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GOVERNMENT OF
NEWFOUNDLAND
AND LABRADOR

Department of
Mines and Energy

Mines Branch

"VOISEY'S BAY - A POSITIVE IMPACT ON OUR PROVINCE"

While prospecting in eastern Labrador in 1993, Albert Chislett and Chris Verbiski of Archean Resources, a small St. John's-based company, chipped samples from an iron-stained rock outcrop. Within fifteen minutes of standing on the outcrop they realized that they had made a potentially significant mineral discovery.



In November 1994, Diamond Fields, the company that funded the prospectors, announced the discovery of a major nickel-copper-cobalt sulphide orebody. On August 21, 1996 Inco purchased Diamond Field Resources owners of the Voisey's Bay project, for C\$4.36 billion in cash and marketable securities. Today, this discovery is estimated to contain 31.7 million tonnes of ore with a grade of 2.83% nickel, 1.68% copper and 0.12% cobalt that is amenable to open-pit mining and a further 109 million tonnes of ore with grades of 0.98%-1.28% nickel, and 0.60%-0.66% copper in underground resources.

On June 11, 2002, almost eight years after discovery, Inco Limited and the Province of Newfoundland and Labrador jointly announced that they had entered into a Statement of Principles on the Voisey's Bay nickel-copper-cobalt deposit in Labrador, and on October 7, 2002, the legal agree-

ments were completed. "It took mutual patience and resolve to finally get a deal that works for everyone, but we did it", said Inco chairman and CEO, Scott Hand.

Project Description

The Voisey's Bay Project will entail a total investment of C\$2.9 billion over the 30-year life of the project, including sustaining capital expenditures. This investment will include C\$710 million on a mine and mill/concentrator processing plant at Voisey's Bay; a C\$180 million research and development program in hydrometallurgical processing, including a C\$85 million demonstration plant at Argentina, and a C\$670-\$800 million nickel processing plant that will produce LME grade electrolytic nickel. Site infrastructure work began in earnest at Voisey's Bay in July 2002 and Inco has committed to spend a total of C\$55 million at this site and at Argentina and St. John's by the end of March 2003.

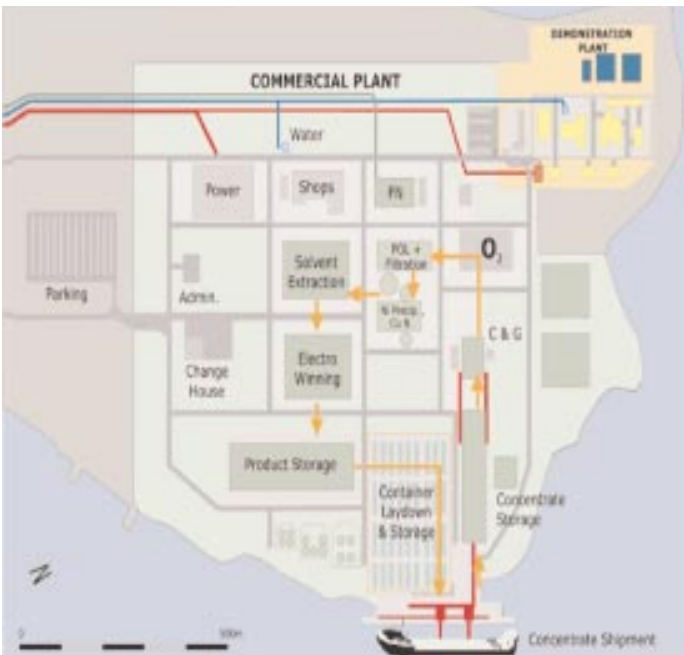
Mine and Mill/Concentrator Processing Plant

Construction of the open-pit mine and a 6000 tonne-per-day mill/concentrator processing plant at Voisey's Bay is scheduled to begin in 2003 and be completed in 2006. This operation will employ approximately 400 people during open-pit operations and will increase to 800 when underground operations commence. The mill/concentrator processing plant will produce two separate concentrates: a copper concentrate that will be sold on the open market and a nickel-copper-cobalt concentrate that will initially be processed at Inco's operations in Ontario and Manitoba and subsequently at the commercial hydrometallurgical processing plant at Argentina.



Hydrometallurgical Research and Development

Inco will undertake a hydrometallurgical process research and development program that will include lab testing, mini pilot testing and the construction and operation of a 1/200th scale demonstration plant at Argentina. Construction of the demonstration plant is scheduled to commence in 2004 and to be in operation in 2006. The plant will employ 200 people during operations and will be used to determine the commercial, technical and economic feasibility of the hydrometallurgical process technology for Voisey's Bay nickel concentrate.



Hydrometallurgical Processing Plant

Inco has committed to constructing a nickel processing facility in the province that is capable of producing annually 110 million lbs of nickel, 5 million lbs of cobalt and 15 million lbs of copper. The form of the processing facility will be determined by the outcome of the Hydrometallurgical Research and Development program. By December 31, 2008, Inco will provide government with its decision to construct either: a) a hydrometallurgical pro-

cessing plant at a capital cost of \$800 million and employing 400 people during operations or, b) a hydrometallurgical nickel matte processing plant or other such plant using proven, state of the art technology to produce a finished nickel product. The capital cost of such a facility is expected to be C\$670 million and once in operation would employ 350 people.

Concentrate Export

During the Research and Development Program and the construction of the processing plant, Inco will be permitted to ship nickel concentrate out of the province to its other Canadian operations. These shipments will not commence until the Demonstration Plant is operational and ready to test nickel concentrate. Inco's continued ability to ship concentrate during this period will be dependent on whether it provides by December 31, 2008, its decision on the form of nickel processing plant it intends to construct and whether it proceeds diligently with engineering and construction such that the facility will be completed by December 31, 2011. In return, Inco guarantees that prior to cessation to mining operations at Voisey's Bay, it will replace the concentrate shipped out of the province in its entirety.

Inco Innovation Centre

An Inco innovation Centre will be developed and operated in conjunction with Memorial University. The Centre will focus on education and research in mineral exploration and metallurgical mining techniques. Fifty to sixty students annually will be engaged in bachelors, masters and doctorate level programs which will provide world-class education, research and training related to the mining industry. Work will commence on the Centre in 2002 with target completion in 2004. Inco will spend \$10 million on the facility and provide an annual endowment of \$1 million over ten years.

For all the facts on the Voisey's Bay Project, visit government's visit web site at www.gov.nf.ca.voiseys/

Underground Exploration

As part of the Voisey's Bay project, an underground exploration program will be used to confirm underground mineable reserves and to develop a mining plan. The program will be carried out in two-phases at a total cost of C\$95 million and approximately 85 people will be employed during each phase. The initial phase is an advanced surface program that began in July 2002. This phase is expected to be completed in 2006 at an estimated cost of C\$20 million. Subsequent underground exploration will be scheduled in time to ensure that sufficient ore is available to sustain full operation of the mill/concentrator processing plant during the transition from the open-pit operations to full underground mining operations.

Underground Mine Development

The long-term plan for the project, subject to completion of a successful underground exploration program, is the development of the underground resources and expansion of the mill/concentrator processing plant. This development is estimated to cost C\$750 million and will employ 800 people at full production.

Industrial and Employment Benefits

An Industrial and Employment Benefits Agreement has been completed which captures Inco's commitments to provide full and fair opportunity to the province's labour force for employment opportunities and to local businesses for the supply of goods and services. The Agreement contains specific policies that address first consideration for procurement from suppliers in the Province and for the training and employment of residents. Training initiatives will include pre-employment and employment training programs utilizing in-house and external training organizations throughout the Province. Specific programs will be established for training at the Voisey's Bay and Argentia sites. Maximum use will be made of existing provincial education facilities near the Project sites.

Aboriginal Participation

This project will provide an unprecedented opportunity for the Innu Nation and the Labrador Inuit Association to participate in a major resource development in Northern Labrador. Inco has entered into Impacts and Benefits Agreements with both aboriginal groups that will provide financial compensation and specific industrial, employment and training opportunities for aboriginal groups residing adjacent to the mine and mill/concentrator processing plant.

Aubrey Hearn, Tony Burgess, Charles Bown

Dimension-Stone Working Committee Formed

The emerging dimension-stone industry of Newfoundland and Labrador has considerable growth potential, but faces several challenges. In February 2002, the Dimension-Stone Working Group Committee was formed to help the industry move forward. The Committee consists of representatives from the Department of Mines and Energy, the Department of Industry, Trade and Rural Development, the Atlantic Canada Opportunities Agency, the Regional Economic Development Boards, and, representing the industry, the Chamber of Mineral Resources. Issues such as investment, training, infrastructure and marketing are being addressed.

Llewellyn Higdon

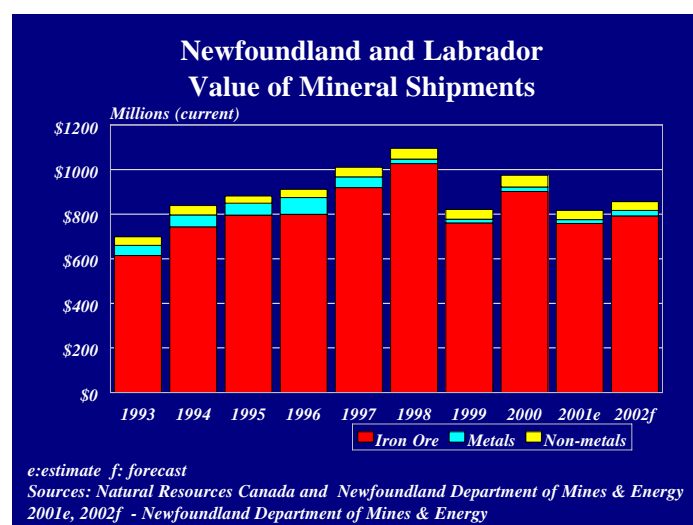
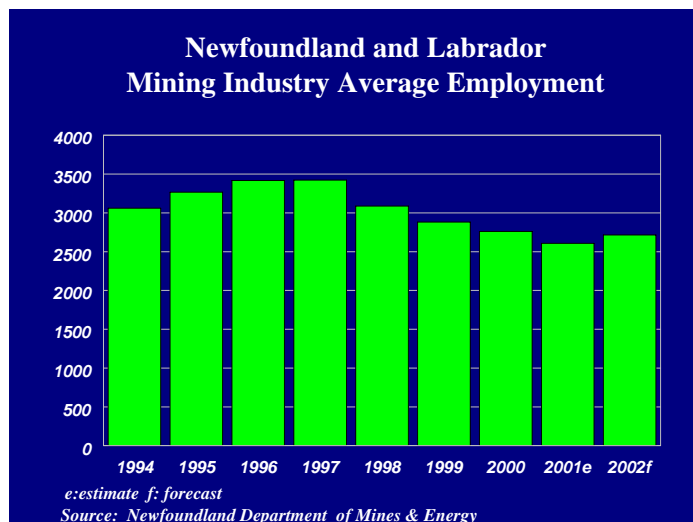
Industry Update

The total value of mineral shipments in the province is forecast to increase from an estimated \$817 million in 2001 to \$856 million in 2002. This is due mainly to an increase in the volume of iron ore.

The mining sector is forecasted to employ 2700 people in 2002, compared with approximately 2600 in 2001.

More detailed information on the mineral industry is available in *Mining Overview*, available from the Mineral Development Division, or visit the web site: <http://www.gov.nf.ca/mines&en/>.

Tony Burgess, Llewellyn Higdon



Current Research

Current Research is an annual publication that highlights the state-of-the-art knowledge on the geological resources of the province, and it captures the main research programs of the Geological Survey. It presents, in a timely fashion, reviews of contemporary projects undertaken by Survey geologists. Some of the published papers summarize research carried out over several years, that highlight the salient features of the geological evolution of a part of the province, that describe the characteristics of a particular mineral belt or commodity, or that capture some singular aspect of development in the Survey-provided knowledge base.

These reports are covered in the following groupings, mostly by discipline: Terrain Sciences; Geochemistry/Geophysics; Mineral Deposits; Regional Geology - Labrador; Regional Geology - Newfoundland; and General Subjects. The papers presented each year reflect the eclectic range but economically related Survey projects, and the often inclusion of reports by Memorial University, the Geological Survey of Canada, industry, and other

mainland and international universities, reaffirms the Survey's policy of collaborating, where possible, with other geoscience providers and stakeholders. These and other collaborations greatly contribute to the provincial knowledge base and help maximize the return on the variously sourced geoscience funding available for Newfoundland and Labrador.

Current Research is published each March in time for the Prospectors and Developers Association Meeting in Toronto, Ontario. Since 2000, papers in *Current Research* are available via the Survey's website (www.geosurv.gov.nf.ca); each volume is also available on CD. The department hopes to have all earlier manuscripts eventually put on the web.

Chris Pereira

Prospectors and Industry Assistance

The Junior Company Exploration Assistance Program (JCEAP) has funded local junior exploration companies such as Altius Resources which now has a major gold play in the Botwood basin that has attracted the attention of Barrick Gold (a world-class gold producer).

Cornerstone Resources, another local junior exploration company has also received JCEAP funding to do exploration work on their sediment-hosted copper (SSC) and volcanic redbed copper (VRC) properties on the Bonavista Peninsula. These properties have attracted the attention of Noranda Inc.

The Hammerdown gold property near King's Point was funded through JCEAP while being explored by Major General Resources of B.C. This property has since been sold to Richmond Mines and is now the only producing gold mine in the province.

The program also supports many local prospectors who have successfully optioned their properties to junior exploration companies, both on the Island and in Labrador. Much of this activity has created a staking rush in many parts of the province, particularly in central Newfoundland. A recent option agreement has led to a significant gold play near Badger - the "Golden Promise".

In light of this activity and the fact that Barrick Gold have entered the province, government are seeing many non-local junior exploration companies coming to the province, some who have conducted exploration work in the past and others who are coming to the province for the first time.

The government also continues to support the local dimension stone industry and this has contributed to the establishment of a world-class Granite Processing Plant at Argentia as well as development and expansion of the dimension stone plant at Jumper's Brook in central Newfoundland.

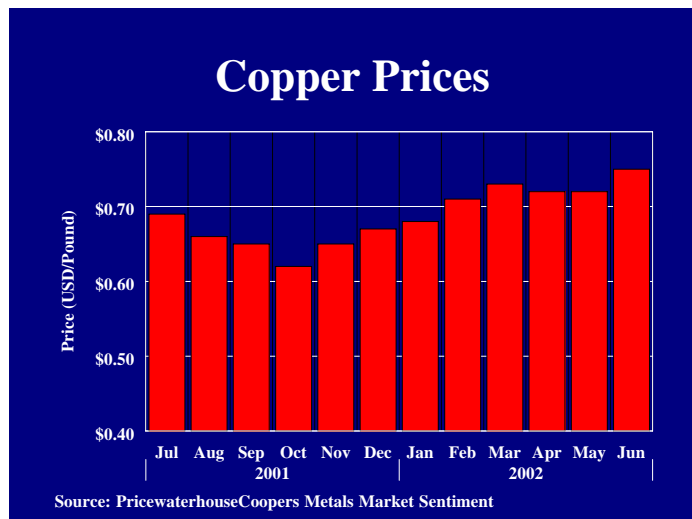
Clearly, the exploration incentive program has been a significant catalyst to the mining and mineral exploration activity that is witnessed here in the province. This goes to show how commit-

ted and confident the government is in the mining/mineral exploration industry of Newfoundland and Labrador.

Spencer Vatcher

Copper Profile

Copper has remained a major base metal, ranking third after iron and aluminum in terms of quantities consumed. Its properties include softness, resistance to erosion, high ductility, malleability, and thermal and electrical conductivity.



The demand for copper is largely concentrated in four main areas – construction, capital equipment, transportation, and consumer durables. Electrical uses for copper such as building wiring, telecommunications, and electrical products, account for about three-quarters of total copper use. In 2001, a significant slowdown in industrial activity caused a 3.4% copper use decline in major copper-using countries. Despite this, refined copper use in Canada is expected to increase in 2002. Growing demand for power cable and building wire coming from the oil and gas and pulp and paper industries, and strong demand for use in new housing construction, contribute to this expected increase in copper use.

Natural Resources Canada forecasts a downward trend in Canadian mine production over the next few years as no new mines are expected to develop and existing mine production is expected to decline given market conditions.

During the past several decades, real copper prices fell and were highly volatile. The last peak was seen in 1995 when prices were US\$1.38/lb. Since then prices have declined significantly. Much of this decline was due to a slowing economy, increased inventories, and the 1997 Asian economic crises. Price fluctuations in copper are caused by a number of factors including international economic and political conditions, the relative exchange rate of the US dollar with other currencies, inflation, global and regional levels of supply and demand, and costs of metals or metal substitutes and the metal inventory levels maintained by

producers and others. Fluctuations will continue to occur, thus making forecasting difficult. As the world economy and industrial demand recover, however, the price of copper can be expected to rise to higher levels than in the past. PricewaterhouseCoopers expects the average price of copper for the third quarter of 2002 to the second quarter of 2003 to average about US\$.81/lb and average US\$.88/lb over the longer term.

Sources: U.S. Geological Survey, *Copper, 2001*; Natural Resources Canada, *Mineral and Metal Commodity Reviews, 2001*; PricewaterhouseCoopers, *Metals Market Sentiment Q2 02, July 2002*; Aur Resources Inc., *2001 Annual Report; Mining Engineering, July 2002*.

Amanda Lewis

“Blueberry Ice” - Amethyst in The New- Wes-Valley Area, Northeast Newfoundland

“Blueberry Ice” is the name given by prospector Joanne Stoodley, the zoned, amethyst-bearing quartz crystals and banded quartz veins from several impressive veins that lie within her claim block, located about 8 km west of New-Wes-Valley, northern Bonavista Bay.

Amethyst is purple quartz. It has been variously proposed that trace amounts of iron oxide and/or manganese oxide and/or radiation, or hydrocarbons in the quartz, either as part of the crystal structure or, as with the hydrocarbons, as an impurity, result in the formation of amethyst. Deer, Howie and Zussman indicate that the presence of manganese or possibly hematite (Fe_2O_3) results in pink (rose) quartz. However, the commonly accepted explanation for the natural formation of amethyst is the presence of iron. The presence of trace amounts of rutile needles (TiO_2) in rose quartz gives it a bluish tinge.

Quartz veins and pegmatites have been known for many years in the Bonavista North area. In 1967, George Gale reported on government-sponsored pegmatite surveys carried out by J.M. Tater and subsequently by Gale himself. Part of this work included the granitic pegmatites in the New-Wes-Valley area. There was no mention of amethyst-bearing quartz veins in this report.

Many local people have noted the presence of veins containing purple crystals in the Hare Bay to New-Wes-Valley area but until 1974 there were no published reports on them. In 1974, D.F. Strong and others included a brief mention of reports of possible fluor spar-bearing veins on the north side of Trinity Bay, Bonavista Bay. Their interpretation of the purple crystals as fluor spar is probably erroneous and the crystals are more likely to be amethyst. W.L. Dickson and R.F. Blackwood reported that zoned quartz crystals occur in veins 8 km west of New-Wes-Valley and in the Trinity Bay area. These veins are composed of terminated crystals and contained clear, smoky and amethyst zones within each crystal. Dickson suggested that the crystals could be used for jewellery. The New-Wes-Valley area was later mapped by N.R. Jayasinghe who showed that the area contain-

ing the veins is shown to be underlain by the Business Cove Granite, a biotite-muscovite, (locally garnetiferous), foliated granite that had intruded the Hare Bay Gneiss.

No further work was carried out until the mid-nineties when prospector William Dancy discovered several veins containing zoned quartz in the area indicated by Dickson and several claims were recorded in 1997. Subsequently, prospector Joanne Stoodley took over these claims and staked several adjacent claims. Most exploration work in the area and excavation of the veins has been carried out by Joanne. Her discussions with local people resulted in other veins being located in foliated biotite granite along the shoreline in the Pool’s Island area of New-Wes-Valley.

In July 2002, a visit to the claims showed that amethyst-bearing quartz veins outcrop in at least four areas. Most work has been carried out on three veins east and northeast of Northwest Pond. The veins occur within a high-grade metamorphic zone containing psammitic biotite gneiss of the Hare Bay Gneiss and foliated biotite-muscovite granite of the Business Cove Granite. Most veins show symmetrical growth from the walls but in a few places some later infusions of quartz lie to one side of the main vein. The veins are nearly vertical and trend in general east-northeast direction. Each vein has its own unique characteristics and the three main veins have been named the Hicks, Joanne’s Bluff and Fox Hole veins and are described below.

The Hicks Vein is located 700 m east of Northwest Pond and about 100 m east of the old Valleyfield access road. The exposed vein is vertical, 15 to 30 cm wide and about 10 m long. The vein has cut moderately foliated, K-feldspar porphyritic, muscovite-biotite granite and has been injected parallel to the foliation in the granite. The vein contains symmetrical, white and purple layers of quartz and some pods containing terminated zoned crys-



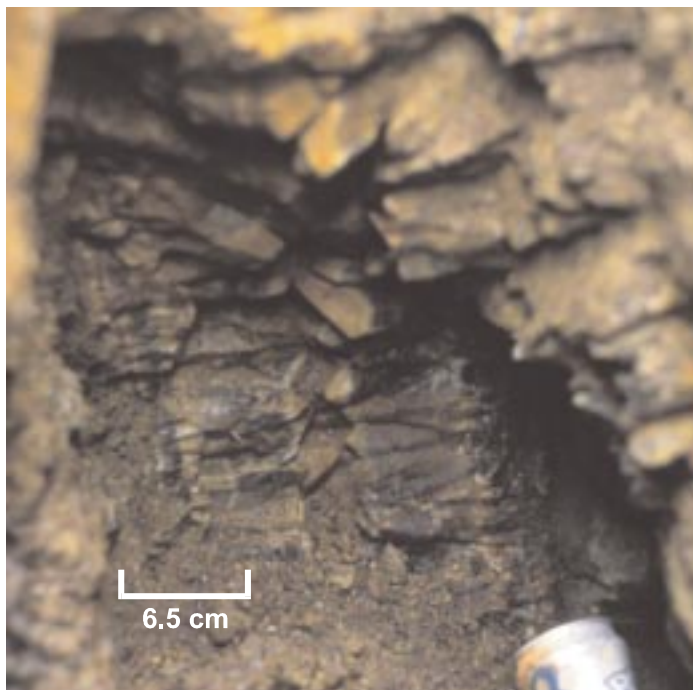
tals. The terminations of the crystals are faceted and taper with irregular sides toward the walls. The loose crystals are 2 to 3 cm long and up to 1 cm in diameter. Multiple, thin layers of white, clear and purple quartz, 1 to 6 mm thick, reflect the growth of the crystals. The caps are composed of transparent smoky (brown) quartz. The pods contain short, 1 cm diameter crystals that form encrustations within the vein. Nice crystals and encrustations have been obtained from this vein.

The Joanne's Bluff vein outcrops about 300 m northeast of Northwest Pond in a clearing in the forest. The exposed vein is a composite of one main vein, 15 m long and about 25 cm thick, and a 20-cm-thick offshoot at its southern end. The vein is steeply dipping and cuts across the foliation in the host granite at an acute angle. The main vein contains symmetrical, 2- to 5-mm-thick, parallel bands of purple, white and clear quartz crystals about 4 mm in diameter, and also a zone of coarser, intergrown,



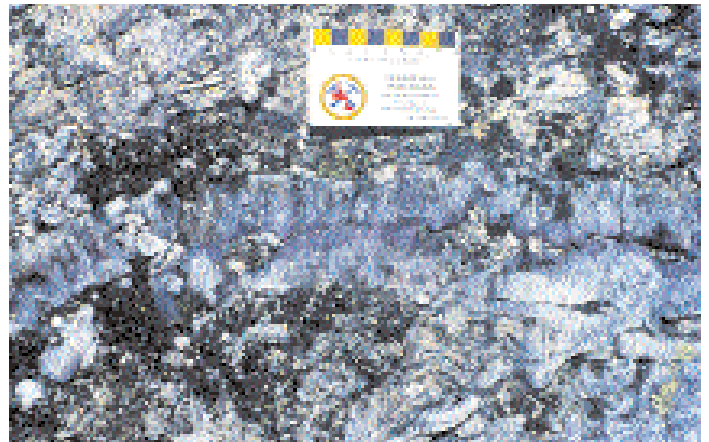
purple and white quartz crystals. The offshoot is composed of symmetrical bands, 2 mm to 1.5 cm thick, of alternating, coarse purple and white quartz crystals. The coarsest band is composed of amethyst. Earlier massive, thin (< 1 cm thick), white, fine-grained quartz veins are cut by the thick coloured veins. Zoned quartz crystals have been recovered from the Joanne's Bluff vein but the main product is blocks of attractively banded quartz.

The Fox Hole vein is located about 400 m north of the turnoff to New-Wes-Valley on the old gravel road, 600 m northwest of Northwest Pond. The vein is 30 to 40 cm wide, is exposed over



about 4 m, and has been excavated to a depth of about 1.5 m. This vein contains spectacular, very coarse quartz crystals and cuts across a 30-cm-thick vein of massive bull quartz. Both veins have cut foliated granite.

The Fox Hole vein contains very large terminated and banded quartz crystals and individual crystals to 10 cm long and up to 4 cm in diameter tapering to about 5 mm adjacent to the walls. The coarse crystals contain several parallel layers, up to 2 cm thick; each layer is separated by a laminae of milky quartz. The terminations of the crystals are composed of multiple laminae of alternating amethyst and milky quartz. Some of the crystals are capped by an earthy-brown layer of fine-grained ferruginous quartz. There are also small vuggy veins parallel to the main vein and these contain white quartz crystals 5 mm in diameter. Joanne has extracted several hundred individual crystals from the vein. These spectacular crystals can be used as mineral specimens or could be cut and made into jewellery.



Another, as yet unnamed, vein outcrops about 150 m northeast of Northwest Pond and about 250 west of the Joanne's Bluff vein has formed along the contact between weakly foliated, biotite-muscovite granite and a large inclusion of psammitic biotite gneiss. The exposed vein is about 5 m long and up to 30 cm wide. The vein is a composite of thin, vertical layers of zoned quartz. Some of the layers are only 2 mm thick. Some of the quartz occurs as single crystals and the other parts of the vein are layers of colour-banded quartz. A small branch from this vein contains up to 7-cm-long, terminated, zoned quartz crystals composed of 2-mm-thick white, clear and purple laminae along with thicker layers in the coarser quartz crystals.

The veins and crystals have potential for use as ornamental stone, mineral specimens and jewellery. Samples collected by Dickson in 1972 were tumbled to remove the irregular, angular faces of the single crystals and this produced elongate pear-shaped pendant. The main use of the material collected by Joanne is as mineral specimens or small ornamental stones. Joanne is hoping to use machinery to expose more of the veins as she is approaching the limit of what can be extracted or exposed by hand. Joanne Stoodley can be contacted by email at j.stoodley@roadrunner.nf.net.

Lawson Dickson

Claim Staking Online

In mid 2001, the Department of Mines and Energy in partnership with X-Wave commenced a project to develop a new mineral rights administration system. The new system has been named MIRIAD, the acronym for Mineral Rights Administration and an adaption of the Greek word “myriad” meaning having innumerable aspects or elements. MIRIAD is scheduled to be completed by July 2003 and will consist of three major applications, these include: a mineral rights maintenance module (desktop applications), an online mineral rights staking module (public web-based applications) and an online mineral rights inquiry module (public web-based applications). Major efforts are now focused on developing processes and procedures for client registration, e-commerce and all the GIS aspects of the project.

Jim Hinchey

Is A “Prospectors Licence” Required to Stake Claims in Newfoundland and Labrador? -“No”

A natural person, 19 years of age or more, and a corporation have the right to obtain map-staked licences to lands open for staking. However, a person who is ordinarily resident (for 6 months) in the province may apply to the Minister of Mines and Energy for designation as a “Genuine Prospector”.

A person who applies for designation as a “Genuine Prospector” must provide clear evidence that she is seriously intending to undertake mineral prospecting activities in the future and either is qualified as a mineral prospector, having completed a recognized mineral prospecting training program or has undertaken mineral prospecting activities for at least 12 months before making the application.

A person designated as a “Genuine Prospector” may stake 30 claims in no more than 5 map staked licences each calendar year without payment of the full \$60.00/claim staking fees; only \$10.00/claim is required. If a “Genuine Prospector” stakes more than 30 claims in a calendar year, the full staking fees for each claim above 30 is required.

A designation as a “Genuine Prospector” is valid for a period of 5 years and is renewable. The designation may be cancelled by the Minister of Mines and Energy on notice to the person.

Jim Hinchey

Prospectors Corner

The prospecting community of Newfoundland and Labrador consists of individuals with very diverse backgrounds. There are several father and son teams that are active, one of these being Raymond James (Jim) Osmond and his son Mark Osmond. Jim was born at Burton’s Cove, near Hampden in White Bay, in 1936. He grew up on the Baie Verte Peninsula in the community of Westport. Jim has pursued a variety of occupations including fishing, logging, surveying for road construction and carpentry. In 1969, Jim moved his family to Baie Verte where he started a

job with the asbestos mine, Advocate Mines Ltd. which he kept for 23 years. Most of his work with Advocate was as a senior tester for quality control.

Jim first became interested in geology and prospecting in the late 1980s while another of his sons, Richard, studied geology and geophysics at Memorial University. At this point, Jim’s life as a prospector began by occasionally prospecting with Richard in the Baie Verte area. This interest in the field grew, and in 1997 he became more active prospecting with another son Mark in several areas on the Baie Verte Peninsula.



Mark became interested in prospecting while working at Voisey’s Bay and South Voisey’s Bay Projects in Labrador from 1996 to 1998. Mark received his genuine prospecting status from the Department of Mines and Energy in 1997, while his father Jim received his designation in 2002.



In late summer of 2001, Mark and his father discovered a very interesting new, high-grade, copper-gold-silver prospect on the southwestern part of the Baie Verte Peninsula along a woods road and this prospect, they named the Black Ridge Prospect. They both are currently working on this exciting new property and hope to option it in the very near future. Several companies have expressed interest in the property.

Mark, also has been active in several other areas of the province with other prospectors, most notably in the Manuels, Conception

Bay area on an epithermal gold-silver property and in the Springdale - Kings Point area on a lode gold prospect. Both of these properties have attracted exploration company interest.

But, both Mark and his father James Osmond are quick to point out that they firmly believe that their home turf - "the Baie Verte Peninsula"- still holds great potential for future discoveries.

Norm Mercer

"Nickel and Sense"

What does a fork, a golf club, a cell phone and a credit card have in common? They are all products improved by nickel. Nickel is an essential component of stainless steel, one of the most durable and versatile materials used in industry and everyday living. It is used to coat golf club shafts, to make rechargeable batteries used in cellular phones and to create the holograms on credit cards.

Pure nickel is widely used for plating various products including household appliances such as pots, pans, and sinks. The plating acts to protect these appliances against rust and high and low temperatures.

Nickel is a naturally occurring metal that can be recycled and re-used without reduction in quality and provides numerous societal and environmental advantages.

Food for thought:

The Canadian dime and quarter are made of pure nickel. Ironically, the five-cent piece is made of an alloy of copper and nickel.

Nicole Hammond, Amanda Lewis

Exploration Update

In the first nine months of 2002, 29 683 claims have been staked - in contrast to the 15 665 staked for the whole of 2001. Exploration expenditures for 2001 were C\$28.4 million. The increased staking activity, recent joint venture agreements, and entry of new companies to the province, is expected to increase the expenditure forecast for 2002 from C\$13 million to approximately C\$25 million. Much of the staking activity and interest is in gold, particularly in the Botwood Basin of north-central Newfoundland.

NEWFOUNDLAND

Gold

On recognizing a potential "Carlin-type" model for gold in north-central Newfoundland, Altius Minerals Corporation staked 887 claims along the east side of the Botwood Basin in October 2001, and on December 12, 2001, announced an earn-in joint venture with Barrick Gold Corporation.

In January 2002, Cornerstone Resources Inc. optioned the 108-claim, copper-gold Colchester property near Springdale, north-

central Newfoundland, and Candor Ventures Corp. entered an earn-in agreement with Phelps Dodge Corporation of Canada, Ltd. on the 144-claim copper-gold Holyrood property on the Avalon Peninsula.

In February 2002, Rubicon Minerals Corporation acquired options on 500 claims near Gander and 740 claims near Botwood in northeastern Newfoundland. Staking continued from March to May at a heated pace, and only slightly less so from June into July, in a belt extending from Gander Bay in the north to Bay d'Espoir in the south.

The most active stakers include: Rubicon Minerals Corporation (4499 claims), Altius Minerals Corporation (1516 claims), Kevin Keats and associates (734 claims; optioned to Candente Resource Corp.), Alexander J. Turpin (704 claims), South Coast Ventures Inc. (581 claims; optioned to Grayd Resource Corporation), Moydow Mines International Inc. (570 claims), Vulcan Minerals Inc. (490 claims), Quest Inc. and associates (485 claims), Mackenzie Jaims (407 claims), CanAlaska Ventures Ltd. (400 claims), Perry English (395 claims), Black Bart Prospecting Inc. and associates (344 claims) and VVC Exploration Corp. (339 claims).

Rubicon Minerals Corporation's holdings also include land packages at Selbys Pond, east of Buchans (which Rubicon announced on July 23, 2002, contains the Golden Promise vein system and boulder-train containing abundant visible gold and assays from float of up to 353.4 g/mt), and in the northeast Avalon peninsula, and Turpin's claims include 355 in the central Avalon Peninsula.

New companies entering the central Newfoundland gold play include: Candente, Grayd, Moydow, Vulcan, Jaims, CanAlaska and VVC, along with Columbia Metals Ltd. (199 claims) Spruce Ridge Resources Ltd. (183 claims), Sparton Resources Inc. (141 claims), Linear Resources Inc. (132 claims), Copper Hill Resources Inc. (108 claims), West African Venture Exchange Corp. (41 claims), and Buchans River Ltd. (40 claims).

In April 2002, Candente Resource Corp. optioned the Linear gold property near Glenwood (an area of visible gold showings and assays from float of up to 1744 g/mt) from the KriASK Syndicate, and in June 2002 staked a further 612 claims.

Also in April 2002, Cornerstone Resources Inc. acquired the 356-claim, True Grit - Golden Grit property near Bay d'Espoir and Altius Minerals Corporation and Barrick Gold Corporation expanded their agreement to include the 158-claim Burnt Lake property near Gander Bay.

On May 22, 2002, Candente Resource Corp. optioned the Keats and associates' ground of 734 claims comprising ten properties. In June 2002, Kermode Resources Ltd. announced an earn-in agreement with South Coast Ventures Inc. on the 92-claim Jacksons Arm property at White Bay and Altius Minerals Corporation announced an earn-in agreement with CanAlaska Ventures Ltd. on the Paradise Lake, Rolling Pond and Chiouk Brook properties and optioned the Twilight property in the Botwood Basin.

Updates of gold exploration programs have been reported by Cornerstone Resources Inc. for its Island Pond and Paul's Pond (both optioned to Candente in July 2002) and True Grit - Golden Grit properties and by Altius Minerals Corporation and partner Sudbury Contact Mines on the Moosehead project. In July 2002, Grayd Resource Corporation optioned the 261-claim Dorset property, on the Baie Verte Peninsula, from South Coast Ventures Inc., and Linear Resources Inc. optioned a 49-claim property near Gander from Altius Minerals Corporation.

In addition, gold exploration has attracted Alexander J. Turpin to the Cape Ray area in southwestern Newfoundland (400 claims), Kevin D. Keats to Victoria Lake (166 claims), Deep Reach Exploration Inc. to Taylor's Brook in the White Bay area (140 claims) and GeoVector Management Inc. to Hickeys Pond on the Burin Peninsula (134 claims), and Richmond Mines have staked 87 claims at Nugget Pond on the Baie Verte Peninsula.

In August 2002, VVC Exploration Corp. increased its presence in the Botwood Basin to 420 claims with an 82-claim option from Black Bart Prospecting Inc. and Gary E. Lewis, and Cornerstone Resources Inc. announced new projects at Cape Ray (432 claims) and Green Bay (301 claims). Also near Cape Ray, GlobeNet Resources Inc. took out an option on 46 claims from South Coast Ventures Inc. and Altius Minerals Corporation staked 48 claims.

Rubicon Minerals Corporation reported gold-bearing quartz veins at the Golden Promise property in August, 2002, and in September, 2002, staked a further 773 claims between Badger and Grand Falls in central Newfoundland.

Staking for gold in September, 2002, included Columbia Metals Corporation Limited (102 claims) and GeoVector Management Inc. (83 claims) in north-central Newfoundland, Linear Resources Inc. (66 claims) near Goobies, eastern Newfoundland, Allan E.T. Keats (65 claims) near Barren Lake, central Newfoundland, and Altius Minerals Corporation (51 claims) at Merasheen Island, Placentia Bay.

Base Metals

On December 6, 2001, base-metal exploration was given a boost when Aur Resources Inc. announced agreements to purchase the Duck Pond property from Thundermin Resources Inc. and Queenston Mining Inc.. The project was given environmental approval on January 31, 2002, and the sale was completed on March 27, 2002. Proven and probable resources consist of 5.2 million tonnes grading 5.8% zinc, 3.3% copper, 0.9% lead, 59 g/mt silver and 0.8 g/mt gold.

In 2001, in eastern Newfoundland, Noranda Inc., (as operator of a joint venture with Cornerstone Resources Inc. on the Red Cliff property), and Cornerstone Resources Inc. (at its Princess group of properties) conducted exploration programs for volcanic red-bed and stratiform copper mineralization. Diamond drilling resumed in August, 2002.

Interest in these areas has prompted other companies (Celtic Minerals Ltd. and Altius Minerals Corporation) to extend the

search for copper and related silver, iron oxide, uranium, gold and rare earth mineralization, in similar rocks, southwestward to the south coast. Updates have been released by Cornerstone Resources Inc. for South Princess, by Altius Minerals Corporation for Dunns Mountain and by Celtic Minerals Ltd. at Bay L 'Argent.

In November 2001, Altius Minerals Corporation announced an agreement to acquire Rambler North from former copper producer Ming Minerals Inc. and in February 2002, John Lee Carroll staked 347 claims in the surrounding area.

In the Buchans-Roberts Arm belt in west-central Newfoundland base-metal exploration is led by: Buchans River Ltd., Celtic Minerals Ltd. Royal Roads Corp. and Mishibishu Gold Corp. around Red Indian Lake; Commander Resources Ltd. on its Green Bay property; and Altius Minerals Corporation and Joint Venture partner Inmet Mining Corporation at Pilley's Island. In February 2002, Buchans River Ltd. announced stock exchange approval to consolidate their Buchans-area holdings with those of related companies GT Exploration Ltd. and Newfoundland Mining & Exploration Ltd..

In April 2002, Kiex Consulting Limited staked 1474 claims having zinc and gold potential on the Great Northern Peninsula and Altius Minerals Corporation added 423 claims to its 150-claim Rocky Brook uranium project, and in May and June 2002, Gallery Resources Limited added 156 claims to its base-metal Katie prospect.

In late May 2002, Altius Minerals Corporation reported on its Pilley's Island project and in June 2002, it announced an earn-in joint venture with Cameco Corporation, the world's largest uranium supplier, for Rocky Brook. Also in June 2002, North Range Adventures Ltd. staked 106 claims having copper-gold potential near Carbonear on the Avalon Peninsula.

In July 2002, South Coast Ventures Inc. staked 61 claims near Grey River on the south coast, Celtic Minerals Ltd. staked 85 claims immediately west of the Rambler Mines on the Baie Verte Peninsula, Skygold Ventures Ltd. announced an earn-in agreement on Island Arc Exploration Inc.'s Long Lake property, which is under option from Noranda Inc., and Leonard Muise and others increased the rare-earth property near Stephenville to 160 claims.

Recent updates of gold exploration programs have been reported by Cornerstone Resources Inc. for its Island Pond and Paul's Pond properties and by Altius Minerals Corporation and partner Sudbury Contact Mines on the Moosehead project.

Industrial Minerals

Vulcan Minerals Ltd. staked 255 claims for salt near Flat Bay in western Newfoundland.

Bulk samples are being collected by International Granite Corporation at Mount Peyton (gabbro) and by Midatlantic Minerals Inc. at Aguathuna on the Port au Port Peninsula (limestone and dolomite).

LABRADOR

In Labrador, nickel, platinum-palladium and iron ore are the primary targets.

In September 2001, Voisey's Bay Nickel Company Ltd. closed its exploration camp at Voisey's Bay, where resources (all categories) consist of 141 million tonnes grading 1.6% nickel and 0.61 % copper. On June 11, 2002, the Government of Newfoundland and Labrador and Inco Limited signed a "Statement of Principles" to develop the Voisey's Bay nickel-copper-cobalt deposits. An advanced surface exploration program, diamond drilling and ground geophysics, at a cost of C\$20 million, started in 2002 and is scheduled to be completed in 2006. An underground exploration program at a cost of C\$75 million is scheduled to commence on a "just-in-time" basis; now estimated to be 2014. The underground exploration program will include the sinking of exploration shafts.

On January 15, 2002, Falconbridge Limited announced a joint venture with Donner Minerals Ltd. to explore for nickel throughout much of northern Labrador. This is in addition to a September 2001 agreement to earn 50% of the South Voisey's package from a consortium headed by Donner Minerals Ltd's majority-owned subsidiary, SVB Nickel Company Ltd., by spending C\$23 million on exploration over a five year period.

Nickel is also being targeted, in central Labrador, by Ram Exploration Ltd. (800 claims) and, in northern Labrador, by Hudson Bay Exploration and Development Company Ltd. (541 claims) and Celtic Minerals Ltd. (338 claims).

Falconbridge Limited completed exploration programs for Donner Minerals Ltd. at South Voisey's and for Vulcan Minerals Inc. at Tasisuak Lake but dropped its 3440 claims having platinum-palladium potential on the Kyfanan Lake intrusion in southeast Labrador. Ground having platinum-palladium potential has been optioned by Cornerstone Resources Inc. in the Kingurutik area of northern Labrador and by BHP Billiton at Gabbro Lake in western Labrador. The latter now forms part of a 2181-claim joint venture with Gallery Resources Limited, announced July 8, 2002, over which an airborne geophysical survey has been conducted.

Lewis Murphy staked 60 claims for uranium at Otter Lake in June 2002, and in July 2002, Anglo American Exploration (Canada) Inc. has staked 128 claims near the Pinware River.

In western Labrador, the Iron Ore Company of Canada continued an exploration program on the 4212 claims staked in 2000 and in early April 2002, Robert Martin staked 106 claims with iron ore potential at Elross Lake. Ressources Majescor Inc. are exploring for diamonds on 152 claims in the easternmost Superior province.

In central Labrador, Torngait Ujaganniavingit Corporation staked 80 claims from April to June, 2002, and Tundra Properties Inc. staked 60 claims in September, 2002, with dimension-stone potential.

Ges Nunn

Geological Survey - Field Season

The Geological Survey's field program for 2002 consisted of nine projects.

Regional Geological Mapping

Ian Knight conducted 1:50 000-scale bedrock geological mapping in the west Newfoundland carbonate belt (NTS areas 12B/9 and 16), southwest of Corner Brook. This work supports exploration for carbonate-hosted zinc deposits and marble, and is important to oil and gas exploration. The project was part of the Bridges NATMAP project being conducted jointly with the Geological Survey of Canada, which also involved federally funded mapping west of Corner Brook by Memorial University and the University of Alberta.

Brian O'Brien began a new 1:50 000-scale mapping project in the Roberts Arm Belt, concentrating on the structurally complex part of the belt that extends south towards the Gullbridge deposit. In 2002, only the northern part of the area was mapped but work is expected to continue next year and will provide essential structural and stratigraphic information for base-metal exploration in this highly prospective belt.

Sean O'Brien did a stratigraphic reconnaissance project with Dr. Art King of Memorial University on the Bonavista Peninsula. The project is an extension of 1:50 000-scale mapping begun in the 1980s in Bonavista Bay and responds to industry interest in the volcanic redbed copper mineralization in the area. More extensive work is proposed for the 2003 field season as the first part of the mapping of the peninsula at 1:50 000 scale.

Bruce Ryan and Don James carried out helicopter reconnaissance of the east-west corridor extending across northern Labrador from Nain to the Québec border. The geology is similar to that just to the south, which hosts the Voisey's Bay Ni-Cu-Co deposit. The full mapping project will be done in 2003 and subsequent years, and will be at scales of 1:50 000 and 1:100 000.

Mineral Deposits Studies

Lawson Dickson did an assessment of the dimension-stone potential of limestone and marble in the Canada Bay area, and also examined the chemical and metallurgical qualities of the Ordovician limestone. In the Port au Choix, Goose Arm and Port au Port areas, he did studies of the Ordovician dolostone resources and, farther south, examined the industrial mineral and base-metal potential of Carboniferous rocks near Cape Anguille.

Paul Moore, a new project geologist in the Survey's Mineral Deposits Section, began a study of mineralization in the Tally Pond volcanic rocks, southeast of Red Indian Lake. The study is documenting the mineralization of these rocks in terms of the stratigraphy, chemistry, structure, volcanology and tectonic evolution of the host rocks, which contain Aur Resources' Duck Pond base-metal deposit.

Geochemistry-Geophysics and Terrain Sciences

Martin Batterson continued his Bonavista-Avalon surficial map-

ping and till geochemistry project this summer, sampling over NTS sheets 2C4, and 1N/5,6,11,12,13 and 14. This project is a continuation of work started in 2001, aimed at providing regional till geochemistry coverage over the Avalon and Bonavista peninsulas. The main exploration targets in these areas are copper and gold, and the first open file release from this project generated considerable exploration interest and staking. Further work is planned for 2003, covering the central Avalon Peninsula.

Shirley McCuaig started a surficial mapping/till geochemistry project in White Bay/ Baie Verte, mapping NTS sheets 12H/10 and 12H/15. This is the first year of a planned multi-year effort in northeast Newfoundland, aimed at providing regional till geochemistry coverage, and surficial mapping to aid mineral exploration efforts. This area of the province has a complex Quaternary history, and understanding the interplay of sea-level change, glacial history and ice flow is vital in using drift-exploration methods.

John McConnell conducted geochemical follow-up to assess the potential for base-metal and PGE mineralization in an area of western Labrador (NTS 23H) by conducting high-density lake-sediment and water geochemical mapping. The survey covered parts of NTS sheets 23A/13, 14 and 15; 23G/01 and 08; and 23H/01-08. Sampling concentrated on areas underlain by rocks of the Ossok Mountain intrusive suite, thought to have potential for Ni-Cu-Co and platinum-group-element mineralization. 524 lakes were sampled as part of this survey with a sample density of about 1 per 4.2 square kilometres. Results will be available next spring.

Upcoming Events

Cordilleran Roundup 2003

January 27-30, 2003

The Westin Bayshore Resort & Marina, Vancouver,
British Columbia

Hosted by the British Columbia and Yukon Chamber of Mines. A "can't miss" event for the mining industry, bringing together explorationists, techniques, services and suppliers to interact and exchange ideas in a relaxed atmosphere. For more information, please contact:

Sally Howson

Tel: (604) 689-5271

Fax: (604) 681-2363

Email: chamber@chamberofmines.bc.ca

Prospectors & Developers Association of Canada Annual Convention

March 9-12, 2003

Metro Toronto Convention Center, Toronto, Ontario

The annual convention and trade show is the gathering place for the people and companies involved in the search for the development of new mineral deposits. The convention and trade show brings together a wide range of players involved in mineral exploration from many parts of the globe. For more information, please contact:

Tel: (416) 362-1969

Fax: (416) 362-0101

Email: info@pdac.ca

CIM Conference and Mining Exhibition

May 4-7, 2003

Palais de Congrès Montréal, Québec

This exhibition features operators, geologists, and mining professionals from across Canada and around the world sharing in the latest developments and solutions shaping the new face of mining. This year's conference boasts two themes: Globalization and the impact on mine operations and Globalization and the search for new ore deposits. For more information, please contact:

Serge Major

Tel: (514) 939-2710

Fax: (514) 939-2714

Email: smajor@cim.org

GAC/MAC Annual Meeting

May 25-28, 2003

Sheraton Vancouver Wall Centre Hotel, Vancouver,
British Columbia

This extensive technical program, incorporating symposia, special and general sessions, field trips, a workshop and short courses, will cover all major aspects of the earth sciences and emphasize the construction and evolution of the Canadian Cordillera and its geological resources. For more information, please contact:

Tel: (604) 681-5226

Fax: (604) 681-2503

Email: vancouver2003@nrcan.gc.ca

Website: www.vancouver2003.com

Baie Verte and Area Chamber of Commerce Mining Conference

June 20-22, 2003

Baie Verte, Newfoundland

This is an annual review of developments in the local exploration and mining scene. For more information, please contact:

Doreen Mckay

Tel: (709) 432-4204

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Email: bvachamber@nf.sympatico.ca

8th Annual Voisey's Bay & Beyond Conference and Trade Exhibition

June 23-25, 2003

Happy Valley-Goose Bay, Labrador

For more information, please contact:

Stacy Gloster

Tel: (709) 896-8033

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Email: ybb@chamberlabrador.com

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L. Matthews

Hon. Lloyd G. Matthews
Minister of Mines & Energy



GOVERNMENT OF
NEWFOUNDLAND
AND LABRADOR

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