THE GEOLOGY OF, AND KNOWN MINERAL OCCURRENCES WITHIN WILDERNESS STUDY AREA 4-65 DOS CABEZAS MOUNTAINS

by

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This report is preliminary and has not been edited or reviewed for conformity with Arizona Geological Survey standards
Brief summary of geological features and known mineral occurrences

Wilderness Study Area 4-65
Dos Cabezas Mountains

1) The WSA is underlain by Precambrian metamorphic rocks, Paleozoic to Mesozoic sedimentary strata, and Cretaceous-Tertiary volcanics. Existent structures are believed to be of Laramide age (62-56 m.y.); during this period, folding and thrusting, doming, and north-south trending normal faulting occurred extensively throughout the Dos Cabezas and Chiricahua mountain ranges. The ores of the Dos Cabezas Mining District are chiefly lode deposits in steeply dipping fault fissure zones and replacement veins cutting metamorphosed sedimentary beds and volcanic flows near porphyry intrusives;

2) One inactive exploration prospect is located within the WSA. The Howell Claim, situated in the north-central portion of the WSA, contains spotty concentrations of auriferous pyrite and galena. There are no records of development or production;

3) Copper minerals occur to the west of the WSA in sulfide-bearing quartz fissure veins cutting Cretaceous volcanic rocks and Precambrian metasediments. Mining operations bordering the WSA produced several thousand tons of ore between the late 1800's and the mid-1900's. The largest copper producers in this area were the Elma and Mascot mines; the Elma Mine recovered over 8000 tons of copper and silver ore, while the Mascot Mine Group produced about 60,000 tons of copper, lead, silver, gold, and iron ore. Minor amounts of copper ore were also mined from several of the gold and silver prospects to the west of the WSA;

4) Silver occurs in association with lead and gold to the west and south of the WSA, in Precambrian granite
and metamorphosed Paleozoic limestone. Several hundred tons of ore were produced during the late 1800's and early 1900's from the Yeakley prospect, as well as from the Silver Camp Mine, Honey Dew Mine Group, Mascot Group, Dives Mine, and Silver Strike Mine. The Leroy Mine produced over 4000 tons of lead ore between the 1800's and 1950;

5) Gold lode deposits are located throughout the Dos Cabezas region. Lenses and spotty concentrations of auriferous pyrite and galena are contained in fissure veins dissecting Precambrian granite. Of the 28 reported occurrences of gold lode, 16 produced over 100 tons of gold ore. The largest producers in the region were the Dives and Gold Prince mines; each reported production of 10,000 tons of gold ore. The Buckeye Apache, Ewell Springs, and Gold Ridge mines recovered over 1000 tons of gold, silver, and lead ore, respectively;

6) There are gold placer deposits in shallow alluvium blanketing granitic pediments on the northern flanks of the Dos Cabezas range. Reported production from the Dos Cabezas and Gold Gulch placers was insignificant (less than one ounce, respectively);

7) Beryllium occurs in small masses and as fracture coatings in granitic rocks on the southern border of the WSA. Some lots of hand-sorted beryl were sold from the Beryl Hill and Live Oak Prospects during the late 1950's;

8) Fluorspar occurs to the north of the WSA in Precambrian granitic rocks. Several small prospect pits were located in this area. Records of production are unavailable;

9) Manganese oxides occur, in association with secondary copper minerals, to the west of the WSA. There are no records of production;

10) Scheelite, a tungsten mineral, forms vein deposits in Cretaceous-Paleocene granite rock to the north and west, and along the southern border, of the WSA. A few tons of ore were mined from the Comstock Lode Mine during the 1950's; five additional claims containing occurrences of scheelite did not record any production;

11) There are reports of uranium radioactivity from four exploration prospects to the west and south of the WSA. No uranium production has been recorded from the Dos Cabezas region;
12) Gemstone prospecting was conducted to the south of the WSA during the mid-1900's. Records of development or production are unavailable;

13) The Paronazzo and Pentelicus marble quarry to the south-east of the WSA reported minor production in the early 1900's;

14) Trace occurrences of molybdenum, zinc, bismuth, niccolite, and arsenopyrite have also been reported from the Dos Cabezas Mountains;

15) The WSA is included in the Dos Cabezas—Teviston Mining District; to the south and west, the WSA borders numerous mines and prospects, mostly relatively small. According to Keith:

"The known ore deposits of the Dos Cabezas and Teviston mining districts appear to be relatively small, spotty, and low grade veins and contact metamorphic bodies. However, the widely scattered and varied mineralization, and favorable geologic formations and structures suggests that possibilities still exist in the area for large, low grade, disseminated copper deposits."

Gold in quartz veins and shallow placer deposits was discovered on both sides of the Dos Cabezas mountain range in the 1860's. Between the early 1880's and 1930's, approximately 100,000 tons of ore, primarily of gold and copper, were mined from the area. Mining activity dwindled following the 1930's; by 1950, most of the mines within the district were idle.

For further discussions of the geology and mineral potential of the Dos Cabezas region, see Sabins (1957), Tenney (1927-1929), and Shields (1940).
MINERAL OCCURRENCES IN THE
DOS CABEZAS AREA (4-65)

EXPLANATION

Known mineral occurrences are located by map number, followed by type of mineral deposit. See accompanying table of mineral occurrences.

Listed by major commodity:

• W: tungsten, chiefly scheelite
• F: silver; associated lead ore
• G: gold lode, associated silver, and copper ore
• H: gold placer
• F: fluorite
• C: copper; chiefly chalcocite and chrysocolla; associated silver, lead, gold lode, uranium, and manganese oxides
• L: lead oxides; associated gold lode, copper, silver, zinc
• B: beryllium
• U: uranium, associated fluorite
• Z: semiprecious silicates
• L: stone; marble
Sources of information include:

Cooper, 1960
Wynn, 1931

Unpublished U. S. Geological Survey information

--- Contact

Fault, dashed where inferred or covered

Low-angle fault, seewells on upper plate

Ancient shorelines of Wilcox Playa; erosional and evaporation features

EXPLANATION

Q1c Clay and water soluble salts devoid of vegetation; marginal parts of the barran ground contain considerable silt and sand

Qs Younger alluvium; unconsolidated silt, sand, and gravel on active floodplains and in stream channels

Qsb Extensive, broad, low-gradient alluvial fans that are largely inactive and generally dissected by erosion

Qtg Weekly to well-indurated conglomerate, conglomerate, and breccia capping low terraces and ridges

Qtp Older alluvium and colluvium; coarse sediment gravel; including sand and silt of older valley fill

Tv Rhyolite welded ash-flow tuff and coarse-grained porphyritic andesite flows

Trk Dikes and small intrusive bodies of rhyolite and rhyolite porphyry

Trd Dikes of andesite and andesite porphyry

Tv Flow, tuffs, breccias, and volcanic conglomerates of andesitic to rhyolitic composition

Kb Dikeses Formation; interbedded sandstone, shale, and limestone, with basal conglomerate unit

Pwi Fine-grained fossiliferous limestone; Horsethief and Eocene Formations

OCeo Limestone with laminated siltstone and sandstone beds; El Paso and Aribica Formations

Prs Undifferentiated Paleozoic sedimentary rocks, including limestone, quartzite, and shales

Tg Medium-to coarse-grained granitic rocks, commonly porphyritic

Xp Pixel Schist; locally containing rhyolitic schist, greenstone, phyllite, melagraywacke, and quartzite
KNOWN MINERAL OCCURRANCES

DOS CABEZAS MOUNTAINS (4-65)

Gold, Copper, Silver, Lead Zinc, Manganese,
Tungsten, Uranium, Beryllium, Fluorspar,
Gemstone, and Marble Deposits

The Dos Cabezas Mountains are composed of complexly faulted and folded schists and granite (Precambrian); sedimentary rocks, primarily sandstone, shale, and limestone (Paleozoic to Mesozoic); and volcanic rocks (Cretaceous to Tertiary) intruded by small granite plutons of Laramide (56-62 m.y.) and middle Tertiary (28-34 m.y.) age. Precious and base metal replacement deposits and veins are generally small and erratically distributed over fairly large areas. Age of mineralization is probably correlative with the Laramide and middle Tertiary plutonic events.

Gold, silver, lead, zinc, copper, and iron deposits are associated with sulfide-bearing veins along shear zones and sporadic replacement deposits in upper Paleozoic limestone. Placer gold deposits (map numbers 3, 14) have been located in shallow alluvium covering granitic pediments on the northern and southern flanks of the Dos Cabezas range. Gold lode deposits (map numbers 5-10,13,15,17,18,20-26,29-33,38-40) form spotty concentrations of auriferous pyrite and galena in Precambrian granite; deposits are variously associated with uranium radioactivity and with molybdenum, lead, copper, and silver minerals. Copper deposits, chiefly chalcopyrite and chalcocite, are found in quartz-filled veins along contacts between intrusive igneous bodies and Paleozoic limestones and schists (map numbers 9-12,17-24,29,30,32,34).

Tungsten-bearing quartz veins are found in Precambrian granite and schists, and in Paleozoic limestone. Low-grade scheelite deposits are located by map numbers 1,16,27,32,22, and 34.

Flourspar (map numbers 4,36) occurs in veinlets cutting Precambrian granitic rocks.

Uranium radioactivity (map numbers 11, 35-37) is associated with base metal sulfides in Cretaceous-Tertiary sedimentary rocks and Precambrian schists and granite.

Manganese oxides occur, in association with secondary copper minerals, in irregular quartz-filled veins cutting Cretaceous schistose rocks and intrusive rhyolite bodies (map numbers 11,25,26).

Single occurrences of other minerals associated with base metal sulfides and oxides have been reported in this region, these being: bismuth (map number 19); berylillium as fracture coatings and pegmatite masses in Precambrian granite (map number 28); semiprecious gemstones (map number 41); and marble from quarries on the southern flank of the Dos Cabezas range (map number 42).

Many mineral deposits were discovered prior to 1870 but mining operations did not begin until the late 1870's. By 1950, most of the mines were idle.
Map No.: 4-65-1

Mine: Comstock Lode Mine (Cohen, Adams)


Geology: Spotty scheelite with minor galena and oxidized iron and lead minerals in quartz veins and veinlets in Cretaceous-Paleocene granitic rock. Some low-grade tungsten placers. Quartz veins trend east and dip south in the quartz diorite-monzonite Cowboy Pluton (59m.y.)


References:
Keith, 1973, p. 72
USBM Files, Comstock Lode Mine
Dale, et al., 1960, p. 25-26
AOMR Comstock
Cooper, 1960

USGS Railroad Pass Quad (1:24000)
Map No.: 4-65-2
Mine: Yeakley

Location: T. 13S  Sec. 24  Lat. 32-16-09N
          R. 26E  Long. 109-38-36W
          Elev. 4500 Ft.

Geology:
Base metal deposits on or near contact between Pinal Schist (Precambrian) and shallow gravel resting on a granitic pediment (Quaternary).

Mineral Products:  Lead
                   Silver
                   Copper


References:
USBM Files, Yeakley
USGS Crib Data, 1972
USGS Railroad Pass Quad (1:24000)
Cooper, 1960
Map No.: 4-65-3

Mine: Gold Gulch Placers
(Inspiration, Teliston, Sturgess Property)

Location: T. 13S
R. 26E
Sec. 36
Cen., W½
Lat. 32-15-41N
Long. 109-38-51W
Elev. 5000 Ft.

Geology:
Placer gold in shallow alluvium and gravel covering a granitic pediment in a mountain basin on north flank of Dos Cabezas Mountains. Veinlets of Quartz contain trace amounts of fine galena, chalcopyrite, and pyrite. Uranium radioactivity confined to wall rock in small quartz veins; uranium mineral tentatively identified as uraninite. Veins associated with dense basic dikes in coarse porphyritic granite country rock.

Mineral Products: Gold Placer

Development and Production: Mainly a dry placer operation. Estimated that over 78,000 cubic yards treated during various periods from early 1900's to 1940. Operators included Cochise Mining Co., Inspiration Placers Inc., Gilman Rice, and Gold Gulch Mining Co. (1973). Workings also in Sec. 35, E½ (T. 13S, R. 26E).

References:
Keith, 1973, p. 72
USBM Files, Gold Gulch Placers
Wilson, 1961, p. 68
USGS Crib Data, 1980
USGS Luzena Quad (1:24000)

USAEC, 1952(?), Sturgess Property
Map No.: 4-65-4

Mine: Buckeye Canyon Prospect

Location: T. 13S  Sec. 34  Lat. 32-15-51N
         R. 27E  NE   Long. 109-34-18W
         Elev. 4660 Ft.

Geology:

Mixed deep purple and green veinlets occur in open cuts through medium-to coarse-grained granitic rocks (late Precambrian). Countryrock transected in locality by Tertiary rhyolite porphyritic dikes.

Mineral Products: Fluorspar: Fluorine

Development and Production: Small prospect pits; extent of development unknown. Located on Buckeye Apache Mines Co. property.

References:

Elevatorski, 1971, p. 12
USBM Files, Buckeye Canyon Prospect
USGS Luzena Quad (1:24000)
Cooper, 1960
Map No.: 4-65-5

Mine: Gold Farms

Location: T. 14S Sec. 5 Lat. 32-14-29N
     R. 27E SE Long. 109-36-15W
     Elev. 6025 Ft.

Geology:

Lenses and spotty concentrations of auriferous pyrite and galena in small quartz-filled fissure veins (N90W and N10E) in Precambrian granite. Deposits near Tertiary dike.

Mineral Products: Gold Lode; Pyrite; Galena

Development and Production: Exploration prospect; shallow surface workings.

References:

USBM files, gold farms
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-6
Mine: Apache Prospect

Location: T. 14S  Sec. 4  Lat. 32-14-42N
R. 27E  C  Long. 109-35-41W
Elev. 5623 Ft.

Geology:
Spotty concentrations of auriferous pyrite and galena in small quartz-filled
fissure veins in coarse-grained, commonly porphyritic, Precambrian granitic rocks.

Mineral Products: Gold Lode: Auriferous Pyrite and Galena

Development and Production: Raw prospect; extent of development unknown.

References:
USBM Files, Apache Prospect
Cooper, 1960
Map No.: 4-65-7

Mine: Buckeye Apache Mines (Buckeye, Apache, Sunrise, Fairview)

Location: T. 14S Sec. 4 Lat. 32-14-26N

Geology:

Auriferous pyrite and argentiferous galena in quartz veins along fissure zones in Precambrian medium-to coarse-grained granitic rocks. Granite is commonly porphyritic, and is cut by diabase, rhyolite porphyry, and andesite porphyry dikes. 2 flat-lying veins (N30W, 200W); NSE, 220W; respectively) cut through dikes and countryrock; main ore concentration is found at intersection of these 2 veins.

Mineral Products: Gold, Silver, Lead: Galena; Pyrite; Tellurides

Development and Production: Development included 2000 ft. of tunnels and 250 Ft. of crosscuts, one 30 Ft. shaft inclined at 35 degrees, 28 additional shafts, various inclines, and open cuts, and 3 10-acre mill sites. Property comprises 40 patented and unpatented mining claims, totalling about 800 acres. Operated by Buckeye Apache Mines, Co. (1973). Mining operations on property began prior to 1880. Workings also located in Section 3 (T. 14S, R. 27E), and in Sections 33 and 34 (T. 13S, R. 27E).

References:

USBM Files, Buckeye Apache Mine
Keith, 1973, p. 72
Cooper, 1960
ABGMT Crib Data, 1981
ADMR Buckeye Apache File
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-8
Mine: Silver Camp Mine

Location: T. 14S  Sec. 12
R. 26E        NW
Lat. 32-14-05N
Long. 109-38-54W
Elev. 5820 Ft.

Geology:
Spotty copper oxides, chalcocite, and chalcopyrite with magnetite and garnet in a fault block of pyrometamorphosed Paleozoic limestones cut by diabase dikes and with silver mineralization and some gold in a quartz-pyrite vein along a fault fissure and at diabase and rhyolite dike intersections. Major country rock types are Cretaceous-Paleocene volcanics and intrusive quartz monzonite (62m.y.). Major N-S trending normal fault through vicinity; mineralization occurs on west (downthrown) side.

Mineral Products: Copper: Chalcocite, Chalcopyrite
                      Silver
                      Gold Lode

Development and Production: A few thousand feet of work from tunnels and shafts. First claims in the district and over 500 tons of ore produced in late 1880's. A few tens of tons shipped in the 1930's. Operated by Parent Mining Co. (1973). Property comprises 8 patented and 8 unpatented claims (as of 1969).

References:
Keith, 1973, -., 62
USBM Files, Silver Camp Mine
Mines Handbook, 1926
USGS Simmons Peak Quad (1:24000)
ABGMT Crib Data, 1981
ADMR Silver Camp Mine File
Map No.: 4-65-9

Mine: Kit Carson Prospect  
(Fourth of July)

Location: T. 14S  
R. 27E  
Sec. 7  
SE of NW  
Lat. 32-14-02N  
Long. 109-37-51W  
Elev. 6750 Ft.

Geology:

Mineral deposits in highly altered red dike contact in major overthrust belt comprising Cretaceous volcanic rocks of andesitic to rhyolitic composition (flows, tuffs, breccias, and volcanic conglomerates).

Mineral Products: Lead; Copper Oxide, Gold Lode

Development and Production: Prospect; produced 3500 lbs. of copper ore in 1908. Workings also in Sec. 6 (T. 14S, R. 27 E).

References:

USBM Files, Kit Carson Prospect  
USGS Crib Data, 1972  
USGS Simmons Peak Quad (1:24000)  
Cooper, 1960
Map No.: 4-65-10

Mine: Mineral Park
   (Gold Slope, Maria)

Location: T. 14S  Sec. 7  Lat. 32-14-02N
         Elev. 6900 Ft.

Geology:

Irregular quartz veins containing spotty free gold, copper oxides, pyrite, and chalcopyrite in epidotized and chloritized Cretaceous-Paleocene volcanics intruded by a granitic plug of the same age.

Mineral Products: Gold Lode; Silver; Copper: Chalcopyrite; Pyrite


References:

Keith, 1973, p. 62
USBM Files, Mineral Park
ABGMT Crib Data, 1981
Cooper, 1960
USAEC, 1953, A-P-74

USGS Simmons Peak Quad (1:24000)
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-11

Mine: Name Unknown


Geology:

Copper mineralization in quartz veins along a fault system in schists and metasediments (Cretaceous or Tertiary). Fault system strikes N80W - N80E and dips 85° NW. Associated with quartz, epidote, and chlorite.

Mineral Products: Lead; Uranium (U3O8); Copper: Malachite, Azurite, Chrysocolla, Chalcopyrite; Pyrite; Specular Hematite; Limonite; Manganese Oxides, Gold (reported).

Development and Production: Extensive workings consist of shafts, adits, and trenches.

References:

USBM Files, Name unknown
USAEC, 1970, RME - 154
Cooper, 1960
Map No.: 4-65-12

Mine: Elma Mine
   (Central Copper Co. Group; Tout)

Location: T. 14S  Sec. 9  Lat. 32-13-51N
          Elev 5850 Ft.

Geology:
Irregular, frequently massive, magnetite, chalcopyrite, and pyrite in a pyrometasomatic
pipe-like body along a strong shear and fault zone cutting brecciated and
metamorphosed Paleozoic limestone and Laramide rhyolite and granitic intrusive rock.

Mineral Products:
Cooper; Silver; Gold Lode; Molybdenum

Development and Production: 5000 Ft. of underground workings; at least 4
levels, upper levels at 40, 113, and 163 Ft.; considerable stoping about the
163 Ft. level workings. At least 8000 tons of ore produced intermittently
from the late 1910's to the late 1960's. Ore trammed to Mascot Mine 2 miles
to the south (10,600 Ft. of aerial tramway). Last operators were Tout, Arivaca

References:
Keith, 1973, p. 61
USBM Files, Elma Mine
ADMR Elma Mine File
ADMR Tout Mine File
Tenney, 1927-29, p. 226-227
USGS Crib Data, 1979

USGS Dos Cabezas Quad (1:24000)
Cooper, 1960
ABGMT Clippings, Mascot Copper Co.
Map No.: 4-65-13

Mine: Howell
(Red Jacket, Lowwill, Grace E.)

Location: T. 14S Sec. 11 Lat. 32-13-59N
R. 27E W2 Long. 109-33-51W

Geology:
Elev. 6000 Ft.

Lenses and spotty concentrations of auriferous pyrite and galena in small quartz-filled fissure veins in Precambrian granite.

Mineral Products: Gold Lode; Pyrite; Galena

Development and Production: Exploration prospect.

References:
Cooper, 1960
USBM Files, Howell
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-14
Mine: Dos Cabezas Placers

Location: T. 14S  Sec. 10
          R. 28E
Lat. 32-13-56
Long. 109-28-18W
Elev. 4000 Ft.

Geology:
Gold placer deposits in alluvium and gravel in all gulches draining southwest
flank of Dos Cabezas range. Gold is flat, ragged, and fairly coarse.

Mineral Products: Gold Placer: Native Gold

Development and Production: Operated mainly as dry placers until about 1947.
Discovered in 1901. Produced about 4.03 kg. Av (1906-1914, 1934-1936). Workings
also in Sections 16, 14 and 22 (T. 14S, R 28E), and in Sections 29, 31, 32,
33, 34, and 27 (T. 14S, R. 27E).

References:
USBM Files, Dos Cabezas Placers
Johnson, 1972, p. 4-6
USGS Crib Data, 1972
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-15

Mine: Apache Pass Mines (New Year, Gold Belle, Helen Dome, Quillan, Lula Gold Nugget)

Location: T. 15S Sec. 10 NE Lat. 32-08-49N
R. 28E Elev. 5100 Ft.

Geology: Long 109-27-52W

Spotty gold and silver values with minor oxidized base metal sulfides in irregular quartz-filled fissure veins cutting Precambrian quartz monzonite country rock.

Mineral Products: Gold Lode
Lead
Zinc
Silver
Copper

Development and Production: Numerous scattered pits, shafts, and adits. About 600 tons of ore produced intermittently since 1870's. Claims extend into Sec. 4, SE\(\frac{1}{4}\); Sec. 9, N\(\frac{1}{4}\); Sec. 10, N\(\frac{1}{4}\) (T. 15S, R. 28E)

References:

Keith, 1973, p. 71
USBM Files, Apache Pass Mines
USGS Bowie Mountain North Quad (1:24000)
ABGMT Crib Data, 1981
Map No.: 4-65-16  
Mine: Rough No. 1 and 2  

Location: T. 14S  
R. 28E  
Sec. 18  
Lat. 32-12-53N  
Long. 109-31-30W  
Elev. 6000 Ft.  

Geology: Irregular disseminations and narrow streaks of scheelite in Precambrian amphibole schist.  

Mineral Products: Tungsten (WO₃): Scheelite  

Development and Production: Exploration prospect; several surface workings. Discovered in early 1940's. Operated by Ben Kratzberg (1943).  

References:  
Dale, 1960  
USBM Files, Rough No. 1 and 2  
USGS Crib Data, 1972  
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-17

Mine: Dos Cabezas Queen Mine

**Location:**

T. 14S  
R. 27E  
Sec. 19  
NE

Lat. 32-12-25N  
Long. 109-37-36W  
Elev. 5750 Ft.

**Geology:**

Scattered pyrite gold ore with sparse base metal sulfides in quartz-calcite filling of a fault fissure zone in slightly graphitic Cretaceous shale.

**Mineral Products:**

Gold Lode; lead; silver; zinc; copper; pyrite; base metal sulfides

**Development and Production:** Adit workings. A small tonnage produced in early 1900's. Operated by Dives Mining Co. Workings also in Sec. 18, SW 1/4 (T 14S, R. 27E).

**References:**

Keith, 1973, p.61  
USBM Files, Dos Cabezas Queen Mine  
USGS Crib Data, 1980  
USGS Simmons Peak Quad (1:24000)
Map No.: 4-65-18

Mine: Honey Dew Mine Group (Silver Peak, New Era, White Oaks Lode, Silver Cave, Silver Cave South, Silver Dike, Gold Spot, Gold Nuggett)

Location: T. 14S, Sec. 20
R. 27E, Cen.
Lat. 32-12-14N
Long. 109-36-37W
Elev. 6190 Ft.

Geology:
Lensing quartz veins and veinlets with minor streaks and disseminations of base metal sulfides along a fault fissure zone cutting Cretaceous metamorphosed shale.

Mineral Products: Gold Lode; silver; lead; copper sulfides


References:
Keith, 1973, p. 61
USBM Files, Honey Dew Mine Group
USGS Dos Cabezas Quad (1:24000)
USGS Crib Data, 1980
Map No.: 4-65-19

Mine: Mascot Mine Group (Iron Tower, Tout Group, Central Copper, Consolidated Tunnel, Bachelder Group, Dos Cabezas Consolidated Mines)

Location: T. 14S Sec. 21 Lat. 32-12-27N
R. 27E N½ Long. 109-35-23W
Elev. 6450 Ft.

Geology:

Iron and copper minerals associated with epidote, chlorite, garnet, and talc in irregular veins, disseminations, and massive bunches in extensively fractured and faulted blocks of pyrometamorphosed Paleozoic limestone, Cretaceous shales, and volcanics. Host rocks along or near Laramide granitic intrusives and associated with dikes ranging from rhyolites to basalts. Magnetite occurs as contact metamorphic replacement deposits in limestone fault blocks.

Mineral Products:

Copper: chalcopyrite, bornite
Lead: galena
Silver
Gold
Iron: magnetite, pyrite
Bismuth

Development and Production: Surface and underground workings include a 2100 Ft. tunnel, 1700 Ft. tunnel, crosscuts, 2 shafts (Elma Consolidated and Mascot). Group includes 32 patented and 56 unpatented claims, owned by Edwin I. Tout. About 60,000 tons of ore produced intermittently from the early 1910's to mid-1950's. Claims extended into T. 14S, R. 27E, Sec. 16, W and S½; T. 14S, R. 27E, Sec. 15, SW¼. Elma Mine is located 1.5 miles N of Mascot Mine (part of Mascot Mine Group).

References:

Keith, 1973, p. 62
USBM Files, Mascot Mine Group
ABGMT Crib Data, 1981
Harrer 1964, p. 22
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)

ADMR Elma Mine File
ADMR Tout Mine File
Mines Handbook, 1916, p. 735
Mines Handbook, 1926, p. 238
ABGMT Clippings, Mascot Copper Co.
Map No.: 4-65-20

Mine: Antelope

Location: T. 14S Sec. 21 Lat. 32-12-23N
R. 27E NE Long. 109-35-20W
Elev. 6440 Ft.

Geology:
Copper minerals associated with epidote, chlorite, garnet, and talc in disseminations and quartzitic veins in faulted blocks of pyrometamorphosed Paleozoic limestone, Cretaceous shales, and volcanics. Veins associated with basaltic to rhyolitic dikes and nearby Laramide granitic intrusives.

Mineral Products: Copper; silver; gold lode

Development and Production: Prospect; extent of development unknown.

References:
USBM Files, Antelope
USGS Dos Cabezas Quad (1:24000)
Cooper, 1960
Map No.: 4-65-21

Mine: Dives Mine
(Bear Cave, Porter, Emma, Nettie, Nobby)

Location: T. 14S Sec. 21 Lat. 32-11-56N
R. 27E SW Long. 109-35-51W

Geology:

Scattered bunches and disseminations of auriferous pyrite and minor base metal sulfides in a strong, coarsely-textured quartz vein along a fault fissure zone separating a wide band of metamorphosed, graphitic Cretaceous shale from Precambrian granitic rock. Vein strikes N68-87W and dips nearly vertically. E-W Trending fault separates quartz monzonite to the south from Cretaceous shales to the north.

Mineral Products:  Gold Lode; zinc: sphalerite; silver, lead: galena; pyrite; copper: chalcopyrite, azurite, cerrusite, malachite

Development and Production: Shaft and tunnel workings. Some 10,000 tons of gold ore produced sporadically from 1882 to 1931. Development included an inclined shaft 30 m deep, 2 adits and more than 1000 m of underground workings. Operators included Twin Peaks Mining Co., Dives Mining Co., Consolidated Gold Mines Inc., Santa Maria Mining Co. (1973).

References:

Keith, 1973, p. 61
USBM Files, Dives Mine
Wilson, E. D., et al., 1934, p. 118-119
Shields, 1940
Cooper, 1960
ABGMT Crib Data, 1981

USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-22
Mine: Ewell Springs Mine

Location: T. 14S Sec. 21 R. 27E Cen., S\(\frac{1}{2}\) Lat. 32-11-44N Long. 109-35-40W Elev. 5750 Ft.

Geology:
Auriferous pyrite and minor base metal sulfides in a quartz vein in a fault fissure cutting graphitic Cretaceous slate. Located on or near contact of slate with Precambrian quartz monzonite.

Mineral Products: Gold Lode; Lead: Galena; Copper; Silver; Zinc; Pyrite

Development and Production: Surface workings. 600-1000 tons reportedly produced in 1880's.

References:
Keith, 1973, p. 61
USBM Files, Ewell Springs Mine
USGS Crib Data, 1980
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-23

Mine: Philadelphia Mine

Location: T. 14S Sec. 21 R. 27E

Lat. 32-11-51N

Long. 109-35-20W

Elev. 6250 Ft.

Geology:

Irregular quartz vein with bunches and disseminations of base metal sulfides in a crosscutting fault in Precambrian quartz monzonite. Associated with a biabase dike. Quartz monzonite body is extensively faulted and sheared; fault separated quartz monzonite from Cretaceous sediments to north.

Mineral Products:

Gold Lode
Silver
Lead: Galena
Copper Sulfides
Pyrite


References:

Keith, 1973, p. 62
USBM Files, Philadelphia Mine
Shields, 1940
ABGTM Crib Data, 1981
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-24

Mine: Gold Ridge Mine
(Casey, Juniper, Huntsman)

Location: T. 14S  Sec. 21
R. 27E  SE
Lat. 32-11-44N
Long. 109-35-24W
Elev. 6000 Ft.

Geology:
Scattered bunches and disseminations of auriferous galena, pyrite, and chalcopyrite in bands of coarse-textured quartz along a major fault and parallel shears separating blocks of Cretaceous graphitic shale and pyrometamorphosed Paleozoic limestone from Precambrian granitic rocks. E-W trending fault separates Cretaceous Bisbee Group to north from Precambrian Rapakivi quartz monzonite to south. Cretaceous beds trend E-W and dip about 60° N. Principal vein is 4-34 Ft. wide, 1750 Ft. long and averages 400 Ft. deep; 7 other veins are located on property.

Mineral Products: Gold Lode; Silver; Lead; Galena; Copper: Chalcopyrite; Pyrite

Development and Production: Numerous shaft and adit workings. 1000 or more tons of ore produced intermittently in 1880's and 1890's and from 1915 to 1936. Developments included 2 tunnels with 1000 Ft. workings on lower tunnel, 1500 Ft. workings on upper tunnel; and about 2000 Ft. of cross cuts, winzes, and drifts. Operations included Dos Cabezas Gold Ridge Mining Co., Chicago and Arizona Copper Co. Property totals 9 unpatented claims; workings also in Sec. 20, SW1/4 (T. 14S, R. 27E).

References:
Keith, 1973, p. 61
USBM Files, Gold Ridge Mine
Wilsin, E.D. et al, 1934, p. 119
Shields, 1940
Elsing and Heinman, 1936, p. 91
ADMR Gold Ridge Mine File

ABGMT Crib Data, 1981
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-25

Mine: Arizona Klondyke Mine
(Arizona and Klondyke groups, Denmark, Bean Manganese Prospect)

Location: T. 14S Sec. 22 R. 27E SE;SW
Lat. 32-11-56N Long. 109-34-19W
Elev. 6250 Ft.

Geology:
Spotty gold and minor silver values associated with irregular quartz veins along fault fissures cutting Cretaceous schistose rocks and with minor manganese oxide in limy beds. E-W trending fault south of mine juxtaposes Precambrian quartz monzonite (to south) with limestone and schistose rocks of Cretaceous Bisbee Group (to north). Largest manganese deposit, near east end of outcrop, is an irregular replacement body as much as 10 Ft. wide.

Mineral Products: Gold Lode; Silver; Manganese: Wad, Pyrolusite; Pyrite

Development and Production: Shaft and surface workings. A few hundred tons of ore produced from 1884 to 1933. Property comprises 6 claims, operated by T. P. Bean (1940-?). Attempted gold mining-operations were unsuccessful. Workings also in Sec. 23 (T. 14S, R. 27E).

References:
Keith, 1973, p. 60
USBM Files, Arizona Klondyke Mine
Cooper 1960
ABGMT Crib Data, 1981
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-26

Mine: Howard Group
(Adriatic, Double Springs, Atlantic, Pacific)

Location: T. 14S Sec. 23 Lat. 32-11-45N
R. 27E SW Long. 109-33-41W

Geology:
Elev. 6500 Ft.

Lensing quartz stringers with minor base metal sulfides associated with shear zones along a rhyolite-slate contact.

Mineral Products: Gold Lode; Silver; Manganese; Lead; Copper

Development and Production: Shallow workings. A few hundred tons of ore produced in the late 1880's and some 20 tons in 1932.

References:
Keith, 1973, p. 62
USBM Files, Howard Group
USGS Crib Data, 1980
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-27
Mine: Ram Claims

Location: T. 14S R. 28E Sec. 21 Lat. 32-12-03N Long. 109-29-36W
Elev. 5250 Ft.

Geology:
Scheelite in quartz lenses that follow foliation in Precambrian schist. Country rock cut by felsite dikes.

Mineral Products: Tungsten (WO₃): Scheelite


References:
DALE, 1960
USBM Files, Ram Claims
USGS Bowie Mtn. North Quad (1:24000)
Map No.: 4-65-28

Mine: Beryl Hill and Live Oak Prospects

Location: T. 14S  Sec. 23  Lat. 32-11-48N

Geology:

Lensing quartz-pegmatite masses in granitic dikes and fracture coatings along
the contact of Precambrian gneiss with porphyry granite.

Mineral Products: Beryllium
Mica
Silicon
Quartz
Feldspar

Development and Production: Open cut workings. Some lots of hand sorted
beryl sold in the late 1950's. Workings also in Sec. 23, NE ¼ (R. 14S, R. 28E).
Grade 0.18-2.6% BeO.

References:

Keith, 1973, p. 72
USBM Files, Beryl Hill and Live Oak Prospects
Meeves, 1966, p. 14, 16
ADMR Live Oak Prospect File
Moore, 1969, p. 102-113
USGS Bowie Mtn. North Quad (1:24000)
Map No.: 4-65-29

Mine: Gold Prince Mine (Gold Hill, Highlonesome, Henry Clay, Pat Price, Murphy, Basin, Bain)


Geology:
Lenticular bodies of pyritic quartz containing irregular bunches of auriferous base metal sulfides in a strong zone of sheared and pyrometamorphosed Cretaceous sandstone and graphitic shale along a major fault. Associated rhyolite, andesite, and diabase dikes. Lenticular quartz bodies strike N70W and dip 650s. E-W fault separates Cretaceous Bisbee Group to north from Precambrian Rapakivi Quartz monzonite to south.

Mineral Products: Gold Lode; Silver; Zinc: Sphalerite; Lead: Galena Copper; Pyrite

Development and Production: Extensive shaft and tunnel workings. The major gold producer of the district with some 10,000 tons produced sporadically from early 1880's to 1950. Developments included 5 tunnels in steep hillside sloping south; depth of workings at least 500 Ft. Total length of workings estimated at 3000 Ft. Operators included Dos Cabezas Gold Mining Co., R.E.D. Mining Co., Gold Prince Mining Co., Out West Mining Co., Bean. Discovered in 1878. Workings also in Sec. 22, South-Central (T. 14S, R. 27E).

References:
Keith, 1973, p. 61
USBM Files, Gold Prince Mine
Wilson, E. D. et al, 1934, p. 119-120
USAEC, 1953, A-P-48
ABGMT Crib Data, 1981
Elsing and Heinman, 1936, p. 91

ABGMT Clippings File
Mines Handbook, 1926
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-30

Mine: Leroy Mine Group (Black Hawk, Climax, Comet, Oneida, Gold Queen, Standard, Jack Dempsey, Lost Hope, War Eagle)

Location: T. 14S Sec. 27 Lat. 32-59-41 N
R. 27E SW Long. 109-33-57W

Geology:

Scattered bunches and disseminations of pyrite, galena, sphalerite, and minor chalcopryrite in irregular, coarsely textured, crosscutting quartz veins along faults and shears cutting Precambrian quartz monzonite. Fault separates quartz monzonite body from Cretaceous sediments to north; monzonitic country rock is in concordant contact with Cambrian sediments to south bedding, as well as fault, trends E-W; accompanied by intrusive diabase dikes.

Mineral Products: Silver Sulfide
Lead: Galena
Gold Lode
Zinc Sulfide: Sphalerite
Copper Sulfide: Chalcopryrite
Pyrite
Niccolite
Arsenopyrite

Development and Production:

Development included 2 shafts, Climax and Leroy, and numerous tunnels. At least 2000 Ft. of workings in Climax Shaft on 3 levels; 1500 Ft. of workings in Leroy Shaft on 3 levels. One tunnel, the Oneida, is 500 Ft. long, with 500 Ft. of side drifts. Property comprises 6 patented claims (as of 1964) and extends into Sections 33, NE¾, and 34, NW½ (T. 14S, R. 27E). Operators included Leroy Consolidated Mines Co., Arelead Mining Co., VMP Leasing Co., Bean. A few thousand tons of ore produced in 1880's and about 4000 tons intermittently between early 1900's and 1950.

References:

Keith, S. B., 1973, p. 62
USBM Files Leroy Mine Group
USGS Dos Cabezas Quad (1:24000)
ABGMT Crib Data, 1981
Wilson, E.D., et al, 1934, p. 120-121
Elsing and Heinman, 1936, p. 91
ADMR Leroy Mine Group File
Mines Handbook 1926
USAEC, 1953, A-P-49
Cooper, 1960
Moore and Roseveare, 1969, p. 251-270
Map No.: 4-65-31

Mine: First Chance Mine

Location: T. 14S Sec. 26
R. 27E NW

Geology:
Pyritic gold-quartz vein with minor lead in a fault fissure zone cutting pyrometamorphosed Cretaceous limy shale of the Bisbee Group. E-W trending fault separates Bisbee Group shales from Precambrian Rapakivi quartz monzonite to the south.

Mineral Products: Gold Lode; Silver; Lead; Pyrite

Development and Production: Shallow pit and open cut workings. Several hundred tons of ore produced in the 1880's and a few tons in 1936-1937. Operators included Globe Mining and Smelting Co., Equities, Inc., and Bean.

References:
Keith, 1973, p. 61
USBM Files, First Chance Mine
USAEC, 1953, A-P-50
Cooper, 1960
USGS Crib Data 1980
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-32

Mine: Austin Mine
(Kaske Mine)

Location: T. 14S R. 28E Sec. 30
Lat. 32-12-00N Long. 109-31-00W
Elev. 6000 Ft.

Geology:
High-grade scheelite mineralization occurs in sheared and silicated shaly limestone of the Martin formation (Devonian), on or near contact of limestone with quartzite of the Pinal Schist Formation (Precambrian). Steeply dipping vein of quartz, trending easterly, cuts diagonally across silicated limestone beds. Associated with galena and minor amounts of sphalerite, chalcopyrite, and pyrite.

Mineral Products:
Gold
Tungsten (WO₃): Scheelite
Copper: Chalcopyrite
Lead: Galena
Zinc: Sphalerite
Pyrite

Development and Production: Developed by a shallow shaft and short adit. Austin Claim located in 1880 by Tom Hatton. Property comprises 3 unpatented claims owned by G. A. Kaske (Austin, Chance No. 7 and Chance No. 8 Claims). Adit is 190 Ft. long and cuts bottom of 85 Ft. deep shaft; W-trending drift from adit is 70 Ft. long. Assays averaged 0.22-1.32% WO₃.

References:
Dale, 1960
USBM Files, Austin Mine
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-33

Mine: Silver Bell Claims

**Location:** T. 14S  R. 28E  Sec. 29  Cen.
**Lat.:** 32-12-00N  **Long.:** 109-30-30W  **Elev.:** 6000 Ft.

**Geology:**
Scheelite and replacement deposits of gold and silver in quartz vein (N72-82E, 90°) transecting contact metasomatized limestone.

**Mineral Products:**
- Gold
- Silver
- Tungsten (WO₃): Scheelite

**Development and Production:** Development included 50 m. deep shaft and one adit. Located as gold prospect in 1910-1911.

**References:**
Dale, 1960
USBM Files, Silver Bell Claims
Cooper, 1960
Dos Cabezas Quad (1:24000)
Map No.: 4-65-34

Mine: Silver Strike Mine  
(Devonian Group, Cawood, Tennessee Shaft)

Location: T. 14S  R. 28E  Sec. 28  Cen. 3 27 38  Lat. 32°10'56"N  Long. 109°29'36"W  Elev. 5200 Ft.

Geology:
Spotty argentiferous galena with minor chalcopryite and sphalerite in a quartz plug along a fissure vein striking N62°E and dipping 80°SE through Paleozoic and Cretaceous sedimentary rocks. Close to a Cretaceous or Tertiary granitic intrusive. Spotty scheelite occurs in shear zones and quartz bodies in pyrometamorphosed Paleozoic limestone.

Mineral Products: Lead: Galena  
Tungsten (WO3): Scheelite  
Zinc: Sphalerite  
Silver  
Coper: Chalcopryite


References:
Keith, 1973, p. 72  
USBM Files, Silver Strike Mine  
ABGMT Crib Data, 1981  
USGS Bowie Mtn. North Quad (1:24000)  
USBM Files, Unknown Prospect
Map No.: 4-65-35

Mine: Rattler Group

Location: T. 14S  Sec. 31  Lat. 32-10-30N
           R. 28E  Cen.  Long. 109-31-00W
Elev. 5690 Ft.

Geology:
Radioactivity associated with minerals in quartz veins cutting quartzite of the Precambrian Pinal Schist Formation. Located on or near rhyolitic dikes (Tertiary).

Mineral Products: Uranium (U₃O₈)

Development and Production: Prospect; extent of development unknown.

References:
USAEC, 1970, RME-154
USBM Files, Rattler Group
Cooper 1960
USGS Dos Cabezas Quad
Map No.: 4-65-36

Mine: Uranium Hill Claims

Location: T. 14S Sec. 32
R. 28E Cen.


Mineral Products: Uranium (U₃O₈); Fluorite

Development and Production: Exploratory surface cuts and diamond drill holes. Core samples assayed 0.3 and 1.09% U₃O₈. Owned by Tom Bean (as of 1955).

References:
USAEC, 1970, RME-154
USBM Files, Uranium Hill Claims
Cooper 1960
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-37

Mine: Typest Group

Location: T. 14S Sec. 32  Lat. 32-10-30N

Geology: Elev. 5495 Ft.

Unknown radioactive minerals in N-S trending shear zone in porphyritic granite.

Mineral Products: Uranium \((U_3O_8)\)


References:
USAEC, 1970, RME-154
USBM Files, Typest Group
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-38
Mine: Hillside Mine


Geology: Spotty gold and silver values in quartz veins in Precambrian Pinal Schist.

Mineral Products: Gold Lode Silver

Development and Production: Limited tunnel and shaft workings. Some 77 tons of ore produced in 1908.

References:
Keith, 1973, p. 72
USBM Files, Hillside Mine
USGS Crib Data, 1980
USGS Bowie Mtn. North Quad (1:24000)
Map No.: 4-65-39

Mine: Happy Hooligan

Location: T. 14S  R. 29E  Sec. 31  
         Lat. 32-10-00N  
         Long. 109-25-00W  
         Elev. 4480 Ft.

Geology:
Unknown.

Mineral Products: Gold Lode  Lead

Development and Production: Prospect; extent of development unknown.

References:
USBM Files, Happy Hooligan
USGS Bowie Mtn, North Quad (1:24000)
Map No.: 5-65-40
Mine: Cottonwood Mine

Location: T. 15S Sec. 6 R. 28E SE
Lat. 32-09-18N
Long. 109-31-18W
Elev. 5226 Ft.

Geology: Spotty gold and galena in quartz-filled fissure veins in Precambrian quartz monzonite. Veins generally strike N-S and dip 32°E; fissure veins are visible on surface for 4500 Ft. and are worked underground for distance of 500 Ft. Workings located on or near andesite and rhyolite dikes (Tertiary).

Mineral Products: Gold Lode
Lead: Galena
Silver

Development and Production: Shaft workings. 500 or more tons of gold ore produced from 1880's to 1934. Development included one main shaft with workings at 56 Ft., 113 Ft., 180 Ft. and 280 Ft. below surface; and one smaller shaft to 56 Ft. level.

References:
Keith, 1973, p. 60
USBM Files Cottonwood Mine
Cooper, 1960
ADMR Cottonwood Mine File
ABGMT Crib Data, 1981
Map No.: 4-65-41

Mine: Topaz Prospect

Location: T. 15S Sec. 8 Lat. 32-08-33N
R. 28E NW Long. 109-30-37W

Geology: Elev. 5100 Ft.

Prospect located on or near contact of porphyritic granitic rocks (Precambrian) with alluvium and overlying pediment gravel (Pliocene).

Mineral Products: Gemstone: Semiprecious Silicates

Development and Production: Prospect; extent of development unknown.

References:
USBM Files, Topaz Prospect
Cooper, 1960
USGS Dos Cabezas Quad (1:24000)
Map No.: 4-65-42
Mine: Paronazzo and Pentelicus Quarries

Location: T. 15S Sec. 20
R. 29E
Lat. 32-06-53N
Long. 109-24-10W
Elev. 5600 Ft.

Geology:
Massive fractured, white and colored marbled Pennsylvanian Horquilla Limestone.

Mineral Products: Stone: Marble

Development and Production: Open Quarries. Minor production in the early 1900's.

References:
Keith, 1973, p. 72
USBM Files, Paronazzo and Pentelicus Quarries
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Wilson and Roseveare, 1949, p. 48
Wilson, 1961

USGS Cochise Head Quad (1:24000)
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Map No.: 4-65-31

Mine: First Chance Mine

Location: T. 14S  Sec. 26  Lat. 32-11-36N
R. 27E  NW  Long. 109-33-49W

Geology:

Pyritic gold-quartz vein with minor lead in a fault fissure zone cutting pyrometamorphosed Cretaceous limy shale of the Bisbee Group. E-W trending fault separates Bisbee Group shales from Precambrian Rapakivi quartz monzonite to the south.

Mineral Products: Gold Lode; Silver; Lead; Pyrite

Development and Production: Shallow pit and open cut workings. Several hundred tons of ore produced in the 1880's and a few tons in 1936-1937. Operators included Globe Mining and Smelting Co., Equities, Inc., and Bean.

References:

Keith, 1973, p. 61
USBM Files, First Chance Mine
USAEC, 1953, A-P-50
Cooper, 1960
USGS Crib Data 1980
USGS Dos Cabezas Quad (1:24000)