International Conference on Autonomous Shipping in Asia and the Pacific

«Practical experience on Autonomous Navigation in Russia»

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In 2023 two ferries, namely “Marshal Rokossovsky” and “General Chernyakhovsky” were put into commercial operation as autonomous ships on the sea round-trip route “Ust-Luga - Baltiysk (Kaliningrad)".

The ferries are equipped with an Autonomous Navigation System (ANS) is designed for:

- automatic analysis of the navigation situation;
- guiding the ship according to a planned route in both the automatic and the remote-control mode;
- automatic decision-making for maneuvering;
- collecting data from the ship’s equipment, the filtering, identifying and displaying data from different sensors;
- loading and displaying navigational map data in both the S57 and S63 formats, displaying navigation data and additional layer’s information.
For the subject of surveying these ferries and other ships as autonomous, the classification society "Russian Maritime Register of Shipping" developed and published the Regulations for Classification of Maritime Autonomous and Remotely Controlled Surface Ships (MASS). The Regulations contain requirements for Maritime Autonomous Surface Ships, Remote Control Centers (RCC) and various technical means to ensure the autonomous ships’ control. The ferries have been assigned an autonomy class with a category of remote control featuring the ability to change-over to the manual control whilst at sea and to the manual control with an option of decision-making when sailing through narrow water passages or when entering to the port.
The ferry’s Remote Control Center is located in the port of St. Petersburg. The Center provides monitoring of the surrounding navigation situation, control of the main movement parameters of the ferries, as well as their remote control at the open sea.
- The composition of equipment at the training Work Station is as close as possible to composition and functionality of MASS Operator workplace.
- The Simulator is implemented on a platform of certified domestic software.
- The simulator is implemented in three versions: VR (Virtual Reality), AR (Augmented Reality), Console.
- The Training Complex was created on a single platform with an Ice Simulator, which makes it possible to create in the future an integrated Training Complex for practicing the principles of navigation, taking into account the specifics of the Northern Sea Route (NSR).
- Provides the opportunity to conduct research and develop practical recommendations for Autonomous Navigation.

Training Programs for specialists involved in operating of autonomous ships have been approved. Programs are based on the applicable Standards of the STCW Code, 1978. The total of 42 autonomous ships Operators have been trained according to said Programs.
In July 2023 in the Russian Federation, the Federal Law No. 294-FZ was adopted for regulating legal relations when using autonomous ships.

Federal Law introduces the changes to a number of national documents aimed to creating a legal framework allowing the operation of autonomous ships, establishing the conceptual apparatus and principles of unmanned navigation.

Currently, the activity is in progress to approve additional by-laws documents whatever necessary to implement the said Federal Law. The relevant requirements will have to be established for the external crew, for the shore-based systems for of autonomous ships’ traffic control, for organizations competent in the field of Autonomous Navigation, for the manning of autonomous ships, and also for the rules of controlling the autonomous ships, etc..
Within the Federal project the shore-based equipment and the appropriate software for Autonomous Navigation are under development.

It is planned to equip the sea ports of St. Petersburg, Kaliningrad, Ust-Luga, Arkhangelsk and Petropavlovsk-Kamchatsky with the following equipment:
- new generation of the Vessel Traffic Service (VTS);
- shore-based Radar station for VTS;
- Optical Video Surveillance and Analysis System (operating in real time mode);
- shore-based NAVDAT system and AIS/VDES;
- Autonomous Navigation System in the port area.

Construction of an Autonomous Ecological Ship was started in 2023 (project No. RST-38)
The Ecological Ship will operate in the sea port of Petropavlovsk-Kamchatsky (Russian Far-East region).
Guidelines for assessing the quality and functionality of Autonomous Navigation System (ANS) Submitted by the Russian Federation to 108 session of IMO Maritime Safety Committee

In the Russian Federation there has been carried out a comprehensive scientific research to develop methodology and corresponding Guidelines for assessing the quality and functionality of Autonomous Navigation System (ANS). That work was based on the results of AIS data analysis in the Baltic Sea area for a period of six months (about 20 million positions), whilst in order to determine the composition and significance of different tasks, a survey was conducted of more than 100 navigators of management level (Masters and Chief Officers).

The Guidelines contain:
- the methodology for assessment of ANS quality;
- the methodology for assessment of ANS applicability;
- provisions for a virtual simulation platform.

Concept of assessment of ANS quality
It is proposed to assess the quality ANS operation on the basis on the results of solving of a set of navigation tasks by that ANS which emerge during the operation of a MASS.
Thank you for attention!