



# **REPORT OF THE 9TH SESSION OF THE IALA ATON ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE**

**18 to 22 March 2019**

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**22 March 2019**

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

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# Report of the 9<sup>th</sup> Session of the IALA

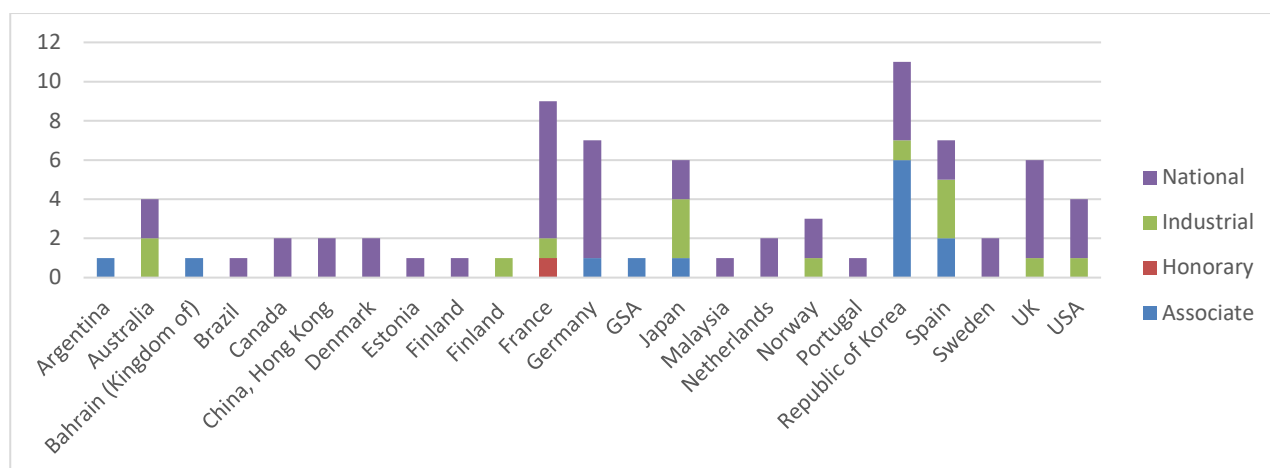
## AtoN Engineering and Sustainability (ENG) Committee

### 18 to 22 March, 2019

### Executive Summary

The ninth meeting of the ENG Committee (ENG9) was held from 18 to 22 March 2019 in IALA HQ.

The session was attended by 76 participants from 22 countries, of which 48 were National Members, 14 were Industrial Members, 1 Honorary Member, 13 were Associate Members. There were no observers. 19 participants attended for the first time. The following chart shows an analysis of the participation.



Working in four working groups, the Committee considered 73 input papers including presentations and produced 27 output documents including 2 draft Guidelines, 1 workshop proposal and 11 working papers.

The Committee produced the following Guidelines:

- Draft Guideline Application of Retroreflecting Material on Marine Aids to Navigation
- Draft Guideline 1091 Bird fouling and deterrent

The Committee drafted the following proposals for workshops/ seminars:

- IALALITE- IALABATT workshop proposal 2021.

The following liaison notes were prepared:

- Liaison Note to ARM9 on Guidance on Simulation Technology
- Liaison to CIRM on the Effect of Radars on Racons in Busy Harbours
- Liaison Note on VDES R-Mode to ENAV 23
- Liaison Note to ARM on 3rd party AtoN provider quality control

The following table shows a summary of the ENG Committee task plan for the work period 2018-2022 and the progress made to date.

Strategy Technical Domain	Tasks	Status
Standard 1010 – AtoN planning and service requirements	2 tasks	All tasks on schedule
Standard 1020 – AtoN Design and delivery	34 Tasks	All tasks on schedule
Standard 1030 – Radionavigation services	18 Tasks	All tasks on schedule
Standard 1050 Training and Certification	2 Tasks	All tasks on schedule

Strategy Technical Domain	Tasks	Status
Standard 1060 Digital communications technologies	2 Tasks	All tasks on schedule

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## Report of the 9<sup>th</sup> Session of the IALA ENG Committee

### GENERAL

The 9<sup>th</sup> session of the IALA AtoN Engineering and Sustainability Committee (ENG) was held from 18 to 22 March 2019 at IALA. The Chairman was Simon Millyard and the Vice Chairman was Michel Cousquer. The Secretary for the meeting was Thomas Southall.

### 1. OPENING

Simon Millyard introduced himself and the WG chairs and welcomed both newcomers and those returning to IALA.

#### 1.1 Approval of the agenda

The agenda (ENG9-1.1) was adopted.

#### 1.2 Welcome from the IALA Secretary-General and Deputy Secretary-General

The Secretary General welcomed all new and returning participants to the 9<sup>th</sup> meeting of the ENG Committee. Since ENG8, the reorganization of the Secretariat has been completed with Omar Frits Eriksson taking the role of Deputy Secretary General and Dean of the IALA World-Wide Academy, Tom Southall and Kevin Gregory supporting the Technical Committees and Isabelle Bracq joining the Administration and Finance team. The third IALA Preparatory Diplomatic Conference and World-Wide Academy seminar took place in Istanbul last week with excellent support of the Turkish Directorate General of Coastal Safety. The World-Wide Academy seminar focused on the effective implementation of IALA Standards and saw the launch of a series of seven colourful infographics to highlight and promote the suite of standards.

At the Preparatory Diplomatic Conference, over 200 delegates from around the world participated in the review of the draft convention text. Positive progress was made and the process will move forwards with the final Diplomatic Conference in early 2020 after which time the Convention will be open to signatures.

The first World Marine Aids to Navigation Day will be held on the 1st July 2019 with the theme 'successful voyages, sustainable planet'. A major World Marine Aids to Navigation Day event will be hosted by Spain but other IALA members are encouraged to embrace the day with their own unique events. Looking at the agenda for ENG9, it is pleasing to see so many interesting input documents and, in particular, the growing interest in the heritage forum and heritage issues in general.

#### 1.3 Administration and safety briefing

Kevin Gregory provided a Safety and Administration briefing.

#### 1.4 Introductions and Apologies

The session was attended by 76 participants from 22 countries, of which 48 were National Members, 14 were Industrial Members, 1 Honorary Member, 13 were Associate Members. 19 participants attended for the first time.



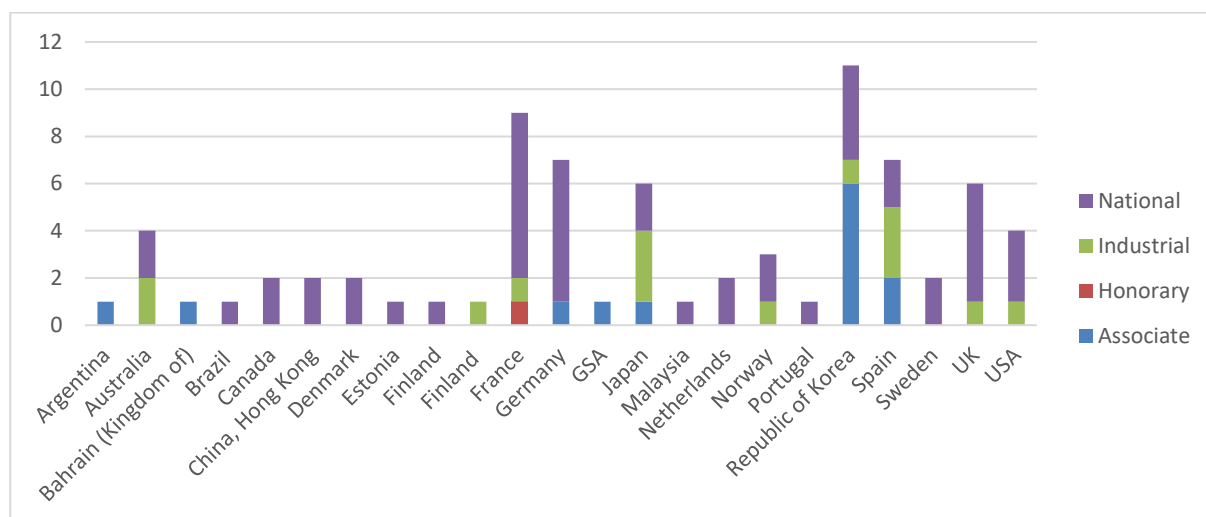
The list of Committee Members who attended ENG9 is shown in ANNEX B. New participants were welcomed in addition to those returning to the Committee. The Committee noted apologies from three Members who were unable to attend as noted in ANNEX B. It was noted that Leif Larsen, Norwegian Coastal Administration, will no longer be attending the ENG Committee. The Chair acknowledged his contribution to the Committee and sent him a letter of thanks.

The following statements were read to Committee members:

*IALA is required to comply with the General Data Protection Regulations of the European Union. In the report of this meeting, IALA will include a list of participants with their contact information. Any participant who wishes to remove their personal information from the participants' list should advise the Committee Secretary as soon as possible.*

*If anyone present has knowledge of any patents, including pending Patents, held either by themselves or by other organisations or individuals, the use of which may be required to practice or implement the content of IALA Documents being developed or worked on in this Committee to inform the IALA Secretariat.*

The following chart shows an analysis of participants.



## 1.5 Programme for the week

The programme for the week, paper ENG9-1.5.1, was approved.

## 2. REVIEW OF ACTION ITEMS FROM ENG8

Input paper ENG9-1.6.1 refers. Action items for the IALA Secretariat from ENG8 were noted as complete. WG chairs were requested to review Members actions.

## 3. REVIEW OF INPUT PAPERS

### 3.1 Input papers

It was noted that all input papers were available on the IALA website. It was observed that the input papers for each Working Group (WG) were identifiable from the document number. The Committee considered 73 input papers.

### 3.2 IALA Position Paper on the Development of Marine Aids to Navigation Services

Simon Millyard highlighted the changes to the IALA Position Paper arising from Council 68 and PAP37. Paper ENG9-10.9 refers. As requested by Council 68 the ENG Committee reviewed relevant sections of the IALA Position Paper and submitted its comments to the Secretariat to collate.

### Action Item

The **IALA Secretariat** to collate the Committees comments on the IALA Position Paper on the Development of Marine Aids to Navigation Services and submit them to PAP38.

## 4. REPORTS FROM OTHER BODIES

### 4.1 Reports from IALA Council

The Committee noted the report of the 68<sup>th</sup> Session of the IALA Council held in IALA HQ in December 2018 and the pertinent points of relevance to the ENG Committee were highlighted by the Committee Secretary. Papers ENG9-3.1.1 refers.

### 4.2 Report of the IALA Policy Advisory Panel

The Committee noted a report from the Committee Secretary on highlights of the 37<sup>th</sup> Session of the IALA Policy Advisory Panel relevant to ENG that was held in February 2019 at IALA HQ.

### 4.3 Report from IMO Meetings

The Committee noted reports from IMO Council 121 (ENG9-3.2.1) and IMO NCSR6 (ENG9-3.2.3) both held in London.

### 4.4 Report on the ITU

The Committee noted a report from the IALA Technical Operations Manager on liaison with the ITU. Input documents ENG9-3.3.1, ENG9-3.3.2, ENG9-3.3.3, ENG9-3.3.4 and ENG9-3.3.5 refers.

### 4.5 Report on the IEC

Michael Hoppe gave an update to the Committee on IEC activity. IMO has released performance standards for Multi system shipborne radionavigation receivers (MSC 401(95)) and a PNT data processing guideline MSC.1/Circ.1575. For onboard usage a type approval standard has to be developed at IEC TC80 WG4a. Further, it is intended to start a type approval for EGNOS SIS receivers. It could be expected that work in IEC TC 80 WG4a may start working on these standards in 2019.

### 4.6 Report on RTCM

Michael Hoppe gave an update to the Committee on RTCM activity. RTCM has a new President in Ed Wendlandt who took over from Bob Markle at the AGM in September. RTCM Special committees continue their work, with SC104 on DGNSS, SC134 on integrity for high accuracy GNSS based applications and SC135 on radio layer for real-time DGNSS applications being of interest to WG3.

RTCM is seeking IALA's assistance to determine the need for, and potential uptake, of a new RTCM version 2.4 which contains generic DGNSS messages.

### 4.7 Report on PIANC

Minsu Jeon notified the Committee that IALA had received an invitation to the PIANC General Assembly taking place 5 June 2019.

### 4.8 Report on CIE

Dr Alwyn Williams provided the Committee with a report on CIE activity. CIE is currently preparing for their quadrennial conference and division meetings being held in Washington DC, USA in June. After the publication of the Technical Report on the measurement of effective intensity, it is expected that the work will continue to review experiments to shed more light on the applicability of the convolution functions, such as Modified Allard Method. It is also noted that CIE has published a Technical Report on determining the uncertainties in spectral measurement, which is an area of interest in an upcoming work task of WG1.



## 4.9 Report e-Navigation Underway International 2019 Conference

The Committee noted the conclusions of the e-Navigation Underway International 2019 Conference sailing between Copenhagen and Oslo. Paper ENG9-3.8.1 refers.

## 5. REPORTS FROM RAPPORTEURS

### 5.1 Power

Peter Dobson reported that there was currently no developments in this area of note.

### 5.2 Lights

Dr Alwyn Williams reported that a United States Coastguard safety alert on the use of LED lighting and potential interference with VHF radios had been issued.

### 5.3 Buoys

Peter Schneider reported that there was currently no developments in this area of note.

### 5.4 PNT

Members reported that a GPS rollover would occur on the 6<sup>th</sup> and 7<sup>th</sup> April. Further information has been posted on the IALA website. This rollover event could especially impact on users with older GPS installations.

### 5.5 Environment

Simon Millyard introduced the United Nations Sustainable Development Goals and gave a briefing and introduction on them and their connection to the work of IALA and the ENG Committee.

### 5.6 Use of drones

Jorgen Royal Petersen gave a presentation on the use of drones (ENG9-4.6.1). Information on the use of drones by Committee members was requested.

### 5.7 IALA Dictionary

Michel Cousquer gave a short update on the IALA Dictionary. The IALA Dictionary is supported by the Secretariat and the Committee were requested to use it in all their work and to use the Dictionary Amendment Proposal template form to advise of any required changes.

#### *Action item*

*That **Committee Members** are requested to ensure that definitions in IALA documents are consistent with the Dictionary.*

*That **Committee Members** are invited to volunteer as Spanish / French translators for Dictionary terms.*

### 5.8 IALA Bulletin liaison

Michel Cousquer briefed the Committee on the need for contributions to the IALA Bulletin. Bulletin issues will be in June and December each year with eBulletin issues at two month intervals.

#### *Action item*

*That **Committee Members** are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet and for the e-Bulletin to Audrey Guinault.*

## 6. PRESENTATIONS

Five presentations were made during the opening plenary session. The presentations are available on the IALA Committee website.

## 6.1 IALA World-Wide Academy (WWA) – Gerardine Delanoye

Gerardine Delanoye and Kevin Gregory described the recent activity in the Academy since ENG8 (ENG9-5.1).

## 6.2 Lighthouse heritage management in Australia – Greg Hansen

Greg Hansen from the Australian Maritime Safety Authority gave a presentation on the management of heritage lighthouses in Australia (ENG9-5.2).

## 6.3 Building ocean observing capacity using AtoN platforms – Glenn Nolan

Glenn Nolan gave from EuroGoos gave a presentation on building ocean observing capacity using AtoN platforms (ENG9-5.3).

## 6.4 Evaluation of WAAS for maritime navigation in Canadian waters – André Châteauvert

André Châteauvert gave a presentation on the evaluation by the Canadian Coast Guard of the use of WAAS for maritime navigation in Canadian waters (ENG9-5.4).

## 6.5 Sustainability and sector lights – Frank Hermann

Frank Herman from the Federal Waterways and Shipping Administration gave a presentation on sustainability and sector lights (ENG9-5.5).

# 7. REVIEW OF WORK PROGRAMME AND WG EXPECTATIONS

## 7.1 Work review

The ENG Committee Workplan for the 2018-2022 work period was finalised. Paper ENG9-6.1.1 refers.

The ENG Work Programme Task Register for 2018-22 was developed. Paper ENG9-6.2.1 refers.

The following shows a summary of progress on the Task Plan at the end of ENG9.

Hosts were invited for the IALABATT / IALALITE Workshop.

Strategy Technical Domain	Tasks	Status
Standard 1010 – AtoN planning and service requirements	2 tasks	All tasks on schedule
Standard 1020 – AtoN Design and delivery	34 Tasks	All tasks on schedule
Standard 1030 – Radionavigation services	18 Tasks	All tasks on schedule
Standard 1050 Training and Certification	2 Tasks	All tasks on schedule
Standard 1060 Digital communications technologies	2 Tasks	All tasks on schedule

### Action item

*The IALA Secretariat is requested to forward the ENG Committee Workplan for 2018-2022, ENG9-12.23, and the Task Register, ENG9-12.24, to ENG9.*

## 8. ESTABLISH WORKING GROUPS

### 8.1 Establishing working groups

Three working groups were established, as outlined below. A list of working group participants is at ANNEX C.

Working Group		Working Group Chair	Working Group Vice Chair
WG 1	Visual & Physical AtoN	Malcolm Nicholson	Alwyn Williams
WG 2	Knowledge & Sustainability	Jordan Lane-Beveridge	Peter Schneider Jorg Unterdeuweide
WG 3	Radionavigation Services	Micheal Hoppe	-
WG4	The Heritage Forum	Peter Hill	Jonghun Kim

## 9. WORKING GROUP 1 – VISUAL & PHYSICAL ATON

The working group was made up of 14 members and they considered 8 input papers. Some of the papers received were for information, whilst others were input to developing guidelines. The main aim of this session was to continue the work identified in the work program and update the task register.

The WG review the Position on the Development of AtoN Services and propose a slight amendment to 6.1.8

Input paper ENG9-2.1.7 was introduced by Alwyn Williams on the subject of change of colour of marine AtoN over distance. The WG found the content to be of great interest and that the work generally agreed with the Angstrom model presented in Guideline G1073 on Conspicuity of AtoN Signal Lights at Night.

### Action Item

*The IALA Secretariat is requested to update section 6.1.8 on the Position on the development of AtoN services and send to PAP for approval*

### 9.1 Update E-111 Port Traffic Signals (Task 2.1.1)

A revised Recommendation was received as a working paper replicating the content of the original in the new IALA format. This was reviewed and the WG is waiting for a response from ARM on the questionnaire. The working group requests that secretariat forwards the revised recommendation to ENG10.

### Action Item

*The IALA Secretariat is requested to forward working paper on the revisions to Recommendation E-111 Port Traffic Signals ENG8-12.17 to ENG10.*

### 9.2 Develop Guideline on Port Traffic Signals (Task 2.1.2)

This task is due to commence at ENG10 for three sessions. However, discussions took place on what the content of the guidance should be with regard to long range daytime intensities (5NM+) and wide divergence to be included.

### 9.3 Develop E-112 Leading Lights and 1023 Leading Lines into a Guideline (Task 2.1.3)

This task was due to commence at ENG9 for four sessions. However, the WG is still developing the Guideline G1133 on the calculation on intensity and this work item depends on its completion.

### 9.4 Complete 1061 Illumination of Structures (Task 2.1.4)

The revision of this Guideline is scheduled for ENG10-11. Refer to task register for scope of work.

## 9.5 Update Guideline 1048 LED technologies and their use in signal lights (Task 2.1.5)

This task commenced at ENG9 for two sessions. It will now merge guidelines 1043 & 1048. This work was started during the last work program but due to other priorities was not completed.

### Action Item

*Jonas Lindberg and Frank Hermann are requested to work on the partially combined Guidelines on LED technologies and their use in signal lights and submit an input paper to ENG10.*

## 9.6 Review & update guideline 1043 on Light sources (Task 2.1.6)

Refer to 9.5 (Task 2.1.5)

## 9.7 Develop a Guideline for E-106 Retroreflective materials (Task 2.1.7)

Work was finalised on developing this Guideline and it is ready to send to Council for approval.

### Action Item

*The IALA Secretariat is requested to forward draft Guideline E-106 on retroreflective materials ENG9-12.6 to Council for approval.*

## 9.8 Develop E200-3 on measurement of light into a Guideline (Task 2.2.1)

This task is due to start at ENG11 for four sessions. Refer to task register ENG8-12.2.12 for scope of work.

## 9.9 Develop new Recommendation on Marine Light Terms of Measurement (Task 2.2.2)

This task is due to start at ENG12 for two sessions. Refer to task register ENG8-12.2.12 for scope of work.

## 9.10 Develop E200-5 on Optical Performance into a Guideline (Task 2.2.3)

This task is due to start at ENG12 for two sessions. Refer to task register ENG8-12.2.12 for scope of work.

## 9.11 Revise Guideline on effective intensity (Task 2.2.4)

This task was due to start at ENG9 for two sessions. However, due to working on developing other documents this work item was not started. Refer to task register ENG8-12.2.12 for scope of work. It will begin at ENG10.

## 9.12 Develop Guidance on monitoring of function and degradation of AtoN light sources (Task 2.2.5)

This task was due to commence at ENG9 and it was envisaged to add to Guideline G1077. However, the required input was not available. Refer to task register ENG8-12.2.12 for scope of work. Pending the required data this task will commence at ENG10.

### Action Item

*That Alwyn Williams and Peter Dobson are requested to provide an input paper to ENG10 on monitoring of function and degradation of AtoN light sources, if sufficient data is collected.*

## 9.13 Develop Guidance on service factors (Task 2.2.6)

This task is due to start during ENG10. However, during the course of developing Guideline G1133 – Calculation of Luminous Intensity and Range it was felt that this Guideline would be the natural placeholder for service condition factors.

Task Group: Alwyn Williams (Leader), Malcolm Nicholson, Partel Keskkula.

### Action Item

*That Alwyn Williams and Link Powell are requested to provide an input paper to ENG10 on service condition factors.*

#### 9.14 Develop Guidance on Colour fading of AtoN (plastic and painted) – methods to measure and assess (Task 2.2.7)

This task is due to start at ENG10 for three sessions. It is envisaged that this guidance will be incorporated into Guideline G1134 on Surface Colours Used as Visual Signals on AtoN, rather than Guideline G1077 or a new Guideline.

Task Group: Jorgen Royal Petersen (Leader), Johnny Menard & Sami Lasma.

##### *Action Item*

*That **working group 1 members** are requested to submit input papers on Colour fading of AtoN (plastic and painted) methods to measure and assess to ENG10.*

#### 9.15 Finish Guideline G1133 Marine Signal Lights - Calculation of Luminous Intensity and Range (Task 2.2.8)

Work continued on developing this Guideline with a clear way forward for its completion.

##### *Action Item*

*That **Alwyn Williams & Malcolm Nicholson** are requested to work intersessionally on the development of this guideline and submit an input paper to ENG10.*

#### 9.16 Update G1041 on Sector Lights to define 'Angle of Uncertainty' (Task 2.2.9)

This task was due to start at ENG9 for two sessions. However, due to working on other documents this task was not started. Refer to task register for scope of work and updated time frame for completion.

#### 9.17 Deliver a Workshop - IALABATT/ IALALITE (Task 2.4.2)

A proposal for this workshop was approved by ENG9 and requested to be forwarded to Council for approval. At ENG9 there have been preliminary discussions with a National Member to host.

##### *Action Item*

*The **IALA Secretariat** are requested to submit the IALALITE- IALABATT workshop proposal (ENG9-12.8) to Council for approval.*

### 10. WORKING GROUP 2 – KNOWLEDGE & SUSTAINABILITY

#### 10.1 Revised guidance on Simulation Technology to revise G1097 in cooperation with ARM task 1.2.4 (Task 1.1.1)

Work on the development of revised guidance on simulation technology continued. In view of the nature of the joint a liaison note has been prepared to enable the draft guideline to be reviewed and developed as appropriate in that Committee.

Mr. Taekeun Park gave a presentation on simulation technology at the closing plenary of the ENG Committee meeting.

##### *Action Item*

*The **IALA Secretariat** is requested to forward the liaison note (ENG-12.10.1) and the draft Guideline on Simulation Technology to the ARM Committee for review and further development.*

#### 10.2 Quality control for 3<sup>rd</sup> party AtoN (and AtoN service) providers. (Joint ARM cooperation) (Task 1.2.1)

Development of the new Guideline continued and the working group considered that obtaining further information from a group consisting of government and contractors would be ideal to obtain multiple perspectives that can be captured into this guideline.

A liaison note to ARM9 was prepared requesting that they give consideration as to whether the guidance on 3rd party AtoN provider quality control may be included as part of the revised Guideline 1052 on Quality Management Systems.

*Action Item*

*The IALA Secretariat is requested to forward the liaison note (ENG9-12.9) and draft guidance on 3<sup>rd</sup> party AtoN provider quality control (ENG9-12.9.1).*

*The IALA Secretariat is requested to forward the working paper ENG9-12.9.1 on draft guidance on 3<sup>rd</sup> party AtoN provider quality control to ENG10.*

**10.3 Develop guidance to identify appropriate standards for AtoN equipment with extreme environmental conditions. (Humidity, temperature, enclosure ratings, UV, etc.) Also including peak intensity specification for LED AtoN, batteries, optic service factor, thermal cap, etc. (Task 2.3.1)**

No work was undertaken on this item and it was considered that it would likely begin at ENG10.

**10.4 Complete guidance on Maintenance of AtoN structures (Task 2.3.2)**

Work on the provision of a new draft Guideline on Maintenance of AtoN Structures was completed.

*Action Item*

*The IALA Secretariat is requested to forward the draft Guideline on the Maintenance of AtoN Structures (ENG9-12.13) to ENG10 as a working paper for further work.*

**10.5 Develop Guideline on Tidal flow data capture and display (Task 2.3.3)**

Development of the new Guideline on Tidal Flow systems continued at ENG9 and will be forwarded as a Working Paper to ENG10, for further development.

*Action Item*

*The IALA Secretariat is requested to forward working paper draft Guideline on Tidal Flow systems ENG9-12.16 to ENG10.*

**10.6 New Recommendation on the Responsible Design & Maintenance of AtoN (Task 2.3.4)**

Work on a draft Recommendation on the Responsible Design and Maintenance of AtoN continued and was forwarded to the Committee plenary for comment with a view to finalisation at ENG10. Now named Design and Operation. Content on aspects of responsible, sustainable, and safe design as well as a recommendation that appropriate building codes are used were included in the document.

*Action Item*

*The IALA Secretariat is requested to forward working paper draft Recommendation on the Responsible Design and Maintenance of AtoN ENG9-12.22 to ENG10.*

**10.7 Joint workshop with all 4 technical committees on Cyber Security in AtoN operations (Task 2.3.5)**

A preliminary Steering Committee meeting for the workshop on Cyber Security in AtoN Operations was formed and consisted of the Chair and Vice Chair of the ENG Committee, the Chair of the ENAV Committee, the Chair of ARM Committee (by telephone) as well as a representative of the potential host (Canada). The workshop has tentatively been scheduled for the end of October 2020.

*Action Item*

*The IALA Secretariat is requested to form a cross-committee Steering Group for the joint workshop on Cyber Security.*

#### **10.8 Develop Guidance on what constitutes a good marine AtoN solar panel (Task 2.4.1)**

No work was undertaken on this item and it was considered that it would likely begin at ENG10.

#### **10.9 Monitor Battery development for use in AtoN (Task 2.4.3)**

No work was undertaken on this item and it was considered that it would likely begin at ENG10.

#### **10.10 Develop Guidance on quantifying buoy characteristics to meet navigation and operational requirements and ways to verify them.**

Although it was envisaged that work would be undertaken at ENG9 it was considered that it would likely begin at ENG10.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG9-12.18 to ENG10 Guidance on quantifying buoy characteristics to meet navigation and operational requirements and ways to verify them.*

#### **10.11 Develop new Guideline on radar reflector (reflection) properties**

The task was commenced at ENG8 and significant progress was made at ENG9.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper new Guideline on radar reflector (reflection) properties ENG9-12.19 to ENG10.*

*That Committee Members provide input to ENG10 on this task.*

#### **10.12 Creating an overview guidance on floating AtoN**

No work was undertaken on this item and it was considered that it would likely begin at ENG10.

#### **10.13 Develop Guidance on modern equipment in traditional lighthouses (Task 2.6.1)**

The draft Guideline on modern equipment in traditional lighthouses was commenced at ENG9.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper on Guidance on modern equipment in traditional lighthouses ENG9-12.20 to ENG10.*

#### **10.14 Revise Recommendation R1004 Environmental Management in the Provision of Marine Aids to Navigation to reference the UN Sustainable Development Goals (Task 2.7.1)**

The revised Recommendation R1004 Environmental Management in the Provision of Marine Aids to Navigation to reference the UN Sustainable Development Goals was further developed and finalised

##### *Action Item*

*The IALA Secretariat is requested to forward the draft Recommendation R1004 Environmental Management in the Provision of Marine Aids to Navigation to reference the UN Sustainable Development Goals (ENG9-12.11) to all Committees for further comment.*

#### **10.15 Dictionary Amendments and Translations**

A number of dictionary amendments and translations were received, during work on current Task Items and also as additional work by WG2 members. Work will continue at ENG10.

##### *Action Item*

*The IALA Secretariat is requested to forward the proposed changes to IALA dictionary definitions (ENG9-12.15) to ENG10.*



## 10.16 Guideline 1091 Bird Deterrent and Bird Fouling solutions

Following an input papers on this subject (ENG9-2.1.9 and ENG9-2.1.9.1) Guideline 1091 was reviewed and updated.

### *Action item*

*The IALA Secretariat to forward the revised Guideline 1091 (ENG9-12.14) to Council for approval.*

## 11. WORKING GROUP 3 – RADIONAVIGATION SERVICES

The WG Chair and Vice Chair express their gratitude to the WG members for their hard work and effort during this busy week. The WG would also like to thank the ENG Committee for making us welcome following the change of Committees.

The WG considered the task plan and task register and provided updates to the ENG Committee Chair and Vice Chair.

### 11.1 Resilient PNT (Task 3.1.1)

At ENG8 the Committee developed a Recommendation on resilient PNT which was approved by Council. Subsequent work to develop a Guideline that offers assistance on what resilience means, how it can be achieved and the potential impact of interference and spoofing events should be developed.

No work on this item during this session.

### 11.2 Terrestrial radionavigation systems (Task 3.2.1)

During this meeting, the first draft of a new recommendation on the provision of terrestrial radionavigation systems should be developed.

No work on this item during this session.

### 11.3 R-Mode (MF) (Task 3.2.2)

There are a number of work items under this topic, including the development of new Guidelines to support R-Mode MF. However, the most pressing activity under this topic is the workshop that will be held at IALA HQ from 9<sup>th</sup>-12<sup>th</sup> September 2019.

### 11.4 R-Mode (AIS/VDES) (Task 3.2.3)

The Committee reviewed input documents ENG9-10.7 and ENG9-10.7.1 on this topic. These input papers captured system requirements for VDES R-Mode based on a baseline and priorities report developed within the R-Mode Baltic project. This information delivers important background information which should be used for the intended development of the R-Mode VDES Guideline. The report should be included as input material to the R-Mode workshop in September 2019.

At ENG8 the Committee developed a liaison note to ARM to support the development of R-Mode VDES with respect to system requirements for a GNSS backup system. The WG reviewed the answer from ARM Committee, ENG9-2.1.3. The information provided was noted and should be included as input material to the R-Mode workshop in September 2019.

The Committee reviewed late input paper ENG9.10.10, on VDES R-Mode Stakeholder Requirements, on the same topic. The information provided was noted and should again be included as input material to the R-Mode workshop in September 2019.

The Committee, noting the result of IMO NCSR 6 that NCSR did not agree the IALA proposal that VHF digital voice communication and VDES R-Mode were included in possible agenda item for WRC-23 but requested IALA to keep IMO informed of the progress made, developed a draft input paper to IMO/IT EG 15, ENG9-12.5.1 and a liaison note to ENAV to finalize the draft ENG9-12.5.

### *Action item*



*The IALA Secretariat is requested to forward ENG9-2.1.3, Liaison note on VDES R-Mode system requirements, and ENG9-10.10, VDES R-Mode Stakeholder Requirements, and ENG9-7.1, Baseline and Priority report to the IALA R-Mode Workshop.*

*The IALA Secretariat is requested to send the liaison note, ENG9-12.5 and the draft input paper to IMO/ITU EG 15, ENG9-12.5.1 to ENAV 23 for finalizing the draft input and submit it to IMO subject to the Council approval.*

### **11.5 Workshop on R-Mode in 2019 (Task 3.2.4)**

The Committee considered the need and benefit of an R-Mode Workshop at ENG8 and forwarded a workshop request sheet to Council for approval. The R-Mode workshop was approved at Council 68. The R-Mode workshop will be held from 9th till 12th September 2019 at IALA HQ.

A steering committee for the R-Mode workshop was established at ENG9 and worked on the preparation of the workshop. A drafting group worked during the meeting on the details of the workshop programme and an information flyer to provide background information. Further work on this material will be conducted in the R-Mode workshop steering committee via telephone conference. The final information should be ready to distributed by end of April 2019.

#### *Action item*

*The IALA Secretariat is requested to support the preparation of the workshop and are asked to circulate the workshop programme together with the workshop flyer to other IALA committees and to advertise the workshop on the IALA webpage.*

### **11.6 R-Mode testbed progress coordination (Task 3.2.5)**

The Committee considered this item and undertook to update the IALA website on the progress of the R-Mode Baltic Sea testbed project and encourage other testbeds to publish their work in a similar manner.

No work on this item during this session.

### **11.7 R-Mode: input to sister organisations on R-Mode standards (Task 3.2.6)**

The Committee reviewed input paper ENG9-10.8, Verification of S-246 and S-247 Product Specification on S-200 Test Bed and discussed the progress on the status of S-246 and S-247 based on working papers ENG8-11.6.1 and ENG8-11.6.2. Both product specifications require additional amendments which will be conducted between ENG9 and ENG10 by KRISO.

#### *Action item*

*KRISO is requested to review and amend product specifications for ENG8-11.6.1 (S-246) and ENG8-11.6.2 (S-247) and provide appropriate input to ENG10.*

### **11.8 Guidance on timing and synchronisation (Task 3.2.7)**

New work item – no work completed within this session.

### **11.9 eRaCon (standard approach); Review recommendations ENAV146 & R-101 & Guideline 1010 (Task 3.3.1)**

The committee completed a Liaison Note (ENG9-12.4) to CIRM that continues the dialog started from an earlier IALA note “On the Effect of Radars on Racons in Busy Harbours” (ENAV20-14.1.21) and response from CIRM (ENG8-11.1). This response clarifies and expands on IALA original request and includes comments from ARM (ENG9-2.1.1).

Further the group started new draft Guidelines on the Use of Enhanced Racons. Work will continue at the next sessions.

The group started review of IALA documents Recommendation R101 Marine Radar Beacons (Racons), Recommendation e-NAV-146 On Strategy for Maintaining Racon Service Capability and Guideline 1010 Racon

Range Performance. The three documents are out of date and need to be brought into the current IALA document structure. Work will continue at the next sessions.

*Action item*

*The IALA Secretariat is requested to forward ENG9-12.4, Liaison note to CIRM – regarding racons in busy harbours.*

#### **11.10 Consideration on how and when to use SBAS (Task 3.4.1)**

Input papers ENG9-10.6, ENG9-10.6.1 and ENG9-2.1.17 were presented and discussed. A drafting group during ENG9 further developed the draft Guideline on SBAS Maritime Service. Further work is required on up following sessions.

The working group further reviewed also ENG9.2.1.12, Pilot project for the transmission of SBAS corrections via IALA beacons and AIS. Details are available under <https://egnosforaton.eu>.

*Action item*

*The IALA Secretariat is requested to forward working paper ENG9.12.21 as an input to ENG10*

#### **11.11 Review of existing DGNSS infrastructure and provision of guidance for current system (Task 3.4.2)**

*New work item – no work on this item during this session.*

#### **11.12 Recommendation on augmentation for maritime use (Task 3.4.3)**

Input paper ENG9-10.1 were considered under this work item.

The aim of this work item was to provide a method by which augmentation service providers would publically declare their service to the maritime community. The need for this grew from ongoing SBAS discussions where it was noted that such a declaration would benefit the maritime community as it would recognise a maritime user.

No work on the draft Recommendation were performed during ENG9. It is planned that the prepared draft Recommendation will be amended and considered at ENG10.

*Action item*

*The IALA Secretariat is requested to forward working paper, ENG9-12.23 (ENG9-10.1), Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision, to ENG10.*

#### **11.13 Provide guidance, strategy and advice on new uses of marine beacon DGNSS infrastructure (Task 3.4.4.)**

This is a new work item – with no work conducted during this session.

#### **11.14 High accuracy systems (Task 3.4.5.)**

This is a new work area - no work completed during this period.

#### **11.15 Review and update current documentation under the purview of PNT WG (Task 3.5.1)**

This activity aims to align the documents under the purview of the PNT WG to align them with the IALA Standards.

The committee reviewed ENG9-10.9, the latest version on Position on the development of AtoN services, according to Chapter 8 on Radio Navigation Services.

The committee reviewed the IALA world DGNSS station list and proposed an introduction to the table for information of maritime authorities and mariners using these stations.

#### *Action item*

*The IALA Secretariat is requested to note the changes for chapter 8 for the regular update procedure of this document.*

*Mr. Jeffrey van Gils is requested to provide appropriate input regarding an introduction to the IALA world DGNSS list to ENG10.*

### **11.16 Monitor developments in GNSS, DGNSS, radar, resilient PNT, e-Pelorus, terrestrial systems, R-Mode, inertial and any other relevant areas etc. (Task 3.5.2)**

The Committee discussed a number of general topic areas, including impact of GPS week number rollover to service providers and users, updates in RTCM Special Committee SC 104 concerning new version 2.4, amongst others.

### **11.17 Liaison with sister organisations (IMO, ITU, RTCM etc) on related topics (Task 3.6.1)**

The committee receives a presentation about RTCM SC-104 draft V2.4 and DGNSS Beacon Services matters from Stig-Erik Christiansen.

RTCM is preparing a clean draft version of 2.4 and will ask IALA for comments and user needs before CDV release. Further, a revision of ITU-R M823 is needed as soon as a new RTCM SC-104 version 2.4 is approved. Further work about these topics are expected at ENG10.

#### *Action item*

*Mr. Stig-Erik Christiansen is asked to provide an input paper to ENG10 concerning RTCM SC-104 version 2.4 and the requested feedback from IALA.*

### **11.18 Input to MSP, Integrity considerations for resilient PNT, cybersecurity impact for PNT data, datum considerations (Task 3.7.1)**

No work in this session.

### **11.19 Development and review of WWA courses (Task 4.1.1)**

No updates during this session.

### **11.20 Navguide updates and review (Task 4.2.1)**

No updates during this session.

## **12. WORKING GROUP 4 – THE HERITAGE FORUM**

11 persons from 7 nations have been involved over the course of ENG8. WG4 received interesting presentations on lighthouse conservation strategies and plans in Australia from Greg Hanson of AMSA and on the heritage lighthouses of Malaysia from Mohd Arma Noramin of the Marine Department, Malaysia.

### **12.1 Establish a World Heritage Lighthouse Cyber Centre, accessible via the IALA website (Task 2.6.3.& 2.6.4)**

No work was carried out on this task.

### **12.2 Establish a concept for nominating one lighthouse as World Heritage Lighthouse of the year for each 'World AtoN Day'. (Task 2.6.5)**

The Heritage Forum resolved that the lighthouse of the year for 2019 will be Cordouan Lighthouse in France. Cordouan Lighthouse was selected for the following reasons.

- *It being of considerable longevity and in a remarkable state of preservation*

- *it being the last manned lighthouse in France and in this regard one of few around the world*
- *its significant role in the development of national and international lighthouse technology – in particular in the trials of Augustin Fresnel's lens system*
- *its current candidacy for UNESCO World Heritage site status. If this is successful, it is thought that it will be only the second lighthouse to receive such status as an individual building – the only known lighthouse with such existing status is the Tower of Hercules in Spain. This rare and exciting candidacy makes this year's IALA Heritage Lighthouse of the Year especially prominent in espousing the value of lighthouse heritage*

Korea will produce a plaque and send to IALA headquarters in time for the IALA Secretary General to present to France at World AtoN Day. This will be a plaque that They will circulate the draft content amongst the Working Group in advance of production.

Jean-Marie Calbet to write to the French LH authority request they send a representative to the World AtoN day at Las Palmas, Canary Islands to receive this plaque. France has produced article for the IALA Bulletin and for the IALA website on the Lighthouse of the Year 2019.

Heritage Forum resolved to seek proposals / suggestions from member countries for potential future years' IALA Heritage Lighthouse of the Year. Future years' IALA Heritage Lighthouse of the Year will be drawn from a particular region of the world (to be will be rotated). From the proposals / suggestions received (including from ENG WG4 participants), future years' IALA Heritage Lighthouse of the Year will be drawn from the world region that is focussed on that year. A proposal / suggestion form is being drafted and will be provided to Members for circulation. The form to be completed intertessionally by Peter Hill and then made available on the IALA e-bulletin and website.

It was considered that efforts to seek the submission of proposals from across IALA was essential to raising the profile of the event and lighthouse heritage generally. The possibility of featuring all proposed lighthouses from that region on the IALA website was discussed - as was the potential for this forming the basis of world lighthouse heritage 'database'.

#### *Action Item*

*That **Peter Hill** to complete the heritage lighthouse of the year proposal form and send it to WG4 members for approval before ENG10.*

*The **IALA Secretariat** to publish the Cordouan Lighthouse article in the bulletin.*

### **12.3 Deliver Heritage Seminar (Task 2.6.6)**

WG4 acknowledged the generous offer from Brazil to host the Heritage seminar in 2020.

A theme for the Heritage Seminar was agreed to be "The challenge of change" and will be delivered in Salvador, Brazil from 21<sup>st</sup> April 2020 to 24<sup>th</sup> April 2020.

The outline theme will be used by the Brazilian delegate, Lt Cdr Marcos Silva, for development and to identify speakers and visits. All WG4 members are asked to identify speakers and specific topics to expand on the programme.

A draft flyer was produced to advertise the event.

The inaugural meeting of the Heritage Seminar steering group was held and a further meeting planned for

#### *Action Item*

*The **IALA Secretariat** is requested to advertise the flyer for the Heritage seminar on the IALA website.*

*The **IALA Secretariat** is requested to host the next Heritage Seminar steering group by GoToMeeting.*

### **12.4 Level 1.5 Model Course on Lighthouse heritage projects**

No work was carried out on developing this course and this will be worked on at ENG10.

#### *Action item*

*That Committee Members provide input to ENG10 on this task.*

### 13. REVIEW OF OUTPUT AND WORKING PAPERS

The Committee considered 73 input papers including presentations and produced 17 output documents including 2 draft Recommendations, 3 draft Guidelines, 1 workshop proposal and 6 working papers. Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

### 14. ANY OTHER BUSINESS

During ENG9 the Committee reviewed the Working Groups Terms of Reference (ENG9-12.1) and added WG4 – The Heritage Forum.

PAP37 requested all Committees to consider ways that IALA could be involved with MASS systems and provide input to be discussed at PAP38.

Rob Dale, Trinity House, was identified as point of contact for the IALA Secretariat for the update of the NAVGUIDE.

#### *Action Items*

*The **IALA Secretariat** are requested to upload the Terms of Reference document (ENG9-12.1) to the Committee website and forward it to ENG10.*

*That **Committee Participants** provide input to the Committee Chair by 1 August considering ways that IALA could be involved with MASS systems.*

### 15. REVIEW OF SESSION REPORT

The report of the meeting (ENG9-14.1) was considered. Committee Participants were requested to advise any corrections / amendments within one week, following which the final version of the report will be issued via the IALA web site.

#### *Action item*

*The **IALA Secretariat** is requested to forward the summary of the ENG9 Committee report (ENG9-14.1) to Council to note.*

### 16. DATE AND VENUE OF NEXT MEETING

The next session of the Committee is from 30<sup>th</sup> September to 4<sup>th</sup> October 2019 at IALA Headquarters.

### 17. CLOSING OF THE MEETING

The Committee Chairman thanked the Vice-Chair, working group Chairs and all Participants for their hard work and effective output during the session and the four year work period. He thanked the IALA Secretariat for their support.

### 18. LIST OF ANNEXES

- 1     Agenda  
      A copy of the agenda is at ANNEX A.
- 2     Participants  
      A list of participants is at ANNEX B.

- 3 Working Group Participants  
A list of working group participants is at ANNEX C.
- 4 Input Papers  
A list of input papers is at ANNEX D.
- 5 Output and Working papers  
A list of output and working papers is at ANNEX E.
- 6 Action Items  
A list of action items is at ANNEX F.



## 9<sup>th</sup> Meeting of the AtoN Engineering and Sustainability Committee (ENG9)

The 9<sup>th</sup> meeting of the **AtoN Engineering and Sustainability Committee (ENG9)** will be held from 18 – 22 March 2019 at IALA Headquarters, St Germain en Laye, France.

The opening plenary will commence at 1300 on Monday 18 March and the closing plenary will end at approximately 1300 on Friday 22 March.

Committee Chair, Vice-Chair and Working Group Chairpersons are requested to meet at 0900 on Monday, 18 March 2019.

### AGENDA

1. Opening
  - 1.1. Approval of the agenda
  - 1.2. Welcome address from the Secretary-General/Deputy Secretary-General
  - 1.3. Administration and safety briefing
  - 1.4. Introductions and apologies
  - 1.5. Programme for the week
  - 1.6. Review of action items from ENG8
  - 1.7. ENG committee structure
    - 1.7.1. WG1 Overview                      Malcolm Nicholson
    - 1.7.2. WG2 Overview                      Jordan Lane-Beveridge
    - 1.7.3. WG3 Overview                      Michael Hoppe
    - 1.7.4. Heritage Forum                      Simon Millyard
2. Review of input papers
  - 2.1. Input papers
    - 2.1.1. IALA Position Paper on the Development of Marine Aids to Navigation Services
3. Reports from other bodies
  - 3.1. IALA
    - 3.1.1. IALA Council 68                      Tom Southall
    - 3.1.2. IALA Policy Advisory Panel (PAP) 37                      Tom Southall
  - 3.2. IMO

- 3.2.1. IMO Council 121
  - 3.2.2. IMO MSC 100
  - 3.2.3. IMO NCSR 6
- 3.3. ITU Minsu Jeon
- 3.4. IEC Michael Hoppe
- 3.5. RTCM Michael Hoppe
- 3.6. PIANC Minsu Jeon
- 3.7. CIE Alwyn Williams
- 3.8. E-Navigation Underway International 2019 Tom Southall
- 4. Reports from Rapporteurs
  - 4.1. Power Peter Dobson
  - 4.2. Lights Alwyn Williams
  - 4.3. Buoys Peter Schneider
  - 4.4. PNT Members of WG3
  - 4.5. Environment Simon Millyard
  - 4.6. Use of drones Jorgen Royal Petersen
  - 4.7. IALA Dictionary Michel Cousquer
  - 4.8. IALA Bulletin liaison Michel Cousquer
- 5. Presentations (15 minutes duration)
  - 5.1. Brief on WWA Gerardine Delanoye
  - 5.2. Lighthouse heritage management in Australia Greg Hansen
  - 5.3. Building Ocean Observing Capacity Using AtoN Platforms Glenn Nolan
  - 5.4. Evaluation of WAAS for Maritime Navigation in Canadian Waters André Châteauvert
  - 5.5. Sustainability and Sector Lights Frank Hermann
- 6. Review of Task Plan and WG expectations
  - 6.1. 2018-2022 ENG task plan
  - 6.2. ENG Task Register
  - 6.3. ENG Events
- 7. Establish Working Groups
- 8. WG 1 - Visual & Physical AtoN
- 9. WG 2 - Knowledge & Sustainability
- 10. WG 3 – Radionavigation Services
- 11. Heritage Forum
- 12. Review of output and working papers
- 13. Any other business
- 14. Review of session report
- 15. Date and venue of next meeting
- 16. Close of meeting



## ANNEX B

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## ANNEX D LIST OF INPUT PAPERS

All papers were posted to the Committee website

Meeting	Agenda Item	Input Paper Title	Source
ENG9-	1.3.1	Provisional Agenda	IALA Secretariat
ENG9-	1.5.1	ENG9 programme for the week	IALA Secretariat
ENG9-	1.6.1	ENG8 Action Items	IALA Secretariat
ENG9-	1.6.2	Report 8th Session IALA ENG Committee ENG8 final	ENG8
ENG9-	2.1.1	Liaison Note ARM to ENG re Racons in busy harbours (ARM8-12.1.2)	ARM8
ENG9-	2.1.2	Liaison Note ARM to IALA Committees re MAtoN lights (ARM8-12.1.3)	ARM8
ENG9-	2.1.3	Liaison Note on VDES R-Mode to ENG (ARM8-12.1.6)	ARM8
ENG9-	2.1.4	Comment from Norway re LED light detection with night vision devices	Norway
ENG9-	2.1.5	Draft Report on the IALA questionnaire 2017	IALA Secretariat
ENG9-	2.1.6	Report of the IALA Questionnaire 2017	IALA Secretariat
ENG9-	2.1.7	The Changing of Light Colour with Range	Link Powell & Alwyn Williams
ENG9-	2.1.8	Addition to examples on using modern equipment on heritage lighthouses	Pärtel Keskküla
ENG9-	2.1.9	Bird deterrents and bird fouling alternative solutions	Eng. Mariano L Marpegan
ENG9-	2.1.9.1	Proposed revisions to IALA Guideline 1091	Eng. Mariano L Marpegan
ENG9-	2.1.10	R-Mode – working arrangement for VDES implementation	Michael Hoppe, Alan Grant, Stefan Gewies
ENG9-	2.1.11	Uniformity of terminology for Spar Buoy and Buoyant Beacons	Pärtel Keskküla
ENG9-	2.1.12	Pilot project for the transmission of SBAS corrections via IALA beacons and AIS for Maritime and IWW – Main Outcomes	M. López et al
ENG9-	2.1.13	Input paper on 3rd party quality	Adam Hay
ENG9-	2.1.14	Input paper on 3rd party quality	Jörg Unterderweide
ENG9-	2.1.15	Input paper on 3rd party quality Liasion note	Jörg Unterderweide
ENG9-	2.1.16	3rd party quality Task Register	Jörg Unterderweide
ENG9-	2.1.17	An independent validation of the EGNOS Availability, Continuity, and Coverage for Maritime Navigation	Deimos Ibáñez Segura et al
ENG9-	2.1.18	Input paper AMSA experience in managing third party AtoN providers March 2019	AMSA
ENG9-	2.1.18.1	Attachment 1 - IALA 2014 Conference paper- Outsourcing of AtoN maintenance services_AMSA	AMSA
ENG9-	2.1.18.2	Attachment 2 - EEP19-25 Key Performance Indicators	AMSA
ENG9-	2.1.18.3	Attachment 3 – Navigation Safety Site Audit Checklist	AMSA
ENG9-	2.1.19	Mobile AtoN light character trial report v1.0	GRAD

ENG9-	2.1.20	Draft revisions to R1004 Ed1 Environmental Management (ah edit 20190305)	Adam Hay
ENG9-	3.1.1	Report Council 68 Final (C68-19.1)	IALA Secretariat
ENG9-	3.2.1	Summary report of IMO Council 121	IALA Secretariat
ENG9-	3.2.3	Report on IMO NCSR6	IALA Secretariat
ENG9-	3.3.1	IALA Report of ITU-R WP5B meetings November 2018 V20181203	Stefan Bober
ENG9-	3.3.2	ENG9-3.3.2 Diagram of AMRD in the regulatory framework	Stefan Bober
ENG9-	3.3.3	E Liaison statement to IALA on AMRD	Stefan Bober
ENG9-	3.3.4	E Liaison statement to IALA on revision Rec ITU-R M1371-5	Stefan Bober
ENG9-	3.3.5	IALA_Report_of_ITU_WRC-19_CPM_meeting_Geneva_2019	Stefan Bober
ENG9-	3.8.1	Conference Highlights ENUW 2019	IALA Secretariat
ENG9-	6.1.1	WP ENG Task Plan 2018-22 (ENG8-12.2.1)	ENG8
ENG9-	6.1.2	Council 68 approved work plan	IALA Secretariat
ENG9-	6.2.1	Task Register 2018-22 at ENG8 (ENG8-12.2.12)	ENG8
ENG9-	7.1	ENG WG Terms of Reference 20180823 (ENG8-1.6.1)	ENG8
ENG9-	8.1	WP WG1 Draft Guideline 1133 Ed.1 on Marine Signal Lights Calculation of Luminous Intensity and Range (ENG8-12.2.3)	ENG8
ENG9-	8.2	WP WG1 Draft Guideline xxxx on Application of Retroreflecting Materials on Marine AtoN (ENG8-12.2.4)	ENG8
ENG9-	8.3	WP WG1 Draft IALA Recommendation R0111 on Port Traffic Signals (ENG8-12.2.6)	ENG8
ENG9-	8.4	WP WG1 Estimation of Astragal and Glazing Losses on the Output of an Internally Fitted Integrated Lantern (ENG8-12.2.8)	ENG8
ENG9-	8.5	WP WG1 Implementation of the Convolution Function to Determine Flash Duration (ENG8-12.2.9)	ENG8
ENG9-	8.6	Cover note for input_paper_on Draft Guideline on Application of Retroreflective Materials on AtoN	Jørgen ROYAL PETERSEN et al
ENG9-	8.6.1	Draft Guideline Application of Retroreflecting Material on Marine Aids to Navigation	Jørgen ROYAL PETERSEN et al
ENG9-	9.1	WP WG2 Draft IALA Guideline Ed.1 Maintenance of AtoN Structures (ENG8-12.2.2)	ENG8
ENG9-	9.2	WP WG2 Draft Recommendation on Design and Operation in the Provision of Marine Aids to Navigation (ENG8-12.2.5)	ENG8
ENG9-	9.3	WP WG2 Draft Guideline on Use of Modern Equipment on Heritage Lighthouses (ENG8-12.2.7)	ENG8
ENG9-	9.4	WP WG2 Task 2.5.1 Brainstorming (ENG8-12.2.10)	ENG8
ENG9-	9.5	WP WG2 Task 2.5.2 Brainstorming (ENG8-12.2.11)	ENG8
	9.5.1	Rapporteur Report on developments in aids to nav (EEP10-05-01)	EEP10
	9.5.2	Report on investigation into radar reflectors (EEP10-05-01A)	EEP10
ENG9-	9.6	WP WG2 Task 2.5.3 Brainstorming (ENG8-12.2.14)	ENG8

ENG9-	9.7	WP WG2 Draft Guideline on tidal current signal system_V0.5 (ENG8-12.2.15)	ENG8
ENG9-	9.8	WP WG2 Revised Guideline G1097 Ed.1 Technical Features and Technology Relevant for Simulation of AtoN (ENG8-12.2.16)	ENG8
ENG9-	9.9	WG WP2 Report-Uniformity of terminology for Spar Buoy and Buoyant Beacon (ENG8-12.2.17)	ENG8
ENG9-	10.00	WG3 - plan for the week	WG3 Chair and Vice Chair
ENG9-	10.1	WP WG3 Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision (ENG8-12.2.13)	ENG8
ENG9-	10.2	Draft R-Mode Roadmap (ENAV19-13.8)	ENAV19
ENG9-	10.3	R-Mode Mindmap (PDF format - updated 20160316) (ENAV19-13.9.1)	ENAV19
ENG9-	10.4	R-Mode Mindmap (Mindmap format - updated 20160316) (ENAV19-13.9.2)	ENAV19
ENG9-	10.5	IALA Roadmap for e-navigation (ENAV19-14.1.5)	ENAV19
ENG9-	10.6	Proposal for Guideline on SBAS Maritime Service	Manuel López (GSA) et al
ENG9-	10.6.1	Draft IALA Guideline Gxxxx on SBAS Maritime Service	Manuel López (GSA) et al
ENG9-	10.7	Cover Note to VDES R-Mode Baselineand Priority Report	Stefan Gewies & Michael Hoppe
ENG9-	10.7.1	R-Mode Baltic- Baseline and Priorities	Stefan Gewies & Michael Hoppe
ENG9-	10.8	Verification of S-246 and S-247 Product Specification on S-200 Test Bed	Younghoon Han et al
ENG9-	10.9	Position on the development of AtoN services_Revised PAP36_track changes	IALA Secretariat
ENG9-	11.1	ENG Task Group 4(TG4) Plan for ENG9	Heritage Forum/KIM BYUNGKUK

## ANNEX E LIST OF OUTPUT AND WORKING PAPERS

Output documents are submitted for review by a body other than the Committee initiating the document.

Meeting	Agenda Item	Output Paper Title	Source
ENG9	12.1	ENG9 Reviewed WG Terms of Reference (ENG9-7.1)	Chair
ENG9	12.2	Draft amendment to Position Paper on Heritage	WG4
ENG9	12.3	Position on the development of AtoN Services - WG3 Comments (ENG9-10.9)	WG3
ENG9	12.4	Liaison to CIRM on the Effect of Radars on Racons in Busy Harbours	WG3
ENG9	12.5	Draft Liaison Note on VDES R-Mode to ENAV 23	WG3
ENG9	12.5.1	Annex A - Draft Input to IMO_ITU EG 15	WG3
ENG9	12.6	Draft Guideline Application of Retroreflecting Material on Marine Aids to Navigation	WG1
ENG9	12.7	Position on the development of AtoN services_WG1_Comment (ENG9-10.9)	WG1
ENG9	12.8	IALALITE- IALABATT workshop proposal 2021	WG1
ENG9	12.9	3rd party AtoN provider quality control	WG2
ENG9	12.9.1	Draft guidance on 3rd party AtoN provider quality control	WG2
ENG9	12.10	Liaison Note to ARM9 on Guidance on Simulation Technology	WG2
ENG9	12.10.1	Draft Guideline 1097 Ed.1.1 Technical Features and Technology Relevant for Simulation of AtoN-working	WG2
ENG9	12.11	Draft Recommendation R1004 Ed1 Sustainability Recommendation	WG2
ENG9	12.12	Moved to 12.22	WG2
ENG9	12.14	Updated Guideline 1091 Bird deterrent and Bird fouling solutions with Best Practice	WG2
ENG9	12.23	ENG Committee Workplan for 2018-2022	Committee
ENG 9	12.24	Task Register	Committee
ENG9	12.27	Position on the development of AtoN services_Revised PAP36_track changes WG1	WG1
ENG9	14.1	ENG9 Report	Committee

Working Papers are documents that will remain within the committee for further review.

Meeting	Agenda Item	Output Paper Title	Source
ENG9	12.13	Draft IALA Guideline Ed.1 Maintenance of AtoN Structures	WG2
ENG9	12.15	Different definitions found between Dictionary and other documents	WG2
ENG9	12.16	WP Draft Guideline on Tidal Current System	WG2
ENG9	12.17	WP on Recommendation E111 on Port Traffic Signals	WG1
ENG9	12.18	WP Guidance on quantifying buoy characteristics	WG2
ENG9	12.19	WP Guideline on radar reflector (reflection) properties	WG2
ENG9	12.20	WP Guidance on modern equipment in traditional lighthouses	WG2
ENG9	12.21	WP draft Guideline on SBAS Maritime Service	WG3
ENG9	12.22	WP draft Recommendation on Design and Operation in the Provision of Marine Aids to Navigation (ENG8-12.2.5)-1	WG2

ENG9	12.25	WP WG3 Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision (ENG9-10.3)(1)	WG3
ENG	12.26	The Challenge of Change	WG4

## ANNEX F ACTION ITEMS

### *Action Items for Secretariat*

1. The **IALA Secretariat** to collate the Committees comments on the IALA Position Paper on the Development of Marine Aids to Navigation Services and submit them to PAP38. 8
2. The **IALA Secretariat** is requested to forward the ENG Committee Workplan for 2018-2022, ENG9-12.23, and the Task Register, ENG9-12.24, to ENG9. 10
3. The **IALA Secretariat** is requested to update section 6.1.8 on the Position on the development of AtoN services and send to PAP for approval 11
4. The **IALA Secretariat** is requested to forward working paper on the revisions to Recommendation E-111 Port Traffic Signals ENG8-12.17 to ENG10. 11
5. The **IALA Secretariat** is requested to forward draft Guideline E-106 on retroreflective materials ENG9-12.6 to Council for approval. 12
6. The **IALA Secretariat** are requested to submit the IALALITE- IALABATT workshop proposal (ENG9-12.8) to Council for approval. 13
7. The **IALA Secretariat** is requested to forward the liaison note (ENG-12.10.1) and the draft Guideline on Simulation Technology to the ARM Committee for review and further development. 13
8. The **IALA Secretariat** is requested to forward the liaison note (ENG9-12.9) and draft guidance on 3<sup>rd</sup> party AtoN provider quality control (ENG9-12.9.1). 14
9. The **IALA Secretariat** is requested to forward the working paper ENG9-12.9.1 on draft guidance on 3<sup>rd</sup> party AtoN provider quality control to ENG10. 14
10. The **IALA Secretariat** is requested to forward the draft Guideline on the Maintenance of AtoN Structures (ENG9-12.13) to ENG10 as a working paper for further work. 14
11. The **IALA Secretariat** is requested to forward working paper draft Guideline on Tidal Flow systems ENG9-12.16 to ENG10. 14
12. The **IALA Secretariat** is requested to forward working paper draft Recommendation on the Responsible Design and Maintenance of AtoN ENG9-12.22 to ENG10. 14
13. The **IALA Secretariat** is requested to form a cross-committee Steering Group for the joint workshop on Cyber Security. 14
14. The **IALA Secretariat** is requested to forward working paper ENG9-12.18 to ENG10 Guidance on quantifying buoy characteristics to meet navigation and operational requirements and ways to verify them. 15
15. The **IALA Secretariat** is requested to forward working paper new Guideline on radar reflector (reflection) properties ENG9-12.19 to ENG10. 15
16. The **IALA Secretariat** is requested to forward working paper on Guidance on modern equipment in traditional lighthouses ENG9-12.20 to ENG10. 15
17. The **IALA Secretariat** is requested to forward the draft Recommendation R1004 Environmental Management in the Provision of Marine Aids to Navigation to reference the UN Sustainable Development Goals (ENG9-12.11) to all Committees for further comment. 15
18. The **IALA Secretariat** is requested to forward the proposed changes to IALA dictionary definitions (ENG9-12.15) to ENG10. 15



19. The **IALA Secretariat** to forward the revised Guideline 1091 (ENG9-12.14) to Council for approval. 16
20. The **IALA Secretariat** is requested to forward ENG9-2.1.3, Liaison note on VDES R-Mode system requirements, and ENG9-10.10, VDES R-Mode Stakeholder Requirements, and ENG9-7.1, Baseline and Priority report to the IALA R-Mode Workshop. 17
21. The **IALA Secretariat** is requested to send the liaison note, ENG9-12.5 and the draft input paper to IMO/ITU EG 15, ENG9-12.5.1 to ENAV 23 for finalizing the draft input and submit it to IMO subject to the Council approval. 17
22. The **IALA Secretariat** is requested to support the preparation of the workshop and are asked to circulate the workshop programme together with the workshop flyer to other IALA committees and to advertise the workshop on the IALA webpage. 17
23. The **IALA Secretariat** is requested to forward ENG9-12.4, Liaison note to CIRM – regarding racons in busy harbours. 18
24. The **IALA Secretariat** is requested to forward working paper ENG9.12.21 as an input to ENG10 18
25. The **IALA Secretariat** is requested to forward working paper, ENG9-12.23 (ENG9-10.1), Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision, to ENG10. 18
26. The **IALA Secretariat** is requested to note the changes for chapter 8 for the regular update procedure of this document. 19
27. The **IALA Secretariat** to publish the Cordouan Lighthouse article in the bulletin. 20
28. The **IALA Secretariat** is requested to advertise the flyer for the Heritage seminar on the IALA website. 20
29. The **IALA Secretariat** is requested to host the next Heritage Seminar steering group by GoToMeeting. 20
30. The **IALA Secretariat** are requested to upload the Terms of Reference document (ENG9-12.1) to the Committee website and forward it to ENG10. 21
31. The **IALA Secretariat** is requested to forward the summary of the ENG9 Committee report (ENG9-14.1) to Council to note. 21

#### *Action Items for Participants*

32. That **Committee Members** are requested to ensure that definitions in IALA documents are consistent with the Dictionary. 9
33. That **Committee Members** are invited to volunteer as Spanish / French translators for Dictionary terms. 9
34. That **Committee Members** are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet and for the e-Bulletin to Audrey Guinault. 9
35. **Jonas Lindberg and Frank Hermann** are requested to work on the partially combined Guidelines on LED technologies and their use in signal lights and submit an input paper to ENG10. 12
36. That **Alwyn Williams and Peter Dobson** are requested to provide an input paper to ENG10 on monitoring of function and degradation of AtoN light sources, if sufficient data is collected. 12
37. That **Alwyn Williams and Link Powell** are requested to provide an input paper to ENG10 on service condition factors. 12
38. That **working group 1 members** are requested to submit input papers on Colour fading of AtoN (plastic and painted) methods to measure and assess to ENG10. 13

39. That **Alwyn Williams & Malcolm Nicholson** are requested to work intersessionally on the development of this guideline and submit an input paper to ENG10. 13
40. That **Committee Members** provide input to ENG10 on this task. 15
41. **KRISO** is requested to review and amend product specifications for ENG8-11.6.1 (S-246) and ENG8-11.6.2 (S-247) and provide appropriate input to ENG10. 17
42. **Mr. Jeffrey van Gils** is requested to provide appropriate input regarding an introduction to the IALA world DGNSS list to ENG10. 19
43. **Mr. Stig-Erik Christiansen** is asked to provide an input paper to ENG10 concerning RTCM SC-104 version 2.4 and the requested feedback from IALA. 19
44. That **Peter Hill** to complete the heritage lighthouse of the year proposal form and send it to WG4 members for approval before ENG10. 20
45. That Committee Members provide input to ENG10 on this task. 21
46. That **Committee Participants** provide input to the Committee Chair by 1 August considering ways that IALA could be involved with MASS systems. 21



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