

IALA Model Course V-103/2

On

Vessel Traffic Services Supervisor Training

**Edition 2
December 2009**

Edition 1.1: December 2005
Edition 1: March 2000



20ter, rue Schnapper, 78100
Saint Germain en Laye, France
Telephone: +33 1 34 51 70 01 Fax: +33 1 34 51 82 05
e-mail - iala-aism@wanadoo.fr Internet - www.iala-aism.org

Document Revisions

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

Date	Page / Section Revised	Requirement for Revision
December 2005	Entire document	Reformatted to reflect IALA documentation Hierarchy
December 2009	Entire document	Reflecting 10 years experience and the evolution of technology

Table of Contents

DOCUMENT REVISIONS	2
TABLE OF CONTENTS	3
TABLE OF TABLES	5
FOREWORD	6
PART A - COURSE OVERVIEW	7
1 OVERVIEW	7
2 PURPOSE OF THE MODEL COURSE	7
3 USE OF THE MODEL COURSE	7
PART B - DELIVERY OF THE MODEL COURSE	8
1 INTRODUCTION	8
2 COURSE MODULES	8
3 SUBJECT OUTLINE	9
4 DETAILED TEACHING SYLLABUS	9
5 PRESENTATION	9
6 EVALUATION OR ASSESSMENT OF THE COURSE PARTICIPANTS	9
7 IMPLEMENTATION	9
8 VALIDATION	9
PART C - COURSE FRAMEWORK	10
1 INTRODUCTION	10
2 REQUIREMENTS FOR ENDORSEMENT AS A VTS SUPERVISOR	10
3 COURSE INTAKE - LIMITATIONS	10
4 TRAINING STAFF REQUIREMENTS	10
4.1 Instructors	11
4.2 Assessors	11
5 TEACHING FACILITIES AND EQUIPMENT	11
PART D - GUIDELINES FOR INSTRUCTORS	13
1 INTRODUCTION	13
2 CURRICULUM	13
3 EVALUATION OR ASSESSMENT	14
PART E – COURSE MODULES	15
MODULE 1 - ADVANCED TRAFFIC MANAGEMENT	16
1.1 INTRODUCTION	16
1.2 SUBJECT FRAMEWORK	16
1.2.1 Scope	16
1.2.2 Aims	16
1.3 SUBJECT OUTLINE OF MODULE 1	17
1.4 DETAILED TEACHING SYLLABUS OF MODULE 1	18
MODULE 2 - VTS EQUIPMENT	22
1.1 INTRODUCTION	22

1.2	SUBJECT FRAMEWORK	22
1.2.1	Scope	22
1.2.2	Aims	22
1.3	SUBJECT OUTLINE OF MODULE 2	22
1.4	DETAILED TEACHING SYLLABUS OF MODULE 2	23
MODULE 3 - ADDITIONAL PERSONAL ATTRIBUTES		24
1.1	INTRODUCTION	24
1.2	SUBJECT FRAMEWORK	24
1.2.1	Scope	24
1.2.2	Aims	24
1.3	SUBJECT OUTLINE OF MODULE 3	25
1.4	DETAILED TEACHING SYLLABUS OF MODULE 3	26
MODULE 4 - RESPONDING TO EMERGENCY SITUATIONS		28
1.	INTRODUCTION	28
1.5	SUBJECT FRAMEWORK	28
1.5.1	Scope	28
1.5.2	Aims	28
1.6	SUBJECT OUTLINE OF MODULE 4	28
1.7	DETAILED TEACHING SYLLABUS OF MODULE 4	29
MODULE 5 - ADMINISTRATIVE FUNCTIONS		30
1.1	INTRODUCTION	30
1.2	SUBJECT FRAMEWORK	30
1.2.1	Scope	30
1.2.2	Aims	30
1.3	SUBJECT OUTLINE OF MODULE 5	30
1.4	DETAILED TEACHING SYLLABUS OF MODULE 5	31
MODULE 6 - LEGAL KNOWLEDGE		32
1.1	INTRODUCTION	32
1.2	SUBJECT FRAMEWORK	32
1.2.1	Scope	32
1.2.2	Aims	32
1.3	SUBJECT OUTLINE OF MODULE 6	32
1.4	DETAILED TEACHING SYLLABUS OF MODULE 6	33
ANNEX 1	VTS Supervisor Competence Chart	34
ANNEX 2	Teaching aids AND REFERENCES	37

Table of Tables

Table 1	Levels of Competence	12
Table 2	Assessment levels	14
Table 3	Recommended Course Hours	15
Table 4	Subject outline – Advanced Traffic Management	17
Table 5	Detailed teaching syllabus – Advanced traffic management	18
Table 6	Subject outline – VTS equipment	22
Table 7	Detailed teaching syllabus – VTS equipment	23
Table 8	Subject outline – Additional personal attributes	25
Table 9	Detailed teaching syllabus – Additional personal attributes	26
Table 10	Subject outline – Responding to emergency situations	28
Table 11	Detailed teaching syllabus – Responding to emergency situations	29
Table 12	Subject outline – Administrative functions	30
Table 13	Detailed teaching syllabus – Administrative functions	31
Table 14	Subject outline – Legal knowledge	32
Table 15	Detailed teaching syllabus – Legal knowledge	33

Foreword

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) has been associated with Vessel Traffic Services (VTS) since 1955 and recognises the importance of human resources to the development of efficient Vessel Traffic Services worldwide.

Taking into account the International Convention on Standards of Training, Certification and Watchkeeping of Seafarers, 1978, as amended in 1995 (STCW Convention), the Seafarer's Training, Certification and Watchkeeping Code (STCW Code) and STCW 95 Resolution 10, IALA has adopted Recommendation V-103 on Standards of Training and Certification of VTS Personnel.

The model training courses developed, or being developed, by IALA for VTS personnel are:

- Model Course V-103/1 - VTS Operator Training
- Model Course V-103/2 - VTS Supervisor Training
- Model Course V-103/3 - VTS On-the-Job Training
- Model Course V-103/4 - VTS On-the-Job Training Instructor

These model courses are intended to provide national members and other appropriate authorities charged with the provision of Vessel Traffic Services with specific guidance on the training of VTS Operators and VTS Supervisors. They may be used by maritime training organisations, and assistance in implementing any course may be obtained through IALA at the following address:

The Secretary General
IALA
20ter rue Schnapper
78100 Saint Germain en Laye
France

Tel: (+) 33 34 51 70 01
Fax: (+) 33 34 51 82 05
e-mail: iala-aism@wanadoo.fr
internet: www.iala-aism.org

PART A - COURSE OVERVIEW

1 OVERVIEW

IALA recommends that training providers utilise accredited training courses as per IALA Guideline 1014 on the Accreditation of VTS Training Courses.

2 PURPOSE OF THE MODEL COURSE

The purpose of this model course is to assist maritime training organisations and their teaching staff in the preparation and introduction of new training courses for VTS Supervisors, or in enhancing, updating or supplementing existing training material where the quality and effectiveness of the training courses may thereby be improved.

This course provides details of the subject areas for knowledge and practical competence required for a VTS Operator to gain an endorsement as a VTS Supervisor.

3 USE OF THE MODEL COURSE

The complete course comprises six modules, each of which deals with a specific subject representing a requirement or function of a VTS Supervisor. Each module contains a subject framework stating its scope and aims, a subject outline and a detailed teaching syllabus.

The course also provides participants with the opportunity to exercise the role of a VTS Supervisor. These exercises should, wherever practicable, use simulation. Where simulation is not practicable, the exercises should be designed to be fully representative of appropriate situations that occur in a VTS.

PART B - DELIVERY OF THE MODEL COURSE

1 INTRODUCTION

All training and assessment of personnel for gaining the endorsement as a VTS Supervisor 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 persons qualified in accordance with Part C, section 4 - Training Staff Requirements.

Training staff should review the course outline and detailed syllabus in each subject. The actual level of knowledge, skills and prior technical education of the participants in the subject concerned should be kept in mind during this review. Any differences between the level of skills and competencies of the participant and those identified within the detailed training syllabus should be identified. To compensate for such differences, the instructor is expected to delete from the course, or reduce the emphasis on, items dealing with knowledge or skills already attained by the participants. The instructor should also identify any academic knowledge, skills or technical training that the participants may not have acquired.

By analysing the detailed syllabus and the academic knowledge required to allow training in the technical area to proceed, the instructor can design an appropriate pre-entry course in the subjects in which weakness is evident. Alternatively, the elements of academic knowledge required to support the technical training elements concerned may be inserted at appropriate points within the syllabus.

Adjustment of the module objectives, scope and content for each subject may also be necessary if the participants completing the course are to undertake duties which differ from the objectives specified.

2 COURSE MODULES

The modular presentation enables the instructor to adjust the course content to suit the participant intake and provide any revisions of the subject objectives as required. The instructor should draw up lesson plans based on each detailed syllabus and the references in them to the textbooks and teaching material suggested for the course. Where no adjustment has been found necessary in the subjects of a detailed syllabus, the lesson plans may simply consist of the detailed syllabus with keywords or other reminders added to assist the instructor in making his presentation of the material.

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. See Table 1, Levels of Competence in Part C.

Each level of competence is defined in terms of the learning outcome, the instructional objectives and the required skills. The recommended level of competence for each subject is indicated in the Subject Outline, of each module.

3 SUBJECT OUTLINE

The subject outline, of each module also includes a total recommended number of hours that should be allotted to each module. However, it should be appreciated that these allocations are arbitrary and assume that the participants have met fully all of the entry requirements specified for each subject. The instructor should therefore carefully review the objectives during course and lesson plan design and consider the need to reallocate the time required to achieve each specific learning objective. In addition, the opportunity to reduce formal training time through recognition of Accredited Prior Learning (APL) should be taken advantage of whenever documented evidence of prior learning or professional certification can be produced by the course participants.

4 DETAILED TEACHING SYLLABUS

The detailed teaching syllabus, of each module has been written in learning-objective format in which the objective describes what the participant must do to demonstrate that knowledge has been transferred. All objectives are understood to be prefixed by the words:

the expected learning outcome is that the participant has acquired the recommended levels of competence in

In preparing a teaching scheme and lesson plans, the instructor is free to use any teaching method or combination of methods that will ensure participants can meet the stated objectives. However, it is essential that participants complete the subject matter set-out in each module.

5 PRESENTATION

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

6 EVALUATION OR ASSESSMENT OF THE COURSE PARTICIPANTS

The evaluation criteria are contained in column 4 of the VTS Supervisor competence chart (see ANNEX 1), and provide the means for an assessor to judge whether a participant is competent to perform the related tasks, duties and responsibilities.

7 IMPLEMENTATION

For the course to run smoothly and effectively, considerable attention must be paid to the availability and use of:

- Qualified instructors;
- Support staff;
- Rooms and other spaces;
- Equipment;
- Textbooks, technical papers;
- Other reference material.

Thorough preparation is key to successful implementation of the course.

8 VALIDATION

The information contained in this document has been validated by a group of technical advisers, consultants and experts on training of VTS personnel. These were drawn from the IALA VTS Committee, training organisations of IALA national members and experienced VTS personnel so that the standards implemented may be as uniform as possible. Validation in the context of this document means that the group has found no grounds to object to its contents.

PART C - COURSE FRAMEWORK

1 INTRODUCTION

The model course covers the requirements of the IALA Recommendation V-103. On successful completion of the course and assessments, the participants should have been presented with sufficient training and to carry out with competence the duties of a VTS Supervisor at a VTS centre. In particular they should be fully conversant with the administrative functions of a VTS and the methods of responding to emergency situations as well as the principles of Vessel Traffic Services, the services that a VTS centre can provide to shipping and the resources and means of providing those services.

2 REQUIREMENTS FOR ENDORSEMENT AS A VTS SUPERVISOR

Every candidate for a VTS Supervisor endorsement should:

- be in possession of a valid VTS Operator Certificate;
- have achieved the International English Language Testing System (IELTS) level 6, or its equivalent;
- satisfy the Competent Authority by passing the appropriate assessment for the accredited course of Supervisor training and that they possess the additional theoretical and practical knowledge appropriate to the requirements of a VTS Supervisor.

3 COURSE INTAKE - LIMITATIONS

Class sizes may be limited at the discretion of the Competent Authority in order to allow the instructor to give adequate attention to individual participants. In general it is recommended that a maximum of 12-14 students be the upper limit that a single instructor can be expected to train satisfactorily to the level of competence involved. Larger numbers may be admitted if extra staff and tutorial periods are provided to deal with participants on an individual basis.

During practical sessions and group activities there may be additional restraints on class size. In particular, 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.

4 TRAINING STAFF REQUIREMENTS

All instructors and assessors should be appropriately qualified for the particular types and levels of training or assessment required for the model course.

The accredited training programme for VTS Supervisors should ensure that the qualifications and experiences of instructors and assessors are covered in the application of appropriate quality training standards. Such qualifications, experience and application of quality standards should incorporate appropriate training in instructional techniques, and training and assessment methods and practices, and comply with all applicable recommendations set out in the following paragraphs.

As well as instructors and assessors, additional staff may be required for the maintenance of equipment and for the preparations of materials, work areas and supplies for the practical work.

4.1 Instructors

Any person conducting training of personnel qualifying for certification as VTS Supervisors should:

- 1 Have an appreciation of the training programme and an understanding of the specific training objectives for the particular type of training being conducted;
- 2 Be professionally and academically qualified in the task for which training is being conducted;
- 3 Have an appropriate balance of professional and teaching qualifications;
- 4 If conducting training with the use of a simulator:
 - a have received appropriate guidance in instructional techniques involving the use of simulators; and
 - b have gained practical operational experience on the particular simulator being used.

Any person responsible for the supervision of training personnel should have a full understanding of the training programme and the specific objectives for each element of training being conducted.

4.2 Assessors

Any person conducting assessment of competence of personnel should:

- 1 Have an appropriate level of knowledge and understanding of the competence to be assessed;
- 2 Be qualified in the task for which the assessment is being made;
- 3 Have received appropriate guidance in assessment methods and practices;
- 4 Have gained practical assessment experience; and
- 5 If conducting assessment involving the use of simulators, have gained practical assessment experience on the particular type of simulator under the supervision, and to the satisfaction, of an experienced assessor.

5 TEACHING FACILITIES AND EQUIPMENT

Facilities other than an ordinary classroom fitted with a chalkboard or whiteboard, an overhead projector or computer-assisted projector and screen are given in the individual subject frameworks.

In order to assist instructors, references are shown against the subjects in the modules to indicate references and publications, additional technical material and teaching aids that the instructor may wish to use when preparing and presenting the course, see Annex B, Teaching aids and references. The material listed in the subject frameworks has been used to structure the detailed teaching syllabuses; in particular:

- teaching aids (indicated by A);
- equipment needed by participants (indicated by E); and
- references (indicated by R).

Table 1 Levels of Competence

Level	Knowledge and/or Attitude	Skill
<p><u>Level 1</u> Work of a routine and predictable nature generally requiring supervision</p>	<p><u>Comprehension</u> Understands facts and principles; interprets verbal/written material; interprets charts, graphs and illustrations; estimates future consequences implied in data; justifies methods and procedures</p>	<p><u>Guided response</u> 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</p>
<p><u>Level 2</u> More demanding range of work involving greater individual responsibility. Some complex/non-routine activities</p>	<p><u>Application</u> Applies concepts and principles to new situations; applies laws and theories to practical situations; demonstrates correct usage of methods or procedures</p>	<p><u>Autonomous response</u> The learned responses have become habitual and the movement is performed with confidence and proficiency</p>
<p><u>Level 3</u> Skilled work involving a broad range of work activities. Mostly complex and non-routine</p>	<p><u>Analysis</u> 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</p>	<p><u>Complex observable response</u> 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</p>
<p><u>Level 4</u> Work that is often complex, technical and professional with a substantial degree of personal responsibility and autonomy</p>	<p><u>Synthesis</u> Integrates learning from different areas into a plan for solving a problem; formulates a new scheme for classifying objects or events</p>	<p><u>Adaptation</u> Skills are so well developed that individuals can adapt rapidly to special requirements or problem situations</p>
<p><u>Level 5</u> Complex techniques across wide and often unpredicted variety of contexts. Professional/senior managerial work</p>	<p><u>Evaluation</u> 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</p>	<p><u>Creation</u> The creation of new practices or procedures to fit a particular situation or specific problem and emphasizes creativity based upon highly developed skills</p>

Part D - GUIDELINES FOR INSTRUCTORS

1 INTRODUCTION

VTS Supervisors are appropriately qualified persons performing one or more tasks contributing to the services of a VTS centre. It is essential that education and training be aimed at minimising incidents due to mistakes or errors of judgement. This model course is designed to meet the requirements for qualified VTS personnel to obtain an endorsement as a VTS Supervisor capable, subject to obtaining satisfactory On-the-Job Training, of supervising and managing an Information, Navigational Assistance or Traffic Organisation Service.

The demonstration of a high level of responsibility, watchfulness and precision characterise a competent VTS Supervisor. Training and education should therefore aim at stimulating these qualities.

Those parts of the subject that are important from the point of view of safety should be emphasised. The instructor should therefore be thoroughly acquainted with the relevant rules that regulate Vessel Traffic Services.

It is important to keep in mind the close relationship of all subjects in the VTS Supervisors course. In particular, instructors should continuously monitor the additional personal attributes of participants and, when appropriate, draw their attention to the need to meet the subjects of that module.

In Vessel Traffic Services new techniques and equipment are developed very quickly. This makes it necessary for instructors to keep up to date in new techniques and in national and international rules and regulations. Instructors should also be encouraged to teach relevant new developments and techniques not mentioned in this syllabus.

2 CURRICULUM

The subject modules into which the course is divided reflect the competence headings of the VTS Supervisor Competence Chart (see ANNEX 1). The syllabuses are presented this way to show clearly the relationship of the syllabus with the IALA recommendations.

The subjects shown in the detailed syllabus are not listed in order of priority. Instructors should treat them in the order, which they consider to be the most effective for their course participants and circumstances.

Great care should be taken when using the levels of competence in Table 1. They have been phrased in a precise form to indicate exactly what the participant should be capable of doing. This then becomes the means of demonstrating that the intended level of knowledge or skill has been attained.

The recommended hours given in the syllabuses are intended to be used as approximate guidelines for planning purposes. The hours should be adjusted as necessary to suit local circumstances in the light of experience with previous courses. If possible the course should be implemented with some flexibility to allow for adjustments during its running. It is normal for different participants to require different lengths of time to cover the same work. For practical reasons some minor adjustments will probably be needed when drawing up the timetable to fit the work to be covered into fixed teaching periods and term times.

The success of the course will depend, to a large extent, upon detailed co-ordination of the individual subjects into a coherent teaching scheme. It is important that an experienced instructor acts as course co-ordinator to plan and supervise the implementation of the course.

Using the time estimates, modified as appropriate, a timetable should be drawn up to suit the normal working day and terms of the training organisation. Teaching schemes should be prepared by the teaching staff outlining the subject areas to be covered week by week. All members of the

teaching team should have a copy of the proposed schemes so that they are aware of what is being done in subjects other than their own.

The teaching schemes should be scrutinised carefully to ensure that all of the listed subjects are covered, that repetition is avoided and that essential pre-requisite knowledge at any stage has already been covered. Only those additional requirements set by the Competent Authority should be introduced.

The course co-ordinator should monitor the running of the course. There should be regular discussions with the teaching staff involved concerning the progress of participants and any problems that have become apparent. Modifications of the teaching scheme should be made where necessary to ensure that participants are attaining the objectives laid down. If necessary, extra tuition should be arranged to enable weaker students to reach the required standard. At the conclusion of the course a discussion should be held to determine whether changes should be made to improve future courses.

Procedures should be in place to follow the On-the-Job Training (OJT) of students, using comments from both participants and OJT Instructors to help ensure relevancy and validity of future courses. The transition from advanced training to OJT should appear as continuous as possible.

3 EVALUATION OR ASSESSMENT

Continual assessment of participants should be undertaken. In many cases the assessment can be based on the marks given to participants' course work, providing a proper record of it is kept. That can be supplemented by occasional short test papers. These assessments are additional to any examination required for the purposes of certification.

Assessments should use the following five levels to indicate the progressive learning attained by participants. It is recommended that, for the VTS Supervisor, an average level of four to five should be considered as being satisfactory.

Table 2 Assessment levels

LEVEL	DESCRIPTION
LEVEL 1	The participant demonstrates a willingness to learn.
LEVEL 2	The participant demonstrates active participation in the learning process.
LEVEL 3	The training positively influences the participant's behaviour and attitude, and there is a measurable increase in knowledge and skills.
LEVEL 4	The participant demonstrates the ability to adapt existing knowledge, skills and attitude when dealing with new and unplanned situations.
LEVEL 5	The participant demonstrates a permanent positive change in knowledge, skills and attitude and is ready to positively influence others. The participant may exhibit some positive changes in co-related behaviours.

The form and timing of examinations for endorsement as a VTS Supervisor is a matter for the Competent Authority concerned.

An adequate period of time should be allowed at the end of the course for revision and review of the course content. That period and the time occupied by examinations would be additional to the times shown in the syllabuses.

The Competent Authority may recognize documented evidence including assessments completed for the attainment of related certificates as equivalencies for parts or all of specific VTS modules.

PART E – COURSE MODULES

The complete course comprises six modules, each of which deals with a specific course module and subject representing a requirement or function of a VTS Supervisor, followed by simulated exercises and assessment intended to be representative of events and incidents likely to be experienced in a VTS centre.

Table 3 Recommended Course Hours

SUBJECT	RECOMMENDED DURATION IN HOURS ¹	
	PRESENTATIONS / LECTURES	EXERCISES / SIMULATION ^{2,3}
1. Advanced Traffic Management	14	18
2. VTS Equipment	3	3
3. Additional Personal Attributes	6	4
4. Responding to Emergency Situations	12	18
5. Administrative Functions	12	6
6. Legal Knowledge	6	3 ⁴
Total	53	52

- Notes:
1. The recommended times are based on the assumption that participant have no knowledge on any subject in excess of that gained during the VTS Operators basic training. The actual time required for each module will vary, depending on previous knowledge and the entrance level of the participant.
 2. The times recommended include simulation time, but do not include the time necessary for examinations or tests of proficiency.
 3. Simulation will provide an opportunity to combine several of the required teaching points of all modules concurrently.
 4. Aspects pertaining to legal implications will be evidenced throughout all simulation exercises

MODULE 1 - ADVANCED TRAFFIC MANAGEMENT

1.1 INTRODUCTION

Instructors for this module should have knowledge and comprehension of ship bridge activities as well as qualifications in the VTS/Maritime field and the ability to apply nautical techniques in a VTS environment. If this cannot be achieved, then an appropriate expert should cover sections of this module relevant to their field of expertise. Ideally, every instructor should have full access to simulated VTS.

1.2 SUBJECT FRAMEWORK

1.2.1 Scope

This syllabus covers the requirement of candidates for VTS Supervisors to have nautical knowledge and management skills additional to those required for VTS Operators. This is to ensure effective traffic management and port operations.

This module also provides detailed knowledge of port operations and the means by which management information can be co-ordinated between all authorities associated with port management activities.

The syllabus provides candidates with an understanding of the conduct and safe management of dangerous cargoes and the ability to initiate effective actions in the event of accidental discharge, ingress of water or fire.

1.2.2 Aims

On completion of this module candidates will demonstrate the ability to manage a VTS watch responsible for the provision of VTS traffic and port operations services and ensure that VTS is capable of co-ordinating effectively with authorities responsible for other port management services.

1.3 SUBJECT OUTLINE OF MODULE 1

Table 4 Subject outline – Advanced Traffic Management

Subject Area	Recommended Competence Level	Recommended Hours	
		Presentations/ Lectures	Exercises/ Simulation ¹
Data used in VTS Charts and publications Monitoring normal operation of aids to navigation Other data sources	Level 4		
Marine Organisations International/national/local organisations Roles and functions of maritime organisations	Level 4		
Traffic/Port Management Principles of waterway and traffic management Traffic monitoring and organisation Supervisory responsibilities and interaction Harbour operations Coastal VTS	Level 5		
Dangerous Cargoes Types of dangerous cargo Special considerations for ships carrying dangerous cargoes in a VTS area Pollution control and response	Level 4		
		14 hours total	18 hours total

Note 1 This should, where possible, include participation in a major regional pollution control exercise.

1.4 DETAILED TEACHING SYLLABUS OF MODULE 1

Table 5 Detailed teaching syllabus – Advanced traffic management

Subjects / Learning Objectives	Reference	Teaching Aid
Data used in VTS		
Charts and publications Systems for correcting charts and publications Means of promulgating changes to charts and publications Significance of failure to correct and promulgate changes to charts and publications	R4, R22, R27, R43	A1, A2, A3, A4, A6, A7
Monitoring normal operation of aids to navigation Visual confirmation of position and operation Radar confirmation of position Monitoring of remote sites	R42, R43	
Other data sources International, regional, national and local data bases Other data inputs		
Marine Organisations		
International/national/local organisations International, national and regional SAR arrangements IMO/IHO/ITU IALA IMPA/IHMA/IAPH National/local governmental body/ ministry (*) National/local maritime executive/operational body (where different from (*)) Other organisations Roles and functions of maritime organisations Establish chain of authority (relevant to the body of trainees under instruction)	R13, R35	A17

Subjects / Learning Objectives	Reference	Teaching Aid
Traffic/Port Management		
Principles of waterway and traffic management Types of traffic / port management service Planning Risk management Allocation of space Criteria which determines the parameters for the safe passage of shipping Guidelines on Navigational Assistance Service (NAS) Required nautical knowledge	R1 to R7 inclusive, R17, R35, R41, R58, R59	A1, A2, A3, A5 E1 E2 during simulated exercises
Traffic monitoring and organisation Traffic patterns VTS sailing or route plans Situation analysis Monitoring and surveillance requirements Related nautical knowledge	R17, R37, R41	
Supervisory responsibilities and interaction Ship masters (including PEC holders) Marine pilots VTS Ships agents Tugs and towing Allied services Other government departments/agencies Related nautical knowledge		
Harbour operations Harbour master – Port authority Port users/stakeholders		

Subjects / Learning Objectives	Reference	Teaching Aid
Terminal operators Security Role of VTS within the harbour Other government organizations Special operations Related nautical knowledge		
Ship Reporting Systems Reporting and recording of alleged/observed breaches of COLREGS, mandatory ship reporting system requirements and SOLAS	R1, R2, R3, R7, R12, R16, R35, R60	
Coastal VTS Concept of coast state control waters Geographical limits of territorial waters SAR regions, EEZ and other special zones National emergency towing protocol Related diplomatic protocols Related nautical knowledge		
Dangerous Cargoes	R8, R38,R40	A17, A18
Types of dangerous cargo International Maritime Dangerous Goods Code (IMDG) International Convention for the prevention of pollution from ships (MARPOL) Local/regional contingency and emergency requirements		
Special considerations for ships carrying dangerous cargoes in a VTS area International Maritime Dangerous Goods Code (IMDG) International Convention for the prevention of pollution from ships (MARPOL) Local/regional contingency and emergency requirements VTS concerns Pilotage concerns		

Subjects / Learning Objectives	Reference	Teaching Aid
Pollution control and response Methods of containing Methods of recovery Role of VTS in national and local contingency/response plans		Standard Hazmat course

MODULE 2 - VTS EQUIPMENT

1.1 INTRODUCTION

Instructors for this module should have comprehension of the equipment and systems used in vessel traffic services and how they are applied in a VTS environment. If this cannot be achieved, then the appropriate expert should cover certain sections of this module. Every instructor should have full access to a simulator capable of representing the VTS environment. In addition, if possible arrangements should be made for participants to visit operational VTS centres.

1.2 SUBJECT FRAMEWORK

1.2.1 Scope

This syllabus covers the theory and practice of maintaining the satisfactory operation of VTS systems, including monitoring the performance of equipment and sub-systems and organising maintenance requirements as and when necessary.

1.2.2 Aims

On completion of the module participants will demonstrate a knowledge of generic system operation, as appropriate to the integration of VTS equipment, redundancy arrangements for the collection, analysis and dissemination of traffic information. Participants will explain rationale and demonstrate skills to identify the malfunction or degradation in performance of equipment and to keep the system operational on a 24/7 basis. Specific knowledge will be considered in On-the-Job Training.

In addition, the participants will demonstrate understanding of systems to enable services to be maintained, to the maximum extent practicable, in the event of equipment becoming unserviceable or malfunctioning.

Participants will communicate with technical staff to ensure that relevant documentation concerning the technical characteristics of the equipment, its operation, performance checks and maintenance, including routine servicing and repair work, is current.

1.3 SUBJECT OUTLINE OF MODULE 2

Table 6 Subject outline – VTS equipment

Subject Area	Recommended Competence Level	Recommended Hours	
		Presentations/ Lectures	Exercises/ Simulation
VTS Equipment Operation of equipment and systems Maintenance procedures Redundancy of equipment	Level 3	3 hours total	3 hours total

1.4 DETAILED TEACHING SYLLABUS OF MODULE 2

Table 7 Detailed teaching syllabus – VTS equipment

Subjects /Learning objectives	Reference	Teaching Aid
VTS Equipment	R31, R33, R34, R37, R41, R49, R57	A1, A2, A4, A6, A11, A12, A13, A15, A17, A18
Operation of equipment and systems Monitoring and maintaining optimum performance and types of: Equipment and systems for collecting data Equipment and systems for data analysis Equipment and systems for disseminating data Shutdowns/equipment degradation Scheduled Unscheduled Rectification Impact on operational procedures and levels of service New technology		
Maintenance procedures Routine maintenance Daily Weekly Monthly and longer intervals of time Unscheduled maintenance		
Redundancy of equipment Systems and equipment for data collection Systems and equipment for data analysis Systems and equipment for data dissemination		

MODULE 3 - ADDITIONAL PERSONAL ATTRIBUTES

1.1 INTRODUCTION

Instructors for this module should have experience of human relationships in particular, in the VTS field. If this cannot be achieved, then an appropriate expert should cover certain sections of this module.

In addition, the instructors of other modules should be aware of the requirements for participants to develop specific personal attributes. The instructors should continuously monitor the personal attributes of participants and, when appropriate, draw their attention to the need to meet the subjects of this module.

1.2 SUBJECT FRAMEWORK

1.2.1 Scope

This syllabus covers the personal attributes needed by VTS Supervisors to enable their administrative and supervisory duties to be performed properly under all conditions likely to be encountered in a VTS centre.

1.2.2 Aims

On completion of the module participants will be able to demonstrate that they have acquired the knowledge and ability to conduct the duties of a VTS Supervisor in a manner which is tactful, courteous and conforms with accepted principles and procedures established by the Competent Authority.

In addition, the participant should be able to demonstrate a sense of responsibility, independence, a willingness to co-operate with others and the ability to motivate and lead a VTS team. In this context, 'co-operation with others' needs to include those outside of the VTS centre such as ship masters, pilots, tug masters and other allied services. The use of simulation integrated into training will enable participants to develop their leadership skills for handling external communications during all types of emergency likely to be experienced operationally.

Participants should also be able to recognise when stressful situations are developing and have knowledge of the management techniques necessary to minimise the effect of such situations on the efficient operation of a VTS centre.

1.3 SUBJECT OUTLINE OF MODULE 3

Table 8 Subject outline – Additional personal attributes

Subject Area	Recommended Competence Level	Recommended Hours	
		Presentations/ Lectures	Exercises/ Simulation
Leadership Team management Job performance and professional development	Level 4		
Communication Skills Effective communication Media and general public Operational communications	Level 4		
Stress Management Recognizing stress/stressful situations and fatigue Responding to stress/fatigue	Level 4		
		6 hours total	4 hours total

1.4 DETAILED TEACHING SYLLABUS OF MODULE 3

Table 9 Detailed teaching syllabus – Additional personal attributes

Subjects /Learning Objectives	Reference	Teaching Aid
Leadership		
Team management Leadership qualities Diplomacy Motivational skills Dealing with difficult situations Self directed work teams		
Job performance and professional development Technological and other advances Credibility Internal External Limitations		A16
Communication Skills		A17 (Police, press, Coast Guard etc.)
Effective communication Listening skills Effective oral/written communication Barriers to communication Counselling		
Media and general public Confidential information Press releases and public relations Responding to requests/questions Information management		

Subjects /Learning Objectives	Reference	Teaching Aid
Operational communications Internal External, such as VHF communications		
Stress Management	R15, R24, R55	
Recognising stress/stressful situations and fatigue		
Responding to stress/fatigue Counselling		

MODULE 4 - RESPONDING TO EMERGENCY SITUATIONS

1. INTRODUCTION

Instructors for this module should have the knowledge, comprehension and the ability to contribute to the development of contingency plans and to apply emergency procedures in a VTS environment. Every instructor should have full access to a simulator capable of representing the VTS environment. If practicable, arrangements should be made for participants to visit operational VTS centres.

1.5 SUBJECT FRAMEWORK

1.5.1 Scope

This syllabus covers the knowledge and skills necessary to supervise the response to emergency situations likely to occur within a VTS area, identify and maintain accurate records of additional resources which are available for emergency situations, and the circumstances under which they should be used.

1.5.2 Aims

On completion of the module participants will demonstrate knowledge of how to assess and implement contingency plans relating to distress, emergencies and other special circumstances. Participants should have the knowledge to contribute to the development of local contingency plans.

The knowledge that the participants acquire should also assist them in the co-ordination of training exercises related to emergency situations. They should also understand the need to learn lessons from training exercises and the requirement to modify plans in the light of the lessons learned.

1.6 SUBJECT OUTLINE OF MODULE 4

Table 10 Subject outline – Responding to emergency situations

Subject Area	Recommended Competence Level	Recommended Hours	
		Presentations/ Lectures	Exercises/ Simulation
Contingency Plans Description and purpose of contingency plans Implementation of and participating in contingency plans Incident response Special circumstances Delegation of responsibilities	Level 4	12 hours total	18 hours total

1.7 DETAILED TEACHING SYLLABUS OF MODULE 4

Table 11 Detailed teaching syllabus – Responding to emergency situations

Subjects /Learning Objectives	Reference	Teaching Aid
Contingency Plans	R5, R13, R35, R37, R38, R39, R40, R41	A1, A13, A14, A17, A18
Description and purpose of contingency plans International National Regional Local In-centre Command and control structure Training exercises		A12
Implementation of and participation in contingency plans (e.g. man overboard, fire, collision, grounding, pollution, toxic-chemical spill, piracy, terrorism, medevac etc.) Immediate response according to contingency plans Use of check lists Co-ordination, evaluation and dissemination of information Liaison with other services as required Importance of maintaining communications		A12
Incident response (e.g. close quarters, loss of power) Management of traffic Importance of maintaining VTS services during incident		
Special circumstances Shifting of dangerous cargoes/materials Incidents not fully covered by contingency plans Incidents at the VTS centre (e.g. fire, flooding, terrorism, security, etc.)		A12
Delegation of responsibilities Prioritization Lines of authority Standard Operating Procedures (SOPs) Organisation of duties of subordinates Resource management		

MODULE 5 - ADMINISTRATIVE FUNCTIONS

1.1 INTRODUCTION

Instructors for this module should have knowledge and comprehension of the administration techniques and the ability to apply them in a VTS environment. If this cannot be achieved, then the appropriate expert should cover certain sections of this module. Every instructor should have full access to a simulator capable of representing the VTS environment.

1.2 SUBJECT FRAMEWORK

1.2.1 Scope

This syllabus covers the knowledge and skills necessary to plan and organise the administrative functions required for maintaining the operational efficiency of a VTS centre.

1.2.2 Aims

On completion of the module participants will demonstrate knowledge to coordinate communications with allied services, manage traffic schedules, prepare reports and assess the performance of VTS centres and personnel.

Participants will also demonstrate knowledge enabling them to manage sailing or route plans and develop traffic plans based on forecast traffic movements within the VTS area.

1.3 SUBJECT OUTLINE OF MODULE 5

Table 12 Subject outline – Administrative functions

Subject Area	Recommended Competence Level	Recommended Hours	
		Presentations/ Lectures	Exercises/ Simulation ¹
Planning and Organisation Traffic schedules Performance of a VTS centre Performance of VTS personnel Preparation of reports (internal and external) Allied services	Level 4	12 hours total	6 hours total

Note 1 – Aspects pertaining to legal implications should be integrated in all simulation exercises.

1.4 DETAILED TEACHING SYLLABUS OF MODULE 5

Table 13 Detailed teaching syllabus – Administrative functions

Subjects /Learning Objectives	Reference	Teaching Aid
Planning and Organisation		
Traffic schedules Monitoring traffic schedules Promulgating traffic schedules Managing traffic schedules	R37	
Performance of VTS centre Supervising/maintaining log keeping functions Shift scheduling	R37, R44, R49, R55	
Performance of VTS personnel Assessing performance Documenting performance and record keeping Training, and improving performance	R37, R41, R44, R50, R55	
Preparation of reports (internal and external) Routine reports Incident reports Technical reports Other reports as required by operations (e.g. statistical, medical, comments, etc.) Billing arrangements	R35, R37, R41	
Allied services Co-ordination and communication with allied services Producing/approving VTS sailing/route plans	R17, R37, R41	

MODULE 6 - LEGAL KNOWLEDGE

1.1 INTRODUCTION

Instructors for this module should have relevant knowledge and comprehension of the legal implications of operating a VTS and the ability to apply these when guidance on practices and procedures for VTS personnel is being developed.

1.2 SUBJECT FRAMEWORK

1.2.1 Scope

This syllabus covers the relevant knowledge and comprehension necessary to understand the legal requirements and their implications on all parties involved in traffic movements in a VTS area.

1.2.2 Aims

On completion of the module, candidates will demonstrate an understanding of the basis in international and national law for the establishment of VTS as well as the legal requirements, limitations and liabilities of those involved in traffic movements in a VTS area, including ships' masters, marine pilots, port and harbour authorities and VTS personnel.

Candidates will demonstrate an understanding of international, national and local legislative requirements and regulations.

1.3 SUBJECT OUTLINE OF MODULE 6

Table 14 Subject outline – Legal knowledge

Subject Area	Recommended Competence Level	Recommended Hours	
		Presentations/ Lectures	Exercises/ Simulation ¹
General		6 hours total	3 hours total
Legal basis for VTS in international law	Level 4		
Legal liabilities and their implications to VTS	Level 3		
Legal liabilities and the implication to others in a VTS area	Level 3		
Shipping acts and regulations relating to VTS	Level 4		

Note 1 – Aspects pertaining to legal implications should be integrated in all simulation exercises.

1.4 DETAILED TEACHING SYLLABUS OF MODULE 6

Table 15 Detailed teaching syllabus – Legal knowledge

Subjects /Learning Objectives	Reference	Teaching Aid
General		
Legal basis for VTS in international law UNCLOS SOLAS (Chapter V) COLREGS IMO resolutions and recommendations IALA recommendations and guidelines	R1, R2, R3, R6, R7, R12, R16, R17, R35, R41, R46, R58, R59, R60	A17, A18
Legal liabilities and their implications to VTS Routine operations Incidents Accuracy of information promulgated Legal responsibilities/consequences of actions Requirements and limitations of their authority	R35, R37, R58, R59, R60	A18
Legal liabilities and the implication to others in a VTS area Routine operations Incidents Other circumstances	R35, R37, R58, R59	A18
Shipping acts and regulations relating to VTS International regulations and resolutions National shipping acts and regulations Local bye-laws, circulars, guidance notes and accepted procedures Means of commenting on/promulgating changes to acts and regulations	R1, R2, R3, R6, R7, R12, R16, R17, R35, R36, R37, R41, R45, R46, R48, R58, R59, R60	A4

ANNEX 1 VTS SUPERVISOR COMPETENCE CHART

Competence area	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
Module 1 Advanced traffic management	<i>Traffic management</i> Apply traffic monitoring and management techniques. Understand roles and responsibilities.	Examination and assessment of evidence obtained from approved simulator and on the job training.	Methods by which INS, TOS and NAS as well as other services are applied in an operational environment. The roles, responsibilities and activities relating to the services are known.
	<i>Chartwork / publications</i> Ensure that: <ol style="list-style-type: none"> 1. all charts and publications are kept up to date in a timely and accurate manner and relevant documentation completed; 2. changes in data in use within the VTS are recorded accurately; 3. aids to navigation in a VTS area are operating within normal parameters. 	Examination and assessment of evidence obtained from approved simulator and on the job training.	Interpretation and implementation of changes are correct and applied as soon as practicable after receipt. Malfunction of any aid to navigation in the area is identified in a timely manner.
	<i>Maritime organisations</i> Knowledge of maritime related organisations	Examination and assessment of evidence obtained from practical instruction and approved simulator and on the job training	The responsibilities and activities of the organisations are understood
	<i>Port management</i> Knowledge and ability to coordinate information management of: <ol style="list-style-type: none"> 1. pilotage; 2. harbour operations (including contingency plans); 3. security; 4. tugs and towing; 5. allied services; 6. ships agents. 		The responsibilities and activities relating to the services are known. Methods by which liaison can be made with each of the services are known and understood.

Competence area	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
	<p><i>Dangerous cargoes</i> Knowledge of dangerous cargoes. Application of precautions to be taken. Knowledge and application of response methods</p>	<p>Examination and assessment of evidence obtained from practical instruction and approved simulator and on the job training;</p>	<p>Methods by dangerous cargoes are recognized and classified are understood Application of methods to respond to threats and incidents affecting the environment are taken in accordance with national and local requirements.</p>
<p>Module 2 VTS equipment</p>	<p><i>Equipment operation and availability</i> The ability to determine that the VTS equipment is operating satisfactorily and, when necessary, to take appropriate action to ensure that the service is maintained at an operational level, and any defects are rectified and relevant documentation is kept up to date.</p>	<p>Examination and assessment of evidence obtained from practical instruction and approved simulator and on the job training;</p>	<p>The methods of comparing actual operational performance with normal performance is known. A good understanding of the overall system, including all equipment and sub-system redundancy arrangements.</p>
<p>Module 3 Additional personal attributes</p>	<p><i>Effective Communication</i> Thorough knowledge of, and ability to perform:</p> <ol style="list-style-type: none"> 1. dealing with the media and the general public; 2. operational telephone conversations; 3. negotiations with other interested parties. 	<p>Assessment of evidence obtained from approved simulated and on the job training.</p>	<p>Conduct conforms with acceptable principles, including confidentiality, and procedures established by the Competent Authority concerned.</p>
	<p><i>Leadership</i> Demonstrate the ability to:</p> <ol style="list-style-type: none"> 1. effect team work procedures; 2. administer and organise work programmes; 3. manage a VTS watch. 	<p>Assessment of evidence obtained from approved simulated and on the job training.</p>	<p>Conduct conforms with acceptable principles and procedures established by the Competent Authority concerned.</p>
	<p><i>Stress and fatigue management</i> An appropriate knowledge of stress and fatigue management techniques.</p>	<p>Assessment of evidence obtained from approved simulation and on the job training.</p>	<p>Conduct conforms with acceptable principles and procedures established by the Competent Authority concerned.</p>

Competence area	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
<p>Module 4 Respond to emergency situations</p>	<p><i>Implement contingency plans relating to distress, pollution and special circumstances</i> Demonstrate knowledge of :</p> <ol style="list-style-type: none"> 1. pre-determined procedures concerning international, national and local emergency situations and coordinating their implementation; 2. the availability of additional resources and the circumstances under which they should be used; 3. the circumstances under which delegation of responsibilities may take place. <p>Assisting in the coordination of training exercises related to emergency situations.</p>	<p>Assessment of evidence obtained from approved simulation and on the job training.</p>	<p>Actions taken in an emergency are in accordance with the appropriate agreed contingency plan.</p>
<p>Module 5 Administrative functions</p>	<p><i>Planning and organisation</i> <i>Demonstrate the ability to:</i></p> <ol style="list-style-type: none"> 1. co-operate with users and allied services in the preparation of VTS sailing or route plans for traffic joining , departing or moving within a VTS area; 2. develop and promulgate a traffic plan; 3. prepare reports; 4. perform manual and electronic log keeping functions; 5. assess and document performance. 	<p>Examination and assessment of evidence obtained from practical instruction and report writing.</p>	<p>VTS sailing or route plans, traffic plans, reports, logs and performance records are in formats suitable for easy reference and correctly follow established procedures and practices.</p>
<p>Module 6 Legal knowledge</p>	<p><i>General</i> Related knowledge of:</p> <ol style="list-style-type: none"> 1. legal responsibilities, limitations and liabilities and their implications; 2. safety related ship certificates; 3. acts and regulations. 	<p>Examination and assessment of evidence obtained from instruction.</p>	<p>Action taken and procedures followed correctly apply and make full use of advice available and correctly follow established procedures and practices</p>

ANNEX 2 TEACHING AIDS AND REFERENCES

Teaching aids that the participants ideally should have access to:

- A1 Simulated VTS environment capable of meeting the training objectives
- A2 Briefing/debriefing area for simulations, including facilities for modelling performance and reviewing recorded exercises
- A3 Charts and associated publications
- A4 Examples of Notices to Mariners applicable to a VTS area
- A5 Ship models
- A6 Video recording and playing facilities
- A7 Audio recording and playing facilities
- A8 Interactive language laboratory
- A9 Personal computer
- A10 Simulator exercises to practice operational maritime English
- A11 Examples of equipment and systems capable of being manipulated in a manner similar to the equipment and systems used in VTS centres
- A12 Interactive VTS simulator, including VHF facilities
- A13 Simulated VHF DF system including digital selective calling facilities
- A14 Appropriate video films;
- A15 Manuals, strip cards and other facilities for use with the monitoring systems being taught
- A16 Appropriate interactive video
- A17 Guest speakers
- A18 Case studies

Equipment recommended for each participant:

- E1 Headset/microphone with press to talk (PTT) facilities
- E2 Logging system
- E3 For chartwork exercises, desks approximately 1 metre long by 0.7 metres width, with drawers for chart stowage
- E4 Protractor, parallel ruler, dividers, nautical almanac, charts of a VTS area, calculator, chart correcting facilities
- E5 Audio tapes of recorded VTS communications

References relevant to the planning of VTS training:

- R1* SOLAS' 74 Regulation V/10 – Ships' routing
- R2* SOLAS '74 Regulation V/11 - Ship reporting systems
- R3* SOLAS '74 Regulation V/12 - Vessel traffic services
- R4* SOLAS '74 Regulation V/27 - Nautical charts and nautical publications
- R5* SOLAS '74 Regulation V/7 – Search and rescue services
- R6* United Nations Convention on the Law of the Sea (UNCLOS)
- R7* International Regulations for Preventing Collisions at Sea, 1972 (COLREGS)
- R8* International Maritime Dangerous Goods Code (IMDG Code) - 1994, as amended
- R9* International Convention on Standards of Training, Certification and Watchkeeping of Seafarers, 1978, as amended in 1995 (STCW Convention)
- R10* Seafarer's Training, Certification and Watchkeeping Code (STCW 95 Code)
- R11* IMO GMDSS Manual
- R12* IMO publication on Ships' Routing
- R13* IMO/ICAO Publication "International Aeronautical and Maritime Search and Rescue (IAMSAR) manual" - in three volumes:
 - Vol 1 – Organization and management (IMO 960)
 - Vol 2 – Mission co-ordination (IMO 961)
 - Vol 3 – Mobile facilities (IMO 962)
- R14* IMO Assembly resolution A.705(17), Promulgation of Maritime Safety Information (MSI)
- R15* IMO Assembly resolution A.772(18), Fatigue factors in manning and safety
- R16* IMO Assembly resolution A.851(20), General principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants
- R17* IMO Assembly resolution A.857(20), Guidelines for Vessel Traffic Services
- R18* IMO Assembly resolution A.917(22), as amended by resolution A.956(23) on Guidelines for the onboard operational use of shipborne automatic identification systems (AIS)
- R19* IMO Assembly resolution A.918(22), Standard Marine Communication Phrases
- R20* IMO Assembly resolution A.950(23), Maritime Assistance Service (MAS)
- R21* IMO Assembly resolution A.954(23), Proper use of VHF channels at sea
- R22* IMO Maritime Safety Committee resolution MSC.232(82), Revised performance standards for Electronic Chart Display and Information Systems (ECDIS)
- R23* IMO COMSAR/Circ.15 - Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)
- R24* IMO MSC/Circ.1014, Guidelines on fatigue mitigation and management
- R25* IMO SN/Circ.244, Guidance on the use of the UN/Locode in the destination field in AIS messages
- R26* International Code of Signals
- R27 IHO approved documents of charts and publications
- R28 ITU Radio Regulations, including Appendices
- R29 ITU-R Recommendation M.493, DSC for use in the maritime mobile services

- R30 ITU-R Recommendation M.541, Operational procedures for the use of DSC equipment in the maritime mobile services
- R31 ITU-R Recommendation M.1371, Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile band
- R32 IELTS Handbook - British Council, or equivalent.
- R33 Marine Communications Handbook - Lloyds of London
- R34 Equipment and system operating manuals
- R35 National, regional and local legislation and regulations on VTS, ports, harbours, pilotage and allied services
- R36 National Notices to Mariners pertaining to VTS
- R37 National procedures and standards for operation of VTS
- R38 National procedures and standards for operation of International Convention for the Prevention of Pollution from Ships (MARPOL)
- R39 National arrangements for intervention, pollution and salvage
- R40 Local/regional contingency and emergency requirements
- R41 IALA Vessel Traffic Services Manual
- R42 IALA Aids to Navigation Guide (NAVGUIDE)
- R43 International Maritime Buoyage System (MBS), published by IALA
- R44 IALA Recommendation V-103, Standards of training and certification of VTS Personnel
- R45 IALA Recommendation V-119, Implementation of Vessel Traffic Services
- R46 IALA Recommendation V-120, Vessel Traffic Services in Inland Waters
- R47 IALA Recommendation V-125, The Use and Presentation of Symbology at a VTS Centre (including AIS)
- R48 IALA Recommendation V-127, Operational procedures for Vessel Traffic Services
- R49 IALA Recommendation V-128, Operational and technical performance requirements for VTS equipment
- R50 IALA Guideline 1017, Assessment of Training Requirements for Existing VTS Personnel, Candidate VTS Operators and Revalidation of VTS Operator Certificates
- R51 IALA Guideline 1026, AIS as a VTS tool
- R52 IALA Guideline 1027, Designing and implementing simulation in VTS Training at Training Institutes/VTS Centres
- R53 IALA Guidelines 1028, The Automatic Identification System (AIS) Volume 1, Part I Operational Issues
- R54 IALA Guideline 1032, Aspects of Training of VTS Personnel relevant to the introduction of the Automatic Identification System
- R55 IALA Guideline 1045, Staffing levels at VTS centres
- R56 IALA Guideline 1050, Management and Monitoring of AIS Information
- R57 IALA Guideline 1056, Establishment of VTS Radar Services (Ed 1)
- R58 IALA Guideline 1068, Provision of a Navigational Assistance Service by Vessel Traffic Services
- R59 IALA Guideline 1070, VTS role in managing Restricted or Limited Access Areas
- R60 IALA Guideline 1071, Establishment of a Vessel Traffic Service beyond territorial seas

*There is an annual catalogue of IMO Publications, many of which are printed in languages other than English. The catalogue provides ISBN and IMO references to these publications and the price, together with order forms which may be faxed. Additionally, training organisations and course co-ordinators should note that groups of publications are also made available on CD-ROM, and may be a more convenient method of obtaining some of the data that they require.

The catalogue contains a list of national distributors who maintain stocks of IMO Publications.

The IMO Publications catalogue is available free of charge from:

IMO Publishing Service
4 Albert Embankment
LONDON SE1 7SR
United Kingdom
e-mail: sales@imo.org

Tel: +44 (0) 20 7735 7611
Fax: +44 (0) 20 7587 3241
<http://www.imo.org>