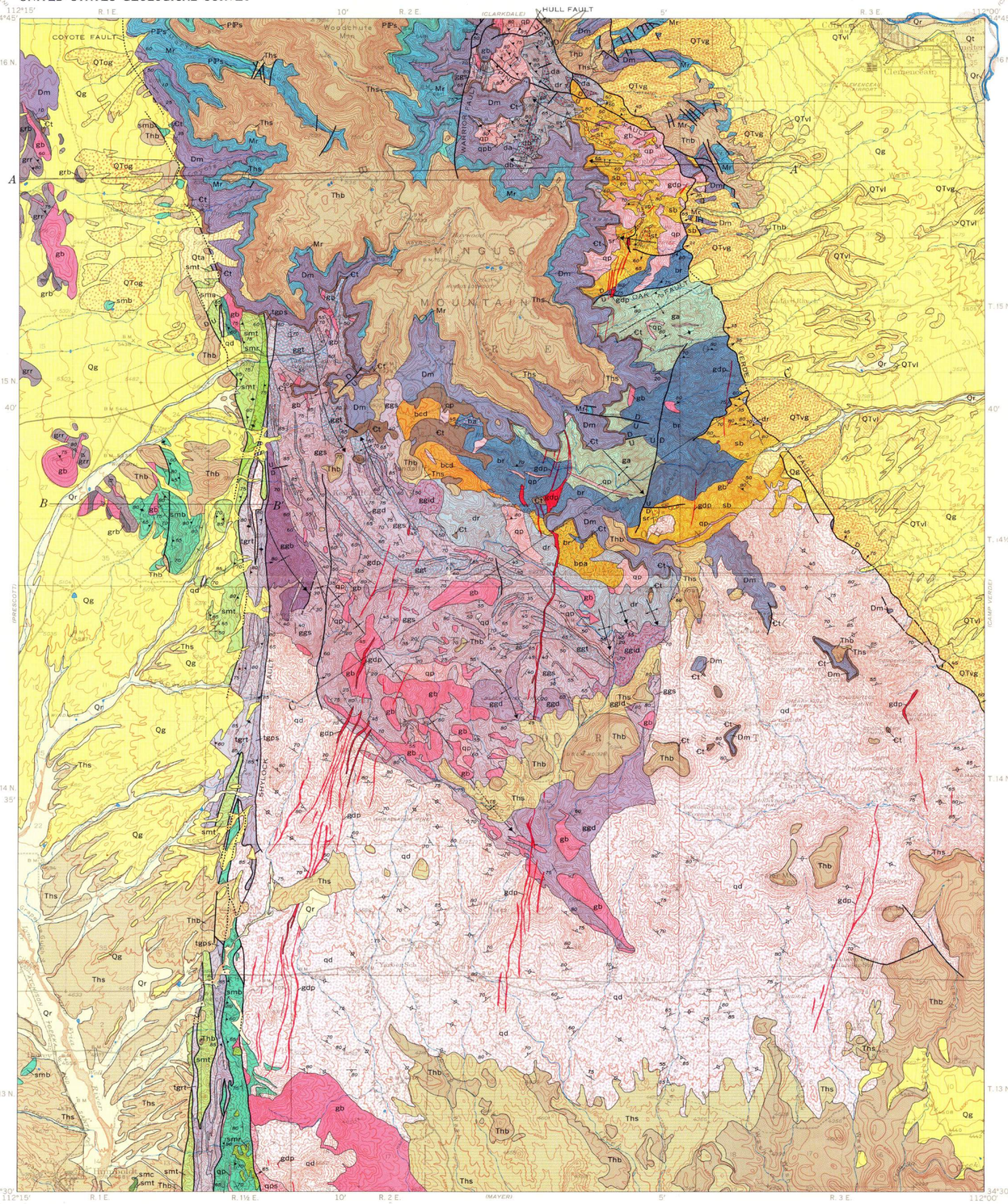
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GEOLOGIC QUADRANGLE MAP
MINGUS MOUNTAIN QUADRANGLE, ARIZONA
GQ-715



Base by U.S. Geological Survey, 1944

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1967

SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

ARIZONA
QUADRANGLE LOCATION

Geology by C. A. Anderson, S. C. Creasey, and R. E. Lehner 1945–52

EXPLANATION

QUATERNARY

Recent

Qr — River wash

Qt — Terrace deposits

Qta — Talus and alluvial fan deposits

Pleistocene

Qg — Younger gravels

Boulders, cobbles, pebbles, and some finer grained sediments, generally poorly sorted; color dominantly red but grades into pink and gray

TERTIARY OR QUATERNARY

Pliocene or Pleistocene

QTog — Older gravels

Clasts largely of Paleozoic rocks and Tertiary basalt, but locally scattered Precambrian rocks. Probably equivalent to the Verde Formation

QTvg, QTvl — Verde Formation

QTvg, *coarse to fine gravel containing interbedded sand and silt layers. Clasts, derived from west of Verde fault, reflect variation in exposed lithology, namely Tertiary basalt, various Precambrian rocks, Supai, Redwall, and Martin Formations*

QTvl, *light-pink to light-yellow (weathered surface white) hard aphanitic limestone beds with interbeds of pinkish-gray, yellowish-gray, and orange-pink friable marl*

UNCONFORMITY

TERTIARY

Pliocene(?)

Thb, Ths — Hickey Formation

Thb, *massive to vesicular olivine basalt flows, commonly showing columnar jointing. Local interbeds of basaltic sand and gravel*

Ths, *coarse gravel and conglomerate grading into sand, and fine marl or silt. Clasts derived from Precambrian and Paleozoic rocks, and rarely, Hickey basalt flows. Locally, only rounded to subrounded clasts of Paleozoic rocks, and conversely, locally only subangular clasts of Precambrian rocks*

UNCONFORMITY

PENNSYLVANIAN AND PERMIAN

PIPs — Supai Formation

Basal zone of rubble, largely chert, overlain by impure limestone. Above limestone are well-bedded red siltstone and shale beds

UNCONFORMITY

MISSISSIPPIAN

Mr — Redwall Limestone

Light-gray and pink limestone, generally granular and coarse-grained. Abundant fossiliferous beds alternate with beds of fossil-poor crystalline limestone. Parts of the Redwall are massive, and stand out as spectacular white cliffs

UNCONFORMITY

DEVONIAN

Middle(?) and Upper Devonian

Dm — Martin Formation

Lower unit light-brownish-gray dolomite containing variable amounts of clay; all of the coarse-grained thick beds are dolomite and thin-beds are dolomitic limestone. Second unit light-colored, thin bedded, dense fine-grained dolomite, containing near the top a thin bed of pale-red sandstone and sandy dolomite. The third unit consists of thinly bedded mottled dolomite and dolomitic limestone. The fourth (upper) unit includes dolomite and dolomitic limestone with interbeds of limy siltstone and shale

UNCONFORMITY

CAMBRIAN

Ct — Tapeats Sandstone

Lower unit of red medium- to coarse-grained sandstone, granule sandstone, and a few pebble conglomerate beds; crossbedding, channels, and ripple marks widespread. Upper unit comprises dark-reddish-brown siltstone at the base grading upward into gray to yellow siltstone and marl with thin cream-colored medium- to coarse-grained sandstone beds in the upper portion

UNCONFORMITY

OLDER PRECAMBRIAN

gdp — Granodiorite porphyry dikes

Many dikes are leucocratic containing quartz and dulled plagioclase phenocrysts in a pale-gray aphanitic groundmass. Other dikes contain abundant hornblende phenocrysts in addition to quartz and feldspar. Some of the thicker dikes have a seriate texture

qd — Quartz diorite

Western facies is medium grained containing conspicuous stubby hornblende prisms, biotite, plagioclase and a small percentage of orthoclase, and abundant small grains of quartz. This rock grades eastward into a fine- to medium-grained facies containing slender prisms of hornblende, biotite, plagioclase, and quartz; orthoclase content lower than in western facies

gb — Gabbro

Dark granular rock containing hornblende and saussuritized plagioclase. Ratio of hornblende to feldspar is variable. Locally, porphyritic facies contains hornblende and saussuritized plagioclase phenocrysts embedded in a fine-grained groundmass. Included under gabbro are some small bodies of diabase

qp, qpb, qps — Quartz porphyry

qp, *conspicuous quartz phenocrysts, commonly associated with albitic plagioclase, embedded in a fine crystalline to microcrystalline groundmass. Near Jerome, foliated quartz porphyry contains quartz "eyes" in a sericitic matrix*

qpb, *breccia zones in Mescal Gulch, consists of angular fragments of quartz porphyry in a matrix of quartz porphyry; probably intrusion breccia*

qps, *locally, seriate granophyre. The mass cutting Buzzard Rhyolite north of the Oak fault is granophyre in the southern exposures but grades northward into normal quartz porphyry. The exposure along the southern end of the Shylock fault is the northern extension of a large mass of granophyre exposed in the Mayer quadrangle*

WEST OF SHYLOCK FAULT

Yavapai Series

*Alder Group**

smb, smt, sma, smc, smr — Spud Mountain Volcanics

smb, *bedded mixed andesitic and rhyolitic breccia and interbedded tuffaceous sedimentary rocks. Andesitic clasts characterized by large saussuritized plagioclase phenocrysts, and in certain beds, by vesicules. Matrix is composed largely of equant plagioclase clasts. Where the breccia is highly foliated, as along the Shylock fault, rock is chlorite-sericite schist*

smt, *andesitic tuffaceous sedimentary rock, gradational into the bedded breccia, and similar to the fine-textured interbeds in the breccia. Locally, crystal tuff beds composed dominantly of saussuritized plagioclase in irregular to equant clasts. Where foliated, rock is essentially a chlorite schist*

smc, *ferruginous chert beds interbedded with andesitic tuffaceous beds east of Humboldt*

sma, *amygdaloidal nonporphyritic flows west of Shylock fault and northwest of Yaeger Canyon. Fibrous actinolitic hornblende, saussuritized plagioclase, and members of epidote group are common*

smr, *rhyolitic rocks containing quartz phenocrysts, and in part, albitized plagioclase phenocrysts set in light-colored microcrystalline base. In part, may be intrusive, and in part, bedded tuffs*

grr, grb — Green Gulch Volcanics

Includes rocks at Indian Hills, the type locality of Indian Hills Volcanics as defined and located by Anderson and Creasey (1958, p. 20–27, pl. 1). Name Indian Hills Volcanics therefore now considered abandoned

grr, *rhyolitic flows, pale-yellowish-brown on weathered surfaces, greenish-gray on fresh surfaces. Tiny phenocrysts of quartz and albitized plagioclase embedded in an aphanitic groundmass. Contorted flow banding widespread*

grb, *greenish-black, blocky basaltic flows. Amygdules, largely of epidote, and vesicles are abundant. Phenocrysts of saussuritized plagioclase and hornblende (after augite?) are embedded in granular albite, epidote group minerals, and chlorite*

tgps, tgrt — Texas Gulch Formation

tgps, *abundant beds of slate, dominantly purple, locally grade into gray. Relict bedding detected on foliation surfaces by cleavage-bedding intersections. Thin pink marble layers interlayered in slate near Shylock fault*

tgrt, *bedded rhyolitic tuff, fine- to coarse-grained, and interbeds of pebble conglomerate. Quartz and sericite conspicuous; albite and microcline abundant but inconspicuous. Rhyolitic fragments, embayed quartz clasts and patches rich in sericite, interpreted as collapsed pumice, testify to volcanic origin of detritus. Clasts in conglomerates are largely jasper and granophyre*

EAST OF SHYLOCK FAULT

*Ash Creek Group**

ggs, ggt, ggb, ggd, ggid — Grapevine Gulch Formation

ggs, *fine-grained tuffaceous and cherty sedimentary beds range from ½ to 2 inches in thickness. Minor folds ranging from 2 to 20 feet in amplitude common. In crystal tuff beds, angular albite and subordinate quartz clasts are embedded in a fine-grained chloritic matrix*

ggt, *poorly bedded coarse-grained lithic tuffaceous sedimentary rocks contain fine-grained tuffaceous interbeds ranging from 2 to 50 feet in thickness. Clasts in lithic tuffs range from 0.1 to 1 inch in diameter and consist of light-colored rhyolite and dacite and dark brown to black andesite. Matrix contains variable amounts of quartz, angular clasts of albite, and sericite, chlorite, epidote, and calcite*

ggb, *massive volcanic breccia of angular to subangular clasts of porphyritic andesite, in matrix of lava chips and crystals*

ggd, *buff-to gray-weathered, vesicular and amygdaloidal dacitic lava contains conspicuous small cream-colored plagioclase phenocrysts. The plagioclase is albite containing variable amounts of clinozoisite, associated with small quartz grains, epidote, chlorite, and brownish-green biotite*

ggid, *intrusive dacite resembles dacitic flows except plagioclase phenocrysts are larger and structure is massive. Groundmass is coarser than in the lava. Intrusive mass near Kendall Camp grades into two dacitic flows*

dr, db, da — Deception Rhyolite

dr, *near Jerome, outcrops are a reddish hue, changing to buff and cream in Mescal Gulch, and are pale colored near Ash Creek. Contorted flow banding and amygdaloidal structures common. Fragmental structures may represent flow breccia in part. Quartz and albitized plagioclase phenocrysts are set in a microcrystalline groundmass. Near Jerome reddish outcrops result from weathering of clots of chlorite to limonite stain. The exotic chlorite, which is product of metasomatic addition of iron and magnesium to the rhyolite, occurs in wide zone of hydrothermal metamorphism related to the ore deposits at Jerome*

db, *breccia beds in Mescal Gulch range from 2 to 40 feet in thickness and contain interbeds of tuffaceous sandstone and chert*

da, *intercalated andesitic flows and agglomerate form dark-green to black outcrops, in marked contrast to adjacent rhyolite. Clasts in agglomerate are highly vesicular and irregular in shape, suggesting bombs and lapilli*

bcd — Dacite of Burnt Canyon

Conspicuous plagioclase and tiny quartz phenocrysts in finely crystalline to aphanitic groundmass. Vesicular facies common

bpa — Brindle Pup Andesite

Dark-gray andesite which weathers light brown; conspicuous plagioclase phenocrysts. Groundmass is aphanitic. In highly vesicular and amygdaloidal facies, groundmass is darker than in massive facies

sb, st, sr — Shea Basalt

sb, *dark-green to black massive, amygdaloidal and pillow basalt. Interiors of thick massive flows diabasic*

st, *interbedded tuffaceous sedimentary rocks consisting largely of basaltic debris*

sr, *small intercalated rhyolitic flows and breccias*

br, ba — Buzzard Rhyolite

br, *rhyolitic flows and breccia; in lower part of Black Canyon tinted red whereas in headwaters of canyon and elsewhere, buff to cream. Flows show contorted flow banding and amygdaloidal structures. Flow breccias are present, but some breccia beds do not have lava matrix. Thin sandy interbeds occur in the breccia. Commonly, rhyolitic rocks are porphyritic with quartz and albitized plagioclase phenocrysts, but in some, quartz phenocrysts are absent*

ba, *intercalated basaltic agglomerate in Burnt Canyon. Bombs and lapilli are conspicuous*

ga — Gaddes Basalt

Chiefly dark green to black pillow and amygdaloidal basalts; minor intercalated rhyolitic rocks

*Age relations between Alder and Ash Creek Groups not established

OLDER PRECAMBRIAN

Contact

Fault, showing dip

Dashed where approximately located; dotted where concealed; U, upthrown side; D, downthrown side

Anticline — Overturned anticline — Syncline

Fold

Showing bearing and plunge of axis, and direction of dip of limbs. Dashed where approximately located; dotted where concealed

Inclined — Overturned — Vertical

Strike and dip of beds

Inclined — Vertical

Strike and dip of foliation

Inclined — Vertical

Strike and dip of planar flow structure

REFERENCES

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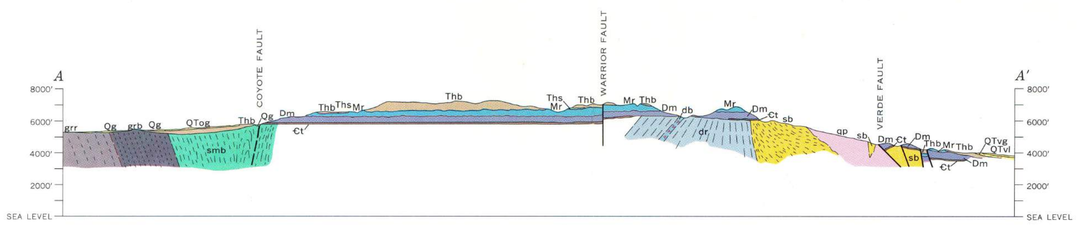

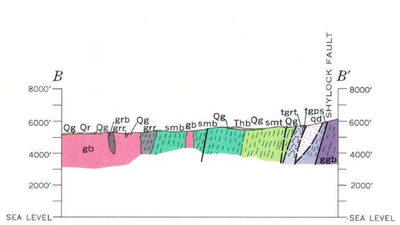

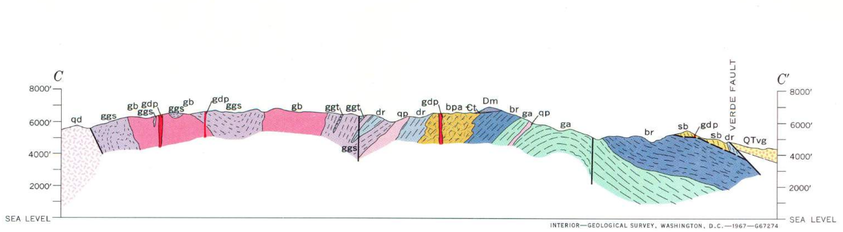

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1967—G67274

GEOLOGIC MAP OF THE MINGUS MOUNTAIN QUADRANGLE, YAVAPAI COUNTY, ARIZONA

By
C. A. Anderson and S. C. Creasey

1967

For sale by U.S. Geological Survey, price $1.00