The US rare earth vulnerability and mammoth battery supply disconnect

The most startling act of cognitive dissonance in the mining space in this day and age is amongst those investors and analysts that enthuse about Lithium, Cobalt, Graphite and yet cannot raise an eyebrow for Rare Earths.

The thesis is rather simple. If you believe that we are on the cusp (or indeed already in) of a massive surge in adoption of EVs and HEVs and therefore the batteries for these vehicles (primarily the Li-Ion battery format) will rule the Earth then how can one not also posit that the type of engine that dominates the same vehicles will have a proportionate need for the Rare Earth magnets produced from Neodymium and Praseodymium. If one is disturbed by potential shortages of Lithium and Cobalt, then why no sleepless nights about Rare Earths?

Alarm Bells?

It seems that concern is rising but not amongst investors. Then again how real is any professed concern if it doesn’t lead to action? Japanese and Korean companies have supposedly been concerned for a decade now about their dependence upon Chinese REE (rare earth element) sources but what has it actually prompted them to do? Sure we had some Japanese prominently and publicly support some of the most notorious fakers in the Canadian REE space during the last boom but they got burned when they discovered they had been snookered by the perennial promoters with zero intention of ever moving to production. On the rebound the Asian end-users retreated into their shells but that doesn’t put bread on the table when one is facing an imminent supply crunch.
The Europeans are just as vulnerable, if not more so. In a recent JRC study, presented at the 9th Conference of the European Strategic Energy Technology Plan, the following was noted:

“The EU resilience to supply bottlenecks is currently low for several materials, such as the rare earths – neodymium (Nd), praseodymium (Pr) and dysprosium (Dy) – used in permanent magnets for wind and electric vehicles technologies, as well as for graphite (C) required in electric vehicles rechargeable batteries. Moderate supply issues are seen for indium (In), silver (Ag) and silicon (Si) required in the photovoltaic technology as well as cobalt (Co) and lithium (Li) requisite in electric vehicles.”

Interesting to note that the hot metals du jour, Lithium and Cobalt come at the end of the list of problem metals. And well they might. At least Lithium has three large cartel members (plus Galaxy and Orocobre) churning out product, while REEs have no meaningful suppliers outside China beyond Lynas.

The JRC report produced this interesting diagram showing resilience currently and 15 years out. What they call (in EU-speak) conservative means pessimistic and then they have an optimistic scenario. Interestingly Neodymium and Praseodymium both remain mired in the Low Resilience (read “poor supply”) category even in the optimistic scenario.
The resilience to supply bottlenecks for carbon fibre composites (CFC) used in wind turbine blades is evaluated as high. The demand for Selenium (Se), Copper (Cu), Gallium (Ga), Tellurium (Te) and Cadmium (Cd) in photovoltaic technology is very marginal compared to the global supply. Therefore, for these materials the estimated EU resilience is also high.

**An Aside on Trumpism**

Initial signals are that US relations with China have a potential to get rather hairy. As we well recall, half a decade ago, a scuffle between Chinese fishing boats and a Japanese Coast Guard vessel resulted in a shutdown of Chinese REE exports to Japan, with a cascade effect into global pricing. At least the Japanese had plants in China that could work around the problem. The US on the other hand has almost zero access to Rare Earths. First lesson when one starts rattling a sabre is make sure one has a sabre to rattle.
The US is especially vulnerable to a REE clampdown by China. With the Japanese having helped Lynas through its dark period, they are first in line for product from the source and as for other sources the US automobile industry might tap, there are pretty much none that come to mind. An incident (or incidents) of sharp elbows and jostling with China (over the South China Sea or even just imposition of tariffs or being labelled a currency manipulator with all the spill-over effects from such a designation) could see an official (or unofficial) clampdown on REE exports to the US. This is exactly what the Pentagon has feared for a long time now and which Congress, and successive Administrations, have ignored.

Nothing would focus attention back onto Rare Earths like such a moment. However if China wanted to get around WTO rules, it might just squeeze supply and implement an export (or re-export) ban to the US in a *sotto voce* manner so there is nothing officially that the US can lodge an appeal over. What more tangible response could the US make? Well, Molycorp’s Mountain Pass might have life breathed back into it, but with every day of inactivity the chances of reviving it and particularly of reviving it quickly becomes more distant. Nothing else is even remotely advanced in North America with the “nearest” projects that could be ramped up in Africa and Australia and even those are not something that would plug the hole made by a sudden escalation of hostilities (trade or otherwise) with China.

Beyond this there is the issue that even if things don’t get militarily heated the prospect of duties of 20% or more on REE magnets imported from China changes the equation for US production. While Mountain Pass had its own unique limitations it certainly would have been helped in its heyday by hefty duties on competing product.

If US automakers intend to address the issue of REE magnet supplies over the next ten years with any more intensity than their current lackadaisical approach then they will need to
start backing some potential “winners”. That most North American REE wannabes have abandoned the fight doesn’t help but we certainly know where the “bodies are buried”. Many of those projects were not going to fly but a handful of them would be viable if reconfigured to size and throughput (and bite-sized capex) more fitting to the current straightened times. Jack Lifton said it seven years ago that projects had to be right-sized and he was paid scant heed. We are at the dawn of the age of the REE mammals now that the REE dinosaurs have gone to the boneyard of history.

Conclusion

The Chinese grip on Rare Earths is no less than it was in the days of Great Panic. Indeed in those days there was at least hope that several handfuls of projects were advancing and that the West would become self-sufficient. Those dreams were blown away in an ego rush by promoters and arguably more destruction of value was wreaked in the REE space than ever was done by Bre-X, for instance.

The clear inconsistency between thinking that EVs and HEVs are the way forward, and yet that REEs are “not important” or “crisis averted”, is the great fallacy of our times. If one feels that Lithium, Cobalt and other battery metals are in critical short supply then the situation is worse in REEs where future sources of production (even in China) are unclear to say the least.

The trigger for this “wake-up call” might be a Trump-induced trade tussle with China (or worse) but it might also be a creeping realization by automakers et al. that they have almost no guaranteed source of supply and that if the soaring production projections for EV/HEVs come to pass then they will need to be running without engines!

In conclusion we would note that last week, in what we might call the first swallow of the REE summer, we received a call
from a private equity group asking us what might be available in REE projects left unloved after the boom. It did not take us long to name three at least that were lying fallow and still worthy of attention. We would humbly suggest that now is the time to get positioned because a hell of a problem is brewing in the area of REE magnet availability.