(200)
T67r
no.861

U.S. GEOLOGICAL SURVEY
LIBRARY
MAY 28 1965
DENVER

PLEASE REPLACE IN POCKET
IN BACK OF BOUND VOLUME

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
U.S. ATOMIC ENERGY COMMISSION

OPEN FILE
TEI-861

DESCRIPTION OF MAP UNITS

Qac **ALLUVIUM AND COLLUVIUM** (0-40 ft)--unconsolidated stream, sheetwash, and talus deposits.

Tb **BASALT FLOW** (0-30 ft)--dark-brown to black massive olivine-bearing basalt.

Tbb **BEDDED TUFF** (0-10 ft)--white to buff pumiceous tuff and tuffaceous sandstone.

RHYOLITE OF PILLAR SPRING:

Tpiu UPPER LAVA FLOW (0-200+ ft)--black to purple to purplish-gray poorly flow banded rock having a vesiculated top and a massive- to platy-weathering lower part. Larger phenocrysts (>1 cm) are plagioclase mantled with anorthoclase; smaller phenocrysts and groundmass are mainly alkali feldspar; pyroxene and fayalitic olivine are common.

Tpil LOWER LAVA FLOW (0-240+ ft)--black to purplish-gray flow-banded to massive rhyolite lava flow having a vesiculated top and a platy-weathering finely crystalline interior. Larger phenocrysts (>1 cm) are plagioclase mantled with anorthoclase; slightly smaller phenocrysts and groundmass are mainly (75 percent) alkali feldspar; pyroxene and fayalitic olivine are common.

THIRSTY CANYON TUFF:

Ttg GOLD FLAT MEMBER (0-160 ft)--compound ash-flow-tuff cooling unit, described from top down: olive to tan partly welded zone with vapor-phase crystallization; greenish-brown or buff welded and devitrified zone, gray-green densely welded zone containing pastel pumice and moderately strong devitrification; dark-green densely welded vitric zone; intermittent thin black basal vitrophyre or fused zone. Phenocrysts: mainly large soda-rich sanidine, minor quartz, plagioclase, fayalitic olivine, pyroxene, and amphibole, and traces of accessory minerals. Rock-fragment inclusions are common. Dark-gray lithic-rich bedded tuff separates individual flows near distal ends.

Ttgb Bedded tuff (0-20 ft)--white, gray, and green pumiceous tuff.

Ttt TRAIL RIDGE MEMBER (0-200 ft)--simple ash-flow-tuff cooling unit, described from top down: reddish-brown densely welded phenocryst-poor tuff; purplish-gray to dark- to reddish-brown welded to densely welded eutaxitic partly devitrified tuff; black to orange and black densely to partly welded vitrophyric to vitric tuff containing abundant phenocrysts and fiamme. Phenocrysts (10-25 percent): soda-rich sanidine cryptoperthite (>90 percent), minor amounts of plagioclase, fayalitic olivine, pigeonitic and diopsidic pyroxene, and amphibole, and trace amounts of other accessory minerals. Rock fragments and black scoriaceous inclusions are locally abundant.

Tttb Bedded tuff (0-22 ft)--white to light-orange pumiceous tuff, partly fused by the Trail Ridge Member in many localities.

SPEARHEAD MEMBER--composite ash-flow-tuff sheet comprised of four distinct cooling units (Ttsw, Ttlu, Ttlm, and Ttll) in the central and northeastern part of the quadrangle, which coalesce to the south and northwest into three compound cooling units (Ttsz, Ttsy, and Ttsx), and then at the south edge of the quadrangle into a single compound cooling unit (Ttsw) that has a basal ash-flow and bedded tuff unit.

Ttsu Upper part (0-200 ft)--multiple-flow simple cooling unit in the north and west, a compound cooling unit in the southeast. Brown and reddish-brown densely welded to welded eutaxitic tuff grades downward into buff to orange nonwelded pumice-rich tuff. Gray partly welded tuff with vapor-phase crystallization occurs locally at top of the unit; white to orange-brown bedded tuff occurs locally at the base. Phenocrysts: soda-rich sanidine (>90 percent), some fayalitic olivine, pigeonitic and diopsidic pyroxene, and amphibole, and trace amounts of accessory minerals. Black scoriaceous pumice and large black lumps of scoria are common.

Lower part:

Ttlu Upper unit (0-240 ft)--compound cooling unit, described from top down: purplish-gray partly welded tuff with vapor-phase crystallization; purplish-gray or brown welded devitrified tuff; light- tan to light-orange nonwelded vitric tuff. Some bedded tuff occurs locally. Welded parts of the unit contain abundant phenocrysts: soda-rich sanidine cryptoperthite (>90 percent), minor amounts of fayalitic olivine, pigeonitic and diopsidic pyroxene, amphibole, and biotite, and trace amounts of accessory minerals.

Ttlm Middle unit (0-300 ft)--simple to compound cooling unit, described from top down: purplish-gray or brown welded devitrified tuff; light-orange nonwelded vitric tuff; light-gray nonwelded vitric tuff. Some white to tan bedded tuff occurs locally. Phenocrysts are abundant in the welded tuff: soda-rich sanidine cryptoperthite (>90 percent), minor amounts of fayalitic olivine, pigeonitic and diopsidic pyroxene, and amphibole, and trace amounts of accessory minerals. Rock-fragment inclusions are common.

Ttll Lower unit (0-150 ft)--ash-flow tuff, bedded tuff, and tuffaceous sedimentary rock. Ash-flow tuffs are dark-brown welded and devitrified tuff and light-tan to orange-brown nonwelded to weakly welded vitric tuff; they are mainly concentrated in the upper part of this unit. The lower part of this unit contains abundant pumice and has local lithic-rich zones; it may be largely ash-fall tuff. Five to 25 percent phenocrysts in the ash-flow tuffs: soda-rich sanidine cryptoperthite (>90 percent), minor plagioclase, fayalitic olivine, pigeonitic and diopsidic pyroxene, and amphibole, and trace amounts of accessory minerals.

Ttsz Unit Z--all or parts of the cooling units Ttsu and Ttlu where these have coalesced and form a compound cooling unit; light-gray to dark-brown weakly to densely welded vitric to partly devitrified tuff; bedded tuff locally present at base.

Ttsy Unit Y--all or parts of the cooling units Ttlu and Ttlm where these have coalesced and form a compound cooling unit; light-orange to tan partly welded to welded mainly vitric tuff.

Ttsx Unit X--all or parts of the cooling units Ttlm and Ttll where these have coalesced and form a compound cooling unit; light-gray to brown nonwelded to welded tuff without any observed separations between the zones of welding.

Ttsw Unit W--all or parts of the cooling units Ttsu, Ttlu, and Ttlm where these have coalesced and form a compound cooling unit; light-gray to brown nonwelded to welded tuff without any observed cooling breaks.

Trb **RHYOLITE AND TUFF OF RIBBON CLIFF:**

Trbu, Trbm, Trbl RHYOLITE (0-980+ ft)--brown to purple to gray flow-banded to massive rhyolite lava flow, weakly devitrified to vitric; black vitrophyre is common. Phenocrysts are large (about 2 cm in diameter) soda-rich alkali feldspar (>80 percent) and minor amounts of fayalitic olivine and pyroxene. Mineralogically identical individual flow units separated by thin bedded tuff units.

Trbt BEDDED TUFF AND ASH-FLOW TUFF (0-130 ft)--bedded tuff, tuffaceous conglomerate, and nonwelded ash-flow tuff underlying the rhyolite of Ribbon Cliff.

Tac **ALLUVIUM AND COLLUVIUM**--boulders and cobbles of rhyolite of Ribbon Cliff lying between flows of rhyolite of Ribbon Cliff.

Tya **TRACHYANDESITE LAVA FLOW** (0-320 ft)--dark-gray, reddish-gray, and light-blue-gray massive to poorly flow-banded dacite lava flow. Phenocrysts (10 percent): mainly plagioclase in a matrix of finely crystalline plagioclase laths.

Tbs **BASALT SCORIA** (0-60+ ft)--dark-brown to black massive to scoriaceous basalt.

TIMBER MOUNTAIN TUFF:

Tma AMMONIA TANKS MEMBER (0-140 ft)--black to purple welded vitrophyric to devitrified ash-flow tuff. Phenocrysts (25-30 percent): soda-rich sanidine cryptoperthite (30-35 percent), plagioclase (45 percent), quartz (5 percent), biotite (5 percent), pyroxene (5-10 percent), and minor accessory minerals.

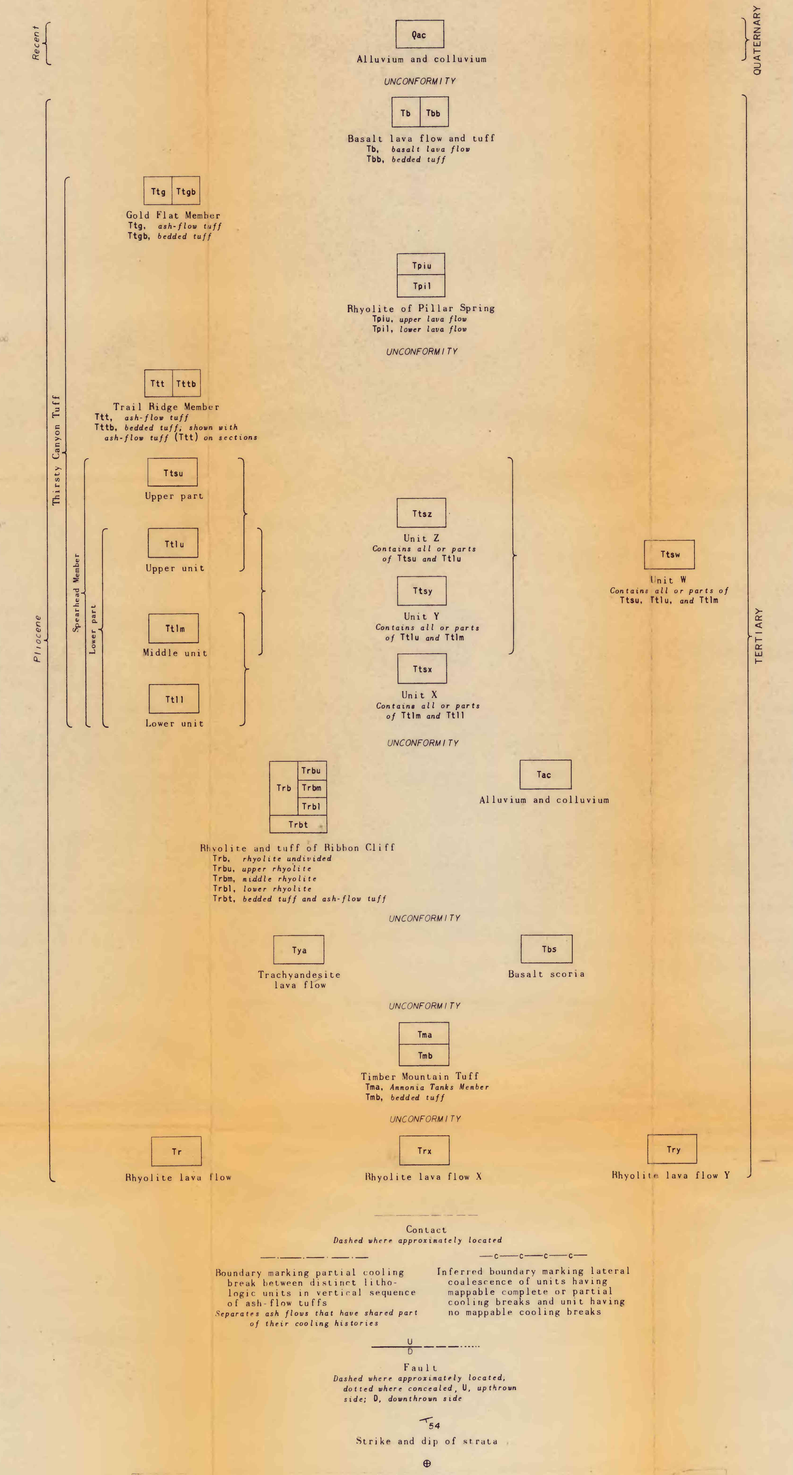
Tmb BEDDED TUFF (0-60 ft)--white to yellowish-white bedded tuff and tuffaceous sedimentary rock directly underlying the Ammonia Tanks Member.

Tr **RHYOLITE LAVA FLOW** (0-260+ ft)--gray to greenish-gray, strongly devitrified to vitric, flow-banded. Phenocrysts (about 6 percent): quartz (30 percent), sanidine cryptoperthite (about 45 percent), plagioclase (<5 percent), and minor amounts of accessory minerals.

Trx **RHYOLITE LAVA FLOW X** (0-220+ ft)--light-purple to light-gray, vitric to crystalline, flow-layered to massive. Phenocrysts (about 10 percent): mainly alkali feldspar, minor biotite.

Try **RHYOLITE LAVA FLOW Y** (0-360+ ft)--gray to greenish-gray, devitrified to vitric, flow-banded. Phenocrysts (about 3 percent): sanidine (about 68 percent), plagioclase (25 percent), magnetite (4 percent), amphibole (2 percent), and minor amounts of biotite and other accessory minerals.

EXPLANATION



Contact
Dashed where approximately located

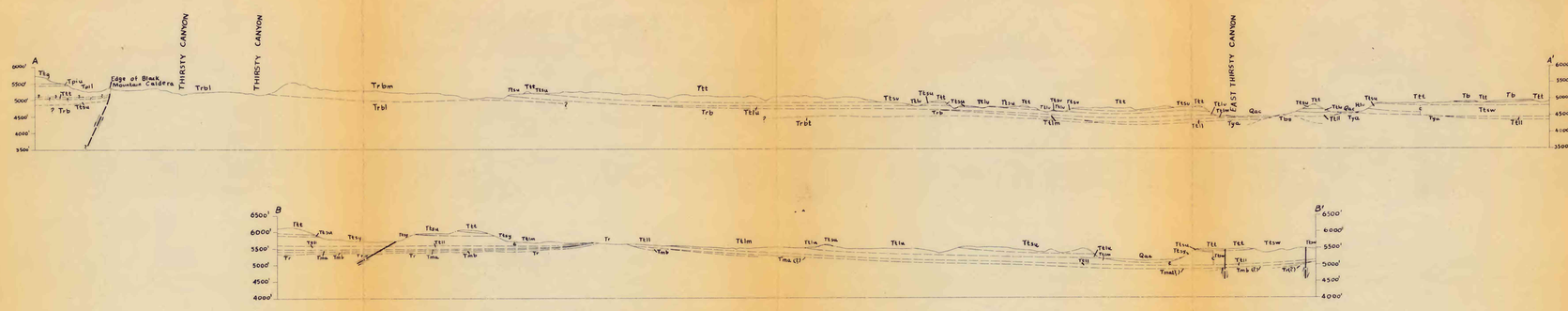
Boundary marking partial cooling break between distinct lithologic units in vertical sequence of ash-flow tuffs
Separates ash flows that have shared part of their cooling histories

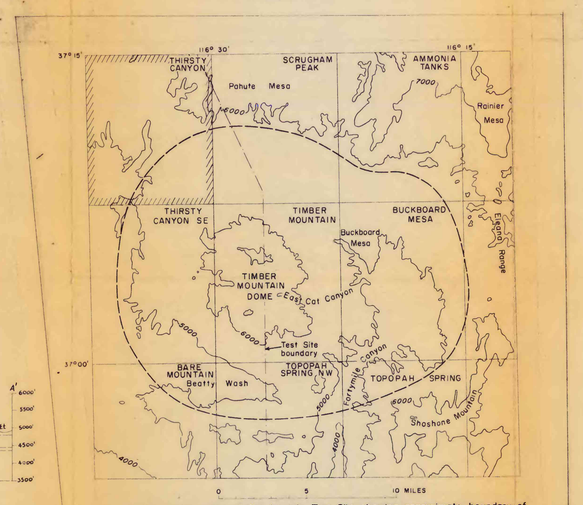
Inferred boundary marking lateral coalescence of units having mappable complete or partial cooling breaks and unit having no mappable cooling breaks

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

54
Strike and dip of strata

Horizontal strata





Map of the western part of the Nevada Test Site showing approximate boundary of the Timber Mountain caldera and location of the Thirsty Canyon quadrangle

GEOLOGIC MAP OF THE THIRSTY CANYON QUADRANGLE, NYE COUNTY, NEVADA

By
J.T. O'Conner, R.E. Anderson, and P.W. Lipman

1965