China's Strategic Deployment of Deep-Sea Mining to Counter U.S. Defense Presence in Oceania

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Executive Summary:

As atttention focuses on securing U.S. defense critical mineral supply chains, deep-sea mining presents a critical new market for decoupling supply chains from reliance on China (PRC). China has strategically launched efforts to lead the deep-sea mining market, secure supply chains, and undermine U.S. defense prescence in the Pacific Oceania region which has critical implications for U.S. national security. Through open source research and analysis there are three key implications targeting U.S. defense and diplomacy that China's increasing investment into deep sea mining seeks to diminish:

- **PRC Expansion of Diplomatic Collaborations with PICs-** China is using research collaborations with PICs on deep-sea mining to expand defense and diplomatic partnerships. The emergence of mining sites and key critical partnerships in the Pacific are strategically poised near U.S. assets. These are aimed at countering U.S. presence and expanding China's influence in Oceania, centered around defense critical minerals.

- **Dual-Use Deep Sea Mining Infrastructure** – China's research and survey vessels conducting mapping of Chinese ISA contract areas, due to navigation patterns, pose a serious threat of being dual-use technology surveilling U.S. military posture and interfering with civilian infrastructure.

- **PRC Competitive Advantage over Deep-Sea Mining** – Through emerging technologies and diplomatic partnerships China is positioning itself to gain global strategic control over the deep-sea mining industry. This is to secure PRC critical mineral supply chains and have the strategic control to undercut the U.S. out of an emerging market that is critical to defense and U.S. National Security.

Background:

China's strategic controls of terrestrial critical minerals and refinement processes creates a U.S. defense base reliance on Chinese regulated supply chains to access minerals that are critical to producing key defense technologies. Recently identified as a priority by the U.S. under E.O. 14285, deep-sea mining has the capability for the U.S. to secure its own critical mineral and rare earth element supply chains as a method to de-couple its supply chain reliance on Chinese manufacturers (Trump, 2025). Yet, China's key deployment of economic, diplomatic, and technological initiatives in support of deep-sea mining has been strategically deployed as a method to curb and undermine US influence and directly counter U.S. defense capabilities in Oceania. Deep-Sea mining allows China to strategically secure their own critical mineral supply chains while creating greater implications for US defense presence due to Chinese dual-use technologies surveying and creating strategic assets that serve to counter US defense assets in the Pacific, creating strategic military-

diplomatic partnerships, and securing dominance over deep-sea critical minerals undermining US access to the market.

US Defense-Critical Minerals and the Global Market:

The US Department of Defense has identified 12 critical raw minerals important towards securing key mineral supply chains for the defense industry, these include: Antimony, Arsenic, Bismuth, Gallium, Germanium, Indium, Natural Graphite, Scandium, Tantalum, Tungsten, and Yttrium (Baskaran & Schwartz, 2025). NATO in addition identified 12 defense critical raw materials which included a few seen on the DOD list; these include: Alumnium, Beryllium, Cobalt, Lithium, Manganese, and Platinum (NATO, 2024). Of these 16 critical minerals, China has control over a section of the supply chain for 14 out of 16 of these key critical minerals and the U.S. specifically relies on Chinese imports for many of these minerals as seen in Table 1. This allows for China to have strategic leverage over the market and the ability to restrict export controls against the US and Allied nations which has been seen in response to US technology protection policies (Shivakumar, Wessner, Howell, 2025). All 16 of these key critical minerals occur in offshore formations with many additionally being present in the U.S. Exclusive Economic Zone (EEZ)[1] (BOEM & USGS, n.d).

As seen in Table 1, China is the leading miner of minerals such as Tungsten and Rare Earth Elements. Additionally, China is a leading refiner of Arsenic, Bismuth, Tantalum, and Yttrium while also controling large quantities of U.S. imports of a variety of critical minerals. Yet, China still faces numerous vulnerabilities to their own supply chains. The mining of certain minerals such as Cobalt from the Democratic Republic of Congo and Manganese from Gabon are examples of minerals that could potentially be impacted by unstable political enviroments (Zhou, 2024). Additionally, minerals moving through key chokepoints to China such as Straits of Malacca and Hormuz provide additional weaknesses in their supply chains.

Deep Sea Mining ISA Regulation and Pacific Island Geography:

Deep-sea mining is an attractive emerging industry for providing key opportunities for commercial and government stakeholders to secure domestic mineral supply chains across all processes from sourcing to refinement, as well as the opportunity to divest away from Chinese industries. Due to key surveying and research, commercial deep-sea mining is a viable option through mining three distinct ocean formations: polymetallic nodules (PMN), polymetallic sulfides (PMS), and cobalt-rich ferromanganese crusts (CFC) (GAO & Howard, 2021).

For the sake of this report, research will focus on the mining of PMNs due to the regional focus area being on the Pacific region. Although, when referencing mining in EEZs, the option to mine CFCs is a possibility due to high prominence within the jurisdiction of Pacific Island Countries (PICs) (BOEM & USGS, n.d.). PMNs are a small sedimentary rock formations found on the seabed

[1] EEZ refers to the maritime area beyond shore that is still within national jurisdiction. It is universally accepted that a countries' EEZ is up to 200 nautical miles from its shore

floor containing the critical minerals of mainly Nickel, Cobalt, Copper, and Manganese (GAO & Howard, 2021). PMNs are mainly found in international waters which are global commons governed by the International Seabed Authority (ISA). ISA under the UN Convention on the Law of the Seas (UNCLOS) has the authority to regulate the permitting for mining in these international waters and implement regulations regarding mining practices. Currently, due to seabed mining being an uncharted method of extracting critical minerals there is a movement towards implementing a moratorium on seabed mining to ensure intentional and enviromentally friendly methods of extracting critical minerals and the creation of an even playing field (Keating-Bitonti & Tupuola, 2025).

The Pacific Oceania Region is divided into Micronesia, Melanesia, and Polynesia. Each of these regions are undergoing seabed mining in their States EEZs, in addition to having certain areas where due to prominence of oceanographic features there are increased concentrations of mining exploration. Micronesia includes Mariana Islands (including Guam), Palau, Caroline Islands, Marshall Islands, and Kiribati (Sayre et al, 2019). ISA contracts have included deep-sea exploration in the Northwest Pacific falling to the East of the Mariana islands. Melanesia includes New Guinea, Bismarck Arch., Solomon Islands, Santa Cruz, Vanautu, Fiji, and New Calendonia. Polynesia includes Hawaii, Tuvalu, Tokelau, Samoa, Cook Islands, Society Islands, Austral Islands, Marquesas Islands, Tuamoutu Arch., Mangareva, Easter Islands, Tonga, Kermadec Islands, and New Zealand (Sayre et al, 2019). The Clarion Clipperton Zone (CCZ), a 1.7 million square mile area where the largest concentration of PMNs are found, falls partly in the Polynesia region situated between Hawaii and Mexico and is a strategic area of ISA exploration contracts (GAO & Howard, 2021).

China's Deep Sea Mining Initatives:

China has been regulated by the ISA to have five contracts for deep-sea mining exploration. Three were given to China Ocean Mineral Resources Research and Development Association (COMRA), one was given to Beijing Pioneer Hi-Tech Development Corporation, and was one given to China Minmetals Corporation (CMC) (International Seabed Authority, n.d). Analysis of China's Deep Sea Mining will focus solely on the two contracts given to Beijing-Pioneer in the Northwest Pacific and CMC in the CCZ. COMRA's operations are within the Indian Ocean, Western Pacific, and CCZ. Through analyzing the ISA Contracts for COMRA in the CCZ and the Western Pacific only rough coordinate areas were given. Additionally, COMRA's contract areas have involved changing boundaries under renewal contracts (Chair of the Legal and Technical Commission, 2022). Therefore, the report will focus on the mapped areas of CMC and Beijing-Pioneer additionally taking into account that China has additional contract areas through COMRA in relative proximity (ISA-COMRA, 2014).

China has engaged in thoughtful investments across the US Department of Defense's (DoD) Diplomatic, Informational, Militarisitic, and Economic (DIME) framework as a method to gain strategic foothold in deep-sea mining as well as methodically attempt to supplant US influence in

the Pacific region (LaTourrette, Villalobos, Yoshiara, & Tariq, 2025). The research into commercial-scale deep sea mining is still ongoing while countries wait for ISA regulations. China is using this interval as means to explore deep-sea mining collaboration, investment, and diplo-militaristic partnerships with PICs to expand its influence and reach.

Diplomatic: Most recently China has engaged in diplomatic collaboration with the Cook Islands, signing a Memorandum of Understanding (MOU) to collaborate on research and development of deep-sea mining technology. This MOU and collaboration allows increased strategic areas where China can operate in, including the Cook Islands' EEZ and in the Cook Islands Investment Corporation (CIIC)'s ISA contract area in the CCZ (Keating-Bitoni & Tupuola, 2025).

Kiribati has previously established ISA contracts with international companies such as Marawa Research and TMC for exploration and research in the CCZ (Keating-Bitoni & Tupuola, 2025). Recent termination of these contracts opens up Kiribati to diplomatic partnership which will most likely be with the PRC seen through recent talks with the PRC ambassador as 1) Kiribati does not recognize Taiwan and 2) the PRC previously had a satellite tracking station which has been seen as a potential place for the PRC to reestablish presence militaristically (Herlevi & Cairns, 2022).

Informational – Intelligence: As will be detailed below in the analysis section, China's strategic positioning of diplo-military alliances and deep sea mining contracts, allows for the use of civilian survey vessels to conduct research on areas that have been granted to China for mining but additionally opens the potential for additional intelligence and informational gathering with the support of its allies in Oceania. It is also important to note the role that deep-sea fiber optic cables play as a potential target of China's intelligence collection or sabotage.

Militaristic: Although China does not have a military installation of any sort in the Pacific Oceania region, over the past few years it has created strategic diplomatic and military partnerships as seen through security agreements (Herlevi & Cairns, 2022). These security agreements all have different conditions but allow China to have strategic presence in the following PICs and are potential PICs where future influence and collaboration in deep-sea mining or PRC defense prescence could be expected:

Solomon Islands has both a military security agreement alongside an additional police security agreement. Signed in 2022, through leaked documents, it officially solidified the military and police prescence and assistance if the Solomon Islands calls upon China for assistance (Hammond, 2023). Additionally, this agreement is significant and a concern to the US as it opens up the movement of PRC ships and their prescence in Melanesia.

Kiribati and Vanuatu both have signed police security agreements with China entailing a small police presence and advising on local policing matters in addition to supply asssistance (Keating-Bitoni & Tupuola, 2025).

Economic: Economic measures in PICs are often in conjunction with other Chinese movements and diplo-militaristic activities as a method towards achieving strategic influence towards

expanding PRC initiatves. Key economic measures will be additional PRC investment into local PICs infrastructure, such as ports, that supports both Chinese survey and military ships and potential opportunities for investment in deep sea mining infrastructure (Herlevi & Cairns, 2022).

US Deep Sea Mining Initiatives and Presence in Oceania:

For securing US supply chains, beginnning the process towards investing into deep sea mining has been a relatively new area identified by the Trump administration. Since the US is not a member of the ISA, significant regualtory burdens constrict the U.S.'s influence within being a key player in this strategic space as the US does not have the authorization to mine in international waters (Baskaran & Schwartz, 2025b). E.O. 14285 *Unleashing America's Offsore Critical Minerals and Resources* is a strategic view into the US's approach to potentially subvert international regulation and establish capabilities in both domestic and international waters (Trump, 2025).

These policies have been accelerated by commercial pressure from companies requesting to lease area within U.S. jurisdiction for mining exploration. Impossible Metals and The Metals Company are at the forefront of requesting the US government for permits and contract areas of deep sea mining. Impossible Metals submitted an unsolicited request to the government which sparked conversation surrounding US involvement in deep sea mining (Bearak, 2025). The Metals Company (TMC) which holds the lead in the development of deep sea mining has applied for a permit following E.O. 14285 (LaTourette & Ligor, 2025).

The Department of the Interior and the Bureau of Ocean Energy Management, following E.O. 14285 recently identified a strategic area of 18.1 million acres for mining off the coast of American Samoa (Bureau of Ocean Energy Management, 2025). Exploring mining in this area would allow the U.S. to have strategic deep-sea mining presence in Polynesia, yet maintain the strategic balance of being within U.S. territorial waters.

Dipomacy and Military: U.S. presence in the Pacific includes a collection of U.S. territories, military assets, and Compacts of Free Association (COFA) that define US security posture and presence within Oceania. U.S. involvement in Micronesia includes the security posture of the second island chain which is made up of the territories of Guam at the south of the chain and the 14 islands that make up The Mariana Islands. Due to the location, area of coverage, and the presence of military bases: Naval Base-Guam and Anderson Air Force Base, U.S. has strategic leverage and influence within this region (Kajee, 2025). In Polynesia, the U.S. has the 50th state Hawaii with military presence at the north of Polynesia and the territory of American Samoa to the Western Middle of Polynesia. As seen in Figure 2, Micronesia is an area of strategic weakness of U.S. presence and influence but yet Fiji is a case study of both the U.S. and the PRC attempting to gain influence in the region through diplo-militaristic agreements, economic aid, and increased infrastructure.

Under the COFA, the United States is responsible for military and defense presence in protecting Micronesia, Marshall Islands, and Palau and their EEZs (US Embassy Marshall Islands, 2024). In

addition to defense and security, the US also provides economic assistance towards these PICs through numerous initiatives. These COFA states, are important areas of economic and research partnership for US deep-sea mining operations as the US military has jurisdictions over their waters and EEZs.

Analysis and Implications for US Defense:

Through strategically mapping the partnerships that the US and China respectively have made in the region, alongside US strategic defense assets, and areas of deep-sea mining exploration contracts there is a repetitive trend that has emerged: China is strategically positioning its civilian deep-sea mining assets and collaborations near US military assets. This is a multi-layered strategy by the CCP, with both militaristic and civilian infrastructure, that has dire implications for U.S. defense including:

- 1) PRC Build-up of diplomatic and defense partnerships in Oceania to counter US defense presence and capabilities, strategically undermining US posture and strength in Oceania, and solidifying partnerships and defense critical mineral sources under conflict.
- 2) Surveilling US military posture and interfering with civilian infrastructure through dual-use deep-sea mining technology.
- 3) PRC gaining strategic control over the Deep-Sea mining industry and supply chains with potential for further weaponizing of defense critical minerals and supply chain access in increasingly conflict-hostile situations.

<u>1: PRC Expansion of Diplomatic Collaborations with PICs:</u>

China's recognition of the first and second island chain as defense and security vulnerabilities has pushed China's expanded military presence and influence in Oceania. For China, Oceania provides a critical point of contention and area of influence that could be a critical expansion point if potential conflict erupts in the first-island chain (LaTourette, Villalobos, Yohsiara, Tariq, 2025). Furthermore, China expanding military partnerships and civilian research and survillence nears U.S. defense installations is a method that under a potential conflict scenario allows China the defense capabilities to counter beyond the second-island chain, targeting U.S. key military installations where support for the first island chain will be reinforced from (LaTourette, Villalobos, Yohsiara, Tariq, 2025). As seen in Figure 2 *China's Strategic Deployment of Deep Sea Mining,* this trend is evident: for each U.S. strategic partner or military installation there is a PRC deep-sea mining and research area, PICs strategic diplomatic/defense partner, or a strategic area where the PRC has economically invested in for potential deep-sea mining collaborations. Beijing-Pioneer's Contract areas of M-1, M-2, C-1, C-2 sit at the closest around less than 400 miles east from the Northern Mariana Islands, less than 800 miles north of the COFA country of Micronesia, and around 1,000 miles Northwest of the Marshall Islands. Kwajalein Atoll which is part of the Marshall Islands and home to the U.S. Ronald Reagan Ballistic Missile Defense Site is relative neighbors with Kiribati, where China has expanded its security presence. Further South into Polynesia, the U.S. territory of American Samoa where Army Reserve presence and potential

mining exploration within its EEZ is to be expected, China has strategically identified Tonga to the Southwest and the Cook Islands, to the Southeast, for potential EEZ mining contract areas. Additionally, the Cook Islands and China's MOU has been a sign of more official mining and diplomatic collaborations both in the EEZ and CCZ. Lastly, looking at Hawaii where the US has a significant military presence and EEZ in proximity to the CCZ, China has strategically established its prescence in the CCZ. From the island of Hawai'i to CMC's contract area of A-5 is roughly 600 miles or only 400 miles outside U.S. EEZ territory. Further outside of the traditional Polynesia region to the far East of the CCZ, CMC's A-4 contract area sits a little over 1,000 miles from San Diego and the US mainland.

2: Dual-Use Deep Sea Mining Infrastructure

Although deep-sea mining has not yet been done on a commercial scale by China, the presence of Chinese ISA contracts have allowed China to send numerous civilian research and survey vessels into these areas many of which are close to U.S. strategic assets (Asia Maritime Transparency Institute, 2020). Chinese survey vessels have been criticized for being outfited with technology that serves dual-use means including contract companies having research connections with the PLA as well as a history of surveying waters within PICs EEZ and near U.S. strategic assets (Funaiole, Powers-Riggs, Hart, 2024). A recent New York Times report, using Starboard Maritime Intelligence Open Source Tracking, outlined the movements of the Chinese research vessel Xiang Yang Hong 6 including strategic tracking and survillence within the U.S. territorial waters of Guam (Buckely & Chang, 2025). Analyzing the NYT report of the Xiang Yang Hong 6 in comparison to the Figure 2 map of Chinese and US strategic assets and deep-sea mining sites, showed distinctly that the PRC research vessels were analyzing at least around the Beijing-Pioneer ISA Contract areas of M-1 and M-2 which would account for the movements of Xiang Yang Hong 6 on the Eastern side of the U.S's Northern Mariana Islands and Guam. Yet, from the report there was also significant movement and survillence of the Xiang Yang Hong 6 on the Western side of Guam (Buckely & Chang, 2025). This area is where there are no Chinese ISA contract areas located but is a dense area of under-sea fiber optic cable lines. One explanation for this could be the potential surveying of these fiber optic cable lines for intelligence collection. Additionally, China's surveying of areas near Guam could be a method of intelligence surveillence or mapping of U.S. assets, such as submarines, to undermine defense efforts in a potential conflict. It is important to note that although the NYT report tracked the 2024 movements of Xiang Yang Hong 6, using the open source Marine Traffic AIS data it can be seen that this is not a unique occurance as Xiang Yang Hong 05 was recently poised a little farther to the West of Guam while Xiang Yang Hong 01was in close proximity to the Eastern side of Guam[2] (Marine Traffic, 2025).

3: PRC Competitive Advantage over Deep-Sea Mining

[2] At the time of this report those were prior movements, yet for a variety of potential reasons both had not been recently picked up by terrestrial AIS systems to calculate further movements.

Although China is using deep-sea mining as a critical means towards gaining diplomatic and military presence in the Pacific Oceania region, China's dominance in Oceania's deep sea mining will not only play a strategic role in covert survillence, data collection, and potential sabotage but will allow China to have economic security and tactical control over supply chains (Kardon & Camcacho, 2023). This is part of a deliberate strategy of China to push their presence both militaristically, through naval dominance, and diplomatically throughout the Pacific towards gaining power dominance outwards towards the third island chain (Cheung & Au, 2025). With U.S. dominance over the second-island chain and potential conflict erupting from the first-island chain, Chinese power strategy through expanding civilian and military assets within the third-island chain provides a calculated method for China to offensively attack U.S. assets in the second and third island chains supporting the conflict of the first-island chain and diminishing U.S. involvement in the region (Herlevi & Cairns, 2022).

If China becomes the dominant player in deep sea mining this additionally creates the potential for China to lock the U.S. out of a marketplace critical to defense manufacturing. This potential lock-out has already been seen through the use of terrestrial critical minerals as a defensive means through export controls (Rafealof, Roth, SooTho, VeryWey, 2025). Further, China's strengthening of key strategic deep-sea mining partners in the PICs creates opportunities for the PRC to have alternative supply chain lines for their own critical mineral reserves, reducing the possibility that the U.S. could effectively counter and target China's supply lines of critical minerals and reducing Chinese access to minerals strategic to their national security (Kardon & Camacho, 2023). If the U.S. does not counter their deep sea mining abilities, China will be able to set international regulations, norms, and influence on the deep-sea critical minerals market, especially within strategic areas such as the CCZ. This is significant as deep-sea mining is currently an key potential emerging market for the U.S. to decouple from China's terrestrial critical mineral supply chain dominance and secure critical minerals strategic to the U.S. defense-industrial base. The U.S. additionally has the potential if acted upon to become a leader in deep-sea mining through developing the processing industries and setting precedent in the market, serving U.S. interests in creating Chinese and global reliance on U.S. processing facilities which could be a key bargaining chip under increasing escalations or heightened power conflict in the Pacific.

Appendix:

Table 1

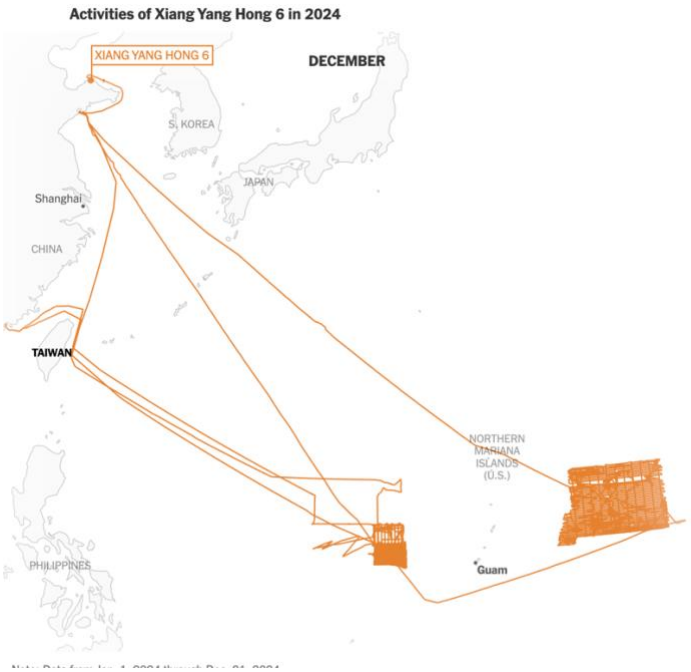
U.S. Defense Critical Minerals					
Name	**Control of Terrestrial Mining**	**Control of Terrestrial Refinement**	**US Import Reliance[3]**	**Defense Usages**	**Deep Sea Mining Found in (PMN, PMS, CFC)**
Antimony	China – 48% of global antimony mining production	Limited information with China most likely controlling majority of refinement	N/A	Strengthening of metals, hardening, night vision goggles, explosive formulations, flares, nuclear weapons production, and infrared sensors	PMN
Arsenic	Byproduct	China Arsenic trioxide	100% China, Morocco, Malaysia, Belgium	LEDs and telecommunication, Semiconductor dopant, Lead-hardening alloy	CFC
Bismuth	Byproduct of the processing of other minerals	China 80% Laos 10%	89% China, Republic of Korea	Ammunition	CFC, PMS (?)
Gallium	Gallium mined from Bauxite (Guinea, Australia, Vietnam)	98% China	100% Japan, China, Germany, Canada	Integrated circuits, optoelectronic devices	PMS, PMN
Germanium	Byproduct	68% China	>50% Belgium, Canada, China, Germany	IR optics and sensors, Javelin missile seeker unit, systems in tanks, helicopters, and naval systems	PMN
Scandium	Byproduct	China (small volumes) Russia Australia (emerging)	100% Japan, China, Philippines	Used in alloys to enhance strength of metals	PMN, CFC

[3] Net import reliance as a percentage of apparent consumption

Tantalum	DRC, Rwanda, Australia	China, Thailand	100% China, Australia, Germany, Indonesia	Anti-lock brake systems, High temperature, aerospace engine parts, Night vision goggles, Global positioning systems, Missile systems	
Tungsten	China Vietnam	China 85-90%	>50% China,3 Germany, Bolivia, Vietnam	Component in nickel superalloys for high temperature sections of jet engines, Armor penetrating projectiles, Aircraft weights and counterweights, Small arms ammunition	CFC
Yttrium	Extracted from ion-adsorption clays with high REE content	China near dominance	100% China, Germany	Metallic alloy component, Garnet crystals, LED phosphor for white and grey colors, Optical and camera lenses, Protective ceramic layers in get engines, Heat-resistant superalloys for jet engines, YAG and YIG lasers	PMN, CFC
Rare Earth Elements	China 68% US 11% Australia 9%		80% China, Malaysia, Japan, Estonia	Precision guided weapons, stealth technology, and advanced jet engines	Varies
Additional NATO Defense Critical Minerals					
Aluminum	Extracted from bauxite	China	47% Canada, United Arab Emirates, Bahrain, China	Electrical, Machinery and equipment, Structural airframe material for aircraft, Military and combat vehicles	PMNs (trace amounts, crusts)

Beryllium	U.S. mined from bertrandite deposits	U.S.	Estimated to be around~ 6% from top producing countries behind the U.S. ex: Brazil and China	Underwater fiber-optic cable systems, High density circuits for high-speed computers and automotive ignition systems, Aerospace castings	PMN, CFC
Cobalt	Congo 74% Indonesia 5% Australia 3%	China Finland	76% Norway, Finland, Japan, Canada	Batteries, Component in nickel superalloys for high temperature sections of jet engines and industrial gas turbines	CFC
Lithium	Australia 47% Chile 26% China 17%	China 60-70%	>50% Chile, Argentina	Air purification, Lithium ion-batteries, Focal lenses for telescopes	PMN (trace amounts), Seafloor
Manganese	South Africa , Australia, China	China (50-60%), South Africa	100% Gabon, South Africa, Australia, Malaysia	Steelmaking, Aluminum alloy production, Additive in unleaded gasoline, Batteries and dry cells	PMN, CFC
Platinum	South Africa (70-75%), Russia	South Africa, Russia, US/UK	85% South Africa, Belgium, Germany, Italy	LCD/flat panel displays, Catalysts (automotive, bulk chemical, petroleum refining), High temperature, corrosion resistant alloy; Aircraft turbine blades, coatings, engine seals and gaskets	CFC

Figure 1: 2024 Mapping of PRC Xiang Yang Hong 6 Movements



Source: New York Times

Figure 2: China's Strategic Deployment of Deep Sea Mining Map

Source: Compilation of ISA Contracts, DOD, Executive Orders, and Open-Source Under-Sea Cables

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[4] These citations are extra citations in addition to the White Paper Bibliography which relevant information included in research was additionally placed on the map.