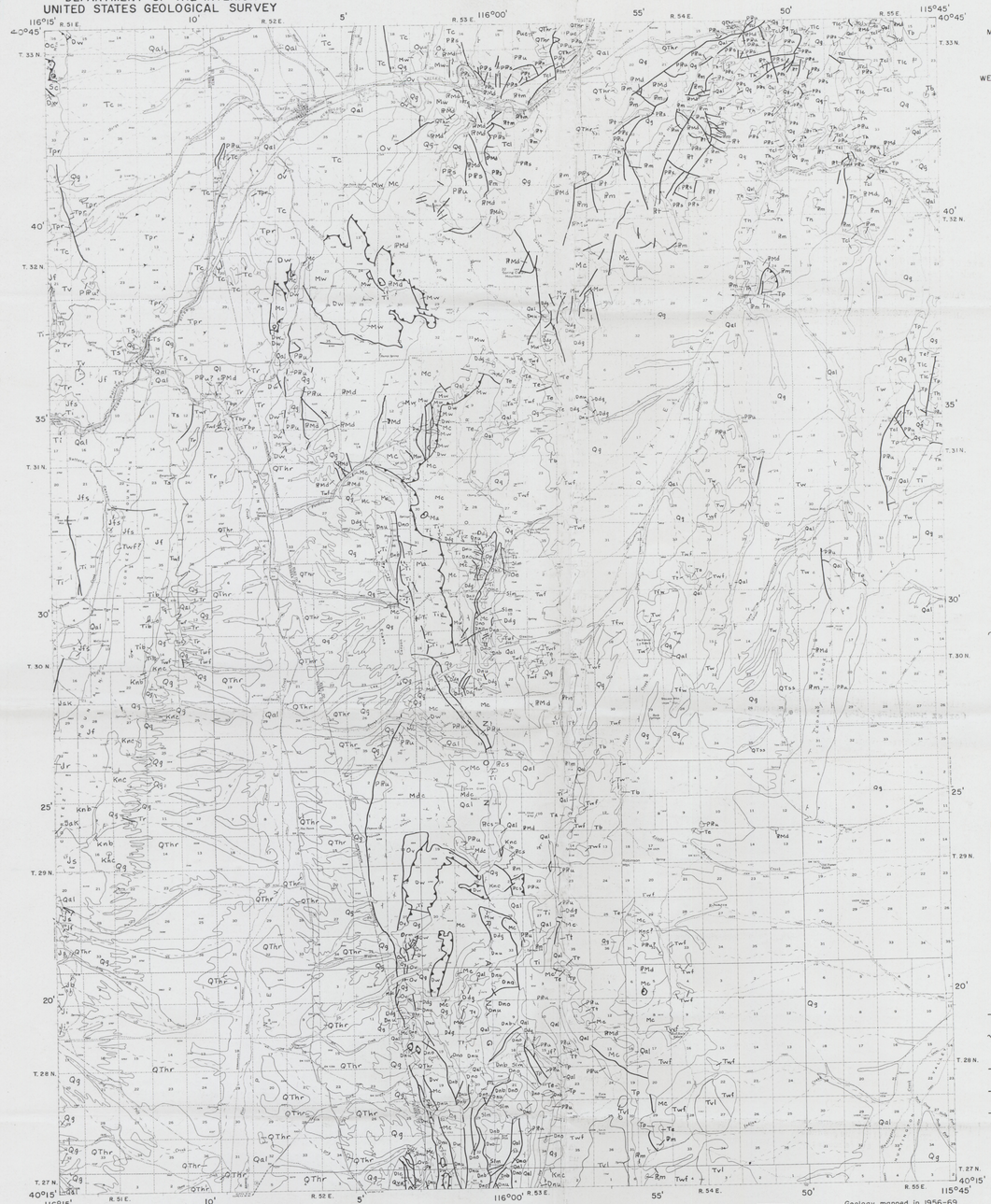
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
NEVADA BUREAU OF MINES

MISCELLANEOUS FIELD STUDIES
MAP MF-481




Base from U.S. Geological Survey 1:62,500, Carlin, Dixie Flats, and Pine Valley, 1952; Robinson Mountain, 1956

Geology mapped in 1956-69

SCALE 1:125 000
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1956

NEVADA
AREA OF REPORT

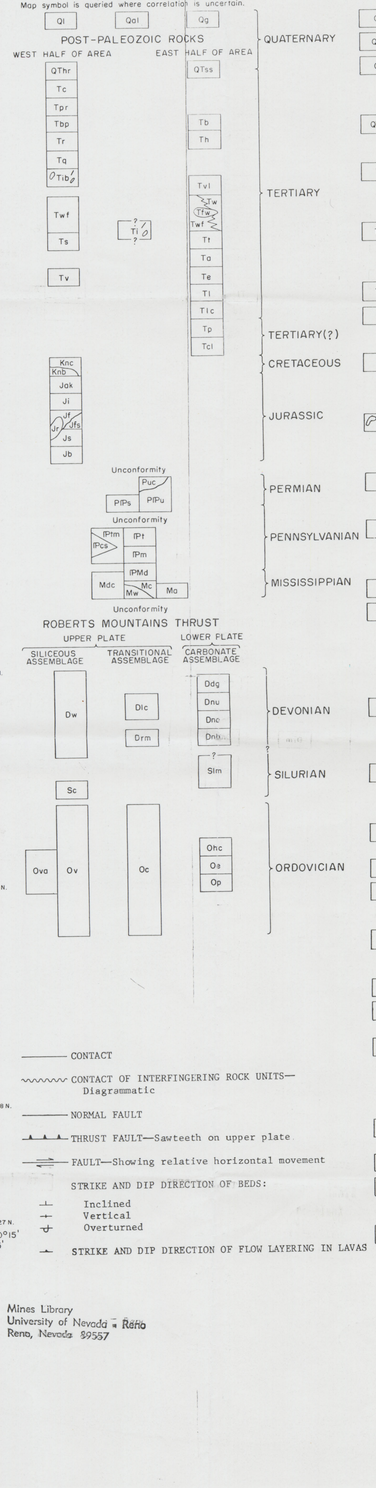
# GENERALIZED GEOLOGIC MAP OF THE CARLIN, DIXIE FLATS, PINE VALLEY, AND ROBINSON MOUNTAIN QUADRANGLES, ELKO AND EUREKA COUNTIES, NEVADA

By
J. Fred Smith, Jr., and Keith B. Ketner

1972

## CORRELATION OF MAP UNITS

Map symbol is queried where correlation is uncertain.




——— CONTACT

~~~~~ CONTACT OF INTERFINGERING ROCK UNITS—Diagrammatic

——— NORMAL FAULT

▲▲▲▲ THRUST FAULT—Sawteeth on upper plate

——— FAULT—Showing relative horizontal movement

STRIKE AND DIP DIRECTION OF BEDS:
- Inclined
- Vertical
- Overturned

STRIKE AND DIP DIRECTION OF FLOW LAYERING IN LAVAS

## DESCRIPTION OF MAP UNITS

Ql — LANDSLIDE DEPOSITS (QUATERNARY)

Qal — ALLUVIUM AND COLLUVIUM (QUATERNARY)

Qg — GRAVEL, SAND, AND SILT (QUATERNARY)——Not tuffaceous.

POST-PALEOZOIC ROCKS IN WEST HALF OF AREA

QTHr — HAY RANCH FORMATION (QUATERNARY AND TERTIARY)——Clay, tuff, limestone, tuffaceous siltstone, and sandstone; fanglomerate.

Tc — CARLIN FORMATION of Regnier (1960) (TERTIARY; MIOCENE)——Tuffaceous sandstone and siltstone, soft, tan, muddy; some tuff, diatomite, limestone, and conglomerate.

Tpr — PALISADE CANYON RHYOLITE of Regnier (1960) (TERTIARY; MIOCENE)——Rhyolite flows. K-Ar age of 15.0±1.0 million years (m.y.) on whole rock (Armstrong, 1970, p. 212-213).

Tbp — BASALT PLUGS (TERTIARY; MIOCENE?)

Tr — RAINE RANCH FORMATION of Regnier (1960) (TERTIARY; MIOCENE)——Tuff, vitric ash, shale, siltstone, limestone, and conglomerate.

Tq — QUARTZ LATITE FLOW (TERTIARY; MIOCENE OR OLIGOCENE)——K-Ar age of 27.7±0.6 m.y. on sanidine; 24.2±0.5 m.y. on biotite (McKee and others, 1971, p. 41, sample no. 145).

Tib — BASALT PLUGS AND DIKES (TERTIARY; OLIGOCENE)——K-Ar age of 31.9±1.1 m.y. on whole rock (R. F. Marvin, H. H. Mehnert, and Violet Merritt, analysts, U.S. Geol. Survey).

Twf — TUFF (TERTIARY; OLIGOCENE)——Massive rhyolitic lapilli tuff and some volcanic breccia and basalt.

Ts — SAFFORD CANYON FORMATION of Regnier (1960) (TERTIARY; OLIGOCENE?)—Vitric tuff and tuffaceous volcaniclastic sandstone and conglomerate; some limestone.

Tv — LATITE TO ANDESITE (TERTIARY; OLIGOCENE?)

Ti — INTRUSIVE ROCKS (TERTIARY; OLIGOCENE—— some may be younger or older)——Mostly rhyolite or granite but ranging to monzonite in composition.

NEWARK CANYON FORMATION (CRETACEOUS; UPPER? AND LOWER CRETACEOUS):

Knc — Main body——Dominantly gray, tan, brown, and red sandstone and conglomerate, and less siltstone and a little limestone in the Cortez Mountains; gray shale, sandstone, conglomerate, and limestone in Pinon Range.

Knb — Mudstone member——Poorly consolidated dark-gray to black mudstone; some thin pebble layers, siltstone, and sandstone and conglomerate lenses.

Jak — ALASKITE (JURASSIC)——K-Ar age of 140± m.y. (R. L. Armstrong in Muffler, 1964, footnote p. 39).

Ji — PREDOMINANTLY GRANODIORITE (JURASSIC)

Jr — RHYOLITE(?) PLUG (JURASSIC)

FRENCHIE CREEK RHYOLITE (JURASSIC):

Jf — Mostly rhyolite, rhyodacite, and andesite flows. K-Ar age of 151±3 m.y. written commun. to L. J. P. Muffler, 1972).

Jfs — Flows, tuffs, and clastic sedimentary rocks.

Js — SOD HOUSE TUFF (JURASSIC)——Mostly altered white silicic ash-flow tuff.

Jb — BIG POLE FORMATION (JURASSIC)——Mostly poorly sorted sedimentary rocks made up of volcanic fragments and plagioclase and quartz; some lava flows.

POST-PALEOZOIC ROCKS IN EAST HALF OF AREA

QTss — CONGLOMERATE, SAND, AND SILT (QUATERNARY AND TERTIARY)——Tuffaceous in part.

Tb — BASALT (TERTIARY; MIOCENE?)

Th — TUFFACEOUS SEDIMENTARY ROCKS AND ASH (TERTIARY; MIOCENE)——Siltstone, sandstone, and conglomerate; mostly tuffaceous; some limestone.

Tvl — PREDOMINANTLY LAVA FLOWS (TERTIARY; OLIGOCENE?)——Mostly rhyolite to latite.

ASH-FLOW TUFFS AND ASSOCIATED ROCKS (TERTIARY; OLIGOCENE):

Twf — Ash-flow tuffs, mostly nonwelded to thoroughly welded.

Tw — Tuffaceous sedimentary rocks and ash——Siltstone, sandstone, conglomerate, and limestone; much ash.

Tfw — Ash-flow tuff and tuffaceous sedimentary rocks interlayered. K-Ar age of 33.2±0.7 m.y. on sanidine; 34.9±0.7 m.y. on biotite (McKee and others, 1971, p. 33, sample no. 76).

Tt — TUFF AND TUFFACEOUS SEDIMENTARY ROCKS (TERTIARY; OLIGOCENE)—Tuffs contain autoliths and fragments of Paleozoic sedimentary rocks.

Ta — BASALT AND BASALTIC ANDESITE (TERTIARY; OLIGOCENE)—Dark fine-grained volcanic rocks.

Te — OIL SHALE UNIT (TERTIARY; OLIGOCENE OR EOCENE)——Thin-bedded limestone, light gray and tan with yellow tint, and laminated shale and siltstone; oil shale; claystone and marl; tuff in upper part. K-Ar age of 38.6±0.8 m.y. on biotite (McKee and others, 1971, p. 32, sample no. 73).

Tl — NONCHERTY LIMESTONE (TERTIARY; EOCENE)—Gray to tan and white, dense, sugary, thick-bedded limestone.

Tlc — CHERTY LIMESTONE (TERTIARY; EOCENE)—Gray and tan dense limestone; much black, brown, and tan chert in pods and lumps; contains fresh water snail shells.

Tp — MOSTLY CLASTIC ROCKS (TERTIARY?; EOCENE?)—Mostly conglomerate, sandstone, and siltstone, some limestone; conglomerate clasts of Paleozoic rocks of pebble to boulder size; red weathered surface common.

Tcl — LIMESTONE AND LIMESTONE CLAST CONGLOMERATE (TERTIARY ?; EOCENE ?)——Gray limestone commonly dense; conglomerate made of pebble to boulder sized clasts of mostly carbonate rocks derived from nearby Paleozoic formations.

CARBONATE AND CLASTIC ROCKS OF VARIOUS TYPES (PERMIAN AND UPPER PENNSYLVANIAN):

PIPu — Main body——Thin-bedded calcareous siltstone and sandstone which weather to yellow and tan platy fragments; limestone, dolomitic limestone, and dolomite; some black platy limestone; conglomerate and conglomeratic sandstone. 4,000± feet thick.

Puc — Carbonate rocks and much chert——Much chert in beds and pods in carbonate rocks like those in PPu. 950+ feet thick.

PIPs — STRATHEARN FORMATION of Dott (1955) (PERMIAN AND UPPER PENNSYLVANIAN)——Sandy limestone, tan and yellow calcareous quartz siltstone, crossbedded sandy and pebbly limestone; quartzite and chert clast conglomerate. 1,200-2,000 feet thick.

IPt — TOMERA FORMATION of Dott (1955) (MIDDLE PENNSYLVANIAN)——Interbedded and interfingering limestone and conglomerate. 1,700-2,000 feet thick.

IPm — MOLEEN FORMATION of Dott (1955) (LOWER AND MIDDLE PENNSYLVANIAN)——Gray limestone, commonly forming ledges, and interbedded thinner silty and sandy limestone; chert in pods and layers in the limestone; lenses of conglomerate. 1,200-1,600 feet thick.

TOMERA AND MOLEEN FORMATIONS of Dott (1955) UNDIVIDED (LOWER AND MIDDLE PENNSYLVANIAN):

IPtm — Main body——Complete mixture of rock types that occur in the two formations. 3,300 feet maximum thickness.

IPcs — Conglomerate——Mainly siliceous clast conglomerate and sandstone.

IPMd — DIAMOND PEAK FORMATION (LOWER PENNSYLVANIAN AND UPPER AND LOWER MISSISSIPPIAN)——Conglomerate of chert and quartzite clasts ranging in size from pebbles to boulders; sandstone; some marl and shaly beds; lenticular units. 4,700 feet thick.

Mc — CHAINMAN SHALE (UPPER? AND LOWER MISSISSIPPIAN)——Mostly gray and some almost black shale and sandstone of quartz and chert grains; some conglomerate lenses; some thin limestone and calcareous sandstone beds; pebbly mudstone. Fossil collections are of Early Mississippian age. 1,600± feet thick.

Mdc — PART OF DIAMOND PEAK FORMATION AND CHAINMAN SHALE UNDIVIDED (UPPER AND LOWER MISSISSIPPIAN)——Conglomerate, sandstone, and shale; no one lithology dominant.

Mw — WEBB FORMATION (LOWER MISSISSIPPIAN)——Gray siliceous mudstone; black to gray, tan weathering, dense limestone in lenses near top. 0-800 feet thick.

Ma — ARGILLITE OF LEE CANYON (MISSISSIPPIAN)——Black siliceous argillite and a little black chert. 5,000+ feet thick.

UPPER PLATE OF ROBERTS MOUNTAINS THRUST

Siliceous assemblage

Dw — WOODRUFF FORMATION (UPPER TO LOWER DEVONIAN)——Dark-gray to black siliceous mudstone and chert; lesser amounts of shale, siltstone, dolomitic siltstone, dolomite, and limestone. 3,000-6,000(?) feet thick.

Sc — CHERT AND SILTSTONE (MIDDLE OR LOWER SILURIAN)——Gray, tan, brown, and green chert and lesser amounts of siltstone. A few hundred feet thick.

Ova — VALMY FORMATION (MIDDLE ORDOVICIAN)——Shale, quartzite, and greenstone. 150+ feet thick.

Ov — VININI FORMATION (UPPER TO LOWER ORDOVICIAN)——Dominantly black chert, and shale and mudstone. Several thousand feet thick.

Transitional assemblage

Dlc — LIMESTONE AND CHERT (UPPER? AND MIDDLE DEVONIAN)——Gray limestone, sandy limestone, chert, and chert-pebble conglomerate. A few hundred feet thick.

Drm — ROBERTS MOUNTAINS FORMATION (LOWER DEVONIAN)——Black shaly and platy carbonaceous silty dolomite and dolomitic marl. 300± feet thick in thrust slice.

Oc — CLAYSTONE, SHALE, AND LIMESTONE (UPPER TO LOWER ORDOVICIAN)——Claystone, shale, sandy limestone and chert, limestone, and quartzite. 1,600+ feet thick.

LOWER PLATE OF ROBERTS MOUNTAINS THRUST

Carbonate assemblage

Ddg — DEVILS GATE LIMESTONE (UPPER AND MIDDLE DEVONIAN)——Medium- to thick-bedded, light- and dark-gray limestone. 940+ feet thick.

NEVADA FORMATION (MIDDLE AND LOWER DEVONIAN):

Dnu — Upper dolomite member——Brown and gray dolomite in alternating layers. 845-2,065 feet thick.

Dno — Oxyoke Canyon Sandstone Member——Quartzite and sandstone containing variable amounts of dolomite. 0-600 feet thick.

Dnb — Beacon Peak Dolomite Member——Thin- to thick-bedded, gray to brown dolomite; peculiar grainy appearing texture and thin red stylolites are characteristic. 675 feet thick.

Slm — LONE MOUNTAIN DOLOMITE (DEVONIAN? AND UPPER AND MIDDLE SILURIAN)——Thick-bedded gray dolomite. 1,400+ feet thick.

Ohc — HANSON CREEK FORMATION (UPPER? AND MIDDLE ORDOVICIAN)—Thin- to thick-bedded black and gray dolomite. 130 feet thick.

Oe — EUREKA QUARTZITE (MIDDLE ORDOVICIAN)——Thick-bedded to obscurely thin-bedded white quartzite. 70 feet thick.

Op — POGONIP GROUP (MIDDLE ORDOVICIAN)——Mostly thin-bedded gray dolomite, some thick-bedded; interbeds of shale in upper part. 350 feet thick.

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For sale by U.S. Geological Survey, price 50 cents
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