**IALA Model Course**

C0103-3

VTS On-The-Job Training

For review at VTS53

Edition #.#

Date…

Revisions to this IALA Document are to be noted in the table prior to the issue of a revised document.

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1. MODEL COURSE OVERVIEW

# Introduction

IALA Model Courses which define the level of training and knowledge needed to reach levels of competence defined by IALA.

IALA’s contribution to the development of internationally harmonized guidance for vessel traffic services is recognised in IMO Resolution A.1158(32) Vessel Traffic Services and the Annex to the resolution states:

* Contracting Governments are encouraged to take into account IALA standards and associated recommendations, guidelines and model courses (Section 9.2)
* VTS personnel should only be considered competent when appropriately trained and qualified for their VTS duties. This includes, inter alia:
* satisfactorily completing generic VTS training approved by a competent authority.
* satisfactorily completing on-the-job training at the VTS where the personnel are employed.

IALA recommendations, guidelines and model courses specifically related to the establishment and operation of VTS include:

* **Recommendation 0103** **- Training and Certification of VTS personnel** specifies the practices associated with the training and certification of VTS personnel to assist authorities when recruiting, training and assessing VTS personnel to ensure the harmonized delivery of vessel traffic services world-wide.
* **Guideline 1156 - Recruitment, training and assessment of VTS personnel** states that *“Model courses provided by accredited training organisations should be approved by the competent authority.”*
* **Guideline 1014 -** **Accreditation of VTS training organizations and approval to deliver IALA VTS model courses** sets out the process by which a training organisation can be accredited to deliver approved VTS training courses.
* IALA model courses including:
* Model Course C0103-1 - VTS Operator Training
* Model Course C0103-2- VTS Supervisor Training
* Model Course C0103-3 - VTS On-the-Job Training
* Model Course C0103-4 - VTS On-the-Job Training Instructor
* Model Course C0103-5 – VTS Revalidation Process for VTS Qualification and Certification

# Purpose of the Model Course

Model course C0103-3 provides the framework for VTS providers to establish and conduct On-the-Job training to ensure personnel are competent with regards to the specific knowledge of operational, geographical and equipment related procedures necessary to undertake duties at the VTS where they are employed.

..

It is not the intention of the model course to present OJT instructors with a rigid ‘teaching package’. Rather, to provide a standard structure to assist VTS providers in the preparation of their C0103-3 training programs, or to enhance, update or supplement existing training material..

# Course Objective

Successful completion of this course demonstrates that students have the requisite knowledge, practical competence, skills, attitude, and proficiency to undertake duties at the VTS where they are employed to:

* provide timely and relevant information on factors that may influence the transit of a ship and assist on-board decision making;
* monitor and manage traffic to ensure the safety and efficiency of ship movements; and
* respond to developing unsafe situations to assist the decision-making process on board.

# Course Curriculum Outline

The model course comprises seven modules, each of which deals with a specific subject representing a requirement or function of a VTS Operator. Each module contains a subject framework stating its scope and aims, a subject outline, learning objectives and teaching points. Refer to Table 1.

Training activities, scenario/simulated exercises and assessments undertaken during the course are intended to represent the role of the VTS Operator and reflect events or incidents that may be experienced at a VTS.

The course does not specify the recommended number of hours that should be allotted to each module as it recognises there are several variables that will affect the time needed for VTS personnel to become familiar with the VTS. In determining course content and duration VTS providers should consider the following elements, as appropriate:

* size and complexity of the geographic VTS area
* functions of the VTS
* the complexity and content of VTS operational procedures
* the complexity and range of VTS equipment
* the human and physical resources available to deliver the training
* the number of students undergoing training
* the background of the students under training (e.g. prior experiences and knowledge)
* the progress of the individuals under training to reflect their specific development needs

| Module Title |  | | Overview |
| --- | --- | --- | --- |
|  |  |
| Communication |  |  | [copy text from the next section – which describes what the module is about] |
| Legal Framework |  |  |  |
| Provision of VTS |  |  |  |
| Local Knowledge |  |  |  |
| Equipment |  |  |  |
| Personal Attributes |  |  |  |
| Emergencies |  |  |  |

# Entry Requirements

Every student attending a C0103 model course should have achieved the International English Language Testing System (IELTS) level 5, or its equivalent.

It is the intention of the IALA VTS model course program to have successfully completed C0103-1 VTS Operator Training prior to undertaking a C0103-3 course. In the event of a VTS Operator Training not being immediately available the VTS provider may conduct C0103-3 OJT training in multiple stages, with some training prior to, and some after completing formal C0103-1 VTS operator training.

that need to be satisfied

# Recognition of prior learning

Recognising that some students may have knowledge, skills and competency in some modules or subject elements associated with this VTS model course exemptions for these should be considered depending on the qualifications and training that an individual may already have.

For example, where a student has already successfully completed on-the-job training at another VTS, recognition of prior learning should be considered as it may reduce the time and content required to meet the desired competence level.

*IALA Guideline 1017 - Assessment for recognition of prior learning in VTS training* provides further guidance assessing and recognizing the prior learning of students.

# Course Intake - Limitations

The VTS provider should determine the number of students enrolled on the course taking into account the number of new VTS personnel, the size of the VTS centre, the number of OJT instructors and the risk of training fatigue. There may be additional training restraints such as:

* during live VTS operations under close supervision a one-on-one ratio is recommended.
* during classroom sessions the group size should allow the instructor(s) to give adequate individual attention to students as required to meet the learning objective(s).
* during practical sessions where the use of a simulator or similar teaching aid is involved, it is recommended that no more than two students be trained simultaneously on any individual piece of equipment.

# Training Staff Requirements

The VTS provider should have VTS personnel trained as OJT instructors to provide and coordinate local training at the VTS centre (e.g., OJT, adaptation training and updating training). The OJT instructor should have in-depth knowledge of the processes and procedures of the VTS centre(s) where they provide training.

Any trainer delivering and assessing local training at a VTS centre should, as a minimum, hold the IALA C0103-4 VTS On-the-job training instructor qualification, or an equivalent national qualification.

*IALA Guideline 1156 - Recruitment, training, and certification of VTS Personnel* provides further guidance on the qualifications for instructors.

*IALA C0103-4 On-the-Job Training Instructor model course* provides a structure to ensure instructors have the knowledge, skill and proficiency to deliver VTS centre specific OJT, adaptation training and updating training.

# Facilities and Equipment

The VTS provider may use a range of training methodologies to deliver the course, these may include:

* delivery of live VTS under the close supervision (one-on-one) by qualified VTS personnel
* scenario based / simulation training
* classroom sessions with presentations and discussion
* online demonstrations, for example locating relevant documents, publications etc
* familiarisation activities such as site visits to allied services, onboard vessels
* group based learning activities
* remote learning (e.g. e-learning, online, distance, hybrid, blended)

Simulator training should be managed in a manner consistent with IALA Guideline 1027 in order to provide sufficient behavioural realism to allow students to acquire the knowledge and skills appropriate to the training objectives.

# Delivery of the Model Course

To make effective use of the model course, training staff should review the course outline, including the competence tables for each module, and prepare a detailed teaching syllabus.

The instructor should take into consideration existing knowledge, skills and attitudes of students to support the assessment and recognition of prior learning. A gap analysis should be carried out to identify any differences between the level of skills and competencies of the student and those identified within the curriculum tables, and teaching strategies to address these gaps should be implemented.

All VTS training should be:

1. Structured in accordance with written programmes, including such methods and means of delivery, procedures and course material as are necessary to achieve the prescribed standard of competence; and,
2. Conducted, monitored, assessed, and supported by qualified persons.

Teaching programmes should ensure that all listed elements are addressed in some manner. The VTS provider should adjust the course content for their VTS to ensure VTS personnel (eg operator, supervisor) are competent with the depth of knowledge and skills they require for the job.

The presentation of concepts and methodologies may be repeated as necessary in various ways until the OJT instructor is satisfied that the student has attained a good working knowledge in each subject.

**Thorough preparation is key to successful implementation of the course.**

## Developing course content

The modular presentation enables the OJT instructor to adjust the course content to suit the student intake and provide any revisions of the subject objectives as required. The instructor should develop lesson plans and detailed learning objectives based on the competence tables, references, and materials as suggested (see Part B).

It is not intended that the modules be presented in the order provided in this model course. It is expected that, to address effective training and learning methodologies, the content of modules will be grouped as appropriate for the learning environment. Presentation of the material should be tailored to reflect specific training objectives and include practical exercises, assessments, etc. When developing lesson plans, the instructor should use a teaching method or combination of methods that will ensure students can achieve the required learning objectives.

The course timetable may need to be adjusted depending on the student intake as different students may require different lengths of time to cover the same content.

1. Competence Level Taxonomy for VTS Training

|  |  |  |  |
| --- | --- | --- | --- |
| Level | Knowledge and/or Attitude | Skill | Verbs (examples) |
| **Level 1**  Work of a routine and predictable nature generally requiring supervision | **Comprehension**  Understands facts and principles; interprets verbal/written material; interprets charts, graphs and illustrations; estimates future consequences implied in data; justifies methods and procedures | **Guided response**  The early stages in learning a complex skill and includes imitation by repeating a demonstrated action using a multi-response approach (trial and error method) to identify an appropriate response | Define, list, , locate, sketch, label, , follow (instructions), select, show willingness, operate, arrange, identify |
| **Level 2**  More demanding range of work involving greater individual responsibility. Some complex/non-routine activities | **Application**  Applies concepts and principles to new situations; applies laws and theories to practical situations; demonstrates correct usage of methods or procedures | **Autonomous response**  The learned responses have become habitual, and the movement is performed with confidence and proficiency | Describe recognise, perform, display, , proceed, comply, give examples |
| **Level 3**  Skilled work involving a broad range of work activities. Mostly complex and non-routine | **Analysis**  Recognises un-stated assumptions; recognises logical inconsistencies in reasoning; distinguishes between facts and inferences; evaluates the relevancy of data; analyses the organisational structure of work | **Complex observable response**  The skilful performance of acts that involve complex movement patterns. Proficiency is demonstrated by quick, smooth, accurate performance. The accomplishment of acts at this level includes a highly co-ordinated automatic performance | Analyse, apply, justify, differentiate, manipulate, categorise, classify, solve, operate, explain, paraphrase |
| **Level 4**  Work that is often complex, technical and professional with a substantial degree of personal responsibility and autonomy | **Synthesis**  Integrates learning from different areas into a plan for solving a problem; formulates a new scheme for classifying objects or events | **Adaptation**  Skills are so well developed that individuals can adapt rapidly to special requirements or problem situations | Evaluate, devise, assess, compare, adapt, respond to, demonstrate, plan, rearrange, organise, predict, interpret, resolve |
| **Level 5**  Complex techniques across wide and often unpredicted variety of contexts. Professional/senior managerial work | **Evaluation**  Judges the adequacy with which conclusions are supported by data; judges the value of a work by use of internal criteria; judges the value of a work by use of external standards of excellence | **Creation**  The creation of new practices or procedures to fit a particular situation or specific problem and emphasizes creativity based upon highly developed skills | Create, judge, evaluate, criticise, construct, compose, draw conclusion, synthesize, coordinate, formulate, improve, modify |

## 

## Competence levels

To assist in the development of lesson plans, five levels of competence are used in the model courses for VTS personnel. Levels 1 to 4 are used in the model course for the training of VTS Operators and levels 3 to 5 are used in the model course for VTS Supervisor. High level learning objectives are provided within the model course. Verb taxonomies have been provided with these levels to assist with the creation of detailed learning objectives. (Table 2 refers)

*IALA Guideline 1103 – Train the trainer* assists instructors with the preparation and development of training courses and is aimed at courses delivered an accredited training organisation.

## Competence tables, teaching aids and references

The VTS provider should create an OJT task book covering the subject elements in each of the modules. The task book is intended to provide structure for delivering the course and assessing the student’s progress.

Detailed competence tables are provided, including competence levels and proposed teaching aids and references. The training materials prepared (eg course notes, course presentations and reference documents etc) should be consistent with IALA standards and up-to-date taking into account recent changes and industry developments. These training materials should be available to the student for their reference.

## References

Course development and delivery should take into consideration the following references. Where required, additional references are identified in specific modules.

* United Nations Convention on the Law of the Sea (UNCLOS)
* International Regulations for Preventing Collisions at Sea, 1972 (COLREGS)
* International Conventions for the Safety of Life at Sea (SOLAS)
  + SOLAS Chapter V, Regulation 12 - Vessel traffic services
  + SOLAS, Chapter V, Regulation 7 - Search and Rescue Services
  + SOLAS Chapter V, Regulation 11 – Aids to Navigation
* IMO Assembly resolution A.1158(32), Guidelines for Vessel Traffic Services
* IMO GMDSS Manual
* IMO/ICAO Publication - International Aeronautical and Maritime Search and Rescue (IAMSAR) manual, three volumes:
  + Vol 1 – Organization and management (IMO 960)
  + Vol 2 – Mission co-ordination (IMO 961)
  + Vol 3 – Mobile facilities (IMO 962)
* National, regional, and local legislation and regulations on VTS, ports, harbours, pilotage and

allied services

* National Notices to Mariners pertaining to VTS
* National procedures and standards for operation of VTS
* IALA Vessel Traffic Services Manual
* IALA S1040 Vessel Traffic Services
* IALA S1050 Training and Certification
* IALA R0103 (V-103) Training and Certification of VTS Personnel
* IALA G1141 Operational Procedures for Delivering VTS
* IALA G1156 Recruitment, Training and Certification of VTS Personnel
* IALA International Dictionary of Marine Aids to Navigation

## Course review and updating

The course content and OJT taskbook should be reviewed on a regular basis to ensure it reflects the current IALA standards, recommendations, guidelines and consider recent changes and industry developments.

On conclusion of the course, a review should be undertaken based on course feedback and observations during course delivery to identify ongoing improvements and training materials that may need updating.

# Assessment

Student progress should be continually monitored and assessed, and regular reviews undertaken. Any problems that may arise should be addressed so that the student can attain the required levels of competence and has the opportunity to meet the course objectives.

Assessments should reflect the level of competence required, as provided in the competence tables for each module.

The VTS provider should determine the assessment methods to be used to ensure competence levels have been attained for each subject of the module course. In addition, the VTS provider should have procedures in place to address instances where the student is unable to attain the required competence.

Assessment results should be recorded and retained to indicate the competence levels that have been attained for each subject of the model course.

# COURSE CertificatION

A student should be considered competent when they have:

* demonstrated they have the theoretical and practical knowledge, and
* has passed the appropriate assessments to ensure they met the required competency as outlined in this model course.

Training records should be maintained by the VTS provider detailing when On-the-Job training was satisfactorily completed for each VTS where the person is employed.

# Acronyms

AIS Automatic Identification System(s)

ALRS Admiralty List of Radio Signals

ARPA Automatic Radar Plotting Aid

AtoN Aid to Navigation

CCTV Close circuit television

COLREGS International Regulations for Preventing Collisions at Sea

COMSAR Sub-Committee on Communications and Search and Rescue (IMO – now part of NCSR)

DF Direction Finding (VHF-DF)

DGNSS Differential Global Navigation Satellite System(s)

DSC Digital Selective Calling

DST Decision Support Tool

ECDIS Electronic Chart Display and Information System(s)

ECS Electronic Chart System(s)

ETA Estimated Time of Arrival

FAL Convention on the Facilitation of International Maritime Traffic (IMO)

GMDSS Global Maritime Distress and Safety System

GNSS Global Navigation Satellite System(s)

GOC General Operator Certificate (GMDSS)

IALA International Association of Marine Aids to Navigation and Lighthouse Authorities - AISM

IAMSAR International Aeronautical and Maritime Search and Rescue (IMO/ICAO)

ICAO International Civil Aviation Organization

IEC International Electrotechnical Commission

IELTS International English Language Test System

IMDG International Maritime Dangerous Goods (IMO)

IMO International Maritime Organization

ISPS International Ship and Port Facility Security (Code)

ITU International Telecommunication Union

Lat Latitude

LLTV Low light television

Long Longitude

LOP Line(s) of position

MARPOL International Convention for the Prevention of Pollutions from Ships (IMO)

MASS Maritime Autonomous Surface Ships

MAtoN Marine Aid to Navigation

MSI Maritime Safety Information

OJT On-the-Job Training

PIANC World Association for Waterborne Transport Infrastructure

Racon Radar beacon(s)

ROC Restricted Operator’s Certificate (GMDSS)

Ro-ro Roll on – roll off

RPL Recognition of Prior Learning

RR Radio Regulations

SAR Search and Rescue

SMCP Standard Marine Communication Phrases (IMO)

SOLAS Convention on the Safety of Life at Sea (IMO)

STCW Standards of Training, Certification and Watchkeeping of Seafarers, 1978, as amended

UN United Nations

UNCLOS UN Convention on the Law of the Sea

VHF Very High Frequency (30 MHz to 300 MHz)

1. COMMUNICATION COORDINATION AND INTERACTION

This module assumes the minimum level of English has been obtained as identified in IALA Guideline 1156 and has appropriate national qualifications to operate the VHF marine radiotelephony equipment.

# SUBJECT FRAMEWORK

## Scope

This module covers the communications procedures used at the VTS centre. It also encourages the use of standard phraseology when communicating with vessels and allied services to:

* Facilitate clear, concise, and unambiguous communications in routine and emergency situations as referenced in IMO Resolution A.1158(32).
* Minimise misunderstanding of the intent of messages and reducing the time required for effective communication.

## Objective of Module 1

On completion of the module the student will communicate using consistent, clear and concise maritime English that reflects standard message structure, including:

* standard phrases for communicating with vessels and allied services using IMO Standard Marine Communication Phrases and IALA G1132 on VTS voice communications and phraseology
* concepts of message construction in terms of compiling, delivering and interpret messages
* processes and procedures used to collect and dissemination of VTS information
* dealing with enquires from the media or complaints from the public / allied services

## Additional references relevant to this module

The following references are relevant to the planning and delivery of this module:

* IMO Assembly Resolution A.918(22) Standard Marine Communication Phrases
* IMO Assembly Resolution A.954(23), Proper use of VHF channels at sea
* ITU Radio Regulations, including Appendices
* ITU-R Recommendation M.493, DSC for use in the maritime mobile services
* IALA R1012 VTS Communications
* IALA G1132 VTS Voice Communications and Phraseology



* 1. DETAILED Competence table FOR MODULE 1 – Communication COORDINATION AND INTERACTION

1. Competence Table – Communication Coordination and Interaction

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
| --- | --- | --- | --- | --- |
| **1.1** | **General Communication Skills** |  |  |  |
| **1.1.1** | *Construct VTS messages using standard phraseology.* | 1.1.1.1 | Use of standard phraseology – G1132 - SMCP | 4 |
| 1.1.1.2 | Structure to compile a message and use of message markers | 4 |
| 1.1.1.3 | Techniques to deliver a message, covering areas such as:   * Tone and volume * Questioning techniques * Ambiguous terminology | 3 |
| 1.1.1.4 | ? Dealing with non-English speakers / cultural differences | 2 |
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|  |  |  |
|  |  |  |
| 1.1.1.5 | Use of standard phrases to trigger predictable actions | 3 |
| 1.1.1.6 | Identifying options for alternative wording to clarify understanding | 3 |
|  |  |  |  |  |
|  |  |  |  |  |
| **1.1.2** | *Demonstrate appropriate and correct communication procedures to gather and disseminate VTS information* |  |  |  |
| 1.3.2.3 | Communication with participating ships and allied services | 4 |
| 1.3.2.4 | Communication with local traffic | 4 |
| 1.3.2.5 | Handover with adjacent VTS areas / sectors | 4 |
| 1.3.2.6 | Provision of safety and advisory broadcasts | 4 |
| 1.3.2.7 | Responding to distress and safety communications (e.g. Distress (Mayday), urgency (Pan Pan) or safety (Securite) messages) | 4 |
| 1.3.2.9 | Other communication procedures (e.g. radar assistance communication, search and rescue communication) | 3 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **1.2** | **Dealing with enquires or complaints** |  |  |  |
| **1.2.1** | *Explain the processes and procedures for dealing with media on public relations issues* |  | VTS procedures | 2 |
|  | Protection / security of sensitive information | 2 |
| **1.2.2** | *Explain the processes and procedures for dealing with enquires or complaints from the public / allied services* |  | VTS procedures | 2 |

1. LEGAL FRAMEWORK

# SUBJECT FRAMEWORK

## Scope

This module covers the regulatory and legislative framework of VTS, including the enforcement of violations and the responsibilities of allied services and participating ships in the VTS.

## Objective of Module 2

On completion of the module the student will explain the local legal and regulatory framework relevant to VTS, including:

* Local, national, and international regulations
* the VTS Objectives set for the VTS and how they are measured
* the roles, responsibilities of and relationships between ship masters, marine pilots, VTS and allied services
* compliance and enforcement in the VTS area

## Additional references relevant to this module

The following references are relevant to the planning and delivery of this module:

* Regional / national / local legislations and regulations relevant to VTS, ports, harbours, pilotage, and allied services
* VTS operational procedures
* Local VTS publications such as user guides, notices to mariners etc



* 1. DETAILED Competence table FOR MODULE 2 – Legal Framework

1. Competence Table – Legal Framework

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
| --- | --- | --- | --- | --- |
| **2.1** | **Regulatory Framework** |  |  |  |
| **2.1.1** | *Provide an overview of the VTS legislative framework and the role of IALA Standards* | 2.1.1.1 | SOLAS V/12 | 2 |
| 2.1.1.2 | IMO Resolution A.1158 (32) | 2 |
| 2.1.1.3 | National regulations related to VTS and to SAR (and to Pilotage) | 2 |
|  |  |  |
| 2.1.1.5 | IALA Standards, Recommendations and Guidelines | 2 |
|  | 2.1.1.6 | IMDG | ? |
|  | **Local Regulations** |  |  |  |
| *Demonstrate knowledge of the local regulations relevant to the VTS* | 2.1.1.4 | Local regulations | 4 |
|  | Local VTS publications such as user guides, notices to mariners etc | 4 |
|  | **VTS Objectives** |  |  |  |
| *Identify the VTS objectives that have been set for the VTS and how the VTS provider measures these* |  | VTS Objectives set for the VTS and how they are measured |  |
| **2.2** | **Roles and Responsibilities** |  |  |  |
|  | *? Explain the VTS providers organisational structure and the reporting lines* |  | Overview of organisational structure and reporting arrangements | 2 |
|  |  |  |  | ? |
|  |  | **?** |
| **2.2.2** | *Explain the responsibilities of VTS personnel* | 2.2.2.1 | Role and responsibility of VTS personnel in the provision of VTS including the relationships between the:   * Master * Pilot * Allied services | 3 |
| **2.5** | **Enforcement of legislation/VTS procedures** |  |  |  |
| **2.5.1** | *Explain the compliance and enforcement framework with respect to violations of VTS regulatory requirements* |  | Compliance and enforcement in the VTS area including:   * Provision of guidance/warnings * Reporting arrangements * Escalation procedures | 3 |

1. PROVISION OF VTS

# SUBJECT FRAMEWORK

## Scope

This module covers the practical aspects associated with the provision of VTS including the provision of information, and the issue of advice, warnings, instructions, and traffic clearances.

## Objective of Module 3

On completion of the module the student will implement the VTSs processes and procedures associated with the provision of VTS to provide maintain a traffic image, timely and relevant information, monitor and manage ship traffic and respond to developing unsafe situations. This includes:

* VTS operational procedures
* provision of timely and relevant information
* monitoring and managing ship traffic
* responding to unsafe situations
* expected daily routines such as watch handover

## Additional references relevant to this module

The following references are relevant to the planning and delivery of this module:

* VTS operational procedures
* IALA G1089 Provision of VTS
* IALA G1070 VTS role in managing Restricted or Limited Access Areas
* IALA G1166 VTS in Inland Waters
* IMO COMSAR/Circ.15 - Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)
* ITU-R Recommendation M.493, DSC for use in the maritime mobile services
* Regional / national / local legislations and regulations relevant to VTS, ports, harbours, pilotage and allied services



* 1. DETAILED Competence table FOR MODULE 3 – Provision of VTS

[Suggest that a sentence is inserted to say something to the effect that not all subject elements may apply to each VTS]

1. Competence Table – Provision of VTS

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
| --- | --- | --- | --- | --- |
| **3.1** | ***VTS Operational Procedures*** |  |  |  |
| **3.1.1** | *Explain the structure of the VTS operational procedures and where to locate them at the VTS* |  | Introduction to operational procedure structure:   * Internal routine * Internal emergency * External routine * External emergency | 2 |
|  | Location of procedures at the VTS | 2 |
|  | Document control / update procedures | 1 |
| 3.1.2 | *Demonstrate the ability to apply the external routine procedures by describing the reporting arrangements / interactions with vessels in the VTS area* |  | Pre-arrival information | 3 |
|  | Vessels entering the VTS area | 3 |
|  | Vessels movements within the VTS area | 3 |
|  | Vessels at anchor | 3 |
|  | Vessels at berth | 3 |
|  | Vessels departing the VTS area | 3 |
|  | Transition between adjacent VTS areas or sectors including the arrangements for vessel handover | 3 |
| **3.2** | **Provision of Information** |  |  |  |
| **3** | *Demonstrate the VTS’s processes and procedure to provide timely and relevant information to influence ship movements and assist with onboard decision making.* |  | Dissemination of information about navigational situations such as:  • Ship traffic information (identity, position, intention (IPI) of other traffic)  • Scheduling information  • Limitations of ships (restricted manoeuvrability, potential hindrances)  • Information concerning the safe navigation of the ship. | 3 |
|  | Dissemination of maritime safety information such as:  • Navigational warnings (diving operations, uncharted obstacles)  • Meteorological and hydrographic conditions and warnings  • Notices to mariners, status of marine aids to navigation) | 3 |
|  | Dissemination of other types of information such as:  • Port information  • Pilotage or Tugs  • Cargo information  • Health condition  • Port State Control (PSC)  • International Ship and Port Facility Security (ISPS) | 3 |
|  | Priority of information to be provided | 3 |
|  | Anticipating calls using information available / sensors | 3 |
|  | **Monitor and Manage Ship Traffic** |  |  |  |
|  | *Demonstrate the VTS’s processes and procedures used to monitor and manage vessel traffic at the VTS such as:*  *• Forward planning of vessel movements*  *• Organizing vessels underway*  *• Organizing space allocation*  *• Establishing a system of voyage or passage plans* |  | Rules / measures used to organise and manage the waterway such as:  • Shipping routeing measures and separation criteria  • Constraints (geographic, operational requirement, priorities, vessel types and characteristics, etc) | 4 |
|  | Ship scheduling of movements | 4 |
|  | Traffic clearance / issuing permission to proceed | 4 |
|  | ? Conditions to conduct special activities (eg hot works, life boat drills, testing of navigational equipment) | 3 |
|  | Organising movements to anchorage areas including assigning positions (if relevant) | 3 |
|  | Adverse environmental conditions such as poor visibility, strong currents or tidal streams, high winds, ice etc. | 3 |
|  | Assisting in environmental protection such as mitigating interactions with marine mammals, ship wash, protecting sensitive areas. | 3 |
|  | *Describe the regulatory provisions which vessels need to comply with in the VTS area* |  | Rules / requirements vessels need to comply with such as speed limits, routeing measures, pilotage requirements, local by-laws etc. | 4 |
|  | **Respond to unsafe situations** |  |  |  |
|  | *Demonstrate the VTS’s processes and procedures to respond to developing unsafe situations to maintain a safe and efficient waterway.* | 3.5.2.1 | Request information, such as:   * Ship identification and details such as position, course, and speed * Status of ship's equipment/defects or deficiencies | 4 |
| 3.5.2.2 | Provide information, such as:   * Range and bearing from fixed objects, fairway/channel or waypoints * Proximity to navigational hazards * Information related to navigating into a channel/fairway/lane (i.e., track is parallel/diverging/converging with/from/to reference line) * Guidance to an anchoring position * Meteorological conditions (e.g. low visibility, strong winds) * Ship(s) manoeuvring with difficulty or with unknown intentions * Condition of the waterway that may affect safety of ship traffic | 4 |
| 3.5.2.3 | Provide advice, such as:   * Advising a ship to alter the course, speed. * Advising a ship to close up/drop back on/from another ship * Advising a ship to keep clear from area/position * Assisting where a key bridge team member is incapacitated | 4 |
| 3.5.2.4 | Provide warnings such as:   * Deviating from the planned or recommended route towards shallow water, dangerous wrecks or other obstacles not otherwise promulgated * Diving operations * Ships not under command. | 4 |
| 3.5.2.6 | Providing instructions, such as keep clear of area/position | 4 |
|  | *Explain the considerations when providing navigational support* |  | Considerations for navigational support, such as:  • Status of waterway  • Equipment capabilities and limitations  • Clarity of communications – VTS and ship | 3 |
| **1.2** | **Daily Routines** |  |  |  |
|  | *Explain what daily routines are required and where the routines are detailed* |  | Daily activities at the VTS | 2 |
|  | ? Time management / priorities |  |
|  | ? Dealing with high workload scenarios/multitasking procedure |  |
|  | Equipment / system checks | 3 |
|  | Log keeping and the retention of logs | 2 |
|  | *Describe the process and information required for a for a watch handover* |  | Handover process such as when, how, method of documenting the handover | 4 |
|  | Information elements for an effective handover | 3 |

1. LOCAL KNOWLEDGE

# SUBJECT FRAMEWORK

## Scope

This module covers the [text]

## Objective of Module 4

On completion of the module the student will [text]:

* [text]
* [text]

## Additional rAdditional references relevant to this module

The following references are relevant to the planning and delivery of this module:

* VTS operational procedures



* Local VTS publications such as user guides, notices to mariners etc
  1. DETAILED Competence table FOR MODULE 4 – Local Knowledge

[Suggest that a sentence is inserted to say something to the effect that not all subject elements may apply to each VTS]

1. Competence Table – Local Knowledge

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
| --- | --- | --- | --- | --- |
| **4.1** | ***VTS Environment*** |  |  |  |
| **4.1.1** | *Identify the key characteristics of the VTS area* |  | Overview to the VTS area including:   * area limits / boundaries * separation zones * shipping lanes and channels * anchorages * pilotage areas / pilot boarding grounds * berths * geographical locations * prohibited or dangerous areas * restricted areas | 3 |
|  |  |  |  |
| **4.1.2** | *Demonstrate a knowledge of the AtoNs in the VTS Area* |  | Aids to Navigation | 3 |
| **4.1.3** | *Explain the navigational restrictions on vessel movements in the VTS Area* |  | Geography, hydrographic and environmental aspects covering areas such as   * Depths * Max drafts / beam / LOA * Max air drafts required (region specific) * Effects of meteorological and hydrological conditions | 3 |
| **4.2** | ***Traffic Profile*** |  |  |  |
| **4.2.1** | *Identify the traffic composition in the VTS area* |  | Types of vessels expected | 2 |
|  | Movements of dangerous goods | 2 |
|  | Typical ship movement characteristics/conditions | 2 |
|  | Typical cargoes handled and their characteristics/conditions | 2 |
|  | Special vessel movements | 2 |
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| **4.3** | **Allied Services** |  |  |  |
| **4.3.1** | *Describe the interactions between VTS and allied services* |  | Pilotage | 2 |
|  | Tugs and Tug operators | 2 |
|  | Icebreakers and icebreaker operators (if relevant) | 2 |
|  | Shipping agents | 2 |
|  | Government agencies, including law enforcement agencies, Customs and Immigration Services | 2 |
|  | ? **Port Security** |  |  |  |
|  |  |  |  |  |
| **4.4** | **Familiarisation Activities** |  |  |  |
| 4.4.1 | *Conduct relevant familiarisation activities such as visits to:*   * *Allied services* * *Adjacent VTS centres* * *Onboard a variety of vessels/craft* |  | As determined by the VTS provider | 2 |
|  |  |  |  |  |

1. Equipment

# SUBJECT FRAMEWORK

## Scope

This module provides a practical environment to learn the equipment used at the VTS.

## Objective of Module 5

On completion of the module the student will:

* use the various equipment at the VTS including their geographical location, limitations, and coverage
* understand the key business rules and functionality of the decision support tool (DST)
* recognise the importance of equipment performance monitoring
* explain the procedures on the storage, dissemination, and release of data

## Suggested Training aids and exercises

The teaching methods for that are suggested for use in the delivery of this module include:

* Classroom presentations and facilitated discussion
* Case studies
* Simulation [and recordings]

## Additional references relevant to this module

The following references are relevant to the planning and delivery of this module:

* User manuals for equipment at the VTS
* VTS operational procedures
* VTS providers information management policies or regulations, data protection regulations
* IALA G1132 VTS Voice Communications and Phraseology
* G1110 Use of Decision Support Tools for VTS Personnel
* IALA R0128 Operational and Technical Performance of VTS Systems
* IALA G1111 Establishing Functional & Performance Requirements for VTS Systems
* IALA G1111-1 Producing Requirements for the Core VTS System
* IALA G1111-2 Producing Requirements for Voice Communications
* IALA G1111-3 Producing Requirements for RADAR
* IALA G1111-4 Producing Requirements for AIS and VDES
* IALA G1111-5 Producing Requirements for Environment Monitoring Systems
* IALA G1111-6 Producing Requirements for Electro Optical Systems
* IALA G1111-7 Producing Requirements for Radio Direction Finders
* IALA G1111-8 Producing Requirements for Long Range Sensors
* IALA G1111-9 Framework for Acceptance of VTS Systems
* R0126 (A-126) The Use of the AIS in Marine Aids to Navigation Services Ed2.0
* General Operators Certificate (GOC) / Radio Operators Certificate (ROC)



* 1. DETAILED Competence table FOR MODULE 5 – Equipment

[Suggest that a sentence is inserted to say something to the effect that not all subject elements may apply to each VTS]

1. Competence Table – Equipment

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
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| **5.1** | **Voice Communication Systems and Procedures** |  |  |  |
| **5.1.1** | *Knowledge of VHF base stations and their working channels in the VTS area* |  | VHF base stations in the VTS area including their geographical location, limitations, and coverage | 2 |
|  | VHF channels and management of multiple channels | 2 |
| **5.1.2** | *Demonstrate the use of the voice communication systems at the VTS centre* |  | Key components/functions of the voice communications system | 3 |
|  | Use of telephone system | 4 |
|  | Access recording / replay of voice records | 4 |
| **5.2** | **Equipment at the VTS** |  |  |  |
| **5.2.1** | Demonstrate the knowledge and use of radar equipment at the VTS centre |  | Radar sites in the VTS area including their geographical location, limitations, and coverage | 3 |
|  | Key components/functions of radar system including accessing recordings / replay of radar data | 4 |
| **5.2.2** | Demonstrate the knowledge of AIS used at the VTS centre |  | AIS sites in the VTS area including their geographical location, limitations, and coverage | 3 |
| **5.2.3** | Demonstrate the knowledge and use of imaging systems at the VTS centre |  | CCTV sites in the VTS area including their geographical location, limitations, and coverage | 3 |
|  | Key components/functions of the CCTV systems including accessing recordings / replay of CCTV data | 4 |
| **5.2.4** | *Demonstrate the knowledge and use of environmental sensors at the VTS centre* |  | Hydrographic sensor equipment (eg tide gauges, tidal stream indicators, wave monitoring) in the VTS area including their geographical location, limitations and coverage | 3 |
|  | Meteorological sensor equipment used in the VTS area | 3 |
|  | Application of environmental sensor data in VTS operations | 4 |
| **5.3** | **Decision Support Tools** |  |  |  |
| **5.3.1** | *Demonstrate the use of the decision support tool* |  | Key components/functions of the decision support tool | 4 |
|  | Business rules (alerts and alarms) used by the system | 4 |
|  | Accessing DST replay functionality | 3 |
| **5.4** | **Equipment Performance Monitoring** |  |  |  |
| **5.4.1** | *Identify the importance of equipment performance monitoring* |  | Expected normal operating parameters | 3 |
|  | Fault identification, and correcting equipment faults | 3 |
|  | Procedures to report equipment faults | 2 |
| **5.6** | **VTS Data** |  |  |  |
| **5.6.1** | *Understand corporate procedures on the storage, dissemination, and release of data* |  | Storage and retention of data at the centre | 2 |
|  | Data release policies / procedures | 3 |

1. Personal Attributes

# SUBJECT FRAMEWORK

## Scope

This module introduces the personal qualities required as a VTS operator including an understanding of corporate human resource policies / procedures and support networks available.

## Objective of Module 6

On completion of the module the student will:

* Understand the relevant corporate human resource policies / procedures
* Act with the professionalism expected of the VTSO role, specifically in the areas of responsibility and reliability
* Identify services available to support VTS personnel

## References relevant to this module

The following references are relevant to the planning and delivery of this module:



* VTS operational procedures
* VTS providers corporate human resource policies and practices
* VTS providers information management policies or regulations, data protection regulations
* IALA G1171 Human Factors and Ergonomics in VTS
* IALA G1167 VTS management
* MSC.1/Circ. 1598 Guidelines on Fatigue
  1. DETAILED Competence table FOR MODULE 6 – Personal Attributes

1. Competence Table – Personal Attributes

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
| --- | --- | --- | --- | --- |
| **6.1** | **Relevant Human Resources Policies / procedures** |  |  |  |
| **6.1.1** | *Demonstrate knowledge of corporate procedures relevant to the VTS provider* |  | Corporate procedures / systems | 2 |
|  | Code of conduct / professionalism | 2 |
| **6.2** | **Responsibility and reliability** |  |  |  |
| **6.2.1** | *? Explain the [importance of / how to] working as part of a team* |  | ? what is expected of a VTSO / Teamwork |  |
|  | ? Rostering procedures / shiftwork / leave |  |
| **6.2.2** | *Describe the responsibilities of the VTSO to ensure they are fit for duty* |  | Fitness for duty |  |
|  | ? Fatigue management |  |
| **6.3** | **Support services** |  |  |  |
| **6.3.1** | *Understand services available to support VTS personnel* |  | Employee Assistance Programs / Support networks | 2 |
|  | ? Incident debriefs |  |

1. EMERGENCY SITUATIONS

# SUBJECT FRAMEWORK

## Scope

This module covers the processes and procedures to respond to emergency situations (internal and external) while maintaining safety of the waterway in the VTS area.

## Objective of Module 7

On completion of the course the student will:

* Learn to apply the internal emergency procedures to ensure business continuity of the VTS including the safety of VTS personnel at the centre
* Learn to apply the external emergency procedures to assist in the collection of information and response activities during an emergency
* Learn to apply contingency plans.
* Recognise the importance of recording and reporting activities during incidents and emergency situations at the VTS

## Additional references relevant to this module

The following references are relevant to the planning and delivery of this module:

* VTS Operational procedures
* VTS Business continuity plan
* Local contingency plans such as pollution response
* IALA G1141 Operational Procedures for Delivering VTS
* IALA G1118 Marine Casualty/Incident Reporting and Recording, Including Near-Miss Situations as it Relates to VTS



* 1. DETAILED Competence table FOR MODULE 7 – Emergency SITUATIONS

[Suggest that a sentence is inserted to say something to the effect that not all subject elements may apply to each VTS]

1. Competence Table – Emergency Situations

| Element | *Session Objective* | Sub-element | Subject Elements | Level of Competence |
| --- | --- | --- | --- | --- |
| **7.1** | **Internal Emergencies** |  |  |  |
| **7.1.1** | *Demonstrate an understanding of internal emergency procedures (internal to the VTS) to ensure business continuity and the safety of VTS personnel* |  | System and equipment failures, such as:   * Loss of external communications * Loss of internal communications * Loss of functionality of sensor equipment * Loss of information management systems / decision support tools | 4 |
|  | Evacuation of the VTS centre | 4 |
|  | Medical emergencies of VTS personnel | 4 |
|  | Security incidents | 4 |
| **7.2** | **External Emergencies** |  |  |  |
| **7.2.1** | *Identify authorities / allied services responsible for handling external emergencies within the VTS area and how VTS interacts to provide support during an emergency response.* |  | Authorities / Allied services responsible for emergency response (eg Port operations / marine operations, water police, Rescue Coordination Centre (RCC, JRCC)) | 3 |
| **7.2.2** | *Demonstrate an understanding of external emergency procedures (external to the VTS) to assist in the collection of information and response activities during an emergency.* |  | Collision, capsizing, sinking, grounding, fire onboard and man overboard | 4 |
|  | Pollution incidents | 4 |
|  | Places of refuge | 4 |
|  | Medical emergency | 4 |
|  | Vessel not under command | 4 |
|  | Security incident | 4 |
|  | Protest action | 4 |
|  | Natural disasters | 4 |
| **7.2.3** | *Describe the local contingency plans available for the VTS* |  | Pollution response plans | 3 |
|  | Other, as required |  |
| **7.3** | **Reporting of incidents and near misses** |  |  |  |
| **7.3.1** | *Describe processes and procedures for recording activities during incidents and emergency situations at the VTS* |  | Incident reporting and recording of activities | 3 |
|  | Dissemination of incident reports | 3 |
|  | Protection / security of sensitive information | 3 |