



Imperial Engages M.Plan International To Carry Out Phase 2 Crater Lake Scandium Metallurgical Test Work

MONTREAL, QUEBEC— October 1, 2019 – Imperial Mining Group Ltd. ("Imperial") (TSX VENTURE: IPG) is pleased to announce that M.Plan International Limited ("M.Plan"), has been engaged to undertake Phase 2 metallurgical test work on the Crater Lake Project scandium mineralization from the recently-discovered TG Zone (*see* Press Release : June 18, 2019). M.Plan, based in Toronto, Ontario, is a joint venture between metallurgical service group Dorfner ANZAPLAN GmbH (Germany), a global leader in specialty mineral process flowsheet development, especially for rare earths and scandium, and Toronto-based mining consultancy Micon International Limited.

The test work will be completed on two 100 kg bulk samples collected from TG Zone diamond drill core, representing the two mineralization types encountered this past winter. Previous metallurgical work on Crater Lake mineralization showed that 100% of the scandium is contained in two common iron silicate minerals; pyroxene and amphibole. Early results showed high recovery of scandium (83.6%) using simple and inexpensive magnetic concentration methods while rejecting 34.3% of the non-scandium bearing material. New test work will attempt to improve the previously encouraging scandium recoveries and increase the non-mineralized material rejection rate.

"The metallurgical test work is intended to optimize the already encouraging test results obtained from our Phase 1 work completed in 2018," said Peter Cashin, Imperial's President & Chief Executive Officer. "Based on the properties of pyroxene, olivine and amphibole, the target of the proposed testwork will be to reject the major portion of olivine, which contains no scandium, from the bulk mineral concentrate, thereby significantly improving scandium recovery and gangue mineral rejection. This is the first step toward defining a full process flowsheet including hydrometallurgical treatment of the mineral concentrate to recover marketable scandium oxide product for scandium-aluminum alloy applications."

Phase 2 Metallurgical Testwork

Under the terms of the agreed scope of work with M.Plan, the following metallurgical test work programs will be completed:

- 1) Mineralogical characterization of the two scandium-bearing bulk samples to quantify the liberation characteristics of the mineral components that make up the samples.
- 2) Physical processing of the samples to produce high-purity pyroxene/amphibole mineral concentrates using magnetic/electromagnetic concentration methods to optimize the recovery of scandium from each bulk sample. Sensor-based ore-sorting methods will also be considered.

- 3) Evaluate the potential impacts for the recovery of by-products (titanium, zircon, rare earths) that would supplement the high-value scandium from the mineralized material.

This work phase is anticipated to be completed sometimes in the first quarter of 2020.

Scandium and Rare Earth Markets

The potential application of scandium as a grain-refiner and hardener in aluminum alloys is well established from research and development work in recent years but its use has been limited due to the lack of primary supply sources outside China and Russia. This is primarily due to the limited availability of scandium in the commercial market. Available scandium supply today is estimated at just 10 to 15 metric tonnes per year, insufficient for widespread adoption of scandium-aluminum (“Sc-Al”) alloys in defense, automotive and aerospace applications.

A new and reliable source of supply could enable the realization of the substantial benefits of the scandium aluminum alloy in armor, automotive chassis and airframe development. Benefits include easy fabrication of parts with a hardness approaching that of titanium, the superplastic nature of such alloys and improved weldability for aluminum structures incorporating the alloy. However, the lack of a reliable domestic supply source and a 100% import reliance on the Peoples Republic of China and Russia, combined with there being no US Defense Stockpile scandium supply available, has frustrated wider use of scandium-aluminum alloys, particularly by the US and other western militaries.

In addition, Imperial is actively monitoring the impact of the current trade war between the US & China and what this means for investors, manufacturers and producers of Rare Earth and Technology material products for the defence, electronics and automotive industries. China now controls over 70% of the global rare earth supply chain and provides 80% of the US rare earth demand. With the risk of China limiting supplies to the US, major consumers of rare earths have just been reminded of the need to establish their own domestic critical materials supply chains. Crater Lake is the only known significant bedrock resource of scandium in North America with the potential for supporting a new domestic scandium supply chain.

The technical content in this press release was reviewed and certified by Dr. Yemi Oyediran, P. Eng, Imperial's Manager of Metallurgical Development.

ABOUT IMPERIAL MINING GROUP LTD.

Imperial is a Canadian mineral exploration and development company focussed on the advancement of its copper-zinc, gold and technology metals properties in Québec. Imperial is publicly listed on the TSX Venture Exchange as “IPG” and is led by an experienced team of mineral exploration and development professionals with a strong track record of mineral deposit discovery in numerous metal commodities.

ABOUT M.PLAN INTERNATIONAL LIMITED

M.Plan International Limited is a joint venture between two internationally recognized consulting companies, Dorfner Anzaplan GmbH and Micon International Limited, combining their expertise in global geological and mining consulting with analytics, processing and engineering with significant experience in the specialty minerals and metals sector.

M.Plan has deep project experience from initial mineral resource estimation through to process development, engineering design and project development. M.Plan and its joint venture owners have been involved in several rare earth element projects globally and hundreds of development studies in the mining sector, including independent lenders’ engineer assignments and as due diligence lead for multiple European and North American capital providers.

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