

Québec Mines

September 2001

Newsletter from the Mines Sector
Ministère des Ressources naturelles



A Word from the Associate Deputy Minister for Mines

Here is the first edition of the QuébecMines newsletter. This new electronic quarterly newsletter published by the Ministère des Ressources naturelles du Québec will keep you up to date on the latest developments in the mining sector in Québec.

Various topics will be discussed, namely the Mining Act, mining exploration highlights in Québec, the mining tax system, and geological projects headed by Géologie Québec. It will also showcase new products developed for the mining industry, including our databases and our [website](#). In each edition, we will profile a mining company, a prospector or a geologist who is active in Québec.

I hope you will appreciate this new opportunity to stay informed, and that you will enjoy reading our first edition!

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Coming up in our next edition

22nd Geological Research Information Seminar
With simultaneous translation!

Mining exploration in Québec

a brilliant future!

Gestim, an exclusive and effective solution for mining title management!



Mining title database



Robert Marquis



Pierre Verpaelst

2001-2002 Field Projects

James Bay

Ongoing projects in the James Bay region will add valuable information to our database, which will eventually help us generate a global portrait of the La Grande and Eastmain areas. Next November, a compilation of 7 map sheets at 1:250,000 will become available to the public at the annual Geological Research Information Seminar. This compilation will include the latest data from mapping, geochronology and metallogenic studies undertaken since the start of the current campaign in 1995.

Abitibi

Work carried out in the Abitibi region was performed in accordance with our three-year action plan (2001-2003), established in conjunction with the mining industry. This work includes an inventory survey in the Lebel-sur-Quévillon area, a project to recover lithogeochemical data and integrate it into SIGÉOM, a pilot project involving 3D-modelling, and an ore deposit study on the Doyon-Bousquet-LaRonde mining camp.

The latter is headed by the Ministère des Ressources naturelles du Québec, in partnership with the Université du Québec à Chicoutimi, the Geological Survey of Canada and mining companies active in the Doyon-Bousquet-LaRonde mining camp.

It consists of a multidisciplinary project that will update our understanding of the principal active mining camp in the Abitibi area. Once this study has been completed, the results will allow us to pursue our efforts in attempting to generate 3D models for other mining camps in Québec.

Speaking of 3D-modelling, in November 2001, we will publish the first results of a pilot project on 3D-modelling. Carried out in partnership with the Unité de recherche en sciences et en technologie

minérale (URSTM) of the Université du Québec en Abitibi-Témiscamingue and the firm Mira Geoscience, this project uses recently acquired data derived from an ore deposit study of the Joutel camp carried out between 1999 and 2001.

Far North

In 1998, the Ministère des Ressources naturelles launched a 5-year project to complete the mapping coverage of northern Québec at a scale of 1:250,000. We are currently completing the fourth field campaign of this project that has mobilized, given its magnitude and complexity, most of our human and financial resources. Once again this year, four field crews are active north of the 55th parallel. Set up in temporary camps in isolated areas, these teams are supplied from the communities of Inukjuak and Puvirnituk, on the coast of Hudson Bay, or from LG-4 in the James Bay region. A metallogenic study of the principal metalliferous showings, and a geochronology study are carried out in conjunction with geological mapping surveys. Thematic studies performed in partnership with the Université du Québec à Montréal, McGill University, Simon Fraser University and the Geological Survey of Canada complete our involvement in the Far North. To conclude this project, we intend to produce a comprehensive geological portrait of this vast territory.

Grenville

Géologie Québec has continued to extend its geological mapping coverage at a scale of 1:50,000 in the Grenville Province. One project is currently underway north of the Sague-

nay region, more specifically in the Lac Maria-Chapdelaine area, which is particularly promising for Ni-Cu and PGE mineralization. A 1:250,000 scale synthesis map will be available next November. The Central Metasedimentary Belt north of Mont-Laurier is also the focus of a synthesis study.

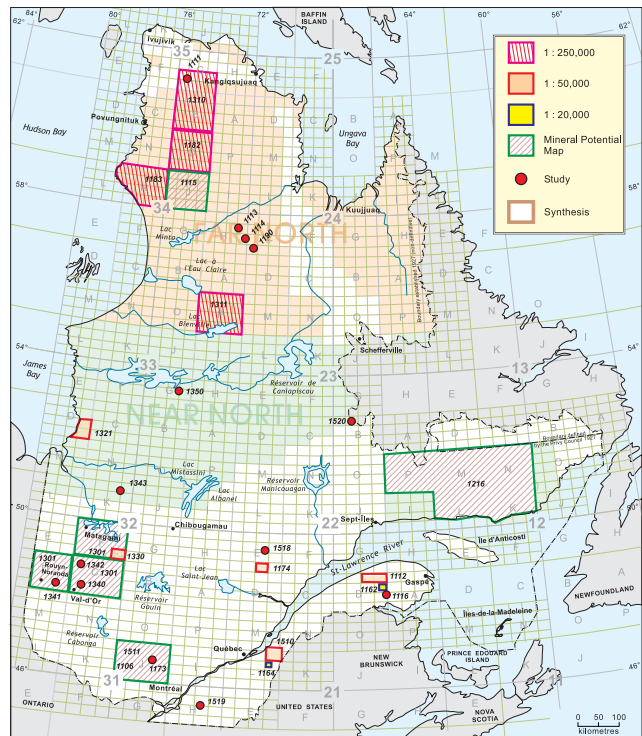
Appalachians

Géologie Québec has continued compilation and mapping work along with metallogenic studies in the Appalachians, namely in the Chaudière-Appalaches region, and in the Bas-St-Laurent and Gaspésie regions as well. The Saint-Magloire area was updated. In the Bas-St-Laurent and Gaspésie regions, the Mont Logan and Mont Albert areas and the Ruisseau Berry area were mapped. Two metallogenic studies were undertaken, one dealing with red beds and another with low-temperature ore deposit settings. We will also continue to update mineral occurrence files.

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[Click on the map to get a detailed view.](#)



SIGÉOM: a new tool, e-SIGÉOM à la carte

Géologie Québec jumped on the Internet bandwagon in early 1998 when it introduced its Examine bibliographic database. Shortly thereafter, Géologie Québec's first general portal was created. In November 1999, two new geoscience applications were launched: the Atlas of GIS data and the list of products, complete with electronic commerce which allows the use of credit cards to order data and publications. The 2000 vintage has added new functions associated with **SIGÉOM à la carte** and a new version of Examine. To celebrate the arrival of its newborn, Géologie Québec redesigned the product interface.



Charles Roy

e-SIGÉOM à la carte is Géologie Québec's spatially referenced database accessible via Internet. It consists of a search engine based on textual elements (rock descriptions, drillholes, etc.) that allows users to consult geoscience data and place orders through electronic commerce. This data can either be downloaded directly or shipped on CD-ROM.

When ordering data, the client specifies the map projection of geometric data (UTM, MTM or geographic coordinates) and the file format (MicroStation, MapInfo, ArcView or AutoCad). Once you receive your order, you are free to apply the

parameters of your choice, since data from **SIGÉOM à la carte** will also allow you to do so.

e-SIGÉOM (ATLAS) is a tool that allows users to view the geographic coverage of the different products available in **SIGÉOM** (digital data or printed documents) according to a specific area, scale or type of map. **SIGÉOM (ATLAS)** also allows users to order these products via electronic commerce.

e-SIGÉOM (EXAMINE) is the new version of **EXAMINE**. Just like its predecessor, **SIGÉOM (EXAMINE)** gives you access and allows you to search through the bibliographic database of geoscience publications available at Géologie Québec. It is therefore possible to identify specific geoscience publications by Géologie Québec, view them, and then order them via electronic commerce.

From now on, you will also be able to consult and order geometric data showing the location of documents. This data may be either downloaded directly or shipped on a CD-ROM.

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SIGÉOM-EXAMINE: Imagery Project

Géologie Québec manages a collection of geoscience documents containing about 68,000 documents. This collection receives about one thousand new geoscience reports each year. The entire collection of printed documents has been microfilmed. Following studies and a pilot project, Géologie Québec launched, in April 1999, the digitization of its document collection. This project is called "FDM Imagery" (*Fonds Documentaire Mines/Mines Document Collection*).

Users of the FDM and Géologie Québec will undoubtedly benefit from the FDM Imagery project, thanks to the improved accessibility to documents via the information highway, the increased effectiveness in recovering masses of information contained in the collection of documents, and a substantial reduction of storage and filing costs.

Géologie Québec's first objective was to digitize, for April 1st, 2001, all of its "QERPUB" collection, which corresponds to the 5,000 publications and geoscience reports produced by the Mines sector. This goal was met and since April 1st, 2001, the digitizing team at Géologie Québec has undertaken digitization of the 61,500 GM (assessment files). As of August 1st, 2001, over 500 GM have been digitized and transferred to SIGÉOM-Examine (Internet). Once it has been completed, the FDM Imagery project will have generated over 2,300,000 images (pages and plans) which may be viewed via the infobahn.

We invite you to start using **e-SIGÉOM-Examine** as soon as possible (if you haven't done so already) to view a large number of geoscience reports free of charge.

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Luc Charbonneau





Patrick Houle

Diamonds are forever

Since the discovery of macrodiamonds by Twin Mining Corporation in the fall of 1999, within a kimberlite dyke swarm along the shores of Fjord Alluviaq in Ungava Bay, Québec's vast expanses have become a first-class target for diamond exploration. Consequently, numerous sampling programs and high-resolution geophysical surveys were carried out over the last three months by various mining companies, particularly in the Nord-du-Québec region, namely in the Wemindji, Caniapiscou, Monts Otish and Fjord Alluviaq areas. As a result, Dianor Resources reported the discovery of a microdiamond in a xenolith-bearing lamprophyre dyke in the Wemindji-Caniapiscou structural corridor, in the James Bay area. In southern Québec, Aurora Platinum Corporation reported a drill intersection of kimberlitic breccia on the Midrim-Belleterre property in the Témiscamingue region. Following the recovery of gem-quality and size diamonds by Twin Mining Corporation in the Ungava Bay area, the first commercial size diamond from Québec was cut by Papillon Gemme Matane.

Compagny Profil

Agnico-Eagle Mines Ltd., with its head office in Toronto, has been an established Canadian gold producer for over 25 years. Its operations, largely underground, are mainly concentrated in northwestern Québec. On August 17th, 2001, the Penna shaft was inaugurated.

The history of Agnico-Eagle Mines Ltd. is linked to Paul Penna, founding president of the company. This history begins in the early 1960s, when Penna invested, along with his brother, in a small company called Agnico Mines. After gaining control of the company, he acquired Equity Exploration, which he renamed Eagle Gold Mines, and later merged it with Agnico. Penna made several wise moves over the years. For example, in 1970, he acquired the Telbel mine (in the

Quarterly Highlights

Platinum group element

Exploration for platinum group elements (PGE) continued to soar in Québec during the last quarter. In the Ungava Trough, following new assays of drill core from 1997 drillholes, Canadian Royalties announced significant platinum and palladium values associated with previously known Cu, Ni and Co intersections, at the base of an ultramafic unit. In the James Bay area, Ressources minières Pro-Or confirmed a PGE-enrichment trend in certain chromite-rich horizons in the Menarik deposit. Near Ville-Marie, Témiscamingue, Aurora Platinum Corporation continued delineation drilling on several Cu, Ni, Co and PGE zones hosted in a mafic-ultramafic rock sequence.

Gold, copper and zinc

Considering the importance of the mining industry in the economy of Québec and its regions, the Government of Québec has maintained its involvement on several fronts: prospecting, exploration, mine development, modernization, renewal of reserves, research and development. To name a few, Cambior (\$2.04M to renew reserves at the Doyon, Mouska and Sleeping Giant gold mines), Richmond Mines (\$2.7M over three years to reopen the Beaufor gold mine) and

McKenzie Bay Resources (\$1.4M to complete a bankable feasibility study on the Lac Doré vanadium project, near Chibougamau) received important amounts of financial assistance from the government. In addition, preliminary work leading to shaft sinking operations on the Copper Rand 5000 copper-gold project near Chibougamau has begun as a result of government assistance previously announced in putting together the \$45M venture. Finally, mine development projects include the Perseverance polymetallic deposit in the Matagami mining camp where Noranda is pursuing its feasibility study, and the Fénélon property where International Taurus Resources has successfully completed a bulk sampling program.

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Agnico-Eagle

Joutel area, Abitibi) from Noranda for only \$78,000. Today, we know that the Eagle, Eagle West and Telbel orebodies produced, between 1974 and 1993, over 6.168 Mt of ore at a grade of 6.57 g/t Au (a production of over 1.3 million ounces of gold). In 1979, Agnico-Eagle Mines Ltd. joined forces with Noranda and Mentor Exploration as shareholders of Dumagami Mines Ltd., owner of the orebody bearing the same name in the Cadillac area. In 1986, Noranda sold its share in the project, which at the time contained 2.7 Mt of reserves grading 3.2 g/t Au, part of which could be mined by open pit. In 1987, reserves had reached 5.5 Mt grading 4.6 g/t Au.

On October 1st, 1988, production began at the Dumagami orebody, located 60 kilometres west of Val-d'Or. The mine was



Pierre Doucet

renamed in honour of Donald J. LaRonde in 1991. By the end of the 1990s, the company had invested over \$300M to expand the LaRonde mine, to sink the different shafts and set up operations, to increase the mill capacity from 2,000 to 3,600 tonnes per day and to add a zinc recovery circuit. In 1998, mineral resources and reserves in the new zones were estimated at 29.2 Mt at 4.5 g/t Au, 79.2 g/t Ag, 0.4% Cu and 4.9% Zn. In June 1999, the company announced it would increase production to 5,000 tonnes per day (this goal was achieved in October 2000), in order to

triple its annual production of gold (from 128,000 ounces of gold in 1999 to 337,000 ounces of gold in 2004). In October 1999, Agnico-Eagle Mines Ltd. announced the discovery of Zone 20 North at a depth of 9,717 feet (2,990 metres) below surface, the deepest massive sulphide intersection ever reported in the cluster of mining camps between Rouyn-Noranda and Val-d'Or. The spring of 2001 is marked by the completion of shaft no.3, named Penna in honour of the former president. At 2,259 metres depth, it is the deepest shaft in North America. Exploration work at depth has helped delineate reserves and resources estimated at 7.8 million ounces of gold contained in the orebody. Mineralized zones remain open at depth.

In May 2001, Agnico-Eagle Mines announced its decision to increase the mill's processing capacity to 7,000 tonnes of ore per day, and expects to invest \$40M to achieve this goal. Gold production should increase from about 229,000 ounces of

gold in 2001 to 396,000 ounces in 2004. Furthermore, the exploration division of Agnico-Eagle Mines Ltd. and its subsidiaries are actively investigating several properties in the Abitibi Subprovince, in Ontario and in Nevada.

The LaRonde mine is undoubtedly the cornerstone of Agnico-Eagle Mines Ltd. and it will consolidate its position as gold

producer over the next decades. Paul Penna, who passed away in 1996, had a saying: "Mines are not discovered, they are built". The construction of the LaRonde mine has yet to be completed...

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Agnico-Eagle Mines Ltd.

Employee Profil

Daniel Lamothe

Mr. Daniel Lamothe has worked as a geologist at the Ministère des Ressources naturelles du Québec since 1981. He was involved in various mapping projects in different areas throughout Québec including the Abitibi, the Ungava Trough and the Far North region. Since 1998, Mr. Lamothe is responsible for the development and production of mineral potential maps (MPMPS). He graciously accepted to answer a few questions.

How did the idea of building an expert system that would enable us to quantify the mineral potential of an area come to life?

D.L.: The first specifically geological expert systems were initially tested at the Geological Survey of Canada by Dr. Bonham-Carter, in the mid-80s. However, generating mineral potential maps requires solid databases. The creation of SIGÉOM (geomining database) in the early 1990s, enabled the Ministère des Ressources naturelles to go ahead with the mineral potential map system.

Is there a similar system elsewhere in the world?

D.L.: Not to my knowledge, no. It requires very complete and efficient geological databases like SIGÉOM.

Which areas of Québec have been covered by mineral potential maps?

D.L.: With the assistance of Mr. Claude Dion, we published in 2000 the first mineral potential maps for "volcanogenic massive sulphide"-type copper-zinc mineralization for areas 32E (Joutel, Abitibi) and 32G (Chibougamau, Abitibi). These maps may be purchased via electronic commerce on our [website](#).



Chantal Dussault

Which maps will be produced next?

D.L.: Maps showing the Olympic Dam-Kiruna model in the Grenville will be available very soon. They will cover map sheets 22I, 22P, 12K, 12L, 12M, 12N, 32J, 32C and 32F. Map sheet 22I should be available at the Seminar and will be accompanied by an explanatory CD-ROM.

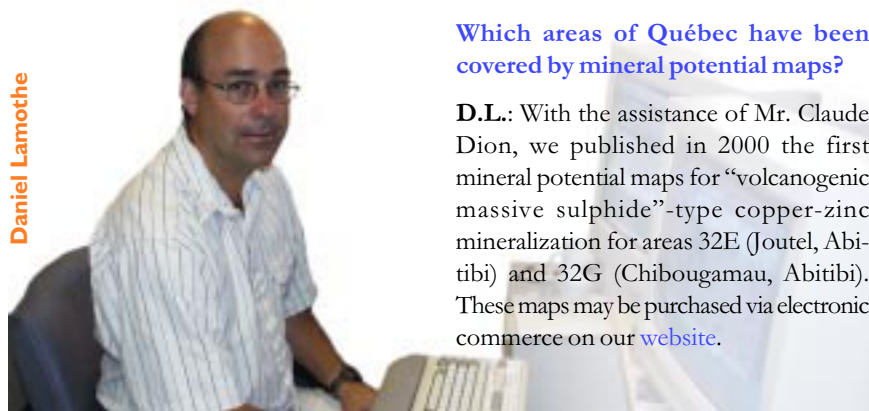
Do you intend to produce mineral potential maps using other geological models?

D.L.: Yes, for diamonds, and for lead-zinc deposits.

For more information, you can reach Mr. Lamothe at the following address:

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Daniel Lamothe

Dates to Remember and Upcoming Events

November 21st and 22nd, 2001

22nd Geological Research

Information Seminar

Over twenty conferences discussing platinum group elements, diamonds and Far North geology.

How to Reach Us

Please do not hesitate to forward your questions or comments.

www.mrn.gouv.qc.ca

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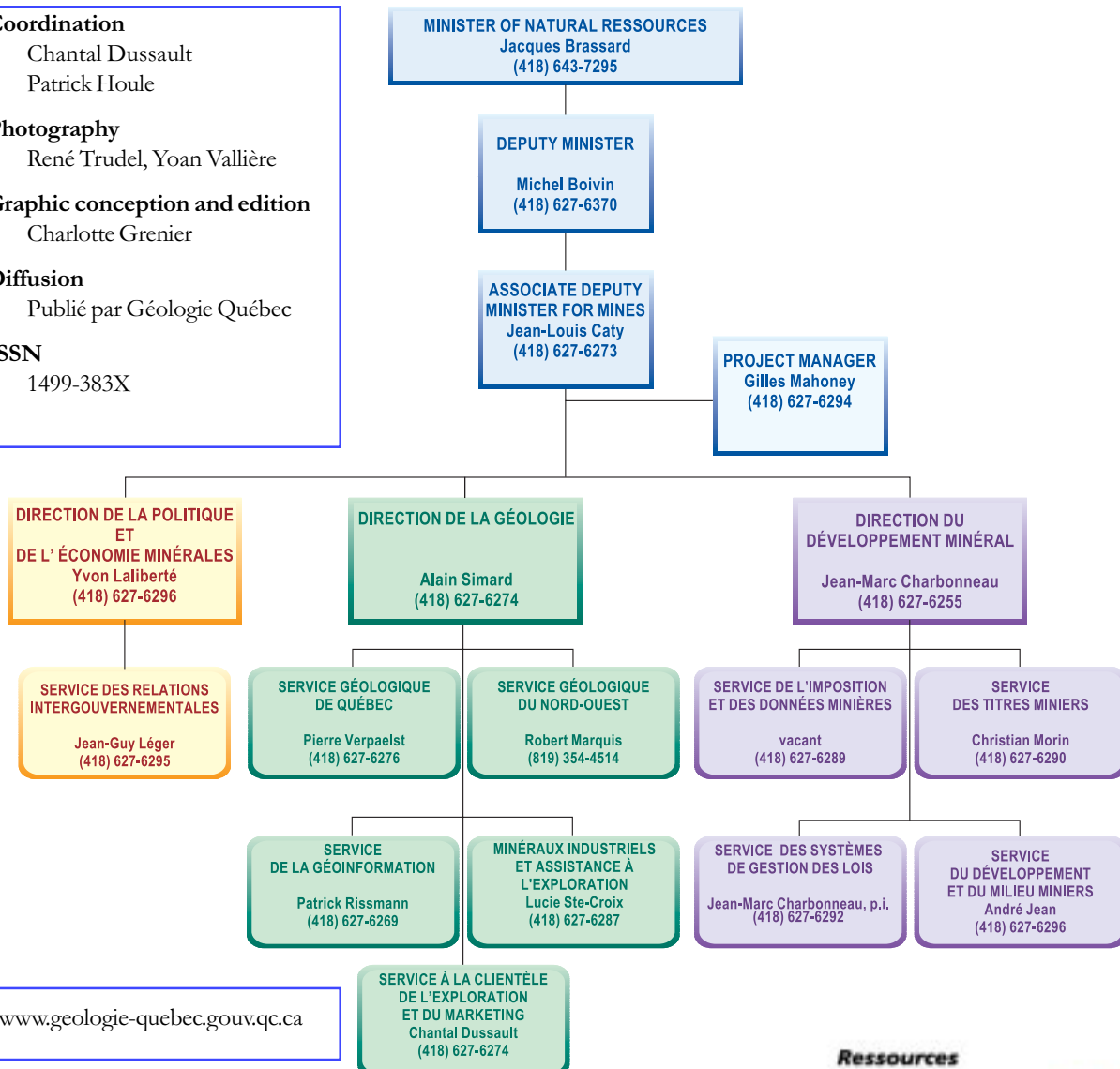
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Location of Field Projects - 2001-2002

