

## METALLURGICAL EXPERIENCE

Micon International provides metallurgical engineering and review services relating to property evaluation, feasibility studies and operations audits. The firm's professional staff has experience in a wide range of metals and minerals in diverse operating environments.

### PRECIOUS METALS

**Aurelian Resources Inc.:** Provision of technical assistance in metallurgical testwork program as part of feasibility studies for the Fruta del Norte project, Ecuador.

**Barrick Gold Corporation:** Evaluation of milling facilities at potential acquisitions in Chile and Brazil.

**Bolivar Goldfields Ltd.:** Development of the feasibility study of the Tomi gold project, located in Venezuela, to manage basic engineering design and for subsequent development of operating plans.

**Buryatzoloto Joint Stock Company, Ulan Ude, Russia:** Process review and participation in company engineer team for interface between owner and banking groups, for project to upgrade and add carbon-in-pulp processing plant to existing gold operation.

**Caledonia Mining Corp - Filon Sur Project, Spain:** Audit of existing heap leaching gold operation and pre-feasibility study for expansion to one million tonnes per year. Subsequent monitoring study of the project on behalf of the lending institution.

**Cambior Inc.:** Process design, cost estimates and management of pre-feasibility study of the Gross Rosebel gold project in Surinam.

**Chase Manhattan Bank, Global Mining Group:** Technical review and monitoring to completion of Cerro Vanguardia S.A. gold-silver project in Argentina.

**CVG Minerven:** Evaluation study of the 700 t/d gold mill in El Callao, Venezuela.

**CVRD, Igarape Project, Para, Brazil:** Process design for 3,000 t/d gold plant employing SAG milling and carbon-in-pulp extraction in the Amazon region.

**Doelcam Inc.:** Process design and local cost evaluation for a feasibility study for 20,000 t/d silver and gold tailings reclamation plant in Pachuca, Mexico employing hydraulic monitors and carbon-in-leach extraction.

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**First Dynasty/Global Gold Corp, Armenia:** Study of gold mining industry in Armenia: Review of process and mechanical integrity of the metallurgical resin-in-pulp plant. Flow sheet development, preliminary equipment selection, preliminary engineering, order-of-magnitude capital and operating cost estimates for a scoping study of a carbon-in-leach tailings retreatment facility at Ararat.

**Lyon Lake Mines Ltd., Beta Vargas Project, Costa Rica:** Test evaluation and basic process design for feasibility study of gold heap leach project.

**Les Ressources Aiguebelle:** Destor project, Quebec. Process design and commissioning of a 1,000 t/d gold mill featuring SAG milling and carbon-in-pulp process.

**Northumberland Mines:** Process design for feasibility study for a 1,000 t/d gold-silver vat leaching operation at the Murray Brook gold-silver project, New Brunswick.

**Polyus Gold, Russia:** Review of the metallurgical aspects of the Natalka project, Kuranakh operation, and Nezhdaniskoe project, as part of Micon's audit review and competent persons report on Polyus' mining assets and mineral reserves.

**Rayrock Resources Ltd.:** Evaluation of three operating gold mills and heap leaching operations in Nevada.

### **Saudi Company for Precious Metals:**

- Design, supply and installation of carbon column and solution distribution system for heap leach project at the Sukhaybarat gold mine, Saudi Arabia.
- Feasibility study, including detailed process design for the Bulghah heap leach gold project, Saudi Arabia.

**Union Bank of Switzerland:** Monitoring of the construction commissioning and completion testing of the Santa Fe Rabbit Creek gold plant, including conventional carbon-in-leach and heap leaching operations.

**Union Bank of Switzerland:** Project review and monitoring from construction until completion of the Peñoles La Ciénega gold-silver mine in Mexico.

## BASE METALS

**Asturiana de Zinc:** Technical and financial review of the mine and mill operations of the Reocin lead-zinc mine in Spain.

**Barrick Gold Corporation:** A prefeasibility study into the bacterial heap leaching of disseminated sulphide ore to recover nickel and cobalt in southern Africa

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**Bolivar Gold Corporation:** High level due diligence of the metallurgical operations of a large copper/gold operation in Serbia.

**Brunswick Mining & Smelting Corp., Bathurst, New Brunswick:** Conducted studies for copper-lead-zinc concentrate dewatering and concentrator expansion.

**Canadian Imperial Bank of Commerce:** Technical evaluation to a banking consortium on the Collahuasi copper project in Chile.

**Comsup Commodities:** Due diligence of the metallurgical processing facilities associated with two copper/molybdenum mining operations in Armenia.

**Confidential Client:** Detailed metallurgical due diligence of North American PGM/Ni/Cu mining operation on behalf of a potential investor. The study included a detailed review of the mineral processing facilities, smelter and base metal refinery.

**Canadian Arrow Mines Ltd., Kenbridge Project, Canada:** Provision of technical support for the metallurgical testwork program in support of feasibility studies for the Kenbridge nickel-copper project in Ontario

**Crowflight Resources Inc.:** Management of the metallurgical design aspects and the overall independent feasibility study for the Bucko Lake nickel project, Manitoba.

**Doelcam Inc.:** Feasibility study management of the Bilbao copper-zinc project, comprising an oxide ore vat leaching and solvent extraction processing plant located in Mexico.

**European Nickel, Albania:** Prefeasibility study into the recovery of nickel and cobalt from a lateritic ore using heap leach technology. The proposed 2.5 million t/y operation included two-stage acid heap leaching, two-stage iron removal circuit comprising primary pressure leaching to remove iron as haematite and to recover sulphuric acid, followed by nickel/cobalt precipitation.

**Gold Hawk Resources, Coricancha Mine, Peru:** A technical review of the Coricancha metallurgical facility and associated operating costs on behalf of an investor. The Coricancha process includes base metal flotation to produce lead and zinc concentrates and bacterial leaching to recover gold.

**Golder Associates, Fortaleza De Minas, Brasil:** A comprehensive review of the nickel production at MSF's processing facilities and an assessment of the component metallurgical efficiencies in order to reconcile nickel production between the mine, concentrator and smelter.

**Inmet Mining, Spain:** Conceptual process design for a scoping study performed on the gossan mineralization to recover lead and gold at the Cobre Las Cruces operation.

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**Les Mines Camchib Inc., Chibougamau, Quebec:** Conceptual studies and preliminary engineering for rehabilitation of 700 t/d copper-gold mill, supervision of pilot SAG mill testwork and expansion of the operating plant.

**Les Mines Sigma: Val d'Or, Quebec.** Design and commissioning of mill expansion, including new 1,400 t/d grinding and gravity recovery circuit and electrical conversion of plant equipment to 60 Hz power supply.

**Les Ressources Audrey, Noranda, Quebec:** Detailed engineering for a copper-zinc flotation concentrator employing SAG milling and pressure filter dewatering at the Mobrunc copper zinc project.

**Morgan Guaranty Trust Company:** Feasibility study review for expansion at Freeport Indonesia's Ertzberg copper-gold project for production to 52,000 t/d.

**Mustang Minerals Corp.:** Co-ordination of a preliminary metallurgical test program for the Maskwa Ni project in Manitoba.

**Ursa Major Minerals Ltd.:** Metallurgical aspects, including the management of the testwork program, and assistance with the management and coordination of a feasibility study for the Shakespeare 4,000 t/d nickel-copper-PGM project, Sudbury, Canada.

## INDUSTRIAL MINERALS

**Agrium Inc., Ontario:** Flow sheet development, metallurgical design and associated capital and operating cost estimates for a feasibility study on a green fields phosphate project in Kapuskasing.

**Avalon Ventures, Separation Rapids Rare Metals Project, Ontario:** Conceptual process engineering and plant operating and capital cost estimates for the pre-feasibility study. The products of mining and processing include concentrates of petalite, spodumene, rubidium-rich potassium feldspar, sodium feldspar and tantalum.

### **Foskor, South Africa:**

- Technical aspects of an in-depth study into the milling and classification circuits at Foskor's phosphate operation in Phalaborwa. (1993)
- Process assistance on a development project at Phalaborwa to recover alumina, magnesia and potassium sulphate from phlogopite and kaolin using liquid ion exchange and packed column technology. (1995)

**Minera Yolanda Ltda.:** Evaluation of the mining and extraction plant operations of new nitrate producing facility in Chile.

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**World Wide Minerals Inc., Kazakhstan:** Due diligence study of phosphoric acid plant, ammonium phosphate fertilizer plant and gold recovery plant at a uranium production facility.

### OIL SANDS

**Suncor Energy:** Oilsands operation and commissioning of the Millennium Extraction Plant (10,000 tonnes per hour). Key projects include automation of the Primary Separation Vessel (PSV), by developing interface measurement technology using pressure transducers and camera imagery, installation of siphon lines with accompanying operating procedures, setup Operation's assay lab to increase assay turnaround for the determination of bitumen/mineral/water (BMW), Distributed Computer System (DCS) monitoring of the hydrotransport and tailings pipelines. Consolidated Tailings (CT) to improve pond capacities.

**Synenco Ltd:** Oilsand project development of the Northern Lights lease (5,000 tonnes per hour). Process and material balance development. ERCB regulatory approval. Oilsand extraction pilot plant operation.