



IALA MODEL COURSE

L2.1.5-6

AIDS TO NAVIGATION – TECHNICIAN TRAINING MODULE 1 ELEMENTS 5 & 6 LEVEL 2 - BUOY HANDLING AND SAFE WORKING PRACTICES

Edition 2.0

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DOCUMENT REVISION

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

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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 5, Regulation 13, paragraph 2; Contracting Governments, mindful of their obligations published by the International Maritime Organisation, undertake to consider international recommendations and guidelines when establishing aids to navigation. As such publications should include recommendations on the training and qualification of AtoN technicians, IALA has adopted Recommendation E-141 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 E-141 Level 2 technician functions. This model course on buoy handling and safe working practices should be read in conjunction with the Training Overview Document IALA WWA.L2.0 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:

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PART 1 - COURSE OVERVIEW

1. 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 L2.0.

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

2. 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 5 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.

3. 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 5 classroom modules, each of which deals with a specific subject covering aspects of plastic buoy maintenance. Module 6 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.

4. TEACHING MODULES

Table 1 **Table of Teaching Modules**

Module Title	Time in hours	Overview
Mangement 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 pier to ship and ship to water

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
Evaluation	1	Written test at the end of the theoretical instruction
Practical buoy handling	5	This module comprises a practical buoy handling exercise conducted under supervision
Total Hours	12	2 day course

5. SPECIFIC COURSE RELATED TEACHING AIDS

This course involves both classroom instruction and practical participation in buoy handling operations. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter.

Trainees should have access to the types of equipment that they will be expected to work with on the job.

Videos and photographs of equipment used such as vessels, buoys, chains, sinkers, wire rope, safety equipment, buoy handling operations will enhance the students learning experience prior to the practical attend buoys handling operation.

6. ACRONYMS

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

AtoN	Aid(s) to Navigation
GRP	Glass Reinforced Plastic
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
L	Level
MBS	IALA Maritime Buoyage System
SOLAS	International Convention for the Safety of Life at Sea, 1974 (as amended)
WWA	World Wide Academy

7. DEFINITIONS

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

8. REFERENCES

In addition to any specific references required by the Competent Authority, the following material is relevant to this course:

- 1 IALA NAVGUIDE.
- 2 IALA MBS.
- 3 IALA Recommendation E-107 on moorings for floating AtoN.

- 4 Technical documentation from coating suppliers.
- 5 IALA Recommendation O-118 for the recording AtoN positions.
- 6 IALA Guideline 1077 on Maintenance of Aids to Navigation.

PART 2 – TEACHING MODULES

1. MODULE 1 – MANAGEMENT PLANS FOR SAFE BUOY HANDLING

1.1. SCOPE

This module describes the planning of buoy handling operations.

1.2. LEARNING OBJECTIVE

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

1.3. SYLLABUS

1.3.1. LESSON 1 – MANAGEMENT PLANS

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

1.3.2. LESSON 2 – HEALTH AND SAFETY ISSUES

- 1 National legislation
- 2 Personal Protective Equipment (PPE)
- 3 On-board safety issues
- 4 Incident and near-miss reporting
- 5 The Safety Brief

2. MODULE 2 – EQUIPMENT AND TOOLS

2.1. SCOPE

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

2.2. LEARNING OBJECTIVE

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

2.3. SYLLABUS

2.3.1. LESSON 1 – SHORE BASED EQUIPMENT

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

2.3.2. 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. DGPS).

3. MODULE 3 – LOGISTICS OF OPERATIONS

3.1. SCOPE

This module describes the logistical process of moving buoys from pier to ship and ship to water.

3.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of how plastic buoys can be maintained afloat.

3.3. SYLLABUS

3.3.1. LESSON 1 - MAINTENANCE BASE TO PIER

- 1 Identification of correct buoys and associated components to be deployed.
- 2 SOP for buoy transport.
- 3 Equipment and PPE check lists.

3.3.2. LESSON 2 – PIER TO VESSEL

- 1 Buoy loading schedule.
- 2 Correct mooring assembly for each buoy.
- 3 On-board safety briefings and procedures.

4. MODULE 4 – ASHORE MAINTENANCE – DISMANTLING AND REBUILD

4.1. SCOPE

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

4.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of the maintenance of plastic buoys at a shore facility.

4.3. SYLLABUS

4.3.1. LESSON 1 - RETRIEVING BUOYS FROM THE WATER

- 1 Check on buoy position.
- 2 Checks/removal of AtoN components.
- 3 Hooking on and lifting.

4.3.2. 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.

4.3.3. 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.

4.3.4. LESSON 4 - REASSEMBLY

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

4.3.5. LESSON 5 - BUOY DEPLOYMENT

- 1 Confirmation of the appointed buoy position
- 2 Re-laying procedures
- 3 Recording the drop position
- 4 Functional tests on AtoN components

5. MODULE 5 – MAINTENANCE REPORTS AND RECORDS

5.1. SCOPE

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

5.2. LEARNING OBJECTIVE

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

5.3. SYLLABUS

5.3.1. LESSON 1 - MAINTENANCE RECORDS

- 1 List of shore-based related records
- 2 Completion of shore-based related records
 - a At the Maintenance Base
 - b At the Pier
- 3 List of Sea-based related records
- 4 Completion of sea based related records
 - a Before retrieval.
 - b Inspection records.
 - c At buoy drop.
 - d Post-deployment records.

5.3.2. ARISING WORK

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

6. MODULE 6 – PRACTICAL BUOY HANDLING

6.1. SCOPE

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

6.2. LEARNING OBJECTIVE

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

6.3. SYLLABUS

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