Insurance Marine News

Cybersecurity risk still the main threat for autonomous shipping, says academic

By admin On November 27, 2022 In Insurance Marine News, Keep, Marine Hull, Marine Liability

Ziaul Haque Munim, Associate Professor of Maritime Logistics at the Faculty of Technology, Natural and Maritime Sciences at University of South-Eastern Norway, has wroitten that cybersecurity risk remained the main concern for the development of autonomous shipping.

He noted that the IMO had categorized the levels of autonomy in MASS into four levels. Level 01 is the low degree of autonomy with advanced decision support systems on board, whereas level 04 is fully autonomous ships capable of making decisions themselves. Levels 02 and 03 are semi-autonomous vessels controlled by a remote-control centre (RCC), the former with a reduced crew and the latter without any crew on board.

The most relevant applications of MASS have been in the context of short sea shipping, Arctic shipping routes, and the implementation of vessel platooning. In 2021 Munim and colleagues evaluated MASS feasibility in commercial shipping routes. “For the present and the near future, Level 02 MASS is the most feasible, particularly in shorter regional routes using smaller vessels”.

Several autonomous ferry projects were currently underway, notably Sundbåt, Hyke and milliAmpere in Norway. “For the adoption of autonomous passenger ferries, it is essential to understand the perceptions of the public who will take the ferry, even though it meets the safety requirements imposed by authorities”, Munim said, noting that “in a recent study, we found that younger people, people with good swimming skills, people who are exposed to the latest technologies, and those using ferries on a monthly basis are more optimistic about taking an autonomous ferry ride.”

However, he warned that, while MASS would increase navigational safety in oceans, cyber security risks were likely to increase significantly.

A cyber risk assessment study of five MASS systems and their sub-systems found that navigational systems, followed by remote control centre and shore-based management offices, were the most vulnerable to cyber threats.

On the sub-system level, Global Navigation Satellite System (GNSS), Electronic Chart Display and Information System (ECDIS), communication devices, Automatic Identification System (AIS), and phishing emails were most vulnerable.

Level 02 MASS in the near future

Munim said that “the consensus from several of my research papers is that the level 2 MASS is the most feasible currently for both commercial shipping and ferry routes as well as for Arctic shipping routes”.

He felt that, while autonomy was going to increase safety and reduce operational costs, cyber security risk mitigating approaches needed to be explored further.

Early deployment of MASS in a commercial context was expected as early as 2023, initially in regional shorter trade-routes. New short-distance routes were likely to emerge through shifting road cargo to sea routes, which would contribute to reducing the environmental impacts of the transport sector. “Concerns over seafarers’ jobs may also disappear over time since MASS will merely trigger a shift in job roles rather than the total elimination of seafarers in Level 02 autonomy”, he said.