

The critical task of the Three Amigos

written by Stephen Lautens | January 11, 2023

The “Three Amigos” summit underway this week has a lot on the table for the leaders of the US, Canada, and Mexico to discuss. There are pressing issues on the agenda for US President Biden, Canadian Prime Minister Trudeau and Mexican President Obrador, such as migration and immigration, North American economic integration, climate change and cooperation in clean energy technologies, and Mexico’s efforts to shut others out of investment in its energy sector.

Even before they met, all three countries announced their ongoing commitment to work together on key sectors, including critical minerals and supply chains. According to [reports](#), “while no financial commitments have been announced yet, those agreements include a cabinet-level summit on semiconductors, mapping mineral resources across the North American continent and promoting educational investment.”

Canada and the US [have already announced](#) their own commitments to developing and securing a domestic critical minerals supply chain. President Biden issued a directive in March 2022 invoking the Defense Production Act to incentivize the mining and domestic production of the critical minerals needed to manufacture batteries for electric vehicles and long-term energy storage. The US DoE awarded US\$2.8 billion of grants in October, 2022, to accelerate US manufacturing of batteries for electric vehicles and the electric grid. In the 2022 Federal Canadian Budget, the government allocated an additional C\$3.8 billion for critical minerals, including those that feed into clean technologies.

Besides Mexico and Canada, the US lists about a dozen countries as strategic partners for “supply chain resilience”. Mexico and Canada are the only ones that share a border with the US, with Canada being the US’s largest [trade partner](#) with US\$664.8 billion in trade in 2021, and Mexico close behind as the US’s second largest trade partner with US\$661.2 billion in trade. In 2021 China came third with US\$657.4 billion in trade with the US.

The Biden vision at the Three Amigos summit is for a more integrated North America supply chain, with the US naturally seeing themselves in the driver’s seat. Canada and Mexico have slightly different views, but do agree on greater, mutually beneficial co-operation as long as the Biden administration’s continuation of the “Buy American” policy doesn’t leave them out in the cold.

Canada has been rapidly developing its own critical minerals and rare earths resources, which leaves the question of what Mexico brings to this particular table.

When people think about Mexico most think about copper and silver, with precious metals [accounting for about half](#) of Mexico’s production. Mexico’s metals sector, which in 2020 generated more than US\$18 billion in exports and contributed around 8% of its gross domestic product.

As far back as 2014 Mexico’s largest mining company, Grupo Mexico, [announced its intention](#) to diversify into rare earth metals business, however there has been little progress to date. At present, of the four critical minerals that the US lists for the high-capacity battery sector (nickel, cobalt, lithium, and manganese) Mexico only produces manganese, and that in relatively small quantities.

The Mexican states of Sonora, Chihuahua, Oaxaca and Chiapas are

recognized to have large, undeveloped deposits of rare earths. The [U.S. Geological Survey \(USGS\)](#) has also identified 1.7 million tons of lithium deposits in Mexico, making it potentially the 10th largest source in the world. However, the Mexican lithium deposits are largely held in clay substrates that are not accessible with current technology, and for the time being will remain in the ground.

That leaves Mexico's development of its lithium resources lagging well behind other Latin American countries like Argentina or Chile. To further stymie development, in April 2022, [Mexico passed legislation](#) to ban private and non-Mexican lithium mining and processing activities and restrict all future projects to state-run companies. Mexico's current president has pledged to honor existing lithium concessions, but has clearly declared not just a "Mexico First", but a "Mexico Only" policy in the sector. Unfortunately, the government's strategy so far has consisted only of the creation of a state-owned company, which has left development in a standstill.

As a rare earths, and particularly lithium, producer, it will be a long time before Mexico is able to contribute to the North American critical minerals supply chain. Not only is it starting from a standing stop, its mineralogical separation challenges are substantial and the current Obrador government is determined to not allow foreign companies and therefore foreign capital to develop any lithium assets in the country.

On top of these mineral development issues, Mexico has other challenges, including widespread organized criminal activity, corruption, civil unrest, and contract risks arising out of the current nationalist climate of Mexican president Andres Manuel Lopez Obrador.

In the near future, it appears that Mexico will continue to

assemble electric cars, but not provide the materials for many of the key components required for a greener future. And it is unlikely that any amount of photo ops by the Three Amigos will fix this anytime soon.

The Department of Defense starts the Invest in Critical Minerals Strategy with the Letter “A”

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What’s old is new again. How many times have we seen an old, either abandoned or suspended mining operation, all of a sudden come back into relevance? This seems to be happening more often as supply chains and global political maneuvering have sparked a race to “onshore” as many things as possible. However, today was a new one for me – antimony. It’s not necessarily at the top of the list of critical materials, as everyone seems to be focusing on the big five (lithium, manganese, nickel, cobalt, graphite) for EV batteries along with copper.

But here are some little know facts that may change your mind about antimony, which is on the U.S. Department of the Interior’s critical minerals list. Antimony trisulfide is essential to national defense as a key component for munitions and primers used in every branch of the armed services. Additionally, every military uniform is coated with antimony to provide fire protection and minimize infrared detection. It is

also a useful material for the energy transition as a glass clarifier in solar panels or as a metal strengthener to wind turbine components. More recently, antimony is gaining recognition as a battery metal for its role in liquid metal battery technology. Yet, the U.S. has no domestic antimony production at present. Even more challenging, roughly 90% of global antimony production is controlled by China, Russia, and Tajikistan. Not exactly, the names you want at the top of your list of a “must have” commodity.

This explains why a domestic mining company was just [awarded a Technology Investment Agreement](#) of up to US\$24.8 million under Title III of the Defense Production Act (“DPA”). That’s right, the Department of Defense has stepped up to the plate to work with [Perpetua Resources Corp.](#) (NASDAQ: PPTA | TSX: PPTA) to complete environmental and engineering studies necessary to obtain a Final Environmental Impact Statement, a Final Record of Decision, and other ancillary permits to sustain the domestic production of antimony trisulfide capability for defense energetic materials. All of this would be for the [Stibnite Gold Project](#) where Perpetua Resources is focused on the exploration, site restoration and redevelopment of gold-antimony-silver deposits in the Stibnite-Yellow Pine district of central Idaho.

The Stibnite Project is one of the highest-grade, open pit gold deposits in the United States and is designed to apply a modern, responsible mining approach to restore an abandoned mine site and produce both gold and the only mined source of antimony in the United States. Further advancing Perpetua Resources’ ESG and sustainable mining goals, the Project will be powered by the lowest carbon emissions grid in the nation and a portion of the antimony produced from the Project will be supplied to Ambri, a US-based company commercializing a low-cost liquid metal battery essential for the low-carbon energy transition.

There's a lot of interesting things at play here but before you get too excited about this project, it should be noted that there is a lot of work to be done because of all the work that wasn't done back in the 1930's and 1940's. In the absence of modern environmental knowledge and regulation, and later to meet wartime demands, the first generation of miners at Stibnite placed mill tailings wherever they could in the Meadow Creek Valley. By the time mining operations ceased in the 1950's, more than four million cubic yards of tailings had been placed in the upper valley. In 1959, government officials ordered the mine to breach the tailings containment and Meadow Creek flowed through, rather than around, the tailings. Over the next 20 years, an estimated 10,000 cubic yards of tailings were eroded by wind and water and washed downstream into the East Fork of the South Fork of the Salmon River system.

Not surprisingly, the proposed Stibnite Gold Project is in the sixth year of review under the National Environmental Policy Act. However, Perpetua expects that current cash resources, combined with the full DPA agreement, would provide the Company with sufficient liquidity to complete permitting and early restoration activities on the current timeline as well as additional liquidity to begin advancing construction readiness. Once back in production, Stibnite is expected to average ~35% of U.S. antimony demand. Plus, the gold component of the mine has pretty appealing economics as well with a 2020 feasibility study suggesting an NPV (5%) of US\$1.3 billion using US\$1,600/oz gold price, average annual gold production of ~465,000 ounces at a very impressive AISC of <US\$450/oz leading to average annual EBITDA >US\$550 million.

I harken back to a saying used by Tom Hanks' character in "A League of Their Own" (although that isn't the original source, it's just one of the more notable ones) "If it were easy, everyone would do it". Reclaiming and resuscitating the Stibnite

Gold project is not an easy task. But Perpetua definitely has momentum on its side and a very influential supporter in the form of the Department of Defense. It would appear they have as good a chance as any to restore commercial operations at what is arguably a very important (and potentially lucrative) asset.

The Inflation Reduction Act delivers a mixed bag of successes and failures for EVs and the green economy

written by Melissa (Mel) Sanderson | January 11, 2023

Did anyone besides me hear happy hollering last week? Probably so – the Democrats in the U.S.A. unexpectedly delivered a piece of legislation which, in the current conflicted context, can reasonably be called a win for the so-called [green economy](#).

Also known as Build Back Better's Baby Brother in disguise, the bill does contain some important, and even some surprisingly positive provisions, such as: tax credits to encourage further deployment of wind and solar power, as well as development of geothermal (one of the surprises); tax credits to encourage businesses to source more of their energy needs from renewables; tax credits for carbon capture technology; and tax credits for the nuclear industry, with special reference to the new generation "mini-nukes," but also including older reactors, some of which would have been retired either this year or next (another surprise). So, big wins for the energy industry.

Now, some of the hollerings might not have been as happy as some of the provisions are markedly less positive. Most spectacularly, excluding both Tesla and Lucid Motors' high-value (and pricey) cars from the consumer tax credit. Although not explicitly named, GM's EV division also might find itself in difficulty, since the tax incentives are for cars made using inputs which do NOT come from "unfriendly" countries. Given China's 80% market share, that makes it pretty hard to qualify a made-in-America EV for the credit. This definitely is going to solidify Elon Musk's conviction that the US government is out to get him, and could throw a spanner into Tesla's reported plan to source its rare earths and other materials from the Democratic Republic of the Congo, a country not on the official "friends" list (at least not yet...?) despite the recent visit by the Secretary of State.

Following along the same line, Congress missed yet again what is arguably the most important link in the green supply chain, and certainly the most fundamental, i.e., actual mining of rare earths and other critical materials such as lithium in the domestic US.

While there are various incentives already in place from prior legislation such as the Defense Production Act to spur research and development in separation and production technologies, and even funding for construction of a full-cycle separation/refining plant in the US, the failure to address the hostile climate toward actually MINING the materials needed for the refining plant continues to undermine the achievability of a viable US green economy. (Yes, those puns are intended).

Obviously, miners – senior as well as junior – would welcome financial incentives and/or government-sponsored assistance in attracting private investment to support development of new mines. But even more, companies would welcome recognition by

Washington that without actually producing primary materials such as rare earths and lithium in the US, the separation and production facilities in the US are going mostly to process materials sourced elsewhere. Kind of defeats the purposes of shortening supply chains and securing reliable supply, doesn't it?

Of course, with mid-term elections approaching and seeming more up for grabs than usually is the case, the Democrats don't want to risk alienating a core constituency (young "greens" and environmentalists) by appearing to promote digging actual holes in the ground. But – and especially if they manage to pull larger majorities out of these midterms (thanks more to errors by the Republicans than any genius on their part) – one has to hope that in the final two years of this Administration someone will courageously decide to tackle streamlining the regulatory process, providing clarity to companies and investors on a reasonably short development timeline and even, perhaps, incentivizing investment into the primary mining production segment of the "green" US economy.

Optimistic, you say? Agreed – but pragmatically speaking, without even such relatively minimal changes, it's far from clear that the US will arrive where it says it wants to go.

Search Minerals moving forward with growing rare earths

resource, new PEA and a commercial magnetic separation plant

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It has recently been reported that the U.S. Government (subject to approval of [the proposal](#)) is likely to widen their definition of “domestic source” in the Defense Production Act to include the United Kingdom of Great Britain and Northern Ireland and Australia. This is in addition to the current inclusion of Canada and of course the USA. If passed, this is great news for critical material miners located in these countries.

One such company is focused on the high value magnet rare earths and is advancing their project in Canada. Magnet rare earths prices, such as neodymium, [have increased very significantly](#) over the past year as EV demand surged.

[Search Minerals Inc.](#) (TSXV: SMY | OTCQB: SHCMF) (Search) is developing their rare earths projects in Labrador, Canada. Their three projects include:

- The Port Hope Simpson (PHS) Property (flagship) – Includes Foxtrot, Deep Fox, Silver Fox, Awesome Fox, and Fox Meadow deposits. Prospective for Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy), and Terbium (Tb), as well as Zirconium (Zr) and Hafnium (Hf). The updated 2022 PEA is due soon in Q2, 2022.
- The Henley Harbour Area in Southern Labrador.
- The Red Wine Complex located in Central Labrador.

Search Minerals PHS Property showing the Foxtrot & Deep Fox deposits and other targets



Source: [Search Minerals website](#)

Search's flagship PHS Property has been the Company's focus with a [PEA completed in 2016](#) on Foxtrot only, an updated Resource recently released (now includes both Foxtrot & Deep Fox), and an updated PEA to follow very soon. Given the larger resource (hence potentially longer mine life) and higher rare earth prices, the upcoming 2022 PEA is expected to potentially improve significantly on the 2016 PEA. Search President & CEO Greg Andrews, discusses the positive impact on their upcoming PEA in a recent InvestorIntel video [here](#).

Details of the updated resource at Foxtrot and Deep Fox

As a result of the recent [updated resource](#) news the Foxtrot resource has grown by approximately 60% from the 2016 estimate and the Deep Fox resource has grown by 25% from the 2019 estimate. Search state in their April 11, 2022 resource [announcement](#): "Revenue attributable to Pr, Nd, Dy, and Tb represent approximately 92% of the total revenue."

Estimated Mineral Resources for the FOXTROT and DEEP FOX Projects as of December 31, 2021



Source: [Search Minerals announcement on April 11, 2022](#)

Both Foxtrot and Deep Fox Resources include open pit (OP) and underground (UG) components as shown on the models below. They will form the basis of the upcoming updated 2022 PEA. In both cases, mineralization remains open at depth.

Models showing the open pit and underground resource at Foxtrot and Deep Fox



Source: [Search Minerals announcement on April 11, 2022](#)

Next steps (including steps towards a full commercial magnetic separation plant)

The next steps for Search at their PHS Property will be the 2022 PEA release, further drilling to grow the resource (including at Fox Meadow), and further advancements with off-take agreements. In 2021 Search signed a [non-binding MOU](#) with USA Rare Earth LLC for the future delivery of a rare earth mineral concentrate supply containing 500 tpa of NdPr. The MOU also included a plan to expand the collaboration to include discussions regarding separation, marketing, and offtake of a portion of the future production at Search's Deep Fox and Foxtrot deposits. There will also be the upcoming results from Search's [magnetic separation program](#) using bulk samples from the PHS Property (Foxtrot & Deep Fox). The results of the testing will be used as part of a 'scale up' to a full commercial magnetic separation plant.

Search President & CEO, Greg Andrews, [states](#): "We continue with our "Sprint to Production" and this is a very important step to scale up and produce more material for further separation into individual oxides of the permanent magnet material, Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy) and Terbium (Tb). These are the key elements which create the value in the rare earth element supply chain. Upon producing the oxides, Search will demonstrate the transformation of the permanent magnet oxides into metal."

Closing remarks

Last month Search released a significant Resource upgrade at Foxtrot and Deep Fox deposits on their PHS Property. The results were strong growing the resources by 60% and 25% respectively.

Both remain open at depth and the PHS Property has numerous other exciting rare earth targets such as Silver Fox, Awesome Fox, and Fox Meadow. This means the PHS Property should potentially continue to further grow the total resource size in years to come. Search did recently release [encouraging assay results](#) at the Fox Meadow target where Search plans to commence a 6,000 m drill program this fall.

The big next catalyst for Search is the upcoming updated 2022 PEA which should potentially see a significant improvement on the 2016 PEA. Following that it will be interesting to see Search's progress towards becoming a rare earths miner as well as processor.

Search Minerals trades on a market cap of [C\\$65 million](#).