The American Waterways Operators

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ADM Karl L. Schultz
Commandant
U.S. Coast Guard
2703 Martin Luther King Jr. Avenue, SE
Washington, DC 20593

RE: Integration of Automated and Autonomous Commercial Vessels and Vessel Technologies Into the Maritime Transportation System (Docket No. USCG-2019-0698)

Dear Admiral Schultz,

The American Waterways Operators is the national trade association for the tugboat, towboat and barge industry. AWO's more than 300 member companies own and operate barges and towing vessels on the U.S. inland and intracoastal waterways; the Atlantic, Pacific and Gulf coasts; and the Great Lakes. Our industry's 5,500 towing vessels and 31,000 barges comprise the largest segment of the U.S.-flag domestic fleet.

Each year, operators of these vessels safely, securely and efficiently move more than 760 million tons of cargo critical to the U.S. economy, including petroleum products, chemicals, coal, grain, steel, aggregates, and containers. Tugboats also provide essential services in our nation's ports and harbors, including shipdocking, tanker escort and bunkering.

On behalf of AWO's member companies, thank you for the opportunity to provide information and insight on the integration of automated and autonomous commercial vessels and vessel technologies into the maritime transportation system. As an industry that continually innovates and adapts its vessels and operations to diverse waterways and business lines, we urge the U.S. Coast Guard to embrace the benefits of safer and more efficient commerce that automated and autonomous technologies provide through a regulatory framework that fosters their use. This requires providing the regulatory certainty needed for vessel operators to invest in developing and deploying those technologies.

Current and Near-Term Scope of Automated and Autonomous Vessels and Technologies

Whether automation is directly applied to machinery or more indirectly applied to support crew decisions and operational processes, these technologies offer significant increases in safety to vessel operations, crews and the environment.

AWO members have utilized automated vessel machinery for two decades to increase the safety of their crews and efficiency for their customers. Automated monitoring systems and machinery not only increase capability by executing routine tasks previously performed by mariners, but also perform tasks like switching to standby generators more quickly and safely than a mariner performing those tasks manually. These systems are most commonly found on larger towing vessels and articulated tug-barge units (ATBs), but advanced technologies that apply artificial intelligence and machine learning are found in all segments of the towing vessel fleet.

Towing companies increasingly develop, test and deploy technologies that gather, monitor and analyze data from vessels to help crewmembers and shoreside personnel make better decisions about vessel operations. For example, systems that monitor machinery apply predictive data analytics to augment planned maintenance schedules by determining when additional maintenance is needed to avert an anticipated machinery breakdown. This increased reliability not only reduces the risk of a mechanical breakdown when a vessel is underway, but also supports on-time performance for customers.

In addition to automated machinery processes, there is growing use of sensors to increase and improve operational awareness and decision-making. Augmenting operations with LIDAR remote sensing can reduce human error and provide mariners with a more accurate navigational picture of changing waterway conditions. Augmenting deck operations with remotely-operated and automated technologies that reduce the amount of heavy manual labor required to handle rigging, mooring lines and hoses can similarly reduce the potential for human errors that lead to falls overboard, while equipping vessels and barges with infrared sensors can hasten recovery and rescue operations. Utilizing automated monitoring and machinery on tank barges can also reduce risks of harm to mariners and further minimize the potential for spills.

Implementation of Automated and Autonomous Vessels and Technologies

As with any commercial enterprise, vessel owners and operators must be able to make a business case for utilizing automated and autonomous technologies through direct financial justification, customer benefit, a reduced risk profile or other justification.

Enabling reductions in a vessel's manning complement or removal of the human element entirely is often viewed as the driver of vessel automation and the development of autonomous vessels. While those may be factors, the examples above demonstrate that augmenting safety and increasing efficient operations remain the primary considerations. Automation can reduce or eliminate the justification for a mariner to perform certain functions, but it comes at a

significant capital expense for the technology itself, vessel modifications to support the technology and the crew and shoreside expertise to manage and service it.

Embracing these technologies requires vessel operators to undertake a cultural shift, and the Coast Guard should seek to understand and mirror that shift. Just as automated machinery has eliminated the need for an engineer on continuous watch oiling parts and monitoring gauges in an engine room, deploying automated and autonomous technology on vessels requires operators to develop IT infrastructure on vessels and grow their workforce's learning and skills from mechanical to technical.

Facilitating Use of Automated and Autonomous Vessels and Technologies

Beyond making an initial business justification for technology implementation, regulatory uncertainty is the principal impediment to adoption of automated and autonomous technology. Without clear guidance from the Coast Guard on what technologies will be accepted and how those technologies will be factored into determining requirements for the safe operation of a vessel, vessel owners are hesitant to seize on advancements that can further increase safety for their mariners and the environment and increase efficiencies for their customers.

Despite the use of automated machinery in the towing industry for decades, AWO member experience shows that current Coast Guard regulations and policy do not provide vessel operators with any certainty as to how that technology will be treated. Moreover, the framework is entirely unprepared to factor emerging technologies into the Coast Guard's determination of how vessels should be safely operated. The current system requires vessel operators to approach the Marine Safety Center and an Officer in Charge, Marine Inspection (OCMI) on a case-by-case basis and work through the regulatory implications of any novelty in vessel design, construction and operation at their own considerable time and expense.

The Coast Guard should not continue expecting industry to make a leap of faith in expending resources to develop and deploy automated or autonomous technologies only to learn the regulatory ramifications of doing so after the fact. To provide the regulatory certainty required to facilitate greater use of these technologies, the Coast Guard should:

1. Acknowledge the safety, environmental and economic benefits of automated and autonomous technologies with a goal of supporting, and thereby increasing, the development and deployment of those technologies in the U.S.-flag fleet.
2. Recognize that a gulf already exists between current regulatory policy and technology that has existed and been implemented for decades, and expedite development of regulatory policy to address existing, widely used automation.
3. Accept that the regulatory process cannot keep pace with rapid technological developments and instead consider the delegation of testing and setting standards for new automated and autonomous technologies to third parties.
4. Balance the existing discretion afforded to individual OCMIs against the need for regulatory certainty and consistency by establishing clear national policy on the acceptance of automated and autonomous technologies and the impacts of those technologies on vessel equipment, design, manning and other operational requirements.

Thank you again for the opportunity to engage in the Coast Guard's consideration of its role in the integration of automated and autonomous commercial vessels and vessel technologies. We would be pleased to answer any questions or provide further information as you see fit.

Sincerely,

Jennifer A. Carpenter
President & CEO