GEOLOGY OF THE SOUTH-CENTRAL GOLDFIELD MOUNTAINS, ARIZONA

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LEGEND FOR MAP AND CROSS SECTIONS

Tertiary

- First Water rhyolite
  - Tfv_2 — First Water rhyolite vitrophyre #2
  - Tfv_1 — First Water rhyolite vitrophyre #1
  - Tfp — First Water rhyolite pyroclastic deposits

Possible Unconformity

- rhyodacites of Apache Gap — Tag
- Government Well latite
  - Tglb — gray latite, unit 'b'
  - Tgr — green latite
  - Tgla — gray latite, unit 'a'
  - Tlx — latite with xenoliths
  - Trl — red latite
  - Tlp — latite, pyroclastic
  - Tbl — basal latite
- yellow rhyolite — Tyr
- undifferentiated basalts — Tub
- Whitetail Conglomerate — Twt

Unconformity

pre-Cambrian

- Ruin granite — pЄg

27 Strike and dip of beds.

75 Strike and dip of flow foliation.

69 Strike and dip of joints.

Contact, dashed where inferred, ? where queried.

26 Contact showing dip.

57/80 Flow antiform, showing crestline.

High-angle fault, normal or reverse, dashed where inferred, ? where queried. Ball on downthrown block. Arrows indicate dip and throw of fault.

A A' A'' Line of cross section, showing bend in section.

1:10,000

0 1000 2000 3000 4000

FEET

ARIZONA GEOLOGICAL SURVEY
Contributed Map
CM-93-A
Sheet 1 of 1
1993

GEOLOGIC MAP OF THE SOUTH-CENTRAL GOLDFIELD MOUNTAINS

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INTRODUCTION The Goldfield Mountains are located 20 miles east of Mesa, Arizona. The range has low to moderate relief and forms the western margin of the Superstition Volcanic Complex. This report consists of a geologic map (1:10,000) and descriptions of rock units found in the south-central Goldfield Mountains. This report was prepared as part of an Advanced Field Geology course at Arizona State University in Tempe, Arizona. Field work was done during the spring of 1991.

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ROCK UNIT DESCRIPTIONS Fifteen map units were identified in the Goldfield Mountains. Some of these map units consist of two or more lithologies which were too areally extensive to map individually. Each rock unit is described separately and where applicable, broken down into subunits. Organization and relative ages of units are based on lithology and field relationships.

First Water rhyolite vitrophyre #2 (Tfw_2)

Brown to black, sub-horizontally flow-banded and spherulite-bearing vitrophyre with 10-15% quartz and sanidine phenocrysts.

First Water rhyolite vitrophyre #1 (Tfw_1)

Brown to black, sub-horizontally flow-banded and spherulite-bearing vitrophyre with 10-15% quartz and sanidine phenocrysts.

First Water rhyolite pyroclastic sequences (Tfp)

White to yellow-gray sequence of pyroclastic units with less than 10% 10-15% quartz and sanidine phenocrysts. Sequences show varying degrees of welding and contain clasts of lower latite and basalt units.

Apache Gap rhyodacite (Tag)

Basal unit consists of a black, aphyric basalt overlain by a tannish yellow glassy rhyodacite with 15-25% biotite, plagioclase, and quartz. The sequence is overlain by a breccia containing basalt, latite, and rhyolite clasts less than 10 cm in size.

Government Well Latite A complex sequence of onlapping and interfingering plagioclase- and biotite-bearing lava flows and pyroclastic units, the latter of which often display rapid facies changes.

gray latite, unit 'b' (Tglb) -- At least three gray and red latite flows containing less than 10% biotite and plagioclase phenocrysts less than five mm in size. Flow shearing is present in the gray flows. Sequence may actually be part of Tgla repeated by a fault.

gray latite, unit 'a' (Tgla) -- At least three gray and red latite flows containing less than 10% biotite and plagioclase phenocrysts less than five mm in size. Flow shearing in the gray flows.

green latite (Tgr) -- Pastel-green to greenish-white, semi-welded to welded volcaniclastic flow deposits containing 25-35% biotite, hornblende, and plagioclase phenocrysts. Scattered pumice clasts also occur throughout the unit, which is locally overlain by a brown, aphanitic latite.

latite with xenoliths (Tlx) -- Purple to purplish-gray latite volcaniclastic flow deposits containing 25-40% biotite and plagioclase phenocrysts, as well as white, hornblende-bearing clasts less than 8 cm in size. Lower contact appears to be a flow breccia.

red latite (Trl) -- Reddish brown latite flow containing about 20% plagioclase and less than 5% biotite. Basal breccia contains basalt clasts very similar to Tbl.

latite, pyroclastic (Tlp) -- White to purple to pastel-green latite pyroclastic unit. Basal lahar (?) contains pebble- to boulder-sized clasts of granite and latite in an ashy, welded to partially welded matrix. Unit appears to coarsen to the northwest. Overlying units consist of lithic-rich pyroclastic flows and breccias.

basal latite (Tbl) -- Gray to grayish-pink latite containing 10-20% biotite, hornblende, and plagioclase less than 3 mm in size. Basal breccia may be present.

yellow rhyolite (Tyr)

Yellow to pink to buff sequences of slightly welded tuffaceous breccia containing angular to sub-rounded clasts of pumice, basalt, and granite. Occasional surge deposits consisting of pebbles in an ashy matrix occur in the unit.

undifferentiated basalt flows (Tub)

Black to gray, phyric to slightly phyric basalt lava flows. Olivine and pyroxene phenocrysts, where weathered, are replaced by brown to green clays and zeolites. Vesicular zones contain silica, zeolites, and calcite fillings.

Whitetail Conglomerate (Twt)

Dark red to light pink, poorly sorted fanglomerate with local lenses of thinly- to thickly-bedded arkosic sandstone and volcaniclastic siltstone. Contains 0.1-1 m angular to rounded clasts of Ruin granite, mylonite, quatzite, and phyllite.

Ruin granite (pЄg)

Rusty orange to light pink, coarse-grained granite. Contains 35% quartz, 25% plagioclase, 35% K-feldspar, and 5% mafics, such as hornblende. Quartz and plagioclase up to 1 cm in length; K-feldspar crystals up to 5 cm in length.

INDEX MAP OF ARIZONA

NORTH