

Model Course V-103/2

Vessel Traffic Services Supervisor

Advancement Training



Model Course V-103/2, VTS Supervisor

Contents

| | |
|--|----|
| Part A - Course Overview | 1 |
| Part B - Module 1 – Additional Nautical Knowledge including Traffic Management | 17 |
| Part C - Module 2 – VTS Equipment | 23 |
| Part D - Module 3 – Additional Personal Attributes | 27 |
| Part E - Module 4 – Responding to Emergency Situations..... | 32 |
| Part F - Module 5 – Administrative Functions..... | 36 |
| Part G - Module 6 – Legal Knowledge | 40 |

Foreword

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) has been associated with Vessel Traffic Services 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 Operators;
Model Course V-103/2 - VTS Supervisor,
Model Course V-103/3 - On-the-Job Training.

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 institutes, and assistance in implementing any course may be obtained through the Association at the following address:

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IALA,
20ter rue Schnapper,
78100 Saint Germain en Laye,
France

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Part A - Course Overview

Contents

| | |
|---|----|
| Section 1 - Introduction | 2 |
| Purpose of the Model Course | 2 |
| Use of the Model Course..... | 2 |
| Lesson Plans | 3 |
| Presentation | 5 |
| Evaluation or assessment of trainee progress..... | 5 |
| Implementation..... | 5 |
| Validation | 6 |
| Section 2 : Course Framework | 7 |
| Scope | 7 |
| Objective | 7 |
| Requirements for endorsement as a VTS Supervisor..... | 7 |
| Course intake - limitations | 7 |
| Training staff requirements | 8 |
| Instructors..... | 8 |
| Assessors | 8 |
| Teaching facilities and equipment..... | 9 |
| Teaching aids..... | 9 |
| References | 10 |
| Section 3 : Course Outline | 13 |
| Section 4 : Guidelines for Instructors | 14 |
| Introduction | 14 |
| Curriculum | 14 |
| Section 5 - Evaluation or Assessment | 16 |

Section 1 - Introduction

Purpose of the Model Course

The purpose of the model course is to assist maritime training institutes and their teaching staff in organising and introducing new training courses, or in enhancing, updating or supplementing existing training material where the quality and effectiveness of the training courses may thereby be improved.

It is not the intention of the model course to present instructors with a rigid teaching package which they are expected to follow blindly. The knowledge, skills and dedication of instructors are key components in the transfer of knowledge and skills to those being trained through this model course material. For teaching purposes the subjects may be grouped and re-arranged where that is considered an advantage. For example, some elements of Additional Nautical Knowledge and Responding to Emergency Situations may be integrated. In every case, it is essential that the trainees attain all of the objectives set out in the stated syllabus for the model course.

Recognising that educational systems and the cultural backgrounds of trainees in VTS vary considerably from country to country, the model course material has been designed to identify the basic entry requirements and trainee target group in universally applicable terms. The course material also specifies clearly the technical content and levels of knowledge and skill necessary to achieve the standards of competence defined in IALA Recommendation V-103.

In this regard, the defined standards of competence are considered to be the level of proficiency which should be achieved for the proper performance of functions at a VTS Centre in accordance with the internationally agreed criteria, incorporating prescribed standards or levels of knowledge, understanding and demonstrated skills.

Use of the Model Course

This course is intended to cover the knowledge and practical competence required for gaining an endorsement in the VTS Certification Log as a VTS Supervisor. The course is in modular format and is aimed at providing the “Advancement Training” described in IALA Recommendation V-103.

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 is designed to ensure trainees are provided with realistic exercises on the role of a VTS Supervisor. These exercises should, wherever practicable, use simulation. However, where simulation is not practicable, the exercises should be designed to be fully representative of appropriate situations that occur in a VTS.

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

All training and assessment of personnel for endorsement as a VTS Supervisor should be:

1. structured in accordance with written programmes, including such methods and media of delivery, procedures and course material as are necessary to achieve the prescribed standard of competence; and,
2. conducted, monitored, evaluated and supported by persons qualified in accordance with Part A, Staff Requirements.

Training personnel should review the course outline and detailed syllabus in each subject. The actual level of knowledge and skills and prior technical education of the trainees in the subject concerned should be kept in mind during this review. Any areas within the detailed syllabus which may cause difficulties between the actual trainee entry level and that assumed in the model course 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 trainees. The instructor should also identify any academic knowledge, skills or technical training that the trainees 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 can 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 VTS trainees completing the course are to undertake duties which differ from the objectives specified.

Lesson Plans

The modular presentation enables the instructor to adjust the course content to suit the trainee 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 learning objectives 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 basic training of VTS Operators and levels 3 to 5 are used in the Model Course for advancement to VTS Supervisor.

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 Section 3, “Subject Outline”, of each Module.

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

| 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> |

LEVELS OF COMPETENCE

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

Section 3, “Subject Outline”, of each module also includes a recommended assessment of the time that should be allotted to each subject. However, it should be appreciated that these allocations are arbitrary and assume that the trainees have met fully all of the entry requirements specified for each subject. The instructor should therefore review carefully these assessments during course and lesson plan design and consider the need to reallocate the time required to achieve each specific learning objective.

Section 4, “Detailed Teaching Syllabus”, of each module has been written in learning-objective format in which the objective describes what the trainee 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 trainee 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 trainees can meet the stated objectives. However, it is essential that trainees attain all objectives set out in each syllabus.

Presentation

The presentation of concepts and methodologies must be repeated in various ways until the instructor is satisfied that the trainee has attained each specific learning objective. The syllabus in each subject is laid out in learning-objective format and each objective specifies what the trainee must be able to do as the learning outcome.

Evaluation or assessment of trainee progress

The evaluation criteria are contained in column 4 of Table 2 of IALA Recommendation V-103, and provide the means for an assessor to judge whether a trainee can perform the related tasks, duties and responsibilities.

Guidance on evaluation or assessment of trainees is given in Section 5 of this Part.

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.

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

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

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 institutions of IALA National Members and experienced VTS Operators so that the minimum 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.

Section 2 - Course Framework

Scope

The course covers the minimum requirements of the IALA Recommendation V-103. It is based on the minimum knowledge and competence factors required for endorsement as a VTS Supervisor and covers the theoretical and practical knowledge required for advancement training as defined in Recommendation V-103. Satisfactory completion of the course is required for the endorsement of the VTS Certification Log as a VTS Supervisor.

Objective

On successful completion of the course and evaluations, the trainees should have sufficient knowledge and competence to carry out 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.

Requirements for endorsement as a VTS Supervisor

Every candidate for 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 an appropriate examination at an Accredited Training Institute that they possesses the additional theoretical and practical knowledge appropriate to the requirements of a VTS Supervisor.

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 trainees. 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 trainees 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.

Training staff requirements

All instructors, supervisors and assessors should be appropriately qualified for the particular types and levels of training or assessment of competence of VTS Personnel.

Accredited training programmes 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, supervisors 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.

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:
 - 4.1 have received appropriate guidance in instructional techniques involving the use of simulators; and,
 - 4.2 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.

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;

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

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.

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 learning objectives 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. 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 trainees (indicated by E)
- References (indicated by R);

will provide valuable information to instructors

Teaching aids

Ideally, the trainees 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 Video films – Bridge Resource Management Series – “Emergency Procedures”
- A15 Manuals, strip cards and other facilities for use with the monitoring systems being taught.
- A16 Interactive video (Videotel) “Understanding English on board ships”
- A17 Guest speakers

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

A18 Case Studies

Equipment required for each trainee:

- 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

The references that are relevant to the planning of VTS training are listed below.

- R1 SOLAS' 74 Regulation V/8 - Routeing
- R2 SOLAS '74 Regulation V/8-1 - Ship Reporting Systems
- R3 SOLAS '74 Regulation V/8-2 - Vessel Traffic Services
- R4 SOLAS '74 Regulation V/12 - Shipborne navigation equipment
- R5 SOLAS '74 Regulation V/14 - Aids to navigation
- R6 SOLAS '74 Regulation V/20 - Nautical publications
- R7 International Regulations for Preventing Collisions at Sea, 1972 (COLREGS)
- R8* IMO publication on Ships' Routeing (IMO-927E, IMO-928F, IMO-929S)
- R9* International Maritime Dangerous Goods Code (IMDG Code) - 1994, as amended (IMO-200E)
- R10 International Convention on Standards of Training, Certification and Watchkeeping of Seafarers, 1978, as amended in 1995 (STCW Convention);
- R11 Seafarer's Training, Certification and Watchkeeping Code (STCW 95 Code);
- R12 Resolution 10 of the 1995 Conference of Parties to the International Convention on standards of Training, Certification and Watchkeeping for Seafarers, 1978;
- R13* IMO Assembly resolution A.851(20), General principles for ship reporting
- R14* IMO Assembly resolution A.857(20), Guidelines on VTS
- R15* IMO Publication "International Aeronautical and Maritime Search and Rescue (IAMSAR) manual" - in three volumes:
 - Vol 1 (IMO 960) ISBN 92-801-1462-X
 - Vol 2 (IMO 961) ISBN 92-801-6087-7
 - Vol 3 (IMO 962) ISBN 92-801-6085-0
- R16 IALA Recommendation V-103, Standards of Training and Certification of VTS Personnel.
- R17 IALA Vessel Traffic Services Manual
- R18 IALA Aids to Navigation Guide (NAVGUIDE)
- R19* IMO Standard Marine Navigational Vocabulary (IMO-985E, IMO986F, IMO-988S)
- R20* IMO Standard Marine Communication Phrases (IMO MSC/Circ. 794 (May 30, 1997))
- R21* International Code of Signals (IMO-994E, IMO-995F, IMO-996S)
- R22 IELTS Handbook - British Council, or equivalent.
- R23 Practice Tests for IELTS. Jakeman & McDowell. Cambridge University Press.

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

- ISBN 0521 497 671, 0521 497 663
- R24 National Arrangements for Intervention, Pollution and Salvage
 - R25 Seaspeak Training Manual ISBN 0-08-031555-0
 - R26 Marine engineering knowledge (such as: General Engineering Knowledge, by McGeorge, H.D.(Kandy publication), ISBN – 0750600063)
 - R27 Marine Communications Handbook - Lloyds of London
 - R28 Marine Communications Handbook - Inmarsat
 - R29 ITU Radio Regulations, including Appendices
 - R30 English for Maritime Studies, 2nd edition, Blakely, published by Prentice Hall ISBN 0-13-281-379-3
 - R31 Ship to shore: Nautical Terms in everyday English
 - R32 Glossary of Marine Technology Terms. Institute of Marine Engineers, ISBN 0434908401
 - R33 STCW Code section B, Chapter VIII, Part 3-1, Guidance on Keeping a Navigational Watch
 - R34* IMO Resolution A.705(17) - Promulgation of Maritime Safety Information (MSI)
 - R35 Equipment and system operating manuals
 - R36 Radar and Electronic Navigation - G J Sonneberg, ISBN 0-408-00272-7
 - R37 Handbook of Data Communications, published by NCC Publications, ISBN 0-85012-363-1
 - R38 GMDSS Handbook (IMO-970E and IMO-971E)
 - R39 International Maritime Buoyage System, published by IALA
 - R40 IHO approved documents of charts and publications
 - R41 Fundamentals of Human Communications, Revised Edition, King, R. G., (1991), Macmillan Publishing Company, New York. ISBN 0023642815
 - R42 Articulation and Voice: Improving Oral Communication, King, R. G., and DiMichael, E. M., (1978), Macmillan Publishing Company, New York.
 - R43 Developing Your Communication Skills, McMaster, R. G., (1978), Longman Canada Limited, Ontario. ISBN 0774711167
 - R44 Communication Skills, Panton, P., (1980), Hutchinson & Co. (Publishers) Ltd, London. ISBN 0091412811
 - R45 ITU-R M Recommendation 493
 - R46 ITU-R M Recommendation 541
 - R47 ITU-R M Recommendation [8C/XA], Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the maritime mobile band.
 - R48 United Nations Convention on the Law of the Sea (UNCLOS)
 - R49 SOLAS '74 Regulation V/15 - Search and Rescue
 - R50* IMO COMSAR/Circ.15 - Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)
 - R51 National procedures and standards for operation of International Convention for the prevention of pollution from ships (MARPOL)
 - R52 Local/Regional Contingency and Emergency requirements
 - R53 National, Regional and Local Legislation and Regulations on VTS, Ports, Harbours, Pilotage and Allied Services
 - R54 National Notices to Mariners pertaining to VTS
 - R55 National procedures and standards for operation of VTS

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

- R56 How to use the IMO SMCP. Weeks, published by Witherby, London ISBN 8420507679
- R57 PIANC Bulletin No. 16 'Big Tankers and their Reception' (1973)
- R58 PIANC Bulletin No. 35 'Reception of Large Ships' (1985)
- R59 PIANC Bulletin No. 51 'Underkeel Clearance for large ships' (1985)
- R60 PIANC-IAPH Report, Bulletin No. 87 'Approach Channels' (April, 1995)

*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 Institutions 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 situated in 43 countries world-wide who maintain stocks of IMO Publications.

The IMO Publications catalogue is available free of charge from:

Publications Section
International Maritime Organization
4 Albert Embankment
LONDON SE1 7SR

Tel: +44 (0) 20 7735 7611
Fax: +44 (0) 20 7587 3241
e-mail: publications.sales@imo.org

Section 3 - Course Outline

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

| SUBJECT | RECOMMENDED DURATION IN HOURS ¹ | |
|---------------------------------------|--|--------------------------------------|
| | LECTURE | EXERCISE/ SIMULATION ² |
| 1. Additional Nautical Knowledge | 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 ³ |
| Totals | 53 | 52 |

- Note
1. The recommended times are based on the assumption that trainees 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 trainee.
 2. The times recommended include simulation time, but do not include the time necessary for examinations or tests of proficiency.
 3. Aspects pertaining to legal implications will be evidenced throughout all simulation exercises.

Section 4 - Guidelines for Instructors

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 minimum requirements for a qualified VTS Operator to obtain an endorsement as a VTS Supervisor capable, subject to obtaining satisfactory on-the-job training, of supervising and managing an information, navigation assistance or traffic organization 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 trainees (see Part 7, Module 6) and, when appropriate, draw their attention to the need to meet the learning objectives of that module.

In vessel traffic services new methods and equipment are developed at a fairly high rate. 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.

Curriculum

The subject modules into which the course is divided reflect the competence headings of Table 2 of IALA Recommendation V-103 (VTS Supervisor Competence chart). The syllabuses are presented this way to show clearly the relationship of the syllabus with the recommendations of the Association.

Although the learning objectives are set out in a teaching order in the syllabuses, instructors are not obliged to teach the objectives in the order in which they appear but should treat them in the order which they consider to be the most effective for their trainees and circumstances.

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

Model Course V-103/2, VTS Supervisor
Part A – Course Overview

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 quite usual for different trainees 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 institute. 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 learning objectives 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 trainees and any problems that have become apparent. Modifications of the teaching scheme should be made where necessary to ensure that trainees are attaining the objectives laid down. If necessary, extra tuition should be arranged to enable weaker students to reach a satisfactory 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 trainees 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.

Section 5 - Evaluation or Assessment

Regular assessment of trainees should be undertaken. In many cases the assessment can be based on the marks given to trainees' 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 learning level attained by trainees. It is recommended that, for the VTS supervisor, an average level of four to five should be considered as being satisfactory.

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

ASSESSMENT LEVELS

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.

If the Competent Authority requires no examination at the end of a college phase, an evaluation of the trainees should be made to enable trainees and instructors to judge whether satisfactory progress has been made. To give trainees practice in the relevant examination techniques, the evaluation should be conducted in a manner similar to that required for endorsement as a VTS Supervisor.

Part B

Module 1 – Additional Nautical Knowledge including Traffic Management

Contents

| | |
|---|----|
| Section 1 - Introduction..... | 18 |
| Section 2 - Subject Framework | 18 |
| Scope | 18 |
| Aims | 18 |
| Section 3 - Subject Outline..... | 19 |
| Section 4 - Detailed Teaching Syllabus..... | 20 |
| 1. Data used in VTS | 20 |
| 1.1 Charts and Publications..... | 20 |
| 1.2 Monitoring normal operation of aids to navigation..... | 20 |
| 2. Marine Organizations | 20 |
| 2.1 International/National Organisations | 20 |
| 2.2 Roles and Functions of Maritime Organisations..... | 20 |
| 3. Traffic/Port Management | 21 |
| 3.1 Principles of waterway and traffic management | 21 |
| 3.2 Traffic Monitoring and Organisation | 21 |
| 3.3 Roles and Responsibilities | 21 |
| 3.4 Harbour operations | 21 |
| 3.5 Control VTS..... | 22 |
| 4. Dangerous Cargoes..... | 22 |
| 4.1 Types of dangerous cargo..... | 22 |
| 4.2 Precautions to be taken when ships carrying dangerous cargoes are in a VTS area | 22 |
| 4.3 Pollution control..... | 22 |

Section 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.

Section 2 - Subject Framework

Scope

This syllabus covers the requirement of candidates for VTS Supervisors to have Nautical Knowledge additional to that required for VTS Operators to ensure that charts and other nautical publications are correctly kept up to date and that proper co-ordination is maintained with other marine organizations and port management authorities.

The course includes the principles and practices of correcting charts and nautical publications and the preparation of notices to mariners.

The course 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.

Aims

On completion of the course candidates will have the ability to organise the proper correction of charts and other nautical publications and ensure that VTS is capable of co-ordinating effectively with authorities responsible for other port management services.

Section 3 - Subject Outline

| Subject Area | Recommended Hours | | |
|---|------------------------------|------------------------|-----------------------|
| | Recommended competence level | Presentation/ Lectures | Exercises/ Simulation |
| 1. Data used in VTS 1.1 Charts and Publications 1.2 Monitoring normal operation of aids to navigation | Level 4 | 3 | 6 |
| 2. Marine Organizations 2.1 International/National Organizations 2.2 Roles and Functions of Maritime organisation | Level 4 | 2 | -- |
| 3. Traffic/Port Management 3.1 Principles of waterway and traffic management 3.2 Traffic Monitoring and Organisation 3.3 Roles and Responsibilities 3.4 Harbour operations 3.5 Coastal VTS | Level 5 | 6 | 6 |
| 4. Dangerous Cargoes 4.1 Types of dangerous cargo 4.2 Precautions to be taken when ships carrying dangerous cargoes are in a VTS area 4.3 Pollution control | Level 4 | 3 | 6 ¹ |

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

Model Course V-103/2, VTS Supervisor – Part B, Module 1
Additional Nautical Knowledge

Section 4 - Detailed Teaching Syllabus

| Learning Objectives | References | Teaching aids |
|---|----------------------------|-------------------------------|
| <p>1. Data used in VTS</p> <p>1.1 Charts and Publications</p> <p>1.1.1 Systems for correcting Charts and Publications</p> <p>1.1.2 Means of promulgating changes to Charts and Publications</p> <p>1.1.3 Significance of failure to correct and promulgate changes to Charts and Publications</p> <p>1.2 Monitoring normal operation of aids to navigation</p> <p>1.2.1 visual confirmation of position and operation</p> <p>1.2.2 radar confirmation of position</p> <p>1.2.3 monitoring of remote sites</p> | <p>R40</p> | <p>A1, A2, A3, A4, A6, A7</p> |
| <p>2. Marine Organizations</p> <p>2.1 International/National Organizations</p> <p>2.1.1 International, National and Regional SAR arrangements</p> <p>2.1.2 IMO</p> <p>2.1.3 ITU</p> <p>2.1.4 IALA</p> <p>2.1.5 IMPA/IHMA</p> <p>2.1.6 IAPH</p> <p>2.1.7 National Governmental Body/ Ministry</p> <p>2.1.8 National Maritime Executive/Operational Body (where different from 2.1.7)</p> <p>2.1.9 Other Organisations</p> <p>2.2 Roles and Functions of Maritime Organisations</p> <p>Establish chain of authority (relevant to the body of trainees under instruction)</p> | <p>R53</p> <p>R15, R53</p> | <p>A17</p> |

Model Course V-103/2, VTS Supervisor – Part B, Module 1
Additional Nautical Knowledge

| Learning Objectives | References | Teaching aids |
|---|--|---|
| <p>3. Traffic/Port Management</p> <p>3.1 Principles of waterway and traffic management</p> <p>3.1.1 Planning</p> <p>3.1.2 Risk management</p> <p>3.1.3 Allocation of space</p> <p>3.1.4 Criteria which determines the parameters for the safe passage of shipping</p> <p>3.2 Traffic Monitoring and Organisation</p> <p>3.2.1 Traffic patterns</p> <p>3.2.2 VTS sailing plans</p> <p>3.2.3 Situation analysis</p> <p>3.3 Roles and Responsibilities</p> <p>3.3.1 Ship Masters (including PEC holders)</p> <p>3.3.2 Marine Pilots</p> <p>3.3.3 VTS</p> <p>3.3.4 Ships Agents</p> <p>3.3.5 Tugs and Towing</p> <p>3.3.6 Allied services</p> <p>3.4 Harbour operations</p> <p>3.5.1 customs</p> <p>3.5.2 linesmen, stevedores</p> <p>3.5.3 ship chandlers</p> <p>3.5.4 Security</p> <p>3.5.5 Role of VTS within the harbour</p> | <p>R 1 to R 18 inclusive, R33, R34 ,R52, R53, R54, R55, R57, R58, R59, R60,</p> | <p>A1, A2, A3, A5 E1 E2 during simulated exercises</p> |

Part C

Module 2 – VTS Equipment

Contents

| | |
|--|----|
| Section 1 - Introduction..... | 24 |
| Section 2 - Subject Framework | 24 |
| Scope | 24 |
| Aims | 24 |
| Section 3 - Subject Outline..... | 24 |
| Section 4 - Detailed Teaching Syllabus..... | 25 |
| 1. VTS Equipment..... | 25 |
| 1.1 Operation of equipment and systems | 25 |
| 1.2 Maintenance procedures..... | 25 |
| 1.3 Rectification of defects..... | 25 |
| 1.4 Redundancy of equipment..... | 26 |
| 1.5 Health and Safety requirements..... | 25 |

Section 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 trainees to visit operational VTS centres.

Section 2 - Subject Framework

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.

Aims

On completion of the course trainees will have a knowledge of system operation, as appropriate to the integration of VTS equipment, redundancy arrangements for the collection, analysis and dissemination of traffic information and the skills to identify the malfunction or degradation in performance of equipment.

In addition, the trainees will be sufficiently trained to use the system to enable services to be maintained, to the maximum extent practicable, in the event of equipment becoming unserviceable or malfunctioning.

Trainees will also have the ability 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 kept up to date.

Section 3 - Subject Outline

| Subject Area | Recommended Hours | | |
|---|------------------------------|--------------|-----------------------|
| | Recommended competence level | Presentation | Exercises/ Simulation |
| 1. VTS Equipment 1.1 Operation of equipment and systems 1.2 Maintenance procedures 1.3 Rectification of defects 1.4 Redundancy of equipment 1.5 Health and Safety requirements | Level 4 | 3 | 3 |

Section 4 - Detailed Teaching Syllabus

| Learning Objectives | Reference | Teaching Aids |
|---|--|---|
| <p>1. VTS Equipment</p> <p>1.1 Operation of equipment and systems</p> <p>1.1.1 Monitoring and maintaining optimum performance</p> <p> 1.1.1.1 Equipment and systems for collecting data</p> <p> 1.1.1.2 Equipment and systems for data analysis</p> <p> 1.1.1.3 Equipment and systems for disseminating data</p> <p>1.1.2 Shutdowns/equipment degradation</p> <p> 1.1.2.1 Scheduled</p> <p> 1.1.2.2 Unscheduled</p> <p> 1.1.2.3 Impact on operational procedures and levels of service</p> <p>1.2 Maintenance procedures</p> <p>1.2.1 Routine maintenance</p> <p> 1.2.1.1 Daily</p> <p> 1.2.1.2 Weekly</p> <p> 1.2.1.3 Monthly and longer intervals of time</p> <p>1.2.2 Unscheduled maintenance</p> <p>1.3 Rectification of defects</p> <p>1.3.1 Minor defects</p> <p>1.3.2 Major defects</p> <p>1.4 Redundancy of equipment</p> <p>1.4.1 Systems and equipment for data collection</p> <p>1.4.2 Systems and equipment for data analysis</p> <p>1.4.3 Systems and equipment for data dissemination</p> <p>1.5 Health and Safety requirements</p> <p>1.5.1 Radiation or electrical hazards</p> | <p>R35</p> <p>R35, R55</p> <p>R35, R55</p> <p>R35, R55</p> | <p>A1, A2, A4, A6, A11, A12, A13, A15, A17, A18</p> |

Part D

Module 3 – Additional Personal Attributes

Contents

| | |
|---|----|
| Section 1 - Introduction..... | 28 |
| Section 2 - Subject Framework | 28 |
| Scope | 28 |
| Aims | 28 |
| Section 3 - Subject Outline..... | 29 |
| Section 4 - Detailed Teaching Syllabus..... | 31 |
| 1. Leadership | 31 |
| 1.1 Team Management | 31 |
| 1.2 Job expertise..... | 31 |
| 2. Communication Skills | 31 |
| 2.1 Effective Communication | 31 |
| 2.2 Media and general public | 31 |
| 2.3 Operational Communications..... | 31 |
| 3. Stress management..... | 31 |
| 3.1 Recognizing stress/stressful situations | 31 |
| 3.2 Responding to stress..... | 31 |

Section 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 trainees to develop specific personal attributes. The Instructors should continuously monitor the personal attributes of trainees and, when appropriate, draw their attention to the need to meet the learning objectives of this module.

Section 2 - Subject Framework

Scope

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

Aims

On completion of the course trainees should 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 trainee 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 simulators integrated into training will enable trainees to develop their leadership skills for handling external communications during all types of emergency likely to be experienced operationally.

Trainees 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.

Model Course V-103/2, VTS Supervisor –
Part D, Module 3 - Additional Personal Attributes

Section 3 - Subject Outline

| Subject Area | Recommended Hours | | |
|---|---|---------------------|----------------------------------|
| | Recommended competence level | Presentation | Exercises/ Simulation |
| 1. Leadership 1.1 Team Management 1.2 Job expertise | Level 4 | 2 | 4 |
| 2. Communication Skills 2.1 Effective Communications 2.2 Media and General Public 2.2 Operational Communications | Level 4 | 2 | |
| 3. Stress Management 3.1 Recognizing stress/stressful situations 3.2 Responding to stress | Level 4 | 2 | |

Model Course V-103/2, VTS Supervisor –
Part D, Module 3 - Additional Personal Attributes

Section 4 - Detailed Teaching Syllabus

| Learning Objectives | Reference | Teaching Aids |
|---|-----------|---|
| <p>1. Leadership</p> <p>1.1 Team Management</p> <p>1.1.1 Leadership Styles</p> <p>1.1.2 Self directed work teams</p> <p>1.2 Job expertise</p> <p>1.2.1 Technological Advances</p> <p>1.2.2 Credibility</p> <p>1.2.3 Limitations</p> | | A16 |
| <p>2. Communication Skills</p> <p>2.1 Effective Communication</p> <p>2.1.1 Listening Skills</p> <p>2.1.2 Effective Oral/written communication</p> <p>2.1.3 Barriers to Communication</p> <p>2.1.4 Motivational Skills</p> <p>2.1.5 Dealing with Difficult People</p> <p>2.2 Media and general public</p> <p>2.2.1 When and how to intervene</p> <p>2.2.2 Confidential information</p> <p>2.2.3 Responding to requests/questions</p> <p>2.3 Operational Communications</p> <p>2.3.1 Internal</p> <p>2.3.2 External</p> | | A17 (_Police, Press, Coast Guard, etc.) |
| <p>3. Stress management</p> <p>3.1 Recognising stress/stressful situations</p> <p>3.2 Responding to stress</p> | | |

Part E

Module 4 – Responding to Emergency Situations

Contents

| | |
|--|----|
| Section 1 - Introduction..... | 34 |
| Section 2 - Subject Framework | 34 |
| Scope | 34 |
| Aims | 34 |
| Section 3 - Subject Outline..... | 34 |
| Section 4 - Detailed Teaching Syllabus..... | 35 |
| 1. Contingency Plans..... | 35 |
| 1.1 Description and Purpose of Contingency Plans | 35 |
| 1.2 Implementation of Contingency Plans (e.g. Man Overboard, Fire, Collision, Grounding, Pollution, Toxic-Chemical spill, Piracy, Terrorism, etc.)..... | 35 |
| 1.3 Special circumstances | 35 |
| 1.4 Delegation of responsibilities | 35 |

Section 1 - Introduction

Instructors for this module should have the knowledge, comprehension and the ability to develop 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 possible, arrangements should be made for trainees to visit operational VTS centres.

Section 2 - Subject Framework

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.

Aims

On completion of the course trainees should have the knowledge of how to implement contingency plans relating to distress, pollution and other emergencies and special circumstances.

The knowledge trainees 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.

Section 3 - Subject Outline

| Subject Area | Recommended Hours | | |
|--|------------------------------|----------------|-----------------------|
| | Recommended competence level | Presentation | Exercises/ Simulation |
| 1. Contingency Plans 1.1 Description and Purpose of Contingency Plans 1.2 Implementation of Contingency Plans 1.3 Special Circumstances 1.4 Delegation of responsibilities | Level 4 | 12 hours total | 18 hours total |

Section 4 - Detailed Teaching Syllabus

| Learning Objectives | Reference | Teaching Aids |
|--|---|--|
| <p>1. Contingency Plans</p> <p>1.1 Description and Purpose of Contingency Plans</p> <p>1.1.1 International 1.1.2 National 1.1.3 Regional 1.1.4 Local 1.1.5 Training Exercises</p> <p>1.2 Implementation of Contingency Plans (e.g. Man Overboard, Fire, Collision, Grounding, Pollution, Toxic-Chemical spill, Piracy, Terrorism, etc.)</p> <p>1.2.1 Immediate response according to contingency plans 1.2.2 Use of check lists 1.2.3 Co-ordination, evaluation and dissemination of information 1.2.4 Liaison with other services as required 1.2.5 Importance of maintaining communications</p> <p>1.3 Special circumstances</p> <p>1.3.1 Movements of dangerous cargoes 1.3.2 Incidents not fully covered by contingency plans 1.3.3 Incidents at the VTS centre (e.g. Fire, flooding, terrorism, security, etc.)</p> <p>1.4 Delegation of responsibilities</p> <p>1.4.1 Organisation of duties of subordinates 1.4.2 Resource management</p> | <p>R9, R15, R49, R51, R52, R53, R55</p> | <p>A1, A13, A14, A17, A18</p> <p>A12</p> <p>A12</p> <p>A12</p> |

Model Course V-103/2, VTS Supervisor
Part F, Module 5 - Administration functions

Part F

Module 5 – Administrative functions

Contents

| | |
|---|----|
| Section 1 - Introduction..... | 38 |
| Section 2 - Subject Framework | 38 |
| Scope | 38 |
| Aims | 38 |
| Section 3 – Subject Outline..... | 38 |
| Section 4 - Detailed Teaching Syllabus..... | 39 |
| 1. Planning and organization..... | 39 |
| 1.1 Allied Services | 39 |
| 1.2 Traffic Schedules..... | 39 |
| 1.3 Preparation of reports (internal and external)..... | 39 |
| 1.4 Performance of VTS Centre | 39 |
| 1.5 Performance of VTS Personnel | 39 |

Section 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..

Section 2 - Subject Framework

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.

Aims

On completion of the course trainees will have knowledge of the use of VTS sailing plans and passage plans for vessels joining or departing from a VTS area and how these plans are compiled in co-ordination with users and allied services.

Trainees will also have knowledge enabling them to develop traffic plans based on forecast traffic movements and assess and record performance of a VTS centre, including its log keeping functions.

Section 3 – Subject Outline

| Subject Area | Recommended competence level | Recommended Hours | |
|---|------------------------------|-------------------|-----------------------|
| | | Presentation | Exercises/ Simulation |
| 1. Planning and Organization 1.1 Allied Services 1.2 Traffic Schedules 1.3 Preparation of reports (internal and external) 1.4 Log keeping. 1.5 Performance of a VTS centre. 1.6 Performance of VTS personnel. | Level 5 | 12 hours total | 6 hours total |

Section 4 - Detailed Teaching Syllabus

| Learning Objectives | Reference | Teaching Aids |
|--|---------------------------------------|---------------|
| <p>1. Planning and organization</p> <p>1.1 Allied Services</p> <p>1.1.1 Co-ordination and communication with Allied Services</p> <p>1.1.2 Producing/Authenticating VTS passage plans</p> <p>1.2 Traffic Schedules</p> <p>1.2.1 Developing traffic schedules</p> <p>1.2.2 Updating traffic schedules</p> <p>1.2.3 Promulgating traffic schedules</p> <p>1.3 Preparation of reports (internal and external)</p> <p>1.3.1 Routine reports</p> <p>1.3.2 Incident reports</p> <p>1.3.3 Technical reports</p> <p>1.3.4 Other reports as required by operations (e.g. statistical, medical, comments, etc.)</p> <p>1.3.5 Billing arrangements</p> <p>1.4 Performance of VTS Centre</p> <p>1.4.1 Supervising log keeping functions</p> <p>1.4.2 Shift Scheduling</p> <p>1.5 Performance of VTS Personnel</p> <p>1.5.1 Assessing performance</p> <p>1.5.2 Documenting performance</p> <p>1.5.3 Training, or recommending training, to correct problems, ensure competence and increase credibility.</p> | <p>R14, R16</p> <p>R55</p> <p>R55</p> | |

Part G

Module 6 – Legal Knowledge

Contents

| | |
|---|----|
| Section 1 - Introduction..... | 41 |
| Section 2 - Subject Framework | 41 |
| Scope | 41 |
| Aims | 41 |
| Section 3 - Subject Outline..... | 41 |
| Section 4 - Detailed Teaching Syllabus..... | 42 |
| 4.1 Legal Basis for VTS in International Law..... | 39 |
| 4.2 Legal liabilities and the implication for VTS..... | 39 |
| 4.3 Legal liabilities and the implication for others in a VTS area..... | 39 |
| 4.4 Shipping Acts and Regulations relating to VTS..... | 39 |

Section 1 - Introduction

Instructors for this module should have 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.

Section 2 - Subject Framework

Scope

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

Aims

On completion of the course, candidates should understand the basis in international and national law for the establishment of VTS as well as the legal liabilities of those involved in traffic movements in a VTS area, including Ships Masters, Marine Pilots, Port and Harbour Authorities and VTS personnel.

Candidates should have an understanding of international and national legislative requirements and regulations.

Section 3 - Subject Outline

| Subject Area | Recommended Hours | | |
|---|------------------------------|---------------|-----------------------|
| | Recommended competence level | Presentation | Exercises/ Simulation |
| 1. General | | | |
| 1.1. Legal Basis for VTS in International Law | Level 4 | 6 hours total | 3 hrs ¹ |
| 1.2. Legal liabilities and their implications to VTS. | Level 3 | | |
| 1.3. Legal liabilities and their implications to others in a VTS area | Level 3 | | |
| 1.4. Shipping Acts and Regulations relating to VTS | Level 4 | | |

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

Section 4 - Detailed Teaching Syllabus

| Learning objectives | Reference | Teaching aids |
|--|---|-----------------|
| <p>1. General</p> <p>1.1 Legal Basis for VTS in International Law</p> <p>1.1.1 UNCLOS 1.1.2 SOLAS (Chapter V) 1.1.3 IMO Guidelines 1.1.4 COLREGS</p> <p>1.2 Legal liabilities and the implication for VTS</p> <p>1.2.1 Routine operations 1.2.2 Incidents 1.2.3 Accuracy of information promulgated 1.2.4 Legal responsibilities/consequences of actions</p> <p>1.3 Legal liabilities and the implication for others in a VTS area</p> <p>1.3.1 Routine operations 1.3.2 Incidents 1.3.3 Other circumstances</p> <p>1.4 Shipping Acts and Regulations</p> <p>1.4.1 International Regulations and Resolutions 1.4.2 National Shipping Acts and regulations 1.4.3 Local Bye-Laws and accepted procedures 1.4.4 Means of commenting on/promulgating changes to acts and regulations</p> | <p>R1-9 inclusive, R12, R13, R14, R17, R24, R29, R34, R39, R45, R46, R47, R48, R49, R51, R52, R53, R54, R55, R61</p> <p>R21</p> | <p>A17, A18</p> |