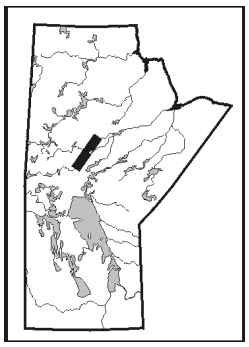
GS-7

THE THOMPSON NICKEL BELT PROJECT: AN UPDATE (PARTS OF NTS 63J, 63O, 63P)



by D.C. Peck

Peck, D.C. 1998: The Thompson Nickel Belt project: an update (parts of NTS 63J, 63O and 63P); **in** Manitoba Energy and Mines, Geological Services, Report of Activities, 1998, p. 34-35.

SUMMARY

The geology, metallogeny and tectonic evolution of the Thompson Nickel Belt (TNB; Fig. GS-7-1) is the subject of a four year investigation being administered by the Canadian Mining Industry Research Organization (CAMIRO; project 97-E02). The TNB project began in 1997 and will extend until 2001. The study will integrate existing mining company data and government reports with a wide range of new data sets, using GIS software as a platform for analysing the database.

INTRODUCTION

The CAMIRO TNB project is sponsored by five companies, including Falconbridge Ltd., Hudson Bay Exploration and Development Co. Ltd., INCO Ltd., Teck Corporation and Western Mining International Limited. Manitoba Energy and Mines (MEM) and the Geological Survey of Canada are major participants in the project. Academic participants are from the University of Manitoba, Laurentian University, l'Université du Québèc à Montréal, the University of Alberta and the University of Saskatchewan. Substantial funding has been provided through two Natural Sciences and Engineering Research Council (NSERC) grants; one of which was awarded to Laurentian University and the other to the University of Manitoba. Total funding from the industry sponsors and NSERC is ca. $800,000 over the four year duration of the project.

RESULTS FROM THE 1998 FIELD PROGRAM

This summer's activities represent the first major phase of field work for the TNB project, but follow on several MEM- and CAMIRO-led field programs in 1997 (see Peck, 1997). MEM's activities relating to the CAMIRO project are listed below. Details are provided in reports given in this volume by Zwanzig (GS-10), Theyer and Freund (GS-11), Peck et al. (GS-12) and Kraus et al. (GS-14). In summary, MEM's 1998 field activities contributing to the CAMIRO TNB project included studies of:

1) The petrology and geochemistry of mineralized and barren ultramafic bodies, mafic dykes and volcanic sequences and spatially associated sedimentary rocks (M. Lesher, M. Burnham and D. Layton-Matthews, Laurentian University; M. Pacey, P. Theyer and D. Peck, MEM);

2) Field characteristics of mafic and ultramafic intrusions and volcanic sequences in the TNB (Peck et al., GS-12, this volume);

3) The mineralogy and geochemistry of TNB ores, involving underground sampling at the Thompson T1 and T3 Mines and the Birchtree Mine (J. Liwanag, N.M. Halden and A.C.L. Larocque, University of Manitoba; L. Hulbert, Geological Survey of Canada; D. Peck, MEM);

4) The geology, lithogeochemistry and tectonic evolution of the western margin of the TNB in the Setting Lake area (Zwanzig, GS-10, this volume).

5) The age of mafic dykes and volcanic rocks in the TNB (L. Heaman, University of Alberta; P. Theyer and D. Peck, MEM);

6) Detrital zircon U-Pb ages for the Ospwagan Group metasedimentary rocks, this year focusing on the Ospwagan Lake, Pipe Mine Open Pit and the Thompson Mine South Pit (N. Machado, l'Université du Québèc à Montréal, and W. Bleeker, Geological Survey of Canada); and

7) Detailed structural mapping of the Thompson Mine South Pit (see Kraus et al., GS-14, this volume)

This volume also contains reports that are not part of CAMIRO project 97-E02, but that are equally important in advancing our knowledge of the TNB and adjacent Archean and Proterozoic rocks. Macek and McGregor (GS-8, this volume) report on progress made in a separate mapping program, involving INCO Ltd., Falconbridge Ltd. and MEM, which will result in new geological compilation maps for the TNB. McGregor (GS-9, this volume) describes the petrography of major lithologies in the TNB. Bohm (GS-13, this volume) reports on the geology of the Natawahunan Lake area, as part of an ongoing investigation of the geology, geochronology and tectonic evolution of the Orr Lake and Split Lake blocks that occur immediately to the east of the northeastern end of the TNB (C. Bohm and L. Heaman, University of Alberta; T. Corkery, MEM). Finally, field work was completed for a LITHOPROBE-funded paleomagnetic and geobarometric study of syn- to post-collisional granitic magmatism within the TNB and the encompassing Churchill-Superior Boundary Zone (Harris et al., GS-15, this volume).

One of the major advances in TNB geology over the past year was the reporting of a U-Pb zircon age (L. Hulbert and M. Hamilton, Geological Survey of Canada, written communication, July, 1998) for a mineralized ultramafic intrusion intersected in a drillhole during a drilling program by Falconbridge Ltd. in the Setting Lake area. The reported age of 1.881 Ga is within error of known ages for some of the "Molson dykes" from the adjacent parts of the northwestern Superior Province. This age suggests a link between the continental rifting and related magmatism, during which some of the largest known "Molson dykes" (e.g., Cuthbert dyke, Heaman et al., 1986) were emplaced, and the development of magmatic Ni sulphide deposits in the TNB.

Initially, the results obtained from the CAMIRO project will be released to the industry sponsors in the form of confidential reports. Following completion of the project, the results will be made public in the form of a compendium volume that will provide a wide variety of new, GIS-referenced, geological, petrological, geochemical and geochronological data, together with interpretations of the metallogenetic and tectonic evolution of the TNB.

ACKNOWLEDGEMENTS

On behalf of all CAMIRO project 97-E02 researchers, I would like to acknowledge the financial and technical contributions made by the above mentioned industry sponsors, as well as the financial support provided by NSERC. M. Pacey prepared the figure.

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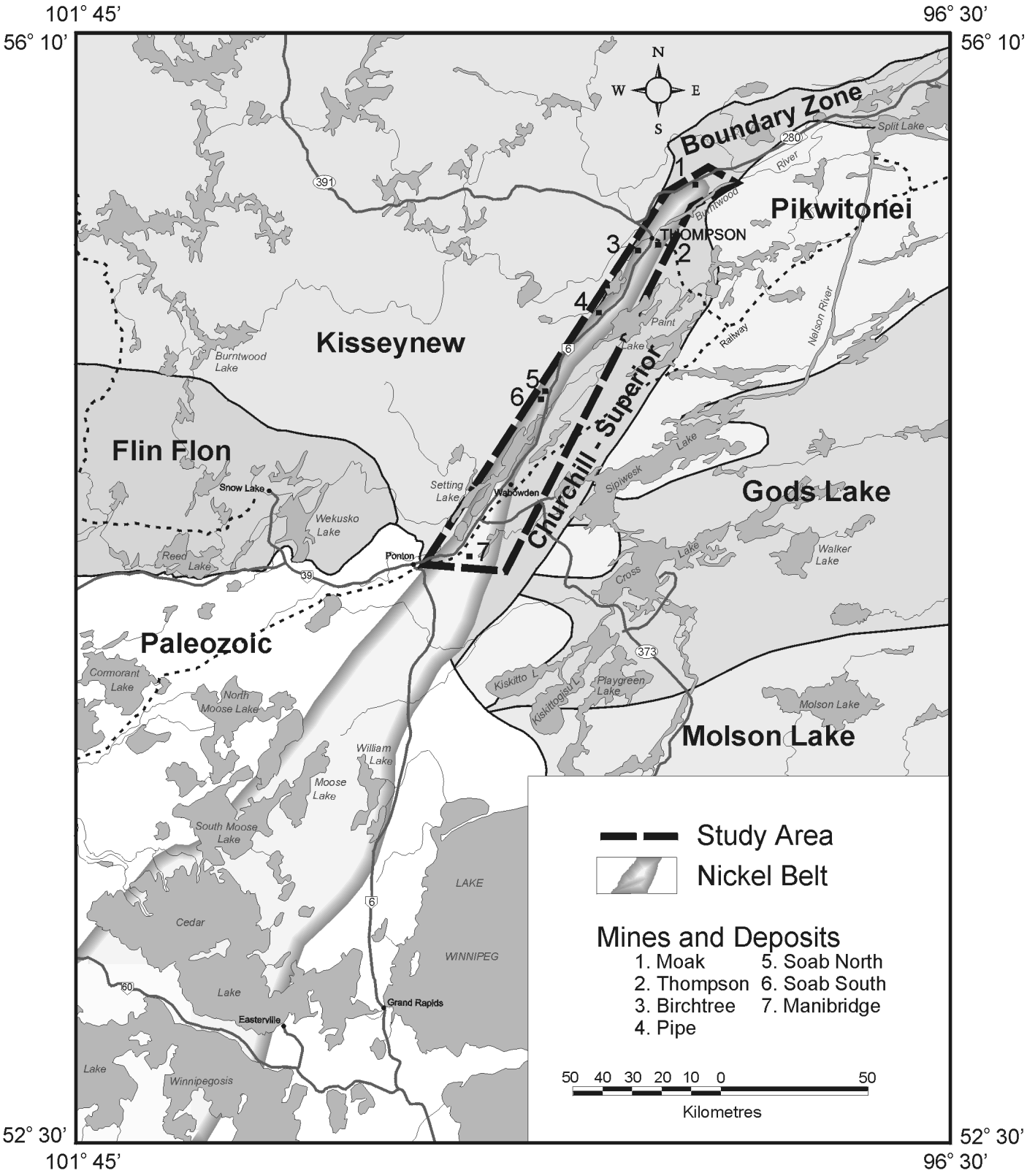

Figure GS-7-1: Study area for MEM's 1998 field activities relating to the CAMIRO Thompson Nickel Belt project.