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Item 11

TEMPIUTE DISTRICT

LOCATION

The Tempiute district is located on Tempiute Mountain, a north-south trending spur range on the west end of the Timpaute Range in northwestern Lincoln County. The townsite of old Tempiute and the 1868-era silver discoveries are located in the southern part of the district, mainly in T4S, R56E. The tungsten properties are located to the north on the north end of the range near the boundary of T3 & 4S, R56 & 57E.

HISTORY

Paher, 1970, dates the discovery of silver in the district as 1865, but Thompson and West, 1881, credit the discovery to December 1868, and state that the district was organized in January of 1869. Rich silver chloride ores were mined and milled at a mill at Crescent in the nearby Pahranagat district, but mining declined when this mill was dismantled and moved to another location. The district was active during the 1870's then quiet up until 1916 when the scheelite claims were staked. No tungsten mining was done at this time, however, and the district was again inactive until 1924 to 1941 when some silver ores were mined. The tungsten deposits again became of interest in 1936 and were relocated. Tungsten production began in 1940 by Lincoln Mines, Inc. The Atolia Mining Co. acquired the tungsten properties in 1945 and they operated until 1948. Wah Chang Mining Corportion acquired the property in 1951, built a larger mill, and operated until 1957 when tungsten mining ceased due to depressed prices and demand. In 1968, Union Carbide Corp. became active in the Tempiute district, leased the tungsten properties, developed new ore reserves, built a new mill, changed the name of the mine to the Emerson Mine and began production in 1977. Operations again ceased in 1982 due to falling tungsten prices and problems with grade control within the mine. The new mine-mill plant is now (1984) on standby status.

The recorded production of the Tempiute district through 1958 is given as $14,922,000 (Tschanz and Pampeyan, 1970). Of this total, $198,600 is from gold, silver, copper, lead, and zinc, the balance is from tungsten. Total production of tungsten, through 1982 is estimated at 500,000 units (Stager, in prep.), but no dollar amount is available for this production.

At the time of our examination (fall, 1983), the operation at the Emerson tungsten mine was on standby, but some development work was being done. There was also activity on the silver properties on the south end of the range and one, the Johnson claim area, appeared to be nearing a production stage.

GEOLOGIC SETTING

Tempiute Mountain is underlain by steeply east-dipping Paleozoic sedimentary rocks which have been intruded on the north by two small granitic stocks. The Paleozoic sequence is more than 7000 feet thick and includes rocks of

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Ordovician, Sulurian, Devonian, and Carboniferous ages. The main part of the range apprears to be a homocline that strikes north, with older beds on the west side, younger ones on the east. At the north end of the range the beds steepen and overturn along strike, a dip reversal possibly brought about by overthrusting prior to granite intrusion which cuts through the thrust plate (Stager, in prep.). The two stocks have been dated at about 92 my (Kruger and Schilling, 1971) and are described as quartz monzonite.

ORE DEPOSITS

Two types of mineral deposits occur in the Tempiute district; silver-bearing brecciated quartz veins which follow bedded plane faults in limestone and dolomite, and tungsten-bearing skarn zones which have formed in the contact zones of the intrusives in the north part of the district.

The massive silver-bearing quartz veins commonly have wide brecciated zones on their walls and occupy bedding plane fault zones in the steeply-dipping carbonate rocks. The carbonate rocks show silicification which decreases in intensity away from the mineralilzed structures. Ore minerals include pyrite, chalcopyrite, galena, tetrahedrite, sphalerite, hemimorphite, cerussite, malachite, and azurite. The breccia zones are cemented with sulfide-bearing quartz, cavitites are lines with euhedral quartz, and outcrops are stained with iron, manganese, and copper oxide minerals. These vein occurrences are found mainly on the southwestern tip of the range. Many old cabin ruins in the area indicate that these were the deposits exploited in the 1870's.

Tungsten deposits occur in the northern part of the district associated with skarn zones formed in the carbonate rocks near their contact with the two intrusive bodies. The following description of these deposits is taken largely from Stager (in prep.). On the west side of the south stock, part of the limestone is altered to thick bodies of tactite in bands parallel to bedding. Around the north stock, only a few narrow lenses of tactite occur, principally on the northeast side. Tactite is present along the west half of the south stock for more than 6,000 feet. Directly at the contact is a continuous band of tactite 15 to 110 feet thick. Adjoining this band is a nearly continuous belt of platy hornfels 25 to 110 feet and in part split into two beds separated by tactite. Large masses of tactite lie west of the hornfels and extend as far as 450 feet from the granite contact. Scheelite is the only mineral found in commercial amounts in the contact deposits. Most of the scheelite occurs in garnet tactite, but some rich deposits have been found in small masses of calcite-fluorite-sphalerite rock formed in marble remnants adjoining tactite bodies. Other minerals that occur in the tactite are quartz, actinolite, pyrite, pyrrhotite, hematite, epidote, and molybdenite. The scheelite occurs in greater concentration on the limestone side of the tactite bands.

At the Lincoln or Emerson mine, ore has been mined from two separate ore shoots; the Moody zone which is east of the platy hornfels zone, and the Grubstake zone which is west of the platy hornfels horizon. The Moody zone has been the most continuous and uniform, the Grubstake, while having high-grade shoots, is not as continuous and has shorter strike length. The Moody zone commonly contains high concentrations of pyrrotite and sphalerite gangue minerals, and some ore zones contain considerable bismuth.

GEOCHEMICAL RELATIONSHIPS

The two types of ore occurrences at Tempiute each reported very different geochemistry. Ore samples from the silver vein deposits were uniformly high in silver, copper, lead, zinc, and antimony. Arsenic and cadium values, while not high, wee uniformly consistent. Molybdenum was reported in only two samples, tin in one, and the values were low. Manganese values were only moderately high. The ore samples from the tungsten skarns, on the other hand, were uniformly high in tungsten and manganese. Copper and lead values were low, but some samples were high in zinc. Beryllium values were high in the skarns, tin was reported in six samples and molybdenum was present in six. It was interesting to note that barium was present in higher amounts in several of the skarn samples than it was in any of the silver vein samples.

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