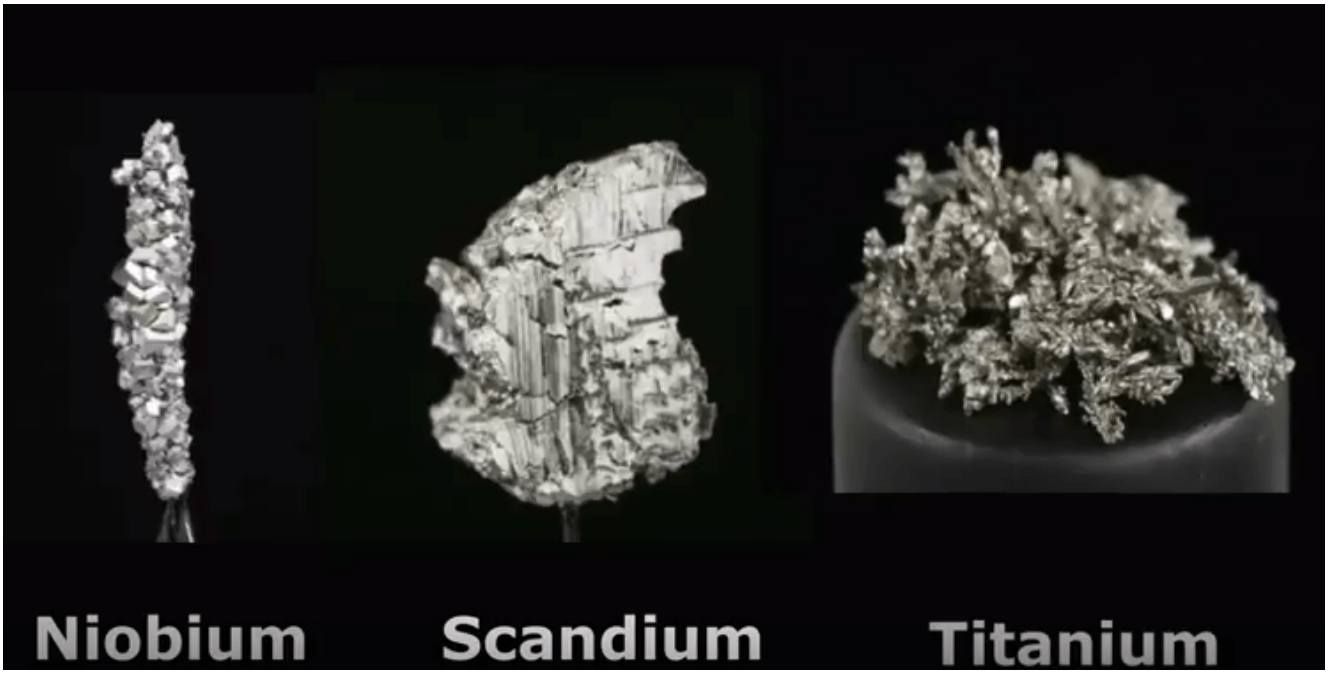
# NioCorp’s niobium, scandium, and titanium make the U.S. critical minerals list

NioCorp Developments Ltd. (TSX: NB | OTCQX: NIOBF) owns the Elk Creek niobium-scandium-titanium project in Southeast Nebraska, USA. NioCorp is focused on the three superalloy materials niobium, scandium, and titanium. All three of which were last week included in the “critical minerals” list of just 35 critical minerals, by the US Government.

Niobium is mostly used for steel alloys as it makes steel lighter and stronger. Niobium is used in bridges and other large infrastructure projects, in high pressure oil and gas pipelines, in virtually all steel-chassis vehicles, and in many other applications. NioCorp states – “$9 of Niobium added to a mid-sized automobile reduces its weight by 100kg, increasing fuel efficiency by 5%.”

Scandium is also used for light weighting. It is used in aluminum-scandium alloys for aerospace industry components and for sports equipment such as bicycle frames, fishing rods, golf iron shafts and baseball bats. NioCorp states – “Scandium expert says airline industry stands to reap hundreds of millions of dollars in annual savings by integrating scandium alloys into commercial jetliners.”

Titanium is as strong as steel but much less dense. It is therefore important as an alloying agent with many metals including aluminum, molybdenum and iron. These alloys are mainly used in aircraft, spacecraft and missiles because of their low density and ability to withstand extremes of temperature.



Niobium, Scandium and Titanium

NioCorp’s Elk Creek has the highest-grade primary niobium resource in North America, and the only such resource under development in the US. Elk Creek has Probable Reserves of 31.7 million tonnes of ore at 0.79% niobium ($Nb_2O_5$), 71.6 grams per tonne (g/t) scandium (Sc), and 2.81% $TiO_2$. Indicated Mineral Resources are 90.9 million tonnes at 0.66% $Nb_2O_5$, 70 g/t Sc, and 2.59% $TiO_2$. The Elk Creek deposit is open in three directions: to the northwest, southeast, and at depth.

Infrastructure is good with the deposit located next to a highway and rail line.

**Figure 4.1 Project Location Map**


NioCorp Elk Creek Nebraska location map

The December 2017 Definitive Revised Feasibility Study resulted in a post-tax NPV 8% of $1.7 billion, with post-tax IRR of 21.7%, a 32-year mine life with a 3.4 year pre-tax payback period from onset of production. The project is expected to produce an average of 7,055 tonnes per annum (tpa) of ferroniobium, 103 tpa of scandium trioxide, and 11,445 tpa of titanium dioxide. CapEx was estimated to be US$1b. Forecast production costs (net of TiO2 byproduct credit) are $12.14/kg of niobium (on a niobium equivalent basis) and $1,127/kg of Sc2O3 (on a Sc2O3 equivalent basis).

NioCorp has 75% of their primary product ferroniobium already under contract for the first 10 years of production – 50% to ThyssenKrupp Metallurgical Products GmbH and 25% to CMC Cometals.

NioCorp is still very well valued with a market cap of just CAD $152m, compared to a NPV of $1.7b.

NioCorp's challenges lie around funding their large CapEx. However, given their very impressive Feasibility Study result, their 75% ferroniobium off-take commitments, and their

eligibility for the German Government loan guarantee program the company is well positioned to progress to the final stages.

Of key significance is the fact that the US relies on China and Russia for these three critical metals. With last week’s change to include niobium, scandium and titanium in the US critical minerals list, and with NioCorp’s 2021 timeline to production, that could soon change.