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.

here

DoD awards Australia's Lynas $120 million to build a heavy rare earths facility in the USA: I have questions

written by Jack Lifton | October 19, 2022

Updated June 28, 2022: Lynas' Managing Director Amanda Lacaze provides answers below

I was intrigued last week when the U.S. Department of Defense (DoD) made the announcement that it had awarded US$120 million to Lynas Rare Earths Ltd. (ASX: LYC) to build a 3-5 kta heavy rare earth separation system in the USA. This is in addition to the $30 million the DoD awarded to Lynas (to be matched by Lynas) in February 2021, for the same thing. My guess is that since Lynas built and operates the world's largest light rare earth separation system in Malaysia where it processes ore from its Mt. Weld Australia monazite mine (the world's largest worked deposit of monazite), it seemed like an easy decision for the DoD, provided it was prepared to overlook the skills of the domestic American market and the mandate to buy American and reshore.

But, since the DoD had already agreed to provide US$30 million of an estimated (by Lynas) US$60 million to build such a facility in Texas, why, I asked myself was an additional US$120 million necessary?

So, I drafted a set of questions for Lynas, the answers to which would be particularly important in a due diligence study for the project, in case the DoD either did not do a due diligence (my guess) or would not publicly answer the same questions citing national security concerns, or some such nonsense.

Here are the questions I sent to Lynas at the beginning of this week:

1. What is the project's location?
2. What is the detailed CAPEX and the estimated OPEX for the system?
3. When will the permitting be finished?
4. Is the plant design finished (It would have to be for the permitting to be finalized)?
5. What is the timeline for construction and first output?
6. What exactly will be the composition of the plant's output in individual rare earths and tonnages of each, and when will the (nameplate) target capacities be reached?
7. Will the costs per KG of each individual rare earth and blend be competitive with the Chinese costs?
8. Will the US DoD be the only customer?
9. Will any of the heavy rare earths be consigned to specific metal/alloy/magnet makers? and,
10. From where, exactly, will the feedstocks be sourced?

Question number 10 is extremely important since there is today no commercial production of heavy rare earths outside of China. Also of note is the fact that Lynas has never commercially produced any separated individual heavy rare earths, nor is its Malaysian plant equipped to do so.

I am awaiting a reply to these questions from Lynas, but I will let you know when I get them.

Publisher's Update:

In response to the above questions InvestorIntel editor Jack Lifton received the following answers by email from Amanda Lacaze, Managing Director of Lynas on June 27, 2022:

1. What is the project's location?

Following a detailed site selection process, the facility is expected to be located within an existing industrial area on the Gulf Coast of the State of Texas.

Texas is an excellent location from which to serve our U.S. customers and support the U.S. government's moves to strengthen its industrial base and make supply chains more resilient through a diversified supply.

2. When will the permitting be finished? / Is the plant design finished? / What is the timeline for construction and first output?

The design of the Heavy Rare Earths plant was completed as part of the Phase 1 contract. The construction timeline will be confirmed following the completion of detailed engineering and planning. The plant is targeted to be operational in financial year 2025.

3. What exactly will be the composition of the plant's output in individual rare earths and tonnages of each?

A typical Heavy Rare Earths separation facility of this type would produce between 2500-3000 tonnes of heavy rare earths per year. We would expect our Heavy Rare Earths production to be in this range.

We have publicly stated our expectation that the Light Rare Earths plant will produce approximately 5,000 tonnes per year of Rare Earths products, including approximately 1,250 tonnes per year of NdPr.

4. Will the US Department of Defense be the only customer?

This will be a commercial facility and will be designed to serve both the U.S Defense Industrial Base and commercial manufacturers.

5. Will any of the heavy rare earths be consigned to specific metal/alloy/magnet makers?

This facility is a positive step towards reinvigorating the domestic Rare Earths market, and we will work to encourage investment in value-added downstream processes including metal and magnet making.

6. From where, exactly, will the feedstocks be sourced?

Feedstock for the facility will be a mixed Rare Earths carbonate produced from material sourced at the Lynas mine in Mt Weld, Western Australia. Lynas is building a new Rare Earths Processing Facility in Kalgoorlie to process the Rare Earth concentrate from Mt Weld. The material produced in Kalgoorlie will be further processed at the new Rare Earths separation facility in the United States. Lynas will also work with potential 3rd party providers to source other suitable feedstocks as they become available.

Rising demand benefits the only integrated producer of bonded rare earth permanent magnets outside of China

written by InvestorNews | October 19, 2022

Neo Performance Materials Inc. (TSX: NEO) (Neo) is an almost totally integrated Western (Canadian) company that processes mixed rare earth concentrates to produce separated individual and specifically blended rare earths to produce rare earth metals, alloys, and "bonded" rare earth permanent magnets. What makes Neo special is that they are the only company in the world that operates dual supply chains inside and outside of China for REE separation and REE advanced materials and end-use products. Neo owns the only operating commercial rare earth separation facility outside of Asia. It's in Europe (Estonia facility) and it has sales and production centers spread across 10 countries globally.

All of the above makes Neo unique as a Western producer of rare earth materials as well as end-use products, which are critical in the green energy and EV revolution.

Award winning facilities

As announced on February 22 and March 28, 2022, Neo won awards for two of its key factories, the first in Thailand and the second in Estonia. The awards were Gold Medals awarded by EcoVadis for 2021 sustainability performance.

The second announcement stated: "This places Neo's Silmet facility in Sillamäe, Estonia in the top five percent of all

facilities around the world reporting to EcoVadis for its sustainability programs in 2022… The Silmet facility processes mixed rare earth feedstock into a variety of high-purity rare earth specialty materials, including neodymium-praseodymium (NdPr) oxide, which is used by Neo's Magnequench business unit to produce neodymium-iron-boron (NdFeB) magnetic materials and magnets for automotive, factory automation, home appliance, circulation pump, and other applications."

This impressive recognition is also very well timed given the surging demand for NdFeB magnets used in many EV motors. Global electric car sales finished March 2022 with 851,000 sales for the month (the second best month ever), 60% higher YoY, with market share of 15%.

The global OEM automotive industry today uses mainly sintered NdFeB rare earth permanent magnets, but the use of bonded type NdFeB in this application is growing rapidly. Neo has pioneered the use of bonded NdFeB magnets in automotive applications with Japanese customer/partner, Honda, and this use is expanding. Neo has agreed with European magnet customers to expand its capacity there and to add sintered NdFeB magnets to its product lines. The EU has encouraged and is financially supportive of this move by Neo.

Prices for rare earths materials and end-user products used in the green economy have been surging the past year, due to demand exceeding supply, and this is reflected in Neo's latest financial results. This supply deficit looks to be baked in for at least the next decade due to the growth of the green economy.

Q4 2021 and Full-Year financial results highlights (in USD)

As reported on March 10, 2022, Neo achieved the following outstanding financial results:

- “Q4 2021 revenue of $153.4 million higher by 39.0% YoY; full-year 2021 revenue of $539.3 million was higher by 55.5% YoY.
- Volumes in the fourth quarter of 3,311 tonnes; full-year volumes expanded by 20.2%.
- Operating income of $12.7 million in the quarter; $59.9 million for the year.
- Adjusted Net Income for the quarter of $16.1 million, or $0.39 per share, with full-year Adjusted Net Income of $55.0 million, or $1.42 per share.
- Adjusted EBITDA for the quarter of $19.7 million; 2021 Adjusted EBITDA of $81.9 million was 183.7% higher YoY.
- Cash balance of $89.0 million after raising $38.0 million from equity offering and distributing $12.8 million in dividends to shareholders.”

As shown above, full-year 2021 revenue was 55.5% higher YoY, based on volume growth of 20.2%. Clearly higher-end product prices helped support the stellar results. Neo sums it up well and the general direction the business is heading by stating:

“Neo reported strong year-over-year (YoY) gains in revenue, volumes, operating income, Adjusted EBITDA, and profitability in the year ended December 31, 2021, driven largely by increased demand for products across all three of its operating divisions, higher selling prices for rare earth materials, and continuing progress in several of the Company’s strategic initiatives.”

I did warn investors that this was what we were expecting from Neo with our December 22, 2021 article: “Neo Performance Materials looks to expand capacity as it rides the tailwind of growing rare earth permanent magnet demand.”

Neo Performance Materials is one of a few Western companies able to process rare earths and make magnets

Source: Neo Performance Materials website

Closing remarks

Neo Performance Materials occupies a rare and critical position in the Western supply chain to produce rare earths specialty products. Demand for powerful rare earth type magnets used in many consumer goods as well as in wind turbines and EVs is expected to surge this decade.

Neo Performance Materials trades on a market cap of C$546 million and a current PE of 17.6. 2022 PE is forecast at 7.82.

The next catalyst for Neo will be the Q1, 2022 earning results due out before the market opens on May 13, 2022. Stay tuned.

Neo Performance Materials becomes the West's First Profitable Total Rare Earths' Supply Chain Company

written by InvestorNews | October 19, 2022

Investors love companies that under promise and over deliver. Today's company is a classic example as it continues to grow its highly valuable global advanced materials business that includes rare earth alloy powders and magnets.

Neo Performance Materials Inc. (TSX: NEO) ("Neo") is a

profitable processor and manufacturer of advanced industrial materials including rare earth metals, alloys, and “bonded” rare earth permanent magnets, specialty chemicals, technology metals, and alloys. These are all critical to the performance of many everyday products and emerging technologies such as the high-powered magnets used in electric vehicles and in direct drive wind turbine electric generators. Neo operates globally with sales and production across 10 countries including Japan, China, Thailand, Estonia, Singapore, Germany, the United Kingdom, Canada, the United States, and South Korea.

Neo is the only company in the world that operates dual supply chains inside and outside of China for rare earths, rare earths separation and the commercial production of rare earths advanced materials. Neo owns and operates the only operating commercial rare earth separation facility in Europe.

Furthermore, Neo’s Magnequench unit is the global leader in bonded neodymium-iron-boron (NdFeB) alloy powder based magnets and their applications. Its powders and magnets are used in high-performance components for the OEM automotive, factory automation, high-efficiency motors, residential appliances, and in many other applications.

Neo Performance Materials global operations that manufacture advanced materials that incorporate rare earths and other rare element metals

Source: Company presentation

Establishing a new Western rare earths supply chain incorporating USA and Europe

As a reminder, in July 2021 Neo announced the commencement of

commercial shipments of mixed rare earth carbonates produced from monazite from which the uranium and thorium had been removed by Energy Fuels Inc. (NYSE American: UUUU | TSX: EFR) in the USA, to Neo's rare earth separations facility in Estonia, Europe. This first shipment was a landmark for establishing a new non-Chinese Western rare earths supply chain. Energy Fuels has been sourcing ore from third parties such as from Chemours' (NYSE: CC) heavy minerals sands operations in Georgia, USA; then processing the monazite residue at their White Mesa Mill in Utah, USA, to extract the rare earths, remove the radioactive elements, and then process the rare earths into a solid mixed carbonate form ready for delivery, in this case, to Neo's operation in Estonia according to its specification. The news stated:

"This new supply chain will initially produce rare earth products from monazite that is processed into mixed RE Carbonate at Energy Fuels' Mill in Utah. This RE Carbonate is then further processed by Neo at its Silmet rare earth processing facility in Sillamäe, Estonia ("Silmet") into separated rare earth oxides and other value-added rare earth compounds. Neo is the only commercial producer of separated rare earth oxides in Europe."

Neo's CEO, Constantine Karayannopoulos, stated: "This innovative U.S.-to-Europe supply chain will supplement Neo's existing rare earth supply from our long-time Russian supplier. It will enable Neo to expand value-added rare earth production in Estonia to meet growing demand in Europe for these materials."

Neo's financials keep getting stronger

As announced on August 12, 2021, Neo produced another stellar financial result in Q2, 2021. Highlights included production volumes increasing 59.6% YoY, revenue reaching US$135.1 million and up 99.5% YoY, adjusted EBITDA of US$22.2 million massively

up YoY (an increase of $21.0 million), and adjusted net income of US$14.1 million, or US$0.37 per share. The chart below highlights the financial improvement in Neo's financials over the past year.

Neo's consolidated revenue and adjusted EBITDA keep rising due to a very strong operational performance

Neo's revenue by segment and geography is led by Magnequench and China

Source: Company presentation

Neo's CEO, Constantine Karayannopoulos, stated: "We had an outstanding second quarter that exceeded our expectations, with record revenue and robust profitability, while our plants operated at near-record output…….With the organic growth we are seeing across all business units, the significant macro tailwinds boosting the entire rare earths sector, and a number of strategic growth opportunities on the radar screen, we remain confident in the sustainability of our long term vision and growth strategy."

Looking ahead to the rest of the calendar year 2021 analyst's forecasts remain strong with CY2021 revenue forecast at US$503 million, net income US$39 million, and 7.82% net profit margin. These estimates may soon need to be increased given Neo has already achieved US$266 million in H1 2021. In terms of multiples, they are also appealing with Neo trading on a 2021 PE of 16.7x and an EV/Revenue multiple of 0.92x.

Closing remarks

Neo is currently riding a wave of demand for its advanced materials as we move to a greener economy, especially for the high-value rare earth alloy powders and magnets made with neodymium. These magnets are key to achieving greater power and efficiency from electric motors, the demand for which in the large drive motors for electric vehicles is surging.

Neo Performance Materials trades on a market cap of C$670 million and a very reasonable 16.7x PE. One to definitely consider.

Energy Fuels and Neo Performance are creating a new U.S.-European rare earths supply chain

written by InvestorNews | October 19, 2022

Many in the market may have not realized that the U.S and Europe now have a new rare earths and rare element materials supply chain. Up until now the only rare earths producer of significance in the US was MP Materials Corp. (NYSE: MP). Energy Fuels Inc. (NYSE American: UUUU | TSX: EFR) has begun to produce a rare earths carbonate in the US and has teamed up with Neo Performance Materials Inc (TSX: NEO) ("Neo"), who makes the final rare earth materials in Estonia Europe.

According to rare earths expert Jack Lifton: "Energy Fuels is today, June 30, shipping the first 20 tonne container load of

MRECs (mixed rare earth carbonate), extracted from Chemours' monazite and processed to remove uranium and thorium and other interfering (with solvent extraction) ions, to Neo Performance' dedicated SX facility in Estonia. Both Mark Chalmers and Constantine Karayannopoulos will be present at the processing plant in White Mesa, Utah."

Jack Lifton also states that this is "the first production of a clean MREC derived from monazite in the USA since 1998" and "the restoration of a domestic rare earth supply chain beyond the mine has begun and Energy Fuels is leading the way."

As reported by Energy Fuels in May 2021, the Company update stated:

"…the Company, along with Neo Performance Materials, announced the joint launch of a U.S.-European REE production initiative under which the parties plan to produce value-added REE products from natural monazite sands, a byproduct of heavy mineral sands mined in the southeastern United States. Pursuant to this initiative, in late-March 2021 Energy Fuels commenced ramping-up commercial production of a mixed rare earth carbonate ("**REE Carbonate**") from natural monazite sands at the Company's White Mesa Mill. Under an agreement in principle signed on March 1, and subject to completion of definitive agreements and successful ramp-up of production, Energy Fuels will ship a portion of its REE Carbonate production to Neo's REE separations facility in Sillamae, Estonia ("**Silmet**"). Neo will then process the REE Carbonate into separated REE materials for use in REE permanent magnets and other REE-based advanced materials."

Energy Fuels is an emerging U.S producer of rare earth element products, plus an existing uranium & vanadium producer (on standby) at their White Mesa Mill in Utah, USA

Source: Energy Fuels

The monazite ore is supplied to Energy Fuels' White Mesa Mill in Utah, USA by The Chemours Company's Offerman Plant in Georgia, and potential future supply of additional natural monazite sands is contracted via a non-binding MOU from the Titan heavy mineral sand project in Tennessee owned by Hyperion Metals Limited. All of this means that a new USA supply chain for rare earths carbonate has begun.

Energy Fuels' President and CEO, Mark S. Chalmers, stated:

"Without a doubt, Energy Fuels is making major strides toward restoring critical U.S. rare earth supply chains, while also maintaining our position as the leading U.S. uranium producer…..On rare earths, our efforts over the past several months culminated in the announcement on March 1 that Energy Fuels and Neo Performance Materials were creating a new, U.S.-European rare earth supply chain……However, as I've said many times, **we have much bigger rare earth plans**, and the momentum is building rapidly as we execute our purposeful strategy. **We are now taking real steps toward designing and building fully integrated, U.S. rare earth production capabilities.**"

It seems the mass media is yet to realize the significance of CEO Chalmer's statement, especially given Energy Fuels trades on a market cap of just US$873 million. When comparing to MP Materials on a market cap of US$6.08 billion, Energy Fuels looks cheap, but it should be noted that Energy Fuels is not yet a fully integrated rare earths carbonate producer and has less capacity (up to 2,500 tons per year of monazite) than MP Materials (noting mining in USA and processing in China). Of course, the plan is for this to change in coming years, plus Energy Fuels has uranium and vanadium on standby production awaiting better prices and/or to supply uranium into the U.S.

Uranium Reserve once it is established by the U.S. government. You can read more on Energy Fuels rare earths plan here.

In the case of Neo Performance Materials, they are further along the supply chain specializing in advance materials including rare earths magnet materials. Neo trades on a market cap of C$616 million (US$497 million). Neo states:

“Neo is the only company in the world that operates dual supply chains inside and outside of China for REE separation and REE advanced materials. Neo owns the only operating commercial rare earth separation facility in Europe.”

You can read more on Neo here.

Neo Performance Materials produces rare earths advanced materials (magnet materials etc) and sells globally

Source: Neo Performance Materials company presentation

Closing remarks

For investors wanting to get involved in western based rare earths and rare earth magnet materials companies then it would be sensible to consider both Energy Fuels (intermediate rare earths carbonate materials) and Neo Performance Materials (advanced rare earth materials).

Both companies appear to be moving in the right direction with a large runway of growth ahead. Demand for their products looks to be exceptional in the years ahead, thanks to the electric vehicle and renewable energy booms, which should support strong pricing and margins.

As a result of all of this, the West’s sustainable future looks

brighter thanks to increasing rare earths products supply from Energy Fuels and Neo Performance Materials.

Jack Lifton on the biggest move by the US Federal Government in the rare earths space

written by InvestorNews | October 19, 2022

“What has happened finally with the US government is that they have recognized the supply chain problem and that we have been too dependent on China for too many things. The two things that are mentioned the most inside the Federal government are pharmaceuticals and rare earths… Rare earths are very much on the radar of the US federal government. In fact, one of our senators, Senator Rubio of Florida is a champion in the US to revive the rare earth supply chain. It is very exciting and it is the biggest move in this commodity that I have seen from the US government.” States critical materials expert Jack Lifton, in an interview with InvestorIntel’s Tracy Weslosky.

Jack went on to say that we should look at the total rare earths supply chain and then try to make that domestic in North America (The US and Canada) or with closest allies like Australia. Jack continued, “The anchor of any supply chain is the mine, the source of the minerals. We have got several in North America and we have 2 or 3 close to production. In Australia, we have two in operation – Lynas and Northern Minerals. The next step is

separating these materials. The mixed rare earths into individual rare earths that can be further processed into products that we actually use."

Jack also said that there is no heavy rare earth separation operation outside of China and if we consider health and safety requirements of North America then Chinese materials will be unacceptable.

To access the complete interview, click here

The U.S. Rare Earths Supply Chain Challenge – Part 4

written by InvestorNews | October 19, 2022

In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants debate on what are the skills needed to create a rare eaths supply chain in North America.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor, Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Alastair started by saying that there is no facility in the US to convert rare earth alloys to magnets. Jack continued by saying that "the US Department of Defence doesn't want any rare earth permanent magnet from China. The only thing they will accept from China is the raw material which the Chinese do not

export. They want extraction, separation, metal making and alloy and magnet making done either in the US or in NATO or SEATO ally countries."

Alastair concluded the discussion by saying, "To achieve this goal it is going to take a couple of different skill sets. It is one set of skills to get something out of the ground and turn it into a separated oxide. That is completely different from metalization and alloy production and then getting into assembly. So you will need three special types of industries that need to be managed. That is where you have to have someone with a vision to be able to bring that type of team together to be able to manage such a diverse set of skills."

- To access the complete discussion, click here
- To access Part 1 of this rare earths series, click here
- To access Part 2 of this rare earths series, click here
- To access Part 3 of this rare earths series, click here

The U.S. Rare Earths Supply Chain Challenge – Part 3

written by InvestorNews | October 19, 2022

In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants begin the debate on what are the challenges in creating a rare earths supply chain in North America.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor,

Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Jack starts the debate with: "When you extract rare earths from ore you get a mixture of rare earths and other things that were in the ore that came out in the extract which is usually an acid. The first thing that you have to do is make a pregnant leach solution. What that means is that you put the metal values in the minerals into the solution. Then you separate out those things that are not rare earths or rare earths that you don't really want for example cerium. Now that solution which is normally a hydrochloric acid extract goes into a separation system which in the US has only been a solvent extraction for light rare earths."

Alastair added "There are other companies looking at novel ways to separate rare earths in an environmentally friendly process to tackle this and compete with the Chinese. The benchmark is the Chinese separation cost which is about $2.50 to $3 a kilogram."

The experts panel also discussed some of the major problems in the North American rare earths supply chain. The panel discussed that the problem in the North American rare earths space is the absence of rare earth separation facility and metallization capability in North America.

- To access the complete discussion, click here
- To access Part 1 of this rare earths series, click here
- To access Part 2 of this rare earths series, click here

The U.S. Rare Earths Supply Chain Challenge – Part 2

written by InvestorNews | October 19, 2022

In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants begin the debate on what is the actual formula to create a supply chain in North America.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor, Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Alastair starts the debate with: "First of all the key is to find a deposit that has a reasonable cost structure and also reasonable content particularly the magnetic four – neodymium, praseodymium, terbium, and dysprosium because those will drive 85-90% of the revenue of any deposit. Then you have to be sure that you can convert that deposit into a concentrate and after that you have to be able to separate it into the oxides. When you talk about magnets you then have to go to the subsequent steps of conversion to metal and then into alloy before you can even get to the magnet manufacturing stage."

Jack added, "The first thing you do is ask the customer what he wants to buy. Then you can go upstream in the supply chain and find out what you need to do."

The experts panel also discussed the exploration and extraction

plays in North America. Tracy said that some of the exploration plays in North America include Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF), Search Minerals Inc. (TSXV: SMY), Ucore Rare Metals, Imperial Mining Group, etc.

To access the complete discussion, click here

To access Part 1 of this rare earths series, click here