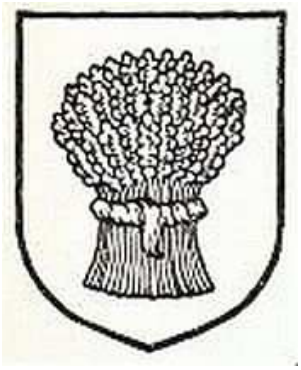
Thursday, January 16, 2020



HALLGARTEN & COMPANY

Coverage Update

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NioCorp Developments

(TSX: NB, OTC:NIOBF)

Strategy: SHORT

Key Metrics	
Price (CAD)	$0.79
12-Month Target Price (CAD)	$0.40
Upside to Target	-49%
12mth hi-low	$0.50-0.94
Market Cap (CAD mn)	$184.86
Shares Outstanding (millions)	234.0
Fully diluted (millions)	274.8

NioCorp

A Fumbling Juggler?

- + Ditching the Rare Earth persona and turning itself into a Niobium project was a deft move
- + Scandium has potential as a technology metal on a more substantial scale
- + The Elk Creek Carbonatite grades similar to the level of the Niobec mine in Quebec
- + Niobium industry dynamics are good, with it being one of the few specialty metals with little to no Chinese supply or control
- + Niobium's price fluctuations in recent times have not been as extreme as many other metals largely because CBMM disciplines the space
- ✘ Outrageously high CapEx of US$879mn puts this project in the undoable category
- ✘ Creating a story in the Niobium niche lost its gleam as majors made clear that their dominance of the space was not open to challenge
- ✘ Scandium has so far failed to find offtakers willing to fund development of Elk Creek or its competitors
- ✘ Warming up the Titanium "potential" smacks of desperation
- ✘ Prominent former REE developer in management may be more of a hindrance than a help for strategic/institutional investors' perceptions
- ✘ The environment for funding projects is very tough at the moment and the over-the-top capex puts flashing warning lights over the stock

Shapeshifting – and Not for the Better

We have to cringe at the latest iteration of this company's project as the "Elk Creek Superalloy Materials Project". This is a triumph of marketing over content and seems to have some investors fooled as to its "doability". We reiterate that no amount of marketing will make this project any more viable than it already isn't. In the beginning the company was Rare Earth oriented (and called Quantum Rare Earths) then it switched to Niobium when the wheels fell of the REE boom (largely because of the epic failure of Molycorp). Then it added Scandium as a node to excite the masses and finally Titanium became the buzz.

Juggling so many metals requires consummate skill or all the balls come tumbling out of the sky down upon one's head. In this note we shall look at the plans and project of NioCorp and give an exposition on why we think this project is likely to stay in the ***Too Hard*** category.

Memory Lane

When we first encountered this project the company was called Quantum Rare Earths. It changed its name in the wake of the REE debacle and in the process lost its long-term association with the

somewhat blighted REE space. We can safely state that we did NOT like Quantum's prospects as a REE project and thus never covered it back in its heyday.

In 2013 we launched coverage on NioCorp with a 23 cent target price when the stock had an 18 cent price. We were not mistaken.

However, the stock shot up to a point where it was grossly overvalued and then management made the classic mistake of believing that the stock price vindicated their business strategy when it was only vindicating its marketing strategy. We shifted to a publicly stated **Short** position on the stock in 2018.

Sour Grapes?

We would note that on an online forum the CEO of NioCorp accused us of being "disgruntled former Molycorp shareholders". Firstly we are insulted that he thought we might be foolish enough to have bought Molycorp in the first place. We never did….

Secondly, find us a (latterdays) Molycorp shareholder that is not disgruntled?

We find this bizarre accusation to be nothing more than reverse sour grapes.

NioCorp – Changing Directions

Over the early years of this decade Quantum (to give NioCorp its former designation) drifted in and out of our line of sight but never got the pulse racing. However, like so many Rare Earth companies it either had a property as an original *raison d' être* that was not the Lanthanide series or hid some other light under a bushel just in case things went wrong in the REE space. For most players the secondary game was Uranium and that is scarcely anything most would want to crow about but in Quantum's case the back-up plan was Niobium. Back in early 2012 we decided that this sideline was interesting enough to prompt us to add the stock to our Model Mining Portfolio. Our logic at the time was that the Niobium in the Quantum mix would make the company interesting to the likes of Molycorp, which had once upon a time controlled the self-same deposit that was now Quantum's main claim to fame.

However, as Molycorp's own problems escalated and its focus turned to self-preservation, the prospect of its doing anything with the Quantum asset faded and we eventually closed the position in October of 2012.

Curiously (or maybe not) Molycorp's former CEO Mark Smith decamped from the sinking Molycorp to NioCorp, as Quantum had restyled itself.

Scandium

In 2018 the Scandium space was being fought over like some ridge in a First World War battle in Flanders. This might be understandable if the price of the metal was raging higher but price was one of the most obscure elements of this element. We know it is highly valued but that is a product of scarcity.

There are few metals out there in which economic models and extant production plans actually guarantee (and need) a fall in the metal's price if plan are realized, even in part. Thus the bizarre thing about Niocorp's latest Feasibility Study is that it is predicated on higher prices than comparable companies.

One thing that has become clear to us is that for end users to tool up for a shift to Aluminium-Scandium alloy use in serious quantities (ergo the aerospace industry) there will need to be at least two producers. One alone will not give them comfort of supply.

We warned a while back that CleanTeq (with its Sunrise project in New South Wales, a nickel cobalt mine with scandium by-products) might get to production but if Nickel prices tanked then such a mine would be shuttered for the duration and the Scandium by-product users would be hung out to dry. Thus the evolution we would see would be a new (primary) producer making several tons a year and then escalating with a by-product producer probably then joining the fray.

Unfortunately, as it became evident to NioCorp that Niobium was a closely controlled market then management decided to jump on CleanTeq's bandwagon that Scandium was going to be finally enabled as a serious option in the aerospace industry. NioCorp predicated its last FS on the basis that it was going to be one of the two players in the space. However, CleanTeq was the real potential enabler and this was due to its mine being justified by Nickel & Cobalt and the battery metal revolution.

CleanTeq in their Feasibility Study stated: "The Company believes that the scandium market has considerable latent demand potential however has historically suffered from significant supply constraints. While scandium oxide prices have historically ranged from US$2,000-4,000/kg (see US Geological Survey Commodity Reports), the DFS has assumed a forward price of US$1,500/kg, which is the price at which the Company expects significant additional demand growth to be stimulated."

And also said in the part headed Scandium Upside Sensitivity Analysis: "In recognition of the potential for scandium demand to accelerate once a reliable supply has been established, the DFS also modelled the impact of scandium sales increasing to a steady run rate of 80 tpa by Year 7. This compares to LOM annual sales of 10 tpa assumed in the base case. The assumed long-term price in this scenario is US$750/kg to reflect the expected change to supply/demand dynamics from incentive pricing used to motivate faster adoption of scandium-containing alloys by customers".

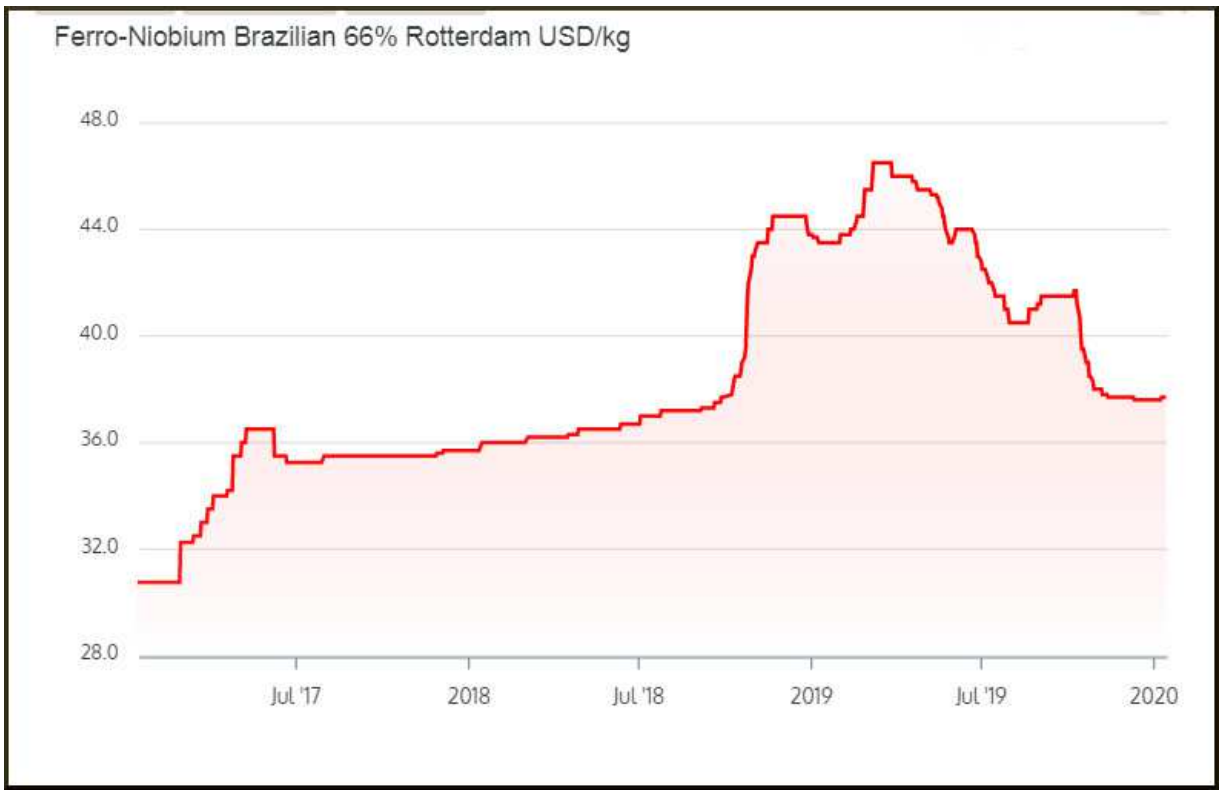
Beyond Cleanteq's project there were two primary Scandium mine projects in close proximity to Sunrise (being developed by Scandium International – SCY.v and Platina Resources - PGM.ax). These were more likely to coattail on CleanTeq, than Elk Creek might.

Unfortunately the demise of the price of Cobalt (rather than Nickel) put CleanTeq's Sunrise project into suspended animation and knocked the whole Scandium ecosphere into limbo. The shocking thing is that NioCorp still projects to the market that Elk Creek (almost entirely now predicated by Scandium) is still viable. After having spent so much on its FS, and staked its all on Scandium, then to reverse and go back

to basics would be an embarrassing admission of having got Scandium woefully wrong.

Niobium – Uses and Dynamics

Niobium is an alloying agent which, when added to steel, creates a material with substantial benefits in the production of high grade steel. Steel containing niobium has many properties making it stronger, lighter in weight and highly resistant to corrosion. Adding niobium to steel also creates steel with a higher melting point. Ferroniobium (66% Niobium, 34% Iron) represents over 90% of world niobium production. Molybdenum and Vanadium can be substituted for niobium in some applications, but a performance or cost penalty may outweigh substitution. For many applications, such as some super alloys and oil and gas pipelines, there are no substitutes for niobium as the niobium allows for withstanding extreme pressures.



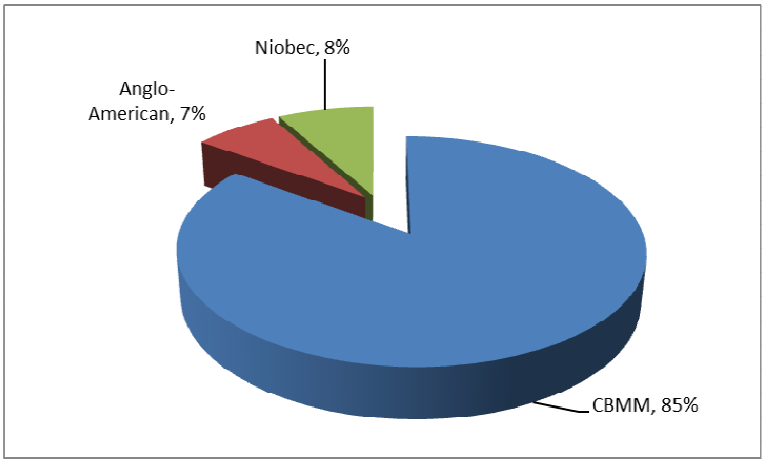
Niobium demand has increased on average 10% a year for the past decade, with growth forecast to continue in similar fashion in the coming decade. The global market is estimated to reach 180,000 - 200,000 tpa by 2018 – 2020 while supply is expected to be a maximum of 170,000 tpa.

Niobium prices have increased in line with this growth over the last decade. The chart at the left shows recent prices but to put that in context the price was US$44-45 back in mid-2011 so prices have only eased off 10% over what has been a pretty tough time for the steel industry.

Interestingly it ranks sixth of the BGS survey of Critical Metals, one place behind Rare Earths in criticality of supply.

Niobium – In the Grip of the Brazilians

Niobium (Nb) is another metal that is scarcely the word on everyone's lips as the main listed exposure to was Iamgold's Niobec subsidiary which operates in Quebec, but even that was bought by the private equity group, Magris, and disappeared from view.



Despite Quebec's role in Niobium production, the real player is Brazil, the world's largest producer of niobium (92%), followed by Canada.

Brazil has two of the largest niobium deposits in the world, the Araxá and the Catalão deposits. The Araxá mine is operated by CBMM, where decreasing grades are increasing operating costs at the mine. CBMM is owned by the Moreira Salles family, one of Brazil's wealthiest groups. Their fortune has largely derived from a punt on Niobium back in the 1960s and interests in the banking sector. According to Bloomberg, CBMM was generating more than $600 million in annual profit early last decades. They calculated it was worth at least $13 billion, based on the family's sale of a 30% stake to a group of Asian steelmakers for $3.9 billion in 2011. The brothers are estimated to hold an equal share of the remaining 70% stake.

Company & Deposit		Reserve tonnes	Class	Nb %	Existing Production	Expanded Production
CBMM - Araxa	Brazil	800-900 mn	M&I	2.50%		150,000
Magris Resources - Niobec	Quebec	450 mn	M&I	0.42%	4,500	13,500
Anglo-American - Catalao	Brazil	33 mn	M&I	1.24%	4,000	6,500

The Catalão mine in the state of Goias is owned by Anglo American Brazil. It has the smallest reserves of the three Niobium "majors". There has been speculation that the mine may run out of ore if the deposit size cannot be increased.

Below can be seen the bigger picture on a global scale:

Niobium - The Good, the Bad and the Indifferent

	Metric Tonnes millions	Nb2O5 %	Nb2O5 Ctd 000s mt
Existing Producers - Mine			
Big 3: CBMM, Anglo, Magris	>1,450	1.59	23,342
Mineracao Taboca (Pitinga)	180	0.21	382
Potential FeNb Producers (Project)			
Alkane Resources - Dubbo	73	0.40	337
Niocorp (Elk Creek)	183	0.54	981
Cradle Resources (Panda Hill)	178	0.50	891
ThreeArc Mining (Tomtor)	154	5.16	7,946
Taseko (Aley)	84	0.50	419
Niocan/Eco-Niobium (Oka)	14	0.66	91

N.B. -Numbers may not add due to rounding

•Excludes cut-off grade metrics and doesn't distinguish between reserves and resources, etc.

Source: Rittenhouse IR

Elk Creek

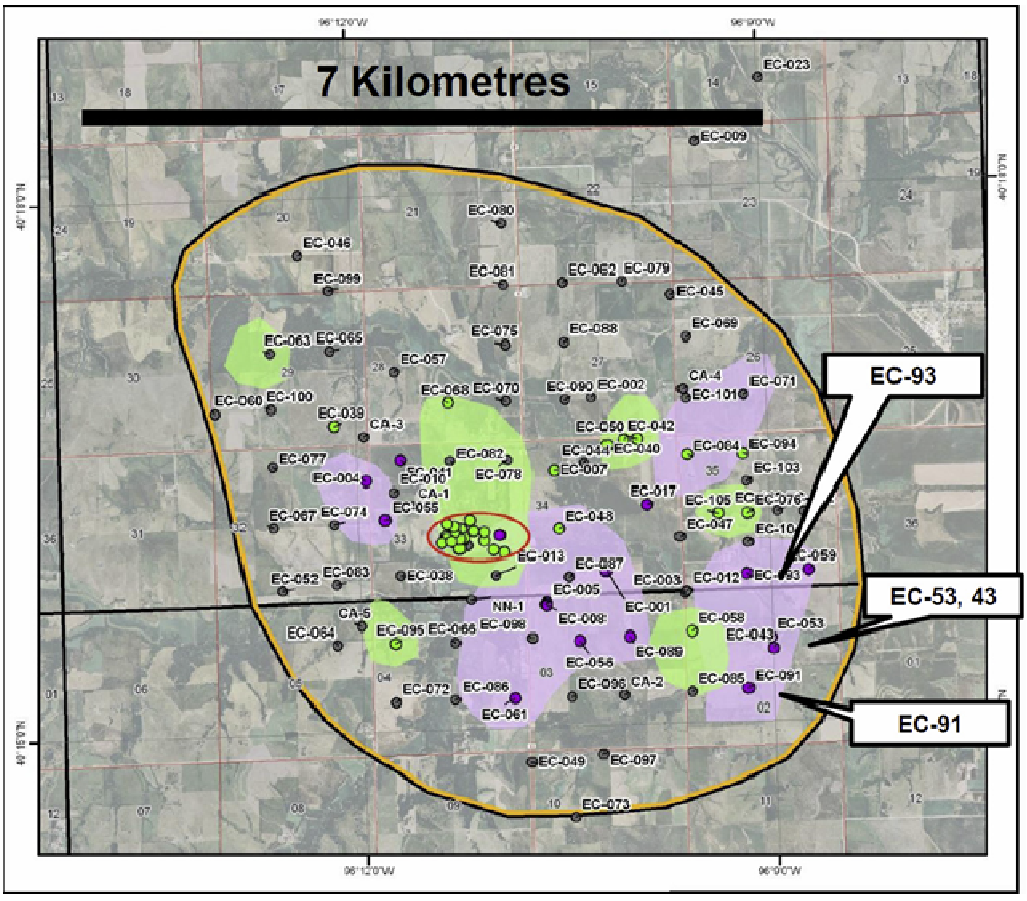
NioCorp's main asset is the Elk Creek project in South East Nebraska (an hour south of Lincoln). Quantum first secured the property in 2011 as a REE prospect. However, it was well-known that the property hosted concentrations of niobium, REE and barium mineralization within the Elk Creek Carbonatite.

The USGS has commented that Elk Creek is potentially one of the "largest global resources of Niobium".

Molycorp and Elk Creek

Curiously enough, the property is a former Molycorp project. The earliest known reference to Molycorp operating within the Elk Creek gravity anomaly area is from 1973. It is unclear at precisely when Molycorp first acquired the mineral rights in the Elk Creek anomaly area. Between, 1973 and 1974, Molycorp completed six drillholes: EC-1 to EC-4, targeting the Elk Creek anomaly and two other holes outside the Elk Creek anomaly area (Anzman, 1976). Drillholes were typically carried out by RC drilling through the overlying sedimentary rocks and diamond drilling through the Ordovician-Cambrian basement rocks.

Molycorp continued their drill program from 1977 and, in May 1978, Molycorp made their discovery of the Elk Creek Nb-REE deposit with drillhole EC-11. The Elk Creek Nb-REE deposit was intersected at a vertical depth of 203.61 m (668 ft) in the Elk Creek Carbonatite. Molycorp continued their drilling program through to 1984 that mainly centred on the Elk Creek Nb-REE deposit within a radius of roughly 2 km. By 1984, Molycorp had completed 57 drillholes within the Elk Creek gravity anomaly area, which included 25 drillholes over the Elk Creek Nb-REE deposit.

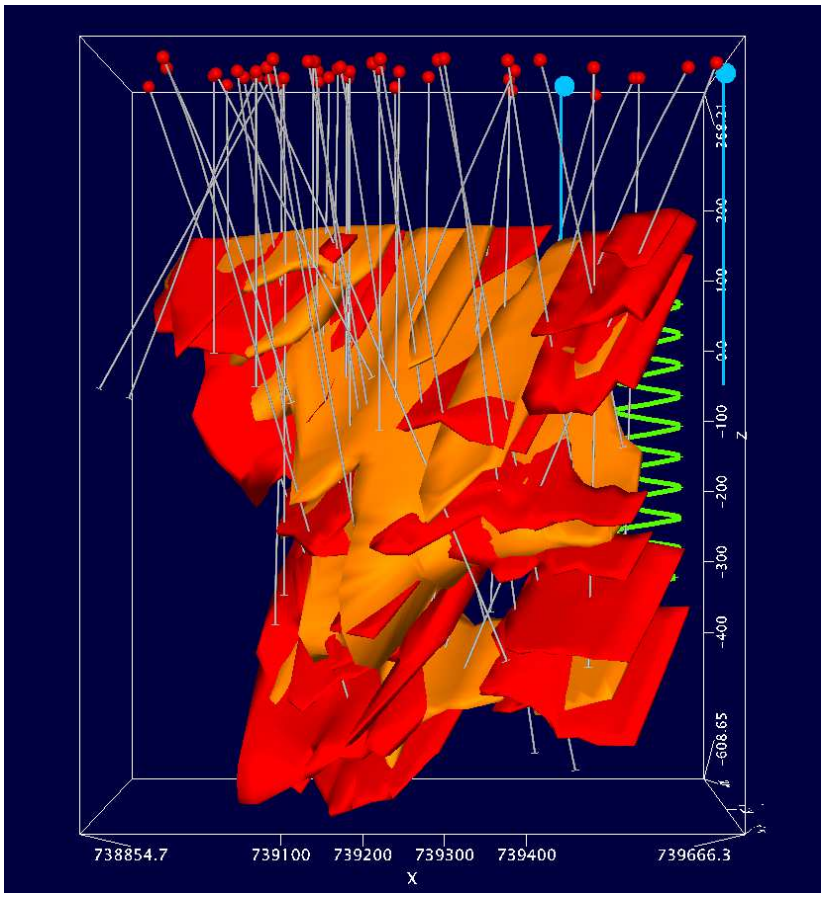


From 1984 to 1986, drilling was focused on the Elk Creek gravity anomaly area. The anomaly area is roughly 7 km in diameter and drilling was conducted on a grid pattern of approximately 610 by 610 m (roughly 2,000 by 2,000 ft.) with some closer spaced drillholes in selected areas. By 1986, a total of 106 drillholes were completed for a total of approximately 46,797 m (153,532 ft). The deepest hole reached a depth of 1,038 m (3,406 ft) and bottomed in carbonatite. Molycorp left Elk Creek in the early 1990's when it abandoned its exploration efforts to focus on the Mountain Pass project in California. Then, until 2011, no further exploration was recorded on the property.

Elk Creek Geology

The property is comprised of the Elk Creek Carbonatite that has intruded into the older Precambrian granitic and metamorphic basement rocks. The Elk Creek Carbonatite and Precambrian rocks are unconformably overlain by layer of roughly 200 m of Palaeozoic marine sedimentary rocks of Pennsylvanian age (approximately 299 to 318 Ma). There are no surface expressions of the Elk Creek Carbonatite on the property.

The Elk Creek Carbonatite has been identified as a carbonatite since its discovery in 1971 through drilling. The 3D graphic at the right shows the conceptual appearance of the Nb-bearing carbonatite.



In the schematic above the zones are:

- Orange areas: higher-grade Niobium zones
- Red areas: higher-grade Scandium zones

Treves et al. (1972) indicated that the rocks resembled those of the Fen District of Norway and suggested that they were carbonatites. The Elk Creek Carbonatite has also been compared to the Iron Hill carbonatite stock in Gunnison County, Colorado. The relationship was based on rock-types and mineralogy (Xu 1996).

Current studies suggest that the Elk Creek Carbonatite was emplaced about 500 Ma due to stress along the Nemaha Uplift boundary. Three other geophysical anomalies were

analyzed and drilled near the Elk Creek Carbonatite along the Nemaha Uplift but were found to be gabbroic intrusive rocks.

The Elk Creek Carbonatite consists predominantly of dolomite, calcite, and ankerite with lesser chlorite, barite, phlogopite, pyrochlore, serpentine, fluorite, sulphides and quartz

Resource & Reserve Estimate

The Feasibility Study published in 2019 was accompanied by a new resource estimate. The Indicated Mineral Resources are 183.2 million tonnes at 0.54% Nb_2O_5, 57.65 g/t Sc, and 2.15% TiO_2. Indicated Resources tonnage has increased 101.5% over the previous estimate.

The Inferred Mineral Resources is 103.9 million tonnes at 0.48% Nb_2O_5, 47.38 g/t Sc, and 1.81% TiO_2.

ELK CREEK - Resource Estimate - 2019

	Cut-off US$/t	Tonnage tonnes	Nb2O5 Grade	Contained Nb2O5	TiO2 Grade	Contained TiO2 (tonnes)	Sc Grade (ppm)	Contained Sc (tonnes)
Indicated	$180	183,185,498	0.54%	981,092	2.15%	3,940,419	57.65	10,562
Inferred	$180	103,992,535	0.48%	498,864	1.81%	1,886,181	47.38	4,928

The Probable Reserves of 36.3 million tonnes of ore stand at 0.81% niobium (Nb_2O_5), 65.7 grams per tonne (g/t) Scandium (Sc) and 2.86% TiO_2. The Probable Reserve tonnage has increased 14.7% over the previous estimate.

Elk Creek - Reserves

	Tonnage tonnes	Nb2O5 Grade	Contained Nb2O5	Payable Nb2O5 (Tonnes)	TiO2 Grade	Contained TiO2 (Tonnes)	Payable TiO2 (Tonnes)	Sc Grade	Contained Sc (Tonnes)	Payable Sc2O3 (Tonnes)
Probable	36,200	0.81%	293,220	167,920	2.86%	1,035,320	418,245	65.70%	2,378	3,403

An Observation

The Niobium grades at Elk Creek are in line with the Niobec mine (which grades at 0.53%) in Quebec. But the initial technical study made it clear that this Niobium deposit was different than the operating Niobium mines in the world. In those the Niobium is associated with iron. The ore is crushed and magnetic separation is done. A small (under 10%) amount of the ore is then sent for processing. It became clear that that Elk Creek needed whole ore processing. But that killed the project economics.

With the global crustal average of Scandium grade being about 18 ppm NioCorp decided to go down the path of trying to make an economic case for a ultra-low (high 60's ppm) grade primary Scandium mine.

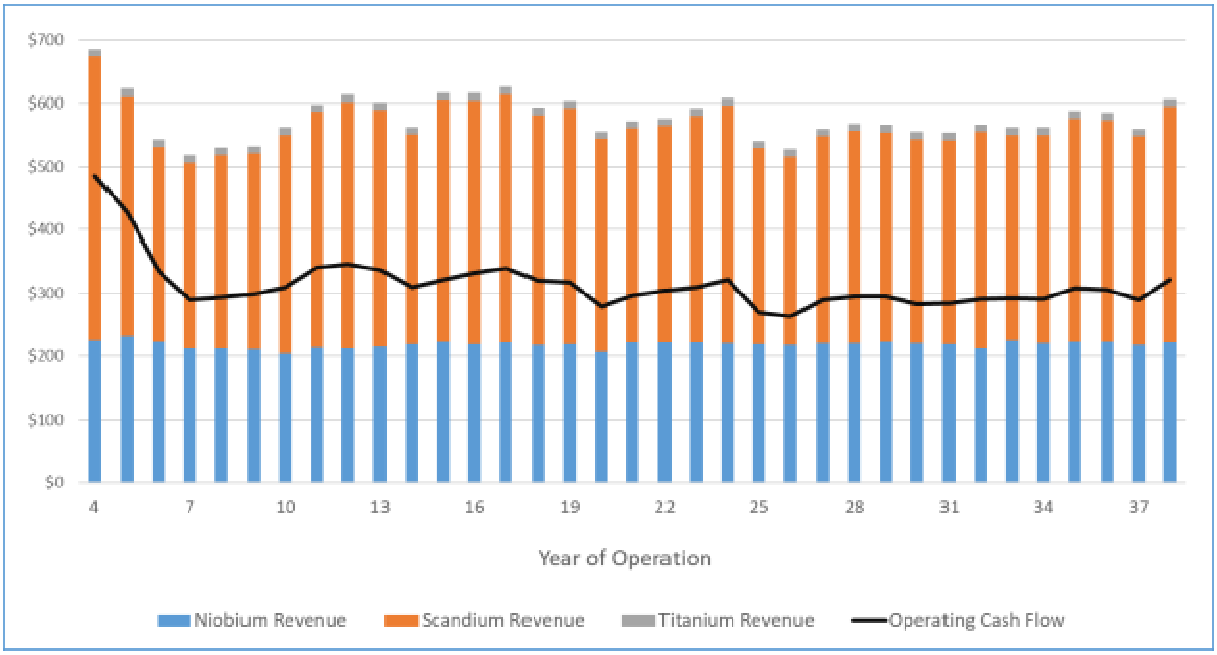
The 2019 FS

The mine design, 2019 FS update, and an update to the project's Mineral Resource and Mineral Reserve were completed by the Nordmin Group of Companies, with technical inputs from other experts. This new Feasibility Study was an update on the 2017 version.

The new FS projected a scenario in which the pre-tax NPV (8% discount rate) increased by 12% to $2.57 billion, and after-tax Internal Rate of Return (IRR) rose to 25.8%, which represented an 18.9% increase.

In the company's opinion the 2019 FS update delivered higher NPV, stronger investment returns, accelerated cash flows, a longer mine life, higher production of all of NioCorp's planned products in the first 10 years of operation, and a further reduction in execution risk and environmental impacts as compared to the previous project Feasibility Study.

As the chart below shows the Scandium revenues are predicted to be larger than any other metal over the Life of Mine.



Source: Niocorp

However in our view and the view of other informed observers the FS had a fatal flaw in using an unrealistic Scandium price, which ultimately proves to be the feet of clay in this calculation an all supposition springing from it.

Key takeaways on NioCorp's most recent FS (which we take with a ton of salt) are:

- Gross revenue over Life of Mine of $20.8 billion being 16.2% higher

- Cumulative revenue of $2.9 billion over the first five years of operation being 17% higher, and cumulative 10-year revenue of $5.8 billion at 9.2% higher
- Cumulative operating cash flow over the first five years of operation of $1.83 billion is higher by 23.6% and increasing over the first 10 years of operation to $3.46 billion, a 12.9% increase.
- Cumulative EBITDA over the first five years of operation of $1.9 billion is 16.5% higher, and cumulative EBITDA over 10 years of $3.8 billion is 6.4% higher.

Mine life has increased from 32 years to 36 years (with an annual steady state ore throughput rate of 1,009,000 tonnes) and the after-tax payback period from the onset of production has been reduced to 2.86 years. Expected revenues streams are shown below:

The company claimed that environmental impacts and associated permitting risks were reduced further from the previous 2017 FS, including the utilization of artificial ground-freezing technologies for mine shaft sinking, onsite water treatment that eliminates process water discharge, and the elimination of previous plans to discharge excess water into the Missouri River. The company claims that treating this water also eliminates the need to obtain any further NEPA-level environmental permits from the U.S. government.

We would note that the last time we wrote about a project using ground-freezing technology, it was the ill-fated Tamerlane that thought it was the solution to their problems.

The metrics of the proposed operation are shown at right:

FS- 2019: Operating Metrics

	Units	
Ore Mined (kt)	000s tonnes	36,313
Mining Rate (mt/d)	mt/day	2,764
Nb2O5 Grade	%	0.81%
Scandium Grade (g/mt)	g/mt	65.71
TiO2 Grade	%	2.86%
Processing Rate (kt/y)	000s tonnes p.a.	1,009
Average Recovery, Nb2O5	%	82.40%
Average Recovery Sc	%	93.10%
Average Recovery TiO2	%	40.30%
Realized Product Prices		
Nb ($/kg Nb as Ferroniobium)	US$	$46.55
Sc2O3 ($/kg as Sc2O3)	US$	$3,676
TiO2 ($/kg as TiO2)	US$	$0.99
Payable Metal		
Nb (mt)	tonnes	168,861
Sc2O3 (mt)	tonnes	3,410
TiO2 (mt)	tonnes	418,841

The CapEx Burden

The CapEx outcome was lower in the latest scenario and was attributed by management, in part, to:

- the need for additional and larger water treatment equipment
- by price inflation in construction materials and processing inputs over the last two years
- the decision to target higher-grade ore at lower elevations in the mine earlier in the project's operational life

Below can be seen the change in the CapEx burden at Elk Creek:

ELK CREEK FS - VARIATIONS

(US $millions)

	2017 FS	2019 FS	Change
Direct Costs			
Preproduction	$71	$83	16.2%
Mining	$179	$257	44.0%
Processing (excluding water treatment)	$343	$367	7.1%
Water management	$100	$6	-94.0%
Water Treatment8	$24	$68	180.0%
Tailings	$20.20	$21.40	6.1%
Site prep	$30.60	$40.60	2.6%
Indirect Expenses			
Mining	$21.90	$23.70	8.1%
Mining EPC	$12.30	$16.00	30.0%
Processing	$34.10	$33.40	-1.8%
Processing EPC	$64.50	$62.60	-2.9%
Site	$7.20	$7.40	2.7%
Water management	$10.80	$8.50	-20.8%
Owners Costs	$38.40	$33.60	-12.4%
Commissioning			
Mining	$0.70	$1.40	102.0%
Processing	$13.00	$13.30	2.7%
Contingency	$109	$101	-7.3%
Sub Total	$1,088	$1,143	5.1%
Net Pre-Production Revenue	($79)	($265)	234.0%
TOTAL	$1,008	$879	-12.9%

This amount is rather eye-watering by any standards. The Sunrise project of CleanTeq has a capex of

US$1.33 billion, but that is primarily a Nickel/Cobalt mine (with only 80 tpa of Scandium)..

The company justifies its new strategy on the basis that targeting higher-grade ore helps to boost its expected operating cash flows over the first 10 years of operations. It claims this trade-off should be attractive to strategic investors, but we do not see why..

Curiouser & Curiouser

Over the longer term NioCorp has become rather controversial in investor circles for going *off-piste*. It is continually surprising with its changes of emphasis on what is essentially the same project as always.

We have dealt with the rotating nature of the focus previously in this review so will not reiterate here.

First we might consider the balance sheet. For a company with such lofty ambitions (and a more sizeable market cap than either of the other two companies with Scandium as a prime focus) there is little to give confidence that fund such a sizeable capex, or indeed just maintain a holding pattern while waiting for a generous offtaker to appear without further serial dilution.

The subject of loans between directors and the company has been a bugbear of some observers. In the NioCorp 2020 10K (for the year ended 30 June 2019), the company reported available funds under the Mark Smith Credit line of $1,520,000; $357,000 in cash; and $71,000 in prepaid expenses. They report monthly operating expenses of approximately $320,000. The credit line carries a 10% interest rate.

Niocorp - Balance Sheet

ASSETS	USD$
Current	
Cash	46,000
Prepaid expenses and other	20,000
Total current assets	66,000
Non-current	
Deposits	35,000
Available for sale securities at fair value	2,000
Mineral interests	10,617,000
Total assets	10,720,000
LIABILITIES	
Current	
Accounts payable and accrued liabilities	3,246,000
Related party loans	1,695,000
Convertible debt, current portion	1,116,000
Derivative liability, convertible debt	-
Total current liabilities	6,057,000
Convertible debt, net of current portion	-
Total liabilities	6,057,000
SHAREHOLDERS' EQUITY	
Issued capital	83,641,000
Additional paid-in capital	13,050,000
Accumulated deficit	(91,690,000)
Accumulated other comprehensive loss	(338,000)
Total equity	4,663,000
Total liabilities and equity	10,720,000

In the 1Q20 10Q for the period ended 30 September 2019 (shown above), the company reported just

$46,000 in cash; $20,000 in prepaid expenses, and $1,305,000 available under the line of credit. They report no other financial resources. This gave them a working capital of a mere four months - and that was three months ago. Accounts payable were over $3.2mn (the other current liabilities are all the MS credit line and the no longer extant convertible portion of the Lind deal).

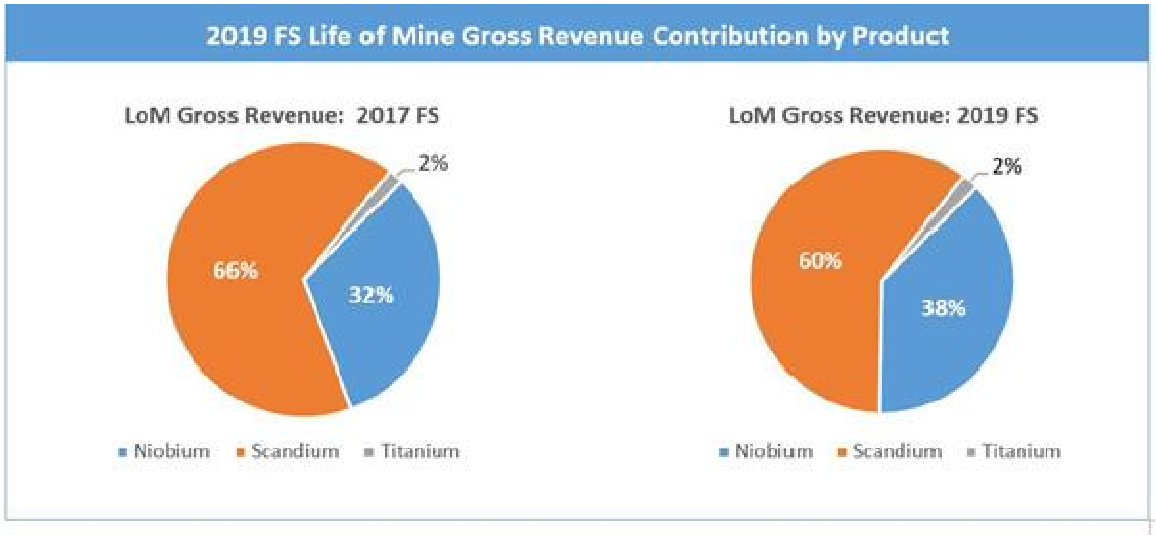
The 2Q20 report will likely be filed around the 8th of February 2020 based on past history. It will be interesting to see if any of the warrants were indeed exercised.

The Problem

Well-documented objections have been raised to quite a fair few of the statements and practices at NioCorp. Principal amongst the topics of disagreement was the lack of cautions on the top line numbers of the Feasibility Study. The top line is what most people look at. There is no top line mention of the cautions that were demanded by the OSC in the earlier revised FS.

More critically is the fundamental price assumption. The Scandium values (US$3,675 per kg) are based on the expert advice of ONG Commodities LLC (Andrew Matheson). All other scandium developers are using $1500 to $2000 per kg in their forecasts.

SRK had recommended a market study of Scandium at a cost of $200,000 in earlier studies that was never done.



Using a vastly unrealistic Scandium price massively inflates NPV (and thus IRR). It adds $2bn to the outcome. The 2017 Feasibility Study posited that NioCorp's NPV is about $600mn to $900mn based on the average Sc pricing that all other Scandium development companies use. Compare that $600mm to the top line NPV $2.564bn in the 2019 FS. It is quite clear that in the first iteration the capex is greater than the NPV, a sure deal-killer, so NioCorp's solution was to find a consultant that would give them the metal price that made the outcome look more palatable.

NioCorp has trumpeted that they have 15% of their production accounted for in an offtake with Traxys. As no $/kg price on this offtake has been stated, therefore it is not "bankable", to say the least. However, Traxys, is an informed market participant and they have an MOU with Platina on its Scandium property. Platina used $1550/kg Sc in their feasibility study.

Platina, who we have written on favorably in the past, used CM Group in Australia to determine their $1550 pricing. Scandium International (who we cover) also used CM Group for their FS numbers ($2000/kg, erring less on the side of caution than Platina) and CM has produced an extensive white paper on Scandium, its market and outlook.

This 125 page report from 2018 is readily available and NioCorp could have relied upon that. They contents table can be found here:

https://www.cmgroup.net/app/uploads/2019/02/Scandium_22Oct2018_TOC.pdf

Then there is the compensation issue which is way out of line with norms of Canadian junior developers. The compensation table for FY2018 and 2019 is shown below:

Fiscal 2019 Summary Compensation Table

Name and Principal Position	Fiscal Year	Salary ($)	Option Awards (1) ($)	Total ($)
Mark A Smith, Chief Executive Officer, President (2)	2019	$ 270,000	$ 121,947	$ 391,947
	2018	$ 270,000	$ 93,957	$ 363,957
Scott Honan, Vice President Business Development	2019	$ 225,000	$ 56,909	$ 281,909
	2018	$ 225,000	$ 37,583	$ 262,583
Neal Shah, Chief Financial Officer	2019	$ 200,000	$ 56,909	$ 256,909
	2018	$ 200,000	$ 37,583	$ 237,583
Jim Sims, Vice President External Affairs	2019	$ 200,000	$ 56,909	$ 256,909
	2018	$ 200,000	$ 37,583	$ 237,583

(1) Reflects the grant date fair value of the Option awards granted during the reported fiscal years. Fiscal year 2019 grants consisted of 750,000 Options for Mr. Smith and 350,000 Options for each of Messrs. Honan, Shah and Sims, in each case at an exercise price of $0.41 per share (using a spot exchange rate of C$1.3202 to US$1.00) on November 15, 2018. Grant date fair values were computed in accordance with FASB ASC Topic 718. Assumptions used in the calculation of these amounts are described in Note 8 in the Company's consolidated financial statements included in the Company's Annual Report on Form 10-K for the fiscal year ended June 30, 2019.

(2) Disclosed amounts paid to KMSmith LLC, an entity controlled by Mr. Smith.

It really speaks for itself.

Recent Financing

In its September accounts, the company stated that its current planned operational needs were approximately $9.1 million until June 30, 2020. Clearly with the current skimpy cash and liquids situation a substantial financing will need to be undertaken to have any hope of reaching this goal.

The most substantial transaction in recent times was in October 2019 when it was announced that the remaining principal due under the Convertible Security Financing Agreements with The Lind Partners

was retired through a common share conversion of $200,000. No new proceeds were raised in connection with the conversion. Remaining interest will accrue monthly, as required under the CSFA, through the duration of the agreement, which terminates in July 2020.

Net proceeds to NioCorp under the CSFA were US$10.77mn, with a total of US$13.1mn in common share conversions made to date under the terms of the CSFA.

In mid-January the company announced that it had expanded its existing non-revolving credit facility with the Executive Chairman, Mark Smith, to US$2.5mn from the previous limit of US$2mn. The credit facility bears a hefty interest rate of 10%, and is secured by Niocorp's assets pursuant to a general security agreement, and is subject to a 2.5% establishment fee. The amounts outstanding under the credit facility will become due June 16, 2020.

The company does have some warrants expiring later in 2020 that are currently in the money so they could have a bit more currently available if the holders exercised those.

As we head into 2020, the engine of NioCorp is essentially running on fumes and these rather self-serving executive loans (to maintain excessive compensation packages in the corporate suite) are an unhelpful band-aid.

Risks

The prime risks we can envision at this stage are:

- ✘ Failure of a Scandium offtaker to appear
- ✘ Financing problems due to massive capex
- ✘ Boeing's distraction with its other issues makes a swing towards Scandium less likely, certainly not investing in a new mine
- ✘ Over-supply in Niobium space
- ✘ Punitory action by CBMM to ward of threats to its quasi-monopoly

The first two factors are linked. We feel that if the company can get a strategic shareholder or a significant end-user lined up then this would help with project financing problems. However, without such a party in sight, the stock price could start to slide making financing an on-going problem.

In recent years the Canadian market has not been sympathetic to metals it understands and is familiar with, let alone new concepts that it must absorb. This company is proffering three metals which scarcely any other Canadian companies are pursuing (maybe for good reason).

The recent financing came in well under target and that leaves the company short on fulfilling expectations. Its drilling program has to stay in hibernation and the metallurgical efforts must be scaled

back severely.

The company has a further burden, the compensation in the executive suite, which is running at over US$80,000 per month. Salaries should be scaled back to match the tight financing.

CBMM gets what CBMM wants and if it does not want an interloper in the Niobium space then it will take action in lowering prices for long enough to scare away investors.

Conclusion

With the 2019 FS of NioCorp on Elk Creek predicated on Scandium production that is four times total global consumption we can safely say that NioCorp is dead in the water unless Boeing's corporate suite decides to back the projects. As we are all aware Boeing's thoughts these days are focused on anything but the backwoods of Nebraska. Nothing but an executive decision to "Go Scandium" would prompt the financing and building of this behemoth. Such a decision would also require Boeing's board looking beyond the Molycorp debacle and hoping such a thing would not be repeated.

Elk Creek is a Niobium project with Scandium credits, not the other way around. Niobium is essentially a monopoly with the Brazilian miner CBMM, controlling over 80% of the market and tolerating Niobec (the producer in Quebec that has an 8-10% market share) so that it does not run into anti-trust problems. CBMM can happily tolerate other miners with tiny Niobium credits being added to the global mix because it can then moderate its own production to maintain price discipline. What it will not tolerate is a new primary Niobium mine of size. Elk Creek will be predatorily priced out of existence. This kills dead any prospect of a Scandium by-product flow.

The original attraction for us at NioCorp was the Nb content. Another carbonatite with REE was just what the world didn't need. However, the world doesn't now need an extra Niobium deposit or a non-primary Scandium deposit. Titanium in a carbonatite sounds like extremely heavy-lifting when mineral sands more than suffice. **NioCorp is essentially offering three different products in formats that no-one wants.**

In theory, with a resource of this size in a strategic metal AND located in the United States, one might see a future for Elk Creek's Niobium resource. However, with all of the current supply coming from allies/friends of the US (Canada and Brazil) Niobium has one of the weakest cases for being a strategically-threatened mineral. In Scandium all the potential competition is from easier to mine, lower Capex projects in Australia (another ally). Likewise with Australia's strong position in Titanium. Who needs Elk Creek on strategic grounds? Certainly not the US….

We have afforded NioCorp a **SHORT** rating with a 12-month target price of CAD$0.40.


Historic Chart for Cdn:NB by Stockwatch.com 604.687.1500 - (c) 2020
Tue Jan 14 2020 Op=0.82 Hi=0.82 Lo=0.79 Cl=0.79 Vol=78,026 Year hi=0.94 lo=0.50
Cdn:NB
0.95
0.925
0.90
0.875
0.85
0.825
0.80
0.775
0.75
0.725
0.70
0.675
0.65
0.625
0.60
0.575
0.55
0.525
0.50
Volume
900 k
600 k
300 k
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
2019
2020

Important disclosures

I, Christopher Ecclestone, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

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