybdenum.

SELECTED REFERENCES

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