

The world-class iron ore deposits of western Labrador have been actively mined since 1954 and are a major contributor to the Newfoundland and Labrador economy. There are currently two producing mines in western Labrador (Iron Ore Company of Canada and Tata Steel Minerals Canada) and numerous projects in advanced stages of development. Gross mineral shipments in 2018 are expected to be in excess of \$2 billion. Since 2012, the Geological Survey has been involved in a project to further our understanding of the origin of the iron ore deposits of western Labrador and to document exploration work, which will aid future exploration in this region.

## Iron Ore Deposits of Labrador West

The iron ore deposits of Labrador West include the Iron Ore Company of Canada's Carol Lake Project (Proven and Probable Reserves of 1,410 Mt @ 38% Fe), as well as the former producing Scully Mine (Proven and Probable Reserves of 444 Mt @ 35% Fe). Advanced exploration projects in the region include Alderon Iron Ore Corp.'s Kamistatusset (Kami) iron ore project (Proven and Probable Reserves of 553 Mt @ 29% Fe) and the Julienne Lake Deposit (Measured and Indicated Resources of 867 Mt @ 34% Fe).

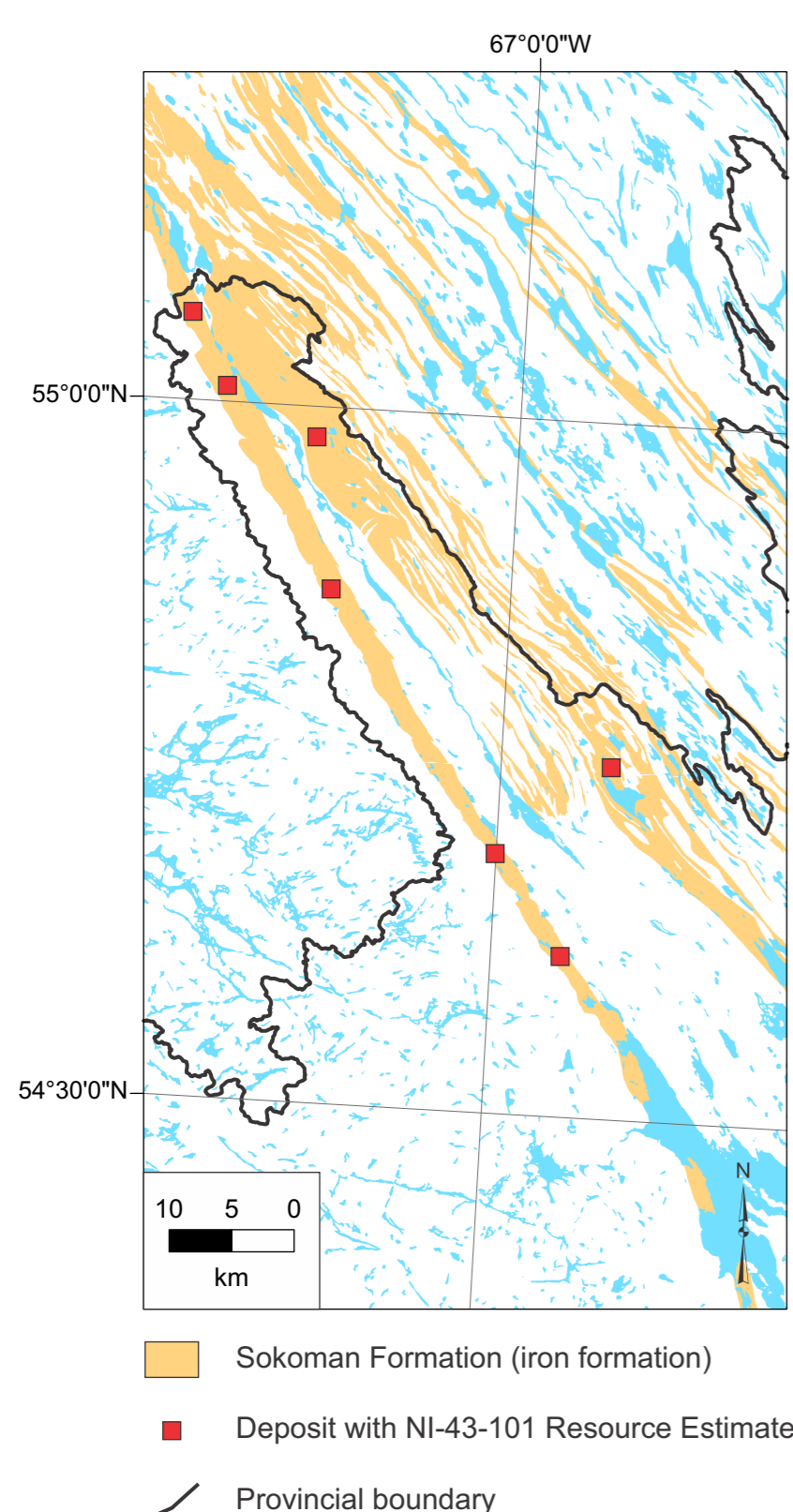
All deposits in the Labrador West area are metataconite iron ore deposits, which are moderately to strongly metamorphosed and recrystallized and are easily beneficiated into iron concentrates (~65% Fe), which are ideal for pellet production.

In response to increased exploration activity in the Labrador West area in the 2000s and early 2010s, the Geological Survey of Newfoundland and Labrador initiated a study of known iron ore deposits in 2012. This work included deposit-scale mapping, logging of diamond-drill core and visits to active mines and known deposits. The results of this study are being incorporated with data from recent industry assessment reports and a number of academic studies in the area into a major report on the iron-ore deposits in the Labrador West area. The report will summarize the regional geology and the results of exploration for new deposits undertaken over the past 20 years.



Top: View of the IOC's Luce pit. Bottom left: Banded oxide-facies iron formation. Bottom right: Oxide-facies iron formation, with coarse-grained specularite and quartz filling vug.

## Taconite Deposits: A Major Untapped Resource



Geological map showing location of major taconite deposits in western Labrador

Taconites are fine-grained, non-metamorphosed to weakly metamorphosed sedimentary iron formations (25 to 30% Fe), with magnetite as the dominant iron ore mineral. None are presently mined in the Labrador Trough, although they are important sources for iron ore elsewhere (e.g. Michigan, Minnesota). The Labrador Trough is host to vast taconite resources, with exploration in the 2000s and early 2010s outlining National Instrument 43-101-compliant Measured, Indicated and Inferred resources of 29.7 billion tonnes (grading 29.9% Fe).

The Geological Survey, in collaboration with Memorial University, has commenced a research project on the stratigraphy and geochemistry of taconite deposits in the Labrador Trough. This project will provide new insights into the genesis of these taconite deposits by applying a novel combination of mineralogical and ultra-trace element and isotopic geochemical analyses, and has significant economic benefits, including refined definition of various ore facies and grades within a single deposit for more efficient 43-101 and ore-streaming evaluation.



Taconite ore from the LabMag Deposit



Taconite drillcore from western Labrador