

Report of Activities 2003

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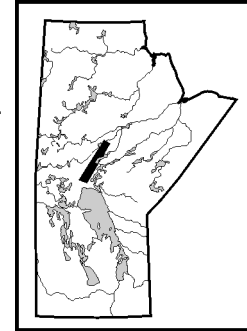
ERRATA:

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**.

Thompson Nickel Belt Project, Manitoba (parts of NTS 63J, 63O and 63P): progress report

by J.J. Macek and C.R. McGregor



Macek, J.J. and McGregor, C.R. 2003: Thompson Nickel Belt Project: progress report, Manitoba (parts of NTS 63J, 63O and 63P); in Report of Activities 2003, Manitoba Industry, Trade and Mines, Manitoba Geological Survey, p. 130–131.

Summary

The purpose of all recent geological work has been toward the preparation of a final Thompson Nickel Belt (TNB) geological compilation map and an accompanying detailed report. Publishing such updated comprehensive information will serve as the basis for further advancement of the geological understanding of this economically important area.

A new topographic base for preparation of the final TNB geological compilation map has been completed. In addition, a geological report describing the Oswagan Group supracrustal sequence, host to most of the nickel mineralization in TNB, was initiated (first draft).

The summer field season was devoted to verifying geology of the TNB compilation map in the southern part of the exposed belt. In addition, this work has yielded some new detailed information to be incorporated into the geological report on the Oswagan Group.

Introduction

A systematic effort to provide comprehensive and accurate geological information about the TNB continued this year, with work focused on 1) completing an accurate topographic base for TNB geology, 2) writing the initial chapters of a geological report on the Oswagan Group, 3) field checking critical areas of the map for accuracy of geological information, and 4) collecting the samples required for further geochemical and isotopic follow-up.

Office activities

The office work was focused on the completion of a new, GIS-compatible topographic base derived from orthophoto tiles (Macek et al., 2002). During the winter of 2002–2003, this task was accomplished and a new topographic base map, which covers the exposed part of the TNB between Moak Lake (northeast of Thompson) and Gormley Lake (southwest of Wabowden), is now ready to accept and portray the geology of the TNB with considerably improved accuracy.

In late 2002, work was begun on a geological report summarizing current knowledge of the Oswagan Group. A first draft of the report, entitled ‘Lithostratigraphy of the Oswagan Group, Thompson Nickel Belt, Manitoba’, is in progress. The report will accompany the final TNB compilation map.

Field activity

Nine weeks of the 2003 field season were devoted to field checking and verifying the accuracy of some parts of the new TNB compilation map (TNB Geology Working Group, 2001a, b, c, d, e). The following areas were visited: 1) Jonas road south (to check lithology and metamorphic grade); 2) Bowden Lake (to verify accuracy of the contacts); 3) Max Lake area (with H. Zwanzig to check the sources of pronounced magnetic anomalies); 4) area east of Gormley Lake and area south of Resting Lake (to check regional extent of the basement and Grass River metasedimentary rocks); 5) Grass River area below Pisew Falls (to investigate metamorphic grade in Bah Lake metavolcanic rocks and check the basement rocks); 6) Phillips Lake, Tracy Lake and Grass River between Tracy and Paint Lakes (to investigate numerous phases of porphyroblastic orthogneiss); and 7) Paint Lake (to search for supracrustal sequences in rocks of high metamorphic grade). A number of samples was collected for mineralogical, chemical and isotopic investigations. The results will be incorporated into the final TNB compilation map and geological report.

The Paint Lake area (mapped previously as undifferentiated basement with large orthogneiss bodies) hosts, in addition, numerous segments of metasedimentary sequences that were recrystallized under high-grade conditions. Mapping of this area should be revised as soon as possible, because it is crucial to establish whether these sequences are related to the economically important Oswagan Group sequence, or if they are part of the older protolith. Record low water levels, which are expected to continue into next year, make undertaking this remapping a priority project for 2004.

Economic considerations

The work performed during the last several years in the TNB has always been aimed at obtaining accurate geological knowledge about, and an understanding of, the TNB, as a means of increasing interest in expanding exploration in this economically crucial area.

A pressing need in the TNB is to widen exploration to new targets. At present, all known nickel deposits are hosted by the metasedimentary sequence of the Ospwagan Group, specifically the Pipe Formation. It is largely in the amphibolite grade of metamorphism, well delineated and relatively well explored. In the Paint Lake area and elsewhere in the TNB, however, there are distinct segments of the supracrustal sequences that strongly resemble the Ospwagan Group but are at the granulite grade of metamorphism. The assumption that these sequences are older and part of the basement has never been tested. As a result, several questions arise:

- Are these rocks really older, or do they belong to the Ospwagan group?
- If they belong to the Ospwagan Group, could they still host nickel deposits despite their high grade of metamorphism?
- If so, what is their regional extent and distribution?
- Could they represent new and significant exploration targets?

In light of the need to expand exploration in the TNB, these questions should be answered soon.

Acknowledgments

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- Thompson Nickel Belt Geology Working Group 2001d: Geology of the Muhigan Lake area (63J/10); Manitoba Industry, Trade and Mines, Manitoba Geological Survey, Preliminary Map 2001 FN-1, scale 1:50 000.
- Thompson Nickel Belt Geology Working Group 2001e: Geology of the Pakwa Lake area (63J/15); Manitoba Industry, Trade and Mines, Manitoba Geological Survey, Preliminary Map 2001 FN-2, scale 1:50 000.