Ucore Steps into the American Rare Earths Processing Ring in Louisiana.

written by | October 19, 2022

Ucore Rare Metals Inc. (TSXV: UCU | OTCQX: UURAF) just announced a mutual commitment between themselves and the State of Louisiana to establish a rare earth separation facility in the state which Ucore refers to as a Strategic Metals Complex (SMC). This is a change in direction from the earlier management drive to build a facility in Alaska. The government of Alaska had committed to supporting this approach through a bond of US$145 million to develop the Bokan Project for infrastructure and construction costs. This is a significant shift – which, I view as positive.

From their news release, they point to some advantages "Critical markers for success, such as streamlined inbound and outbound freight, ample supply and proximity of chemicals and reagents, attractive energy costs, the robustness of labor pools, room for ramp-up and production expansion and community support, including technical education infrastructure were all part of the size-up." In addition, they are evaluating several brownfield sites which typically come with infrastructure already in place like power and buildings which would reduce the capital investment.

The Louisiana Economic Development (LED) sent a non-binding Letter of Intent (LOI) to Ucore last week. The LED laid out a 10-year US$9.6 million economic incentive package in consideration for Ucore's projected investment of US$55 million. There may also be additional incentive's once a site has been chosen which could bring the total package up to US$11 million

from the LED.

According to the LOI, the following were identified:

- The financial, economic and tax incentive offers described in the LOI are estimates based on the Company's commitment to and fulfillment of its capital investment, employment and expected payroll schedules for the Louisiana SMC. This includes: (i) a total capital investment by the Company for the Louisiana SMC of at least US$55 million by December 31, 2026; and (ii) new jobs in Louisiana at the Louisiana SMC in the amount of 45 jobs in 2025 with an annual payroll of US$2.4 million rising to 80 jobs in 2034 with an annual payroll of US$5.2 million.
- Louisiana's Industrial Tax Exemption Program can offer up to a 10-year tax exemption to the Company. LED estimates that the exemption may result in up to US$6.0 million in tax savings for the Company. The State's Industrial Tax Exemption Program is administered by and will be subject to a contract to be finalized between the Company and the Louisiana Board of Commerce and Industry and requires approval from Parish and municipal governing bodies as well as the Parish school board.
- Louisiana's Quality Jobs Program provides a 4% or 6% payroll rebate on the gross annual payroll for qualifying new jobs for up to 10 years. The program also refunds state sales/use tax paid on construction materials purchased during construction or a 1.5% project facility expense rebate on certain capital expenditures. LED estimates that the value of this program could be up to US$3.6 million for the Company. The Quality Jobs Program is administered by and will be subject to a contract to be finalized between the Company and the Louisiana Board of Commerce and Industry.

Initial plans are to build a plant that will produce 2,000 tonnes per year (TPY) of separated rare earths by the second half of 2024. Plans would be to expand to a world scale production level of 5,000 TPY by 2026. The technology to be used is Ucore's wholly owned Innovation Metals Inc. Rapid SX™ technology. This has been piloted for some time now at Kingston Process Metallurgy (KPM) to develop knowledge of the process and design parameters.

This appears to be the first major investment in rare earth separation processes in the USA, although there are others also talking about this including Lynas Rare Earths Ltd. (ASX: LYC) and MP Materials Corp. (NYSE: MP) with grants from the Department of Defense (DoD). MP received US$35 million and Lynas US$120 million. This begs the question of whether or not the DoD will support Ucore with this plan of action. With a current market cap of approximately US$30 million raising the funds through equity financing would be very dilutive to existing shareholders so either the DoD assists or Ucore gains a strategic partner or a combination of these two will allow the financing of the SMC.

I am sure more news will be forthcoming as engineering and construction will likely need to start by mid-2023 to achieve the stated target of production in 2024-H2.

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Ucore Rare Metals is building its rare earths Field of Dreams with RapidSX

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To misquote the famous line in the 1989 movie '*Field of Dreams*', "if you build it, they will come" (the actual line from the movie is he will come – referring either to Kevin Costner's character's father or shoeless Joe Jackson or perhaps both). Making a giant leap from that to the world we find ourselves in today, where 80% of the worlds rare earth resources are controlled by China, if you build it, or at least can process the raw materials into rare earth oxides (REOs), then arguably everyone will come. OK, maybe that was a bad segue but you're just going to have to live with it. The point is, there are billions of dollars being invested over the next couple of years on EV battery manufacturing facilities in North America and the U.S. has recently implemented legislation (the Inflation Reduction Act), which requires that 40% of battery components be sourced from factories in the U.S. or its free trade agreement partners, and that Chinese components and minerals be phased out beginning in 2024. On-shoring is the name of the game as we transition to a lower carbon future.

There are numerous rare earth explorers pursuing processing capabilities but perhaps no one is closer to commissioning than Ucore Rare Metals Inc. (TSXV: UCU | OTCQX: UURAF). Ucore is

focused on rare- and critical-metals resources, extraction, beneficiation, and separation technologies with the potential for production, growth, and scalability. Ucore has an effective 100% ownership stake in the Bokan-Dotson Ridge Rare Earth Element Project in Southeast Alaska. Ucore's vision includes disrupting the People's Republic of China's control of the U.S. rare earths supply chain through the near-term development of heavy and light rare-earth processing facilities – including the Alaska Strategic Metals Complex in Southeast Alaska. And to that end Innovation Metals Corp., a wholly owned Ucore subsidiary, has developed the RapidSX separation technology resulting in the production of commercial-grade, separated rare earth oxides at the pilot scale.

Sounds promising but what exactly is RapidSX? The process combines the time-proven chemistry of conventional solvent extraction (SX) with a new column-based platform, which significantly reduces time to completion and plant footprint, as well as potentially lowering capital and operating costs. SX is the international rare earth industry's standard commercial separation technology and is currently used by 100% of all rare earth producers worldwide for bulk commercial separation of both heavy and light rare earths. Utilizing similar chemistry to conventional SX, RapidSX is not a new technology but represents a significant improvement on the well-established, well-understood, proven conventional SX separation technology preferred by rare earth producers. As an investor, I prefer disruption of existing technology versus reinventing the wheel as it is typically more capital efficient and quicker to market, unless of course, it's cold fusion type of disruption, in which case I'm all ears.

As for the progress of RapidSX, Ucore announced in mid-July that it had upscaled its rare earth Demonstration Plant capabilities and streamlined the RapidSX commercial deployment plan. In early

2022 Ucore received very positive results from the independent RapidSX technology evaluation, including the conclusion that a RapidSX production plant can potentially have a 2/3rds smaller footprint than a conventional SX facility with the same throughput. The team then received buy-in from all stakeholders to expand the design and construction of the Demo Plant. Ucore's enhanced Demo Plant will be able to process: tens of tonnes of mixed rare earth concentrate on a per annum basis; many feedstock sources, including planned light and heavy rare earth element feedstocks for the Strategic Metals Complexes; and all RapidSX splits required to produce individual praseodymium, neodymium, terbium, and dysprosium. Ucore has planned product qualification trials in Q4-2022 for prospective North American metal/alloy makers and original equipment manufacturers (OEMs).

All this is only one aspect of Ucore's business, they are also a rare earth explorer with the advanced Bokan-Dotson Ridge rare earth deposit. Highlights at Bokan include a NI 43-101 Preliminary Economic Assessment, with a resource estimate that remains open down-dip and on-strike with further drilling planned. The project can be "near shovel ready" for construction in less than 30 months after receipt of the next stage of development funding. And the Company boasts that Bokan is the highest grade NI 43-101 HREE resource in the U.S. But we'll save digging further into the details on Bokan for another day.

Bottom line, Ucore is very close to churning out rare earth oxide material at its Demonstration Plant which could lead to supply offtake agreements with EV manufacturers and/or other downstream customers. This could be huge for Ucore in light of the fact that on-shoring is going to be a high priority for the foreseeable future. With a market cap of C$34 million, there could be a bright future for Ucore if all the pieces fall into place.

Ucore targets to fill the processing gap in a Western rare earths supply chain by 2024

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As most investors familiar with the critical materials sector know, China currently dominates the space, especially in downstream critical materials 'processing'. This leaves the Western world very vulnerable to supply chain interruptions that can threaten the supply of end-user products such as electrical and electronic components, electric vehicles, wind turbines, solar panels, and/or military systems.

Today's company, Ucore Rare Metals Inc. (TSXV: UCU | OTCQX: UURAF) (Ucore), is working to bridge that gap, domestically, and become a USA 'processor' first of the rare earths, and ultimately of other key critical materials. They also plan to be a vertically integrated individual, separated, heavy rare earths producer.

Ucore is focused on initially developing an Alaska-based Strategic Metals Complex (SMC) rare earths' central processing facility with commissioning targeted for 2024. After that Ucore plans to develop its own magnet rare earths' deposit located on Bokan Mountain on Prince of Wales Island, Alaska. The ultimate plan for Ucore is to have their Bokan-Dotson Ridge REE Project – containing the heavy rare earths' Dysprosium (Dy), Terbium (Tb) & Yttrium (Y) – feed their first, Alaska located, SMC processing

facility. The underlying technology for this and other planned SMCs is the RapidSX™ REE separation technology platform, which will be operated by Ucore's wholly owned subsidiary, Innovation Metals Corp. (IMC).

Ucore plans to fill the processing gap in creation of a Western rare earths supply chain with their SMC facilities

Source: Ucore news January 2022

A key part of getting the Alaskan SMC processing facility up and running is to secure material supply agreements. The facility will have an initial 2,000 tpa total rare earth oxide (TREO) separation and purification capacity, ramping to at least 5,000t/year TREO by 2026.

Feedstock agreements are progressing well for Ucore's planned Alaskan SMC processing facility

In October 2021 Ucore signed a non-binding Memorandum of Understanding (MOU) with Vital Metals Limited (ASX: VML | OTCQB: VTMXF) for the supply of a mixed rare earth carbonate, beginning H1 2024. The deal is for "Vital to sell to Ucore a minimum of 500t REO (ex-cerium)/year, commencing H1 2024. Vital to expand production to support a minimum of 50% of Ucore's envisioned 5,000t TREO/yr processing capability by 2026."

It also was announced last week on April 20, 2022, that Ucore and Germany's ThyssenKrupp Materials Trading had executed a feedstock supply MOU for the Alaska SMC. Under the MOU "ThyssenKrupp Materials Trading is expected to begin the supply of a minimum of 1,000 tpa of mixed rare earth carbonate to Ucore in 2024 for ten years." The announcement also states that the non-binding MOU allows for increasing quantities in subsequent

years and that the two parties will work towards a 10-year binding contract.

The above MOU is a great achievement and positive endorsement for Ucore, as ThyssenKrupp Materials Services is the biggest mill-independent materials distributor and services provider in the Western world with around 380 locations, in more than 30 countries.

The loud and clear message for investors is that Ucore is putting together a North American individual rare earths supply chain from mixed rare earths carbonate (concentrate) all the way to the final product of separated individual rare earth oxides, used to make rare earth metal alloys (including magnets) such as those required for many critical and green energy products. It will be a key initial step for the USA to gain rare earths processing independence from China, which currently dominates the sector.

Ucore is also developing processing technology for other critical metals in Ontario

As announced on April 19, 2022 Ucore is improving the management and technical team for their Ontario RapidSX™ Commercialization and Development Facility (CDF). The demonstration plant construction is ongoing and is scheduled for commissioning in mid-2022.

What I find most interesting is that Ucore is also working on nickel laterite ore processing technologies as well as lithium-ion battery recycling, including working with clients such as Li-Cycle Holdings Corp.

Full details on Ucore's 2022 plans can be read here and include:

- A commercial demonstration plant for their RapidSX™

technology in Ontario.
- Development of the Alaska SMC Project.
- Exploring the potential of developing an SMC in Canada.
- Accelerating the development of the Bokan Project as a vital US supply chain component to provide a long-term secure source of HREEs; the most expensive and scarce inputs of the permanent magnet alloys.

Ucore's business summary – Includes a target for construction of the Alaska SMC by 2023, subject to finance

Source: Ucore Rare Metals Inc. website – Alaska 2023

Closing remarks

The Western world needs to develop its own complete end-to-end supply chains for critical strategic metals. In the case of rare earths, Ucore is advancing well and steadily moving towards becoming a U.S. individual separated rare earths producer by 2024, all going to plan. Of course, investors should remember these dates are the best guide from the company only and are subject to variables such as successful funding.

Ucore Rare Metals Inc. trades on a market cap of C$37 million. Ucore still has a long way to go with several hurdles and risks ahead, partially explaining the very low market cap. Still, if they succeed the potential reward could be significant.

Jack Lifton with Gareth Hatch on Rare Earths in the Rest of the World

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Note from the Publisher: Rest of the World (ROW) is often utilized in rare earths discussion to the market, not including China.

“Innovation Metals (IMC) is a private Canadian company. We have been working for some time now on the development of a proprietary separation and purification process that we call RapidSX™. We started working with rare earth elements and some other technology metals with that. It is an accelerated form of solvent extraction (SX) which is the primary process used in the industry for rare earth separation and combines the benefits of the chemistry of SX with a new way of making the process happen at a much faster rate, reduce footprints and various benefits. In the spring of this year, I encountered the folks at Hexagon. They are an Australian firm listed on the ASX and primarily involved in graphite at that point. They have a couple of projects. One is Australia, one in the US in Alabama and they are getting into the downstream looking at processing, looking at the end uses. They are trying to expand into energy materials side of things… they looked at the RapidSX™ work that we have been doing. A couple of weeks ago we announced the formation of a joint venture company with them and they have an option to invest $2 million into the JV which will allow us to build a demonstration-scale separation facility to put the RapidSX™ approach throughs its paces at a much larger scale.” States Gareth Hatch, Chairman and CEO of Innovation Metals Corp., in an interview with InvestorIntel’s Jack Lifton.

Gareth went on to provide an update on the Rare Earth Industry Association (REIA) in which he is the Advisory Board Chair. REIA is a global association for rare-earth industry stakeholders which provides a platform to mitigate business risks in the rare earth value chain. In the interview, Jack and Gareth also discussed the new ISO standards for rare earths. Gareth said that the standard includes terms and definitions, traceability, packaging, testing, analysis, etc to bring consistency and uniformity and to create a framework so that companies can get certified.

To access the complete interview, click here