NBMG OFR 83-11
See also 83-12 for geochemical results

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BARE MOUNTAIN DISTRICT

The Bare Mountain (Fluorine) mining district is situated due east of Beatty and U.S. Highway 95 in an area which includes the northwest trending Bare Mountain and the northwestern end of Yucca Mountain, in southern Nye County, Nevada. The small, sub-district of Carrara is located on the east flank of Bare Mountain. All areas of the district are accessible by way of good to poor dirt roads east from U.S. Highway 95.

The Bare Mountain district was originally prospected during the 1904 Bullfrog boom. From 1905 to about 1918, the district was explored and small gold deposits were discovered on the west, north, and east flanks of Bare Mountain. Early attempts to develop ore bodies failed and most of the gold/silver production during this period was meager and went unreported. Mercury was originally discovered near the Telluride Mine around 1908. Later discoveries at the Tip Top and Thompson Mines resulted in the construction of a retort about 1912 and several hundred flasks of mercury were produced (Bailey and Phoenix, 1944). Other commodities produced in the district during this early period included gem-quality, cinnabar-bearing opal; ceramic silica from the Silicon Mine; volcanic cinder, kaolin, and perlite. Attempts were made to quarry marble from the Carrara quarry, but were largely unsuccessful (Ball, 1906; Lincoln, 1923; Cornwall, 1972). Early production figures for the district for the above commodities were included in the Bullfrog district, but estimates place them at less than $30,000 (Hewett, 1936).

Fluorspar has produced the largest value for the Bare Mountain district with the Daisy Mine as the main property. The original lode claims at the Daisy were located in 1918 by J. Irving Crowell. He sold the claims to Spar Products Corp. who leased the property back to the Crowell family (Continental Fluorspar Co.) on a 99 year lease. The property has been in continuous production since 1918, and is now being managed by the third generation of the Crowell family (Lincoln, 1923). Fluorspar production from the property through 1976 has been estimated at more than

200,000 tons and Cornwall (1972) reports reserves could last for years. The deposit is the largest in Nevada.

The Bare Mountain district is unique as being the only relatively active district in the Esmeralda-Stateline Resources Area Project. The Daisy Mine was producing, although cut back in manpower and productivity due to the recession; the Stirling-Panama Mine area, along with adjacent properties along the eastern flank of Bare Mountain, was mining disseminated gold and exploring reported silver bearing zones. A caretaker was in residence on the Silver Peak claims. The Oasis Mountain Project (Spicer Claim) north of Beatty near Springdale, had been producing telluride gold for over a year, and the district had been extensively explored during 1981-1982.

Bare Mountain is a northwest, elongated triangular mass of complexly faulted and folded Late Precambrian to Late Paleozoic clastic and carbonaceous sedimentary rocks, which are locally intruded by Tertiary-Quaternary dikes of pegmatite, aplite, and granitic porphyry. Intruding the sedimentary mass throughout the area are low grade, ore bearing stringers and massive veins of quartz. The sedimentary beds form a northwest dipping, northeast striking monocline. Locally, the sediments are metamorphosed to hornfels, tactite, marble, and phyllite/schist by tectonic activity and intrusives. To the north of the area underlain by bedded sediments are outcrops of Tertiary rhyolitic welded and non-welded ash-flow tuffs and flows. East and southeast of Bare Mountain are Tertiary-Quaternary cinder cones.

Deformation of the Paleozoic block occurred in at least three stages: the initial, intense deformation of the beds during the Sonoma Orogeny at the end of the Paleozoic; intense thrust and right-lateral strike-slip faulting in the Mesozoic (Laramide Orogeny?); and normal faulting during the Tertiary Basin-Range tectonic period. Locally, thrust faults favor the weak, shaly units of the Wood Canyon and Carrara Formations. The main deformation of Bare Mountain is probably

related to the right-lateral shearing of the Walker Lane Mobile Belt (Longwell, 1960). The mountain is bounded on the east and west flanks by Tertiary-Quaternary Basin-Range normal faults.

The northern end of Yucca Mountain is composed of Miocene to Recent rhyolitic welded and nonwelded tuffs, and rhyolite to rhyo-dacite porphyry dikes, stocks, and lavas which include volcanic glass, pumice fragments and stones. The tuffs are bleached, argillically altered, and are irregularly silicified and opalized from ascending hydrothermal solutions. Alaskite dikes and fine-grained granitic dikes intrude the altered volcanics and follow bedding planes in the Paleozoic sediments on the north side of Bare Mountain. The volcanics are thought to be derived from the Timber Mountain Caldera, Oasis Mountain Caldera, and other volcanic centers located north and northeast of Bare Mountain. Erosional remnants of later basalt flows overly the earlier extrusives. The tuffs and flows are generally horizontal or have shallow dips and strike in all directions. Faulting in the volcanics generally trend northeast and are later intersected by north-northeast trending fault traces (associated with the Walker Mobile Belt?). Tectonic activity in the Tertiary moderately deformed and tilted the volcanics. The volcanics lie either in direct contact with the Paleozoic sediments or along a shallow, north dipping thrust fault.

Mineralization within the district occurs in several general modes. Hydrothermal quartz veins and breccia zones are found throughout the Paleozoic sediments. The quartz veins are thin and irregular, and are locally mineralized with microcrystalline gold, auriferous chalcopyrite and pyrite, argentiferous galena and sphalerite. The metallics are carried and deposited by the quartz veins along bedding shears and disseminated in the country rock, the most favorable being the dolomitic member of the Precambrian-Cambrian Stirling Quartzite. Alteration minerals associated with the sulfides include malachite, azurite, hematite and limonite. The country rocks adjacent to the veins are locally

silicified and argillized. Irregular breccia pipes or zones on the eastern flank of Bare Mountain in the dolomitic Nopah Formation consists of fragments of felsic volcanics, dolomite, and siltstone. The breccias are argillically altered and carry minor gold and fluorite. Fluorite fills the open spaces and replaces the breccia fragments, which are rounded and surrounded by rock flour. Stibiconite was observed with the fluorite. The Tertiary rhyolite tuffs are hydrothermally altered to masses of chalcedony, opal, and alunite which carries fine stringers and grains of cinnabar (Knopf, 1915). Sparse cinnabar is also in lenses of cryptocrystalline silica along with coarsely crystalline barite and calcite along fissures in dolomite.

The principal fluorite deposits at the Daisy Mine in the northern end of Bare Mountain occur as irregular, hydrothermal replacement bodies along fault zones in dolomite (Nopah Formation). The orebodies' formation was structurally controlled by thrust and normal faults. The extent of the deposit is unknown. Surrounding the ore bodies are clay-like rinds of gouge which are reported to carry small amounts of gold. In the vicinity of the mine, crystalline fluorspar fills solution cavities in the dolomite. Mr. Jack Crowell, the current mine manager, was kind enough to give us a tour of the Daisy Mine. Activity at the mine extends from the 8th to the 13th levels. Samples were taken from the present ore body. For a complete description of the Daisy Mine, refer to the list of references cited.

The Oasis Mountain Project (Spicer Claims) has been mining telluride gold for over a year near Oasis Mountain. The claim block extends over 5 square miles and includes the Transvaal Camp area. According to the project geologist, gold tellurides occur in the rhyolite breccia. The ore bodies are in vein, epithermal and intrusive systems associated with the Timber Mountain Caldera. He also suggested that a molybdenum porphyry system might be located at depth in the

Transvaal Camp area, which is located along the rim-fault system of the Timber Mountain Caldera.

Along the eastern flank of ~~Bean~~ Bare Mountain, the Panama Mine-Stirling Mine area is currently open-pitting for disseminated gold in breccia zones along a shallow thrust fault. The ore, which occurs in the upper plate, ranges from 0.5 to 4.0 oz/ton with values in arsenic, antimony, and mercury. Below the ore zone the rocks are silicified from ascending mineralized solutions. The area is extensively brecciated and intruded by porphyry dikes. Minerals observed in the area include clays, alunite, limonite, jarosite, fluorite, stibnite, and cerrusite. Throughout the workings, thin calcite/fluorite and quartz veins are prevalent. Stibiconite was observed associated with fluorite, which partially cements and replaces the breccia fragments.

Kaolin has been mined from montmorillonite deposits outcropping east of Beatty on the western flank of Beatty Mountain. The kaolin resulted from the alteration of Miocene-Pliocene tuffs along faults. The deposits grade laterally into the country rock.

REFERENCES - Bare Mountain District

Bailey, E. H., and Phoenix, D. A. (1944) Quicksilver deposits in Nevada: NBMG Bulletin 41.

Ball, S. H. (1906) Notes on the ore deposits of southwestern Nevada and eastern Califonia: USGS Bulletin 285.

_____ (1907) A geologic reconnaissance in southwestern Nevada and eastern California: USGS Bulletin 308.

Beal, L. H. (1963) Investigation of titanium occurrences in Nevada: NBMG Report 3.

Byers, F. M., Jr., et al. (1976) Volcanic suites and related cauldrons of Timber Mountain-Oasis Valley caldera complex, southern Nevada: USGS Professional Paper 919.

Byers, F. M., Jr., et al. (1976) Geologic map of the Timber Mountain caldera area, Nye County, Nevada: USGS Map GQ-891.

Carr, W. J., and Quinlivan, W. D. (1966) Geologic map of the Timber Mountain quadrangle, Nye County, Nevada: USGS Map GQ-503.

Chesterman, C. W., and Main, F. H. (1954) Daisy fluorspar mine, in Lovering, T. G., Radioactive deposits of Nevada: USGS Bulletin 1009-C.

Cornwall, H. R. (1972) Geology and mineral deposits of southern Nye County, Nevada: NBMG Bulletin 77.

Cornwall, H. R., and Kleinhampl, F. J. (1959) Stratigraphy and structure of Bare Mountain, Nevada [abs.]: GSA Bulletin, v. 70, p. 1714.

_____ (1961) Geology of the Bare Mountain quadrangle, Nevada: USGS Map GQ-157.

_____ (1964) Geology of the Bullfrog quadrangle and ore deposits related to Bullfrog Hill caldera, Nye County, Nevada and Inyo County, California: USGS Professional Paper 454-J.

Garside, L. J. (1973) Radioactive mineral occurrences in Nevada: NBMG Bulletin 81.

Geehan, R. W. (1946) Exploration of the Crowell fluorspar mine, Nye County, Nevada: USBM Information Circular 3954.

Hewett, D. F., et al. (1936) Mineral resources of the region around Boulder Dam: USGS Bulletin 871.

Hill, J. M. (1912) The mining districts of the Western United States: USGS Bulletin 507.

Horton, R. C. (1964) Fluorite in Mineral and water resources of Nevada: NBMG Bulletin 65.

Knopf, A. (1915) Some cinnabar deposits in western Nevada: USGS Bulletin 620D.

Kral, V. E. (1951) Mineral resources of Nye County: NBMG Bulletin 50.

Lincoln, F. C. (1923) Mining districts and mineral resources of Nevada: Nevada Publications Co., Reno.

Longwell, C. R. (1960) Possible exploration of diverse structural patterns in southern Nevada: Am. Jour. Sci., v. 250-A.

Olson, J. C. and Hinrichs, E. N. (1960) Beryl-bearing pegmatites in the Ruby Mountains and other areas in Nevada and northwestern Arizona: USGS Bulletin 1082-E.

Papke, K. G. (1973) Industrial mineral deposits of Nevada: NBMG Map 46.

_____ (1979) Fluorspar in Nevada: NBMG Bulletin 93.

Stewart, J. H., and Carlson, J. E. (1976) Cenozoic rocks of Nevada: NBMG Map 52.

Thurston, W. R. and Bell, G. L. (1949) Daisy fluorspar deposit near Beatty, Nye County, Nevada: USGS Open-file Report 3-209.