

AUTONOMOUS VEHICLES: The Public and Private Sectors are Ready to Unleash Unmanned Maritime Vehicles

I. Introduction

Are unmanned maritime vehicles the next frontier in autonomous technology? While unmanned aerial vehicles (UAV) and connected autonomous vehicles (CAV) have received considerable recognition in the news and media, unmanned maritime vehicles (UMV) have not. That is beginning to change, in part, because the defense, commercial, and scientific sectors have realized the potential for UMs. As these vessels enter the water, it is important for stakeholders — manufacturers, insurers, consumers, and operators — to understand the governing authorities to avoid or minimize future conflicts.

II. UMV Technology Is Developing Rapidly

The U.S. Navy's Sea Hunter exemplifies the unbounded nature of UMV. The Navy recognized the promise of UMs years ago and partnered with Leidos to develop unmanned vessels for a variety of maritime applications. Leidos then designed and built the Sea Hunter, a 132-foot-long Medium Displacement Unmanned Surface Vehicle.¹ In 2019, the Sea Hunter distinguished itself from traditional warships when it became the first ship to travel roundtrip from San Diego to Hawaii — over 5,000 nautical miles — without onboard personnel.² Gerry Fasano, President of Leidos Defense group, said of the achievement, "The recent long-range mission is the first of its kind and demonstrates to the U.S. Navy that autonomy technology is ready to move from the developmental and experimental stages to advanced mission testing."³

The Sea Hunter was just the beginning. The Navy is developing Sea Hunter 2 and recently issued a twenty-five-year Unmanned Systems Integrated Roadmap.⁴ And more countries are investing in UMs. Japan, Singapore, and South Korea have announced plans to utilize UMs to patrol Indo-Pacific waters for surveillance, mine detection, illegal fishing, and human trafficking.⁵ The Sea Hunter

¹ <https://investors.leidos.com/news-and-events/news-releases/press-release-details/2019/Sea-Hunter-Reaches-New-Milestone-for-Autonomy/default.aspx>

² <https://www.thedrive.com/the-war-zone/26319/usns-sea-hunter-drone-ship-has-sailed-autonomously-to-hawaii-and-back-amid-talk-of-new-roles>

³ <https://investors.leidos.com/news-and-events/news-releases/press-release-details/2019/Sea-Hunter-Reaches-New-Milestone-for-Autonomy/default.aspx>

⁴ <https://news.usni.org/2018/08/30/pentagon-unmanned-systems-integrated-roadmap-2017-2042>

⁵ <https://ipdefenseforum.com/indo-pacific-countries-turn-to-unmanned-vessels-to-patrol-regions-waters/>

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milestone coupled with global state investment suggests that UUVs are cementing their place on the high seas.

As governments continue to utilize UUVs, so too will commercial actors; there is already a high commercial demand for UUVs. Over the last decade, there has been a shortage of seafarers to meet increased global trade.⁶ UUVs obviate this problem because they do not require a seafarer to operate. UUVs promise to ameliorate labor shortages and decrease labor costs through autonomous operation. Additionally, more shipyards will be equipped to construct UUVs. UUVs are smaller than traditional ships because they do not have to dedicate space for personnel onboard, which enables smaller shipyards to construct them. The smaller size coupled with more market participants substantially reduces the cost to build ships and increases output.

III. UUV Regulations Are Coming

While UUV uses are clear, their regulations are not. Like other autonomous technologies, UUVs continue to develop in ways unanticipated by the original drafters of maritime rules and regulations. UUVs do not clearly fall under the category of “ships” under existing regulations and conventions. While the label appears intuitive, the framework governing ships must be amended to include UUVs. For example, Rule 5 of the 1972 International Regulations for Preventing Collisions at Sea requires every vessel to maintain a proper lookout to avoid collision. It remains unclear whether optical and acoustical sensors alone — without a human operator — could satisfy Rule 5 as written. Similarly, the International Convention for the Safety of Life at Sea mandates that ships be able to assist in rescue operations. UUVs, by design, are not yet suited to comply with those provisions.

The International Maritime Organization recognized the tensions between UUVs and existing regulations. In 2018, the International Maritime Organization began conducting a regulatory scoping exercise to study how existing regulations (including the regulations identified above) might apply to ships with varying degrees of automation. Specifically, the International Maritime Organization is examining: (1) existing regulations that, as drafted, preclude unmanned ships from operating; (2) regulations that have no application to UUVs; and (3) regulations that do not specifically preclude UUVs but may need to be amended.⁷ The regulatory scoping exercise addresses safety, security, liability, and compensation for damage, interactions with ports, pilotage, responses to incidents, and protecting the marine environment.⁸ The regulatory scoping exercise is a great first step to allow

⁶ <https://www.ics-shipping.org/shipping-facts/shipping-and-world-trade/global-supply-and-demand-for-seafarers> (demand for seafarers has outweighed available supply for the last decade); see Michal Chwedczuk, *Analysis of the Legal Status of Unmanned Commercial Vessels in U.S. Admiralty and Maritime Law*, 47 J. Mar. L. & Com. 123, 124 (2016)

⁷ Natalie Klein, *Maritime Autonomous Vehicles Within the International Law Framework to Enhance Maritime Security*, 95 Int'l L. Stud. 244, 245 (2019)

⁸ <http://www.imo.org/en/MediaCentre/HotTopics/Pages/Autonomous-shipping.aspx>

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UMVs to operate. But the regulations must continue to develop alongside the technology to ensure success for all stakeholders.

The CAV/UAV team at Riley Safer Holmes & Cancila LLP is continuing to monitor these developments and is available to advise on the changing UMV landscape.

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