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Technical Domain / Task Number 2 1.2.2

Author(s) / Submitter(s) China MSA

Recommendations for Updating Guideline 1110 on Decision Support Tools for VTS personnel

# 1 Summary

Considering the application of new technology and the development of VTS function, VTS personal need better Decision Support Tools (DSTs) to assist their work. In accordance with the task register for 2018-2022, the IALA VTS committee considered amending the IALA Guideline No. 1110. The purpose of this document is to meet the operational requirements of DSTs for VTS personnel and the scenes of Marine Aids to Navigation (MAN) better.

## Related documents

* VTS Committee Task Register for 2018-2022;
* IMO Resolution A.1021(26) Code on alters and indicators;
* IALA VTS Manual;
* IALA Dictionary;
* Guideline 1110 on Decision Support Tools for VTS Personnel;
* IALA Recommendation V-125 on the use and presentation of symbology at a VTS Centre (including AIS)
* IALA Recommendation V-127 on Operational Procedures for Vessel Traffic Services;
* IALA Recommendation V-128 on Operational and Technical Performance Requirements for VTS Equipment.
* IALA Guideline 1018 on Risk Management;
* IALA Guideline 1070 on VTS role in managing Restricted or Limited Access Areas;
* IALA Guideline 1089 on provision of Vessel Traffic Services(INS,TOS,NAS);
* IALA Guideline 1111 on Preparation of Operational and Technical Performance Requirements for VTS Systems.

# Background

The task register for 2018-2022 has been updated in the 48th meeting of IALA VTS committee. It is the task 1.2.2 to update Guideline 1110 on Decision Support Tools for VTS personnel, which emphasizes the impact of the development of emerging concepts and technologies on the guideline.

With the application of big data, artificial intelligence and other new technologies, the functions of DSTs have been constantly developed, which can be used not only in setting alarm for VTS personnel in vessel traffic safety, but also in navigation efficiency and risk prediction.

# Discussion

## Expanding the functions of DSTs with the development of emerging technologies

With the development and application of new technologies, the alarm information provided by DSTs is no longer limited to issuing alerts based on real-time data information, such as on-board navigational data and real-time hydrometeorology data, but also can predict urgent situation that may appear in the future according to big data statistical analysis. The VTS personnel can do traffic organization in advance to relieve traffic jam effectively based on the alarm information.

## Effective evaluation of the alert threshold setting

It is of great help to improve the rationality of alert information by evaluating the alert threshold setting effectively. The modification of alert thresholds should not only rely on the experience of VTS personnel, but also need the calculation and evaluation of big data mainly to find out the specific factors that affect the setting of alert thresholds which is unreasonable. By modifying the impact factors determined by the evaluation, VTS personnel can set more effective alert thresholds to improve navigation safety and efficiency.

# Suggestion

## About “3.2 Situation awareness”

The document suggests dividing the original part *“3.2 Situation awareness”* into three categories. They are “3.2.1 situation awareness to ensure safety of vessel traffic” which includes the original part 3.2, “3.2.2 situation awareness to improve navigation efficiency” and “3.2.3 situation awareness to predict and assess risk”.

**4.1.1 Adding “situation awareness with the DSTs to improve navigation efficiency”**

In this categories, the VTS personnel is to make decision to arrange or to draw reasonable route for vessel traffic with the help of DSTs in a routine condition.

**Example**

The DSTs assist VTS personnel to arrange vessels entering and leaving port, berthing or throwing anchor.

**4.1.2 Adding “situation awareness with the DSTs to predict and assess risk”**

In this categories, the DSTs may require user to input information such as the vessel(s) concerned or the area supervised, then output assessed risk coefficient or risk prediction result to warn VTS personnel to pay special attention or make action in advance to prevent potential risk.

**Example**

There will be increased vessel flows in VTS area in some specific period in view of the result of statistics and analysis of previous data. So, the VTS personnel can focus on this situation in advance based on the DSTs.

## About “3.4 Management requirements of DSTs”

With the development of new technologies and the change of shipping environment, the appropriate alert thresholds outputted by the DSTs needs post-evaluation according to the changes. The document suggests adding the description as following.

**4.2.1 Adding “Evaluating the alert or proposal”**

The document suggests that the alert or proposal should be divided into three categories, such as timely or helpful, commonly, wrong alarm or uselessly. The results of judgement can be used to set alert thresholds as a reference. By evaluating the effectiveness of alarm information or recommendations, VTS personnel can determine whether the original alert thresholds need to be reset or maintained.

**4.2.2 Adding “post-evaluating the alert thresholds”**

After running the DSTs for a period of time, it is needed to examine the wrong alarm rate or unreasonable recommendation rate. In other words, the users should find and adjust the factors which impact the helpful alarm or the reasonable recommendation by post-evaluating the alert thresholds to improve the safety and efficiency of navigation, to improve the accuracy of prejudgment.

## About “3.5 Operational requirements of decision support tools”

*“3.5 Operational requirements of decision support tools”* should be modified corresponding to the modification “3.2 Situation awareness”. Two parts will be added in the document, which are improving navigation efficiency and predicting and assessing risk, besides the original situation. Considering the modification of 3.5, some definitions and operational requirements should be adjusted.

**4.3.1 Modifying the description of operational requirements of DSTs**

To modify “DSTs may be based upon a real-time assessment of risks associated with the traffic situation.” as：“DSTs may be based upon a real-time assessment of risks, improving navigation efficiency and predicting risk associated with the traffic situation.”

**4.3.2 Adding the operational requirements of DSTs**

The operational requirements of DSTs should add the functions to improve navigation efficiency and to enhance risk perception ability according to the needs of the authorities on the basis of the original requirements.

# Action requested of the Committee

The committee is invited to review this document, and draw attention of member states if necessary.

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