

**WEDNESDAY, AUGUST 24, 2005, A.M.**

**SESSION 39: INTERNATIONAL CONFERENCE ON NICKEL AND COBALT**

**OPERATIONAL UPDATES**

Sponsor(s): The Non-Ferrous Pyrometallurgy Section, Metallurgical Society of CIM

Room: Doll

Chair(s): M. KING, Falconbridge Ltd., Canada and

A. DALVI, Inco Technical Services Ltd., Canada

PAPER 39.1—9:00

**COREFCO REFINERY – REVIEW OF OPERATIONS.**

R. KRENTZ and P. CORDINGLEY, Sherritt International Corporation, Canada

The nickel-cobalt sulphides produced from limonitic laterite ores by Moa Nickel S.A. in Cuba are shipped to the Corefco nickel-cobalt refinery in Canada. Major changes to the refining process were required from about 1991 to 1994 to handle the Moa sulphide feed with its unusually high cobalt content. In the period 1994 to 2004 the production capacity of the refinery has increased to match increases at Moa, and the process has been refined and improved. This paper reviews the chemistry described above and highlights some of the recent changes made to the refinery processes with emphasis on product quality, debottlenecking of existing equipment and selective capital investment to increase production. These changes have resulted in increased production of 51% for nickel and 82% for cobalt in the period 1994 to 2004.

PAPER 39.2—9:25

**PROCESS IMPROVEMENT AT FALCONBRIDGE DOMINICANA.**

E. MAST, Falconbridge Dominicana, Dominican Republic

Falconbridge Dominicana (Falcondo) has operated a 28,000 tpy nickel laterite mine and processing plant since 1972 in the Dominican Republic. The operation includes mining, a processing plant, an oil refinery, and a power plant. Falcondo has not only decreased reduction furnace fuel consumption but has improved calcine quality via the application of a novel process control system and continuous improvement. Falcondo's power consumption in the electric furnaces is one of the lowest in the world. This paper describes how Falcondo has improved its fuel efficiency while maintaining product quality and metal losses in slag.

PAPER 39.3—9:50

**KALGOORLIE NICKEL SMELTER OPERATIONS OVERVIEW.**

J. PALMER, M. DRAKE and D. LOTH, Western Mining Corporation, Australia

WMC Resources' Kalgoorlie Nickel Smelter was commissioned in 1972 at a design capacity of 30,000 tpa of contained Nickel in matte. A series of upgrades and progressive improvements have resulted in a design capacity increase to 110,000 tpa of contained Nickel in matte. The smelter sources nickel-in-concentrate from three Mine / Concentrators and supplies nickel-in-matte to WMC's Nickel Refinery and export customers. The Flash Furnace was last rebuilt in 1999, and is over halfway through the 10-year campaign target. The many modifications over the previous campaigns, including the Integrated Flash Furnace, are reviewed. Recent operation of the smelter and the development of the process during the current campaign are detailed herein. An overview of key interfaces with the Nickel Business Unit Concentrators and Refinery operations is provided.

**COFFEE BREAK—10:15-10:35**

PAPER 39.4—10:35

**AN OVERVIEW OF INCO'S COPPER CLIFF COMPLEX.**

J. DONALD and K. SCHOLEY, Inco Ltd., Canada

Nickel has been mined and processed from the Sudbury basin for over 100 years. During this period, the process has evolved into what is one of the largest and most complex mining and metallurgical facilities in the world. This paper will describe the geology and mining of the Sudbury basin as well as the Copper Cliff metallurgical flowsheet circa 2005, including:

- Clarabelle Mill,
- The smelting flash furnaces,
- The bulk converters,
- Matte casting, separation, and processing
- The carbonyl refineries

- Carbonyl residue processing
- Copper processing
- Sulphur products

The challenges of today and the opportunities for the future are discussed.

PAPER 39.5—11:00

UPDATE ON FALCONBRIDGE'S SUDBURY SMELTER.

R. SCHONEWILLE, Falconbridge Ltd., Canada

Operation of Falconbridge's Sudbury nickel smelter has undergone significant change since the production was consolidated to a single electric furnace in 1994. In the late 1990's a capital program of about \$100 MM (Cdn) was undertaken to expand and modernize the smelter. This project, known as Smelter 2000, was mainly driven by the need to process the new concentrate produced at Falconbridge's Raglan operation in northern Québec. Included in the scope of the project was the installation of dry concentrate handling facilities, modifications to the roaster feed preparation system, installation of a matte granulation system and modification of one of the converters. Improvements to in-plant hygiene were also an important part of the Smelter 2000 project. Over the past 5 years much has been learned about the challenges in treating two significantly different concentrates. More recently, the introduction of a third concentrate from Falconbridge's new Montcalm operation near Timmins, Ontario has added another dimension to the operation. This paper will describe how the main challenges from the past 5 years have been overcome and discuss the path forward for the Sudbury Smelter Business Unit.