UPDATE NOTE

CHEMICALS & MATERIALS TECHNOLOGY

Odyssey Marine Exploration, Inc.

Urgency around Seabed Mining Increases as Scientific Data Comes In

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Dmitry Silversteyn
dmitry@watertowerresearch.com
330-998-9899

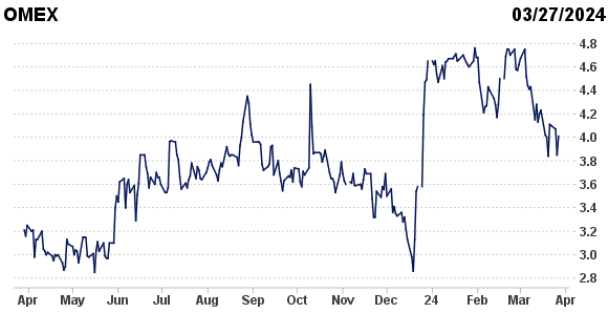
KEY POINTS

- **Industry needs batteries and batteries need metals.** As numerous studies have concluded, even with slightly slower than previously anticipated growth in EV adoption and renewable energy (wind and solar) buildout, demand for metals going into lithium batteries is expected to exceed current estimates for said metals' production as early as 2026-28. The implied need to find and develop sufficient new resources of these metals to satisfy the expected demand has become a major focus for battery and auto OEMs, as well as governments set on the path to electrification of their economies.
- **More plentiful, less harmful.** Many industry and investment banks' reports also conclude that traditional terrestrial resources in the development or even exploration phase currently are not sufficient to meet the expected demand, suggesting other unconventional resources require commercial development. While brines have been looked to as a way to address lithium supply needs, other metals (nickel, copper, cobalt, and manganese) can be found in another unconventional resource, the deep-sea floor, where these metals are present in high concentrations in the form of polymetallic nodules. Although preventing seabed mining has been environmental activists' sacred cow, emerging scientific data from real-world observations and its analysis is proving that mining a low biomass location like a seafloor is materially less damaging to the environment and ocean life than terrestrial mining. It also releases an order of magnitude lower carbon emissions, compared with land-based mines, without the need to destroy jungles and rainforests and forcibly relocate (at best) the indigenous population, as developing new mines in the DRC and Indonesia would do, and without the need to treat and dispose of overburden and tailings.
- **Politics will drive action.** The important role seabed polymetallic nodules can play in the world's attempts to transition away from hydrocarbon-based economy and, equally important, the role these resources can play in reducing Western economies' dependence on the Chinese-based supply chain for critical metals, has gained attention recently in government circles as well. In the US, the National Defense Authorization Act (NDAA) signed earlier this year requires the Pentagon to provide a report assessing the feasibility of building a domestic metals supply chain based on deep-sea resources, such as polymetallic nodules. In addition, a bill has been introduced in Congress (HR-1082) calling for funding of deep-sea mining projects, which may benefit directly companies like OMEX and TMC, who are already the leaders in deep-sea exploration and development of such resources. With international regulations regarding deep-sea mining of minerals and metals coming closer to fruition, former military and political leaders in the US have renewed the call for the country to finally ratify the United Nations Convention on the Law of the Sea (UNCLOS) and take its seat at the table to help advance the seabed mining industry and help it realize its potential as an important contributor to the efforts to decarbonize global economy.
- **Question of when, not if.** The Secretary General of the International Seabed Authority (ISA), a UN agency tasked with developing an international mining code for seafloor mining, acknowledged that despite some countries' opposition, the issuance of the mining code and subsequent development of these resources are only a matter of time.

KEY STATISTICS

Ticker:Exchange	OMEX:NASDAQ
Current Price	$3.90
52-Week Range	$2.84-$5.07
Average Volume (30-Day)	75,305
Shares Outstanding (MM)	20.0
Market Cap ($MM)	$78.0
Fiscal Year-End	December

PRICE PERFORMANCE



Right Place, Right Time

Odyssey Marine Exploration, Inc., together with its subsidiaries, is a deep-ocean exploration pioneer based in Tampa, FL, that provides access to critical mineral resources worldwide. The company uses innovative methods and cutting-edge technology to discover and validate seafloor mineral resources, and to develop subsea mineral deposits in an environmentally and socially responsible manner. Its growing project portfolio includes different mineral sets, including polymetallic nodules and phosphate resources in various economically and politically stable jurisdictions around the world. OMEX is currently focused on the Cook Islands polymetallic nodule exploration projects, as well as developing additional projects. The Cook Islands resource contains polymetallic nodules with an unusually high concentration of cobalt, a metal critical to the enablement of the global electrification trend, given its important role in everything from lithium batteries to magnets and metal alloys.

Figure 1: Cook Islands EEZ Polymetallic Nodule Grades

Classification	Cut-off (kg/m2)	Abundance (wet, kg/m2)	Nodules Mt (wet)	Metal Grade (%)				
				Co	Cu	Fe	Mn	Ni
Indicated	5	26.7	304	0.50	0.15	18.5	15.4	0.25
Inferred	5	14	6,400	0.4	0.2	17	16	0.4
Global	5	14.4	6,700	0.44	0.21	17.4	15.8	0.37

Source: Company reports, Cook Islands Seabed Minerals Authority mineral resource report in accordance with JORC Code (2012)

Given the growing realization that without a step change in the scale of metal production, battery manufacturing and therefore EV production and governments' plans for decarbonizing their economies and moving them to a more sustainable (metals-based) energy infrastructure are so much fantasy. That in turn set off a race to discover, quantify, and develop unconventional but massive resources that can be found offshore, primarily in the form of polymetallic nodules lying on the seafloor. While dozens of private sector companies are actively engaged in exploration and development of land-based resources, very few have the expertise and technology to conduct similar operations on the ocean floor. OMEX is one such company, having pivoted away from shipwreck exploration to underwater discovery and development of metal and mineral resources over the last decade. OMEX currently has several such projects in its development portfolio and the company's strategy is to apply its vast experience through service agreements with the license holding development companies in which it is invested to shepherd these projects from discovery and resource validation to environmental permitting and production, potentially monetizing part, or all, of its ownership stakes during the course of development and redeploying the proceeds toward new project investments, sharing the gains with shareholders along the way.

To date, OMEX has invested in several such projects including cobalt (Co), phosphate, and gold (Au) deposits, with opportunities to economically extract other metals found in these deposits, such as iron (Fe), rare earth elements (REEs), including yttrium (Y), as well as manganese (Mn), titanium (Ti), nickel (Ni), and copper (Cu). Given the uncrowded market and limited competition, OMEX continues to explore additional opportunities and the company expects its project portfolio to continue to expand and grow as more countries look to the seafloor in their jurisdictional waters for sources of metals and minerals that can be utilized to improve local economies and provide the world with the materials needed to affect the transition away from fossil-derived energy. As the two companies (CIC and OML) with exploration rights in the Cook Islands EEZ that OMEX has invested in progress in their work of exploration and quantification of their respective resources, the company stands to benefit, given the typical progression along the value curve, defined as % of resource's NPV being reflected in company's valuation, as the certainty of development increases and time to exploitation nears.

Our Insights

Opportunities

NAFTA case ruling may offer asymmetric risk/reward profile. OMEX expects the NAFTA ruling to be announced in 2Q24. We note that there is reason to believe there is a strong possibility of the NAFTA arbitration case being decided in OMEX's favor, potentially resulting in significant monetary award to the company. An arbitration tribunal's decision in favor of the Mexican government would still remove approximately $25 million in accrued litigation expense from the company's balance sheet and income statement.

OML's milestones. As a share owner in OML, Odyssey Marine should benefit from OML's progress when it comes to developing the Cook Islands polymetallic nodule resource. Near- to mid-term catalysts include:

- Publishing an updated resource statement following the recently completed ocean expedition (anticipated in 1H24).
- Issuing a prefeasibility report incorporating the new data (anticipated in 2024).
- Submission of an environmental permit application (targeting end of 2025 or early 2026).

Increasing OML ownership stake. As part of its investment in OML in July 2023, OMEX has the option to increase its stake in the company from 6% to 13% to more than 40%. Increased participation in OML, as it develops the polymetallic nodule resource in Cook Islands EEZ, may result in a more direct link between OMEX and OML valuations.

Changing attitudes toward seabed mining. The ongoing efforts by International Seabed Authority (ISA) to complete the development of an international mining code for exploitation of ocean bed resources in international waters and growing acceptance of the need to develop such resources in sovereign waters by individual countries, including USA, should have a positive impact on OMEX, as it would boost the credibility of its Cook Islands EEZ projects, potentially increasing the value of OML and CIC and, by extension, OMEX.

Obstacles

Potential arbitration loss. Despite having a portfolio of exploration projects with potential NPVs that can justify current prices, OMEX may be affected if OMEX and ExO lose the NAFTA case or win but receive a small monetary award.

Liquidity and dilution. As with many small-cap mineral explorers and developers, existing projects may require OMEX-provided financing beyond the company's current means of satisfying, implying the need to raise external capital, or monetize portions of existing project ownerships, with neither being guaranteed and both options being potentially dilutive.

ABOUT THE ANALYST



Dmitry Silversteyn
Senior Research Analyst

Prior to joining Water Tower Research, Dmitry Silversteyn built a strong sell-side franchise on Wall Street as an equity research analyst focusing on the specialty chemicals and materials industries.

Over his 20-plus-year career, Dmitry was the senior analyst at Buckingham Research, Longbow Research, where he was a founding member, and FTN Securities. Dmitry began his career in finance at Lehman Brothers, Salomon Smith Barney, and First Analysis where he was also involved in investment banking and venture capital activities. Dmitry has received several industry recognitions including being ranked "#2" stock picker in chemicals by Reuters and StarMine and "#2" stock analyst in chemicals by the Wall Street Journal Best on the Street survey.

Earlier in his career, Dmitry was a process and project engineer and manager at firms in the water treatment, battery manufacture and fluid handling industries and was an early user of six-sigma programs.

Dmitry holds a BS in Chemical Engineering from Illinois Institute of Technology and an MS in Finance from the ITT Stuart School of Business.

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