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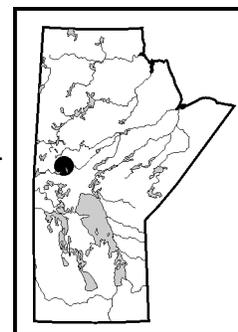
ERRATA:

The publisher/department name in the bibliographic reference cited immediately below the title of each GS report should read

Manitoba Industry, Economic Development and Mines instead of **Manitoba Industry, Trade and Mines**.

**GS-2 Volcanogenic massive sulphide deposit documentation
in the Snow Lake area, Manitoba (NTS 63J13 and 63K16):
progress report**

by T.H. Heine



Heine, T.H. 2003: Volcanogenic massive sulphide deposit documentation in the Snow Lake area, Manitoba (NTS 63J13 and 63K16): progress report; *in* Report of Activities 2003, Manitoba Industry, Trade and Mines, Manitoba Geological Survey, p. 22–24.

Summary

The main focus for this season’s effort was to complete a collection of reference samples for volcanogenic massive sulphide (VMS) mines in the Snow Lake region. A collection of underground drillcore from all of the now-closed mines operated by Hudson Bay Mining and Smelting Co., Limited (HBM&S) in this region was located near the end of the summer season and is being moved to Flin Flon. In addition, sample suites were collected from waste dumps at the Osborne Lake, Rod and Spruce Point mines in the Snow Lake region. The establishment of this reference collection of ores, rocks and data from each mine in the district will provide an invaluable archive and reference for future work on the metallogenesis of the region. A number of workers have already made use of the collection for research and education purposes. This sample collection, which is available for viewing and research purposes, is stored at the Centennial mine core-viewing facility near Bakers Narrows.

Mines documentation project

The VMS documentation project, outlined previously (Heine and Prouse 1998, 2000, 2001; Heine, 2002), continues to progress, with work focusing on existing and past-producing mines. The sampling phase of this project has consisted of collecting samples of ore and rock types associated with each mine. Ideally, the location within the mine of each sample should be known with reasonable accuracy. As most of the mines in the region have been long closed and underground workings are no longer accessible, sample collection at these sites has, in many instances, been limited to surface waste piles. Where material is available, polished slabs have been prepared from selected sulphide samples.

Surface exploration diamond-drill core from the Photo Lake deposit has also been preserved, and seven complete drillholes through this deposit are part of the collection. This collection of samples and drillcore will complement the exploration drillcore libraries established by the Manitoba Geological Survey in Lynn Lake, Thompson, The Pas and Winnipeg (Prouse, 1989, 2002). The collection inventory to date from Snow Lake is summarized in Table GS-2-1.

Snow Lake mines

Snow Lake mine geologists working for HBM&S had assembled a representative collection of samples and drillcore from each deposit (G. Kitzler, pers. comm., 2002). Unfortunately, the hand samples were discarded when the Stall Lake mine was decommissioned, and the location of the underground drillcore collection was not known. This year, however, after extensive inquiries and research, this drillcore collection was located on September 12, 2003 near Stall Lake.

The complete collection located near Stall Lake comprises 17 stacks of core and is estimated to contain approximately 3400 boxes. A cursory inventory indicates that all of the Snow Lake deposits mined by HBM&S prior to the opening of the Photo Lake deposit are represented. Most of the boxes are only in fair shape, and many are starting to

Table GS-2-1: Sample inventory for mines in the Snow Lake region.

Deposit name	End of production	Samples	Polished slabs	Drill holes
Anderson Lake mine	1988	6	1	
Chisel Lake mine	1989	7	3	~700
Chisel North mine	in production	14		
Osborne Lake mine	1983	4		
Photo Lake mine	1998	118		7
Rod mine	1991	4	3	
Spruce Point mine	1992	8		
Stall Lake mine	1994	18	10	

rot because they are stored in the open. Most of the end tags are preserved and remain legible. To date (September 2003), more than 800 boxes of core have been moved to the Centennial mine core-viewing facility. Moving the remaining core to the Centennial site is planned before fiscal-year end. Proper archiving and preservation of this core collection includes reboxing, relabelling and preparing a detailed inventory of the collection.

The first core moved to the Centennial mine core-viewing facility from the Stall Lake site is from the Chisel Lake mine. Rather than preserving the entire core length for each hole, the underground drillcore from this mine has been 'telescoped' by HBM&S geologists. Each hole is thus represented by samples of each rock type intersected in the drillhole. A significant proportion of the underground drilling in the Chisel mine has been saved in this manner. It appears that the remaining core collection from the other mines in the area has been saved in a similar way.

Centennial mine core-viewing facility

The mines reference collection is stored indoors in the Manitoba Geological Survey core-viewing facility at the Centennial mine site near Bakers Narrows. Samples are bagged and stored in numbered pails, core is in racks and polished slabs are stored in cabinets. The viewing facility has room on the racks for 969 core boxes, of which approximately 85% is currently utilized.

Since this collection was established, a number of clients have used material from it for research and education purposes, including Harold Gibson, Laurentian University (teaching material); Ronald Frost, University of Wyoming (sulphide anatexis); Al Galley, Geological Survey of Canada (sulphide geochemistry); George Gale, Manitoba Geological Survey (rare earth element geochemistry); Ian Jonasson, Geological Survey of Canada (sulphide trace-element geochemistry); Neil Provins, Falconbridge (Australia) Pty. Ltd. (teaching material); and Thomas Heine, Manitoba Geological Survey (education).

Access to the collection for viewing or for research purposes can be arranged through:

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Economic considerations

The economic implications of this project are considerable. Recent publications have reinforced the importance of establishing and maintaining collections of geological material and data (*see* articles in the June 2002 issue of *Geotimes*). Having a reference resource of samples and data from and about the mines in the district serves not only academic interests, but provides a valuable resource for individuals and organizations undertaking base-metal deposit exploration in the Snow Lake–Flin Flon region. An investigation to define the trace-element characteristics of the Flin Flon–Snow Lake region base-metal deposits is underway (Jonasson et al., 2002). This study is designed to investigate the relationship of the trace-element chemistry of the host rocks with their associated sulphide mineralization. This study may make it possible to characterize sulphides encountered by exploration programs, and enable a determination of whether additional work is warranted on a particular mineralized occurrence. Such a study has significant mineral-exploration importance, in that it may be a powerful tool for prioritizing and evaluating sulphide occurrences. It was noted that this investigation would have been difficult, if not impossible, to undertake had reference sample suites from a number of long-closed mines in the district not been available. These had been collected by previous workers and were found in widely distributed locations. Material from the Manitoba Geological Survey deposit reference collection in Flin Flon was provided for this study.

Acknowledgments

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particularly appreciated. A comment by Don Dudek (Aur Resources Ltd.) led to the discovery of the missing collection.

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