# Imperial Mining Crews Mobilize to Evaluate High-Grade Scandium Targets, Crater Lake Project, Northeastern Quebec

written by Raj Shah | August 15, 2018
August 15, 2018 (Source) – **Highlights:**

- Work will evaluate two areas on the western part of the property where scandium (**Sc**) grades of **between 400 and 1,600 g/t Sc** (**two to eight times higher** than what is considered economic threshold), and where Historical drilling of on one target returned **19 m grading 506 g/t Sc** were identified.
- Previous drilling identified a third zone of scandium mineralization which **returned up to 62.8 m grading 304 g/t Sc including 1.48% Total Rare Earths** (TREO).
- Scandium is a rare, high-value technology metal that reportedly trades for between **US$2,500 and $3,700 per kg** in the oxide form (USGS, 2017).

**Imperial Mining Group Ltd. ("Imperial")** (TSX VENTURE:IPG) is pleased to announce that it has started up field exploration activities on the Crater Lake scandium project, northeastern Quebec (Figure 1).

Crater Lake Project Location Map, Quebec

"We are very excited about the scandium potential of our Crater Lake project. The targets of primary interest host exceptional surface grab and diamond drillhole scandium grades that are two to eight times higher than the 200 g/t Sc generally considered

to be economic," said Peter Cashin, Imperial's President & Chief Executive Officer. "Scandium demand for use in lightweight, high-strength aluminum alloys, particularly in the aerospace, automotive and defense sectors is expected to grow significantly once an assured supply source outside of Russia or China, has been developed to production. We believe that the Crater Lake project, even at this relatively early stage of development, represents one of the most attractive potential new sources of scandium in the world."

Field crews have mobilized to the property to undertake surface evaluation of the TGZ and STG geophysical targets (Figure 2) that returned high historical grab sample grades of between 404 and 1,600 g/t Sc west of the previously known Boulder scandium-rare earth Zone. Prospecting, geological mapping, mechanical stripping and washing and channel sampling of the new areas is underway to better quantify the high intensity magnetic targets that correspond to the surface mineralization.



Oblique 3D Magnetic Inversion Image, Crater Lake Project, Québec

In addition, metallurgical studies on Boulder Zone mineralization are also ongoing. Mineralogical studies to date (*see* Press Release: June 27, 2018) of a composite core sample indicates that scandium is primarily hosted by two common iron silicate minerals. As a result, a high-quality scandium mineral concentrate can be produced by using simple magnetic separation techniques. A supplemental bulk sample of mineralized core is currently being collected by the field crew for metallurgical processing later this fall.

Work will carry on until September. The results from the program will be used for planning of a winter drilling program in early 2019.

**Crater Lake Exploration History (2007 to present)**

The property consists of 57 contiguous claims covering approximately 27.9 $km^2$ and is located approximately 200 km east northeast of Schefferville, Québec.

Crater Lake was first explored in 2007 as a rare earths prospect by Quest Rare Minerals Ltd. ("Quest"). This early work led to the location of the "Discovery Outcrop" in 2009 which **returned up to 9.0% rare earth oxides plus yttrium ("REE") and up to 1,600 g/t (0.16%) scandium ("Sc")**. An airborne geophysical survey completed in 2008, identified a strong, concentric, six-km diameter magnetic anomaly, defining the host Crater Lake Alkaline Intrusive Complex (Figure 3). The scandium is associated with a distinct, highly magnetic layer of ferrosyenite within this intrusion. Subsequent geochemical, geological and geophysical programs were supplemented by reconnaissance diamond drilling of the best targets.

Crater Lake Project Compilation Map, Québec

In 2014, Quest drilling intersected a 225 m long Sc bearing zone (Boulder Zone) within a thick, highly magnetic, ferrosyenite layer returning up to **167.8m grading 260 g/t Sc including 62.8 m grading 304 g/t Sc and including 27.6 m grading 351 g/t Sc**. These grades compare favourably with known Australian laterite scandium deposits which grade between 260 to 410 g/t Sc, some of which are advancing to pre-production. Review of the drilling data from a program conducted by Quest in 2010 revealed areas of higher grade mineralization grading 506 g/t Sc over 19.0m along the western side of the Crater Lake intrusion.

The geophysical anomalies related to these targets, the TGZ and STG, measure 750 m and 600 m in strike length, respectively, and are of a higher magnetic intensity than the Boulder Zone and

represent very attractive higher-grade targets for further exploration and drilling. 3-D magnetic data modeling of the Crater Lake Intrusive completed in April 2018 (Figure 2) reveals the host ferrosyenite is related to a deeply-rooted caldera-collapse ring-dyke system that has been traced to a depth of at least one km.

**Scandium Markets**

Scandium, is a silvery-white non-toxic transition metal, often associated with REE, together with yttrium, tantalum and niobium. Scandium is often found in trace amounts in other REE deposits and occurrences and has been mined as a by-product in a few uranium and REE mines in the world, for example in the Zhovti Vody deposit, Ukraine and at Bayan Obo, China. Primary, hardrock scandium deposits of enough size and grade to be economically important are scarce and Crater Lake represents one of the few such opportunities in the world.

Scandium acts as a grain-refiner and hardener of aluminum alloys. Aluminum-scandium alloys combine high strength, ductility, weldability, improved corrosion resistance and a lower density. The combination of all these properties makes aluminum-scandium alloys well-suited for the aerospace, automotive and defense industries. Other applications for aluminum-scandium alloys include consumer products such as baseball bats, golf club heads and high-end bicycle wheel rims.

One of largest potential markets for scandium-aluminum alloys is the use as spherical powders in 3-D metal printing application in the automotive and aerospace sectors. Due to significant technology advantages in manufacturing, complex parts can now be produced by 3-D additive manufacturing using a range of metal alloy compositions at lower cost base and at near parity to standard metal forged and cast parts but with host of superior

mechanical characteristics.

The broader adoption of scandium in the aluminum alloys sector has been primarily constrained by the limited availability of scandium in western commercial markets, today estimated to be 10 to 15 metric tonnes per year. This has resulted in much higher prices for Sc compared to competing alloy materials, such as titanium, and has limited its broader use. The current price of the metal oxide published by USGS indicates that scandium oxide* trades at approximately US$3,700/kg for 99.99% purity for small lots (10s to 100s of kg) and US$2,500/kg for large lots (greater than one tonne).

* – *1 g/t Sc metal = 1.5338 g/t Sc oxide*

Increasing demand is placing supply pressure on the Solid Oxide Fuel Cell ("SOFC") industry because of its heat stabilization and electrical conductivity characteristics. In SOFC applications, scandium is important in the scandia stabilized electrolyte of the cell, which allows lower operating temperatures and a longer operating life of the cell.

The technical content in this press release was reviewed and certified by Pierre Guay, P. Geo., Imperial's Vice-President, Exploration, a Geologist and Qualified Person as defined by NI 43-101.

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