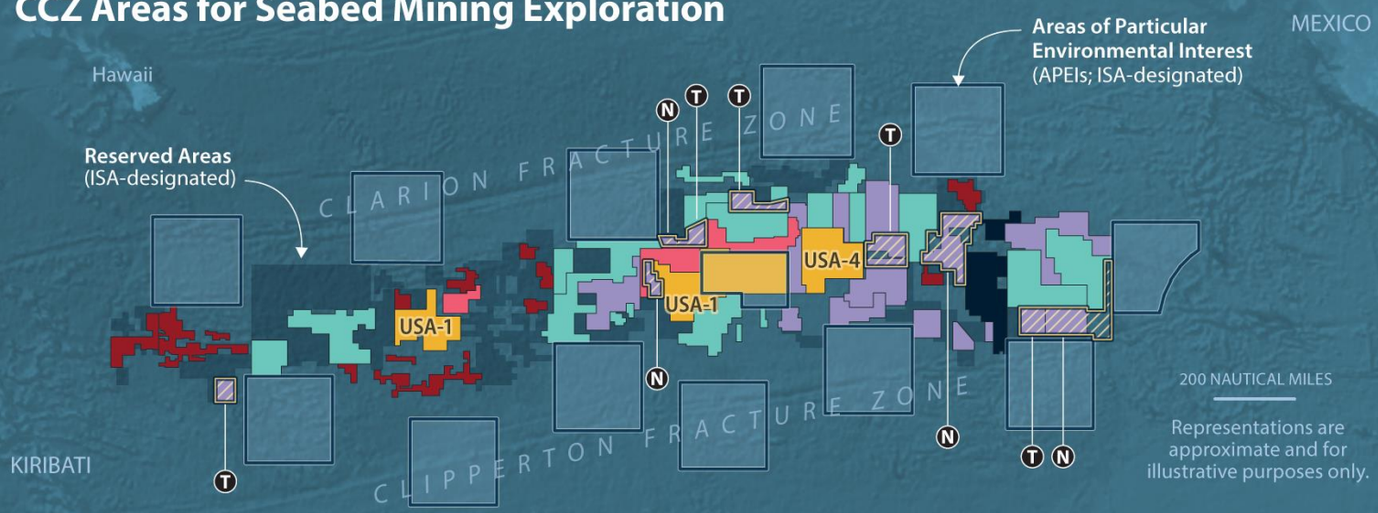
Seabed Mining in the Clarion-Clipperton Zone

Seabed deposits containing critical minerals occur across the global ocean, including in the international Clarion-Clipperton Zone (CCZ). The International Seabed Authority (ISA) issues seabed mining contracts to parties to the U.N. Convention on the Law of the Sea (UNCLOS). As a non-party to UNCLOS, the United States issues licenses and permits through the National Oceanic and Atmospheric Administration (NOAA). U.S. seabed mining activities may conflict with the ISA framework.

CCZ Areas for Seabed Mining Exploration



U.S. Licenses and Permits

NOAA issues licenses and permits to U.S. companies under the Deep Seabed Hard Mineral Resources Act (30 U.S.C. §§1401 et seq.).

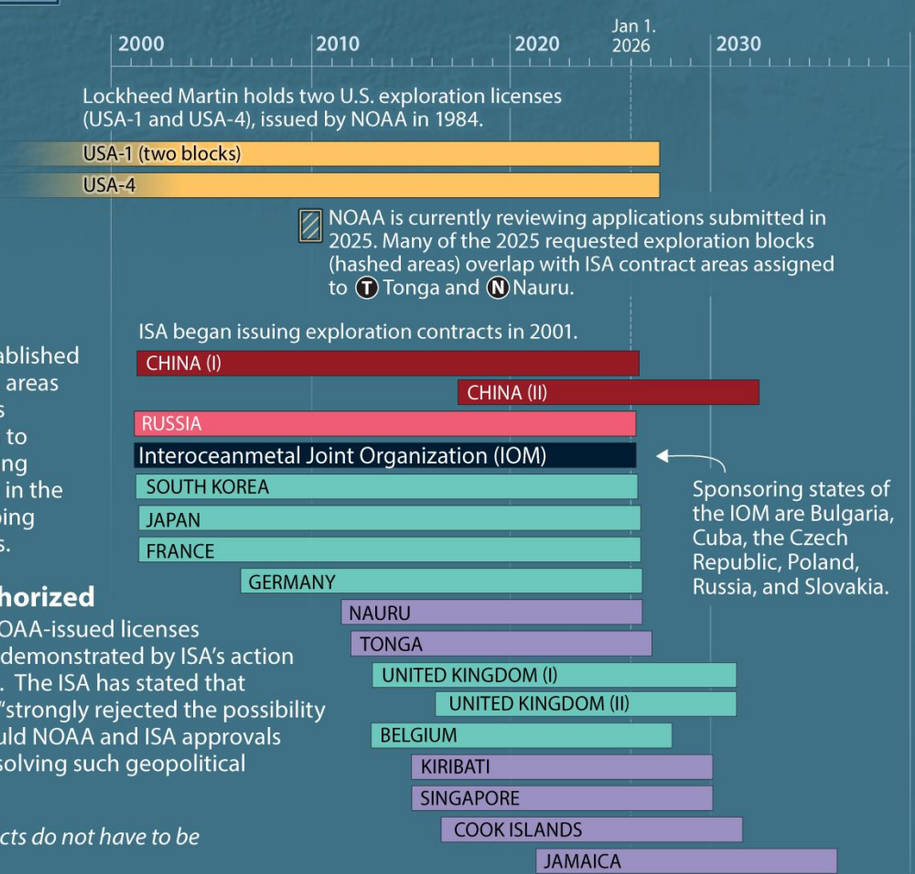
ISA-Issued Contracts

China *Russia* *IOM*
U.S. Allies *Other Countries*

The ISA, an autonomous organization established in 1994, issues seabed mining contracts in areas beyond national jurisdiction to companies sponsored by UNCLOS parties. In addition to contracts, ISA designates APEIs as no-mining zones to protect biodiversity and habitats in the CCZ and reserved areas to ensure developing countries have access to mineral resources.

Both the ISA and NOAA have authorized seabed exploration in the CCZ. NOAA-issued licenses may not be internationally recognized, as demonstrated by ISA's action to designate part of USA-1 an APEI in 2021. The ISA has stated that "virtually all" countries with ISA contracts "strongly rejected the possibility of acting outside [international law]." Should NOAA and ISA approvals vary in some measure, the pathway for resolving such geopolitical conflicts is unclear.

Seabed mining licenses, permits, and contracts do not have to be contiguous blocks.



Polymetallic Nodules (PMNs)

PMNs potato-shaped rocks lying on the deep seafloor. They form over millions of years as minerals from seawater and sediment pore water accrete around a hard nucleus (e.g., shark tooth), forming concentric layers. PMNs in the CCZ contain cobalt, copper, manganese, nickel, and other minerals.

While some have proposed harvesting PMNs as an option for diversifying critical mineral supply chains, particularly for energy transition and military technologies, others have expressed concerns about seabed mining's cost and environmental impact. Some may consider seabed mining unnecessary should emerging technologies rely on fewer critical minerals found in PMNs.

Sources: NOAA, "Deep Seabed Hard Minerals Mining," https://oceanservice.noaa.gov/deep-seabed-mining/; ISA, www.isa.org; and International Energy Agency, *Global Critical Mineral Outlook*, 2025. Map: U.S. areas based on map in NOAA, *Deep Sea Mining: A Report to Congress*, 1995, p. 6, and materials accompanying NOAA, "Deep Seabed Mining: Notice of Receipt of Applications for Deep Seabed Mining Exploration Licenses and Announcement of Public Comment Period and Virtual Public Hearings," 90 *FR* 60064, December 23, 2025; ISA areas based on ISA data; ESRI. Nodule image: Smithsonian Institution.

Information as of February 4, 2026, prepared by Caitlin Keating-Bitonti, Specialist in Natural Resources Policy; Emma Kaboli, Analyst in Energy Policy; Calvin DeSouza, Geospatial Information Systems Analyst; and Amber Wilhelm, Visual Information Specialist.

CRS

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