GEOLOGIC MAP OF THE COWAN RESERVOIR QUADRANGLE, OWYHEE COUNTY, IDAHO

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1995

CORRELATION OF MAP UNITS

Qal, Qll	HOLOCENE and PLEISTOCENE
UNCONFORMITY	
QTg	PLEISTOCENE or PLIOCENE
UNCONFORMITY	
Tch, Tdt, Tda, Ts, Tbr (stratigraphic relationships are uncertain)	PLIOCENE or MIOCENE
UNCONFORMITY	
Tdc	
UNCONFORMITY	
Tc15, Tc13, Tc12, Tc11	MIOCENE

DESCRIPTION OF MAP UNITS

SEDIMENTARY UNITS

Qal ALLUVIUM--Unconsolidated gravel, sand, and silt deposits along stream courses.

Qll INTERMITTENT LAKE DEPOSITS--Reworked wind-deposited clay and silt trapped in low areas on surface of underlying basalt flow. Scattered pebbles, cobbles, and boulders of basalt lie on some of these deposits.

QTg GRAVEL DEPOSITS--Unconsolidated deposits of sand to boulder-sized, rounded to angular, fragments of volcanic, plutonic, and metamorphic rocks derived from rock units south of this quadrangle.

Ts SEDIMENTARY DEPOSITS, UNDIFFERENTIATED--Mainly poorly consolidated clay, silt, and sand deposits. Includes gravel lenses and silicic volcanic ash layers. Partly fluvatile and partly lacustrine in origin. In NW1/4, SE1/4, sec. 21, T. 16 S., R. 8 E., about 30 feet of relatively pure silicic ash, overlain by 100 feet or more of silt with minor sand and gravel, is cleanly exposed at the base of the west-facing escarpment, where Cowan ditch falls down the slope.

VOLCANIC UNITS

Tch BASALT OF COWAN HOMESTEAD--Basalt flow containing distinctive large plagioclase and olivine phenocryst clumps set in a dense groundmass. Source is unknown but probably is to the east. Unit appears to be a channel-filling flow as much as 80 feet thick.

Tdt BASALT OF DORSEY TABLE--Basalt flow erupted from small shield volcano located in secs. 2 and 3, T. 16 S., R. 8 E., about a mile east of the eastern edge of this quadrangle. Most of this unit lies to the east (Bonnichsen and Jenks, 1991). Typically shows olivine phenocrysts and contains rounded scoria fragments set in a subophitic to slightly diktytaxitic matrix. Typically 20 feet or less thick.

Tbr BASALT OF BLACK ROCK--Nearly aphyric basalt flow with widely scattered olivine phenocrysts and a diktytaxitic texture that erupted from Black Rock hill shield volcano located half a mile west of the northwestern part of this quadrangle. Normal paleomagnetic polarity (Bonnichsen, 1981). The unit extends many miles north of this quadrangle (Bonnichsen and Jenks, 1991; Jenks and Bonnichsen, 1991). Consists of one flow that is only a few feet thick in this quadrangle but may exceed 100 feet near its source.

Tda BASALT OF DIAMOND A DESERT--Basalt flows with essentially identical compositions (Bonnichsen and others, 1994) that erupted from two sources located a few miles south and east of this quadrangle. The part of the unit which caps Dorsey Table in the southeastern corner of this quadrangle and the elongate series of mesas in the eastern part probably erupted from the westernmost of the two source vents (dike and small shield in southern part of sec. 2, T. 47 N., R. 58 E.). The part of the unit that underlies Dorsey Table in the northeastern part of this quadrangle probably erupted from the eastern of the two sources (shield, elev. 6485, in SW1/4 sec. 7, T. 47 N., R. 58 E.). This basalt is nearly aphyric, with only scattered plagioclase microphenocrysts and sparse olivine phenocrysts.

Tdc RHYOLITE OF DORSEY CREEK--Mainly marginal facies of a large rhyolite lava flow that extends many miles north and east of this quadrangle (Bonnichsen, 1982; Bonnichsen and Jenks, 1991; Bonnichsen and Kauffman, 1987; and Jenks and Bonnichsen, 1991). Contains quartz, plagioclase, augite, pigeonite, and opaque oxide phenocrysts. Normal magnetic polarity (Bonnichsen, 1981) and average whole-rock K-Ar age of 8.1 Ma (Hart and Aronson, 1983).

Tc15 COUGAR POINT TUFF, UNIT XV--Densely welded tuff sheet that is the uppermost Cougar Point Tuff unit. Contains plagioclase, sanidine, quartz, augite, pigeonite, fayalite, and magnetite phenocrysts (Bonnichsen and Citron, 1982). Normal magnetic polarity (Bonnichsen 1981). Ranges in thickness from nearly 300 feet at western edge of quadrangle to only a few feet at eastern exposures in southeastern part of quadrangle.

Tc13 COUGAR POINT TUFF, UNIT XIII--Welded tuff sheet exposed in southwestern corner of quadrangle in wall of Bruneau Canyon. Contains plagioclase, sanidine, quartz, augite, fayalite, and opaque oxide phenocrysts (Bonnichsen and Citron, 1982) and has normal magnetic polarity (Bonnichsen, 1981).

Tc12 COUGAR POINT TUFF, UNIT XII--Welded tuff sheet exposed in southwestern corner of quadrangle in wall of Bruneau Canyon. Contains plagioclase, augite, pigeonite, and magnetite phenocrysts (Bonnichsen and Citron, 1982) and has normal magnetic polarity (Bonnichsen, 1981).

Tc11 COUGAR POINT TUFF, UNIT XI--Thick, densely welded, tuff sheet exposed in wall of Bruneau Canyon in southwestern corner of quadrangle. Contains sanidine, quartz, plagioclase, magnetite, ilmenite, augite, pigeonite, and fayalite phenocrysts (Bonnichsen and Citron, 1982) and has reversed paleomagnetic polarity (Bonnichsen, 1981).

SYMBOLS

Contact: dashed where approximately located.

Fault: dashed where approximate, small dash where inferred, dotted where concealed; bar and ball on downthrown side.

I-971 — Location of chemically analyzed sample; see Bonnichsen and others (1994) for data.

REFERENCES CITED

Bonnichsen, Bill, 1981, Stratigraphy and measurements of magnetic polarity for volcanic units in the Bruneau-Jarbidge eruptive center, Owyhee County, Idaho: Idaho Geological Survey Technical Report 81-5, 75 p.

Bonnichsen, Bill, 1982, Rhyolite lava flows in the Bruneau-Jarbidge eruptive center, southwestern Idaho, in Bill Bonnichsen and R.M. Breckenridge, editors, Cenozoic Geology of Idaho: Idaho Bureau of Mines and Geology Bulletin 26, p. 283-320.

Bonnichsen, Bill, and G.P. Citron, 1982, The Cougar Point Tuff, southwestern Idaho and vicinity, in Bill Bonnichsen and R.M. Breckenridge, editors, Cenozoic Geology of Idaho: Idaho Bureau of Mines and Geology Bulletin 26, p. 255-281.

Bonnichsen, Bill, and M.D. Jenks, 1991, Geologic map of the Jarbidge River Wilderness Study Area, Owyhee County, Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-2127, scale 1:50,000.

Bonnichsen, Bill, and D.F. Kauffman, 1987, Physical features of rhyolite lava flows in the Snake River Plain volcanic province, southwestern Idaho, in J.H. Fink, editor, The Emplacement of Silicic Domes and Lava Flows: Geological Society of America Special Paper 212. p. 119-145.

Bonnichsen, Bill, W.P. Leeman, John Bernt, M.M. Godchaux, and M.D. Jenks, 1994, Analyzed rocks from the Sheep Creek 30 x 60 minute quadrangle, Owyhee and Twin Falls counties, southwestern Idaho: Idaho Geological Survey Technical Report 94-5, 16 tables on disk and location map.

Hart, W.K., and J.L. Aronson, 1983, K-Ar ages of rhyolite from the western Snake River Plain area, Oregon, Idaho, and Nevada: Isochron/West, no. 36, p. 17-19.

Jenks, M.D., and Bill Bonnichsen, 1991, Geologic map of the Bruneau River Wilderness Study Area, Owyhee County, Idaho: U.S. Geological Survey Miscellaneous Field Study Map MF-2128, scale 1:50,000.

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Topography by photogrammetric methods from aerial photographs taken 1973. Field checked 1975. Map edited 1979

Projection and 10,000-foot grid ticks: Idaho coordinate system, west zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone 11
1927 North American datum
To place on the predicted North American Datum 1983 move the projection lines 14 meters north and 75 meters east as shown by dashed corner ticks

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

IDAHO
QUADRANGLE LOCATION

Field work conducted in 1977-78 and 1985-86

Digital Cartography by Timothy D. Funderburg and Heather Page at the Idaho Geological Survey's Digital Mapping and Information lab.

Idaho Geological Survey Digital Mapping & Information

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