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STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
DONALD A. HULL, STATE GEOLOGIST

PRELIMINARY GEOLOGIC MAP OF THE COUGAR RESERVOIR AREA LANE COUNTY, OREGON

1982

PLATE 4

0-82-7
PLATE 4

Geology and Geothermal Resources of the Cascades, Oregon 1982

The work was supported by the United States Department of Energy (Cooperative agreement No. DE-FC07-79ID12044).

Base Map by U. S. Geological Survey

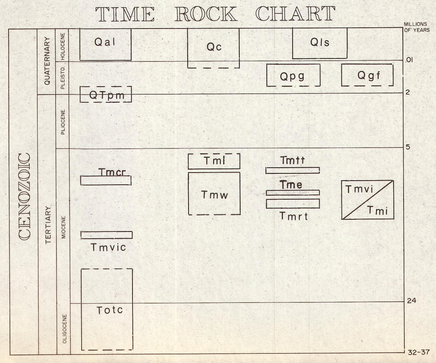
SCALE 1:24 000

Geology by George R. Priest and Neil M. Woller, 1982
Field work, 1979-1982

All references cited in the explanation appear in the list of references cited at the end of Open-File Report 0-82-7.

OREGON
QUADRANGLE LOCATION

TIME ROCK CHART



EXPLANATION

SURFICIAL DEPOSITS

Qal — Alluvium: Recent unconsolidated sediments located in present river and creek channels

Qc — Recent colluvium: Includes talus debris slopes as well as thin soil cover. Where bedrock lithology can be inferred below thin soil cover, bedrock unit is shown

Qls — Landslide deposits: Unconsolidated landslide debris; includes slumps and slide blocks

Qpg — Glacial outwash deposits: Unconsolidated sands and sandy gravels with moderately good sorting and stratification; found at lower elevations; Pleistocene in age

Qgf — Glacial and fluvial deposits: Unconsolidated sedimentary deposits of glacial and fluvial origin; includes tills and unconsolidated outwash deposits of Pleistocene age; found at higher elevations; may be partly a result of local alpine glaciation

BEDROCK GEOLOGIC UNITS

QTpm — Pliocene-Pleistocene mudflow deposits: Semiconsolidated clastic units bearing andesitic lithic fragments and cobbles in indurated, silty sand matrix; brown-gray. Mapped as unit Tmvi by Wells and Peck (1961) and as Oligocene volcanic rocks by Brown and others (1980a). Seen in isolated outcrops along the reservoir margins; clearly controlled by present topography which developed after about 5.0 m.y. B.P.

Volcanic rocks of early High Cascade time

Tml — Lavas of Tipsoo Butte (late Miocene): Unit caps ridges on east side of Cougar Reservoir; appears conformable on unit Tmtt at Tipsoo Butte. Diktytaxitic olivine basalts and basaltic andesites; light to medium gray. Olivines altering to iddingsite. Clinopyroxene in groundmass is ophitic to intergranular and may be titanium-rich. Three flows recognized on Tipsoo Butte. Flows originate from east of map area and are undeformed. Equivalent to uppermost part of the Outerson volcanics of Thayer (1939), Pliocene volcanic rocks of Brown and others (1980a), and lower basalt of intermediate series of Flaherty (1981). Basal flow at Tipsoo Butte K-Ar dated at 7.80±0.77 m.y. B.P.; basal flow at Lookout Ridge K-Ar dated at 8.80±0.34 m.y. B.P.; flow near top of section at Tipsoo Butte dated at 9.41±0.42 m.y. B.P.

Volcanic rocks of late Western Cascade time

Tmtt — Tuffs of Tipsoo Butte (Miocene): Intracanyon into unit Tmw at Tipsoo Butte and overlain (conformably?) by unit Tml. Hornblende-bearing two-pyroxene dacitic nonwelded ash-flow tuff and probable surge deposits. White pumices and free pyroxenes in cream-colored matrix; thick bedded at almost flat-lying attitude. Lies below unit Tml dated at 9.4 to 7.8 m.y. B.P. but above parts of unit Tmw dated at 13.2 to 8.93 m.y. B.P.

Tmcr — Andesites of Castle Rock (Miocene): Intrusive plug dome and possible flows at Castle Rock. Pilotaxitic hypersthene andesite; very fine grained, light gray, almost aphyric. K-Ar dated at 9.31±0.44 m.y. B.P.

Tmvi / Tmi — Andesitic intrusives (Miocene): Generally two-pyroxene plagioclase-rich andesites. Composition and texture similar to unit Tmw. Tmvi: plug domes; Tmi: dikes.

Tmw — Andesites of Walker Creek (Miocene): Plagioclase-rich two-pyroxene andesites, usually reddish gray. Intracanyon into unit Totc and interbedded with unit Tmrt on the west side of the reservoir. Equivalent to Sardine Formation of Peck and others (1964), Rhododendron Formation of Hodge (1933), and Miocene volcanic rocks of Brown and others (1980a). Includes interbeds of laharic mudflows and autobreccias of same composition as well as interlayered sediments. General dip in lower part is a few degrees to southeast. On east side of reservoir, thickness exceeds 752 m; 610 m exposed at Walker Creek. Slightly altered flow at base of section on west side of reservoir K-Ar dated at 12.4 m.y. B.P. Uppermost flow on Lookout Ridge (north of map area) K-Ar dated at 8.93 m.y. B.P. Flow in middle part of sequence on east side of reservoir K-Ar dated at 13.2±0.7 m.y. B.P.; interbedded tuffs at Rush Creek K-Ar dated at 13.8±0.8 m.y. B.P.

Tme — Basaltic lavas of the East Fork (Miocene): Gray-black, almost aphyric olivine-bearing basalts and basaltic andesites. At least 120 m thick. Mapped as Sardine Formation by Peck and others (1964) and as Miocene volcanic rocks by Brown and others (1980a). Olivine is altered to iddingsite. Interbedded within unit Tmw. Folded and faulted; probably older than unit Tmw flow K-Ar dated at 13.2±0.7 m.y. B.P.

Tmrt — Tuffs of Rush Creek (Miocene): Dacitic welded and nonwelded ash flows; generally cream-colored or gray; pumices bearing hypersthene and plagioclase phenocrysts with or without minor hornblende. Contains interbeds of sediments. Unconformable above unit Totc; intracanyon and interbedded with unit Tmw. Mapped as Sardine Formation by Peck and others (1964) and Miocene volcanic rocks by Brown and others (1980a). Folded and faulted. One of lowest flows in Rush Creek drainage K-Ar dated at 13.8±0.8 m.y. B.P.

Tmvic — Dacite intrusive of Cougar Dam (Miocene): Two-pyroxene-bearing dacite; black; glassy with irregular jointing. Dikelike intrusive on east side of reservoir; becomes both dike- and sill-like in west side dam exposure. Intrudes unit Totc. K-Ar dated at 16.2±1.8 m.y. B.P. Mapped as Sardine Formation by Peck and others (1964); equivalent to Miocene intrusive rocks of Brown and others (1980a)

Volcanic rocks of early Western Cascade time

Totc — Tuffs of Cougar Reservoir (Oligocene-Miocene): Chiefly lithic-fragment-rich, pumice-poor, dacitic tuffs of laharic(?) deposition with minor ash flows, rhyodacite, and iron-rich andesite. Typically green to dull gray due to low-grade alteration; also yellowish and reddish gray. Lithic clasts in tuffs are generally aphyric or, less frequently, plagioclase-phyric andesites and dacites of many hues. Rich in hypersthene phenocrysts near top of section at Rush Creek. Usually very poor in phenocrysts. In local sample locations contains rare hornblende and/or sanidine. Includes interbeds of epiclastic volcanic rocks and generally aphyric rhyodacite and iron-rich andesite. Lower contact not exposed in map area. Overlain by units Tmw and Tmrt and intruded by 16.2-m.y. B.P. unit Tmvic. Equivalent to Little Butte Volcanic Series of Peck and others (1964), Breitenbush series of Thayer (1936), Oligocene(?) volcanic rocks of Brown and others (1980a) and Breitenbush formation of White (1980a) and Hammond and others (1980). One iron-rich andesite flow at top of sequence at Rush Creek is chemically correlative with White's (1980a,c) Scorpion Mountain lavas, which are between 27 and 19 m.y. B.P. This flow is also similar to Woller and Priest's (this volume) lavas of Black Canyon K-Ar dated at 22 m.y. B.P. Several kilometers west of map area at Nimrod, unit is intruded by quartz monzonite zircon-lead dated at 35±10 m.y. B.P. by Peck and others (1964) and K-Ar dated at 16.3±0.2 m.y. B.P. by Sutter (1978)

GEOLOGIC SYMBOLS

Fault: Solid where visible, dashed where approximately located, dotted where concealed by alluvium, landslide, or reservoir. Dip on fault plane indicated; bar and ball on downthrown side

Strike and dip

Contacts: Solid where visible, dashed where inferred below cover or from photo interpretation

Shear: Orientation of plane and slickensides shown

Geothermal heat-flow hole: With terrain-corrected gradient (°C/km) and heat flow (mW/m²) shown

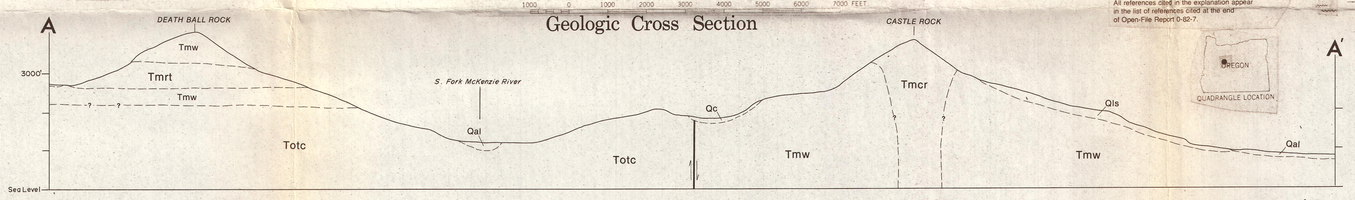
Geochemical sample

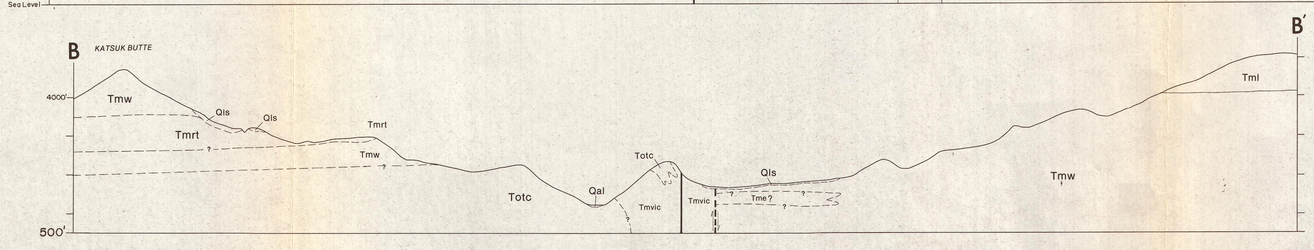
K-Ar date

Dike: Dip shown

Fault zone with brecciation

Geologic Cross Section





Map prepared by
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