IALA MODEL COURSE

L2.1.9

AIDS TO NAVIGATION– TECHNICIAN TRAINING
MODULE 1 ELEMENT 9
LEVEL 2 – INTRODUCTION TO BUOY POSITIONS

Edition 2.0

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International Association of Marine Aids to Navigation and Lighthouse Authorities
Association Internationale de Signalisation Maritime

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

CONTENTS

PART 1 - COURSE OVERVIEW 5
1. SCOPE 5
2. OBJECTIVE 5
3. COURSE OUTLINE 5
4. TEACHING MODULES 5
5. SPECIFIC COURSE RELATED TEACHING AIDS 5
6. ACRONYMS 5
7. DEFINITIONS 6
8. REFERENCES 6
PART 2 - TEACHING MODULES 7
1. MODULE 1 - AN INTRODUCTION TO BUOY POSITIONS AT SEA 7
1.1. Scope 7
1.2. Learning Objective 7
1.3. Syllabus 7
1.3.1. Lesson 1 - Geographical Position at Sea 7
1.3.2. Lesson 2 - Methods of fixing a buoy Position 7
2. MODULE 2 – FACTORS AFFECTING THE POSITION OF A BUOY 7
2.1. Scope 7
2.2. Learning Objective 7
2.3. Syllabus 7
2.3.1. Lesson 1 - The Movement of a Buoy relative to its Sinker 7
2.3.2. Lesson 2 - Factors affecting the position of a buoy 7

List of Tables

Table 1 Table of Teaching Modules 5

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 Organisation, 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 an Introduction to buoy positions 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 an introduction to buoy positions. Assistance in implementing this and other model courses may be obtained from the IALA World-Wide Academy at the following address:

The Secretary-General
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PART 1- COURSE OVERVIEW

1. SCOPE

This course is intended to provide technicians with the theoretical training necessary to have a basic understanding of the factors affecting the position of floating aids to navigation.

This introductory course is intended to be supported by further training modules on floating aids; practical aspects of buoy handling; moorings; deployment and maintenance. Details of these supporting model courses can be found in the Level 2 Technician training overview document IALA WWA L2.0.

2. OBJECTIVE

Upon successful completion of this course, participants will have acquired sufficient knowledge and skill to understand the factors affecting the position of a floating AtoN within their organizations.

3. COURSE OUTLINE

This theoretical course is intended to cover the knowledge required for a technician to determine the factors affecting the position of buoys. The complete course comprises 2 classroom modules, each of which deals with a specific subject covering aspects buoy positions.

4. TEACHING MODULES

Table 1 ***Table of Teaching Modules***

Module Title	Time in hours	Overview
An introduction to buoy positions at sea	2.0	This module describes how the positions of buoys are determined and reported
Factors affecting the position of a buoy	2.0	This module describes why the position of a buoy may vary
Evaluation	0.5	Written test
Total Hours:	**4.5**	1 day course

5. SPECIFIC COURSE RELATED TEACHING AIDS

This course will be classroom based. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter.

A regional medium and large scale chart should be provided.

A model of a buoy in a water tank should be considered as a valuable teaching aid.

6. ACRONYMS

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

AtoN	Aid(s) to Navigation
GPS	Global Positioning System

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:

- IALA NAVGUIDE.
- IALA MBS.
- IALA Recommendation E-107 on Moorings for Floating Aids to Navigation.
- IALA Recommendation O-118 for the Recording of Aids to Navigation Positions.
- IALA Recommendation O-104 on 'Off Station' signals for Major Floating Aids.
- IALA Guideline 1066 on the Design of Floating Aid to Navigation Moorings.

PART 2 - TEACHING MODULES

1. MODULE 1 - AN INTRODUCTION TO BUOY POSITIONS AT SEA

1.1. SCOPE

This module describes how the positions of buoys are determined and reported.

1.2. LEARNING OBJECTIVE

To gain a **basic** understanding of how the positions of buoys are fixed before their positions are reported using a standard format.

1.3. SYLLABUS

1.3.1. LESSON 1 - GEOGRAPHICAL POSITION AT SEA

1 Latitude and Longitude.

2 Standard geographical position formats.

3 The determination of the geographical position of a buoy from a chart.

1.3.2. LESSON 2 - METHODS OF FIXING A BUOY POSITION

1 The use of hand-held GPS.

2 Use of differential GPS receivers to improve accuracy.

3 Use of transits from a vessel.

4 Use of remote monitoring.

2. MODULE 2 – FACTORS AFFECTING THE POSITION OF A BUOY

2.1. SCOPE

This module describes why the position of a buoy may vary.

2.2. LEARNING OBJECTIVE

To gain a **basic** understanding of the factors affecting the position of a buoy.

2.3. SYLLABUS

2.3.1. LESSON 1 - THE MOVEMENT OF A BUOY RELATIVE TO ITS SINKER

1 Recording the ‘drop ’position of a sinker (charted position).

2 The theoretical scope of a buoy related to mooring chain length (swing radius).

3 The concept of a position ellipse.

4 The concept of 'out of position'.

2.3.2. LESSON 2 - FACTORS AFFECTING THE POSITION OF A BUOY

1 Tidal height and flow.

2 Wind and waves.

3 Ice.

4 Interference by a vessel.

5 Broken moorings.

6 Position errors during buoy laying.