

# Canada's Labrador & Newfoundland/Québec iron ore mines expand production

by Dr. Edward Schiller

Aerial view of concentrator and pellet facilities of Iron Ore Company of Canada at Wabush. Photo courtesy Iron Ore Company of Canada.

Canada's famous, iron ore-rich Labrador Trough of western Labrador and northeastern Québec has four producing iron ore mines in various stages of expansion as well as four major projects in the advanced stages of exploration and development. Current production from the four mines is around 40 million tonnes annually.

The Labrador Trough is a 1,600 km long and 160 km wide geological structure extending south-southeast from Ungava Bay on the north through Québec and Labrador and southwestward into central Québec. The trough comprises early Proterozoic sedimentary and volcanic rocks highlighted by banded iron formations that have been mined since 1954. Today, iron ore mining is

centred around the twin cities of Wabush-Labrador City, Newfoundland & Labrador and Fremont, Québec, 14 km to the west. Active exploration and development is taking place in the vicinity of Wabush-Labrador City and near the former iron ore mining town, 250 km to the north.

## OPERATING MINES – WABUSH-LABRADOR CITY, NEWFOUNDLAND & LABRADOR

Iron Ore Company of Canada (IOC) is Canada's largest iron producer and a leading supplier of iron ore pellets and concentrates. IOC produced iron at its mine site in Schefferville, Québec from 1954 until 1982 when the site closed. IOC's current mine and process facilities, located near Labrador City, a community of approximately 9,000,

is known as the Carol Project. The facility began operation in 1962 and has produced more than one billion tonnes of crude ore with an average iron content of 39%. Annual production and capacity at their Carol Lake Concentrator near Wabush is 17 million tonnes of iron ore concentrates, of which 13 million tonnes is pelletized and the balance processed into various grades of concentrator products.

An announced \$500 million will be spent on new loading and hauling equipment, power supply upgrades, new railway locomotives and ore cars, a crusher station, an overland conveyor and an autogenous grinding mill. The aim of this expansion is to increase annual production to more than 25 million tonnes of concentrates and 14.5





million tonnes of pellets in 2011.

IOC owns and operates the Québec North Shore & Labrador railroad (QNSL) that links the mine to its port facilities at Sept-Iles, Québec, 430 rail-km (320 air-km) to the south on the St. Lawrence River. As a common rail carrier\*, QNSL transports iron ore products from other operations to Sept-Iles and adjoining ports. IOC is owned by Rio Tinto PLC [RIO-NYSE, London, Australia, NZ], which operates within the Rio Tinto Iron Ore Group (58.7%), Mitsubishi Corp. (26.2%) and the Labrador Ore Royalty Income Fund (15.1%).

**Cliff's Natural Resources Inc.** [CLF-NYSE] is an international mining and resource company and the largest producer of iron ore pellets in North America. The company owns or manages six iron ore

mines in the US and Canada, plus mines in Australia. Cliffs operates the Wabush/Scully deposit and annually mines 5.5 million tons of iron ore which is shipped via the QNSL Railway to their facilities in Pointe Noir where the company produces 2.7 million tons of pellet concentrate. The deposit, 100%-owned by Cliffs, began production in 1965.

#### OPERATING MINES – FREMONT, QUÉBEC

**ArcelorMittal Mines Canada** is one of Canada's leading suppliers of iron ore to steel markets around the world, generating some 40% of Canada's total production. The company operates two large open-pit mines; one at Mont Wright and a second at Fire Lake to the south in Québec, both linked by their private Cartier Railroad to pellet plant,

storage and port facilities for shipping at Port-Cartier. The company produces about 14 million tonnes of iron ore concentrates and over 9 million tonnes of iron oxide pellets annually. ArcelorMittal is the world's number one steel company, with 320,000 employees in more than 60 countries. The company was established in January 2008 following the acquisition of the Québec Cartier Mining Company in 2006

**Consolidated Thompson Iron Mines Ltd.** [CLM-TSX] is the new kid on block; production commenced on its Bloom Lake operations in 2010 with an expected annual mining rate of 8 million tonnes of concentrates from ores grading approximately 30% iron. Offtake agreements totaling a minimum of 8 million tonnes of 66.5% iron ore concentrates are in place for a minimum of seven years of mine life. Reserves are estimated to be 640 million tonnes. Concentrates are transported on the QNSL railroad to port facilities at Port Cartier, 330 km distant on the St. Lawrence River.

In addition, the company owns the Lamelee-Peppler properties located 70 km southwest of Fermont and 45 km west of the Bloom Lake. A recently completed scoping study on the Peppler property estimates indicated resources of 302,000,000 tonnes grading 28.4% iron. Twenty-seven drill holes have been completed on the Lamelee property with a tonnage expectation to exceed the Peppler deposit. The combined resources of Lamelee and Peppler have produced a significant upside to the Bloom Lake operation.

#### EXPLORATION – WABUSH-LABRADOR CITY-FREMONT

The most aggressive exploration program underway in this area is the **Alderon Resource Corp.** [ADV-TSXV] Kamistatusset, or Kami, property located 10 km south of Wabush. The property was optioned from **Altius Minerals Corp.** [ALS-TSX] in November 2009 and, in early December 2010, Alderon exercised its option right to earn a 100% interest in the property, subject to a 3% gross sales royalty on iron ore concentrates. Iron ore mineralization is in the 28% to 34% iron range with a 60/40

magnetite to hematite ratio with manganese contents in the 0.6 to 1.5% range.

Steel mills prefer iron ore feeds containing more magnetite ( $\text{Fe}_3\text{O}_4$ ) than hematite ( $\text{Fe}_2\text{O}_3$ ) and show a preference to ores with low manganese. Iron ores from the Bloom Lake deposit of Consolidated Thompson average less than 0.03% manganese, whereas ores from Cliffs Scully mine average between 1.2%-4.0% manganese.

In 2010, Alderon completed 25,749 metres of drilling in 73 holes which will be incorporated into a NI 43-101 report and available in Q1 2011. A \$2.5 million winter drill program of 5,000 metres is scheduled to begin January 2011 that is designed to delineate 500 million tonnes grading 28-32% iron. Production is planned at a rate of 8 million tonnes annually over a 21-year mine life. Drilling is directed at two main targets, the northeast-striking Rose Lake Central and SW Rose Lake and the northwest-striking Mills Lake target, five km southeast of the Rose targets. With the proximity of the property to existing operations, rail spurs or conveyor options could readily connect the mine to the main railroad line to Sept-Iles. Port options include loading from existing IOC facilities at Sept-Iles, from Point Noire where Cliffs and Consolidated Thompson are constructing new facilities expected to start in 2011, or from Port Cartier where ArcelorMittal have in-place facilities.

Altius Minerals Corp. owns eight exploration licenses in the vicinity of Wabush and has joint venture agreements on six licenses with Kennecott Canada Exploration (a Rio Tinto Group company). An exploration program, including drilling, was completed in 2010.

**Champion Minerals Inc.** [CHM-TSX], (82.5%), and **Fancamp Exploration Ltd.** [FNC-TSXV], (17.5%), own 16 concessions in the Fermont area of Québec that contain 503.3 million tonnes grading 28.0% iron of inferred resources on their Bellechasse and Fire Lake North Blocks. In addition, historical resources are reported from the Paquet Block of 578 million tonnes grading 30.4% iron and the Moire Lake Block of 102 million tonnes grading 31% iron. All blocks are adjacent to or proximal to the Consolidated Thompson Iron Mines and the ArcelorMittal

producing operations and accessible to power, roads and rail connecting to St. Lawrence Seaway ports. The companies own an additional 10 other concessions 50 km south of Fremont with known historical iron resources and potential resources.

Champion Minerals has iron properties in the Fremont and Schefferville areas. The Fermont properties comprise the Bellechasse and Fire Lake North blocks that contain 603 million tonnes grading 29% iron. Hosted within six of the other 14 Fremont blocks is an additional 578 million tonnes of historical resources (non- NI 43-101 compliant). A 7,000-metre drill program is underway on the Harvey Tuttle Block to outline several 200-500-million tonne lenses.

#### EXPLORATION – SCHEFFERVILLE

The most advanced explorer/developer in the Schefferville area is **Labrador Iron Mines Ltd.** [LIM-TSX] with 19 iron ore deposits containing 150 million tonnes of direct shipping iron (DSO) ore grading 56-58% Fe of hematite ore. These reserves were part of the historic reserves and resources outlined by IOC during the period they mined DSO from 1954 to 1982. LIM owns 100% of these DSO resources. The ores will be shipped via the QNSL railroad over a distance of 565 km to Sept-Isle. The company has received the Certificate of Approval for Mine Operations for developing and operating its Schefferville Project. Preparations for construction of the mine and beneficiation are currently underway with full scale iron ore production to commence in April 2011 at a rate of 2 million tonnes/year.

**New Millennium Capital Corp.** [NML-TSXV] holds a 100% interest in the Kemag property in Québec and an 80% interest in the LabMag property in Newfoundland & Labrador northwest of Schefferville, located in the Millennium Iron Range. In addition, the company owns a 20% interest in the DSO Project (Direct Shipping Ore) with partner **Tata Steel Global Minerals Holdings Pte Ltd.** (Tata Steel) of Singapore. The DSO Project contains 64.1 million tonnes of proven and probable reserves, 15.3 million tonnes of measured and indicated resources, and 40-45 mil-

lion tonnes of non-compliant historical resources.

The Kemag Project contains 3.5 billion tonnes of proven and probable reserves grading 29.6% iron, plus 1.0 billion tonnes of measured and indicated resources averaging 29.5% iron, and 1.2 billion tonnes of inferred resources averaging 29.3% iron. The KeMag Project contains 2.1 billion tonnes of proven and probable reserves averaging 31.3% iron, 0.3 billion tonnes of measured and indicated resources grading 31.3% iron and 1.0 billion tonnes of inferred resources grading 31.2% iron. Production at the DSO Project is expected to start Q3 2012. Prefeasibility studies for both the LabMag and KeMag projects have been completed with the eventual planned annual production of 15 million tonnes of pellets and 7 million tonnes of concentrates.

The Wabush/Labrador City region offers a number of advantages to exploring and developing projects, mainly due to the in-place communities of the twin Newfoundland & Labrador and Fermont, Québec cities that have full housing, communication and support facilities: hospitals, schools, daily air service, etc. But equally important is the presence of Churchill Falls, 200 km to the east, on the Churchill River, that provides inexpensive power. Current costs are about 4 cents per KW to area power consumers, whereas power rates elsewhere in Canada are 50% to 100% higher.

The Churchill power station has the second largest hydroelectric generating capacity in North America at 5,428 MW installed, expandable to about 6,300 MW and ranks as the second largest underground power station in the world. Although once considered a remote part of Québec and Newfoundland & Labrador, the area is connected to the port facilities of Sept-Iles/Port Cartier on the St. Lawrence River via two railroads and an all-weather highway east to Goose Bay accessible to the Atlantic Ocean as well as an all weather highway southwest to Baie Comeau, Québec on the St. Lawrence River. ■

*\* The term 'common carrier' refers to a railroad, as in this case, the Québec North Shore & Labrador Railway that crosses an inter*

*provincial boundary. It is obligated to permit the use of the rail line by other users and falls under the jurisdiction of the federal government. The ArcelorMittal Cartier Railroad, being a private rail line entirely within the province of Québec, is not obligated to allow usage by a third party. Any third party usage is negotiated with ArcelorMittal and not subject to any government intervention.*



Concentrator and the CNR Wabush/Scully operation. Photo submitted.