



# Abstract

# Supplement

## **Monday PM: British Columbia's First 100 Years of Global Discovery**

Sponsored by: Teck Resources Limited

### **2:00 – 2:25 Sullivan- History, Geology and How it Shaped BC and the Mining Industry**

**Mark Edwards, Director – Environment, Teck Resources Limited**

The historic Sullivan mine began production nearly 100 years ago, at about the same time as the Association for Mineral Exploration BC was founded. Its long history is closely tied to the history of British Columbia and Canada as well as to the history and evolution of the mining and smelting industries. This presentation will describe the importance of the long-lived Sullivan deposit from both a technical point of view as well as a human point of view.

Development of the Sullivan deposit (150 MT at 5.9% Zn, 6.0% Pb, 25% Fe, 71 g/t Ag) went hand in hand with the rise of Consolidated Mining and Smelting Co., which went on to become Cominco and then Teck. Many major technological advances were established there during its 92 years of operation including the differential froth flotation process, new reclamation practices, advanced water treatment processes, and contributing to our understanding of the geology of Sedex deposits. On a broader front the Sullivan became an economic engine for the company and for the neighboring communities, including Kimberley, Cranbrook, and also Trail. At the end of its operations life an innovative and visionary closure planning process addressed environmental and sustainability issues and provided for a 'soft economic landing' for the region.

Activity at the Sullivan has by no means stopped since production ceased a decade ago. Today, ongoing environmental management and water management/treatment activities keep many employees and contractors very busy. And the Sullivan continues to teach us how to further improve mine closure and reclamation processes and guides us to more sustainable mining practices.

## **Tuesday AM: Public Geoscience: Preparing for the Next 100 Years**

Sponsored by: Teck Resources Limited

### **9:10 – 9:25 Prospecting on Beringia's Doorstep: Improving Surficial Geochemistry Techniques near the Glaciated-Unglaciated Boundary, Yukon**

Jeffrey Bond, Panya Lipovsky, Yukon Geological Survey, Whitehorse, Yukon; Robin McKillop AECOM, Markham, Ontario

New gold discoveries in the unglaciated area of central Yukon have relied heavily on soil geochemistry. To support mineral exploration, recent surficial geology mapping projects by the Yukon Geological Survey were focussed on the region that straddles the early Pleistocene glacial limit and the adjacent unglaciated terrain. Similarly, AECOM has been undertaking surficial geology mapping and soil geochemistry studies at the property-scale in the unglaciated Dawson Range. Key drift prospecting problems that have been investigated in these areas include: understanding slope process effects on early Pleistocene glacial sediments; understanding the spatial distribution of loess laterally on the surface and vertically in soil profiles; and examining the effect of permafrost and periglacial processes on sediment mixing and colluviation. This presentation will address both soil and stream sediment sampling strategies that can be employed near the glaciated-unglaciated boundary in Yukon.

## **Wednesday PM: Canadian Exploration Highlights**

Sponsored by: Imperial Metals Corporation

### **4:10 – 4:30 COULON Cu-Zn-Ag PROJECT, QUÉBEC.**

Paul Archer, Vice-President Exploration, Virginia Mines Inc.

The Coulon property is located 15 km north of the Fontanges Airport operated by Hydro-Québec, about 700 km to the east-northeast of Matagami in the James Bay region, Québec. The property, 100%-owned by Virginia Mines, consists of 661 claims (32,853 hectares). The property is accessible all year by a road linked to the Trans-Taïga Highway. A hydroelectric power dam is located less than 10 kilometres south of the main camp.

The Coulon project results from a regional reconnaissance survey carried out by Virginia in the summer of 2003 within the unexplored Coulon Archean volcanic belt. Reconnaissance work exposed new polymetallic showings within an altered bimodal volcanic sequence containing sillimanite-bearing felsic schists and a highly altered anthophyllite-sulphide horizon. The most interesting, the Dom showing, returned values of up to 22.37% Zn, 4.77% Pb, 1.62% Cu, 482 g/t Ag and 482 ppb Au from selected samples. The ensuing geophysical and diamond-drill program led to the discovery in 2004 of three polymetallic massive sulphide lenses, which returned up to 15.39 % Zn, 3.12 % Pb, 117 g/t Ag and 0.46 %

Cu over 10.5 m (lens 16-17); 2.91% Zn, 1.12% Cu, 34.25 g/t Ag and 0.3 g/t Au over 21.8 m (lens 9-25); and 12.65% Zn, 1.36% Cu, 1.54% Pb, 125 g/t Ag and 0.3 g/t Au over 4.70 m (lens 08). Subsequent exploration programs carried out from 2006 to 2008 led to the discovery of four additional polymetallic lenses (lenses 43, 44, 201, Spirit). In April 2009, Virginia Mines announced a NI43-101 compliant, mineral resource estimate, with an indicated resource of 3,675,000 tonnes at an average grade of 3.61% Zn, 1.27% Cu, 0.40% Pb, 37.2 g/t Ag and 0.25 g/t Au and an inferred resource of 10,058,000 tonnes at an average grade of 3.92% Zn, 1.33% Cu, 0.19% Pb, 34.5 g/t Ag and 0.18 g/t Au.

An eighth mineralized lens (223) was discovered during the winter of 2011 while following up on an alteration zone below lens 16-17. Hole CN-11-223 crosscut a semi-massive to massive sulphide intersection grading 3.86% Zn, 0.7% Cu, and 75.09 g/t Ag over 44 metres (true thickness of 37.4 metres), including a richer interval that yielded 7.32% Zn, 0.88% Cu, and 85.14 g/t Ag over 12.15 metres. This new intersection is located at a vertical depth of only 350 metres and is totally open at depth and to the south.

Several of the other mineralized lenses remain open and the potential to increase their tonnage is excellent. Many other priority targets are defined within this fertile volcanic belt that contains mineralized showings and alteration along a lateral distance of over 20 km. Virginia plans geophysical surveying and 12,000 metres of diamond drilling during the winter of 2012.

The Coulon project lies at the junction of four lithotectonic domains: the La Grande, Ashuanipi, Minto, and Bienville Archean sub-provinces. The sector is dominated by intrusions of tonalite and granite, which are hosts to several Archean volcano-sedimentary belts (Venus, Charras, Marilyn, Pitaval, Coulon belts). Virginia has outlined within the Coulon belt a volcanic bimodal sequence that extends over at

least 25 km. Polymetallic mineralized lenses and alteration lie within the felsic volcanic sequence. The altered rocks (highlighted by the presence of anthophyllite, enstatite, muscovite, and mg-chlorite schist) reflect metamorphosed magnesium rich alteration pipes. Massive sulphide lenses are composed of coarse pyrrhotite, sphalerite, pyrite, chalcopyrite and galena in variable amounts.

The Coulon polymetallic lenses represent typical metamorphosed VMS-style mineralization and are reminiscent of economic VMS deposits such as Geco, Ontario and Pyhasalmi, Finland.

#### **Thursday PM: Commodity Review: Balancing Demand Growth and Resurgent Recovery**

Sponsored by: Goldcorp Inc.

#### **4:35 – 4:55 Pan American Silver Corp.**

Geoff Burns , President & CEO, Pan American Silver Corp.

Mr. Burns has been CEO of Pan American Silver since 2004. He holds a Bachelor of Science degree in Geology and a Masters of Business Administration. His career in the precious metals mining industry, where he has held several executive positions, spans over 25 years. Prior to joining Pan American Silver he was Senior VP and CEO of Coeur d'Alene Mines Corp. and CFO of Prime Resources. Mr. Burns has extensive experience in mine operations and project development throughout North and South America and has participated in numerous mine construction projects from feasibility study, through start-up and into continuous operation. A great deal of Mr. Burns' professional activities has concentrated on financial management and he has led numerous capital market transactions including equity, debt and convertible debt placements.

Pan American Silver Corp. is a Canadian primary silver mining company based in Vancouver, BC. The Company was founded in 1994 with the intention to provide investors with the best vehicle to gain real exposure to silver.

Today, Pan American is the second-largest primary silver mining company in the world, with seven operating silver mines in Peru, Mexico, Argentina and Bolivia. Pan American also owns the Navidad silver deposit, one of the largest undeveloped silver deposits in the world, and is the operator of the La Preciosa silver project.

Pan American's mission is to be the largest low-cost primary silver mining company worldwide. It's growth strategy is based on the continued increase of low-cost silver production through the efficient operation and expansion of its existing mines, an aggressive exploration program to replace silver Reserves mined each year and the increase of its silver Reserves and Resources, and the acquisition and development of new silver-rich deposits.

The Company has a recognized team of industry-leading professionals with a wealth of experience in exploration, project development, mining operations and corporate finance.

## CORE SHACK

Sponsored by: Canaccord Genuity Corp. and Rubicon Minerals Corporation

**BC / Yukon / Alaska – Tuesday, January 24**

### **Meliadine Project: Developing a New Gold Mining Camp in Nunavut**

Agnico-Eagle Mines Limited

The high-grade Meliadine advanced exploration project is located near the western shore of Hudson Bay in the Kivalliq region of Canada's Nunavut Territory, 25 km northwest of the hamlet of Rankin Inlet and 1,500 km north of Winnipeg, Manitoba.

Claims were first staked on the Meliadine property in 1987. The Discovery gold deposit was found in 1989, and Tiriganiaq (the largest deposit to date) in 1993. Agnico-Eagle acquired its 100% interest in Meliadine by merging with Comaplex Minerals Corp. in July 2010. A \$62-million exploration drilling program has already been initiated; approximately 200,000 metres of drilling is planned through early 2013, mainly to convert mineral resource to reserves at Tiriganiaq. Another \$68 million has been budgeted through early 2013 to complete an underground bulk sample, feasibility study, permitting and the construction of an all-weather road linking the project to Rankin Inlet.

Archean volcanic and sedimentary rocks of the Meliadine greenstone belt underlie the property, which is mainly covered by glacial overburden, with deep-seated permafrost. The rock layers have been folded, sheared and metamorphosed. They trend west-northwest, dip to the north, and appear to have been overturned. The rock units are truncated by the Pyke Fault, a regional structure that extends the entire 80-kilometre length of the large land package (over 52,000 hectares).

The Pyke Fault appears to control gold mineralization on the Meliadine property. At the southern edge of the fault is a series of oxide iron formations that host all five Meliadine deposits. The deposits consist of multiple lodes of mesothermal quartz-vein stockworks, laminated veins, and sulphidized iron formation mineralization with strike lengths up to 3 km. The Upper Oxide iron formation hosts the TIRIGANIAQ and WOLF NORTH zones. The two Lower Lean iron formations contain the F ZONE, PUMP and WOLF MAIN deposits. Wolf, F zone and Pump are all within 5 km of Tiriganiaq. The DISCOVERY deposit is 17 km east-southeast of Tiriganiaq, and is hosted by the Upper Oxide iron formation.

In January 2010, the project had an NI-43-101-compliant mineral resource in these five deposits containing 0.1 million ounces of gold in the measured category (0.3 million tonnes at 10.6 g/t), 3.2 million ounces of gold in the indicated category (12.6 million tonnes at 7.8 g/t) and 1.7 million ounces in the inferred category (8.4 million tonnes at 6.4 g/t).

Four core boxes displaying samples from the Tiriganiaq deposit. Maps, long sections and cross sections illustrating the five main deposits. Agnico-Eagle employees Guy Gosselin, Marc Legault and Denis Vallaincourt.

## **Cerro Maricunga Oxide Gold Project, Maricunga Mineral Belt, Chile**

Carl B. Hansen – President and CEO, Atacama Pacific Gold Corporation; Eugene Toby - Bushwalker Exploration

The Cerro Maricunga oxide gold deposit lies at the northern end of a trend of precious and base metal deposits located within the Maricunga Mineral Belt, 140 kilometres northwest of the city of Copiapo, Chile. The Cerro Maricunga property is 100%-owned by Atacama Pacific Gold Corporation which commenced a 42,000 metre, Phase III drill program in November 2011 in support of resource expansion and economic studies. Based upon the 33,330 metres of drilling completed on the deposit, Cerro Maricunga presently hosts an indicated resource of 1.62 million ounces of gold (92.8 Mt grading 0.54 g/t Au) with a further 1.95 million ounces (116.7 Mt @ 0.52 g/t Au) in the inferred category.

Mines in the Maricunga Minerals Belt include Kinross Gold's La Coipa gold-silver mine and Maricunga gold mine. Significant mineral deposits include the large Cerro Casale gold-copper deposit (Barrick/Kinross), the Caspiche gold-copper deposit (Exeter) and the Volcan gold deposit (Andina Minerals).

The basement rocks in the Maricunga Mineral Belt comprise a series of volcanic-plutonic-sedimentary arcs of Mesozoic-Cenozoic age which are associated with the subduction of the Pacific Plate below the South American Plate. A large volcanic caldera complex developed over basement rocks of Paleozoic-Triassic and Mesozoic-Early Tertiary and beginning with the development of large andesitic (dacitic) stratovolcanoes starting in the Oligocene-Miocene (23-14 Ma – based on K/Ar dates)(Bartlett, 2004, Geoexploraciones, 2003). High angle reverse faulting occurred between two sub-belts, the 24-20 Ma western early Miocene and the 14-13 Ma eastern middle Miocene, in response to regional compression induced by subduction zone flattening. A series of prominent northwest structures have been noted throughout the Maricunga Mineral Belt which may have played a role in the emplacement of several mineral deposits.

The Cerro Maricunga deposit is located within the partially eroded Ojos de Maricunga stratovolcano which is composed of extensively developed mid-Miocene pyroclastic volcanics with a central dacitic-andesitic Porphyry and Breccia Complex ("PBxC") which hosts the gold mineralization. Mineralization is associated with black banded veinlets and magnetite-chlorite breccias and veinlets which are largely confined to the PBxC. The stratovolcano overlies slightly older Lower-Mid Miocene pumaceous rhyodacitic pyroclastic tuffs. Subsidiary porphyritic dacitic flow domes are developed along north-northwest trending faults which are flanked by volcanic breccias, pyroclastic flows and tuffs and dacitic-andesite flows, and very locally by tuffaceous arenites and volcaniclastic conglomerates.

The oxide ore at Cerro Maricunga is a distinguishing feature of the deposit and is a characteristic which gives the deposit an advantage over others in the Maricunga Mineral Belt. Total copper grades are very low, averaging in the 0.03% range, with leachable copper being a fraction (1 to 2.5%) of the 0.03%. Recorded pyrite is in the order of <0.1%. The deposit may be regarded for metallurgical purposes as essentially a leached capping, however, the oxide ore is a primary characteristic associated with the

emplacement of the mineralization. Column tests have returned gold recoveries from 76 to 89% at a 19 to 25 mm crush size.

Early alteration at Cerro Maricunga is characterized by a change from high temperature hydrous (amphiboles, biotite) to anhydrous products (pyroxene, plagioclase, Fe-Ti oxides) associated with decompression. Later alteration (intermediate argillic) is the result of falling temperatures although this style of alteration is weak at Cerro Maricunga. Disseminated pyrite is observed surrounding the complex in distal positions, and probably forms part of a propylitic alteration halo.

### **Pyramid Porphyry Cu-Mo-Au Project Alaska Peninsula, Alaska USA**

The Pyramid Project is a significant new copper-gold-molybdenum porphyry discovery located near tidewater on the southwest Alaskan Peninsula. The project is a joint venture operation between Full Metal Minerals and Antofagasta Minerals and is completing its second year of activity. A total of 4244 metres of diamond drilling in 17 holes have been completed to date; including 2576m of drilling over 12 holes in 2011. Highlights from the 2010 & 2011 drilling programs include:

- PY10-01: 467.6 metres @ 0.43% Copper Equivalent
- PY10-05: 194.78 metres @ 0.63% Copper Equivalent
- PY11-07: 104.0 metres @ 0.72% Copper Equivalent
- PY11-010: 310.29 metres @ 0.53% Copper Equivalent
- PY11-012: 208.00 metres @ 0.54% Copper Equivalent
- PY11-014: 100.00 metres @ 0.76% Copper Equivalent
- PY11-016: 155.94 metres @ 0.97% Copper Equivalent
- PY11-017: 117.54 metres @ 0.81% Copper Equivalent

Porphyry Cu-Mo-Au mineralization at Pyramid is hosted within early Cretaceous siliciclastic sediments and late Miocene age quartz diorite to quartz feldspar porphyry stocks and dikes. Multiple porphyry centers have been identified through detailed mapping and drilling. The heart of the system is a magnetite rich potassically altered quartz diorite flanked asymmetrically and dominated by phyllic alteration in strongly hornfelsed sediments and intrusive rocks. Mineralized rocks are locally cut by a series of intra-mineral to late-mineral dikes and small stocks ranging in composition from quartz rhyolite porphyry to gabbro. The most important intra-mineral intrusives appear to be feldspar and quartz feldspar porphyry dikes.

Paragenetically, copper+/-gold mineralization appears to be an early event and developed within both intrusive and surrounding hornfels as diffuse sericite-quartz-chalcopyrite-clay-feldspar stockwork veins and veinlets, or 'early halo veins', similar to EDM (early dark micaceous) veins in well-known deposits

such as Bingham Canyon, Butte, Chuquicamata, and Los Pelambres. The early halo veins are cross-cut by a series of A quartz-feldspar-sulphide veins, B style quartz-moly-chalcopryrite-pyrite veins, C-quartz-pyrite veins, and late D-style pyrite-quartz veining. Anhydrite-sulphide veins are locally developed and appear to be part of a B-vein assemblage. Late stage chalcopryrite+/-pyrite veins are also developed in some portions of the hypogene mineralization. Molybdenum mineralization has been dated by Re-Os at approximately 6 Ma reflecting more recent igneous activity along the Alaska Peninsula.

Copper enrichment plays a vital role in the deposit as a supergene chalcocite+/-covellite+/-bornite blanket is well developed on the north, southwest, and southeast parts of the system. Enrichment true thickness is known to exceed 200m in some parts of the system and leached capping ranges between 0 and +100m thickness. Mineralization is open in all directions and the depth extent of hypogene mineralization has yet to be determined as most drilling has been focused on identification of the enrichment blanket.

### **TURNAGAIN Ni-Co-PGE DEPOSIT**

Tony Hitchins and Greg Ross, Hard Creek Nickel Corp.

The Turnagain Ni-Co-Pt-Pd project is located in northern British Columbia, 1350 km northwest of Vancouver and 70 km east of the town of Dease Lake. Access is by paved Highway 37 to Dease Lake and then via an existing 'resource road' to the site or by light aircraft to a gravel strip adjacent to the exploration camp. The project is 100 percent owned by Hard Creek Nickel Corporation (HNC).

After the initial discovery of nickel and copper sulphides in a bank of the Turnagain River, Falconbridge Nickel Mines acquired the property in 1966 and, until the early 1970's, conducted various surveys followed by exploratory drilling. Between 1996 and 2011, HNC and predecessor companies, Bren-Mar Resources Ltd. and Canadian Metals Exploration Limited, optioned the property then conducted extensive ground and airborne geophysical surveys, a geochemical soil survey, geological mapping, environmental base line studies, drill programs and metallurgical test work. A total of 79,351 m in 320 core holes have been completed to date.

In December 2011, AMC Mining Consultants (Canada) Ltd. completed a NI 43-101 compliant Preliminary Economic Assessment of the Turnagain Ni project based on an open pit mine and mill producing a direct shipping nickel concentrate. Using a cut-off grade of 0.1% Ni, the property contains an estimated 865 Mt of Measured and Indicated Resources at 0.21% Ni and 0.013% Co. An additional 976 Mt grading 0.20% Ni and 0.013% Co is classified as inferred. Recent conventional flotation test work has produced a concentrate grading 18% Ni and 0.96% Co at 58% recovery.

The Turnagain Alaskan-type mafic-ultramafic intrusion is an elliptical body 3 km x 8 km with the long axis broadly conformable to the northwesterly-trending regional structural grain. Except for the southern side, which is in intrusive contact with hornfelsed phyllitic and volcanoclastic sediments, the ultramafic body is in fault contact with contorted, often graphitic and pyritic, phyllite. The ultramafic body is presently interpreted as a sub-volcanic magma chamber filled with a sequence of cumulus lithologies from dunite±chromite, near the interpreted paleo-base, through wehrlite, olivine clinopyroxenite, clinopyroxenite, magnetite pyroxenite and hornblende diorite. A late granodiorite to hornblende diorite

intrusion separates the large dunite-dominant body from a smaller sub-chamber of magnetite clinopyroxenite and hornblendite.

The Turnagain ultramafic intrusion is an unusual Alaskan-type complex in that it hosts relatively abundant sulphide minerals. Sulphide mineralization is concentrated in the southeastern portion of the intrusion where numerous hornfels xenoliths, often partially digested, have contributed sulphur and graphite that led to the precipitation of sulphides from the ultramafic magma.

Intercumulus sulphides are present in trace to minor amounts in all ultramafic lithologies but increase significantly from sparse disseminations to extensive zones of 2-7% disseminated sulphides, minor net-textured intervals and, rarely, massive sulphide intervals in the Northwest-Horsetrail-Hatzl deposits. Sulphide mineralization is best developed in the vicinity of the transition from dunite to wehrlite and olivine clinopyroxenite. Most sulphide intervals are dominated by pyrrhotite>pentlandite with trace amounts of chalcopyrite, bornite and millerite. Where serpentinization is moderate to intense, sulphide grains, particularly pyrrhotite, are rimmed and partially replaced by magnetite and, locally, valleriite becomes a relatively abundant sulphide. Minute grains of the Pt and Pd minerals sperrylite and sudburyite, respectively, are often attached to pentlandite and contribute to the 50-200 ppb Pt+Pd analysed in the Horsetrail-Northwest mineralization.

Nickel sulphides intersected elsewhere on the property require additional exploration to determine their extent and significance.

Although nickel mineralization has been the focus of exploration, there are a number of targets with indications of platinum and palladium mineralization. In the Cliff area, Pt and Pd occur with Ni-Cu in pyrrhotite-rich intervals of olivine clinopyroxenite. Several varieties of clinopyroxenites in the DJ-DB area host Pt-Pd mineralization, especially where clinocllore alteration and chalcopyrite are present. Exploration in 2012 is planned to evaluate these and other Pt-Pd targets.

### **Cinco de Mayo Project, Chihuahua, Mexico**

#### **Blind Ag-Pb-Zn and Au-Mo Discoveries at MAG Silver's Cinco de Mayo Project, Chihuahua, Mexico**

Peter K.M. Megaw, Exploration Manager, MAG Silver-IMDEX Inc.; James A. McGlasson, Chief Project Geologist, James I. Lyons, Chief Consulting Geologist, IMDEX Inc.; Lyle Hansen, Geologist, MAG Silver Corp.

Cinco de Mayo is a 25,000 hectare Ag-Pb-Zn Carbonate Replacement Deposit (CRD) prospect located in north-central Chihuahua, Mexico that emerged from 15 years of systematic exploration and study of the geologic characteristics of major CRDs in Mexico. Cinco de Mayo lies directly along a major deep crustal break that forms the western boundary of the Jurassic Chihuahua Trough. Chihuahua's most important CRD/skarn systems lie along this fault and share many key features including: high Ag, Au, Mo, W and Cu; favorable structural and stratigraphic localization; polyphase igneous rocks; dominance of replacement over open-space filling; skarn and hornfels alteration; metalliferous jasperoids and high iron sphalerite. All these features, except intrusive rocks and skarn/hornfels alteration, were observed during the initial visit to Cinco de Mayo Ridge, a NE-SW elongate limestone ridge about 0.5 km wide and

2.5 km long surrounded by alluvium. Jasperoids and mineralization exposed in the ridge appeared to be sourced laterally under cover.

Alluvium covers much of the project area so exploration is primarily guided by projection of outcrop geology, iterative 3D drillhole modeling and geophysics plugged into a proprietary CRD model. Pre-drilling work included biogeochemical sampling, NSAMT and airborne Magnetics-EM. Mineralization was cut in the first drill hole at Cinco Ridge and the massive sulphide replacement Jose Manto was discovered with Hole 20. The size of the Jose Manto, 2,000 m by 300 m by up to 16 m thickness, and scheelite-bearing garnet skarn, associated with felsic dikes cut below and near the Jose Manto, suggested that flying an expanded airborne magnetic and ZTEM survey was warranted. This revealed a pronounced linear anomaly under cover 4 km west of the Jose Manto and the first hole (Hole 130) found the Pozo Seco Moly-Gold Body (PSB) just below surface. The PSB is a structurally-controlled jasperoid over 2500 m long, 300 m wide and 50 - 250 m thick. Molybdenum mostly occurs on fracture surfaces as powellite ( $\text{CaWO}_3$ ) with native gold in later fractures. The PSB has an Indicated Resource of 29 million tonnes averaging 0.147% Mo and 0.25 g/t Au and another 23 million tonnes of Inferred Resource at slightly lower grade. Metallurgical test-work is underway.

Drillhole spacing on the Jose Manto has been 100-250 metres, so it is not yet known where the thickest part of the manto is. Manto mineralization consists of massive coarse-grained galena and sphalerite with pyrite replacing pyrrhotite. Barite, fluorite and manganoan calcite are the principal gangue minerals. Limestone beds up to 7 m thick are completely replaced, separated by thinner partially to unreplaced beds. In late 2011, focus returned to the gap between the Jose Manto and mineralization first drilled at Cinco Ridge. The new drilling has now linked the two, giving a combined strike length of over 4,000 m. In Hole 380, a 4 m thick limestone bed is replaced by massive sulphides grading 386 g/t (12.4 opt) Ag; 8.2% Pb and 14% Zn. Compositing this with the thinner parallel mantos gives 11 m grading 163 g/t (5.2 opt) Ag; 3.7% Pb and 7.8% Zn.

All but a few of the 384 holes drilled within the 12 by 18 km Cinco de Mayo project area have hit at least trace mineralization. PSB Mo-Au jasperoid mineralization is at least 100 times larger than similar mineralization seen in other CRDs and the Jose Manto is one of the largest mantos ever found. The scale and nature of mineralization combined with large geophysical anomalies indicates that Cinco de Mayo could be a mega-district. Exploration will continue focusing on tracing known mineralization towards the intrusive center/source of the system.

### **Recent Carlin-Type Gold Discoveries on the Rackla Gold Project in central Yukon**

Rob Carne – President, ATAC Resources Ltd., Julia Lane – Project Manager, Archer, Cathro & Associates (1981) Limited, Venessa Bennett – Geomantia Consulting

The Rackla Gold Project is located in central Yukon within middle Proterozoic to Paleozoic clastic and carbonate sedimentary rocks deposited along the fault-controlled North American paleo-continental margin. The 1,600 sq/km property hosts two distinct belts of gold mineralization termed Rau Trend and Nadaleen Trend. The Rau Trend hosts a variety of different types of gold targets and most appear to be intrusive-related. The Nadaleen Trend, some 100 km to the east, hosts Carlin-type gold occurrences.

Although the two styles of mineralization are conventionally thought to be unrelated, there is evidence on the Rackla Gold Project that both share a common structural setting which is responsible for the abundance of gold and pathfinder element occurrences.

In 2011, ATAC's activities in the Rau Trend included completion of a 43-101 compliant resource estimate on the Tiger Deposit and discovery drilling of high grade (structurally controlled) Ag-Pb-Zn mineralization on the nearby Ocelot occurrence.

At a cut-off grade of 0.30 g/t gold, the estimated Tiger Deposit oxide plus sulphide resources are:

- Indicated: 508,000 ounces gold (7,150,000 tonnes at an average grade of 2.21 g/t)
- Inferred: 290,200 ounces gold (8,280,000 tonnes at an average grade of 1.09 g/t)

Of particular significance is the near surface high-grade oxide mineralization. At a cut-off grade of 1.60 g/t gold, the estimated Tiger Deposit oxide resources are:

- Indicated: 337,500 ounces gold (2,470,000 tonnes at an average grade of 4.25 g/t)
- Inferred: 17,400 ounces gold (180,000 tonnes at an average grade of 3.00 g/t)

The primary focus of the 2011 exploration program in the Nadaleen Trend was delineation of Carlin Type gold mineralization. Additionally, a concurrent and aggressive regional exploration program involving geological mapping and geochemical sampling along the entire 185 km long claim block was also undertaken.

Seven areas of Carlin-type gold mineralization are present within the Nadaleen Trend, where 89 diamond drill holes totalling 26,600 m were completed. This work has outlined significant mineralization on the Conrad, Osiris, Isis and Isis East occurrences. Host rocks are Middle Proterozoic to Lower Paleozoic silty limestone, calcareous diamictites, non-calcareous siliciclastics and mafic intrusions that have undergone polyphase deformation.

Gold mineralization occurs within all units but is best developed within the limestone sequences where alteration is characterized by decalcification accompanied by peripheral calcite flooding. Mineralization within non-calcareous rocks is generally by brittle fracturing and directly associated with fault breccia and/or intense fracture development. Gold mineralization is most commonly associated with black, fine grained sooty pyrite, and is sometimes accompanied by the arsenic sulphides realgar and orpiment.

The setting, mineralization and alteration of the Nadaleen Trend showings are completely consistent with their classification as Carlin-type gold deposits.

## **NORTH AMERICA – Wednesday, January 25**

### **Alderon Iron Ore Corp.**

Tayfun Eldem, *PEng - President and CEO*, Alderon Iron Ore Corp.

Alderon Iron Ore Corp. (ADV:TSX | ALDFF:OTCQX) is developing a near term iron ore project within the Labrador Trough. The Kami Property is located next to the mining towns of Wabush and Labrador City in Western Labrador, Canada and is surrounded by four producing iron ore mines including Rio Tinto's Carol Lake, ArcelorMittal's Mont Wright and Cliffs' Scully Mine and Bloom Lake. The project is also less than 6 km from a multi-user railway that will take the concentrate to a year round, deep sea port on the St. Lawrence Seaway.

Kami currently contains an NI 43-101 Mineral Resource estimate of 490 million tonnes indicated at 30.0% iron and an additional inferred resource of 598 million tonnes at 30.3% iron. Based on the Rose Central Preliminary Economic Assessment, Alderon plans to commence commercial production in 2015 at a rate of 8 million tonnes per year at a grade of 65.5% iron. The PEA also illustrated robust project economics including an NPV (discounted at 8%) of US\$3.07 billion, an IRR of 40.2%, with a payback period of 2.7 years. With the addition of the North Rose resource, an option to ramp up to 16 million tonnes per year is being considered and will be included in the feasibility study, expected in Q3 2012. An additional 26,000 metres of infill and exploration drilling is being carried out with the goal of upgrading the resource to measured and indicated as well as expanding the known mineralization in preparation for the feasibility study.

### **Geology of Eagle Hill's Windfall Lake Gold Project in northwestern Quebec**

Jean-Philippe Desrochers (Eagle Hill) and Darrell Turcotte (Eagle Hill)

The Windfall Lake Gold Project is in the central part of the Late Archean Urban-Barry greenstone belt in Abitibi, Quebec. On November 3<sup>rd</sup> 2011, Eagle Hill announced the first mineral estimation for this gold deposit with a total indicated resource of 1.144 million tonnes at 9.10 g/t of Gold (**335,000 oz**), and a total inferred Resource of 1.690 million tonnes at 6.70 g/t of Gold (**364,000 oz**) at a cut-off grade of 3.0 g/t gold. Over 90 percent of the current mineral resource lies within an area of 600 by 900 metres and within 450 metres from surface and occur in several sub-vertical east-northeast-trending mineralized zones. The mineralized zones vary in width between 2 and 25 metres and most of the zones remain open along strike. The gold mineralization occurs within a low pressure zone along a high strain deformation corridor trending northeast and characterized by variable hydrothermal alteration associated with pyrite stockwork and disseminated pyrite mineralization.

In the area of the Main Zone, the volcanic rock units and gold mineralization are intruded by a series of calc-alkalic to alkalic felsic porphyry dikes that exhibit pyrite stockwork and pyrite dissemination similar to the mineralization hosted in volcanic rock units of the Main Zone. However, the dikes contain much lower gold grades than the gold zones hosted in the volcanic rock units in general. The characteristics of the gold mineralization in the Main Zone are similar to intrusion-related gold mineralization described as atypical greenstone-hosted deposits by Robert (2007). Although these atypical deposits display similar regional-scale controls and commonly occur in the same camps as orogenic deposits, they differ in styles

of mineralization, metal association, interpreted crustal levels of emplacement, and relative age. Those gold deposits show a close spatial association with high level porphyry stocks and dikes.

The gold mineralization is hosted in volcanic units of similar age as those of volcanic cycle 1 in the Chibougamau mining camp (2720-2730 million years), and are characterized by mafic and felsic volcanic flows of the Macho Formation. This volcanic succession is overlain by deformed younger sedimentary units.

At the property-scale, the volcanic units are located in an early thrust zone dipping shallowly southeast. The volcanic rock units dip at 20 degrees southeast with opposing younging directions, thus indicating shallowly dipping folds. The porphyry dikes have intruded sub-parallel to the thrusting and cross-cut some of the gold zones.

Due to the significance of the gold mineralization at Windfall Lake, Eagle Hill has undertaken a 25,000 metre drill program that commenced during the fall of 2011 and will continue until the end of March 2012. The primary objective is to test the extensions of the known gold-bearing zones and increase the size of the resource.

### **New Discoveries in the Historic Guanajuato Mining District, Guanajuato, Mexico**

Barry D. Devlin, VP Exploration, Endeavour Silver Corp.

Guanajuato is the second largest Mexican silver district and has produced over 1.2 billion oz silver and 5 million oz gold. Mining in Guanajuato extends from at least 1548 when the first silver-gold vein was discovered in the La Luz area, very close to Endeavour's operating Bolañitos mine. Endeavour's other operating mine is Cebada on the Veta Madre.

The Guanajuato District is located in the Sierra Madre Occidental, a north-northwesterly trending linear volcanic belt. Normal faulting combined with hydrothermal activity around 27 Ma resulted in the silver-gold deposits found in the district. Most of the economic mineralization is related to the north and northwesterly trending structures. There are three major mineralized fault systems in the district; La Luz, Veta Madre and La Sierra.

Since acquiring the property in 2007, Endeavour's focus has been to expand resources and to explore for new sources of mineralization. In 2008, Endeavour discovered the Lucero silver-gold vein which is a new vein in the heart of the La Luz system. The initial discovery hole (SJS-1) intercepted 374 g/t Ag and 3.1 g/t Au over 3.6 m with follow-up intercepts up to 472 g/t Ag and 5.8 g/t Au over 3.4 m. Subsequent drilling has discovered a swarm of new high grade, gold-silver veins near the now-producing Lucero vein. The most significant of these new high grade, silver-gold veins are Karina, Fernanda and Daniela. Drilling highlights include 421 g/t Ag and 3.6 g/t Au over 2.0 m and 193 g/t Ag and 5.1 g/t Au over 2.8 m for Karina and 179 g/t Ag and 7.1 g/t Au and over 9.1m, 391 g/t Ag and 6.6 g/t Au over 3.7 m and 167 g/t Ag and 3.3 g/t Au over 7.2 m on Daniela. Drilling at Guanajuato has now extended the high grade, gold-silver mineralization over more than 600 m length within the Daniela vein.

In 2011, exploration drilling east of the Lucero-Karina-Fernanda-Daniela veins discovered two new high grade silver-gold veins: La Joya and Belen. Drilling highlights include 463 g/t Ag and 6.8 g/t Au over 2.0 m in the La Joya vein and 497 g/t Ag and 5.2 g/t Au over 1.1 m for Belen.

Endeavour's exploration success with discovering new, blind veins in Guanajuato is attributed to a combination of surface and underground mapping and sampling, structural and geochemical characterization of mineralized structures and diamond drilling.

As a result of these new discoveries, Endeavour anticipates there will be a substantial increase in reserves and resources at Guanajuato. This should allow management to undertake the next phase of mine expansion in 2012 from 1000 to 1600 tpd at Guanajuato. In 2011, Endeavour completed a major expansion of the Guanajuato plant from 600 to 1600 tpd on time and budget and the plant successfully ramped up throughput to 1000 tonnes per day by October.

### **Porphyry-Gold Mineralization at the Colpayoc Gold Project Yanacocha District – Northern Peru**

Brian T. Brewer, Jose Quijano, Stan Myers, Keith Laskowski

Colpayoc Gold Project is in the famous Yanacocha Gold District in Northern Peru, which has combined production and resources of more than 70 million ounces of gold, making it the largest gold camp in South America. The Colpayoc Gold Project contains at least 8 gold exploration targets covering 58 km<sup>2</sup>, 12 km southwest of the main Yanacocha mine complex. Estrella owns or has the option to acquire a 100% interest in the property. Two distinctive types of gold mineralization have been identified and explored. Most work has been focussed on the porphyry-gold mineralization in the south-eastern portion of the property where two mineralized intrusive systems have been identified. Structurally controlled polymetallic mineralization, containing silver-gold-zinc-lead-copper-manganese replacement mineralization occurs within jasperoid alteration zones hosted within a northwest trending fault zone, traced for more than 2 kilometres. Potential also exists for skarn-hosted silver-gold-copper mineralization.

#### **Porphyry-Gold Mineralization: Daylight Gold Zone**

The Colpayoc Property is underlain by a Cretaceous marine sedimentary sequence folded into a series of northwest trending isoclinal folds. Folding was followed by a mid-Miocene magmatic event which produced a +3000 metre diameter intrusive center in the vicinity of the Daylight porphyry gold system, and overlying pyroclastic rocks are present in the vicinity of the structurally controlled polymetallic system at Cerro Rico. Two different porphyry intrusions have been identified on the Colpayoc Property and both host significant gold mineralization. The Daylight Zone contains older, quartz-biotite-feldspar porphyry with sericite-pyrite-quartz-magnetite alteration and a younger hornblende porphyry with intense quartz-magnetite stockwork. The Colpayoc Property lies within the prominent Chicama-Yanacocha Structural Corridor and the local structure can be summarized by belt parallel northwest trending faults and folds cut by northeast trending "transverse" faults.

The recent work on the Colpayoc Property has been concentrated on the Daylight Gold Zone. An NI 43-101 compliant inferred resource containing **7.6 million tonnes @ 0.6 g/t gold for 144,600 ounces of gold** was completed in 2010 (SRK Consultants) based solely on the near-surface oxide (porphyry) mineralization in the Daylight Zone. Since then, Estrella Gold Corp. has completed an additional 2,357.2 metres of core drilling on the Colpayoc Property and an updated resource estimate is currently being prepared. The property has the potential to contain a multi-million ounce porphyry gold deposit, similar to nearby Cerro Corona (88 Mt @ 1.0 g/t gold and 0.5% copper, +3 million ounce gold).

#### **Structurally Controlled Ag+Au+Mn+/Zn+/Pb+/Cu Mineralization: Cerro Rico Zone**

The Cerro Rico Zone 2 km northwest of the Daylight Gold Zone contains folded Cretaceous limestone in variable fault contact with younger altered volcanic rocks. The fault zone is entirely hosted in limestone away from the remnant volcanic rocks, and has been traced at least 2.5 kilometres along strike. The fault zone varies from 1 – 40 metres in width and exhibits variable alteration, with jasperoid development and base-metal replacement mineralization. Three trenches totalling 231.8 metres were completed.

Processed ground magnetic data identifies eight additional targets on the Colpayoc Property and indicates that both the Daylight Zone and the Cerro Rico Zone occur within a large alteration zone that encompasses an area of more than 3000 metres in diameter.

#### **Monument Bay Gold Camp, NE Manitoba: Delivering Canada's Next Gold Camp**

Glen Kuntz, P. Geo, COO, Mega Precious Metals Inc.

The 100% owned Monument Bay gold camp in Manitoba is Mega Precious Metals Inc.'s most advanced brownfield project. The gold camp is located 570 km northeast of Winnipeg and 340 km southeast of Thompson, Manitoba and is approximately 25 km long by 15 km wide. It hosts high-grade gold mineralization within the Stull Lake greenstone belt; similar to the Red Lake district in Northern Ontario.

Mega currently has an extensive land package comprising 35 claims and 1 mineral exploration license totaling >256 sq km. From inception in 1989 to date, over 130 kilometres of core have been drilled and less than 15% of the current land package has been extensively explored. In the first 9 months of 2011, Mega drilled >27,000 metres of definition drilling, identified 30 new targets, completed extensive environmental baseline work, filed assessments, heritage studies, commenced traditional land use mapping and on June 27, 2011 announced a 47% increase in the gold resources at Monument Bay.

The deposit, that spans less than 4 km of the 25 km length, is now estimated to contain an NI 43-101 compliant Measured Resource of 221,510 tonnes grading 12.48 g/t, plus an Indicated Resource of 2,199,100 tonnes grading 7.12 g/t plus Inferred Resources of 6,147,000 tonnes grading 6.01 g/t using a 3.0 g/t cut off grade. This focused exploration program resulted in converting over 592,000 ounces of gold into the Measured and Indicated category and discovering an additional 1 million inferred ounces gold. The cost of acquisition and discovery is approximately \$10 per ounce of gold in the first 9 months of 2011.

The deposit is an Archean vein complex system and, not unlike many Ontario and Quebec gold mines, is open on strike and dip plus includes numerous parallel structures that have not been tested. The 21 mineralized zones defined to date are extremely predictable and so are large, high grade mineralized systems. Some examples are:

- The C zone has a current strike length of 2,425 m, a dip length of 925 m and an average width of 6.5 m with an average grade of 5.4 g/t
- The current A zone strike length is 1,400 m, dip length is 700 m and the average width is 3.7 m with an average grade of 9.03 g/t.
- The Burn zone has a currently strike length of 450 m, dip length of 325 m and an average width of > 30 m with an average grade of 4.2 g/t.

The exploration program to date has also determined that along with the current mineralized system, other parallel gold bearing mineralized systems exist in the Monument Bay Gold Camp. As a result of this exploration effort, in 2012 Mega will have 3 drills, 1 backhoe and 1 dozer to advance the 30 new targets found along the parallel mineralized systems. Mega's 2012 objectives are to continue to advance these new targets plus continue the current definition/step out drill program to outline sufficient measured & indicated resources to demonstrate positive economics for a combined bulk surface and selective underground mining operations. The project remains on track for an upgraded resource in early 2012 and a Preliminary Economic Assessment (PEA) in the 1<sup>st</sup> half of 2012.

#### **INTERNATIONAL –Thursday, January 26**

##### **Corcoesto Gold Deposit, Galicia, Spain**

Edgewater Exploration Ltd.'s 100% owned

The Corcoesto gold deposit lies in a 2 kilometre wide, N30E-trending dextral shear band in the northwest part of the Schistose Domain of Galicia-Tras Os Montes (SDGTM). The SDGTM represents basement within the Galicia-Tras Os Montes Zone (GTMZ) in the Iberian Massif. The SDGTM is a medium grade metamorphic unit, strongly deformed with recumbent folds and thrust faults consisting of Precambrian to Devonian age metasediments and orthogneisses.

Igneous rocks at Corcoesto are related to syntectonic granites deformed during late stages of formation. Metamorphism has generated strong foliations or banded gneissose textures resulting in biotitic and leucocratic gneisses. Metre scale, late stage felsitic dikes intrude the gneisses in several places. These dikes have intruded previous structures such as foliation (N30E) and fractures (N70E or N70W) and cut mineralized quartz veins indicating they are late stage.

Most lithologies at Corcoesto are disposed as bands parallel to the main shear zone and trend N30E with a dip of approximately 70° NW.

Corcoesto gold mineralization is related to the extensional zones trending N70E which represent second order dextral shears. Higher-grade gold mineralization is related to arsenopyrite-bearing quartz veins, which are frequently included in larger zones of silicification commonly containing disseminated arsenopyrite in association with sericitic and potassic alteration. These veins are present in several styles largely dependent upon the host rock:

- 1) Sheeted vein style      Sheeted veins develop primarily in fine-grained leucocratic orthogneiss at Cova Crea East and Peton de Lobo. Typically the zones consist of very tightly spaced millimetric quartz veins oriented with disseminated arsenopyrite.
- 2) Quartz vein style      This style of mineralization consists of grey to bluish arsenopyrite-bearing quartz veins parallel to extensional zones (N70E). They are common coarse-grained leucocratic gneisses, biotitic gneisses, paragneisses and schists. Veins within the schists are less continuous compared to the those in other lithologies. The quartz veins are included in larger zones of silicification, which commonly contain disseminated arsenopyrite, with sericite and potassic alteration. Where silica replacement is very intense, however, it may be difficult to establish a boundary between the vein and wall-rock silicification.
- 3) Breccia style      This style of mineralization consists of clasts of brecciated host rock that have been cemented and partially replaced by grey to bluish arsenopyrite bearing quartz. The original host rock is normally biotitic gneiss. This type of mineralization is not very common in the deposit, but appears in the westernmost part of Pozo del Ingles and may carry high-gold grade.

Exploration has been very successful at locating and defining gold resources using a combination of geochemical soils sampling, trenching, geologic mapping, and diamond drilling.

The Corcoesto Project has a partially-diluted, NI 43-101-compliant resource of 222,000 ounces Measured (3.89Mt @1.77g/t Au) and 103,000 ounces Indicated (1.82Mt @1.69g/t Au) and a larger inferred resource of 20.3 million tonnes averaging 1.76 g/t Au containing 1,150,000 ounces gold.

Resources are estimated by Ore Reserves Engineering using 0.65 and 2.0 g/t Au cut off, and an Inverse Distance Squared method,

### **Rio Grande Cu-Au-Ag Deposit: A New Game Changing, High-Grade Intercept**

Javier Robeto Kevin B. Heather, Wayne Hewgill, John E. Black, Regulus Resources Inc.; Jorge Kesting, Facundo Huidobro, Pachamama Resources Ltd.

The Rio Grande Cu-Au-Ag porphyry project is located in the high Puna of NW Argentina, 450km west of the city of Salta. The project was discovered by Mansfield Minerals Inc. during regional prospecting in late 1999 and is currently a 50/50 joint venture between Pachamama and Regulus with the latter as the operator.

A total of 97 drill holes, totalling ~48,000m have been completed at the Rio Grande project between 2001 and 2011. The project was put on hold in 2009 when Antares focused its attention to the Haquira

copper project in Peru which ultimately sold to First Quantum in December 2010. After completion of a 24 kilometre Quantec Titan 24 survey at Rio Grande in 2011, the joint venture mounted an aggressive 15,000 metre drilling campaign which led to the discovery of a new zone of high-grade Cu-Au mineralization in the previously underexplored Southwest Zone.

In December 2011, the company released the results from hole RGR-11-86. They included an intercept starting at 293 metres depth with 257.2 metres grading 0.53% Cu, 1.20 g/t Au and 1.59 g/t Ag (1.19% Cu Eq or 2.39 g/t Au Eq); including 54.5 metres grading 1.34% Cu, 4.52 g/t Au and 2.68 g/t Ag (3.79% Cu Eq or 7.58 g/t Au Eq).

The Rio Grande project is located along the prominent NW-trending Archibarca Lineament that also controls the location of the Escondida porphyry Cu deposit (BHP-Billiton), 150 km to the west-northwest in Chile. The project shares many geologic similarities with the Bajo de Alumbrera porphyry Cu-Au deposit (Xstrata), located approximately 300km to the south. The deposit also shares many similarities with some of the "Alkalic-type" Cu-Au porphyry systems found throughout British Columbia and New South Wales in Australia.

The Rio Grande Cu-Au-Ag prospect is located within a partially eroded, earliest Middle Miocene (16.5 Ma), andesite-dominated volcanic-hypabyssal intrusive complex of high-K, calc-alkaline affinity. The Rio Grande complex intrudes through granitic basement rocks into a continental back-arc basin filled with a thick (>1500m), oxidized sequence of continental red bed sandstones.

Seven (7) main alteration types have been identified, including: potassic - K-feldspar, Calcic-Iron-(Sodic) (diopside ± magnetite ± K-feldspar ± scapolite ± actinolite), potassic - biotite (PB), hematite, chloritic / propylitic, iron-oxide / clay, and minor silicification.

Cu-Au-Ag mineralization at Rio Grande occurs within a distinct 2-km diameter ring-shaped fracture zone defined by IP chargeability, as well as Cu- and Au-soil geochemical anomalies. Early exploration focussed on the better exposed Discovery and Sofia zones, however subsequent drilling on the North, #7 and Southwest zones has indicated the mineralization extends around the ring structure. The better mineralization in the ring structure consists of chalcopyrite-magnetite hosted in fractures and crackle breccia-zones associated with variable degrees of K-feldspar, calc-silicate (diopside), and secondary biotite alteration. The high-grade Au-Cu mineralization in the Southwest Zone is related to disseminated chalcopyrite. Better mineralized intercepts encountered to-date are:

- RGR-11-86 (Southwest): 257.2m grading 0.53% Cu, 1.20 g/t Au,
- RGR-11-80 (#7): 187m grading 0.34% Cu, 0.34 g/t Au
- RGA-07-34 (Sofia): 189m grading 0.70% Cu, 0.67 g/t Au
- RGA-06-24 (Sofia): 128m grading 0.47% Cu, 0.71 g/t Au
- RGA-07-40 (Discovery): 103m grading 0.58% Cu, 0.75 g/t Au

- RGA-07-56 (#7): 135m grading 0.53 Cu, 0.65 g/t Au
- RGA-07-48 (North): 152m grading 0.44% Cu, 0.41 g/t Au

The principal copper oxide minerals are chrysocolla, malachite and traces of azurite. The principal sulphide minerals are chalcopyrite and pyrite, which within the ring structure are typically associated with magnetite. Chalcopyrite (with gold) occurs as coarse-grained clots, disseminations, stringers plus fracture and breccia fillings. In the near surface environment, chalcopyrite is commonly oxidized to a dark brown coloured, translucent “copper limonite”, as well as chrysocolla and other blue-green and black oxides (*i.e.*: Cu-bearing Mg-oxides and neotocite).

### **The Bagassi Central Gold Zones: Burkina Faso Gets Its Grade On**

Robert Sibthorpe, President and CEO, Roxgold Inc.

Spurred by a new Mining Act in Burkina Faso in 2003 and a surge in the gold price, 6 new gold mines have been brought into production and more than 35 companies have undertaken exploration programs in the country. Primary gold deposits in Burkina Faso occur in the Paleoproterozoic Birimian greenstone belt formations. Gold deposits of prime economic importance in eastern Burkina Faso were formed in the Baoule-Mossi domain during the Early Proterozoic between 2400 and 2100 Ma. Most Birimian hosted gold deposits occur in corridors 10 to 15 kilometers wide, in the transition zones between volcanic belts and sedimentary basins which are characterized by extensive shear zones. The gold deposits brought into production, or under development in Burkina Faso, are dominantly low grade, bulk tonnage targets being exploited by open pit mining operations.

The Yaramoko property is situated in the Hounde greenstone belt in eastern Burkina Faso. The western half of the permit is underlain predominantly by volcano-sedimentary schists and a wide band of sedimentary rocks thought to be part of the Tarkwaian Group. These rocks are mainly affected by NNE-SSW structures. The deposit type found in these terranes is shear hosted, multi-stage epigenetic gold veins that usually contain polymetallic sulphides and an assemblage of hydrothermal alteration minerals. The eastern portion of the permit is underlain by volcanic rocks composed predominately of amphibolized basalts, andesitic lavas and various pyroclastic rocks. These rocks are mainly affected by NW-SE structures and gold is present in shear zones along them. Granodioritic to tonalitic masses intrude the south-east and eastern portions of the permit. East-west to ESE-WNW shears cut both the volcanics and the intrusives and control the gold mineralization in this area.

In late 2010, a reverse circulation drilling program in the east central area of the Yaramoko concession followed up on gold anomalies from a regional soil sampling survey. Hole YRM-10-RC-036 intercepted 24.6 g/t gold in its final 6 meters. YRM-11-RC-055 subsequently intercepted 28.6 g/t gold over 20 meters. Between June and August of 2011 the Company drilled 40 core holes in this area and selected samples were airfreighted to Canada for assaying. Statistical analysis of the 436 assays received shows that the first quartile had a mean value of 56.27 g/t gold and a median value of 22.24 g/t gold. The first decile (44 samples) had a mean value of 117.45 g/t gold and a median value of 84.77 g/t gold. 19 samples had values exceeding 100 g/t gold and these were widely distributed over the drilled area. Gold

occurs in native form and in fine-grained pyrite, the dominant sulphide, locally making up 10% of the rock but usually less than 1 percent. The host rock is dominantly granite. It appears that gold mineralization and intensive quartz veining is younger than the granitoid intrusion. The presence of intrusive rocks of significantly lower competence than the host mafic volcanic rocks may have been important in localizing fracture and dilation zones near their contacts. Gold mineralization could be a late stage hydrothermal event related to the intrusive activity. The mineralized zones strike E-W while the dominant shear direction of the mafic volcanics is NW-SE. The presence of high grade gold mineralization in the Bagassi Central Zones may provide cause for a review of the exploration potential of intrusive masses within the Burkina Faso greenstone belts.