

MOUNT TOBIN DISTRICT

LOCATION

The Mount Tobin mining district is located in the southern part of the Tobin Range, in eastern Pershing County. It includes properties near the southern end of the range, in Jersey Valley on the east side of the range, and continues nearly to Mount Tobin on the north.

HISTORY

The Mount Tobin district is chiefly a mercury district, but it also contains fluorspar and zeolite deposits and was actively prospected for precious metals in the early 1980's. Cinnabar was discovered here before 1918, but the ore bodies of the largest mine (about 1500 flasks of production), the Mount Tobin Mine, were not worked on a large scale until 1940-41 (Bailey and others, 1984). The Mount Tobin Mine was worked again in the late 1960's, producing at least 14 flasks of mercury.

The Eureka Mine in Miller Basin in the southern part of the district was active between 1955 and 1959, and between 1962 and 1971 (Bailey and others, 1984). It has been inactive since 1971. A few flasks have probably been produced by mines adjacent to the Eureka Mine (Johnson, 1977, p. 73).

Cinnabar at the Hot prospect or Polkinghorne prospect in the southwestern part of the district was discovered in 1956; it was explored in the 1960's and 1970's but apparently has had no production (Lawrence, 1963; Bailey and others, 1984).

The earliest known mining at the Needle Peak fluorspar deposit was in 1950; one carload of ore was shipped in 1951. Development consists of a few short adit and a trench; some exploratory drilling was done in the 1970's (Papke, 1979, p. 62).

Zeolites were first reported from Cenozoic sedimentary rocks on the west side of Jersey Valley by Deffeyes (1958, p. 11-12), after discovery of erionite in samples collected in 1956. The area was claimed by Union Carbide Corp. in 1958, and by Shell Development in 1963. Mobile Oil Corp. mined some zeolite-rich rock in the early 1970's, apparently for its own use in petroleum processing (Papke, 1972 and oral communication, 1984).

GEOLOGIC SETTING

The oldest rocks in the Mount Tobin district consist of Paleozoic chert and clastic rocks of the Havallah sequence. These are unconformably overlain by a thick group of Triassic carbonate, clastic, and volcanic rocks. Tertiary volcanic rocks unconformably overlie these older units. The Tertiary volcanic rocks consist of silicic ignimbrites which are overlain by a thick andesite unit consisting of lenticular flows, agglomerates, and minor associated tuffs. Tertiary sedimentary rocks crop out on the east flank of the range (Johnson, 1977).

ORE DEPOSITS

The mercury deposits are chiefly in sedimentary rocks of Late Paleozoic or Triassic age, but lesser amounts of cinnabar are widespread in andesitic to rhyolitic rocks of mid-Tertiary age. The mineralization is mostly in or near steep fault zones which trend nearly north, and the cinnabar is generally accompanied by a little quartz and pyrite. Barite and stibnite occur with cinnabar at one property (Bailey and others, 1984). Burke (1974) suggests that the mineralization appears to have occurred in Oligocene time, during the development of an east-west volcano-tectonic trough and extrusion of andesitic volcanic rocks. Hydrothermal alteration in the vicinity of the deposits and prospects consists of bleaching and iron-staining, argillization, and silicification (Bailey and others, 1984).

With the exception of the Hot prospect (S25, T27N, R38E) at the southwest end of the range, the mercury mines and prospects are located in two separate areas. One area is at the head of Golconda Canyon about 6 km south of Mount Tobin. The second area of deposits is located in Miller Basin about 5 km south of Golconda Canyon. The major mine in the northern group is the Mount Tobin Mine; in the southern area the Eureka Mine is the major property.

The ore deposits at the Mount Tobin Mine are in a tuffaceous conglomerate of the Triassic China Mountain Formation. They are concentrated in argillized rocks, along northerly-trending faults of small displacement. The ore bodies that have been found are shallow and perhaps formed beneath a capping of altered volcanic rock (Johnson, 1977, p. 74; Bailey and others, 1984). Cinnabar occurs as cavity fillings in conglomerate, as a replacement of cement and pebbles, as encrustations, and as veinlets. Sparse pyrite is present on one dump.

The Blue Bird or Last Chance Prospect is located about 1.5 km northwest of the Mount Tobin Mine. Cinnabar (with a little pyrite) occurs as painty films and veinlets in sandstone, shale, and volcanic tuff of the Triassic Koipato Group. The rocks are locally silicified, bleached, and argillized along joints (Bailey and others, 1984).

A gold, mercury, and arsenic geochemical anomaly is present in rocks exposed south of the Mount Tobin Mine (Queenstake Resources Ltd. Exploration Report, 15 March 84). This anomaly includes the Right Fork prospect in SE/4, NE/4 S12, T28N, R39E where cinnabar is reported from a panned dump sample (Bailey and others, 1984). Old workings at the property explore a N65°E, 55°NW quartz vein in chert pebble conglomerate. The vein contains white chalcedonic to crystalline quartz and sparse limonite. The vein quartz is commonly pseudomorphic after lamellar calcite.

Anomalous lead, zinc, and silver in soil samples was found in a mineralized zone that is concordant with enclosing chert, shale, and limestone of the late Paleozoic Havallah sequence. The zone is 30-150 m wide and over 1000 mm long. This property is located in W/2 NE/4 S5, T28N, R40E about 3 km east of the Mount Tobin Mine. The mode of occurrence and type of alteration and mineralization suggest that a volcanogenic massive sulfide deposit may underlie the geochemical anomaly (Queenstake Resources Ltd. Exploration Report, 15 March 84).

The Eureka Mine is located in S32, T28N, R39E in Miller Basin. The workings, consisting of a small open cut and several adits and other underground workings, are chiefly in grey limestone of the Triassic Natchez Pass Formation. Cinnabar occurs in a northeasterly-trending broken

zone in limestone near a contact with argillized Tertiary andesite. Part of the mineralized zone is filled with dense, brown limonitic gossan containing cinnabar along fractures (Bailey and others, 1984). The Camera prospect in S28,T28N,R39E is also in limestone of Natchez Pass Formation. Sparse cinnabar apparently occurs along a N80°E, 65°NW fault zone (Bailey and others, 1984).

The Hot prospect is located in S25,T27N,R38E. Crystalline cinnabar occurs in veins of white calcite or barite which cut limestone of the Triassic Natchez Pass Formation. The cinnabar is accompanied by stibnite and antimony oxides. Mineralization occurs along a N20°E, 85°W fault (Lawrence, 1963, p. 204; Bailey and others, 1984).

The Needle Peak Mine is located in S19,T28N,R40E. Fluorspar occurs in an irregular, northwest-trending breccia zoner along a fault which separates Triassic limestone and Tertiary rhyolite tuff (Papke, 1979, p. 62-63); Johnson, 1977, p. 74). The breccia zone is reported to be about 3 m wide. Both the tuff and limestone are silicified; fluorite also occurs in vugs in the silicified limestone (jasperoid). Halloysite and rare barite are reported from the altered wallrock (Papke, 1979, p. 63).

Zeolite deposits are present in Tertiary sedimentary rocks exposed on the west side of Jersey Valley. Papke (1972, p. 21-23) reports that clinoptilolite, erionite, mordenite, and phillipsite occur in the rocks. The deposits are the result of authigenic zeolite mineral formation during diagenesis of volcanic ash beds which were deposited in saline, alkaline lakes (Papke, 1972, p. 12).

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