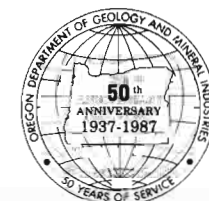
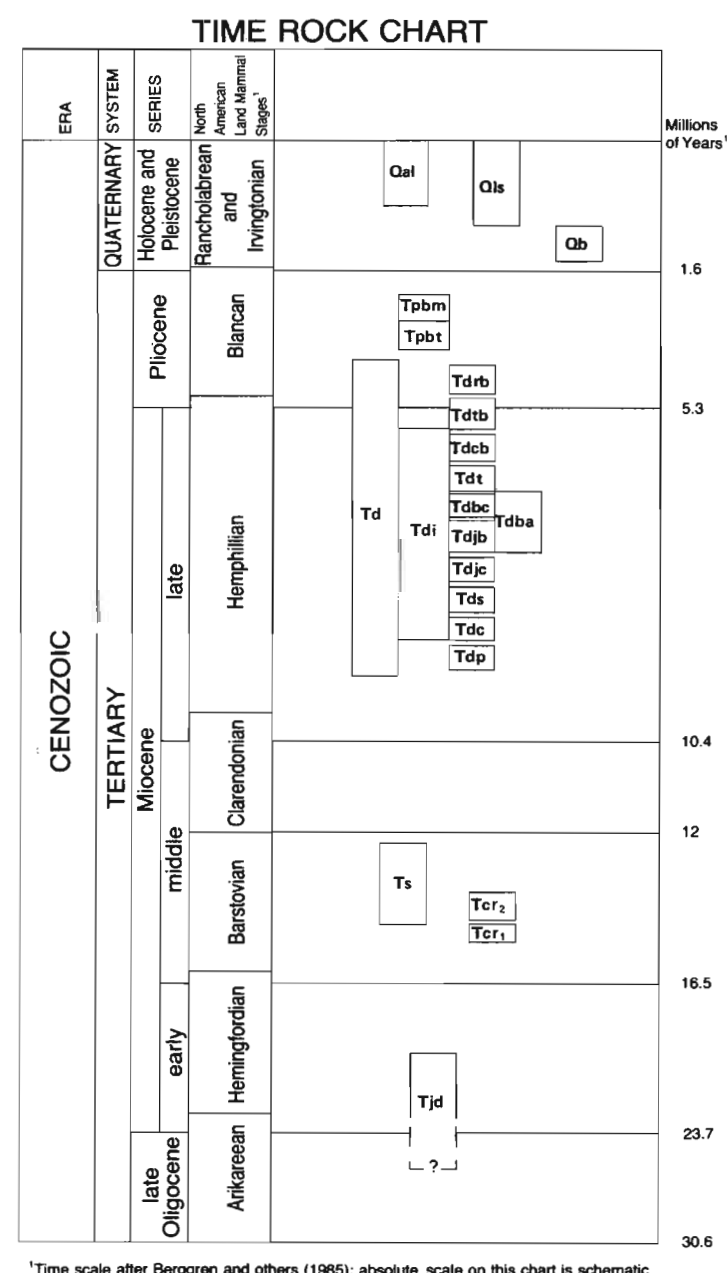


# GEOLOGIC MAP OF THE SEEKSEEQUA JUNCTION AND A PORTION OF THE METOLIUS BENCH QUADRANGLES, JEFFERSON COUNTY, OREGON 1987



GMS-44

Geologic Map of the Seekseequa Junction and a  
Portion of the Metolius Bench Quadrangles, Jefferson County, Oregon  
By Gary A. Smith



## EXPLANATION

- Unconsolidated Deposits**
- Quaternary alluvium (Holocene)** — Silt, sand, and gravel along and in major rivers and streams.
  - Landslide debris (Holocene and Pleistocene)** — Rotated and slumped blocks; slip surfaces developed within and/or near top of Sinitus and John Day Formations.
- Rock Units**
- Intracanyon basalt (Pleistocene)** — Diktytactic olivine basalt exposed above the Deschutes River at south edge of map. This unit is the northern extension of intracanyon flows that can be traced 30 km up the Deschutes and Crooked Rivers and that were probably erupted near Newberry Volcano. Local intercalated basaltic tuffs. Dated at  $1.19 \pm 0.08$  m.y. B.P.; reversed magnetic polarity.
  - Basalts of Metolius Bench (Pliocene)** — Several flows of diktytactic olivine basalt distinguished from basalts of Tenino Bench by more evolved composition (1.3 to 2.1 percent  $\text{TiO}_2$ , 10.5 percent  $\text{CaO}$ , 9.5 percent  $\text{FeO}$ ). Basalts of this unit west of the map margin have been dated at  $3.72 \pm 0.11$  and  $3.99 \pm 0.08$  m.y. B.P.; normal and reversed magnetic polarity.
  - Basalts of Tenino Bench (Pliocene)** — At least two flows of diktytactic olivine basalt distinguished from overlying basalts of Metolius Bench by more primitive composition (0.9 to 1.1 percent  $\text{TiO}_2$ , 1.1 percent  $\text{CaO}$ , 9.5 percent  $\text{FeO}$ ). Normal magnetic polarity.
  - Deschutes Formation (upper Miocene and lower Pliocene)** — Coarse-grained volcanic sandstones, conglomerates, and debris-flow breccias interbedded with siliceous ignimbrites (Tdb), air-fall lapillitones, and basalt and basaltic andesite (Tdba) lava flows. Volcanic units are mapped separately where exposed and are described by Smith (1986b). No attitudes are shown within this unit on the map, although all units are gently inclined toward the basin axis as a reflection of primary dip (the slight dip of a bedded deposit assumed at its moment of deposition), slight subsequent deformation, or both.
  - Round Butte member (lower Pliocene)** — At least four flows of gray, porphyritic olivine basalt erupted at Round Butte, southeast of the map area. Dated at  $3.97 \pm 0.05$  m.y. B.P.; reversed magnetic polarity.
  - Tetherow Butte member, Agency Plains basalt flow (upper Miocene or lower Pliocene)** — Black, fine-grained basalt with phenocrysts and glomerophenocrysts of plagioclase and augite. One of two flows erupted from Tetherow Butte, 25 km south of map area, and dated at  $5.31 \pm 0.05$  m.y. B.P.; normal magnetic polarity.
  - Coyote Butte ignimbrite member (upper Miocene)** — White to light-gray, unbedded dacitic ignimbrite. Two flow units occur in the Tenino Creek area. Underlying, coarser air-fall tuff contains accretionary lapilli. Reversed magnetic polarity.
  - Tenino ignimbrite member (upper Miocene)** — Multiple flow units of gray, dacitic ignimbrite in two cooling units, locally separated by sediments. Black pumice lapilli and bombs are up to 30 cm in diameter. Upper parts of cooling units are oxidized pink or orange by fumarolic alteration. Welding restricted to basal part of thick, lower cooling unit in Tenino Creek area, where pillars of platy jointed, densely welded ignimbrite crop out.
  - Big Canyon basalt member (upper Miocene)** — Several flows of diktytactic olivine basalt exposed in Deschutes River canyon near southern map margin. Reversed magnetic polarity.
  - Jackson Buttes ignimbrite member (upper Miocene)** — Light-gray rhyolitic ignimbrite, typically oxidized pink or orange by fumarolic alteration. Intensely altered ignimbrite exposed southeast of Coyote Butte, north of Seekseequa Junction, and west of Indian Park campground tentatively assigned to this member. Reversed magnetic polarity.
  - Juniper Canyon basalt member (upper Miocene)** — Thin flow of diktytactic olivine basalt exposed southwest of Indian Park campground. Can be correlated to thicker outcrops 5 km southwest of map area. Normal magnetic polarity.
  - Seekseequa basalt member (upper Miocene)** — Coarse-grained basalt with phenocrysts and glomerophenocrysts of plagioclase and olivine commonly exceeding 1 cm in length. Columnar jointing and spiracles characterize most outcrops. Extends in a narrow north-south band across eastern part of map area where it filled and overflowed an ancestral Deschutes River channel. Normal magnetic polarity.
  - Chinook ignimbrite member (upper Miocene)** — Pink-gray, unwelded, rhyolitic ignimbrite with white pumice lapilli rarely exceeding 1 cm in diameter and prominent cobble-rich zone near base. Extends in a narrow north-south band across eastern part of map area where it filled and overflowed an ancestral Deschutes River channel. Normal magnetic polarity.
  - Pelton basalt member (upper Miocene)** — Diktytactic olivine basalt in four to eight flow units separated by thin sedimentary interbeds and weathered zones. Lowest volcanic unit in the Deschutes Formation. Dated at  $7.42 \pm 0.22$  m.y. B.P.; normal magnetic polarity.
  - Sinitus Formation (middle Miocene)** — Light-colored tuffs, massive volcanic mudstones, cross-bedded sandstones, and minor pebble conglomerates. Conformable upon and interbedded with the Columbia River Basalt Group (Smith, 1986a). Contains Barstovian (middle Miocene) vertebrate fauna north of map area (Downs, 1956).
  - Columbia River Basalt Group, Prineville chemical type (middle Miocene)** — Sparsely aphyric to aphyric basaltic basalt, dark gray to black; weathered brown. Only unit  $\text{Ter}_2$  is exposed; unit  $\text{Ter}_1$  appears only in cross-section. Unit  $\text{Ter}_2$  is high- $\text{SiO}_2$  variety of the characteristically high  $\text{P}_2\text{O}_5$  and high-Ba Prineville chemical-type lavas. Both units are correlative to Prineville chemical-type flows in the Grande Ronde Basalt, N. chron, north of map area (Smith, 1986b).
  - John Day Formation (upper Oligocene? and lower Miocene)** — Light-colored tuffs, lapillitones, fine-grained volcanic sandstones, and mudstones. Most, if not all, of the formation in the map area belongs to member 1 of Robinson and others (1984), with paleontologic and isotopic data indicating an early Miocene age, but base of unit is probably of Oligocene age.

## MAP SYMBOLS

- Contact — Dashed where approximately located
- Strike and dip of bedding
- Prominent exposure of Pleistocene air-fall pumice-lapilli deposit from eruptions of Mount Jefferson

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Field work conducted from 1982 to 1985  
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Field work supported by the Department of Geology at Oregon State University, Oregon Department of Geology and Mineral Industries, and Geological Society of America. Isotopic dates by L. W. Snee, Oregon State University.  
Map prepared with support from the Northwest College and University Association for Science (University of Washington) and Rockwell Hanford Operations, Basalt Waste Isolation Project, under contracts with the U.S. Department of Energy.

