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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43942-2024

Method of risk assessment for intelligent ship

智能船舶风险评估方法

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed and coordinated by the National Technical Committee for Standardization of Marine Vessels (SAC/TC12): This document was drafted by: China Classification Society, China National Energy Group Shipping Co., Ltd., China Shipbuilding Industry Corporation Comprehensive Economic and Technical Research Institute, Shanghai Maritime University, China Software Evaluation Center (Software and Integrated Circuit Promotion Center of the Ministry of Industry and Information Technology): The main drafters of this document are: Sun Xu, Wang Xinyu, Xing Chenghai, Fu Shanshan, Li Heng, Cai Yuliang, Liao Nanxiang, Zhou Changgen, Guo Hua, Zhao Chenning, Liu, W.:, Gao, P.:, Shi, Z.:, and Ma, J:L: Risk assessment method for smart ships

1 Scope

GB/T 43942-2024 gives the Chinese method for assessing the risk of an intelligent ship. Autonomy at sea raises a problem that prescriptive rules cannot answer: the ship is new in kind, there is no service history to draw on, and the classification and flag requirements were written for a manned vessel, so approval has to rest on a demonstrated risk assessment instead. This standard sets out how to conduct one. It gives the general requirements and the assessment process, the preliminary preparation stage in which the system, its functions and its operational envelope are defined, and the assessment stage itself; then the risk identification, the hazard analysis covering the sensing, decision and

control functions, the communication links, the shore control centre and the human-machine interface, and the failure modes peculiar to autonomy such as loss of situational awareness and unsafe fallback; then the risk analysis and evaluation against the acceptance criteria, the risk control options and the reporting. For a shipyard, an owner or a survey body bringing an intelligent ship into Chinese service, this is the method the safety case will follow. It takes effect on 1 November 2024.

This document specifies the general requirements, risk identification, risk analysis, risk evaluation, and risk response for risk assessment of smart ships and systems: This document is applicable to risk assessment of smart ships and systems:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 24353-2022 Risk Management Guide

GB/T 27921 Risk management risk assessment technology

3 Terms and definitions

The following terms and definitions apply to this document: 3:

1 Intelligent Ship A ship that realizes intelligent operation in terms of ship navigation, management, maintenance, cargo transportation, etc:

Note: Its functions are performed autonomously to varying degrees independent of the crew: 3:

2 Risk The impact of uncertainty on goals: Note 1 to entry: An impact is a deviation from expectations that can be positive and/or negative and may present both opportunities and threats:

Note 2: Objectives can have different dimensions and types and can be applied at different levels:

Note 3: Risks can generally be described in terms of risk sources, potential events, their consequences and likelihood: [Source: GB/T 24353-2022, 3:1] 3:3 risk assessment The entire process of risk identification, risk analysis, risk assessment and risk response: [Source: GB/T 29246-2023, 3:64, modified] 3:4 risk identification The process of discovering, identifying and describing risks: [Source: GB/T 29246-2023, 3:68] 3:5 risk analysis The process of understanding the nature of risk and determining its level: [Source:

GB/T 29246-2023, 3:63]

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