Iron, Mercury 3100 0002

(288)

Item 2

NEVADA
PERSHING & CHURCHILL COUNTIES

BUENA VISTA AND ANTELOPE SPRINGS DISTRICTS

Summary and conclusions: The Buena Vista iron district and the Antelope Springs mercury districts form a single mineralized zone six miles wide and twenty miles long, trending north-south. The iron deposits occur in highly altered diorite in the Buena Vista Hills and adjacent pediment, while the mercury deposits are in Mesozoic sediments in the southern point of the Humboldt Mts. The rocks, alteration and mineralization are so different in the two districts as to suggest that there is a major structural break between them -- possibly a thrust fault. There is no pyrite to speak of in either district, and no metals other than the iron of the Buena Vista district and the mercury of Antelope Springs.

The part of the district that was considered as possibly amenable to exploration by induced polarization geophysical techniques -- that part within the Buffalo Mt. quadrangle -- is not at all promising. The only two metals known to be present, iron and mercury, are in minerals that are not susceptible to IP, and there is nothing at all to indicate that there is a mineralization zoning pattern that might include a zone of copper mineralization under the pediment cover.

There is a possibility that mineralization amenable to IP might exist at the extreme south end of the zone -- between Copper Kettle and White Cloud Canyons on the west flank of the Stillwater Mts. -- where pyritic mineralization with some copper values has been reported. Judging by the topographic map, however, the country is rough enough to provide enough outcrops to make IP not particularly necessary. This area was not visited in the present examination, but would be worth a look.

References:

USGS MF 220, Preliminary Map of the Buffalo Mt. Quad., 1959, scale 1 : 48,000. Good geologic coverage of the northern two thirds of the district.

Nevada Bur. Mines Bull. 53, Part A, Geology and Iron Ore Deposits of the Buena Vista Hills, 1955. Generalized map of the iron district, descriptions and maps of individual deposits.

Nevada Bur. Mines Bull. 41, Quicksilver Deposits in Nevada, 1944. Descriptions of the mercury mines.

USGS AMS 1 : 250,000 Reno sheet. Only topographic coverage of the southern end of the district.

Introduction: This examination was made to determine whether there is any likely place for application of Induced Polarization geophysical work in the Buena Vista district. IP work would be aimed at finding a large body of disseminated sulfides, most likely with copper values if any values at all. The district was of interest because of the published descriptions of intense mineralization represented by the numerous magnetite orebodies and nearby fairly productive mercury mines.

The examination occupied two days of field work and a day of poking around in Reno and elsewhere on library research and particularly looking for available aeromagnetic coverage of the district -- no aeromagnetic work was found, though undoubtedly the area has been flown by at least

half a dozen private outfits. At the time of examination the Thomas Mine was being worked by Nevada Barth Corp., and the American Ore Mine was being worked by Nevada Iron Ore Co. H. S. Thomas, president of the latter, gave me very willing permission to look over old and new pits, since I was not a government man (who he hates with a purple passion). Reputedly, the other mines of the district are owned by someone, and presumably being fairly tightly held, but I learned nothing about other ownerships.

Geology: The area of the iron mines, the Buena Vista Hills and the pediment surrounding them, is underlain by diorite and volcanic-looking rocks that are mapped as differentiates of the diorite. In the general area of the iron deposits these rocks are more or less scapolitized and in part chloritized, but outlying small exposures to the north and northeast -- toward the Humboldt Mts. -- are not particularly altered. The iron deposits are massive lenses and veins of magnetite partly altered to hematite. Some of them are 100' or more wide and at least several hundred feet long and deep, but the ones I saw at the Nevada Ore property were at most fifteen feet or so wide. The ore replaces diorite, and in places grades out from massive magnetite through partly-replaced rock into chloritized but not magnetite-bearing scapolitized diorite. There are only rare outcrops all through the main part of the district, as most of the bedrock is covered by at least a few feet of sandy silt deposited in Lake Lahontan, so it is likely that most of the deposits were discovered or at least extended by magnetometer work.

A couple of miles north of the Buena Vista Hills is the south end of the Humboldt Mts., which here are a series of low mountains of Mesozoic sediments, somewhat folded and faulted, with both fold axes and faults trending northwest. The Antelope Springs mercury district is in these low mountains, with the nearer mercury mines only a couple of miles from the northernmost iron mines. The mercury is typical epithermal mineralization, with cinnabar as fracture fillings in sandstone and limestones and to a limited extent replacing limestone. The only igneous rocks in the mercury district are occasional diabase dikes; there is no diorite. Conversely, there are no Mesozoic sediments on the surrounding pediment, only the diorite and associated rocks. Around the very base of the mountains there are scattered small outcrops of diorite and of Mesozoic sediments more or less interspersed, but none that give any idea whether the diorite intrudes the sediments.

South and east of the Buena Vista Hills are the Stillwater Mts., in which the principal rocks are, apparently, Mesozoic sediments, which are intruded by diorite, granites, and the prevalent diabase dikes. It appears, from MF 220, from scattered mentions in reports, and from a brief look at the part of the mountains adjacent to the Buena Vista Hills, that the diorite stock and its contained iron mineralization continue from the hills into the mountains.

According to Hal Bonham of the Nevada Bureau of Mines (oral communication, 12/10/64), a major frontal fault runs along the west side of the Stillwater Mts, and continues northward, passing just west of the Buena Vista Hills. East of this fault the diorite and other older

rocks are exposed, but west of it there are no exposures and gravity studies indicate at least 5,000' of low-density sediments, presumably Late Tertiary and Quaternary.

Also according to Bonham, there is some question in the minds of people who have done regional mapping about the relation between the diorite exposed in the Buena Vista Hills and surrounding pediment and the Mesozoic sediments of the Humboldt Mts. He personally suspects that there is a major thrust fault between them. My own very limited work had already led me to essentially the same opinion -- that the Buena Vista Hills - pediment area is in one major structural block, and the adjacent Humboldt Mts. in another. A thrust fault seems the most likely separating structure, though possibly steeper faults with several thousand feet displacement around the base of the mountain could accomplish the same effect. This conclusion of mine was based more on intuition than anything concrete -- the geology of the mountains is just too different from that of the pediment. The sediments in the mountains show none of the alteration that should have accompanied the intrusion of such a large diorite mass, nor do they show any alteration that might be related to the scapolitization of the diorite.

Despite this structural separateness, there is a suggestion that so far as mineralization goes, the Buena Vista iron district and the Antelope Springs mercury district are but sections of a single large mineralized zone trending Due north. This zone is six miles wide and twenty miles long, occupying Townships 24, 25, 26 and the south half of 27 North, Range 34 East. The northern six miles of the zone contains mercury only, the mines being on various minor structures but prominently aligned along northwest-trending faults and fold axes. The southern fourteen miles or so contains iron only, and again the orebodies are localized by various minor structures, but with a suggestion in their distribution that they, too, are aligned along northwest-trending major structures.

A striking feature of the zone is the mono-metallic nature of the two districts: in the Antelope Springs district there is essentially only mercury, and in the Buena Vista district only iron. MF 220 shows one lead-silver prospect, one gold prospect, and one antimony prospect around the edges of the Antelope Springs district, but no other evidence of base or precious metals. In the case of the Antelope Springs district, this is not so surprising, since mercury districts commonly contain no other metals, probably because of the extremely low temperature of mercury deposition. In the case of Buena Vista, it is quite surprising, since magnetite bodies are most commonly associated with base metal mineralization. The Buena Vista iron ores clearly are not the ordinary pyrometasomatic magnetite bodies that are found in limestones near acidic intrusives.

Another striking feature is the absence of pyrite from the district -- the mercury deposits have enough iron staining to account for a little pyrite in the unoxidized ore, but the magnetite deposits have virtually no pyrite at all.

In the University of Nevada School of Mines library there is a USGS Open File report by F. C. Schrader on the Buena Vista district; unfortunately I did not get the number or date, but as I recall, it was written about 1937. In this report, several mines in the vicinity of Copper Kettle Canyon and White Cloud Canyon are included as part of the Buena Vista district. Copper Kettle Canyon is in T 24 N, and White Cloud Canyon in T 23 N, R 34 E, on the west flank of the Stillwater Mts. -- at the extreme south end of the Buena Vista district as it is now considered, and beyond it. Judging by Schrader's descriptions, some of these mines encountered pyrite veins or zones of pyrite veins as much as a couple of hundred feet wide, and he reports some copper values. I found this report after I left the district, and did not get down into this area.

Ore Potential: The odds are very good, I suspect, that there are more iron ore bodies than those now opened up; if so, it is nearly certain that they have been found or at least indicated by magnetometer surveys -- a resident at the edge of the pediment commented on the everlasting planes cross-crossing the area, undoubtedly making aeromagnetic surveys. I found several freshly-staked traverses indicating that an overall ground magnetic survey has been made recently (there was no sign of holes to indicate that techniques requiring electrical contact with the ground were used).

There is also a possibility that more mercury orebodies will be found in the Antelope Springs district, particularly as the present $500 price for mercury has already brought several leasers into the district.

I can see no hope for deposits of other metals, however, at least in the main part of the district -- that part covered by MF 220. The utter lack of metals other than iron and mercury throughout the area suggests that there just were no other metals in the mineralizing solutions. There is nothing at all to indicate that the magnetite ore might be a mineralization zone, perhaps bordered by another zone of, say, copper mineralization. West of the Buena Vista Hills there is a structural impossibility for ore -- the major frontal fault drops possible host rocks far below economic depth.

There remains one area that might possibly be of interest: the five-mile stretch along the west front of the Stillwater Mts., where Schrader described pyritic mineralization and some copper. Judging by the topography as shown on the Reno sheet and what I saw from the north end of this area, however, the outcrops are likely to be good enough that IP would be pretty much superfluous. This area would be worth a look, however, on the basis of the reported copper.

Arthur Baker III

Area scouted December 9-11, 1964