A Rocky Path Ahead for Vital Metals

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A news release issued earlier today from Vital Metals Limited (ASX: VML) cast a shadow over the company's ambitious rare earths mining projects. While the company has showcased a robust profile of its operations, particularly at the Nechalacho site in Canada's Northwest Territories, a series of strategic and economic challenges have now raised concerns over its viability in the rare earths market.

A Promising Start

Vital Metals commenced its operations at Nechalacho in 2021, quickly positioning itself as Canada's pioneering rare earths miner and the second in North America. With a significant resource of 94.7 Mt at Nechalacho, it looked like the company was on a trajectory to substantial growth.

The Nechalacho Project particularly seemed to be a gold mine (or, more aptly, a rare earth mine), with the North T Zone hosting a resource touted as one of the world's highest-grade rare earth deposits. Moreover, the company had forged a notable offtake agreement with Norway's REEtec, promising to deliver significant quantities of NdPr over the next few years.

The Saskatoon Setback

However, the recent news release paints a different picture. Plans to defer the completion of certain circuits in the Saskatoon Facility until H2 2024 pointed to underlying concerns. Despite intentions to produce an intermediate rare earth oxide product from Nechalacho, the absence of economically viable

sales led to reevaluation.

By April 2023, a strategic review indicated that the company's original plan for the North T pit and the Saskatoon Facility wasn't economically viable. Efforts to renegotiate terms with REEtec, given unexpected economic and technical changes, haven't borne fruit. This has led to the issuance of a Notice of Termination under the Offtake Agreement, with termination set for late December 2023.

Legal and Financial Implications

REEtec's stance complicates matters. They dispute Vital's reasons for the Notice of Termination, the news release states: "REEtec has indicated that it does not agree with Vital's assessment that it has suffered unfair hardship, nor does it consider the Notice of Termination to be valid. REEtec has therefore reserved its rights in that
regard, which may include arbitration proceedings."

Additionally, VMCL, a Vital Metals subsidiary, has now been pushed into bankruptcy. This decision seems to be a move to shield the company's mineral assets in the NWT and continue its development. While this bankruptcy affects the Saskatoon operation, Vital's other ventures, like Cheetah Resources Corporation, remain untouched.

Looking Forward

Despite these setbacks, Vital remains committed to its vision, as Interim Chairman Richard Crookes expressed in an interview on FNN. The focus now shifts to the Tardiff Project, a significant rare earth deposit in a favorable jurisdiction.

Financially, while the company's immediate status will be clearer with its 2023 Annual Report, discussions are ongoing to

secure capital for the next 12-18 months of operations.

Conclusion

Vital Metals' journey showcases the complex interplay of strategic, economic, and legal factors in the world of rare earth mining, many critical minerals experts cite a shortage of simple economics in that it is just too expensive to compete without government assistance. Jack Lifton, Co-Chairman of the Critical Minerals Institute, remarked on Vital Metals' recent news release concerning their Saskatoon announcement: "The decision by Vital Metals to relinquish its Canadian subsidiary showcases the challenges faced by junior miners in Canada and globally. The often underestimated costs and rigorous standards required for transitioning from mining to becoming a reliable supplier to major manufacturing industries is profound. It's not just about excavating minerals; it's about understanding the intricate supply chain, meeting stringent quality benchmarks, and most importantly, being financially sound to fulfill delivery promises. Many junior miners assume a letter of intent or a memorandum of understanding is their ticket to success, but in reality, without strategic marketing and a deep understanding of the industry, they remain ill-prepared. To truly succeed, companies must grasp that it's not merely about 'digging it up' but about ensuring consistent quality, reliability, and financial stability."

Avalon Advanced Materials

Separation Rapids Lithium Project progresses, EV investors look north for critical materials

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It is not very often that an investor can buy a company with exposure to both lithium and key magnetic rare earths. One company that offers exposure to both is Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF) ('Avalon'). Avalon has five critical materials projects across Canada, providing investors with exposure to **lithium**, **rare earths (neodymium, dysprosium)**, cesium, tantalum, feldspars, tin and indium.

With the electric vehicle (EV) boom set to take off, companies such as Tesla are planning to grow EV production by 50%pa reaching 20 million new EVs pa by 2030. At Tesla Battery Day Tesla suggested an aggressive industry wide target of 10TWh of Li-ion batteries pa by 2030 to meet EV demand (assumes a switch to 100% EVs).

Tesla says that's a 100 fold increase on 2019 levels. This suggests demand for EV metals (such as lithium and the magnetic rare earths) looks likely to surge this decade and create a super-cycle for the EV metal miners.

100% electric transportation requires 100x growth in EV battery production this decade

Source: Tesla Battery Day video

Avalon's focus projects for lithium (Separation Rapids, Lilypad) and rare earths (Nechalacho)

Source

Avalon's Separation Rapids Lithium Project is located 70 km by road north of Kenora, Ontario, Canada. It holds one of the largest "complex-type" lithium-cesium-tantalum pegmatite deposits in the world. A PEA was completed in 2018 resulting in a pre-tax NPV8% of $156m, post tax IRR of 22.7%, CapEx C$77.7m with a 20 year mine life. In a recent news Avalon has been doing metallurgical test work with the overall objectives of reducing costs, improving recoveries and optimizing lithium product quality. Avalon has previously developed a proprietary process flowsheet to produce a high purity lithium hydroxide product from petalite. The process limits waste by recycling of the sulphuric acid solvent. Avalon and partners are now optimizing the final stages of the process, which involves the use of electrolysis to produce lithium hydroxide. The results will enable finalizing equipment selection and design. A further 2,500 tonne bulk sample extraction program is set to commence next. With Ontario Premier Doug Ford recently announcing Ontario's interest in establishing new battery materials supply chains in the province, Avalon is investigating collaborative opportunities to establish a lithium processing facility in Northwestern Ontario.

Avalon's Lilypad Cesium Property, located 150 km northeast of Pickle Lake, Ontario, is an exploration stage project with cesium-lithium-tantalum mineralization. It has the potential to be a secondary lithium supply source for Avalon. Avalon has recently re-activated the Project due to increasing demand for cesium. Planned follow-up work will initially involve

mineralogical and analytical testwork, which will be followed by metallurgical process testwork to identify the most efficient methods for concentrating the pollucite ore and recovering by-product tantalum and lithium.

Avalon's flagship Nechalacho Rare Earth Elements Property is located at Thor Lake, Northwest Territories, Canada. Avalon's main focus is the deeper HREE Basal Zone at the property. The Basal Zone retained by Avalon contains a rich polymetallic rare metals resource, with potential for economic recovery of several rare earth elements. A Feasibility Study was completed in 2013 on the Basal Zone resulting in a pre-tax NPV10% of $1.35 billion (post-tax NPV10% of $900m). The post-tax IRR was 19.6%. CapEx was $1.575b. Sales of the five critical REO (neodymium, europium, terbium, dysprosium and yttrium) account for over 82% of the separated REO revenues. Avalon has also retained a 3% NSR on the near surface T-Zone and Tardiff Zone at the Nechalacho Rare Earth Elements Property, bought by Cheetah Resources back in 2019. Avalon could also potentially collaborate with the newly planned SRC Rare Earths Processing Facility to be established in Saskatchewan with plans to be operational by late 2022.

EVs are coming in all shapes and sizes and they will require huge amounts of EV metals such as lithium and rare earths

Avalon Advanced Materials Inc. stock is up 87.5% over the past year and trades on a market cap of C$26m.

Don Bubar on Avalon's 20 years in rare earths and their diversified asset base of critical materials

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"We have been in rare earths business for over 20 years now," Don Bubar, President, CEO and Director of Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF), tells InvestorIntel's Tracy Weslosky in an interview. "And we are very well known among investors in the US for our lead role in the rare earths bubble 10 years ago. Whenever there is new development and news headline related to the risk on security of supply, then you will see speculative trading activity in Avalon."

"Our strategy has been to have a diversified asset base," Bubar continued. "That gives us exposure to broad range of these new emerging critical materials. We are basically positioned to react to when there is a new demand in the marketplace."

Bubar went on to say that Avalon is working with a partner on its Nechalacho rare earth elements property and has maintained its main resource for any future upside. "We continue to look at other possibilities to create new rare earths supplies, by looking at how we can use new technology to recover rare earths from non-traditional sources such as historic mine wastes," he said.

Bubar also commented on Avalon's Separation Rapids Lithium Project: "Our focus now is on taking advantage of the opportunity in lithium markets. We are permitted now to recover a bulk sample to finalize our process flowsheet, do a pilot

plant run and produce some product samples for customers who have expressed interest in the product in the glass industry as well as start to revisit serving the battery materials market going forward."

To access the complete interview, click here.

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Avalon's 'Holy Grail' plan-of-operations for near term production of NA critical materials

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Avalon is a company with big plans. With several advanced critical materials projects all in the safe jurisdiction of Canada. Using smart extraction processes and technology, and in some cases JV project partners, Avalon aims to cost-effectively bring several new projects into production.

Additionally Avalon is working on extracting valuable materials from waste materials, that offer potential for near term revenue streams. Many Governments and large miners are interested to facilitate the removal and further processing of waste material.

Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF) is focused on critical minerals and cleantech materials including

rare earths, lithium, tantalum, cesium, cobalt, nickel, tin, and others with near term production potential.

Avalon has adopted a strategy of sourcing low CapEx, high value projects which can be put into small scale production quickly and cost effectively. To this end Avalon has several JV partners in their different projects.

Avalon Advanced Minerals project pipeline

Source

Nechalacho Rare Earth Elements Property (Thor Lake, Northwest Territories, Canada) (3% NSR on T-Zone and Tardiff Zone bought by Cheetah Resources, and 100% owns the HREE Basal Zone).

Avalon has sold some of the project (the near surface T-Zone and Tardiff Zone resources) to Cheetah Resources for C$5 million cash. Avalon will receive a 3% NSR on these areas should they reach production. Cheetah Resources recently announced they are moving rapidly toward small-scale production of rare earths including neodymium and praseodymium.

The Basal Zone retained by Avalon contains a rich polymetallic rare metals resource, with potential for economic recovery of the heavy rare earth elements, neodymium, praseodymium, lithium, zirconium, beryllium, niobium and tantalum. A Feasibility Study was completed in 2013 on the Basal Zone resulting in a NPV10% of $1.35 billion.

You can read more in a recent InvestorIntel article.

Separation Rapids Lithium Project

Separation Rapids Lithium Project is 70 km by road north of

Kenora, Ontario. The deposit is one of the largest “complex-type” lithium-cesium-tantalum pegmatite deposits in the world, unusual in its enrichment in the rare, high purity lithium mineral petalite. A PEA was completed in 2018 resulting in a pre-tax NPV8% of $156 million, post tax IRR of 22.7%, CapEx of $77.7 million with a 20 year mine life. Avalon is currently doing process development work to optimize the process flowsheet and produce new petalite product samples for glass-ceramic manufacturers who have expressed strong interest in Avalon’s product. Also of interest is that Avalon is testing advanced processing methods such as sensor-based ore-sorting and dense media separation.

Next steps include processing a larger bulk product sample for customer qualification, which would then lead to off-take agreements to support project development. In 2020, subject to financing, other work will include a $3-5 million program to prepare for construction of mine and process plant in 2020-21 to produce lithium mineral concentrates. Added to this will be a FS, environmental assessments, and project permitting.

Separation Rapids Lithium Project

Source

Will Scarlett Rare Earths Recovery Project (near Marion, Illinois, USA) – Avalon to earn-in up to 50% from project owner Coal Strategy Advisors

The Will Scarlett Project is interesting as Avalon plans to process rare earths from coal mine wastes. Sampling of the waste has revealed high concentrations of total rare earth oxides in excess of 500 ppm. Also notable is that no significant uranium or thorium has been detected associated with the rare earths at

Will Scarlett. The coal mine also has other metallic elements such as cobalt, nickel, lithium, manganese and zinc in mine waste materials.

Avalon President and CEO, Don Bubar, stated:

"In our research to date on rare earths in coal mine wastes, Will Scarlett stands out as exceptional in terms of the levels of rare earths present in the AMD. Like our East Kemptville Tin Project in Nova Scotia, Will Scarlett provides Avalon with an opportunity to extract value out of previously-mined waste materials at a relatively low cost, and potentially fully remediate the long term environmental liability associated with acid mine drainage at the site."

Avalon plans to participate in the installation and operation of a demonstration facility (pilot plant) to scale up the process at the Will Scarlett site, assuming funding can be arranged. The goal is to demonstrate how this technology can recover separated rare earths at a much lower cost than traditional solvent extraction technology, thereby making it economic to recover rare earths from lower grade resources, such as mine wastes.

Lilypad Cesium Property

Lilypad Cesium Property (150 km northeast of Pickle Lake, Ontario) is at exploration stage with cesium-lithium-tantalum mineralization. Past discoveries has included cesium assaying up to 6.205% Cs_2O over 1.70 metres and tantalum mineralization assaying over 0.10%Ta_2O_5 found in numerous tantalum-cesium-lithium pegmatite dykes. This summer Avalon plans to follow up on encouraging results obtained during past work programs.

Warren Township Anorthosite Project

Warren Township Anorthosite Project (100 km west of Timmins,

Ontario). The tenement hosts a significant resource of high purity anorthosite, consisting of up to 98% high calcium plagioclase feldspar. The PFS was completed in 2003.

East Kemptville Tin-Indium Project

East Kemptville Tin-Indium Project (45 km northeast of Yarmouth, Nova Scotia). PEA completed in 2018. There is the opportunity to sustainably fully rehabilitate the site through recovery of tin from stockpiles using new ore-sorting technology at a very low CapEx. Currently the project is on hold.