FOR OPEN FILE REPORT

MI 85-2

COPPER OCCURRENCES AND HYDROTHERMAL ALTERATION AT SHEEP MOUNTAIN

M.A. Kaufman November 12, 1963

Copper occurrences were reported on Sheep Mountain near an extensive zone of hydrothermal alteration. Seven days were spent in the area from May 30th to June 12th to examine the copper showings and study any possible association between them and the extensive alteration. Streams draining the altered zone were geochemically tested and chip samples were taken from the altered zone where accessible. X-ray determinations were made to detect possible copper or molybdenum.

A thorough account of the geology of the area is given in U.S.G.S. Bull. 989-C and map I-342. A detailed description of the copper showings is given in an ADM&M Open File Report by Martin Jasper. The altered and mineralized areas lie in a generally N-S striking belt of volcanic rocks which include tuffs, andesites, and basalts with associated fragmental units. Basic dikes cut the volcanics in the altered zone. The area is cut by strong NE to EW striking faults.

An extensive zone consisting of irregular patches of hydrothermal alteration (approximately one mile long by one half mile wide) occurs in the volcanics of Sheep Mountain. (See U.S.G.S. map I-342) The weaker alteration consists of veinlets of calcite and clay minerals cutting the volcanics. Propylitization of the lavas to form greenstone is another alteration feature. The stronger alteration is characterized by quartz-sericite with associated fine disseminated pyrite, and veinlets and pods of gypsum. The extensive rusty staining visible from the Glenn Highway is caused by disseminated pyrite, but its pervasive appearance is greatly exagerated by slides and transported iron.

Most of the copper occurrences lie in an area approximately 2000' across strike at 5300' to 5600' elevation in unaltered volcanics a short distance above the previously mentioned zone of alteration. They consist chiefly of northeasterly striking vertically dipping minor shear zones containing native copper, chalcopyrite, bornite, and chalcocite associated with quartz, calcite, and epidote. Although the occurrences do represent an anomalous concentration of copper over a fairly widespread area, none of them are of sufficient size or strength to be of economic significance. The strongest mineralized area observed consisted of a zone several hundred feet wide containing northeasterly striking mineralized shears from a few inches to one foot in width separated by 10' to 20' widths of barren volcanics. The rest of the area is characterized by either weakly mineralized zones up to 10' in width or strongly mineralized widths of a few inches separated by hundreds of feet of barren volcanic rock.

Examination of the altered zone revealed no visible associated copper and none of the rock chip samples or the drainage samples revealed any trace of copper or molybdenum. There is no direct association of the known copper mineralization in the Sheep Mountain area with the extensive altered zone but it is probable that the copper could have been mobilized and deposited during the same time as the alteration. An unsuccessful attempt was made to reach the alteration on the north side of Sheep Mountain. In this traverse, a float sample of native copper in calcite probably derived from greenstone was picked up on Caribou Creek approximately two miles south of the mouth of Bitter Creek.

SUGGESTIONS FOR FURTHER WORK

The area of the known copper showings is extremely precepitous as is the north slope of Sheep Mountain. If possible, the north slope should be examined for copper occurrences and the known altered zone near Bitter Creek should be sampled. If the north slope contains numerous copper showings similar to the area examined on the south slope, I would consider the possibility of a larger mineralized zone at depth under the summit area of Sheep Mountain.

BIBLIOGRAPHY

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