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GEOLOGIC MAP OF THE
LATHROP WELLS QUADRANGLE
NYE COUNTY, NEVADA

By Edward J. McKay and B. C. Burchfiel

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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Geologic Map of the Lathrop Wells Quadrangle
Nye County, Nevada*

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This report is preliminary
and has not been edited for
conformity with Geological
Survey format.

*Prepared on behalf of the U.S. Atomic Energy Commission

- DESCRIPTION OF MAP UNITS**
- Qal** ALLUVIUM (0-200 ft)--stream and terrace sand and gravel, windblown sand, and talus in the vicinity of bedrock.
- Qts** SANDSTONE (0-50 ft)--dirty-brown tuffaceous sandstone and volcanic conglomerate in beds less than an inch to two feet thick. Matrix about half vitric tuff and half fine- to medium-textured subrounded to angular sand grains. Mica is sparse and very fine grained. Angular cobbles and boulders of welded tuff of the Topopah Spring and Tiva Canyon Members are erratically distributed in undulating to mostly flat beds of sandstone. Vitric pumice cobbles as much as 2 inches across are scattered throughout the sandstone. Sandstone is well cemented and contains regional north-south joints. No fragments of bones or Paleozoic rocks evident.
- Qtb** BASALT (0-50 ft)--black scoriaceous olivine basalt flow.
- Tmr** TIMBER MOUNTAIN TUFF: RAINIER MESA MEMBER (0-150 ft)--simple(?) cooling unit of pumiceous ash-flow tuff. Gray, weathering dark brown to black, devitrified welded tuff. Base not exposed. Phenocrysts (20-35 percent) are quartz, chertonic sandine, plagioclase, and sparse biotite. Gray and red volcanic lithic fragments less than 1 percent and mostly less than one quarter-inch across.
- Tpc** TIVA CANYON MEMBER (400± ft)--multiple-flow compound cooling unit of ash-flow tuff, described from the top down: gray pumiceous, vitric, or super-phase crystallized, nonwelded to partly welded tuff less than 10 ft thick that grades down to densely welded red and black vitrophyre about 5 ft thick; underlain by red- or purple-brown outcasing devitrified welded tuff 50-100 ft thick that grades downward into a zone of purple-gray lithophysal welded tuff 100-200 ft thick, which grades downward into densely welded purple-gray devitrified tuff 75-150 ft thick weathering dark brown and characterized by closely spaced conchoidal fractures; columnar-jointed gray moderately to densely welded devitrified tuff 15-30 ft thick; brown to orange-brown partly welded tuff, 10-20 ft thick, consisting mostly of glass shards that grades to a basal gray or white nonwelded partly bedded tuff 15-30 ft thick. Basaltic structures range from 1 to 3 inches across. Phenocrysts compose 5-15 percent of welded tuff and consist of alkali feldspar, plagioclase, and some biotite. Dark red and gray volcanic lithics are sparse and less than one-half inch across.
- Tpb** BEDDED TUFF (20-40 ft)--gray to white lapilli tuff with graded bedding and tuffaceous sandstone; vitric to zeolitized, weathers brown to light greenish yellow and into small caves. Sandstone contains subangular to subrounded medium-grained-size lithics and crystals. Most outcrops contain a few pale-red welded tuff fragments as much as an inch across. Thickness in places is exaggerated on map and cross-sections.
- Tpt** TOPOPAH SPRING MEMBER (150-400 ft)--multiple-flow compound cooling unit of ash-flow tuff, thus from north to south: described from top down: gray to brown nonwelded to poorly welded vitric to devitrified tuff containing olive-brown pumice 1-5 inches across consisting of glassy matrix and crystals of sandine, plagioclase, and sparse fine-grained biotite; grades in a distance of a few inches to 20 ft into red and black densely welded vitrophyre 2-10 ft thick. Below the vitrophyre are three zones of welded tuff, each ranging in thickness from 50-120 ft: an upper reddish-brown zone containing grayish-white outcasing, a middle purplish-gray lithophysal zone, and a lower brown devitrified densely welded zone that grades downward to a basal olive-brown vitric partly bedded nonwelded tuff 10-30 ft thick. Phenocrysts decrease downward from 10-15 percent at top to 1-3 percent at base and are mostly alkali feldspar, plagioclase, and some biotite. At southern end of Yucca Mountain the member is thin and is mostly a vitrophyre.
- Tuf of CRATER FLAT** (200-300 ft)--simple(?) cooling unit of pumiceous ash-flow tuff. Base and top not exposed.
- Tcfw** WELDED TUFF (45 ft)--gray, weathering brown and black, devitrified silicified nonwelded tuff about 5 ft thick grading downward to 40 ft of welded tuff with earthy matrix containing 5-20 percent phenocrysts of quartz, sandine, plagioclase, biotite, and specks of magnetite. Dark angular dense volcanic lithic fragments less than one-half inch across are common. Grades downward into underlying unit.
- Tcf** NONWELDED TUFF (155-255 ft)--light-brown, massive, slope-forming, zeolitized.
- Ttbr** TUFF BRECCIA (0-30 ft)--gray, weathering tan, fine-grained tuffaceous sandstone containing fragments as much as an inch across of dark-olive-brown pumice and denser volcanic rocks. Matrix is conspicuously rich in small flakes of black biotite.

Terminology for pyroclastic rocks from C. S. Hess and R. L. Smith (1961, Ash-flow tuffs; their origin, geologic relations, and identification: U. S. Geol. Survey Prof. Paper 366, p. 3-8) and R. L. Smith (1960, Zones and zonal variations in welded ash flows: U. S. Geol. Survey Prof. Paper 334-F, p. 149-159).

EXPLANATION

Qal

Alluvium

UNCONFORMITY

Qts

Sandstone

UNCONFORMITY

Qtb

Basalt

UNCONFORMITY

Tmr

Rainier Mesa Member of Timber Mountain Tuff

Tpc

Tpb

Tpt

Paintbrush Tuff
Tpc, Tiva Canyon Member
Tpb, bedded tuff
Tpt, Topopah Spring Member

UNCONFORMITY

Tcfw

Tcf

Tuff of Crater Flat
Tcfw, welded tuff
Tcf, nonwelded tuff

Ttbr

Tuff breccia

Contact

Dashed where approximately located

45

Fault, showing dip
Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side

35

Strike and dip of beds

+

Strike of vertical beds