



U.S. Coast Guard

Great Lakes Association of Science Ships
28th Annual Science Vessel Coordination Workshop

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Office of Commercial Vessel Compliance (CG-CVC)



Agenda



- Coast Guard Efforts
- Laws, Regulations and Policy
- Charter for Automated and Autonomous Vessel Policy Council (AutoPoCo)
- Autonomous Activities in the Marine Transportation System (MTS)
- NDAA 2023 > At-Sea Recovery Operations Pilot Program
- IMO Developments
- Ongoing Considerations





Coast Guard Efforts in Support of Autonomy



- In 2021, Coast Guard established a charter called the Automated and Autonomous Vessel Policy Council (AutoPoCo). The purpose was intended to coordinate cross-directorate activities to develop policies and courses of action to address the operation of Autonomous and Remote-Control activities in U.S. waters.
- 2022 Coast Guard Authorization Act – AT-SEA RECOVERY OPERATIONS PILOT PROGRAM
- CVC Policy Letter 22-01 – Testing of Remote and Autonomous Systems (currently updating)
- 2022-23 1-yr Merchant Marine Industry Training Program
- 2023 Unmanned Systems Strategic Plan
- CG involved in IMO MASS Joint Working Group
 - September 2023 (Report not published yet) and April 2023 (Available online)
 - MASS Code Implementation in 2025 (non-mandatory) and 2028 (mandatory)





Laws, Regulations, and Policy

Laws

- Congress
- 46 US Code

Regs

- USCG
- 33 & 46 CFR

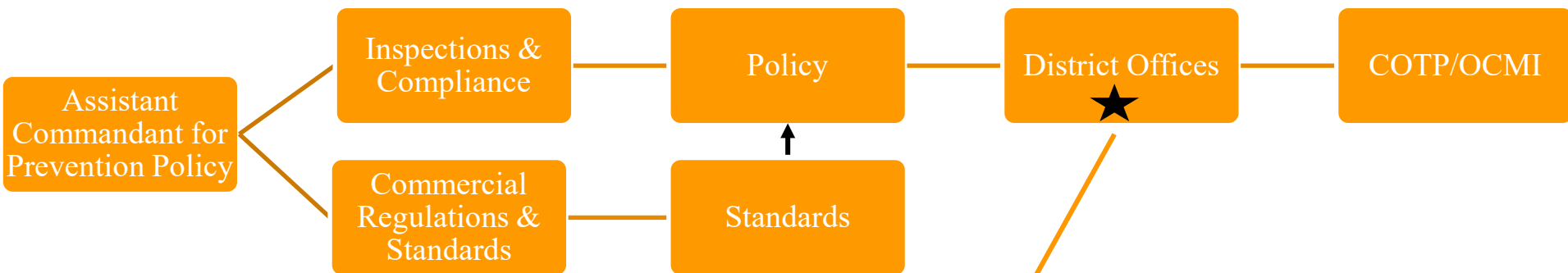
Policy

- USCG
- Policy Letter
- NVIC

- Laws are the products of written statutes, passed by either the U.S. Congress or state legislatures.
- Regulations are not laws themselves but are written to explain how to implement statutes or laws.
- Regulations, are standards and rules adopted by administrative agencies that govern how laws will be enforced.
- Policy is written for industry/CG on how certain regulations should be interpreted, evaluated, and enforced.



Laws, Regulations, and Policy Process





Vessel Determinations

46 USC §3 – The word "vessel" includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

Recreational

- a class of vessel whose primary purpose is for pleasure.

*Uninspected
(C)

- means a vessel not subject to inspection under section 3301 (i.e. Inspected) of this title that is not a recreational vessel
- UPV, Fishing and Towing

*Inspected
(D/H/I/K/L/M/T/U)

- Freight, small passenger, passenger, tank, towing & offshore supply vessels; seagoing barges

*Commercial Service includes any type of trade or business involving the transportation of goods or individuals, except service performed by a combatant vessel.

**Oceanic Research Vessel – employed only in instruction in oceanography or limnology, or both, or only in oceanographic or limnological research. (≥300GT and not engaged in commercial service.



Statutory Allowances and Constraints



- **US Code and Code of Federal Regulations**
 - Equivalent: the Commandant may accept in substitution therefor any other fitting, material, apparatus, or equipment, or type thereof, or any other arrangement.
 - Special Considerations: the OCMI may give special consideration to authorizing departures from the specific requirements when unusual circumstances or arrangements warrant such departures and an equivalent level of safety is provided.
 - Exemptions – limited to specific requirements.
- **Design Basis Agreement (DBA)** – The regulations do not account for all acceptable design and construction methods for a vessel. To facilitate innovation in the maritime domain, the Commandant (CG-ENG) has the authority, to consider equivalents to regulatory design standards. (ENG Policy Letter 01-23).
- **COLREGS** – exemptions and alternatives are limited to light, shape and sound signal requirements.
- **Manning (Uninspected)** – does not stipulate minimal manning; however, requires vessel to be operated by a licensed operator.
- **Manning (Inspected)** – CG has limited flexibility in modifying the minimal manning requirements for the deck department whereas more flexibility for manning requirements for the engineering department when a vessel is equipped with certain levels of automated machinery systems.



Automated & Autonomous Vessel Policy Council (AutoPoCo)



Purpose: Develop policies and COAs to address operations of automated and autonomous vessels in U.S. waters.

- Objectives:
 - ID existing regs and policies that apply
 - ID reg and policy gaps
 - Develop guidance for field units and industry
 - Serve as clearing house for unique projects
 - Make recommendations for training and education programs
- Charter
 - Advisors: CG-5P, CG-5PS, CG-5PC, CG-5PW
 - Chairs: CVC & ENG
 - Core Members
 - MSC
 - WWM
 - INV
 - MMC
 - NAV
 - 5P-TI
 - OES



Autonomous Technology in the MTS



- Space Operations
- Oceanographic Surveys
- Marine geological survey
- Environmental Monitoring
- Research



SpaceX Droneship



MAYFLOWER 400



XOcean



NDAA 2023, H.R. 7776-1737



Sec. 11504. AT-SEA RECOVERY OPERATIONS PILOT PROGRAM

a) **IN GENERAL.**—The Secretary shall conduct a pilot program to evaluate the potential use of remotely controlled or autonomous operation and monitoring of certain vessels for the purposes of—

- 1) **better understanding** the complexities of such at-sea operations and potential risks to navigation safety, vessel security, maritime workers, the public, and the environment;
- 2) **gathering observational and performance data** from monitoring the use of remotely-controlled or autonomous vessels; and
- 3) **assessing and evaluating regulatory requirements necessary** to guide the development of future occurrences of such operations and monitoring activities.



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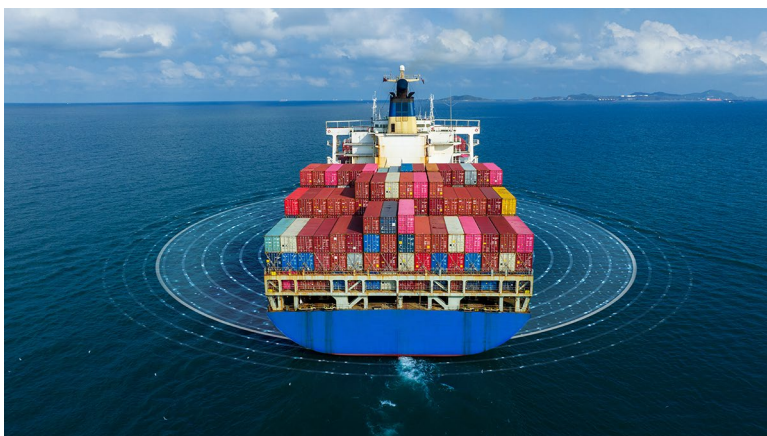
- b) Timeline: duration not to exceed 5 years, enact within 180 days
- c) AUTHORIZED ACTIVITIES.—The activities authorized under this section include:
- (1) remote over-the-horizon monitoring operations related to the active at-sea recovery of spaceflight components on an unmanned vessel or platform;
 - (2) procedures for the unaccompanied operation and monitoring of an unmanned spaceflight recovery vessel or platform; and
 - (3) unmanned vessel transits and testing operations without a physical tow line related to space launch and recovery operations, except within 12 nautical miles of a port.

(d) INTERIM AUTHORITY may—

- (1) allow remotely controlled or autonomous vessel operations to proceed consistent to the extent practicable under the proposed title 33, United States Code, and 46, United States Code, including navigation and manning laws and regulations;
- (2) modify or waive applicable regulations and guidance as the Secretary considers appropriate to— (A) allow remote and autonomous vessel at-sea operations and activities to occur while ensuring navigation safety; and (B) ensure the reliable, safe, and secure operation of remotely-controlled or autonomous vessels;



Considerations for Inspected Vessels



Design

Testing and trials

Operational Permissive
Conditions

Vessel Inspections and
Manning

COLREGs



Considerations for Uninspected Vessels



Risk Categorization

Notifications to
COTP

Concept of
Operations

Risk Mitigating
Factors



Challenges to Address



- Legal – Laws were not created with this technology in mind
- Various Stakeholders – State, Federal, Private Sector, and Labor Unions
- Overregulating versus Underregulating – Mitigate risk w/o impeding innovation
- Consistency in enforcement





Questions

