

# Cancana Resources – Production Trumps Inaction

When we have written about Manganese in the past it has been in the context of steel alloys or of exotic new types of batteries. The conversation has kept to these topics rather than the alternative use as fertilizer because for Manganese to be fertilizer grade it needs to be in excess of 48% Mn grade. While Manganese mining does tend to focus on the high-grade Direct Shipping Ore (DSO) material it is rare that it reaches the grade that satisfies fertilizer demand. In fact of all the major manganese mines in Brazil, only that of Cancana Resources Corp. (TSXV: CNY) broaches the required level. I thought that this merited highlighting so I have done a review of the company's activities and shall discuss these here.

## Assets



Cancana Resources Corp. is focused on exploring and developing the BMC manganese project in the far western state of Rondônia in Brazil. This state borders Bolivia. The assets consist of concessions that the company accumulated itself and then the plant and deposits of two other producers that the BMC Joint Venture (in which Cancana is partnered by a leading resources hedge fund) bolted on in 2014 to take the step up to

being a producer.

The Joint Venture holds a large land position extending to nearly 37,000 hectares in very prospective terrain. In its 2015 NI43-101 report the consultants noted that very little exploration had been performed to date and that Cancana needed

to initiate regional exploration programs aimed at identifying manganese occurrences with follow up leading to resource and reserve calculations. That report was based upon exploration over an area of a mere 4.4 hectares, containing an inferred resource of 35,000 tonnes of mineralization with an average grade of 54% Mn.

The geology of the area consists of Proterozoic aged granitic plutons underlying several high-grade manganese occurrences. The mineralization occurs as close-packed, rounded to angular clasts of Pyrolusite / Manganite within a saprolitic soil. The clasts range in size from sand particles to boulders greater than 1m on a side. Prior to Cancana's arrival on the scene this type of mineralisation was already in production by Rio Madeira and Eletroligas, two companies operating in the area, of this more anon.

### **Manganese (Mn) – the Known Unknown Fertiliser**

Manganese is a chemical element with symbol Mn and atomic number 25. It is not found as a free element in nature; it is often found in combination with iron, and in many minerals. Manganese is a metal with important industrial metal alloy uses, particularly in stainless steels.

So while Manganese is primarily used in the production of steel, the high-grade and high-purity nature of the material produced at BMC qualifies as 'agricultural-grade' manganese and can be sold at a premium. Manganese is an important plant micronutrient and is required by plants in the second greatest quantity compared to iron. Manganese is a major contributor to various biological systems including photosynthesis, respiration, and nitrogen assimilation. Manganese is also involved in pollen germination, pollen tube growth, root cell elongation and resistance to root pathogens.

Manganese deficiency in plants is evidenced by symptoms which often look like those of iron deficiency. Deficiency can occur

from low fertilizer application rates, use of general purpose fertilizers (which typically have reduced micronutrient contents), excessive leaching or applying too many iron chelate drenches.

Manganese is the world's twelfth most prevalent mineral and is mined in South Africa, Australia, China, Brazil, Gabon, Ukraine, India and Ghana and Kazakhstan. It is the fourth most traded metal with annual production (in 2011) amounting to an estimated 14 million tonnes. As a direct shipping ore (DSO) it has become in recent years almost the exclusive preserve of mega-producers, and smaller players have disappeared. One of the largest players has been BHP-Billiton (with mines in Australia and South Africa) while the largest player in North America is probably Grupo Autlan in Mexico. The BHP Manganese assets (amongst others) were recently spun-out via the South32 demerger operation. The goal here though is not for the product from Cancana's venture to go to the export market but rather to go for domestic fertilizer usage in the soybean industry in particular.

### **Brasil Manganese Corporation**

In 2014, the producing assets of the two miners operating in the vicinity of Cancana's concession in Rondonia came under the ownership of Brasil Manganese Corporation (BMC), Cancana's joint venture partnership with Ferrometals (which is a special purpose investment vehicle for The Sentient Group). Sentient is a resource-focused private equity fund with approximately \$2.7Bn in assets under management, and a 15-year track record for advancing resource projects from early stage to pre-feasibility and development. We have come across Sentient before, principally in the context of the Rincon Lithium asset in Argentina.

The backstory to the two companies acquired is that Manganese was first explored for by Rio Madeira Mineracao in 2005. The partners in that firm recognized an opportunity to create a

niche market for high-grade, high-value manganese cobbles. These cobble fields were known from road cuts and discussions with local farmers. The black cobbles were visible in roadbeds, especially after a rain. Minimal exploration uncovered several occurrences of these “boulder patches”. The company built a processing plant, which became operable during 2008.

## **Operations**

BMC’s first actions after ownership transfer were to bring the safety features into line with modern practices.

The mining is open cut, indeed it is somewhat akin to scraping the surface as the weathered boulders are the main material sought after. The picture below tells a thousand words as the heavily weathered red earth so frequently found in the tropics is the source of the boulders and other Manganese ore.



The Rio Madeira plant is a basic affair consisting of common

gravel washing and sorting plants. The raw material from the field is fed through a hopper and jaw crusher if needed, to the first wash station – vibrating screens. The majority of soil is removed with the soil / water slurry being pumped to settling ponds. The remaining clasts are fed through a trommel for a second wash before being sorted by size with vibrating screens. The sorting places the material into 3 piles – a coarse, medium and fine fraction that is now available for sale as the final product. Further beneficiation can be done to separate manganese clasts from gangue by jiggging the fine and medium material producing a cleaner, enriched material for the end client, depending on their need.

During 2011, a second company, Eletroligas, optioned the properties known as Jaburi and set up a similar plant based on Rio Madeira's plant. They produced material for themselves, as they are a ferro-manganese producer and needed a source of high-grade manganese. Their plant was designed to produce product for the ferro-manganese market only, which means they can tolerate higher minor elements in their final product than can material destined for the fertilizer market. Increased silica (quartz) and iron minerals are detriments to fertilizer producers but not ferro-manganese producers.

The Eletroligas plant (renamed the Jaburi Plant) was improved to provide feed for the fertilizer market. The washing cycle and particle separating jigs were improved. The trommel feed and rotation were adjusted. New water pumps were installed.

Both facilities needed extensive safety features such as re-wiring of overhead electrical infrastructure, hand rails, cat walks, chain guards, upgraded trommels, water pumps, tailing / settling ponds.

Both plants follow similar circuits to produce finished product from raw materials. The raw material, which is a mixture of soil and clasts of all sizes, is brought to the plant by 20 tonne capacity trucks and stored near the plant.

The clasts within the soil are heterogeneous in nature, made from manganese bearing materials, granitic, mafic and vein quartz bearing clasts.

Communications were improved by installing a radio network between all vehicles and base stations at each plant capable of reaching Espigao, over 40 km away.

Production is still relatively small scale. BMC produced 2,143 tonnes of manganese product during the June quarter from colluvial sources, bringing stockpiles to 7,056 tonnes (net of sales) at the end of June. BMC then went on to produce 2,045 tonnes of manganese in the month of July 2015, being record production levels for the Rio Madeira plant. Most product seems to be accumulated into these stockpiles as BMC recorded second quarter sales of 338 tonnes. However what it did sell it managed to achieve prices averaging more than a 30% premium on current CIF prices. CIF Tianjin pricing for 44% manganese was US\$2.98 per dmtu as of June 26th, 2015

## **Conclusion**

As I often repeat, **Production is King** and Cancana have short-circuited the expensive and tedious route of endless consultant's reports by acquiring two producing properties to get the product flowing. We suspect that this shall be the trend for *wannabe* miners across a swathe of metals in coming years as the old paradigm fades in the face of brutal financing conditions.

The Joint Venture partners, Cancana and Ferrometals, are employing a two-pronged strategy at BMC. The primary objective is to advance BMC to an initial resource and onward to pre-feasibility, while also expanding current small-scale production to support those exploration activities. This matches the strategy we have seen a number of other more innovative miners have pursued with the small scale operations funding the eventual bigger project. We can find nothing to

fault in that and Cancana have gained a serious endorser of that strategy by attracting the very choosy Sentient people to join with them in the venture.