NioCorp Provides an Update on Detailed Engineering Design That May Shorten the Time to Market for its U.S.-Made Critical Minerals

written by Raj Shah | June 28, 2018

June 28, 2018 (Source) – NioCorp Developments Ltd. **("NioCorp"** or the **"Company")**(TSX:NB) (OTCQX:NIOBF) (FSE:BR3) is pleased to provide an update on the progress of the detailed engineering study being conducted by the Nordmin Group of Companies ("**Nordmin**") on NioCorp's proposed Elk Creek Nebraska, Critical Minerals Mine (the **"Project"**). The work has determined that incorporating industry-standard ground freezing technology during shaft sinking, coupled with the reduction in underground hydrogeology pumping requirements, may help NioCorp shorten its time to market for the Niobium, Scandium, and Titanium superalloy metals it plans to produce.

To date, Nordmin's analysis of the Project's hydrogeology indicates that significantly less bedrock water[1] may be encountered during mining operations than was estimated in the Project's Feasibility Study ("Project FS"). This may lead to schedule improvements in the construction of NioCorp's underground mine and supporting infrastructure that can be expected to positively impact the overall Project schedule, mitigate risks, and potentially improve project economics and margins in the early years of the mine life, according to Nordmin.

Nordmin's design uses ground freezing to support the shaft excavation process during the development of the Project's production and ventilation shafts. This approach is expected to shorten the schedule of complete development as shaft sinking would not have to be delayed for 12 to 18 months while advanced dewatering was conducted, as was envisioned in the Project FS. Ground freezing techniques also have the ability to facilitate the simultaneous sinking of both the production and ventilation shafts, instead of the sequential shaft sinking plan contained in the Project FS. This may save additional schedule time, minimize water inflows and improve overall safety during shaft sinking operations.

Ground freezing is used worldwide for both mining and civil applications. The advantage of ground freezing is that it is capable of providing assurance of the integrity of the soil and rockmass to full depth prior to excavation using proper instrumentation. The freeze wall allows construction to be scheduled without evaluating the in-shaft time necessary to probe ahead, place additional supports, or deal with ground water. This approach can be implemented through the soil/rock interface, which is often the most difficult area in which to create a ground water cut-off by other methods.

All of these outcomes, if realized through the final mine plan that Nordmin is currently developing, could reduce the span of time between the completion of project financing and commercial production operations, as compared to the approximately 3.5-year time span that was estimated between project financing and commercial operations in the Project FS.

A variety of factors beyond mining operations can impact time to market for the Project, NioCorp and Nordmin cautioned. However, as quantified by Nordmin, the potential for the Project schedule to benefit from ground freezing techniques justifies developing

the design layouts and the project execution plan to take advantage of this approach.

“We are greatly encouraged by all the geotechnical and hydrogeological work completed to date, which demonstrates the potential of improving the overall project schedule for the Elk Creek mine,” said Chris Dougherty, P.Eng., Chairman of The Nordmin Group. “While some detailed engineering remains to be finalized, we are optimistic at this stage that the preferred mine design should incorporate ground freezing, and that this should help NioCorp bring its superalloy metals to market sooner than was previously planned in the Project’s Feasibility Study.”

Ground freezing has been successfully utilized in the mining and construction industry since the 1940’s, according to Nordmin. For the Elk Creek project, this would involve freezing the vertical column of ground where the main production and ventilation shafts are to be located by drilling boreholes around the perimeter of the shaft columns, from the surface to the mine bottom, and then placing steel pipes in those boreholes. A chilled brine is circulated through the pipes from a surface refrigeration unit in an entirely closed system in which no chemicals are injected into the ground. After the columns of ground are frozen – typically over a period of several months – the shafts are sunk to their final depth through the frozen ground. Once completed, the shafts may be lined with concrete and/or grouted in areas to minimize water inflow. Bedrock water encountered during mining is managed by grouting and/or pumping excess bedrock water to water management and treatment systems on the surface.

Qualified Person

Chris Dougherty, P.Eng., Chairman of The Nordmin Group, a Qualified Person as defined by National Instrument 43-101, is

responsible for the detailed engineering being conducted on NioCorp's underground mine and has reviewed, approved, and verified the technical information contained in this news release.

About NioCorp

NioCorp is developing a superalloy materials project in Southeast Nebraska that will produce Niobium, Scandium, and Titanium. Niobium is used to produce superalloys as well as High Strength, Low Alloy ("HSLA") steel, which is a lighter, stronger steel used in automotive, structural, and pipeline applications. Scandium is a superalloy material that can be combined with Aluminum to make alloys with increased strength and improved corrosion resistance. Scandium also is a critical component of advanced solid oxide fuel cells. Titanium is used in various superalloys and is a key component of pigments used in paper, paint and plastics and is also used for aerospace applications, armor and medical implants.

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the future critical and strategic nature of niobium and scandium, and the expected closing of the Lind financing. Such forward-looking statements are based upon NioCorp’s reasonable expectations and business plan at the date hereof, which are subject to change depending on economic, political and competitive circumstances and contingencies. Readers are cautioned that such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause a change in such assumptions and the actual outcomes and estimates to be materially different from those estimated or anticipated future results, achievements or position expressed or implied by those forward-looking statements. Risks, uncertainties and other factors that could cause NioCorp’s plans or prospects to change include risks related to the Company’s ability to operate as a going concern; risks related to the Company’s requirement of significant additional capital; changes in demand for and price of commodities (such as fuel and electricity) and currencies; changes in economic valuations of the Project, such as Net Present Value calculations, changes or disruptions in the securities markets; legislative, political or economic developments; the need to obtain permits and comply with laws and regulations and other regulatory requirements; the possibility that actual results of work may differ from projections/expectations or may not realize the perceived potential of NioCorp’s projects; risks of accidents, equipment breakdowns and labor disputes or other unanticipated difficulties or interruptions; the possibility of cost overruns or unanticipated expenses in development programs; operating or technical difficulties in connection with exploration, mining or development activities; the speculative nature of mineral exploration and development, including the risks of diminishing quantities of grades of reserves and resources; and the risks involved in the exploration, development and mining business and the risks set forth in the Company’s filings with the SEC at

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[1] "Bedrock water" is distinct and separate from groundwater or aquifer water resources that exist in the top 100 feet or so of soil in the area. The bedrock water associated with the NioCorp mine exists beneath both the topsoil and another 500 feet or so of limestone, and is largely trapped in fissures and cracks in the Earth's bedrock. It does not intermix with groundwater in the topsoil layer.