# IALA

## MODEL COURSE

## L2.11.7

## MARINE AIDS TO NAVIGATION - TECHNICIAN TRAINING

## LEVEL 2 - MAINTENANCE PLANNING & RECORDS

## Edition 2.0
**December 2017**

# DOCUMENT HISTORY

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

| Date | Details | Requirement for Revision |
|---|---|---|
| December 2013 | 1st issue | Council 56 |
| December 2017 | Entire document: General review and update | Council 65 |
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# FOREWORD

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) recognises that training in all aspects Marine 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 R0141 - 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 Level 2 technician functions.  This model course on Maintenance Planning & Records 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 Planning & Records.  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 theoretical training necessary to have a good understanding of the principles of maintenance planning & records for AtoN.  This course is intended to be supported by further training modules on specific aspects of AtoN 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 principles of maintenance planning & records for AtoN and use them to good effect within their organisation.

## 3.  COURSE OUTLINE

This course is intended to cover the knowledge required for a technician to understand the principles of Maintenance Planning & Records for AtoN.  The complete course comprises five classroom modules, each of which deals with a specific subject covering aspects of maintenance planning & records for AtoN.  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 |
|---|---|---|
| Why have a maintenance programme? | 1.0 | This module describes the basic functions and types of service craft and buoy tenders |
| Maintenance systems | 1.0 | This module describes the maintenance systems available |
| Work orders | 1.0 | This module describes the principle of Work Orders and how they work |
| Reports | 1.0 | This module describes how to understand what reports are available and how they can be used to optimise Maintenance Management and guide investment plans |
| Demonstration | 2.0 | This module describes a practical demonstration of the maintenance system in use at the local organisation |
| Evaluation | 1.0 | Written test |
| **Total Hours** | **7.0** | One-day course |

## 5. SPECIFIC COURSE RELATED TEACHING AIDS

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

Examples of Computerised Maintenance systems and paper based records should be used to illustrate the processes involved in Maintenance Planning & Records for AtoN.

## 6. ACRONYMS

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

**AtoN**       Marine Aid(s) to Navigation
**IALA**       International Association of Marine Aids to Navigation and Lighthouse Authorities
**L**          Level
**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 G1077 on Maintenance of Aids to Navigation.

2    IALA NAVGUIDE.

# PART 2 – TEACHING MODULES

## 1. MODULE 1 – WHY HAVE A MAINTENANCE PROGRAMME?

### 1.1. SCOPE

This module describes the advantages and disadvantages of running a maintenance programme.

### 1.2. LEARNING OBJECTIVE

To gain a **basic** understanding of why their organisation chooses to operate a formal Maintenance Management system.

### 1.3. SYLLABUS

#### 1.3.1. LESSON 1 – ADVANTAGES AND DISADVANTAGES

1    Assure reliability.

2    Optimise asset lifecycle costs.

3    Safety of staff and others.

4    Legislative compliance.

5    Costs and staff time associated with operating a formal maintenance management system.

#### 1.3.2. LESSON 2 – MAINTENANCE PHILOSOPHIES

1    Breakdown.

2    Planned maintenance:

    a    Calendar based.

    b    Hours run based.

3    Condition based:

    a    Manual inspection.

    b    Automated condition reporting.

#### 1.3.3. LESSON 3 - MAINTENANCE INDUCED FAILURES

1    Examples of maintenance induced failures.

2    The Bathtub curve of breakdowns over an asset's life.

3    Root cause of failures and identification of problems causing faults.

## 2. MODULE 2 – MAINTENANCE SYSTEMS

### 2.1. SCOPE

This module describes the maintenance systems available.

### 2.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding the different types of maintenance systems in use and to assess the best type for the organisation.

### 2.3. SYLLABUS

#### 2.3.1. LESSON 1 – MAINTENANCE SYSTEMS

1    Manual calendar based – Tee Card.

2    Computerised:

    a    Off the shelf.

    b    Large, complex & bespoke.

#### 2.3.2. LESSON 2 - ASSETS AND ASSET STRUCTURES

1    Asset structures.

2    Sub Assets and components.

3    Examples of asset structures in use.

4    Bills of Materials.

5    Links to other documents.

6    Links to other similar assets in use.

## 3. MODULE 3 – WORK ORDERS

### 3.1. SCOPE

This module describes the principle of Work Orders and how they work.

### 3.2. LEARNING OBJECTIVE

To gain a **basic** understanding of the principle of Work Orders and how they work.

### 3.3. SYLLABUS

#### 3.3.1. LESSON 1 – WORK ORDERS

1    Work Orders for breakdowns:

    a    Initiating.

    b    Approving.

    c    Progressing.

    d    Closing.

    e    Archiving.

2    Planned work orders:

    a    Set into the annual work plan.

    b    Drawn off and issued.

    c    Work done.

    d    Closing.

    e    Archiving.

3    Routine work schedules:

    a    Setting and storing of regular work schedules for use in multiple locations.

    b     Standard Operating Procedures.

4    Bills of materials for servicing packs

5    Work tracking:

    a     Identifying outstanding work at a location or on an asset.

    b     Identifying who has carried out work / who should have carried out work.

    c     Prevent duplication of work requests.

    d     Resource allocation and reporting of hours spent on each work order.

6    Examples of:

    a     Work Orders.

    b     Work schedules.

    c     Planned maintenance regimes.

# 4.   MODULE 4 – REPORTS

## 4.1.   SCOPE

This module describes how to understand what reports are available and how they can be used to optimise Maintenance Management and guide investment plans.

## 4.2.   LEARNING OBJECTIVE

To gain a **satisfactory** understanding of what reports are available and how they can be used to optimise Maintenance Management and guide investment plans.

## 4.3.   SYLLABUS

### 4.3.1.   LESSON 1 – REPORTS

1    Availability reports.

2    Down time reports.

3    Breakdown analysis.

4    Stores usage.

5    Influence investment decision.

6    Influence future maintenance strategies.

7    Asset history.

### 4.3.2.   LESSON 2 - PITFALLS

1    Difference between Data Overload and Useful Information.

2    Effective interpretation of information.

3    Decide who is to receive the reports and what they are going to do with the information.

4    The accuracy of the report is only as good as the information entered.

### 4.3.3.   LESSON 3 – EXAMPLES

1    Reports.

2    Asset History.

3    Breakdown analysis.

# 5. MODULE 5 – PRACTICAL DEMONSTRATION

## 5.1. SCOPE

This module describes a practical demonstration of the maintenance system in use at the local organisation.

## 5.2. LEARNING OBJECTIVE

To gain a **satisfactory** understanding of the scope and principles of the maintenance management system in use.

## 5.3. SYLLABUS

### 5.3.1. LESSON 1 – DEMONSTRATION

1    Work orders.

2    Planned work.

3    Asset structures.

4    Bills of materials.

5    Resource allocation.

6    Search functions.

# 6. ASSESSMENT

Participants will be given a short written test on completion of Module 5.