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

EXPLANATION

OCT 26 1973
DENVER

OUTCROP OR AREA OF ABUNDANT OUTCROPS

VERTICAL SHAFT

MINE

TRENCH

PROSPECT PIT(S)

CAVED ADIT(S)

ADIT

VERTICAL DRILL HOLE (GENERALLY OLDER DRILLING)

VERTICAL DRILL HOLE (MORE RECENT EXPLORATION)

50 CONTACT

SHOWING DIP WHERE KNOWN. LONG-DASHED WHERE APPROXIMETELY LOCATED; SHORT-DASHED WHERE INFERRED; DOTTED WHERE CONCEALED; QUERIED WHERE DOUBTFUL. IN AREAS WHERE BEDROCK IS COVERED BY SURFICIAL DEPOSITS CONTACTS ARE PROJECTED VERTICALLY FROM THE BEDROCK SURFACE.

FAULT

R

LONG-DASHED WHERE APPROXIMETELY LOCATED; SHORT-DASHED WHERE INFERRED; DOTTED WHERE CONCEALED; QUERIED WHERE DOUBTFUL; R ON UPTHROWN SIDE OF REVERSE FAULT; ARROWS SHOW RELATIVE HORIZONTAL MOVEMENT.

DRILL HOLE, INCLINED, SHOWING VERTICAL PROJECTION OF BEDROCK SURFACE AND BOTTOM OF HOLE.

A' A

LINE OF SECTION

10 ANTICLINE

SHOWING TRACE OF AXIAL PLANE. LONG-DASHED WHERE APPROXIMETELY LOCATED, SHORT-DASHED WHERE INFERRED, QUERIED WHERE DOUBTFUL; ARROWHEAD AND NUMBER INDICATES DIRECTION AND PLUNGE OF AXIS.

LINEAMENT FROM SIDE-LOOKING RADAR IMAGERY - 1965

ASYMETRIC ANTICLINE

SHOWING TRACE OF AXIAL PLANE, AND BEARING AND PLUNGE OF AXIS. SHORT ARROW INDICATES STEEPER LIMB. LONG-DASHED WHERE APPROXIMETELY LOCATED.

SCRATCH LINE

POWER LINE

PIPELINE

10 SYNCLINE

LONG-DASHED WHERE APPROXIMETELY LOCATED; SHORT-DASHED WHERE INFERRED, QUERIED WHERE DOUBTFUL; SHOWING TROUGHLINE AND DIRECTION OF PLUNGE.

65 35

COMPRESSOR STATION NO. 7 ON 36" PIPELINE UNDERLAIN BY SHALLOW GREENSTONE, gs, SUNDAY QUARTZITE, AND BAD RIVER DOLOMITE; ATTITUDE IN FOUNDATIONS N65E, 35SE. RADIO ANTENNA NEARBY

PLANAR AND LINEAR FEATURES IN ROCKS

SYMBOLS MAY BE COMBINED

50 STRIKE AND DIP OF BEDS

STRIKE OF VERTICAL BEDS

55 STRIKE AND DIP OF OVERTURNED BEDS

40 25 STRIKE AND DIP OF BEDS AND PLUNGE OF SLICKENSIDES

20 STRIKE AND DIP OF FOLIATION

STRIKE OF VERTICAL FOLIATION

20 STRIKE AND DIP OF CLEAVAGE

15 BEARING AND PLUNGE OF LINEATION

75 40 STRIKE AND DIP OF FOLIATION AND PLUNGE OF LINEATION

f 45 FOLIATION BEARING N45E

40f FOLIATION BEARING N40°E

40 BEARING OF DIKE N40E

40 sh. INCL. FOLIATION OF SHIST INCLUSION (ZENOLITH, PENDANT) BEARING N40E.

AREA OF PUBLISHED REPORT

CABINS

FS 336

FOREST SERVICE ROAD 336, DASHED MAY BE A FIRE LANE AND/OR LOGGING TRAIL.

KC ROAD

KIMBERLY-CLARK LOGGING ROAD

JOINTS

50 STRIKE AND DIP OF JOINTS

STRIKE OF VERTICAL JOINTS

70j JOINT BEARING N70E

20 40 60 50 60 STRIKES AND DIPS OF MULTIPLE JOINTS

60sh. jts. SHEAR JOINTS N60-70E 70

25 JOINT CONTROLLED VALLEY BEARING N25°W

PILLOW STRUCTURE, ELLIPSOIDAL STRUCTURE STRAIGHT LINE POINTS TOWARD ORIGINAL TOP OF PILLOW

G MACROSCOPIC GARNET LOCALITY

COARSE SLOUGH-OFF TALUS SLOPE DUE TO JOINTED, FRACTURED ROCK

SHEARED ROCK, LOCALLY MYLONITIZED GRANITE

Qtz. Vns. (Peg. Vns.) QUARTZ VEINS (PEGMATITE VEINS)

Ag MEGASCOPIC NATIVE SILVER USUALLY ON OXIDIZED FRACTURE OR JOINT SURFACES

AEROMAG ANOMALY

AEROMAG.

DIKE CONTACTS EXTENDED ON BASIS OF POSITIVE AEROMAGNETIC ANOMALY

ABBREVIATIONS

AEROMAG.	AEROMAGNETIC	MUS.	MUSCOVITE
AGG.	AGGLOMERATE	PGN	PARAGNEISS
AMYGD.	AMYGDALOIDAL	PSH	PARASHIST
BIO.	BIOTITE	PORPH.	PORPHYRITIC
BR.	BRECCIA	QTZ.	QUARTZ
CGL.	CONGLOMERATE	SCH. SCHL.	SHIST SCHLIEREN
CONJ.	CONJUGATE	SED.	SEDIMENTARY
ELL.	ELLIPSOIDAL	sh.	SHIST, SHEARED
f.	FLOW	VNS.	VEINS
FM.	FORMATION	IRON OXIDE	- OXIDIZED JOINT AND FRACTURE SURFACES.
fol.	FOLIATION		
gn.	GNEISS	ell. gst.	ELLIPSOIDAL GREENSTONE
gr	GRANITE	f. br.	FLOW BRECCIA
gst.	GREENSTONE, GREENSHIST	SED. br.	SEDIMENTARY BRECCIA
INCL.	INCLUSION (PENDANT, ZENOLITH)	el. f. br.	ELLIPSOIDAL FLOW BRECCIA
jt(s).	JOINT(S)		
K-SPAR	POTASH FELDSPAR		
META-	METAMORPHOSED		

REFERENCES CITED

ALDRICH, H.R., 1929, THE GEOLOGY OF THE GOGEBIC IRON RANGE OF WISCONSIN: WISCONSIN GEOL. AND NAT. HISTORY SURVEY BULL. 71, P. 156-8, AND P. 205.

ALLEN, R.C., AND BARRETT, L.P., 1915, CONTRIBUTIONS TO THE PRE-CAMBRIAN GEOLOGY OF NORTHERN MICHIGAN AND WISCONSIN: MICHIGAN GEOL. AND BIOL. SURVEY, PUB. 18, GEOL SER. 15, P. 41-43, 54-57, 66-75.

ATWATER, G.I., 1938, CORRELATION OF THE TYLER AND COPPS FORMATIONS OF THE GOGEBIC IRON DISTRICT: GEOL. SOC. AMERICA BULL., VOL. 49, P. 179-181.

BUDDINGTON, A.F., 1959, GRANITE EMPLACEMENT WITH SPECIAL REFERENCE TO NORTH AMERICA: GEOL. SOC. AMERICA BULL., VOL. 70, P. 674-741, 19 FIGS.

FRITTS, C.E., 1969, BEDROCK GEOLOGIC MAP OF THE MARENISCO-WATERSMEET AREA GOGEBIC AND ONTONAGON COUNTIES, MICHIGAN: U.S. GEOL SURVEY MISC. GEOL. INV. MAP I-576

HAMLIN, W.K., 1961, PALEOGEOGRAPHIC EVOLUTION OF THE LAKE SUPERIOR REGION FROM LATE KEWEENAWAN TO LATE CAMBRIAN TIME: GEOL. SOC. AMERICA BULL., V. 72, NO. 1, P. 1-18, 8 FIGS., 1 TABLE.

HENDRIX, T.E., 1960, STRUCTURAL HISTORY OF THE EAST GOGEBIC IRON RANGE: UNPUB. PH.D. THESIS, UNIV. WISCONSIN, MADISON.

HOTCHKISS, W.O., 1919, GEOLOGY OF THE GOGEBIC RANGE AND ITS' RELATION TO RECENT MINING DEVELOPMENTS: ENG. AND MIN. JOUR., V. 108, P. 443-452, 501-507, 537-541, 577-582.

HUBER, N.K., 1959, SOME ASPECTS OF THE ORIGIN OF THE IRONWOOD IRON-FORMATION OF MICHIGAN AND WISCONSIN: ECON. GEOLOGY, V. 54, NO. 1, P. 82-118.

IRVING, R.D., AND VAN HISE, C.R., 1892, THE PENOKEE IRON-BEARING SERIES OF MICHIGAN AND WISCONSIN: U.S. GEOL. SURVEY MON. 19, P. 431.

JONES AND LAUGHLIN ORE CO., 1937, GEOLOGICAL MAP EAST GOGEBIC: JONES AND LAUGHLIN STEEL CORP., PITTSBURGH, PENNSYLVANIA, UNPUB. MAP.

PRINZ, W.C., 1967, PRE-QUATERNARY GEOLOGIC AND MAGNETIC MAP AND SECTIONS OF PART OF THE EASTERN GOGEBIC IRON RANGE, MICHIGAN: U.S. GEOL. SURVEY MISC. GEOL. INV. MAP I-497.

SCHMIDT, R.G., 1972, PENOKEAN OROGENY IN THE CENTRAL AND WESTERN GOGEBIC REGION, MICHIGAN AND WISCONSIN, in FIELD GUIDEBOOK 18TH ANN. INST. ON LAKE SUPERIOR GEOL., 1972: HOUGHTON, MICHIGAN, P. A12-A13.

TRENT, V.A., 1969, GEOLOGIC EXAMINATION OF PIPELINE TRENCH THROUGH THE EAST GOGEBIC RANGE, MICHIGAN (ABS.): 15TH ANNUAL INSTITUTE ON LAKE SUPERIOR GEOLOGY, OSHKOSH, WISCONSIN.

TRENT, V.A., 1973, SURFICIAL DEPOSITS OF THE WAKEFIELD NE AND MARENISCO QUADRANGLES, GOGEBIC COUNTY, MICHIGAN: U.S. GEOL. SURVEY OPEN FILE REPORT, 10P., 2 FIGS.

U.S. GEOLOGICAL SURVEY, 1972, AEROMAGNETIC MAP OF CENTRAL GOGEBIC COUNTY, MICHIGAN, AND NORTHERN VILAS COUNTY, WISCONSIN: U.S. GEOL. SURVEY GEOPHYS. INV. MAP GP-828.

VAN HISE, C.R., 1892, THE HURONIAN VOLCANICS SOUTH OF LAKE SUPERIOR [ABS.]: GEOL. SOC. AMERICA BULL., V. 4, P. 435-436.

V.A. TRENT, U.S.G.S., 1973.