Newfoundland and Labrador

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THIS ISSUE

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

Department of Mines and Energy

Mines Branch

Production Photos: - Open pit mining at the Iron Ore Company of Canada - Ore haulage from Roycefield Resources' underground antimony mine.

Value of Mineral Shipments Will Increase for Fourth Consecutive Year.

The total value of Newfoundland and Labrador's mineral shipments is forecast to be $978 million in 1997. This is an increase of 5% over the 1996 preliminary value, and it will be the fourth consecutive year that the total mineral shipment value will increase for the province. This is a result of a 10% increase in iron ore shipments from Labrador West in 1997. However, lower than expected gold production will keep the 1997 figure from reaching $1 billion.

The Hope Brook mine closed in September 1997, but gold production at Richmont's Nugget Pond mine is exceeding expectations.

The start of Roycefield Resources' antimony mine and Atlantic Minerals' increased dolomite output will help increase the 1997 value of industrial mineral shipments by 82% over the 1996 value. However, the 1997 value of structural material shipments will decrease 12% from 1996 levels. Average employment in the mineral resource industry will increase 2% to 3,480, in 1997.

Iron Ore . . . . . A Solid Cornerstone

The Newfoundland and Labrador mining industry is the leading resource sector in the province. Since 1993, the value of mineral shipments has increased by 40%. This upswing is due primarily to the resurgence of the iron ore industry in western Labrador. Iron ore shipments from the Iron Ore Company of Canada (IOC) and Wabush Mines will make up close to 92% of the total value of mineral shipments in the province in 1997, and 55% of Canada's iron ore products. IOC and Wabush mines are both operating at or near capacity.

Recent events have given reassurance that the iron ore industry will continue to make up a major part of our province's mining industry. In December 1996, IOC approved a major capital expenditure program for 1997 and 1998. IOC is investing $75 million in new capital investment at Labrador City that includes the construction of a new flotation plant, a new wet-grinding mill system and improvements in the train system between Labrador City and Sept-Iles.

On April 2, 1997, North Limited of Australia finalized an agreement for the purchase of a 59.3% interest in IOC. On April 23, 1997, IOC announced an initiative to expand its current production capacities. A study was approved to determine the feasibility of expanding IOC's pellet making capabilities.

At Wabush Mines, the Wabush Board of Directors approved major expenditures to upgrade mining equipment such as a production loader, haulage trucks, a bulldozer and a grader.

Wabush Mines is also completing a feasibility study on a new manganese extraction plant. The plant would reduce manganese levels in iron pellets enabling it to be sold on the market once it is separated from the ore. The manganese project is very important to the long term viability of the Wabush operation because it will lower mining costs and increase the market access for Wabush pellets as well as increase revenue.

Prospectors Assistance Program Update

The financial grants portion of the Prospectors Assistance Program is currently supporting 40 prospecting projects, which are widely distributed throughout Newfoundland and Labrador. Prospecting areas are geologically diverse and targets include various deposit-types of base metals, other metals, hydrothermal and placer gold, industrial minerals, dimension and ornamental stone.

Some of the project areas are subject to negotiation for option agreements with mineral exploration companies. To date, 31 of the 239 Prospectors Assistance Program sponsored projects have resulted in option agreements, bringing private-sector investment of nearly $5 million.

Roycefield Resources Starts Mining and Substantially Increases Reserves

Roycefield Resources commenced mining at its Beaver Brook property in mid-July of this year, and milling is scheduled to start in October. Roycefield Resources will initially produce an antimony concentrate. However, the company is planning to construct an antimony trioxide plant on site to convert the concentrate into antimony trioxide.

In September, Roycefield Resources announced that its diamond drill-program had indicated about 500,000 tonnes of additional reserves of over 3% antimony using a 1.5% cut off. Previously, reserves of 1,379,908 tonnes grading 4.49% antimony had been delineated at Beaver Brook.

Mine Site Reclamation

One of the first records of mineral exploration in Newfoundland dates back to 1576 when Sir Martin Frobisher explored the shores of Trinity Bay and found pyrite. Since then, Newfoundland's mining legacy has resulted in at least 70 abandoned mines throughout the island with almost half of these being located in the Notre Dame Bay area. Some of these sites contain openings to underground workings which may be potentially hazardous to the public.

In 1985, the Engineering Section of the Department of Mines and Energy started its first mine-rehabilitation program at the abandoned iron ore mines on Bell Island. This work included open-pit backfilling, closure of underground openings, warning signs and fence installation, derelict equipment and scrap-metal removal, and revegetation of areas containing iron ore stock piles. Since the initial reclamation work on Bell Island, various steps have been taken to advise the public of the dangers associated with abandoned mines and similar remedial work has been completed on other sites throughout the province, including those near St. Lawrence, Baie Verte, Springdale, Placentia and Tilt Cove.

Dangerous conditions existed at many abandoned mines as a result of past mining practices, whereby mines were abandoned after the ore was exhausted. Detailed documentation on the mine layout may no longer exist for some older mines, and there may be multiple openings to underground workings which have become hidden by vegetation over time. Even though some mine openings on certain sites were permanently sealed, the potential for other dangerous conditions to be created with time still exists. As a result, certain abandoned sites are being monitored on a yearly basis to ensure that past reclamation work, such as fencing and shaft closure, is maintained.

At present, the Department of Mines and Energy is preparing a framework for the mining industry to address rehabilitation. This will include reclamation measures to restore the site and to ensure public safety when the mining operations are terminated.

Gold Rush in Southeastern Newfoundland!

Since 1990, Canadian mining companies have focused their attention and many millions of exploration dollars onto the search for bulk tonnage, low- to high-grade epithermal- and porphyry-style gold deposits in volcanic and plutonic rocks. Much of this effort has taken place in South America and southeast Asia. However, recent studies have shown that such styles of mineralization are typical of known gold occurrences in southern and eastern Newfoundland, and that the potential for future gold discoveries in these areas is high.

Newfoundland-based prospectors and junior exploration companies have taken the lead within the Canadian mining industry in searching for these gold deposits in southeastern Newfoundland. As of October, 1997, more than 950 claims have been staked in this area and at present 5,271 claims are in good standing. So far, exploration efforts have focused primarily on 1) the Avalon high alumina belt near St. John's, and coeval rocks of the east-central Avalon Peninsula, 2) the Hickey's Pond - Burin Knee belt of the northern Burin Peninsula, and related rocks farther south and east on the Burin and Paradise peninsulas, and 3) the Precambrian rocks and younger intrusions in the Grey River and La Poile areas.

Why this activity....? First and foremost, is the known occurrence of gold and related hydrothermal minerals in these areas. The gold occurs mainly, but not exclusively, in late Precambrian volcanic and plutonic rocks, that form the core of the "Avalon" geological Zone of Newfoundland. These "Avalonian" rocks occur on the Burin, Bonavista and Avalon peninsulas, and in several areas along the southern coast of the island, as far west as La Poile Bay. The same rocks extend southwestward along much of the Atlantic seaboard into the Appalachian mountains of the southeastern USA, where the first gold rush in North America was spurred by the discovery of gold in 1803. Most gold production from eastern North America has come from these rocks. In the past 15 years, five gold mines in this geological belt were brought into production, including southern Newfoundland's Hope Brook mine (11.2 million mt @4.54 g/t Au).

Why this gold....? The Avalonian rocks formed mainly between 560 and 635 million years ago, the products of immense volcanic eruptions along a tectonically active region which at that time was located along the edge of an ancient continent known as Gondwana. This Avalonian magmatic belt was similar in scale and geologic setting to parts of the Andes, the Cordillera and other volcanic ranges of the present-day Pacific Rim. Melting occurred deep in the earth's crust, due to interaction of ancient tectonic plates, and formed magmas that ultimately rose to within a few kilometres of the Precambrian surface (the "*epithermal*" domain). In many instances, magmatic material was emplaced onto the surface by way of volcanic eruptions. In certain situations, heat expelled from cooling of the

underground magmas served as the driving force behind large-scale, near-surface hydrothermal convective systems, similar to modern geothermal/hot spring systems (*e.g.,* Taupo zone in New Zealand, and the Yellowstone district, USA). Superheated groundwater and fluids derived from the then-molten magmas, percolated upward through the old Avalonian crust. Gold derived either directly from the magmas or leached from the surrounding crust by these hot (up to 300°C), acidic to neutral pH fluids, was deposited in veins and fractures or, in some cases (*e.g. porphyry deposits*), was finely disseminated throughout the rock. Gold was deposited at differing levels in the crust (*e.g.* shallow *epithermal* and slightly deeper *porphyry domains*). In the case of much of the Avalonian belt, the hydrothermally altered host rocks and related gold mineralization were tilted and buried by younger sediments.

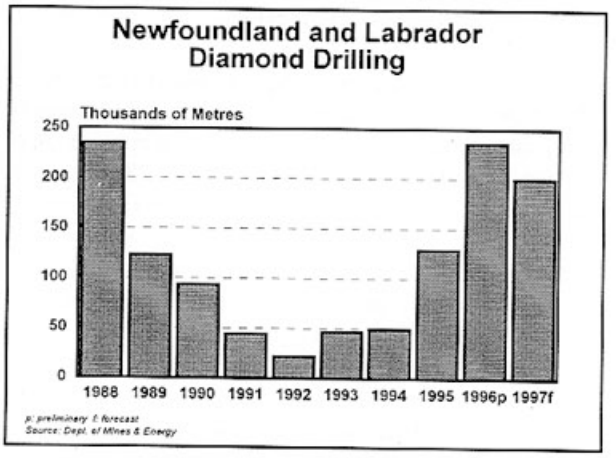
Mineral Exploration Update

Final 1996 diamond-drill statistics have been compiled. The total of 235,632 metres surpassed the all time high of 234,831 metres established in 1988 during the heyday of flow-through financing for mineral exploration. The Department of Mines and Energy is forecasting about 200,000 metres of drilling for 1997. The forecast of $73.3 million in exploration expenditures for 1997 remains unchanged.

Voisey's Bay Nickel Company Limited continues to be the most active exploration company in Labrador. Geological mapping, prospecting, ground geophysics and a 65,000 metre diamond-drill program are ongoing. A budget of $25 million has been allocated for the 1997 season. Reserves now stand at 32 million tonnes at 2.38% nickel, 1.68% copper and 0.12% cobalt in the Main Ovoid and 50 million tonnes grading 1.36% nickel, 0.67% copper and 0.90% cobalt in the Eastern Deeps. Sixty-five holes have now been drilled in the Reid Brook zone - Western Extension, where nickel values have been reported from 1.2% to 2.8%. A preliminary resources estimate of the Reid Brook and the Western Extension zones is currently being calculated.

On August 21, 1997, **Columbia Yukon Resources Ltd.** announced the results of a 9-hole 1000 metre drill program completed on its VBE-2 gold property, located 9 kilometres south of Voisey's Bay. Results up to 7.4 g/mt gold over 1.27 metres were recorded. The mineralization, which trends north south, has been traced over a strike length of 275 metres and remains open in all directions.

Vulcan Minerals Inc. completed a 10-hole, 1000 metre diamond drill program in August, 1997 on its Carbonear base-metal property. Results of up to 4.10% lead and 1.58% zinc over 1.2 metres and 1.44% zinc and 1.63% lead over 0.6 metres have been reported. The property is interpreted to have geological potential similar to the giant Sullivan base-metal deposit of British Columbia.



Buchan's River Ltd. completed a variety of geophysical surveys, including induced polarization, time domain electromagnetic and gravity, over its 44 square kilometre Buchans River property in 1997. Drilling to test several geophysical targets was completed in September and October.

Major General Resources Ltd. is currently completing a trenching and diamond drilling program on its Rendell-Jackman gold property located west of Springdale. This program is preparatory to the extraction of a bulk sample from the surface. Reserves on the property now stand at 290,834 tonnes at 8.65 g/mt gold in the Orion Zone; 385,600 tonnes at 16.5 g/mt gold in the Hammer Down Zone; and 122,490 tonnes at 24.62 g/mt gold in the Rumbullion Zone.

On September 6, 1996, **Donner Resources Ltd.** announced that it had completed a major transaction with **Teck Corporation**. Teck agreed to finance exploration work on Donner's 4000-claim Voisey's Bay south property located some 90 kilometres south of the Voisey's Bay deposit. An integrated exploration program with up to 10,000 metres of diamond drilling, with a budget of $4 - 5 million is ongoing. Drill results released to date include values ranging from 1.35% to 1.93% nickel, 0.84% to 1.64% copper and 0.17% - 0.20% cobalt over widths from 0.1 to 0.60 metres.

Mineral Deposit Studies in Northern Labrador

The Voisey's Bay discovery in 1994 was followed by two seasons of intense exploration activity within 150 kilometres of Nain. Although the 1997 season was not as busy, exploration throughout northern Labrador remains at unprecedented levels. The Geological Survey responded in 1996 by initiating a research program to gather information on the numerous new sulphide prospects detected by junior exploration companies. For the past two summers, project geologist Andy Kerr has been working out of Nain. The purpose of this project is twofold. First, it provides documentary information that will be placed in the province's Mineral Occurrence Data System (MODS) and geofiles. Second, through related petrographic and geochemical studies, it should provide a much better understanding of "geological controls" on magmatic sulphide mineralization in Labrador. Both types of information will be of great value in future exploration work.

In the short-term, Andy has examined a large number and variety of sulphide prospects, both in the field and in drill core. He has worked with several junior companies, and has provided them with advice about rock types and textures, and information on the mineralogy and petrology of surface and core samples. The project emphasizes collaboration and cooperation with companies, who gain from the Survey's regional experience, and the Survey can gather more detailed information for research. The involvement and assistance of exploration companies has been invaluable in terms of our project logistics, and we hope that we can continue and expand this approach in years to come.

Andy reported some early findings in a presentation at the 1996 Mines and Energy Open House in two Current Research papers and, most recently, in an article in the Voisey's Bay News. He has repeatedly emphasized that Voisey's Bay-type magmatic sulphide deposits represent small and difficult exploration targets, despite their immense potential value. Although two years of intensive exploration have yet to identify a second "Ovoid", he feels that we have as yet only scratched the surface, and the potential for hidden orebodies, like the Eastern Deeps, remains high. The sulphide prospects that he has looked at are very diverse, and some differ significantly from the type of mineralization seen at Voisey's Bay. These appear to have no genetic link to the rocks in which they are now found, and most likely "migrated" from larger accumulations of massive sulphide elsewhere. Finding the original sources for such zones is a difficult task, but several juniors continued their search for these elusive mother lodes. In other areas, relationships and textures suggest that the sulphides are genetically linked to associated rocks, ranging in composition from mafic to ultramafic. In these cases, it is easier to apply exploration models derived from our knowledge of the Voisey's Bay deposits.

Although much of the attention has been on the Nain area, other parts of Labrador may hold as much promise. An area 100 kilometres south of Voisey's Bay, was described by Andy as *"the closest geological analogue to the local area around the Voisey's Bay deposits"*. Drilling results from the 1997 program in this area by Donner Resources and Teck Corporation are anticipated with much interest. A recent discovery of large gossans containing significant nickel and copper near Harp Lake, by Gallery Resources, may reawaken exploration interest in areas even farther to the south, which so far have seen little attention. Overall, it is clear that the Geological Survey has an important role in understanding magmatic sulphide mineralization, and in promoting and assisting continued exploration for nickel and copper throughout northern Labrador. These will remain high-priority objectives for the Mineral Deposits Section in years to come.

Mineral Exploration Site Inspections

The Mineral Lands Division of the Mines Branch is responsible for the permitting and inspection of mineral exploration activities in the province and for enforcement of the Mineral Regulations Sections 41(1) to 46 as they pertain to mineral exploration.

All companies or individuals who intend to explore for minerals in this province must submit an "Application For Exploration Approval...." form to the Mineral Lands Division. This form outlines the proposed exploration work, methods, contractors, location of work, camp sites, fuel caches, time frames and related information. While permits to occupy camp sites and for establishment of fuel caches are approved and issued by separate divisions of the Department of Government Services and Lands, the application procedure is coordinated and streamlined through the Mineral Lands Division which issues the final exploration approval. Field inspections of mineral exploration activities and work sites are ongoing. In insular Newfoundland particular attention is paid to activities like trenching and diamond drilling which, because they require the transportation and use of mechanized equipment, have the greatest potential for ground disturbance. Mobilization of trenching and

work sites in this part of the province is often done over sensitive terrain so care must be taken to prepare proper trails and to rehabilitate work sites. Inspections of these activities are carried out year-round.

Inspections of mineral exploration activities in Labrador are not conducted on a continuous basis but inspection trips to all company field camps and work sites are carried out at the beginning, middle and end of the field season when most companies are active. This year three visits were made to all exploration camps, one each in July, August and September. These visits were a joint effort of the Departments of Mines and Energy, Government Services and Lands, and Tourism, Culture and Recreation. An environmental monitor from either the Labrador Inuit Association or the Innu Nation was present on all trips.

The exploration activities of most concern in Labrador are the selection of campsites; the setup and operation of base camps; fuel cache locations; and maintenance and cleanup of abandoned camp sites and fuel cache sites. Diamond drilling activities in Labrador are not a major concern because nearly all equipment and supply movements are solely helicopter supported and all equipment and supplies are removed from the base camp when a drill hole is completed. When done properly, the impact of these activities on the environment is minimal.

During the 1997 exploration season there were 12 active camps in Labrador. All were well run and none of the camp operations posed any environmental concerns. There were some minor concerns regarding waste water disposal and proper fuel storage at several camps, and these concerns were addressed on site during the inspection. As a result of the first inspection trip in July, cleanup orders were issued to mineral exploration companies for five abandoned camps used during previous exploration seasons, one drill site, and one stockpile of fuel drums and garbage. At the time of the last inspection in September, six of the sites had been cleaned up and the cleanup of the seventh site was in progress and about 90% complete.

Additionally, six sites used by companies during our first two inspection visits were abandoned and either cleaned up or properly secured for the winter months in anticipation of use during the next exploration season. The only outstanding issue after the last inspection is the ownership and removal of empty fuel drums at two fuel caches, and this is being followed up by an official of the Government Service Centre in Goose Bay.

The general rule for mineral exploration companies operating in this province is that anything brought into the bush must be consumed or brought out and that operations leave the smallest footprint possible on the environment.

The current regime of permitting, inspections and enforcement will continue to encourage adherence to this rule remembering the primary objective of protecting the environment while simultaneously fostering a positive climate for mineral exploration.

1997 Mines and Energy Ministers Conference

The 54th annual Mines and Energy Ministers Conference was held in St. John's, July 6-9, 1997. Over 280 delegates from governments, industry, national associations and universities attended. The conference followed the format of recent years, whereby Open Sessions with representatives from industry, industry associations and universities were followed by Closed Sessions with Ministers and government officials only.

Key issues on the Mines side included regulatory efficiency, geoscientific databases, and knowledge initiatives. The Energy agenda included electricity trade, energy, and environmental issues including climate change and regulatory matters. The conference was preceded by two workshops. One workshop was on regulatory efficiency with presentations by government and industry. The other workshop was entitled Canada's Geoscience Knowledge Base: Maintaining Our Competitive Advantage. Again, presentations were made by industry, government, university and national associations. The conclusions and results of both workshops were presented to the Ministers and industry-government task forces have been appointed to address these important issues.

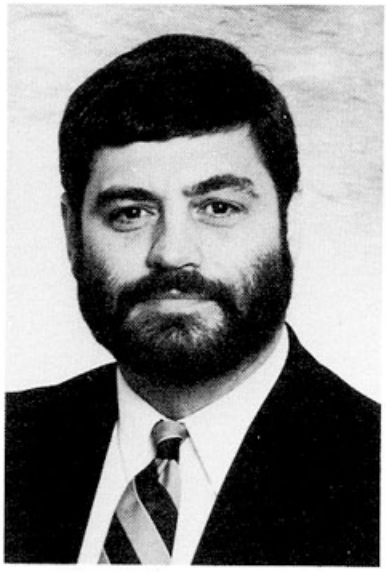
Post-conference field trips included visits to the Eastern Avalon Gold, High-Alumina Belt. The Newfoundland Slate Inc. quarry and research facilities at the Marine Institute and Institute for Marine Dynamics.

A comprehensive guest and social program was enjoyed by all.

New Director for Geological Survey

Effective October 1st, 1997, Mr. R. Frank Blackwood is the new Director of the Geological Survey, Mines Branch, Department of Mines and Energy. The Director is the Chief Provincial Geoscientist and oversees Government's geoscience policy and activities and their application to mineral evaluation and development, and plans and directs the Department's overall geoscientific programs and research activities.

Mr. Blackwood joined the Department in 1976 upon graduation from Memorial University with a M.Sc. in Geology. He spent 11 years as a project geologist working on 'Gander Zone' rocks, and had been Senior Geologist, Geoscientific Publications and Information for 10 years upon his appointment to Director.



Upcoming Events

Mines Branch 21st Annual Review of Activities

November 6, 1997
St. John's, NF

Annual Review of the Mines Branch activities and Open House will be held in conjunction with the CIM District 1 Conference at the Delta Hotel and Convention Centre in St. John's. For more information, please contact:

Norm Mercer
Tel: (709) 729-6193
Fax: (709) 729-3493

CIM District 1 Meeting and Conference

November 6-8, 1997
St. John's, NF

The Newfoundland Branch of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) is the host for the CIM District 1 meeting for 1997. This meeting will include a two-day technical program, Trade Show and Field Trips to areas of interest. The theme for this years conference is "Rediscovering Atlantic Canada". For more information, please contact:

Tony Burgess
Tel: (709) 729-6445
Fax: (709) 729-3493

Buchans Exploration & Mining Conference

November 28-30, 1997
Buchans, NF

The Buchans Exploration and Mining Conference will provide exploration and mining companies an opportunity to present updates on their programs and will offer potential suppliers venues to promote their products and services. For more information, please contact:

Ron Dawe
Tel: (709) 672-4455
Fax: (709) 672-1155

Northwest Mining Association Annual Convention

December 1-5, 1997
Spokane, Washington

The western United States premier international mining exposition will hold its 103rd annual meeting. For more information:

Tel: (509) 624-1158
Fax: (509) 623-1241

Cordilleran Roundup & Exploration Methods '98

January 27-30, 1998
Vancouver, British Columbia

The British Columbia and Yukon Chambers of Mines are joining with the Society of Economic Geologists to produce what will be a world class international meeting. The Conference is attended generally by most of the Vancouver-based junior mining and exploration companies. For more information, please contact:

Jack Patterson
Tel: (604) 681-5328
Fax: (604) 681-2363

Prospectors and Developers Association of Canada 1998 Annual International Convention & Trade Show

March 8-11, 1998
Toronto, Ontario

The annual meeting of the PDAC is unique in the world in its ability to bring together the full range of players in global exploration and development. For more information, please contact:

Rita Plaskett
Tel: (416) 362-1969
Fax: (416) 362-0101

Annual General Meeting of CIM and CIM Tradex

May 3-7, 1998
Montreal, Quebec

1998 is the 100th anniversary of the founding of the CIM and a host of centennial activities is planned to mark the anniversary. CIM '98 is going to be the year's biggest industry event and everyone with a business or professional interest in the various fields of activity should plan to attend. For more information, please contact:

Chantal Murphy
Tel: (514) 939-2710 (ext. 304)
Fax: (514) 939-2714

NEWFOUNDLAND AND LABRADOR

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