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| IALA Model Course |

C2001-7

AIDS TO NAVIGATION – TECHNICIAN TRAINING

Maintenance of Plastic Buoys

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 6

6. ACRONYMS 7

7. DEFINITIONS 7

8. REFERENCES 7

PART 2 – TEACHING MODULES 8

1. MODULE 1 – HEALTH AND SAFETY 8

1.1. Scope 8

1.2. Learning Objective 8

1.3. Syllabus 8

1.3.1. Lesson 1 - Health and Safety 8

2. MODULE 2 – TYPES OF PLASTIC BUOYS 8

2.1. Scope 8

2.2. Learning Objective 8

2.3. Syllabus 8

2.3.1. Lesson 1 - Types of Plastic Buoys 8

3. MODULE 3 – AFLOAT MAINTENANCE 8

3.1. Scope 8

3.2. Learning Objective 9

3.3. Syllabus 9

3.3.1. Lesson 1 - Inspection 9

3.3.2. Lesson 2 – Maintenance 9

4. MODULE 4 – ASHORE MAINTENANCE – DISMANTLING AND REBUILD 9

4.1. Scope 9

4.2. Learning Objective 9

4.3. Syllabus 9

4.3.1. Lesson 1 - Dismantling 9

4.3.2. Lesson 2 - Steel protection 9

4.3.3. Lesson 3 - Reassembly 9

4.3.4. Lesson 4 - Inspection 10

4.3.5. Lesson 5 - End of Life Disposal 10

5. MODULE 5 – STANDARDS 10

5.1. Scope 10

5.2. Learning Objective 10

5.3. Syllabus 10

5.3.1. Lesson 1 - Standards 10

6. MODULE 6 – SITE VISIT 10

6.1. Scope 10

6.2. Learning Objective 10

6.3. Syllabus 10

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.

Taking into account that 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 training and qualification of AtoN technicians, and consequently IALA has adopted Recommendation R0141on 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 R0141 Level 2 technician responsibilities. This model course on the maintenance of plastic buoys 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 in maintenance of plastic buoys. 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 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 (AtoN). Details of these supporting model courses can be found in the Level 2 Technician training overview document IALA WWA C2000.

# 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 organisations.

# 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 |
| 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 buoy is on station |
| Ashore Maintenance – Dismantling/Rebuild | 2 | This module describes the dismantling and rebuild of the buoy in the shore facility |
| Standards | 0.5 | This module describes the international and local standards pertinent to plastic buoys |
| Site visit | 4 | To visit a buoy refurbishment facility to consolidate knowledge learned |
| **Total Hours:** | **9** | 2 day course |

# SPECIFIC COURSE RELATED TEACHING AIDS

This course involves both classroom instruction and a visit to a buoy refurbishment facility. Classrooms should be equipped with appropriate teaching aids to enable presentation of the subject matter.

# 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

MBS IALA Maritime Buoyage System

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

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 R0108 on Surface Colours used as Visual Signals on Aids to Navigation.
4. .
5. IALA Guideline G1006 on Plastic Buoys.
6. – TEACHING MODULES

# MODULE 1 – HEALTH AND SAFETY

## Scope

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

## Learning Objective

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

## Syllabus

### 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.

# MODULE 2 – TYPES OF PLASTIC BUOYS

## Scope

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

## Learning Objective

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

## Syllabus

### 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.

# MODULE 3 – AFLOAT MAINTENANCE

## Scope

This module describes how plastic buoys can be maintained afloat.

## Learning Objective

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

## Syllabus

### Lesson 1 - Inspection

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

### Lesson 2 – Maintenance

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

# MODULE 4 – ASHORE MAINTENANCE – DISMANTLING AND REBUILD

## Scope

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

## Learning Objective

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

## Syllabus

### Lesson 1 - Dismantling

1. Marine growth removal.
2. Tail tube/ballast dismantling.
3. Superstructure removal and dismantling.
4. Mooring eye – inspection and repair.
5. Modular float attachment – inspection.
6. Lifting eye testing.

### Lesson 2 - Steel protection

1. Galvanising/zinc spray.
2. Anode protection.

### Lesson 3 - Reassembly

1. Superstructure assembly.
2. Superstructure attachment.
3. Modular float attachment.
4. Technical equipment attachment.
5. Mooring line attachment.

### Lesson 4 - Inspection

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

### Lesson 5 - End of Life Disposal

1. Disposal plan for end of life.

# MODULE 5 – STANDARDS

## Scope

This module describes the standards pertinent to plastic buoys.

## Learning Objective

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

## Syllabus

### Lesson 1 - Standards

1 IALA Recommendation R0108 on Surface Colours used as Visual Signals on Aids to Navigation.

2 IALA Guideline G1006 on Plastic Buoys.

3 Local standards.

4 Local standard operating procedures.

5 Local waste management standards for disposal.

# MODULE 6 – SITE VISIT

## Scope

To visit a shore buoy maintenance facility.

## Learning Objective

To consolidate knowledge learned from this course.

## Syllabus

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