Fluorite deposits of Burro Mountains and vicinity

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part of the mine contains oxidized copper and iron minerals. Uranium minerals are found throughout the mine but are more abundant on the upper levels near the shaft. Autunite is found only within the upper 30 feet of the deposit, and the iron-bearing torbernite-like mineral is not found within the upper 100 feet of the deposit. Uranium is also contained in a greenish-black iron-stained clay of unknown mineral composition found in the lower part of the mine.

The Blue Jay deposit lies along the Blue Jay fault zone. Numerous small subparallel faults constitute the fault zone at this locality, and the diabase basalt, and latite dikes which are present, are broken into small slivers. A white rhyolite dike has been intruded along the main fault plane. The uranium mineralization was most intense in segments of a latite dike that has been broken by the faulting and by the later rhyolite intrusion. Autunite and torbernite are both present, and pitchblende has been identified tentatively from one sample taken from the easternmost trench. The latite host rock is extremely altered (argillized). Uranium minerals also occur in the adjacent granite and in and near the diabase, which is also altered.

FLUORITE DEPOSITS OF BURRO MOUNTAINS AND VICINITY

by
Elliot Gillerman*

Although the Burro Mountains area is known primarily for its copper and turquoise deposits, fluorite was mined in the early 1880's from the Burro Chief deposit and used as a flux in the smelting of copper. Mining was carried out in a small way in the Burro Mountains and in the area immediately to the south from World War I to about 1942, when larger-scale and continuous mining started at the Shrine mine. In 1943 the Burro Chief was reopened and extensive mining began. A total of about 125,000 tons of fluorspar has been shipped from the district, the greater part of it since 1943.

The fluorspar occurs mostly as veins in the Precambrian granite. A few of the smaller deposits south and west of the Burro Mountains occur within the middle Tertiary volcanic rocks, which form a north-west-trending belt in this area; and at the Shrine mine, the vein traverses in part a mass of rhyolite that is probably a remnant of a once more-extensive flow capping the granite. At the Burro Chief the fluorspar vein follows a fault between granite and quartz monzonite porphyry.

The deposits are mostly simple fissure fillings with little or no replacement of the wall rock. The Burro Chief is along a wide shear zone, which is one of the major faults within the Big Burro Mountains; most of the other deposits are along small faults or shears adjacent to major zones of movement. Repeated movements along the shear zone of the Burro Chief have brecciated the fluorspar and resulted in an extensively altered and fractured zone.

The fluorspar is commonly associated with quartz; small amounts of pyrite, gold, turquoise, calcite, chrysocolla, malachite, and limonite may be present. No barite or base-metal sulphides have been found in the deposits. The fluorspar is mostly green or purple and is characteristically massive. Columnar and granular varieties occur. Well-developed crystals are common, particularly in the deposits south of White Signal, where cubes are modified by dodecahedrons, tetrahexahedrons, and hexoctahedrons. At least two and probably three stages of fluoritization took place, closely spaced in time. With few exceptions the violet fluorspar represents the last stage.

Several factors localized the fluorspar, but the chief factors were (1) wall-rock control, (2) irregularities in the faults along which the veins occur, and (3) the presence of small linkage faults (small faults that extend across the gap between two large faults) or similar but larger faults that split off the major faults into the footwall and are called footwall splits.

The granite is the prevalent host rock because it is more porous and because its greater competency has resulted in shattering under stress. Excellent examples of the shattered host rock are exposed at the Shrine, Spur Hill, Purple Heart, and other deposits. The irregularity of the fault surface controls the width of the ore shoots at the Shrine, Moneymaker, and smaller deposits. The effect of linkage and footwall-split faults on the localization of deposits and of ore shoots within a deposit is well shown at the Burro Chief and at the deposit south of White Signal along the Malone fault. The grosser features that determined the regional distribution of the fluorspar are the major structural features of the area and

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possibly the preparation of the ground by the intrusion of the Tyrone stock. The large northwest-trending faults, which are a dominant feature of the area – especially the Mangas Valley and the Malone faults – were particularly important in determining the regional distribution.

The fluorspar deposits are late Tertiary in age, later than the copper deposit at Tyrone, and later than the base-metal deposits in the Hanover-Santa Rita area. They may be about the same age as the precious metal deposits in the Mogollon area to the northwest.

SUMMARY OF SMALLER MINING DISTRICTS IN THE SILVER CITY REGION*

by
R. M. Hernon

Chloride Flat Silver Ores

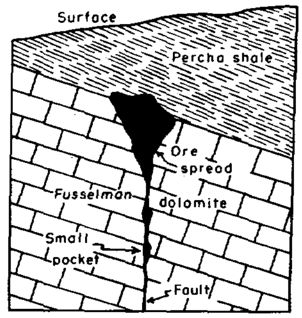
The Chloride Flat district, now idle, is northwest of Boston Hill and 2 to 4 miles west-northwest of Silver City. Production has been estimated by Entwistle (1944) at about 149,000 tons of ore that yielded about 4,000,000 ounces of silver valued at $3,293,000. The ore is of a type valuable for its fluxing qualities which permitted mining of low grade material.

The geology is similar to that of Boston Hill. The rocks of early Paleozoic age dip about 25° east-northeast, and are cut by numerous minor faults of the northeast-trending set. Most of the faults are downthrown on the eastern sides and have apparent displacement to the right.

Thin sills of dacite porphyry intrude the Percha shale, and dikes of hornblende diorite porphyry parallel or intrude minor faults. Alteration is similar to that in the Boston Hill district.

The ore bodies are localized along faults and fissures in dolomite immediately under or a short distance below the Percha shale. Fissure intersections are favorable loci of ore deposition.

* Reprinted from: Geology and ore deposits, Silver City region, New Mexico, in West Texas Geological Society Guidebook Field Trip No. 3, November 6-9, 1949, p. 4-6.



Sketch showing localization of ore at contact of dolomite with shale. (Chloride Flat district). Taken from "Manganiferous iron-ore deposits near Silver City, New Mexico" by L. P. Entwistle; New Mexico Bureau of Mines Bull. 19, Figure 5, p.53, 1944.

The ore bodies are oxidized, and lie between dolomite walls that are altered to calcite. The ore consists of carbonates, quartz, abundant hematite, pyrolusite, limonite, and residual galena and its oxidation products. The silver minerals are cerargyrite and embolite, pearcite, argentiferous galena, argentite (alteration product of pearcite), and native silver. Entwistle (1944) believes that most of the silver was derived from primary argentite. Silver halides contained most of the produced silver. Except in proportions of economic metals, the primary mineralization and sequence are like those of Boston Hill.

Fleming Camp

The ores of Fleming Camp, which is 6 miles northwest of Silver City, are similar to those of Chloride Flat, but they are localized as irregular pockets in the Beartooth quartzite. The Beartooth quartzite rests on the Fusselman limestone (Paige, 1916, p. 14) in part of the district. Production has been estimated at $300,000. The district is now idle.

Georgetown

The Georgetown district, now idle, is about 3 miles east of Fierro. Its silver output has been estimated at a value of $3,500,000 (Lasky and Wootton, 1933, p. 57). Both high grade and concentrating ores were mined; most of the ore was oxidized.

The sedimentary rocks of the district are of Paleozoic age and dip west-southwest at small angles (Paige, 1916, p. 14). Several faults of the northeast set cut the Paleozoic rocks. Paige has mapped a large northwest fault that drops Miocene (?) volcanic rocks and valley fill down on the northeast