

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

(Select as appropriate)

☐ ARM☐ ENG☒ PAP☐ ENAV☐ VTS**Purpose of paper:**☒ Input☐ Information**Agenda item**

6.4

**Technical domain/ Task number**

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**Author(s)/Submitter(s)**

Secretariat

## COMPREHENSIVE REVIEW AND ENHANCEMENT PROPOSAL FOR IALA TECHNICAL DOCUMENTS

### 1. INTRODUCTION

IALA plays an important role in safety of navigation and efficiency through the publication of standards, which serve as the top-level technical documentation. These standards, encompassing 31 scopes and interrelating numerous technical documents, are crucial for defining Marine AtoN technology and services. With IALA's impending transition to an IGO, a thorough review and restructuring of these documents is necessary.

This paper outlines the connections between these documents and presents a comprehensive analysis aimed at enhancing their consistency and effectiveness.

### 2. PURPOSE

This document aims to present the findings from an in-depth review of IALA's technical documentation. The objective is to propose strategic revisions that will not only streamline the documentation, but also improve its overall coherence and utility, particularly in light of the transition to an IGO.

### 3. FINDINGS AND DISCUSSION

#### 3.1. CURRENT STATUS AND AREAS FOR IMPROVEMENT

As of January 2024, IALA's documentation comprises 7 standards, 75 recommendations, and 146 guidelines. A detailed analysis of these documents reveals a need for updates and the development of new guidelines and recommendations.

Our review identified documents that require updating due to relevancy, scope shifts or outdated content. Additionally, there is a necessity for new documents to address gaps in the current documentation.

#### 3.2. PROPOSED ACTIONS

The Secretariat proposes to prioritize the updates and developments in section 3.3 of this paper in the 2023-2027 work program.

### 3.3. DETAILED FINDINGS

#### Documents need updates

- R0118, Ed1.2, Dec 2005:\*\* Recording of AtoN positions requires modernization.
- R0109, Ed1.1:\*\* Updates needed for the calculation of the range of a sound signal.
- R1018, Ed1.1, Dec 2019:\*\* Expansion to include broader scopes such as remote control, lighting protection, and safety management.
- R0107, Ed2.1, May 2009:\*\* Update to include modern mooring practices and materials like plastic buoys.

#### New documents proposed

- A recommendation for AtoN planning.
- General floating AtoN recommendation.
- Power system-related recommendation.
- Recommendations related to GNSS independent systems such as VDES R-Mode and ERPS.
- SBAS-related recommendation.
- VDES additional services recommendation.
- Data exchange system-related recommendation.

#### Document to be withdrawn

- G1153, Ed1.1, Template for review of emerging technologies for possible use by IALA members is not really guideline type document, so it is proposed to change the type of document to template and put it under the other appropriate papers.

## 4. ACTION REQUESTED OF PAP

The PAP is requested to consider these findings and accordingly update the work program as necessary.

## Annex List of scopes and documents

### 1. S1010 Marine AtoN planning and service requirements

#### 1.1. Obligations and regulatory compliance

##### 1.1.1. AtoN awareness for mariners

- R1021
- G1173

##### 1.1.2. IMSAS

- No Recommendation
- G1054

#### 1.2. Aids to Navigation planning

##### 1.2.1. Maritime buoyage system and fairway design

- R1001
- G1078

##### 1.2.2. Port traffic signals

- R0111
- No Guideline

##### 1.2.3. Marking bridges and structures

- R0113
- G1163
- G1172

##### 1.2.4. Marking man-made offshore structures

- R0139
- G1162

##### 1.2.5. Marine spatial planning

- R1010
- G1121
- G1033

- G1079
- 1.2.6. Cost comparison
  - No Recommendation
  - G1047
- 1.2.7. Emerging technologies template
  - No Recommendation
  - G1153
- 1.2.8. Use of mobile AtoN
  - R1016
  - G1154
- 1.2.9. Cyber security
  - R1024
  - No Guideline
- 1.2.10. State of the art technologies
  - No Recommendation
  - G1178
  - G1179
- 1.2.11. Virtual AtoN
  - R0143
  - G1081
- 1.3. Levels of service (objective, availability and categories)
  - 1.3.1. Categorisation and availability
    - R0130
    - G1004
    - G1035
    - G1037
  - 1.3.2. off station signal
    - R0104
    - No Guideline

#### 1.4. Risk management

##### 1.4.1. Risk management tools

- R1002
  - G1018
  - G1123
  - G1124
  - G1138
  - G1104

##### 1.4.2. Maritime data sharing

- R0142
  - G1086

##### 1.4.3. Simulation

- R0138
  - G1057
  - G1058

##### 1.4.4. Disaster recovery

- R1009
  - G1120

##### 1.4.5. Marking wrecks

- R1015
  - G1046

#### 1.5. Quality management

##### 1.5.1. Quality management

- R0132
  - G1052
  - G1133
  - G1168
  - G1005

##### 1.5.2. Recording AtoN position

- R0118
- No Guideline

## 2. S1020 Marine AtoN design and delivery

### 2.1. Aids to Navigation visual signalling

#### 2.1.1. retroreflecting material

- R0106
- G1145

#### 2.1.2. Surface colours

- R0108
- G1134

#### 2.1.3. Rhythmic characters

- R0110
- G1116
- G1038
- G1043
- G1048
- G1061
- G1094
- G1122

#### 2.1.4. Leading lights

- R0112
- G1023
- G1041

#### 2.1.5. Pictogram

- No Recommendation

#### 2.1.6. Light colours

- R0201
- No Guideline

#### 2.1.7. Light calculation, definition and notation

- R0202
- G1148

#### 2.1.8. Light measurement

- R0203
- G1065

#### 2.1.9. Effective intensity

- R0204
- G1135

#### 2.1.10. Estimation of optic performance

- R0205
- G1073

#### 2.1.11. Range of sound signal

- R0109
- G1090

### 2.2. Design, implementation, and maintenance

#### 2.2.1. Use of AIS

- R0126
- G1082
- G1062
- G1084
- G1098

#### 2.2.2. Responsible design

- R1018
- G1165
- G1077
- G1008
- G1012
- G1051
- G1091

- G1092
- G1108
- G1136
- G1109
- G1140
- G1151
- G1174

### 2.3. Floating aids to navigation

#### 2.3.1. Moorings

- R0107
- G1066

#### 2.3.2. Plastic buoy

- No Recommendation
- G1006

#### 2.3.3. Buoy painting

- No Recommendation
- G1015

#### 2.3.4. Buoy design

- No Recommendation
- G1099

### 2.4. Environment and sustainability

#### 2.4.1. Environmental management

- R1004
- G1036
- G1137

#### 2.4.2. Extreme environmental conditions

- No Recommendation
- G1175



## 2.5. Power systems

### 2.5.1. Solar power system

- No Recommendation
- G1170
- G1039

### 2.5.2. Integrated lanterns

- No Recommendation
- G1064

### 2.5.3. Power system selection

- No Recommendation
- G1067

## 2.6. Heritage and culture

### 2.6.1. Lighthouse conservation and maintenance

- R1005
- G1049
- G1063
- G1080
- G1093
- G1074
- G1075

## 3. S1030 Radionavigation services

### 3.1. Satellite positioning and timing

#### 3.1.1. PNT

- R1017
- G1127

#### 3.1.2. GNSS

- R1029
- No Guideline
- R1022

- No Guideline

### 3.2. Terrestrial positioning and timing

#### 3.2.1. Terrestrial radionavigation systems

- R1020
- No Guideline

#### 3.2.2. eLoran

- R1011
- G1125

#### 3.2.3. VDES R-Mode

- No Recommendation
- G1158

### 3.3. Augmentation services

#### 3.3.1. Maritime radionavigation service

- R0115
- G1016

#### 3.3.2. Performance and monitoring DGNSS

- R0121
- G1112
- G1119
- G1126

#### 3.3.3. Future of DGNSS

- R0135
- G1060

#### 3.3.4. DGNSS service provision

- R0150
- G1053

#### 3.3.5. SBAS

- No Recommendation
- G1129

- G1152

### 3.4. Racon and radar positioning

#### 3.4.1. RACON

- R0101
- R0146
- G1010

this one should move up

#### 3.4.2. ERPS

- No Recommendation
- G1147

## 4. S1040 VTS

### 4.1. VTS implementation

#### 4.1.1. VTS planning

- R0119
- G1083
- G1150
- G1160
- G1171

#### 4.1.2. VTS inland waters

- R0120
- G1166

#### 4.1.3. VTS management

- No Recommendation
- G1167

### 4.2. VTS operations

#### 4.2.1. VTS operations

- R0127
- G1089

- G1110
- G1131
- G1141
- G1144

#### 4.2.2. Staffing levels

- No Recommendation
- G1045

#### 4.2.3. Casualty and incident reporting and recording

- No Recommendation
- G1118

#### 4.2.4. Safety culture

- No Recommendation
- G1176

### 4.3. VTS communications

#### 4.3.1. VTS communications

- R1012
- G1132

### 4.4. VTS auditing and assessing

#### 4.4.1. Auditing and assessing VTS

- R1013
- G1101
- G1115

### 4.5. VTS data and information management

#### 4.5.1. portrayal of VTS

- R0125
- G1177

### 4.6. VTS technologies

#### 4.6.1. VTS systems

- R0128

- G1111
- G1111-1
- G1111-2
- G1111-3
- G1111-4
- G1111-5
- G1111-6
- G1111-7
- G1111-8
- G1111-9

4.6.2. Information exchange

- No Recommendation
- G1130

4.7. VTS additional services

4.7.1. Restricted or limited access areas

- No Recommendation
- G1070

4.7.2. Interaction with allied or other services

- No Recommendation
- G1102

4.7.3. Local port services

- No Recommendation
- G1142

4.7.4. Deck officers

- No Recommendation
- G1149

## 5. S1050 Training and certification

5.1. Training and assessment

5.1.1. VTS training and certification

- R0103
  - G1017
  - G1027
  - G1103
  - G1156

#### 5.1.2. AtoN training and certification

- R0141
  - G1020
  - G1169

### 5.2. Accreditation, competency, certification and revalidation

#### 5.2.1. R0149

- G1014
- G1100

### 5.3. Capacity building

#### 5.3.1. No Recommendation

- No Guideline

## 6. S1060 Digital communication technologies

### 6.1. Wide and medium bandwidth systems

#### 6.1.1. Provision shore based AIS

- R0123
  - G1050

#### 6.1.2. AIS service

- R0124
  - No Guideline
  - R0124-0
  - R0124-1
  - R0124-3
  - R0124-4
  - R0124-5

- R0124-9-11
- R0124-12
- R0124-14
- R0124-16
- R0124-17
- R0124-18
- R0124-19

6.1.3. VDES

- R1007
- G1117

6.2. Narrow bandwidth systems

6.2.1. No Recommendation

- No Guideline

6.3. Harmonised maritime connectivity

6.3.1. Shore based infrastructure architecture

- R0140
- G1113
- G1114

6.3.2. Regional e-Navigation implementation

- R0148
- No Guideline

6.3.3. Portrayal

- No Recommendation
- G1105

7. S1070 Information services

7.1. Data models and data encoding

7.1.1. Harmonized implementation of ASM

- R0144
- G1095

#### 7.1.2. Product specification

- R0147
  - G1085
  - G1087
  - G1088
  - G1106

#### 7.1.3. Maritime service

- R1019
  - G1155
  - G1161
  - G1096
  - G1107

#### 7.1.4. IVEF

- R0145
  - No Guideline

#### 7.1.5. MRN

- R1023
  - G1143
  - G1164

### 7.2. Data exchange systems

#### 7.2.1. Web service based S-100 data exchange

- No Recommendation
  - G1157

#### 7.2.2. Technical service

- No Recommendation
  - G1128

#### 7.2.3. Ship reporting

- No Recommendation
  - G1159



### 7.3. Terminology, symbology and portrayal

#### 7.3.1. No Recommendation

- No Guideline