

Paper for Consideration by MASSPT

Proposal on the Development of "Standards for Unmanned Survey Vessels"

Submitted by:	China MSA
Executive Summary:	Unmanned vessels are developing rapidly in hydrographic surveying, with obvious advantages and more and more applications. In order to guide the research and development, production, application and inspection of unmanned survey vessels, it is necessary to formulate relevant standards. The China Maritime Safety Administration (China MSA) proposes to carry out the formulation of "standards for unmanned survey vessels".
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Background

Unmanned vessel technology is the trend of future maritime development. Unmanned vessels, as a surface autonomous platform, have advantages such as flexibility, maneuverability, safety, strong concealment, and low operational costs compared to traditional manned vessels. In the future, they can perform labor-intensive and high-risk work, as well as repetitive and long-term work, replacing some construction work with high costs and large resource inputs. The primary advantage of unmanned vessels is the ability to achieve unmanned operation and vessel autonomy, reducing human intervention and thus avoiding accidents at sea and ensuring the safety of crew members.

As the most typical unmanned intelligent platform system on water, unmanned vessel technology has developed rapidly in recent years and has been highly valued around the world. In order to address the challenges brought about by the development of unmanned vessel technology, various stakeholders in the international community have been actively exploring, formulating, and improving relevant rules and norms. Among them, the International Maritime Organization (IMO) established the Working Group of Maritime Autonomous Surface Ships (MASS), defined and classified unmanned vessels, launched the work of sorting out relevant laws and regulations and analyzing their applicability, and formulated the guidelines for unmanned vessel trials, etc, imposing certain constraints on international convention rules and standards.

Based on the above advantages of unmanned vessels, unmanned vessels have been widely used in international hydrographic surveying. Data show that China's unmanned survey vessels have been applied in more than 50 countries in the world.

Analysis

Unmanned survey vessels can integrate various sensors, and the onboard control system can flexibly carry a variety of sensors systems for positioning, orientation, attitude, depth, and flow measurement, which can meet the needs of various elements of marine surveying work.

In underwater survey work, compared with traditional survey vessels, unmanned survey vessels have the advantages of flexibility, high safety, and wide coverage. They can operate in waters that are dangerous or traditional survey vessels cannot reach, thereby improving underwater survey efficiency and reducing the influence of human factors and vessel maintenance costs, so that it can further reduce the number of accidents in underwater surveying.

Unmanned survey vessels are generally less expensive than manned survey vessels, allowing for the construction of more survey vessels within a limited budget. They can also operate in teams to expand the scope of surveying operations and efficiently gather underwater topographic and geomorphological information for ports, channels, rivers, lakes, and other surveyed water bodies, significantly enhancing the capabilities of maritime surveying in various countries and providing convenience for the compilation and update of nautical charts, thereby improving the safety of ship navigation.

The key technologies of unmanned survey vessels include perception, navigation, and control, and the system is relatively complex. Currently, there are no general technical requirements, product standards, and inspection specifications for unmanned survey vessels. As the application of unmanned survey vessels becomes more widespread, it is necessary to standardize the development of unmanned survey vessels to regulate and guide their development. There is an urgent need for technical requirements, product standards, and inspection specifications for unmanned survey vessels at the international and domestic levels. The IHO Unmanned Vessel Project Team can suggest that the IHO HSSC develop relevant standards for unmanned survey vessels to meet the production, inspection, and use needs of unmanned survey vessels.

Recommendations

Organize the formulation of general technical requirements, product standards, and inspection rules for unmanned survey vessels, etc.

The formulation of product standards of unmanned survey vessel mainly includes carrying out research on classification and basic parameters determination, determining technical requirements for hull system, sensing system, power system, control system, communication system, safety system and load system, and putting forward inspection methods and inspection rules.

1. It is suggested to conduct research on "General Technical Requirements for Unmanned Survey Vessels";

2. It is suggested to conduct research on "Product Standards for Unmanned Survey Vessels";

3. It is suggested to conduct research on "Inspection Specifications for Unmanned Survey Vessels";

4. It is suggested that China take the lead in participating in the formulation of standards for unmanned survey vessels.

Conclusion

Through the formulation of "unmanned survey vessel standards", a basis for the production and inspection of unmanned survey vessels can be provided, as well as a certain reference for the production, inspection and use of unmanned survey vessels in the world, which will promote the development of global hydrographic survey.

Action

The MASS PT is requested to:

1. Note the proposal.

2. If permitted, it is requested that we take the lead in setting the standards, with the participation of all other interested countries.