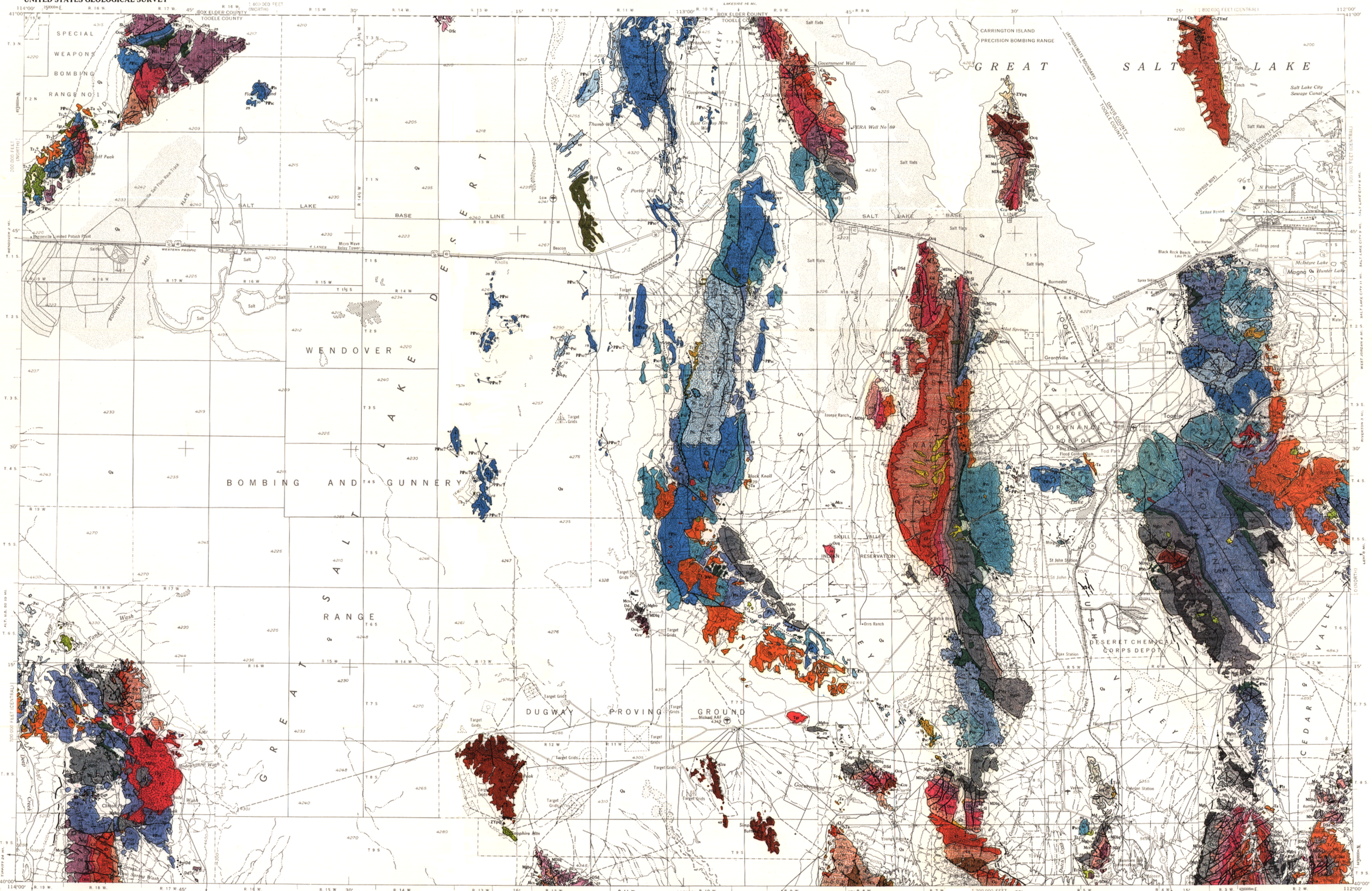
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-1132

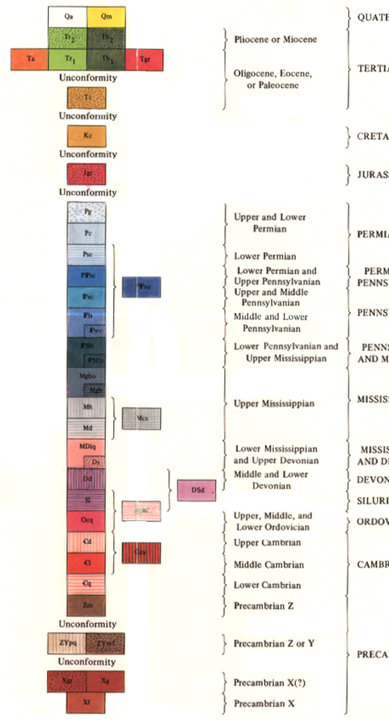


Base from U.S. Geological Survey, 1953
Limited revision 1970

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

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

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- **Qa** — ALLUVIAL DEPOSITS (Quaternary)
- **Qm** — MORAINAL DEPOSITS (Quaternary)
- **Tr3** — YOUNGER RHYOLITIC FLOWS, BRECCIAS, AND SHALLOW INTRUSIVE ROCKS (Pliocene or Miocene)—Exposed in Sapphire Mountain, Deep Creek Mountains, southern Silver Island Mountains(?)
- **Tr2** — BASALT AND BASALTIC ANDESITE FLOWS AND SHALLOW INTRUSIVE ROCKS (Pliocene or Miocene)
- **Tx** — 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)
- **Tl** — INTRUSIVE ROCKS OF BASALTIC COMPOSITION (Oligocene, Eocene, or Paleocene) --Exposed in western Traverse Range and South Mountain
- **Tg** — 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
- **Jp** — GRANITIC ROCKS (Jurassic)--Includes diorite, granodiorite, and quartz monzonite in Silver Island and northern Deep Creek Mountains (Stacey and Zartman, 1976)
- **Pz** — 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
- **Pw** — 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 (1961); also includes units 2 to 6 of Oquirrh Formation in Grassy Mountains (Doelling, 1964), and units 4 to 3 of Oquirrh Formation in Cedar Mountains (Maurer, 1970)
- **Pmc** — 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)
- **Ppc** — WEST CANYON LIMESTONE (Lower Pennsylvanian)--Basal bioclastic limestone of Bingham sequence (Tooker and Roberts, 1970)
- **PPbu** — SANDSTONE, QUARTZITE, AND LIMESTONE, AND MINOR AMOUNTS OF DOLOMITE AND SILTSTONE, UNDIVIDED (Lower Permian and Pennsylvanian)
- **PPs** — 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
- **PMc** — LAKE POINT LIMESTONE (Lower Pennsylvanian and Upper Mississippian)--Basal bioclastic limestone of Rogers Canyon sequence (Tooker and Roberts, 1970)
- **Mpbo** — 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
- **Mm** — CARBONATE ROCKS (Upper Mississippian)--Limestone, sandstone, and shale; in Deep Creek Mountains includes Woodman Formation
- **MDhq** — LIMESTONE, QUARTZITE, AND DOLOMITE (Lower Mississippian and Upper Devonian)--Includes Victoria and Fitchville Formations and Pinyon Peak and Gardison Limestones
- **Dv** — 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)
- **Ou** — 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)
- **SOif** — LAKETOWN AND FISH HAVEN DOLOMITES, UNDIVIDED (Silurian and Upper Ordovician)--Unit restricted to northern West Tintic Mountains
- **Ꞓl** — DOLOMITE AND LIMESTONE (Upper Cambrian)--Dolomite, silty dolomite, limestone, and, in lower part of unit, shale
- **Ꞓu** — 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)
- **Ꞓm** — CARBONATE ROCKS, UNDIVIDED (Upper and Middle Cambrian)
- **Ꞓc** — 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)
- **ZYuc** — MINERAL FORK TILLITE (Precambrian Z or Y)--Unit exposed near north end of Antelope Island
- **Xgr** — 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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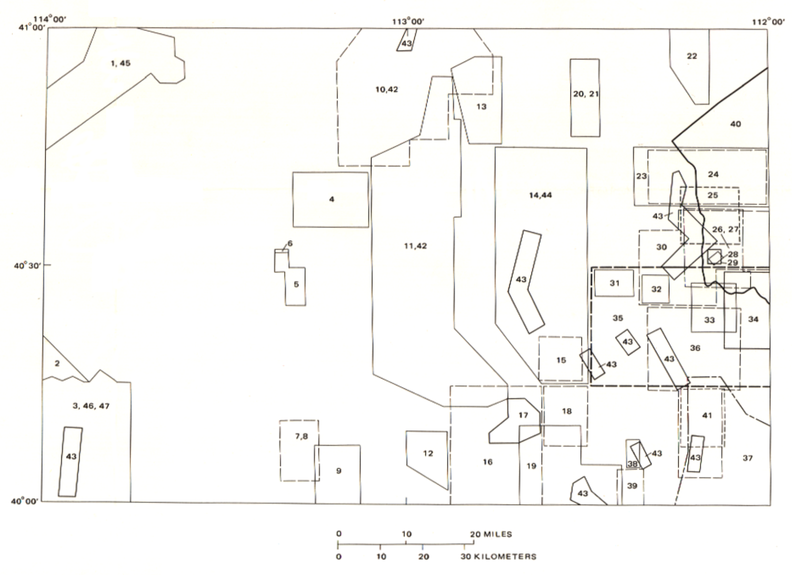
FORMATIONAL NAMES OF PRE-TERTIARY SEDIMENTARY AND METASEDIMENTARY ROCKS APPLIED BY ORIGINAL AUTHORS, AND THEIR RELATION TO MAP UNITS USED IN COMPILATION OF THE TOOELE 1° BY 2° QUADRANGLE.

(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				Gerster Fm.				
	Lower			Phosphoria Fm.	Phosphoria Fm.				
				Park City Fm.	Grandeur Member of Park City Fm.			Grandeur Member of Park City Fm.	
		Ferguson Mountain(?) Fm. of Berge (1960)	Pequop and Ferguson Mountain Fms.	Unnamed fm. of Doelling (1964)	Unnamed fm. of Maurer (1970)			Diamond Creek(?) Ss. Kirkman(?) Ls.	
			Strathearn Fm.	Units 2-6 of Doelling (1964)	Units 4-5 of Maurer (1970)			Oquirrh Group: Clinker Fm. of Welsh and James (1961); Curry Fm. of Welsh and James (1961); Bingham Mine Fm.	Kessler Canyon Fm.
					Unit 3 of Maurer (1970)			Butterfield Peaks Fm.	Erda Fm.
PENNSYLVANIAN	Upper	Oquirrh Fm.	Ely Ls.	Unit 1 of Doelling (1964)	Units 1-2(?) of Maurer (1970)		Oquirrh Fm.	West Canyon Ls.	Oquirrh Group
	Middle	Chainman Sh.	Diamond Peak and Chainman Fms.	Manning Canyon Sh.	Manning Canyon Sh.		Manning Canyon Sh.	Manning Canyon Sh.	Lake Point Ls.	Manning Canyon Sh.
	Lower	Ochre Mountain Ls.		Great Blue Ls.	Great Blue Ls.	Great Blue Ls.	Great Blue Ls.	Great Blue Ls.	Green Ravine Fm.	Great Blue Ls.
MISSISSIPPIAN	Upper	Woodman Fm.		Humbug Fm.	Humbug Fm.	Humbug Fm. and Deseret Ls., undivided	Humbug Fm.	Humbug Fm.	Humbug Fm.
				Deseret Ls.			Deseret Ls.	Deseret Ls.	Deseret Ls.
	Lower	Joana Ls.	Joana Ls.	Lodgepole Ls.		Gardison Ls.	Gardison Ls. Fitchville Fm.	Gardison Ls. Fitchville Fm.	Gardison Ls. Fitchville Fm.
DEVONIAN	Upper					Pinyon Peak Ls.	Pinyon Peak Ls.		Pinyon Peak Ls.
		Guilmette Fm.	Pilot Sh. Guilmette Fm.	Guilmette Fm.		Victoria Fm.	Stansbury Fm.	Stansbury(?) Fm.	Victoria Fm.
	Middle	Simonson Dol.	Simonson Dol.	Simonson Dol.		Simonson and Sevy(?) Dols.	Simonson(?) and Sevy(?) Dols.		
		Sevy Dol.		Water Canyon Fm.					Bluebell Dol.
	Lower	Laketown Dol.	Laketown Dol.	Laketown Dol.		Laketown Dol.	Laketown Dol.		
SILURIAN	Upper	Fish Haven Dol.	Fish Haven Dol.	Fish Haven Dol.		Fish Haven Dol.	Fish Haven Dol.		Fish Haven Dol.
ORDOVICIAN	Middle		Eureka Qtzite						
			Crystal Peak Fm. Swan Peak Qtzite. Lehman Fm.	Swan Peak Qtzite.		Swan Peak Qtzite.			
			Kanosh Sh.			Kanosh Sh.	Kanosh Sh.		
	Lower	Pogonip Group		Garden City Fm.		Pogonip Group	Garden City Fm.		Opohonga Ls.
		Notch Peak Ls.	Notch Peak Ls.	St. Charles Ls.		Ajax Dol.	Ajax Dol.		Ajax Dol.
		Corset Spring Sh.	Corset Spring Sh.				Corset Spring Sh.		
CAMBRIAN	Upper	Johns Wash Ls.	Johns Wash Ls.						
		Dunderberg Sh.	Dunderberg Sh.			Opex Fm.	Opex Fm.		Opex Fm.
		Hicks Fm.	Undifferentiated Upper Cambrian carbonates	Nounan Ls.				Opex Fm.	
		Lamb Dol.							
		Trippe Ls.				Cole Canyon Dol.	Cole Canyon Dol.	Cole Canyon Dol.	Cole Canyon Dol.
		Young Peak Dol.		Marjum Ls.		Marjum Ls.	Bluebird Dol.	Bluebird Dol.	Bluebird Dol.
	Middle			Wheeler Ls.		Wheeler Fm.	Bowman and Herkimer Ls.	Bowman Ls.	Herkimer Ls.
				Swasey Ls.		Swasey Ls.	Dagmar Dol.	Herkimer Ls.	Dagmar Dol.
		Abercrombie Fm.		Whirlwind Fm. of Robison (1960)		Whirlwind Fm. of Robison (1960)	Teutonic Ls.	Teutonic Ls.	Teutonic Ls.
				Dome Ls.		Dome Ls.			
				Chisholm Sh.		Chisholm Sh.			
				Howell Ls.		Howell Ls. Tatow Fm.	Ophir Fm.	Ophir Fm.	Ophir Fm.
	Lower	Busby Qtzite.	Busby Qtzite.	Pioche Sh.		Pioche Sh.			
		Pioche Sh.	Pioche Sh.						
PRE-CAMBRIAN	Z	Prospect Mountain Qtzite.	Prospect Mountain Qtzite.	Tintic Qtzite.		Tintic Qtzite.	Tintic Qtzite.	Tintic Qtzite.	Tintic Qtzite
						Mutual Fm.			Mutual Fm.
	Z or Y						Big Cottonwood(?) Fm.		



SOURCES OF DATA USED IN COMPILING GEOLOGIC MAP OF TOOELE 1° BY 2° QUADRANGLE

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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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