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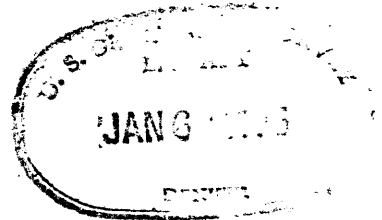
R298

PRELIMINARY GEOLOGIC MAP OF THE SOUTHERN
PART OF THE MICHIGAN 7 1/2 MINUTE QUADRANGLE,
MARQUETTE AND BARAGA COUNTIES, MICHIGAN

by

John S. Klasner

W. F. Cannon



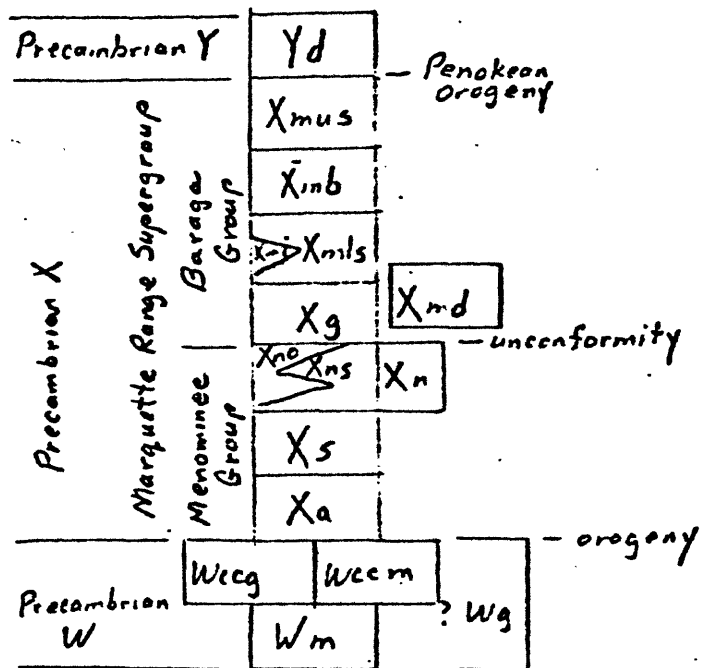
U.S. Geological Survey open-file map

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

U. S. Geological Survey
OPEN FILE MAP 75-9

This map is preliminary and has
not been edited for conformity
with Geological Survey standards
or nomenclature.

Correlation of map units.



Description of units

Yd


Keeweenaw diabase (Precambrian Y). Relatively unaltered plagioclase-pyroxene diabase with reversed magnetic polarity. Forms circular stock of coarse to very coarse grained diabase (as much as 2" long crystals) in Sec. 35, 36, T. 48 N., R. 30 W., and a mass of unknown form cropping out on an island in Lake Michigamme in S 1/2, Sec. 27, T. 48 N., R. 30 W.

Xmus

Michigamme Formation- upper slate member (Precambrian X). Variable unit with black carbonaceous pyritic slate of unknown thickness near base, overlain by andalusite-staurolite metagraywacke commonly with calc-silicate concretions, and lesser interbeds of micaceous schist, black to gray quartzite, and siltstone. Staurolite and andalusite are commonly concentrated in zones as much as a few feet thick parallel to bedding, and zones with abundant calc-silicate concretions also define bedding.

Xmb

Michigamme Formation- Bijiki Iron-formation Member (Precambrian X). Generally weakly magnetic gruneritic and garnetiferous banded cherty iron-formation. Generally 100-150 feet thick but tight folding commonly produces wider outcrop width.

1 Xm/s 

2 Michigamme Formation - lower slate member (Precambrian X).

3 Black carbonaceous and pyritic slate commonly with rust
4 colored or yellow (Fe- sulfate) staining on weathered
5 surfaces. Contains a thin medial unit (Xmi) of weakly mag-
6 netic iron-formation similar to Bijiki Iron-formation
7 Member. In Sec. 35, T. 48 N., R. 30 W., are several outcrops
8 of siltstone, schist, and conglomeratic quartzite believed
9 to be part of the lower slate member.

10 Xmd

11 Metadiabase (Precambrian X). Massive to schistose mafic
12 rocks. Most is relatively massive sills of metamorphosed
13 diabase now consisting of plagioclase and hornblende. More
14 sheared rocks, commonly found near edges of sills are bio-
15 tite-amphibole schist. In places contains abundant xeno-
16 liths of older sedimentary rocks, largely Siamo Slate.

16 Xg

17 Goodrich Quartzite (Precambrian X). Variable unit with
18 ferruginous basal conglomerate, black quartzite, sugary
19 textured rusty weathering quartzite, magnetic-gruneritic
20 iron-formation, and chloritoid schist. Is best exposed near
21 Michigamme mine where it contains a basal unit about 70 feet
22 thick of black to gray quartzite with a thin magnetic zone
23 near the top, overlain by about 200 feet of thin bedded and
24 tightly folded gruneritic iron-formation, overlain in turn
25 by an upper unit of rusty weathering sugary textured quartzite
26 and conglomerate containing chert pebbles as much as 5" long.

1 The only other exposures are in Sec. 20, T. 48 N., R. 30 W.
2 where the basal unit is hematitic iron-formation pebble
3 conglomerate containing clasts of Negaunee Iron-formation
4 as much as 6" long, overlain by coarse grained chloritoid
5 schist with, in places abundant chloritoid porphyroblasts
6 1-2" long.

7 Negaunee Iron-formation (Precambrian X). (Units are mapped
8 according to dominant lithologic type, but interbedding of
9 units on a scale too small to map is common).

10
11 X_{no}

12 Xno- Jaspilite- interbedded pink, red, or maroon jasper and
13 specular hematite. Most is wavy bedded or contains discon-
14 tinuous beds or lenses of jasper, much of which is granular.
15 Hematite beds generally contain minor magnetite.

16 X_{ns}

17 Xns- Grunerite-magnetite-chert iron-formation- interbeds of
18 gray chert and grunerite-magnetite mixtures. Grunerite is
19 commonly randomly oriented or in rosettes of radiating
20 acicular grains.

21 X_n

22 Xn- Undifferentiated iron-formation- iron-formation inferred
23 in areas of no exposure by projection or magnetic measurements.

X_s

Siamo Slate (Precambrian X). Mostly thin, wavy bedded gray quartzose argillite, commonly with calc-silicate layers and concretions containing randomly oriented amphibole porphyroblasts. A sharp basal contact is exposed along the south edge of section 19, T. 48 N., R. 30 W.. There the basal unit is thin-bedded fine grained quartzite with interbeds of iron-rich garnetiferous schist. This material grades up section to black slate and thin-bedded argillite. Near the upper contact in Sec. 21, T. 48 N., R. 30 W. there are possible outcrops and numerous large boulders of gruneritic iron-formation believed to be part of the Siamo.

X_a

Ajibik Quartzite (Precambrian X). Mostly massive to thick bedded buff to white orthoquartzite with lesser conglomeratic beds mostly near the base. Exposures in Sec. 24, T. 48 N., R. 31 W. show polymictic basal conglomerate with lithic sedimentary clasts as much as a few inches diameter in a poorly sorted quartzose matrix with disseminated pyrite. The conglomerate is separated from the underlying basement granite by 5-10 feet of greenish gray massive to sheared fine grained micaceous material, possibly sheared regolith, with disseminated pyrite and minor black tourmaline. Conglomerate is radioactive giving geiger counter readings of 2000-3000 counts per second greater than the adjacent granitic rocks.

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Wg

Granitic rocks (Precambrian W). Massive to foliated pink to gray granitic rocks north of the Marquette Trough. Commonly intruded by thin amphibole-biotite-chlorite dikes which are generally highly sheared. Quartz-feldspar pegmatites as dikes as much as several feet thick or as small irregular masses are common. Aplite dikes and quartz veins, mostly a few inches thick, are also common.
















Wccg | Wccm

Compeau Creek Gneiss (Precambrian W). Wccg- gneissic granitic rocks- medium to coarse grained and generally prominently gneissic. Typically banded with biotite-rich layers or schleiren in lighter colored granitic rocks with abundant pegmatitic clots and layers. Wccm- massive granitic rocks- typically coarse grained and massive and largely mineralogically homogeneous in outcrop.

Wm

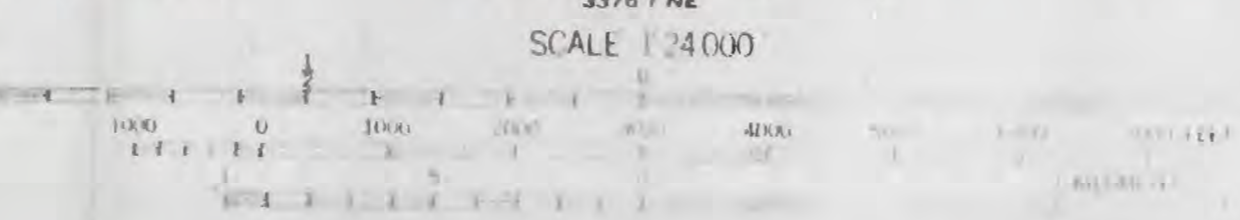
Migmatite (Precambrian W). Leucocratic granitic gneiss with abundant interlayers or inclusions of biotite-rich or garnet-rich quartzo-feldspathic gneiss or amphibolite.

Map Symbols

1		
2		Area of abundant outcrop
3		
4		Strike and dip of bedding
5		Strike of vertical bedding
5-		Strike and dip of overturned bedding.
6		
7		Strike and dip of bedding showing stratigraphic top direction determined from cross beds
8		Strike and dip of cleavage, schistosity, or foliation
9		Strike of vertical cleavage, schistosity, or foliation
10-		Bearing and plunge of fold axis
11		Contact
12		Fault, queried where inferred
13		Mine shaft
14		Mineral prospect
15-		Margin of surface mine or caved ground
16		Diamond drill hole: vertical, inclined
17		Crest of positive magnetic anomaly from ground magnetic traverse
18		
19		



Map, and edition, and published by the Geological Survey
 Control by USGS and USC&GS
 Topographic from aerial photographs by photogrammetric methods
 Aerial photography taken 1951-1952. Field check 1956
 Proposed datum: 1927 North American datum
 100-foot grid based on Michigan coordinate system, well zone
 100-meter Universal Transverse Mercator grid, zone
 16, shown in blue
 Unchecked elevations are shown in brown



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 1974



QUADRANGLE LOCATION

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ROAD CLASSIFICATION

Heavy duty	Light duty
Unimproved dirt	
U S Route	State Route

MICHIGAMME, MICH.
 SE 4 MICHIGAMME 7 1/2 QUADRANGLE
 R4630-W8830/75

1956
 AMS 3377 II SE-SERIES V862

75-9