

UNITED STATES DEPARTMENT OF THE INTERIOR
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BUREAU OF MINES
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War Minerals Report 112
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NONPAREIL MERCURY MINE
DOUGLAS COUNTY, OREG.

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WAR MINERALS REPORT
UNITED STATES DEPARTMENT OF THE INTERIOR — BUREAU OF MINES

W.M.R. 112 — Mercury

October 1943

NONPAREIL MERCURY MINE
Douglas County, Oreg.

SUMMARY

Investigations of the Bonanza-Nonpareil mercury belt by the Federal Geological Survey in the summer of 1942 revealed geologic structure favorable for mercury deposits near the Nonpareil mine. It is in this structure that large, rich ore bodies were found in the Bonanza mine at the north end of the belt. At the Nonpareil mine, about 2 miles south of the Bonanza, the structure is buried under a considerable depth of overburden and was never prospected. It is believed that its position beneath the overburden can be ascertained with sufficient accuracy to justify diamond drilling by the Bureau of Mines in expectation of developing new ore bodies.

Both the Nonpareil and Bonanza mines were discovered in the 1860's. Production of the Bonanza from 1937 to June 1942 was 17,078 flasks of mercury. Total production of the Nonpareil is unknown but probably is small. The mine was last operated in 1942 and was reported to have produced 40 flasks of mercury.

INTRODUCTION

The property was visited by an engineer* of the Bureau of Mines in October 1942. The north Nonpareil mine workings were

* O. H. Metzger, senior mining engineer.

studied, and several samples were taken. No attempt was made to correlate the various formations, as this had been done previously by Dr. A. C. Waters of the Geological Survey. The projected diamond drilling and sampling herewith presented are based almost entirely upon Dr. Waters' report.

The Nonpareil mine is on the north side of the valley of Calapooya Creek about 10 miles east of Sutherlin, Douglas County, Oreg. Sutherlin is on Route 99, about 15 miles north of Roseburg. A well-maintained graveled road extends easterly from Sutherlin to about 100 feet of the portal of the south workings. The north workings are about 1,200 feet to the northwest of this road and about 2,000 feet northeast of the south workings.

Ample water for diamond drilling and all other purposes is available at Calapooya Creek, less than 1 mile southeast of the mine workings.

TOPOGRAPHY AND GEOLOGY

The altitude at the workings ranges from 800 to 1,100 feet. The south workings lie in an area of low relief with a relatively uniform slope to the east toward Calapooya Creek. The north workings are in the vicinity of the escarpment of what is locally known as the Crag fault. Here the topography is extremely precipitous, but to the northeast and just below the escarpment the terrain is much less rugged; the slope of the ground at the foot of the escarpment is slightly over 30° , but farther east it gradually decreases. The proposed diamond-drill sites for this part of the property are on slopes ranging from 10° to 20° .

The geology of the area between the Bonanza and Nonpareil mines is treated in detail by Dr. Waters. Only that part of his report essential to planning an exploration program for the Nonpareil property will be discussed herein.

Cinnabar ore bodies on the Nonpareil property are inferred by geological conditions similar to those prevailing at the Bo-

nanza mine. The most productive ore bodies in the Bonanza mine are in a tuffaceous sandstone immediately below a shale contact. Mineralization is localized along shear or fracture zones that may lie directly at the contact but in some places are a few feet in the sandstone.

Ore bodies in the north Nonpareil workings are in massive sandstone and tuffaceous sandstone along or near the Crag fault. In one adit a shoot adjacent to the Crag fault was mined, which yielded ore reported to have averaged 40 pounds mercury per ton. The ore shoot is not exhausted, but the amount of ore remaining above the adit probably is small and low-grade. Scattered showings of cinnabar may be found near the Crag fault in the vicinity of the north workings for a distance of 250 feet along the strike and over a width of 40 feet. This zone has never been sampled systematically, but from visual inspection the grade of ore seems to be very low.

The shale-sandstone contact, on which the ore bodies of the Bonanza mine occur, is not exposed at either the north or the south Nonpareil workings. Its inferred intersection with the Crag fault would be the apex of possible ore bodies corresponding geologically with those in the Bonanza mine. Diamond-drill holes for exploring the shale-sandstone contact are planned.

The ore body in the south Nonpareil workings lies just beneath a fault that is approximately parallel with the bedding of the sandstone and dips to the northeast at 35° to 50° . The ore body is bounded on the southwest by another fault, which bears N. 25° W. and dips to the southwest at 65° to 75° . These two faults form an inverted trough, in which the ore body seems to have been formed.

That part of the ore body that has been mined is some distance below the shale-sandstone contact stratigraphically but above it topographically. If projected downward along its rake, it would intersect the contact at a point approximately 154 feet east of

the portal of the lower adit and about 20 feet below. Four diamond-drill holes are proposed in the vicinity of this intersection.

DEVELOPMENT

Development at the north Nonpareil workings includes six adits ranging in length from less than 20 to over 250 feet. The longest of these is about 200 feet to the southwest of the Crag fault zone. The other four are partly or entirely within the fault zone. Ore of economic grade was found in only one adit, where it was stoped out to a height of about 15 feet above the floor of the drift. It is stated that some of this ore was high-grade, but its amount was small. Very little ore remains above the back of this stope. The possible extension of ore downward from the bottom of the drift can be investigated by a short diamond-drill hole just below the portal of the adit and pointed into the hill at a vertical angle of -45° .

Only scattered showings of cinnabar can be found in the other four adits of the north workings. Several samples indicate material that assays 0.1 to 0.4 pound of mercury per ton. Systematic sampling may possibly reveal small isolated patches of economic or near-economic ore, but it is not expected that these would be important.

The south Nonpareil workings include three adits at vertical intervals of about 75 feet. Ore was found in all of these, but most of the stoping was from the lowest, in which two ore bodies were found.

The total amount of drifting in the south workings is over 1,000 feet. Considerable ore was mined, but the grade is believed to have been low.

ORE RESERVES

No ore reserves are indicated in any of the mine workings or in outcrops. Exploration at depth, as herein described, is believed to be the only means of finding ore.

PROPOSED EXPLORATION BY BUREAU OF MINES

This exploration will consist essentially of diamond drilling. A limited amount of systematic sampling is planned along the Crag fault in the vicinity of the north Nonpareil workings. The adits of the north Nonpareil workings that are on the fault zone are also to be sampled. All proposed drilling is from surface stations.

One hole is planned to intersect the ore shoot exposed in adit No. 5 of the north workings at a distance of about 50 feet below the floor of the adit. If this hole is continued to 130 feet, it should intersect the Crag fault at a distance of 140 to 150 feet below its outcrop. Three vertical holes are planned to pierce the shale-sandstone contact about 50 feet east of its intersection with the Crag fault.

Four holes are proposed for exploring the ore body exposed in the south workings. One hole is planned to pierce the projection of this ore body just north of its intersection with the shale-sandstone contact. Two holes are planned to pierce it just beneath the contact at depths of 30 and 60 feet from the surface, respectively, and one hole should pierce it about halfway between the contact and the nearest point at which it is exposed in the lower adit. Possible occurrences of cinnabar in the sandstone below the known ore body will be explored.

CONCLUSIONS

Ore bodies at the Nonpareil mercury mine are inferred entirely from geological deductions. Structures similar to those that have been most productive at the Bonanza mine are probably present at the Nonpareil mine, where they would be buried under a considerable thickness of surface debris. It is believed that the positions of these structures have been determined with sufficient accuracy for conducting a diamond-drill exploration program.