Bedrock Geologic Map of the Disappointment and Ima Lakes Area, Lake County, Northeastern Minnesota

Eric Sitterl*, Jake Manke**, Josh Gibb*, Evan Keer*, Laura Murphy*, Andrew Cantiez*, Tracy Mason*, George Vinokur*, and Dave Frayer**

University of Minnesota Duluth, Precision Field Legacy
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*University of Minnesota Duluth, 211 McCというのが, Duluth, Minnesota, 55812; Email: dsitterl@umn.edu; Telephone: 218-726-5053
**Department of Geology, University of Minnesota Morris, Minnesota; 3000 20th Avenue SW, Morris, Minnesota, 56267; Email: jmankem@umn.edu; Telephone: 507-587-6488

Exploratory Text

The iron-ore deposits of the Lake Superior region, Duluth Complex and related rocks, northeastern Minnesota. Miscellaneous Map Series, M-119, Miller, J.D., Jr., Green, J.C., Severson, M.J., Chandler, V.W., and Peterson, D.E., 2001, Geologic map of the Mesoproterozoic Ima Lake Intrusion, scale 1:500,000.

References


Figures

A1ab, Department of Geology, University of Minnesota Morris, Minnesota; 3,000
B', Distance (m)
2
D epartment of Geology, Macalester College, Minnesota; 7
8
D epartment of Geology, Carlton College, Minnesota; 9
10

Description of Map Units

Mesoproterozoic - 2.1 Ga

Dolomite (Dol) - Light grey to black, coarse-grained, heterogeneous dolomite. Subordinate to the regional dolomite unit, with 3-10% of the composition dominated by felsic debris. Discontinuously widespread throughout the region.

Anorthositic Troctolite (Pat) - Thin- to thick-bedded polymict anorthositic troctolite. Contains large inclusions of anorthositic series rocks, ranging from 0.5-8.0 cm in length.

Diorite (Ad) - modally layered anorthosite. Occurs as regional scale inclusions within the Ima Lake Intrusion showing complex internal structure and lacking obvious signs of in situ differentiation.

Pyrrhotite-pyrite ore (Pps) - Subsuite of the Duluth Complex composed predominantly of plagioclase contaminated by Archean footwall rocks.

Pyroxene Troctolite (Pxt) - Southeast-dipping, mafic layered intrusion first subdivided into four major series that include the early gabbroic, felsic, anorthositic, and thermally metamorphosed, sparsely amygdaloidal, massive and pillowed basalt and associated metabasalts. The series are characterized by high thermal gradients and variable differentiation.

Lake Superior Island Member (Ls) - Olivine and oxides phase in and out, with the former ranging from poikolitic to granular. Light grey to black, coarse- to very coarse-grained, heterogeneous augite troctolite. Pyroxene occurs as clots and knotty crystals, while olivine is disseminated in the matrix. The unit is characterized by high thermal gradients and variable differentiation.

Geologic Contact: observed, inferred, concealed
Geologic Foliation: inclined
Digital Topography
Sample Location Map
Vertical Derivative Magnetic Anomaly Map
Location Map
Correlation of Map Units
Map Symbols

Geologic Cross Section A-A' of the Neoarchean Knife Lake Group
Geologic Cross Section B-B' of the Mesoproterozoic Ima Lake Intrusion

South
North