



9110-04-P

**DEPARTMENT OF HOMELAND SECURITY**

**Coast Guard**

**[Docket No. USCG-2019-0698]**

**RIN 1625-AC54**

**Request for Information on Integration of Automated and Autonomous  
Commercial Vessels and Vessel Technologies into the Maritime Transportation  
System**

**AGENCY:** Coast Guard, DHS.

**ACTION:** Request for Information (RFI).

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**SUMMARY:** The Coast Guard is seeking input regarding the introduction and development of automated and autonomous commercial vessels and vessel technologies subject to U.S. jurisdiction, on U.S. flagged commercial vessels, and in U.S. port facilities. The Coast Guard is also seeking input regarding barriers to the development of autonomous vessels. This document solicits the public's view on issues related to the opportunities, challenges, and impacts of automated and autonomous commercial vessels and vessel technologies.

**DATES:** Comments must be received by the Coast Guard on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may submit comments using the Federal eRulemaking Portal at <https://www.regulations.gov>. See the "Public Participation and Request for Comments"

portion of the **SUPPLEMENTARY INFORMATION** section for further instructions on submitting comments.

**FOR FURTHER INFORMATION CONTACT:** For information about this document call or email Ted J. Kim, Coast Guard; telephone 202-372-1528, email *Ted.J.Kim3@uscg.mil*.

**SUPPLEMENTARY INFORMATION:**

**I. Public Participation and Request for Comments**

The Coast Guard views public participation as essential to understanding the emerging automated and autonomous commercial vessels and vessel technologies, how vessel owners and operators foresee implementing such technologies, and the Coast Guard's role with regard to such technologies. The Coast Guard will consider all information, comments, and material received during the comment period. If you submit a comment, please indicate the specific question from this document to which each comment applies.

Please submit comments (or related material) through the Federal eRulemaking Portal at *https://www.regulations.gov*. Enter the docket number "USCG-2019-0698" into the search bar to find the relevant docket and submit comments. Documents mentioned in this notice, and all public comments, will be available in the online docket as well. Additionally, if you visit the online docket and sign up for email alerts, you will be notified when comments are posted.

If you cannot submit your material by using *https://www.regulations.gov*, call or email the person in the **FOR FURTHER INFORMATION CONTACT** section of this document for alternative instructions.

The Coast Guard accepts anonymous comments. All comments received will be posted without change to <https://www.regulations.gov> and will include any personal information you have provided. For more about privacy and submissions in response to this document, see the Department of Homeland Security's eRulemaking System of Records notice (85 FR 14226, March 11, 2020).

## **II. Request for Information**

On February 11, 2019, the President issued Executive Order (E.O.) 13859, "Maintaining American Leadership in Artificial Intelligence."<sup>1</sup> The executive order announced the policy of the United States Government to sustain and enhance the scientific, technological, and economic leadership position of the United States in artificial intelligence (AI) research and development and deployment through a coordinated Federal Government strategy. Automation is a broad category that may or may not incorporate many forms of technology, one of which is AI. This request for information (RFI) will support the Coast Guard's efforts to accomplish its mission consistent with the policies and strategies articulated in E.O. 13859. Input received from this RFI will allow the Coast Guard to better understand, among other things, the intersection between AI and automated or autonomous technologies aboard commercial vessels, and to better fulfill its mission of ensuring our Nation's maritime safety, security, and stewardship.

The transportation industry is currently undergoing a major transformation related to automated and autonomous technologies.<sup>2</sup> All modes of transportation have begun

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<sup>1</sup> See 84 FR 3967.

<sup>2</sup> See generally U.S. Department of Transportation, Automated Vehicle Public Notices, <https://www.transportation.gov/av/publicnotices> (last visited on Dec. 5, 2019).

introducing and testing automated transportation systems. Highly automated and autonomous vessels have the potential to improve safety in the maritime system, where it is estimated that 75%<sup>3</sup> of accidents are caused, at least in part, by human error. However, the introduction of automation and autonomous technology into commercial vessel operations brings a new set of challenges that need to be addressed, affecting design, operations, safety, security, training, and the workforce.

Development of automated and autonomous vessel technology is happening quickly internationally. In light of this, in 2018, the International Maritime Organization (IMO) began a regulatory scoping exercise of its various international conventions for the effects autonomous technology could potentially have on current regulatory approaches and treaties. In 2019, the IMO developed interim guidelines for trials of autonomous ships.<sup>4</sup> The Coast Guard recognizes the National Science & Technology Council and the U.S. Department of Transportation's (DOT) efforts to unify automated transportation technologies across the Federal government and independent agencies. This RFI aims to complement the principles outlined in the National Science & Technology Council and U.S. DOT report on "Ensuring American Leadership in Automated Vehicle Technologies: Automated Vehicles (AVs) 4.0,"<sup>5</sup> and to coordinate across the agencies in its automation activities.

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<sup>3</sup> According to Allianz Global Corporate & Specialty an analysis of almost 15,000 marine liability insurance claims between 2011 and 2016 shows human error to be a primary factor in 75% of the value of all claims analyzed – equivalent to over \$1.6bn of losses. *See* <https://www.agcs.allianz.com/content/dam/onemarketing/agcs/agcs/reports/AGCS-Safety-Shipping-Review-2019.pdf>.

<sup>4</sup> [http://www.imo.org/en/MediaCentre/HotTopics/Documents/MSC.1-Circ.1604%20-%20Interim%20Guidelines%20For%20Mass%20Trials%20\(Secretariat\).pdf](http://www.imo.org/en/MediaCentre/HotTopics/Documents/MSC.1-Circ.1604%20-%20Interim%20Guidelines%20For%20Mass%20Trials%20(Secretariat).pdf)

<sup>5</sup> The report is available at: <https://www.transportation.gov/sites/dot.gov/files/2020-02/EnsuringAmericanLeadershipAVTech4.pdf>.

The Coast Guard is interested in hearing from the public on a range of issues related to the potential introduction and development of automated and autonomous technologies aboard commercial vessels or any automated and autonomous vessels subject to U.S. jurisdiction and U.S. port facilities. The Coast Guard recognizes that the phrase “automated and autonomous commercial vessels and vessel technologies” covers a wide range of maritime applications. For purposes of this RFI, automated and autonomous commercial vessels and vessel technologies are systems that use automation: (1) to perform operations without, or with less, human intervention, (2) related to one or more vessel functions, and (3) for the duration of operations or in limited time periods. These vessel functions may include, but are not limited to, navigation operation, communication, machinery operation, cargo management, emergency response, and maintenance. The Coast Guard intends for commenters to interpret the phrase, “automated and autonomous commercial vessels and vessel technologies,” expansively. Please provide relevant information on all issues, challenges, and solutions related to the development and implementation of automation and autonomous technologies aboard commercial vessels. In addition, the Coast Guard seeks public comments more broadly on automated and autonomous commercial vessels and vessel technologies that may not be covered in the following questions.

- (1) What existing statutes or Coast Guard-issued regulations, policies, or standards may present a challenge or barrier to the development, demonstration, deployment, or evaluation of automated and autonomous commercial vessels and vessel technologies? Please provide specific examples of these statutes, regulations, policies, or standards. How would

these statutes, regulations, policies, or standards need to be changed to remove barriers or challenges?

- (2) What specific Coast Guard regulations, policies, or standards may become obsolete or serve as an impediment to overall industry participation, innovation, or implementation of automated and autonomous commercial vessels and vessel technologies? Please provide specific examples of such regulatory barriers that will affect such activities. If such barriers would have a particular impact on certain types of vessels or businesses (for example, small businesses), please specify.
- (3) The Coast Guard currently applies its existing legal authorities to allow testing in various locations throughout the United States. There are current projects in various developmental stages across the nation. Are there any additional legislative, regulatory, or policy changes needed to facilitate testing or enhance coordination between the commercial sector and the U.S. government for testing? Please provide specific examples.
- (4) What non-Coast Guard regulatory, policy, or legislative challenges, not otherwise specified in response to a previous question above, may present a challenge or barrier to the development, demonstration, deployment, or evaluation of automated and autonomous commercial vessels and vessel technologies? Please specify or describe these challenges, and propose resolutions, if possible.
- (5) What additional regulations, policies, or voluntary consensus standards should the Coast Guard consider to provide better clarity or certainty to the maritime

industry and communities related to the automated and autonomous commercial vessels and vessel technologies? Please specify areas where additional regulations, policies, standards, or common terminology contained within voluntary consensus standards might be necessary or appropriate to better ensure safety, security, or environmental stewardship, or for other reasons.

- (6) What are the benefits (direct and indirect) and cost-savings of automated and autonomous commercial vessels and vessel technologies, if any? Please provide information and data that evidences such benefits and cost-savings.
- (7) For what purposes and in what ways are commercial vessels already making use of automated and autonomous technologies? For instance, how are commercial vessels making use of automated and autonomous technologies for such purposes as navigation, machinery operation, maintenance, docking, security, or firefighting, or other purposes?
- (8) What types of automated and autonomous commercial vessels and vessel technology (depending on vessel types, classes, and automation levels) may be adaptable for use on commercial vessels subject to U.S. jurisdiction?
- (9) What vessel functions, procedures, equipment components, or systems can be replaced, augmented, or aided with automated and autonomous commercial vessels and vessel technologies?
- (10) What changes should be made to ensure port facilities can accommodate automated and autonomous commercial vessels and vessel technologies?

- (11) What potential economic factors (such as risks, costs, or practical limitations) will a commercial vessel owner or operator have to consider before implementing automated and autonomous commercial vessels and vessel technologies?
- (12) What impacts to the maritime workforce do you anticipate would occur with the introduction of automated and autonomous commercial vessels and vessel technologies? Please provide information and data regarding any relevant costs or benefits to the maritime workforce associated with their introduction.
- (13) What specific training may need to be developed in consideration of these new technologies? Please provide information and data (whether quantitative or qualitative) regarding costs that training providers might incur from having to update current courses and training requirements.
- (14) What type of infrastructure (whether physical or cyber), procedures, and operational data, if available, would help facilitate the safe, secure, and efficient deployment of automated and autonomous commercial vessels and vessel technologies on subject to U.S. jurisdiction?

(15) What threats do automated and autonomous commercial vessels and vessel technologies present to cybersecurity or privacy? How can vessel, facility, and port owners and operators mitigate or minimize the threat?

(16) What are the negative or positive safety and security implications of automated and autonomous commercial vessels and vessel technologies?

Please explain and provide details, if possible.

Dated: August 02, 2020.

Karl L. Schultz,  
Admiral, U. S. Coast Guard,  
Commandant.

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