C64-11.2.6.2 (ENG6-11.1.3)

IALA MODEL COURSE

L2.5.1&2

AIDS TO NAVIGATION - TECHNICIAN TRAINING

LEVEL 2 MODULE 5 ELEMENTS 5.1 & 5.2

INTRODUCTION TO COATINGS AND SPECIFICATIONS; SURFACE PREPARATION

Edition 2.0

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

DOCUMENT HISTORY

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31 May 2013	1st issue	Council session 55
16 June 2017	Entire document Scheduled revision by ENG Committee to edition 2. Title – Change to correct module title. Sections 1, 2 – Page 6 – Reworded. Table 1 – Page 7 – Minor correction. Section 5 – Page 7 – reworded. Section 3.3.3 / 3.3.4 – Page 9 and Section 4.3.1 - Page 10 – change in reference to standard. Section 5.3.1 – Change in wording	Council session 64

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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 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:

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PART 1- COURSE OVERVIEW

1. SCOPE

This course is intended to provide technicians with the practical training necessary to become competent in surface preparation before applying coatings to AtoN structures.

This course is intended to be supported by further practical training modules on buoy cleaning, corrosion of structures and maintenance procedures. 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 to understand how to prepare surfaces in preparation for application of coatings.

3. COURSE OUTLINE

This course is intended to provide technicians with the practical training necessary to become competent in surface preparation before applying coatings to AtoN structures. The complete course comprises 6 modules, each of which deals with a specific subject representing an aspect of surface preparation before coating. 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
Introduction to coatings	1.5	This module describes the basic functions and types of service craft and buoy tenders: 1 Main aim of the use of coating 2 Different types of coating
Surface repairs	1.0	Defects to be corrected Methods of repair
Materials in use	2.0	Different methods of preparation for various materials in use
Standards and controls	1.5	Process control requirements for effective preparation and coating
Surface preparation	2.0	Paint removal and surface preparation before coating
Site visit	2.0	Visit to a site / facility for practical experience of knowledge learned
Evaluation	1.0	Written test
Total Hours	**11.0**	Two day course

5. SPECIFIC COURSE RELATED TEACHING AIDS

This course involves both classroom instruction and practical experience and will be both classroom and workshop based. 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	Aid(s) to Navigation
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities - AISM
L	Level
SA	Surface preparation requirement specified in the standard ISO-8501-1 (Swedish)
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 Guideline 1006 on Plastic Buoys.

2 IALA Guideline 1015 on Painting Aids to Navigation Buoys.

3 IALA Guideline 1077 on Maintenance of Aids to Navigation.

4 Technical documentation from equipment manufacturers will be another useful source of information.

PART 2 – TEACHING MODULES

1. MODULE 1 – INTRODUCTION TO SURFACE PREPARATION

1.1. SCOPE

This module introduces coatings and specifications for maintaining AtoN structures.

1.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of why surface preparation is an important part of the maintenance process for AtoN structures.

1.3. SYLLABUS

1.3.1. LESSON 1 – INTRODUCTION

1 Protection.

2 Signal colour.

1.3.2. LESSON 2 – SELECTION FACTORS

Factors to be considered in selecting the type and degree of surface preparation:

1 Base material.

2 Coating specification.

3 Facilities available.

4 Local environmental conditions.

1.3.3. LESSON 3 - SPECIFICATION PROCEDURE

Presentation of the procedures that can be used and selection factors:

1 Economical.

2 Technical.

3 In house or contractor.

2. MODULE 2 – SURFACE REPAIRS

2.1. SCOPE

This module identifies repair as an important part of surface preparation.

2.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of the types of defect and repair methods.

2.3. SYLLABUS

2.3.1. LESSON 1 – DEFECTS TO BE CORRECTED

1 Damage.

2 Corrosion.

3 Wear.

4 Other depending on the AtoN in use.

2.3.2. LESSON 2 – MEANS OF REPAIRS

1 Replacement.

2 Cut out and renewal of parts.

3 Building up worn parts.

3. MODULE 3 – MATERIALS IN USE

3.1. SCOPE

This module describes the different degrees of surface preparation that can be used, depending on the type of substrate and the conditions of use of the structure.

3.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of how to specify the type of surface preparation, according to the type of substrate and the conditions of use of the structure and the types of defect and repair methods.

3.3. SYLLABUS

3.3.1. LESSON 1 – WOOD

1 Inspection.

2 Preparation.

3 Replacement.

3.3.2. LESSON 2 – CONCRETE & MASONRY

1 Surface etching.

2 Salt removal.

3 Old coating removal & compatibility with new coating.

3.3.3. LESSON 3 – STEEL

1 Old coating removal.

2 Corrosion removal.

3 Surface profile to relevant standards- (e.g. SA grades).

3.3.4. LESSON 4 – ALUMINIUM ALLOYS AND OTHER NON-FERROUS METALS

1 Old coating removal.

2 Corrosion removal.

3 Surface profile to relevant standards (e.g. SA grades).

3.3.5. LESSON 5 – PLASTICS AND COMPOSITES

1 Old coating removal.

2 Surface preparation.

3 Chemical compatibility.

4. MODULE 4 – STANDARDS AND CONTROLS

4.1. SCOPE

This module introduces the standards and the type of controls that can be used in surface preparation.

4.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of preparation standards and controls.

4.3. SYLLABUS

4.3.1. LESSON 1 – STANDARDS

1 Surface profile standards.

2 National legislation:

- a Environmental.
- b Waste.
- c Emissions.
- d Noise.
- e Hazardous products.
- f Health & safety requirements.

3 Manufacturers' specifications.

4.3.2. LESSON 2 - CONTROLS

1 Inspection

5. MODULE 5 – SURFACE PREPARATION

5.1. SCOPE

This module describes the different existing methods for surface preparation and gives recommendations for paint removal procedures.

5.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of how to apply different methods of surface preparation and to be familiar with paint removal methods.

5.3. SYLLABUS

5.3.1. LESSON 1 – PAINT REMOVAL

1 Grit blasting.

2 Ice blasting.

3 Water jetting:

- a High pressure.
- b Wet blasting.

4 Mechanical removal.

5.3.2. LESSON 2 - MECHANICAL SURFACE PREPARATION METHOD

1 Grit blasting.

2 Manual abrasion:

- a Power tools.
- b Hand.

5.3.3. LESSON 3 – CHEMICAL SURFACE PREPARATION METHODS

1 Etching.

6. MODULE 6 – SITE VISIT

6.1. SCOPE

This module covers a visit to a site or surface preparation facility.

6.2. LEARNING OBJECTIVE

To see surface preparation taking place in an AtoN environment and to consolidate theoretical knowledge learned.