



NEWS NUGGETS

Compiled by Shane Lasley



PHOTO BY KYLE NEGRI, COURTESY OF MILLROCK RESOURCES INC.

Geologist Chris Brown collects data at Mars, a prospect on the Stellar property where geophysics indicates a buried porphyry may be the source of the surface copper-gold mineralization found there.

Mars porphyry potential discovered

PolarX Ltd. Oct. 25 reported that an induced polarization geophysical survey has confirmed the potential of a buried porphyry copper-gold system at the Mars prospect on its Stellar property in Southcentral Alaska. Broadly spaced soil samples have outlined a 2,000- by 1,500-meter area of gold and copper mineralization at Mars and rock chip samples collected from this same area have returned assays of up to 7.4 percent copper and 1.8 grams per metric ton gold. Data from the IP survey carried out at Mars in August show a buried chargeability anomaly located 100 to 150 meters below the copper-gold mineralization on surface, consistent with a buried porphyry system. The chargeability anomaly extends to the edge of the 800-meter-wide area surveyed this year. PolarX said further IP surveying will be undertaken to map out the full extent of the IP anomaly. Mars lies about 6,000 meters northwest of the Zackly skarn. PolarX said the 2017 drill program to update a historical gold-copper resource at Zackly identified evidence for a buried porphyry system. The company said geological evidence indicates a structural corridor extending between Mars and Zackly with the potential to host multiple buried porphyry copper-gold systems. This corridor is now a priority target for future exploration at Stellar. Initial assay results from the 2017 drill program at Zackly are expected in November.

Higher grades tapped at Pyramid

CopperBank Resources Corp. Oct. 23 reported results from two additional holes drilled this summer at the Pyramid copper project on the Alaska Peninsula. Hole DDH 17PY033, drilled in the Main zone of the Pyramid deposit, cut 300 meters of 0.53 percent copper, 0.12 g/t gold and 0.02 percent molybdenum. This hole was drilled 150 meters west of DDH 11PY016, a 2011 hole that cut 155 meters of 0.71 percent copper, 0.18 g/t gold and 0.018 percent molybdenum. CopperBank said the results from 17PY033 and 17PY032, confirm a broad horizon of continuous, higher grade mineralization over 400 meters long. 17PY032, reported earlier this year, cut three mineralized intercepts: 40 meters of 0.33 percent copper, 0.1 percent molybdenum and

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U.S. AIR FORCE: PHOTO BY AIRMAN 1ST CLASS ISAAC JOHNSON



This U.S. Air Force F-35A Lightning II fighter aircraft is conducting cold weather testing at the Eielson Air Force Base in Interior Alaska. The significant amount of rare earth elements needed for this fifth generation multi-role fighter was among the concerns raised by U.S. military aviation specialists during the funding of the F-35 program.

TECHNOLOGY MINERALS

REEs: US Achilles heel

Former Army acquisitions exec says military needs domestic rare earths

By SHANE LASLEY
Mining News

A former high ranking United States Army executive charged with acquiring and developing world-class equipment for U.S. soldiers under the Obama and Bush administrations warns that the lack of a domestic source for rare earth elements, or REEs, will be the Achilles heel of American military superiority.

"Every one of the current and next round of super and unimaginable US weapons relies on REEs, an exotic assortment of 17 metals and elements, that are neither mined nor processed into ores in the US," Dean Poppo, former assistant secretary for acquisition logistics and technology, penned in an Oct. 10 column.

Rare earth elements possess unique characteristics that make them important ingredients to many high-technology devices used by both civilians and the military.

While their high-tech applications makes them vital to United States security, the fact that more than 90 percent of these metals come from China elevates their status to critical.

"We remain completely at the mercy of foreign governments and markets for these vital supplies, which are the building blocks for every major piece of military equipment or weapons system," Poppo wrote.

"To believe China would keep supplying us with the materials needed to defeat them is both irresponsible and naïve," the former Army executive added.

The United States, however, does have several options for domestic sources of rare earths, including Ucore Rare Metals' Bokan Mountain project in Southeast Alaska and the REE separation technology that company is developing.

"Former Secretary Poppo's insight and expertise in supply chain security has highlighted the growing threat of relying on foreign nations such as China

Given REE's undeniable military and commercial value, it is difficult to overstate their importance to our national security."

—Dean Poppo, former assistant secretary for acquisition logistics and technology, U.S. Army

for the American military's most essential and critical materials," said Ucore President and CEO Jim McKenzie. "Ucore's establishment of domestic REE separation capabilities fits hand in glove with the urgent need for an American military supply chain free of compromise."

China's REE dominance

China's dominance of global rare earths supply means the Middle Kingdom dictates the going price of these technology minerals.

The Middle Kingdom gained this commanding position by flooding the market with rare earths in the 1980s. By offering these elements at a fraction of the going rate, REE producers outside of China, including the Mountain Pass Mine in California, were uneconomical and forced to close.

Over the ensuing two decades, China has reigned as the global low-cost supplier of rare earths. During this same period, these elements have become increasingly important ingredients in a wide range of modern products such as terabyte hard-drives that fit in the palm of your hand, high-efficiency power generation and guided missiles.

"Their unique properties, such as strong magnetic qualities at high temperatures, help precision-guided munitions pinpoint targets, facilitate GPS navigation, and allow fighter pilots to eject safely. Given REE's undeniable military and commercial value, it is difficult to overstate their importance to

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NORTHERN NEIGHBORS

Compiled by Shane Lasley



Drilling merges 3 Aces high-grade gold zones

Golden Predator Mining Corp. Oct. 25 reported that recent drill results have confirmed the continuity of the 1,600-meter-long Hearts-Clubs corridor at 3 Aces, a high-grade gold project in southeast Yukon. Highlights from the most recent assay results from reverse circulation drilling at Hearts-Clubs includes 19.81 meters of 3.32 grams per metric ton gold from a depth of 10.67 meters in hole 3A17-203; and 4.57 meters of 9.3 g/t gold from a depth of 22.1 meters in 3A17-205. Golden Predator said the results from 20 RC holes has confirmed a doubling of the strike length of the Ace of Hearts vein, with 600 meters of continuity, and the extension of mineralization for 340 meters along the Hearts-Clubs Corridor. A second parallel shear zone, below the Hearts-Clubs Corridor, was also established and confirmed with visible gold along a 450-meter segment, additional results are pending. The 1,600-meter Hearts-Club Corridor now extends from the Ace of Hearts to the Ten of Clubs zone. In 2018, the company will test a 1,200-meter projected extension of the corridor. "We continue to be encouraged by our drill program results which expand gold mineralization, further support the orogenic gold system, and develop our evolving geologic and structural model," said Golden Predator CEO Janet Lee-Sheriff, Chief Executive Officer. "The Hearts-Clubs Corridor remains open along strike and at depth and we will continue to drill the newly identified parallel structures in the Hearts-Clubs corridor."

Gold-copper skarn Drilled at Pluto, YU

StrikePoint Gold Inc. Oct. 23 announced that drilling has encountered gold and copper at Pluto, one of 22 Yukon mineral exploration properties the company acquired from IDM Mining earlier this year. Located in the Kluane region of southwestern Yukon, Pluto is an early stage exploration project where prospecting has identified skarn mineralization. The 2017 program at Pluto included 12 rotary air blast drill holes testing two targets – eight at Charon target and four at Hydra. Hole 17-CRN-01, the first hole drilled at Charon, cut 6.1 meters of 0.74 grams per metric ton gold with 1.67 percent copper. Hole 17-CRN-02, also drilled at Charon, cut 15.24 meters averaging 1.05 g/t gold. Another hole drilled at Charon cut 32 meters of 0.14 percent copper. Drilling at Hydra, which is 6,000 meters southwest of Charon, cut 10.67 meters of 0.4 g/t gold. "The discovery through drilling of copper and gold mineralization occurring at Pluto is an exciting development," said StrikePoint CEO Shawn Khunkhun. StrikePoint said the mineralization encountered in both zones is hosted in limestone layers which are altered by skarn and marble. The 2017 program also included extensive mapping of the northeastern portion of the property and surface sampling. Highlights from grab samples collected from Charon include 48.4 g/t gold, 36.3 g/t gold and 1.23 percent copper.

Nice zinc intercepts at Macmillan Pass

Fireweed Zinc Ltd. Oct. 24 reported high-grade zinc intercepts from verification drilling in the Jason Main zone results at its Macmillan Pass project in eastern Yukon. The best intercept from this second batch of assay results from 2017 drilling at Jason include 13.1 meters of 13.24 percent zinc and 3.38 percent lead. Another hole cut 15.7 meters of 10.22 percent zinc and 1.95 percent lead. Another hole drilled at Jason earlier this year cut 7 meters of 12.16 percent zinc and 3.13 percent lead. The results from this year's drilling at Jason will be used to update a historical resource for the deposit. Fireweed said Jason Main remains open for expansion as well as the nearby high-grade Jason South Zone which was not drilled in 2017. The 2017 program at Macmillan Pass also tested the Tom zones, which also have historical resources. Earlier reported results from Tom West include 24.4 meters of 10.2 percent zinc, 6.28 percent lead and 87.7 grams per

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0.07 g/t gold from 11 meters; 51.3 meters of 0.34 percent copper, 0.02 percent molybdenum and 0.1 g/t gold from 67 meters; and 201 meters of 0.48 percent copper, 0.02 percent molybdenum and 0.1 g/t gold from 132 meters. According to a 2013 calculation, Pyramid hosts roughly 1.1 billion pounds of copper in 122.5 million metric tons of inferred resource averaging 0.41 percent copper, 0.1 grams per metric ton gold and 0.021 percent molybdenum. CopperBank said the higher grade portions of holes 32 and 33 are outside the 2013 resource envelope. "This program was carefully designed to increase tonnage and examine the higher grade portions of the deposit. Our team is very pleased to report multiple intervals of broad and continuous mineralization at grades higher than the historical resource estimate," said CopperBank Executive Chairman Gianni Kovacevic. Hole DDH 17PY034, drilled at the Pyramid North zone, cut 232.9 meters averaging 0.19 percent copper 0.06 g/t gold and 0.04 percent molybdenum from a depth of seven meters. The 2017 program at Pyramid consisted of 3,690 meters of drilling in 13 holes. "We await the results of the final nine drill holes, so our team can see how these results impact the historical resource estimate, and where future drilling should take place," Kovacevic added.

Alaska appealing Sfs initiative

Alaska Department of Law Oct. 20 filed an appeal to the Alaska Supreme Court in *Stand for Salmon v. Mallott*, a lawsuit over the constitutionality of proposed ballot initiative 17FSH2, also known as the Stand for Salmon initiative. In September, Lieutenant Governor Byron Mallott declined to certify 17FSH2 because it made an unconstitutional appropriation of a state asset—anadromous fish and wildlife habitat—by initiative. The lieutenant governor's decision was based on an Alaska Department of Law opinion that the law changes proposed in the ballot measure would unconstitutionally prohibit the development of mines, dams, roadways and pipelines. "In doing so, the measure



BYRON MALLOTT

The sponsors of 17FSH2 sued to overturn Mallott's decision and obtain petition booklets for circulation throughout the state. Earlier this month, Anchorage Superior Court Judge Mark Rindner reversed Mallott's decision, ruling that 17FSH2 was a constitutional use of the initiative process.

would effectively set state waters aside for the specific purpose of protecting anadromous fish and wildlife habitat 'in such a manner that is executable, mandatory, and reasonably definite with no further legislative action,' while leaving insufficient discretion to the legislature or its delegated executives to use that resource in another way," state attorneys wrote. Article XI, section 7 of the Alaska Constitution prohibits the making or repealing of appropriations by ballot initiative. The sponsors of 17FSH2 sued to overturn Mallott's decision and obtain petition booklets for circulation throughout the state. Earlier this month, Anchorage Superior Court Judge Mark Rindner reversed Mallott's decision, ruling that 17FSH2 was a constitutional use of the initiative process. The Department of Law contends that 17FSH2 unconstitutionally infringes on the Legislature's discretion to decide how to allocate state assets among competing uses, thereby making it an impermissible appropriation by initiative. "The question of whether a proposed ballot initiative makes an appropriation is an important constitutional question that should be answered by The Alaska Supreme Court," said Attorney General Jahnna Lindemuth. "We take no position on whether 17FSH2 is good policy. This is about the superior court's legal conclusion and our duty to defend the Alaska Constitution, and we believe the superior court got it wrong. The Alaska Supreme Court's case law on initiatives prohibits the type of resource allocations that 17FSH2, by its terms, makes a foregone conclusion. The Legislature—and only the Legislature—can decide how to allocate this public asset among industry, fisheries, and other competing interests and uses." Upon Judge Rindner's ruling, petition booklets for 17FSH2 were printed and delivered to sponsors. The state said it will request expedited consideration by the Alaska Supreme Court in order to provide clarity before ballots have to be printed for next year's elections. ●



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Shane Lasley	PUBLISHER & NEWS EDITOR
Rose Ragsdale	CONTRIBUTING EDITOR
Mary Mack	CEO & GENERAL MANAGER
Susan Crane	ADVERTISING DIRECTOR
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Judy Patrick Photography	CONTRACT PHOTOGRAPHER
Forrest Crane	CONTRACT PHOTOGRAPHER
Renee Garbutt	CIRCULATION MANAGER
Mapmakers Alaska	CARTOGRAPHY

ADDRESS • P.O. Box 231647
Anchorage, AK 99523-1647

NEWS • 907.229.6289
publisher@miningnewsnorth.com

CIRCULATION • 907.522.9469
circulation@petroleumnews.com

ADVERTISING
Susan Crane • 907.770.5592
scrane@petroleumnews.com

FAX FOR ALL DEPARTMENTS
907.522.9583

Several of the individuals listed above are independent contractors

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metric ton silver. Assays are pending from additional drilling completed at the Tom zones. Results from additional holes drilled at Tom are pending. Results from the 2017 drilling and re-sampling of historical core will be incorporated into an NI 43 101-compliant mineral resource for Tom and Jason. Completion of the report is expected by year end. Following the completion of the resources estimate and associated technical report, expected by year's end, Fireweed plans to initiate a preliminary economic assessment to evaluate future mine planning, metallurgy and project economics.

ATAC encouraged by high-grade Tiger gold

ATAC Resources Ltd. Oct. 23 reported that a 12-hole drill program encountered high-grade gold at the Tiger deposit and Tiger East anomaly at Rau, a project located at the eastern end of the company's roughly 185-kilometer- (115 miles) long Rackla property in the Yukon. The 2017 program at Tiger focused on expanding the known sulfide and oxide resources within and adjacent to an open pit outlined in a preliminary economic assessment completed in 2016. Highlights from the 12 holes drilled this year include: 51.82 meters of 5.66 grams per metric ton gold in oxide mineralization east of the Tiger deposit; 56.77 meter of 4.08 g/t gold in a hole that confirms sulfide grade and continuity within the deposit; 64.01 meters of 2.46 g/t gold in sulfide mineralization to the west of Tiger; and 21.34 meters of 2.59 g/t gold in new oxide gold mineralization at the Tiger East anomaly. "These results reinforce ATAC's commitment to advance Tiger through feasibility and permitting," said ATAC President and CEO Graham Downs. "The 2017 drilling was designed to build upon positive results from the company's updated 2016 PEA which demonstrated that sulfide gold mineralization, previously classified as waste in the 2014 PEA, could be processed to increase the deposit's recoverable ounces of gold."

Wide gold zone cut beyond Eagle Gold

Victoria Gold Corp. Oct. 23 reported 624.1 meters of 0.5 grams per metric ton gold was encountered across the entire length of the second hole drilled at Eagle Deep, an extension of the Eagle Gold zone at its Dublin Gulch property in the Yukon. This long intercept in this hole, DG17-922, included 371.1 meters of 0.65 g/t gold from 185.9 meters; 37.2 meters of 1.27 g/t gold from 249.8 meters; and 38.8 meters of 1.2 g/t gold from 468.3 meters. This is the second of four holes targeting previously untested areas adjacent to, and below the pit-boundary outlined in a 2016 feasibility study for the Eagle Gold Mine project. DG17-910C, the first of the Eagle Deep hole drilled, cut 423 meters of 0.59 g/t gold from 221 meters. In addition to validating gold mineralization beyond the pit boundary, Victoria said gold mineralization was encountered within the pit boundary that had not previously been established within the Eagle Gold Mine block model due to lack of drill density at depth, indicating further upside potential of the Eagle Gold Mine. "Eagle Deep assay results continue to impress," said Victoria Gold President and CEO John McConnell. "These newest results from alongside and beneath the current Eagle pit walls drive home the fact that there is more to Eagle than just what was captured in the Feasibility Study. 2017 continues to be an exciting exploration sea-

son for us. Diamond drilling and exploration activities are still in full swing and we look forward to additional exploration results throughout Q4, 2017." The open-pit, heap-leach operation outlined in the feasibility study for Eagle Gold is expected to produce 190,000 ounces of gold annually over a 10-year mine life from 116 million metric tons of reserves averaging 0.67 g/t (2.66 million oz) gold. In August, Victoria broke ground on the first phase of development of this open-pit, heap-leach operation and is targeting the first gold pour from Eagle in 2019.

More CB gold; Auryn to restart drilling in March

Auryn Resources Inc. Oct. 19 reported that drilling at Inuk, a prospect at its Committee Bay gold project in Nunavut, cut 25 meters of 1.15g grams per metric ton gold. This hole was drilled 400 meters away from an historical intercept of 12.6 meters of 16.04 g/t gold. "We are very pleased to have hit the broad intervals of consistent mineralization at our Inuk target," said Auryn Chief Geologist Michael Henriksen. "We have extended the mineralized system by 400 meters to the northeast under an intrusive cover rock sequence and glacial till. Our understanding of the geology of the Inuk prospect is at an early stage but we are highly encouraged at the strength of sulfidation and gold mineralization within banded iron formations over tens of meters." Auryn completed 33,133 meter of drilling testing 18 targets across the entire 155-mile (250 kilometers) greenstone belt covered by the Committee Bay property. Results from 31 percent of the holes are pending. This includes results from the Kinng Gold, Kinng Mountain, Mist, Koffy targets in the northeast portion of the belt. Auryn plans to resume drilling at Committee Bay in March with a 10,000-meter program at Aiviq, a high-grade gold discovery made this year, and expansion drilling at Three Bluffs, a deposit with 2.1 million metric tons of indicated resource averaging 7.85 g/t (524,000 ounces) gold and 2.9 million metric tons of inferred resource averaging 7.64 g/t (720,000 oz) gold. "We look forward to mobilizing drill

rigs in March to further test the Aiviq discovery and commence extending the Three Bluffs deposit," said Auryn President and CEO Shawn Wallace. "This is the first year that our portfolio will be active through the winter months, generating additional results from drill programs soon to be underway."

Auryn said results are pending from the 37 holes (14,811 meters) drilled at its Homestake Ridge gold-silver project in the Golden Triangle, British Columbia. The company said a number of the holes drilled this year encountered geological features consistent with the high-grade gold and silver mineralization known to exist at the South Reef prospect and the Homestake Main deposit but the turnaround on results this year has been slow. "We have, much like the rest of the industry, been burdened with slower than expected assay turnaround but are due to see the first holes from Homestake Ridge later in October," said Wallace.

Record iron shipped from Canadian Arctic mine

Baffinland Iron Mines Corp. Oct. 18 reported that it shipped record quantities of

iron ore from its Mary River Mine in Nunavut to European and Asian markets in 2017. From Aug. 2 to Oct. 17, Baffinland shipped roughly 4.1 million metric tons of iron ore from its Milne Inlet Port to markets in Germany, the United Kingdom, and Japan. Fifty-six panamax vessels with an average of 72,600 metric tons of iron ore each shipped over 75 days, marking the largest shipping program by volume ever executed in the Canadian high arctic. "Our record-setting performance was achieved through the hard work and dedication of our employees," said Baffinland Iron President and CEO Brian Penney. "I also want to thank all of our partners involved in making this program a success, including our shipping partners, ice management experts, the Canadian Coast Guard, and the continued support of the North Baffin communities, in particular Pond Inlet, and the Qikiqtani Inuit Association." No health and safety or environmental incidents occurred during the shipping program. Baffinland Iron Mines, jointly owned by Nunavut Iron Ore and ArcelorMittal, has applied for permits to ship 12 million metric tons of ore annually from its high-grade Mary River iron mine on Baffin Island, Nunavut. ●

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REE NEED

our national security," said Poppo.

In 2010, China cut exports of this suite of 16 elements critical to green energy, high-technology and defense by upwards of 40 percent. This sparked a price explosion that was fueled further by an over-exuberant market worried about a global shortage.

"China has already set a precedent for using REEs as geopolitical leverage. Following a dispute with Japan in 2010, the country curtailed its REE exports, spiking prices as much as 600 percent," Poppo wrote.

For example, europium oxide rose from US\$475 per kilogram in 2008 to a peak of US\$3,800/kg in 2011.

Most of the critical rare earth oxides – including dysprosium, terbium and neodymium – followed a similar upward price trajectory.

The skyrocketing REE prices at the time spurred a frenzy of exploration aimed at identifying non-Chinese supplies of these technology minerals.

This work helped to advance a number of promising REE projects, including Bokan Mountain, and resulted in the re-opening of Mountain Pass.

By 2013, however, China opened up its rare earths exports, sending prices plummeting as quickly as they rose.

Today, europium oxide can be bought on the Internet from Chinese suppliers for US\$250/kg.

These wild swings in prices have made it difficult to determine the feasibility of opening a new mine and by 2015 MolyCorp, the company that resumed operations at Mountain Pass, had filed for bankruptcy.

"The last American rare earth mine closed in 2015, leaving the U.S. government without a single domestic supplier of the rare earths and specialty metals it requires," Poppo penned.

Unconventional US sources

Ucore Rare Metals has advanced both conventional and unconventional rare earth sources in the U.S.

The company's more orthodox domestic REE source is at Bokan Mountain on Prince of Wales Island.

A preliminary economic assessment envisioned a

1,500-metric-ton-per-day mining operation at Bokan that would churn out 2,250 metric tons of rare earth oxides annually during the first five years of full production. This yearly supply included some of the more critical REEs such as 95 metric tons of dysprosium oxide, 14 metric tons of terbium oxide and 515 metric tons of yttrium oxide.

While Bokan Mountain has stalled in the pre-permitting stage, the research to develop a more economical and environmentally sound processing facility to separate and recover the rare earths found there is evolving into a more unorthodox REE source.

By 2014, Ucore's quest for a cutting edge REE separation technology had led the exploration turned innovation company to IBC Advanced Technologies and its proprietary molecular recognition technology.

The basic idea behind the MRT process is that "SuperLig resins" are engineered to grab ions based on a number of traits such as size, chemistry and geometry. These resins are loaded into a column and latch onto the targeted material suspended in a solution that is pumped through the column. Simply rinsing the resin with a mildly acidic solution releases a nearly pure version of the material the resin is engineered to bind to.

Using a REE-laden solution sourced from Bokan Mountain, IBC and Ucore have successfully applied molecular recognition technology to the separation of the tightly interlocked rare earth elements with a pilot plant known as SuperLig-One.

"We've demonstrated the capability to separate the 16 individual REE, at greater than 99 percent purity and 99 percent recovery, from PLS (pregnant leach solution) derived from Bokan-Dotson Ridge REE ore," said IBC President and CEO Steven Izatt. "Dysprosium, for example, has been separated from Bokan PLS in a pilot plant operation at the 99.99 percent level with 99 percent recovery."

This means that essentially all of dysprosium fed into SuperLig One comes out the other end as a virtually pure product.

This highly efficient process has further evolved into the Strategic Metals Complex, a facility being developed to extract rare earths from sources not typically thought about for their REE potential.

Coal mine tailings are one of numerous unconventional rare earth sources being considered.

"In order for the United States to become self-sufficient in the supply of REE it is essential that critical ones of these, such as neodymium, dysprosium, europium, terbium, and yttrium, be produced in large quantities by green engineering-green chemistry procedures that will meet current environmental standards, avoid the use of organic solvents, and generate minimal waste," said Izatt. "IBC's SuperLig MRT is a commercial technology that meets these standards."

Federal REE funds

Poppo, who joined Ucore's advisory board this year, says it is critical that the federal government appropriate some funding for the research and development of domestic sources of rare earths.

"Both the House and Senate Armed Services Committee authorization bills included additional funds for development of domestic rare earth capability, though the all-powerful Appropriations Committees have not matched this investment to date," he wrote. "We need to put some money toward fixing this critical supply chain issue before we get caught short and embarrassed when it's a matter of life and death in defense of the nation."

In July, President Donald Trump signed an executive order to identify and address potential weak points in the defense manufacturing base and supply chain for U.S. weapons systems.

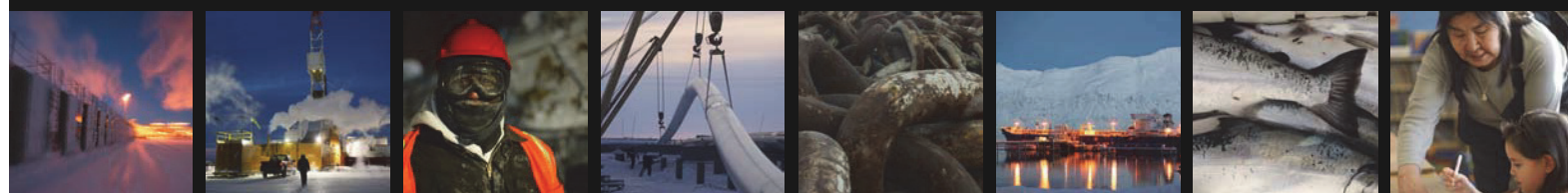
Poppo believes that U.S. dependence on China for its rare earths should be part of this conversation.

"The Pentagon is foolish to advertise a grand strategy of technological prowess when it doesn't even have a secure supply of the strategic materials it needs to innovate," he wrote. "President Trump's recently announced Industrial Base Review could be an opportunity to fix this problem by insisting that the Pentagon support domestic supply lines."

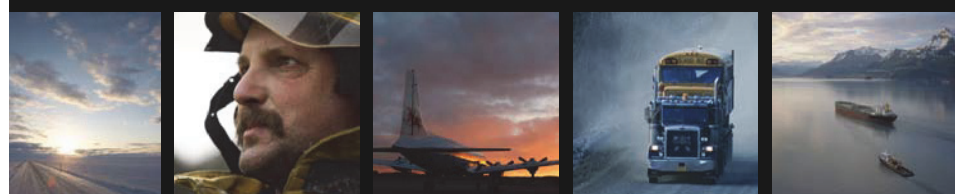
Poppo believes that protecting the U.S. military's Achilles heel is worth the any investment needed to ensure a domestic REE supply.

"Though seemingly unimportant things like a \$2 rare earth element magnet steering a billion dollar weapons platform may sound inconsequential, when our adversaries cut off our supply, leveraging our greatest weakness against us, we won't have anywhere to turn," penned the former Army executive. ●

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