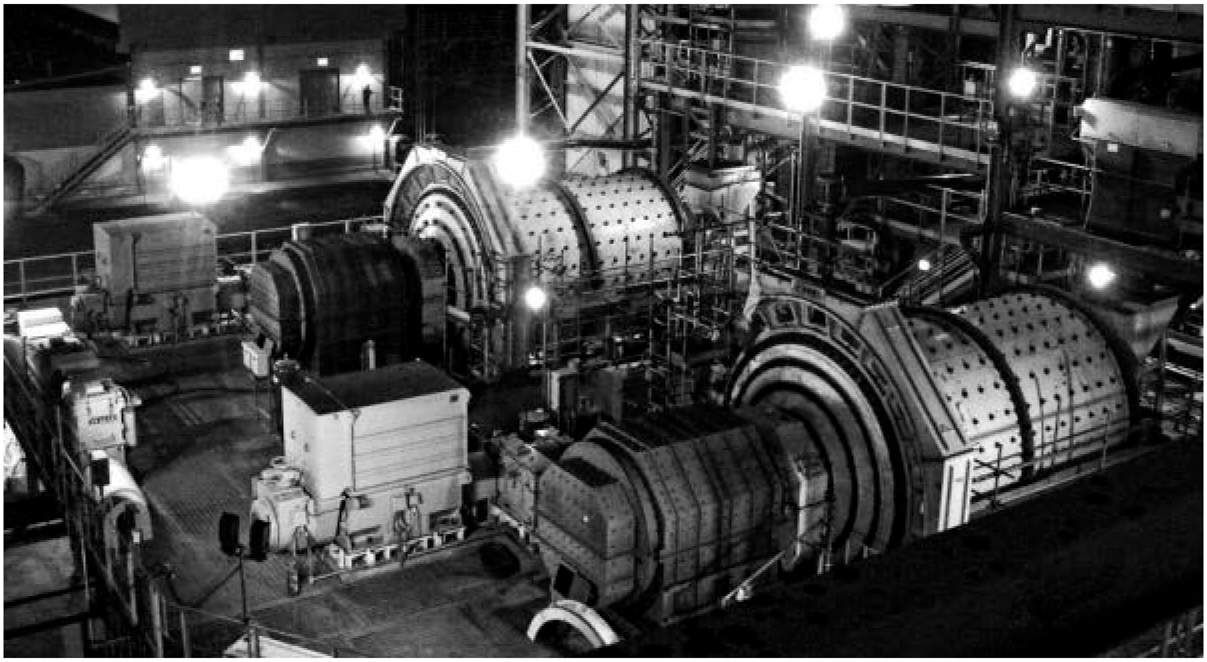
Niobium Mining – The First Step in Building a Fighter Jet

Palisade Global Investments Follow | *Friday, 03 June 2016 10:49 (EST)*

In what was probably the least publicized bidding war in mining history, fifteen companies took part in the sale of Anglo American's niobium and phosphates operations located in the states Goiás and São Paulo, in Brazil.



Secondary Grinding Mills At The Boa Vista Fresh Rock Niobium Facility, Source: Anglo American

In a strategy to alleviate its $26 billion of net debt, Anglo American eventually sold its Brazilian niobium and phosphates businesses to the China Molybdenum Co. Ltd. for a staggering $1.5 billion. The sale was part of a plan to divest more than half of its operations to focus on more prolific projects, and analysts rejoiced as the $1.5 billion price tag was 50% more than the expected sales price.

The niobium and phosphate operations had always been Anglo's more lucrative divisions, but was a small contributor to the overall bottom line. In aggregate, last year the operations generated $146 million in earnings before interest, taxes, depreciation and amortization (EBITDA), niobium contributing $40 million.

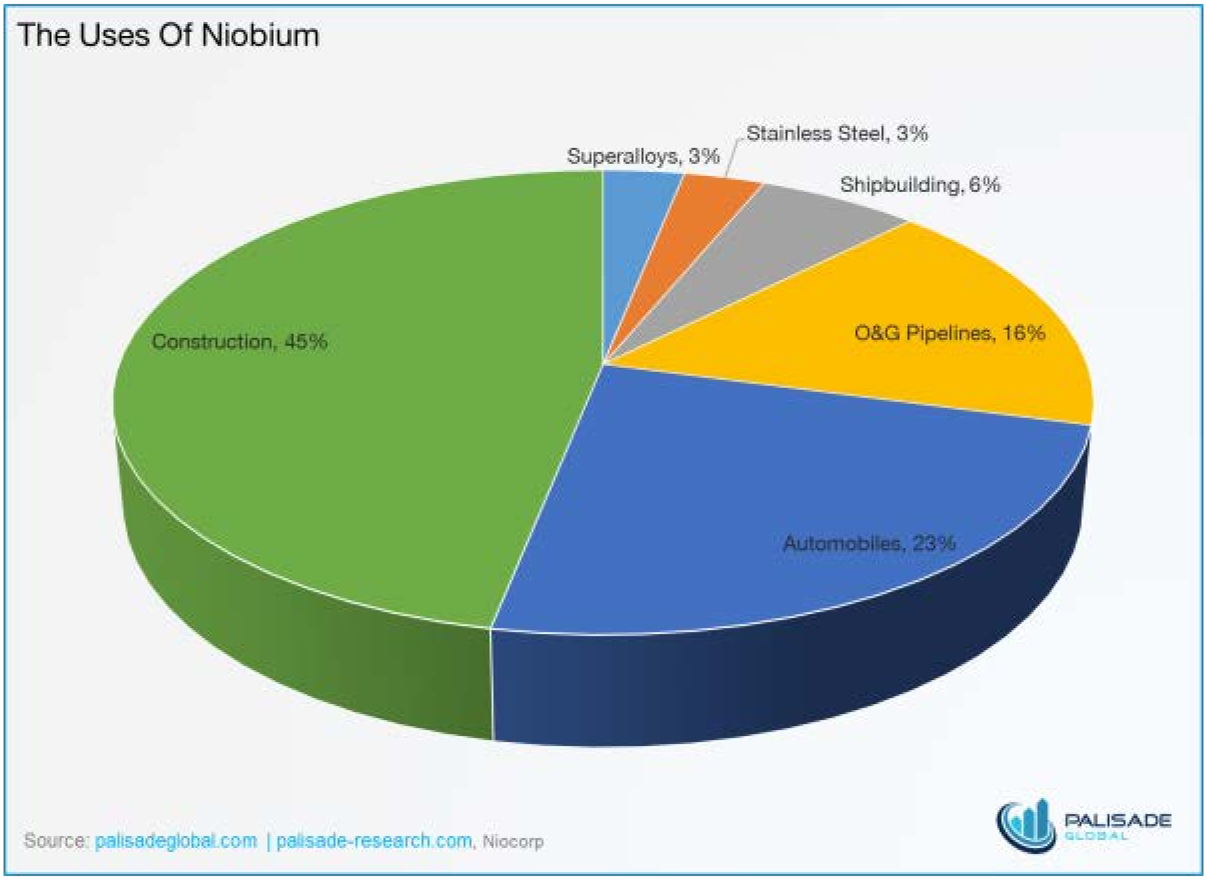
In 2015, niobium production increased by 34% to 6,300 tonnes, reaching 69% of its nameplate capacity. In its annual report, Anglo expected capacity to increase to 9,000 tonnes and production to 6,800 by the end of 2016. The phosphate business produced 1.1 million tonnes of fertilizer, which was in-line with guidance and expected to be similar in 2016.

What is most astonishing about the niobium and phosphate operations is the life-of-mine these operations have. The total run-of-mine ore for the Boa Vista operations is 26.6 million tonnes at a grade of 0.89% Nb2O5, or enough running room for almost 20 years. The 17.1 million tonnes of phosphate tailings of 0.69 % Nb2O5 adds another 16 years. The phosphate operations are just as robust, with 214.1 million tonnes of proven and probable reserves at 12.5% P2O, or a life of mine of almost 35 years.

Needless to say, once these operations are up and running, it will be generating a lot of cash flow. Thus, it is no surprise that the niobium and phosphate operations were Anglo's more profitable divisions. For this write-up, we will be concentrating on niobium as we believe there is a strong buying opportunity in this space and in our research, have found and invested in a company that is severely undervalued.

What Is Niobium? A Matter Of National Security

Like its name, niobium even looks boring. It's dull and grey, but it has super conducting properties and when added to steel, makes it stronger and lighter, and is highly resistant to any sort of corrosion. For these reasons, niobium is considered one of the most important elements in today's world. The majority of the world's niobium is consumed in the form ferroniobium by the steel industry, which is subsequently used in construction and automobiles.



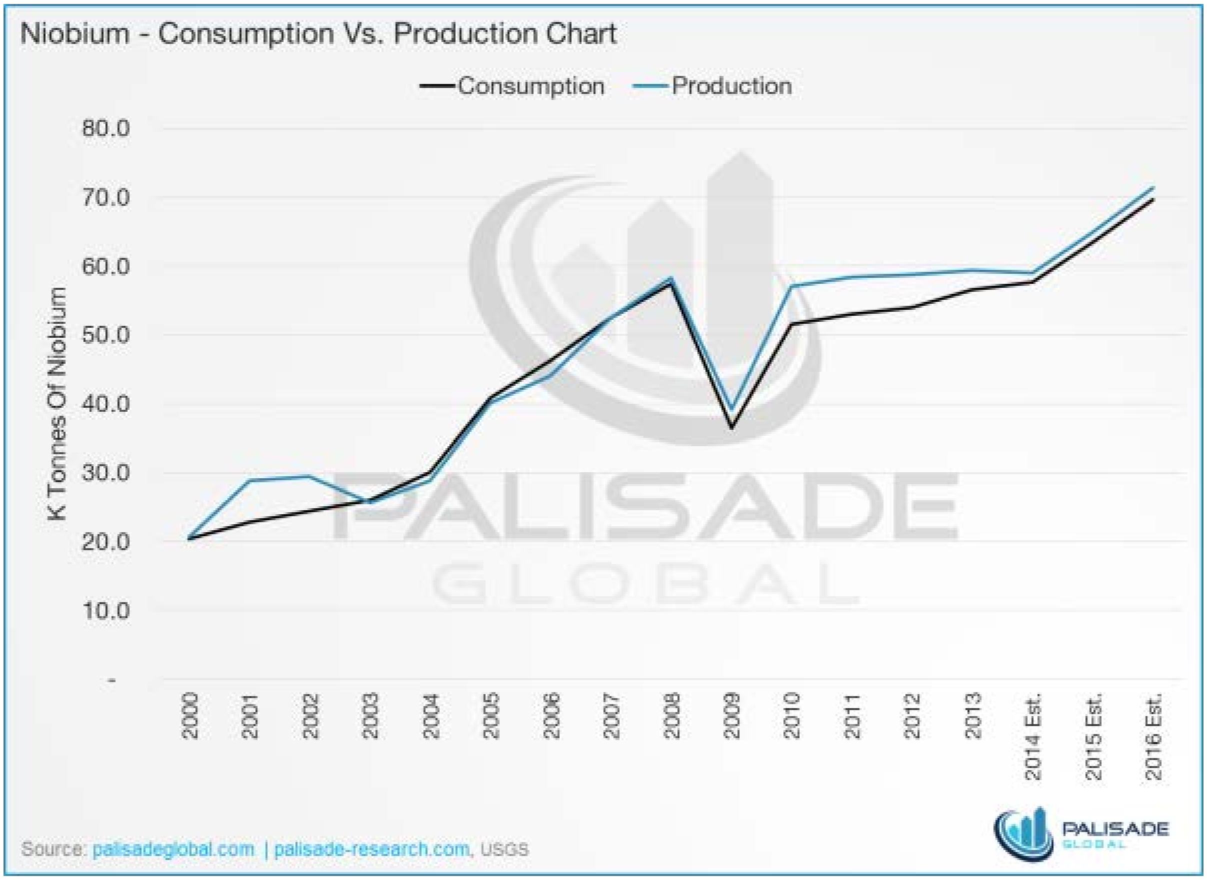
Intuitively, the demand for niobium has slightly dropped with the softening of the ferroniobium market and overall commodities. This is accompanied by the decline in overall demand driven primarily by the challenging conditions in the Chinese steel industry and lower midstream investments in oil and gas.

Regardless of the current supply/demand picture, niobium remains a key component in many businesses. This can be seen in hundreds of financials where steel is directly highlighted as a risk factor that could materially affect business, financial conditions and future results. For example:

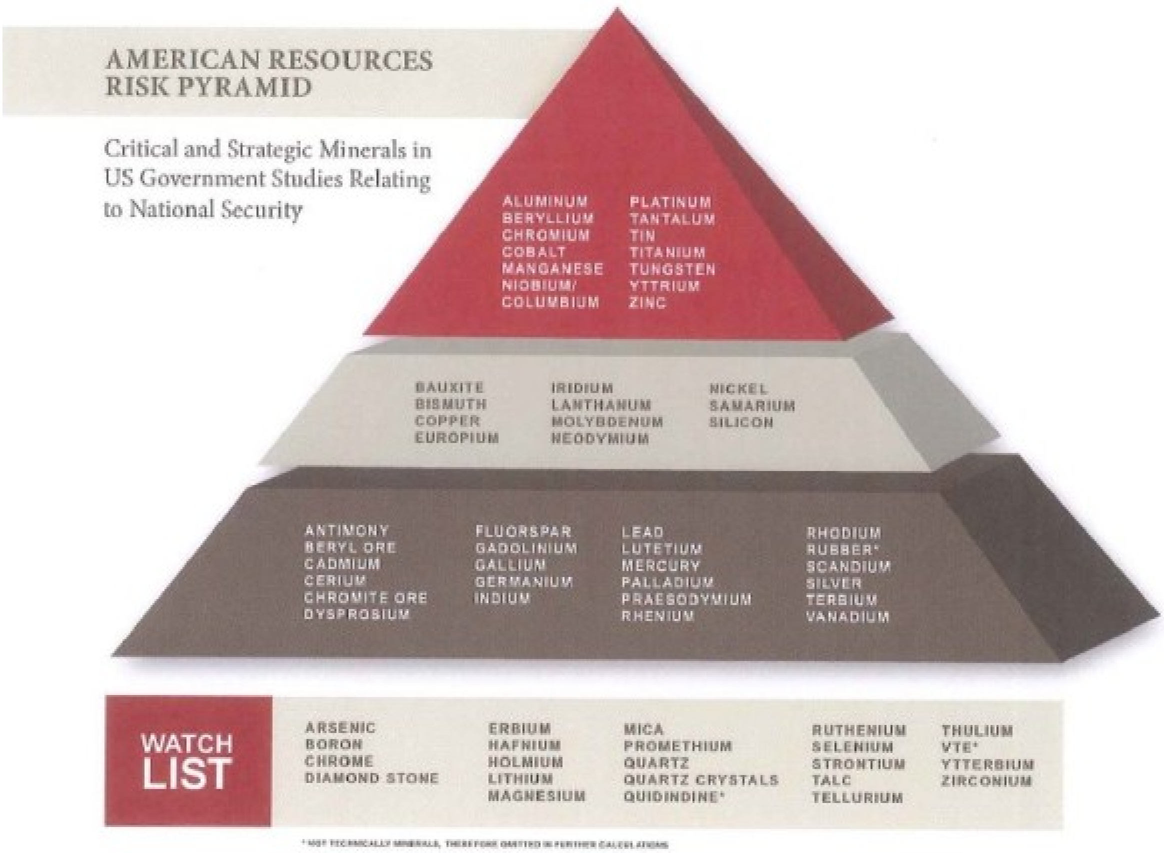
Tesla Motors (TSLA) – We may experience increases in the cost or a sustained interruption in the supply or shortage of raw materials. Any such increase or supply interruption could materially and negatively impact our business, prospects, financial condition and operating results. We use various raw materials in our business including aluminum, steel, nickel and copper. The prices for these raw materials fluctuate depending on market conditions and global demand for these materials and could adversely affect our business and operating results.

We highlight Tesla Motors because while 90% of niobium demand is directly related to steel, the United States Geological Survey (USGS) states that the consumption of niobium is not always correlated to overall steel production. This is because only 10% of steel products contain niobium. Niobium demand is more correlated with the production of super alloys, high-efficiency auto mobiles, and pipelines.

Sure enough, demand for niobium is expected to increase on the backs of jet engines, national defense, and electric vehicles. Furthermore, as stated earlier only 10% of global steel production contains niobium, this is expected to rise to as much as 20%. This transition will see an accelerated demand for niobium, especially since it's the emerging countries (ie. China, India, Brazil) that will be making this transition.



Because of the products associated with niobium, the Department of Defense has declared niobium a 'strategic mineral'. While definitions of strategic minerals vary, it generally refers to a mineral ore or derivative products that come mostly or largely from foreign sources; difficult to replace; and important to the nation's economy and defense. Thus, the United States maintains a stockpile of niobium at all times and according to the USGS, the DLA Strategic Materials plans to acquire niobium to address the current shortfall.



Niobium – Strategically Important, But No Domestic Production?

With niobium being integral to national security, you would think the US would have secured some sort of domestic production. Surprisingly, niobium production has not been reported in the United States since 1959, with the majority of resources being low grade and geologically complex to be economical. Thus, the US is forced to import all of its niobium from: Brazil (83%), Canada (12%), and others (5%).

There are only three producers of niobium as its primary product and there have been no new niobium mines come onto production since the 1970s:

- Companhia Brasileira de Metalurgia e Mineração (CBMM) – Producing ~85% of the world's niobium from the Araxá mine in Brazil
- China Molybdenum – Producing 7-8% of the world's niobium from the Catalao mine in Brazil
- Magris Resources – Producing approximately 7-8% of the world's niobium Niobec mine in Canada

CBMM was founded in 1955 and since 1965 has been controlled by the Moreira Salles family, one of Brazil's wealthiest families. The family made its wealth in banking as former owners of the Unibanco banking conglomerate, but it was not until Walther Moreira Salles' bet on niobium the real wealth was created.

In 1965, US Admiral Arthur W. Radford convinced Walther to back an endeavour to explore and produce niobium. At the time, Admiral Radford served on the board of Molycorp Inc., a US-based mining company that had just acquired the rights of a niobium deposit in the state of Minas Gerais. This was truly a gamble –

back then there was no market for niobium, just a study suggesting that it *could* be used to strengthen and lighten steel.

Walther Moreira Salles not only backed the venture, but also bought a large stake in the project, and the rest is history – the company now effectively controls the niobium market and makes over $600 million in profit annually.

Araxá niobium mine in Brazil, Source: CBMM

The United States Niobium Savior – Niocorp Developments Ltd

The story of Admiral Radford must have resonated with Mark Smith, who served as the President and CEO of Molycorp from 2008 to 2012. In fact, Molycorp was still a shareholder of CBMM until 2006, and even thereafter Mark was able to keep a close relationship with the Brazilian group.

Mark Smith is now the President, CEO and Executive Chairman of **Niocorp Developments (TSX:NB)**, a niobium development company and 100%-owner of the Elk Creek project, the highest grade niobium resource in North America, one of the largest in the world, and most importantly, located in the heart of the United States in, Nebraska. The project was actually owned by Molycorp almost 50 years ago, and was drill tested in the 1970s and 1980s. Although the project was seen as economic, it was put on the backburner as other projects became more focal.

Elk Creek remained mothballed until it was acquired by Quantum Rare Earth Developments Corp in May 2010. The company quickly utilized the historical data from 110 drill holes and went to work. The company was able to put out an updated resource, but more importantly, courted Mark Smith, who joined as an Advisor in February 2013, and appointed as the CEO and Director in September 2013.

With Mark at the helm, Niocorp has now emerged as the next niobium producer with attractive by-credits in scandium and titanium. Niocorp has already released a PEA which highlights robust economics over a 36-year mine life, and is now working towards a feasibility study. The company has also attracted one of the leading steel manufacturers in the world, ThyssenKrupp, as a partner. The German steel producer has signed a 10-year off-take agreement for 50% of Elk Creek’s niobium production. This off-take also qualifies Niocorp for financial assistance from the German government – something crucial come time for project construction.

Current Price: C$0.83
Shares Outstanding: 170.5 million
Market Capitalization: C$141.5 million
52-Week Range: C$0.51 – C$1.14
Cash: ~C$7.0 million
Total Liabilities: C$10.7 million

Elk Creek will be a 2,700 tonne-per-day producer, with a pre-tax NPV of US$3.07 billion, after-tax NPV of US$2.3 billion, and average pre-tax cash flow of US$438 million per year. Unfortunately, Elk Creek’s initial capital cost will be in the range of US$979 million, which is the primary reason why there is such a large disconnect between the current market cap and NPV of projected cash flow. Understandable, but we would argue the market has overreacted and Niocorp is currently deeply undervalued.

Before we begin, let’s address the big ugly elephant in the room, the US$979 million upfront capital cost. This will be Niocorp’s largest hurdle on the road to production, however, the company has already made significant progress in achieving project financing. This comes in the off-take agreement it has signed with ThyssenKrupp, which encompasses 50% of the planned niobium production over ten years. As we mentioned earlier, this qualifies Niocorp for a loan guarantee provided by the German government, which from our research is around US$200 million.

Niocorp will also be able to bank this off-take, especially since ThyssenKrupp is a US$12.4 billion company and will have no problem fulfilling its obligations. Furthermore, Niocorp also has material by-products in scandium and titanium, scandium of which is also a strategic element used in the aerospace and defense industry. Scandium and titanium will make up 40% and 10% of Niocorp’s revenue, respectively, and both are commodities sold in well-established markets. It is very realistic for streaming company to come in and take the titanium for a large sum of cash or debt combination.

To project our cash flow, we utilized debt interest of 10% and a discount rate of 15%. We calculate a total discounted cash flow of US$273.0 million, or C$356.9 million, or on a fully diluted per share basis C$1.70.

Now, let’s look at the other niobium miners to get a feel for Niocorp’s peers and their market value.

CBMM would be a good proxy in terms of valuation, unfortunately, actual numbers are guarded and the company is private. We know in April 2011, a Japan-Korea Partnership acquired 15% of the company for $1.95 billion. The partnership included some key players in steel, including: JFE Steel Corp., Nippon Steel Corp., Sojitz Corp., Japan Oil, Gas and Metals National Corp. (JOGMEC), and POSCO. This valuation was validated several months later, when CBMM sold another 15% stake to a Chinese group made up of five state-owned companies, also major steel players, for US$1.95 billion.

Compared to China Molybdenum’s recently acquired Boa Vista fresh rock operation, CBMM’s cost of mining would be considerably less because CBMM mines soft rock. At time of sale, we calculated that CBMM was roughly generating US$1.8 billion in cash flow. Thus, CBMM’s 2011 of US$13 billion valuation was derived by a cash flow multiple of 7.2x.

Anglo American’s sale of its niobium and phosphate projects netted them US$1.5 billion. According to our analysis, the niobium assets accounted for US$465 million of the sale. Anglo expects niobium production to ramp up to 6,800 tonnes once the Boa Vista Fresh Rock plant reaches nameplate capacity in the third quarter of 2016. With the majority of the heavy spending done, we calculate the sale of the niobium operations was based on a projected cash flow multiple of 12.0x.

The last comp is the Niobec mine, previously owned by **IAMGold Corp. (IAG)**, and acquired by Magris Resources in October 2014 for US$530 million. Niobec is an underground mine located approximately 200 kilometers north of Quebec City, Quebec. Niobec is North America’s only source of niobium and has a mine life of almost 20 years. At time of sale, IAMGold forecasted niobium production of 5.2-5.5 million kilograms, for which we estimate cash flow of $70.4 million. Thus, Niobec was valued using a cash flow multiple of 7.5x.

Unfortunately, there is limited data for a more accurate comparison between niobium projects, however, we are comfortable with these estimates as would rather work with a range then an exact target price.

We estimate Niocorp's 2019 cash flow to be US$217.1 million. Using a CF multiple of 7.2x, discounting back to present day, and taking into account our projected debt, we come to a target share price of C$2.20. We opted for the lowest transactional multiple, the Chinese paid a huge multiple for Catalao and we expect the premium arose from the strategic nature of the asset, versus a simple money-making venture. Our final target price is a blend of both valuation methods, giving us a target price of C$1.95, or a 135% gain from the current price.

What's On the Horizon for Niocorp

2016 will be an exciting year for Niocorp. The company is working towards the all-important feasibility study, and will be looking to raise some funds to get them there. Niocorp recently announced the approval for early warrant exercise, with an estimated exercisable at 65 cents that expire on Nov. 10, 2016. There is an estimated 10.9 million shares available to be exercised, and will result in C$7 million in the treasury. We expect this in conjunction with an equity raise of a couple of million to get them to the finish line.

After the FS has been issued, the company will commence fundraising for construction. As we mentioned earlier, this will be a daunting task but we believe the company has already pushed the first domino with the off-take with ThyssenKrupp, and as more partnerships are announced and funding secured, the stock price will jump as the market de-risks the project. Niocorp owns a very economic mine, and its strategic importance must not be ignored.

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