MINERALS OF THE FREDRICKSON MINE, GOODSPRINGS DISTRICT, CLARK COUNTY, NEVADA

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The Fredrickson mine is located in the NW 1/4 of sec. 33 T24S R58E in the Goodsprings mining district of Clark County, about 50 mi South-southwest of Las Vegas, Nevada. Hewitt's 1931 paper (pages 147-148) deals with the historical and geological information, which is summarized here. The Fredrickson mine was located in 1897 by Jesse Jones. The mine has a main inclined tunnel with five different levels indicated by Hewitt. Below the lowest indicated level, the fifth level, are some workings that extend below that of Hewitt's mine map, which I'll call the sixth level. This suggests that the mine was producing after Hewitt's report, probably during WWII. From 1909 to 1926 ore from the mine yielded 5,615 ounces of silver, 3,741 pounds of copper, 205,368 pounds of lead, and 559,011 pounds of zinc.

Hewitt reported that the mine workings lie within the Mississippian-age Yellow Pine member of the Monte Cristo limestone. Mineralization occurs in breccias and faults. Sulfide minerals were oxidized resulting in ore that contained mostly hydrozincite, hemimorphite, and residual galena. Collecting specimens can be challenging, as the matrix is sometimes quite crumbly, resulting in a frustratingly high number of damaged specimens. Semi-quantitative EDS and/or powder XRD analysis confirmed the identities of most of these minerals. The wulfenite reported by Hewitt was not found. Only species found by the author are reported here.

*Aurichalcite* *(Zn,Cu)*5*(CO3)2*(OH)6 was found on the first, fifth, and sixth level. It is found as powdery blue films, crystalline aggregates, and as acicular crystals.

*Bromargyrite*, AgBr was found as small green rounded or curved aggregates on the second level. It is associated with hemimorphite.

*Cerussite*, PbCO3 is found on the fifth level associated with rosasite and aurichalcite in a crumbly matrix. Crystals tend to be loosely attached to the matrix and are difficult to recover. The largest crystal recovered was 2.5 mm in size. The translucent colorless to gray crystals are small, and because they occur in a white to off-white matrix, they are difficult to spot. Paying attention to a reflective flash of high luster can give away their location.

*Cinnabar*, HgS generally occurs as black grains and masses. The masses can reach several inches in size, especially on the first level, and exhibit shiny cleavage faces. Associated tiny red minium/cinnabar masses or specks are not uncommon.

*Descloizite*, PbZnVO4(OH) was found on the third level associated with galena and fornacite. It generally forms unattractive brown or orangeish-brown masses, but druses of tiny orange or brown crystals and surfaces with single crystals are also found. It may grade to mottramite as some of the crushed descloizite can locally display a green streak, suggestive of mottramite.

*Dolomite*, CaMg(CO3)2 is common, both as a coarse-grained gangue mineral and as white opaque rhombohedrons.

*Fornacite*, Pb2Cu(AsO4)(CrO4)(OH) was found on the third and fifth levels. It forms brown crystals up to 0.25 mm in size, which are often twinned. The crystals are lustrous and transparent. Weathered or smeared fornacite has a pistachio green color, which is a useful hint for looking for microscopic crystals. Another useful clue is its association with galena.

*Galena*, PbS generally occurs as black grains and masses. The masses can reach several inches in size, especially on the first level, and exhibit shiny cleavage faces. Associated tiny red minium/cinnabar masses or specks are not uncommon.

*Hemimorphite*, Zn Si O (OH) •H O occurs as transparent, striated colorless crystals.
**Hydrozincite**, Zn$_5$(CO$_3$)$_2$(OH)$_6$ is found on all levels of the mine. It is usually found as white or nearly white masses. Using a portable ultraviolet lamp can help locate it. Seams can have coatings of tiny crystals and groups of radiating crystals. The crystals are soft and fragile. Collecting undamaged specimens is challenging.

**Mimetite**, Pb$_5$(AsO$_4$)$_3$Cl was found on the first and fifth levels. It forms gemmy orange to yellow prisms and also ugly yellow aggregates.

**Minium**, Pb$_3$PbO is intergrown with cinnabar and forms red specks and small masses within or adjacent to oxidized galena.

**Mottramite**, PbCuVO$_4$(OH) occurs sparsely with the descloizite on the third level, as indicated by its green streak and green-black drusy crystal coatings.

**Rosasite**, (Cu,Zn)$_2$(CO$_3$)(OH)$_2$ was found on the first and fifth levels and below the fifth level. It forms blue or greenish-blue spherical aggregates and fans of adjacent prisms. Under high magnification individual crystals can be seen.

The mine is not posted but is assumed to be patented, so the owner should be contacted for permission to collect.

**References:**