

# FEM 2009



**Huge turn out demonstrates the high level of activity in Finland and Sweden, and growing interest in Norway – John Chadwick and Daniel Gleeson were there**

**R**ovaniemi in Finland lies about 5 km short of the Arctic circle, to where most visitors late in the year drive to get the Santa Claus experience. More recently Rovaniemi has established itself as the meeting place for those involved and/or interested in exploration and mining in Finland, Sweden and Norway, every other year. So from December 1-3 we assembled for the 7th Fennoscandian Exploration and Mining (FEM 2009), one of the largest exploration and mining conferences in Europe. It was attended by some 650 delegates and supported by 66 exhibitors.

The big news that week came from Finland, including First Quantum Minerals approving the development of the Kevitsa nickel-copper-PGM mine. It is one of the world's major undeveloped sulphide nickel deposits and one of the largest mineral discoveries in Finland's history. Mid-central Lapland is a hot area even in the winter! Also, Agnico-Eagle is finding more gold at its Kittila gold mine and Belvedere Resources announced a maiden resource estimate on its 100% owned, Hirsikangas Gold Project in western Finland.

Kevitsa's process facilities will be designed for 5 Mt/y with built in expansion capabilities. First Quantum has significantly enhanced mineral reserves to an estimated 107 Mt grading 0.296% Ni; 0.272% Ni(S) and 0.418% Cu; using a Ni(S) cutoff grade of 0.147%. All material mining permits have been received and detailed engineering has started, with commercial production targeted for mid 2012.

In 2009, Agnico-Eagle added some 14,000 ha to its overall property position for a total land package at Kittila of 26,550 ha. Of this,

the mining licence area consists of 850 hectares. Exploration drilling has continued to yield significant gold intersections at depth within and outside the Suuri mineral resource envelope. Most of the drilling has been between depths of 700 and 1,000 m. The objective of the program is to systematically convert the large amount of resources to reserves. Suuri holds approximately 7.8 Mt grading 5.6 g/t Au, or approximately 1.4 Moz of gold, in Inferred resources between the depths of 800 and 1,100 m below surface.

Gold intersections in the Suuri and Roura zones suggest that they are one continuous zone at depth with a potential strike length of some 500 m. There was also the discovery of the new high grade Roura East lens and the Ketola zone is now known to continue at depth, about 75 m beneath the current resource model.

Underground definition drilling continues in the Suuri and Roura areas between 250 and 400 m below surface, which has confirmed the thickness and grade of one of the thickest parts of the Roura orebody. The mine is producing well from the open pit and is preparing the first test stope underground. The objective is to validate the grade and ground conditions. Extraction is expected to begin this year.

Belvedere says it has 119,000 oz Indicated and 109,000 oz of Inferred resources at Hirsikangas.

Details of the papers and various presentations from FEM 2009 can be found at [www.lapinlitto.fi/fem2009/2009\\_index\\_programme.htm](http://www.lapinlitto.fi/fem2009/2009_index_programme.htm). The following are highlights from the company presentations.

*Most of the exploration drilling Agnico-Eagle has carried out at Kittila is between depths of 700 and 1,000 m at its Suuri mineral resource. The objective is to systematically convert resources to reserves*

Jonas Lundström, Northland Resources' Director of Human Relations and Corporate Communications reported on his company's two iron ore projects, either side of the Swedish/Finnish border, north and northwest of Kolari in Finland. Northland expects to complete a feasibility study of the Kaunisvaara project in Sweden by June 2010, with production in 2012. The Finnish Hannukainen project is less far advanced with a preliminary economic assessment to be completed by April 2010 and progress being made in the search for a partner for the project. Northland's NI 43-101 resource base is currently about 320 Mt Measured and Indicated, with a further 180 Mt Inferred. Further growth is expected.

Kaunisvaara includes three magnetite iron ore projects; Tapuli, Sahavaara and Pellivuoma. These mines will provide feed to a single processing facility.

Nick Szabor, Senior Mine Geologist with Norway's Sydvaranger Gruve AS reported on its project consisting of three magnetite iron deposits with JORC compliant resources (Kjellmannsåsen, Fisketind Øst and Bjørnevattn) and a further 20 prospects with known iron mineralisation located over a 12 km strike length. The existing equipment and infrastructure at the site, including primary crushers and a cobbing plant, a concentrator and various related infrastructure, has been refurbished. Mining has been restarted. Exploration continues but the mine currently has an estimated life of 19 years at an annual production rate of 7 Mt of mill feed. After processing, this is expected to produce some 2.9 Mt/y of magnetite concentrate.

Fredric Bratt, the CEO of IGE Nordic, a subsidiary of International Gold Exploration, reported on the preliminary assessment (PA) for the Rönnbäcken nickel project in northern Sweden. The NPV of the project is estimated at \$142 million. The objective now is to secure a strong partnership to fund the remaining stages towards production, including prefeasibility and bankable feasibility studies.

The PA is based on an initial 13 year mining plan with mill throughput of 20 Mt/y of ore, and a projected recovery of 74.5% of nickel in sulphides. The resultant concentrate, averaging 28% Ni content, is expected to supply 17,000 t of nickel in concentrate annually. The initial capital cost of the project has been estimated at \$698 million.

Michael Hudson, President & CEO of Mawson

Resources spoke about the extensive uranium exploration that has been undertaken in Sweden and noted the country is "analogous to major global uranium-bearing cratons." He also noted that uranium provides half of Sweden's power and a quarter of Finland's, but both are wholly dependent on overseas suppliers of the metal.

In 1980, at its peak, uranium exploration in Sweden and Finland totalled over \$9 million in expenditure, but is today about a third of that expenditure, and one gets a lot less work done per dollar today. Nevertheless at the height of the boom in 2007, Sweden ranked 6th in the world with 45 projects, while Finland came in 15th with 18 projects.

He concluded: "With little uranium exploration over the last 30 years and excellent regional datasets, exceptional opportunities exist to locate the uranium in Scandinavia if time, money, commitment and persistence are dedicated towards further exploration."

Endomines' CEO Markus Ekberg presented on his Pampalo mine, which will start this year. In October Endomines placed a significant order for gold plant equipment with Metso Minerals, including a grinding mill, gravity and flotation separation circuits and dewatering equipment. Endomines signed a project control and management agreement with Finland's Ahma Insinöörit. This agreement includes project management and supervision of all earthmoving and processing plant construction as well as equipment installation. There are 200,000 oz in bankable reserves – enough for seven years' production.

Endomines is the sole owner of mineral rights along the Karelian Gold Line in Finland, where it has 15 years of active gold exploration invested. There is a total of 23 gold deposits – five with reserves (Pampalo, Pampalo E, Hosko, Muurinsuo and Rämepuro). Two mining concessions have been granted so far. There are two more deposits with resources (Kuivisto, Kuittila). The exploration potential is open along strike and at depth. Pampalo is the first deposit to be mined and there are very high

grades in some satellite deposits. Hosko is especially promising (assays up to a maximum of 1,000 g/t Au!)

Michael Nilsson, CEO of Nordic Mines presented Laiva, another new gold mine in Finland (*IM* November, 2009 front cover and inside). Nordic Mines has a total of six project areas in various stages of development in Sweden and Finland. Considerable mineral resources have been identified at the Laiva and Tormua projects in Finland.

Laiva is one of the largest gold projects in the region, planning for a mining rate of 2 Mt/y (130,000 oz/y gold). The deposit is wide and well suited to large-scale open-pit mining. The ore to waste ratio is expected to be in the range of 1:4.

Peter Cordin, Managing Director, noted that his company, Dragon Mining, has been unhedged since last September and is "a growing Scandinavian gold producer." He is expecting to produce 80,000 oz in 2010 – 40,000 oz from Svartliden mine in Sweden and from two mines serving the Vammala production centre near Tampere in Finland – Orivesi, 30,000 oz and Jokisivu, 10,000 oz.

Svartliden is transitioning to underground this year. The mineralisation remains open at depth, and then there is further regional potential. Near Vammala, there is also the Kaapelinkulma gold project. Looking forward, this could be producing by 2011 and the following year could see Dragon producing 110,000 oz – 40,000 oz from Svartliden, 30,000 oz each from Orivesi and Jokisivu, and 10,000 oz from Kaapelinkulma.

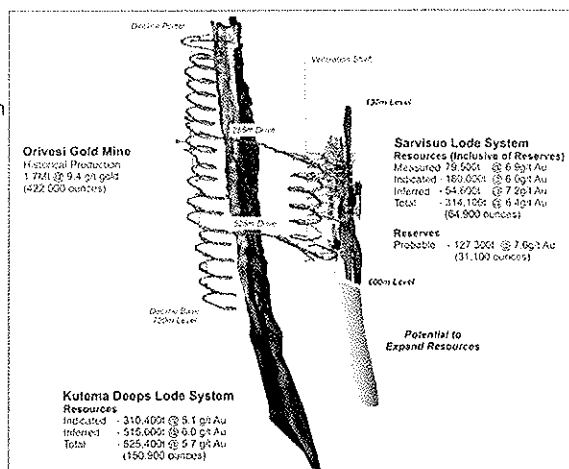
Alistair Cowden, Managing Director, updated delegates on Vulcan Resources' activities in Finland, in the Outokumpu area: a major mineral field with 2,000 Milb

*Dragon Mining is expecting to produce around 30,000 oz of gold from its Orivesi gold mine*

Cu and 1 Moz Au produced (1914-1989). Here, Vulcan's Kylylahti is the largest known unmined deposit, fully permitted, with a completed definitive feasibility study (DFS). He describes it as a "straightforward underground mine, nine-year mine life, potential for 15 years." It has 15.5 Mt of ore in resources and "first class infrastructure." The Luikonlahti mill is close to smelters and refineries for potential sale of copper-gold and cobalt-nickel concentrates.

Luikonlahti is to be Vulcan's treatment hub. It was built in 1968 and treated both Outokumpu type ore and talc ore. Formerly its capacity was 650,000 t/y, but currently it is 350,000 t/y and is being refurbished for €6 million to bring it back to 600,000 t/y. It has been under 'care and maintenance' for 18 months, and is in sound condition (Sweco audit). It is fully permitted with more than 10 years capacity in the tailings dam. There are seven deposits of great interest within 45 km of the mill.

The Kylylahti strategy is to "revisit and update the DFS using Luikonlahti rather than a new €85 million mill, using a new mine plan at higher grades than DFS using recent 'high-grade' resource estimate." It is likely to start up with sale of copper-gold and zinc concentrates and the company has commenced discussions with equity and debt providers and offtakers and is "aiming for a mine development decision in Q2 2010." *IM*



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