

IALA GUIDELINE

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VTS TRAINING FOR DECK OFFICERS

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IALA WORKING PAPER

1. INTRODUCTION

1.1. BACKGROUND

An effective Vessel Traffic Service improves the safety and efficiency of navigation, the safety of life at sea and the protection of the marine environment from possible adverse effects of maritime traffic.

SOLAS regulation V/12 provides the basis for Vessel Traffic Services (VTS) and is supported by IMO resolutions, guidelines and circulars. The importance of VTS is furthermore referenced in the Manila Amendments to the STCW 1978 Convention.

An efficient VTS relies upon the co-operation between the bridge team and the VTS operator (VTSO). The effectiveness of information exchange depends upon each party's understanding of their respective functions and responsibilities. Increased knowledge and understanding of a VTS by the bridge team will enhance teamwork between VTS and ships and improve safe navigation.

It is recognised that not all deck officers have the same knowledge level of VTS. A higher level of knowledge of VTS will enable better use of their services, resulting in enhanced situational awareness.

1.2. APPLICATION

This Guideline contains recommendations that complement the standard of competence provided in the STCW Code for the deck department in order to enhance their understanding of VTS. It could also be used by other relevant stakeholders, such as flag states, harbour and port organisations, pilot organisations and shipping companies.

2. AIMS AND OBJECTIVES

This Guideline presents guidance and information to be used by maritime training organisations in the development of training on VTS as an integral part of the training of deck officers. This document also provides examples of activities that could be used to facilitate effective communications and the exchange of information between the bridge team and the VTSO.

3. OVERVIEW OF VTS

3.1. TERMS USED IN VTS

Vessel traffic service (VTS) - a service implemented by a competent authority, designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with the traffic and to respond to traffic situations developing in the VTS area.

Competent authority - the authority made responsible, in whole or in part, by the government for safety, including environmental safety, and efficiency of vessel traffic and the protection of the environment.

VTS authority - the authority with responsibility for the management, operation and co-ordination of the VTS, interaction with participating ships and the safe and effective provision of the service.

VTS area - the delineated, formally declared service area of the VTS. A VTS area may be subdivided in sub-areas or sectors.

VTS operator—an appropriately qualified person performing one or more tasks contributing to the services of the VTS.

VTS centre - the centre from which the VTS is operated. Each sub-area of the VTS may have its own sub-centre.

Allied services - services actively involved in the safe and efficient passage of the vessel through the VTS area.

3.2. WHERE TO FIND INFORMATION ABOUT A VTS

The services offered by a VTS to the mariner are promulgated to ships in nautical charts and publications. This includes details of the VTS, its capabilities, rules, regulations, requirements, radio frequencies and procedures.

It is recommended that deck officers should obtain the official “VTS Users Guide” from appropriate nautical publications or websites. Further information may be also obtained from IALA Guideline 1144 Promulgating the requirements of a VTS to mariners – a VTS users guide template.

3.3. PARTICIPATION IN VTS

As identified in SOLAS regulation V/12, participation in a VTS may be mandatory within the territorial seas. A VTS may be applicable to all ships or there may be exemptions to certain types and sizes of ships. It should be noted that ships that are not required to participate in a VTS may still choose to do so. A VTS may also be implemented beyond the territorial seas.

3.4. PURPOSE, OBJECTIVES, ROLES AND FUNCTIONS OF VTS

VTS is recognised internationally as a navigational safety measure through SOLAS regulation V/12. VTS is implemented under a national legal framework adhering to international standards and recommendations.

3.4.1. PURPOSE OF VTS

The purpose of vessel traffic services is to contribute to safety of life at sea, safety and efficiency of navigation and the protection of the marine environment within the VTS area by mitigating the development of unsafe situations. VTS may also have a role to play in security.

The main benefits of a VTS for the deck officer include:

- aiding in the safe and efficient use of navigable waterways;
- affording unhindered access to pursue commercial activities, subject to any restrictions that may exist; and
- contributing to keeping the seas and adjacent environment free from pollution.

There may be additional operational objectives specific to that VTS which take account of the volume of traffic, degree of risk, geographic and environmental conditions within the VTS area.

3.4.2. ROLES

By monitoring the movements of ships within the VTS area, the VTSO is able to interact with ships in accordance with established regulations and procedures.

3.4.3. FUNCTIONS

VTS functions can be subdivided into internal and external functions. Internal functions are the preparatory activities that have to be performed to enable a VTS to operate. These include data collection, data evaluation and decision-making. External functions are activities executed with the purpose of influencing traffic. They relate to the primary traffic management functions of rule-making, allocation of space, control of ships and ship manoeuvres to avoid collisions, as well as to other management functions such as enforcement, remedial and ancillary activities.

Amongst the most important functions that a VTS may carry out are those related to, contributing to and thereby enhancing and supporting:

- safety of life at sea;

- safety of navigation;
- efficiency of vessel traffic movement;
- protection of the marine environment;
- maritime security;
- search and rescue;
- law enforcement; and
- protection of adjacent communities and infrastructure.

3.5. BENEFITS OF VTS FOR THE BRIDGE TEAM

A VTS has real-time knowledge and provides the following benefits for the bridge team:

- Information about coastal, port and inland waterways and infrastructures and its key and vulnerable locations, thereby improving maritime traffic efficiency;
- information about ship activities, including ship position and intention, etc., thereby improving the situational awareness between ships;
- navigational assistance in difficult navigation conditions to ensure the safety of ships;
- knowledge of conventional port operations, including ship voyage and passage planning and port interface activities, thereby reducing the pressure in voyage and passage planning and help deck officers fully understand the navigation environment in complex traffic situations; and
- information concerning the coordination of medical assistance in emergency situations.

3.6. VTS AND SHIP REPORTING SYSTEMS

Ship Reporting Systems (SRS) and reporting requirements are used to provide, gather or exchange information through radio reports or other electronic means. The information is used to provide data for many purposes including search and rescue, vessel traffic services, weather forecasting and prevention of marine pollution.

Ship routing measures and SRS are passive where ships provide information through predetermined reporting requirements.

VTS is proactive, continuously monitoring ship traffic and providing relevant information. The deck officer should be aware that:

- VTS, Traffic Separation Schemes (TSS) and SRS can be used independently or in combination;
- SRS often provides data for VTS traffic images; and
- both VTS and SRS may be mandatory or voluntary.

3.7. PROVISION OF VTS

3.7.1. PROVISION OF TIMELY AND RELEVANT INFORMATION

The provision of timely and relevant information on factors influencing the ship's movements and assist on-board decision making may include:

- position, identity, intention and movements of ships;
- maritime safety information;

- limitations of ships in the VTS area that may impose restrictions on the navigation of other ships (e.g. manoeuvrability), or any other potential hindrances;
- other information such as reporting formalities and International Ship and Port Facility Security (ISPS) code details; and
- support to, and cooperation with, allied services.

This information may be provided:

- at fixed times (i.e. broadcast) or time-intervals;
- on demand (when requested by ships); and
- when deemed necessary by the VTS.

3.7.2. MONITORING AND MANAGEMENT OF TRAFFIC

The monitoring and management of traffic to ensure the safety and efficiency of ship movements may include:

- forward planning of ship movements;
- organizing ships underway;
- organizing space allocation;
- establishing a system of traffic clearances;
- establishing a system of voyage or passage plans;
- providing route advice; and
- ensuring compliance with and enforcement of regulatory provisions for which they are empowered.

3.7.3. RESPONDING TO DEVELOPING UNSAFE SITUATIONS

Developing unsafe situations may include:

- a ship unsure of its route or position;
- a ship deviating from the route;
- a ship requiring guidance to an anchoring position;
- a ship that has defects or deficiencies, such as navigation or manoeuvring equipment failure;
- severe meteorological conditions (e.g. low visibility, strong winds); and
- a ship at risk of grounding or collision.

A VTS may also assist in emergency response or support to emergency services.

3.8. VTS PROCEDURES

A VTS operates in accordance with the requirements set by the Competent Authority. VTS procedures are integral to the safety management system ensuring the services are delivered accurately, efficiently and effectively. This includes both internal and external procedures. More information can be found in IALA Guideline 1141 Operational procedures for Vessel Traffic Services.

4. ALLIED AND OTHER SERVICES

A VTS actively interacts with allied and other services which are also involved in the safe and efficient passage of the ship through a VTS area.

Allied services include pilotage, tugs, line handlers, port authorities, search and rescue and customs authorities.

Other services refer to services other than the allied services, which may use VTS data to more effectively undertake their work (e.g. ensuring local security or preventing illegal imports within a port). More information can be found in IALA Guideline 1102 VTS Interaction with Allied or Other Services.

5. COMMUNICATION BETWEEN THE DECK OFFICER AND THE VTS CENTRE

5.1. TOOLS

Different communication tools may be used, including VHF radio. VHF voice communications are generally performed on the channel specified by the VTS centre. Other tools include AIS safety related messages, DSC, email and radiotelephony on MF/HF.

5.2. VOICE COMMUNICATION

It is important that all communications can be readily understood. Therefore, voice communication should be in English, using standard phraseology. However, in some situations voice communication may be carried out in the national language of the bridge team and the VTSO. VTS should play an active role in ensuring that the content of all communication is understood by all participants.

5.3. REQUIREMENTS OF COMMUNICATIONS

To ensure consistent and effective communication, it is important that:

- VTS VHF working channel is monitored when in the VTS area; and
- communication should be concise and unambiguous.

It should be noted that information provided by the VTS centre does not affect the statutory responsibilities and duties of deck officers.

5.4. VOICE COMMUNICATION IN VTS

To ensure the communication efficiency, deck officers should make use of SMCP, including the use of message markers, and IALA Guideline 1132 on VHF voice communication. Several tools are provided in the IALA Guideline to improve the effectiveness of communication.

Communication should:

- clearly indicate the identity of the ship and the VTS centre;
- use the assigned frequencies/channels of the VTS;
- use the correct reporting procedures of the VTS; and
- take into account the limitations within radio telecommunication, both when receiving and transmitting communication with a VTS.

6. TRAINING ACTIVITIES

VTS should be included in the mandatory national training programmes for deck officers developed in accordance with the provisions of the STCW Code and be reflected in examination and assessment. VTS should also be included in other types of training – such as Bridge Resource Management, voyage planning, and voice communication.

6.1. THEORY TRAINING

Theory training on VTS should include the following:

- introduction of VTS, including functions, responsibilities, and procedures of VTS;
- requirements for transiting through the VTS area;
- benefits of VTS for the bridge team;
- communication methods and standard phraseology between the bridge team and VTS; and
- where to find information on VTS.

6.2. PRACTICAL TRAINING

Ships navigating in an area where VTS is provided should make use of these services. The introduction of VTS in practical training is helpful for deck officers to be familiar with the operation of ships in the VTS area. Examples of elements for training are provided in Table 1.

Training activity	Specific items	Evaluation elements about VTS	Evaluation requirements
Voyage or passage plan	Develop a voyage or passage plan	<ul style="list-style-type: none">• Obtain the necessary VTS information• Identify the relevant VTS interaction(s)• Include the VTS information in the voyage or passage plan	VTS influencing factors should be fully considered and reflected in the formulation of the voyage or passage plan.
	Develop a contingency plan	<ul style="list-style-type: none">• Consider possible incidents in the VTS area• Identify contingencies that take into account how VTS can assist	
Actual operation through a specific VTS area	Entry into the VTS area	<ul style="list-style-type: none">• Contact VTS• Include relevant VTS information in your decision making	In the VTS area, ships should report to VTS as required, seek assistance from VTS, and cooperate with VTS to deal with incidents.
	Passage through the VTS area	<ul style="list-style-type: none">• Maintain communication with VTS• Actively participate in the VTS	
	Incidents within the VTS area	<ul style="list-style-type: none">• Contact VTS• Include relevant VTS information in your decision making• Maintain communication with VTS	

Table 1 *Examples of practical training elements*

6.3. EQUIPMENT TRAINING

6.3.1. VHF

Effective VTS VHF communication directly contributes to navigational safety and efficiency. VHF communication training improves coordination and understanding between ships and the VTS centre. This training may also be carried out as simulation.

6.3.2. ECDIS

The use of ECDIS assists in the identification of VTS coverage, and location of the VTS reporting line / point. Training on ECDIS should include reference to the use of ECDIS in a VTS area. Examples of elements for training are provided in Table 2.

Training activity	Evaluation elements
Voyage or passage plan through the VTS area	<ul style="list-style-type: none">• Clarify coverage of VTS and location of VTS reporting points• Voyage or passage planning should include information on the VTS area
Monitoring the movement of the ship in the VTS area	<ul style="list-style-type: none">• Take note of the VTS area and VTS reporting lines/points

Table 2 Examples of VTS factors that can be considered in ECDIS practical training

6.4. CONSIDERATIONS FOR SHIPS IN THE VTS AREA

There are a number of factors that should be taken into account by the bridge team when a ship is in a VTS area. Examples of elements for training are provided in Table 3.

Training activity	Evaluation elements
Considerations – entering the VTS area	<ul style="list-style-type: none">• Providing <u>estimated arrival / departure from VTS area</u>, including format, content and format of the estimated arrival / departure report;• Procedure to follow when <u>entering VTS area</u>, including establishing contact with the VTS centre, communications and reporting requirements.
Considerations – within the VTS area	<ul style="list-style-type: none">• <u>Movement within a VTS area</u>, including the mandatory requirements for ships in the VTS area, communication and reporting requirements;• <u>Anchoring in VTS area</u>, including the designated anchorage, communications and reporting requirements;• <u>Berthing / unberthing in VTS area</u>, including the arrival berth report, traffic clearance, speed or other restrictions and reporting requirements.
Considerations – departing the VTS area	<ul style="list-style-type: none">• Procedures to follow when <u>departing the VTS area</u>, including reporting requirements.

Table 3 VTS factors that may be considered when a ship is in a VTS area

6.5. INCIDENTS AND EMERGENCIES

A VTS supports safety of navigation and protects the environment through active monitoring and interaction with ships. VTS can assist with the coordination of response during incidents and emergencies, while ensuring the safety of the waterway. Incidents or emergencies may include: search and rescue / man overboard; engine failure; steering gear failure; collision or grounding; encountering adverse weather that may affect safe voyage.

Examples of elements for training are provided in Table 4.

Training activity	Evaluation elements
Incident / Emergency	<ul style="list-style-type: none">• Report made to VTS in a timely manner;• Relevant information included, depending on the situation. Information may include: time and position of incident, nature of emergency, type of assistance required;• Communication with VTS is clear and concise;• Further information requested by the VTS is provided;• Request for navigational assistance (if required);• VTS is kept informed as the situation develop; and• VTS is advised when the incident / emergency has been resolved.

Table 4 *Examples of incidents and emergencies*

6.6. FAMILIARISATION ACTIVITIES

Familiarisation activities may include visiting a VTS centre or arranging for a presentation from a representative of a VTS. The objective of the familiarisation is to explain the purpose of VTS to the deck officer, thereby enhancing VTS awareness.

To achieve the objective, familiarisation activities should be structured, and may use a workbook or other process. The familiarisation activity may include:

- equipment used;
- procedures followed;
- legal and regulatory requirements of the VTS;
- how the VTS monitors and interacts with traffic in the VTS area;
- joint case study reviews; and
- how the deck officer can work most effectively with the VTS.

6.7. FAMILIARISATION BETWEEN ALLIED SERVICES AND VTS

The involvement of allied services, including pilots, in the work of the VTS will promote the safety of navigation in the VTS area. Therefore, the above familiarisation activities may also be of benefit for the providers of such allied services.

7. ACRONYMS & DEFINITIONS

7.1. ACRONYMS

AIS	Automatic Identification System
DSC	Digital Selective Calling
ECDIS	Electronic Chart Display and Information System
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organization
MF/HF	Medium Frequency / High Frequency (radio)
SMCP	Standard Marine Communication Phrases
SRS	Ship Reporting System
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
TSS	Traffic Separation Scheme
VHF	Very High Frequency (radio)
VTs	Vessel Traffic Service
VTsO	Vessel Traffic Service Operator

7.2. DEFINITIONS

The definition of terms used in this Guideline can be found in the International Dictionary of Marine Aids to Navigation (IALA Dictionary) at <http://www.iala-aism.org/wiki/dictionary>

8. REFERENCES

- [1] SOLAS 1974- International Convention for the Safety of Life at Sea Chapter V, Regulation 12 Vessel Traffic Services
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- [3] International Convention on Maritime Search and Rescue 1979
- [4] ITU Radio Regulations, volume five, Recommendation ITU.R.M.1171.0 and subsequent chapters
- [5] IMO Resolution A.857(20) Guidelines for Vessel Traffic Services
- [6] IMO Resolution A.918(22) IMO Standard Marine Communication Phrases (SMCP)
- [7] IALA Recommendation V-120 Vessel Traffic Services in Inland Waters (edition 2)
- [8] IALA Recommendation R0127 Operational Procedures for Vessel Traffic Services (edition 2)
- [9] IALA Guideline 1071 Establishment of a Vessel Traffic Service beyond Territorial Seas
- [10] IALA Guideline 1089 Provision of VTS Services
- [11] IALA Guideline 1102 VTS Interaction with Allied or other services
- [12] IALA Guideline 1131 Setting and measuring VTS objectives
- [13] IALA Guideline 1132 VTS VHF Voice Communication
- [14] IALA VTS Manual
- [15] Admiralty List of Radio Signals (ALRS)