



ENG9-1.6.2

# REPORT OF THE 8<sup>TH</sup> SESSION OF THE IALA ATON ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE

15 to 19 October 2018

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# Report of the 8<sup>th</sup> Session of the IALA

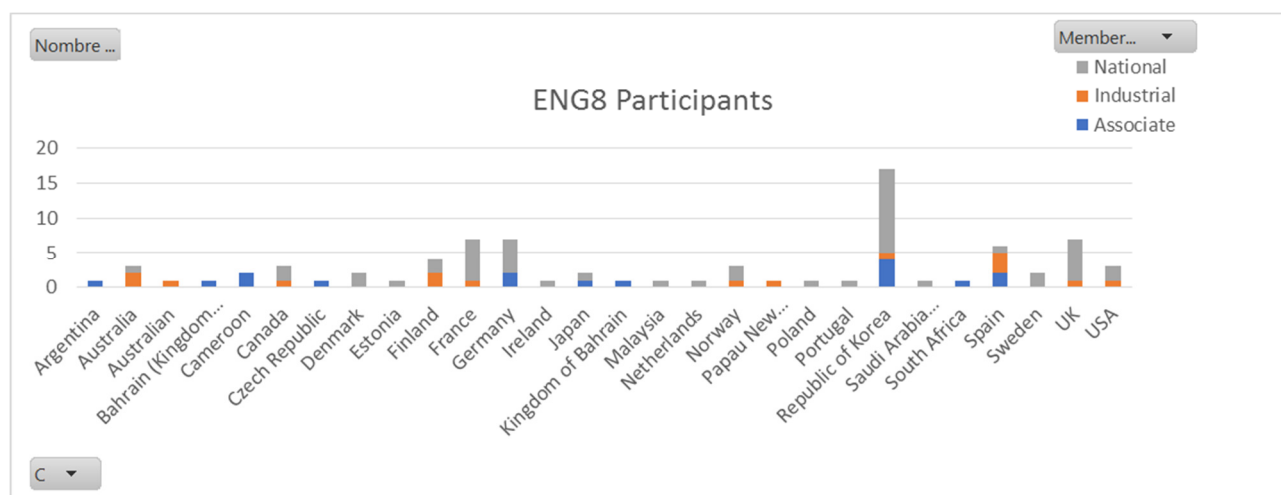
## AtoN Engineering and Sustainability (ENG) Committee

### 15 to 19 October, 2018

### Executive Summary

The eighth meeting of the ENG Committee (ENG8) was held from 15<sup>th</sup> to 19<sup>th</sup> October 2018 in IALA HQ.

The session was attended by 82 participants from 28 countries, of which 51 were National Members, 15 were Industrial Members, 16 were Associate Members. There were no observers. Seventeen participants attended for the first time. The following chart shows an analysis of the participation.



The scope of work of the ENG Committee was increased by taking on responsibility for radionavigation services.

Working in three working groups, the Committee considered 90 input papers including presentations and produced 29 output documents including 6 new/revised Academy Model Courses, 2 draft Recommendations, 3 draft Guidelines, 4 workshop/seminar proposals and 17 working papers. All Recommendations and Guidelines considered were aligned with the proposed seven Standards.

The Committee produced the following Recommendations, Guidelines:

- Draft Recommendation on Resilient PNT;
- Draft IALA Recommendation R0200-1 (E200-1) Ed.2 on Marine Signal Lights Colours;
- Draft Guideline 1006 on plastic buoys;
- Draft Guideline G1067-3 Ed.2 Electrical Energy Storage for AtoN\_Dec2017;
- Draft Guideline 1065 Ed.4 AtoN Signal Light Beam Vertical Divergence\_Dec2017.

The Committee drafted the following proposals for workshops/ seminars:

- Proposal for R-Mode workshop 2019;
- Draft Cyber Security Workshop Proposal;
- Draft Heritage Seminar Proposal;
- IALALITE- IALABATT workshop proposal 2021.

The following liaison notes were prepared:

- Liaison note ENG8 to ARM8 on simulation guideline update;
- Liaison Note to ARM8 on the Cyber Security Workshop;
- Liaison Note to Secretariat on World Heritage Lighthouse Competition;
- Liaison Note to ARM8 on Proposed Draft Model Course L1.2;

- Liaison Note to IALA Secretariat on the Heritage Seminar;
- Liaison Note to ARM8/ VTS46 on E-111 Port Traffic Signals;
- Liaison to IMO NCSR LED detection;
- Liaison Note to ARM8 re Racons in busy harbours;
- Liaison Note to ARM & ENAV re VDES R-Mode system requirements comments;
- Liaison Note to IALA Secretariat on the IALA LITE BATT Workshop.

The Committee produced a proposal for a World Heritage Lighthouse competition for all IALA members as a contribution to the 2019 World AtoN Day.

Under the Academy distance learning programme, one participant was presented with his certificate on passing the AtoN Level 1 Managers' course First Class.

Support for the Academy continued with drafting of one new model course and revision of five model courses.

- Draft IALA Model Course L1.2 Master of AtoN Management new edition 20180612 shgb;
- Draft IALA Model Course L1.5 Historic Lighthouse Projects Ed.2 December 2018;
- Draft IALA Model Course L2.1.7 Buoy Moorings Ed 3 Dec 2018;
- Draft IALA Model Course L2.2.1 DC Power Systems;
- Draft IALA Model Course L2.2.2 Primary and Secondary Battery Maintenance;
- Draft IALA Model Course L2.2.3 Photovoltaic (Solar panel) systems and maintenance Ed3 2018.

The Committee thanked David Jeffkins for his years of service as Vice-Chair of the ENG Committee and congratulated Michel Cousquer for his nomination as Vice-Chair of the Committee. The Committee thanked Adam Hay for his work as Chair of the ENG WG2 and welcomed Jordan Lane-Beveridge as the new Chair of WG2. The Committee also thanked Frank Hermann for his years of work as Vice-Chair of ENG WG1 and congratulated Alwyn Williams for his nomination to replace Mr Hermann. The Committee also thanked Manuel Santos, Committee Participant, and Seamus Doyle, Committee Secretary, who both stepped down from the Committee.

The draft ENG Committee task plan for the work period 2018-2022 aligned with the seven draft Standards and the IALA committee work programme for 2018-2022 was updated and session details were added. The following table shows a summary of progress made to date in the four year work period.

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

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## Report of the 8<sup>th</sup> Session of the IALA ENG Committee

### GENERAL

The 8<sup>th</sup> session of the IALA AtoN Engineering and Sustainability Committee (ENG) was held from 15<sup>th</sup> to 19<sup>th</sup> October 2018 at IALA. The Chairman was Simon Millyard and the Vice Chairman was Michel Cousquer. The Secretary for the meeting was Seamus Doyle.

### 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 (ENG8-1.1) was adopted.

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

The Secretary-General of IALA, Mr Zachariae, welcomed all participants to IALA, including those attending the ENG Committee for the first time. He congratulated Simon Millyard on his re-nomination as ENG Chair and Michel Cousquer's nomination as Vice-Chair of the Committee. He thanks David Jeffkins, outgoing Vice-Chair of ENG, for his great work during the 2014-2018 work period. He referred to the very successful IALA 19<sup>th</sup> Conference and thanked Korea for their outstanding management of the Conference and their hospitality in Incheon. The Conference and the General Assembly were very productive. The new strategic mission and seven IALA Standards were approved by General Assembly. A fantastic lighthouse exhibition was widely admired and the Incheon Declaration was adopted. A World Lighthouse Day is planned for 2019.

He noted that the new 2018-2022 work period is now commencing. Changes to the Secretariat with the employment of two new permanent staff members, Kevin Gregory and Tom Southall, with termination of contracts with Michael Card, Stephen Bennett, Wim van der Heijden and Seamus Doyle in December 2018. Omar Frits Eriksson will take on the role of Deputy Secretary-General in addition to his existing role as Dean of the WWA. He noted the new Radionavigation Services working group in ENG, transferring this work from the ENAV Committee. He referred to the UN Sustainability Goals and noted that the Committee work will include environmental considerations.

He presented an AtoN Level 1 Manager First Class certificate to Alwyn Williams.



The IALA Deputy Secretary-General, Michael Card, noted the commencement of the four year work programme 2018-2022. The IALA Strategic Vision with two goals approved by the General Assembly is on the IALA website. The IALA Position Paper is a tactical document approved by Council in December 2017 and revised by PAP36. The seven IALA Standards were approved by General Assembly in Korea and are now available for use by governments and administrations in legislation. He noted the role of the Policy Advisory Panel (PAP) to advise the Council and the purpose of the Committees to produce and revise IALA Documents. The Work Programme for the Committees has been approved by Council and mapped into individual Task Plans for the Committees. The IALA Recommendations have been mapped on to the IALA Standards. He noted the change of focus of Committees in putting responsibility for operational matters in the scope of the ARM Committee.

#### 1.3 Administration and safety briefing

Seamus Doyle provided a Safety and Administration briefing. Paper ENG8-1.3 refers.



## 1.4 Introductions and Apologies

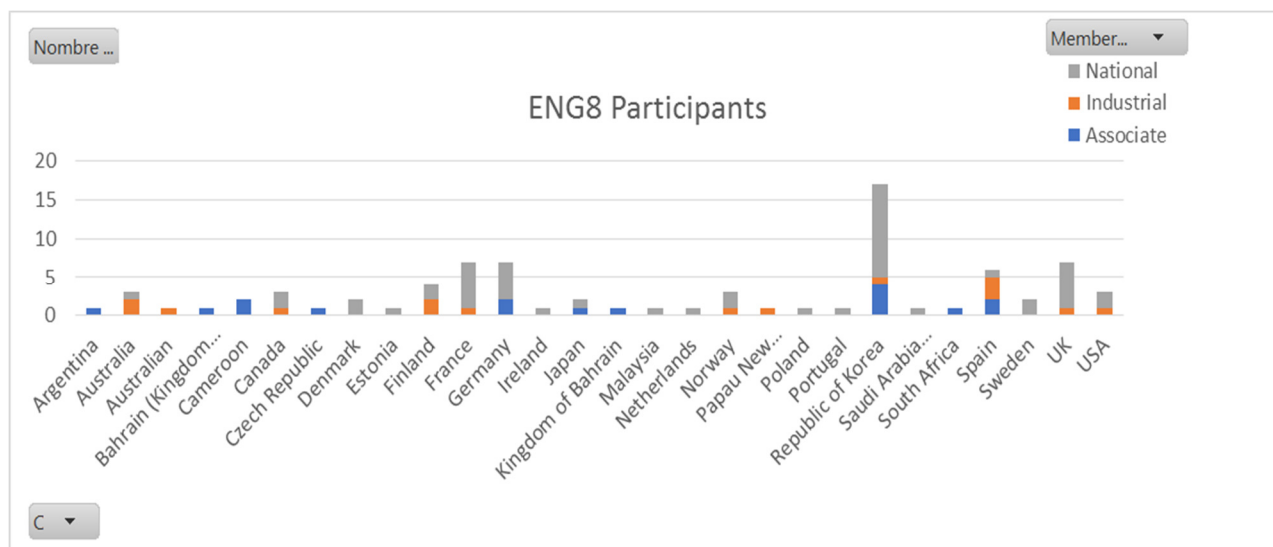
The session was attended by 82 participants from 28 countries, of which 51 were National Members, 15 were Industrial Members, 16 were Associate Members. There were no observers. Seventeen participants attended for the first time.



The list of Committee Members who attended ENG8 is shown in ANNEX B. New participants were welcomed in addition to those returning to the Committee. The Committee noted apologies from Members who were unable to attend as noted in ANNEX B. It was noted that Manuel Santos has been promoted and this is his last ENG Committee meeting.

The meeting was advised that IALA has a policy regarding compliance with the General Data Protection Regulations. IALA will include a list of participants with their contact information in the report of this meeting. Any participant who wishes to remove their information from the participants list should advise the Committee Secretary as soon as possible.

The following chart shows an analysis of participants.



## 1.5 Programme for the week

The programme for the week, paper ENG8-1.5, was approved.

## 1.6 ENG committee structure

Input papers ENG8-0.1 and ENG8-1.6.1 refer.

Simon Millyard provided an explanation of the ENG Committee and Working Group structure for the work period 2018-2022. The draft ENG Committee WG Terms of Reference, ENG8-1.6.1, were considered. He also summarised the work of the Heritage Forum.

Malcolm Nicholson, Chair of WG1, provided an overview of the work of WG1. In response to a question raised at NCSR 5/17 in the report of the twenty-fourth meeting of the ICAO/IMO Joint Working Group on

Harmonization of Aeronautical and Maritime Search and Rescue regarding the inability of night vision devices to detect LED obstacle lighting, it was stated that LEDs do not emit IR radiation and modification to LED AtoN lights by inclusion of IR LEDs would be required to enable night vision goggles to detect them. This would have implications for both cost and energy consumption. An liaison note to IMO, ENG8-12.1.20, was drafted.

Adam Hay, Chair of WG2, summarised the work for WG2.

Alan Grant, Chair of WG3, summarised the work of WG3.

Simon Millyard summarised the work of the Heritage Forum, noting four “pillars” of heritage lighthouses as architectural heritage (what it looks like), industrial (how did it work), social (what was it like for the people who operated the service), economic (is it financially viable today).

It was noted that Adam Hay cannot continue as Chair of WG2 and nominations for his replacement were invited. It was also noted that Frank Hermann was stepping down as Vice-Chair of WG1 at ENG8 and nominations for his replacement were invited.

#### **Action item**

*The IALA Secretariat is requested to submit liaison note ENG8-12.1.20 to the IMO NCSR6 (deadline 13 November 2018) on the IMO input template.*

## **2. REVIEW OF ACTION ITEMS FROM ENG8**

Input papers ENG8-2.1 and ENG8-2.2 refer. ENG8-2.2 are actions from ENAV21 WG5, now ENG WG3. Action items for the IALA Secretariat from ENG7 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 90 input papers including presentations.

### **3.2 Identify input papers suitable for uploading to the IALA Wiki**

No papers were identified for uploading to the IALA Wiki.

## **4. REPORTS FROM OTHER BODIES**

### **4.1 Reports from IALA Council – 65<sup>th</sup>, 66<sup>th</sup> and 67<sup>th</sup> Sessions**

The Committee noted the report of the 65<sup>th</sup> Session of the IALA Council held in IALA HQ in December 2017 and the reports of the 66<sup>th</sup> and 67<sup>th</sup> Sessions of the IALA Council held in Incheon, Republic of Korea, in May and June 2018 respectively. Papers ENG8-4.11, ENG8-4.1.2 and ENG8-4.1.3 refer.

### **4.2 Report of the 34<sup>th</sup>, 35<sup>th</sup> and 36<sup>th</sup> Sessions of the IALA Policy Advisory Panel**

The Committee noted the reports of the 34<sup>th</sup>, 35<sup>th</sup> and 36<sup>th</sup> Sessions of the IALA Policy Advisory Panel (PAP34, PAP35, PAP36), held in October 2017, February 2018 and September 2018 respectively in IALA HQ. Papers ENG8-4.2.1, ENG8-4.2.2, ENG8-4.2.3 refer.

### **4.3 IALA position on the development of AtoN services 2017-12-15**

Simon Millyard highlighted the changes to the IALA Position Paper arising from PAP36. Paper ENG8-4.3 refers.



It was noted that the ENG Committee should consider the IMO approach to sustainability and develop an IALA sustainability policy / document. The ENG Task Plan was amended to include a task. Input paper ENG8-4.3.1 refers.

#### **4.4 Report on 19<sup>th</sup> IALA Conference 2018**

The Committee noted the report of the 19<sup>th</sup> IALA Conference held in Incheon, Republic of Korea, from 27<sup>th</sup> May to 2<sup>nd</sup> June 2018. Paper ENG8-4.4 refers.

An appeal was made for ideas on how to protect the lighthouse heritage.

##### *Action item*

*ENG Committee members are invited to submit ideas on how to protect the lighthouse heritage to ENG9.*

#### **4.5 Report on the IALA Seminar on Arctic Navigation Nov 2017**

The Committee noted the report of the IALA Seminar on Arctic Navigation, from 9<sup>th</sup> to 10<sup>th</sup> November 2017 in IALA HQ. Paper ENG8-4.5 refers.

#### **4.6 Report first IALA-IHO Technical Coordination Meeting**

The Committee noted the report of the first IALA-IHO Technical Coordination Meeting, from 27<sup>th</sup> to 28<sup>th</sup> June 2018. Paper ENG8-4.6 refers.

#### **4.7 Incheon Declaration on Lighthouses as Cultural Heritage**

The Committee noted the Incheon Declaration on Lighthouses as Cultural Heritage which was published during the 19<sup>th</sup> IALA Conference in Incheon, Republic of Korea in May 2018. ENG participants were encouraged to implement the Declaration where possible. Paper ENG8-4.7 refers.

#### **4.8 Report e-Navigation Underway International 2018 Conference**

The Committee noted the report of the e-Navigation Underway International 2018 Conference, from 24<sup>th</sup> to 26<sup>th</sup> January 2018 on board DFDS ferry sailing between Copenhagen and Oslo. Paper ENG8-4.8 refers. Yonghun Cho provided a video report of the Conference.

#### **4.9 IALA Report 14<sup>th</sup> meeting Joint IMO-ITU Expert group on Maritime Radiocommunication Matters**

The Committee noted the report of the IALA Report on the 14<sup>th</sup> meeting Joint IMO-ITU Expert group on Maritime Radiocommunication Matters, from 3<sup>rd</sup> to 7<sup>th</sup> September 2018 in IMO Headquarters, London. Paper ENG8-4.9 refers.

### **5. REPORTS FROM RAPPORTEURS**

#### **5.1 Nomination of Rapporteurs & topics for the work period 2018-2022**

The following participants volunteered to act as rapporteurs for ENG meetings for the work period 2018-2022.

Power	Peter Dobson
Lights	Alwyn Williams
Buoys	Peter Schneider
Simulation	Yeo Jimin
PNT	Members of WG3
Environment	Adam Hay
Use of drones	Jørgen Royal Petersen

## 5.2 Feedback from external organisations

The following participants volunteered to act as rapporteurs for ENG meetings for the work period 2018-2022.

ITU	Minsu Jeon
IEC	Papers from ENAV Committee
RTCM	Alan Grant
PIANC	Minsu Jeon
CIE	Alwyn Williams

## 5.3 IALA Dictionary

Michel Cousquer gave a short update on the IALA Dictionary. Seamus Doyle provided a demonstration of the Dictionary including definitions in three languages. The Committee was requested to use the Dictionary in all their work and to use the Dictionary Amendment Proposal template form to advise of any required changes.

### Action item

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

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

## 5.4 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

*ENG 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

Seven 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 described the recent activity in the Academy since ENG7. She noted how technological development contributes to resolving problems faced by developing countries. Input paper ENG8-6.1 refers.

### 6.2 Real-time tidal current monitoring and information systems in Korea

Sung-Jun Kim made a presentation on real-time tidal current monitoring and information systems in Korea. Paper ENG8-6.2 refers.

In discussion Mr Kim noted that visual signal boards displaying tidal data are useful in addition to digital data in difficult coastal conditions where it is necessary to not be distracted by looking down at bridge displays.

### 6.3 E-Navigation Underway Conferences

Seamus Doyle invited participants to attend the e-Navigation Underway North America conference on 6<sup>th</sup> to 7<sup>th</sup> November 2018 and the e-Navigation Underway International conference during the week of 4<sup>th</sup> to 8<sup>th</sup> February 2019. He also announced dates for a workshop on Harmonising the Delivery of VTS Voice

Communications in Korea, the World Marine Aids to Navigation day and the 14<sup>th</sup> IALA Symposium. Paper ENG8-6.3 refers.

#### **6.4 MENAS AtoN Monitoring Project**

Mahdi al Mosawi described the MENAS AtoN monitoring project. Paper ENG8-6.4 refers.

In discussion it was noted that the old AIS system used fixed slot times while the new system uses random selection.

MENAS own the base station which allocates AIS slots. The same base station receives Message 6 and allocates slots. Slot collisions have not been observed.

It was noted that applications using one slot for a number of services are in use.

It was stated that, although there are pros and cons for both systems, MENAS has no preference for either satellite or AIS monitoring.

No issues with heat or humidity have been observed by MENAS. Equipment is enclosed in a plastic enclosure as used successfully for AtoN light systems. It was however noted that radio reception is better when humidity is high.

The monitoring system uses open system technology and is therefore potentially vulnerable to cyber attack.

#### **6.5 Titanium foil anti-corrosion technology for steel lighthouses**

Cdr. Kinji Takeuchi from the Maritime Traffic Department, Japan Coast Guard, described a project using titanium foil to extend the time between painting of steel towers. The tower was pre-painted before applying titanium foil and the foil was then top coated with paint. Paper ENG8-6.5 refers.

In discussion it was noted that there is very little difference in the appearance of the tower with either paint or titanium foil covering. Heritage experts are happy with the foil method of protection. No special surface preparation is required for foil.

Prices in the presentation are in Yen and are considered to be low.

#### **6.6 Lighthouse World Summit 2018**

Tamotsu Ikeda made a presentation on the planned Lighthouse World Summit 2018 on 10<sup>th</sup> to 11<sup>th</sup> November 2018 in Shima City, Japan, to celebrate the 150<sup>th</sup> anniversary of the building of the first western style lighthouse in Japan.

The summit will be attended by heads of lighthouse authorities. It was noted that Vincent Guigueno will attend from France.

Paper ENG8-6.6 refers.

#### **6.7 Baltic R-Mode testbed**

Stefan Gewies described the Baltic R-Mode testbed using signals of opportunity in the DGPS and AIS bands. He concluded that DGPS is better but the study is still in progress. Paper ENG8-6.7 refers.

In discussion it was noted that timing is the main challenge, with the timing limitation driven by the station clock accuracy. Galileo is an option for time synchronisation

A cost benefit analysis of all alternatives is planned.

It was noted that Mr Gewies can provide data on the testbed to IALA in accordance with Guideline G1107 for inclusion in the IALA testbeds webpage.

## 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 ENG8-12.2.1 refers.

The ENG Work Programme Task Register for 2018-22 was developed. Paper ENG8-12.2.12 refers.

The following shows a summary of progress on the Task Plan at the end of ENG8.

Hosts were invited for the IALABATT / IALALITE Workshop, the Workshop on Cyber Security and the Workshop on R-Mode.

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

Responding to a question regarding the future of DGPS, it was stated that the IALA Position Paper still supports to provision of DGPS. It was noted that some administrations have removed DGPS while others are considering the future of their systems. This issue was considered in input paper ENG8-11.12 and in output paper ENG8-12.1.26.

The following question was asked of all attendees:

*Does anyone present have the 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?*

#### Action item

*The Secretariat is requested to forward the ENG Committee Workplan for 2018-2022, ENG8-12.2.1, and the Task Register, ENG8-12.2.12, to ENG9.*

*ENG Committee members are invited to consider hosting the IALABATT / IALALITE workshop, the workshop on cyber security and the workshop on R-Mode.*

## 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	Adam Hay	Peter Schneider Jorg Unterdeuweide
tWG 3 Radionavigation Services	Alan Grant	Micheal Hoppe

The Committee thanked Frank Hermann for his many years of dedicated service and enormous contribution as Vice-Chair of WG1. Alwyn Williams volunteered to take on the role of Vice-Chair of WG1.

With effect from ENG9 Jordan Lane-Beveridge will take over the role of Chair of WG2. The Committee thanked Adam Hay for his excellent and effective chairmanship of WG2 over the last four years.

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

The working group was made up of 15 members and they considered 11 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 populate the task register with the various inputs required and whether any intersessional work would be required to complete the work program.

Input paper ENG8-9.6 identified that the published version of R0201 Marine Signal Lights – Colours does not display the chromaticity area for the blue region even though the coordinates are there. The working group requests that the secretariat copies the chromaticity diagram from the original submission to Council (ENG7-11.1.1) and replaces the chromaticity diagram in the published version and then resubmit to Council for approval. ENG8-12.1.13 refers.

Input paper ENG8-9.4 on definitions was discussed and it was concluded that the definitions from G1073 are correct and that the terms need to be updated in G1065. G1065 was updated to reflect this and the Secretariat is requested to forward ENG8-12.1.29 to Council for approval. The definition of Fluorescence in the Dictionary is correct and aligns with the CIE definition. The paragraph in G1134 is an explanation of the term relating to surface colours and is not a definition as such, therefore does not require amending.

### Action Item

*The Secretariat is requested to forward output paper ENG8-12.1.13 to Council for approval.*

*The Secretariat is requested to forward output paper ENG8-12.1.29 to Council for approval.*

*The Secretariat is requested to upload the definition of fluorescence from ENG7.*

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

A revised Recommendation was received as an input paper updating the content of the original. This was reviewed as well as a previous input paper (ENG4-9.18) from South Africa on the difficulties of achieving the signal codes at long range and wide divergence. It prompted a discussion on whether the current signal codes were being adhered to because of these issues. It is not the remit of the working group to amend the codes should this be the case. However, the working group can provide guidance on how to achieve the signal codes. It was felt that the working group should seek advice from the ARM and VTS Committees on whether the signal codes were being followed and to that extend a liaison note was drafted. Should the reply be that the signal codes are still being adhered to then the recommendation can be completed at ENG9 and work can proceed on providing the guideline on how to achieve the codes.

### Action Item

*The Secretariat is requested to forward liaison note ENG8-12.1.19 to ARM8 and VTS46.*

*The Secretariat is requested to forward working paper ENG8-12.2.6 to ENG9.*

### 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 is due to commence at ENG9 for four sessions. However, it is dependent on the completion of G1133.

#### **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 is due to commence at ENG9 for two sessions. It will now merge guidelines 1043, 1048 & 1049. This work was started during the last work program but due to other priorities was not completed.

##### *Action Item*

*Jonas Lindberg is requested to work on the partially combined Guidelines and submit an input paper to ENG9.*

#### **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 continued on developing this Guideline and it is expected to be completed at ENG9.

##### *Action Item*

*Jørgen Royal Petersen, Sami Lasma, Johnny Menard, James Collocott and Pärtel Keskküla are requested to conduct intersessional work using working paper ENG8-12.2.4 and submit an input paper to ENG9.*

#### **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 is due to start at ENG9 for two sessions. Refer to task register ENG8-12.2.12 for scope of work.

*The Secretariat is requested to forward working paper ENG8-12.2.9 to ENG9.*

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

This task will commence at ENG9-10 and it is envisaged to add to Guideline G1077. Refer to task register ENG8-12.2.12 for scope of work.

##### *Action Item*

*Alwyn Williams and Peter Dobson are requested to provide an input paper to ENG9 on monitoring of function and degradation of AtoN light sources.*

#### **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.

##### *Action Item*

*Alwyn Williams and Link Powell are requested to provide an input paper to ENG9 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.

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

Work continued on developing this Guideline and the corrections put forward in input paper ENG8-9.9 were taken into account.

*The Secretariat is requested to forward working paper ENG8-12.2.8 to ENG9.*

*Jordan Lane-Beveridge is requested to coordinate intersessional work along with Frank Hermmann, Alwyn Williams, Dave Scutt, Pärtel Keskküla, Malcolm Nicholson, Fernando Romero on the development of Guideline G1133 using the working paper ENG8-12.2.3 and submit an input paper to ENG9.*

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

This task is due to start at ENG9 for two sessions. Refer to task register ENG8-12.2.12 for scope of work.

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

A proposal for this workshop was prepared. Paper ENG8-12.1.28.

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

### **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)**

Pärtel Keskküla was thanked for making the AtoN light flash simulator available on-line to IALA Members. The software tool is available on the IALA website at <http://www.iala-aism.org/technical/aton-software/>.

Revision of Guideline G1097 commenced at ENG8 and will be forwarded as a Working Paper to ENG9, for further development. Additional input is sought from Committee Members.

#### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.16 to ENG9.*

*Committee Members are asked to provide any information on their experiences with AtoN Simulators or AtoN Simulation Technology as input to ENG9.*

#### **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 commenced at ENG8. The structure of the document was discussed and further work on this guideline will continue at ENG9.

#### *Action Item*

*Committee Members are asked to provide any information on their experiences with quality control and checking over 3<sup>rd</sup> party AtoN service providers.*

#### **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)**

The scope and possible content of this new Guidance was discussed in WG2 at ENG8, potential contributors have been identified and development of the guideline has been assigned for commencement later in the Task Plan.

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

A sub group was formed to continue work on the draft Guideline on Maintenance of AtoN Structures. The draft Guideline will be forwarded to ENG9 for further development. There will be further intercessional review by Members of the sub group, with a view to finalizing the document at ENG9 and sending to Council for approval.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.2 to ENG9.*

*Committee participants are requested to provide input to ENG9 on maintenance techniques and systems, for possible inclusion in the draft Guideline on the maintenance of AtoN structures.*

Committee participants are requested to submit photographs of structures to illustrate the Guideline on Maintenance of AtoN Structures similar to those now included in Guideline 1006 on plastic buoys, ENG8-12.1.1.

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

Development of the new Guideline on Tidal Flow systems commenced at ENG8 and will be forwarded as a Working Paper to ENG9, for further development.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.15 to ENG9.*

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

A draft Recommendation on the Responsible Design and Maintenance of AtoN was developed and will be forwarded to ENG9, with a view to finalizing and sending to Council for approval.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.5 to ENG9.*

*Committee participants are requested to review the draft Recommendation prior to ENG9 and forward any suggested changes as input to ENG9.*

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

A draft Workshop Proposal on Cyber Security was completed and will be sent to the ARM Committee for their comment. The Workshop has been tentatively scheduled for the second half of 2020. Once the Workshop Proposal has been reviewed and accepted by the ARM Committee, it will be sent to Council for approval, so that a search for a Host Country can continue.

Further updates on status of the Workshop shall be provided at ENG9.

##### *Action Item*

*The IALA Secretariat is requested to forward output papers ENG8-12.1.9 and ENG8-12.1.10 to ARM8.*

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

This new guidance was discussed in WG2 at ENG8, potential contributors have been identified and development of the guideline has been assigned for commencement later in the Task Plan.

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

Updates on battery development and the emergence of new battery technologies will be provided at each ENG Committee Meeting as a Rapporteur Item.

Input papers ENG8-10.6 (Definitions in IALA Dictionary - Power Supplies) and ENG8-10.9 (Definition of battery cycle life) were reviewed by WG2. The definition of the IALA dictionary was taken over in Guideline 1067-3. Also a few words on temperature were edited. The definition in the IALA Dictionary shall be kept.

#### *Action Item*

*The IALA Secretariat is asked to forward Output Paper ENG12.1.18 (the edited Guideline 1067-3 Ed.2 Electrical Energy Storage) for Council approval.*

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

The task was commenced at ENG8. The topic was discussed amongst the buoy sub group and it was agreed to modify the topic.

The Task Plan and Task Register was updated to reflect the new topic and define the objectives, outcomes and key milestones. There was collective agreement on the content required. Some notes were prepared to guide this work and further work on this task will commence at ENG9.

#### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.10 to ENG9.*

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

The task was commenced at ENG8. The topic was discussed amongst the buoy sub group and it was agreed to expand the scope beyond the use on plastic buoys.

The Task Plan and Task Register was updated to reflect the new topic and define the objectives, outcomes and key milestones. There was some discussion on the technical information required to further develop the task. Some notes were prepared to guide this work and further work on this task will commence at ENG9. Previous IALA work on radar reflectors will be researched.

#### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.11 to ENG9.*

*Paul Mueller is requested to submit old RNav Committee work on radar reflectors.*

*The IALA Secretariat is requested to submit papers EEP10-05-01 and EEP10-05-01A to ENG9.*

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

Revision of Guideline 1006 on plastic buoys carried over from the 2014-2018 work period was completed, ENG8-2.1.1 refers.

The task was commenced at ENG8. The topic was discussed amongst the buoy sub group and it was agreed that an overview document (either a recommendation or guideline) was required, to provide a general guide to all floating AtoN, including references to the various documents available on this topic.

The Task Register was updated to define the objectives, outcomes and key milestones. Work on this task will continue at ENG9. Some notes were prepared to guide the task at the next ENG session.

The Committee noted and reviewed Input Paper ENG8-10.1 on the uniformity of terminology and spar buoys and buoyant beacons. This document will be forwarded as a Working Paper to ENG9 so that its contents can be considered in the development of the guidance on Floating AtoN.

#### *Action Item*

*The IALA Secretariat is requested to submit the draft Guideline G1006 on Plastic Buoys to Council for approval.*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.17 to ENG9.*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.14 to ENG9.*

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

The draft Guideline on modern equipment in traditional lighthouses will be further developed later in the 4 year task plan. This will be done in coordination with WG1 for Task 2.1.6, particularly in relation to their review of Guideline 1049 on the Use of Modern Light Sources in Traditional Lighthouses, to ensure there are the relevant cross references.

Further intersessional assistance will be sought from Committee participants to assist in developing the Guideline during ENG9.

#### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG8-12.2.7 to ENG9.*

*Committee participants are requested to provide input to ENG9 on their experiences with modern equipment on traditional lighthouses.*

#### **10.14 Monitor Climate Change to inform IALA of impact and potential adaptation requirements for AtoN providers (Task 2.6.2)**

Updates on climate change and the impact and potential adaptation requirements for AtoN providers will be provided at each ENG Committee Meeting as a Rapporteur item.

#### **10.15 Establish a World Heritage Lighthouse Cyber Centre, accessible via the IALA website (Task 2.6.3)**

The Heritage Forum will commence development of a World Heritage Lighthouse Cyber Centre. Whilst the concept is still in early stages of development, it is envisioned that it would be accessible via the IALA website and would be a central depository for information on Heritage Lighthouses from around the world, provide details and access to the various IALA documents that deal with Heritage Lighthouses, and in general provide a source of information on the topic. Expected completion is late in the current Task Plan session.

#### **10.16 Establish a database on World Heritage Lighthouses (Task 2.6.4)**

The Heritage Forum will progressively develop a database on all World Heritage Lighthouses, in coordination with the nomination and application process for the World Heritage Lighthouse of the Year Competition (See Task 2.6.5).

#### **10.17 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 formulated the idea for a 'World Heritage Lighthouse of the Year Competition' to contribute to the celebration of world AtoN day. This will involve the invitation for National Members to nominate Heritage Lighthouses within their country. Nominations shall be judged by a Selection Committee, which will be formed from members of the Heritage Forum, and others from within the IALA family and one Heritage Lighthouse selected to be the 'World Heritage Lighthouse of the Year' - for that year. It is expected it will be an ongoing, annual competition to coincide each year with World AtoN day.

The competition proposal is being forwarded to the IALA Secretariat, along with suggested content for an invitation to all National Members, and a draft Nomination form.

The tentative deadline for nominations will be just prior to ENG9.

#### Action Item

*The IALA Secretariat is requested to support the initiatives outlined in Liaison Notes ENG8-12.1.11 and nomination form ENG12.1.12.*

*Committee participants are requested to discuss the competition with the relevant people within their organizations and encourage participation.*

#### 10.18 Deliver Heritage Seminar (Task 2.6.6)

A draft proposal for the Heritage Seminar was completed and will be sent to the IALA Secretariat for review and approval. The Seminar has been tentatively scheduled for the first half of 2020. Once the Seminar Proposal has been reviewed and accepted by the IALA Secretariat, it will be sent to Council for approval, so that a search for a Host Country can continue.

Further updates on status of the Seminar shall be provided at ENG9.

#### Action Item

*The IALA Secretariat is requested to consider the draft Heritage Seminar proposal as outlined in output papers ENG8-12.1.16 and ENG8-12.1.17 and send to Council for approval.*

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

This was a new Task added at ENG8, aimed at reviewing and revising Recommendation R1004 on Environmental Management so that it references the 17 established United Nations Sustainable Development Goals. The revision will commence between sessions and provided as an input paper to ENG9, for review by the Committee.

#### 10.20 Development and review of WWA courses (Task 4.1.1)

The Committee noted input papers ENG8-10.7 (Draft Model Course L1.2 Master of AtoN Management), , ENG8-10.13 (WWA Documents for review at ENG8), ENG8-10.13.1 (Draft IALA Model Course L2.1.7 Buoy Moorings Ed 3 Dec 2018), ENG8-10.13.2 (Draft IALA Model Course L2.2.1 DC Power Systems), ENG8-10.13.3 (Draft IALA Model Course L2.2.2 Primary and Secondary Battery Maintenance), ENG8-10.13.4 (Draft IALA Model Course L1.5 on Historic Lighthouse Projects) and ENG10-13.5 (Draft IALA Model Course L2.2.3 Photovoltaic (Solar panel) systems and maintenance Ed3 2018).

The ENG Committee was requested to review the Draft Model Course L1.2 Master of AtoN Management and forward the document to ARM for their review and eventual forwarding to Council for approval.

The five Model Courses were reviewed and completed for submission to Council for approval.

It was noted that, if an administration is issuing international training certificates, it is necessary to stick to the Model Course content.

#### Action Item

*The IALA Secretariat is requested to forward output paper ENG8-12.1.3, ENG8-12.1.4, ENG8-12.1.5, ENG8-12.1.6 and ENG8-12.1.7 to the IALA Council for approval.*

*The IALA Secretariat is requested to forward Liaison Note ENG8-12.1.14 and Output Paper ENG8-12.1.2 to ARM8.*

#### 10.21 Navguide updates and review (Task 4.2.1)

The Committee will commence review and updates of the Navguide in future task plan sessions.

#### 10.22 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.

A number of translations of dictionary items into Spanish were undertaken during WG2 and forwarded to the IALA Secretariat for review and actioning.

#### *Action Item*

*The IALA Secretariat is requested to review the Spanish translations of dictionary terms as detailed in Output Paper ENG8-12.1.21 and update the dictionary accordingly.*

*The IALA Secretariat is requested to review the recommended amendment and the associated translation into both Spanish and French as detailed in Output Number ENG8-12.1.15 and update the dictionary accordingly.*

## **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)**

Having reviewed the new task plan, and identifying the need for a new Recommendation and Guideline on this topic, the Committee prepared a new Recommendation on Resilient PNT.

The Committee considered input paper ENG8-11.11 and agreed that a strategy item to set out IALA's position on resilient PNT into the future is required, but felt more work was needed. As an interim measure, the IALA Position on the development of AtoN services document was reviewed and amended.

#### *Action item*

*IALA Secretariat is requested to forward ENG8-12.1.22, Draft Recommendation on Resilient PNT, to Council for approval.*

*IALA Secretariat is requested to forward ENG8-12.1.26, proposed amendments on IALA Position on the development of AtoN services, to PAP for consideration.*

### **11.2 Item relocated (Task 3.1.2)**

Item removed from task plan – line retained for clarity.

### **11.3 Terrestrial radionavigation systems (Task 3.2.1)**

No work on this item during this meeting.

### **11.4 R-Mode (MF) (Task 3.2.2)**

The Committee received an update on the work of the R-Mode Baltic Sea project and noted the need to work with the ENAV Committee to discuss R-Mode development in general.

A presentation on the R-Mode Baltic Sea project was provided to the Committee.

#### *Action item*

*The IALA Secretariat is requested to forward the R-Mode Road Map from ENAV to ENG9.*

### **11.5 R-Mode (AIS/VDES) (Task 3.2.3)**

The Committee reviewed input documents ENG8-11.4, ENG8-11.4.1, ENG8-11.4.2, ENG8-11.5, ENG8-11.13, ENG8-11.13.1, ENG8-11.13.2, ENG8-11.13.3 on this topic. These input papers captured a range of questions posed to the Committee inviting support and assistance in the definition of R-Mode VDES system requirements. The Committee considered how best to respond, and noted that some aspects were beyond its remit/knowledge and support from ARM would be needed.



The Committee developed a liaison note to go to ARM and ENAV to support the development of R-Mode VDES.

The Committee also noted the need to work closely with ENAV on this topic and discussed different methods of maintaining the communications link outside of meetings that will allow all members to remain involved. Ideas discussed, included a mailing list or online forum, which need to be explored further and no decision was formed.

#### *Action item*

*IALA Secretariat is requested to forward ENG8-12.1.25, Liaison note on VDES R-Mode system requirements, to ENAV23 and ARM8.*

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

The Committee considered the need and benefit of an R-Mode Workshop and felt it was needed. It recognised that the timeframe of 2019 would be quite tight, but would be appropriate for the development of the R-Mode concept. It was also noted that the workshop would require input from other IALA Committees, namely ENAV and ARM and therefore the workshop request document should be shared with them in due course.

The location and date of the workshop are yet to be confirmed, but it is likely to take place at IALA HQ over a 4 days period during July or September 2019 (to be confirmed).

It was noted that the workshop should have a defined agenda and aim, which will require additional discussions to ensure participants are suitably educated and candidate options considered sufficiently, to enable the workshop to make decisions and allow the R-Mode VDES design to move forward. Any intersessional meetings will be held virtually and in coordination with the ENAV Committee.

A workshop request document was completed.

#### *Action item*

*IALA Secretariat is requested to forward ENG8-12.1.23, R-Mode VDES workshop request, to Council for approval.*

*IALA Secretariat is requested to forward ENG8-12.1.23, R-Mode VDES workshop request, to ARM and ENAV for their consideration.*

### **11.7 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.

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

Item consolidated with task 3.5.2.

### **11.9 Product Specification support (eLoran etc). Continue work on ENAV Task 3.1.2 - Develop a Product Specification on eLoran data, beacon corrections, and data exchange – from 2014-18 work period: S-245 ASF data (Task 3.2.7)**

Item consolidated with task 3.2.10.

### **11.10 Product Specification support (eLoran etc). Continue work on ENAV Task 3.1.2 - Develop a Product Specification on eLoran data, beacon corrections, and data exchange – from 2014-18 work period : S-246 eLoran Station Almanac (Task 3.2.8)**

Item consolidated with task 3.2.10.

#### **11.11 Product Specification support (eLoran etc). Continue work on ENAV Task 3.1.2 - Develop a Product Specification on eLoran data, beacon corrections, and data exchange – from 2014-18 work period : S-247 Differential eLoran Reference Station Almanac (Task 3.2.9)**

Item consolidated with task 3.2.10.

#### **11.12 Develop and maintain relevant Product Specifications e.g. S-245 eLoran ASF data, S.246 eLoran transmitting station almanac and S-247 Differential Loran reference station. (Task 3.2.10)**

The Committee reviewed input papers ENG8-11.6, ENG8-11.6.1 and ENG8-11.6.2 and discussed the progress of the different draft S-200 product specifications. Drafts of the S-246 eLoran Station Almanac and S-247 Differential eLoran reference station almanac are ready for review and Committee members are invited to consider them before ENG9 and provide comments back to WG3 Chair.

The Committee also considered other potential S-200 product specifications and the need for guidance in terms of what information is required when starting the process.

The product specification for the DGNSS beacon almanac (S-240) was discussed and the current status of the product specification was unclear, along with next step in the process. Clarification was sought from the Secretariat and it is awaiting acceptance and incorporation in the IHO Registry.

#### *Action item*

*ENG Committee members are requested to review ENG8-11.6.1 and ENG8-11.6.2 and provide any comments back to the WG3 Chair ([alan.grant@gla-rad.org](mailto:alan.grant@gla-rad.org)) prior to ENG9.*

*The IALA Secretariat is requested to proceed with the acceptance process for the S-240 Product Specification and promote its inclusion in the IHO S-100 registry.*

#### **11.13 Guidance on timing and synchronisation (Task 3.2.11)**

New work item – no work completed within this period.

#### **11.14 eRacon (standard approach) ; Review recommendations ENAV146 & R-101 & Guideline 1010 (Task 33.1)**

The Committee reviewed input paper ENG8-11.1 from CIRM and noted its response.

The Committee plans to develop a response during ENG09 but noted the need to seek guidance from the ARM Committee. A liaison note to ARM was prepared seeking its support on the requirement for racons in busy harbours.

#### *Action item*

*IALA Secretariat is requested to forward ENG8-12.1.24, Liaison note to ARM – regarding racons in busy harbours, to ARM8.*

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

Input papers ENG8-11.7, ENG8-11.8 and ENG8-11.10 were considered and a number of presentations on SBAS projects were received.

Discussions on the use of SBAS considered the need to provide guidance to Service providers on how and when SBAS may be available and what aspects should be considered. It was noted that while there are many different SBAS providers, only the European service was represented in the Committee and it would be beneficial to seek the involvement of other providers.

Presentations on different related projects provided updates on receiver standards developments, current performance considerations of EGNOS when considering a maritime user and an update on an EGNOS pilot project that is demonstrating EGNOS re-transmission through AIS and marine radiobeacons.

*Action item*

*IALA Secretariat is requested to include three WG3 presentations as late input papers to ENG8.*

**11.16 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.

**11.17 Recommendation on augmentation for maritime use (Task 3.4.3)**

Input papers ENG8-11.9 and ENG8-11.9.1 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.

The Committee discussed that the scope of the document should be expanded to consider new and emerging navigation systems and at the same time noted that marine radiobeacon services are already captured by the IALA list.

The prepared draft Recommendation will be amended and considered at the next meeting.

*Action item*

*IALA Secretariat is requested to forward working paper, ENG8-12.2.13 Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision, to ENG9.*

**11.18 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.

**11.19 High accuracy systems (Task 3.4.5.)**

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

**11.20 Review and update current documentation under the purview of the 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.

No work on this topic was completed during this session.

**11.21 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 ongoing DGNSS user consultations, updates in RTCM Special Committees, a recent Resilient PNT meeting in Europe, US Institute of Navigation's SDR Guidelines, amongst others.

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

No work in this session.

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

No work in this session.

### 11.24 Development and review of WWA courses (Task 4.1.1)

No updates during this session.

### 11.25 Navguide updates and review (Task 4.2.1)

No updates during this session.

## 12. REVIEW OF OUTPUT AND WORKING PAPERS

The Committee considered 90 input papers including presentations and produced 29 output documents including 6 revised Academy model courses, 2 draft Recommendations, 3 draft Guidelines, 4 workshop/seminar proposals and 17 working papers. Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

## 13. ANY OTHER BUSINESS

It was noted that IALA guidance to Members of activities for the World Maritime AtoN Day will be available on the IALA website in a few weeks.

Participants enjoyed a number of social events. On Tuesday evening, the Committee bid farewell to Manuel Santos with a small presentation. On the same evening, participants savoured other cultures through shared typical food and drink from their home countries.

On Wednesday evening the Committee dinner was well attended in the restaurant La Piazza. A presentation was made to Seamus Doyle, outgoing Committee Secretary, in appreciation of his years of service to the Committee.



On Thursday evening a “friendly” football match resulted in a draw at 12 goals each with some assistance from local amateurs.

## 14. REVIEW OF SESSION REPORT

The report of the meeting (ENG8-14.1) 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 Secretariat is requested to forward the summary of the ENG8 Committee report (ENG8-14.1) to Council to note.*

## 15. DATE AND VENUE OF NEXT MEETING

The next session of the Committee is from 18<sup>th</sup> to 22<sup>nd</sup> March 2019 at IALA Headquarters.

## 16. CLOSING OF THE MEETING

The Committee Chairman thanked the Vice-Chair, working group chairs, all Participants for their hard work and effective output during the session and the four year work period. He thanks David Jeffkins for his sterling service as Vice-Chair over the past four years and welcomed Michel Cousquer as Vice Chair of the Committee. He thanked the IALA Secretariat for their support. He thanks Michael Card, who is stepping down as IALA Deputy Secretary-General, for his drive and energy in helping to guide the work of the Committee.

The Committee bade farewell to Seamus Doyle who was stepping down as secretary to the Committee. Mr Doyle thanked the Committee for their friendship and assistance over many years and for their good wishes for the future.

The Committee Chairman concluded by thanking all participants, the Vice Chair and secretariat for the hard work, wished everyone a safe journey home and hoped to see everyone at the next meeting.

## 17. 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.

## 8<sup>th</sup> Meeting of the AtoN Engineering and Sustainability Committee (ENG8)

The 8<sup>th</sup> meeting of the **AtoN Engineering and Sustainability Committee** (ENG8) will be held from 15 – 19 October, 2018 at IALA, St Germain en Laye, France.

The opening plenary will commence at 1300 on Monday 15 October and the closing plenary will end at approximately 1300 on Friday, 19 October.

Committee Chair, Vice-Chair and Working Group Chairpersons are requested to meet at 0900 on Monday, 15 October 2018.

### 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. ENG committee structure
    - 1.6.1. Welcome to the PNT Working Group & ENG committee structure
    - 1.6.2. WG1 Overview                      Malcolm Nicholson
    - 1.6.3. WG2 Overview                      Adam Hay
    - 1.6.4. WG3 Overview                      Alan Grant
    - 1.6.5. Heritage Forum                      Simon Millyard
2. Actions from last work programme (ENAV21 & ENG7) to carry forward
3. Review of input papers
  - 3.1. Input papers
  - 3.2. Identify input papers suitable for uploading to the IALA Wiki
4. Reports from other bodies
  - 4.1. Report on 65<sup>th</sup>, 66<sup>th</sup> and 67<sup>th</sup> Sessions of the IALA Council 2017-12 and 2018-06
  - 4.2. Report of the 34<sup>th</sup>, 35<sup>th</sup> and 36<sup>th</sup> Sessions of the IALA Policy Advisory Panel
  - 4.3. IALA position on the development of AtoN services 2017-12-15
  - 4.4. Report on 19th IALA Conference 2018
  - 4.5. Report on the IALA Seminar on arctic navigation Nov 2017
  - 4.6. Report first IALA-IHO Technical Coordination Meeting
  - 4.7. Incheon Declaration on Lighthouses as Cultural Heritage
  - 4.8. Report e-Navigation Underway International 2018 Conference
  - 4.9. IALA Report 14<sup>th</sup> meeting Joint IMO-ITU Expert group on Maritime Radiocommunication Matters
  - 4.10. IALA Report on IMO MSC99
  - 4.11. IALA Report on IMO NCSR5
  - 4.12. IALA Report on IMO Council 120



4.13. IALA Report on meetings of ITU-R WP5B

5. Reports from Rapporteurs

5.1. Nomination of Rapporteurs & topics for the work period 2018-2022  
(Power, Lights, Buoys, Simulation, PNT, Environmental)

5.2. Feedback from external organisations  
(IMO, ITU, IEC, RTCM, PIANC, CIE)

5.3. IALA Dictionary

Michel Cousquer

5.4. IALA Bulletin liaison

Michel Cousquer

6. Presentations (15 minutes duration)

6.1. Brief on WWA

Gerardine Delanoye

6.2. Real-time tidal current monitoring and information systems in Korea

Sung-Jun Kim

6.3. E-Navigation Underway Conferences

Seamus Doyle

6.4. MENAS AtoN Monitoring Project

Mahdi al Mosawi

6.5. Titanium foil anti-corrosion technology for steel lighthouses

Kinji Takeuchi

6.6. Lighthouse World Summit 2018

Tamotsu Ikeda

6.7. Baltic R-Mode testbed

Stefan Gewies

7. Review of Task Plan and WG expectations

7.1. 2018-2022 ENG task plan

7.2. ENG Task Register

8. Establish Working Groups

9. WG 1 - Visual & Physical AtoN

10. WG 2 - Knowledge & Sustainability

11. WG3 – Radionavigation Services

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

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7	Hyuk Kim	National Maritime PNT Office, Republic of Korea
8	Ian Hanna	US Coast Guard, USA
9	Ivan M. Carlsson	Danish Maritime Authority, Denmark
10	Jeffrey van Gils	Ministry of Infrastructure and Waterway Management, Netherlands
11	Jesper Backstedt	Swedish Maritime Administration, Sweden
12	Jin-Gee Jeon	Ministry of Oceans & Fisheries, Republic of Korea
13	Mahdi Al Mosawi	MENAS, Bahrain
14	Manuel Santos	Portuguese Lighthouse Authority, Portugal
15	Marek Dziewicki	Maritime Office Gdynia, Poland
16	Maria Mota	ESSP, Spain
17	Michael Patterson	US Coast Guard, USA
18	Minsu Jeon	IALA, France

	Name	Organisation / Country
19	Nadine Epara	Cameroon National Port Authority, Cameroon
20	Marie Christelle Foe Ambani	Autorite Portuaire Nationale, Cameroon
21	Kaisu Heikonen	Finnish Transport Agency, Finland
22	Owen James	Pharos Marine – Automatic Power, UK
23	Paul F Mueller	Tideland Signal Corporation, USA
24	Sang Hyun Park	Korean Research Institute of Ships and Ocean Engineering (KRISO), Republic of Korea
25	Sig Erik Christiansen	Kongsberg Seatex, Norway
26	Stefan Gewies	German Aerospace Center, Germany
27	Thoraf Noack	German Aerospace Center, Germany
28	Younghoon Han	Korea Research Institute of Ships and Ocean Engineering (KRISO), Republic of Korea
29	Manuel Lopez Martinez	European GNSS Agency, Czech Republic

#### Working Group 4

#### Heritage Forum

	Name	Organisation / Country
1	Alimuddin Amirudin	Marine Department, Malaysia
2	Cheol Soon Baik	Ministry of Land, Infrastructure & Transport, Republic of Korea
3	Jeongsik Kim	Ministry of Oceans and Fisheries, Republic of Korea
4	Jiwon Jeong	Cultural Heritage Administration, Republic of Korea
5	Jonghun Kim	Paichai University, Republic of Korea
6	Seung Cheol Lee	Ministry of Oceans and Fisheries, Republic of Korea
7	Sunyoung Hwang	National Lighthouse Museum, Republic of Korea
8	Young Cham Kim	Ministry of Land, Infrastructure & Transport, Republic of Korea



## ANNEX D LIST OF INPUT PAPERS

All papers were posted to the Committee website

Meeting	Agenda Item	Input Paper Title	Source	Presented by / WG
ENG8-	0.1	Welcome to IALA ENG8 2018-08-28 v2	Simon Millyard	Simon Millyard
ENG8-	1.1	Draft Agenda (20181011)	IALA Secretariat	Simon Millyard
ENG8-	1.3	Safety & Admin briefing	IALA Secretariat	Seamus Doyle
ENG8-	1.5	Programme for the week (20180726)	IALA Secretariat	Simon Millyard
ENG8-	1.6.1	ENG WG Terms of Reference 2018-08-23	IALA Secretariat	Simon Millyard
ENG8-	1.6.2	(PAP36-13.3) Committee responsibilities Information services	PAP36	Simon Millyard
ENG8-	2.1	Action Items from ENG7	ENG7	Seamus Doyle
ENG8-	2.2	Action items from ENAV21 20170927 for WG5	ENAV21	Seamus Doyle
ENG8-	3.1	Input paper Committee template February 2017	IALA Secretariat	Seamus Doyle
ENG8-	4.1.1	(C65-19.1) Report Council 65	IALA Secretariat	Simon Millyard
ENG8-	4.1.2	(C66-20.1) Report Council 66 Final-Rev	IALA Secretariat	Simon Millyard
ENG8-	4.1.3	Report Council 67 Final	IALA Secretariat	Simon Millyard
ENG8-	4.2.1	(PAP34-18.1) Draft Report PAP34 V2	IALA Secretariat	Simon Millyard
ENG8-	4.2.2	(PAP35-18.1) Draft Report PAP35 V1	IALA Secretariat	Simon Millyard
ENG8-	4.2.3	(PAP36-11.1) Draft Report PAP36_V2	IALA Secretariat	Simon Millyard
ENG8-	4.3	IALA position on the development of AtoN services 2017-12-15	IALA Secretariat	Simon Millyard
ENG8-	4.3.1	ENG8-4.3.1 Presentation UN Sustainability Goals	IALA Secretariat	Simon Millyard
ENG8-	4.4	19th IALA Conference 2018 report final	IALA Secretariat	Simon Millyard
ENG8-	4.5	Report on the IALA Seminar on arctic navigation Nov 2017	IALA Secretariat	Simon Millyard
ENG8-	4.6	IALA-IHO Technical Coordination Meeting v3	IALA Secretariat	Simon Millyard
ENG8-	4.7	Incheon Declaration on Lighthouses as Cultural Heritage	IALA Secretariat	Simon Millyard
ENG8-	4.8	Report e-Navigation Underway International 2018 final	IALA Secretariat	Simon Millyard
ENG8-	4.9	IALA Report 14th meeting Joint IMO-ITU Expert group on Maritime Radiocommunication Matters	Stefan Bober	Michael Card
ENG8-	4.10	IALA Report on IMO MSC99	IALA Secretariat	Michael Card
ENG8-	4.11	IALA Report on IMO NCSR5	IALA Secretariat	Michael Card
ENG8-	4.12	IALA Report on IMO Council 120	IALA Secretariat	Michael Card
ENG8-	4.13	IALA Report on meetings of ITU-R WP5B	Stefan Bober	Michael Card
ENG8-	6.1	Presentation Briefing from WWA	Gerardine Delanoye	Gerardine Delanoye
ENG8-	6.2	Presentation Real-time tidal current monitoring and information systems in Korea	Sung-Jun Kim	Sung-Jun Kim
ENG8-	6.3	Presentation e-Navigation Underway conferences	IALA Secretariat	Seamus Doyle
ENG8-	6.4	Presentation MENAS Aton Monitoring project	Mahdi al Mosawi	Mahdi al Mosawi
ENG8-	6.5	Presentation Titanium foil anti-corrosion technology for steel lighthouses	Kinji Takeuchi	Kinji Takeuchi
ENG8-	6.6	Presentation Lighthouse World Summit 2018	Tamotsu Ikeda	Tamotsu Ikeda
ENG8-	6.7	Presentation 2018 R-Mode testbed in the Baltic Sea	Stefan Gewies	Stefan Gewies
ENG8-	7.1	ENG task plan 2018-22 20181015	PAP36 / SM	Simon Millyard
ENG8-	7.2	ENG Task Register 2018-22 20180801	Simon Millyard	Simon Millyard

Meeting	Agenda Item	Input Paper Title	Source	Presented by / WG
ENG8-	7.2.1	Task Register 2018-22 proposal Develop Guideline on Tidal Flow Data Capture and Display Task 2.3.3	Jimin Yeo	Simon Millyard / WG2
ENG8-	7.2.2	Task Register 2018-22 proposal Develop guidance on technology for AtoN simulation Task 1.2.1	Jimin Yeo	Simon Millyard / WG2
ENG8-	9.1	(ENG7-11.2.5) Draft Recommendation E-200-3 Ed.2	ENG7	WG1
ENG8-	9.2	(ENG7-11.2.6) Draft Guideline 1133 Ed.1 on Marine Signal Lights Calculation of Luminous Intensity and Range	ENG7	WG1
ENG8-	9.3	(ENG7-11.2.7) Draft Guideline xxxx on Application of Retroreflecting Materials on Marine AtoN	ENG7	WG1
ENG8-	9.4	Definitions in IALA Dictionary - Visual AtoN	IALA Secretariat	WG1
ENG8-	9.5	Revision of Recommendation E111 on Port Traffic Signals	Frank Hermann	WG1
ENG8-	9.5.1	Draft IALA Recommendation R0111 on Port Traffic Signals 20180831	Frank Hermann	WG1
ENG8-	9.6	Correction Required to IALA Recommendation R0201	Alwyn Williams	WG1
ENG8-	9.7	Estimation of Astragal and Glazing Losses on the Output of an Internally Fitted Integrated Lantern	Alwyn Williams	WG1
ENG8-	9.8	Implementation of the Convolution Function to Determine Flash Duration	Alwyn Williams	WG1
ENG8-	9.9	Incompabilities On Draft Guideline 1133 Marine Signal Lights- Luminous Intensity And Range	Ahmet Öztekin	WG1
ENG8-	10.1	(ENG7-10.21) Report-Uniformity of terminology for Spar Buoy and Buoyant Beacon 170912	ENG7 Jong-Uk Kim	WG2
ENG8-	10.2	(ENG7-11.2.2) Draft Guideline on Use of Modern Equipment on Heritage Lighthouses	ENG7	WG2
ENG8-	10.3	(ENG7-11.2.3) Draft IALA Guideline Ed.1 Maintenance of AtoN Structures ENG7	ENG7	WG2
ENG8-	10.4	(ENG7-11.2.4) Draft Guideline 1006 on plastic buoys 20180118	ENG7	WG2
ENG8-	10.5	Develop Guideline on Tidal Flow Data Capture and Display	Jimin Yeo	WG2
ENG8-	10.6	Definitions in IALA Dictionary - Power Supplies	IALA Secretariat	WG2
ENG8-	10.7	Draft Model Course L1.2 Master of AtoN Management new edition 20180612 shgb	WWA	WG2
ENG8-	10.8	Draft IALA Model Course L1.5 on Historic Lighthouse Projects Ed.2 December 2019	WWA	WG2
ENG8-	10.9	Definition of battery cycle life	Ahmet Öztekin	WG2
ENG8-	10.10	Replacement of Light Source in Anadolu Lighthouse	Ahmet Öztekin	WG2 Heritage
ENG8-	10.11	Remote Control and Monitoring of AtoN fitted AIS in Turkey	Ahmet Öztekin	WG2
ENG8-	10.12	Updated Guideline 1091 with Best Practice Document	Mariano Luis Marpegan	WG2
ENG8-	10.13	ENG8-10.13 WWA Documents for review at ENG8	WWA	WG2
ENG8-	10.13.1	ENG8-10.13.1 Draft IALA Model Course L2.1.7 Buoy Moorings Ed 3 Dec 2018	WWA	WG2
ENG8-	10.13.2	ENG8-10.13.2 Draft IALA Model Course L2.2.1 DC Power Systems	WWA	WG2
ENG8-	10.13.3	ENG8-10.13.3 Draft IALA Model Course L2.2.2 Primary and Secondary Battery Maintenance	WWA	WG2

Meeting	Agenda Item	Input Paper Title	Source	Presented by / WG
ENG8-	10.13.4	ENG8-10.13.4 Draft IALA Model Course L1.5 Historic Lighthouse Projects Ed.2 December 2018	WWA	WG2
ENG8-	10.13.5	ENG8-10.13.5 Draft IALA Model Course L2.2.3 Photovoltaic (Solar panel) systems and maintenance Ed3 2018	WWA	WG2
ENG8-	10.14	181004 Draft Guideline G1006 on Plastic Buoys	Peter Schneider	WG2
ENG8-	10.15	Proposal to develop operation manual for AtoN simulation system	Jimin Yeo	WG2
ENG8-	11.1	LN-IALA-29032018 Liaison note CIRM to IALA on the use of racons in busy harbours	Richard Doherty	WG3
ENG8-	11.2	(ENAV21-14.2.6) Draft IALA Recommendation Ed.1 on PNT relevant services and systems	ENAV21	WG3
ENG8-	11.3	WG3 plan for ENG8	Alan Grant	WG3
ENG8-	11.4	VDES R-mode Development Status Update.	Jan Šafář	WG3
ENG8-	11.4.1	Meeting July2018-Yiwu W-05 VDES R-mode Discussion	Jan Šafář	WG3
ENG8-	11.4.2	AIS VDES R-mode Development-Technical Report-1v1	Jan Šafář	WG3
ENG8-	11.5	ENG8-11.5 (Jan2018-ESTEC-output05) Liaison ENAV to ENG on R-Mode using VDES	ENAV WG3 ESTEC Jan 2018 intersessional	WG3
ENG8-	11.6	Development of eLoran S-200 Product Specification rev	Younghoon Han	WG3
ENG8-	11.6.1	Draft S-246 eLoran Station Almanac Product Specification	Younghoon Han	WG3
ENG8-	11.6.2	Draft S-247 Differential eLoran Reference Station Almanac Product Specification	Younghoon Han	WG3
ENG8-	11.7	EGNOS SIS performance based on IMO Res. A.1046	Manuel López-Martinez	WG3
ENG8-	11.8	Project SBAS implementation in shipborne receivers	Per Erik Kvam	WG3
ENG8-	11.9	Proposal for Recommendation on GNSS Augmentation Services	Alan Grant	WG3
ENG8-	11.9.1	Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision	Alan Grant	WG3
ENG8-	11.10	Support for the transmission of EGNOS corrections via IALA beacons and AIS/VDES	Lourdes Tavis	WG3
ENG8-	11.11	DSG views on RPNT	Michael Card	WG3
ENG8-	11.12	IALA Position on DGNSS	Michael Card	WG3
ENG8-	11.13	(ENAV22-12.1.17) Liaison ENAV to ENG on PNT on R mode-1v0 (1)	ENAV22	WG3
ENG8-	11.13.1	(ENAV22-9.3.6) (Jan2018-ESTEC-output05) Liaison ENAV to ENG on R-Mode using VDES	ENAV22	WG3
ENG8-	11.13.2	(ENAV22-9.2.5) (July2018-Yiwu W-05) VDES R-mode Discussion	ENAV22	WG3
ENG8-	11.13.3	(ENAV22-9.2.10) VDES R-mode Development Status Update	ENAV22	WG3
ENG8-	11.14	(ENAV22-12.1.13) Liaison to IALA Secretariat reach out for emerging tech	ENAV22	WG3 / All

## 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	Output Paper Title	Source	Action
ENG8- 12.1.1	Draft Guideline 1006 on plastic buoys	WG2	To Council 68
ENG8- 12.1.2	(ENG8-10.7) Draft Model Course L1.2 Master of AtoN Management new edition 20180612 shgb	WG2	To ARM8
ENG8- 12.1.3	(ENG8-10.13.4) Draft IALA Model Course L1.5 Historic Lighthouse Projects Ed.2 December 2018	WG2	To Council 68
ENG8- 12.1.4	(ENG8-10.13.1) Draft IALA Model Course L2.1.7 Buoy Moorings Ed 3 Dec 2018	WG2	To Council 68
ENG8- 12.1.5	(ENG8-10.13.2) Draft IALA Model Course L2.2.1 DC Power Systems	WG2	To Council 68
ENG8- 12.1.6	(ENG8-10.13.3) Draft IALA Model Course L2.2.2 Primary and Secondary Battery Maintenance	WG2	To Council 68
ENG8- 12.1.7	(ENG8-10.13.5) Draft IALA Model Course L2.2.3 Photovoltaic (Solar panel) systems and maintenance Ed3 2018	WG2	To Council 68
ENG8- 12.1.8	Liaison note ENG8 to ARM8 on simulation guideline update	Chair	To ARM8
ENG8- 12.1.9	Liaison Note to ARM8 on the Cyber Security Workshop	WG2	To ARM8
ENG8- 12.1.10	Draft Cyber Security Workshop Proposal	WG2	To ARM8
ENG8- 12.1.11	Liaison Note to Secretariat on World Heritage Lighthouse Competition	WG2	To IALA Secretariat
ENG8- 12.1.12	Draft Nomination Form for the World Heritage Lighthouse Competition	WG2	To IALA Secretariat
ENG8- 12.1.13	(C65-11.2.2.1) (ENG7-11.1.1) Draft IALA Recommendation R0200-1 (E200-1) Ed.2 on Marine Signal Lights Colours	WG1	To Council 68
ENG8- 12.1.14	Liaison Note to ARM8 on Proposed Draft Model Course L1.2	WG2	To ARM8
ENG8- 12.1.15	Dictionary amendment proposal - Erosion	WG2	To IALA Secretariat
ENG8- 12.1.16	Liaison Note to IALA Secretariat on the Heritage Seminar	WG2	To IALA Secretariat
ENG8- 12.1.17	Draft Heritage Seminar Proposal	WG2	To Secretariat Then to Council 68
ENG8- 12.1.18	Draft Guideline G1067-3 Ed.2 Electrical Energy Storage for AtoN_Dec2017	WG2	To Council 68
ENG8- 12.1.19	Liaison Note to ARM8/ VTS46 on E-111 Port Traffic Signals	WG1	To ARM8 / VTS46
ENG8- 12.1.20	Liaison to IMO NCSR LED detection	Chair	To IALA Secretariat To NCSR6 early
ENG8- 12.1.21	WG2 Dictionary amendment proposal for Spanish translations	WG2	To IALA Secretariat
ENG8- 12.1.22	Draft Recommendation on Resilient PNT	WG3	To Council 68
ENG8- 12.1.23	Proposal for R-Mode workshop 2019.	WG3	To Council 68
ENG8- 12.1.24	Liaison Note to ARM8 re Racons in busy harbours	WG3	To ARM8
ENG8- 12.1.25	Liaison Note to ARM & ENAV re VDES R-Mode system requirements comments	WG3	To ARM8 To ENAV23
ENG8- 12.1.26	WG3 Suggested amendments to IALA position on the development of AtoN services 2017-12-15	WG3	To PAP37
ENG8- 12.1.27	Liaison Note to IALA Secretariat on the IALA LITE BATT Workshop	WG2	To IALA Secretariat

Meeting	Output Paper Title	Source	Action
ENG8- 12.1.28	IALALITE- IALABATT workshop proposal 2021	WG2	To IALA Secretariat
ENG8- 12.1.29	Draft Guideline 1065 Ed.3.1 AtoN Signal Light Beam Vertical Divergence_Dec2017 ENG8 Modified	WG1	To Council 68
ENG8- 14.1	Report on session 8 of the ENG Committee (ENG8)	IALA Sec	To Council for noting

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

Number	Working Paper Title	Source	Action
ENG8- 12.2.1	Task plan updated at ENG8	Vice Chair	To ENG9
ENG8- 12.2.2	(ENG8-10.3) Draft IALA Guideline Ed.1 Maintenance of AtoN Structures (ENG8 17 Oct)	WG2	To ENG9
ENG8- 12.2.3	Draft Guideline 1133 Ed.1 on Marine Signal Lights Calculation of Luminous Intensity and Range 10-17-18 (1)-1	WG1	To ENG9
ENG8- 12.2.4	Draft Guideline xxxx on Application of Retroreflecting Materials on Marine AtoN	WG1	To ENG9
ENG8- 12.2.5	Draft Recommendation on Design and Operation in the Provision of Marine Aids to Navigation	WG2	To ENG9
ENG8- 12.2.6	Draft IALA Recommendation R0111 on Port Traffic Signals 20180831	WG1	To ENG9
ENG8- 12.2.7	(ENG8-10.2) Draft Guideline on Use of Modern Equipment on Heritage Lighthouses	WG2	To ENG9
ENG8- 12.2.8	Estimation of Astragal and Glazing Losses on the Output of an Internally Fitted Integrated Lantern	WG1	To ENG9
ENG8- 12.2.9	Implementation of the Convolution Function to Determine Flash Duration	WG1	To ENG9
ENG8- 12.2.10	Task 2.5.1 Brainstorming	WG2	To ENG9
ENG8- 12.2.11	Task 2.5.2 Brainstorming	WG2	To ENG9
ENG8- 12.2.12	Task register 2018-2022 at ENG8	Vice Chair	To ENG9
ENG8- 12.2.13	Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision	WG3	To ENG9
ENG8- 12.2.14	Task 2.5.3 Brainstorming	WG2	To ENG9
ENG8- 12.2.15	Draft Guideline on tidal current signal system_V0.5	WG2	To ENG9
ENG8- 12.2.16	Revised Guideline G1097 Ed.1 Technical Features and Technology Relevant for Simulation of AtoN edit 181018	WG2	To ENG9
ENG8- 12.2.17	(ENG8-10.1) Report-Uniformity of terminology for Spar Buoy and Buoyant Beacon 170912	WG2	To ENG9

## ANNEX F ACTION ITEMS

### *Action Items for Secretariat*

1. The IALA Secretariat is requested to submit liaison note ENG8-12.1.20 to the IMO NCSR6 (deadline 13 November 2018) on the IMO input template.	8
2. The Secretariat is requested to forward the ENG Committee Workplan for 2018-2022, ENG8-12.2.1, and the Task Register, ENG8-12.2.12, to ENG9.	12
3. The Secretariat is requested to forward output paper ENG8-12.1.13 to Council for approval.	13
4. The Secretariat is requested to forward output paper ENG8-12.1.29 to Council for approval.	13
5. The Secretariat is requested to upload the definition of fluorescence from ENG7.	13
6. The Secretariat is requested to forward liaison note ENG8-12.1.19 to ARM8 and VTS46.	13
7. The Secretariat is requested to forward working paper ENG8-12.2.6 to ENG9.	13
8. The Secretariat is requested to forward working paper ENG8-12.2.9 to ENG9.	14
9. The Secretariat is requested to forward working paper ENG8-12.2.8 to ENG9.	15
10. The IALA Secretariat is requested to forward working paper ENG8-12.2.16 to ENG9.	15
11. The IALA Secretariat is requested to forward working paper ENG8-12.2.2 to ENG9.	16
12. The IALA Secretariat is requested to forward working paper ENG8-12.2.15 to ENG9.	16
13. The IALA Secretariat is requested to forward working paper ENG8-12.2.5 to ENG9.	16
14. The IALA Secretariat is requested to forward output papers ENG8-12.1.9 and ENG8-12.1.10 to ARM8.	16
15. The IALA Secretariat is asked to forward Output Paper ENG12.1.18 (the edited Guideline 1067-3 Ed.2 Electrical Energy Storage) for Council approval.	17
16. The IALA Secretariat is requested to forward working paper ENG8-12.2.10 to ENG9.	17
17. The IALA Secretariat is requested to forward working paper ENG8-12.2.11 to ENG9.	17
18. The IALA Secretariat is requested to submit papers EEP10-05-01 and EEP10-05-01A to ENG9.	17
19. The IALA Secretariat is requested to submit the draft Guideline G1006 on Plastic Buoys to Council for approval.	18
20. The IALA Secretariat is requested to forward working paper ENG8-12.2.17 to ENG9.	18
21. The IALA Secretariat is requested to forward working paper ENG8-12.2.14 to ENG9.	18
22. The IALA Secretariat is requested to forward working paper ENG8-12.2.7 to ENG9.	18
23. The IALA Secretariat is requested to support the initiatives outlined in Liaison Notes ENG8-12.1.11 and nomination form ENG12.1.12.	19
24. The IALA Secretariat is requested to consider the draft Heritage Seminar proposal as outlined in output papers ENG8-12.1.16 and ENG8-12.1.17 and send to Council for approval.	19
25. The IALA Secretariat is requested to forward output paper ENG8-12.1.3, ENG8-12.1.4, ENG8-12.1.5, ENG8-12.1.6 and ENG8-12.1.7 to the IALA Council for approval.	19
26. The IALA Secretariat is requested to forward Liaison Note ENG8-12.1.14 and Output Paper ENG8-12.1.2 to ARM8.	19
27. The IALA Secretariat is requested to review the Spanish translations of dictionary terms as detailed in Output Paper ENG8-12.1.21 and update the dictionary accordingly.	20
28. The IALA Secretariat is requested to review the recommended amendment and the associated translation into both Spanish and French as detailed in Output Number ENG8-12.1.15 and update the dictionary accordingly.	20
29. IALA Secretariat is requested to forward ENG8-12.1.22, Draft Recommendation on Resilient PNT, to Council for approval.	20
30. IALA Secretariat is requested to forward ENG8-12.1.26, proposed amendments on IALA Position on the development of AtoN services, to PAP for consideration.	20



31. The IALA Secretariat is requested to forward the R-Mode Road Map from ENAV to ENG9.	20
32. IALA Secretariat is requested to forward ENG8-12.1.25, Liaison note on VDES R-Mode system requirements, to ENAV23 and ARM8.	21
33. IALA Secretariat is requested to forward ENG8-12.1.23, R-Mode VDES workshop request, to Council for approval.	21
34. IALA Secretariat is requested to forward ENG8-12.1.23, R-Mode VDES workshop request, to ARM and ENAV for their consideration.	21
35. The IALA Secretariat is requested to proceed with the acceptance process for the S-240 Product Specification and promote its inclusion in the IHO S-100 registry.	22
36. IALA Secretariat is requested to forward ENG8-12.1.24, Liaison note to ARM – regarding racons in busy harbours, to ARM8.	22
37. IALA Secretariat is requested to include three WG3 presentations as late input papers to ENG8.	23
38. IALA Secretariat is requested to forward working paper, ENG8-12.2.13 Draft IALA Recommendation Rxxxx on GNSS Augmentation Service Provision, to ENG9.	23
39. The Secretariat is requested to forward the summary of the ENG8 Committee report (ENG8-14.1) to Council to note.	24

### *Action Items for Participants*

40. ENG Committee members are invited to submit ideas on how to protect the lighthouse heritage to ENG9.	9
41. Committee Members are requested to ensure that definitions in IALA documents are consistent with the Dictionary.	10
42. Committee Members are invited to volunteer as Spanish / French translators for Dictionary terms.	10
43. ENG Committee members are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet and for the e-Bulletin to Audrey Guinault.	10
44. ENG Committee members are invited to consider hosting the IALABATT / IALALITE workshop, the workshop on cyber security and the workshop on R-Mode.	12
45. Jonas Lindberg is requested to work on the partially combined Guidelines and submit an input paper to ENG9.	14
46. Alwyn Williams and Peter Dobson are requested to provide an input paper to ENG9 on monitoring of function and degradation of AtoN light sources.	14
47. Alwyn Williams and Link Powell are requested to provide an input paper to ENG9 on service condition factors.	14
48. Jordan Lane-Beveridge is requested to coordinate intersessional work along with Frank Hermman, Alwyn Williams, Dave Scutt, Pärtel Keskküla, Malcolm Nicholson, Fernando Romero on the development of Guideline G1133 using the working paper ENG8-12.2.3 and submit an input paper to ENG9.	15
49. Committee Members are asked to provide any information on their experiences with AtoN Simulators or AtoN Simulation Technology as input to ENG9.	15
50. Committee Members are asked to provide any information on their experiences with quality control and checking over 3 <sup>rd</sup> party AtoN service providers.	15
51. Committee participants are requested to provide input to ENG9 on maintenance techniques and systems, for possible inclusion in the draft Guideline on the maintenance of AtoN structures.	16
52. Committee participants are requested to review the draft Recommendation prior to ENG9 and forward any suggested changes as input to ENG9.	16
53. Paul Mueller is requested to submit old RNav Committee work on radar reflectors.	17



- 54. Committee participants are requested to provide input to ENG9 on their experiences with modern equipment on traditional lighthouses. 18
- 55. Committee participants are requested to discuss the competition with the relevant people within their organizations and encourage participation. 19
- 56. ENG Committee members are requested to review ENG8-11.6.1 and ENG8-11.6.2 and provide any comments back to the WG3 Chair ([alan.grant@gla-rad.org](mailto:alan.grant@gla-rad.org)) prior to ENG9. 22



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