



IALA ARM COMMITTEE

REPORT OF THE 11TH SESSION OF THE IALA ATON REQUIREMENTS AND MANAGEMENT (ARM) COMMITTEE

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13 March 2020

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**Report of the 11th Session of the IALA
AtoN Requirements and Management (ARM) Committee
9 to 13 March 2020
Executive Summary**

The 11th Session of the ARM Committee was held at Centro Argentino de Ingenieros (CAI), Buenos Aires, Argentina from 9 to 13 March 2020.

The session was attended by 46 participants from 20 countries. Four participants attended for the first time.

The Committee continued the work for the 2018-2022 work period. Working in three working groups, the Committee considered 48 input papers and produced 44 output and working documents.

The Committee completed the review of Guideline 1143 Ed.2 Unique Identifiers for Maritime Resources and this will now be forwarded to Council for approval. An Input paper to Council regarding the withdrawal of G1072 and input to the Cyber Security Workshop Steering Committee was also produced.

The Committee finalised liaison notes to:

- ENAV on statement from IALA to ITU Rec ITU-R M.1371-5;
- ENAV regarding AMRD Group B;
- LAP and PAP on IMSAS the manual;
- ENG on Guideline 1116 Selection of Rhythmic Characters and Synchronisation of Lights for AtoN;
- ENG on the draft Guideline on Tidal Current Signal System;
- ENG Regarding Possible Amendments to Recommendation E-110 with the Character for Mobile AtoN;
- ENAV regarding assigning MMSI to AIS AtoN; and
- ENAV regarding Draft Guideline on Producing an e-Navigation Operational Service Description.

The Task Plan for the ARM Committee was also reviewed and updated.

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Report of the 11th Session of the IALA

AtoN Requirements and Management (ARM) Committee

1. INTRODUCTION

The 11th session of the AtoN Requirements and Management (ARM) Committee was held from 9 to 13 March 2020 at Centro Argentino de Ingenieros (CAI), Buenos Aires, Argentina. The Chairman was Phil Day and the Secretary for the meeting was Thomas Southall.

The Committee Chair, Phil Day, welcomed both new participants and those returning to Committee for the eleventh session of the ARM Committee (ARM11).

1.1 Administration and safety briefing

Thomas Southall provided a Safety and Administration briefing to the committee including specific details of the venue. As part of the presentation the following question was asked:

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?

No patents were noted.

The following statement on the IALA General Data Protection Policy was made:

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

1.2 Welcome from the hosts

The ARM Committee and Secretary-General were warmly welcomed by Argentinian dignitaries - Comodoro Valentín Sanz Rodriguez - Servicio de Hidrografía Naval, Eng. Pablo Bereciartua – Vice-Presidente del Centro Argentino de Ingenieros, Prefecto General Miguel Angel Reyes - Argentine Coast Guard Sr. Juan Carlos Schmid - Secretario General del Sindicato de Dragado y Balizamiento. All acknowledged the excellent contribution of the ARM Committee to the safety of navigation around Argentina and wished the Committee a productive week.

1.3 Welcome address from the Secretary-General

Francis Zachariae welcomed all to ARM11 convened by IALA's member Hidrovia and expressed in a wonderful venue, the National Centre of Engineers. A special thanks was given to the main organizers Raul Escalante and Mariano Marpegan.

He hoped that participants have had a little time to visit the beautiful town of Buenos after or before the meeting.

Mr Zachariae acknowledged the very unfortunate events concerning the Corona Virus and said he was truly sorry for all the problems and inconvenience that has followed.

He noticed that on the agenda many important subjects – changes to the Maritime Buoyage Agreement based on a GAB analysis, work on the Mobile AtoN, Virtual AtoN and MASS. ARM has also given LAP an interesting task concerning IALA A or B at the poles, continued work on Maritime Services, operational service descriptions, data modelling, S-100 and 200, unique identifiers MRN, the many notes to ITU, Risk Management (IWRAP, PAWSA, SIRI etc.) – just to mention some of the issues for this week.

Mr Zachariae stated he was very encouraged by the discussion's experts held at the four-day workshop on Ranging Mode (R-mode), which took place in Saint-Germain-en-Laye in the second week of September. R-mode and VDES could be a reality and perhaps solve many problems with Resilient PNT.

Another milestone in this area was achieved in November when the World Radiocommunication Conference completed its allocation of frequencies for the VDES to also enable data communications ship-to-satellite and satellite-to-ship on a global basis.

In January The Northern Lighthouse Board kindly offered to accommodate the workshop on the future of Differential Systems in Edinburgh and I think the whole world is looking forward to hearing the excellent results from that workshop in the form of recommendations or guidelines.

IALA was very grateful to the Government of Malaysia for hosting the Diplomatic Conference in Kuala Lumpur a week ago.

Following on from the WWA Seminars on Safety of Navigation held in Marrakech in February 2018 and in Istanbul in March 2019 a third seminar also took place in Kuala Lumpur on the first day.

The Conference was a success and 50 States adopted the Convention on The International Organization for Marine Aids to Navigation. As you are aware, this new treaty instrument is designed to govern IALA as an intergovernmental organization that is fit for purpose and transparent, in line with the modern needs of the global maritime community.

The agreed transitional arrangements will ensure that, upon entry into force, the activities of our organs and the technical work of the Committees will continue uninterrupted. In other words, our responsibilities towards the maritime community will be undiminished and maintained with the customary high level of commitment to the development, improvement and global harmonization of Marine Aids to Navigation.

The French Government offered to host the signing Ceremony in November this year.

Preparations continue for the first, combined VTS-ENAV Symposium – on the theme of “Enhanced Maritime Safety and Connectivity” – and the accompanying Industrial members' exhibition is due to take place in Rotterdam in May 2020. The official website is open <https://iala-rotterdam2020.nl/> where an overview programme is available.

This will be a useful forum to explain and discuss further the drafting work achieved by the VTS Committee in updating the IMO's Guidelines for Vessel Traffic Services. The IMO aims to complete the revision of the relevant instrument – Assembly Resolution A.857(20) – by 2021.

IALA will celebrate the second World Marine Aids to Navigation Day, on 1st July, with parallel events taking place in Burgas, on the Black Sea coast of Bulgaria, and later in Tokyo, Japan. Later in the year, the Industrial Members Committee will hold its Mid Term Assembly, which will take place at IALA Headquarters in October.

With the latest reorganization the IALA and WWA staff now consist of 12 full time employed members and four consultants (three in the WWA section and one for Communication). IALA has just hired a new technical officer to work with Tom, Senor Jaime Alvarez from Spain.

IALA has grown to 306 members and they include three new National members as well as new Industry and Associate members.

Mr Zachariae wished all good luck with ARM's important work this week, and thanked our host from Argentina for the excellent cooperation and hard work in organizing this meeting.

1.4 Approval of the agenda

The agenda (ARM11-1.4.1) was approved.

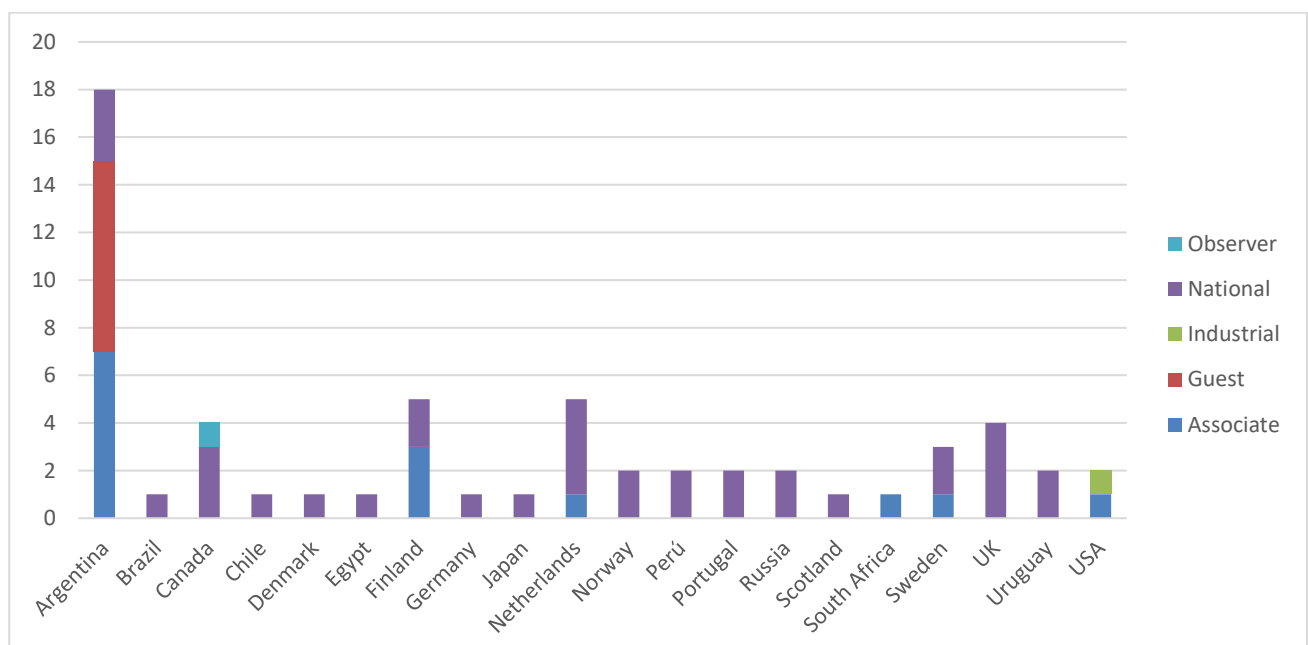
1.5 Introductions and Apologies

The session was attended by 46 participants from 20 countries attended ARM11. Four participants attended for the first time.



The list of Committee participants who attended ARM11 is attached in Annex B. New participants were welcomed in addition to those returning to the Committee. The Committee noted 17 apologies from participants who were unable to attend listed in Annex B.

The following chart shows an analysis of participants.



1.6 Programme for the week

The programme for the week, paper ARM11-1.6.1 was approved.

2. REVIEW OF ACTION ITEMS FROM LAST MEETING

2.1 Review of action items from ARM10

Input paper ARM11-2.1.1 refers. All action items for the IALA Secretariat and participants from ARM10 were noted as complete. Action 23 from ARM10 requested the Secretariat to withdraw G1072 on AtoN Information Exchange and Presentation. This has been removed from the IALA website but requires a note to Council for the Guideline to be discontinued. The ARM Committee drafted a note to Council regarding this and this will be forwarded by the Secretariat.

Action item:

The IALA Secretariat is requested to forward the note to Council (ARM11-13.3.2) regarding the withdrawal of G1072.

3. REVIEW OF INPUT PAPERS

3.1 Input papers to ARM 11

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

3.2 Input papers not related to an existing task

There were no input documents unrelated to tasks.

4. REPORTS FROM OTHER BODIES

4.1 IALA

4.1.1 Report on IALA Council

Minsu Jeon, IALA Technical Operations Manager, provided the Committee with a report from Council. The 70th session of the IALA Council was held in the Pacific Community (SPC) HQ, Noumea, New Caledonia. All Committee documents were approved with the exception of:

- The Liaison Note to ITU on AMRD Matters

The councillor from the Canadian Coast Guard expressed concerns on part of the document that would need to be more detailed and asked for the paper to be sent back to the ARM committee for further debate. The councillor from Norway supported this view. They proposed to coordinate a response and a proposal for the next ARM committee meeting.

- Input paper to ITU on Recommendation M.1371-5

The councillor from Norway expressed concerns about part of the document, particularly about special marks, and asked that it would be sent back to the ARM committee for further discussion. The councillors from Canada, Japan and Finland also supported this view.

4.1.2 Report of the IALA Policy Advisory Panel

Thomas Southall, Committee Secretary, provided a report to ARM 11 regarding the 39th session of PAP which was held at IALA Headquarters from 19 to 21 February 2020. The following was highlighted to participants:

- That the outcomes of the recent Workshop on the Future of Marine Radiobeacon DGPS/DGNSS were considered by the PAP.
- The PAP agreed that the ARM and VTS committees review the AtoN and VTS related elements of the IMO IMSAS Auditors Manual with a view to PAP40 considering to prepare a proposal for an amendment to the IMO.

- Progress was reviewed with respect to the preparation of the IALA Workshop on Cyber Security and the coordination of Cyber Security measures across the technical committees was discussed.

4.1.3 IALA Events

Committee participants were reminded of the following IALA events:

- IALA Heritage Seminar to be held between the 25 and 26 April 2020 in Salvador, Brazil;
- The combined VTS and ENAV Symposium to be held between the 25 and 29 May 2020 in Rotterdam, the Netherlands - www.iala-rotterdam2020.nl;
- Joint IHO/IALA workshop on S-100/S-200 development and portrayal in Norway between 8 and 12 June 2020. This workshop will cover the overarching goals and technical aspects regarding the development of the S-100/S-200 Product Specifications and the Portrayal of the data/information
- IALA Workshop on Cyber Security to be held between the 26 and 30 October 2020 in Quebec City, Canada.
- IALA workshop on AtoN in Autonomous World to be held between 1 and 5 Mar 2021 in Japan. The workshop will provide a forum for discussion of the IALA position on MASS amongst stakeholder groups.

Other IALA events will be publicised on the news and calendar sections of the IALA website.

4.2 IMO

4.2.1 IMO Assembly and Council

Committee noted a verbal report provided on IMO Council 122, 123 and Assembly 31. Of special interest to IALA is the process of reforming the IMO including the expansion of Council members and terms.

4.2.2 IMO NCSR

Minsu Jeon reported the result of NCSR 7. Revision of the Guidelines for VTS (Resolution A.857(20)) which was the result of extensive coordination by IALA and the VTS Committee was adopted by the meeting. The sub-Committee also decided to update the e-Navigation Strategy Implementation Plan including the Maritime Services.

4.3 E-Navigation Underway

Francis Zachariae gave the Committee a short briefing on the E-Navigation Underway North America which was held between the 12 to 13 November 2019 in Tampa, United States of America. ARM11 noted the conclusions and recommendations from the event (ARM11-4.3.1).

The e-Navigation Underway International conferences will soon be known as 'Digital@Sea'.

4.4 IHO/IALA liaison

IALA and the IHO met at the regular technical cooperation meeting in Oct 2019, the agenda included a range of matters relating to charting requirements for new light characteristics, updates to the IHO GI Registry, MRN and matters related to S-100 and S-200 matters.

5. REPORTS FROM RAPORTEURS

Each Working Group Chair provided an update on developments and areas of work within their respective areas.

5.1 Workshop on the Future of Marine Radiobeacon DGPS/DGNSS

Phil Day, ARM Chair, gave the Committee a brief report from the Workshop on the Future of Marine Radiobeacon DGPS/DGNSS recently held at the Northern Lighthouse Board Headquarters in Edinburgh between 27 and 31 January 2020.

ARM11 noted the following Workshop conclusions that IALA should consider:

- encouraging IALA members to ensure that GNSS integrity information is provided in their area of responsibility;
- encouraging IALA members who discontinue their DGNSS services, to seek alternative ways of informing mariners, in a clear and timely manner, if GNSS becomes unreliable; and
- identifying alternative new and innovative ways of providing GNSS integrity information to mariners and find ways to speed up their development, including:
 - harmonised maritime GNSS user integrity algorithms;
 - encourage the development of MSR test specification and its introduction on all vessels; and
 - the introduction of R-Mode and other solutions for mitigating GNSS vulnerabilities.
- how best to co-ordinate this work with other international bodies to achieve globally harmonised solutions.

Taking into consideration some of these key findings, a draft guideline was produced at the event. The draft Guideline has been forwarded ENG committees for further development.

6. PRESENTATIONS

6.1 IALA's Role and Strategy for the S-200 product specifications

The presentation was given by Minsu Jeon reporting the updates of S-200 PSs. He introduced the interactions between different service levels of Maritime Services, Technical Services, and Product Specifications and the ongoing work of Committees with the plan regarding the testbed.

7. WORK PROGRAMME (2018 - 2022)

The ARM Committee Task Plan for the 2018-2022 work period was reviewed (ARM11-7.1).

The following shows a summary of progress on the Task Plan at the end of ARM11.

Strategy Technical Domain	Tasks	Status
Standard 1010 – AtoN planning and service requirements	21 tasks	All tasks on schedule
Standard 1020 – AtoN Design and delivery	2 Tasks	All tasks on schedule
Standard 1050 Training and Certification	2 Tasks	All tasks on schedule
Standard 1060 Digital communications technologies	2 Tasks	All tasks on schedule
Standard 1070 Information services	14 Tasks	All tasks on schedule
Other	4 Tasks	All tasks on schedule

Action item:

The IALA Secretariat is requested to forward the ARM Committee Task Plan for 2018-2022, ARM11-13.1.1, to ARM12.

8. ESTABLISH WORKING GROUPS

Three working groups were established, as outlined below. A list of working group participants is at Annex C. The terms of reference for the ARM Committee were reviewed and updated.

Working Group (WG)	Working Group Chair / Vice Chair
WG1 – Navigational Requirements	Guttorm Tomren / Johan Westerlund
WG2 – Information Services and Portrayal	Martin Bransby
WG3 – Risk Management	Roger Barker / Ed Rogers

9. WORKING GROUP 1 – NAVIGATIONAL REQUIREMENTS (WG1)

9.1 Response to input papers

The Working Group reviewed the list of input papers and allocated them to current tasks. The below liaison notes were received from ENG and Council and responses were prepared:

9.1.1 ARM11-8.1.1 WP Annex 1 - Draft Guideline on Tidal Current Signal System (ARM10-13.2.7.1)

The Committee considered input paper ARM11-8.1.1 from ENG regarding draft guideline on Tidal Current Signal System. The committee agrees a guideline on the subject is needed but proposes that the guideline should be more general in nature, dealing with any type of meteorological and hydrological information. The guideline should not go into detail on any single type of technical solution and therefore needs to provide more general advice, while specific examples of system solutions, such as the one described in the draft guideline, are provided as examples. A liaison note was drafted along with a restructured version the draft guideline.

Task group; Johan Westerlund, Alfredo Dominguez

Action item:

The IALA Secretariat is requested to forward liaison note in response to the input document ‘Draft Guideline on Tidal Current Signal System’ (ARM11-13.2.4) and ARM11-13.2.4.1 ‘Draft Guideline on Hydrological and Meteorological Data’ to ENG.

9.1.2 ARM11-9.13 ITU Liaison Notes from Council 70

The 70th session of the IALA Council was held in the Pacific Community (SPC) HQ, Noumea, New Caledonia. All Committee documents were approved with the exception of:

- The Liaison Note to ITU on AMRD Matters

The councillor from the Canadian Coast Guard expressed concerns on part of the document that would need to be more detailed and asked for the paper to be sent back to the ARM committee for further debate. The councillor from Norway supported this view. They proposed to coordinate a response and a proposal for the next ARM committee meeting.

- Input paper to ITU on Recommendation M.1371-5

The councillor from Norway expressed concerns about part of the document, particularly about special marks, and asked that it would be sent back to the ARM committee for further discussion. The councillors from Canada, Japan and Finland also supported this view.

WG1 reviewed the feedback from Council 70 and produced two liaison notes to ENAV, one regarding filtering of AMRD Group B and the other regarding proposed changes to message 28.

Action items:

The IALA Secretariat is requested to forward Liaison Note on statement from IALA to ITU Rec ITU-R M.1371-5 (ARM11-13.0.1) to ENAV.

The IALA Secretariat is requested to forward Liaison Note regarding AMRD Group B (ARM11-13.0.2) to ENAV.

9.2 Reformat and review the IALA MBS incorporating MAtoN (Task 1.5.1)

Task group; Natasha McMahon, Peter Douglas, Laura Snoep, Risto Lang and James Collocott.

The task group continued on revising the MBS, considering the initial gap analysis that was done at ARM9. The work is now at 85% completion and a final draft should be produced at ARM12.

Action item:

*The **IALA Secretariat** is requested to forward working papers ARM11-13.2.11, ARM11-13.2.13, and ARM11-13.2.12 on the review of the IALA MBS to ARM12.*

9.3 Undertake a gap analysis of IALA guidance associated with the MBS, including 1078, The Use of AtoN in the Design of Fairways (June 2011). Identify further work to add to the task plan (Task 1.5.3)

The task team that is revising the MBS considered the initial gap analysis that was done at ARM9. This task is now considered to be complete.

Task group: James Collocott, Natasha McMahon, Peter Douglas, Laura Snoep, Risto Lang, Sakashita Hidakazu, Juan Frias, Patricio Torres, Sebastian Garcia, Maurice Julie, Oleg Gaidai, Evgenii Iaroslavl'tsev

Action item:

*The **IALA Secretariat** is requested to forward Guideline 1078 on the use of AtoN in the design of fairways (ARM11-13.2.10) as a working paper to ARM12.*

9.4 Develop a guideline for the Use of Mobile AtoN (Task 1.5.10)

Task group: Alfredo Dominguez, Trevor Harris, Yves Jaques, Mats Hörström, Kjell Johansson, Joonatan Ahlroos

The draft guideline was finalised during ARM11, taking into consideration intersessional input and consulting with previous members of the task group unable to attend ARM11. Pending approval by the Council Recommendation E-110 Rhythmic Characters of Lights on AtoN should be amended with the new character associated with MAtoN. A liaison note was drafted to inform ENG.

Pending approval by IALA Council IALA Guideline G1046 and IALA Recommendation R1015, should be reopened and updated regarding MAtoN.

Note: Following ARM11, a meeting was held between the ARM Chair, Vice-Chair and Working Group Chairs supported by the Secretariat to finalize the remaining output as agreed by ARM11 participants at plenary.

This meeting concluded that the draft MAtoN guideline should not go to Council but be forwarded to ARM12 as a working paper for finalization in order to provide clearer guidance on the AIS aspects of the document, which remain to be resolved with the eNav committee and are the subject of ongoing work with ITU and IEC.

As the draft guideline is no longer being forwarded to Council for approval the liaison note regarding Update of Recommendation E-110 Rhythmic Characters of Lights on AtoN (ARM11-13.2.5) will also no longer be forwarded to ENG but will be sent to ARM12 as a WP to be used when the guideline has been finalized.

Action item:

~~The **IALA Secretariat** is requested to forward the draft guideline on the use of Mobile AtoN (ARM11-13.2.1) to Council for approval.~~

~~The **IALA Secretariat** is requested to forward the liaison note regarding Update of Recommendation E-110 Rhythmic Characters of Lights on AtoN (ARM11-13.2.5) to ENG.~~

*The **IALA Secretariat** is requested to forward the draft guideline on the use of Mobile AtoN (ARM11-13.2.1) to ARM12 as a working paper.*

The IALA Secretariat is requested to forward the liaison note regarding Update of Recommendation E-110 Rhythmic Characters of Lights on AtoN (ARM11-13.2.5) to ARM12 as a working paper.

9.5 Develop guidance on AtoN provision in polar regions (Task 1.5.6)

The ARM Committee received a response from LAP stating that the Panel needs to investigate the matter further before providing guidance on the subject. Further work on the task is postponed until such guidance is provided, scheduled at LAP21.

9.6 Review Recommendation R-0139 on Marking of Man-made Offshore Structures

Task group: Trevor Harris, Guttorm Tomren. None of the task group members from ARM10 were present at ARM11 due to the Corona Virus outbreak.

Work on this task was progressed, it has been split into a short and general recommendation with the bulk of the document moved into a new draft guideline. Work will continue at ARM12. Prior to ARM12 there is a possibility for intersessional work from AMSA and South Korea.

Action item:

The IALA Secretariat is requested to forward the draft Recommendation R0139 and draft Guideline on marking of man-made offshore structures (ARM11-13.2.7 and ARM11-13.2.8) to ARM12 as working papers.

9.7 Review R0143 Provision of virtual aids to navigation and G1081 Virtual AtoN to reflect developments (Task 1.6.1)

Task group: Yves Jaques, Joonatan Ahlroos, Kjell Johansson, Mats Hörström.

Work on this task was progressed intersessionally prior to ARM11 and substantial progress was made during the week. In general, G1081 have been updated to reflect today's use of AIS AtoN in various user cases which have evolved since the last edition. It will be finalised at ARM12.

Action item:

The IALA Secretariat is requested to forward the draft Guideline G1081 on Virtual AtoN (ARM11-13.2.2) to ARM12 as a working paper.

9.8 In association with ENG review G1116 Selection of Rhythmic Characters and Synchronisation of Lights for [Marine] Aids to Navigation (Dec 2015) (Task 2.1.1)

Task group: Guttorm Tomren, Johan Westerlund, Øyvind Schrøder

Additional text was added regarding synchronisation of lights to G1116.

Action items:

The IALA Secretariat is requested to forward the liaison note ARM11-13.2.3 and draft Guideline G1116 (ARM11-13.2.3.1) to ENG for consideration before approval by council.

9.9 Revise G1052 Quality Management in Aids to Navigation Service Delivery (Task 1.4.1)

Task group: Øyvind Schrøder, Sami Saarela

Work on this was progressed during the week, further work on the document will be required at ARM12.

Action item:

The IALA Secretariat is requested to insert the missing figures from the original document and thereafter forward the draft Guideline G1052 (ARM11-13.2.9) to ARM12 as a working paper.

9.10 Revise G1054 Preparing for a Voluntary IMO Audit on Aids to Navigation Service Delivery (Task 1.1.2)

Work on ARM11-8.8 WP Annex 1 IMSAS - IHO-IALA GD20191016 was completed by a cross-WG task group, work on revising the Guideline will begin at ARM12.

Action item:

The IALA Secretariat is requested to forward the liaison note and associated annex (ARM11-13.0.3 and ARM11-13.0.3.1) to PAP and LAP for further consideration.

9.11 Other items

The use of AIS AtoNs is increasing, in particular, non-official/unauthorized use with regard to the fishing/aquaculture industries.

Currently, there are various methods of defining and displaying AIS AtoN on shipborne display leading (according to Canadian Coast Guard survey) to confusion among mariner users on the different types (virtual, synthetic, etc.). There is a need to enable a consistent method for the mariner and the ECDIS/radar software to decide whether an AtoN is physical or virtual. A liaison note to ENAV was produced to highlight the issues around coding/identification/portrayal of MAtoN with regard to MMSI and coding related to ITU-R M.1371-5 and IHO standards

Action item:

The IALA Secretariat are requested to forward Liaison Note regarding assigning MMSI to AIS AtoNs (ARM11-13.2.6) to ENAV.

10. WORKING GROUP 2 – INFORMATION SERVICES AND PORTRAYAL (WG2)

WG2 attendance was severely curtailed due to the ongoing global situation with the COVID-19 virus: the WG attracted only eight participants. The working group considered 16 input documents and reviewed the ARM task list from a Working Group 2 perspective and items prioritised due to the low attendance.

10.1 Develop guidance on cyber security for AtoN authorities in collaboration with all other Committees (Task 1.2.6)

Task Leaders: Martijn Ebben and Minsu Jeon

The working group worked on inputs for the Cyber Security workshop in October in Quebec City, Canada (reference WG2 tasks 1.2.6 and 6.2.2). Topics were grouped into main subjects and a proposed agenda for the workshop was produced and will be forwarded to the workshop steering committee.

Action items:

Committee Participants are invited to submit examples of cyber security systems development and incidents to ARM12, or to Martijn Ebben (m.ebben@portofrotterdam.com).

The IALA Secretariat is requested to send outputs of the WG (ARM11-13.3.10 and ARM11-13.3.11) to the cyber security workshop Steering Committee.

10.2 Review G1084 Procedure of the Authorisation of AIS AtoN (Task 2.2.1)

This item still awaits the Guideline on Mobile AtoN to enable commencement of the task.

10.3 Provide guidance on the management of requirements and requirements traceability (Task 2.2.2)

This task was completed at ARM9. Published as Guideline G1133.

10.4 Review relevant sections of NAVGUIDE as requested by Secretariat (Task 3.2.1)

Natasha McMahon, NAVGUIDE Coordinator, requested that the Working Group work on this throughout the period and provided guidance on which aspects of the NAVGUIDE were to be considered by Working Group

2; it was considered that the WG would be responsible for updating sections 4.5 and 4.6 of the NAVGUIDE. Natasha also requested that the WG consider a contribution to the MBS regarding virtual AtoN.

10.5 Review G1050 Management and Monitoring of AIS Information (Dec 2005) (Task 4.1.1)

No work was performed on this during ARM11 due to the current uncertainties around the monitoring of Mobile AtoN and Autonomous Maritime Radio Devices (AMRD). Work to commence once these issues have been addressed.

10.6 Maritime Connectivity (Task 4.2.1)

No input was available from suitable technical experts. ARM to invite the Secretary General of the Maritime Connectivity Platform Consortium to the next ARM meeting; moreover, Jin Hyoung Park, chair of the Maritime Connectivity Platform Consortium's Working Group on the Maritime Identity Register, was unavailable at ARM11.

There was some discussion regarding the MCP, including its relationship with IALA. It is hoped that this can be clarified by the Secretary General of the Maritime Connectivity Platform Consortium at the next ARM meeting.

Action item:

The IALA Secretariat is requested to invite the Secretary General of the Maritime Connectivity Platform Consortium to ARM12.

10.7 Develop guidance on Maritime Services (Task 5.1.1)

Task Force: Peter Hooijmans, LeeAnne Gordon, Michael Strandberg and Minsu Jeon.

Work was conducted on the draft Guideline on MS development and will be continued at ARM12. It was noted that there is a deadline to submit an input paper to IMO NCSR8 before the end of November 2020.

Work on a Guideline on "producing an e-Navigation Operational Service Description" continued. This document is already nearing completion, but the WG will seek the input of the ENAV Committee.

Action items:

The IALA Secretariat is requested to forward the Liaison note, with the draft Guideline as an annex (ARM11-13.1.1) to the ENAV Committee requesting comments and feedback on the Draft Guideline on "producing an e-Navigation Operational Service Description."

The IALA Secretariat is requested to forward the Draft Guideline on "producing an e-Navigation Operational Service Description" (ARM11-13.3.4 and ARM11-13.3.8) to ARM12 as working papers.

The IALA Secretariat is requested to forward the Draft Guideline on "MS Guideline development" (ARM11-13.3.9) to ARM12 as a working paper.

10.8 New Guideline on Operational considerations for S-200 (S-201 AtoN information and S-230 Application Specific Messages) (Task 5.1.2)

Task leader: Eivind Mong, Peter Hooijmans and Seewong Oh.

Significant work has been undertaken intersessionally by KRISO and CCG and this work was presented via video conference by Sewoong Oh. It was decided at the meeting that the updates suggested by KRISO will be implemented, but that Annex C to S-201 (implementation of S-201) should be moved to a separate Guideline.

KRISO has developed a spreadsheet which allows simple data entry of AtoN information, but which will allow easy conversion to the S-201 format and visualisation in the KRISO S-100 online viewer. KRISO is altruistically providing this spreadsheet for the use of IALA members.

The WG wishes to express its gratitude to the KRISO contingent for "burning the midnight oil" with a time zone difference of 12 hours from Argentina to Korea.

Action item:

Sewoong Oh, KRISO, is requested to forward the S-201 conversion spreadsheet to ARM12 as an input document.

10.9 Continue to Develop Product Specification S-201 in the Task Group already assigned (Task 5.1.3)

This work was completed at ARM10; however, some problems and gaps have already been noted and it is considered that work should continue on developing S-201 towards version 2.0.0.

Action item:

The **IALA Secretariat** is requested to update the ARM task 5.1.3 to include another output to read “Develop S-201 towards version 2.0.0.” This work will continue for the rest of the committee work period.

10.10 Develop Annex C to S-201 (Task 5.1.4)

Task leader: Sewoong Oh, assisted by Eivind Mong.

The S-201 PS contains basic information on implementation; however, this will now be developed as a separate Guideline and reside outside the PS.

KRISO also provided suggestions on implementation guidance which will be considered at ARM12.

Action items:

The **IALA Secretariat** is requested to update the ARM task 5.1.4 to amend the task to read “Develop guidance on the implementation of S-201.”

Sewoong Oh - KRISO is requested to provide the presented suggestions on implementation guidance to ARM12.

10.11 Develop Requirements for S-125 (Task 5.1.5)

Task leader: Eivind Mong

A scoping exercise was undertaken and a rudimentary sketch of a draft working paper was drawn up. This outlines the thoughts and ideas of the WG on S-125. This will be developed at the next ARM session.

Action items:

The **IALA Secretariat** is requested to forward the S-125 draft ideas paper (ARM11-13.3.5) to ARM12 as a working paper for further work.

10.12 Coordination with IHO/WMO for S-100, S-200, and MRN management (S-100/S-200 message coordination with other Committees on S-2xx development) (Task 5.1.6)

Workshop proposal was approved at Council 69 and will be held in Ålesund, Norway, 8-12 June 2020. A steering committee is finalising the arrangements, with several members of ARM on the steering committee. A show of hands just within WG2 showed that the workshop should be well attended (notwithstanding global virus pandemics).

10.13 Develop guidance on MRN for users (Task 5.1.7)

Task force: Peter Hooijmans, LeeAnne Gordon, Michael Strandberg, Minsu Jeon, Kimmo Heiskari, Dave Lewald, Martijn Ebben, Sewoong Oh, Jin hyong Park and Martin Bransby

The Working Group previously received a number of liaison notes from the ENAV Committee that make suggestions for the Guideline. The Working Group discussed that as a working principle, minor amendments would be noted and implemented when enough corrections are noted for another release; however, if there were fundamental changes to be made, these would be implemented as expeditiously as possible. It was thought that the suggested changes were major to warrant an amendment at ARM11 and this was

undertaken to address comments and issues surrounding the organisation of domains within the MRN naming structure. These took into consideration instances of MRN implementation already rolled out which did not conform to the previous edition of the Guideline.

Two GotoMeeting conferences were held with USA and Korean colleagues regarding this matter. There was initially some confusion on how to proceed; however, with some edits and added examples, the WG now considers this Guideline suitable for release as edition 2.

Action items:

*The **IALA Secretariat** is requested to forward G1143 Unique Identifiers for Maritime Resources version 2 (ARM11-13.3.3) to Council for approval.*

*The **IALA Secretariat** is requested to forward the ISO Country code versus IALA members spreadsheet (ARM11-13.3.6) to ARM12 for information.*

10.14 Develop MRN Registry Submission & Maintenance Guideline for IALA Secretariat (Task 5.1.8)

Now that changes have been made to G1143, work will continue on this, but as other work took priority in the understaffed WG, this will be actioned at ARM12.

Action item:

*The **IALA Secretariat** is requested to forward the MRN Management note (formally C65-11.4.2.29) and now (ARM11-13.3.7) to ARM12 as a working document.*

10.15 Develop Recommendation to cover MRN Guidelines (Task 5.1.9)

Now that changes have been made to Guideline 1143, work will continue on this, but as other work took priority in the understaffed WG, this will be actioned at ARM12.

10.16 Coordinate Committee support for IALA representation at IHO working groups in cooperation with Secretariat (HSSC, S-100WG, NIPWG) (Task 5.1.10)

Task leaders: Dave Lewald and Eivind Mong

The task leaders attended IHO (NIPWG7, S-100WG5) with Dave Lewald as IALA rapporteur. Work is ongoing throughout the period.

10.17 Monitor the development of S-201 Testbed (Task 5.1.11)

Task leader: Sewoong Oh

Sewoong Oh presented an update on the Republic of Korea's prototype S-200 testbed that has already been implemented as a demonstrator of some aspects of S-200. A web-based demonstration of the testbed was shown. The Working Group agreed that this work should be considered when developing S-200 within the ARM Committee.

ARM members are invited to submit updates to Sewoong Oh on the progress of this topic to be presented at each ARM meeting. These updates will be used as inputs to the development of S-201. Work in this item will take place throughout the period. Sewoong Oh introduced a MS Excel template for the conversion of AtoN databases to an S-201 format which KRISO was giving to IALA for the benefit of all IALA members.

Action item:

*That **Committee participants** are requested to submit updates on the development of S-201 to Sewoong Oh for ARM12.*

10.18 Review G1072 AtoN Information Exchange and Presentation (Dec 2009) and consider if contents of G1105 can be incorporated (Task 5.2.1)

Task leader: Martin Bransby

A review of G1072 and G1105 was conducted at ARM10 where it was concluded that revision and restructuring of IALA documentation relating to portrayal and symbology (in both VTS and AtoN) for shore-based users is necessary. The WG recommended discontinuing G1072 and significant revision to G1105, to be coordinated with the VTS committee.

In discussion with the secretariat, the procedure for withdrawing the Guideline was slightly wrong, so it didn't happen. This is corrected here.

Action items:

*The **IALA Secretariat** is requested to send a note to Council (ARM11-13.3.2) requesting that G1072 on AtoN Information Exchange and Presentation is withdrawn.*

*That **Committee participants** are invited to contribute to a concept on future IALA documents regarding portrayal and symbology and input these to ARM12.*

10.19 Develop Guideline on ship reporting from the shore-side perspective (Task 5.2.2)

Task leader: Fred Pot, assisted by Mr. Wen, Dave Lewald, Martijn Ebben and Michael Strandberg

The input paper to ARM11 on this subject (ARM11-9.5) was not progressed during this session; instead, a scheduled conference call for the overarching Ship reporting Task Group (SRTG) took place.

The main points of the telecom were:

Next steps in development of the IALA Guideline

Presentation of a suggested architectural solution was done by Mr. Wen, who welcomed comments and suggestions.

This approach includes the notion of a central repository to hold updated published information on reporting formalities by Authorities (Worldwide); this approach was questioned by Michael Strandberg, expressing a view to provide this required service by other means, IMO GSIS (as a preference to hold WEB link details as to where this information can be obtained).

A 'work in progress' paper on the same subject, prepared by the STM BALT SAFE project, was mentioned as a candidate reference to this, and subsequently forwarded by Michael Strandberg to Fred Pot for sharing among the TG members.

Expert Group on Data Harmonisation (EGDH)

It was recognised that the IMO EGDH group is working on expanding the IMO Compendium with data sets beyond the FAL Convention, which would potentially be the focal point for data sets foreseen as required for the scope of this ARM task. The process to engage the Group was clarified by Michael Strandberg.

Migration to a digital ship reporting system

A migration to a digital Ship reporting System process form part of the Guideline and should be detailed when the operational and technical services are known in more detail.

The Guideline is to be worked on intersessionally.

Action items:

***Michael Strandberg** and **Fred Pot** are requested to provide input to ARM12 on the matter post the intersessional meeting.*

10.20 Develop guidance on the symbology and portrayal of AtoN (with WG1) (Task 5.3.1)

Task leader: Sewoong Oh and Eivind Mong

As S-201 version 1.0.0 is complete, the task leaders will implement guidance *within* the S-201 Product Specification Annex E at future ARM meetings.

10.21 Participate in an ENG led joint workshop on cyber security (Task 6.2.2)

The ARM Chair is co-ordinating this on behalf of the ARM Committee. The workshop will take place in Quebec, Canada during the period 26-30 October 2020. Cross-refer task 1.2.6. At least five of the WG attendees will participate in the workshop. It was noted that the Secretariat had already been actioned to send the output of ARM10 to the cyber security workshop, so this was in hand.

Action item:

The IALA Secretariat to consider consolidating all documents relating to the cyber security workshop from all committees and forward them as input to the cyber security workshop steering committee.

10.22 Action items from input documents

Most input documents are working papers or information to do with the production and development of current tasks.

10.22.1 Service Specification S-124 – with Annexes

The ARM committee compliments the authors, of the Technical Service Specification for the promulgation of S-124 data, for a very in depth and complete document. The ARM Committee has some suggestions for the consideration of the authors.

The document is missing the connection with MS5. It does not describe what the information needs from MS5 are and does not describe how these information needs lead to functional requirements. If the relation with MS5 is not specific this could make validation of the service difficult, because there is no traceability to the information needs which have to be realised by the technical service. Furthermore, the technical service specification assumes that the MCP is the platform for the connectivity. ARM suggests that the connectivity part of the service should be platform agnostic.

11. WORKING GROUP 3 – RISK MANAGEMENT (WG3)

11.1 Review G1018 Risk Management to ensure compatibility with risk toolbox. Includes full review of underlying Risk Toolbox documentation G1123, G1124, G1138 (Task 1.2.1)

The Working Group undertook an extensive review of the fundamental basis of Guideline 1018 Ed.4 Risk Management. The review concluded that the IMO Formal Safety Assessment approach to risk management should be adopted as the basis for the guideline based on proposals put forward by the Working group Chair and Francis Zachariae, IALA Secretary-General. Although reference to ISO 31000 will remain in the guideline to provide a strategic risk management overview to the guideline. This update to the guideline was undertaken by a Sub-group comprising of Prof Floris Goerlandt, Mr Valtteri Laine, and Mr Ernst Bolt.

The Working Group also identified the need for a basic risk assessment tool that could be used by IALA members to record decisions for simple risk assessment – e.g. marking of a wreck, changing characteristics of a Aid to Navigation (etc.), which would ensure they meet the SOLAS Chapter 5 Regulation 13 requirement for Aid to Navigations decisions to be risk based.

Action Items:

The IALA Secretariat is requested to forward the working paper (ARM11-13.4.1) Guideline 1018 Ed.4 Risk Management as input to ARM12.

11.1.1 Review of Guideline 1124 Ed.1 The use of PAWSA MkII for Waterway Design and AtoN Planning

An extensive review of the PAWSA guideline was undertaken by the Working Group including updating of the guideline structure (which is to become standardized for all IALA Toolbox guidelines). General textual changes and comments related to standardization of terminology/nomenclature and cross reference to 1018 Risk Management Guidelines were also undertaken.

Action Items:

The IALA Secretariat is requested to forward the working paper (ARM11-13.4.3) WP Guideline 1124 Ed1 The use of PAWSA MkII June 2017 (ARM10-10.3) as input to ARM12.

11.1.2 Review of Guideline 1123 Ed.1 The use of IWRAP MkII as input to ARM11 for Waterway Design and AtoN Planning

The Working Group undertook a review of the IWRAP guideline and agreed to update the structure to mirror the PAWSA guideline and carry through similar standardization of terminology / nomenclature and cross referencing to 1018 Risk Management Guidelines.

The Working Group recommended the setup of an IWRAP technical user group meeting to determine a plan for IWRAP development, to include for example review and update of causation probabilities functionality, addition of consequence modelling, and addition of risk control effectiveness functionality.

It was also agreed to ensure that the analytical outputs of IWRAP and their benefit are clearly specified in the guideline (e.g. density analysis, track analysis, emissions and playback – some of which are newly introduced into IWRAP), and that focus remained on streamlining collation of input AIS data through IALANET.

Action Items:

The IALA Secretariat is requested to forward the working paper (ARM11-13.4.2) Guideline 1123 Ed.1 The use of IWRAP MkII (ARM 10-10.2) as input to ARM12.

The IALA WWA are asked to consider setting up an IWRAP user group workshop in the future.

11.1.3 Review of Guideline 1138 Ed.1 The use of SIRA for Waterway Design and AtoN Planning

A short review of the SIRA guideline was undertaken.

Action Item:

The IALA Secretariat is requested to forward the working paper (ARM11-13.4.5) WP Guideline 1138 Ed.1 The use of SIRA Dec2017 V as input to ARM12.

11.1.4 Review of Guideline 1058 Ed.2 Use of Simulations a Tool for Waterway Design and AtoN Planning

This guideline was not progressed as simulation expertise was not available at ARM 11.

Action Item:

The IALA Secretariat is requested to forward the working paper (ARM11-13.4.10) Guideline G1058 Ed.1 The use of Simulations a Tool for Waterway Design and AtoN Planning as input to ARM12.

11.2 Review R0142 Maritime Data Sharing IALA Net to reflect new title “Maritime data sharing” and the storage and use of historical [AIS and other] data for risk analysis (Task 1.2.2)

The Working Group fully supports the continuing development of IALANET.

Many countries are reluctant to share data for many reasons, primarily national policy. As such it is, unfortunately, a fact that there exists a gap in AIS coverage provided by IALANET.

Quality of data is a concern and especially how to highlight poor quality data as it potentially can have a fundamental impact on the results of the assessment.

IALANET is currently restricted in use to National Authorities, who have contributed to the database. However, ideally, the data should also be available to all members. A possible opening of the IALANET to other users should be considered during the future development of the service for the purpose of expanding and improving the use of IWRAP and risk management in general.

11.3 Review G1086 Global Sharing of Maritime Data (June 2012) in collaboration with task 1.2.2 (R0142 review) (Task 1.2.3)

The IALANET will undergo some additional development in near future and therefore any further revision and modification of the Guideline will be postponed until later in the working period in order to

accommodate any future changes of the use of IALANET. Despite this, a small task group made a preliminary review of G1086 identifying early needs for revision. The outcome of the review will serve as input to later Committee meetings.

Action Items:

The IALA Secretariat is requested to forward the WP 1086 Ed1 Global Sharing of Maritime Data_22Jun2012 (ARM11-10.8) to ARM12.

11.4 In cooperation with ENG (task 1.2.1) revise R0138 and G1058 and G1097 on simulation use by AtoN authorities (Task 1.2.4)

Analysis and review of the Guideline G1097 and the Recommendation R0138 will be postponed until the next Committee meeting ARM 12 when hopefully technical expertise will be present.

Action Items:

The IALA Secretariat requested to forward the input paper (ARM11-13.4.9) Recommendation R0138 Ed.1 The Use of GIS and Simulation by Aids to Navigation Authorities as input to ARM12.

The IALA Secretariat is requested to forward the working paper (ARM11-13.4.10) Guideline 1058 Ed.2 Use of Simulations a Tool for Waterway Design and AtoN Planning as input to ARM12.

The IALA Secretariat is requested to forward the input paper (ARM11-13.4.11) Draft Guideline 1097 Ed.1.1 Technical Features and Technology Relevant for Simulation of AtoN-working paper (ENG9-12.10.1) as input to ARM12.

11.5 Develop Recommendation for marine data sharing for risk assessment analysis or incorporate with R0142 task 1.2.2 (Task 1.2.5)

Task 1.2.5 is considered to be almost identical to Task 1.2.2. Hence, this Task 1.2.5 is closed and the content of the task will be handled under Task 1.2.2.

11.6 Develop document to promulgate IALA risk management tool box to IMO (SN circular) (Task 1.2.7)

Task 1.2.7 will be started when the full review of guideline G1018 together with the supporting toolbox guidelines have been brought to a significant level of maturity (Task 1.2.4).

11.7 Review G1020 Training Related to [Marine] Aids to Navigation (Dec 2005) (Task 3.1.1)

A draft version of the IALA Model Course L1.3 on Risk Management Tool Ed 2 was sent to WWA for final amendment after ARM9. The Model Course has since been approved by Council.

11.8 Review relevant sections of NAVGUIDE as requested by Secretariat (Task 3.2.1)

In conjunction with other working groups, Working Group 3 has been assigned to various sections to be included in the revised NAVGUIDE and commenced early assessment of the requirements. In addition, on completion of the revision of G1018 suggested amendments to the NAVGUIDE text will be provided.

11.9 Cooperate with WWA in providing Risk Seminar(s) (Task 6.1.1)

Coordination and cooperation between the WWA, its lecturers and Working Group 3 is essential for providing guidance to National Members as well as education through the Risk Management Courses provided by WWA.

The WWA Secretariat informed that there is a growing interest for Risk Management Courses around exceeding available resources. The WWA is currently looking into possibilities to respond to the interest.

The Working Group Chair confirmed that Working Group 3 are continuing to fully support, where appropriate, the WWA in delivery of Risk Management Seminars.

12. REVIEW OF OUTPUT AND WORKING PAPERS

The Committee produced 44 output and working documents. Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

13. ANY OTHER BUSINESS

Participants raised a question regarding how an authority could demonstrate compliance with IALA standards. The Secretary-General addressed this question by stating that the Standards and associated Recommendations and Guidelines are not compulsory, however under the IMO IMSAS audit Member States obligations under SOLAS are those that would be examined. This was covered further when the Committee developed the questions in the IMSAS Auditors Manual Annex 3 during ARM11.

14. DATE AND VENUE OF NEXT MEETING

The 12th session of the ARM Committee (ARM12) will be held from 19 to 23 October 2020 at IALA Headquarters in Saint-Germain-en-Laye, France.

15. CLOSING OF THE MEETING

The Committee Chair thanked the Committee and Working Group chairs for their hard work and effective output during the session particularly noting the absence of some Chairs, Vice-Chairs and other participants of the committee. He thanked the hosts for their exceptional service during the week particularly Eng. Raul Escalante, Mariano Marpegan and Sebastian Garcia and the IALA Secretariat for their support. Taking the international situation into account he wished everyone good health and a safe journey home.

16. LIST OF ANNEXES

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



11th Meeting of the AtoN Requirements and Management Committee (ARM11)

The 11th meeting of the **ARM Committee** will be held from 9 - 13 March 2020, at Centro Argentino de Ingenieros (CAI), Buenos Aires, Argentina.

The opening plenary will commence at 1300 on Monday 9 March 2020, and the closing plenary will end by approximately 1200 on Friday 13 March.

Committee Chair, Vice-Chair and Working Group Chairpersons are requested to meet at 0900 on Monday 9 March.

Agenda

1. Introduction
 - 1.1. Administration and Safety Briefing
 - 1.2. Welcome from the hosts
 - 1.2.1. Comodoro Valentín Sanz Rodriguez - Servicio de Hidrografía Naval
 - 1.2.2. Eng. Pablo Bereciartua – Vice-Presidente del Centro Argentino de Ingenieros
 - 1.2.3. Prefecto General Miguel Angel Reyes -Argentine Coast Guard
 - 1.2.4. Sr. Juan Carlos Schmid - Secretario General del Sindicato de Dragado y Balizamiento
 - 1.3. Welcome address from the Secretary-General
 - 1.3.1. Exchange of Gifts and Short Break
 - 1.4. Approval of agenda
 - 1.5. Apologies and introductions
 - 1.6. Programme for the week
2. Review of action items from last meeting
 - 2.1. Review of action items from ARM10
3. Review of input papers
 - 3.1. Input papers to ARM 11
 - 3.2. Input papers not related to an existing task
4. Reports from other bodies
 - 4.1. IALA
 - 4.1.1. IALA Council
 - 4.1.2. IALA Policy Advisory Panel (PAP)
 - 4.1.3. IALA Events
 - 4.2. IMO
 - 4.2.1. IMO Assembly and Council

- 4.2.2. IMO NCSR
- 4.3. E-Navigation Underway
- 4.4. IHO/IALA liaison
- 5. Reports from rapporteurs
 - 5.1. Working Group 1
 - 5.2. Working Group 2
 - 5.3. Working Group 3
 - 5.4. Workshop on the Future of Marine Radiobeacon DGPS/DGNSS
- 6. Presentations
 - 6.1. IALA's Role and Strategy for the S-200 product specifications Minsu Jeon
- 7. Work Programme (2018 - 2022)
- 8. WG1 - Navigational requirements
- 9. WG2 - Information Services and Portrayal
- 10. WG3 - Risk management
- 11. Any Other Business
- 12. Establish Working Groups
- 13. Review of output and working papers
 - 13.1. ARM task plan
 - 13.2. WG1
 - 13.3. WG2
 - 13.4. WG3
- 14. Review of session report
- 15. Date and venue of next meeting
- 16. Close of the meeting

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Apologies for absence

Name	Organisation	Country/Category of membership
Dave Lewald	US Coast Guard	United States / National
Dave Merrill	US Coast Guard	United States / National
Anthony Maffia	US Coast Guard	United States / National
Catherine Steinberg	Force Technology	Denmark / Associate
Jakob Bang	Danish Maritime Authority	Denmark / National
Peter Dam	Danish Maritime Authority	Denmark / National
Bill Cairns	American Pilots	United States / Associate
Ahmed Farouk	Egyptian Authorities for Maritime Safety	Egypt / National

Grant Judson	AMSA	Australia / National
Jan Hendrick	WSV	Germany / National
Jon Leon Ervik	Norwegian Coastal Administration	Norway / National
Gael Nassif	Direction des Affaires Maritimes	France / National
Dr Prof Ranxuan Ke	JiMei University	Peoples Republic of China / Associate
Daewoong Kang	Ministry of Oceans and Fishries	Republic of Korea / National
Miyoung Kang	Ministry of Oceans and Fishries	Republic of Korea / National
Jaehoon Jung	Korea Institute of Aids to Navigation	Republic of Korea / Associate
Junki Bae	Korea Institute of Aids to Navigation	Republic of Korea / Associate
Sewoong Oh	KRISO	Republic of Korea / Associate

New Participants

Name	Organisation	Country/Category of membership
Sami Saarela	Finnish Transport & Communications Agency	Finland/National
Floris Goerlandt	Dalhousie University	Canada / Observer
Rafael Palmer	Diretoria de Hidrografia e Navegação- Brazilian Navy	Brazil / National
Sebastian García	Hidrovia SA	Argentina / Associate

Working Group 1

Navigational Requirements

	Participants	Organisation / Country
1	Guttorm Tomren (Chair)	Norwegian Coastal Administration, Norway
2	Johan Westerlund (Vice Chair)	Swedish Maritime Administration, Sweden
3	Juan Frias	Servicio de Hidrografia Naval, Argentina
4	Sebastian Garcia	Hidrovia S.A., Argentina
5	Natasha McMahon	Canadian Coast Guard
6	Patricio Torres	Dirección General del Territorio Marítimo y de Marina Mercante de Chile
7	Joonatan Ahlroos	Finnish Transport Infrastructure Agency
8	Risto Lang	Finnish Transport and Communication Agency
9	Sami Saarela	Finnish Transport and Communication Agency
10	Maurice Julie	Light Dues Board Peninsular Malaysia Marine Department
11	Laura Snoep	Ministry of Infrastructure and Water Management
12	Øyvind Schrøder	Norwegian Coastal Administration
13	Evgenii Iaroslavtsev	Principal Department of Navigation & Oceanography
14	Oleg Gaidai	Principal Department of Navigation & Oceanography
15	Peter Douglas	Northern Lighthouse Board
16	James Collocott	South African Maritime Safety Authority
17	Mats Hörström	Swedish Transport Agency
18	Kjell Johansson	Swedish Maritime Administration
19	Trevor Harris	Trinity House
20	Alfredo Dominguez	Tideland Signal Corporation
21	Sakashita Hidakazu	Japan Coast Guard
22	Yves Jaques	Canadian Coast Guard
23	Guttorm Tomren (Chair)	Norwegian Coastal Administration, Norway
24	Johan Westerlund (Vice Chair)	Swedish Maritime Administration, Sweden
25	Juan Frias	Servicio de Hidrografia Naval, Argentina
26	Sebastian Garcia	Hidrovia S.A., Argentina
27	Natasha McMahon	Canadian Coast Guard
28	Patricio Torres	Dirección General del Territorio Marítimo y de Marina Mercante de Chile
29	Joonatan Ahlroos	Finnish Transport Infrastructure Agency

Working Group 2**Information Services and Portrayal**

	Name	Organisation / Country
1	Martin Bransby	GRAD (UK & Ireland)
2	Eivind Mong	Canadian Coast Guard
3	Michael Strandberg	Danish Maritime Authority
4	LeeAnne Gordon	National Geospatial Intelligence Agency (USA)
5	Minsu Jeon	IALA Technical Officer
6	Martijn Ebben	Port of Rotterdam Authority (Netherlands)
7	Peter Hooijmans	Ministry of Infrastructure & Water Management (Netherlands)
8	Kimmo Heiskari	Finnish Transport Infrastructure Agency

Working Group 3**Risk Management**

	Name	Organisation / Country
1	Captain Roger Barker (Chair)	Trinity House / UK
2	Francis Zachariae	IALA / Secretary General
3	Mr Raul Escalante	Hidrovia S.A. / Argentina
4	Prefecto Roberto Rodriguez	Prefectura Naval Argentina / Argentina
5	Prefecto Julio Bernal	Prefectura Naval Argentina / Argentina
6	Mr Rafael Palmer	Diretoria de Hidrografia e Navegacao Nautica do Sudeste - Brazilian Navy / Brazil
7	Prof Floris Goerlandt	Dalhousie University / Canada
8	Mr Mohamed Ali	Egyptian Authority for Maritime Safety / Egypt
9	Mr Valtteri Laine	Finnish Transport and Communication Agency / Finland
10	Mr Ernst Bolt	Netherlands
11	Captain Juan Gonzales	Dirección de Hidrografía y Navegación de la Armada del Peru / Peru
12	Lcdr Artur Dias Marques	Direcção de Faróis - Portuguese Lighthouse Authority / Portugal
13	Mr Arlindo Santos	Direcção de Faróis - Portuguese Lighthouse Authority / Portugal
14	Captain Marcelo Olivera	Servicio de Iluminación y Balizamiento de la Republica Oriental del Uruguay / Uruguay
15	Capt Jorg Kuchta	Federal Waterway and Shipping Administration / Germany
16	Dr Edward Rogers	NASH Maritime / UK
17	Eng. Antonella Mancere	Hidrovia SA / Argentina (Wednesday / Thursday)

ANNEX D LIST OF INPUT PAPERS

All papers are posted on the Committee section of the IALA website

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM11-	1.4.1	Provisional Agenda	IALA Secretariat	All
ARM11-	1.6.1	Programme for the Week	IALA Secretariat	All
ARM11-	2.1.1	Action Items from ARM10	IALA Secretariat	All
ARM11-	3	Input paper Committee meeting template	IALA Secretariat	All
ARM11-	3.1	List of Input Papers to ARM11	IALA Secretariat	All
ARM11-	4.1.2.1	MASS Workshop Proposal post PAP39 (PAP39-6.1.5.1.1)	PAP39	All
ARM11-	4.1.2.2	Report of PAP39 (PAP39-8.1)	PAP39	All
ARM11-	4.3.1	ENUW NA 2019 Conclusion and Recommendations	ENUW NA	All
ARM11-	7.1	ARM Task Plan	Vice-Chair	All
ARM11-	8.1	WP Liaison Note to All Committees on Tidal Display Signal System (ARM10-13.2.7)	ARM10	WG1
ARM11-	8.1.1	WP Annex 1 - Draft Guideline on Tidal Current Signal System (ARM10-13.2.7.1)	ARM10	WG1
ARM11-	8.2	WP R1001 Ed1 The IALA Maritime Buoyage System_XXX (1) (ARM10-13.2.8)	ARM10	WG1
ARM11-	8.2.1	WP_WG1_Task Team_MBS_V3 (ARM10-13.2.8.1)	ARM10	WG1
ARM11-	8.2.2	ARM11-8.2.2 WP MBS Review gap analysis initial (ARM10-13.2.8.2)	ARM10	WG1
ARM11-	8.3	WP 1078 - The use of AtoN in the design of fairways (ARM10-13.2.9)	ARM10	WG1
ARM11-	8.4	WP Draft IALA Guideline on Mobile AtoN 16 Oct clean copy (ARM10-13.2.10)	ARM10	WG1
ARM11-	8.5	WP WG1 Marking of man-made offshore structure (ARM10-13.2.11)	ARM10	WG1
ARM11-	8.6	WP 1116-Ed.1-Selection-of-Rhythmic-Characters-and-Synchronisation-of-Lights-for-AtoN (ARM10-13.2.12)	ARM10	WG1
ARM11-	8.7	WP 1052-Ed.3-Quality-Management-Systems-for-Aids-to-Navigation-Service-Delivery (ARM10-13.2.13)	ARM10	WG1
ARM11-	8.8	WP Annex 1 IMSAS - IHO-IALA GD20191016 (ARM10-13.2.14)	ARM10	WG1
ARM11-	8.9	WP G1081 Provision of Virtual Aids to Navigation (ARM10-13.2.15)	ARM10	WG1
ARM11-	8.10	Liasion note to ARM From LAP20 on IALA Regions at the Poles	LAP20	WG1
ARM11-	9.1	WP ARM Maritime Service Guideline development V1.0 (ARM10-13.3.5)	ARM10	WG2
ARM11-	9.2	WP Draft Guideline producing an e-Nav Operational Service Description (ARM10-13.3.6)	ARM10	WG2
ARM11-	9.3	WP DRAFT_1143 Ed.2 Unique Identifiers for Maritime Resources_EMLG edits (ARM10-13.3.7)	ARM10	WG2
ARM11-	9.4	WP MRN GuidelineTrackingSheet (ARM10-13.3.8)	ARM10	WG2

Meeting	Paper Number	Input Paper Title	Source	Presented by / WG
ARM11-	9.5	WP SRTG ARM10 Report v1.6 (ARM10-13.3.9)	ARM10	WG2
ARM11-	9.6	Input paper on the IALA governance of MRN	KRISO/OFFIS	WG2
ARM11-	9.7	Input paper Committee meeting template for draft OSD guideline	Rijkswaterstaat	WG2
ARM11-	9.7.1	Draft Guideline on producing an e-Navigation Operational Service Description	Rijkswaterstaat	WG2
ARM11-	9.8	Proposal for MRN Management by National Authorities	NGA	WG2
ARM11-	9.8.1	IALA_MRN_NationalAuthority	NGA	WG2
ARM11-	9.8.2	ISO-IALANationalAuthorities	NGA	WG2
ARM11-	9.9	Service spec S124 - with annexes	KRISO/OFFIS	WG2
ARM11-	9.10	2020-GENDIST-0002 MEJ RTCM WRC19	GRAD	WG2
ARM11-	9.11	Input Paper to ITU on AMRD (C70-11.2.4 (ARM10-3.19))	C70	WG2
ARM11-	9.12	Input Paper to ITU preliminary draft revision of ITU-R M.1371-5 (C70-11.2.5 (ARM10-3.20))	C70	WG2
ARM11-	9.13	ARM11-9.13 ITU Liaison Notes from Council 70	IALA Secretariat	WG2
ARM11-	10.1	WP Guideline_1018_RiskMan_work (ARM10-13.4.1)	ARM10	WG3
ARM11-	10.2	WP Guideline 1123 Ed1 The use of IWRAP MKII-June 2017 (ARM10-13.4.2)	ARM10	WG3
ARM11-	10.3	WP Guideline 1124 Ed1 The use of PAWSA MKII June 2017 (ARM10-13.4.3)	ARM10	WG3
ARM11-	10.4	WP PAWSA Work Group Summary 14-18 October (ARM10-13.4.4)	ARM10	WG3
ARM11-	10.5	WP Guideline 1138 Ed.1 The use of SIRA Dec2017 V (ARM10-13.4.5)	ARM10	WG3
ARM11-	10.6	WP IALA_SIRA_Reccomendations (ARM10-13.4.6)	ARM10	WG3
ARM11-	10.7	WP IMO_FSA_IALAToolBox_Schematic (ARM10-13.4.7)	ARM10	WG3
ARM11-	10.8	WP 1086 Ed1 Global Sharing of Maritime Data_22Jun2012 (ARM10-13.4.8)	ARM10	WG3
ARM11-	10.9	WP Recommendation RO138 (O-138) Use of GIS and Simulation by AtoN Authorities (ARM10-13.4.9)	ARM10	WG3
ARM11-	10.10	WP Guideline G1058 Ed.2 (ARM10-13.4.10)	ARM10	WG3
ARM11-	10.11	WP Draft Guideline 1097 Ed.1.1 Technical Features and Technology Relevant for Simulation of AtoN (ARM10-13.4.11)	ARM10	WG3

Output documents are submitted for review/action by a body other than the Committee initiating the document. Working Papers are documents that will remain within the committee for further review.

Meeting	Agenda Item	Output Paper Title	Source	Action
ARM11-	13.0.1	Liaison Note to ENAV on statement from IALA to ITU Rec ITU-R M.1371-5	WG1	To ENAV
ARM11-	13.0.2	ARM11-13.0.2 Liaison Note to ENAV regarding AMRD Group B	WG1	To ENAV
ARM11-	13.0.3	Liaison Note to PAP / LAP - IMSAS Audit Manual Annex 3 AtoN Questions	Committee	To LAP and PAP
ARM11-	13.0.3.1	Annex 1 - IMSAS Manual Annex 3 with Revised AtoN Questions	Committee	To LAP and PAP
ARM11-	13.1.1	ARM Task Plan	Committee	ARM12
ARM11-	13.2.1	WP New Guideline on MAtON	WG1	Council Note: Now a WP
ARM11-	13.2.2	WP Revised Guideline 1081 on Virtual AtoN	WG1	ARM12
ARM11-	13.2.3	Liaison Note to ENG on the Revised G1116 Selection of rhythmic characters and synchronisation of lights for Aids to Navigation	WG1	To ENG
ARM11-	13.2.3.1	Annex 1 - Revised Guideline 1116 on Selection of rhythmic characters and synchronisation of lights for Aids to Navigation	WG1	To ENG
ARM11-	13.2.4	Liaison Note to ENG on Tidal Stream Data	WG1	To ENG
ARM11-	13.2.4.1	Annex 1 - Draft Guideline on Hydrological and Meteorological Data	WG1	To ENG
ARM11-	13.2.5	WP Liaison Note to ENG on Rhythmic Characters (MAtON)	WG1	To ENG Note: Now a WP
ARM11-	13.2.6	Liaison Note to ENAV on Allocation of MMSI for AIS AtoN	WG1	To ENAV
ARM11-	13.2.7	WP Draft Recommendation O139 Marking of man made offshore structure (ARM10-13.2.11) - Guidance extracted to draft guideline	WG1	ARM12
ARM11-	13.2.8	WP for ARM12 Draft guideline on man made structures - Extracted from O139	WG1	ARM12
ARM11-	13.2.9	WP 1052-Ed.3-Quality-Management-Systems-for-Aids-to-Navigation-Service-Delivery (ARM11-8.7)	WG1	ARM12
ARM11-	13.2.10	WP Draft Guideline 1078 The Use of AtoN in the Design of Fairways	WG1	ARM12
ARM11-	13.2.11	WP History of the MBS	WG1	ARM12
ARM11-	13.2.12	WP NAVGUIDE 2022 Publication Plan ARM10 Input	WG1	ARM12
ARM11-	13.2.13	WP R001 Ed.1 The IALA Maritime Bouyage System	WG1	ARM12
ARM11-	13.3.1	Liaison Note to ENAV plus Annex on Producing Maritime Operational Service Descriptions	WG2	To ENAV
ARM11-	13.3.2	Note to Council - Withdrawal of Guideline 1072	WG2	To Council
ARM11-	13.3.3	Revised G1143 UNIQUE IDENTIFIERS FOR MARITIME RESOURCES	WG2	To Council

ARM11-	13.3.4	WP Draft Guideline on Operational Service Descriptions	WG2	ARM12
ARM11-	13.3.5	WP Draft of Ideas Concerning S-125	WG2	ARM12
ARM11-	13.3.6	WP ISO Country Code vs IALA Members	WG2	ARM12
ARM11-	13.3.7	WP MRN Management Note	WG2	ARM12
ARM11-	13.3.8	WP Annex 1 to ARM11-13.3.4 on OSD	WG2	ARM12
ARM11-	13.3.9	WP MS Guideline on Maritime Service Guideline Development	WG2	ARM12
ARM11-	13.3.10	Cyber Workshop Grouped Topics	WG2	Cyber Security Steering Committee
ARM11-	13.3.11	Cyber Workshop Suggestions for the Workshop Planning	WG2	Cyber Security Steering Committee
ARM11-	13.4.1	WP Guideline_1018_RiskMan_work (ARM10-13.4.1)	WG3	ARM12
ARM11-	13.4.2	WP Guideline 1123 Ed1 The use of IWRAP MKII-June 2017 (ARM10-13.4.2)	WG3	ARM12
ARM11-	13.4.3	WP Guideline 1124 Ed1 The use of PAWSA MKII June 2017 (ARM10-13.4.3)	WG3	ARM12
ARM11-	13.4.4	WP PAWSA Work Group Summary 14-18 October (ARM10-13.4.4)	WG3	ARM12
ARM11-	13.4.5	WP Guideline 1138 Ed.1 The use of SIRA Dec2017 V (ARM10-13.4.5)	WG3	ARM12
ARM11-	13.4.6	WP IALA_SIRA_Recommendations (ARM10-13.4.6)	WG3	ARM12
ARM11-	13.4.7	WP IMO_FSA_IALAToolBox_Schematic (ARM10-13.4.7) (Wthdrawn)	WG3	ARM12
ARM11-	13.4.8	WP 1086 Ed1 Global Sharing of Maritime Data_22Jun2012 (ARM10-13.4.8)	WG3	ARM12
ARM11-	13.4.9	WP Recommendation RO138 (O-138) Use of GIS and Simulation by AtoN Authorities (ARM10-13.4.9)	WG3	ARM12
ARM11-	13.4.10	WP Guideline G1058 Ed.2 (ARM10-13.4.10)	WG3	ARM12
ARM11-	13.4.11	WP Draft Guideline 1097 Ed.1.1 Technical Features and Technology Relevant for Simulation of AtoN (ARM10-13.4.11)	WG3	ARM12
ARM11-	14.1	Report of ARM11	Committee	To Council

Action Items for Secretariat

1. The **IALA Secretariat** is requested to forward the note to Council (ARM11-13.3.2) regarding the withdrawal of G1072. 8
2. The **IALA Secretariat** is requested to forward the ARM Committee Task Plan for 2018-2022, ARM11-13.1.1, to ARM12. 10
3. The **IALA Secretariat** is requested to forward liaison note in response to the input document 'Draft Guideline on Tidal Current Signal System' (ARM11-13.2.4) and ARM11-13.2.4.1 'Draft Guideline on Hydrological and Meteorological Data' to ENG. 11
4. The **IALA Secretariat** is requested to forward Liaison Note on statement from IALA to ITU Rec ITU-R M.1371-5 (ARM11-13.0.1) to ENAV. 11
5. The **IALA Secretariat** is requested to forward Liaison Note regarding AMRD Group B (ARM11-13.0.2) to ENAV. 11
6. The **IALA Secretariat** is requested to forward working papers ARM11-13.2.11, ARM11-13.2.13, and ARM11-13.2.12 on the review of the IALA MBS to ARM12. 12
7. The **IALA Secretariat** is requested to forward Guideline 1078 on the use of AtoN in the design of fairways (ARM11-13.2.10) as a working paper to ARM12. 12
8. ~~The **IALA Secretariat** is requested to forward the draft guideline on the use of Mobile AtoN (ARM11-13.2.1) to Council for approval.~~ 12
9. ~~The **IALA Secretariat** is requested to forward the liaison note regarding Update of Recommendation E-110 Rhythmic Characters of Lights on AtoN (ARM11-13.2.5) to ENG.~~ 12
10. The **IALA Secretariat** is requested to forward the draft guideline on the use of Mobile AtoN (ARM11-13.2.1) to ARM12 as a working paper. 12
11. The **IALA Secretariat** is requested to forward the liaison note regarding Update of Recommendation E-110 Rhythmic Characters of Lights on AtoN (ARM11-13.2.5) to ARM12 as a working paper. 13
12. The **IALA Secretariat** is requested to forward the draft Recommendation R0139 and draft Guideline on marking of man-made offshore structures (ARM11-13.2.7 and ARM11-13.2.8) to ARM12 as working papers. 13
13. The **IALA Secretariat** is requested to forward the draft Guideline G1081 on Virtual AtoN (ARM11-13.2.2) to ARM12 as a working paper. 13
14. The **IALA Secretariat** is requested to forward the liaison note ARM11-13.2.3 and draft Guideline G1116 (ARM11-13.2.3.1) to ENG for consideration before approval by council. 13
15. The **IALA Secretariat** is requested to insert the missing figures from the original document and thereafter forward the draft Guideline G1052 (ARM11-13.2.9) to ARM12 as a working paper. 13
16. The **IALA Secretariat** is requested to forward the liaison note and associated annex (ARM11-13.0.3 and ARM11-13.0.3.1) to PAP and LAP for further consideration. 14
17. The **IALA Secretariat** are requested to forward Liaison Note regarding assigning MMSI to AIS AtoNs (ARM11-13.2.6) to ENAV. 14
18. The **IALA Secretariat** is requested to send outputs of the WG (ARM11-13.3.10 and ARM11-13.3.11) to the cyber security workshop Steering Committee. 14
19. The **IALA Secretariat** is requested to invite the Secretary General of the Maritime Connectivity Platform Consortium to ARM12. 15
20. The **IALA Secretariat** is requested to forward the Liaison note, with the draft Guideline as an annex (ARM11-13.1.1) to the ENAV Committee requesting comments and feedback on the Draft Guideline on "producing an e-Navigation Operational Service Description." 15

21. The **IALA Secretariat** is requested to forward the Draft Guideline on “producing an e-Navigation Operational Service Description” (ARM11-13.3.4 and ARM11-13.3.8) to ARM12 as working papers. 15
22. The **IALA Secretariat** is requested to forward the Draft Guideline on “MS Guideline development” (ARM11-13.3.9) to ARM12 as a working paper. 15
23. The **IALA Secretariat** is requested to update the ARM task 5.1.3 to include another output to read “Develop S-201 towards version 2.0.0.” This work will continue for the rest of the committee work period. 16
24. The **IALA Secretariat** is requested to update the ARM task 5.1.4 to amend the task to read “Develop guidance on the implementation of S-201.” 16
25. The **IALA Secretariat** is requested to forward the S-125 draft ideas paper (ARM11-13.3.5) to ARM12 as a working paper for further work. 16
26. The **IALA Secretariat** is requested to forward G1143 Unique Identifiers for Maritime Resources version 2 (ARM11-13.3.3) to Council for approval. 17
27. The **IALA Secretariat** is requested to forward the ISO Country code versus IALA members spreadsheet (ARM11-13.3.6) to ARM12 for information. 17
28. The **IALA Secretariat** is requested to forward the MRN Management note (formally C65-11.4.2.29) and now (ARM11-13.3.7) to ARM12 as a working document. 17
29. The **IALA Secretariat** is requested to send a note to Council (ARM11-13.3.2) requesting that G1072 on AtoN Information Exchange and Presentation is withdrawn. 18
30. The **IALA Secretariat** to consider consolidating all documents relating to the cyber security workshop from all committees and forward them as input to the cyber security workshop steering committee. 19
31. The **IALA Secretariat** is requested to forward the working paper (ARM11-13.4.1) Guideline 1018 Ed.4 Risk Management as input to ARM12. 19
32. The **IALA Secretariat** is requested to forward the working paper (ARM11-13.4.3) WP Guideline 1124 Ed1 The use of PAWSA MkII June 2017 (ARM10-10.3) as input to ARM12. 20
33. The **IALA Secretariat** is requested to forward the working paper (ARM11-13.4.2) Guideline 1123 Ed.1 The use of IWRAP MkII (ARM 10-10.2) as input to ARM12. 20
34. The **IALA WWA are asked** to consider setting up an IWRAP user group workshop in the future. 20
35. The **IALA Secretariat** is requested to forward the working paper (ARM11-13.4.5) WP Guideline 1138 Ed.1 The use of SIRA Dec2017 V as input to ARM12. 20
36. The **IALA Secretariat** is requested to forward the working paper (ARM11-13.4.10) Guideline G1058 Ed.1 The use of Simulations a Tool for Waterway Design and AtoN Planning as input to ARM12. 20
37. The **IALA Secretariat** is requested to forward the WP 1086 Ed1 Global Sharing of Maritime Data_22Jun2012 (ARM11-10.8) to ARM12. 21
38. The **IALA Secretariat** requested to forward the input paper (ARM11-13.4.9) Recommendation R0138 Ed.1 The Use of GIS and Simulation by Aids to Navigation Authorities as input to ARM12. 21
39. The **IALA Secretariat** is requested to forward the working paper (ARM11-13.4.10) Guideline 1058 Ed.2 Use of Simulations a Tool for Waterway Design and AtoN Planning as input to ARM12. 21
40. The **IALA Secretariat** is requested to forward the input paper (ARM11-13.4.11) Draft Guideline 1097 Ed.1.1 Technical Features and Technology Relevant for Simulation of AtoN-working paper (ENG9-12.10.1) as input to ARM12. 21

Action Items for Participants

41. **Committee Participants** are invited to submit examples of cyber security systems development and incidents to ARM12, or to Martijn Ebben (m.ebben@portofrotterdam.com). 14

- 42. **Sewoong Oh, KRISO**, is requested to forward the S-201 conversion spreadsheet to ARM12 as an input document. 16
- 43. **Sewoong Oh - KRISO** is requested to provide the presented suggestions on implementation guidance to ARM12. 16
- 44. That **Committee participants** are requested to submit updates on the development of S-201 to Sewoong Oh for ARM12. 17
- 45. That **Committee participants** are invited to contribute to a concept on future IALA documents regarding portrayal and symbology and input these to ARM12. 18
- 46. **Michael Strandberg** and **Fred Pot** are requested to provide input to ARM12 on the matter post the intersessional meeting. 18



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Association Internationale de Signalisation Maritime