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Technical Domain / Task Number 2 …………………………………

Author(s) / Submitter(s) …China MSA………………

Proposal on developing a new model course on AIS data analysis skills

# Summary

With the continuous and rapid development of digital technology in the field of maritime, AtoN managers are required to have certain data analysis capabilities. At present, the model course of IALA does not involve relevant training lectures on data analysis. This document proposes that the AIS data analysis course be an important part of the digital solutions (data analysis and maritime informatics) training project, including seven aspects such as AIS abnormal data analysis, and be included in the IALA LEVEL 1 model course.

## Purpose of the document

The document aims at the task of "develop training project on the implementation of digital solutions (data analysis and maritime informatics)" in the 2023-2027 work plan of the DTEC Committee, combined with the mature practical application experience of China MSA in the field of AIS data analysis, and proposes to take AIS data analysis course as an important part of digital solution training project, and be included in the IALA LEVEL 1 model course.

## Related documents

S1050-Training and Certification;

R0141-Training and Certification of Marine Aids to Navigation Personnel;

# Background

The continuous and rapid development of digital technology has affected almost all aspects of the maritime industry, including AtoN. Digital technology involves the creation and practical use of digital information using devices, methods or systems. AIS is one of the most important manifestations of the application of digital technology in the field of AtoN. AIS data is widely used in AtoN remote monitor and control, vessel traffic management, collision prevention, search and rescue, navigation safety and navigation efficiency, risk management, etc. It is necessary to capture certain AIS data analysis ability for AtoN managers.

At present, the AIS lectures included in the IALA LEVEL 1 model course mainly introduces the use and function of AIS, but does not involve the content of AIS data analysis. Therefore, it is very necessary to develop the AIS data analysis lecture.

# Discussion

China MSA has a mature application practice in AIS data analysis. It is believed that the lecture content of AIS data analysis should include the following seven aspects at least.

* AIS data integrity analysis, understand the vulnerability sources and detection methods of AIS data link (VDL), and master the analysis and judgment ability of AIS data integrity.
* Abnormal AIS AtoN data analysis, understand the working mechanism of message 6 and message 21, and master the ability to analyze abnormal information such as name of AtoN, MMSI, position, voltage and current of real and virtual AIS AtoN.
* Abnormal vessel AIS data analysis , master the ability to analyze and judge whether abnormal AIS data information broadcast by vessels, such as name, MMSI, position, speed, etc.
* Vessel navigation safety situation analysis and early warning, based on vessel’s speed and course to analysis whether the vessel’s intersection is safe, or over speed, illegal overtaking, approaching and entering the restricted area, and remind the vessel to pay attention or give early warning.
* Statistics and analysis of vessel traffic, including the number of vessels entering and leaving ports according to vessel’s size and type, the flow trajectory of various vessels in a certain section within a certain period. It can provide data support for vessel management and channel planning.
* Analysis of abnormal behavior of vessels, on the basis of familiar with abnormal behavior of vessels, master the feature extraction, active recognition and analysis of abnormal behavior of vessels according to AIS data.
* Accident vessel trajectory analysis, analysis of accident vessel trajectory to provide evidence for marine accident investigation.

# References

None

# Action requested of the Committee

The Committee is invited to consider the proposal in this document when developing a new model course on AIS data analysis skills and take actions as appropriate.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)