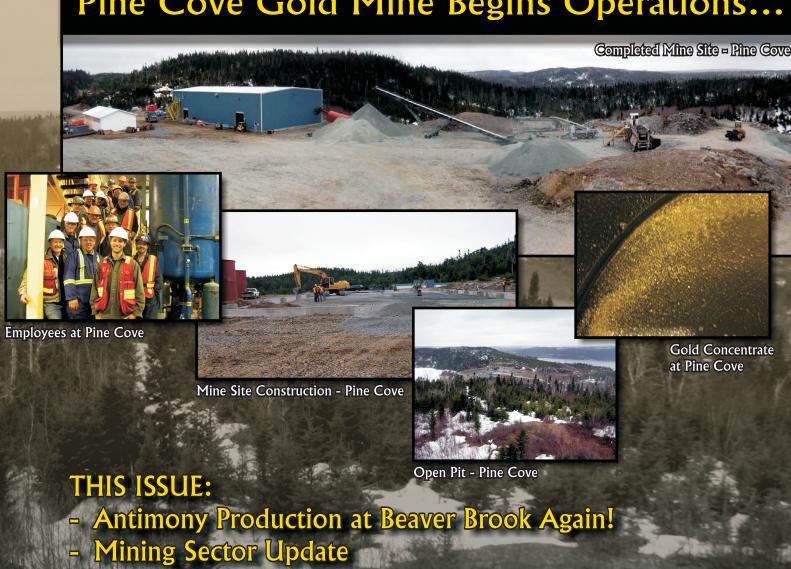




**Natural Resources** 

**Spring**, 2008

# Pine Cove Gold Mine Begins Operations...



- Mining Delegation to China
- **Brazil Vale Meetings**
- Commodity Series: Antimony, Cobalt and Gold
- Prospector's Corner
- Historic Mine Spotlight

## **MINISTER'S MESSAGE**



**Minister of Natural Resources** 

am pleased to introduce this latest edition of MINFO magazine as it marks yet another banner year for mineral exploration and development in Newfoundland and Labrador.

Our industry is experiencing record-breaking levels of exploration and shipments. Last year, companies spent \$138 million on exploration in the province. The value of mineral shipments reached \$3.9 billion. We have had an average of one new mine a year for the past four years, and this year new mines are opening at Pine Cove and Beaver Brook. These operations provide important employment and spin-off benefits in rural areas of the province.

Our excellent mineral resources, high mineral prices, strategic industry supports and local expertise are well-aligned to ensure this industry continues its recent string of successes. While our province is enjoying the benefits that accompany this upswing in prices and demand, we are also making strategic investments to continue improving our competitive edge in this global mining market.

In May, we had an official launch, for the first time, of the Geological Survey of Newfoundland and Labrador's 2008 summer field program. The launch recognized the important work of the Survey and celebrated an expanded field

program of nine geological mapping projects across the province.

The expanded program is part of a three-year, \$3-million initiative announced in Budget 2008 to improve knowledge of the province's mineral resource base. The investment is a major increase in the program's base budget this year and includes four new projects and the expansion of ongoing efforts. In total, \$1.5 million will be devoted to field activities this year, \$800,000 of which will go to the most extensive mapping effort in Labrador in over a decade. The season will also see full-scale mapping projects on the Island, a project to study gold mineralization around Grand Falls-Windsor, and a small-scale field project on the Avalon Peninsula to conduct geochemistry surveys of surface material.

This year, we also have 21 summer students, mostly from Memorial University, who will gain valuable career experience that will contribute positively to the continued growth of this industry.

I am very proud of the work that is done by the Mines Branch. Where ever I go, whether it's national industry conferences or meetings with mining companies, people tell me we have one of the best Mines branches in the country. Our employees are definitely being recognized and are making a difference to the industry and the province. I want to thank the staff of the Mines Branch for all their hard work.

This is an important industry to the province and our government is committed to maintaining this momentum. We are continuing our record-level funding for the Mineral Incentive Program for the third-year in a row and are investing in the expanded geological field program.

We are also investing \$500,000 over the next two years to improve the mineral exploration permitting process by developing an online Mineral Exploration Approval Management System. This system will allow easier information sharing between government departments, staff and exploration companies and will complement our award-winning MIRIAD online staking system.

Our new and expanded programs demonstrate our commitment to improving the province's global competitiveness and to attracting even more exploration and development.

We are witnessing the positive impact that environmentally-responsible mining activity is having on the lives of Newfoundlanders and Labradorians, especially in rural areas. That's why our government is working to provide industry with effective support and programming. We understand that the work of our Geological Survey, prospectors, exploration companies and mining companies is essential to the continued success of the industry.

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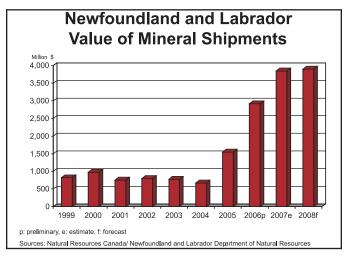
Note: Currency in Canadian Dollars unless otherwise noted.

## MINING SECTOR UPDATE

The Mining sector in the province and the minerals it produces continue to make a significant contribution to the economy. Gold, copper, zinc, nickel, cobalt, iron ore, and antimony are among the metal commodities now being mined. A variety of non-metal products such as slate, silica, dolomite, and anorthosite are exported to Canadian and world markets. Construction aggregates are supplied locally and there is an increasing interest in supplying aggregates for the export markets.

Just four years ago, in 2004, the total gross value of mineral ship-





ments for this province was \$673 million. The forecast for 2008 is \$3.9 billion, which represents a 479% increase.

Employment in the Mining sector has grown along with the value of mineral shipments. The 2008 forecast of 4,028 person years is a 30% increase from 2004.

Buoyant metal prices and the anticipated start up of gold mining operations at Pine Cove, on the Baie Verte Peninsula, and antimony production near Gander are important factors driving the growth in mining.

### ANACONDA MINING INC. - PINE COVE GOLD MINE STARTS OPERATIONS

naconda Mining Inc., a Vancouver-based junior mining company, announced on May 5, 2008 that min-Ling and milling have commenced at the Pine Cove Gold Mine located in the Ming's Bight area of the Baie Verte Peninsula. The mine is projecting production of 13,000 ounces of gold in 2008. The property is currently under option from New Island Resources, and Anaconda will earn its 60% interest in the project by arranging financing and successfully bringing it to commercial production, as defined by the option agreement between the two companies.



The Pine Cove deposit was discovered in 1988, and since then, exploration work has delineated 2,332,676 tonnes of indicated ore, grading 2.76 grams gold per tonne for 207,000 ounces of gold. Inferred resources total 66,700 tonnes grading 2.43 grams gold per tonne for 5,200 ounces of gold.

There have been previous attempts to bring the deposit to production. However, the needed capital could not be raised and the project was put on hold each time. This time, the situation in the market is different. Gold and commodities in general, are trading at record or near-record highs making previously borderline projects more attractive.



Pit development at Pine Cove.

During 2005, in an effort to reduce the capital cost of building a mine/mill complex at Pine Cove, Anaconda re-designed its original mine plan from a 1,000 tonnes per day operation to a 500 tonnes per day operation. This reduction in mill throughput would also extend the mine life from six to twelve years. The project is a small, open-pit mine using contracted excavators and trucks. Ore will be processed at an on-site mill.

Groundbreaking at the site took place early in July 2007, following government approval of Anaconda's mine-development plan. Anaconda finished the construction phase and began commissioning of the Mill in April 2008; the plan now is to ramp up to full production during this second quar-

The project is expected to employ about 44 people during operation: 20 in the open pit, 15 in the mill, and 9 administration staff. The total capital investment to construct the mine, mill and related infrastructure was \$7 million, and the operating cost of the mine is expected to be \$39/tonne of ore processed. This project will result in significant economic benefits to the region that will be felt for many years to come.

#### ANTIMONY PRODUCTION AT BEAVER BROOK AGAIN!

eaver Brook Antimony Mine Inc. has reactivated its antimony mine located approximately 43 km southwest of Glenwood in central Newfoundland after a 10-year shutdown. Roycefield Resources Ltd. originally opened the mine in 1997, but closed it in 1998 as a result of declining prices. Following the closure, several financial transactions involving a number of companies resulted in Beaver Brook Antimony Mine Inc., a private company, being the owner of the mine.



The Concentrate Mill at Beaver Brook Mine Inc.

Antimony markets have rebounded, and the company started mining and milling in 2008. (For additional information on antimony markets, see *Report on Antimony* in this issue.)

Approximately 160,000 tonnes of ore grading about 4.5% stibnite will be mined per year from the underground mine using the overhand cut and fill method, with development waste and

ter of 2008.

quarried rock used as backfill. Ore grading about 4.5%, stibnite is fed to the 450 tonnes-per-day mill which will use a flotation method to produce about 10,000 tonnes of 62% stibnite concentrate per year. The stibnite concentrate will be trucked to Halifax for shipping to international markets.

Beaver Brook Antimony Mine Inc. is a significant employer in the area. In April 2008, 96 people were employed, and the company anticipates that this number is expected to increase to 100 at full production. The expected life of the mine is 7 to 10 years.

### MINING IS BACK AND FUELLING EXCITING TIMES ON THE BAIE VERTE PENINSULA

llan Cramm, General Manager of the Pine Cove Gold Mine, was born and raised in the area and in an April 29 interview, made some very enlightening

Mr. Cramm likened the atmosphere about the imminent production at the mine site to that of expectant parents who were about to have their first child!

"This is a big accomplishment for a relatively new and small company. The company is very appreciative of the efforts of those involved in the project, including the great deal of cooperation from the different Government departments, to advance it to where it is today. The company will use the experience gained together with the Pine Cove operations as a base of operations to identify and develop other opportunities in the region and throughout the province.

This is the first mine for both companies [Anaconda Mining Inc. and New Island Resources Inc.] - so you can imagine it is quite exciting. Regular dialogue between the partners helps all to understand the onsite progression. This is a true joint ven-



Allan Cramm

ture in the sense both parties bring something to the table. One brings, in this case the deposit, while the other brings the capital and mining experience.

With only 4 Anaconda people on-site for most of the project, we relied on contractors to do all the installation and site development. Most of the installation done on-site was completed by small and for the most part local contractors. Workmanship and attention to safety was second to none. It would be difficult for a visitor to the site to distinguish one contractor from another as all employees were able to work together very well in the interest of safety and productivity.

We have had the benefit to have some of the most experienced mechanical and electrical fabricators in the business. With support from Anaconda's site personnel and several local and national engineering consulting firms providing specialized engineering services, the people collectively completed a made right here gold plant. This project could be described as a design build. We started construction without having the benefits of having all the components in place consequently we had to anticipate and allow for items in the plant that were two or three months out. Everybody worked well together resulting in a pleasant work environment which contributed to excellent productivity without a lost time accident.

Hopefully we will produce a gold bar within the next month! We will continue to optimize the process plant to achieve maximum throughput and recovery in a cost effective manner. There are many variables that can be altered between the crushing and grinding that can/will impact throughput and recovery. These areas will be evaluated closely over the coming year(s) to ensure the safe maximum equipment utilization is being achieved.

I think opening of the Pine Cove Mine will help put the area back on the map of both Canadian and International exploration companies. It helps when your promoting the merits of a property when you are within a short distance from an operating mine.

Mining has been a very important part of the local economy over the past 100 years on this peninsula. We, as a company, are committed to training people, providing competitive benefits, and a safe workplace with all the amenities. I think most all residents are excited about the recent resurgence in this industry, hopefully enabling more people to stay in the area and even attract former residents back."

### **IOC EXPANSION**

n March 11, 2008, the Iron Ore Company of Canada (IOC) held a press conference at the Delta Hotel in St. John's to announce the approval of a \$500 million expansion program. This represents phase one of a program that could result in an increase of current capacity by about 50%.

Phase one of this program will begin immediately and will address operating bottlenecks and improve winter performance. The investment includes the purchase of new mining equipment, the installation of a new crusher station in the mine, a grinding mill in the concentrator and a 6-km overland conveyor. New locomotives and rail cars will be purchased to increase railway capacity. This will expand IOC's mining and processing facility's capacity in Labrador West from the current 17 million tonnes to 22 million tonnes. The next phase of the program is currently being studied to assess feasibility and the decision to proceed is anticipated to be made later this year. If a decision is made to go ahead with the next phase, total production may reach more than 25 million tonnes.

IOC employs 1,900 people including those in its mine and pelletizing plant in Labrador City and shipping facility in Sept Iles. Currently in Labrador, the company will generate an estimated 1,500 person years of employment for 2008





*New crusher at the Iron Ore Company of Canada.* 

and is one of the province's largest industrial employers. During the construction phase of the expansion program, IOC estimates that the required construction workforce will peak at 250 workers over the next three years. Once completed, this expansion will create an additional 200 jobs that will be required in day-to-day operations.

On April 30, 2008, IOC announced 2008 iron ore price settlements which reflect an increase of 86.67% for pellets and an increase of 68.75% for concentrates over 2007 prices. Iron ore is not traded through an exchange or through a spot market like gold, nickel and copper; instead, the prices of iron ore are set through negotiated contacts between producers and purchasers. Contracts are necessary due to the large size of market participants and the orders placed. A contract provides a set supply and price, eliminates spot price volatility in the short term, and once negotiated, sets the general price for the year.

In its news release, IOC stated that it is Canada's largest iron ore producer, with iron ore being an important mineral product in terms of both tonnage and value for the country. The company is known globally for the high quality of its products, which are often used by steelmakers to improve quality and productivity and reduce greenhouse gas emissions.

#### **VOISEY'S BAY UPDATE**

ining of the nickel, copper and cobalt deposit located at Voisey's Bay, Labrador began in September 2005. Vale reported that production in 2007 reached 59,000 tonnes of nickel, 42,000 tonnes of copper and 1,239 tonnes of cobalt. Projected employment for 2008 is 900 person years, which includes operations staff for the mine/mill in Voisey's Bay and the Demonstration Facility at Argentia, administrative and exploration staff employed in the province, and some pre-construction staff for the commercial processing plant.

Vale Inco Newfoundland and Labrador Limited had submitted an Environmental Impact Statement (EIS) for the proposed commercial processing plant at Long Harbour on November 6, 2007. On January 16, 2008, the Minister of Environment and Conservation advised that additional clarification and information with respect to a number of issues were required. In addition to updates to the EIS, the company is working towards the completion of the plant feasibility study which will be used to select the type of plant to be constructed - hydromet or matte. The construction period for the commercial plant is from 2009 to 2011 and is estimated to cost US\$2.177 billion; the facility will be operational beginning in 2012.

## **EXPLORATION EXPENDITURES REACH RECORD LEVEL**

stimated expenditures on exploration and deposit appraisal in the province for 2007 reached a record of approximately \$138,000,000. ☐ The 2008 projection of about \$133,000,000 is also substantially higher than previous years (Figure 1). The major commodities sought continue to be base metals (including nickel, zinc, copper and lead), plus uranium, gold and iron ore. The high spending levels are driven by a variety of factors including strong international demand for these metals, and the high residual mineral potential of Newfoundland and Labrador.

There were 79,206 claims staked in 2007, bringing the total in good standing at year end to 189,283. Both totals are post-Voisey's Bay highs.

About 60% of 2007 expenditures were made in Labrador. The most active area is the Central Mineral Belt (CMB) where uranium is the principal target. Highlights included new resource estimates by Aurora Energy

Newfoundland and Labrador **Exploration Expenditures** 

**Figure 1.** Exploration expenditures, 2000 to 2008 (forecast).

Resources for the Michelin and Jacques Lake deposits and by Crosshair Exploration and Mining for the Moran Lake Czone. New uranium occurrences were reported by several companies in the CMB and elsewhere in south-central Labrador.

There was renewed interest in nickel in 2007, following encouraging results obtained by Celtic Minerals and Benton Resources (with partner Teck-Cominco) in the Kingurutik Lake area, about 80 km northwest of Voisey's Bay. Almost 11,000 claims were staked in the region during the second half of 2007, and substantial exploration programs are planned for 2008. Also, strong iron ore prices and the announcement of a major expansion of the IOC operations in Labrador City prompted a recent flurry of staking in that area.

On the Island of Newfoundland, several of the larger exploration programs focused on Buchans-style deposits of copper, lead, zinc, gold and silver in the central region. New resource estimates were released by Messina Minerals on their Boomerang deposit and by Mountain Lake Resources on the Bobby's Pond deposit. Rambler Mining and Metals continued their program of delineation drilling and dewatering of old workings at the former Rambler copper-gold mine, and has recently released a National Instrument 43-101 resource statement. Underground drilling is now in progress. Advanced drilling is being conducted at a number of other base-metal projects, and several new resource estimates are expected in 2008. Elsewhere, gold and uranium projects created significant activity in central and western Newfoundland, while tungsten and molybdenum are the targets in southern Newfoundland. The historic Grey River tungsten deposit is the most advanced of these; Playfair Resources recently reported a new resource estimate and scoping studies. Finally, a new uranium discovery in the Kings Point area in 2007, led to staking of almost 14,000 claims. Some drilling has been done on the new discovery, and substantial exploration programs are expected in 2008.

During February 2008, the company indicated that it will close the Demonstration Facility in Argentia by the end of June, after the six-month extension to the two-year research and development program is complete. Approximately 150 people are employed at the facility and employees are being offered other jobs within the company's Canadian and Goro operations, or training opportunities. These employees will be given the opportunity to work at the commercial processing plant in Long Harbour once the facility is constructed and operational.



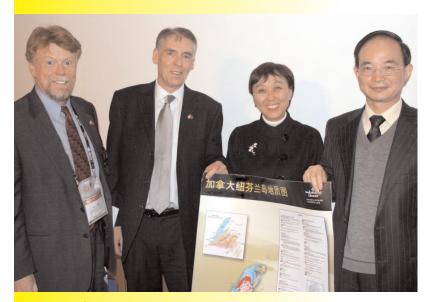
Voisey's Bay Open-Pit Mine 2007

## **NEWFOUNDLAND AND LABRADOR JOINS CANADIAN MINING DELEGATION TO CHINA**

'n November 2007, a three-person delegation representing the Newfoundland and Labrador Department of Natural Resources \_\_and the province's Chamber of Mineral Resources joined representatives of the federal government (Natural Resources Canada, and Foreign Affairs and International Trade), seven provincial and territorial governments, and some 30 Canadian companies to attend China Mining 2007. Asia's premier mining congress and exhibition was held in Beijing. Amongst the principal goals of the Canadian delegation at China Mining were the attraction of Asian investment to Canada, and the promotion of greater cooperation and collaboration between Canada and China in the area of minerals and metals.

During the Canada-China Minerals Forum, the Mines Branch presented a paper that reviewed this province's mining industry and exploration potential for key players in the Asian mining sector. The Branch also joined its counterpart in New Brunswick in sharing a booth in the China Mining Trade Show, where both provinces were successful in showcasing resource potential and investment opportunities in each of their jurisdictions, and in making contacts with key players in the Chinese and broader Asian mining and metals industry.

One of the many highlights of China Mining was the meeting of Canadian provincial geological surveys with the China Geological Survey, at the Survey's Beijing headquarters. At that time, ADM Richard Wardle presented the head of the Chinese Survey with geological maps of Newfoundland and Labrador.



<mark>L-R: Sean O'Brien (Senior Geologist, Geological Survey NL); Richard</mark> Wardle (ADM Mines, NL Dept. of Natural Resources); Bai Qin (Deputy <mark>Director, China Geological Survey) and Zhong</mark> Ziran (Director General, China Geological Survey).

## **BRAZIL VALE MEETINGS**

n November 2007, Premier Danny Williams, Natural Resources Minister Kathy Dunderdale Land a delegation of provincial officials travelled to Brazil to meet with representatives from Vale and to tour their facilities in that country. Vale is the world leader in production and export of iron ore, and, since the acquisition of Inco in 2006, has also become the world's largest nickel produc-

The eight-day trip through various regions of Brazil included tours of processing and transportation facilities, an open-pit mine, corporate headquarters and aluminum smelters. Included in the visit were key sites in the northern regions of Perá and Maranhão, and meetings in Rio de Janeiro. It provided valuable insight into the operations of Vale, now the owners of Vale Inco in Newfoundland and Labrador.

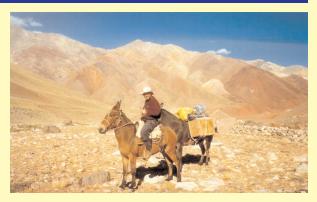
Site managers and top officials with the company led each of the tours, which allowed the Premier and Minister to gain detailed information on operational and corporate policy issues. The delegation was briefed on Vale's business model as well as on the various technical processes used in the company's mining and refinery operations. Company representatives also discussed their approach to the considerable logistical challenges of large-scale mineral production. In Brazil alone, the company operates 9,820 km of railway and six port terminals. The transportation of Vale's products accounts for 16 % of all cargo transported in Brazil.

Throughout the visit, Vale officials highlighted the company's commitment to sustainable development through community investments and environmental preservation and rehabilitation. In particular, company representatives emphasized Vale's focus on forest preservation and repopulation. The Premier, Minister and Deputy Minister Chris Kieley each planted native tree species near the Vale site to commemorate the visit.

In Rio de Janeiro, the delegation visited the company's corporate offices and met with members of the company executive, including CEO Roger Agnelli. During this meeting, the Premier and Minister had an opportunity to discuss opportunities for Vale in Newfoundland and Labrador, and to remind the company of commitments in the Voisey's Bay Development Agreement.

## PROSPECTOR'S CORNER

t has been said that you can find a Newfoundlander just about anywhere that you go in the world; travelling abroad for employment has always been a part of our heritage and our way of life. Take for instance, Fred Keats, from the nationally-acclaimed Keats family of Benton, who has spent the last 35 years prospecting for Noranda and Noranda/Falconbridge (now Xstrata). As a young man, Fred began his prospecting career in the summer of 1970, after being hired by Noranda at its Gander office. He joined his father, Ted, and older brother, Allan, who had started with the company a year earlier. For this keen young man, this was the beginning of a life-long adventure of prospecting and travel which would include Newfoundland and Labrador, many regions of Canada, and such exotic destinations around the world as Africa, Australia and South America.



Fred Keats prospecting in the high Andes mountains.

While in Newfoundland, Fred was part of the Noranda team that discovered the Boundary and Duck Pond deposits along with numerous other base-metal prospects in the area south of Red Indian Lake. In the late 1980s, Fred and the Noranda team identified a brand new gold district on the island called the Grub Line. In one summer, they discovered over 30 significant gold prospects, including Paul's Pond and Gold Stash, and Fred is credited with the discovery of the Stog'er Tight gold deposit on the Baie Verte Peninsula. In Labrador, Fred discovered one of the two significant nickel prospects found by Noranda. All of these areas are still being explored with some substantial investments being made on exploration. During these exciting early years, Fred was involved in all aspects of prospecting and mineral exploration from stream sediment and soil sampling, till sampling, trenching and blasting and providing team leadership in a wide variety of exploration program activities.

In 1997, Fred was transferred to Thunder Bay, Ontario. For Fred and his family this was a big move but a very rewarding one. It offered him the opportunity to travel to such places as South America where he worked in regions of the high Andes (Antamina), the Patagonia Desert, the rain forest of Ecuador, and down to Ushuaia, the most southerly city in the world. Prospecting highlights of these trips were Fred's discovery of a 50% combined lead/zinc prospect near the Beagle Channel in Argentina, and a new copper deposit which he discovered by chasing mineralization for three kilometres up a mountain valley. To quote Fred, "It does a prospector's heart good when he sees the angular blocks getting larger and then to notice that the mountain side looks a bit off-colour. Then you finally get close enough and see that it's the telltale copper staining...the mineral malachite." Fred also had exciting trips to Devon Island in the high Arctic prospecting for carbonate hosted zinc deposits.

In 2002, Fred was transferred to Laval, Québec, where he assumed a new role as prospector/environmental health and safety (EHS) coordinator. As a Falconbridge team member, he played a major part in helping to establish Canada-wide Falconbridge EHS policies and protocols that even surpassed government regulatory requirements. He also provided major input into a safer and more environmentally acceptable way to evaluate and sample laterite deposits. Fred conducted sampling surveys on bauxite deposits in Jamaica, and one of his career highlights was prospecting for nickel in Australia.

After a long and exciting career, Fred retired from Xstrata last year. He and his family have returned to the island and have settled in Paradise. Prospecting and the yearning for adventure and discovery, however, flow in Fred's veins. Teaming up with his son, Wesley, they have formed Keats Global Exploration Services Ltd. They have staked claims in this province, and are presently prospecting in Argentina and Chile on contract for an exploration company. Fred is determined to continue his lifelong passion for years to come.

## **GEOLOGICAL FIELD PLANS FOR 2008**

rovisional plans for 2008 field work of the Geological Survey, Department of Natural Resources, include a significant effort in Labrador mapping, and an expansion of mineral deposits research.

Tim van Nostrand will be mapping in the Seal Lake area of central Labrador, which has previously been mapped only at reconnaissance scale. Tim will be upgrading the mapping in this area of significant mineral potential, and examining stratigraphic and structural relationships in the Seal Lake Group.

Alana Hinchey will continue mapping at the eastern end of the Central Mineral Belt near Makkovik. Special emphasis will be placed on determining stratigraphic and structural relationships between basement and cover rocks; and the detailed stratigraphy of the Aillik Group. Structural, geochemical and geochronological studies will continue, and in addition, a senior assistant will be working on a M.Sc. project in the area.

*Brian O'Brien* will continue mapping in the Notre Dame Bay area, focusing on detailed structural and stratigraphic relationships with additional examination of sedimentology, palaeontology, geochronology and volcanic geochemistry in this area of historic and current exploration interest.

*Ian Knight* will be mapping in western Newfoundland, concentrating on the area lying between Deer Lake and Gros Morne National Park. Special emphasis will be placed on understanding the sedimentology, structure and stratigraphy of the early Palaeozoic carbonate sequences. Doug Boyce will be working with Ian delivering palaeontological input on the stratigraphy of western Newfoundland.

*Jennifer Smith* will be working on a new project examining the surficial geology and till geochemistry of the central volcanic belt of Newfoundland. This is an area of considerable interest for exploration, and the complex ice-flow history makes drift prospecting challenging. Understanding ice-flow patterns and developing a regional database of till geochemistry will aid in exploration in this area.

*Greg Sparkes* will continue his project on uranium mineralization in the province. He will concentrate on the western Central Mineral Belt, working in conjunction with active exploration efforts in this area. Depending on other commitments, some field time may be spent in Newfoundland also.

The Geological Survey also anticipates that a new hire will start a project on gold mineralization in northeast Newfoundland this summer.

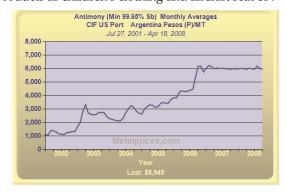


Ithough it is usually described as a metal, antimony is more properly called a semi-metal, or a metalloid. Unlike typical metals, the pure form of antimony is not shiny and malleable, and is a poor conductor of electricity and heat. The name *antimony* is derived from the Greek words *anti* and *monos*, which mean *not together*. This silvery-grey element rarely occurs in nature as a native (single) element, but is found in a number of different minerals, the most important of which is stibnite (SbS<sub>3</sub>). Antimony minerals, particularly stibnite, have been known and used since ancient times. As early as 3000 BC, pastes of antimony trisulphide, (Sb<sub>2</sub>S<sub>3</sub>), were used as eye cosmetics.

Because of its hardness, brittleness and lack of malleability, antimony has no commercial uses by itself except for ornamental castings and semiconductor devices. Instead, it is a component of many products. Nearly all antimony is consumed in one of four forms: antimony trioxide, which is used mostly for flame retardants in such products as children's clothing and aircraft seat cov-

ers; antimonial lead alloys, which are used mostly in batteries, but also in other products; refined antimony metal, which is used in lead-acid batteries and a variety of metallic products; and sodium antimonate, which is used for the clarification of specialty glasses. *AntimonyNet* reports that the U.S. antimony market is approximately 70 million pounds per year, is valued at over \$200 million, and is growing at about 6.8% annually. The United States Geological Society estimates that in 2007, approximately 40% of the antimony consumed was used as flame retardants.

*Industrial Minerals* reports that the world market for flame retardant additives for polymers is estimated at 1.5 million tonnes, with a value of over two billion euros. Flame retardants can be classified as organic, and inorganic (mineral), which account for about 50% of the world market by volume and



35% by value. In the mineral market, antimony oxides are considered secondary flame retardants, which are usually not effective enough to be used alone, but can significantly increase the performance of other flame retardants. In 2006, antimony oxides accounted for about 15% of the world mineral flame retardant market by volume and 45% by value. Antimony oxide compounds are expected to see modest growth in Europe and the United States, and strong growth in developing markets, especially China.

China is the key factor in the antimony market. In 2006, it accounted for over 80% of global mine output, followed well behind by Bolivia, South Africa, and Tajikistan. Exports from China declined 61% from 2006 to 2007. The sharp decline was attributed to a shortage of concentrate in China. That country is now the world's leading importer of antimony ores and concentrates, and its antimony demand has become the world's largest.

Base metals such as copper and zinc, and precious metals such as gold and silver, are traded on markets, including the London Metals Exchange. In contrast, the prices of minor metals such as antimony are negotiated between producers, consumers and wholesalers. Supply and demand factors have held the price of antimony metal close to the US\$6,000 per tonne in the first quarter of 2008. In historical terms, this is a healthy price range for producers.



## **REPORT ON COBALT**









obalt is generally not talked about like other commodities such as gold, nickel or copper; however, after its dramatic 70% price increase over the past year it is garnering more and more attention. Cobalt is not traded on an exchange the way a rlot of metals are, instead cobalt is sold directly by producers and suppliers to the end user. Cobalt, along with nickel and copper, is mined in Newfoundland and Labrador at Voisey's Bay.

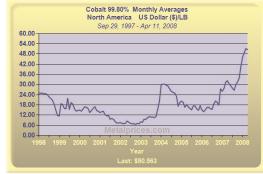
Cobalt is used by many industries such as health, communications, transportation and national defence through such products as magnets, high-strength steel, carbides and catalysts. The most common use of cobalt is to make what are known as super alloys, which simply means cobalt is combined with other metals and minerals to produce a product that has enhanced performance characteristics. When used as a super alloy, cobalt can add great strength to a product e.g., carbide saw blades. Another feature that cobalt contributes is its ability to maintain its magnetic properties even at extremely high temperatures. Cobalt's performance at high temperature has facilitated its use in parts for aircraft turbine engines which submit its components to these extreme temperatures. In fact, a typical turbofan jet engine requires 50 to 60 kg of cobalt. For this application, cobalt currently has no practical substitute.

Some other uses of cobalt include:

- Batteries in cell phones and laptop computers
- Additives in paints, varnishes and inks to control drying time
- Adhesives that bind steel-belted radial tires
- To decolourize glass and as an ingredient of coloured pigments
- Cobalt salts are added to animal feeds to increase vitamin B-12 production
- To make artificial body parts, such as hip and knee joints

Cobalt's current price is approximately US\$50 per pound which is a dramat-

ic increase from the \$7 per pound price back in 2002 and 2003. Based on an article in Mining Journal, analysts are predicting a plunge in the price of this metal as a result of projected increased supply from central Africa and more specifically the Democratic Republic of Congo. Approximately 36% of the world's supply of cobalt and much of the anticipated increases are based on new projects in Congo. Predicted increases in supply will almost double the amount of cobalt produced and this will put downward pressure on the price of this metal.











## REPORT ON GOLD









ising consistently through the first six years of this century, gold reached a high of about US\$725 an ounce in May of 2006. For the following 18 months, gold traded between US\$550 and US\$700. The strong market for gold that began in 2001 now continues apace. Up about 260% since 2001, gold has risen through all previous nominal highs and was valued in March 2008 at nearly \$US1000. One reason for gold's recent strength is the poor performance of the US dollar compared to a basket of other currencies. The US dollar index dropped from 120 in 2000 to

73 in March 2008, a 39% decline.

The US Federal Reserve has reacted to the country's economic woes with swift interest rate cuts. In the aftermath, real interest rates (interest rates less inflation) across the short to medium time horizon are now near zero. Gold, which had been rising in concert with the commodities boom, has now taken on an extra appeal as a safe haven in uncertain times.

Forecasts for the yellow metal reflect the prevailing uncertainty. Jim Sinclair, chairman of Tanzanian Royalty Exploration and an analyst with a long history in mining and brokerages circles, has a minimum target for gold of US\$1,650 by January 2011. He expects gold to reach US\$1,200 in

2008. Mainstream Canadian banks are not quite as optimistic for the near term. BMO Capital Markets has a 2009 average monthly price target of US\$880, while Toronto Dominion Bank has provided a price forecast of US\$860 for the end of 2009.

## **HISTORIC MINE SPOTLIGHT:**

### THE DIRECT SHIPPING IRON ORE DEPOSITS OF THE KNOB LAKE AREA

This article summarizes major themes from the book, Cain's Legacy, by Richard Geren and Blake McCullogh, 1990.

The modern history of iron ore in the Knob Lake/Schefferville area began with the Labrador excursions of a Swiss Oblate priest named Louis Babel. Writing in a journal in 1866, Babel referred to the area as being abundant in iron. A.P. Low, working for the Canadian Geological Survey from 1892 to about 1895, noted many hematite and magnetite occurrences near Menehik Lake and Astray Lake. By 1950, many prospectors, geologists, and financiers had made contributions to the development of the Labrador iron range, the culmination of which gave rise to Canada's pre-imminent iron producing area.

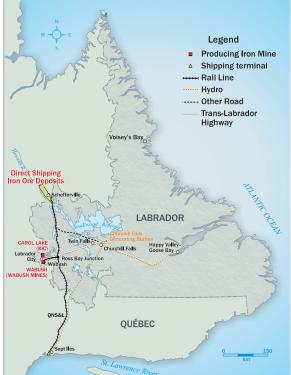
Exploration in the Knob Lake area from about 1930 to 1950 had outlined a considerable resource in excess of 400 million tons of iron ore. The Iron Ore Company of Canada (IOC) was incorporated in Delaware, USA in 1949 by a consortium of Canadian and American mining-related entities. IOC embarked on the formidable task of driving a railway from Sept Iles on the Gulf of St. Lawrence to what is now Schefferville, a distance of some 360 miles. The railway and other extensive infrastructure was completed by 1954 and in July of that year the first ship load of direct shipping iron ore left Sept Iles on the ore carrier S.S. Hawaiian.

The Knob Lake/Schefferville operation was proceeding as planned and IOC concentrated its exploration efforts in the Carol Lake area of Labrador from 1955 to 1960. A large specular-hematite iron resource that averaged about 37.9% iron was

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defined by the end of the 1950s. The company made a positive production decision on the Carol Lake project in 1958 with a targeted start up date of 1962.



The location of the direct shipping iron ore deposits and existing Labrador iron ore mines.

Cargos of direct shipping iron ore left the Knob Lake area continuously until 1982 when industry and economic events combined to force closure of the operation. Research and development efforts on the ores of the Minnesota Iron Range had led to the production of pellets from concentrate. Iron pellets quickly became the industry choice as blast furnace feed in North America, making the direct shipping ores less attractive. High-grade iron discoveries in other countries such as Brazil and Australia also played a part in the closure decision. IOC had successfully installed a pelletizing plant at the Labrador City operation and in 1970 the company announced the construction of a concentrator and pellet plant at Sept Iles to upgrade the direct shipping ores from the Knob Lake deposits. These ores, however, were somewhat different than those at Labrador City. The Knob Lake ores required finer grinding and the use of flotation technology to separate the iron from other deleterious content.

By October of 1980, North American steel production was reflecting the broader economic contraction that was already under way. Steel production had fallen to just 40% of capacity by autumn. IOC was faced with serious business decisions since the slumping steel market demanded less of its iron ore. In response to economic conditions, the direct shipping operations near Knob Lake and the relatively new plant at Sept Iles were closed in October of 1982, leaving the Labrador City operation in production. This marked an end of iron ore production

from the direct shipping deposits of the Knob Lake area. The mineral rights to the land were allowed to lapse in 1988. The former claims saw sporadic staking through the 1980s and 1990s but no mining occurred at that time.

A strong market for metals materialized in about 2004 and interest in the direct shipping deposits has now returned. Two public companies are leading the effort to bring the deposits back into production. New Millennium Capital Corporation (NMCC) and Labrador Iron Mines Holdings Ltd. (LIM) each hold claims in the area. Many of these claims cover deposits formerly held by IOC. Each of the two junior mining companies state that their claims hold approximately 100 million tonnes of iron ore resources as previously defined by IOC. LIM's website lays out a conceptual mining plan that would see an April to November operation which could upgrade the ore with relatively simple crushing, washing, and screening techniques.

Both NMCC and LIM recently submitted registration documents with the Newfoundland and Labrador Department of Environment and Conservation. This is an important step toward bringing these iron ore deposits back into production. LIM's and NMCC's target production dates are 2009 and 2010, respectively. The development of either project will once again see ore cars make the 360-mile trip from Schefferville to Sept Iles.

## **MINERAL INCENTIVE PROGRAM UPDATE 2008**

he Mineral Incentive Program (MIP) offers non-refundable grants to individuals and companies to explore for minerals in Newfoundland and Labrador.

The \$2.5 million program has three main components: prospectors' assistance, junior exploration assistance, and natural stone assessment.

#### **2007 HIGHLIGHTS**

A total of \$148,000 was granted to 54 prospectors in 2007; 15 of these projects were conducted in Labrador.

A total of 20 grants were awarded under the Junior Exploration Assistance program. Total expenditures through grant allocations and industry contributions were close to \$10,000,000. This program was oversubscribed, with more applications submitted than there were funds available.



Instructor Larry Hicks and prospecting students looking at bedrock in Corner Brook stream.

#### **GENERAL**

The Prospectors Assistance supports resident prospectors through non-refundable grants of up to \$4,000 for traditional, grassroots prospecting on Crown lands or lands staked in the prospector's name.

The *Junior Exploration Assistance* budget is \$1,900,000. This funding is to defray 50% of approved eligible costs, to a maximum of \$100,000 on the Island and \$150,000 in Labrador, on exploration projects conducted by individuals or junior mineral-exploration/mining companies registered to do business in the province.

The Government of Newfoundland and Labrador is encouraging the development of dimension stone, building stone and industrial minerals through the Natural Stone Assessment program. A total of \$250,000 is allocated toward providing nonrepayable grants to cover 75 % of the cost of exploration and resource assessment on stone prospects, up to a maximum of \$50,000 per project.

As well, the Department of Natural Resources, in conjunction with the Bay St. George Campus of the College of the North Atlantic in Stephenville, will hold a 14-day Prospectors Training Course between May 26th and June 8th. Upon completion of the course, the 28 students will be eligible to apply for status as *Genuine Prospectors* which enable them to stake up to 30 claims per year without having to pay the \$50 deposit per claim. The department will be offering a similar 14-day course in Happy Valley-Goose Bay in early August at a cost of \$850.

## **APPOINTMENTS**

**JUSTIN LAKE** was hired in July 2007 as a Mineral Development Geologist to assist in the administration of the Mineral Incentive program. Justin is a 2004 Earth Science graduate from Memorial University.

**DARREN PITTMAN** was hired in December 2007 as an Engineer I in the Engineering Analysis section, Mineral Development Division. Darren is a Civil Engineer graduate from Memorial University.

**LEN MANDVILLE** was appointed Manager, Mineral Incentive Program, in May 2008. Len, an Earth Sciences graduate from Memorial University, has been with the Department of Natural Resources in various capacities for nearly 19 years.

**JOHN DAVIS** was appointed Director (Acting) of the Mineral Development Division in September 2007. John joined the division in 2004 as a Mineral Development Engineer.

**GES NUNN** took a lateral transfer within the Mineral Lands Division on January 18, 2008 and is now the Resource Assessment Geologist in the Quarry Materials Section. In this capacity, Ges will be involved in the review of municipal plans and various land use proposals, and provide input from the Mines Branch for planning programs.

**PHIL SAUNDERS** was the successful candidate for the Exploration Monitoring Geologist position and appointed on April 3, 2008. Phil brings a wealth of industry experience to the position responsible for the overall review of exploration assessment reports and the preparation of various reports and summaries on mineral exploration.

LARRY NOLAN has been appointed Senior Geologist in the newly formed Geoscience Data Management Section of the Geological Survey. Larry will provide direction to this group as it takes on the task of organizing, archiving and delivering the vast array of Geological Survey data that has been accumulated over decades of research. Larry has been with the Survey over 20 years and has spearheaded GIS and data management efforts within the Survey.

TIM VAN NOSTRAND has been appointed a project geologist in the Regional Mapping Section of the Geological

Survey. Tim has a B.Sc. and M.Sc. from Memorial University, and worked with the Survey in the late 1980s and early 1990s. He will bring his extensive field experience to mapping in central Labrador.

**NEIL STAPLETON** was hired in January 2008 by the Geoscience Data Management Section of the Geological Survey. He will be providing GIS support for the geological staff, cartography, and other clients in the use of GIS databases for data interpretation, report preparation and map production. Neil was previously employed by the Department of Environment and Conservation, Parks and Naturals Areas Division as a Computer Systems Analyst (GIS) from 2005-2007 and with the Crown Lands Division as a Lands Officer in 2004. He holds a B.Sc. in Geography from Memorial University.

**JENNIFER SMITH** joined the Geological Survey in April as a project geologist specializing in surficial mapping and terrain sciences. Jennifer has a B.Sc. and M.Sc. from Memorial University, and has been working with the Saskatchewan Geological Survey. Jennifer spent several summers working with survey projects as a student assistant, and is an author or co-author on numerous maps and publications.

**DR. DAVID LIVERMAN** was appointed Director of the Geological Survey in March 2008. David joined the Geological Survey in 1988 as project geologist in surficial mapping/till geochemistry, and carried out numerous field projects in Newfoundland and Labrador. He was appointed Senior Geologist in the Geochemistry, Geophysics and Terrain Sciences Section in 1999, and conducted further research, mainly in geological hazards. David had been Director (Acting) of the Geological Survey since October 2007.

**LORETTA CRISBY-WHITTLE** has been promoted to the position of Project Geologist, Geoscience Data Management Section of the Geological Survey. Loretta has been a geologist with the Geological Survey for 22 years and has extensive experience with digital bedrock geology maps and databases.

## **RETIREMENTS**

Two long-standing employees of the Geological Survey retired over the winter. FRANK BLACKWOOD had been the Director of the Geological Survey for the last ten years, and completed over 30 years as a geologist with the Survey. Frank started out as a project geologist, mapping in the Gander area, and on the south coast, and later moved to manage the Survey's publications section. He was appointed director in 1997, and did much to raise the Survey's profile both locally and nationally, as well as supporting the high level of scientific achievement of the Survey's geologists and ensuring strong support to the mineral exploration community. Shortly after Frank retired, DOREEN PEAVEY, who had acted as secretary and administrative support to Frank and the previous director, Bryan Greene, decided to retire after 31 years of government service. Both will be much missed.

SYLVIA NEWHOOK, secretary and administrative support employee with the Mineral Lands Division, will be retiring on June 30th. Sylvia has given 14 years of exemplary service to her fellow employees and the public.

## **AWARDS**

In September, DR. CHARLES GOWER was presented with the 2007 Provincial Geologists medal at the Energy and Mines Ministers Conference in Whistler, B.C. Charlie was recognized for nearly three decades of mapping of the eastern Grenville Province in Labrador. His maps cover nearly 100,000 square kilometres of complex geology, and are backed by an extensive and impressive record of papers and reports interpreting the convoluted history of the area.

**TERRY SEARS** of the Geoscience Publications and Information section has had his cartographic expertise recognized by ESRI Canada as one of twelve maps selected as part of the 2007 Map Gallery competition. The map "Natural Hazards, Humber Valley, Corner Brook, Steady Brook, Pasadena, and Deer Lake" authored by Shirley McCuaig and Dave Liverman is featured in the 2008 ESRI Calendar.

DR. LAWSON DICKSON is the recipient of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) 2008 District 1 Distinguished Service Award. The award acknowledges Lawson's dedication and commitment to the Newfoundland Branch, his tireless efforts in promoting CIM, and ensuring the success of the annual branch conference. Lawson is Senior Geologist of the Regional Geology Section, Geological Survey, Department of Natural Resources.

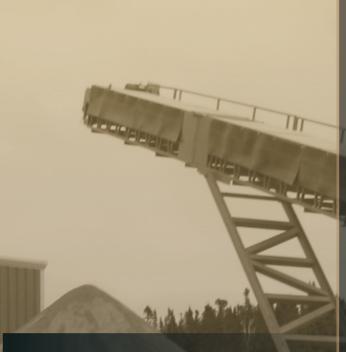
FRANK BLACKWOOD is the 2008 recipient of the Geological Association of Canada's Ambrose Medal. The GAC awards this medal annually to an individual for sustained dedicated service to the Canadian earth science community. Frank retired as Director of the Geological Survey of Newfoundland and Labrador in September 2007 after 30 years of Provincial Government service, all with the Geological Survey. He earned Bachelor and Master of Science degrees from Memorial University and joined the survey as a field geologist in 1976, mapping in Gander Bay and on the south coast. He later transferred his skills to the Publications and Information Section as senior geologist, before his appointment as Director of the Survey in 1997.

Frank's contribution to the Department is matched by his involvement with the broader geological community in Canada. He was Secretary Treasurer to the Geological Association of Canada for a considerable period of time and then served as President of that organization in 1993-94. In 2001 he chaired the organizing committee for the highly successful GAC-MAC in St. John's. He later became President of the Canadian Geological Foundation, and continues to serve as a volunteer director of the Johnson Geocentre.

### PHOTO CREDITS

Cover; Anaconda Mining Inc.; Department of Natural Resources.

*Inside*; Anaconda Mining Inc.; Cain's Legacy (R. Geren and B. McCullogh), p. 69; Department of Natural Resources; IOC; Fred Keats.



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Director, Mineral Development	(709)	729-644	9
Wabush Office	.(709)	282-394	9

Director, Geological Survey	(709)	729-2301
Goose Bay Office	(709)	896-5162

Geoscience Publications and Information.....(709) 729-3159

Home Page http://www.gov.nr.nl.ca/mines&en/

Information and statistics quoted are from data provided by government and /or industry publications: for details, readers should direct their enquiries to the Mineral Development Division of the Department of Natural Resources.

### **UPCOMING EVENTS**

Expo Labrador

Happy Valley-Goose Bay, NL

June 22-25, 2008

Contact: Sean Handregan Tel: (709) 896-8033 Fax: (709) 896-8039

Email: coordinator@expolabrador.com Website: www.expolabrador.com

Conference of Metallurgists (COM 2008)

August 24-27, 2008

Winnepeg, MB

Contact: Brigitte Farah, MetSoc of CIM

Tel: (514) 939-2710, ext. 1317; Fax: (514) 939-9160

Email: bfarah@cim.org

Website: www.metsoc.org/com2008

**Resource Investors Forum 2008** 

September 16-17, 2008

St. John's, NL

Contact: Newfoundland and Labrador

Chamber of Mineral Resources

Tel: (709) 722-9542; Fax: (250) 391-1787

Email: director@nlcmr.ca

Website: www.investorsforum.ca/

Blendon's 20th Annual Canadian Conference on Markets for Industrial Minerals

October 21-22, 2008

Toronto, ON

Tel: (250) 391-8820 Email: info@blendon.com

Website: www.blendon.com/conference.shtml

Mineral Resources Review 2008

Department of Natural Resources

32nd Annual Mines Branch Review of Activities &

55th Annual CIM Newfoundland Branch

**Conference and Trade Show** 

October 30 - November 1, 2008

Delta St. John's Hotel and Conference Centre

St. John's, NL

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