

from NBMG 83-9  
See also 83-10 for  
geochemical results.

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Item 9

IVANHOE DISTRICT

2480 0008

The Ivanhoe district is located in the Battle Creek Range, in T 37-38N, R47-48E about 70 km. northeast of Battle Mountain and 20 km. southeast of Midas. The workings in the district, which are entirely for mercury, consist of numerous open pits, trenches, adits, stopes, and shallow shafts.

Mercury was discovered in the Ivanhoe district in 1915; production was intermittent through 1928, and then continuous until 1947. A few flasks of mercury were produced in the late 1950's and early 1960's (Smith, 1976). Bailey and Phoenix (1944, p. 55-63) describe the geology of the individual properties and their production. Production is also summarized in Smith (1976, Table 29). In 1982, shallow rotary drilling for gold-silver mineralization was conducted in and below blanket-like zones of silicification (opalite) in the southern part of the district. A few drill holes were apparently drilled in this same area in 1979 as part of a uranium exploration effort.

The ore deposits in the Ivanhoe district consist of cinnabar disseminated in amorphous and cryptocrystalline silica (opalite) or coating fractures. The ore bodies are either flat (blanket) or localized along steep faults. Opalite is extensive in the area, but ore bodies reportedly occur only in opalite produced by the silicification of the more rhyolitic of the Tertiary volcanic and tuffaceous rocks which are present in the area. Only the blanket deposits have proven commercial although some of the steep deposits have been extensively explored.

The gangue minerals include chalcedony, alunite, montmorillonite, and rarely sulfur, barite, and quartz. The grade of the Silver Cloud deposit, for example, averaged about 51b/ton (Smith, 1976).

The Ivanhoe deposits exhibit many of the features of opalite-type mercury deposits as described by Bailey and Phoenix (1944, p. 17-21). The alteration assemblage at this type of deposit is characterized by extensive silification along

faults and of favorable porous strata. Argillic alteration is locally present below or peripheral to areas of silicification. The rocks exposed in the Ivanhoe district consist of Tertiary rhyolitic ash-flow tuff, hypabyssal intrusive rocks, air-fall tuff and tuffaceous lacustrine rocks. The Ivanhoe area may be a caldera, but no detailed mapping of the area has been done.

Several of the deposits exhibit features which suggest that the deposits were formed at quite shallow depths. Siliceous spring sinter was recognized at a locality near the Old Timer Mine; probable subaqueous opalite and cinabar deposition and hydrothermal brecciation was noted at the Rimrock Mine. Also, the blanket deposit at the Silver Cloud Mine is believed to be the result of hot spring activity in a lacustrine environment. This is suggested by the even, gently sloping bedding of the volcanics and the presence of yellow coatings of mercury chloride which occur with cinnabar and metacinnabar.

The age of the host rocks in the Ivanhoe district is not known; they may be equivalent to 14 m.y. rhyolitic rocks which are dated in northern Lander County about 40 km. to the southwest (McKee and Silberman, 1970). Miocene vertebrate remains are reported from a unit which is probably equivalent to the syngenetically mineralized beds at the Silver Cloud Mine. However, some rhyolitic intrusive rocks may be post-mineral, as at the Rimrock Mine. Thus the age is believed to be that of at least some of the volcanic rocks in the district, probably middle Miocene.

#### Selected References:

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