

Arizona Geological Society

417 Project, Globe, Gila County, Arizona: A Native Silver Discovery

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The 417 Project lies 10 km due north of the copper mining town of Globe, Arizona, and 112 km east of Phoenix, Arizona (Figure 1). The “417” consists of 100 unpatented lode claims covering an area where an extraordinary amount of alluvial native silver was found by metal detectorists over the last two years. Twenty five, large (over 0.5 kg), silver nuggets (Figure 2) totalling over 10,700 ounces (330 kg) were spread over a 560 meters length of a dry arroyo locally known as Mexican Mine Canyon. The silver nuggets range in weight from 30 grams to up to 190 kilograms (417 lbs, Figure 3) and notably decrease in size down the gradient of the arroyo. The largest nuggets, 36 kg, 55 kg, and 190 kg occur 25 meters downslope of a 300 m long, east-west striking, 40 cm wide, quartz-siderite brecciated vein. Although one historic 4 m deep prospect pit occurs on the vein, there are no indications of native silver in the pit walls or in dump material. The obvious source of the silver lies in the east-west vein.

Apparently the earliest mineral discovery in the area was by the Apaches who used silver found in a creek to make bullets. There was a rush to the area when prospectors heard of this and the creeks were worked in 1873 and 1874. During 1875-1876, one of the sources for the nuggets was located on the surface at what is now the McMorris mine. The town of Globe was founded in 1875, and in fact was founded as a silver mining center, named after a 9 inch “globe” of solid silver found in the hills. As Ransome, a USGS geologist noted in 1903, the first mines in the Globe area focused on silver.

The last published discovery of native silver was noted by Pederson in a 1962 USGS Professional Paper who stated a 60 lb nugget was found in a wash north of Globe. Nugget Wash just north of Mexican Mine Canyon was cited as producing \$100,000 worth of silver in the early 1900's, which at the then price of a \$1/oz silver would equate to 100,000 oz of silver.

The Globe-Miami Mining District is a prolific copper producer and still has three mines in full production. All copper comes from Laramide age porphyry deposits, located 8 km to the west of the “417” claims. The “417” area is underlain by a Proterozoic diabase with the quartz carbonate vein and presumable source of the native silver occurring near the contact of the diabase and the Proterozoic Apache Group sedimentary rocks which the diabase intrudes. The diabase intruded the Ruin Granite, also Proterozoic in age. Locally the diabase contains a compositionally similar gabbro with a pegmatitic texture. A red, potassic granite appears to intrude the diabase and a more aplitic phase of that potassic granite occurs in a prospect pit alongside the quartz carbonate vein which hosts the native silver.

The silver nuggets range up to 20 cm thick and up to 120 cm long, compositionally the nuggets have skeletal quartz up to 40% by volume (Figure 4), although occasionally the nuggets are pure silver. One XRF (hand-held) analysis showed the silver contained 6% tin and 2% mercury, the outer rind of the nuggets are often covered with a 1 mm layer of dark cerargyrite (silver chloride). Petrographic studies showed that the native silver contains 2% mercury as an amalgam, as well as acanthite, chlorargyrite, jalpaite, and mckinstryite .

The closest geologic analogue to the “417” project is the Cobalt Silver district in Ontario, Canada where over 445 Moz of silver were produced from thin veins in another Proterozoic diabase. At Cobalt, the veins were from 5 to 25 cm wide and often near the edges of the Proterozoic diabase sills and the Archean sedimentary rock. The unconformity between the Nipissing diabase and the sedimentary rocks at least spatially appears to be a control on native silver mineralization. It seems likely that the “417” silver mineralization is of Proterozoic age as well and not related to the nearby younger porphyry copper ores.



Figure 1. The 417 Project, Globe area.



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Figure 2. Silver nuggets recovered by detectors. Dark appearance due to cerargyrite (AgCl) coating



Figure 3. The 190 kg silver nugget, perhaps currently the largest silver nugget in the world.



Figure 4. Cut through one of the silver nuggets showing the internal texture.

