SEARCHLIGHT MINING DISTRICT

Location and Access. The Searchlight mining district is in a group of hills on the east side of Piute Valley in the southern part of Clark County. Most of the mines and prospects are in Secs. 22, 27, and 34, T. 28 S., R. 63 E., and Secs. 2 and 3, T. 29 S., R. 63 E. (see U. S. Geological Survey, Searchlight 15-minute topographic quadrangle map). The town of Searchlight is in the southern part of the district. It is accessible from Nipton, California, 21 miles to the west on the Union Pacific Railroad, via State Highway 68, and from Las Vegas, 55 miles to the north, via paved U. S. Highway 95.

History and Production. The district, discovered in 1897, has produced over $4,500,000 worth of gold, silver, copper, and lead. The principal value was in gold except in a very few veins.

Previous Work. Callaghan (1939) has described the geology of the district, and the individual mines and prospects, in some detail, the following description being principally from his report.

The Rocks. Precambrian (?) granite gneiss is overlain by early Tertiary (?) andesitic flows and breccias (fig. —). These rocks were intruded by andesite porphyry. A large mass of early Tertiary (?) quartz monzonite intruded both the andesite porphyry and earlier rocks. After a period of erosion, a second series of volcanic rocks were extruded during the late Tertiary (?).

The contact of the quartz monzonite body is very irregular, numerous dikes and sills projecting into the intruded rocks. The margins of the body are porphyritic, the size and proportions of the phenocrysts varying irregularly. The quartz monzonite consists of quartz, orthoclase, oligoclase, andesine, biotite, augite, magnetite, apatite, and zircon. The orthoclase and plagioclase are present in approximately equal amounts. The quartz is interstitial to the feldspar and graphically intergrown with the orthoclase.

Biotite is more abundant than the augite.

Structures. The veins are distributed in an en echelon pattern around the western, northern, and southern margins of the quartz monzonite body. A few small veins occur along the east side of the district. Most of the veins and many of the apophyses of the quartz monzonite body fill fractures striking west and dipping to the south; a few veins fill fractures striking north and dipping to the west. The fractures are of the gash type with maximum displacement in the center and decreasing movement toward the ends and with depth. During regional movements following the consolidation of the quartz monzonite, the body apparently acted as a competent mass, so that fractures formed in a regular pattern in the less competent rocks around its margins. Movements along the fractures after the formation of the veins has brecciated the vein material and adjacent wall rock.

Veins. The largest veins are in the early Tertiary (?) volcanic rocks and andesite porphyry, are up to 50 feet wide, and have been productive over some 1,000 feet along their strike and mined to a maximum depth of 900 feet.

Vein Mineralogy. The veins consist of brecciated country rock cemented by porous and vuggy quartz. Later movement has brecciated the quartz. Some adularia and calcite also occur in the veins. Except in a few limited areas the veins are almost completely oxidized, secondary lead, copper, and iron silicates, sulfates, and carbonates filling fractures and cavities in the veins. The primary sulfide minerals galena, sphalerite, and chalcopyrite occur locally in the quartz. Cerussite and hemimorphite are the most abundant secondary minerals. A great variety of other oxidation products, including chrysocolla, chalcocite, cuprite, hematite, malachite, brochantite, linarite, leadhillite, wulfenite, vanadinite, and mottramite.

Molybdenum Minerals. The lead molybdate, wulfenite, is the only molybdenum mineral reported in the district. Tabular, orange-yellow wulfenite

crystals were fairly abundant in the Quartette mine and were noted in the Duplex mine.

Alteration. The country rock in which the veins occur have been altered by emanations from the quartz monzonite, by the vein-forming solutions, and by supergene solutions during the weathering of the primary mineralization. Epidote, quartz, and magnetite were formed in the volcanic rocks around the periphery of the quartz monzonite body, but bear no relation to the veins.

Wall rock alteration in the southern part of the district is slight; in the northern part of the district the volcanic rocks and andesite porphyry have been altered to a fine grained aggregate of adularia and quartz containing remnants of primary minerals.

The later supergene alteration has changed the feldspars in the wall rock to beidellite type clays. The adularized and silicified rock in the northern part of the district have not been affected to any extent by the supergene solutions. The wall rock along the northern veins is stained brown and yellow, the staining being pale green or gray in the southern part of the district.

Zoning. The vein minerals and wall-rock alteration both vary from north to south in the district. The zonal distribution of the wall-rock alteration is mentioned above under Alteration. The amount of primary copper sulfides in the veins apparently decreased northward, the northern veins containing only minor amounts. Specualr hematite is abundant in the Quartette mine in the southernmost part of the district but is rare elsewhere. Calcite is much more abundant in the northern veins than in the southern veins. These mineralogical changes appear to be gradational. There was considerably more gold than silver in the ores from the southernmost and northern parts of the district, however, at the Duplex mine in the south-central part of the district, silver is slightly more abundant than gold.

The zoning is not distributed radially in respect to the outcrop of the quartz monzonite. Callaghan (1939) believed that the Quartette vein in the south was deposited at higher temperatures than the veins at the Pompeii and J. E. T. mines in the northernmost part of the district. It is interesting to note that wulfenite is most abundant in the "high temperature" Quartette vein, occurs in the Duplex mine a short distance to the north, but reportedly is very rare to absent elsewhere in the district.

Duplex Mine

The Duplex (IXL) mine is mainly in the southeast corner of Sec. 34, T. 28 S., R. 63 E., on the hill south of the town of Searchlight. The mine is the second largest in the district, both in the terms of production and extent of the workings. The total production, reportedly exceeded $650,000, chiefly in gold, but with important values in lead, and lesser values in silver and copper. The mine produced intermittently from 1903 to 1934.

The mine is developed by extensive workings extending over 1600 feet laterally and to a depth of over 700 feet (see Callaghan, 1939, figs. 24 and 25 and plate 49 for sections and plan of mine).

The country rock is pyroclastic rocks altered to hornfels and andesite porphyry dikes. There are 4 veins; 3 of the veins generally strike N. 60°-70° W. and dip 45°-75° W. The other (IXL) vein strikes N. 8° W. and dips 10°-25° W.

The New Years Gift vein, the northernmost of the four, was by far the most productive. The ore body extended from the surface to a depth of 500 feet, has a maximum lateral extent of 1200 feet at a depth of 300 feet, pitches 10° E., and is up to 10 feet wide with an average width of 4 or 5 feet. The vein consists of brecciated country rock cemented by quartz. Chrysocolla and some malachite stain the quartz. Lumps and large masses of cerussite are common. A few lumps of coarse galena are found locally. Zinc is present as hemimorphite and films of mottramite.

The Fraction, the next vein to the south, intersects the more gently dipping New Years Gift vein. It has been stoped at the surface and above the intersection. The orebody has a maximum lateral extent of 400 feet and pitches 10° E. The vein material is similar to that of the New Years Gift mine.

Only a small amount of stoping was done on the Searchlight vein which is the next vein south of the fraction. Apparently no stoping was done on the IXL vein, the southernmost vein in the mine.

Wulfenite occurred sparingly in the veins as tabular orange-yellow crystals. The average metal content of the ore shipped was 4.0 ounces of gold and 6.9 ounces of silver per ton, 11.8 percent lead, 2.9 percent copper, and 1.6 percent zinc. The silver content was higher in the ore that was richer in lead.

Quartette Mine

The Quartette (Golden Treasure) mine is mostly in Secs. 2 and 3, T. 29 S., R. 63 E., and is the southernmost mine in the district. Approximately 65 percent of the gold, 20 percent of the silver, 60 percent of the copper, and 15 percent of the lead produced in the district have come from this mine. Nearly all the total production of over $2,800,000 took place from 1902 through 1923.

The mine is developed by extensive workings totaling over 5½ miles. There are 13 levels which explore the vein for 2,100 feet along the strike and for 1,160 feet down dip, reaching a depth of 870 feet. A great deal of stoping was done (see Callaghan, 1939, plates 45 and 46 for plan and section of the mine). Nearly the entire mine is now flooded.

The country rock is volcanic rocks altered to hornfels, gneiss, and andesite porphyry dikes. The vein is 3,300 feet long on the surface. It has a general N. 70° W. strike, curving to a more northerly strike at its

northwestern end, and dips 40°-72° S., but dips 50°-60° S. Throughout most of the mine. The vein cuts the irregular gneiss-hornfels contact, and is offset by post-mineral faulting. Splits are common, as are quartz veinlets and gouge seams in both the hanging and foot walls.

The main orebody, or group of ore shoots, was in the western part of the vein, extended from near the surface to a point about 1,000 feet downdip, had a maximum width of 700 feet, and pitched to the south. Ore shoots up to 50 feet wide were stoped, the largest stopes apparently being at splits. The vein pinches laterally and downdip.

The vein consists of brecciated country rock cemented by porous and vuggy quartz which, in turn, has been brecciated. The quartz is widely distributed, but never forms large or solid masses. Abundant chrysocolla and "limonite" and some malachite stain the quartz. Large masses of cerussite locally are common in the veins. Earthy cuprite and radial aggregates of hemimorphite are present. Abundant plates and sheafs of specular hematite occur in the quartz. A little chalcopyrite and some residual kernels of galena are found in a few limited areas. Silver values are higher where cerussite or galena are present.

Ransome (1907, p. 71) states that:

> Wulfenite, the molybdate of lead, in characteristic square, tabular orange-colored crystals, is very common throughout the mine and does not necessarily indicate ore. It is apparently one of the later products of oxidation and occurs in little vugs and open fissures, implanted on the other minerals.

from John Schilling's notes (1968)