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

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SAFFORD DISTRICT

The main mines in the Safford district occupy Palisade and Safford Canyons located about 13 miles southwest of Carlin at the north end of the Cortez Mountains. A few minor prospects included in the district are scattered throughout the low mountains north and south of Barth, a railroad siding in Palisade Canyon about 4 miles southwest of the old townsite of Palisade.

The major mine in the district is the Barth, or West, iron mine which lies at Barth siding on the junction between Safford and Palisade Canyons. Discovery of the outcropping ore body apparently preceeded 1869 (Roberts, et al, 1967), but the first major production occurred between 1903-1918 when almost 550,000 tons of iron ore were recovered by the American Smelting and Refining Co. (Couch and Carpenter, 1943). The mine was inactive until drilling of a magnetic anomaly indicated the presence of an extended ore body. Problems with flooding curtailed mining until 1960 when flood waters were averted by the construction of a new channel for the Humboldt River (Roberts, et al, 1967). From 1961 through 1964, almost 600,000 tons of ore with an iron content between 63-64% were shipped from the mine. Mining of the deposit continued fairly regularly until operations ceased in February 1980 when the open pit intersected the water table 300' below the surface (person. comm., M.R. Healy). At the time of our June, 1982 visit, stockpile ore was being shipped to Provo, UT and other destinations 3-4 times a week. Crushing and screening occurs on a weekly basis. The mine is operated by Nevada Barth Corp. on land owned by Southern Pacific Railroad Co.

Prior to 1910, more than $ 200,000 worth of silver ore was produced from two principal mine sites in Safford Canyon, the Onondaga and Zenoli mines (Emmons,1910). Little is known about the history of activity since that time, but recent exploration activity in Safford Canyon indicates a revived interest in the area. Several of the mines within Safford Canyon are patented.

Most of the Safford district is underlain by Jurassic andesite flows of the Frenchie Creek Rhyolite (Smith and Ketner, 1976). These rocks are host to the iron and silver mineralizaiton in Palisade and Safford Canyons. The host rock at the Barth iron mine is described as an "olivine-bearing hypersthene andesite flow" (Shawe, et al, 1962). The flows dip shallowly westward and are intruded just north of Palisade Canyon and to the east by several small "quartz monzonite, diorite and syenite" igneous bodies of post Jurassic, probable Tertiary age (Stewart and Carlson, 1976).

The iron ore from the Barth Mine consists mainly of red hematite, with minor remnant magnetite and some specularite (Emmons, 1910). The ore occurs in a massive replacement deposit of possible contact metamorphic origin. The deposit varies in form and dimension with depth but generally dips about 40° to the northeast. Networks of hematite extend into the fractured footwall rocks and veinlets of apatite cut the ore zone. The ore is generally high quality and uniform in grade but it contains "undesirably large amounts of phosphorous" (Shawe, et al, 1962). In 1954, a pyrite and pyrrhotite sulfide zone was intersected in a drill hole located southeast of the main ore body (Shawe, 1962).

The silver mineralization in Safford Canyon occurs in north or northwest-striking fissure veins or fault zones cutting altered Jurassic andesites. The veins are described as narrow and non-persistant (Roberts, et al, 1967). The sulfide ore contains tetrahedrite, sphalerite, grey copper, chalcopyrite, pyrite, galena and stibnite (?) in a gangue of quartz, calcite, barite, and manganocalcite. Iron-oxides, copper carbonates and horn silver are present in the upper portions of the vein. Although stibnite is reported from the Zenoli mine, Lawrence, 1963, was unable to locate any during his examination of the area.

The Onondaga mine was visited during our examination of Safford Canyon. One

of several workings at the mine site is a N20W trending adit which explores a N25W striking, 75SW dipping sheeted shear zone in propylitized and silicified andesites. The shear zone extends for about 100' north of the adit. The andesites exposed at the portal are altered to clays, iron-oxides and calcite. Silicified andesite breccia from the dump (sample 167) is cemented by quartz, calcite, barite and iron and manganese oxides. The altered fragments and breccia cement contain unoxidized clots of galena, pyrite and sphalerite (?). Below the portal, exposed along a new exploration road, the andesites are propylitized, fractured and cut by calcite veins. Throughout the exposed roadcut, the rocks contain abundant fine-grained pyrite and are coated by minor copper oxides. Further up the canyon, at the Safford Canyon mine, two barite veins are exposed in bleached, altered quartz latitic volcanic rocks (Papke, in preparation). The width of the veins range from 6" to 4' and their strike lengths are about 130' and 150'.Exploration work has been done in Safford Canyon during the past few years. Several drill areas are located within the canyon and there has been extensive chip sampling of altered rock exposed along new roadcuts near the mines.

Shallow shafts and prospects located within Palisade Canyon and in the low mountains north and south of Barth explore copper-bearing fractures or faults in andesites and basaltic andesites. The main minerals are malachite, azurite and pyrite, but bornite, chalcopyrite and chalcocite were also observed. The host rocks are generally fractured and silicified adjacent to the mineralized areas. The workings are of minor extent and no recent activity was noted in these areas.

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