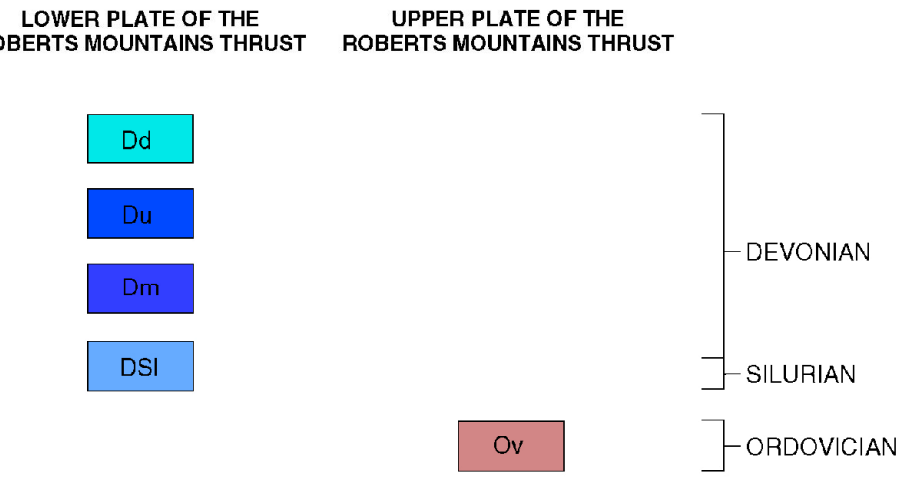
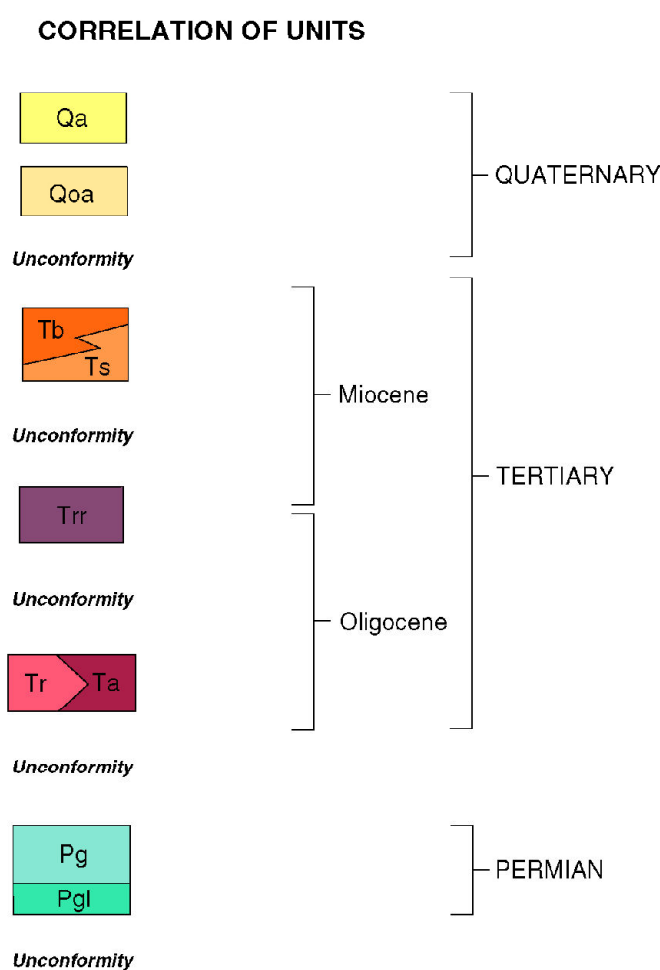


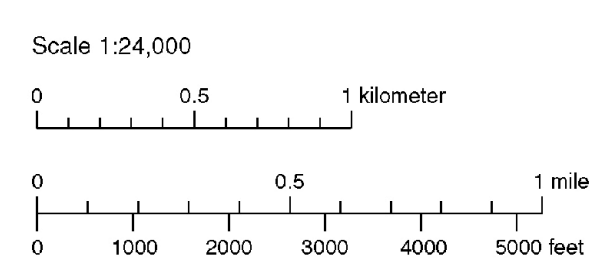
- Qa** Alluvium (Quaternary) Mostly stream and gravel deposits and intermontane fans. Includes landslide deposits. Age is Pleistocene or Holocene.
- Qoa** Alluvial fan deposits (Quaternary) Fan deposits. Dissected in Garden Valley. Age is Pleistocene or Holocene but may include some Pliocene and Miocene deposits.
- Tb** Basalt (Miocene) Dark-gray, vesicular, fine-grained to glassy lava flows. Locally interbedded with sandstone and sedimentary breccia (Ts). ⁴⁰Ar/³⁹Ar age of 13.55±1.1 Ma.
- Ts** Sandstone and sedimentary breccia (Miocene) Weakly indurated ash-siltstone, sandstone, conglomerate, and sedimentary breccia. Many channels filled with angular to subangular pebbles and cobbles of mostly dark volcanic rock types similar to the volcanic rocks on the east flank of the Roberts Mountains. Interbedded with basalt (Tb) in northern part of quadrangle.
- Tr** Rhyolite of Rabbit Springs (Oligocene-Miocene) Welded rhyolite ash-flow tuff. Crystals poor with phenocrysts of quartz, plagioclase, and sanidine. Eutaxitic texture locally. In most places the groundmass is gray and devitrified, but locally it is black glass. K-Ar age on sanidine is 24.7±0.8 Ma.
- Tr** Andesite (Oligocene) Generally dense black, aphyric rock but vesicular to spongy in places. It overlies thick rhyolite flows on the northeastern edge of the Roberts Mountains; in other places it is interbedded with or beneath rhyolite flows. It is potassium-rich with more than 3 wt percent K₂O. K-Ar ages are 31.5±1.0, 32.9±1.0, and 33.9±1.0 Ma.
- Tr** Rhyodacite (Oligocene) Crystalline, flow-banded, rhyodacite lava and some subvolcanic intrusive rocks. Contains phenocrysts of amorphous quartz, plagioclase, and biotite. Commonly pink to gray with black glassy bands that give it a swirly appearance. Massive and thick accumulations of this rock probably are vent sites. Locally an igneous breccia shown on map by stipple pattern. The rhyodacite locally overlies dark andesite and in other places is overlain by andesite. The radiometric ages of these units overlap. K-Ar ages of biotite are 33.8±1.0 and 35.5±1.0 Ma.
- Pg** Garden Valley Formation (Permian) Basal part of this formation consists of a limestone unit (Pgl) that contains medium-bedded, gray packstones, locally crinoidal, and with some algal lamellae and chert nodules. Limestones are interbedded with sandstone and shales in turn overlain by limestone with brachiopod fragments and locally abundant fusulines. Above limestone unit, formation consists of red-brown silty sandstone and cobble conglomerate, coarse grits, sandstone, and some bedded chert. These quartzitic rocks are mostly recrystallized and resistant to erosion. Near top of quartzose units is at least one lenticular limestone unit (Pgl). It is medium- to thin-bedded, fine-grained, and contains brachiopod fragments and some ammonites. Where unfaulted, basal contact of Garden Valley Formation overlies the Ordovician Viniini Formation with an angular discordance of about 20'.
- Dd** Devils Gate Limestone (Devonian) Massive to thick-bedded limestone consisting mostly of algal and stromatolite wackestones and boundstones and *Amphipora* packstone. Stipple pattern indicates dolomitization and silicification.
- Du** Union Mountain Formation (Devonian) Gray to brown quartzose dolomite sandstone, and quartzite. Local silicification forms lattice of siliceous ribs. Exposed only in one locality in south-central part of the quadrangle but is abundant in the Sulphur Springs Range about 5 miles to the east.
- Dm** McCoolley Canyon Formation (Devonian) Light-gray, medium- to thick-bedded calcareous with abundant brachiopod, coral, and crinoid fragments. Exposed only in one locality in south-central part of quadrangle where it conformably underlies sandy dolomite of the Union Mountain Formation.
- DSI** Lone Mountain Dolomite (Devonian and Silurian) Thick-bedded to massive, dense, light-colored dolomite. In most places it is coarse-grained and recrystallized with ribs of brown siliceous rock. Locally bedding and lamination can be seen, as well as its bioclastic nature with abundant crinoid fragments and oolites.
- Ov** Viniini Formation (Ordovician) Dark structureless mudstone, dark shale and minor thin- to medium-bedded, fine-grained limestones. Structurally overlies Devonian Devils Gate Limestone and Devonian and Silurian Lone Mountain Dolomite on the Roberts Mountains thrust fault (regional thrust) and is overlain unconformably by limestone and coarse clastic rock of the Permian Garden Valley Formation along an angular unconformity.



GEOLOGIC MAP OF THE FRAZIER CREEK QUADRANGLE, NEVADA

Edwin H. McKee and James E. Conrad

1998



Base map: U.S. Geological Survey Frazier Creek 7.5' Quadrangle, 1986 Digital Raster Graphic (DRG)

POTASSIUM-ARGON AGES OF VOLCANIC ROCKS

Map number	Map unit	Material dated	K ₂ O (percent)	⁴⁰ Ar rad mole/g x 10 ⁻¹⁰	⁴⁰ Ar rad (percent)	Age±σ (Ma)
1	Tr	Sandstone	10.17	3.65	70.4	24.7±0.8
2	Ta	Whole rock	2.79	1.28	41.0	31.5±1.0
3	Ta	Whole rock	3.13	1.50	73.0	32.9±1.0
4	Ta	Whole rock	4.00	1.97	71.0	33.9±1.0
5	Tr	Biotite	8.52	4.20	82.8	33.8±1.0
6	Tr	Biotite	8.38	4.32	83.1	35.5±1.0

¹Ages calculated using λ₁ = 0.581 x 10⁻¹⁰ yr⁻¹, λ₂ = 4.962 x 10⁻¹⁰ yr⁻¹, ⁴⁰K/³⁹K_{total} = 1.167 x 10⁻⁴ mol/mol. Errors are estimates of the standard deviation of analytical precision.

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