from NBMG OFR 83-9
See also 83-10 for
geochemical results.

3060 0008

Item 8

MERRIMAC DISTRICT

The Merrimac, or Lone Mountain mining district occupies Lone Mountain, a conspicuous ridge in the southern Independence Mountains about 25 miles northwest of Elko. The ridge is plainly visible west of the Mountain City Hwy. and accessible from fair dirt roads which lead off from the Tuscarora (Taylor Canyon) turnoff. The main mines in the district encircle the 8,780' crest of Lone Mountain. Numerous shallow prospects are peripheral to the minesites and explore the contact zones elsewhere in the district. A few bedded barite occurrences are located outside of the central district within a few miles north, west and south of Lone Mountain.

According to Granger, 1957, the district produced a little over one million dollars worth of lead, zinc, copper, silver and gold between its discovery in 1866 and 1949. The Rip Van Winkle mine, the largest mine in the district, contributed a sizeable portion of the total production. The district ranks as the largest recorded producer of zinc (more than 3 million pounds) in Elko County before 1949. Lead-zinc-silver ore produced since then was derived from sporadic mining of the Rip Van Winkle property. Today, most of the mines are inactive.

In 1954, 6 units of tungsten were produced from the Lone Mountain "open pit" mine located in section 11, T37N, R53E (Stager, to be published). A minor amount of barite was produced from a small open pit on the Dresser Minerals claims located about four miles south of Lone Mountain (oral comm. with Dresser Minerals geologist). The other known barite properties are developed by shallow trenching and drilling and have no recorded production.

A molybdenum occurrence near Dinner Station is reported by Schilling, 1962. The exact location or type of occurrence is not known.

The geology of Lone Mountain was studied in detail by Lovejoy during the latter part of the 1950s. According to his interpretations, the lower flanks of Lone Mountain are composed of thrusted eastern and western facies sediments of Ordovician through Devonian age. The lower plate rocks are mainly limestones, calcareous siltstones and shales. Internal overthrusts of these rocks occur locally. The upper plate section consists of cherts and siliceous shales. On the plate margins, the rocks are fractured, brecciated and silicified. Detailed lithologic descriptions of the sediments are provided by Lovejoy, 1958 (a). Ketner, 1975, has since correlated the Lone Mountain sediments with recognized Nevadan stratigraphies; explicitly the Nevada and Roberts Mountains Formations. Tertiary conglomerates and welded ash-flow tuffs cover the low-lying areas adjacent to Lone Mountain.

The ridgecrest area of Lone Mountain is underlain by a multiple intrusive complex which consists of several crosscutting stocks and dikes. The combined outcrop exposure of the bodies is between 6 and 8 square miles. The main intrusive body, named the Nannies Peak intrusive, forms bold, jointed outcrops along the entire north-trending summit of Lone Mountain. The arcuate, dike-shaped body displays a range of compositions and textures but predominately is a quartz monzonite porphyry. Several mines are located along the contact of this body and the older Devonian limestones.

The intrusion along Nannies Peak was both pre-dated and postdated by the intrusion of monzonitic to dioritic stocks and latite or porphyritic dikes outcropping on the east flank of Lone Mountain. All of the igneous bodies are intruded by late-stage aplitic or porphyritic dikes and quartz veins far too numerous to map individually. The dikes and veins are common in the mined areas where they are altered or mineralized. Some of the dikes occupy high-angle fault structures.

The composite intrusive body of Lone Mountain is dated at 38 m. y. (Coats and McKee, 1972). A much younger and probably less reliable age of 12 m. y. (± 20 m. y.) was obtained earlier on biotite from the Nannies Peak pluton at the Lone Wolf mine (Schilling, 1965).

The ore bodies at Lone Mountain are mainly vein or replacement deposits which are localized within the altered intrusive bodies or more commonly along the contact zones between lower plate limestones and the intrusive stocks and dikes. Many of the deposits are gossany replacement zones occurring along bedding planes (faults?) or thrust faults in silty limestones and calcareous shales. Also, copper and iron-rich skarns are developed near the contacts of the larger stocks. A few mines, specifically the Monarch and Rip Van Winkle, are developed along high-angle faults or silicified breccia zones in the upper plate rocks.

The main ore minerals are sphalerite, chalcopyrite, and galena associated with silver and minor gold (Smith, 1976). Emmons, 1910, also notes the presence of copper and lead carbonates, pyromorphite and arsenopyrite. Much of the mined ore was oxidized.

The limestones exposed along the flanks of Lone Mountain are typically silty or sandy, often laminated or mottled, form massive to medium beds (6"- 1' thick) and are interbedded with limey shales. At the minesites, the limestone wallrocks are notably altered. Most commonly they are bleached and recrystallized, forming sugary white marble outcrops. The bedding is generally contorted or folded. Steep bedding inclinations near the ridgecrest are the result of doming by the intrusive mass. Calcite veins cut the wallrocks and also cement breccias. Pyrite, galena and hemimorphite occur in gossans, replaced wallrock and mineralized breccias found on the dumps.

Silicification of the limestone is evident at several locations. The tactites contain variable amounts of pink, red or green garnet, epidote, actinolite, calcite and occassionally tremolite. Mineralized varieties contain copper minerals (sulfides and oxides), magnetite and pyrite. Replacement pods of magnetite, partially oxidized to hematite, were mined in tactites at the Magnetite claim and Lone Mountain "open pit" mine. The tactites developed in silty horizons are generally sugary in texture and light green in color.

Dikes and quartz veins are found in abundance at the minesites. Often the igneous rocks show cross-cutting relationships and are, in turn, cut by finely crystalline siliceous dikes or quartz veins. Some of the dikes at the minesites are bleached, propylitized (chloritic alteration) or sericitized and contain some pyrite.

Finely crystalline purple fluorite occurs in a 10-12" wide quartz vein exposed in the upper workings at sample location 186. Chalcopyrite, pyrite, copper oxides and sphalerite (?) also occur in the vein. At the IM claims, located about 1 mile to the east, yellow antimony oxides were observed in siliceous gossan found on the dump. Lawrence, 1963, reports the occurrence of "small blebs and large lenses" of stibnite associated with galena and pyrite at the Hunter prospect. The location of the prospect, as stated by Lawrence, is confusing. However, the prospect is accredited for the production of twelve tons of lead-silver-antimony ore in 1921 (?).

Throughout the district, many of the caved underground workings are redeveloped by scrapping or trenching. The shallow excavations are between 2-10 years old. Several patented mining claims are held on the north and east flanks of Lone Mountain. Exploratory drilling was conducted probably 5-10 years ago in several areas adjacent to the minesites. Active claims cover the north-west flank of the mountain. At the time of our exam, Nammco (Casper, Wyo.) geologists were beginning exploration work on their claims located near the Monarch Mine. The southern part of the district is relatively inactive, but everywhere covered by valid unpatented mining claims.

Selected References:

Coats, R. R. and McKee, E. H. (1972) Ages of plutons and types of mineralization, northwestern Elko County, Nevada: USGS PP800C, p. C165-C168.

Emmons, W. H. (1910) A reconnaissance of some mining camps in Elko, Lander and Eureka Counties: USGS Bul 408, p. 84.

Engineering and Mining Journal (1938) Note on Rip Van Winkle mine, v. 139, no. 1, p. 84.

Granger, A. E., et al (1957) Mineral resources of Elko County, Nevada: NBMG Bul 54, p. 106-112.

Horton, R. C. (1963) An inventory of barite occurrences in Nevada: NBMG Report 4, p. 7.

Ketner, K. B. (1974) Preliminary geologic map of the Blue Basin quadrangle, Elko County, Nevada: USGS Map MF-559.

Ketner, K. B. (1975) Stratigraphic sequence of Paleozoic and Mesozoic rocks exposed in central Elko County, Nevada: USGS open-file rpt 75-213.

Lawrence, E. F. (1963) Antimony deposits of Nevada: NBMG Bul 61, p. 62.

Lovejoy, D. W. (1955) Preliminary report of the geology of Nannies Peak (Lone Mountain), Nevada: Masters thesis, Columbia Univ.

Lovejoy, D. W. (1958)(a), Overthrust Ordovician and the Nannies Peak intrusive, Lone Mountain, Elko County, Nevada: GSA Bul, v. 70, no. 5.

Lovejoy, D. W. (1958) (b) Overthrust Ordovician and the Nannies Peak ring dike, Lone Mountain, Elko County, Nevada: Ph.D. thesis, Columbia Univ.

Selected References (continued)

Lovering, T. S. and Stoll, W. M. (1943) Preliminary report on the Rip Van Winkle mine, Elko County, Nevada: USGS open-file report, Salt Lake City, Utah, scale 1:600.

Papke, K. G. (in press) Barite deposits in Nevada: NBMG Bul, in preparation.

Schilling, J. H. (1962) An inventory of molybdenum occurrences in Nevada: NBMG Rpt 2, p. 14.

Schilling, J. H. (1965) Isotopic age determinations of Nevada rocks: NBMG Rpt 10, p. 31.