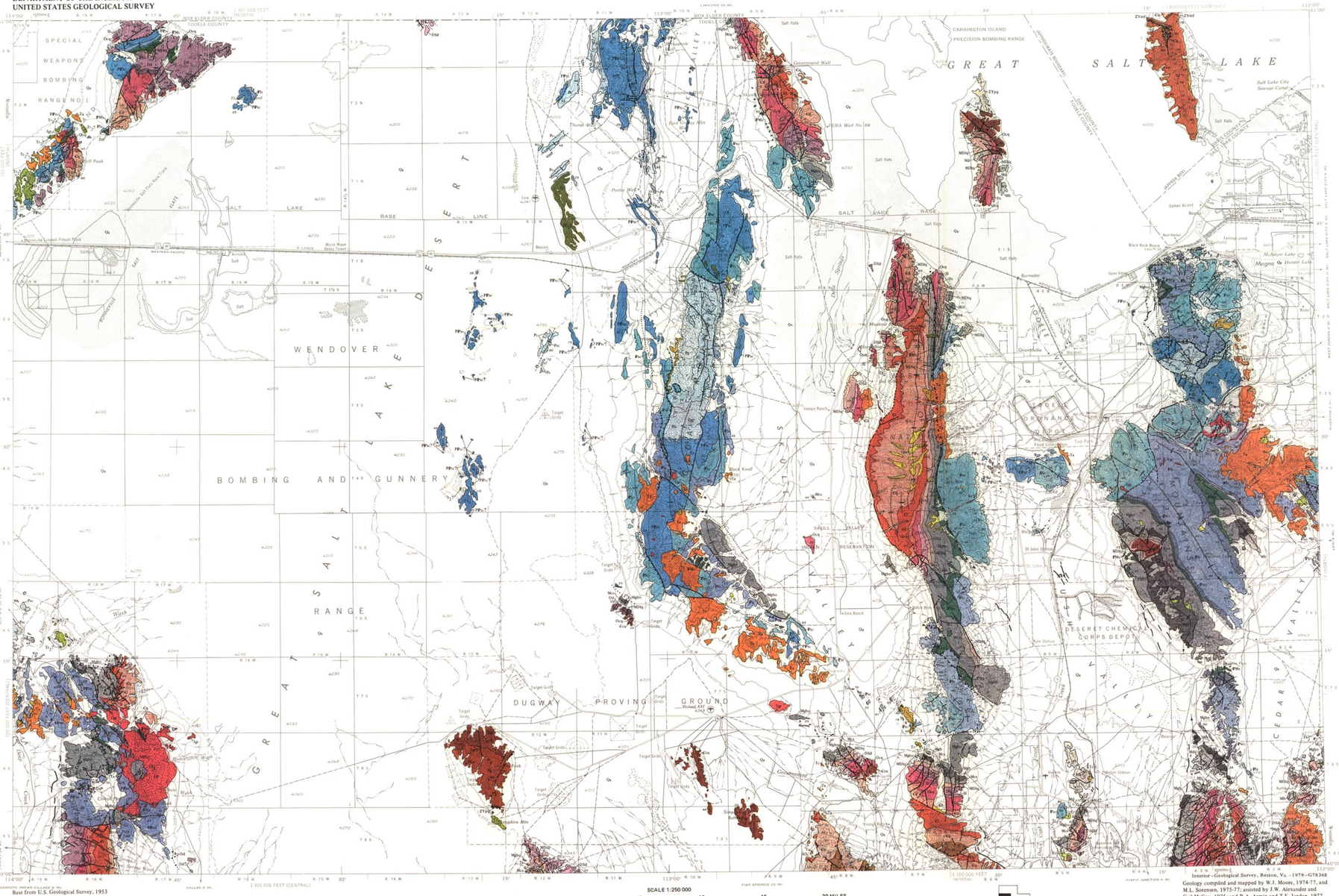
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-1132



Base from U.S. Geological Survey, 1953
Limited revision 1970

SCALE 1:250 000
5 0 5 10 15 20 MILES
5 0 5 10 15 20 25 30 KILOMETERS

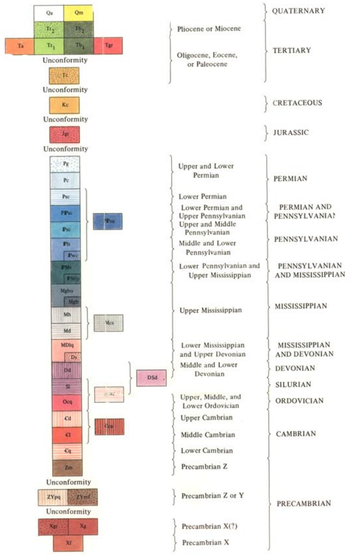
CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS
TRANSVERSE MERCATOR PROJECTION
NATIONAL GEODETIC VERTICAL DATUM OF 1929

INDEX MAP

Interior—Geological Survey, Reston, Va.—1979—G78368

Geology compiled and mapped by W.J. Moore, 1974-77, and M.L. Sorensen, 1975-77; assisted by J.W. Alexander and Gail McCoy, 1975; and R.A. Armin and T.E. Jordan, 1977

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qs — ALLUVIAL DEPOSITS (Quaternary)

Qm — MORAINAL DEPOSITS (Quaternary)

Tr2 — YOUNGER RHYOLITIC FLOWS, BRECCIAS, AND SHALLOW INTRUSIVE ROCKS (Pliocene or Miocene)—Exposed in Sapphire Mountain, Deep Creek Mountains(?), and southern Silver Island Mountains(?)

Tb2 — BASALT AND BASALTIC ANDESITE FLOWS AND SHALLOW INTRUSIVE ROCKS (Pliocene or Miocene)

Ta — ANDESITE, DACITE, AND QUARTZ LATITE FLOWS AND BRECCIAS (Oligocene, Eocene, or Paleocene)

Tr1 — OLDER RHYOLITIC FLOWS, BRECCIAS, AND SHALLOW INTRUSIVE ROCKS (Oligocene, Eocene, or Paleocene)

Tb1 — INTRUSIVE ROCKS OF BASALTIC COMPOSITION (Oligocene, Eocene, or Paleocene) —Exposed in western Traverse Range and South Mountain

Tgr — GRANITIC ROCKS (Oligocene, Eocene, or Paleocene) —Includes granodiorite, quartz monzonite, and quartz latite

Tc — SILICEOUS CONGLOMERATE, SANDSTONE, TUFFACEOUS SANDSTONE, AND FRESH-WATER LIMESTONE (Oligocene, Eocene, or Paleocene)—Includes White Sage Formation in Gold Hill area and rocks correlative with North Horn Formation and Apex Conglomerate (Morris and Lovering, 1961) in eastern half of area

Kc — FERRUGINOUS CONGLOMERATE (Cretaceous)—Exposed in northern Sheeprock Mountains

Jg — GRANITIC ROCKS (Jurassic)—Includes diorite, granodiorite, and quartz monzonite in Silver Island and northern Deep Creek Mountains (Stacey and Zartman, 1976)

Pg — GERSTER FORMATION (Upper and Lower Permian)—Limestone and minor amounts of sandstone. Unit exposed in Deep Creek Mountains and Cedar Range

Pc — CARBONATE ROCKS (Upper and Lower Permian)—Cherty limestone, dolomite, and minor amounts of siltstone and phosphatic shale. Includes units such as Park City and Phosphoria Formations in Grassy, Cedar, and Oquirrh Mountains. Limestone contains fusulinids of Leonardian and Guadalupian age

Psc — SANDSTONE, LIMESTONE, AND DOLOMITE (Lower Permian) —Includes units such as Diamond Creek(?) sandstone and Kirkman(?) Limestone in Oquirrh Mountains, unnamed formations of Doelling (1964) and Maurer (1970) in Grassy and Cedar Mountains, respectively, and Ferguson Mountain(?) Formation of Berge (1960) in Deep Creek Mountains. Includes fusulinids of Wolfcampian and Leonardian age

PPbc — CALCAREOUS SANDSTONE, QUARTZITE, LIMESTONE, AND DOLOMITE (Lower Permian and Upper Pennsylvanian)—In Oquirrh Mountains includes Curry and Clinker formations of Welsh and James (1963); also includes units 2 to 6 of Oquirrh Formation in Grassy Mountains (Doelling, 1964), and units 4 to 5 of Oquirrh Formation in Cedar Mountains (Maurer, 1970)

Pbc — SANDSTONE, LIMESTONE, AND SILTY LIMESTONE (Upper and Middle Pennsylvanian)—In Oquirrh Mountains includes Kessler Canyon Formation (Upper Pennsylvanian and Lower Permian?) of Rogers Canyon sequence and Bingham Mine Formation of Bingham sequence (Tooker and Roberts, 1970); also includes unit 3 of Oquirrh Formation in Cedar Mountains (Maurer, 1970)

Pb — BIOCLASTIC LIMESTONE, SILTSTONE, AND SPARSE DOLOMITE (Middle and Lower Pennsylvanian)—Includes part of Ely Limestone in Silver Island Mountains, unit 1 of Oquirrh Formation in Grassy Mountains (Doelling, 1964), and units 1–2(?) of Oquirrh Formation in Cedar Mountains (Maurer, 1970). In Oquirrh Mountains includes Erda Formation of Rogers Canyon sequence and Butterfield Peaks Formation of Bingham sequence (Tooker and Roberts, 1970)

Pwc — WEST CANYON LIMESTONE (Lower Pennsylvanian)—Basal bioclastic limestone of Bingham sequence (Tooker and Roberts, 1970)

PPm — SANDSTONE, QUARTZITE, AND LIMESTONE, AND MINOR AMOUNTS OF DOLOMITE AND SILTSTONE, UNDIVIDED (Lower Permian and Pennsylvanian)

PMs — SILTSTONE, CLAYSTONE, AND QUARTZITE (Lower Pennsylvanian and Upper Mississippian)—Locally includes chert-pebble conglomerate and limestone lenses. Includes Diamond Peak Formation and Chainman and Manning Canyon Shales

PMbg — LAKE POINT LIMESTONE (Lower Pennsylvanian and Upper Mississippian)—Basal bioclastic limestone of Rogers Canyon sequence (Tooker and Roberts, 1970)

Mgbo — GREAT BLUE AND OCHRE MOUNTAIN LIMESTONES (Upper Mississippian)—Limestone and minor amounts of quartzite and shale; in northern Oquirrh Mountains, includes Green Ravine Formation of Rogers Canyon sequence (Tooker and Roberts, 1970)

Mgb — LOWER PART OF GREAT BLUE LIMESTONE (Upper Mississippian)—Long Trail Shale Member and underlying limestone in southern Oquirrh Mountains, and Topliff and Paymaster Members in Thorpe Hills and northern East Tintic Mountains

Mh — HUMBUG FORMATION (Upper Mississippian)—Interbedded limestone and sandstone

Md — DESERET LIMESTONE (Upper Mississippian)—Cherty limestone; thin phosphatic shale locally present at base

Mcs — CARBONATE ROCKS (Upper Mississippian)—Limestone, sandstone, and shale; in Deep Creek Mountains includes Woodman Formation

MDdq — LIMESTONE, QUARTZITE, AND DOLOMITE (Lower Mississippian and Upper Devonian)—Includes Victoria and Fitchville Formations and Pinyon Peak and Gardison Limestones

Ds — STANSBURY FORMATION (Upper Devonian)—Quartzite and dolomite conglomerate with subordinate dolomite, limestone, and sandstone

Dd — DOLOMITE, SANDY DOLOMITE, AND SILTY LIMESTONE AND DOLOMITE (Middle and Lower Devonian)—Includes units such as Sevy and Simonson Dolomites and Water Canyon Formation; in Silver Island, Deep Creek, and Lakeside Mountains, includes lower part of Guilmette Formation

DSd — DOLOMITE, UNDIVIDED (Upper and Middle Devonian and Silurian)—In East Tintic Mountains includes Bluebell Dolomite of Late Ordovician, Silurian, and Devonian age

Sl — LAKETOWN DOLOMITE (Silurian)

Oocq — CARBONATE ROCKS AND QUARTZITE (Upper, Middle, and Lower Ordovician) —Dolomite, cherty dolomite, quartzite, shale, and limestone. Includes units such as Garden City Formation, Opohonga Limestone, Pogonip Group, Kanosh Shale, Swan Peak Quartzite, and Fish Haven Dolomite. In Deep Creek Mountains, includes rocks of Late Cambrian age (lower part of Chokecherry Dolomite of Nolan, 1935)

SOsf — LAKETOWN AND FISH HAVEN DOLOMITES, UNDIVIDED (Silurian and Upper Ordovician)—Unit restricted to northern West Tintic Mountains

Cd — DOLOMITE AND LIMESTONE (Upper Cambrian)—Dolomite, silty dolomite, limestone, and, in lower part of unit, shale

Cl — LIMESTONE, SHALE, AND DOLOMITE (Middle Cambrian)—Limestone commonly includes intraformational conglomerate and intercalated silty limestone. Lowermost part of unit locally includes rocks of Early Cambrian age (Pioche Shale and Busby Quartzite)

Ccu — CARBONATE ROCKS, UNDIVIDED (Upper and Middle Cambrian)

Cq — QUARTZITE (Lower Cambrian)—Includes Prospect Mountain Quartzite in Deep Creek and Silver Island Mountains and Tintic Quartzite to east

Zm — MUTUAL FORMATION (Precambrian Z)—Exposed in Sheeprock, Simpson, and East Tintic Mountains. Locally includes underlying shale and quartzite that may be correlative with Inkom Formation and uppermost Caddy Canyon Quartzite of northern Wasatch Range

ZYpq — PHYLLITE AND QUARTZITE AT NORTH END OF STANSBURY ISLAND AND PHYLLITE SOUTH OF GRANITE MOUNTAIN (Precambrian Z or Y)

ZYmf — MINERAL FORK TILLITE (Precambrian Z or Y)—Unit exposed near north end of Antelope Island

Xg — GRANITE (Precambrian X?)—Leucocratic granite and pegmatites of Granite Mountain

Xg — GNEISS (Precambrian X?)—Biotite gneiss and pegmatites of Granite Mountain

Xf — FARMINGTON CANYON COMPLEX (Precambrian X)—Unit exposed on Antelope Island

Contact

Fault—Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side

Thrust fault—Dashed where approximately located; dotted where concealed. Sawteeth on upper plate

Folds—Showing trace and direction of plunge of axial plane. Dashed where approximately located or concealed

Anticline

Syncline

Overturned anticline

Overturned syncline

Strike and dip of beds

Inclined

Vertical

Overturned

Strike and dip of cleavage

Strike and dip of joint

Mine waste

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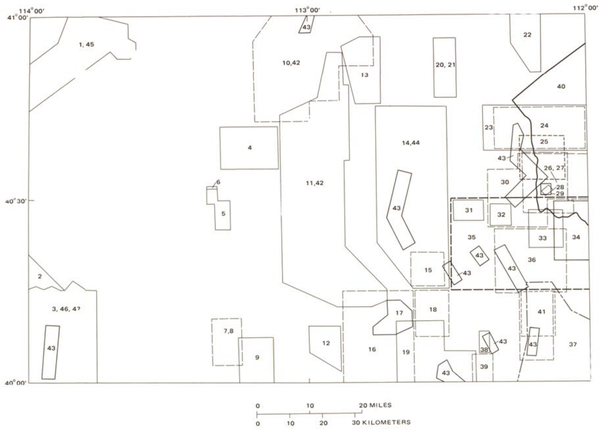
FORMATIONAL NAMES OF PRE-TERTIARY SEDIMENTARY AND METASEDIMENTARY ROCKS APPLIED BY ORIGINAL AUTHORS, AND THEIR RELATION TO MAP UNITS USED IN COMPILATION OF THE TOOELE 1° BY 2° QUADRANGLE.

(See references cited in tabulation of source materials for details of stratigraphic usage)

		DEEP CREEK MOUNTAINS	SILVER ISLAND MOUNTAINS	GRASSY AND LAKESIDE MOUNTAINS	CEDAR MOUNTAINS	SHEEPROCK AND NORTHERN SIMPSON MOUNTAINS	STANSBURY ISLAND, STANSBURY AND ONAQUI MOUNTAINS	OQUIRRH MOUNTAINS	EAST TINTIC MOUNTAINS AND THORPE HILLS
PERMIAN	Upper and Lower	Pg		Phosphoria Fm. Park City Fm.	Gerster Fm. Phosphoria Fm. Grandeur Member of Park City Fm.			Grandeur Member of Park City Fm.	
	Lower	Pc	Ferguson Mountain(?) Fm. of Berge (1960)	Pequop and Ferguson Mountain Fms.	Unnamed fm. of Doelling (1964)			Diamond Creek(?) Ss. Kirkman(?) Ls.	
		Psc			Unnamed fm. of Maurer (1970)			Clinker Fm. of Welsh and James (1961) Curry Fm. of Welsh and James (1961)	
PENNSYLVANIAN		PPsc		Units 2-6 of Doelling (1964)	Units 4-5 of Maurer (1970)			Bingham Mine Fm. Kessler Canyon Fm.	
	Upper	PPc	Oquirrh Fm.	Ely Ls.	Unit 3 of Maurer (1970)		Oquirrh Fm.	Butterfield Peaks Fm. Erda Fm.	Oquirrh Group
	Middle	PPb			Unit 1 of Doelling (1964)			West Canyon Ls.	
	Lower	(PPsc)			Units 1-2(?) of Maurer (1970)			Manning Canyon Sh. Lake Point Ls.	Manning Canyon Sh.
MISSISSIPPIAN		PMs (PMbg)	Chainman Sh.	Diamond Peak and Chainman Fms.	Manning Canyon Sh		Manning Canyon Sh.	Great Blue Ls. Green Ravine Fm.	Great Blue Ls.
		Mgbo (Mgb)	Ochre Mountain Ls.		Great Blue Ls.	Great Blue Ls.	Great Blue Ls.		
	Upper	Mh	Woodman Fm.		Humbug Fm.	Humbug Fm. and Deseret Ls., undivided	Humbug Fm.	Humbug Fm.	Humbug Fm.
		Mcs			Deseret Ls.		Deseret Ls.	Deseret Ls.	Deseret Ls.
		Md			Lodgepole Ls.	Gardison Ls.	Gardison Ls. Fitchville Fm.	Gardison Ls. Fitchville Fm.	Gardison Ls. Fitchville Fm.
	Lower	MDdq (Ds)	Joana Ls.	Joana Ls.		Pinyon Peak Ls. Victoria Fm.	Pinyon Peak Ls. Stansbury Fm.	Stansbury(?) Fm.	Pinyon Peak Ls. Victoria Fm.
DEVONIAN	Upper		Guilmette Fm.	Guilmette Fm.	Guilmette Fm.		Simonson(?) and Sevy(?) Dols.		Bluebell Dol.
	Middle	DSd	Simonson Dol. Sevy Dol.	Simonson Dol.	Simonson Dol. Water Canyon Fm.	Simonson and Sevy Dols.			
	Lower	Dd	Laketown Dol.	Laketown Dol.	Laketown Dol.	Laketown Dol.	Laketown Dol.	Laketown Dol.	Fish Haven Dol.
SILURIAN	Middle Upper	Sol? Sl	Fish Haven Dol.	Fish Haven Dol.	Fish Haven Dol.	Fish Haven Dol.	Fish Haven Dol.	Fish Haven Dol.	
ORDOVICIAN	Middle	Oocq		Swan Peak Qtzite.	Eureka Qtzite Crystal Peak Fm. Swan Peak Qtzite.	Swan Peak Qtzite.			
					Lehman Fm. Kanosh Sh.	Kanosh Sh.	Kanosh Sh.	Kanosh Sh.	
	Lower		Pogonip Group	Garden City Fm.	Garden City Fm.	Pogonip Group	Garden City Fm.		Opohonga Ls.
CAMBRIAN	Upper	Cd	Notch Peak Ls. Corset Spring Sh.	Notch Peak Ls.	St. Charles Ls.	Ajax Dol.	Ajax Dol. Corset Spring Sh.	Ajax Dol.	Ajax Dol.
			Johns Wash Ls. Dunderberg Sh.	Johns Wash Ls. Dunderberg Sh.	Nounan Ls.	Opex Fm.	Opex Fm.	Opex Fm.	Opex Fm.
			Hicks Fm. Lamb Dol.	Undifferentiated Upper Cambrian carbonates					
			Trippe Ls. Young Peak Dol.		Marjum Ls.	Cole Canyon Dol.	Cole Canyon Dol.	Cole Canyon Dol.	Cole Canyon Dol.
					Wheeler Ls.	Bluebird Dol.	Bluebird Dol.	Bluebird Dol.	Bluebird Dol.
	Middle	Ccu			Swasey Ls.	Wheeler Fm.	Bowman and Herkimer Ls.	Bowman Ls. Herkimer Ls.	Herkimer Ls.
					Whirlwind Fm. of Robison (1960)	Swasey Ls.	Dagmar Dol.	Dagmar Dol.	Dagmar Dol.
		Cl	Abercrombie Fm.		Dome Ls.	Whirlwind Fm. of Robison (1960)	Teutonic Ls.	Teutonic Ls.	Teutonic Ls.
					Chisholm Sh.	Dome Ls.			
					Howell Ls.	Chisholm Sh.			
			Busby Qtzite.	Busby Qtzite.	Pioche Sh.	Howell Ls. Tatow Fm. Pioche Sh.	Ophir Fm.	Ophir Fm.	Ophir Fm.
	Lower		Pioche Sh.	Pioche Sh.	Tintic Qtzite	Tintic Qtzite.	Tintic Qtzite.	Tintic Qtzite.	Tintic Qtzite
PRE-CAMBRIAN	Z	Cq	Prospect Mountain Qtzite.	Prospect Mountain Qtzite.		Mutual Fm.			Mutual Fm.
		Zm					Big Cottonwood(?) Fm.		
	Z or Y	ZYpq							



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GEOLOGIC MAP OF THE TOOELE 1° BY 2° QUADRANGLE, UTAH

By
William J. Moore and Martin L. Sorensen

1979

This map was printed from negatives prepared by photographic color-separation of author-prepared colored original.

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