



MODEL COURSE

C2001-7

MARINE AIDS TO NAVIGATION –
TECHNICIAN TRAINING
MAINTENANCE OF PLASTIC BUOYS

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DOCUMENT REVISION

Revisions to this document are to be noted in the table prior to the issue of a revised document. The latest edition of the Model Course is the only version in force unless the Model Course is explicitly revoked by the Council.

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FOREWORD

The International Organization for Marine Aids to Navigation (IALA) recognizes that training in all aspects of Marine 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, contracting governments should undertake to take into account existing international recommendations and guidelines when establishing aids to navigation. A footnote is included referencing inter alia recommendations and guidelines of IALA.

IALA has adopted the normative Recommendation R0141 on Training and Certification of AtoN Personnel. In order to help Members of the Organization, AtoN authorities and other stakeholders worldwide to comply with the provisions of the Recommendation, a series of model courses covering elements of training for AtoN personnel have been developed by the Committees and the World-Wide Academy of the Organization (WWA).

It is intended that such courses shall be conducted by a training institute or an organization accredited by a competent authority in a Member State of the Organization or Non-member State. This model course is intended to provide Members, AtoN authorities, and other appropriate stakeholders with specific guidance on the training of AtoN technicians in shore marks.

PART 1 – COURSE OVERVIEW

1. SCOPE

This course is intended to provide technicians with the practical and theoretical training necessary to have a satisfactory understanding of the maintenance of plastic buoys.

This introductory course is intended to be supported by further training modules on theoretical and practical aspects of floating aids to navigation. Details of these supporting model courses can be found in the Model Course C2000 Level 2 Technician Training Model Course Overview.

2. OBJECTIVE

Upon successful completion of this course, participants will have acquired sufficient knowledge and skill to maintain plastic buoys whilst on the job within their authorities, organizations or other stakeholders.

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 five classroom modules, each of which deals with a specific subject covering aspects of plastic buoy maintenance. The module 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
Health and Safety	1	This module identifies the health and safety issues associated with plastic buoy maintenance
Types of plastic Buoys	0.5	This module describes the types of plastic buoys in common use
Afloat Maintenance	1	This module describes maintenance that can be carried out whilst the buoy is on station
Ashore Maintenance – Dismantling/Rebuild	2	This module describes the dismantling and rebuilding of the buoy in the shore facility
Standards	0.5	This module describes the international and local standards pertinent to plastic buoys
Site visit	2	To visit a buoy refurbishment facility to consolidate knowledge learned
Total Hours:	7	1 day course

5. SPECIFIC COURSE RELATED TEACHING AIDS

This course involves both classroom instruction and a visit to a buoy refurbishment facility. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter.

6. ACRONYMS

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

AtoN	Marine Aids to Navigation
GRP	Glass Reinforced Plastic
IALA	International Organization for Marine Aids to Navigation
L	Level
MBS	IALA Maritime Buoyage System
SOLAS	International Convention for 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.

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 Recommendation R1001 The IALA Maritime Buoyage System
- 3 Technical documentation from coating suppliers.
- 4 IALA Guideline G1006 on Plastic Buoys.
- 5 IALA Guideline G1077 on Developing a maintenance strategy for Marine Aids to Navigation
- 6 IALA Guideline G1015 on Painting Marine Aids to Navigation Buoys

PART 2 – TEACHING MODULES

1. MODULE 1 – HEALTH AND SAFETY

1.1. SCOPE

This module describes the health and safety issues associated with plastic buoy maintenance.

1.2. LEARNING OBJECTIVE

To gain a satisfactory understanding of the health and safety issues associated with the maintenance of plastic buoys.

1.3. SYLLABUS

1.3.1. LESSON 1 - HEALTH AND SAFETY

- 1 Personal Protective Equipment
- 2 Use of mobile crane
- 3 Control of heavy items being moved – buoy tipping and rolling
- 4 Fork lift trucks
- 5 High-pressure water jet
- 6 Working at heights
- 7 General hand tools

2. MODULE 2 – TYPES OF PLASTIC BUOYS

2.1. SCOPE

This module describes the types of plastic buoys in common use.

2.2. LEARNING OBJECTIVE

To gain a satisfactory understanding of plastic buoys in common use.

2.3. SYLLABUS

2.3.1. LESSON 1 - TYPES OF PLASTIC BUOYS

- 1 Polyethylene buoys
- 2 Glass Reinforced Plastic (GRP) buoys
- 3 Polyurethane / elastomer coated foam buoys
- 4 Composite assemblies
- 5 Ballast weights

3. MODULE 3 – AFLOAT MAINTENANCE

3.1. SCOPE

This module describes how plastic buoys can be maintained afloat.

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 - INSPECTION

- 1 Review of cleaning – high-pressure water/mechanical (scrapers)
- 2 Surface/colour/coating condition
- 3 Mooring eye wear
- 4 Damage inspection

3.3.2. LESSON 2 – MAINTENANCE

- 1 Localized painting
- 2 Review of marine growth and guano removal
- 3 Mooring eye wear build-up or mooring eye replacement
- 4 Surface colour fading

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 - DISMANTLING

- 1 Marine growth removal
- 2 Taitube/Skirt and ballast dismantling
- 3 Superstructure removal and dismantling
- 4 Mooring eye – inspection and repair
- 5 Modular float attachment – inspection
- 6 Float painting (Polyurethane / elastomer coated foam buoys)
- 7 Lifting eye testing

4.3.2. LESSON 2 - STEEL PROTECTION

- 1 Galvanizing/zinc spray
- 2 Anode protection

4.3.3. LESSON 3 - REASSEMBLY

- 1 Superstructure assembly
- 2 Superstructure attachment
- 3 Modular float attachment
- 4 Technical equipment attachment.

5 Mooring line attachment

4.3.4. LESSON 4 - INSPECTION

Final inspection prior to deployment: Mooring and/or lifting eye testing

4.3.5. LESSON 5 - END OF LIFE DISPOSAL

Disposal plan for end of life

5. MODULE 5 – STANDARDS

5.1. SCOPE

This module describes the standards pertinent to plastic buoys.

5.2. LEARNING OBJECTIVE

To gain a satisfactory understanding of the standards pertinent to the maintenance of plastic buoys.

5.3. SYLLABUS

5.3.1. LESSON 1 - STANDARDS

- 1 IALA Recommendation R0141 on Surface Colours used as Visual Signals on Marine Aids to Navigation.
- 2 IALA Guideline G1006 on Plastic Buoys.
- 3 IALA Guideline G1015 on Painting Marine Aids to Navigation Buoys.
- 4 IALA Guideline G1077 on Developing a maintenance strategy for Marine Aids to Navigation
- 5 Local standards
- 6 Local standard operating procedures
- 7 Local waste management standards for disposal

6. MODULE 6 – SITE VISIT

6.1. SCOPE

To visit a shore buoy maintenance facility.

6.2. LEARNING OBJECTIVE

To consolidate the knowledge learned from this course.

6.3. SYLLABUS

Visit a buoy maintenance facility or buoy tender to view the maintenance of plastic buoys in operation.