Tom Drivas on Appia’s Alces Lake Rare Earths Project with world-class grades

“Appia is concentrating on the Alces Lake Project…It has world-class grades. We see grades up to 49-50% rare earths and a quarter of that is critical rare earths like neodymium and praseodymium.” States Tom Drivas, CEO, President and Director of Appia Energy Corp. (CSE: API | OTCQB: APAAF), in an interview with InvestorIntel’s Alastair Neill at PDAC 2020.

Tom went on to say that the Alces Lake Project has up to 80% monazite right on the surface making it the highest grade deposit in North America in terms of monazite and in terms of rare earths one of the highest grades in the world. The company is currently working with Saskatchewan Research Council (SRC) to advance the project into the next level in terms of processing.

To access the complete interview, click here

Disclaimer: Appia Energy Corp. is an advertorial member of InvestorIntel Corp.

International Rare Earths Expert Alastair Neill Steps in as the 8th Annual

Technology Metals Summit (#TMS2020) Conference Coordinator

Leading Rare Earths' Companies and U.S. Government Relations Consultant Jeff Green Confirms Participation

Toronto, February 13, 2020 – The **8th Annual Technology Metals Summit (#TMS2020)**, an exclusive event for both the industry and investors on the critical materials supply chain, is pleased to announce the appointment of rare earths expert Alastair Neill as conference coordinator.

Founder of InvestorIntel and the Critical Materials Summit series Tracy Weslosky commented: "Alastair has over 25 years of professional experience in critical materials in Asia, North America and Europe. Often a speaker or panelist for a wide range of industry events, we are privileged to be utilizing such a knowledgeable player in the industry to ensure the most informative content possible at this year's **8th Annual Critical Materials Summit** being held on Thursday, May 14, 2020 in Toronto at the Omni King Edward Hotel."

Having already confirmed critical material presenters such as Avalon Advanced Materials Inc., Search Minerals Inc., and Texas Mineral Resources Corp., Alastair added: "I am delighted to be stepping in to ensure that we offer investors an understanding of not only where the critical materials industry stands presently, but where it is

heading. Increased speculation from government and industry on how to effectively create a much-needed supply chain in North America and Europe, makes #TMS2020 timely."

Speaker Jeff Green of J.A. Green and Company commented further with "I look forward to speaking at #TMS2020 about the most aggressive U.S. government intervention into the rare earths market in history. The U.S. Department of Defense is in the process of committing millions of dollars to bring rare earth manufacturing back to the United States, which makes this an exciting time to be a participant in this critical materials market. I look forward to the conversations that Alastair Neill and InvestorIntel are sparking at #TMS2020."

About the 8th Annual Technology Metals Summit: InvestorIntel, a trusted source of online market information for investors in the capital markets, is pleased to host the 8th Annual Technology Metals Summit (#TMS2020) on Thursday, May 14th, 2020. A 1-day event being held in the Sovereign Ballroom at the Omni King Hotel located at 37 King St East in Toronto, Canada – click here to register

About InvestorIntel.com: InvestorIntel.com is a leading online source of investor information that provides public market coverage for both investors and industry alike. Offering coverage of emerging markets and investment opportunities to discerning investors, InvestorIntel is considered an online influencer in analysis, videos and podcast reports and is hosts the monthly **ii6 Summit Series** for self-directed investors in Toronto, Canada.

For more information, contact InvestorIntel at tracy@investorintel.com or +1 416 792 8228.

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738 Billion Defense Bill plus U.S. and Canadian Critical Materials Memorandum Equals Pivotal Year for Rare Earths

On Friday, we received a call from the CBC requesting more data on how the recent Fiscal Year 2020 National Defense Authorization Act (NDAA) that was passed on December 17th would impact the North American rare earths market. This combined with the recently signed memorandum of understanding (MOU) for critical materials signed on December 18th between the U.S. and Canada to reduce our dependence on Chinese rare earths and from all vantage points, Jack Lifton is correct in saying "**2020 looks to be a pivotal year for rare earths**".

This timely passing of a "massive $738 billion defense authorization bill" by both the U.S. House and Senate, unquestionably holds ramifications for those of us following the North American public markets. In fact, it should mean that the leading players in this market should not only experience an increase in market valuations effective immediately, but this will inevitably result in much needed financings to achieve a successful rare earths supply chain in North America.

Jack Lifton commented that "The 2020 National Defense Authorization Act, which authorizes funding for the U.S. military, has expanded its recognition of the critical importance of the rare earths from the FY 2019's mandate that the U.S. military only buy non-Chinese rare earth permanent magnets to the requirement that the U.S. Defense Department develop a plan and implement a strategy to discover or develop and integrate each of the necessary industrial components into a total domestic American rare earth supply chain for any and

all rare earth enabled products utilized by the U.S. Dept of Defense." He adds: **"This is the greatest opportunity to revive a non-Chinese rare earth industry, since the movement to China of that industry in the last years of the twentieth century."**

In reviewing the 2020 NDAA, we have cut out the relevant excerpt from clause (c) listed under Section 850 titled "Acquisition and Disposal of certain Rare Earth Materials" for our readership.

NDAA Excerpt:

(c) REPORT ON SUPPLY CHAIN ISSUES FOR RARE EARTH MATERIALS.—Not later than 180 days after the date of the enactment of this Act, the Administrator of the Defense Logistics Agency, in coordination with the Deputy Assistant Secretary of Defense for Industrial Policy, shall submit a report to Congress assessing issues relating to the supply chain for rare earth materials. Such report shall include the following:

(1) An assessment of the rare earth materials in the reserves held by the United States.

(2) An estimate of the needs of the United States for rare earth materials—

(A) in general; and

(B) to support a major near-peer conflict as described in war game scenarios in the 2018 National Defense Strategy.

(3) An assessment of the extent to which substitutes for rare earth materials are available.

(4) A strategy or plan to encourage the use of rare earth materials mined, refined, processed, melted, or sintered in the United States, or from trusted allies, including an assessment of the best acquisition practices (which shall include an analysis of best value contracting methods) to

ensure the viability of trusted suppliers of rare earth materials to meet national security needs.

While the above will inevitably be the catalyst for finally addressing the supply chain and inevitable sustainability issues in North America around these technology metals, I agree with Alkane Resources Ltd.'s (ASX: ALK | OTCQX: ANLKY) Managing Director Nic Earner who wrote "It is good to see continued moves by the US Government to establish independent supply. We look forward to seeing this lead into purchasing and commercial arrangements with US Defence suppliers in time."

I have reached out to my favorite and most knowledgeable players in the industry with a request for them to provide practical feedback on what this means for our sector and how it will impact us in 2020. Their comments are below, and I have added everyone to the commentary section so you may respond directly to them.

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"In a complementary initiative, on December 18th, Canada and the U.S. signed a Memorandum of Understanding confirming Canada's participation in the U.S.-led Energy Resource Governance Initiative (ERGI), part of a multi-pronged strategy by Washington to break free of China's near-monopoly on so-called critical energy minerals essential for high-tech industries – producing everything from lithium batteries for electric cars, to smartphones and computers, wind turbines and defense assets. **There are great economic benefits for Canada if our natural resource wealth and industrial capabilities can be adapted toward creating both new primary mineral supply sources <u>and the value-added derivative products</u> needed for electric vehicles as well as other clean technology and defense applications.** I look forward to learning more about the Governments' plans and I know that industry leaders and technical experts across the full supply chain can contribute

toward creating collaborative and innovative solutions." – Ian London, Chair, Chair, Canadian Rare Earth Elements Network (CREEN)

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"**This year should be the culmination of nearly 10 years of effort to move the U.S. government from endless studies and research projects to actually investing in the production of rare earth materials needed to support the Department of Defense, which should serve as a catalyst to long-term commercial viability for the industry.** The DOD currently has three active Requests for Proposal to invest in establishing the capability to separate light and heavy rare earths through two new facilities, and the establishment of an inventory of NdFeB magnets. With the continued support of Congress and the Pentagon, **2020 should be the year that separates the wheat from the chaff in the prospective rare earth market, as only the most viable prospective producers of rare earths will be selected for government funding – the time for hype and pipe dreams is over as we move to an era of actual investment in production**." – Jeff Green, President, J.A. Green & Company

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"**These two initiatives are essential to attract and renew investment interest in the rare earth sector**. Search has participated in the requests from both the US and Canadian governments, which identifies Search Minerals as a key participant in the North American rare earth supply chain. **It is also helpful that Canada rare earth resources are considered 'domestic source' for these additional funding opportunities**." – Greg Andrews, CEO, Search Minerals Inc. (TSXV: SMY)

Dr. David Dreisinger, Vice-President, Metallurgy of Search Minerals adds: "Since our inception, we have met our objectives to have a proven processing technology which has

low capital and operating costs, environmentally friendly and scalable. The new initiatives could help fund separation facilities or technologies in North America which could process our concentrate into individual oxides. Our resources contain both light and heavy rare earths required for many applications deemed critical under NDAA. **The initiative allows the ability for new government funding opportunities required to advance the supply chain initiative, ie offtake agreement or direct investing**."

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"**The 2020 NDAA is an excellent additional step in a process that will ultimately lead to the establishment of a rare earth supply chain in the United States.** Various agencies in the Department of Defense are now also beginning to put serious funding into the establishment of a domestic supply chain. Texas Mineral Resources and its funding and development partner USA Rare Earth Inc. is not waiting to take action. Rather, it has proactively established a Colorado based rare earth pilot facility that will ultimately be transported to Texas and ultimately envisions Texas as the center of a domestic rate earth and critical mineral supply chain." – Anthony Marchese, Chairman, Texas Mineral Resources Corp. (OTCQB: TMRC)

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"The NDAA will bring focus on the rare earths sector and some much-needed funding to implement a North American strategy for rare earths. **Six months is a very short time to summarize the state of the industry unless they have multiple inputs from those with knowledge of the space. Hopefully they will look at investing in the magnet supply chain, which needs rebuilding for the production of neodymium magnets (NdFeB).** This initiative should build more confidence in the investment side and raise the profile for projects that can go into production in a short period of time." – Alastair Neill, Trinity

Management Ltd.

"Trillions of dollars of all-important products are dependent on one dominant group which, in the past, has used rare earths for economic, political, social and technical gains. **The United States' most recent vocalized concern over threatened or possible disruption of rare earth supply is once again drawing attention to the potentially tenuous situation and the importance of the companies addressing this situation.** Prudent business practice dictates the use of multiple suppliers particularly for key inputs. That said, the sourcing of rare earth raw materials in the United States and its allies can be arranged in the not too distant future, however, the paramount issue is establishing and implementing the technical know-how to process the raw materials into refined rare earths and then into useful applications and products. Processing capability is of paramount importance and is fundamental to unlocking supply dependency and will take considerably longer to implement due to the unique characteristics and the technical aspects of the rare earths." – Tracy A. Moore, CEO of Canada Rare Earth Corp.

"Lynas welcomes the U.S. Defense Department's plan to encourage the development of a rare earth supply chain in the United States, or with trusted allies. **As the world's second largest Rare Earths producer, Lynas is well positioned to help the establishment of a sustainable and resilient rare earth supply chain from mine to magnet and to energy efficient electric motors**." – Lynas Corporation

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"Bringing together the NDAA, the Australian Government's AUD4.4bn Defence Export Facility being made available to rare earth development projects, and joint U.S.-Australia critical minerals initiatives, **it's clear that not since the Government of Japan helped fund Lynas in 2011 to build their Malaysian process plant, have we seen Western governments, including**

those of the EU member states, focus, co-operate and now act on the issues that have allowed China to effectively take control of the rare earth market over the past 20 years. These efforts could result in further diversification (beyond Lynas) of NdPr and heavy rare earth supply, including by Arafura Resources, into ex-China NdPr metal-NdFeB magnet alloy/magnet manufacturing and the downstream clean energy supply chain." – Richard Brescianini, Arafura Resources Limited

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"Medallion Resources has been focused on the development of rapid 'go to production' rare earth business model and proprietary extraction process using by-product monazite feedstocks. These are available throughout the Americas, Australia and Southern Africa. **We recently announced the start of US site selection process for an initial REE extraction plant with capital requirements that are a fraction of traditional REE mining and processing operations**." – Donald Lay, President & CEO Medallion Resources

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

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

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

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

The U.S. Rare Earths Supply Chain Challenge – Part 1

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 whether or not a rare earths supply chain can be built in the US.

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 Lifton starts the debate with: "Yes we can if the money is put forth and all of the skills necessary are there and even deposits are there. If you want to have the total rare earths that you need, for example, rare earth permanent magnets, you will need more than what is produced in the United States. You need to have Canadian content and Australian content. This is the base issue as the anchor of any supply chain is the raw material source. The issue here is money. No one in the United States, private or public, actually believes that the United States could produce rare earth permanent magnets competitively priced than those produced in China. I happen to believe we can."

In this debate the experts address some of the misinformation and myths in the rare earths industry including the cost of separating rare earths and that the rare earths business is a mining business. To access the complete discussion, click here