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| IALA Model Course |

C2001-3

AIDS TO NAVIGATION – TECHNICIAN TRAINING

Buoy Handling and Safe Working Practices

Edition 2.1

June 2021

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

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| Date | Page / Section Revised | Requirement for Revision |
| June 2016 | Entire document | Minor textual changes |
| June 2021 | Entire document | Review of content |
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|  |  |  |
|  |  |  |
|  |  |  |

PART 1 - COURSE OVERVIEW 6

1. SCOPE 6

2. OBJECTIVE 6

3. COURSE OUTLINE 6

4. TEACHING MODULES 6

5. SPECIFIC COURSE RELATED TEACHING AIDS 7

6. ACRONYMS 7

7. Definitions 7

8. REFERENCES 7

PART 2 – TEACHING MODULES 9

1. MODULE 1 – HEALTH AND SAFETY 9

1.1. Scope 9

1.2. Learning Objective 9

1.3. Syllabus 9

1.3.1. Lesson 1 - Health and Safety 9

2. MODULE 2 – TYPES OF PLASTIC BUOYS 9

2.1. Scope 9

2.2. Learning Objective 9

2.3. Syllabus 9

2.3.1. Lesson 1 - Types of Plastic Buoys 9

3. MODULE 3 – AFLOAT MAINTENANCE 10

3.1. Scope 10

3.2. Learning Objective 10

3.3. Syllabus 10

3.3.1. Lesson 1 - Inspection 10

3.3.2. Lesson 2 – Maintenance 10

4. MODULE 4 – ASHORE MAINTENANCE – DISMANTLING AND REBUILD 10

4.1. Scope 10

4.2. Learning Objective 10

4.3. Syllabus 10

4.3.1. Lesson 1 - Dismantling 10

4.3.2. Lesson 2 - Steel protection 10

4.3.3. Lesson 3 - Reassembly 11

4.3.4. Lesson 4 - Inspection 11

4.3.5. Lesson 5 - End of Life Disposal **Erreur ! Signet non défini.**

5. MODULE 5 – STANDARDS 11

5.1. Scope 11

5.2. Learning Objective 11

5.3. Syllabus 11

5.3.1. Lesson 1 - Standards 11

6. MODULE 6 – SITE VISIT 12

6.1. Scope 12

6.2. Learning Objective 12

6.3. Syllabus 12

List of Tables

Table 1 Table of Teaching Modules 6

FOREWORD

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) recognises that training in all aspects of Aids to Navigation (AtoN) service delivery, from inception through installation and maintenance to replacement or removal at the end of a planned life-cycle, is critical to the consistent provision of that AtoN service.

Under the SOLAS Convention, Chapter V, Regulation 13, paragraph 2; Contracting Governments, undertake to take into account the international recommendations and guidelines when establishing aids to navigation, including referring to the appropriate recommendations and guidelines of IALA. This includes recommendations on the training and qualification of AtoN technicians and, consequently, IALA has adopted Recommendation R0141 on Standards for Training and Certification of AtoN personnel.

IALA committees working closely with the IALA World-Wide Academy have developed a series of model courses for AtoN personnel having technician responsibilities. This Model Course on buoy handling and safe working practices should be read in conjunction with the Training Overview Document IALA WWA C2000 which contains standard guidance for the conduct of all Level 2 model courses

This Model Course is intended to provide national members and other appropriate authorities charged with the provision of AtoN services with specific guidance on the training of AtoN technicians on safe working practices when handling buoys at sea. Assistance in implementing this and other model courses may be obtained from the IALA World-Wide Academy at the following address:

The Dean

IALA World-Wide Academy Tel: (+) 33 1 34 51 70 01

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1. - COURSE OVERVIEW

# SCOPE

This course is intended to provide technicians with the practical training necessary to become competent in the buoy handling and safe working practices.

Due to the hazardous nature of handling the buoys, all persons attend buoy handling operations should be over the age of 18 and be deemed by the competent authority to be responsible individuals.

This course is intended to be supported by further training modules on buoy tenders, buoy moorings and cleaning. Details of these supporting model courses can be found in the Level 2 Technician training overview document IALA WWA C2000.

This course is not intended to provide training in the operation of lifting equipment, cutting and burning equipment or seamanship tasks for which separate specialist training courses that comply with national legislation may be required

# OBJECTIVE

Upon successful completion of this course, participants will have acquired sufficient knowledge and skill to handle buoys in a safe working manner on the job within their organisations.

This course is intended to cover the knowledge and practical competence required for a technician to safely handle buoys without any damage or injury. The complete course comprises five theoretical modules, each of which deals with a specific subject representing an aspect of buoy handling and safe working practices. Each module begins by stating its scope and aims, and then provides a teaching syllabus. The final practical module is intended to be conducted at sea. The complete course is practical and job-centred designed to provide trainees with a realistic, hands-on educational experience.

# COURSE OUTLINE

This practical course is intended to cover the knowledge required for a technician to maintain plastic buoys under supervision. The complete course comprises five classroom modules, each of which deals with a specific subject covering aspects of plastic buoy maintenance. Module six comprises a site visit designed to consolidate theoretical and practical knowledge. Each module begins by stating its scope and aims, and then provides a teaching syllabus.

The required standard of competence is considered to be the level of proficiency that should be achieved for the proper performance of the duties carried out by the technician in their organization.

This Model Course is focussed at the satisfactory level of competence.

1. Levels of Competence

| **Competence Level** | **Learning Outcome** | **Instructional Objectives** | **Required skills** |
| --- | --- | --- | --- |
| 2 | The conduct of routine tasks unsupervised and some more complex tasks under guidance | A satisfactory understanding of theoretical concepts and principles so that they can be applied in practice | Correctly acquired responses have become habitual. Actions can be performed confidently and efficiently |

# TEACHING MODULES

1. Table of Teaching Modules

|  |  |  |
| --- | --- | --- |
| Module Title | Time in hours | Overview |
| Management plans for safe buoy handling | 1 | This module describes the planning of buoy handling operations |
| Equipment and tools | 1 | This module describes the equipment and tools required during buoy handling operations |
| Logistics of buoy operations | 0.5 | This module describes the logistical process of moving buoys from ship to shore |
| Buoy retrieval, safe handling, inspection and replacement | 2.5 | This module describes how to lift buoys safely from the water, clean and inspect and replace the buoy in its appointed position |
| Maintenance records and reports | 1 | This module describes the process of record keeping and arising work |
| Assessment | 1 | Written test |
| Practical buoy handling | 5 | This module comprises a practical buoy handling exercise conducted under supervision |
| **Total Hours** | **12** | 2 day course |

# SPECIFIC COURSE RELATED TEACHING AIDS

1. This course involves both classroom instruction and a visit to a coastal area.
2. Classrooms should be equipped with appropriate teaching aids to enable presentation of the subject matter.
3. Trainees should have access to the types of equipment that they will be expected to work with on the job.

# ACRONYMS

To assist in the use of this model course, the following acronyms have been used:

AtoN Aid(s) to Navigation

GNSS Global Navigation Satellite System

IALA International Association of Marine Aids to Navigation and Lighthouse Authorities

MBS IALA Maritime Buoyage System

PPE Personal Protective Equipment

SOLAS International Convention for the Safety of Life at Sea, 1974 (as amended)

SOP Standard Operating Procedures

WWA World-Wide Academy

# DEFINITIONS

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

# REFERENCES

The following material is relevant to this course:

1. IALA NAVGUIDE.
2. IALA Recommendation R1001 on the IALA Maritime Buoyage System (MBS).
3. IALA Recommendation R0107 on Moorings for Floating Aids to Navigation.
4. IALA Recommendation R0118 on the Recording of Aids to Navigation Positions.
5. IALA Guideline 1077 on Maintenance of Aids to Navigation.
6. – TEACHING MODULES

# MODULE 1 – MANAGEMENT PLANS FOR SAFE BUOY HANDLING

## Scope

This module describes the planning of buoy handling operations.

## Learning Objective

To gain a satisfactory understanding of the management and health and safety procedures related to safe buoy handling operations.

## Syllabus

### Lesson 1 – Management Plans

1. Buoy maintenance and replacement plans.
2. Standard Operating Procedure(s) (SOP).
3. Competency of personnel engaged in buoy handling operations.

### Lesson 2 – Health and Safety Issues

1. National legislation.
2. Personal Protective Equipment (PPE).
3. Certification requirements for equipment and tools.
4. On-board safety issues.
5. sb.
6. Incident and near-miss reporting.

# MODULE 2 – EQUIPMENT AND TOOLS

## Scope

This module describes the equipment and tools required during buoy handling operations.

## Learning Objective

To gain a satisfactory understanding of the equipment and tools used in safe buoy handling operations.

## Syllabus

### Lesson 1 – Shore Based Equipment

1. Cranes and lifting devices.
2. Road transport, loading equipment and cradles.
3. Offloading equipment transport to berth and berth to vessel.

### Lesson 2 – Vessel Based Equipment

1. Deck handling equipment.
2. Jet washers and scrapers.
3. Cutting and burning equipment.
4. Mooring replacement tools.
5. Slings and lifting strops.
6. Buoy positioning devices (e.g. GNSS).

# MODULE 3 – LOGISTICS OF OPERATIONS BETWEEN SHIP SND SHORE

## Scope

This module describes the logistical process of moving buoys from ship to shore and vice-versa.

## Learning Objective

To gain a satisfactory understanding of the logistics involved in the safe movement of buoys between ship and shore and vice-versa.

## Syllabus

### Lesson 1 - Maintenance Base to Berth

1. Identification of correct buoys and associated components to be moved.
2. SOP for buoy transport (lifting and moving).
3. Equipment and PPE check lists.

### Lesson 2 – Berth to Vessel

1. Buoy loading schedule.
2. SOP for buoy loading (lifting and moving).
3. Correct mooring assembly for each buoy.
4. On-board safety briefings and procedures.

# MODULE 4 – MAINTENANCE AFLOAT/ASHORE – DISMANTLING AND REBUILD

## Scope

This module describes the maintenance of buoys at a maintenance facility ashore or afloat.

## Learning Objective

To gain a satisfactory understanding of the stages of buoy maintenance ashore or afloat.

## Syllabus

### Lesson 1 - Retrieving buoys from the water

1. Check on buoy position.
2. SOP for buoy loading (lifting and landing on deck including ship stability issues).
3. Checks/removal of AtoN components.
4. Hooking on and lifting.

### Lesson 2 - Cleaning of the buoy assembly

1. Use of jet washers and safety implications.
2. Use of scrapers and other cleaning tools.
3. Disassembly of mooring components.
4. Safety implications of cutting and burning equipment.

### Lesson 3 - Inspection of the buoy assembly

1. Inspection of the buoy.
2. Inspection of the AtoN components.
3. Inspection of the mooring assembly.
4. Storage of components to be returned to base.
5. Photographic and other records.

### Lesson 4 - Reassembly

1. Installation of AtoN components on the buoy.
2. Reassembly and connection of the mooring assembly.
3. Checks on all components.

### Lesson 5 - Buoy Deployment

1. Confirmation of the appointed buoy position.
2. SOP for buoy placement (lifting from deck and laying including ship stability issues).
3. Re-laying procedures.
4. Recording the drop position.
5. Functional tests on AtoN components.

# MODULE 5 – MAINTENANCE REPORTS AND RECORDS

## Scope

This module describes the process of record keeping and arising work.

## Learning Objective

To gain a satisfactory understanding of how to complete maintenance records relating to buoy handling operations.

## Syllabus

### Lesson 1 - Maintenance Records

1. Requirement for maintenance records.
2. List of shore-based related records.
3. Completion of shore-based related records.
4. List of sea-based related records.
5. Completion of sea based related records.
   1. Before retrieval.
   2. Inspection records.
   3. At buoy drop.
   4. Post-deployment records.

### Arising Work

1. Process of recording arising work.
2. Follow up actions.

# MODULE 6 – PRACTICAL BUOY HANDLING

## Scope

This module comprises a practical buoy handling exercise conducted under supervision.

## Learning Objective

To **consolidate** a detailed understanding of safe buoy handling operations at sea.

## Syllabus

The syllabus will follow that shown in Modules 4 and 5 above with an emphasis on practical activity under supervision.