

From NBMG OFR 83-9
See also 83-10 for
geochemical results.

MOUNTAIN CITY DISTRICT

(71)
Item 17

3260 0017

The Mountain City district is located in extreme north-central Elko County, and includes the large area that lies generally north of the Independence Range and south of the Idaho border. The area is totally within the Humboldt National Forest and is bounded on the west by the Duck Valley Indian Reservation.

Included within the Mountain City district are the old districts of Cope, Murray, Sooner, Marseilles, and Van Duzer. Silver-gold lode deposits were discovered in 1869 in the Cope, Murray, and Sooner districts; those at Cope led to the founding of the town of Mountain City. Over one million dollars in silver was produced prior to 1881 from the mines around Mountain City. Gold placers were worked in the Van Duzer part of the district following their discovery in 1893 (Emmons, 1910). In 1931, the Rio Tinto copper deposit was discovered southwest of Mountain City. This deposit, which produced \$21 million before it closed in 1947, has far exceeded all others in total production within the Mountain City district. Small amounts of manganese, tungsten, and uranium have been produced from separate properties in various parts of the district during the years following World War II. During the late 1960's, a molybdenum occurrence was being explored in an area east of Mountain City (on what are shown as the Autunite claims, Mountain City 15' map). During the 1970's, attempts were made to reactivate the copper mine at Mountain City as well as to leach old dumps at the site for copper. During 1982, the only activity listed in the district was a small silver mining operation at the Silver King mine west

of Mountain City (in the old Marseilles part of the district) and a silver leach operation at the old Protection mine south of Mountain City (one of the old Cope district silver mines).

Rocks in the Mountain City district consist of a sequence of lower Paleozoic, western facies rocks, all now located within the upper plate of the Roberts Mountains thrust sheet. Several plutons of Cretaceous quartz monzonite intrude the Paleozoic formations and both quartz monzonite and the older rocks have been overlain by several sequences of Tertiary volcanic rocks (Coats and Stephens, 1968).

The orebody at the Rio Tinto mine occurred as lenses within a definite sequence of black shales in the lower portion of the oldest Paleozoic formation present in the district, the Ordovician Valmy Formation. The ore occurrence is interpreted as being genetically related to late Paleozoic mafic vulcanism (Coats and Stephens, 1968). The primary orebodies were lenticular in shape and were composed mainly of quartz, pyrite, and chalcopyrite. The principal orebody was completely leached to the 200 level, and supergene copper sulfide ore was found beneath an essentially barren gossan. Ore shipped from the property in the early production years ran as high as 37% copper; the overall grade of ore produced throughout the life of the mine was 9.7% copper (Coats and Stephens, 1968).

Gold and silver deposits of the Mountain City mining district, the original discoveries, are quartz veins which occur mainly in the Cretaceous quartz monzonite. Near the southern margin of the pluton, veins also cut

Paleozoic rocks. Tertiary rhyolitic rocks are hydrothermally altered near veins near the town of Mountain City, suggesting that the veins may be younger than 30 m.y. (the age of the rhyolites) (Coats and Stephens, 1968). The veins occupy faults which cut the older rocks; they strike in various directions but the most common direction is northwest. Ore shoots were as much as five feet wide. Primary ore in the veins consisted of pyrite, galena, sphalerite, tetrahedrite, arsenopyrite, chalcopyrite, argentite, and free gold. Most of the vein production, however, came from oxidized portions of the veins.

Tungsten has been reported from one mine in the Mountain City district, the Golden Ensign about one mile southeast of the town. The deposit produced mainly silver and gold, lead, and copper during the pre-1900 era of activity in the district. Scheelite and molybdenite are also reported present, but there is no recorded production of these metals (Stager, in preparation).

Uranium was discovered east of Mountain City in 1954, and small amounts of uranium ore were produced between 1959 and 1963. The deposits are in Tertiary conglomerates and tuffs in areas where these rocks overlie an eroded surface of the quartz monzonite. The deposits are localized along permeable layers, generally within the basal 30 feet of the host rock. The ore minerals, autunite, metatyuyamunite, uranophane, or torbernite, occur as fillings in cracks and pore spaces or they partly replace lignitized or opalized wood (Smith, 1976).

Gold placer operations have been carried on over the years since 1883 in the old Van Duzer portion of the district, and manganese was produced in 1943

from the Wicker mine on the west side of Merritt Mountain, east of Mountain City. Little is known of the manganese occurrence, but it is described as a vein type deposit in black shales (USBM field report, NBMG files). The molybdenum occurrence which caused a flurry of exploration activity in the 1960's is east of Mountain City in an area of more recent uranium exploration that extends across quartz monzonite outcrops on the north edge of the Huber Hills. This area is described as a stockworks zone in quartz monzonite near a contact with granite (Sparks Tribune, August 7, 1969). The activity described in the 1969 news article was apparently not successful, as there is no activity in the area at this time.

Selected References:

- Basanez, D. (1979) Copper in the Cope, A History of Rio Tinto, Quarterly, Northeastern Nevada Historical Society, No. 79-4.
- Coats, R. R. (1964) Geology of the Jarbidge quadrangle, Nevada-Idaho: USGS Bull. 1141-M, p. M1-M24.
- Coats, R. R. (1968) Preliminary geologic map of southwestern part of the Mountain City quadrangle, Elko County, Nevada: USGS open-file rpt.
- Coats, R. R. (1968) Upper Paleozoic formations of the Mountain City area, Elko County, Nevada: USGS Bull. 1274-A, p. A22-A27.
- Coats, R. R. and McKee, E. H. (1972) Ages of plutons and types of mineralization, Northwestern Elko County, Nevada: USGS PP 800-C, P. C165-C168.

Selected References (continued)

- Coats, R. R. and Stephens, E. C. (1968) Mountain City Copper Mint, Elko County, Nevada: in Ore Deposits of the United States, 1933-1967 (Graton-Sales Volume), v.2, (New York) Am. Inst. of Mining and Metallurgical Petroleum Engineers, p. 1074-1101.
- Crawford, A. L. and Forbes, D. C. (Aug. 1932) Microscopic characteristics of the Rio Tinto, Nevada, copper deposit: Mines Magazine, v. 22, no. 8, p. 7-9.
- Emmons, W. H. (1910) A reconnaissance of some mining camps in Elko, Lander and Eureka Counties, Nevada: USGS Bull 408, p. 80.
- Garside, L. J. (1973) Radioactive mineral occurrences in Nevada: NBMG Bull. 81, p. 43.
- Granger, A. E., et al, (1957) Geology and mineral resources of Elko County, Nevada: NBMG Bull 54, p. 112.
- Hunt, S. F. (1936) Mining geology outlined.
- Johnson, M.G. (1973) Placer gold deposits of Nevada: USGS Bull. 1356, p. 15.
- Lawrence, E. F. (1963) Antimony deposits of Nevada: NBMG Bull. 61.
- Matson, E. J. (1947) Rio Grande copper deposit, Elko County, Nevada: USBM RI 4120, 6p.
- Nevada Bureau of Mines and Geology Mining district files, Mountain City mining district, File #71, contains unpub. reports on Mtn. City district,
- Nolan, T. B. (1933?) Mountain City mining district, Elko County: USGS open-file rpt, 30p.
- Roberts, R. J., et al (1971), Gold-bearing deposits in north-central Nevada and southwestern Idaho: Econ. Geology, v. 66, p. 14-33.

Selected References (continued)

Schilling, J. H., (1962) An inventory of Molybdenum occurrences in Nevada:

NBMG Report 2.

Smith, R. M. (1976) Mineral resources of Elko County, Nevada: USGS open-file

rpt 1976-56, p. 116.

Stager, H. (in press) Tungsten deposits of Nevada: NBMG Bull. in preparation.