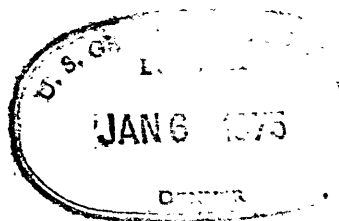


PRELIMINARY GEOLOGIC MAP OF THE SOUTHERN  
PART OF THE DIORITE 7 1/2 MINUTE QUADRANGLE  
MARQUETTE COUNTY, MICHIGAN

by

W. F. Cannon

John S. Klasner



U.S. Geological Survey open-file map

Prepared in cooperation with  
Geological Survey Division, Michigan Department  
of Natural Resources

U. S. Geological Survey  
OPEN FILE MAP 75-11  
This map is preliminary and has  
not been edited for conformity  
with Geological Survey standards  
or nomenclature.

Correlation of map units.

Precambrian X	Precambrian Y		Yd	- Penokean orogeny	
			Xmd		
			Xml		
	Marquette Range Supergroup	Baraga Group	Xing	- unconformity	
			Xg		
			Xn		
		Menominee Group	Xs		
			Xa		- orogeny
		Precambrian W			Wg
			Ws		
			Wf		
			Wmg		

### Description of units

$Y_d$

Keweenawan diabase (Precambrian Y). Dikes of relatively unaltered diabase with reversed magnetic polarity.

$X_{md}$

Metadiabase (Precambrian X). Massive to highly sheared metamorphosed diabase. Shearing is widespread and commonly intense. More intensely sheared rocks are biotite-amphibole-chlorite schist, in places magnetic and pyritic and in places intruded by small quartz veins. Less sheared rocks are plagioclase, chlorite, and amphibole and commonly have diabasic texture preserved. Occurs as dikes in Precambrian W rocks and as dikes and sills in Precambrian X rocks where it is known from diamond drilling and mine workings.

$X_{ml}$

Michigamme Formation - lower slate member (Precambrian X). Mostly black carbonaceous and pyrite slate with lesser amounts of thinly laminated gray quartzose siltstone.

$X_{mg}$

Michigamme Formation - Greenwood Iron-formation Member (Precambrian X). Thinly laminated gray to brown argillite with alternating quartz-rich and biotite-rich layers. In places strongly magnetic but in general much less iron-rich than near type locality to south and east.

X<sub>g</sub>

Goodrich Quartzite (Precambrian X), White, gray, and pink thick bedded (6"-3') quartzite with, in places, 1/16"-1/2" cross bed lamellae. Near base contains ferruginous quartzite and conglomerate.

X<sub>n</sub>

Negaunee Iron-formation (Precambrian X), In east half of area is thoroughly oxidized to slightly magnetic banded cherty iron-formation with alternating layers of gray-white chert or pink-maroon jasper and massive hematite and (or) limonite. In much of area is enriched by leaching of silica to form soft hematite-limonite ore, now largely mined out. In west half of areas is less oxidized and, in places, strongly magnetic banded hematite-magnetite-chert (jasper) iron-formation. Secondary enrichment is less well developed except for mixed soft hematite-limonite and hard hematite ore at American mine.

X<sub>s</sub>

Siamo Slate (Precambrian X), Near base is dark gray to gray-green slate and argillaceous quartzite. Becomes finer grained and dominantly gray-green slate to black, fissile slate toward top.

X<sub>a</sub>

Ajibik Quartzite (Precambrian X). White, pink, and gray ortho-quartzite and feldspathic quartzite with rare interbeds of quartz pebble conglomerate. Most is thick bedded to massive with cross-bed lamellae preserved in a few outcrops.

Wg

Granitic rocks (Precambrian W). Coarse to medium grained white, pink, and gray granitic rocks. Mostly massive but with prominent shear foliation in places, especially within 500-1000 feet of contacts with Precambrian X sedimentary rocks. The most intensely sheared rocks are largely sericitic schist.

Wf

Massive and layered felsic rocks (Precambrian W). Coarse to fine grained felsic rocks with pink feldspar and minor quartz. In places the massive rocks contain quartz-feldspar pegmatites with pyrite mineralization. Layered rocks are generally thinly laminated, and possibly of volcanic origin.





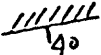


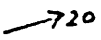
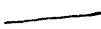
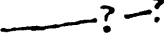


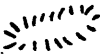


Ws

Serpentinite (Precambrian W). Light buff weathering, massive or rarely banded dark green to black serpentinite. Massive rock is composed of serpentine pseudomorphs of medium grained olivine and in places is strongly magnetic. Layered phase contains alternating 1/8" bands of brown-green and black serpentinite. Where strongly sheared commonly contains schistose serpentine masses and rustly weathering carbonate-rich patches.

Wmg

Metagabbro complex (Precambrian W). Greatly varied unit consisting of dark green to black, fine to medium grained metagabbro and metabasalt, commonly with disseminated pyrite. Most is massive to moderately sheared and rarely has layering of possible volcanic origin. Near Michigan Gold mine contains dikes of porphyritic metabasalt with plagioclase phenocrysts up to about 1" long.

## Map Symbols

	Area of abundant outcrop
	Strike and dip of bedding
	Strike of vertical bedding
	Strike and dip of overturned bedding.
	Strike and dip of bedding showing stratigraphic top direction determined from cross beds
	Strike and dip of cleavage, schistosity, or foliation
	Strike of vertical cleavage, schistosity, or foliation
	Bearing and plunge of fold axis
	Contact
	Fault, queried where inferred
	Mine shaft
	Mineral prospect
	Margin of surface mine or caved ground
	Diamond drill hole: vertical, inclined
	Crest of positive magnetic anomaly from ground magnetic traverse