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Users of OGS products are encouraged to contact those Aboriginal communities whose traditional territories may be located in the mineral exploration area to discuss their project.

Miscellaneous Release—Data 239

GIS Compilation of Mineral Occurrences of the Central and Eastern Uchi Domain

by M.A. Puumala¹

This publication can be downloaded from

http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD239

This digital release is a compilation of mineral occurrences of the central and eastern Uchi domain of northwestern Ontario. This compilation was conducted during 2006–2007 as part of the Far North Geological Mapping Initiative. These data are being released in conjunction with Open File Report (OFR) 6228, *Mineral Occurrences of the Central and Eastern Uchi Domain*. OFR 6228 provides detailed occurrence descriptions; however, additional data for the mineral occurrences are provided as 2 Microsoft® Excel® (.xls) spreadsheets. Two colour figures (Map 1 and Map 2) and Figure 10 (all 1:250 000 scale) accompany OFR 6228, digital versions of which are provided in portable document format (4 .pdf files). This release provides .mxd and geodatabase files in ESRI® ArcGIS® 9.2 format, as well as shapefiles, for Map 1, Map 2 and Figure 10. Location data are provided in the Universal Transverse Mercator (UTM) projection and grid system, zones 15 and 16, North American Datum 1983 (NAD83). Available on 1 CD-ROM.

1. Data. This folder contains 2 Microsoft® Excel® spreadsheet (.xls).

- a) Central and Eastern Uchi-all data.xls: This spreadsheet contains 4 worksheets, one for each of the NTS map areas covered by this report. These are the MDI data for mineral occurrences in the central and eastern Uchi domain.
- b) MDI-info_Maps1-2.xls: This spreadsheet contains 2 worksheets representing i) the mineral occurrence tables on OFR 6228 Maps 1 and 2; ii) the deposit information in symbol form; and iii) the UTM co-ordinates for locations.

2. GIS_data. This folder contains the map document file (.mxd), geodatabase files and shapefiles used to create the OFR 6228 Map 1, Map 2 and Figure 10. The .mxd and geodatabase files were created in ESRI® ArcGIS® 9.2.

3. Open File Report. This folder contains 4 portable document format (.pdf) files.

- a) OFR6228.pdf: Open File Report 6228, *Mineral Occurrences of the Central and Eastern Uchi Domain*.
- b) OFR6228-Figure10.pdf: Figure 10, a 1:250 000 scale figure of the 4 NTS map areas, showing the names of areas where mineral occurrences are located.
- c) OFR6228-Map1.pdf: Map 1 is a 1:250 000 scale compilation map of mineral occurrences for NTS areas 52 O and 52 J (northern portion) (UTM Zone 15).
- d) OFR6228-Map2.pdf: Map 2 is a 1:250 000 scale compilation map of mineral occurrences for NTS areas 52 P and 42 M (UTM Zone 16).

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Abstract

This study, made possible through the Ontario Geological Survey's Far North Geological Mapping Initiative, provides a compilation of geological and metallogenic information for 372 mineral occurrences. These occurrences have been documented since the 1920s through mineral exploration programs and government geological surveys in the central and eastern portions of the Archean Uchi domain of the Superior Province.

The study area is located between latitudes 51° and 52°N and longitudes 86° and 92°W, which are covered by the National Topographic System (NTS) 1:250 000 scale map sheets 52 O, 52 P and 42 M, and the northern portion of 52 J. Much of the study area is remote and difficult to access, with all-weather roads currently limited to the Highway 599/808 corridor that passes through the communities of Mishkeegogamang Ojibway Nation (New Osnaburgh) and Pickle Lake in the west-central portion of the study area, forest access roads that terminate at the community of Slate Falls near the southwestern corner of the study area, and forest access roads that have been advanced into the south-central portion of the study area in the Sim–Morden–Witchwood lakes areas.

The compiled occurrences include 6 past-producing mines (4 with published reserves), 25 developed prospects with reserves, 54 prospects, 267 occurrences and 20 discretionary occurrences. These mineral occurrences represent a wide variety of mineralization types, including lode gold (vein and replacement), polymetallic vein, mafic to ultramafic intrusion-hosted copper-nickel-platinum group elements (PGE), rare-element-bearing pegmatite, volcanogenic massive sulphide (VMS), intrusive porphyry-related copper-molybdenum-gold, and Algoma-type banded iron formation.

The vast majority of the documented mineral occurrences in the central and eastern Uchi domain are located within or immediately adjacent to the volcanic-sedimentary rock sequences that are most commonly referred to as greenstone belts. The study area includes the entire Miminiska–Fort Hope, Pickle Lake, Lake St. Joseph, Meen–Dempster and Lang Lake greenstone belts, as well as the far eastern end of the Birch–Uchi greenstone belt.

The varied geology and tectonic histories of the supracrustal rock assemblages that make up the greenstone belts influence the distribution of economic mineral occurrences. A key goal of this study was to establish the relationship between the various styles of mineralization and individual tectonic events. By gaining an understanding of these relationships, exploration for specific commodities can be focussed in areas where the tectonic history indicates the highest potential for economic mineralization.

An evaluation of the tectonic history of the central and eastern Uchi domain has resulted in the following proposed chronology of metallogenic events.

1. Mafic to ultramafic intrusion-hosted copper-nickel-PGE mineralization in rocks of the Pickle Crow assemblage in the Pickle Lake and Miminiska–Fort Hope greenstone belts (>2860 Ma).
2. Volcanogenic massive sulphide (VMS)-type mineralization in felsic volcanic rocks of the Kaminiskag (formerly Woman) assemblage in the Pickle Lake greenstone belt (2842 to 2836 Ma).
3. Later VMS-type mineralization in association with volcanic rocks of the Confederation assemblage (2744 to 2730 Ma) in the Lang Lake, Meen–Dempster, and Pickle Lake greenstone belts, and within rocks of the St. Joseph assemblage (2724 to 2713 Ma) in the Meen–Dempster, Lake St. Joseph and Miminiska–Fort Hope greenstone belts.
4. Copper-nickel-PGE mineralization is associated with probable late-tectonic mafic intrusions located near the southern boundary of the Miminiska–Fort Hope greenstone belt, and in the Lang Lake and Meen–Dempster greenstone belts near the Bear Head fault zone.
5. Porphyry copper-molybdenum-gold mineralization is associated with some felsic intrusions marginal to the greenstone belts, most notably in the Lang Lake and northern Bamaji Lake areas.
6. Algoma-type banded iron formation deposition occurred throughout the volcanic and sedimentary depositional history of the central and eastern Uchi domain.
7. Structurally controlled gold and polymetallic mineralization is likely to have been associated with the collision between the Uchi domain and the Winnipeg River terrane (2720 to 2700 Ma).
8. Rare-metal pegmatite mineralization occurs in association with peraluminous granitic intrusions located in close proximity to major regional fault zones, with known examples near the North Caribou Lake–Totogan Lake shear zone and the Sydney Lake–Lake St. Joseph fault zone. These deposits are typically hosted by late-tectonic to posttectonic intrusions that postdate the peak of regional metamorphism.