



IALA MODEL COURSE

L2.4.1-2

AIDS TO NAVIGATION - TECHNICIAN TRAINING

LEVEL 2 MODULE 4 ELEMENTS 4.1 – 4.2

SOUND SIGNALS

Edition 2.0

December 2016

10, rue des Gaudines – 78100 Saint Germain en Laye, France
Tél. +33 (0)1 34 51 70 01 – Fax +33 (0)1 34 51 82 05 – academy@iala-aism.org

www.iala-aism.org

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
May 2013		Edition 1
December 2016	Page 7 Page 9	Module 1 – Section 1.3.1 – Minor changes. Module 2 – Section 2.3.3 – Minor 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.....	6
7. DEFINITIONS	6
8. REFERENCES.....	6
PART 2 – TEACHING MODULES.....	7
1. MODULE 1 – An introduction to sound signals	7
1.1. Scope	7
1.2. Learning Objective	7
1.3. Syllabus.....	7
1.3.1. Lesson 1 – Background, types and functions of sound signals	7
1.3.2. Lesson 2 – Considerations on the use of sound signals.....	7
2. MODULE 2 – Sound signal installation	7
2.1. Scope	7
2.2. Learning Objective	7
2.3. Syllabus.....	7
2.3.1. Lesson 1 – Installation of a short range electric sound signal.....	7
2.3.2. Lesson 2 - Installation of a fog detector.....	8
2.3.3. Lesson 3 – Commissioning and calibration.....	8
3. ASSESSMENT	8
4. SITE VISIT	8

List of Tables

<i>Table 1</i>	<i>Table of Teaching Modules.....</i>	<i>5</i>
----------------	---------------------------------------	----------

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 AtoN Service Craft and Buoy Tenders 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 service craft and buoy tenders. Assistance in implementing this and other model courses may be obtained from the IALA World Wide Academy at the following address:

The Secretariat
IALA World-Wide Academy
10 rue des Gaudines
78100 Saint Germain-en-Laye
France

Tel: (+) 33 1 34 51 70 01
Fax: (+) 33 1 34 51 82 05
e-mail: contact@iala-aism.org
Internet: www.iala-aism.org

PART 1- COURSE OVERVIEW

1. SCOPE

This course is intended to provide technicians with the theoretical and practical training necessary to have a basic understanding of the types and functions of sound signals and a satisfactory understanding how to install a modern sound signal and fog detector.

This introductory course is intended to be supported by further training modules on power supplies 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 types of sound signals used by their organizations and to install a modern sound signal and fog detector under supervision.

3. COURSE OUTLINE

This mainly practical course is intended to give participants sufficient competency to install a modern sound signal and fog detector under supervision. The complete course comprises 1 theoretical classroom module; 1 practical module and a site visit.

4. TEACHING MODULES

Table 1 Table of Teaching Modules

Module Title	Time in hours	Overview
Introduction to sound signals	1.0	This module describes the history of sound signals, the IALA policy on their use and modern types of sound signals and fog detectors
Sound signal installation	2.0	This module describes how to install a modern short-range electric sound signal and fog detector
Site visit	2.0	A visit to an operational sound signal
Evaluation	1.0	Practical installation test
Total Hours	6.0	One-day course

5. SPECIFIC COURSE RELATED TEACHING AIDS

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

A demonstration sound signal and fog detector should be made available in a suitable workshop or open-air environment.

6. ACRONYMS

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

AC	Alternating current
AtoN	Aid(s) to Navigation
DC	Direct current
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
L	Level (technician training - WWA)
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 Recommendation E-109 for the Calculation of the Range of a Sound Signal.
- 3 Manufacturers' handbooks related to sound signals in use by the Authority.

PART 2 – TEACHING MODULES

1. MODULE 1 – AN INTRODUCTION TO SOUND SIGNALS

1.1. SCOPE

This module describes the history of sound signals, the IALA policy on their use and modern types of sound signals and fog detectors.

1.2. LEARNING OBJECTIVE

To gain a **basic** understanding of the types of modern sound signals and fog detectors and their use.

1.3. SYLLABUS

1.3.1. LESSON 1 – BACKGROUND, TYPES AND FUNCTIONS OF SOUND SIGNALS

- 1 History of sound signals.
- 2 Mechanical sound signals (bells and whistles).
- 3 Compressed air sound signals.
- 4 Electric sound signals:
 - a AC systems.
 - b DC systems.
 - c Directional and Omni-directional.
- 5 Fog detectors and their ideal siting.
- 6 Sound signals on major floating AtoN and offshore structures.
- 7 Sound pressure levels.

1.3.2. LESSON 2 – CONSIDERATIONS ON THE USE OF SOUND SIGNALS

- 1 IALA and National policy on the use of sound signals.
- 2 Problems with sound signal propagation and background noise.
- 3 Nuisance to local residents.

2. MODULE 2 – SOUND SIGNAL INSTALLATION

2.1. SCOPE

This module describes how to install a modern short-range electric sound signal and fog detector.

2.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of how to install a modern electric sound signal and fog detector.

2.3. SYLLABUS

2.3.1. LESSON 1 – INSTALLATION OF A SHORT RANGE ELECTRIC SOUND SIGNAL

- 1 Review of components.
- 2 Health and Safety considerations.
- 3 Assembly of the sound generator on its stand.

- 4 Power supply connection.
- 5 Routine maintenance procedures.

2.3.2. LESSON 2 - INSTALLATION OF A FOG DETECTOR

- 1 Review of components.
- 2 Assembly of the fog detector.
- 3 Power supply connection.
- 4 Connection between fog detector and sound signal.
- 5 Routine maintenance procedures.

2.3.3. LESSON 3 – COMMISSIONING AND CALIBRATION

- 1 Review of Health and Safety considerations.
- 2 Setting sound characteristic (long blast or Morse).
- 3 Setting fog detector levels.
- 4 Testing procedures.
- 5 Commissioning of sound signal installation.

3. ASSESSMENT

Participants will be assessed on their competency at the end of Lesson 3.

4. SITE VISIT

The purpose of the site visit is to permit participants to consolidate the theoretical and practical knowledge gained through a visit to an operational AtoN station fitted with an operational sound signal.

Participants should be tasked to conduct basic maintenance procedures during this visit.