**Input paper: [[1]](#footnote-1)** ENG16-3.1.2.5

**Input paper for the following Committee(s):** **Purpose of paper:**

(Select as appropriate)

ARM  ENG  PAP  Input

ENAV VTS  Information

**Agenda item** [[2]](#footnote-2) n.n

**Technical domain/ Task number** 2 IALA Level 2 Module Course

**Author(s)/Submitter(s)** Mónica Herrero

Title of paper[[3]](#footnote-3)

# Summary - EXAMPLE OF HEADING 1 STYLE

## Purpose of the document

This input paper has the purpose to introduce a new Model Course Level 2 Technician Training - MODULE 12 BEACONING OF WATERWAYS AND FAIRWAYS CHANNELS.

## Related documents

This course is intended to provide technicians with the theoretical training necessary to have a basic understanding of the principles of the beaconing of waterways and fairways channels.

# Background

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

# Discussion

This course is intended to cover the knowledge required for a technician to understand the principles of operation of the beaconing of waterways and fairways channels. The complete course comprises 3 classroom modules, each of which deals with a specific subject covering aspects of the beaconing of waterways and fairways channels. Each module begins by stating its scope and aims, and then provides a teaching syllabus.

*Table 1 Table of teaching Modules*

|  |  |  |
| --- | --- | --- |
| ***Module Title*** | ***Time in hours*** | ***Overview*** |
| Introduction | 5 | Description of the evolution, requirements, design considerations and AtoN systems. |
| AtoN sizing and design | 15 | This modules provides an overview and description of the purpose of AtoN . |
| Beaconing design | 5 | This module provide a satisfactory understanding of a beaconing design. |

**MODULE 1 – INTRODUCTION (5h)**

1. Introduction
   1. Evolution of the navigation
      1. Background
      2. E-navigation
   2. User requirements
      1. Generalities
      2. Accuracy
      3. Reliability
      4. Special requirements
      5. User queries
   3. Design considerations
   4. Performance parameters of AtoN systems
      1. Positioning accuracy
      2. Redundancy
      3. Perception

**MODULE 2 – AIDS TO NAVIGATION SIZING AND DESIGN (15h)**

1. Aids to Navigation sizing and design
   1. Luminous systems
      1. Lantern types
      2. Light basics
      3. Intensity and range calculation
      4. Choice of luminous equipment
   2. Days Marks
      1. Types of daymarks
      2. Characteristics
      3. Day Mark sizing
   3. Electronic systems
      1. Radar
      2. AIS – Automatic Identification System
   4. Leading lights
      1. Leading light types
      2. Two-light leading lights
      3. Sector leading lights

**MODULE 3 – BEACONING DESIGN (5h)**

1. Beaconing Design
   1. Previous considerations
      1. MBS
   2. Beaconing of navigable boundaries
      1. Basic principles for the design of waterways
      2. Others Aids to Navigation
   3. Design methodology
      1. Procedure
      2. Maintenance
      3. Risk assessment
      4. Simulation
   4. Examples
   5. Conclusion

# References

1. 1010 Ed2 Racon Range Performance\_June 2005
2. 1018 Ed.3 Risk Management\_May2013
3. 1023 Ed1.1 Design of Leading Lines December 2005
4. 1033 Ed.1 Provision of AtoN for Different Classes of Vessels, including HSC\_Dec2003
5. 1041 Ed3 on Sector Lights\_June 2016
6. 1046 Ed.2 Response Plan for Marking New Wrecks\_June 2019
7. 1051 Ed.1 Provision & Identification of AtoN in Built-up Areas\_Dec2005
8. 1058 Ed.2 Use of Simulation as a Tool for Waterway Design and AtoN Planning\_June 2011
9. 1061 Ed.1 Light Applications Illumination of Structures\_Dec2008
10. 1079 Ed.1 Establishing and Conducting User Consultancy by Aids to Navigation Authorities\_Dec2009
11. 1148 Ed.1 Guideline G1148 on determination of required luminous intensity for marine signal lights
12. G1078 Ed2.0 The Use of AtoN in the Design of Fairways Channels
13. G1094-Ed2.1-Daymarks-for-Aids-to-Navigation-June-2016
14. G1134 Surface Colours Used as Visual Signals on AtoN Ed2.0
15. G1135 Effective Intensity Ed2.0 December 2020
16. G1163 Ed1.0 The Marking of Breakwaters and Barriers
17. M1000 Navguide 2018 Ed8 Compressed
18. R0101 Marine Radar Beacons (Racons) (R-101) Ed2.1 December 2004
19. R0108 The Surface Colours used as Visual Signals on Marine Aids to Navigation (E-108) Ed4.1 December 2017
20. R0110 Rhythmic Characters of Lights on Aids to Navigation Ed5.0
21. R0111 Port Traffic Signals (E-111) Ed1.3 December 2019
22. R0112 Leading Lights (E-112) Ed1.2 December 2005
23. R0113 The Marking of Fixed Bridges and other Structures over Navigable Waters (O-113) Ed2.1 December 2011
24. R0126 (A-126) The Use of the AIS in Marine Aids to Navigation Services Ed2.0
25. R0130 Categorisation and Availability Objectives for Short Range Aids to Navigation (O-130) Ed3.1 June 2017
26. R0138 The Use of GIS and Simulation by Aids to Navigation Authorities (O-138) Ed1.1 December 2007
27. R0139 (0-139) The Marking of Man-made Structures Ed3.0
28. R0201 Marine Signal Lights-Colours (E200-1) Ed3.1 December 2018
29. R0202 Marine Signal Lights-Calculation, Definition and Notation of Luminous Range (E200-2) Ed2.1 December 2017
30. R0203 Marine Signal Lights Part 3 - Measurement (E-200-3) Ed1.1 December 2008
31. R0204 Marine Signal Lights-Determination and Calculation of Effective Intensity (E-200-4) Ed2.1 December 2017
32. R0205 Marine Signal Lights Part 5 - Estimation of the Performance of Optical Apparatus (E-200-5) Ed1.1 December 2008
33. S1010 AtoN Planning & Service Requirements Ed1

# Action requested of the Committee

The Committee is requested to:

1. Review the proposal of this new Model Course
2. Approve the contents
3. Submit to the council to be approved and include as a Level 2 Model Course

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)
3. Footer will automatically populate [↑](#footnote-ref-3)