

Choosing the “Rocky” Road to Rare Earth Production

Here at **Investorintel** we often muse about what can be salvaged from the wreckage of Molycorp and while opinions differ wildly on the residual value of the hardware and real estate (not to mention the intellectual property) there are some assets that were embedded at Molycorp that are infinitely transferrable and indeed have already been transferred.

It was a very interesting move to see Rocky Smith captured by Peak as Chief Operating Officer – Development. This became effective from the 5th of January 2016. He was previously the Managing Director of Molycorp’s Mountain Pass Rare Earth complex from July 2009 to August 2015. Essentially Peak has picked up one of the few people with current experience of practical, specialist and technical rare earth operations.

His skillset span management, operations and engineering. Most recently he was responsible for operations at Molycorp’s mining and processing site at Mountain Pass where he managed 500 employees and an annual operational budget of in excess of US\$150 million. He recruited, developed and led the team responsible for the implementation of the redesigned and expanded Mountain Pass operation. His work included the establishment of management systems, debottlenecking and the delivery of expansion programs which boosted production capacity by 230% over three years.

Between 1989 and 2000 he worked for FMC Corp and between 2000 and 2008 for the Talc miner, Barretts Minerals.

Before that I worked with Eti Soda in Beypazari, Turkey as a technical expert on a soda ash plant start up in 2009. From 2000 to 2008 he was employed by Minerals Technology at their Barretts Minerals property (a talc mine) in Dillon, Montana,

most of that time as the Plant Manager with responsibility for everything from the mine thru the facility. From 1989 thru 2000 he worked for FMC, first in gold at Paradise Peak as Chief Metallurgist and then Plant Superintendent, then he moved to the Green River site and again worked as Technical Superintendent for the site and then as an Operations Superintendent for one of their large natural soda ash plants.

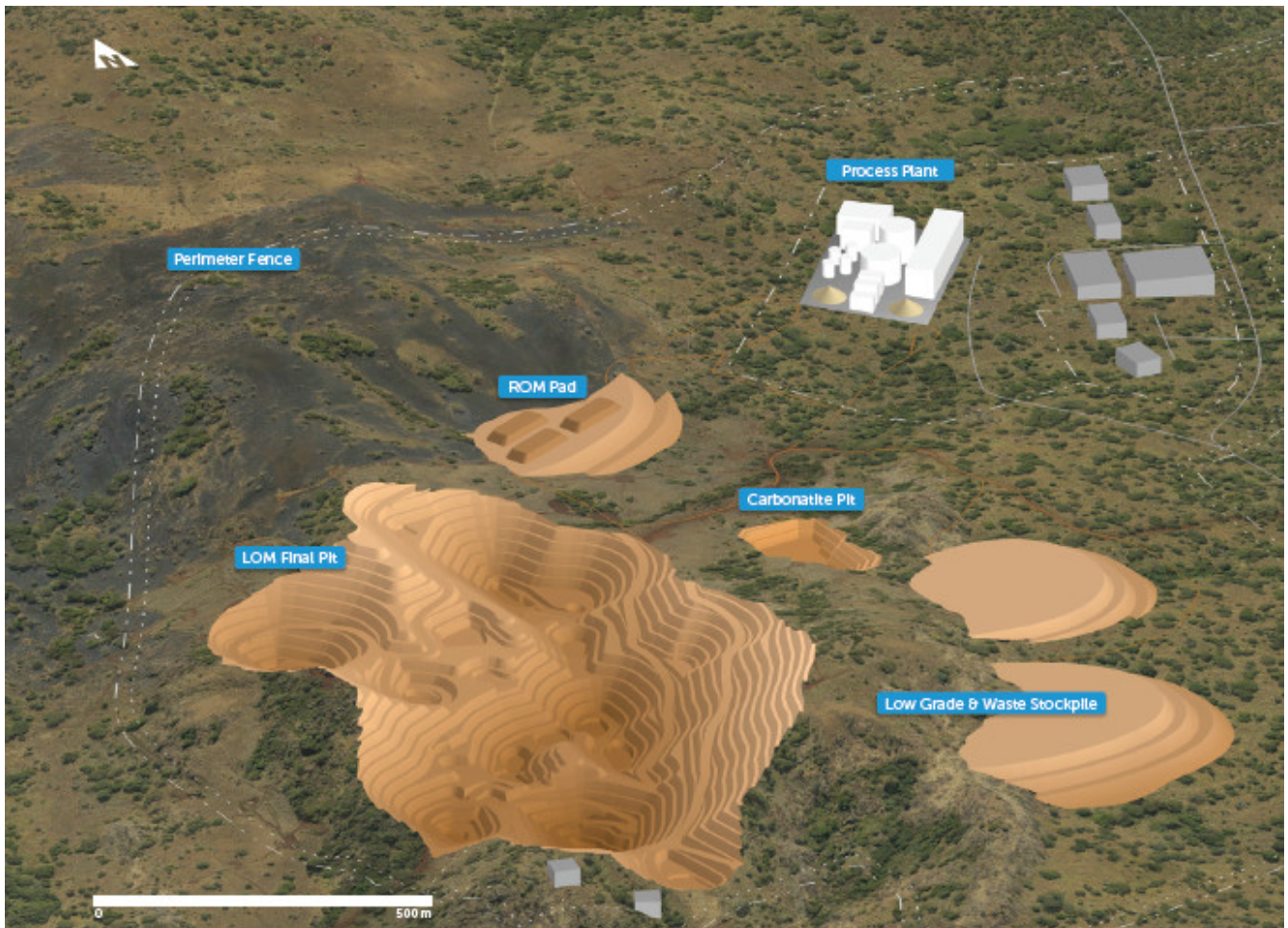
In the range of metals dealt with he has also worked in uranium, vanadium, gallium, germanium and base metal sulphide flotation recovery.

He holds a Bachelor of Science degree in Chemistry and has over 35 year's operations and senior management experience in the mineral processing sector. He has relocated from the United States to Perth, Western Australia.

The number people on the planet, who are not Chinese, that know how to put together the soup to nuts of Rare Earths production can be numbered on one hand (and of someone whose lost a few fingers..) so Peak have bagged themselves someone with a "rare" skillset.

Ngualla

Peak's sole focus is the Ngualla project in Tanzania which it is pursuing in conjunction with its partners Appian and IFC. Ngualla is a large high-grade rare earth deposit, particularly gifted in the magnet metals neodymium and praseodymium. The PFS mooted capex of around US\$367mn, including 30% (US \$85 million) contingency.



Peak has commenced the Bankable Feasibility Study for the Ngualla Project and has appointed AMEC Foster Wheeler as the lead engineer for the study. Early indications are that a rejigged scenario for the production process due out in coming weeks could show a sizeable reduction in the previously mooted capex.

Prepping the Marketing Effort

Also in the first few weeks of the New Year, Peak announced that Michael Prassas was joining as Executive General Manager – Sales, Marketing & Business Development. He had previously been Global Account Manager for Automotive Catalysis and Sales Manager – Rare Earth Systems for leading global chemical company Solvay. That Belgian group had acquired Rhodia-STER, the large French REE trading house (and chemical company) in 2011.

He was at Solvay from September 2012 where his primary

responsibility was for Rare Earth Mixed Oxide sales in Europe and Africa. He over 20 years' experience in sales and marketing (also at OEM and Tom-Tom) with his focus being the negotiation of long-term supply contracts with global accounts and developing business relationships and offtake agreements with some of the world's largest automotive companies.

He has a degree as a Business Economist from the North Stuttgart School of Business Administration where he studied economics, majoring in foreign trade, human resources and financing. He is expected to relocate from France to Perth in the first quarter of 2016.

Clearly Peak are not relying on the failed "build it and they will come" school of thought, that so many others have posited, and want to make sure customers are lined up in advance for Ngualla's output.

Conclusion

When an explorer moves up to the stage of making the commitment to corralling the team for mine building and operation then one can finally be reassured that the "rubber is hitting the road". The two most recent hires go beyond mere mine-building and are looking to the end production and selling phase. Beyond that Peak has decided to go for heavyweights with experience in the biggest players in the rare earth space.

In particular its hire of the (re)builder of Mountain Pass comes freighted with "lessons learnt" in constructing a major Rare Earth mine. Peak's Ngualla development will be much more bite-sized and with management's feet firmly on the ground the pressure to build something pharaonic will not be there. That Peak feels it can and will be done is further accentuated by the hiring of personnel to move the product out to the marketplace when production starts to roll.

Again, in Peak, we find a case of "hare & tortoise" with a

below-the-radar REE hunter moving further down the road to the end goal, verily as some of the household names of the REE space fold up their tents for the last time having burned through enormous piles of money with nothing to show. With the team in place we now await the reformed capex plan in the next few weeks and the move to funding.

Arafura announces major progress in de-risking Nolans Project's path to production



Arafura Resources ('Arafura', ASX: ARU) is one of Australia's fastest-growing rare earths developers. It has achieved exploration successes, concluding fruitful partnerships to ensure long term growth at the Nolans Rare Earths Project. The Nolans Rare Earths Project

presents a world-class rare earths resource grading 2.6% rare earth oxides ("REO") with measured and indicated resources able to sustain at least a 25 year mine life according to Arafura's recently published 'Nolans Development Report' (NDR), highlighting the advanced stage of the Nolans Project. The Document' (not to be confused with feasibility Study) explains recent changes to the process and flow-sheet as well as the projected CAPEX and OPEX, which make Nolans a very competitive project even in the face of Chinese producers, which places Arafura's Nolans Project in the middle of the cost curve in terms of producers inside and outside of China.

The NDR has confirmed that Nolans presents some of the highest neodymium (“Nd”) content of any rare earths resource currently being considered for development anywhere in the world.

Chinese magnet producers are very interested in Arafura’s Nolan Project, which is not surprising given its (20%) neodymium and praseodymium content (Nd and Pr separately or NdPr Oxide), two of the main materials used to make magnets. Given China’s dominant position in the rare earths sector, is a very welcome and surprising prospect. Arafura’s uniqueness stems from the composition of its resource, which as stated above, features 25-26% magnet feed materials, accounting by themselves to some 70-77% of its potential revenues. Arafura may well position itself as a major magnet producer in its own right. The growth in demand for NdPr Oxide is expected to lead to supply shortages in the next decade, prompting a faster price appreciation than other rare earths.

One of the most important aspects of the report addresses the extent to which Arafura has worked with Chinese experts to accelerate the path to production and de-risk the Project. Arafura The East China Mineral Exploration and Development Bureau (ECE) has helped Arafura achieve project optimization thanks to a careful review of capital and operating costs, which will maximize the savings achieved thanks to an ambitious cost cutting plan. ECE holds a strategic equity holding of 24.86% in Arafura, enabling Arafura to avoid having to dilute the share price while continuing to work on its own innovative rare earth extraction process. Arafura’s report says that much of the work for the Nolans Project’s Definitive Feasibility Study (“DFS”) has been completed thanks to ECE’s cooperation, which will continue until the final version, expected to be ready in the second half of 2015. The Nolans Project could launch production in early 2019, provided Arafura secures other offtake agreements in order to fulfill all project funding needs. The Company will likely seek a development partner to be announced over the next 18-24

months, noting that the NDR will serve as a marketing document to achieve these goals.

There have been some concerns over the status of Australian-Chinese relations and their potential deterioration. While, military and international diplomatic cooperation has suffered over Prime Minister Tony Abbott's stance against China's ally Russia, economic cooperation is actually flourishing.

Australia appears ready to sign a free trade agreement with China, a deal expected to be signed before the end of 2014 according to news reports. There is speculation that the deal could be finalized during the G20 meeting in Brisbane in November, even as Prime Minister Tony Abbott and Chinese President Xi Jinping are expected to meet earlier at the Forum of Asia-Pacific Economic Cooperation in Beijing. Xi, himself, will address the Australian Parliament during his G20 visit. "The Australian" reports that after nearly a decade of negotiations, there is sufficient political will on both sides to finally conclude a free trade agreement even if the final stages of any trade negotiation are always the hardest. Australia is keen to conclude the deal as any hesitation would play into the hands of Australia's main competitor, New Zealand over agricultural products and services. China wants an improved investment access and tariff reductions on household items such as electronics. China also wants access to Australia's vast mineral resources. The economic stakes are such that neither China nor Australia will let international differences spoil important trade and economic ties.

Arafura Development Report

reinforces robust project economics, rare earth production scheduled for 2019

Arafura Resources ('Arafura', ASX: ARU) will start production in 2019 with a 20,000 tons/year target featuring excellent project economics according to the Company's 'Development Report for the Nolans Project in the Northern Territory – the



Nolans Development Report (NDR). The Report provides an updated picture for the project while serving as the preview to the Definitive Feasibility Study scheduled for completion in mid- to late-2015. The Project's Definitive Feasibility Study (DFS) will:

1. incorporate the results of the ongoing China-based optimization program
2. increase opportunities for the Company, including confirmation of provisional product sales agreements
3. Proceed with regulatory permitting for the Nolans Site, including the Project's water supply
4. Secure an offshore site within an established chemical precinct for the Separation Plant

The NDR reflects Arafura's strategy of de-risking the Nolans Project by focusing on the production of high demand heavy rare earth metals (HREE) such as neodymium and praseodymium (Nd, Pr) and a commitment to lowering costs wherever possible. Arafura has identified three main factors as responsible for the cost cutting measures in response to pressure from falling commodity prices and Australian infrastructure costs, which have increased substantially in the past few years. One of the

most notable examples of this approach was Arafura's decision to shift the proposed processing plant that was to be built in Wyhalla (at first chosen because the jurisdiction's welcoming attitude and recognition from the state government of South Australia) to an area closer to the where the Nolans mine will be built.

The relocation of the processing plant alone has allowed Arafura to save some AUD\$ 400 million while also leaving sufficient capital to continue along the path to production. But the overall savings plan envisaged measures to achieve savings of over AUD\$ 1 billion, which has prompted the decision to locate the separation plant to an entirely different region within easy reach of hydrochloric acid supplies, which do away with the need to a chloralkali plant. The NDR assumes that the separation plant would be based at a location in the Gulf Coast region of the USA. Finally, the third major prong of Arafura's de-risking plan has been to work closely with experienced partners such as East China Mineral Exploration and Development Bureau (ECE). ECE holds a strategic equity holding of 24.86% in Arafura, enabling Arafura to avoid having to dilute the share price while continuing to work on its own innovative rare earth extraction process. The cost cutting measures have been of vital significance to the Nolans Project because, without them the Nolans Project was threatened. Arafura has survived and thrived thanks to a decision to become more efficient.

The Nolans Bore probable ore reserves total 24 million tons grading 2.8% REO (672,000 tons of contained REO), along with 2.97 million tons of phosphorus oxide and 4,900 tons of uranium oxide. Arafura's excellent economics stem from the composition of its resource, which features 25-26% magnet feed materials, clearly leaving Arafura the room and capacity to become a world class magnet producer. According to Arafura, these reserves can be mined using open-pit methods that help improve on overall costs and have an estimated lifespan of 22

years, using a maximum beneficiation turnout of 1.1 million tons per annum. Further drilling will be required for confirmation but Arafura's 95% resource-to-reserve conversion rate marks a significant achievement, with Nolans Bore as one of the world's only rare earths projects that has established an ore reserve.

The Chinese have a market share of 90% for rare earths. State-controlled company Baotou Steel Rare-Earth intends to store up to 100,000 tons of metals in special warehouses. This practice should start to raise the price of rare earths. Just about all rare earths, with the likely exceptions of cerium and lanthanum, are being hoarded. China can afford to do this because it has no competition at all for the time being – unlike the cases of cerium and lanthanum. China wants to secure long-term supplies for its own industries and heavy rare earths are likely to be really rare in the next few years, which should force prices to rise – sharply. Chinese companies could then be supplied by the state with cheap supplies, while foreign companies would most likely have to pay horrendous prices. China is also consolidating suppliers and reducing excess capacity to match demand, allowing some measure of price controls.