Epithermal Au/Ag Mineralization and Occurrence at the Moss Mine Project, Oatman Mining District, Arizona

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2.2 M oz historical production
MOSS PROJECT LOOKING NORTH
Captain John Moss and Paiute Chief Tercherrum, circa 1860’s
Capt. John Moss, gold miner/prospector, was stationed at Fort Mojave with the “California Volunteers” during the Civil War.

Capt. Moss was a “peace-maker” and had very good relations with several tribes in the area.

Chief Iretaba (Yara Tav) is referred to in the literature as a Mojave chief and diplomat. He took Moss to what is now the Moss Project and it is recorded that Moss and his troopers were able to recover 12,000 ounces of gold from a very small excavation.

Chief Iretaba later went to Washington with Moss to meet with President Lincoln.
MOSS PROPERTY 1865-1900

• Very little mining activity occurred at the Moss from 1865 to 1900 but with the discovery of the Gold Road Mine, a boom started in the Oatman area.
• Shaft sinking, adits, and pits were the main exploration tools and the Moss saw intense exploration and development.
• Moss vein mineralization differs significantly from volcanic-hosted high-grade bonanza at Oatman (Gold Road, Tom Reed, and United Eastern). These 3 mines produced more than 2 million ounces of gold.
REGIONAL GEOLOGY

Black Mountains, eroded volcanic center of lower Miocene age (+23 to 18 Ma).

Thick sequence of andesite, latititic dacite and rhyolite volcanic rocks intruded by granodiorite to granite plutons.

Geochemistry of volcanics alkalic to subalkalic, shoshonitic (highly potassic) calc-alkaline.

Granodiorite stock (Moss Porphyry) hosting mineralization estimated 10.7 Ma.

Mineralization controlled by faults and fracture sets associated with the mid-Tertiary volcanic activity.
EPITHERMAL GOLD MINERALIZATION

• Low sulfidation (adularia-sericite) epithermal breccia vein.
• “Moss Vein” forms prominent ridge trending about 110°, dip of 70° S.
• Not a simple fissure vein.
• White quartz and calcite through quartz-calcite with small clasts of wallrock, to brecciated wallrock veined and cemented by quartz-calcite.
BRECCIA VEIN

AR167c 49-54° breccia vein - clasts of fine porphyry floating in white quartz-calcite matrix
Preliminary Paragenesis - Moss Mine

chlorite-clay (calcite-quartz-pyrite)

magnetite veins & replacements

gray quartz (+/- pyrite) veins & replacements

white quartz-calcite (episodic)

rare late pyritic veinlets

Au-Ag-pyrite-silver sulfides

fluorite

limonite/hematite (oxidation)
VEINING DENSITY

quartz-calcite vein density

0  0.5  1  2  3  4  5
trace <1% 1%-10% 10%-20% 20%-40% 40%-70% >70%
quartz-calcite quartz-calcite quartz-calcite quartz-calcite quartz-calcite quartz-calcite

n.b. gray silica veinlets don’t count
MOSS VEIN
SHOWING
RARE SILVER
SULFIDE
ACANTHITE
COLLOFORM
BANDING
TEXTURE
GINGURO
TEXTURE

DARK BANDS
ARE
ARGENTITE
BLADED CALCITE TEXTURE
UNDERGROUND –65 LEVEL
PHASE I DEVELOPMENT

ACTIONS

• Mine 90,000 tonnes of higher grade ore from Hill #1
• Stock pile low grade ore
• Use waste rock for facilities construction and disposal
• Heap leach to recover gold and silver
PHASE I DEVELOPMENT

OBJECTIVES

• Prove continuity and grade of ore
• Develop agglomeration techniques and procedures
• Determine heap leach solution kinetics
• Determine pilot scale recovery percentages for gold and silver
• Determine economics of the project
• Provide a basis to raise the capital to construct a mine – or not, as the case may be
PHASE I DAY-LIGHT QUARRY
THANKS FOR LISTENING!
QUESTIONS... COMMENTS?