



# REPORT OF THE 4<sup>TH</sup> SESSION OF THE IALA ATON ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE

11 to 15 April 2016

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# Report of the 4<sup>th</sup> Session of the IALA

## AtoN Engineering and Sustainability (ENG) Committee

### 11 to 15 April, 2016

### Executive Summary

The fourth meeting of the ENG Committee (ENG4) was held from 11<sup>th</sup> to 15<sup>th</sup> April 2016 in IALA HQ.

The session was attended by 43 participants from 20 countries, of which 29 were National Members, 9 were Industrial Members, 3 were Associate Members, one was an observer. Four members attended for the first time.

The Committee considered 78 input papers and produced 17 output documents and 26 working papers including 6 Academy model courses.

The seven proposed Standards and their respective areas of work were considered in order to align supporting documentation. Progress was made on review of IALA documents in order to update and align the documents with the proposed IALA Standards.

The ENG Chairman and the Chairman of ENG WG2 successfully passed their certificate on modules 1 and 2 of the WWA Level 1 Managers Certificate.

Good progress has been made on preparing for the workshop on sustainable light & power for the next generation in Koblenz in March 2017 and the workshop on the challenges of providing AtoN services in extremely hot climates in September 2016.

Review of relevant sections of the Navguide progressed in accordance with the workplan.

A significant revision of the existing IALA guidance on sector was lights was completed with the incorporation of guidance on modern LED sector lights, including updated design, measurement and installation procedures.

A strategy for relating defined terms in IALA documentation to the definitions in the IALA Dictionary was proposed for consideration by the PAP.

Professor Alison Raby from Plymouth University in the UK presented her work on wave load analysis and effects on rock lighthouses.

The ENG Committee work plan for the work period 2014-2018 was updated in the light of emerging developments. The following table shows a summary of progress while progress on each work task to date is shown in ANNEX F of the meeting report.

Task	Number Tasks	Progress Indicator			Status Overview
		Green	Yellow	Red	
TD#1 – Light and vision physics	8	☒	☐	☐	All tasks progressing per current plan
TD#2 – AtoN design and maintenance	8	☒	☐	☐	All tasks progressing per current plan
TD#3 – Global capacity building and training	2	☒	☐	☐	All tasks progressing per current plan
TD#4 – Civil engineering and environment	4	☒	☐	☐	All tasks progressing per current plan

Across all domains	18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per current plan task 5.1.11 which is delayed by one session.
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# Report of the 4<sup>th</sup> Session of the IALA ENG Committee

## GENERAL

The 4<sup>th</sup> session of the AtoN Engineering and Sustainability Committee (ENG) was held from 11 to 15 April 2016 at IALA. The Chairman was Simon Millyard and the Vice Chairman was David Jeffkins. 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.

The Secretary-General of IALA, Mr Zachariae, noted that IALA is in good shape with 15 new members in the last three months and lots of interest from prospective new members. He noted improvements in various technology systems in IALA to facilitate the working of the Committee. He provided an update on the Change of Status project noting that the draft convention text had been agreed by the IALA Council and work is progressing with the French Foreign Ministry with a view to ratifying IALA IGO status at a diplomatic conference in 2018 in Korea.

#### 1.1 Approval of the agenda

The agenda (ENG4-1.2) was adopted.

#### 1.2 Administration and safety brief

Seamus Doyle provided a Safety and Administration briefing.

#### 1.3 Introductions and Apologies

The meeting was attended by 43 participants from 20 countries, of which 29 were National Members, 9 were Industrial Members, 3 were Associate Members, one was an observer. Four members attended for the first time.

The list of Committee Members who attended ENG4 is shown in ANNEX B. The Committee noted apologies from Members who were unable to attend as noted in ANNEX B. Noting the retirement of Adrian Wilkins, the Committee thanked Adrian for his many years of service and enormous contribution to the work of IALA.



#### 1.4 Programme for the week

The programme for the week, paper ENG4-1.4, was approved.



## 1.5 Welcome from IALA

The Deputy Secretary-General of IALA, Michael Card, noted that membership had increased by 10% in five years and 21% in ten years. He reported that the Council had approved seven IALA standards at the 61<sup>st</sup> session, paving the way for preparation of IALA standards to facilitate mandating of AtoN provision through legislation. He noted work of the Strategy Group and the Academy. Work continues with the IMO NCSR and the Arctic Council. He noted that IALA documentation is used extensively in Russia with particular value placed on the Navguide. The Policy Advisory Panel met on two occasions since ENG3 and the Legal Advisory Panel met in parallel with ENG4.

## 2. REVIEW OF ACTION ITEMS FROM ENG3

Input paper ENG4-2.1 refers. Action items for the IALA Secretariat from ENG3 were noted as complete except for action 1, “the Secretariat is requested to review potential improvements to accessing to the CALMAR software via the IALA web site, which is part of the IALA website update project” which is on-going. Council decisions on relevant output papers are awaited following Council Session 62 in June 2016. WG chairs were requested to review Members actions.

### Action

*The IALA Secretariat is requested to continue work on improving access to the CALMAR software.*

## 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 78 input papers.

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?*

It was noted that there is a possible issue re patent in relation to Mobilis buoys.

### Action

*Peter Schneider is requested to contact Mobilis to clarify the issue of buoy superstructure patent.*

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

The following papers were identified as suitable for retention on the IALA Wiki:

- ENG4-6.3.1 and ENG4-6.3.2 – Presentation and paper on wave loading on rock lighthouses;
- ENG4-9.7.2 – R&RNAV report on visual perception of non-rectangular flashes at threshold;
- ENG4-9.7.3 – R&RNAV report on visual perception of non-rectangular flashes at supra-threshold;
- ENG4-9.8.1 and ENG 4-9.8.2 – Danish Maritime Administration report on use of retroreflective material on AtoN marks;
- ENG4-9.13 – Estonian Maritime Administration report on group flashing light viewing trial;
- ENG4-10.11 – Monitoring an modelling of rock lighthouses;
- ENG4-10.21 – Impact of hot climates on human performance when undertaking AtoN maintenance;
- ENG4-10.25 – Impact of temperature and relative humidity on AtoN equipment;
- ENG4-9.20 – AIS detection for visual AtoN.

## Action

*David Jeffkins is requested to upload input papers ENG4-6.3.1, ENG4-6.3.2, ENG4-9.7.2, ENG4-9.7.3, ENG4-9.8.1, ENG4-9.8.2, ENG4-9.13, ENG4-10.11, ENG4-9.20, ENG4-10.21, ENG4-10.25 to the IALA Wiki.*

## 4. REPORTS FROM OTHER BODIES

### 4.1 Reports from IALA Council – 61<sup>th</sup> Session

The Committee noted the report of the 61<sup>th</sup> Session of the IALA Council held in Dakar, Senegal, from 8 to 11 December 2015, paper ENG4-4.1 refers.

### 4.2 PAP30, 12 to 13 November 2015

The Committee noted the report of the 30th Session of the IALA Policy Advisory Panel (PAP30), from 12 to 13 November 2015 in IALA HQ. Paper ENG4-4.2 refers.

## 5. REPORTS FROM RAPPORTEURS

### 5.1 CIE-IALA Liaison

Malcolm Nicholson reported Alwyn Williams has taken over his role in the GLA R&RNAV. He noted that there was a meeting of the CIE in Melbourne in March.

### 5.2 Developments in AtoN Simulation Systems

Jong-Uk Kim reported on an AtoN Simulator providing simulations, which include the topographical and environmental characteristics of a primary harbour and the characteristics of a navigating ship and maritime traffic. This enables the AtoN planning expert to design a safer and more efficient distribution of AtoN. Paper ENG4-10.26 refers.

In discussion it was noted that the simulator is an excellent tool and that IALA should have such a tool.

### 5.3 Developments in remote control and monitoring

Peter Schneider provided a detailed report of the remote control and monitoring of visual aids to navigation in the marine traffic technology system in Germany. Paper ENG4-5.3 refers.

Responding to a question Mr Schnieder noted that the system would be capable of using VDES communications but the present communications are more cost effective. The system components are Belgian sole manufacturer but development of the system on a low energy PLC will facilitate easy sourcing of equipment. An objective of the system is to provide a monitoring system which is independent of the AtoN system rather than integrated. The data provided by the system is widely internally in the WSV by technicians, traffic centre monitoring, maintenance, etc.

### 5.4 IALA Dictionary

A short demonstration of the IALA Dictionary was presented.

The Committee noted the setting up of the Dictionary Working Group (DWG) and the DWG terms of reference, paper ENG4-5.8.1 refers. The Committee also noted the procedure for adding, amending or removing Dictionary terms using the template in paper ENG4-5.8.2. The addition of acronyms to the Dictionary was noted.

Responding to a request for ENG Members to assist IALA with translation of Dictionary terms to French and Spanish the following volunteered their services:

- |         |                                     |
|---------|-------------------------------------|
| French  | - no volunteers                     |
| Spanish | - Fernando Romero, Mariano Marpegan |

## Action



*Committee Members are requested to include a notice in all Recommendations and Guidelines identifying the Dictionary as the source of definitions.*

*The Secretariat is requested to advise Mike Hadley to include a notice in all Recommendations and Guidelines identifying the Dictionary as the source of definitions when converting IALA documentation to the new identity style.*

## **5.5 IALA Bulletin liaison**

David Jeffkins briefed the Committee on the need for contributions to the IALA Bulletin. Aline deDievre will assist with the preparation of the Bulletin. The deadline for submission of articles is two months before publication. The next issue of the Bulletin for which articles can be accepted is June 2016.

### **Action**

*ENG Committee members are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet.*

## **5.6 IALA Clickshare wireless presentation system**

Seamus Doyle briefed the Committee on the use of the Clickshare wireless presentation system.

## **6. PRESENTATIONS**

Four 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**

Input paper ENG4-6.1 refers. Gerardine Delanoye described the recent activity in the Academy since ENG3. She noted that there are fewer Level 1 AtoN certified managers in Europe than in Africa and South America.

### **6.2 VTS2016 Symposium**

On behalf of Mohamad Halim Bin Ahmed, Seamus Doyle invited participants to the VTS 2016 Symposium from 8 to 12 August 2016 in Kuala Lumpur. Paper ENG4-6.2 refers.

### **6.3 Wave Loading of Lighthouses**

Professor Alison Raby from Plymouth University described her work on Wave Loading of Lighthouses which she has carried out on behalf of the General Lighthouse Authorities of UK and Ireland at Eddystone lighthouse to develop monitoring and modelling techniques suitable for understanding of the wave–structure interaction in isolated masonry structures. Papers ENG4-6.3.1 and ENG4-6.3.2 refer.

In discussion it was noted that the bathymetry of the ocean floor around a rock station is very important in respect of the wave loading and stations need to be analysed on an individual basis. There are many instances of failure of rock lighthouses due to wave loading. Similar research has been carried out by Cybernetica in Norway and Finland and there are plans for further tests in Lithuania. If there were no energy supply limitations, Ms Raby indicated that the research could be extended by impact measurements on the exterior of the lighthouse.

### **6.4 ENG Workshop on Sustainable Light & Power – Simon Millyard**

The draft technical programme for the IALA Workshop on Sustainable Light & Power in Koblenz in March 2017 was reviewed by Simon Millyard, with particular emphasis on gaps in the draft programme. Paper ENG4-9.10 refers.

## **7. REVIEW OF WORK PROGRAMME AND WG EXPECTATIONS**

### **7.1 Work review**

The ENG Committee Workplan, was updated. Paper ENG4-11.2.1 refers.

The ENG Work Programme Task Register for 2014-18 was updated. Paper ENG4-11.2.2 refers.

#### Action

*The Secretariat is requested to forward the revised ENG Committee Workplan, ENG4-11.2.1, to ENG5.*

*The Secretariat is requested to forward the revised ENG Work Programme Task Register for 2014-2018, ENG4-11.2.2, to ENG5.*

## 7.2 IALA Standards

Simon Millyard provided an explanation of the new IALA Standards structure following PAP31. The work of the ENAV Committee in relation to Unique Identifiers was noted.

## 7.3 Heritage Forum

The future structure of Heritage Forum Work was described. Neil Jones will act as Task Group Leader.

## 7.4 Technical policy

Michael Card described the need for, and development of, an IALA Technical Policy to summarise IALA technical policy on a range of topic. The Policy will be structured similar to the Standards and Standards topics and will provide a link between the IALA strategy and Committee workplans. Examples of topics included future of racons, MSI, satellite positioning, buoys and beacons, and DGPS stations.

# 8. ESTABLISH WORKING GROUPS

## 8.1 Establishing working groups

Two working groups were established, as outlined below:

Working Group		Working Group Chair	Working Group Vice Chair
WG 1	Visual & Physical AtoN	Malcolm Nicholson	Frank Hermann
WG 2	Technical Knowledge & Sustainability	Adam Hay	Peter Schneider Jorg Unterdeuweide

# 9. WORKING GROUP 1 – VISUAL & PHYSICAL ATON

## 9.1 Develop guidance on Marine Signalling (Task 1.1.1)

Refer to Task 1.1.2 and Task 1.1.3

## 9.2 Develop guidance on the selection of rhythmic characters including 1069 Synchronisation (Task 1.1.2)

Work continued on the new Guideline entitled 'Selection of Rhythmic Characters' taking into account information from E-110 and introducing new sections on the use of non-rotating flashing lights, flash profiles, synchronisation and sequencing.

#### Action Items

*The Secretariat is requested to forward Liaison note ENG4-11.1.16 and ENG4-11.2.25 Draft Guideline on the Selection of Rhythmic Characters of Lights on AtoN to ARM4 & ENG5.*

*Members of the task group are requested to identify further work items to contribute to the Draft Guideline on the Selection of Rhythmic Characters of Lights.*

## 9.3 Update / Replace Guideline 1038 On Ambient Lights Levels (Task 1.1.3)

Work progressed on the update/replacement of the Guideline 1038 and included alternative methods for switching AtoN including astronomical clocks, GNSS, AIS, visibility detectors, user demand etc. The present lux levels of ambient light recommended in the Guideline are still valid.

#### *Action Items*

*The Secretariat is requested to arrange for working paper ENG4-11.2.16, Draft Guideline 1038, to be converted to the new IALA Guideline Template.*

*The Secretariat is requested to input the converted Guideline ENG4-11.2.16 to ENG5 for Committee approval.*

*Committee Members are requested to review paper ENG4-11.2.16, Draft Guideline 1038 with a view to completion at ENG5.*

### **9.4 Populate the S100 registry for relevant AtoN classes (Task 2.5.1)**

This task is due to commence at ENG6.

### **9.5 Navguide updates (Task 5.1.1)**

A schedule to provide updates to the Navguide has been agreed between ENG and ARM Committees. The Committee provided updates as per the Navguide update schedule and a revised Navguide update plan was produced.

### **9.6 Review of IALA documents (ref ENG1 input paper on document ownership) (Task 5.1.2)**

Refer to Tasks 5.1.3-5.1.13.

### **9.7 Review and Update E200 on Marine Signal Lights (Task 5.1.3)**

This task commenced at ENG4. After some debate and guidance from the secretariat it was decided that the series could be revised into two recommendations on Colour and Range and Guidelines for the remainder of the information. The revision of colours will have an impact on the products of industrial Members, with regard to the removal of the temporary boundaries. It was therefore decided to write to the IMC asking for their input to ENG5.

#### *Action Item*

*The Secretariat is requested to forward the working papers ENG4-11.2.22, ENG4-11.2.23 & ENG4-11.2.24 to ENG5.*

*The Secretariat is requested to forward the Liaison note ENG4-11.1.15 to the IMC.*

*Alwyn Williams is requested to provide input to ENG5 on apparent intensity.*

*Frank Hermann is requested to provide new tables and figures on range and colour to ENG5.*

### **9.8 Update E-106 for the use of retro-reflecting material on aids to navigation marks within the IALA Maritime Buoyage System (Task 5.1.4)**

This task commenced at ENG4 with an input paper received from Jorgen Royal Petersen on the Danish use of retroreflector surfaces. The Committee felt that the standard code and the comprehensive code belonged in the MBS. The additional guidance notes on the selection and installation would be used as input to a new guideline. A liaison note to the ARM Committee was prepared, ENG4-11.1.14 refers.

#### *Action Item*

*The Secretariat is requested to forward the Liaison note ENG4-11.1.14 to ARM4.*

*The Secretariat is requested to forward the working paper ENG4-11.2.20 and ENG4-11.2.26 to ENG5.*

### **9.9 Review and Update Recommendation E108 Ed 2 for the Surface Colours used as visual signals on aids to navigation (Task 5.1.5)**

This task is due to commence at ENG6.

### **9.10 Review of IALA Recommendation E-110 for the Rhythmic Characters of Lights on Aids to Navigation (2012) (Task 5.1.6)**

In light of the new Guideline on 'The Selection of Rhythmic Characters' (see Task 1.1.2) work has begun on updating Recommendation E-110. No further work was carried out on this task item at ENG4

#### *Action Item*

*The Secretariat is requested to forward ENG3-11.2.15, Recommendation E-110 Ed4 Draft Rhythmic characters of lights on AtoN ENG2 notes 20150521, to ENG5.*

### **9.11 Update Recommendation E-111 for port traffic signals (Task 5.1.7)**

This task is due to commence at ENG4. Due to the amount and quality of input papers at ENG4 work on this task did not begin. However, an input paper was received from South Africa and will be considered at ENG5.

#### *Action Item*

*The Secretariat is requested to forward the input paper ENG4-9.18 to ENG5.*

*ENG Committee Members are requested to submit input papers in support of the revision of Recommendation E-111 on Port Traffic Signals.*

### **9.12 Update Recommendation E-112 for Leading Lights and Guideline 1023 for the design of leading lines (Task 5.1.8)**

To align with the proposed workshop on sustainable light and power (IALABATT/IALALITE) Task 5.1.9 has been delayed to nearer the end of the work program and accordingly this task has been brought forward to commence at ENG3. Seven input papers were received and work began on this task. The input papers were reviewed and subsequently amalgamated into a single working paper. It was decided that the recommendation is more guidance and that a single guideline would be sufficient for the members.

#### *Action Item*

*Frank Hermann and Partel Keskkula are requested to provide an input paper to ENG5 on new guideline for Leading Lines.*

*Members are requested to provide information on the daymark of leading lines used in their respective countries.*

*Sami Lasma is requested to provide an updated Java program (including source code) on the design of leading lines to ENG5.*

*Frank Hermann and Yves Marie Blanchard are requested to update and compare results of the existing Excel spread sheet and input the results to ENG5.*

### **9.13 Merge and update Guideline 1043 On Light Sources and Guideline 1048 on LED Technologies and Guideline 1049 on the Use of Modern Light Sources in Traditional Lighthouses (Task 5.1.9)**

This task was due to commence at ENG2. However, to align with the proposed IALABATT/IALALITE workshop on sustainable light and power, Task 5.1.9 has been transferred to nearer the end of the work program. This will also allow for the most up to date information to be included in the update.

### **9.14 Update Guideline 1041 on Sector Lights (Task 5.1.10)**

The Committee finished their review and update of Guideline 1041 on Sector Lights.

#### *Action Item*

*The Secretariat is requested to forward ENG4-11.1.8, Draft IALA Guideline 1041 On Sector Lights, to Council for approval.*

*The Secretariat is requested to submit new definitions of terms used in Guideline 1041 to the DWG for approval, paper ENG4-11.1.9 refers.*

#### **9.15 Update Guideline 1061 Illumination of Structures (Task 5.1.11)**

The revision of this Guideline has not progressed as envisaged. An additional session will be required to complete this work.

#### *Action Item*

*Malcolm Nicholson is requested to work on Guideline 1061 on Illumination of Structures intersessionally and submit an input to ENG5.*

#### **9.16 Update Guideline 1065 on Aids to Navigation Signal Light Beam Vertical Divergence (Task 5.1.12)**

Task is due to start at ENG6.

#### **9.17 Review and Update of Guideline 1073 on Conspicuity of AtoN at Night (Task 5.1.13)**

Task is due to start at ENG5.

#### **9.18 Review and update Guideline 1069 on synchronisation of lights (Task 5.1.14)**

Task is being amalgamated into selection of characters. No work was carried out on this task at ENG4.

#### **9.19 Identify current documents as potential Standards, Recommendations, Guidelines & Manuals (Task 5.2.1)**

The future ENG IALA documentation is considered to be as follows:

New Recommendations to write are:

- AtoN Design, Operation & maintenance.
- Floating AtoN
- Environmental Responsibility

Existing ones to reformat:

- Surface Colours used in Visual Signalling
- Marine Signal Lights - Colours
- Marine Signal Lights - Range
- Rhythmic Characters
- Port Traffic Signals
- Retro reflecting materials & codes. (Unless incorporated into the MBS)

#### **9.20 Presentation to ENG Committee on new developments in AtoN & related topics (Task 5.3.1)**

#### *Action Item*

*Members are requested to input presentations to future ENG meeting on topics of interest to the Committee.*

#### **9.21 Rebranding of IALA Documentation**

The Committee responded to queries from Mike Hadley arising from updating of IALA documentation to the new image style.

#### *Action*

*The Secretariat is requested to forward paper ENG4-11.1.7 to Mike Hadley and to Council.*

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

### **10.1 Workshop on Sustainable Lights and Power Systems – IALABATT/IALALITE (Task 1.5.2)**

Preparations for the workshop on Sustainable Light & Power for the next generation (IALABATT/IALALITE) are well advanced.

The draft technical programme was discussed and further developed.

#### *Action Item*

*Committee participants are requested to note the proposed dates for the 2017 Workshop on Sustainable Light & Power for the next generation in Koblenz, Germany.*

### **10.2 Develop further guidance on Plastic Buoys, Systems & Sensors (Task Number 2.1.1)**

Access to the CALMAR software and manual for the design of buoy moorings is ongoing and will be finalized when upgrade of the IALA website is complete.

Work on the proposed Buoy Guidelines continued with further development of Guideline 1006. Additional information was added into the guideline, with particular focus on chapters relating to polyethylene buoys.

#### *Action Item*

*The IALA Secretariat is requested to continue work on improving access to the CALMAR software.*

*The IALA Secretariat is requested to forward working paper ENG4-11.2.3 to ENG5.*

*Committee Members are requested to provide any relevant information from their respective regions to ENG5 regarding the use of plastic buoys in hot climate and high UV exposure environments, power supply for buoys and remote control technologies.*

### **10.3 Engineering guidance on the implementation of e-Navigation systems. (Task Number 2.1.2)**

This work item is scheduled to start at ENG5 and Committee Members are asked to report on any trials they are undertaking in relation to integration of e-navigation systems with conventional AtoN equipment and systems.

#### *Action Item*

*Committee Members are requested to provide any relevant information from their respective regions to ENG5 regarding trials or work on integration of e-navigation systems with conventional AtoN equipment and systems.*

*Alwyn Williams is requested to arrange for a presentation on e-navigation for ENG5*

### **10.4 Develop guidance on Sustainable AtoN design & Maintenance. (Task Number 2.2.1)**

No further intersessional input was received for Guideline 1036. The document was further reviewed and it was agreed that content was substantially complete and still relevant, but required transfer into the new IALA document format.

#### *Action Item*

*The IALA Secretariat is requested to transfer working paper ENG4-11.2.7 into the new IALA document format and submit as a working paper to ENG5.*



*Committee members are requested to provide any relevant information they may have with regard to environmental management in the AtoN workspace.*

#### **10.5 Develop guidance on the commissioning of AtoN equipment and systems and Engineering audits. (Task Number 2.2.2)**

Development of the draft guideline on commissioning of AtoN equipment and engineering audits continued at ENG4. Committee members were requested to review the working paper and provide feedback to ENG5. Members were also requested to provide examples of AtoN engineering audits/inspections to ENG5.

##### **Action Item**

*The IALA Secretariat is requested to transfer working paper ENG4-11.2.8 into the new IALA document format and submit as a working paper to ENG5.*

*Members are requested to review working paper ENG4-11.2.8 and provide feedback to ENG5.*

*Members are requested to provide examples of AtoN engineering audit/inspections to ENG5.*

#### **10.6 Develop guidance on AtoN design & maintenance for hot climates (Task Number 2.3.1)**

Drafting of the guideline on AtoN design & maintenance for hot climates commenced at ENG4. The draft document will be forwarded as a working paper for further development at the workshop on AtoN delivery and maintenance in extremely hot climates.

##### **Action Item**

*The IALA Secretariat is requested to forward working paper ENG4-11.2.10 to the workshop on AtoN delivery and maintenance in extremely hot climates.*

#### **10.7 Workshop on AtoN delivery and maintenance in Extreme Heat (Task Number 2.3.2)**

Qatar has been confirmed as the venue for the workshop on AtoN delivery and maintenance in extremely hot climates from 4<sup>th</sup> to 7<sup>th</sup> September 2016. The flyer and other relevant workshop documentation has been completed. The 12<sup>th</sup> steering group meeting was held at ENG4 and final preparations for the workshop progressed.

##### **Action Item**

*Committee Members are requested to note the dates and venue for the workshop on AtoN delivery and maintenance in extremely hot climates and are encouraged to attend.*

#### **10.8 Review and update guidance on safety of personnel (Task 2.4.1)**

The draft Guideline on safety of personnel was reviewed and deemed to be recent and relevant, but requires transfer into the new IALA document format. Some further intercessional review from Committee Members will also be sought.

##### **Action Item**

*The IALA Secretariat is requested to transfer working paper ENG4-11.2.18 into the new IALA document format and submit as a working paper to ENG5.*

#### **10.9 Support the WWA in updating Recommendations and Guidelines on standards for training and certification of AtoN personnel (Task 3.1.1)**

No proposals for updated Academy Recommendations or Guidelines were received as input for ENG4.

#### **10.10 Support the WWA in updating model courses on standards for training and certification of AtoN personnel as training courses are undertaken (Task 3.2.1)**

Input papers ENG4-10.13 (L2 Model Course on Buoy Cleaning), ENG4-10.14 (L2 Model Course on Maintenance of Plastic Buoys), ENG4-10.15 (Level 2 Model Course on Maintenance of Steel Buoys), ENG4-10.16 (L2 Model Course on Power Sources of Buoys - Technicians), ENG4-10.17 (L2 Model Course on An Introduction to Buoy Positions) and ENG4-10.18 (L2 Model Course on Buoy handling) were reviewed completed for submission to Council for approval.

##### *Action Item*

*The IALA Secretariat is requested to forward output papers ENG4-11.1.1, ENG4-11.1.2, ENG4-11.1.3, ENG4-11.1.4, ENG4-11.1.5 and ENG4-11.1.6 to the IALA Council for approval.*

#### **10.11 Develop guidance on the use of heritage lighthouses for modern AtoN equipment & systems (Task Number 4.1.1)**

The draft Guideline on the use of heritage lighthouses for modern AtoN equipment ENG4-11.2.4 will be forwarded to ENG5 for further work.

Some intercessional assistance will be sought from Committee Members to further develop the guideline before ENG5.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG4-11.2.4 to ENG5.*

*Committee Members are requested to provide input to ENG5 on any relevant experience with the use of modern AtoN equipment and systems in heritage lighthouses.*

#### **10.12 Develop guidance on the maintenance of AtoN structures (Task Number 4.1.2)**

The draft Guideline on maintenance of AtoN structures was further developed. The structure and content level was agreed upon. Guideline 1076 on Building Conditions of Lighthouses was reviewed and it was agreed that some of the content should be blended into the new draft Guideline on maintenance of AtoN structures and the annex has been placed on the IALA Wiki.

The guideline will be further developed at ENG5.

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG4-11.2.9 to ENG5.*

*Committee Members are requested to review working paper ENG4-11.2.9 on maintenance of AtoN structures and provide feedback or information on maintenance systems or processes in their respective organisations to ENG5.*

#### **10.13 Navguide updates (Task 5.1.1)**

Review of the Navguide was further progressed. The review was guided predominantly by the Navguide Update Plan, however some other issues were identified during ENG4, and also by the WWA.

The Navguide Update Plan was updated to reflect progress made at ENG4 and sent to the ARM Committee.

A Liaison Note was also sent to the ENAV committee, highlighting some possible revisions needed in sections of the Navguide that are more relevant to the ENAV Committee.

##### *Action Item*

*The IALA Secretariat is requested to forward Liaison Note ENG4-11.1.13 to the ARM Committee.*

*The IALA Secretariat is requested to forward Liaison Note ENG4-11.1.12 to the ENAV Committee.*

*The IALA Secretariat is requested to forward Working Paper ENG4-11.2.19 to ENG5.*

*Members are requested to submit updated photos and illustrations for the Navguide to ENG5.*

#### **10.14 Review of IALA documents (ref ENG1 input paper on document ownership) (Task 5.1.2)**

Input paper ENG 4-10.5 was reviewed and further developed, with a goal of reviewing Guideline 1039 and validating the fittingness of the IALA solar model as a suitable ongoing IALA tool. Additional progress and some improvements were made at ENG4. This work will continue until the 2017 workshop on Sustainable Light & Power for the Next Generation.

Review and development of Guidelines 1067 was continued. Review and updating of the four documents is progressing and will continue until the 2017 workshop on Sustainable Light & Power for the Next Generation.

Guideline 1006 was reviewed in conjunction with Task 2.1.1, on development of further guidance for plastic buoys, systems and sensors. Further intercessional work is planned and revisions will be submitted to ENG5.

##### *Action Item*

*The IALA Secretariat is requested to forward Working Papers ENG4-11.2.3, ENG4-11.2.11, ENG4-11.2.12, ENG4-11.2.13, ENG4-11.2.14, ENG4-11.2.14, ENG4-11.2.15, and ENG4-11.2.17 to ENG5.*

*The IALA Secretariat is requested to withdraw Guideline 1011 – A standard method for defining and calculating the load profile of Aids to Navigation from the IALA website as this document was replaced by Guideline 1067.*

#### **10.15 Heritage Forum**

The Heritage Forum was merged into ENG WG2 at ENG4.

Significant work was undertaken on development of a draft strategy, for review and comment by the Committee. The strategy identifies a number of tasks and work items for consideration and possible incorporation on the ENG committee work plan.

The Heritage Forum requested Committee Members to review and comment on the strategy. Committee Members were also requested to send contact details of relevant staff within their organizations that would like to join or be provided with more information on the work of the heritage group to Neil Jones ([neil.jones@trinityhouse.co.uk](mailto:neil.jones@trinityhouse.co.uk)).

##### *Action Item*

*The IALA Secretariat is requested to forward working paper ENG4-11.2.5 and ENG-11.2.6 to ENG5.*

*Members are requested to forward contact details of staff within their organizations that would like to join or be provided with more information on the work of the heritage group to Neil Jones ([neil.jones@trinityhouse.co.uk](mailto:neil.jones@trinityhouse.co.uk)).*

#### **10.16 Reformatting of IALA Documentation**

The Committee received two documents from Mike Hadley, with some minor queries on content that was noted during reformatting. The Committee reviewed the documents.

##### *Action Item*

*The IALA Secretariat is requested to forward output paper ENG4-11.1.10 and ENG-11.1.11 to Mike Hadley.*

### **11. REVIEW OF OUTPUT AND WORKING PAPERS**

The Committee produced 17 output documents and 26 working papers including 6 Academy model courses. Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

### **12. ANY OTHER BUSINESS**

The Academy is organising a Level 1 AtoN Managers certificate course for modules 1 and 2 using distance learning commencing on 1 July 2016. The exam will be carried out during ENG5. The course will be provided

free of charge on this occasion and further courses will attract a cost. Contact Stephen Bennett for further information.

It was noted that the ENG Chairman and the Chairman of ENG WG2 successfully passed their certificate on modules 1 and 2 of the WWA Level 1 Managers Certificate.

The social programme will be changed at ENG5 to include a football match between WG1 and WG2 in the local stadium.

### **13. REVIEW OF SESSION REPORT**

The report of the meeting (ENG4-13.1) was considered. Committee Participants were requested to advise any corrections / amendments within one week, following which the final version will be issued via the IALA web site.

#### *Action item*

*The Secretariat is requested to forward the ENG4 Committee report (ENG4-13.1) to Council to note.*

### **14. DATE AND VENUE OF NEXT MEETING**

It is expected that the 5<sup>th</sup> session of the ENG Committee (ENG5) will be from 10<sup>th</sup> to 14<sup>th</sup> October 2016 at IALA HQ.

### **15. CLOSING OF THE MEETING**

The Chairman thanked all Committee Members for their commitment, good company and hard work during the week and noted the good progress with implementation of the workplan. He thanked those who had submitted input papers for their interesting and diverse contributions. He thanked the Vice Chair, Secretary, WG Chairs and Vice Chairs for their support and asked that the Committee's gratitude be passed to the Secretariat for their cheerful and courteous support.

He concluded by saying that all were invited to ENG5, wished everyone a safe journey home and hoped to see everyone at the next meeting.

### **16. 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 Work programme progress**

A summary of progress in completing the work programme and progress with deliverables is at ANNEX F.

## 7 Action Items

A list of action items is at ANNEX G.

## 4<sup>th</sup> Meeting of the AtoN Engineering and Sustainability Committee (ENG4)

The 4<sup>th</sup> meeting of the **AtoN Engineering and Sustainability Committee (ENG4)** will be held from 11 – 15 April, 2016 at IALA, St Germain en Laye, France.

The opening plenary will commence at 1300 on Monday 11 April and the closing plenary will end at approximately 1300 on Friday, 15 April.

Committee Chair, Vice-Chair and Working Group Chairpersons are requested to meet at 0900 on Monday, 11 April 2016.

### AGENDA

1. Opening
  - 1.1. Approval of the agenda
  - 1.2. Administration and safety briefing
  - 1.3. Introductions and apologies
  - 1.4. Programme for the week
  - 1.5. Welcome from IALA
2. Review of action items from ENG3
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 61<sup>st</sup> Session of the IALA Council 2015-12-07
  - 4.2. Report of the 30<sup>th</sup> Session of the IALA Policy Advisory Panel
  - 4.3. Report on IMO NCSR 3 (29 Feb to 4 March 2016)
5. Reports from Rapporteurs
 

5.1.	CIE-IALA Liaison	Malcolm Nicholson
5.2.	Developments in AtoN Simulation Systems	Jong-Uk Kim
5.3.	Developments in remote control and monitoring	Peter Schneider
5.4.	IALA Dictionary	David Jeffkins
5.5.	IALA Bulletin liaison	David Jeffkins
5.6.	IALA file share	Seamus Doyle
6. Presentations (15 minutes duration)
 

6.1.	Brief on WWA	Gerardine Delanoye
6.2.	VTS2016 Symposium	Mohamad Halim Bin Ahmed
6.3.	Wave Loading of Lighthouses	Alison Raby
6.4.	ENG Workshop on Sustainable Light & Power	Simon Millyard
7. Review of Work Programme and WG expectations
8. Establish Working Groups



#### 8.1. Heritage Forum

9. WG 1 - Visual & Physical AtoN
10. WG 2 - Knowledge & Sustainability
11. Review of output and working papers
12. Any other business
13. Review of session report
14. Date and venue of next meeting
15. Close of meeting

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## **Apologies**

Apologies were received from the following.

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HANSEN Greg	AMSA	Australia
ZELLER Andrew	Tideland Signal	USA
VARGAS Ivan	Automatic Power	USA
LINDBERG Jonas	Sabik Oy	Finland
KRAGSET Ingvald	NCA	Norway
ZHIGANG Shen	China MSA	China
SUI Yongju	China MSA	China
WILKINS Adrian	Pharos Marine	UK

## Working Group 1

## Visual &amp; Physical AtoN

	Members	Organisation / Country
1	Malcolm Nicholson (Chair)	Sealite / Australia
2	Frank Hermann (Vice Chair)	German Federal Waterways & Shipping Administration / Germany
3	Vincent Roget	GISMAN / France
4	Manuel Santos	Portuguese Lighthouse Authority / Portugal
5	Aivar Usk	Cybernetica AS / Estonia
6	Fernando Romero	M.S.M. / Spain
7	Yves-Marie Blanchard	CEREMA / France
8	Pärtel Keskküla	Estonian Maritime Administration / Estonia
9	Alwyn Williams	GLA R&RNAV / UK & Ireland
10	Juseop Han	KAAN / Republic of Korea
11	Sigge Gustafsson	Swedish Maritime Authority / Sweden
12	Jørgen Royal Petersen	Danish Maritime Authority / Denmark
13	Sami Lasma	Finish Transport Agency / Finland
14	Seppo Virtanen	SeaHow / Finland



	Name	Organisation / Country
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2	Jörg Unterdeweide (Vice Chair)	German Federal Waterways & Shipping Administration/ Germany
3	Peter Schneider (Vice Chair)	German Federal Waterways & Shipping Administration/ Germany
4	Shaheen Mirza	MENAS / Bahrain
5	Eoghan Lehane	Commissioners of Irish Lights / Ireland
6	Mariano Luis Marpegan	Hidrovia S.A. / Argentina
7	Ronan AUTRET	CEREMA / France
8	Yuri Choi	Ministry of Fisheries / Korea
9	Hyo-Jun Oh	Ministry of Fisheries / Korea
10	Michel Cousquer	CEREMA / France
11	Joel TOURBOT	Inter-regional Maritime Directorate, France
12	Peter DOBSON	Trinity House Lighthouse Service / UK
13	Marco Krings	German Federal Waterways & Shipping Administration/ Germany
14	Mahdi Al Mosawi	IALA
15	Tony Taylor	Pharos Marine/ UK
16	Huanping (Clare) Zhang	Shandong Buoy & Pipe Industry Co. Ltd./ China (People's Republic
17	Guang Zhu	Shandong Buoy & Pipe Industry Co. Ltd./ China (People's Republic
18	Leif Arne Larsen	Norwegian Coastal Administration/ Norway
19	Trung Kien Dong	Vietnam Maritime Safety North East/ Vietnam
20	Adam Wettges	Canadian Coast Guard/ Canada
21	Nicolas Fady	CEREMA / France

## ANNEX D LIST OF INPUT PAPERS

All papers were posted to the Committee website

	Number	Input Paper Title	Source	Presented by / WG
1	ENG4- 1.2	Draft Agenda 20160409	IALA Sec	Simon Millyard
2	ENG4- 1.4	Programme for the week 20160107	IALA Sec	Simon Millyard
3	ENG4- 2.1	Action Items from ENG3	ENG2	Seamus Doyle
4	ENG4- 3.1	Input paper Committee template January 2016	IALA Sec	Simon Millyard
5	ENG4- 4.1	(C61-22.1) Council 61 Final Report	IALA Sec	Simon Millyard
6	ENG4- 4.2	(PAP30-18.1) Report PAP30	IALA Sec	Simon Millyard
7	ENG4- 4.3	Report on IMO NCSR 3 (29 Feb to 4 March 2016)	IALA Sec	Simon Millyard
8	ENG4- 5.8.1	(DWG2-2 2) IALA Dictionary Working Group for Committees 20160301	DWG	David Jeffkins
9	ENG4- 5.8.2	Dictionary amendment proposal form	DWG	David Jeffkins
10	ENG4- 5.8.3	Liaison note to ENG4 from DWG	DWG	David Jeffkins WG1/WG2
11	ENG4- 6.1	WWA brief to ENG-4 March 2016	WWA	Gerardine Delanoye
12	ENG4- 6.2	VTs Symposium 2016 Website - Registration Flow - A	Mohamad Halim Bin Ahmed	Mohamad Halim Bin Ahmed
13	ENG4- 6.3.1	Presentation Wave loading on rock lighthouses	Alison Raby	Alison Raby
14	ENG4- 6.3.2	Wave loading on rock lighthouses summary	Alison Raby	Alison Raby
15	ENG4- 6.4	Presentation Sustainable Light & Power	IALA Sec	Simon Millyard
16	ENG4- 7.1	ENG Committee Workplan 2014-18 - updated at ENG3	ENG3	Simon Millyard
17	ENG4- 7.2	ENG Work Programme Task Register - updated at ENG3	ENG3	Simon Millyard
18	ENG4- 8.1	ENG Committee TOR Wiki - updated at ENG3	ENG3	Simon Millyard
19	ENG4- 9.1.1	S-201 AtoN Information Product Specification Covering note	Nick Ward	WG1
20	ENG4- 9.1.2	ENG4-9.1.2 S-201 AtoN Information Product Specification - draft 0.0.1	Nick Ward	WG1
21	ENG4- 9.1.3	S-201 Product Specification - draft 0.0.1 formatted	Nick Ward	WG1
22	ENG4- 9.1.4	S-201 Product Specification - draft 0.0.1 Annex A DCEG_rev5 formatted	Nick Ward	WG1
23	ENG4- 9.2	(ENG1-9.4.6) Need for harmonizing requirements to leading line dayboard dimensions in IALA documentation (Guideline	ENG1	WG1

	Number	Input Paper Title	Source	Presented by / WG
		1023).		
24	ENG4- 9.3	Liaison note to IALA Members on use of pictogram	ARM3	WG1
25	ENG4- 9.4	(ENG3-11.2.15) WG1 Rec E-110 Ed4 Draft Rythmic characters of lights on AtoN ENG2 notes 20150521	ENG3	WG1
26	ENG4- 9.5	(ENG3-11.2.16) WG1 Draft Guideline on Selection of Rhythmic Characters of Lights on AtoN 20151119	ENG3	WG1
27	ENG4- 9.6	(ENG3-11.2.17) WG1 Draft Guideline 1038 Revision	ENG3	WG1
28	ENG4- 9.7.1	Cover note for the R&RNAV visual perception papers.	Alwyn Williams	WG1
29	ENG4- 9.7.2	RPT-04-IT-AW-16 Visual Perception of Non-rectangular - Flashes at Threshold	Alwyn Williams	WG1
30	ENG4- 9.7.3	RPT-06-IT-AW-16 Visual Perception of Non-rectangular - Flashes at Supra-threshold	Alwyn Williams	WG1
31	ENG4- 9.8.1	Revision of IALA Recommendation E-106	Jørgen Royal Petersen	WG1
32	ENG4- 9.8.2	Proposal for Revision of IALA ENG4 on Retroreflecting material on AtoN Marks 20160304	Jørgen Royal Petersen	WG1
33	ENG4- 9.9.1	Queries re Guidelines 1094 and 1097	Mike Hadley	WG1
34	ENG4- 9.9.2	IALA Guideline 1094 Ed.1 Daymarks for Aids to Navigation December 2012	Mike Hadley	WG1
35	ENG4- 9.9.3	IALA Guideline 1097 Ed.1 Technical Features and Technology Relevant for Simulation of AtoN May 2013	Mike Hadley	WG1
36	ENG4- 9.10	Workshop on Sustainable Light & Power - draft Technical Programme	Steering Group	WG1/ WG2
37	ENG4- 9.11	Revision of E-200 Luminous Range - ENG3 action item 29	Frank Hermann	WG1
38	ENG4- 9.11.1	Revision of E-200 Luminous Range - ENG3 action item 29 Fernando.	Fernando Romero	WG1
39	ENG4- 9.12	Revision of IALA documents on leading lines - ENG3 action 32	Frank Hermann	WG1
40	ENG4- 9.13	Viewing Trial of Group Flashing Lights	Pärtel Keskküla	WG1
41	ENG4- 9.14	Aspects of leading lines from Russian Guidelines	Pärtel Keskküla	WG1
42	ENG4- 9.15	Aspects of leading lines from Finnish Guidelines	Pärtel Keskküla	WG1
43	ENG4- 9.16	Comments on the Present IALA Guidelines on Design of Leading Lines	Pärtel Keskküla	WG1
44	ENG4- 9.17.1	FTA's leading line calculator software	Sami Lasma	WG1
45	ENG4- 9.17.2	FTA Leading Line Calculator.zip	Sami Lasma	WG1
46	ENG4- 9.18	Update E111 for Port Traffic Signals South Africa JamesC	James Collocott	WG1

	Number	Input Paper Title	Source	Presented by / WG
47	ENG4- 9.19	Report-Development of Compatible Flashing Control System for LED lantern	Ju-Seop Han	WG1
48	ENG4- 9.20	Guideline 1038 AIS detection for visual AtoN	Sigge Gustafsson	WG1
49	ENG4- 10.1	(ENG3-11.2.4) WG2 Guideline 1036 ed2 On Environmental Management 20151118 from ENG3	ENG3	WG2
50	ENG4- 10.2	(ENG3-11.2.5) WG2 Draft Guideline Maintenance of AtoN Structures	ENG3	WG2
51	ENG4- 10.3	(ENG3-11.2.6) WG2 Review of IALA documents - maintenance of AtoN Structures	ENG3	WG2
52	ENG4- 10.4	(ENG3-11.2.7) WG2 NAVGUIDE Update Plan - updated at ENG3	ENG3	WG2
53	ENG4- 10.5	(ENG3-11.2.8) WG2 Solar model comparison	ENG3	WG2
54	ENG4- 10.6	(ENG3-11.2.9) WG2 Review of IALA documents - Power Systems	ENG3	WG2
55	ENG4- 10.7	(ENG3-11.2.10) WG2 Revised Guideline 1006 Plastic Buoys	ENG3	WG2
56	ENG4- 10.8	(ENG3-11.2.12) WG2 sub working group - Buoys and Moorings	ENG3	WG2
57	ENG4- 10.9	(ENG3-11.2.13) WG2 Draft Guideline on Use of Modern AtoN Equipment in Heritage Lighthouses	ENG3	WG2
58	ENG4- 10.10	(ENG3-11.2.14) WG2 Draft Guideline on Commissioning	ENG3	WG2
59	ENG4- 10.11	Monitoring and Modelling Rock Lighthouses April 2015	Alison Raby	WG2
60	ENG4- 10.12	WWA Liaison Note to ENG4	WWA	WG2
61	ENG4- 10.13	(EEP19-output-20) L2 Model Course Module 1.8 Buoy Cleaning Oct 12	WWA	WG2
62	ENG4- 10.14	(EEP19-output-21) L2 Model course Module 1.12 Maintenance of Plastic Buoys	WWA	WG2
63	ENG4- 10.15	(EEP19-output-22) L2 Model course Module 1.13 Maintenance of steel buoys.	WWA	WG2
64	ENG4- 10.16	(EEP19-output-23) L2 Model course Module 1.14 Power sources on Buoys - Technicians	WWA	WG2
65	ENG4- 10.17	(EEP20-output-9) Draft L2 Model Course Module 1.9 on an Introduction to buoy positions[1]	WWA	WG2
66	ENG4- 10.18	(EEP21-14.1.3.9) WWA Model Course L2.1.5 buoy handling Rev 0 September 2013	WWA	WG2
67	ENG4- 10.19	(ENAV18-14.1.24) Liaison Note to all IALA Committees and PAP post plenary	ENAV18	WG2
68	ENG4- 10.20	(ENAV18-14.1.30) draft IALA e-navigation Road Map post plenary	ENAV18	WG2
69	ENG4- 10.21	Impact of hot climates on human performance and task maintenance of aids to navigation	Mariano Marpegan	WG2
70	ENG4- 10.22	Liaison note WWA to ENG re Level 1 training	WWA	WG2/ WG1
71	ENG4- 10.23.1	Queries re Guidelines 1098 and 1099	Mike Hadley	WG2
72	ENG4- 10.23.2	IALA Guideline 1098 Ed.1 the Application of AIS - AtoN on Buoys May2013	Mike Hadley	WG2

	Number	Input Paper Title	Source	Presented by / WG
73	ENG4- 10.23.3	IALA Guideline 1099 Ed.1 on the Hydrostatic design of buoys May 2013	Mike Hadley	WG2
74	ENG4- 10.24	Lighthouse heritage significance evaluation Australia	David Jeffkins	WG2
75	ENG4- 10.25	Considerations of the impact of temperature and relative humidity on AtoN in the Tropics	Mariano Luis Marpegan	WG2
76	ENG4- 10.26	Report-Development in AtoN Simulation Systems-JongUk KIM	Jong-Uk Kim	WG2
77	ENG4- 10.27	NAVGUIDE 2014 amendments	Stephen Bennett	WG2
78	ENG4- 10.28	Sea Test of Plastic Buoys (Polyethylene, Polyurea foam, Steel)	Ju-Seop Han	WG2

## ANNEX E LIST OF OUTPUT AND WORKING PAPERS

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

	Number	Output Paper Title	Action
1	ENG4- 11.1.1	Model Course Module 1.8 Buoy Cleaning	To Council
2	ENG4- 11.1.2	Model Course Module 1.12 Maintenance of Plastic Buoys	To Council
3	ENG4- 11.1.3	Model Course Module 1.13 Maintenance of Steel Buoys	To Council
4	ENG4- 11.1.4	Model Course Module 1.14 Power Sources on Buoys Technicians	To Council
5	ENG4- 11.1.5	Model Course Module 1.9 on an Introduction to Buoy Positions	To Council
6	ENG4- 11.1.6	Model Course I2.1.5 Buoy Handling rev 1 June 2016	To Council
7	ENG4- 11.1.7	Draft IALA Guideline 1094 ed1 Daymarks for Aids to Navigation June 2016	To Mike Hadley To Council
8	ENG4- 11.1.8	Draft IALA Guideline 1041 on Sector Lights	To Council
9	ENG4- 11.1.9	Dictionary amendment from Guideline on Sector lights	To DWG
10	ENG4- 11.1.10	IALA Guideline 1099 ed 1 on the Hydrostatic Design of Buoys May 2013	To Mike Hadley
11	ENG4- 11.1.11	IALA Guideline 1098 ed 1 on the Application of AIS Aton on Buoys	To Mike Hadley
12	ENG4- 11.1.12	Liaison Note to ENAV re NAVGUIDE	To ENAV19
13	ENG4- 11.1.13	Liaison Note to ARM re NAVGUIDE	To ARM4
14	ENG4- 11.1.14	Liaison Note to ARM re use of Retroreflecting Material on AtoN Marks in the MBS	To ARM4
15	ENG4- 11.1.15	Liaison Note to IMC on Use of Temporary Colour Boundaries in AtoN lights	To IMC
16	ENG4- 11.1.16	Liaison note ENG4 to ARM4 on Draft Guideline on Selection of Rhythmic Characters review	To ARM4
17	ENG4- 11.1.17	Liaison Note to PAP on Dictionary referencing of terms	To PAP32
18	ENG4- 13.1	Report ENG4	To Council 62

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

	Number	Working Paper Title	Action
1	ENG4- 11.2.1	ENG Committee Workplan 2014-18 - updated at ENG4	To ENG5
2	ENG4- 11.2.2	ENG Work Programme Task Register - updated at ENG4	To ENG5
3	ENG4- 11.2.3	WG2 Sub Working Group Buoys and Moorings - Report & plan	To ENG5
4	ENG4- 11.2.4	WG2 Draft Guideline on Use of Modern AtoN Equipment in Heritage Lighthouses	
5	ENG4- 11.2.5	WG2 Task Group 4 (Heritage) Report April 2016	To ENG5
6	ENG4- 11.2.6	Strategy for ENG Task Group 4 (formerly Heritage Forum)	To ENG5
7	ENG4- 11.2.7	Draft Guideline 1036 ed2 on Environmental Management	To ENG5
8	ENG4- 11.2.8	Draft Guideline on Commissioning	To ENG5
9	ENG4- 11.2.9	WG2 draft Guideline Maintenance of AtoN Structures	To ENG5
10	ENG4- 11.2.10	Draft Guideline on the Challenges of Providing AtoN Services in Hot Climates	To Workshop
11	ENG4- 11.2.11	WG2 Sub Working Group Solar Model Comparison - Report & plan	To ENG5
12	ENG4- 11.2.12	WG2 Sub Working Group Review of IALA Documents Power Systems - Report & plan	To ENG5
13	ENG4- 11.2.13	Draft Guideline 1067-0 Ed2 on Selection of Power Systems for AtoN and Associated Equipment Apr2016	To ENG5
14	ENG4- 11.2.14	Draft Guideline 1067-1 Ed2 Total Electrical Loads of Aids to Navigation Apr 2016	To ENG5
15	ENG4- 11.2.15	Draft Guideline 1067-2 Ed2 Power Sources_April2016	To ENG5
16	ENG4- 11.2.16	Draft Guideline 1038 on Methods and Ambient Light Levels for the Activation of AtoN lights	Convert template ENG5
17	ENG4- 11.2.17	Draft Guideline 1067-3 Ed2 Electrical Energy Storage for Aids to Navigation Apr2016	To ENG5
18	ENG4- 11.2.18	Draft Guideline 1092 Ed1 Safety Management for AtoN Activities 7Dec2012	To ENG5
19	ENG4- 11.2.19	WG2 Navguide Update Plan updated at ENG4	To ENG5
20	ENG4- 11.2.20	Proposal re E106 on Retro reflecting material on AtoN Marks	To ENG5
21	ENG4- 11.2.21	Draft Guideline on Leading Lines	To ENG5
22	ENG4- 11.2.22	Draft Recommendation on Marine Signal Lights Colours	To ENG5
23	ENG4- 11.2.23	Draft Recommendation on Luminous Range	To ENG5
24	ENG4- 11.2.24	Frame for Draft Guideline on Marine Signal Lights	To ENG5
25	ENG4- 11.2.25	Draft Guideline on Selection of Rhythmic Characters of Lights on AtoN	To ARM4 To ENG5
26	ENG4- 11.2.26	Draft Recommendation E-106	To ENG5

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
WG1 – Visual & Physical AtoN								
1.1.1	Produce a Guideline on Marine Signalling	2	5		☒	☐	☐	
1.1.2	Develop guidance on the selection of rhythmic characters including 1069 Synchronisation	2	5		☒	☐	☐	
1.1.3	Update / Replace 1038 On Ambient Lights Levels	2	5		☒	☐	☐	
2.5.1.	Populate the S100 registry for relevant AtoN classes	3	6		☒	☐	☐	
5.1.1	Update the Navguide as requested by ARM Committee	5	6	2-7	☒	☐	☐	Updated by Liaison note from ARM
5.1.2	Review of IALA documents	1	7		☒	☒	☐	
5.1.3	Review and Update E200 On Marine Signal Lights	3	6	4-7	☒	☐	☐	
5.1.4	Update E-106 For the use of retro-reflecting material on aids to navigation marks within the IALA Maritime Buoyage System	4	5		☒	☐	☐	
5.1.5	Review and Update E108 Ed 2 For the Surface Colours used as visual signals on aids to navigation	6	6		☒	☐	☐	
5.1.6	Review of IALA Recommendation E-110 for the Rhythmic Characters of Lights on Aids to Navigation (2012)	6	7	2-5	☒	☐	☐	
5.1.7	Update Recommendation E-111 For port traffic signals	4	5		☒	☐	☐	
5.1.8	Update E-112 For Leading Lights and 1023 for the design of leading lights	4	6	3-5	☒	☐	☐	
5.1.9	Merge and update 1043 On Light Sources and 1048 On LED Technologies and 1049 On The Use of Modern Light Sources in Traditional Lighthouses	2	4	5-7	☒	☐	☐	
5.1.10	Update 1041 On Sector Lights	1	3		☒	☐	☐	
5.1.11	Update 1061 Illumination of Structures	1	2	5	☐	☒	☐	Duration extended by one session
5.1.12	Update 1065 On Aids to Navigation Signal Light Beam Vertical Divergence	6	6		☒	☐	☐	
5.1.13	Review and Update of Guideline 1073 on Conspicuity of AtoN at Night	5	7		☒	☐	☐	
5.1.14	Review and Update Guideline 1069 on Synchronisation of Lights	2	5		☒	☐	☐	
<del>5.2.1</del>	<del>Identify current documents as potential Standards, Recommendations, Guidelines &amp; Manuals</del>	<del>5</del>	<del>7</del>		<del>☒</del>	<del>☒</del>	<del>☐</del>	
5.3.1	Presentation to ENG committee on new developments in AtoN & related topics	1	7		☒	☐	☐	
WG2 – Knowledge & Sustainability								
1.5.2.	Workshop on Lights and Batteries – IALABATT/IALALITE	1	6		☒	☐	☐	Scheduled for ENG5



Task		Start	Planned	Revised	Progress Indicator			Status
2.1.1.	Develop further guidance on plastic buoys, systems & sensors	1	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proposal Approved by Council
2.1.2	Engineering guidance on the implementation of e-Navigation systems	3	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Scheduled for ENG4
2.2.1.	Develop guidance on sustainable AtoN design & maintenance.	3	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENG1
2.2.2.	Develop guidance on the commissioning of AtoN equipment and systems and engineering audits.	2	5		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced at ENG3
2.3.1	Develop guidance on AtoN design & maintenance for hot climates.	4	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Progressed at ENG3
2.3.2	Workshop on AtoN delivery and maintenance in extreme heat	3	4		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENG3
2.4.1	Review and update guidance on safety of personnel	4	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENG1
3.2.1.	Support the WWA in updating model courses on standards for training and certification of AtoN personnel	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Scheduled for ENG5
4.1.1.	Develop guidance on the use of heritage lighthouses for modern AtoN equipment & systems.	3	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proposal Approved by Council
4.1.2.	Develop guidance on Maintenance of AtoN structures	2	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Scheduled for ENG4
5.1.1.	Navguide updates	3	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced ENG1
5.1.2.	Review of IALA documents (ref ENG1 input paper on document ownership)	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Commenced at ENG3

*Action Items for Secretariat*

1.	The IALA Secretariat is requested to continue work on improving access to the CALMAR software.	7
2.	The Secretariat is requested to advise Mike Hadley to include a notice in all Recommendations and Guidelines identifying the Dictionary as the source of definitions when converting IALA documentation to the new identity style.	9
3.	The Secretariat is requested to forward the revised ENG Committee Workplan, ENG4-11.2.1, to ENG5.	10
4.	The Secretariat is requested to forward the revised ENG Work Programme Task Register for 2014-2018, ENG4-11.2.2, to ENG5.	10
5.	The Secretariat is requested to forward Liaison note ENG4-11.1.16 and ENG4-11.2.25 Draft Guideline on the Selection of Rhythmic Characters of Lights on AtoN to ARM4 & ENG5.	10
6.	The Secretariat is requested to arrange for working paper ENG4-11.2.16, Draft Guideline 1038, to be converted to the new IALA Guideline Template.	11
7.	The Secretariat is requested to input the converted Guideline ENG4-11.2.16 to ENG5 for Committee approval.	11
8.	The Secretariat is requested to forward the working papers ENG4-11.2.22, ENG4-11.2.23 & ENG4-11.2.24 to ENG5.	11
9.	The Secretariat is requested to forward the Liaison note ENG4-11.1.15 to the IMC.	11
10.	The Secretariat is requested to forward the Liaison note ENG4-11.1.14 to ARM4.	11
11.	The Secretariat is requested to forward the working paper ENG4-11.2.20 and ENG4-11.2.26 to ENG5.	11
12.	The Secretariat is requested to forward ENG3-11.2.15, Recommendation E-110 Ed4 Draft Rhythmic characters of lights on AtoN ENG2 notes 20150521, to ENG5.	12
13.	The Secretariat is requested to forward the input paper ENG4-9.18 to ENG5.	12
14.	The Secretariat is requested to forward ENG4-11.1.8, Draft IALA Guideline 1041 On Sector Lights, to Council for approval.	13
15.	The Secretariat is requested to submit new definitions of terms used in Guideline 1041 to the DWG for approval, paper ENG4-11.1.9 refers.	13
16.	The Secretariat is requested to forward paper ENG4-11.1.7 to Mike Hadley and to Council.	14
17.	The IALA Secretariat is requested to continue work on improving access to the CALMAR software.	14
18.	The IALA Secretariat is requested to forward working paper ENG4-11.2.3 to ENG5.	14
19.	The IALA Secretariat is requested to transfer working paper ENG4-11.2.7 into the new IALA document format and submit as a working paper to ENG5.	14
20.	The IALA Secretariat is requested to transfer working paper ENG4-11.2.8 into the new IALA document format and submit as a working paper to ENG5.	15
21.	The IALA Secretariat is requested to forward working paper ENG4-11.2.10 to the workshop on AtoN delivery and maintenance in extremely hot climates.	15
22.	The IALA Secretariat is requested to transfer working paper ENG4-11.2.18 into the new IALA document format and submit as a working paper to ENG5.	15
23.	The IALA Secretariat is requested to forward output papers ENG4-11.1.1, ENG4-11.1.2, ENG4-11.1.3, ENG4-11.1.4, ENG4-11.1.5 and ENG4-11.1.6 to the IALA Council for approval.	16
24.	The IALA Secretariat is requested to forward working paper ENG4-11.2.4 to ENG5.	16
25.	The IALA Secretariat is requested to forward working paper ENG4-11.2.9 to ENG5.	16
26.	The IALA Secretariat is requested to forward Liaison Note ENG4-11.1.13 to the ARM Committee.	16
27.	The IALA Secretariat is requested to forward Liaison Note ENG4-11.1.12 to the ENAV Committee.	16

28.	The IALA Secretariat is requested to forward Working Paper ENG4-11.2.19 to ENG5.	16
29.	The IALA Secretariat is requested to forward Working Papers ENG4-11.2.3, ENG4-11.2.11, ENG4-11.2.12, ENG4-11.2.13, ENG4-11.2.14, ENG4-11.2.14, ENG4-11.2.15, and ENG4-11.2.17 to ENG5.	17
30.	The IALA Secretariat is requested to withdraw Guideline 1011 – A standard method for defining and calculating the load profile of Aids to Navigation from the IALA website as this document was replaced by Guideline 1067.	17
31.	The IALA Secretariat is requested to forward working paper ENG4-11.2.5 and ENG-11.2.6 to ENG5.	17
32.	The IALA Secretariat is requested to forward output paper ENG4-11.1.10 and ENG-11.1.11 to Mike Hadley.	17
33.	The Secretariat is requested to forward the ENG4 Committee report (ENG4-13.1) to Council to note.	18

### *Action Items for Members*

34.	Peter Schneider is requested to contact Mobilis to clarify the issue of buoy superstructure patent.	7
35.	David Jeffkins is requested to upload input papers ENG4-6.3.1, ENG4-6.3.2, ENG4-9.7.2, ENG4-9.7.3, ENG4-9.8.1, ENG4-9.8.2, ENG4-9.13, ENG4-10.11, ENG4-9.20, ENG4-10.21, ENG4-10.25 to the IALA Wiki.	8
36.	Committee Members are requested to include a notice in all Recommendations and Guidelines identifying the Dictionary as the source of definitions.	9
37.	ENG Committee members are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet.	9
38.	Members of the task group are requested to identify further work items to contribute to the Draft Guideline on the Selection of Rhythmic Characters of Lights.	10
39.	Committee Members are requested to review paper ENG4-11.2.16, Draft Guideline 1038 with a view to completion at ENG5.	11
40.	Alwyn Williams is requested to provide input to ENG5 on apparent intensity.	11
41.	Frank Hermann is requested to provide new tables and figures on range and colour to ENG5.	11
42.	ENG Committee Members are requested to submit input papers in support of the revision of Recommendation E-111 on Port Traffic Signals.	12
43.	Frank Hermann and Partel Keskkula are requested to provide an input paper to ENG5 on new guideline for Leading Lines.	12
44.	Members are requested to provide information on the daymark of leading lines used in their respective countries.	12
45.	Sami Lasma is requested to provide an updated Java program (including source code) on the design of leading lines to ENG5.	12
46.	Frank Hermann and Yves Marie Blanchard are requested to update and compare results of the existing Excel spread sheet and input the results to ENG5.	12
47.	Malcolm Nicholson is requested to work on Guideline 1061 on Illumination of Structures intersessionally and submit an input to ENG5.	13
48.	Members are requested to input presentations to future ENG meeting on topics of interest to the Committee.	13
49.	Committee participants are requested to note the proposed dates for the 2017 Workshop on Sustainable Light & Power for the next generation in Koblenz, Germany.	14
50.	Committee Members are requested to provide any relevant information from their respective regions to ENG5 regarding the use of plastic buoys in hot climate and high UV exposure environments, power supply for buoys and remote control technologies.	14

51.	Committee Members are requested to provide any relevant information from their respective regions to ENG5 regarding trials or work on integration of e-navigation systems with conventional AtoN equipment and systems.	14
52.	Alwyn Williams is requested to arrange for a presentation on e-navigation for ENG5	14
53.	Committee members are requested to provide any relevant information they may have with regard to environmental management in the AtoN workspace.	15
54.	Members are requested to review working paper ENG4-11.2.8 and provide feedback to ENG5.	15
55.	Members are requested to provide examples of AtoN engineering audit/inspections to ENG5.	15
56.	Committee Members are requested to note the dates and venue for the workshop on AtoN delivery and maintenance in extremely hot climates and are encouraged to attend.	15
57.	Committee Members are requested to provide input to ENG5 on any relevant experience with the use of modern AtoN equipment and systems in heritage lighthouses.	16
58.	Committee Members are requested to review working paper ENG4-11.2.9 on maintenance of AtoN structures and provide feedback or information on maintenance systems or processes in their respective organisations to ENG5.	16
59.	Members are requested to submit updated photos and illustrations for the Navguide to ENG5.	16
60.	Members are requested to forward contact details of staff within their organizations that would like to join or be provided with more information on the work of the heritage group to Neil Jones (neil.jones@trinityhouse.co.uk).	17



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