



Report of the 2nd Session of the IALA ENG Committee

18 to 22 May 2015

Executive Summary

- 59 members from 26 countries attended the second meeting of the ENG Committee, of which 35 were National Members, 12 were Industrial Members and 6 were Associate Members; 12 members attended for the first time;
- The Committee considered 53 input papers;
- The Committee produced 11 output documents and 15 working papers including 4 Academy model courses and 2 workshop proposals;
- The Work Programme for 2014-2018 was updated;
- Initial planning was carried out for a workshop on the challenge of providing ATON services in extremely hot climates in Abu Dhabi from 4th-7th September 2016. Approval from the host country is awaited.
- Initial planning was carried out for a workshop on sustainable light & power for the next generation in Koblenz in March 2017.
- The work of transforming the IALA product line continued;
- Increased use of the IALA Wiki was successfully promoted.

Progress summary table.

Task	Number Tasks	Progress Indicator			Status Overview
		Green	Yellow	Red	
TD#1 – Light and vision physics	8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per plan
TD#2 – AtoN design and maintenance	8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per plan
TD#3 – Global capacity building and training	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per plan
TD#4 – Civil engineering and environment	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks progressing per plan
Across all domains	18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	New task 5.1.14 added All tasks progressing per plan except task 5.1.11 which is delayed by one session.

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ENG Committee
2nd Session

22 May 2015

Report of the 2nd Session of the IALA ENG Committee

GENERAL

The 2nd session of the AtoN Engineering and Sustainability Committee (ENG) was held from 18 to 22 May 2015 at IALA. The Chairman was Simon Millyard and the Vice Chairman was David Jeffkins. The Secretary for the meeting was Seamus Doyle.

1 INTRODUCTION

The IALA Secretary General, Francis Zachariae, introduced himself, noting that he had taken up the post on 1st February 2015. He welcomed everyone to ENG2 and thanked ENG Committee Members for their hard work for IALA and their contribution to the safety of navigation. He set out four priorities – full implementation of the IALA Vision approved at the IALA conference in 2014, implementation of the IALA change of status to an IGO, success of the World Wide Academy (WWA) and implementation of the review of the Secretariat approved at Council 59. He wished the Members a successful meeting.

1.1 Administration and safety brief

Virginia Butler provided a Safety and Administration briefing.

1.2 Approval of the Agenda

The agenda (ENG2-1.2) was adopted.

1.3 Introductions and Apologies

The list of Committee Members who attended ENG2 is shown in ANNEX B. The Committee noted apologies from Members who were unable to attend as noted in ANNEX B.



1.4 Programme for the week

Paper ENG2-1.4 refers. The change of procedure to extend the working time for the Working Groups described in ENG2-1.4.2 was noted. The programme for the week was approved.

2 REVIEW OF ACTION ITEMS FROM ENG1

Input paper ENG2-2.1 refers. Action items for the IALA Secretariat from ENG1 were noted as complete. Further work arising from action 11 comprising an update of EEP21-14.1.1.2 in accordance with ENG1-11.2.7 was assigned to the working groups. 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.

3.2 Identify input papers suitable for uploading to the IALA Wiki

David Jeffkins introduced the task for updating the Navguide using the IALA Wiki. He noted that the ARM Committee plan to reissue the Navguide every two years. The process of management of the Navguide update task was discussed and it was agreed that a plan would be prepared during ENG2.

Action

The Secretariat is requested to forward the ENG plan, ENG2-11.1.9, for updating the Navguide to the ARM Committee with liaison note ENG2-11.1.8.

4 REPORTS FROM OTHER BODIES

4.1 Reports from IALA Council – 59th Session

The Committee noted the report of the 59th Session of the IALA Council at IALA HQ, Paris, from 9th to 10th 10 December 2014, Paper ENG2-4.1 refers;

4.2 Report of MSC94, May 2014

The Committee noted the report of the IMO MSC 94 meeting held in London from 17th to 21st November 2014, paper ENG2-4.2 refers.

It was noted that previous MSC meeting reports had been structured so that issues relevant to each IALA Committee were clearly separated and a return to this report format was requested.

Action

The IALA Secretariat is requested to structure future IMO MSC reports with a focus on each individual IALA Committee.

4.3 Reports from PIANC Working Group 178

Peter Dobson presented a report on the PIANC working group 178 meeting held in Brussels on the 5th and 6th February 2015, input paper ENG2-4.3 refers. The next meeting will be held in Abu Dhabi in January or February 2016. Shaheen Mirza agreed to provide a report of the meeting, subject to his availability.

Action

Subject to his availability, Shaheen Mirza is requested to provide a report on the PIANC working group 178 meeting in Abu Dhabi in early 2016 to ENG4.

5 REPORTS FROM RAPPORTEURS**5.1 Developments in Renewable Energy Sources**

There was nothing to report.

5.2 Developments in Battery Technology

Jonas Lindberg presented a report on developments in lithium-ion batteries used in ATON projects in the Norwegian Coastal Administration and a trial project in the Finnish Transport Agency. He also noted a lithium-ion battery system, which has a capacity of up to 10kWh per module introduced by the car manufacturer company Tesla. Input paper ENG2-5.2 refers.

In discussion, it was noted that the weight of the Tesla battery is dependent on the battery capacity.

5.3 Developments in New Light Sources

Malcolm Nicholson noted that much work was in progress on new light sources but more research was required before reporting.

5.4 CIE-IALA Liaison

Malcolm Nicholson reported that there is a lot of activity in CIE. He recalled the visit by members of CIE at EEP21 and noted that both IALA and CIE had benefited greatly from the visit. He noted the upcoming meeting of CIE in Manchester, UK, in July 2015 at which it is hoped that the content of IALA Recommendation E200-4 will be confirmed.

5.5 Developments in AtoN Simulation Systems

On behalf of Mr Jong-Uk Kim, Mr Jin-Gee Jeon reported that an AtoN simulator system with full mission bridge has been developed in Korea, input paper ENG2-5.5 refers. The simulator is designed to assist decision making for AtoN design and AtoN position planning, taking into account the effects of topographical, environmental and maritime traffic characteristics of the target navigation area.

Mr Jeon kindly offered use of the AtoN simulator in Yeosu, in the South of South Korea, to the IALA WWA. Stephen Bennett, IALA WWA Vice Dean, thanked Mr Jeon for his generous offer and looked forward to working with Korea on the project.

Mr Jeon also proposed that a new IALA Guideline could be prepared in association with the AtoN simulator.

Action

Mr Jong-Uk Kim is requested to progress the implementation of the Korean AtoN simulation system for the IALA WWA with Stephen Bennett.

ENG Committee Chair is requested to consider a new work task in the ENG work programme regarding a guideline for the AtoN simulator.

ENG Committee Chair is requested to consider with the Chair of the ARM Committee the opportunities for IALA provided by the AtoN simulator, including opportunities for use in the risk management toolbox.

5.6 Developments in buoy moorings

Adrian Wilkins described the idea of using screw moorings as alternatives to sinkers that may have advantages for taut moorings. He noted that the tidal energy market is developing new mooring techniques. Input paper ENG2-5.6.1 refers.

5.7 Developments in remote control and monitoring

Please refer to section 6.4.

5.8 IALA Dictionary

The need to ensure that the IALA Dictionary is maintained up to date was noted. It was suggested that the Working Groups should extract terms when preparing or amending IALA Recommendations and Guidelines and verify that the terms are included accurately in the Dictionary.

5.9 IALA Bulletin liaison

David Jeffkins and Marie-Helene Grillet briefed the Committee on the need for contributions to the IALA Bulletin. The deadline for submission of articles is two months before publication.

Action

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

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 ENG2-6.1 refers. Gerardine Delanoye introduced herself as the new IALA WWA Programme Manager. She described the funding arrangements for the Academy and outlined the ENG-related activities since ENG1 as well as the Academy-related planned activity up to ENG-3. She set out the targets for Academy-related work for ENG2.

6.2 PIANC meeting report – Peter Dobson

This presentation was covered in section 4.3.

6.3 Performance of UHMWPE AtoN Structures - Eugene Lakous

Eugene Lakous discussed the advantages and disadvantages in the use of ultra-high molecular weight polyethylene (UHMWPE) as the base material for construction of AtoN structures, and the potential for amending IALA Guideline 1006. Input paper ENG2-6.4 refers.

UHMWPE is a material that has been used in maritime industries for 30-40 years. Traditionally it has found a home as fender pads at port authorities around the world.

UHMWPE is more impact resistant than any PE, UHMWPE is much smoother and self-lubricating to a level closest to PTFE – therefore allowing for benefits in marine growth non-adhesion, it is suitable for extreme environments, it is coloured for life, it resists UV aging, and has a lower installation cost.

In discussion it was noted that cost of AtoN provision was competitive with steel. Performance in very hot climates would need to be investigated. UHMWPE structures are essentially UHMWPE on a steel frame and all materials are recyclable.

6.4 Remote control of AtoN lights - Peter Schneider

Peter Schnieder described a remote control and monitoring system for visual aids to navigation and infrastructure, Maritime Traffic Technology System (MTTS), installed by WSV. The presentation included a discussion of the migration of fixed visual aids to navigation and infrastructure into the MTTS. Input paper ENG2-6.5 refers.

In discussion it was noted that manpower reductions yielded by the project have yet to be realised. The MTTS has only been implemented at fixed stations to date, with consideration of implementation on buoys in the future.

6.5 Development and testing of new LED lamp

Fernando Romero described a hyperbolic reflector system for providing a light source for a traditional Fresnel lens using a single LED. The light source described provides a high-power light source with uniform output and which is easily focused. Input paper ENG2-6.5.1 refers.

Manuel Santos described tests of the LED light source in the 4th order Fresnel lens optic at Cape Espichel Lighthouse. The tests indicated actual performance of the 150 watt LED source providing in excess of 27NM compared with 26NM using a 1kW tungsten halogen source in the same lens. Input paper ENG2-6.5.2 refers.

7 REVIEW OF WORK PROGRAMME AND WG EXPECTATIONS

7.1 Work Programme

The ENG Committee Workplan, ENG2-7.1, was updated.

The ENG Work Programme Task Register for 2014-18, ENG2-7.2, was reviewed and updated. David Jeffkins described a revised process for updating the Task Register on the IALA Wiki.

Action

The Secretariat is requested to forward the revised ENG Committee Workplan, ENG1-11.1.10, to Council for approval.

The Secretariat is requested to forward the revised ENG Committee Workplan, ENG1-11.1.10, to ENG3.

WG Chairs are requested to update the ENG Work Programme Task Register on the IALA Wiki at each ENG session.

The Secretariat is requested to forward the revised ENG Work Programme Task Register for 2014-2018, ENG2-11.2.15 to ENG3.

7.2 IALA Standards, Recommendations and Guidelines

Simon Millyard proposed a scheme for relating ENG IALA Recommendations and Guidelines to emerging IALA Standards, input paper ENG2-7.2.1 refers. It was noted that Standards will not be approved until 2018 and that Standards relate to all Committees.

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	Adrian Wilkins (standing in for Adam Hay)	Greg Hansen

9 WORKING GROUP 1 – VISUAL & PHYSICAL ATON

9.1 Develop guidance on Marine Signalling (Task 1.1.1)

Refer to Tasks 1.1.2 & 1.1.3

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

Work commenced on a new Guideline entitled ‘Selection of Rhythmic Characters, taking a lot of information from Recommendation E-110 and introducing new sections on the use of fixed flashing lights and synchronisation.

Action Items

The Secretariat is requested to forward working paper ENG2-11.2.12 to ENG3.

Members are requested to identify further work items to contribute to the Guideline on selection of rhythmic characters.

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

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

Action Items

The Secretariat is requested to forward working paper ENG2-11.2.14 to ENG3

Members are requested to identify further work items to contribute to the revision of Guideline 1038.

Sigge Gustafsson is requested to provide an input paper to ENG3 on the SMA experiences with AtoN AIS detection of vessels for switching AtoN on/off.

Aivar Usk is requested to provide an input paper to ENG3 on AoD – AtoN on Demand.

9.4 Navguide updates (Task 5.1.1)

A schedule to provide updates to the Navguide has been agreed between ENG and ARM.

9.5 Review of IALA documents (ref ENG1 input paper on document ownership) (Task 5.1.2)

Refer to Tasks 5.1.3 – 5.1.13.

9.6 Review and Update Recommendation E200 On Marine Signal Lights (Task 5.1.3)

This task is due to commence at ENG3. Members are requested to provide input papers to ENG3.

Action Item

Members are requested to provide input papers in relation to the review of Recommendation E200 to ENG3.

9.7 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 commenced on updating E-110.

Action Item

The Secretariat is requested to forward working paper ENG2-11.2.10 to ENG3.

9.8 Update E-112 for Leading Lights and 1023 for the design of leading lights (Task 5.1.8)

This task was brought forward and will commence at ENG3.

Action Item

Members are requested to familiarise themselves with Recommendation E-112 for Leading Lights and Guideline 1023 for the design of leading lights and provide input papers to ENG3 to support the updates.

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

This task was due to commence at ENG2. However, to align with the proposed IALABATT/IALALITE workshop Task 5.1.9 was transferred to nearer the end of the work program. This also allows for the most up to date information to be included in the update.

9.10 Update 1041 on Sector Lights (Task 5.1.10)

The Committee continued the review and update of Guideline 1041 on Sector Lights. It is envisaged that this document can be finalised during ENG3 with intersessional work.

Action Item

Frank Herman, Jorgen Royal Petersen, Fernando Romero, Colin Day & Malcolm Nicholson are requested to work intersessionally on ENG2-11.2.11 and provide an input to ENG3.

9.11 Update 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 progress Guideline 1061 Illumination of Structures intersessionally and submit an input to ENG 3.

10 WORKING GROUP 2 – TECHNICAL KNOWLEDGE & SUSTAINABILITY

10.1 Workshop on Lights and Batteries – IALABATT/IALALITE (Task Number 1.5.2)

A proposal for a workshop on lights and batteries (IALABATT/ IALALITE) was developed for submission to the IALA Council. Output paper ENG2-11.1.7 refers.

Action Items:

The IALA Secretariat is requested to forward output paper ENG2-11.1.7 to the IALA Council for approval.

Committee members are requested to note the proposed dates for the 2017 IALABATT/ IALALITE Workshop.

Committee members are requested to identify potential presentations for the 2017 IALABATT/ IALALITE workshop and advise Jorg Unterderweide.

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

Input paper ENG2-10.1 was considered and it was concluded that the CALMAR software and manual for the design of buoy moorings had been amended as requested with the exception of the Arabic version of the manual. The French members were requested to contact Mobilis regarding provision of the Calmar software via the IALA web site. The location of the software on the IALA web site and on the Wiki was discussed and the Secretariat is requested to review if this can be improved by providing a link to the Calmar software from the list of Guidelines on the website.

Action Items:

The Secretariat is requested to review potential improvements to accessing to the CALMAR software on the IALA web site.

Committee members are requested to provide input on radar reflectors to ENG3.

Committee members are requested to provide input on polyethylene materials to ENG3.

The French members were requested to contact Mobilis regarding provision of the Calmar software via the IALA web site.

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

It was decided that the information in input paper ENG2-10.11 detailing problems of mounting AIS AtoN aerial systems on buoys should be considered in a review of Guideline 1098 on AIS on buoys. The information paper will be included in a proposed new Guideline on AtoN equipment on buoys.

Action Item:

The IALA Secretariat is requested to forward Input paper ENG2-10.11 to ENG3.

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

This will be the subject of a new Guideline which will incorporate and replace the existing Guideline 1036 (environmental considerations) and Guideline 1077 (Maintenance of AtoN).

The proposed Guideline will be mapped to the new Standard on AtoN Planning and Service Delivery (Environmental responsibility). The task 2.2.1 was updated in the task register to commence at ENG3.

Action Item:

Committee members are requested to review the content of the existing Guideline 1036 (environmental considerations) and Guideline 1077 (Maintenance of AtoN) with a view to creating a new Guideline and submit proposals to ENG3.

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

A new Guideline on commissioning and engineering auditing of AtoN equipment and systems was proposed in ENG1. It was decided that the information in input paper ENG2-10.8 can be used as a basis for developing a new guideline. The important headings were incorporated in a draft guideline template ENG2-11.2.1 for further development at ENG3.

Action Item:

The IALA Secretariat is requested to forward working paper ENG2-10.8 to ENG3.

The IALA Secretariat is requested to forward working paper ENG2-11.2.1 to ENG3.

Members are requested to provide input papers to ENG3 on commissioning of AtoN in their services.

10.6 Develop guidance on AtoN delivery & maintenance in extremely hot climates (Task Number 2.3.1).

A new Guideline on operation and maintenance of AtoN in hot climates will be drafted at ENG5 following a proposed workshop to be held in September 2016 in Abu Dhabi.

Task 2.3.1 was updated in the task register to commence after the workshop to show completion in session 7 rather than session 5.

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

A proposal for a workshop on AtoN delivery and maintenance in extremely hot climates in September 2016 in Abu Dhabi was prepared, output paper ENG2-11.1.1 refers. Approval has been sought from ADT and ADPC in the host country.

The title of the workshop in the task register was amended to “Workshop on AtoN delivery and maintenance in extremely hot climates”.

Action Item:

The IALA Secretariat is requested to forward output paper ENG2-11.1.1 to session 60 of the IALA Council for approval.

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

It was found that Guideline 1092 on Safety management for AtoN activities was quite recent and had good content on safety management. The requirement to review this document was assessed as a lower priority in the work plan and the task register was updated with work to start at ENG4.

Action Item:

Committee members are requested to submit details of relevant documented safety procedures to ENG3.

10.9 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 documents ENG2-10.6, ENG2-10.7 and ENG2-10.10 were reviewed, amended and accepted for submission to the IALA council for approval.

A liaison note ENG2-10.15.1 was received from the ENAV Committee for the ENG Committee to consider amendments in “Global Satellite Navigation Systems and e-Navigation” model course. Input document ENG2-10.15.2 was reviewed and the content considered acceptable for submission to the IALA council for approval.

Action Items:

The IALA Secretariat is requested to forward output papers ENG2-11.1.2, ENG2-11.1.3, ENG2-11.1.4, and ENG2-11.1.5 to the IALA Council for approval.

The IALA Secretariat is requested to forward liaison note ENG2-11.1.6 to the ENAV Committee.

10.10 Develop guidance on the use of heritage lighthouses for modern AtoN equipment & systems. (Task Number 4.1.1)

A new Guideline on the use of heritage lighthouses for modern AtoN equipment and systems should include the use of new lamps in traditional optics and the replacement of mercury floats with modern bearings. The Heritage Forum is requested to review this requirement and provide input to ENG3 discussions.

The requirement to review the new Guideline was assessed and, to allow the future participation of the Heritage Forum attendees, the task register was amended by moving task 4.1.1 from sessions 2 - 5 to sessions 3 - 6.

Action Items:

The Heritage Forum members are encouraged to assist with the development of the new Guideline on the use of heritage lighthouses for modern AtoN equipment and systems in ENG3.

Members are requested to provide input papers to ENG3 on their experiences in the use of heritage lighthouses for modern AtoN equipment and systems.

10.11 Develop guidance on Maintenance of AtoN structures (Task Number 4.1.2)

The Committee reviewed working paper ENG2-10.5 and further developed the structure of the new Guideline on “Maintenance of AtoN structures” for input to ENG3. Working paper ENG2-11.2.2 refers.

Action Item:

The IALA Secretariat is requested to forward working paper ENG2-11.2.2 to ENG3.

10.12 Navguide updates (Task 5.1.1)

ARM Liaison Note ARM1-11.1.8 was considered. An ENG NAVGUIDE update action plan was developed, ENG2-11.1.9 refers.

Peter Dobson (peter.dobson@thls.org) was appointed ENG point-of-contact/coordinator for ENG NAVGUIDE updates.

Action Items:

The IALA Secretariat is requested to forward liaison note ENG2-11.1.8 regarding updating the NAVGUIDE to the ARM Committee.

The IALA Secretariat is requested to forward the NAVGUIDE update action plan ENG2-11.1.9 to the ARM Committee and ENG3.

10.13 Review of IALA documents (Task 5.1.2)

After ENG1 three sub working groups met to review IALA documents in the areas of power systems, buoys / moorings and AtoN structure maintenance.

WG2 (sub working group power systems) reviewed input papers ENG2-10.3 (the output from ENG1), ENG2-10.9 (input from Germany on solar model performance) and ENG2-10.12 (input from Trinity House on solar model performance). The sub working group compared four solar power supply tools, working paper ENG2-11.2.3 refers. The sub working group also reviewed the power system related documentation and working paper ENG2-11.2.4 refers to the proposed plan for their future review and amendments. It was noted that Guideline 1077 includes content on power systems and recommendations on this are proposed, working paper ENG2-11.2.5 refers.

WG2 (sub working group Buoys and moorings) reviewed working paper ENG2-10.2 (the output from ENG1) and identified amendments to Guideline 1006. This work is to continue intersessionally with a view to create a suite of buoy guidelines.

The group proposed a new structure for buoy guidelines and this is presented as working paper ENG2-11.2.6. The content of the proposed new Guideline on buoy structures and Guideline on buoy equipment are detailed in working paper ENG2-11.2.7.

It is anticipated that any new buoy guidelines will be developed under task 2.1.1 “Develop further guidance on Plastic Buoys, Systems & Sensors”.

WG2 (sub working group AtoN structure maintenance) reviewed working paper ENG2-10.4. It was recommended that a number of these IALA guidelines be discontinued and sections of content either removed permanently, used in the new guideline with some modification, transferred directly into the new document or alternatively sections of interest, such as case studies put in the IALA Wiki. Working paper ENG2-11.2.8 refers.

Action Item:

The IALA Secretariat is requested to forward working papers ENG2-11.2.3, ENG2-11.2.4, ENG2-11.2.5, ENG2-11.2.6, ENG2-11.2.7 and ENG2-11.2.8 to ENG3.

Committee members are encouraged to review working paper ENG2-11.2.6 on the structure of buoy guidelines and provide an input to ENG3.

Committee members are encouraged to review working paper ENG2-11.2.8 on Maintenance of AtoN Structures IALA – guidelines and recommendations and provide an input to ENG3.

11 REVIEW OF OUTPUT AND WORKING PAPERS

Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

12 ANY OTHER BUSINESS*Action*

The IALA Secretariat is requested to upload the paper on sound signals (from Frank Hermann) to the IALA Wiki.

13 REVIEW OF SESSION REPORT

The report of the meeting (ENG2-13.1) was approved by the Committee.

Action item

The Secretariat is requested to forward the ENG2 Committee report (ENG2-13.1) to Council to note.

Simon Millyard is requested to forward the IALA welcome video to participants.

14 DATE AND VENUE OF NEXT MEETING

It is expected that the 3rd session of the ENG Committee (ENG3) will be from 16 to 20 November 2015 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 expressed the Committee's thanks to the Middle East Navigation Aids Service and the German Federal Waterways and Shipping Administration for their offers to host workshops. He acknowledged the enthusiastic way in which a heavy workload had been tackled. He noted the interesting presentations on a range of topics. He thanked the Vice Chair, Secretary, WG Chairs and Vice Chairs, Adrian Wilkins and Greg Hansen 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 ENG3, 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.

ANNEX A AGENDA**2nd Meeting of the AtoN Engineering and Sustainability Committee (ENG2)**

The 2nd meeting of the **AtoN Engineering and Sustainability Committee (ENG2)** will be held from 18 – 22 May, 2015 at IALA, St Germain en Laye, France.

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

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

AGENDA

1. Introduction
 - 1.1. Administration and safety briefing
 - 1.2. Approval of the agenda
 - 1.3. Introductions and apologies
 - 1.4. Programme for the week
2. Review of action items from ENG1
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 of the 59th Session of the IALA Council 2014-12-09
 - 4.2. IALA Report of IMO MSC94 rev2
 - 4.3. Report from PIANC Working Group 178
5. Reports from Rapporteurs

5.1. Developments in Renewable Energy Sources	Peter Dobson
5.2. Developments in Battery Technology	Jonas Lindberg
5.3. Developments in New Light Sources	Malcolm Nicholson
5.4. CIE-IALA Liaison	Malcolm Nicholson
5.5. Developments in AtoN Simulation Systems	Jong-Uk Kim
5.6. Developments in buoy moorings	Sipke Hoekstra
5.7. Developments in remote control and monitoring	Peter Schneider
5.8. IALA Dictionary	David Jeffkins
5.9. IALA Bulletin liaison	David Jeffkins
6. Presentations (15 minutes duration)

6.1. Brief on WWA	Gerardine Delanoye
6.2. See 4.3	
6.3. Performance of UHMWPE AtoN Structures	Eugene Lakous
6.4. Remote control of AtoN lights	Peter Schneider

6.5. Development and testing of new LED lamp

Fernando Romero &
Manuel Santos

7. Review of Work Programme and WG expectations
 - 7.1. Work programme
 - 7.2. IALA Standards, Recommendations and Guidelines
8. Establish Working Groups
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

ANNEX B LIST OF PARTICIPANTS**Country****Argentina Hidrovia S.A.**

Eng. Mariano Luis MARPEGAN

Phone +54 11 43 206 900

Mobile phone: +54 911 63630594

e-mail (main): mlmarpegan@hidrovia-gba.com.ar

e-mail (alternative): marianoluismarpegan@yahoo.com.ar

Australia Australian Maritime Safety Authority

Mr Greg HANSEN

Phone +61 2 6279 5613

Mobile phone: +61 407 918223

e-mail (main): greg.hansen@amsa.gov.au

Australian Maritime Safety Authority

Mr David JEFFKINS

Phone +61 2 6279 5677

Mobile phone: +61 438 635 797

e-mail (main): david.jeffkins@amsa.gov.au

e-mail (alternative): dj@amsa.gov.au

Australia Sealite

Mr Bert FRAME

Phone +44 1502 588026

Fax +44 1502 588047

Mobile phone: +44 7785 930963

e-mail (main): b.frame@sealite.com

**Bahrain Middle East Navigation Aids Service (MENAS)
(Kingdom of)**

Mr Shaheen MIRZA

Phone +973 17 82 85 50

Fax +973 17 72 77 65

Mobile phone: +973 39 65 01 80

e-mail (main): mirza@menas.com.bh

e-mail (alternative): info@menas.com.bh

Bulgaria Bulgarian Ports Infrastructure Company

Mr Rumen ARABADZHIEV

Phone +359 807 99 99

Mobile phone: +359 888 988 803

e-mail (main): offica@bgports.bg

e-mail (alternative): r.arabadzhiev@bgports.bg

China Shandong Buoy & Pipe Industry

Mr Jianhua LI

China **China Maritime Safety Administration**
(People's Rep of)

Mr Baohong WANG

Shandong Buoy & Pipe Industry Co.Ltd.

Ms Viola ZHENG

Phone +86 635 5085878
 Mobile phone: +86 189 63565107
 e-mail (main): violazheng@buoyandpipe.com

Tianjin Maritime Safety Administration of P.R. of China

Mr. Shen ZHIJIANG

Phone +86 22 5887 6550
 Mobile phone: +86 189 2028 0165
 e-mail (main): shen1968@163.com

China **China Maritime Safety Administration**
(People's
Republic of) Ms Jiali CHEN

Phone +86 10 65292887
 Fax +86 10 65292893

China **Shandong Buoy & Pipe Industry**
(People's
Republic of) Mr Eugene LAKOUS

Mobile phone: +61 42 744 5600
 e-mail (main): eugene@pipeandbuoy.com.au

Shandong Buoy & Pipe Industry Co, Ltd.

Mr Jerome ADIRIM
 e-mail (main): jerome@keystone.ca

Denmark **Danish Maritime Authority**

Mr. Jorgen ROYAL PETERSEN

Phone +45 72 19 62 74
 Mobile phone: +45 24 28 82 96
 e-mail (main): jrp@dma.dk

Estonia **Cybernetica AS**

Mr. Aivar USK

Phone +372 639 7991
 Mobile phone: +372 513 1021
 e-mail (main): aivar.usk@cyber.ee

Finland **Finnish Transport Agency**

Mr Sami LASMA

Mobile phone: +358 40 098 1322
 e-mail (main): sami.lasma@fta.fi

Sabik Oy

Mr Jonas LINDBERG

Phone +358 19 560 1121
Mobile phone: +358 40 828 9460
e-mail (main): jonas.lindberg@sabik.com

France**Association sauvegarde Cordouan**

Mr. Jean-Marie CALBET

Phone +33 5 56 41 17 43
Mobile phone: +33 6 64 04 19 84
e-mail (main): jean-marie.calbet@orange.fr
e-mail (alternative): contact@asso-cordouan.fr

CEREMA

Mr. Michel COUSQUER

Phone +33 2 98 05 67 78
Fax +33 2 98 05 67 67
Mobile phone: + 33 (0)6 63 37 44 59
e-mail (main): michel.cousquer@cerema.fr
e-mail (alternative): mn.cousquer@free.fr

CEREMA

Mr. Philippe RENAUDIN

Phone +33 2 98 05 67 50
Fax +33 2 98 05 67 67
e-mail (main): philippe.renaudin@cerema.fr

CEREMA/DT/TSMF/PE

Mr Ronan AUTRET

Phone +33 (0)2 98 05 67 75
Fax +33 (0)2 98 05 67 67
e-mail (main): ronan.autret@cerema.fr

CETMEF

Mr. Nicolas FADY

e-mail (main): nicolas.fady@developpement-durable.gouv.fr

DIRM / SPBM

M. Joël TOURBOT

Phone +33 4 91 39 69 63
Mobile phone: +33 6 24 94 04 03
e-mail (main): joel.tourbot@developpement-durable.gouv.fr

GISMAN

Mr. Vincent ROGET

Phone +33 2 97 29 41 21
Mobile phone: +33 6 88 29 13 70
e-mail (main): vincent.roget@gisman.fr

Germany Federal Waterways & Shipping Administration

Mr. Peter SCHNEIDER

Phone +49 4927 1877 291
 Mobile phone: +49 160 745 80 95
 e-mail (main): peter.schneider@wsv.bund.de

German Federal Waterways and Shipping Administration

Mr. Jörg UNTERDERWEIDE

Phone + 49 261 9819 2400
 Mobile phone: +49 151 246 222 40
 e-mail (main): joerg.unterderweide@wsv.bund.de

German Federal Waterways and Shipping Administration

Mr. Frank HERMANN

Phone +49 261 98 19 2413
 Fax +49 261 98 19 2155
 Mobile phone: +49 151 68 14 25 02
 e-mail (main): frank.hermann@wsv.bund.de

Ireland Commissioners of Irish Lights

Mr. Colin DAY

Phone +353 1 271 5467
 Fax +353 1 271 5565
 Mobile phone: +353 87 2197 007
 e-mail (main): c.day@cil.ie

Japan Japan Aids to Navigation Association (JANA)

Mr. Tamutso IKEDA

Phone +81 (0)3 3230 1470
 Fax +81 3 3230 1050
 e-mail (main): ikeda_t@jana.or.jp

Korea (Republic of) Korea Association of Aids to Navigation (KAAN)

Dr Ju-Seop HAN

Phone +82 2 2627 8307
 Mobile phone: +82 10 3576 9541
 e-mail (main): elecwave@naver.com
 e-mail (alternative): elecwave@haepoong@gmail.com

Korea Association of Aids to Navigation (KAAN)

Mr Yong Su YU

Ministry of Oceans and Fisheries

Mr Jin-Gee JEON

Phone +82 32 880 6258
 Mobile phone: +82 10 7460 9778
 e-mail (main): joengingee@korea.kr

Mozambique INAHINA

Mr Simiao Antonio MUNGUAMBE

Phone +258 21 430 186/8
 Mobile phone: +258 824881530 / +258 84 3988867
 e-mail (main): siniels3@gmail.com
 e-mail (alternative): ciniels@yahoo.com.br

INAHINA

Ms Suzana TEMBE

e-mail (main): sut0412@yahoo.com.br

Netherlands Ministry of Infrastructure and Environment

Mr. Sipke HOEKSTRA

Mobile phone: +31 6 52 56 27 18
 e-mail (main): sipke.hoekstra@rws.nl

Ministry of Infrastructure and Environment

Mr Egbert van der WEIDE

Mobile phone: +31 6 29 56 53 15
 e-mail (main): Egbert.vander.weide@rws.nl

New Zealand Maritime New Zealand

Mr Jim FOYE

Phone +64 4 494 1211
 Mobile phone: +64 27 431 3935
 e-mail (main): jim.foye @maritimenz.govt.nz

VEGA Industries

Mr Stephane LUTEYN

Phone +64 4 238 0221
 e-mail (main): Stephane.luteyn@vega.co.nz

Norway Norwegian Coastal Administration

Ms Ingvild KRAGSET

Phone +47 33 03 48 08
 Mobile phone: +47 9345 3921
 e-mail (main): ingvild.kragset@kystverket.no

Norway Norwegian Coastal Administration

Mr Leif Arne LARSEN

Box 1502
 6025 Aalesund

Norway

Phone +47 70 16 01 77
 Mobile phone: +47 95 72 45 04
 e-mail (main): leif.arne.larsen@kystverket.no

Norwegian Lighthouse Museum

Mr Jo van der EYNDEN

Mobile phone: +47 48 11 16 37

e-mail (main): jey@vaf.no

e-mail (alternative): Jo.Eynden@getmail.no

Poland Urząd Morski w Gdynia

Mr Grzegorz ZACHARCZUK

e-mail (main): grzegorz.zacharczuk@umgdy.gov.pl

Portugal Portuguese Lighthouse Authority

LtCdr. Manuel SANTOS

Phone +351 21 44 61 660

Mobile phone: +351 91 66 30 658

e-mail (main): manuel.santos@marinha.pt

Scotland Northern Lighthouse Board

Mr. Bob McINTOSH

Phone + 44 1314 73 31 00

Mobile phone: +44 7831 665 388

e-mail (main): bobm@nlb.org.uk

Northern Lighthouse Board

Mr. Moray WADDELL

Phone + 44 131 473 3100

Mobile phone: +44 7768 177472

e-mail (main): morayw@nlb.org.uk

Senegal Port Autonome de Dakar

Mr. Amadou NDIAYE

Phone + 221 849 7950

Mobile phone: +221 77 631 0926

e-mail (main): makhouzin@yahoo.fr

e-mail (alternative): amadou.ndiaye1956@gmail.com

South Africa South African Maritime Safety Authority

Mr. James COLLOCOTT

Phone + 27 21 938 3310

Mobile phone: +27 82 45 84 890

e-mail (main): jcollocott@samsa.org.za

e-mail (alternative): james.collocott@gmail.com

Spain Mediterraneo Senales Maritimas S.L.L.

Mr. Fernando ROMERO

Phone +34 962 761 022

Fax +34 962 761 598

Mobile phone: +34 616 440 948

e-mail (main): fromero@mesemar.com

e-mail (alternative): fer.msm@gmail.com

Puertos del Estado

Mr Jose Carlos DIEZ GONZALO

Phone +34 91 524 55 00
 Fax +34 91 524 55 06
 e-mail (main): j.c.diez@puertos.es

Puertos del Estado

Mrs. Marisa MARCO

Phone +34 986 56 51 29
 Mobile phone: +34 67 85 44 885
 e-mail (main): marisa.marco@portovilagarcia.es
 e-mail (alternative): marisamarco@gmail.com

Puertos del Estado

Mr. Santiago TORTOSA

Phone +34 649 79 99 61
 e-mail (main): faroalmina@telefonica.net
 e-mail (alternative): faro@puertodeceuta.com

Sweden**Swedish Maritime Administration**

Mr. Sigge GUSTAFSSON

Phone +46 10 47 84 827
 Mobile phone: +46 11 19 13 30
 e-mail (main): sigge.gustafsson@sjofartsverket.se

UK

Mr Ivan VARGAS

Phone +1 713 228 5208 ext 211
 Mobile phone: +1 713 419 7152
 e-mail (main): ivargas@automaticpower.com
 e-mail (alternative): Ivanvargas66@gmail.com

Consultant with Pharos Marine

Mr. Adrian WILKINS

Phone +44 1983 29 79 58
 Mobile phone: + 44 7 900 400 272
 e-mail (main): adrianwilkins@talk21.com

GLA-R&RNAV

Mr Malcolm NICHOLSON

Phone +44 1255 245 143
 Mobile phone: +44 7768 50 55 79
 e-mail (main): malcolm.nicholson@gla-rrnav.org

Trinity House

Mr Neil JONES

Phone +44 1 255 245 155
 Mobile phone: +44 77 99 03 50 45
 e-mail (main): neil.jones@thls.org

Trinity House Lighthouse Service

Mr Peter DOBSON

Phone +44 1255 245063
 Mobile phone: +44 7768 036002
 e-mail (main): peter.dobson@thls.org

Trinity House Lighthouse Service

Mr Simon MILLYARD

Phone +44 1255 245 152
 Mobile phone: +44 777 646 55 37
 e-mail (main): simon.millyard@thls.org

USA**Tideland Signal Corporation**

Mr. Andrew ZELLER

Phone +1 713 681 6101
 e-mail (main): andrew.zeller@tidelandsignal.com

Apologies

Apologies were received from the following.

Name	Organisation	Country
Adam HAY	Nawae Construction	Papua New Guinea
John Corio	Sealite	Australia
Abba Busheri	MENAS	Bahrain
Stephanie Verbit	CCG	Canada
Goodbye		
Paulo REGO		Brazil

ANNEX C WORKING GROUP PARTICIPANTS**Working Group 1 Visual & Physical AtoN**

	Members	Organisation / Country
1	Malcolm Nicholson (Chair)	General Lighthouse Authorities of UK and Ireland / UK
2	Frank Hermann (Vice Chair)	German Federal Waterways & Shipping Administration / Germany
3	Michel Cousquer	CEREMA, France
4	Colin Day	CIL, Ireland
5	Sigge Gustafsson	SMA, Sweden
6	Han Ju-Sup	Kaan, Korea
7	Yu Yong-Su	Kaan, Korea
8	Aivar Usk	Cybernetica, Estonia
9	Ivan Vargas	Pharos Marine/Automatic Power, USA
10	Simiao Munguambe	Inahina, Mozambique
11	Andrew Zeller	Tideland Signal, USA
12	Fernando Romero	MSM, Spain
13	Jorgen Royal Petersen	DMA, Denmark
14	Jonas Lindberg	Sabik, Finland
15	Shen Zhijiang	China MSA, China
16	Sami Lasma	Finnish Transport Agency, Finland
17	Moray Waddell	NLB, Scotland

Working Group 2 Technical Knowledge & Sustainability

	Name	Organisation / Country
1	Adrian WILKINS (Chair) Standing in for Adam Hay	Pharos Marine, UK
2	Greg HANSEN (Vice Chair)	Australian Maritime Safety Authority, Australia
3	Sipke Hoekstra	Ministry of Infrastructure and Environment, Netherlands
4	James Collocott	SAMSA, South Africa
5	Grzegorz Zacharczuk	Maritime Office INDGYNIA, Poland
6	Shaheen Mirza	MENAS
7	Baohong Wang	China MSA, China
8	Jianhua Li,	Shandong Buoy & Pipe Industry, China
9	Yanhui Zheng	Shandong Buoy & Pipe Industry, China
10	Ronan AUTRET	CEREMA, France
11	Jose Carlos DIEZ	Puertos del Estado, Spain
12	CHEN Jiali	Maritime Safety Association, China
13	Eugene Lakous	Shandong Buoy & Pipe Industry, Australia
14	Jerome Adirim	Canada Chain, Canada
15	Joel TOURBOT	Inter-regional Maritime Directorate, France
16	Philippe Renaudin	CEREMA, France
17	Nicholas Fady	CEREMA, France
18	Amadou NDIAYE	Port Authority of Dakar, Senegal
19	Peter SCHNEIDER	German Federal Waterways & Shipping Administration, Germany
20	Jörg UNTERDERWEIDE	German Federal Waterways & Shipping Administration, Germany
21	Tamotsu Ikeda	JANA, Japan
22	Peter DOBSON	Trinity House Lighthouse Service, UK
23	Leif Arne LARSEN	Norwegian Coastal Administration, Norway
24	Jin-Gee Jeon	Ministry of Oceans and Fisheries, Korea
25	Moray Waddell	Northern Lighthouse Board, Scotland
26	Rumen Arabadzhiev	Bulgarian Ports Infrastructure Company, Bulgaria

ANNEX D LIST OF INPUT PAPERS

[All papers were posted to the Committee website](#)

Number	Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
1	ENG2- 1.2		Draft Agenda (20150518)	IALA Sec	Simon Millyard
2	ENG2- 1.4.1		Programme for the week (20150501)	IALA Sec	Simon Millyard
3	ENG2- 1.4.2		Changes to ENAV work programme for the week	IALA Sec	Simon Millyard
4	ENG2- 2.1		Action Items from ENG1	ENG1	Seamus Doyle
5	ENG2- 3.1		Input paper Committee template July 2014	IALA Sec	Simon Millyard
6	ENG2- 4.1		Report of the 59th Session of the IALA Council 2014-12-09	Council 59	Michael Card
7	ENG2- 4.2		IALA Report of IMO MSC94 rev2	IALA Sec	Michael Card
8	ENG2- 4.3		Report from PIANC Working Group 178	Peter Dobson	Peter Dobson
9	ENG2- 4.3.1		Presentation PIANC feedback	Peter Dobson	Peter Dobson
10	ENG2- 5.2		Rapporteur report - Developments in Battery Technology	Jonas Lindberg	Jonas Lindberg
11	ENG2- 5.5		Rapporteur Report Development in AtoN Simulation Systems	Jong-Uk Kim	Simon Millyard
12	ENG2- 5.6.1		Screw anchors v1	Adrian Wilkins	Adrian Wilkins
13	ENG2- 6.1		IALA WWA brief May 15 Rev 1 shgb	Gerardine Delanoye	Gerardine Delanoye
14	ENG2- 6.3		Performance of UHMWPE in AtoN Structures-2	Eugene Lakous	Eugene Lakous
15	ENG2- 6.4		Remote control of AtoN lights	Peter Scheneider	Peter Schneider
16	ENG2- 6.5.1		Development of LED for traditional lens optics V4	Fernando Romero	Fernando Romero
17	ENG2- 6.5.2		New LED Light Source test in Cape Espichel Lighthouse	Fernando Romero	Manuel Santos
18	ENG2- 7.1		(ENG1-11.1.1) ENG Committee Workplan 2014-18 20141121	ENG1	Simon Millyard
19	ENG2- 7.2		(ENG1-11.2.1) ENG Work Programme Task Register 2014-18 20141121	ENG1	Simon Millyard
20	ENG2- 7.2.1		IALA standards and related documents ENG Draft3	Simon Millyard	Simon Millyard

Number	Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
21	ENG2-	8.1	(ENG1-11.1.2) ENG Committee WG Terms of Reference 20141121	ENG1	Simon Millyard
22	ENG2-	9.1	(ARM1-11.1.8) Liaison note to all committees on ways of working for the NAVGUIDE update	ARM1	WG1
23	ENG2-	9.2	(ENG1-11.2.8) WG1 draft Guideline 1061 on the illumination of structures	ENG1	WG1
24	ENG2-	9.3	(ENG1-11.2.9) WG1 Trials and Implementation of the Fixed and Flashing Rhythmic Character on Estonian AtoN 20141110	ENG1	WG1
25	ENG2-	9.4.1	(ENG1-11.2.5) WG1 draft revised Guideline 1041 on sector lights 20141119	ENG1	WG1
26	ENG2-	9.4.2	(ENG1-11.2.5) WG1 draft revised Guideline 1041 on sector lights 20141119 - after intersessional revision	ENG1	WG1
27	ENG2-	9.5	National AtoN character list (German list) (Ref ENG1 Action 26)	Frank Hermann	WG1
28	ENG2-	9.6.1	Cover note for ENG2-9.6.2	Aivar Usk	WG1
29	ENG2-	9.6.2	TSMAD27 4.5.2B Lights Modelling in S-101 20131202	Aivar Usk	WG1
30	ENG2-	9.7	National AtoN Rhythmic Character list-Estonia - ref ENG1 Action 26 20150514	Pärtel Keskküla via Aivar Usk	WG1
31	ENG2-	9.8	Analysis of the causes of deterioration to LED lanterns	Ju-Seop Han	WG1
32	ENG2-	9.9	Report on Development of LED Large Beacon in Korea	Yong-Su Yu	WG1
33	ENG2-	9.10	Rhythmic characters SMA 2015 - Action 26	Sigge Gustafsson	WG1
34	ENG2-	9.11.1	Danish National AtoN Character Data Base - action item 25	Jorgen Royal Petersen	Jorgen Royal Petersen
35	ENG2-	9.11.2	Marking of Danish waters web publishing	Jorgen Royal Petersen	Jorgen Royal Petersen
36	ENG2-	9.11.3	20150518 Danish National AtoN Character Data Base	Jorgen Royal Petersen	Jorgen Royal Petersen
37	ENG2-	9.12	National AtoN Character list French list ref eng1 action 26-1	Michel Cousquer	Michel Cousquer
38	ENG2-	10.1	(ENG1-11.2.7) WG2 Amendment of CALMAR mooring calculation software	ENG1	WG2
39	ENG2-	10.2	(ENG1-11.2.2) WG2 Review of IALA documents working paper - working report buoys and moorings 2014120	ENG1	WG2

Number	Meeting	Agenda Item	Title / Author (if required)	Source	Presented by / WG
40	ENG2-	10.3	(ENG1-11.2.3) WG2 Review of IALA documents working paper- Power Systems 20141120	ENG1	WG2
41	ENG2-	10.4	(ENG1-11.2.4) WG2 Review of IALA documents working paper 20141120	ENG1	WG2
42	ENG2-	10.5	(ENG1-11.2.6) WG2 Proposed new Guideline on Maintenance of AtoN structures 20141120	ENG1	WG2
43	ENG2-	10.6	Draft Model Course E141-2 Ed 2 Senior Management Training Rev 0 WWA	WWA	WG2
44	ENG2-	10.7	Draft IALA WWA L1.3 on Risk Management Ed 2	WWA	WG2
45	ENG2-	10.8	Commissioning of AtoN	Peter Dobson	WG2
46	ENG2-	10.9	Comparison of Solar Model Performance	Jörg Unterderweide	WG2
47	ENG2-	10.10	Draft edition 2 Model Course E141-1 Level 1 AtoN Manager Training Rev 0	WWA	WG2
48	ENG2-	10.11	Problems of fitting AIS antennae on Buoys	Peter Dobson	WG2
49	ENG2-	10.12	Comparison of Solar Model Performance	Peter Dobson	WG2
50	ENG2-	10.13	(ARM1-11.1.2) Liaison note to ENG on E141	ARM1	WG2
51	ENG2-	10.14	(ARM1-11.1.7) Liaison note to ENG re Navguide audible signals	ARM1	WG1
52	ENG2-	10.15.1	ENAV16-14.1.5 Liaison note ENAV to ENG committee on WWA model course on GNSS and e-Navigation	ENAV16	WG2
53	ENG2-	10.15.2	(ENAV16-14.1.13) WWA L1 Model Course 1-4 on GNSS and e-Navigation 2015 rev 0 with note	ENAV16	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	Title	Status
1	ENG2- 11.1.1	Workshop proposal on the challenges of providing AtoN services in Extremely Hot Climates	To Council 60
2	ENG2- 11.1.2	Draft model course L1.4 Level 1 Aids to Navigation Manager Training Global Navigation Satellite Systems and e- Navigation	To Council 61
3	ENG2- 11.1.3	Draft model course L1.3 Level 1 Aids to Navigation Manager Training risk management	To Council 61
4	ENG2- 11.1.4	Draft Model Course E141-1 Level 1 AtoN Manager Training Ed2	To Council 61
5	ENG2- 11.1.5	Draft Model Course E141-2 Ed 2 Senior Management Training Ed2	To Council 61
6	ENG2- 11.1.6	Liaison note ENG to ENAV Committee on WWA Model Course on GNSS and e- Navigation	To ENAV17
7	ENG2- 11.1.7	Workshop proposal Sustainable Light & Power for the next generation	To Council 61
8	ENG2- 11.1.8	Liaison Note to ARM on navguide update	To ARM2
9	ENG2- 11.1.9	Navguide update plan 20150521	To ARM2
10	ENG2- 11.1.10	ENG Committee Workplan 2014-18 - update from ENG2	To Council 61
11	ENG2- 13.1	Report ENG2	To Council for noting

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

	Number	Title	Status
1	ENG2- 11.2.1	WG2 Draft Guideline on Commissioning	To ENG3
2	ENG2- 11.2.2	WG2 Maintenance of AtoN structures.	To ENG3
3	ENG2- 11.2.3	WG2 Solar Model Comparison	To ENG3
4	ENG2- 11.2.4	WG2 Review of IALA Documents - power systems 20141120	To ENG3
5	ENG2- 11.2.5	WG2 Draft Guideline 1077 Maintenance of Aids to Navigation	To ENG3
6	ENG2- 11.2.6	WG2 New guideline structure on buoys	To ENG3
7	ENG2- 11.2.7	WG2 Buoys and moorings working paper	To ENG3
8	ENG2- 11.2.8	Maintenance of AtoN Structures IALA - guidelines & recommendations	To ENG3
9	ENG2- 11.2.9	IALA WWA Model course revision plan 2014-2017	To ENG3
10	ENG2- 11.2.10	WG1 E-110 Ed4 Draft Rhythmic characters of lights on AtoN ENG2 notes 20150521	To ENG3
11	ENG2- 11.2.11	WG1 Draft IALA Guideline 1041 on Sector Lights	To ENG3
12	ENG2- 11.2.12	WG1 Draft IALA Guideline 1069 Ed2 Synchronisation of Lights 20150520	To ENG3
13	ENG2- 11.2.13	WG1 Draft IALA Guideline on Selection of Rhythmic Characters of Lights on Aids to Navigation 20150521	To ENG3
14	ENG2- 11.2.14	WG1 Guideline 1038 Ed2 Ambient Light Levels at which Aids to Navigation Lights should switch on and off May2009 MOD May2015 Rev2	To ENG3
15	ENG2- 11.2.15	ENG Wiki Task Register	To ENG3

ANNEX F WORK PROGRAMME – REVIEW OF PROGRESS WITH DELIVERABLES AT ENG2

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		☒	☐	☐	
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	3	☐	☒	☐	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		☒	☐	☐	
5.2.1 Identify current documents as potential Standards, Recommendations, Guidelines & Manuals	5	7		☒	☐	☐	
5.3.1 Presentation to ENG committee on new developments in AtoN & related topics	1	7		☒	☐	☐	
WG2 – Knowledge & Sustainability							

Task		Start	Planned	Revised	Progress Indicator			Status
1.5.2.	Workshop on Lights and Batteries – IALABATT/IALALITE	1	6		☒	☐	☐	Commenced ENG1
2.1.1.	Develop further guidance on plastic buoys, systems & sensors	1	6		☒	☐	☐	Commenced ENG1
2.1.2	Engineering guidance on the implementation of e-Navigation systems	3	7		☒	☐	☐	
2.2.1.	Develop guidance on sustainable AtoN design & maintenance.	3	6		☒	☐	☐	
2.2.2.	Develop guidance on the commissioning of AtoN equipment and systems and engineering audits.	2	5		☒	☐	☐	
2.3.1	Develop guidance on AtoN design & maintenance for hot climates.	4	7		☒	☐	☐	
2.3.2	Workshop on AtoN delivery and maintenance in extreme heat	3	4		☒	☐	☐	
2.4.1	Review and update guidance on safety of personnel	4	7		☒	☐	☐	
3.2.1.	Support the WWA in updating model courses on standards for training and certification of AtoN personnel	1	7		☒	☐	☐	Commenced ENG1
4.1.1.	Develop guidance on the use of heritage lighthouses for modern AtoN equipment & systems.	3	6		☒	☐	☐	
4.1.2.	Develop guidance on Maintenance of AtoN structures	2	6		☒	☐	☐	
5.1.1.	Navguide updates	3	6		☒	☐	☐	
5.1.2.	Review of IALA documents (ref ENG1 input paper on document ownership)	1	7		☒	☐	☐	Commenced ENG1

ANNEX G ACTION ITEMS*Action Items for the IALA Secretariat*

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| 1 | The Secretariat is requested to forward the ENG plan, ENG2-11.1.9, for updating the Navguide to the ARM Committee with liaison note ENG2-11.1.8. | 6 |
| 2 | The IALA Secretariat is requested to structure future IMO MSC reports with a focus on each individual IALA Committee. | 6 |
| 3 | The Secretariat is requested to forward the revised ENG Committee Workplan, ENG1-11.1.10, to Council for approval. | 9 |
| 4 | The Secretariat is requested to forward the revised ENG Committee Workplan, ENG1-11.1.10, to ENG3. | 9 |
| 5 | The Secretariat is requested to forward the revised ENG Work Programme Task Register for 2014-2018, ENG2-11.2.15 to ENG3. | 9 |
| 6 | The Secretariat is requested to forward working paper ENG2-11.2.12 to ENG3. | 10 |
| 7 | The Secretariat is requested to forward working paper ENG2-11.2.14 to ENG3 | 10 |
| 8 | The Secretariat is requested to forward working paper ENG2-11.2.10 to ENG3. | 11 |
| 9 | The IALA Secretariat is requested to forward output paper ENG2-11.1.7 to the IALA Council for approval. | 12 |
| 10 | The Secretariat is requested to review potential improvements to accessing to the CALMAR software on the IALA web site. | 12 |
| 11 | The IALA Secretariat is requested to forward Input paper ENG2-10.11 to ENG3. | 12 |
| 12 | The IALA Secretariat is requested to forward working paper ENG2-10.8 to ENG3. | 13 |
| 13 | The IALA Secretariat is requested to forward working paper ENG2-11.2.1 to ENG3. | 13 |
| 14 | The IALA Secretariat is requested to forward output paper ENG2-11.1.1 to session 60 of the IALA Council for approval. | 13 |
| 15 | The IALA Secretariat is requested to forward output papers ENG2-11.1.2, ENG2-11.1.3, ENG2-11.1.4, and ENG2-11.1.5 to the IALA Council for approval. | 14 |
| 16 | The IALA Secretariat is requested to forward liaison note ENG2-11.1.6 to the ENAV Committee. | 14 |
| 17 | The IALA Secretariat is requested to forward working paper ENG2-11.2.2 to ENG3. | 14 |
| 18 | The IALA Secretariat is requested to forward liaison note ENG2-11.1.8 regarding updating the NAVGUIDE to the ARM Committee. | 15 |
| 19 | The IALA Secretariat is requested to forward the NAVGUIDE update action plan ENG2-11.1.9 to the ARM Committee and ENG3. | 15 |
| 20 | The IALA Secretariat is requested to forward working papers ENG2-11.2.3, ENG2-11.2.4, ENG2-11.2.5, ENG2-11.2.6, ENG2-11.2.7 and ENG2-11.2.8 to ENG3. | 15 |
| 21 | The IALA Secretariat is requested to upload the paper on sound signals (from Frank Hermann) to the IALA Wiki. | 15 |
| 22 | The Secretariat is requested to forward the ENG2 Committee report (ENG2-13.1) to Council to note. | 16 |

Action Items for Members

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| 23 | Subject to his availability, Shaheen Mirza is requested to provide a report on the PIANC working group 178 meeting in Abu Dhabi in early 2016 to ENG4. | 7 |
| 24 | Mr Jong-Uk Kim is requested to progress the implementation of the Korean AtoN simulation system for the IALA WWA with Stephen Bennett. | 7 |

- 25 ENG Committee Chair is requested to consider a new work task in the ENG work programme regarding a guideline for the AtoN simulator. 7
- 26 ENG Committee Chair is requested to consider with the Chair of the ARM Committee the opportunities for IALA provided by the AtoN simulator, including opportunities for use in the risk management toolbox. 7
- 27 ENG Committee members are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet. 8
- 28 WG Chairs are requested to update the ENG Work Programme Task Register on the IALA Wiki at each ENG session. 9
- 29 Members are requested to identify further work items to contribute to the Guideline on selection of rhythmic characters. 10
- 30 Members are requested to identify further work items to contribute to the revision of Guideline 1038. 10
- 31 Sigge Gustafsson is requested to provide an input paper to ENG3 on the SMA experiences with AtoN AIS detection of vessels for switching AtoN on/off. 10
- 32 Aivar Usk is requested to provide an input paper to ENG3 on AoD – AtoN on Demand. 10
- 33 Members are requested to provide input papers in relation to the review of Recommendation E200 to ENG3. 11
- 34 Members are requested to familiarise themselves with Recommendation E-112 for Leading Lights and Guideline 1023 for the design of leading lights and provide input papers to ENG3 to support the updates. 11
- 35 Frank Herman, Jorgen Royal Petersen, Fernando Romero, Colin Day & Malcolm Nicholson are requested to work intersessionally on ENG2-11.2.11 and provide an input to ENG3. 11
- 36 Malcolm Nicholson is requested to progress Guideline 1061 Illumination of Structures intersessionally and submit an input to ENG 3. 11
- 37 Committee members are requested to note the proposed dates for the 2017 IALABATT/IALALITE Workshop. 12
- 38 Committee members are requested to identify potential presentations for the 2017 IALABATT/IALALITE workshop and advise Jorg Unterderweide. 12
- 39 Committee members are requested to provide input on radar reflectors to ENG3. 12
- 40 Committee members are requested to provide input on polyethylene materials to ENG3. 12
- 41 The French members were requested to contact Mobilis regarding provision of the Calmar software via the IALA web site. 12
- 42 Committee members are requested to review the content of the existing Guideline 1036 (environmental considerations) and Guideline 1077 (Maintenance of AtoN) with a view to creating a new Guideline and submit proposals to ENG3. 13
- 43 Members are requested to provide input papers to ENG3 on commissioning of AtoN in their services. 13
- 44 Committee members are requested to submit details of relevant documented safety procedures to ENG3. 13
- 45 The Heritage Forum members are encouraged to assist with the development of the new Guideline on the use of heritage lighthouses for modern AtoN equipment and systems in ENG3. 14
- 46 Members are requested to provide input papers to ENG3 on their experiences in the use of heritage lighthouses for modern AtoN equipment and systems. 14
- 47 Committee members are encouraged to review working paper ENG2-11.2.6 on the structure of buoy guidelines and provide an input to ENG3. 15

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| 48 | Committee members are encouraged to review working paper ENG2-11.2.8 on Maintenance of AtoN Structures IALA – guidelines and recommendations and provide an input to ENG3. | 15 |
| 49 | Simon Millyard is requested to forward the IALA welcome video to participants. | 16 |