

MINNESOTA CONSERVATION DEPARTMENT  
DIVISION OF LANDS AND MINERALS

## EXPLORATION CLASSIFICATION

Mine IRRRRC - U of M Deep Hole Drilling  
 Drill Hole No. 7 (Box 97 Start)  
 Date Started Dec. 19, 1966  
 Date Finished Jan 31, 1967  
 Date Classified Feb 1, 1967

Description NE-SE - 36 - 57 - 22  
 Location 154.735-106.46 W of E 1/4 Corner of Sec. 36  
 Elevation 1451.63  
 Angle Vertical  
 Location of Samples \_\_\_\_\_

From	To	Classification	Mag. P.	Remarks
* 946	984	F & M. Gr. Bd. & Mot. CHY. T. Mag. in Bds & Diss. So. Silicates Noted also So. Slaty Bds.	M	NQWL Core U.C.
984	1005	F & M. Gr. Mot. Mass. & Bd. CHY. T. Mag. in Bds & Diss. Silicates & Slaty Bds. Scat.	M	
1005	1014	F & M. Gr. Bd. & Mot. CHY. T. Mag. in Bds & Diss. So. Sil. & Slaty Bds. Noted	M	
1014	1030	F & M. Gr. Mot. Bd. & So. Mass. CHY. T. Mag. in Bds. & Diss. Few Silicates Noted. So. Jaspery Bds. also at various places	M	
1030	1035	F & M. Gr. Mass. Mot. & Bd. CHY. T. Less Mag. More Silicates & Slaty Layers Noted	SM	4.5
1035	1055	F & M. Gr. mixed Slaty & Mot. CHY. T. V. Little Mag. except in CH. Scat. Silicates and So. Jasper.	SM	
1055	1064	F. Gr. Lam. Thin Bedded Slaty T. V. Little Mag. Noted	VSM	2.5.
1064	1109	F. Gr. Mass. CHY. T. Almost a Qtzitic Chert (Orthoclase) like So. Nodules of Manganese. Scat. at various places. No Iron Noted. Pyrites @ 1094-1100 in a Vertical Fract. (Pro. Marcasite) Brown Jasper Spots?	NM	4.6.
1109	1135	F & M. Gr. Mot. Mass. & Bd. CHY. T. So. Diss. Mag. also Jasper Zones	SM	
1135	1156	F & M. Gr. Mostly Mot & So. Thin Bds CHY. T. Mag. Diss.	M	
1156	1233	F & M. Gr. Mot. & Bd. CHY. T. Mag. in Bds. & Diss	V.M.	
1233	1280	Same as above. But w/ So. Scat. Silicates & a few Slaty Layers.	V.M.	
1280	1284	F. Gr. lam Slaty T. mixed w/ Mot Lean CHY. T. So. Mag. in CHY. Zones	M	
1284	1296	F. Gr. Lam. Slaty T. w/ So. Zones of Qtz	VSM	
1296	1218	F & M. Gr. Mot. & Bd. CHY. T. w/ So. Slaty & Silicate layers Mag. Diss	M	
1218	1334	M. Gr. Mot. CHY. T. w/ So. Slaty & Silicate Layers Mag. Diss.	M.	
1334	1346	F & M. Gr. Mot. & Bd. CHY. T. Trans. To Red. Basal	SM	
1346	1372	M. Gr. Red. Basal T. Red Basal Cong. & Pro. Algal @ 1360' 1363'	NM	
1372	1376	F. Gr. Slaty Phase of Qtz. Trans. zone	NM	
1376	1380	Gray. Qtzite	NM	
1380	1387	Co. Gr. Gray Qtzite	NM	
1387	1411	F. Gr. Lite Gray Qtzite	NM	
1411	1428	White Pink (almost white) Qtzite	NM	
		E.D.H.		
* 0	204	Surface		
204	800	Virginia Slate		
800	946	Iron Formation		

**THE FIRST DEEP** Hole to Study the Southward Extension of the Mesaba iron formation passed through 591 feet of Taconite formation; the University of Minnesota School of Mines has announced. The initial hole was drilled on state-owned land about a mile and a half south of Keewatin. Total depth of the hole was 1,437 feet. It was drilled by the E. J. Longyear Company which received a contract on a bid basis to complete three to four deep holes by April of this year. This phase of the project was financed by a \$100,000 appropriation from the Iron Range Resources and Rehabilitation Commission. Some geologists believe that the Mesaba formation continues southward all the way to Lake Superior, with the Gogebic Range forming the outcropping of the formation at the other end.

**ACCORDING TO EUGENE P. PFLEIDER**, professor of mineral and metallurgical engineering, and principal investigator of the project, and Prof. Paul K. Sims, director of the Minnesota Geological Survey, this hole proves the down-dip extension of the iron formation in this section of the Range, and extends the potential for minable taconite some two to three miles south of the previously drilled limits. The project calls for the drilling of ten deep holes on state-owned mineral reserves along the 100-mile length of the Mesaba. The University School of Mineral and Metallurgical Engineering, the Minnesota Geological Survey, and the Mines Experiment station of the University are asking the appropriation of an additional \$222,600 by the present legislature to continue the survey with a total estimated cost of \$322,000 over a four-year period. The geologists' log for the Keewatin hole showed the following rock strata: glacial drift, 0-213 feet; Virginia Slate, possibly upper slaty, 213 to 790 feet; Upper Cherty Horizon, 790 to 917 feet; Lower Slaty Horizon 917 to 1061 feet; Intermediate Slate, 1061 to 1068 feet; Lower Cherty Horizon, 1068 to 1302 feet; Red Basal Taconite 1302 to 1381 feet; Pokegama Quartzite, 1381 to 1437 feet. The iron formation extends from the Upper Cherty to the Basal Taconite.

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