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 it is via the Niobec subsidiary of Iamgold (IAG) which operates in Quebec.

There are only three producing Niobium mines in the world. Despite Quebec’s role for IAG, 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 generates more than $600 million in annual profit. 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.
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.

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.

NioCorp: NioCorp is one of the lucky ones that exited the REE space early. Its earlier manifestation had been as Quantum Rare Earths (ironically exploring the same deposit as now but with a focus on REEs. Besides its sizeable Niobium resource, one of the interesting features of Niocorp is that the company is headed up by Mark Smith, the veteran CEO of Molycorp, who has been steeped in the world of specialty metals for many decades. Indeed the Elk Creek property of Niocorp used to belong to Molycorp when it was a much more diversified metals explorer, before it narrowed down to its current REE focus. Niocorp’s exploration efforts are focused on the Elk Creek Carbonatite in Nebraska. This structure is one 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. The Elk Creek Carbonatite has been identified as a carbonatite since its discovery in 1971 through drilling.

In April 2012, QRE released an NI43-101 Resource estimate prepared by Wardrop Tetratech. The main findings were:
With a resource of this size in a strategic metal AND located in the United States, we have pondered who might want to make a move on this company. Formerly the obvious candidate was Molycorp, now significantly less so. Surely Japanese and Korean steel makers would like to see an alternative source of supply to the Brazilians, while the US resource security hawks would be happy to see a Niobium source within the US (but they have proven less amenable to paying to develop such sources in the recent past).

The attraction for us at NioCorp is the Nb content. Another carbonatite with REE does nothing for us, and clearly the management at Quantum Rare Earth did the right thing in exiting from the dead-zone that is Rare Earths. The new leadership knows Niobium from the inside out and this is a big feather in the cap for the company.

Alkane – an example to emulate? In July, Alkane Resources Ltd, the ASX-listed Zirconia (and REE) focused explorer announced that it had signed a Joint Venture Framework Agreement with the Austrian specialty metals major, Treibacher Industrie AG, with a view to developing the company’s potential stream of ferro-niobium from the Dubbo Zirconia project (DZP). This deal was a breakthrough as the company had previously announced a MoU back in October 2011. As with most such MOUs the market loses interest after such a long gestation of a deal. Therefore when the final deal came through it acted as a substantial kicker for the Alkane stock price. The purpose in mentioning Alkane’s progress here is twofold. Firstly it shows that new parties can break into the Niobium space and secondly that securing a credible partner (in this case a trading
The intended Joint Venture activities are the production and marketing of ferro-niobium (FeNb) using niobium concentrate from the DZP. The parties will form a company, initially wholly owned by Alkane, to use Triebacher’s proprietary technology to process DZP niobium concentrate at a facility in Australia (or other agreed location) to produce FeNb. Triebacher has the option to purchase 50% of the new company within three years of commissioning of the plant and will have exclusive rights to market the FeNb.

The Joint Venture expects to produce over 3,000 tonnes of FeNb, utilising all of the niobium concentrate produced from the one million tonnes per annum development of the DZP, making it the only producer of niobium in Australia once production commences in 2016. At current prices, annual production of FeNb will generate revenue of approximately US$90 million with AZL’s share estimated to be about A$80 million (depending upon A$/US$ exchange rate), which is 16% of total anticipated annual project revenue as determined by the definitive feasibility study released to the ASX in April 2013).

The EIS for DZP was lodged with the NSW Department of Planning and Infrastructure in late June 2013 marking the start of the approval process for this State Significant Project.

Niobec (Iamgold – IAG): The Niobec mine located in the Municipality of St-Honoré in the Saguenay-Lac-Saint-Jean region, 200 kilometers North of Québec city, is the only underground niobium mine in the world. Niobec currently employs more than 480 employees. Its production currently corresponds of 8 – 10 % of the worldwide volume of niobium depending on changes in supply and demand from year to year.

Talk in 2012 indicated that IAG intended to float this off in the public markets but they seem to be hanging onto it. This
may be because of weak markets but we would also suspect it is because Niobium currently has a better outlook than Iamgold’s staple metal, gold. If the spin-off had gone ahead it would have given the metal a much stronger public awareness than hitherto where it has just been a bonanza earner for IAG hidden in its closet.

Conclusion: Mining markets scarcely know anything about the Niobium scene. This is no surprise as the exposure for investors is via roundabout routes with the current producers either embedded in majors (two in gold companies) and the biggest player is not even a public company. However the scope exists for at least a couple of other producers to surface and make a more rounded supply situation in this important metal for specialist alloy applications. As we have pointed out here, Alkane looks a likely producer in the near future and Niocorp has potential to join in at a later date thus diversifying the geographical sources (by adding Australia and the USA to the mix) and in the case of Niocorp providing the US with some resource security in the metal.