

IALA World Wide Academy

Model Course for Aids to Navigation

LEVEL 2 Technician Training

Introduction to Remote Monitoring of AtoN

Module 10 Elements 10.1-10.2 (IALA WWA L2:10.1-2)

Edition 1

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DOCUMENT REVISIONS

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

Date	Page / Section Revised	Requirement for Revision

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.

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 international recommendations and guidelines when establishing aids to navigation. As such publications should include recommendations on the 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 Introduction to Remote Monitoring of AtoN 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 the principles of remote monitoring of AtoN. 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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1 PART A - COURSE OVERVIEW

1.1 Scope

This course is intended to provide technicians with the theoretical training necessary to have a basic understanding of the principles of remote monitoring of AtoN. This introductory course is intended to be supported by further training modules on AtoN, their components and Automatic Identification Systems. Details of these supporting model courses can be found in the Level 2 Technician training overview document IALA WWA L2.0.

1.2 Objective

Upon successful completion of this course, participants will have acquired sufficient knowledge and skill to understand the principles of remote monitoring of AtoN within their organisations.

1.3 Course Outline

This course is intended to cover the knowledge required for a technician to understand the principles of operation of remote monitoring of AtoN. The complete course comprises 4 classroom modules and one practical module, each of which deals with a specific subject covering aspects of Remote Monitoring of AtoN. Each module begins by stating its scope and aims, and then provides a teaching syllabus.

1.4 Table of Teaching Modules

Module Title	Time in hours	Overview
Monitoring overview	2	This module describes an overview of how AtoN can be monitored remotely
Methods of monitoring	2	This module describes the technologies in common use for monitoring AtoN
Problems and fault finding	1	This module describes typical problems found on monitoring systems
Practical	2	This module describes how to gain practical experience of remote monitoring
Evaluation	1	
Total Hours:	8	Two day course

1.5 Specific Course Related Teaching Aids

- 1 This course involves classroom instruction only. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter.
- 2 Examples of Remote Monitoring of equipment and programming units / PCs should be to hand to enable the student to gain practical application and programming skills during the course.

1.6 Reference

In addition to any specific references required by the Competent Authority, the following material is relevant to this course:

- IALA Guideline 1008 on Remote Monitoring and Control of Aids to Navigation

2 PART B - TEACHING MODULES

2.1 Module 1 – Monitoring overview

2.1.1 Scope

This module describes an overview of how AtoN can be monitored remotely.

2.1.2 Learning Objective

To gain a **satisfactory** understanding of why monitoring is used and what can be monitored

2.1.3 Syllabus

Lesson 1 Advantages of monitoring

- Verification of AtoN status
- Prediction of faults to aid repairs

Lesson 2 Disadvantages of monitoring

- Added cost of installation
- Potential running costs
- System complexity
- False alarms prompting wasted visits.

Lesson 3 Parameters that can be monitored

- Light on/off
- Racon healthy
- Position within guard ring
- Battery voltage
- AIS operational
- Operation of other AtoNs
- Other

Lesson 4 Alarm points - optional

- Light off when it should be on
- Light on when it should be off
- Low battery voltage
- AtoN failed
- Out of position

2.2 Module 2 – Methods of monitoring

2.2.1 Scope

This module describes the technologies in common use for monitoring AtoN

2.2.2 Learning Objective

To gain a **basic** understanding of the technologies available and in common use for monitoring AtoN

2.2.3 Syllabus

Lesson 1 Data Transfer from AtoN to User Interface

- Direct land telephone line
- GSM mobile phone signal from modem
- Satellite data connection
- VHF link to private shore network
- VHF link to public shore network
- VHF point to point
- AIS message 6 into base station network
- AtoN suppliers satellite link into web based terminal
- Other

Lesson 2 User interface

- Graphical User Interface
- Presentation of data
- Data trends and historical logs
- Web based AtoN suppliers network

Lesson 3 Remote control

- Advantages of remote control
- Disadvantages of remote control
- What to control
- Security and access levels

2.3 Module 3 – Problems and fault finding

2.3.1 Scope

This module describes typical problems found on monitoring systems

2.3.2 Learning Objective

To gain a **satisfactory** understanding of the types of problems found with AtoN monitoring systems

2.3.3 Syllabus

Lesson 1 Problems

- Out of range
- Failed network ashore
- Failed transmission from AtoN to Modem
- Component failures
 - Aerials
 - Modems
 - Controllers

- Multiple calling
- Incorrect calibration
- Security and access levels

2.4 Module 4 – Practical

2.4.1 Scope

This module describes how to gain practical experience of remote monitoring

2.4.2 Learning Objective

To gain a **satisfactory** understanding of how to interrogate, control and recognise the monitoring technologies used in the Competent Authority's AtoN

2.4.3 Syllabus

Lesson 1 Practical

- Practical operation of monitoring systems employed

Assessment: Participants will be assessed on their competency at the end of Module 4