ENG14-3.2.9

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**£** ARM **R** ENG **□** PAP **X** Input

**□** ENAV **□** VTS **□** Information

Agenda item 3.2

Technical Domain / Task Number ENG 4.1.1……………………

Author(s) / Submitter(s) China MSA

Pre-job training course for buoy tender crew

# Summary

According to the work programme(2018-2023) of ENG committee, task 4.1.1 developing new course related to aids to navigation is under process. Presently, WWA has 31 courses covered level 1 and level 2, however, there is no systematic demonstration course for buoy tender crew pre-job training.

## Purpose of the document

Proposal to develop a new training course for buoy tender crew pre-job training.

## Related documents

1. O-118-Recording-of-AtoN-Position\_Dec2005
2. G1066-The-Design-of-Floating-Aid-to-Navigation-Moorings;
3. G1077-Maintenance-of-Aids-to-Navigation；
4. G1092-Safety-Management-for-AtoN-Activities；
5. Model-Course-L2.6.1-buoy-handling-and-safe-working-practices；
6. Model-Course- L2.1.9roduction-to-buoy-positions-ed-2-l2-1-9-1；
7. Model-Course-L2.1.7-Buoy-Moorings
8. Model-Course-L2.6.1&L2.6.2-AtoN-Service-Craft-and-Buoy-Tenders；
9. G1099-The- hydrostatic-design-of-buoys.
10. G1046 -Response Plan for the Marking of New Wreck.

# Discussion

Due to the particularity of buoy tender, the operating environment and content of buoy tender are completely different from those of cargo ships or passenger ships. For first-line onboard buoy tender crew, the existing common training courses for seaman are not enough. The existing training courses of WWA courses are basically aimed at the management on shore, and they cannot meet the training needs of buoy tender crew.

Since the crew on the buoy tender are the key participants in the first-line work, and the operating environment of the buoy tender is always complicated and with greater safety risk. The crew onboard should not only consider the normal ship manoeuvre, but also consider the operational procedure of hoisting and releasing the buoy etc. How to make the buoy tender crew better familiar with the nature of the work, and to carry out buoy operations more efficiently and safely is one of the issues that all management agencies must consider.

In recent years, a large number of buoy tender crews or shore staff have retired in China every year. Some first-line buoy tender operation teams are facing with frequent crew changes and a large proportion of novices. This puts new demands on buoy tender crew pre-job training. China MSA is carrying out relevant research and developing training courses for buoy tender crew to ensure that the joining crew conduct buoy operation independently, safely and efficiently a relatively short period of time.

# proposal

Presently, China MSA has completed the development of a draft training course for buoy tender crew pre-job training(shown as the attached paper) basic on the actual work.It is proposed that the WWA should consider the necessity of developing a pre-job training courses for buoy tender crew. With reference to the pre-job training courses that have been formed by the China MSA, WWA should correspondingly conduct to develop a new training course, and China MSA is willing to offer assistance or leading the development on behalf of WWA.

# Action requested of the Committee

The committee is requested to consider the proposal and take appropriate action.

# Annex. IALA MODEL COURSE- BOUY TENDER CREW PRE-JOB TRAINING

## 



**IALA MODEL COURSE**

LX.X.XX

AIDS TO NAVIGATION – TECHNICIAN TRAINING

LEVEL 2 - BOUY TENDER CREW PRE-JOB TRAINING

**Edition 2.0**

**June 2016**





**DOCUMENT REVISION**

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

|  |  |  |
| --- | --- | --- |
| **Date** | **Page / Section Revised** | **Requirement for Revision** |
| June 2016 | Entire document | Minor textual changes |
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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.

Taking into account that under the SOLAS Convention, Chapter 5, Regulation 13, paragraph 2; Contracting Governments, mindful of their obligations published by the International Maritime Organization, undertake to consider the international recommendations and guidelines when establishing aids to navigation, including recommendations on 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 the maintenance of plastic buoys 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 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 Secretary-General |  | |
| IALA | Tel: | (+) 33 1 34 51 70 01 |
| 10 rue des Gaudines | Fax: | (+) 33 1 34 51 82 05 |
| 78100 Saint Germain-en-Laye | e-mail: | [academy@iala-aism.org](mailto:academy@iala-aism.org) |
| France | Internet: | [www.iala-aism.org](http://www.iala-aism.org/) |

# PART 1 - COURSE OVERVIEW

1. **SCOPE**

This course is intended to provide the necessary theoretical and practical training for buoy tender crew , so that they can have a satisfactory understanding of performing operations such as buoy deployment, retrieval, replacement, and removal, as well as onboard work such as taking supply, repair, and buoy maintenance.

The purpose of this course is to provide pre-job training support for buoy tender crew before join onboard .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 Level 2 Technician training overview document IALA WWA L2.0.

1. **OBJECTIVE**

Upon successful completion this course, participants will have sufficient knowledge and skills to identify the essential information of their service vessels or buoy tender vessels.

1. **COURSE OUTLINE**

This course is divided into four parts, the purpose is to let the crew understand the equipment related to buoy operation, buoy maintenance and other buoy operation related procedures or requirements, etc.  The course consists of three theoretical classroom modules and one practical module, which is designed to consolidate their theoretical knowledge.  Each of these four modules begins with a description of its scope and objectives and then provides a syllabus.

1. **TEACHING MODULES**

### Module 1 : Basic knowledge of buoys

|  |  |  |
| --- | --- | --- |
| **Module Title** | **Time in hours** | **Overview** |
| buoy | 0.5 | 1. Brief introduction: float, tailtube, top plate, superstructure, cladding plates, top mark,etc. |
| Mooring equipment | 2 | 1. The composition of the buoy mooring system: bridle, riding chain,thrash chain, ground chain, sinker, swivel, end shackle, etc.  2. Design of mooring system: mooring type, sinker/rope type, buoyancy calculation.  3. Various section of the mooring   : bride\riding\thrash\circulation  radius, sinker  4. Rope mooring equipment;  5. Elastic mooring equipment. |
| Buoy position and record related requirements | 1 | 1. Allowable position error;  2. Location record requirements;  3. Factors affecting the accuracy of buoy position . |
| Buoy maintenance | 2.5 | 1. Anchor chain wear extent;  2. Color;  3. The structure of the floating body;  4. Position;  5. Light character;  6. The principle of maintenance;  7. Maintenance records (on board);  8. Maintenance period; |
| **Total Hours** | **6** | **1 day** |

### Module 2 :Introduction to operation equipment and tools of buoy tender vessel

|  |  |  |
| --- | --- | --- |
| **Module Title** | **Time in hours** | **Overview** |
| Ship crane | 1 | 1. Safe working load,  2. Sling  3. Operation |
| Winch | 0.5 | 1. Safe working load,  2. Steel wire,  3. Operation |
| buoy operating tools | 0.5 | disassembly tool of Buoy assembly |
| Locating device | 1 | 1.DGPS  2. Positioning accuracy,  3. Positioning principle,  4. The method of buoy positioning, |
| **Total Hours** | **3** | **0.5day** |

***Module 3 :Introduction to buoy tender operation***

|  |  |  |
| --- | --- | --- |
| **Module Title** | **Time in hours** | **Overview** |
| Conventional buoy operation | 1. 2 | 1. Process of transport buoy from shore to ship and ship to water; 2. Buoy recovery, inspection and replacement. 3. Assemble/Disassemble of buoy components; 4. Buoy retrieval; 5. Buoy operation working plan; 6. Standard operating procedures. 7. Buoy loading and unloading operations |
| Light and racon detection | 0.5 | 1. Nominal distance of light and racon 2. Detection method of light 3. Detection method of racon. |
| Emergency wreck marking buoy operation | 1.5 | 1. Emergency Response Plan for buoy operation 2. Procedures and principles for Emergency wreck marking buoy deployment. 3. Emergency preparedness and response; 4. How to get as much information about the wreck as possible; |
| Safe operation of light buoy | 2 | 1.  Safe operation plan of buoy  2. Pre-work meeting  3. Safety procedures or guidelines,  4. Personal protective equipment  5. Accident report  6. Risk assessment |
| **Total Hours** | **6** | **1 day** |

***Module 4 :Practical operation of buoy tender***

|  |  |  |
| --- | --- | --- |
| **Module Title** | **Time in hours** | **Overview** |
| Conventional buoy deployment and recovery operations | 6 | On-site deployment and recovery of light buoy operations |
| **cumulative time** | **6** | **1 day** |

1. **SPECIFIC COURSE RELATED TEACHING AIDS**

This course involves both classroom instruction and field practice. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter, field practical operations need to be equipped with actual buoy tender vessel.

In the field practical operation module, participants must wear personal protective equipment, including clothes, work shoes, and safety helmets.

Buoys, mooring systems, photos of actual buoy tender vessel should be considered as valuable teaching aids.

1. **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

1. **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>

1. **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. Technical documentation from coating suppliers.
4. IALA Guideline 1066 《the design of floating aid to navigation mooring》
5. IALA Guideline 1099 《the hydrostatic design of buoys》.
6. IALA Guideline 1046 《Response Plan for the Marking of New Wrecks》

# PART 2 – TEACHING MODULES

1. **MODULE 1 – BASIC KNOWLEDGE OF BUOY**

## SCOPE

This module describes the structure, composition and maintenance requirements of the buoy.

### LEARNING OBJECTIVE

Understanding the structure, composition and maintenance requirements of the buoy, and help the bouy tender crew to understand the basic knowledge of buoy satisfactorily.

## SYLLABUS

* + 1. **LESSON 1 - BUOY STRUCTURE**

1. Buoy body and super structure.
2. Mooring chain/shackle/swivel/Sinker.
3. Lamp and assecssory equipment.
   * 1. **LESSON 2-MOORING SYSTEM**
4. Mooring equipment.
5. Mooring type.
6. Buoyancy/chain/swinging circle calculation.
   * 1. **LESSON 3 - RELEVANT REQUIEMENTS FOR BUOY POSITION AND RECORD**
7. Definition of Buoy Position.
8. Allowable position tolerance.
9. Recording requirements.
   * 1. **LESSON 4 - BUOY MAINTANENCE**
10. Position.
11. Structure.
12. Color.
13. Light quality character.
14. **MODULE 2 – INTRODUCTION TO OPERATIONAL EQUIPMENT OF BUOY TENDER**

### SCOPE

This module describes the operational equipment and tools of the buoy tender.

* 1. **LEARNING OBJECTIVE**

Understanding the operational equipment and tools of buoy tender, and help crew use the equipment and tools safely.

* 1. **SYLLABUS**
     1. **LESSON 1 - CRANE**

1. Safe working load.
2. Operation essentials.
3. Deck crane maintenance.
   * 1. **LESSON 2 - WINCH**
4. Safe working load.
5. Operation essentials.
6. Winch maintenance.
   * 1. **LESSON 3 - OTHER EQUIPMENT**
7. Electric welding equipment.
8. Mooring replacement equipment.
9. Sling/rope.
   * 1. **LESSON 4 - POSITIONAL EQUIPMENT**
10. Position accuracy.
11. Position correction.
12. **MODULE 3 –OPERATIONAL KNOWLEDGE OF BUOY TENDER**
    1. **SCOPE**

This module introduce the conventional operation knowledge of buoy tender.

* 1. **LEARNING OBJECTIVE**

This module aims to help the buoy tender crew to understand operational knowledge of buoy tender and conduct buoy operation task independently and efficiently .

* 1. **SYLLABUS**
     1. **LESSON 1 - COVENTIONAL BUOY OPERATION.**

1. Loading and unloading buoy.
2. Launching operation: Preparation before release,moment to release,operation after release.
3. Removal operation:Preparation before removal,moment to hoist the buoy ,operation after removal.
4. Position adjustment/check.
   * 1. **LESSON 2 - LIGHT AND RACON DETECTION.**
5. Nominal distance of light and racon
6. Detection method of light.
7. Detection method of racon.
   * 1. **LESSON 3-LAUNCHING EMERGENCY WRECK MARKING BUOY.**
8. Preparation.
9. Launching procedure.
10. Matters needing attention.
    * 1. **LESSON 4-SAFETY OPERATION.**
11. Safety work plan and pre-work meeting.
12. Safety procedures and guidelines.
13. PPE.
14. Risk assessment and accidence avoidance.
15. **MODULE 4 –PRACTICAL FIELD OPERATION.**
    1. **SCOPE**

Upon competition of theoretical knowledge learning, this module, this module provides piratical field operation for the trainee.

* 1. **LEARNING OBJECTIVE**

Through attending practical field operation, this module aim to help the crew deepen the understanding of theoretical knowledge, and finally master the operational skill.

* 1. **SYLLABUS**
     1. **LESSON 1 - PRACTICAL FIELD OPERATION.**

1. Loading and unloading operation.
2. Launching and removal operation.
3. Precautionary measures for aground/collision/casualty/cargo shifting.
4. Other safety measures.