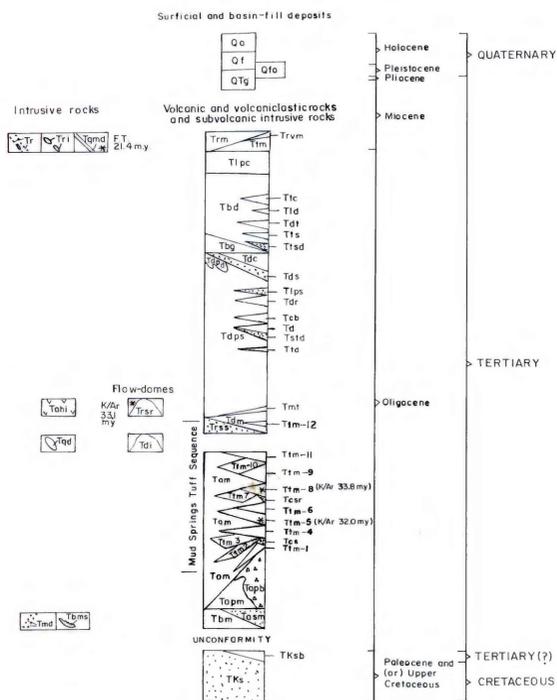


CORRELATION OF MAP UNITS



Ash flow tuff units within the Mud Springs sequence (Tm-1-12) pinch-out to the northwest and may represent early ash eruptions from a Horse Camp Peak volcanic cone or from a more distal source, such as the Animas caldera to the southeast.

LIST OF MAP UNITS

Qa	Alluvium (Holocene)
Qf	Fan deposits (Holocene and (or) Pleistocene)
Qto	Older fan deposits (Pleistocene)
Qtg	Gila Conglomerate (Pleistocene, Pliocene, and Miocene)
RHYOLITE OF MULE MOUNTAINS (MIOCENE)	
Trm	Rhyolite flows
Trvm	Vitrophyre
Ttm	Air-fall tuff and tuffaceous sandstone
Tr	Rhyolite dikes and plugs
Tri	Rhyolite plugs
Tqmd	Quartz monzonite porphyry dike
Tlpc	Lava flows of Crookson Peak (Oligocene)
BASALTIC AND ANDESITIC ROCKS OF DARK THUNDER CANYON AND INTERLAYERED SILICIC TUFF (OLIGOCENE)	
Tbd	Basaltic flow member
Ttc	Ash-flow tuff of Crook Ranch
Tld	Dacite
Tdt	Ash-flow tuff
Tts	Air-fall tuff
Tsd	Sandstone member
Tbg	Bloodgood Canyon Tuff (Oligocene)
Tdc	Davis Canyon Tuff (Oligocene)
Tds	Volcaniclastic rocks
DACITE OF SUMMIT MOUNTAIN (OLIGOCENE)	
Tdps	Dacite porphyry flows
Tdpd	Porphyritic dacite
Tlps	Sandstone member
Tdr	Aphyric dacite flow member
Tcb	Caballo Blanco Tuff (Oligocene)
Td	Ash-flow tuff of Davenport Canyon (Oligocene)
Tstd	Sandstone member
Ttd	Air-fall tuff
Tmt	Ash-flow tuff
Tahi	Andesite porphyry plug of Horse Camp Peak (Oligocene)
Trsr	Rhyolite of Steeple Rock (Oligocene)
Tdm	Aphyric dacite flows (Oligocene)
Tqd	Diorite plug (Oligocene)
TUFF SEQUENCE OF MUD SPRINGS AND INTERLAYERED VOLCANIC AND VOLCANICLASTIC ROCKS (OLIGOCENE)	
Tm-12	Ash-flow tuff
Trss	Volcaniclastic rocks of Steeple Rock
Tdi	Rhyodacite of Carlisle Canyon
Tm-11	Ash-flow tuff
Tam	Andesite of Mount Royal
Tm-10	Ash-flow and air-fall tuff
Tm-9	Ash-flow and air-fall tuff
Tm-8	Ash-flow tuff
Tm-7	Air-fall tuff and tuffaceous sandstone
Tcsr	Sandstone
Tm-6	Ash-flow tuff
Tm-5	Ash-flow tuff
Tm-4	Ash-flow tuff
Tm-3	Rhyolitic breccia
Tm-2	Ash-flow tuff
Tcs	Sandstone
Tm-1	Ash-flow tuff
ANDESITE OF MUD SPRINGS PEAKS (OLIGOCENE)	
Tapm	Andesite porphyry
Tapb	Andesite sedimentary breccia
Tad	Dacite porphyry dikes
Tbms	Andesite porphyry sill
Tasm	Sandstone
Tbm	Andesite
VIRDEN FORMATION OF ELSTON, 1960 (PALEOCENE AND (OR) UPPER CRETACEOUS)	
TKsb	Arkosic sedimentary breccia
TKs	Sandstone, siltstone, pebble conglomerate, and minor black shale

REFERENCES

Elston, W. E., 1960. Reconnaissance geologic map of the Virden thirty-minute quadrangle, New Mexico Bureau of Mines and Mineral Resources, Geologic Map 15, scale 1:126,720

MAP SYMBOLS

- Contact
- Fault—showing dip where known. Crosshatched along wide fault zones. Dashed where approximately located or inferred; dotted where concealed; queried where uncertain. U, upthrown side; D, downthrown side
- 20° Strike and dip of compaction foliation in tuffs or fluxion layering in lavas--Inclined
- 10° Strike and dip of beds--Inclined
- Quartz vein--Commonly contiguous with major faults
- Zones of alteration--
- Chiefly propylitic alteration along Whiskey Creek-Carlisle faults
- Chiefly silicification and alunitization along the Telephone Ridge rhyolite-tuff complex
- Dacitic breccia--Dusky purple, highly hematitized breccias within dacite porphyry flows (Tds). Angular dacite fragments are not sorted and may have formed by gas fluidization. Abundant chalcedonic quartz cement. Steeply dipping unit as much as 500 ft (150 m) wide near Possum Hollow.
- Sample localities for age determinations
- * K-Ar Location of K-Ar dates (biotite separates)
- * F.T. Location of fission track dates (zircon separates)
- Mine workings or development
- X Prospect pit
- Shaft
- Adit
- Open cut
- Rock waste and tailings
- Diamond drill hole site (some localities not shown)
- Approximate secondary road location

NOTE: See table 2, in pamphlet, for list of mines, prospects, and mineral occurrences

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

GEOLOGIC MAP AND SECTIONS OF THE STEEPLE ROCK QUADRANGLE, GRANT AND HIDALGO COUNTIES, NEW MEXICO

By
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1990