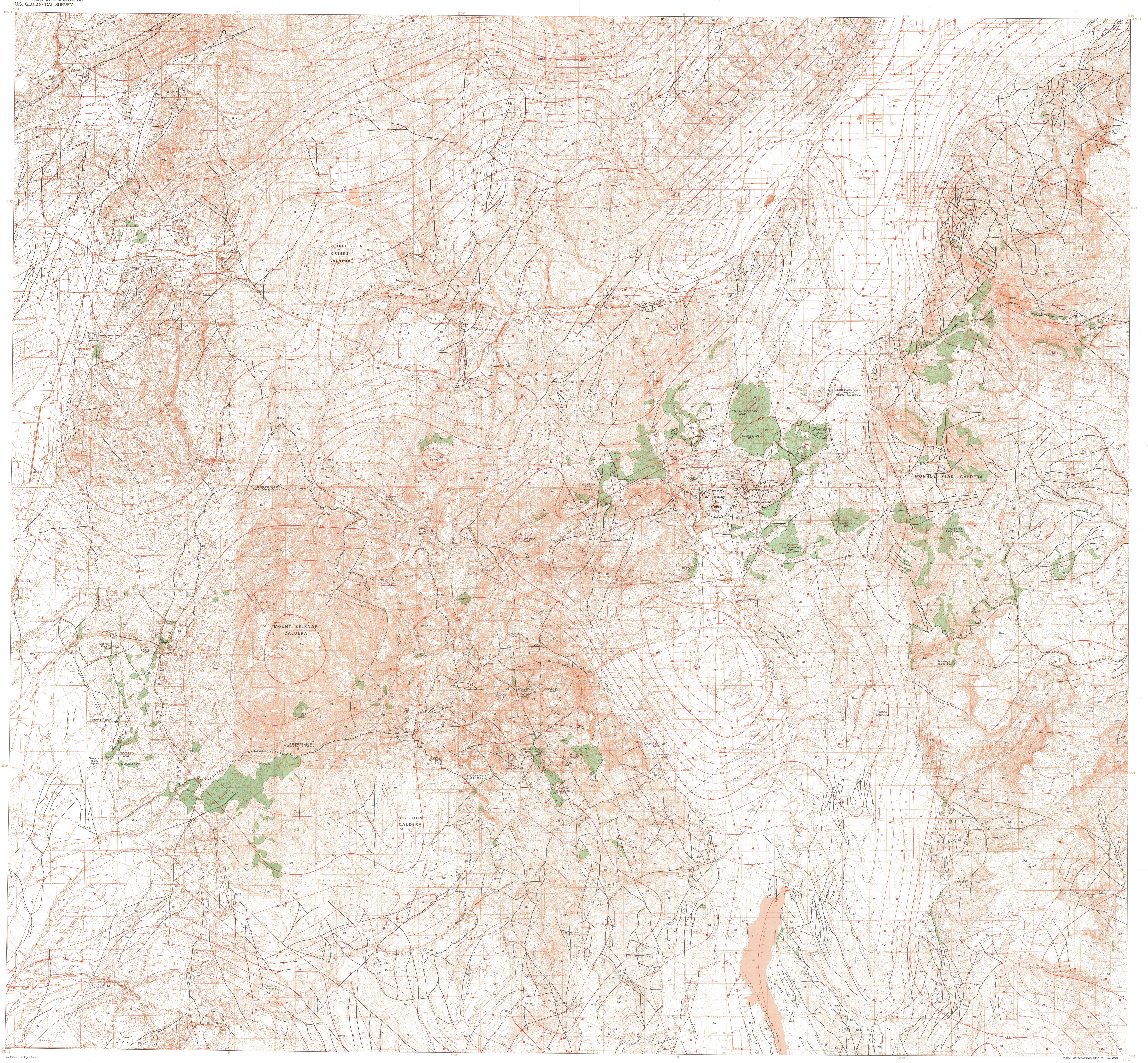
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-1430-C

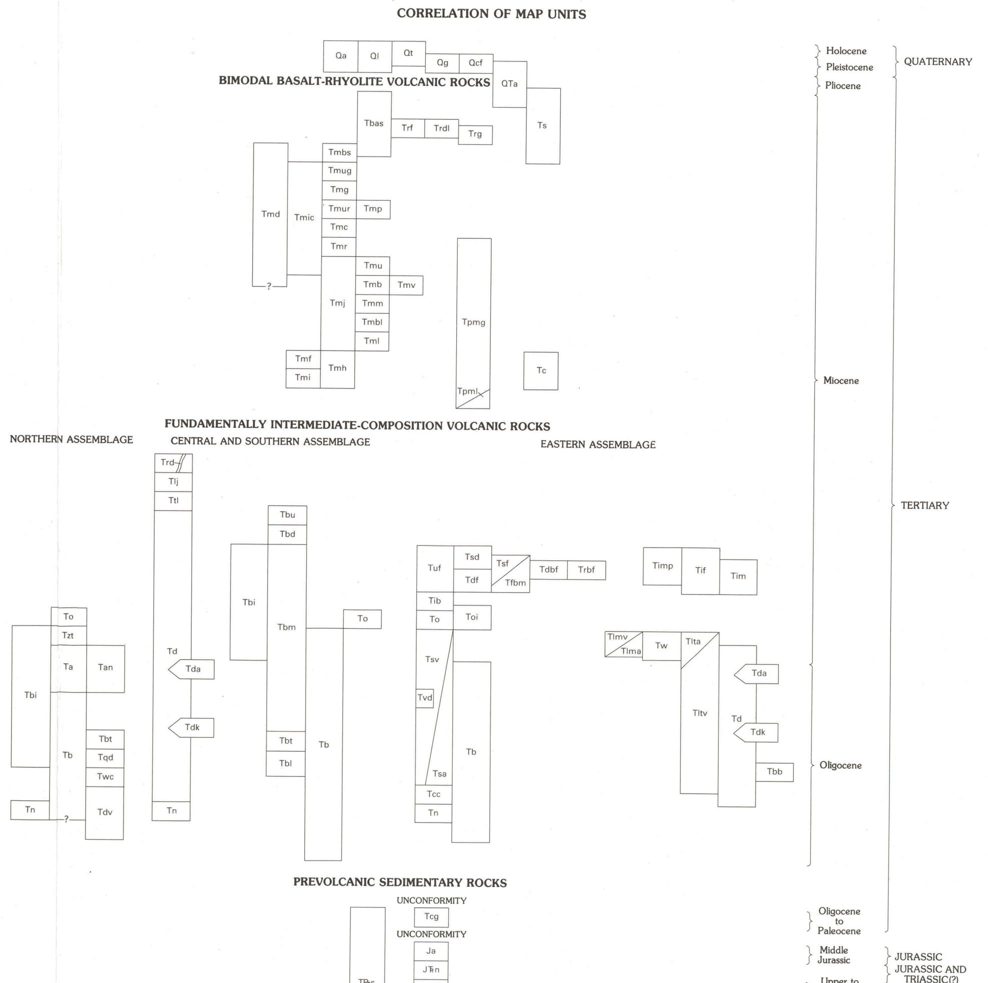


Base from U.S. Geological Survey

Geology from Cunningham and others (1983)

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA.—1984—G83192

CORRELATION OF MAP UNITS



LIST OF MAP UNITS

Unit	Description
Qa	ALLUVIAL DEPOSITS (QUATERNARY)
Ql	LANDSLIDE DEBRIS (QUATERNARY)
Qt	TRAVERTINE (QUATERNARY)
Qg	GLACIAL DEPOSITS (PLEISTOCENE)
Qcf	BASALTIC ANDESITE OF COVE FORT (PLEISTOCENE)
QTa	OLDER ALLUVIUM (PLEISTOCENE TO MIOCENE?)
Ts	SEVIER RIVER FORMATION (PLIOCENE AND MIOCENE)
Tc	CONGLOMERATE (MIOCENE)

BIMODAL BASALT-RHYOLITE ASSEMBLAGE

Unit	Description
Tbas	BASALT LAVA FLOWS (MIOCENE)
Trf	RHYOLITE OF FORSHEA MOUNTAIN (MIOCENE)
Trdl	RHYODACITE OF DRY LAKE (MIOCENE)
Trg	RHYOLITE OF GILLIES HILL (MIOCENE)
	MOUNT BELKNAP VOLCANICS (MIOCENE)
	Intrusive rocks
Tmd	Dikes and small stocks
Tmic	Intracaldera intrusive rocks
Tmf	Fine-grained granite
Tmi	Porphyritic rhyolitic stocks and volcanic domes
	Outflow facies volcanic rocks
Tmbs	Rhyolite of Big Star
Tmug	Upper gray tuff member
Tmg	Gray Hills Rhyolite Member
Tmur	Upper red tuff member
Tmp	Porphyritic lava flows
Tmc	Crystal-rich member
Tmr	Red Hills Tuff Member
Tmj	Joe Lott Tuff Member
Tmh	Lower heterogeneous member
	Intracaldera facies volcanic rocks (Mount Belknap caldera)
Tmu	Upper tuff member
Tmb	Mount Baldy Rhyolite Member
Tmv	Volcaniclastic rocks
Tmm	Middle tuff member
Tmbl	Blue Lake Rhyolite Member
Tml	Lower tuff member
	POTASSIUM-RICH MAFIC VOLCANIC ROCKS IN THE SOUTHERN TUSHAR MOUNTAINS (MIOCENE)
Tpmg	Gravels from potassium-rich mafic lava flows
Tpml	Potassium-rich mafic lava flows

NORTHERN ASSEMBLAGE OF FUNDAMENTALLY INTERMEDIATE-COMPOSITION VOLCANIC ROCKS

Unit	Description
To	OSIRIS TUFF, OUTFLOW FACIES (MIOCENE)
Tzt	ZEOLITIC TUFF (MIOCENE)
Ta	TUFF OF ALBINUS CANYON (MIOCENE OR OLIGOCENE)
Tan	BASALTIC ANDESITE (MIOCENE OR OLIGOCENE)
	BULLION CANYON VOLCANICS (MIOCENE AND OLIGOCENE)
Tb	Heterogeneous lava flows and volcanic breccias (Oligocene)
Tbi	Intermediate-composition intrusive rock (Miocene and Oligocene)
Tbt	Three Creeks Tuff Member (Oligocene)
Tqd	QUARTZ LATITE AND RHYODACITE VOLCANIC DOME AND FLOW (OLIGOCENE)
Twc	VOLCANIC ROCKS OF WALES CANYON (OLIGOCENE)
Tn	NEEDLES RANGE FORMATION (OLIGOCENE)
Tdv	VOLCANIC ROCKS OF DOG VALLEY (OLIGOCENE)

CENTRAL AND SOUTHERN ASSEMBLAGE OF FUNDAMENTALLY INTERMEDIATE-COMPOSITION VOLCANIC ROCKS

Unit	Description
Trd	RHYODACITE TO RHYOLITE DIKES (MIOCENE)
Tlj	FORMATION OF LOUSY JIM (SIGMUND, 1979) (MIOCENE)
Ttl	TUFF OF LION FLAT (MIOCENE)
Td	MOUNT DUTTON FORMATION (MIOCENE AND OLIGOCENE)
Tda	Antimony Tuff Member (Oligocene)
Tdk	Kingston Canyon Tuff Member (Oligocene)
Tn	NEEDLES RANGE FORMATION (OLIGOCENE)
	BULLION CANYON VOLCANICS (MIOCENE AND OLIGOCENE)
Tbi	Intermediate-composition intrusive rock (Miocene)
Tbu	Upper member (Miocene)
Tbd	Delano Peak Tuff Member (Miocene)
Tbm	Middle member (Miocene and Oligocene)
Tbt	Three Creeks Tuff Member (Oligocene)
Tbl	Lower member (Oligocene)
Tb	Heterogeneous lava flows and volcanic breccia (Miocene and Oligocene)
To	OSIRIS TUFF, OUTFLOW FACIES (MIOCENE)

EASTERN ASSEMBLAGE OF FUNDAMENTALLY INTERMEDIATE-COMPOSITION VOLCANIC ROCKS

Unit	Description
	POST-CALDERA VOLCANIC ROCKS FILLING UPPER PART OF MONROE PEAK CALDERA (MIOCENE)
Tuf	Undivided post-Monroe Peak caldera volcanic rocks
Tsd	Sanidine-bearing dacitic lava flows
Tdf	Dacitic lava flows
Tsf	Lava flows of Sage Flat
Tfbm	Lava flows of Bagley Meadows
Tdbf	Dacite of Big Flat
Trbf	Rhyodacite of Burnt Flat
	INTRUSIONS RELATED TO THE MONROE PEAK CALDERA (MIOCENE)
Timp	Intrusive rocks of Monrovian Park
Tif	Intrusive rocks of First Lefthand Fork of Monroe Creek
Tim	Intrusive rocks undivided
Tib	INTRACALDERA BRECCIA (MIOCENE)
	OSIRIS TUFF (MIOCENE)
Toi	Intracaldera facies
To	Outflow facies
	VOLCANIC ROCKS OF SIGNAL PARK (MIOCENE AND OLIGOCENE)
Tsv	Vent facies
Tsa	Alluvial facies
Tvd	VOLCANIC DOME OR LAVA FLOWS (OLIGOCENE)
Tb	BULLION CANYON VOLCANICS, HETEROGENEOUS LAVA FLOWS AND VOLCANIC BRECCIA (OLIGOCENE)
Tcc	VOLCANIC ROCKS OF CLIFF CANYON, ALLUVIAL FACIES (OLIGOCENE)
Tn	NEEDLES RANGE FORMATION (OLIGOCENE)
	VOLCANIC ROCKS OF LANGDON MOUNTAIN (MIOCENE)
Tlmv	Vent facies
Tlma	Alluvial facies
Tw	VOLCANIC ROCKS OF WILLOW SPRING, ALLUVIAL FACIES (MIOCENE)
	VOLCANIC ROCKS OF LITTLE TABLE (MIOCENE AND OLIGOCENE)
Tlta	Alluvial facies
Tltv	Vent facies
Td	MOUNT DUTTON FORMATION (MIOCENE AND OLIGOCENE)
Tda	Antimony Tuff Member (Oligocene)
Tdk	Kingston Canyon Tuff Member (Oligocene)
Tbb	BUCKSKIN BRECCIA (OLIGOCENE)

PREVOLCANIC SEDIMENTARY ROCKS

Unit	Description
TPzs	TERTIARY, MESOZOIC, AND PALEOZOIC SEDIMENTARY ROCKS
Tcg	CONGLOMERATE (OLIGOCENE TO PALEOCENE)
Ja	ARAPIEN FORMATION (MIDDLE JURASSIC)
JTRn	NAVAJO SANDSTONE (JURASSIC AND TRIASSIC?)
TRPs	TRIASSIC AND PERMIAN SEDIMENTARY ROCKS

NOTE: Not all geologic units are identified on this map; full-color geologic map has been published as U.S. Geological Survey Miscellaneous Investigations Series Map I-1430-A, Cunningham and others (1983).

CONTACT

GRADATIONAL CONTACT BETWEEN INTRUSIVE AND EXTRUSIVE PARTS OF THE SAME ROCK UNIT—Approximately located

FAULT—Dotted where concealed. Bar and ball on downthrown side

THRUST FAULT—Open pattern and dots where projected beneath cover. Teeth point toward upper plate

STRIKE AND DIP OF BEDDING OR LAVA FLOWS
- 2 Inclined
- 50 Overturned

30 STRIKE AND DIP OF COMPACTION FOLIATION

TOPOGRAPHIC WALL OF CALDERA—Solid where it follows a contact; broken where concealed

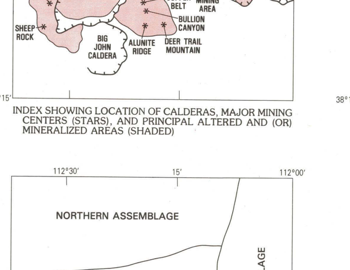
BREAKAWAY SCARP AT HEAD OF A COHERENT BLOCK OF SLUMPED BEDROCK

QUARTZ VEINS AND ALUNITE VEINS

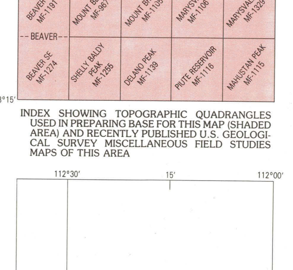
ARGILLIC AND ADVANCED ARGILLIC ALTERATION

GRAVITY DATA STATIONS

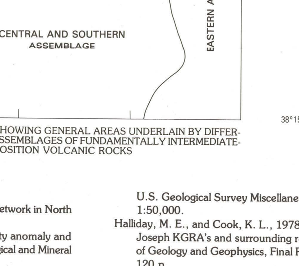
-190 GRAVITY CONTOURS—Hachures indicate relatively lower gravity. Contour interval 2 milligals. A density of 2.67 grams per cubic centimeter was assumed in reducing the data to the complete Bouguer anomaly. Data tied to North American Gravity Base Network (Behrendt and Woollard, 1961)



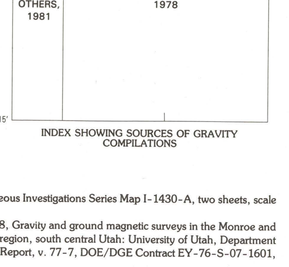
INDEX SHOWING LOCATION OF CALDERAS, MAJOR MINING CENTERS (STARS), AND PRINCIPAL ALTERED AND (OR) MINERALIZED AREAS (SHADED)



INDEX SHOWING TOPOGRAPHIC QUADRANGLES USED IN PREPARING BASE FOR THIS MAP (SHADED AREA) AND RECENTLY PUBLISHED U.S. GEOLOGICAL SURVEY MISCELLANEOUS FIELD STUDIES MAPS OF THIS AREA



INDEX SHOWING GENERAL AREAS UNDERLAIN BY DIFFERENT ASSEMBLAGES OF FUNDAMENTALLY INTERMEDIATE-COMPOSITION VOLCANIC ROCKS



INDEX SHOWING SOURCES OF GRAVITY COMPILATIONS

REFERENCES

Behrendt, J. C., and Woollard, G. P., 1961, An evaluation of the gravity control network in North America: Geophysics, v. 26, no. 1, p. 57-76.

Cook, K. L., Adhidjaja, J. I., and Gabbert, S. C., 1981, Complete Bouguer gravity anomaly and generalized geology map of the Richfield 1° x 2° quadrangle, Utah: Utah Geological and Mineral Survey Map No. 59, scale 1:250,000.

Cunningham, C. G., Steven, T. A., Rowley, P. D., Glassgold, L. B., and Anderson, J. J., 1983, Geologic map of the Tushar Mountains and adjoining areas, Marysvale volcanic field, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-1430-A, two sheets, scale 1:50,000.

Halliday, M. E., and Cook, K. L., 1978, Gravity and ground magnetic surveys in the Monroe and Joseph KGRA's and surrounding region, south central Utah: University of Utah, Department of Geology and Geophysics, Final Report, v. 77-7, DOE/DGE Contract EY-76-S-07-1601, 120 p.

Sigmund, J. M., 1979, Geology of a Miocene rhyodacite lava flow, southern Tushar Mountains, Utah: Kent, Ohio, Kent State University, unpublished M.S. thesis, 35 p.

14½° TRUE NORTH MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1984

SCALE 1:50 000
1 ½ 0 1 2 3 MILES
1 .5 0 1 2 3 KILOMETERS
CONTOUR INTERVALS 40 AND 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTAH
MAP AREA

COMPLETE BOUGUER GRAVITY ANOMALY MAP ON A GEOLOGIC BASE MAP OF THE TUSHAR MOUNTAINS AND ADJOINING AREAS, MARYSVALE VOLCANIC FIELD, UTAH

By

Kenneth L. Cook, Mark E. Halliday, Charles G. Cunningham,
Thomas A. Steven, Peter D. Rowley, Lori B. Glassgold,
John J. Anderson, and Linda L. Coles

1984

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