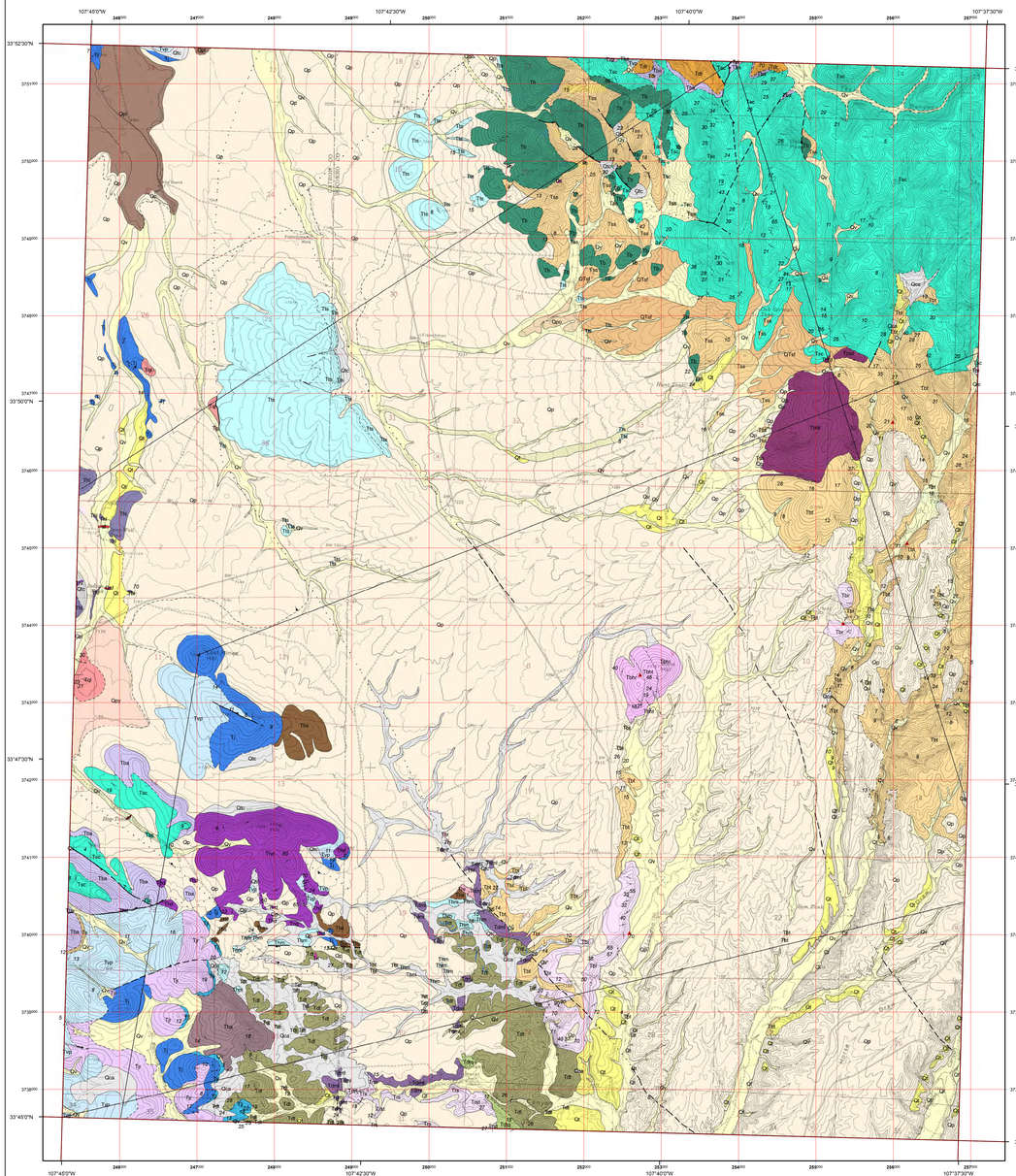
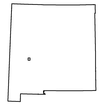
NMBGMR Open-file Geologic Map 65
Last Modified 25 August 2010



Base from U.S.Geological Survey 1984, from photographs taken 1976 and field checked in 1976. Map edited in 1984
1927 North American datum, UTM projection – zone 13
1000- meter Universal Transverse Mercator grid, zone 13, shown in red



1:24,000

1 0.5 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

This draft geologic map is preliminary and will undergo revision. It was produced from either scans of hand-drafted originals or from digitally drafted original maps and figures using a wide variety of software, and is currently in cartographic production. It is being distributed in this draft form as part of the bureau's Open-file map series (OFGM), due to high demand for current geologic map data in these areas where STATEMAP quadrangles are located, and it is the bureau's policy to disseminate geologic data to the public as soon as possible.

After this map has undergone scientific peer review, editing, and final cartographic production adhering to bureau map standards, it will be released in our Geologic Map (GM) series. This final version will receive a new GM number and will supercede this preliminary open-file geologic map.

DRAFT

New Mexico Bureau of Geology and Mineral Resources
Open-file Geologic Map **65**

Mapping of this quadrangle was funded by a matching-funds grant from the STATEMAP program of the National Cooperative Geologic Mapping Act, administered by the U. S. Geological Survey, and by the New Mexico Bureau of Geology and Mineral Resources. (Dr. Peter A. Scholle, *Director and State Geologist*; Dr. J. Michael Timmons, *Geologic Mapping Program Manager*).

New Mexico Bureau of Geology and Mineral Resources
New Mexico Tech
801 Leroy Place
Socorro, New Mexico
87801-4796

[505] 835-5490
http://geoinfo.nmt.edu

This and other STATEMAP quadrangles are (or soon will be) available for free download in both PDF and ArcGIS formats at:

http://geoinfo.nmt.edu/publications/maps/geologic/ofgm/home.html

Geologic map of the Oak Peak 7.5-Minute Quadrangle, Catron and Socorro Counties, New Mexico

June 2010

by
G.R. Osburn[1] and C.A. Ferguson[2]

[1] Earth and Planetary Science Department, Washington University, St. Louis, MO, 63130
[2] 119 North Fork Rd., Centennial, WY, 82055

Oak Peak Unit Descriptions

af Man-made deposits (Holocene) – Earthen dams for tanks along active gulleys or valleys.

Qv Valley alluvium (Holocene) – Active alluvium in valleys, gulleys, and along active stream beds, generally incised <3m.

Qt Terrace deposits (Quaternary) – Terrace deposits composed of alluvium incised more than 3m above nearby active alluvial deposits.

Qca Colluvium and alluvium (Holocene – Quaternary)

Qtc Talus and colluvium (Holocene - Quaternary)

Qpl Lacustrine deposits (Quaternary) – Clay, silt, and fine-grained sandy playa deposits.

Qp Piedmont deposits (Quaternary) – Sand and gravel deposited in alluvial fans.

QTsfSanta Fe Group (Pleistocene – Miocene) – Conglomerate and sandstone, typically volcaniclastic and moderately indurated. Thickness: 0-100m.

Tbt Beartrap Canyon Formation (Miocene) – Volcaniclastic sandstone, conglomerate, and lesser nonwelded felsic tuff. The tuffs are derived from intercalated phenocryst-poor and phenocryst-rich rhyolite and phenocryst-rich dacite lava flows, and domes. Clasts and lithics are chiefly rhyolitic, derived from intercalated lavas, or older lavas and ignimbrites; chiefly South Canyon Tuff, but also locally, other older Datil Group tuffs. Sandstone and conglomerate are commonly complexly interleaved. Locally, some moderate to high-angle, cross-stratified, medium- to thick-bedded sandstone sequences are strongly suggestive of eolian deposition. Thickness: 0-300m.

Tbr Beartrap Canyon Formation, phenocryst-poor rhyolite lava and lava domes (Miocene) – Rhyolite lava and hypabyssal rhyolite containing less than ~10% phenocrysts of feldspar, biotite, ± quartz.

Tbtd Beartrap Canyon Formation, phenocryst-rich dacitic lava and lava dome (Miocene) – Dacitic lava containing >25% plagioclase, with biotite and lesser hornblende phenocrysts.

Tbhr Beartrap Canyon Formation, rhyolite lava of Bald Hill, (Oligocene) – Rhyolite lava and hypabyssal rhyolite containing less than ~10% phenocrysts of feldspar, biotite, ± quartz.

Tbhrt Beartrap Canyon Formation, rhyolitic tuff associated with rhyolite of Bald Hill (Oligocene) – Moderately phenocryst-poor, nonwelded rhyolitic tuff associated with the Bald Hill rhyolite lava (Tbhr).

Tts Turkey Springs Tuff (Oligocene) - Welded to non-welded rhyolite ash-flow tuff containing 2-25% (increasing upwards) phenocrysts of quartz, sanidine, plagioclase, and biotite. The tuff is typically light gray to pink and contains up to 20% pumice lapilli, and 5-10% lithic lapilli. Thickness: 0-500m.

Tb Basaltic lava (Oligocene) – Mafic lava containing up to 10% 1-2mm pyroxene and/or olivine phenocrysts and lesser plagioclase phenocrysts up to 3mm. The basalt is interleaved with some upper flow units of the South Canyon Tuff (**Tsc**) and with the volcaniclastic sandstone (**Tss**). Thickness: 0-160m.

Tss Volcaniclastic sandstone (Oligocene) – Sandstone and minor conglomerate. Thickness: 0-75m.

Thd Dacite of Hog Hill (Oligocene) – Dacitic lava and intrusive dacite in the southwest-central part of the map area. The dacite contains 5-15% phenocrysts of plagioclase, biotite, hornblende?

Tsc South Canyon Tuff (Oligocene) – Rhyolitic ash-flow tuff containing 4-30% phenocrysts of plagioclase, sanidine, quartz, and biotite. Lithic-lapilli are generally <5%, and pumice lapilli 5-25%. Thickness: 0 - 500m.

Tba Basaltic andesite lava (Oligocene) – Mafic lava containing up to 10% 1-3mm plagioclase phenocrysts and sparse pyroxene and/or olivine. Thickness: 0-75m.

Ts Sandstone (Oligocene) – Volcaniclastic sandstone and sparse pebbly sandstone and conglomerate that overlies the Vicks Peak Tuff (Tvp) in the southwestern part of the map area. Thickness: 0-10m.

Tvp Vicks Peak Tuff (Oligocene) – Densely welded rhyolitic ash-flow tuff containing 1-15% phenocrysts, chiefly sanidine up to 4mm, lesser plagioclase up to 2mm, and sparse pyroxene, hornblende, and biotite <2mm. The tuff contains 2-25% strongly flattened pumice lapilli up to 1m long, and sparse <10cm lithic lapilli. The tuff is typically light gray and the pumice lapilli are commonly recessive on weathered surfaces. Thickness: up to 90m.

Tdr Rhyolite of Durfee Canyon (Oligocene) – Moderately phenocryst-poor (3-7%) rhyolite lava containing mainly sanidine up to 3mm, biotite up to 2mm, and sparse quartz up to 2mm. Thickness: 0 - >200m.

Tql Quartz-porphyritic lava (Oligocene) – Moderately phenocryst-poor quartz-phyric intermediate to felsic lava. Age relationship to other units except the La Jencia Tuff, which it intrudes, is unknown.

Thl Hornblende lava (Oligocene) – Hornblende-porphyritic intermediate lava and a related dike (**Thli**) along the western edge of the map area. Age relationship to other units unknown.

Tj La Jencia Tuff (Oligocene) – Densely welded rhyolitic ash-flow tuff containing 2-10% phenocrysts of sanidine (1-4mm) and plagioclase (1-2mm), and minor biotite, pyroxene, and hornblende, and quartz. The tuff is generally light to dark gray and contains 5-15% strongly flattened pumice lapilli up to 1m long, and up to 5% lithic lapilli. Thickness: up to 120m.

Trs Rhyolite of Sullivan's Hole (Oligocene) – Moderately phenocryst-poor rhyolitic lava occurs along the southern edge of the map area. The lava contains 5-7% phenocrysts <3mm of feldspar, biotite and minor quartz. Thickness: 0-70m.

Trst Rhyolitic tuff of Sullivan's Hole (Oligocene) – Nonwelded felsic tuff associated with the rhyolite of Sullivan's Hole (Trs). Thickness: 0-25m.

Tfu Undifferentiated felsic lava or hypabyssal rocks (Oligocene) – Small isolated outcrops of strongly silicified felsic porphyry displaying flow-foliation, and breccia, possibly autobrecia. All phenocrysts, which may have made up to 15% of the rock are completely altered.

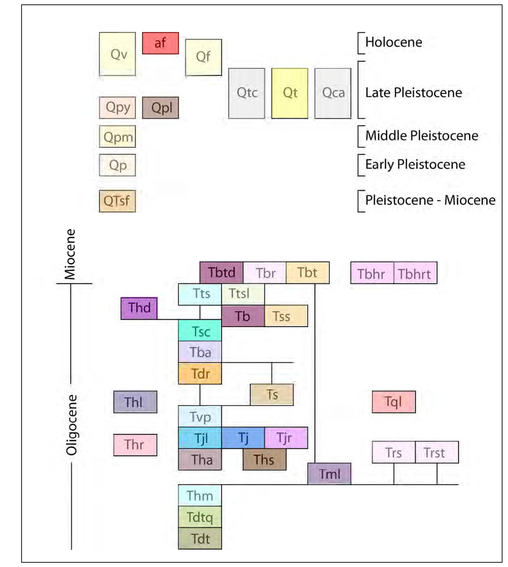
Tml Mafic lava (Oligocene) – Mafic lava containing up to 5-7%, ≤2.5mm plagioclase and up to 2-4%, 1mm green clinopyroxene (?) phenocrysts. The lava is typically strongly altered with abundant quartz amygdules. Thickness: 0-30m.

Tha Hornblende Andesite lava (Oligocene) – Andesitic lava containing 5-10% phenocrysts of ≤2mm rounded, subhedral to euhedral plagioclase with thin K-feldspar rims, 1-3%, ≤1mm biotite, and up to 2%, 1-4mm tabular hornblende. Thickness: 0-100m.

Ths Volcaniclastic rocks (Oligocene) – Volcaniclastic sandstone and conglomerate containing mostly mafic detritus. Thickness: 0-30m.

Thm Hells Mesa Tuff (Oligocene) – Densely welded phenocryst-rich rhyolitic to trachytic ash-flow tuff containing 20-35% phenocrysts of plagioclase (≤3mm), sanidine (≤3mm), quartz (≤4mm), hornblende (≤2mm), and biotite (≤2mm). The tuff is reddish brown to orange in color and contains sparse lithic lapilli and generally <10% pumice lapilli <10cm long. Thickness: 0-25m.

Tdt Ash-flow tuff (Oligocene) – Moderately phenocryst-rich, feldspar-phyric ash-flow tuff containing 10-15% 1-2mm plagioclase and up to 5% 1-3mm biotite. Locally, the tuff contains up to 50% lithic lapilli and blocks up to several meters. Pumice lapilli are generally small (<10cm) and sparse (0-10%). Thickness: >200m with no exposed base.



COMMENTS TO MAP USERS

A geologic map displays information on the distribution, nature, orientation, and age relationships of rock and deposits and the occurrence of structural features. Geologic and fault contacts are irregular surfaces that form boundaries between different types or ages of units. Data depicted on this geologic quadrangle map may be based on any of the following: reconnaissance field geologic mapping, compilation of published and unpublished work, and photogeologic interpretation. Locations of contacts are not surveyed, but are plotted by interpretation of the position of a given contact onto a topographic base map, therefore, the accuracy of contact locations depends on the scale of mapping and the interpretation of the geologist(s). Any enlargement of this map could cause misunderstanding in the detail of mapping and may result in erroneous interpretations. Site-specific conditions should be verified by detailed surface mapping or subsurface exploration. Topographic and cultural changes associated with recent development may not be shown.

Cross sections are constructed based upon the interpretations of the author made from geologic mapping, and available geophysical, and subsurface (drillhole) data. Cross-sections should be used as an aid to understanding the general geologic framework of the map area, and not be the sole source of information for use in locating or designing wells, buildings, roads, or other man-made structures.

The map has not been reviewed according to New Mexico Bureau of Geology and Mineral Resources standards. The contents of the report and map should not be considered final and complete until reviewed and published by the New Mexico Bureau of Geology and Mineral Resources. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the State of New Mexico, or the U.S. Government.

OAK PEAK CROSS SECTIONS 1 AND 2