



IALA ENG COMMITTEE

REPORT OF THE 19th SESSION OF THE IALA ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE

20 October – 04 November 2024

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04 November 2024

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International Organization for Marine Aids to Navigation

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Report of the 19th session of the IALA

Engineering and Sustainability (ENG) Committee

Executive Summary

The 19th session of the ENG Committee was held from 21 to 31 October 2024, including the physical week at Sydney, Australia between 21 to 25 October, chaired by Alwyn Williams and vice-chaired by Michel Cousquer. The Secretary for the meeting was Alisa Nechyporuk.

85 participants from 30 countries and three observers participated in ENG19. 13 participants attended online, and 5 participants attended for the first time.

The session began with an opening plenary and the physical week on Monday 21 October and continued until Friday 25 October. The Chair welcomed everybody, both old as well as new participants, to the meeting and was pleased to see so many faces at ENG19. An approval period was followed, and the virtual closing plenary was held on Monday 04 November.

The meeting was carried out in accordance with the *Committee Arrangements*.

Key outputs completed included:

ENG19	9.2.1.1.1	Draft guideline on Buoy Tender
ENG19	9.2.1.3.1	Comments for Drone Recommendation
ENG19	9.2.1.3.2	Draft Guideline Use of Drones for AtoN Management
ENG19	9.2.1.6	Guideline on Overview of a Floating AtoN
ENG19	9.2.1.7	Draft G1077 Developing a Maintenance Strategy for Aids to Navigation
ENG19	9.2.1.8	Draft Guideline on AtoN in extreme conditions
ENG19	9.2.2.1	Draft Guideline on Medium Frequency R-Mode signal structure and navigation message
ENG19	9.2.2.2	Development of procedures and requirements for the recognition of augmentation systems in the WWRNS to NSCR 12
ENG19	9.2.2.4.1	R0146 Strategy for Maintaining Racon Service Capability (e-NAV-146) Ed1.1
ENG19	9.2.2.6	Draft Guideline G1158 VDES-R mode
ENG19	9.2.2.9	S-240 DGNSS Station Almanac Product Specification v1.2

The following liaison notes were approved:

ENG19	9.2.1.1	Liaison note ENG to ARM Buoy Tender Activities
ENG19	9.2.1.2	Liaison note ENG to ARM on Categorisation and Availability Objectives for Short Range Aids to Navigation
ENG19	9.2.1.3	Liaison note from ENG to ARM on the Use of drones for AtoN Management
ENG19	9.2.1.4	Liaison note from ENG to ARM on remote monitoring
ENG19	9.2.1.5	Liaison note from ENG to ARM on IoT sensors
ENG19	9.2.1.9	Liaison to Council on CIE Research Group on Cone Fundamentals
ENG19	9.2.2.3	Liaison note to IMO on Enhanced Radar Positioning Systems
ENG19	9.2.2.4	Liaison to ARM on R0101 and R0146
ENG19	9.2.2.5	Liaison to ARM on AIS Documentation
ENG19	9.2.2.7	Liaison note from ENG to ARM on MASS Guideline Review
ENG19	9.2.2.8	Liaison note ENG to DTEC committee on digitalisation of waterways guideline
ENG19	9.2.2.10	Liaison note ENG to PAP on MASS Guideline

Overall status of the ENG Committee 2023 - 2027 Work Programme after ENG19:

Standard	Scope	No.	Task	Comment	17	18	19	20	21	22	23	Coop. entity
					2023	2024	2024	2025	2025	2026	2026	
S1010 Marine Aids to Navigation Planning and Service Requirements	1.1 Obligations and Regulatory Compliance	1.1.1	Consider developing guidance on the certification of technical equipment, information systems and technical infrastructure related to MASS in the domain of IALA	<u>New Guideline</u> Develop a guideline on the certification of technical MASS equipment, information systems, and technical infrastructure within the domain of IALA.					X	X	X	WG1
	1.2 Aids to Navigation Planning	1.2.1	Compile new Guideline on AtoN Tender requirements and specification - Led by ARM with ENG support	<u>New Guideline</u> New Guideline on Tender requirements.				X	X	X	X	WG1
		1.2.2*	Review relevant sections of the NAVGUIDE	Based on IHO/IALA portrayal and IALA comms workshop output.					X	X	X	WG1
		1.2.3	Develop guidance on the provision of Marine AtoN for autonomous vehicle/vessel operations (Maritime Autonomous Surface Ship, MASS)						X	X	X	WG1
	1.4 Risk Management	1.4.1*	Develop guidance on cyber security for Marine AtoN	<u>New Guideline</u> The Guideline will be continued led by DTEC				X	X	X	X	WG1
S1020 Marine Aids to Navigation Design and Delivery	2.1 Aids to Navigation Visual Signalling	2.1.1*	Update G1043 Light sources used in visual AtoN	<u>New amalgamated Guideline</u> Review & update guideline 1043 on Light sources and amalgamate with Guideline on modern equipment in traditional lighthouses					X	X	X	WG1
		2.1.2*	Update G1048 LED technologies and their use in signal lights	<u>Revised Guideline</u>					X	X	X	WG1

Standard	Scope	No.	Task	Comment	17	18	19	20	21	22	23	Coop. entity
		2.1.3*	Develop guideline on Port Traffic Signals	<u>New Guideline</u> Develop a new guideline on Port Traffic Signals in consultation with ARM	X							WG1
		2.1.4*	Update R0112 Leading lights	<u>New Guideline</u> Update E-112 Leading Lights and 1023 Leading Lines into a guideline	X	X	X	X	X			WG1
		2.1.5*	Update G1061 Light application illumination of structures	<u>Revise Guideline</u> Complete Guideline G1061 (2008) on Illumination of Structures						X	X	WG1
	2.2 Design, Implementation and Maintenance	2.2.1*	Update R0203(E200-3)	<u>New Guideline</u> Update E200-3 on Light measurement into a guideline	X							WG1
		2.2.3*	Update G1041 Sector Lights	<u>Revise Guideline</u> Update Guideline 1041 on Sector Lights to define 'Angle of Uncertainty'			X	X				
		2.2.5*	Develop Guidance on monitoring of function and degradation of AtoN light sources	<u>Add to G1077</u> Develop Guidance on monitoring of function and degradation of AtoN light sources	X	X	X	X				
		2.2.6*	Develop Guideline on complimentary use of AtoN. Eg. Tsunami monitoring, Met Hydro monitoring, Private communications platforms etc. Develop Guideline on meteorological and oceanographical data dissemination	New guideline on Complimentary use of AtoN	X	X	X	X				WG1

Standard	Scope	No.	Task	Comment	17	18	19	20	21	22	23	Coop. entity
		2.2.7*	Update and Amalgamate the Guidelines 1108, 1136 and new guideline “AtoN equipment and structures exposed to extreme environmental conditions into one guideline	<u>Revised Guideline</u>	X	X	X					WG1
	2.3 Floating Aids to Navigation	2.3.1*	Develop guidance quantifying characteristics to meet nautical and operational requirements and ways to verify them	<u>New or revised guideline</u>	X	X	X					WG1
		2.3.2*	Produce a guideline to support inexperienced organisations or individuals if they are required to establish floating AtoN (for whatever reason) and demonstrate the various topics to consider for the lifetime of the floating AtoN. Reference to ENG17-3.0.5 ARM Liaison Note where they note the following for the draft guideline	<u>New Guideline on floating AtoN</u>	X	X	X					WG1
		2.3.3*	Update Recommendation E-107 Moorings for floating AtoN 2.0 Technical recommendation on moorings	<u>Update Recommendation</u>	X	X	X	X				WG1
		2.3.4	Update G1066 Design of floating AtoN moorings 1.1 General consideration on mooring materials, and comparison of mooring loads and design	<u>Updated Guideline on Design of floating AtoN moorings</u>	X	X	X	X				WG1
	2.4 Environment and Sustainability	2.4.1*	Review and update as necessary of G1036 on Environmental Management in Aids to Navigation (the Green Guide)	<u>Revise guideline on Environmental and Sustainability responsibilities</u>					X			WG1
		2.4.2*	Guideline on how to assess the through life environmental impact of AtoN and AtoN provision	<u>New Guideline</u>					X			WG1

Standard	Scope	No.	Task	Comment	17	18	19	20	21	22	23	Coop. entity
	2.6 Heritage and Culture	2.6.1*	Maintain the Heritage web page on the IALA website	<u>Updated Heritage web page</u>	X	X	X	X	X	X	X	WG3
		2.6.2*	Develop Guidance on modern equipment in traditional lighthouses	<u>New Guideline</u>	X	X	X	X	X			WG3
		2.6.3*	Make proposal for the Heritage Lighthouse of the Year award	Maintain the Award	X	X	X	X	X	X	X	WG3
		2.6.4*	Write the Heritage lecture for the WWA L1.1 AtoN Manager course	<u>New module on Heritage to include in the L1.1 course</u>	X	X	X	X	X	X	X	WG3
		2.6.5*	Review of documents pertinent to heritage reviewed	Revised documents	X	X	X	X	X	X		WG3
		2.6.6*	Update G1063 Agreement for complementary use of lighthouse property. What should the agreement contain and safety aspect of the agreement including examples of few countries	<u>Updated Guideline</u>	X	X	X	X				WG3
		2.6.7*	Review Guidelines 1074, 1075 & 1076 on Branding, Business plans and Building Conditioning for content and relevance.	Reviewed guidelines	X	X	X	X				WG3
S1030 Radionavigation Services	3.1 Satellite positioning and timing	3.1.1*	New Guideline on the need and potential solutions on timing and synchronization	<u>New Guideline</u>		X	X	X	X	X		WG2
		3.1.2*	Review and update the World-Wide Radionavigation Plan (2012)	<u>New Guideline</u>		X	X	X				WG2
	3.2 Terrestrial positioning and timing	3.2.1*	Development of R-Mode Guideline Coordination of R-Mode test beds	<u>New Guideline</u>	X	X	X	X	X	X	X	WG2
	3.3 Augmentation services	3.3.1*	Monitoring DGNSS developments, both SBAS and marine Radiobeacon and update IALA documents as necessary	<u>Reportage</u>		X	X	X	X	X	X	WG2

Standard	Scope	No.	Task	Comment	17	18	19	20	21	22	23	Coop. entity
		3.3.2*	High accuracy positioning systems Guidance on new systems and how they can be used	<u>New Guideline</u>	X	X	X	X	X	X	X	WG2
		3.3.3*	Monitor developments in radionavigation topics for information exchange and development of appropriate guidance (inc. resilient PNT, cyber security, timing aspects etc). Rapporteur reports and new documents as required.	<u>Reportage</u>		X	X	X	X	X	X	WG2
	3.4 Racon and Radar positioning	3.4.1*	Development of eRacon/eRadar technology Review related IALA documents	<u>Revised Guideline</u>	X	X	X	X	X	X	X	WG2
S1050 Training and Certification	5.1 Training and Assessment	5.1.1*	Review and update of the WWA Lesson plans as requested by the Academy	Review and update of the WWA Lesson plans								WG1
		5.1.2	Training in implementation of digital solutions (data analytics & maritime informatics)	<u>New Guideline and training programmes</u> Develop a guideline on skills related to the digital environment, such as data analytics and maritime informatics and associated training programs with WWA.								WG1
S1060 Digital Communication Technologies	6.3 Harmonised Maritime Connectivity	6.3.1	Update G1008 Remote control and monitoring of AtoN	<u>Revised Guideline</u> Remote control and monitoring of AtoN. Objectives of remote control and monitoring, and technical aspects such as communication links, display, maintenance and integration with other systems	X	X		X	X	X	X	WG1

Legend:

Blank: Ongoing or scheduled task
 Light orange: To Council to note or approve
 Light grey: Task completed or deleted
 X: Prolonged task

Legend for task numbering:

Digit 1: WG 1, 2 or 3
 Digit 2: S1040 VTS Scope No.; Other standards = 8; Standard not available = 9
 Digit 3: In sequence (1, 2, 3 etc.)
 Digit 4: Sub task a, b, c...(if needed)

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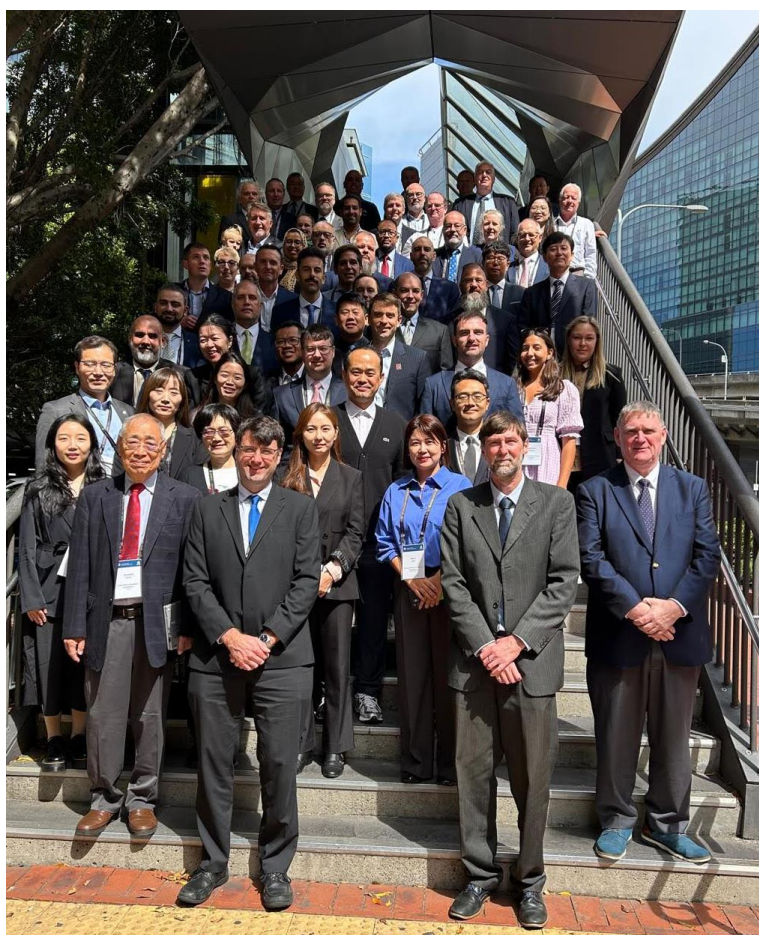
Report of the 19th session of the IALA AtoN Engineering and Sustainability (ENG) Committee

1. INTRODUCTION

The 19th session of the ENG Committee was held from 21 to 04 November 2024, including the physical week in Sydney, Australia, between 21 to 25 October, chaired by Alwyn Williams and vice-chaired by Michel Cousquer. The Secretary for the meeting was Alisa Nechyporuk.

The session began with an opening plenary and the physical week on Monday 21 October and continued until Friday 25 October. The Chair welcomed everybody, both old and new participants, to the meeting. An approval period was followed, and the virtual closing plenary was held on Monday 04 November.

85 participants from 30 countries and three observers participated in ENG19. 13 participants attended online, and five participants attended for the first time.



1.1 Welcome from the Deputy Secretary-General and Dean

The Deputy Secretary-General, Omar Frits Eriksson, started by thanking AMSA for hosting the meeting and welcomed all participants to ENG19. He noticed with interest the many input papers and mentioned some of the many topics addressed by these while noting the breadth of the scope of the Engineering committee.

The Deputy Secretary-General also recognised the nature of the work being more and more cross-committee addressing matters such as MASS, cyber-security and digitalization. He noted the many inputs from China and thanked the Chinese delegation for contributing so actively to the work of the committee.

He also thanked China MSA for their assistance with clarifying the intellectual property rights related to a few Chinese patents on VDES and VDES R-mode.

This was a very successful process that granted IALA and its members the right to use the technologies described by these patents free of charge.

The Deputy Secretary-General highlighted the work undertaken by WG3, Heritage, and Culture, which has received significant interest from members worldwide. He also mentioned the task of nominating candidates for the Lighthouse of the year and said that many member countries are interested and have put forward their prioritized nominations.

In conclusion, the Deputy Secretary-General provided a status on the transformation of IALA from a Non-Governmental Organization to an Inter-Governmental Organization, stating that the first general assembly of the new organization will be held in February 2025, hosted by Singapore.

Finally, he wished all participants good luck and thanked them once again for their contribution to the work of IALA.

1.2 Approval of the Agenda

The agenda was reviewed and approved (ENG19-1.4.1).

1.3 Apologies

No apologies were received. A list of participants who attended ENG19 can be found on the IALA Dashboard for ENG and in Annex B.

1.4 Working Arrangements

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

IALA complies with the General Data Protection Regulations of the European Union. IALA will include a list of participants with their contact information in the report of this meeting. Any participant who wishes to remove their contact details from the participant's list should advise the Committee Secretary as soon as possible.

The following question was asked by the Committee Secretary:

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

No patents were noted.

The Committee Secretary provided all participants with a briefing on the *Committee Working Arrangements* document and tools available to them.

The deadline for submitting documents to the silent approval procedure was set to 30 October 2024, 20:00 UTC.

2. REVIEW OF ACTION ITEMS FROM ENG19

The Committee Secretary confirmed that all Secretariat actions from ENG18 were completed (input paper ENG19-2.1.2).

3. REVIEW OF INPUT PAPERS

3.1 Review of input papers to ENG19

Late input papers were received and are highlighted in the list of input papers in **Error! Reference source not found.**

4. REPORTS FROM OTHER BODIES

4.1 IALA

4.1.1 IALA Council

Minsu Jeon, the Technical Director of IALA, reported that at Council 80, several key revisions and updates to the work program for 2023-2027 were approved. These approvals included workshops, guidelines, and technical specifications.

The following workshops were approved or discussed: the 2nd IALA IHO Joint Workshop on S-100/200 in September 2024 (already concluded), an Aids to Navigation Engineering Workshop in October 2024 in Sydney, Australia, a VTS Competent Authority Workshop scheduled for January 2025 in Rome, Italy, a Sustainability and ENG 21 Workshop in October 2025 in Dublin, Ireland, and a Future of Radionavigation and Radiocommunication Workshop in 2026 in Edinburgh, UK. Additionally, the International Conference on Lighthouse Tourism and Maritime Heritage is also planned for October 2025 in Dublin, Ireland in conjunction with the workshop.

A procedure for the versioning and approval of product specifications and technical services was agreed. This protocol outlined three phases: the Development Phase for documents prior to version 1.0.0, the Testing and Validation Phase for documents between versions 1.0.0 and 1.9.9, and the Implementation Phase, where documents ready for publication and use are numbered from version 2.0.0 onward.

The Council further approved several liaison notes related to technical interactions with other organizations, including the IHO, RTCM, IEC, IMO, and ITU, focusing on operational interaction, standard updates and tasks.

A decision was made to select the Faro di Genova 'Lanterna' in Italy as the Heritage Lighthouse for the year 2024.

The Secretariat presented a paper to the Council on the necessity for more frequent updates to manuals, highlighting the rapid pace of technological evolution and the need for timely updates to ensure relevance and effectiveness. The request for authorization to implement a new process allowing committees to expedite the publication of updates to manuals was approved.

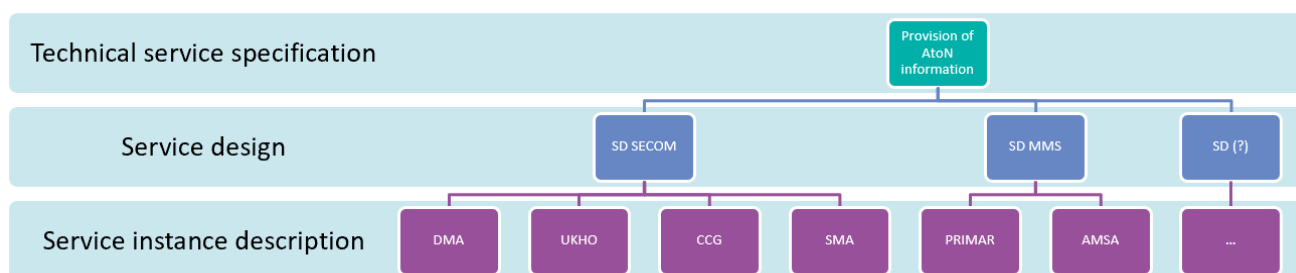
4.1.1.1 Documents approved by Council

Minsu Jeon, the Technical Director of IALA, reported that several key documents and guidelines were also approved:

- The Council approved the revised R1019 on the provision of Maritime Services in the context of e-Navigation in the domain of IALA, Ed2.0.
- The Council approved the new Guideline G1182 on Cyber Security specifics from an IALA perspective, Ed1.0.
- The Council noted the Technical Service: Marine Aids to Navigation (AtoN): Technical Service Specification for the Provision of AtoN Information, Ed1.0.
- The Council approved the revised G1141 Operational Procedures for Delivering VTS, Ed3.0.
- The Council approved the revised G1177 Portrayal of VTS information, Ed2.0.
- The Council noted the Technical Service: Service design for VTS Traffic Clearance Service using SECOM, Ed1.0.
- The Council noted Technical Service: Service Specification for VTS Traffic Clearance, Ed1.3.

The Council approved the revised Model Course C0103-4 VTS On-the-Job Training Instructor, Ed3.0. The Council approved the proposed protocol for Product Specifications and Technical Service versioning and approval. The versioning and approval process includes the following:

- Development Phase: Documents before edition 1.0.0 are working documents.
- Testing and Validation: Documents version 1.0.0 to 1.9.9 are intended for testing and validation but not for publication or implementation.
- Implementation: Once ready for implementation, documents undergo an official approval procedure and are numbered 2.0.0 for publication.



4.1.2 IALA Policy Advisory Panel (PAP)

Minsu Jeon reported that at the PAP54, held on September 16 - 17, 2024, at the IALA headquarters, several important topics were discussed and reviewed.

IALA's ongoing work on Maritime Autonomous Surface Ships (MASS) was a key focus, with a MASS Task Force meeting held on September 17, 2024, also at IALA HQ. IALA contributed to the revision of the Standards of Training, Certification, and Watchkeeping (STCW) and continued its efforts in the development, training, and testing of S-200 standards. This included the establishment of a roadmap for S-200 development and a report on the progress of S-200 Product Specification development, as documented in C80-10.8.1.

Additionally, the meeting reviewed the questionnaire, ensuring continued refinement and updates to IALA's terms.

4.1.2.1 Sustainability WS

Alwyn Williams, Chair of the ENG committee, noted that the AtoN Engineering Workshop is a great opportunity to share professional experience and knowledge of different topics, certainly from a sustainability point of view, climate changes, modern courses of worldwide Academy, asset management, and working environment.

A workshop on sus

tainability is scheduled for October 2025, with Irish Lights set to host the event.

4.1.2.2. Future Radiocommunication and radionavigation

Hideki Noguchi, Chair of DTEC committee, reported that planning was underway for an event anticipated to take place in 2025. The event's primary goals include sharing updates on developments within the IMT technology family, specifically IMT-Advanced (4G/LTE), IMT-2020 (5G), and the emerging IMT-2030 (6G) technologies. The event will focus on identifying features within the IMT family that could be adapted for the AtoN domain, assessing the technical, regulatory, and operational challenges in applying IMT technologies to this sector, and evaluating IALA's ongoing role in this application. A proposal for the workshop is expected to be submitted to the December Council from DTEC.

4.1.3 2023-2027 Work Plan and Task Register

Technical Secretary of ENG committee provided all participants with a briefing on the IALA Task Registry working arrangements and tools available to them.

4.2 Update on MASS task group

Minsu Jeon reported that the plan for the IALA MASS TF considers the deliverables as depicted in the terms of reference from the MASS TF. Below is depicted the approach proposed per deliverable:

1. Del-1: report on MASS scenarios and their impact on Marine Aids to Navigation.
2. Del-2: scoping exercise and a report on the impact of MASS on IALA publications.
3. Del-3: report on possible MASS-related work items for the IALA committees.

Minsu Jeon also noted that several key documents from MASS Task Force context:

- ENG19-3.1.0.1 Draft Guideline on Developments and Implications of MASS for coastal authorities.
- ENG19-3.1.0.2 Del2 MASS Publications Scoping Report v2.2.
- ENG19-3.1.0.3 Del3 Report on possible MASS-related work items for the IALA committees.
- ENG19-3.1.0.4 Liaison note from ARM to ENG VTS DTEC on MASS Guideline Review post plenary.
- ENG19-3.1.0.11 Liaison note DTEC to ARM, ENG, VTS, MASS TF on MASS Rec and Guideline.
- ENG19-3.1.0.11.1 Revised draft Guideline on MASS for AtoN Authorities.

4.3 IMO

The Technical Director, Minsu Jeon, provided an update on key activities from the IMO relevant to IALA, summarizing the outcomes of two significant meetings, the 108th session of the IMO Maritime Safety Committee (MSC 108), held from May 15 to 24, 2024 and the 11th session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 11), held from June 4 to 13 2024. Both meetings took place at the IMO Headquarters.

At MSC 108, chaired by Mrs. Mayte Medina of the United States and supported by Vice-Chair Capt. Theofilos Mozas of Greece, IALA was represented by Minsu Jeon, Tom Southall and Axel Hahn. IALA submitted MSC 108-INF.8 - IALA Workshop on establishing scenarios for the development of MASS (Maritime Autonomous Surface Ships).

The main outcomes of MSC 108 included:

- A revised roadmap for developing a regulatory code for MASS, marking progress in the regulation of autonomous ships.
- The adoption of revised guidelines on maritime cyber risk management, ensuring enhanced protection against cyber threats.
- New training requirements related to the prevention and response to violence and harassment in the maritime sector, particularly addressing sexual harassment, bullying, and sexual assault. These were incorporated into amendments to the STCW Code.
- Amendments to the 1974 SOLAS Convention and related instruments were also adopted, reflecting updates to key maritime safety regulations.
- Additionally, reports from various sub-committees were presented, leading to the approval of several important provisions.

At NCSR 11, chaired by Mr. J. Brouwers of the Netherlands and supported by Vice-Chair Mr. C. Cerda Espejo of Chile, IALA was represented by Minsu Jeon, Tom Southall and Stefan Bober. IALA submitted several papers, including:

- NCSR 11-14 - IALA Guideline G1181 on VDES VDL Integrity Monitoring.
- NCSR 11-18-1 - Draft revision of SN.1/Circ.297 on IALA Maritime Buoyage System (MBS).
- NCSR 11-18-2 - IALA Risk Management Toolbox.

Key outcomes from NCSR 11 included:

- The introduction of the VHF Data Exchange System (VDES) into the SOLAS framework, facilitating better communication and data transmission in maritime safety.
- Updates to the IALA Maritime Buoyage System (SN.1/Circ.297) and the Degree of Risk Evaluation (SN.1/Circ.296).
- Establishment of voluntary Vessel Traffic Services (VTS).
- Improvements to Marine Safety Information (MSI) and Global Maritime Distress and Safety System (GMDSS) services.
- Addressing AIS signal blockages caused by VHF radiotelephony and revisions to Recommendation ITU-R M.1371-5 aimed at enhancing the security and integrity of AIS signals.
- Guidance on the validity of onboard radiocommunications equipment was updated (MSC.1/Circ.1460/Rev.4).
- Considerations regarding agenda item 1.12 of WRC-27, focusing on the use of the 1645.5-1646.5 MHz band, were discussed.
- Additionally, issues concerning S-100 implementation and the associated training needs for seafarers were highlighted, along with discussions on the future of the Maritime Messaging Service.

4.4 IHO

Minsu Jeon reported on recent activities with the IHO. The focus included various collaborations, technical updates, and workshops related to the S-100 and S-200 standards.

Key liaison involved the Hydrographic Services and Standards Committee (HSSC), the Nautical Information Provision Working Group (NIPWG) and ongoing liaison notes to NIPWG regarding AtoN Product Specifications (PS). Additionally, ITU's collaboration with S-100 Working Group and Regional Hydrographic Commissions played a central role. These collaborations helped define the technical aspects and portrayals of AtoN features, with particular emphasis on the IHO GI Registry and the S-124/125 technical services.

A key co-event between IALA and IHO was the 2nd Joint IHO/IALA Workshop on S-100/200 Development and Portrayal, which was held from September 9 - 13, 2024, at the U.S. Naval Academy in Annapolis, USA. This workshop attracted 84 participants from 19 countries, providing valuable insights into the integration and evolution of various S-100 series standards, including S-101, S-124, S-125, and S-201. Key conclusions from the workshop highlighted:

Operational Recommendations:

- Evaluation of the S-101 data model to ensure all information from S-12 (List of Lights) is included.
- Clarification that S-124 is designed for time-sensitive, navigationally critical information, while S-125 addresses changes in AtoNs.

- The need for S-124 and S-125 to provide a comprehensive operational picture, while S-125 does not duplicate AtoNs information in S-101.

Technical Recommendations:

- A review of data and service provisions required by IALA for international compliance, including for non-SOLAS vessels.
- Collection of test scenarios and datasets by the IHO-SGP lab to identify technical gaps in product specifications.
- Exploration of official testing MCP's identity management with IHO and addressing security concerns.
- Establishment of a formal system to notify stakeholders of changes to the S-100 standard.
- Recommendations to retain and enhance the S-124 symbol and align S-125 with IMO Circular Letter 243, while keeping S-101 symbols unchanged during the dual-fuel period.

Training Recommendations:

- Identification of knowledge gaps within the maritime community before training on S-100 standards.
- A focus on coordinated communication and marketing from IALA and IHO regarding S-100's benefits.
- Recommendations to refine STCW training requirements and include transition training to ECDIS.
- Emphasis on addressing significant training gaps for different user groups across the maritime community.
- Tailoring training courses to specific user groups, from high-level executives to software developers, ensuring materials remain current as standards evolve.

The workshop concluded with a joint recommendation to continue future discussions on the interaction of standards like S-101, S-124, S-125, and S-201, as well as broader efforts to implement and support remaining IHO and IALA product specifications across the maritime community.

4.5 ITU

Minsu Jeon provided an update and key documents on ITU:

- Revision of Recommendation ITU-R M.1371-5 Automatic Identification System – AIS.
- Revision of Recommendation ITU-R M.585-9 Assignment and use of identities in the maritime mobile service.
- New ITU study question “Coexistence of VHF data exchange system with a Ranging-Mode in the VHF data exchange system”.
- New ITU study question “Introduction of Digital Voice Communications in the VHF maritime frequency channels”.
- New Report ITU-R M. [VDES R-MODE] – Impact of the possible introduction of a range mode on the VHF data exchange system.
- Suppression of Recommendation ITU-R M.693-1 Technical characteristics of VHF emergency position-indicating radio beacons using digital selective calling.

4.6 RTCM

Alwyn Williams, Chair of the ENG committee, apologies for the absence of Stig Erik.

4.7 PIANC

Minsu Jeon reported about new publications from PIANC:

- Sustainable Management of the Navigability of Natural Rivers.
- PIANC Fender Guidelines 2024.
- Climate Change Costs to Ports and Waterways: Scoping the Business Case Assessment for Investment in Adaptation.
- Coating Based Corrosion Mitigation for Hydraulic Steel Gates.

He noted the setting up of a PIANC EnviCom Working Group 256 on ‘Understanding Blue Carbon: a Practical Guide.’

4.8 CIE

Alwyn Williams reported that on 3rd June 2024, a workshop to celebrate the 100-year anniversary of the adoption of V(λ) was held by the International Commission on Illumination (CIE) and Consultative Committee for Photometry and Radiometry (CCPR). Held at the BIPM, Paris, France, it gave an opportunity for the attendees to review the history of the function and get an understanding of the fundamental change that might happen in the relatively near future.

It is proposed that the fundamental colour-matching functions used in photometry and colorimetry would be modified to align with the results of relatively recent experiments. The change is often called “cone fundamentals” because the functions are said to more accurately match how the human visual system operates in practice.

The change is not without controversy, and CIE are putting together a research forum to investigate the impact of such a change on the industry. It was said that the earliest time that the research forum would report back is five years, meaning that there is no immediate change expected. Even then, it is expected that the change to cone fundamentals will be a gradual one.

Alwyn Williams suggested that it might be beneficial for IALA to be represented by an individual at the research forum, so an input paper to Council seeking approval to join the research forum with IALA affiliation was made.

4.9 WWA Update

Latifa Oumouzoune continued with the update on World-Wide Academy. She mentioned that Academy aims to ensure that all coastal States can fulfil the obligations related to Marine Aids to Navigation placed upon them in SOLAS Chapter V and that all coastal States can claim conformance with the relevant IALA Standards.

Latifa highlighted key outputs from WWA Capacity Building:

- Conducts workshops and seminars to raise the awareness of high-level decision makers with respect to their international obligations.
- Undertakes analytical missions to identify gaps between current practices and international standards and provides advice on how to bridge these gaps.
- Arranges follow-up activities to review progress made towards conformance with international standards.
- Collaborates with sister organizations in capacity building activities.
- Provide sponsorship opportunities to participate in the academy training programmes and events.

Latifa noted that WWA facilitates continuous training for the development of Marine Aids to Navigation professionals through alumni activities and other initiatives, and key aims are:

- Supports the development of IALA Model Courses in close cooperation with the IALA technical committees.
- Oversee the effective implementation of the IALA training accreditation scheme.
- Supports the development of a network of accredited training organizations world-wide and their delivery of the IALA Model Course Level 1.1.
- Delivers the IALA Model Courses for Level 1.2 and Level 1.3.
- Facilitates continuous training for the development of Marine Aids to Navigation professionals through alumni activities and other initiatives.

4.10 Chinese patents

The Deputy Secretary-General, Omar Frits Eriksson, started by thanking AMSA for hosting the meeting and welcomed all participants to ENG19. He noticed with interest the many input papers and mentioned some of the many topics addressed by these while noting the breadth of the scope of the Engineering committee.

The Deputy Secretary-General also recognised the nature of the work being more and more cross-committee, addressing matters such as MASS, cyber-security, and digitalization. He noted the many inputs from China and thanked the Chinese delegation for contributing so actively to the work of the committee.

He also thanked China MSA for their assistance with clarifying the intellectual property rights related to a few Chinese patents on VDES and VDES R-mode.

This was a very successful process that granted IALA and its members the right to use the technologies described by these patents free of charge.

The Deputy Secretary-General highlighted the work undertaken by WG3, Heritage, and Culture, which has received great interest from members worldwide. He also mentioned the task of nominating candidates for the Lighthouse of the year, and said that many member countries are interested, and have put forward their prioritized nominations.

In conclusion, the Deputy Secretary-General provided a status on the transformation of IALA from a Non-Governmental Organization to an Inter-Governmental Organization, stating that the first general assembly if the new organization will be held in February 2025, hosted by Singapore.

Finally, he wished all participants good luck and thanked them once again for their contribution to the work of IALA.

5. PRESENTATIONS

All recordings of the presentations given during the WG sessions of ENG19 can be found on the [Repository](#). The following presentations were given at ENG19:

- Extending Buoy Life While Reducing Emissions and Costs (Ed Steijn, Sabetoflex).
- Twinning lighthouses project (NLB/JCG).
- The Internet of Things (IoT) technology based on Aids to Navigation for Maritime Safety (ETRI).
- IALA World-Wide Academy Update(WWA).
- Replacement of mercury rotary systems of French lighthouses (Emma Rieu-Stephan, Cerema).
- Resilient PNT approaches (Florin Mistrapau).
- Update on the Irish Lights Lighthouse Tourism and Heritage Conference (William Dunning).
- Presentation on Australian Lighthouses (Ian Clifford).

6. REVIEW OF INPUT PAPERS

The input papers for ENG19 consisted of new input papers as well as working papers from the previous session. The input paper list (ENG19-3.0.1) includes the working papers from ENG19.

Input papers were numbered in line with the agenda and allocated to the relevant Working Group. The late input papers were referred to the participant's attention and are highlighted in blue in the list of input papers.

7. ESTABLISH WORKING GROUPS

The Chair outlined the procedure to be followed by working groups, after which three working groups were established and their tasks outlined. The Working Group chairs and vice-chairs were introduced. Full lists of working group participants can be found in Annex F.

Working Group (WG)	Working Group Chair / Vice-Chair
WG1 – Visual & Physical AtoN	Malcolm Nicholson / Lingyan Wang, Aw Eng Soon
WG2 – Radionavigation Services	Jeffrey van Gills / Stefan Gewies, Sun Qian
WG3 – Heritage and culture forum	Sarah-Jane Lakshman (acting) / William Dunning (acting)

8. WORKING GROUP 1 – VISUAL & PHYSICAL ATON (WG1)

During the 19th session of the ENG committee, WG1 consisted of 25 members and considered 17 input papers and 5 liaison notes. The main task of the group was to update the task register and progress the tasks. The group reviewed (ENG19-3.1.0.17) the liaison note to ENG on Buoy Tender Activities and produced a response. The group reviewed (ENG19-3.1.0.19) the liaison note to ENG on the review of R0130 on Categorisation and Availability Objectives for Short Range AtoN and produced a response. The group reviewed (ENG19-3.1.0.20) the liaison note to ENG on remote monitoring and produced a response. The group reviewed (ENG19-3.1.0.6) liaison note from ARM to ENG and DTEC on the Use of drones for AtoN Management and produced a response. An input paper was received from the IALA WWA with regard to an update of G1165. This was discussed during ENG19 and a new task will be added to the work program to cover the revision of this guideline.

The Chair and Vice-Chairs of the Working Group thanked all participants, both in person and online for their hard work during the session. They noted the ongoing success of the hybrid working environment.

Throughout the physical session of the week, several focused task group sessions were held. The task groups focused on the following tasks as per the work program:

- Task 2.1.4 Update R0112 Leading lights.
- Task 2.1.6 Update R0203(E200-3).
- Task 2.2.1 Update G1037 Data collection for AtoN performance calculation.
- Task 2.2.2 Update G1077 Maintenance of AtoN.
- Task 2.2.4 Update and Amalgamate the Guidelines G1108, G1136 and G1175.
- Task 2.3.1 Develop guidance quantifying floating AtoN characteristics.
- Task 2.3.2 Creating an overview guidance on maintenance of floating AtoN.
- Task 2.3.3 Update Recommendation R0107 (E-107) Moorings for floating AtoN.

- Task 2.3.4 Update G1066 Design of floating AtoN moorings.
- Task 6.3.1 Update G1008 Remote control and monitoring of AtoN.

8.1 Task 2.1.4 Update R0112 Leading lights

Task group leader: Lingyan Wang

Task Group members: Lingyan Wang, Travis J Rasmussen, Xu Ruqing, Chen Dequan, Aldo Silva Avalos, Jorgen Royal Petersen, Chen Dequan, Sarah Robinson (Partel Keskulla, Marina Bano Terencio – not in real-time).

Key outcomes include:

The TG worked through a revised working version of Guideline G1023 Design of Leading Lines, incorporating numerous intersessional comments by Partel, Marina and Sarah. The progress was limited by the differing time zones as many of the comments discussed were Partel's and they warranted further discussion. Good progress was made, however, on many of the topics raised by Marina and Partel and the group worked through approximately 50 % of the document, noting terminology that required amendment in the corresponding Excel workbook. In particular, the TG spent significant time clarifying terminology and ensuring alignment with other relevant publications, including G1148 and R0202&4. Intersessional dates of the 18th/19th November 10:00 UTC have been proposed to continue review of the document with any participants who may wish to join.

Action item(s):

***Sarah Robinson** is requested to update the Draft guideline on Leading Lights intersessionally as discussed in ENG19 committee meeting and submit as input to ENG20 committee meeting.*

8.2 Task 2.1.6 Update R0203(E200-3)

Task group leader: Lingyan Wang

Task Group members: Omar Eriksson, Malcolm Nicholson, Link Powell, Sarah Robinson, Travis J Rasmussen, Lingyan Wang, Xu Ruqing (1 online, 7 in person).

Key outcomes include:

The first input paper (ENG19-3.1.1.7) on this subject was received from China MSA, and Lingyan Wang presented it in the WG1 opening plenary. The Task Group has decided to include this input paper in the new light measurement guideline to give the measurement guidance for the on-site measurement.

A second input paper (ENG19-3.1.1.10) on this subject was received from Alwyn Williams. Alwyn introduced it in the task group meeting and The Task Group has decided to include this input paper to the new light measurement guideline to provide a correction method to the measurements that are made outside the standard test conditions.

The task group reviewed the draft guideline's new structure, which is basically harmonised with the Recommendation R0203. All the guidance which is necessary for conducting one complete measurement will be kept in the main body, other detailed knowledge will be moved into the Annex to give further guidance.

Considering there is not any IALA published document about the light measurement at present, which is very useful for the IALA members and other stakeholders, as suggested by Omar Eriksson, the task group decided to publish an interim guideline based on R0203(E200-3), which will be replaced once the new measurement guideline is finalised.

Action item(s):

***Lingyan Wang** and **Link Powell** are requested to update the Draft guideline on measurement intersessionally as discussed in ENG19 committee meeting and submit as input to ENG20 committee meeting.*

Lingyan Wang is requested to draft an interim measurement guideline based on R0203 (E200-3) and submit as input to ENG20 committee meeting.

8.3 Task 2.2.1 Update G1037 Data collection for AtoN performance calculation

Task group leader: Sigge Gustafsson

Key outcomes include:

An input paper was received from China MSA and the task group considered how best to incorporate the content into the revised guideline. Refer to task plan for task completion.

Action item(s):

The Secretariat is requested to forward the working paper Update G1037 (ENG19-9.2.1.10) to ENG20.

8.4 Task 2.2.2 Update G1077 Maintenance of AtoN

Task group leader: Chris Scully

Key outcomes include:

G1077 was rewritten to provide broad guidance on the development of maintenance strategies and plans for AtoN. It contains guidance on Planned and Reactive maintenance and the guiding principles of maintenance plans. Further guidance is provided on developing, implementing and reviewing maintenance plans. Annex A contains an example of a generic maintenance strategy. All other Annexes were removed.

Action item(s):

The Secretariat is requested to forward the output paper Revised Guideline G1077 Developing a maintenance strategy for Aids to Navigation (ENG19-9.2.1.7) to the Council for approval.

The Secretariat is requested to amend the references to G1077 in section 4.8.1 and 4.8.3 of the NAVGUIDE, updating to them to refer to G1151 on Maintenance of AtoN structures.

8.5 Task 2.2.4 Update and Amalgamate the Guidelines G1108, G1136 and G1175

Task group leader: Mariano Marpegan

Key outcomes include:

The three Guidelines relating to the provision of AtoN in extreme climates have now been amalgamated into one comprehensive Guideline. This task was finalised during ENG19 and is now ready for approval.

Action item(s):

The Secretariat is requested to forward the output paper Draft Guideline on AtoN in extreme conditions (ENG19-9.2.1.8) to the Council for approval, subject to approval. Upon approval, withdraw G1108, G1136 and G1175 from circulation.

8.6 Task 2.3.1 Develop guidance quantifying floating AtoN characteristics

Task group leader: Gillian Burns

Key outcomes include:

A liaison note from ARM was received and the content was reviewed and added to the Guideline. An input paper from China MSA was also received and taken into account. The Guideline was finalized during ENG19 and is ready for approval.

Action item(s):

The Secretariat is requested to forward the output paper New draft Guideline on Overview of a Floating AtoN (ENG19-9.2.1.6) to Council for approval.

8.7 Task 2.3.2 Creating an overview guidance on maintenance of floating AtoN

Task group leader: Greg Hansen

Key outcomes include:

This new task was identified at ENG18. Information was gathered and the main body of work will be carried out at ENG20

Action item(s):

Greg Hansen is requested to submit an input paper to ENG20 on buoy maintenance strategies.

8.8 Task 2.3.3 Update Recommendation R0107 (E-107) Moorings for floating AtoN

Task group leader: Pierre-Luc Delange

Key outcomes include:

This task will be started once task ENG-2.3.4 has been completed.

8.9 Task 2.3.4 Update G1066 Design of floating AtoN moorings

Task group leader: Pierre-Luc Delange

Key outcomes include:

The Task Group discussed how the existing G1066 guideline can be rewritten for it to be more readable, understandable, and especially more informative for users not initially familiarised with mooring calculations. We felt that some changes in the language used and the structure of the Guideline would greatly improve the understandability of the document.

A revised index for the Guideline has been developed, the guideline will present a high level overview of the core concepts and design process first, explaining mooring systems and typology before diving into the actual calculations. A separated section regarding mooring components will contain the current information about chain mooring and extend on some recently developed mooring set technologies. Some of the key changes in the guideline concepts and structure are:

- Slack, taut, and transitional should not be presented as different mooring types, as they are simply different states with the same mooring typology. They will be given now as “calculation cases”, as a catenary mooring is simply calculated for it to be on one of these three given states under design environmental loads.
- Derivating from this last change, the sinker weight formula has been moved to the anchoring section and needs to be converted to a general formula that can be applied to any mooring set calculation case. This is under development, but we are positive that it is possible to adapt it.
- We propose to change the language from “maximum” environmental conditions to “design” environmental conditions. These conditions need to be decided by a designer. Also, we are proposing mentioning the possibility of a dual design, considering both “operational” conditions (with normal navigation) and “survival” conditions. This can lead to huge efficiency (cost versus AtoN performance) and operational benefits.
- Calculation formulas will be modified to be general and apply to all three catenary mooring line states, we will clarify which parts of the equation are null in each case.

- Anchoring devices is now the general term for any system that works as an attachment point to the seabed. We proposed the use of the terms “embedment anchor” and “sinker / gravity anchor”.

Some of the needed images have been created intersessionally, but the need for more of them has arisen, and we plan to work as a group to incorporate visuals and further edits intersessionally. We feel figures and graphics are key to explaining some of the concepts clearly. Also, a code of colours regarding mooring line sections, maintained throughout the whole guideline, has been proposed as a tool to improve user understanding of the different mooring states, especially on catenary moorings.

There’s also clarity and coherence revision to be applied, still not incorporated one the WIP document, as we feel that would be better done after the re-ordering of the content.

Our intention is to do intersessional work to achieve:

- Re-ordering the guidelines according to the proposed structure.
- Add clarity and coherence reviews to the WIP document.
- Continue creating the needed visual resources.
- Continue working on the sinker formula.

The next steps would be to:

1. Adapt the catenary calculation formulas for them to be applied to all three calculation cases.
2. Extend the hybrid mooring section.
3. Re-revise the whole guideline to identify and eliminate outdated information about current practices.

Action item(s):

Jose Andrés Fombuena is requested to coordinate intersessional work and submit an input paper to ENG20 on the Revised Guideline G1066.

8.10 Task 6.3.1 Update G1008 Remote control and monitoring of AtoN

Task group leader: Jonas Lindberg

The task group worked on the development of a new guideline on the harmonisation of IoT protocol. A new task has been created in the work plan to cover this and will be updated during ENG20. The update of G1008 is scheduled to be completed later in the work program.

Action item(s):

Peter Dobson is requested to schedule intersessional work on the Harmonisation of IoT Protocol and submit an input paper to ENG20.

8.11 Task on Review of IALA Work Programme 2023-2027 and ENG WG1 Task Register

The IALA Work programme was reviewed in conjunction with the ENG WG1 detailed task register.

The Task Register was updated, noting that it is a living document on the website and will be reviewed at each meeting.

9. WORKING GROUP 2 – RADIONAVIGATION SERVICES (WG2)

During the 19th session of the ENG committee, the WG2 – Radionavigation Services worked on several tasks.

Referencing Document(s): ENG WG2 Work Program

The working plan was introduced, reviewed, and adopted by WG.

The WG Chair express their gratitude to WG participants for their hard work and perseverance this week. The WG Chair and Vice Chaira would also like to thank all of the Task Group leaders for their time and effort in progressing their work items.

WG2 was informed about the existence of a web tool for monitoring the tasks in the working plan. The updated tasks are reflected in the report for the specific task: <https://www.iala-task-register.com/>. The Chair will work together with the Secretariat and task leaders to update the Task register.

Working documents have been placed in a folder marked as such within each task’s sub-folder on the IALA file share. Throughout the physical session of the week, a number of focused WG sessions, were held. The WG focused on the following tasks:

- Task 3.2.1 on R-Mode development.
- Task 3.3.1 on Augmentation systems.
- Task 3.3.2 on High-accuracy positioning systems.
- Task 3.3.3 PNT technology review (Task 8.1.1).
- Task 3.4.1 on Radar & Enhanced Racon positioning.
- Task 3.5 on S200 PNT.

9.1 Task 3.1.1 Develop guidance on timing and synchronization

Task group leader: Stefan Gewies

Comments:

No work was progressed during this session on Develop guidance on timing and synchronization.

9.2 Task 3.1.2 WWRNP review

Comments:

No work was progressed during this session on the World-Wide Radio Navigation Plan.

9.3 Task 3.2.1 R-Mode development

Task group leader: Stefan Gewies

Input papers:

ENG19-3.1.0.15	Liaison note to ENG on Guideline G1158 VDES R Mode
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Comments:

The draft Guideline on MF R-Mode signal structure and navigation message was further developed intersessional and provided a mature input to ENG19. The review comment from ENG18 was considered.

The draft guideline on “MF R-Mode signal structure and navigation message” was reviewed and amended during the meeting and a final version was generated which should become an output of ENG-19. The committee thanks the task group for their effort they spend to developing the guideline.

In a brainstorming session new work items were identified for this task group.

The Guideline G1158 VDES R-Mode was discussed, and no changes are proposed.

Output:

The Guideline on “MF R-Mode signal structure and navigation message” and the forwarding of “Guideline G1158 VDES-R mode” to Council.

Action item(s):

The **Secretariat** is requested to forward the new draft Guideline MF R-Mode signal structure and navigation message (ENG19-9.2.2.1) to the Council for approval.

The **Secretariat** is requested to forward Revised Guideline G1158 VDES R-Mode (ENG19-9.2.2.6) to the Council for approval.

9.4 Task 3.3.1 Augmentation Systems

Task group leader: José-Luis Martin

Input papers:

ENG19-3.1.2.1	NCSR 12 Recognition of augmentation systems in the World-Wide radionavigation systems
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Comments:

The Committee reviewed the input paper ENG19-3.1.2.1, “Draft input to NCSR 12, Recognition of augmentation systems in the World-Wide radionavigation systems” and the information given during the discussions. The draft guideline on “NCSR 12 Recognition of augmentation systems in the World-Wide radionavigation systems” was reviewed and amended during the meeting, and a final version was generated which should become an output of ENG-19. The committee thanked the task group for the effort they had spent developing the output paper.

Output:

ENG19-9.2.2.2 NCSR12 Development of procedures and requirements for the recognition of augmentation systems in the WWRNS_ENG19

Action item(s):

José-Luis Martin is requested to identify the primary submitter for the document titled Development of procedures and requirements for the recognition of augmentation systems in the WWRNS (ENG19-9.2.2.2) and inform the Secretariat before the council input deadline.

The **Secretariat** is requested to forward the document titled Development of procedures and requirements for the recognition of augmentation systems in the WWRNS (ENG19-9.2.2.2) to IMO NCSR12 for Council approval, pending the identification of the main submitter.

9.5 Task 3.3.2 High accuracy positioning systems

Task group leader: Sun Qian

Input papers:

ENG19-3.1.2.3	Input paper on Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service
ENG19-3.1.2.3.1	Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service

Comments:

The Committee noted the input paper ENG19-3.1.2.3 “Input paper on Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service” and ENG19-3.1.2.3.1 “Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service”.

The group worked further on the draft guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service, which should be continued over the next sessions. It is planned that the draft guideline should be further developed intersessional with the aim to provide input to ENG20. It is planned that the work will be progressed in correspondence between interested members, and some member expressed their concerns to consider the non-mandatory MASS programme. Committee members who are interested in contributing to this guideline are invited to share their interest by email with the task leader, Sun Qian, gbcouple@163.com.

Output:

Working document (ENG19-9.2.1.11) Draft Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service.

Action item(s):

Committee participants interested in supporting the development of the Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service are invited to contact the task group leader, Qian Sun (gbcouple@163.com).

9.6 Task 3.3.3 PNT technology review (Task 8.1.1)

Task group leader:

Input papers:

ENG19-3.1.2.4	Development of Advanced eLORAN Technology in the Republic of Korea
ENG19-3.1.2.5	Development Result of the Korean R-Mode test bed
ENG19-3.1.2.6	ROK Point Status
ENG19-3.1.0.1	Draft Guideline on Developments and implications of MASS for coastal authorities
ENG19-3.1.0.2	Del2 MASS Publications Scoping Report v2.2
ENG19-3.1.0.3	Del3 Report on possible MASS related work items for the IALA committees
ENG19-3.1.0.4	Liaison note from ARM to ENG VTS DTEC on MASS Guideline Review post plenary
ENG19-3.1.0.4.1	Annex ARM proposals on Draft Guideline Developments and implications of maritime autonomous surface ships
ENG19-3.1.0.7	Liaison note from ARM on the IALA AIS documentation
ENG19-3.1.0.7.1	Annex to Liaison note on the IALA AIS documentation
ENG19-3.1.0.11	Liaison note DTEC to ARM, ENG, VTS, MASS TF on MASS Rec and Guideline
ENG19-3.1.0.11.1	Revised draft Guideline on MASS for AtoN Authorities
ENG19-3.1.0.12	Liaison note DTEC to all committees and PAP on digitalisation of waterways guideline
ENG19-3.1.0.12.1	Draft IALA Guideline on Digitalization of waterways

ENG19-3.1.0.13	ENG19-3.1.0.13 Liaison note DTEC to ARM, VTS, ENG, PAP on IALA documentation relating to AIS
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Comments:

During the meeting, there were 3 presentations given on PNT-related technology and projects:

1. Resilient PNT approaches given by Florin Mistrapau
2. Development of terrestrial radionavigation system in ROK given by Han Younghoon
3. S-240 data services through the S-200 testbed given by Han Younghoon

All presentations can be found on the files share.

The Working group took notice of the documents related to AIS:

- ENG19-3.1.0.7 Liaison note from ARM on the IALA AIS documentation.
- ENG19-3.1.0.7.1 Annex to Liaison note on the IALA AIS documentation.
- ENG19-3.1.0.13 Liaison note DTEC to ARM, VTS, ENG, PAP on IALA documentation relating to AIS.

The workgroup discussed the views of ARM and DTEC and agrees with the views of DTEC. They drafted a liaison note to ARM on their views on this matter. "ENG19-9.2.2.5 Liaison to ARM on AIS Documentation"

The workgroup took notice of document related to MASS:

- ENG19-3.1.0.1 Draft Guideline on Developments and implications of MASS for coastal authorities.
- ENG19-3.1.0.2 Del2 MASS Publications Scoping Report v2.2.
- ENG19-3.1.0.3 Del3 Report on possible MASS related work items for the IALA committees.
- ENG19-3.1.0.4 Liaison note from ARM to ENG VTS DTEC on MASS Guideline Review post plenary.
- ENG19-3.1.0.4.1 Annex ARM proposals on Draft Guideline Developments and implications of maritime autonomous surface ships.
- ENG19-3.1.0.11 Liaison note DTEC to ARM, ENG, VTS, MASS TF on MASS Rec and Guideline.
- ENG19-3.1.0.11.1 Revised draft Guideline on MASS for AtoN Authorities.

The workgroup discussed the documents on MASS and made a Liaison note to ARM on MASS Guideline Review. And accept the proposed revisions of documents. Also took notice of the proposed intersessional draft group session scheduled for Monday, 13 January 2025.

The workgroup took notice of documents related to digitalisation of waterways:

- ENG19-3.1.0.12 Liaison note DTEC to all committees (and PAP) on digitalisation of waterways guideline.
- ENG19-3.1.0.12.1 Draft IALA Guideline on Digitalization of waterways.

The workgroup discussed the documents on Digitization of waterways and made a Liaison note to DTEC on digitalisation of waterways guideline.

Outputs:

- ENG19-9.2.2.5 Liaison to ARM on AIS Documentation.
- ENG19-9.2.2.7 Liaison note from ENG to ARM on MASS Guideline Review.
- ENG19-9.2.2.8 Liaison note ENG to DTEC committee on digitalisation of waterways guideline.
- ENG19-9.2.2.10 Liaison to PAP on MASS Guideline Updates.

Action item(s):

The **Secretariat** is requested to forward the liaison on AIS Documentation (ENG19-9.2.2.5) to ARM for further consideration.

The **Secretariat** is requested to forward the liaison note on MASS Guideline Review (ENG19-9.2.2.7) to ARM for further consideration.

The **Secretariat** is requested to forward the liaison note on digitalisation of waterways guideline (ENG19-9.2.2.8) to DTEC for further consideration.

The **Secretariat** is requested to forward the liaison on MASS Guideline Updates (ENG19-9.2.2.10) to PAP for further consideration.

The **Committee participants** interested in participating to the drafting group the MASS guideline for AtoN authorities should contact Jillian Carson-Jackson (jillian@jcconsulting.net). The first meeting is scheduled for 13 January 2025 and will be a online meeting.

9.7 Task 3.4.1 Radar & Enhanced Racon positioning-Mode development

Task group leader: Paul Mueller

Comments:

The WG2 reviewed the work and finalized the IMO Liaison on Enhanced Radar Positioning Systems. WG2 reviewed recommendation R0146 and brought it up to date and corrected misconceptions. Created a liaison note to ARM for advice on the future of R0101 and R0146.

Output:

- Information paper ENG19-9.2.2.3 for IMO on “Enhanced Radar Positioning Systems”.
- Liaison ENG19-9.2.2.4 to ARM on advice on Liaison to ARM on R0101 and R0146.
- revised Guideline “ENG19-9.2.2.5 R0146 Strategy for Maintaining Racon Service Capability (e-NAV-146) Ed1.1 20241013”.

Action item(s):

The **Secretariat** is requested to forward the information paper on Enhanced Radar Positioning Systems (ENG19-9.2.2.3) to IMO NCSR12 for Council approval.

The **Secretariat** is requested to forward liaison on R0101 and R0146 (ENG19-9.2.2.4) and R0146 Strategy for Maintaining Racon Service Capability (e-NAV-146) Ed1.1 (ENG19-9.2.2.4.1) to ARM for further consideration.

9.8 Task 3.5 S-200 PNT

Task group leader: Han Younghoon

Input papers:

ENG19-3.1.2.7	S-240 data service through S-200 testbed system
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Comments:

During the meeting the workgroup discussed and progressed the S-240 product specifications and produced a latest version.

Output:

- ENG19-9.2.2.9 - S-240-DGNSS-Station-Almanac-Product-Specification version 1.2.
- ENG19-9.2.2.9.1 S-240 version 1.2 GML Schema (zip file).
- ENG19-9.2.2.9.2 S-240 DGNSS Station Almanac Feature Catalogue version 1.2.xml.

Action item(s):

The **Secretariat** is requested to release S-240-DGNSS-Station-Almanac-Product-Specification version 1.2 (ENG19-9.2.2.9), S-240 version 1.2 GML Schema (ENG19-9.2.2.9.1) and S-240 DGNSS Station Almanac Feature Catalogue version 1.2 (ENG19-9.2.2.9.2) (can be found on the fileshare <https://nextcloud.iala-aism.org/index.php/f/323001>).

9.9 Task on Review of IALA Work Programme 2023-2027 and ENG WG2 Task Register

The IALA Work programme was reviewed in conjunction with the ENG WG2 detailed task register.

The Task Register was updated, noting that it is a living document on the website and will be reviewed at each meeting.

The proposed change to the task register is to migrate task 8.1.1. PNT technology review into task 3.3.3 PNT technology review. Also make a general task for the ENG committee for implementation of MASS within current documentation. During the sessions of the workgroup task, 3.5 S-200 PNT seemed to be missing.

10. WORKING GROUP 3 – HERITAGE AND CULTURE FORUM (WG3)

ENG WG3 – Heritage Forum considers its overall objective to be:

“To further the declaration and recommendations contained within the Incheon Declaration and within IALA Recommendation R1005 – ‘Conserving the built heritage of lighthouses and other aids to navigation’.

During the 19th session of the ENG committee, the WG3 – Heritage & Culture Forum worked on several tasks regarding guidance in managing heritage properties and considered the commendation of Heritage Lighthouse of the Year 2025.

Referencing Document(s): ENG WG3 Work Program

WG3 went through all its tasks within the Task Register led by the respective Task Leaders.

The Acting Chair, Sarah-Jane Lakshman, and Acting Vice-Chair, William Dunning, of the Working Group thanked all participants, both in person and online, for their hard work during the session. They noted the ongoing success of the hybrid working environment.

Throughout the physical session of the week, a number of focused WG sessions were held. The WG focused on the following tasks:

- Review of G1063 Ed.1 Agreements for Complementary use of Lighthouses.
- Review of G1074 Ed.1 Branding and Marketing of Historic Lighthouses, Dec 2009.
- Review of G1075 Ed.1 A Business Plan for the Complementary Use of a Heritage Lighthouse.
- Development of WWA L1.1 ATON Manager Course Heritage Module.
- Development of Technical / Guidance document on ‘good practice in modernizing heritage lighthouses whilst minimizing negative heritage impact’.
- Commendation of the IALA Heritage Lighthouse of the Year 2025.

WG3 was pleased to receive the following presentations, which were all well-received and generated some interesting discussion.

- Update on the Irish Lights Lighthouse Tourism & Heritage Conference (William Dunning, Trinity House).
- Heritage Lighthouses in Australia: Navigating the Future (Ian Clifford, Lighthouse of Australia Inc.).
- Twinning Lighthouse Project (Japan Coast Guard & Northern Lighthouse Board).

- World Marine AtoN Day 2024 and Lighthouse of the Year Celebration, Genoa, Italy (Naehyuk Yoo, Korea Institute of Aids to Navigation).
- Lingao Lighthouse (ZhenYu GUO, China Maritime Safety Administration).
- KATON Stamp Tour (Jiwon Sim, KATON).
- The 1st Korea Lighthouse Week Report (Bae YongChan, MOF).
- The Farol do Bugio Lighthouse (Antonio Oliviera, Portuguese Lighthouse Directorate).

10.1 Task 2.6.1 on Maintaining the Heritage webpage on the IALA website

Task group leader: Seong Woo SON (Korea Institute of Aids to Navigation) and Gillian Burns (Northern Lighthouse Board).

Comments:

The Heritage webpages have been updated to include new HLY nominations received in 2024, and for minor amendments in existing HLY nominations.

Key outcomes include:

WG3 participants agreed that the heritage web pages on the IALA website are suitable and

Action item(s):

Seong Woo Son and Gillian Burns are requested to coordinate WG3 work maintaining the Heritage Web Page through to completion within the Task Period and Korea Institute of Aids to Navigation and NLB respectively are requested to support them in this.

The Secretariat is requested to assist the editing team with the IALA Heritage Web Page editing as required.

10.2 Task 2.6.2 Production of Technical or Guidance document on 'good practice in modernising heritage lighthouses whilst minimising negative heritage impact'

Task group leader: Sarah-Jane LAKSHMAN, Australian Maritime Safety Authority

Comments: Sarah-Jane presented to the group a draft of this document in its current state. It was agreed that the document was shaping up nicely to assist AtoN Managers with principles to consider when modernising heritage lighthouses.

Key outcomes include:

1. WG3 participants were asked to send examples of good practice in sensitively modernising heritage lighthouses to the Task Leader intersessionally.

Action item(s):

Sarah-Jane Lakshman is requested to continue coordinating WG3 work in the production of a Technical or Guidance document on 'good practice in modernizing heritage lighthouses whilst minimizing negative heritage impact' and AMSA is requested to support them in this.

WG3 participants are requested to submit any relevant examples of minimizing impact to heritage when installing and/or upgrading equipment inside historic lighthouses to Sarah-Jane prior to ENG20.

10.3 Task 2.6.3 Manage the process for the IALA HLY accolade

Task group leader: Peter HILL, Trinity House

Comments: In Peter Hill's absence, Sarah-Jane Lakshman (AMSA) oversaw the process of the IALA HLY accolade for ENG19.

Key outcomes include:

1. As determined by WG3 at ENG18, the selection of IALA HLY was agreed to be fit for purpose for 2025. YongChan BAE (MOF) confirmed the Republic of Korea's (ROK) ability and willingness to design and manufacture a plaque for the 2025 and 2026 HLY recipients. For that, WG3 is extremely grateful and thanks ROK for its continued support to the IALA HLY accolade.
2. YongChan BAE (MOF) also expressed that ROK would be willing to receive input from WG3 participants at ENG20 on the design to be included on the plaque. WG3 indicated that they would be happy to assist with this provided review of the design options at ENG20 fit within ROK's design and manufacture schedule. Following confirmation of the IALA Council's commendation of Heritage Lighthouse of the Year 2025, 3 designs of the selected lighthouse will be considered.
3. WG3 received a presentation by Naehyuk YOO (KATON) on the World AtoN Day celebrations held in Genoa, Italy in July 2024. Naehyuk showed photos of the events and of the tour of Lanterna, Heritage Lighthouse of the Year 2024. It was reported that the celebrations were a great success, and the accolade had a positive impact on both the local and national Italian community.
4. A number of WG3 participants emphasized the weight this international accolade has to both local and national communities, and that specific rules and regulations for the HLY nomination and voting process should be considered for future HLY deliberations. WG3 participants agreed that it is important to review nomination and voting processes, however, some participants noted that introducing rules and regulations may have an impact on the spirit of the accolade. WG3 welcomes input papers on this matter for further discussion at future ENG meetings.

Action item(s):

***Peter Hill** is requested to continue coordinating WG3 work Managing the process for the IALA Heritage Lighthouse of the Year Accolade through to completion within the Task Period and **Trinity House** is requested to support them in this.*

10.4 Task 2.6.4 Write the Heritage Module for the WWA L1.1 AtoN Manager Course

Task group leader: Ke Raxuan, Navigation Institute of JiMei University

Comments: Ke Raxuan produced a detailed and beautifully presented slideshow detailing a new and improved Heritage Module for the L1.1 AtoN Manager Course. The scope of the proposed course covers:

- The Incheon Declaration and Heritage Lighthouse of the Year accolade.
- The use of historic lenses.
- The importance of the preservation of lighthouses – including management of risk, engagement with stakeholders, developing protective measures, and identifying the potential and limitations of historic structures.
- Examples of complementary use.
- Relevant IALA documents (e.g. the IALA Complementary Lighthouse Use Manual, guidance and recommendation documents).

Key outcomes include:

1. WG3 agreed this module is shaping up to be extremely useful to AtoN Managers, and thanks the Task Leader for their hard work on drafting the material. It was noted that the Lecture number may change, and that this will be updated once the module is complete.
2. Ke Raxuan requested that WG3 participants assess their own experiences with managing heritage properties and send through any case studies that may be relevant for inclusion as examples in the module.

Action item(s):

Ke RAXUAN is requested to continue coordinating WG3 work in creating the Heritage Module for the WWA L1.1 AtoN Manager Course through to completion within the Task Period and the **Navigation Institute of JiMei University** is requested to support them in this.

WG3 participants are requested to submit any relevant examples of managing heritage lighthouses to the task group lead, **Ke Raxuan** prior to ENG20.

10.5 Task 2.6.5a Review Guideline G1080 Ed.1 The Selection and Display of Heritage Artefacts, Dec 2011

Task group leader: Jiwon SIM, Korea Institute of Aids to Navigation

Comments: At the last ENG (ENG18), WG3 worked together to suggest a number of revisions for G1080 to improve its use when considering the management of artefacts. The Task Leader advised that an update on the revision process of G1080 will be presented at ENG20 following the suggested amendments collated by the group at ENG18.

Key outcomes include:

1. It was suggested that following the update at ENG20, the group determine whether the existing completion timeframe of ENG21 is achievable.

Action item(s):

Jiwon SIM is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1080 Ed.1 through to completion by second half of 2025 (ENG21) and **Korea Institute of Aids to Navigation** is requested to support them in this.

10.6 Task 2.6.5b Review Guideline G1093 Ed.1 The Management of Surplus Lighthouse Property, Dec 2012

Task group leader: Naehyuk Yoo, Korea Institute of Aids to Navigation

Comments: Naehyuk provided an update on the revision process currently being undertaken for G1093 which explores the heritage management of surplus lighthouse properties to ensure their preservation is ensured.

Key outcomes include:

1. WG3 discussed the importance of the heritage guidance documents, including G1093, working cohesively so to avoid repeated content, and appropriate cross-referencing. A revised draft of G1093 will be presented to the group
2. It was found that Task 2.6.5b was without an entry on the ENG Task Register database, and this has been rectified by the WG Chair and Vice-Chair.

Action item(s):

Naehyuk Yoo is requested to continue to coordinate WG3 work in reviewing Guideline G1093 Ed.1 for completion and **Korea Institute of Aids to Navigation** is requested to support them in this.

10.7 Task 2.6.6 Review Guideline G1063 Ed.1 Agreements for Complementary use of Lighthouses, Dec 2008

Task group leader: Juan LIU, China Maritime Safety Administration (MSA)

Comments: The following Input Paper and Annex was presented by Juan LIU and discussed;

ENG19-3.1.3.3 Proposal for updating G1063 on Agreements for Complementary Use of Lighthouses

ENG19-3.1.3.3.1 Annex Draft revised G1063 on Agreements for Complementary Use of Lighthouses

Key outcomes include:

1. The group appreciates the work Juan LIU has undertaken in revising G1063, and thanks the Task Leader for the Annex Draft. The Input Paper and Annex were reviewed, and many of the changes were deemed suitable for the purpose of advising AtoN managers examples of complementary use.
2. There was discussion within WG3 on whether the guideline should be intended for functional AtoN, or heritage properties in general (surplus or not). Some WG3 participants emphasized that G1063 should avoid repeating content found in other guidelines, such as G1093 on surplus lighthouse property, and ensure the guidelines cross-reference each other appropriately. Advice was sought from Peter Hill (Trinity House) owing to Peter's involvement in the revision process. The advice received was that the scope of G1063 could focus specifically on achieving complementary use through third-party agreements – this is to differentiate the guideline from the Complementary Use Manual. In this case, the guideline name ought to be updated to reflect this scope – it was suggested the guideline be renamed to 'Partnership Agreements for Complementary Use of Lighthouse Property'.
3. Discussion then fell on the confusion between guidelines and manuals utilizing the term 'complementary use', and William Dunning (Trinity House) voiced an intention to submit an input paper at ENG20. This input paper would seek to clearly define the difference between the existing guidelines and present a suggested flowchart outlining how the guidelines fit together, and how they sit alongside the existing Complementary Use Manual.
4. Naehyuk Yoo (KATON) provided the Task Leader with an example 'Contract for the Consignment Operation of Lighthouse Marine Cultural Space' for possible inclusion as an annex of G1063.

Action item(s):

*Juan Liu is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1063 Ed.1 through to completion in second half of 2025 (ENG21) and **China Maritime Safety Administration (MSA)** is requested to support them in this.*

***WG3 participants** are requested to submit any relevant examples of third-party partnerships for complementary use of the lighthouses to the task group leader, **Juan LIU** prior to ENG20.*

10.8 Task 2.6.7a Review Guideline G1074 Ed.1 Branding and Marketing of Historic Lighthouses, Dec 2009

Task group leader: ZhenYu GUO, China Maritime Safety Administration (MSA)

Comments: The following Input Paper and Annex was presented by ZhenYu GUO and discussed;

ENG19-3.1.3.2 An Exploration of the Branding and Marketing of Lighthouses

WG3 were presented with a most interesting case study exploring the branding and marketing of Hainan Round-Island Lighthouse Park complex. ZhenYu GUO detailed the tourism ventures currently underway – a 988.2-kilometre-long highway loop with 84 tourism sites including 25 lighthouses, 26 coastal lagoons, 21 tourist resorts, and much more. The lighthouses that can be found on this highway route are considered a string of pearls, with a number of these towers being celebrated in media, art and advertising.

The paper and presentation by ZhenYu GUO detailed the three-pronged approach to this venture:

1. establishing a tourism brand
2. integrating two major resource systems
3. product combination (i.e. lighthouses and fashion, art and nature).

The paper and presentation were very well-received, and WG3 were fascinated by all the various themes that were being explored on the one island. The group are eager to hear of how the tourism ventures progress, and what challenges and successes are experienced. These experiences could then feed into G1074 and be used as examples.

Action item(s):

Zhenyu GUO is requested to continue coordinating WG3 work in reviewing IALA Guidance documents G1074 Ed.1 for completion by first half of 2025 (ENG20) and G1075 Ed.1 for completion by first half of 2026 (ENG22) and **China Maritime Safety Administration (MSA)** is requested to support them in this.

WG3 participants are requested to submit any relevant examples of third-party partnerships for complementary use to **Zhenyu GUO** prior to ENG20.

10.9 Task 2.6.7b Revise Guideline G1075 Ed.1 A Business Plan for the complementary use of a Historic Lighthouse

Task group leader: Zhenyu GUO, China Maritime Safety Administration (MSA)

Comments: The following Input Papers were presented by ZhenYu GUO and discussed;

ENG19-3.1.3.1 Proposal for updating G1075 on A Business Plan for the Complementary use of a heritage lighthouse

ENG19-3.1.3.1.1 Annex Business plan for the complementary use of a heritage lighthouse (revised draft)

ZhenYu GUO has made considerable progress on this guideline as Task Leader, and many of the revisions were deemed suitable by WG3.

Key outcomes include:

1. Some participants raised concerns that language for the guideline ought to remain within the realm of what an AtoN authority 'could' do, rather than 'should' do when it comes to optional complementary business ventures. It was also recommended that G1075 reference R1004 and R1005 so that users are able to explore these recommendation documents.
2. Participants had reservations as to the suggestion of the use of AI. It was felt this technology is too new and not understood well enough for IALA to promote its use. There was also suggestion from the group to steer away from naming specific software within the guidance document so to remain impartial.

WG3 thanks ZhenYu GUO for all the hard work that has been undertaken to update G1075, as revision of this guideline appears to be entering its final stage.

Action item(s):

Zhenyu Guo is requested to continue coordinating WG3 work in reviewing IALA Guidance documents G1074 Ed.1 for completion by 1st half of 2025 (ENG20) and G1075 Ed.1 for completion by 1st half of 2026 (ENG22) and **China Maritime Safety Administration (MSA)** is requested to support them in this.

10.10 IALA Heritage Lighthouse of the Year 2025

10.10.1 Nominations and means of arriving at a commendation

All participants of WG3 were invited to complete a ranking sheet in respect to nominees. 15 Ranking sheets were received. These sheets were then collated to determine the three IALA Heritage Lighthouses that WG3 would commend. A further discussion was held to reach a consensus as to which of the three it would commend as IALA LHY 2025.

It was agreed by all participants that any one of the nominees considered warrants being an IALA HLY and it was acknowledged that comparing and contrasting lighthouses was almost an impossible task. WG3 was grateful to all who had taken part.

10.10.2 The three lighthouses commended for consideration of IALA HLY 2025

Eddystone Lighthouse, England



Standing tall offshore from Devon (England), Eddystone Lighthouse shines brightly as a rock lighthouse tasked with safely guiding mariners past the dangerous Eddystone Rocks.

First built by Trinity House in 1882, it is the fourth lighthouse to mark the hazardous rocks, its predecessors being the Winstanley Tower (1698-1703) – which was the first lighthouse to be built on a small rock in open sea - Rudeyard's Tower (1709-1755), and Smeaton's Tower (1759-1882). When concern for growing cracks in Smeaton Tower grew, it was agreed that the existing lighthouse ought to be dismantled and re-erected as a monument on-land, and a new tower be built in its place.

We now find on site Douglass' Tower, a technically beautiful tower influenced by the likes of the renowned Stevenson family, John Smeaton and Douglass. The lighthouse was first opened in 1882 by the Duke of Edinburgh, who laid the final stone of the tower.

This lighthouse stands as a shining example of a heritage lighthouse with impressive technical pioneering and strong aesthetic value that has permeated through the surrounding communities. Eddystone Lighthouse showcases the evolution of both technical lighthouse architecture, as evidenced by the variety of towers that have been built at this site, and of AtoN technology housed inside the lighthouse (it was the first Trinity House rock lighthouse to be converted to automatic operation by 1982).

Fascinated by the isolation of the tower, Eddystone Lighthouse has consistently inspired writers, artists, the television industry, and the local and national communities, and the lives of the hardy lighthouse keepers have been celebrated, romanticized or pitied over the centuries.

Despite its inaccessibility, Trinity House endeavours to keep the history of Eddystone Lighthouse alive, most recently with an exhibition of the tower at its visitor and education site at Lizard Lighthouse Heritage Centre in 2009. The Smeaton Tower continues to be a popular tourist site, offering visitors a glimpse into the beautifully restored 1759 tower set against the glorious views of Plymouth Sound.

The effort to educate and illuminate national and international audiences on the isolated Eddystone towers is a testament to Trinity House. With the inability to allow visitors to physically visit the tower, promotion of the

lighthouse's history, hand-in-hand with its aesthetic and technical prowess, has made it a standout to lighthouse communities around the world.

Hook Head Lighthouse, Ireland



Many nations are blessed with historic lighthouses, but few can boast one as old as Hook Head Lighthouse in Ireland. Constructed some-time between the years 1210 and 1240, it is the second oldest operating lighthouse in the world existing largely in its original form - after the Tower of Hercules in Spain.

William Marshall, a Knights Templar, built the lighthouse tower to protect and develop the shipping trade – a priority that has not wavered in the last 700 years. It was monks from a nearby monastery that likely undertook the construction work and became its lighthouse keepers for the next few centuries. The monks lived in the tower which served the additional function of monastery until 1641. Traces of their chapel on the eastern side of the building still survive. Architecturally, it is one of the most fascinating examples of medieval architecture in Ireland with its 4m thick walls, its stairway built within the walls and its rib-vaulted chambers.

Having been a lighthouse for so long, Hook Head Lighthouse has seen technologies come and go and is able to tell their story. Coal burning lanterns were replaced by whale oil, then gas (manufactured on-site), then Paraffin oil before giving way to electricity. Different optic and rotation systems similarly came and went as the tower remained constant through it all. Yet whilst accommodating this constant change, much has been conserved – testimony to the esteem in which the lighthouse is held and the care that has been taken of it.

Innovation extends to the way in which the lighthouse has been developed as a community asset and a tourist attraction. The Hook Heritage Community enterprise was established for this purpose and the lighthouse officially opened to the public in 2000 by the then President of Ireland Mary McAleese and is one of Irish Light's Great Lighthouses of Ireland – itself a commendable initiative by its operator the Commissioners of Irish Lights. Since 2019 it has attracted over 250,000 visitors from all over the world. Former keepers' houses now provide a retail gift shop, café and bakery offering local products and employment. Guided tours of the tower are offered where visitors get a fascinating insight into the workings of the lighthouse combined with stories and facts of this unique building, past, present and future. Interestingly it has been observed that such tours improve ventilation and so

building conditioning – a great example of symbiosis between the interests of managing AtoN and complementary use.

Lingao Lighthouse, China



Standing as the oldest lighthouse in the Hainan Province on Hainan Island, Lingao Lighthouse is a fascinating example of how a heritage lighthouse can be celebrated through innovative tourism ventures, good conservation, clever design technology and educational endeavours.

Building was completed by November of 1894, one of 59 lighthouses built by the General Taxation Department of the customs between the years of 1858 to 1927. This cast iron tower was designed for suitability to the local climate – particularly the need to withstand storms. Comprised of 6 columns and 350 steel rods supporting the tower, Lingao Lighthouse stands at 22 meters tall and decorated with red and white bands for unique visibility. It was remarked in 2010, following structural investigation, that the lighthouse was exceedingly stable – a testament to the design and continued care of the tower since its completion.

Between China MSA and the Ministry of Transport, China has prepared and published a variety of key documents including The Measure for the Protection and Management of Historical Lighthouses in the Maritime Areas of China (China MSA), and the Regulations for the Protection of Historical Lighthouses (Ministry of Transport) – documents which underpin concentrated efforts to maintain, repair and protect heritage sites. This work is exemplified in the continued care given to Lingao Lighthouse and its unique features – most notably the rotating lantern which has continued to be serviced and has remained in operation.

An absolutely fascinating part of the lighthouse and its cultural impact is its position within a larger Lighthouse Park complex – known as the Lingao Lighthouse Liberation Park. Comprised of four themes, the park explores and celebrates the different centuries of lighthouse use with an in-depth on-site presentation on the history of the tower and artefact display. Considered a ‘pearl’ in a necklace chain with another 24 lighthouses located around the shores of Hainan Island, the tower forms one of numerous historic sites along the Hainan Round-Island highway loop. Visitors are encouraged to visit the island and travel along this highway route to uncover the history and natural beauty of the region.

Lingao Lighthouse itself is open to educational visitors, where members of school groups, maritime institutions, and government organisations can visit the lighthouse free of charge by appointment. Open days for World Navigation Day and World AtoN Day are celebrated events open to all, and media outlets have centred on Lingao Lighthouse in recent years, cementing it in popular culture.

It is the emphasis on tourism, education and innovation that makes this heritage lighthouse an utter standout. The poetic ‘necklace’ composition of the island and its lighthouses draws vivid imagery, and Lingao Lighthouse makes its mark as a ‘pearl’ in the cultural landscape. The lighthouse and its larger park is an intriguing look at just how inventive lighthouse tourism can be, and stands as an example for all to admire.

10.10.3 After some discussion, ENG19 WG3 determined to commend Lingao Lighthouse, China, to IALA Council as IALA Heritage Lighthouse of the Year 2025.

Action item(s):

*The **Secretariat** is requested to forward the ENG Committee’s commendation for consideration in determining the IALA Heritage Lighthouse of the Year 2025 to the council.*

*The **Secretariat** is requested to organise a formal presentation of the IALA HLY accolade to the recipient at a suitable event to which the recipient is in attendance.*

10.10.4 IALA Heritage Lighthouse of the Year (IALA HLY) 2026 and beyond

The deadline for nominations to be considered for IALA HLY 2026 will be 30th of September 2025.

Action item(s):

*The **Secretariat** is requested to send an e-bulletin out in July 2025 reminding members of the opportunity to nominate lighthouses for IALA HLY and of the 30th September deadline for doing so to ensure consideration for the 2026 award.*

***Committee Members** are requested to raise awareness of the IALA HLY award in their respective organisations and to submit nominations for lighthouses they consider having heritage or cultural value.*

10.11 Review of IALA Work Programme 2023-2027 and ENG WG3 Task Register

The IALA work programme was reviewed in conjunction with the ENG WG3 detailed task register.

The Task Register was updated, noting that it is a living document on the website and will be reviewed at each meeting.

Key outcomes following review of WG3 Task Register:

1. A new task entry was created for the revision of G1093 as this was felt appropriate by the group.
2. It was determined by the group that those tasks due for completion by ENG21 (as captured in the Work Register) will be reviewed at ENG20 to ensure this timeframe is achievable.

11. SUMMARY OF OUTPUT AND WORKING PAPERS

The Working Group Chairs reported on the work carried out by their Working Groups.

Outputs from ENG19 were approved by the Committee using the approval procedure. The output documents and working papers are listed in Annex D.

Alwyn Williams expressed condolences on the passing of the former WG2 Chair, Michael Hoppe. He spoke about Michael’s commitment and knowledge to advancing resilient PNT, and his legacy will continue in those technologies. He will be a much-missed friend and colleague, and the committee observed a minute of silence for reflection.

12. REVIEW OF SESSION REPORT

The draft report of the meeting (ENG-13.1) was approved by the Committee at the Closing Plenary.

13. DATE AND VENUE OF NEXT MEETINGS

ENG20 is planned to be held between 07 – 11 April 2025 at IALA Headquarters, Saint Germain-en-Laye, France.

Other IALA events will be publicised on the IALA website.

14. ANY OTHER BUSINESS

15. CLOSING OF THE MEETING

The Chair thanked all Committee participants again for all the engagement and hard work. He hoped that all the participants would return to ENG20.

Deputy Secretary-General, Omar Frits Eriksson, thanked all participants for their work especially as he is aware that all have their jobs back at home to work on also.

Finally, the Chair asked if there were any final comments that participants wished to make; there were none.

16. LIST OF ANNEXES

A. Agenda

A copy of the agenda is at Annex A.

B. Participants list

A list of participants is at Annex B.

C. Input Papers

A list of input papers is at Annex C.

D. Output and Working papers

A list of output and working papers is at Annex D.

E. Action Items

A list of action items is at Annex E.

F. Working Group Participants Lists

Lists of working group participants is at Annex F



19th Session of the AtoN Engineering and Sustainability Committee (ENG19)

AGENDA

Opening Plenary

Start 10:00 UTC + 11, 21st October 2024 (23:00 UTC, 20th October 2024)

1. Introduction
 - 1.1. Welcome address from the Deputy Secretary-General and Dean Omar Frits Eriksson
 - 1.2. Welcome address from the Australian Maritime Safety Agency (AMSA)
 - 1.3. Administration and Safety Briefing (AMSA)
 - 1.4. Approval of the agenda Alwyn Williams
 - 1.5. Apologies and Introductions Alwyn Williams
 - 1.6. Working arrangements Alisa Nechyporuk
 - 1.7. Programme for the week Alisa Nechyporuk
 - 1.8. Outcomes of the AtoN Engineering Workshop Alwyn Williams
2. Review of action items from last meeting Alwyn Williams
3. Review of input papers Alwyn Williams
 - 3.1. Review of input papers to ENG19 Alisa Nechyporuk
4. Reports from other bodies
 - 4.1. IALA
 - 4.1.1. IALA Council Minsu Jeon
 - 4.1.1.1. Documents approved by Council Minsu Jeon
 - 4.1.2. Policy Advisory Panel (PAP) Minsu Jeon
 - 4.1.2.1. Sustainability WS Alwyn Williams
 - 4.1.2.2. Future Radiocommunication and radionavigation Hideki Noguchi
 - 4.1.3. 2023-2027 Work Plan and task register Michel Cousquer
 - 4.2. Update on MASS task group Minsu Jeon
 - 4.3. IMO Hideki Noguchi
 - 4.4. IHO Minsu Jeon
 - 4.5. ITU Minsu Jeon
 - 4.6. RTCM Stig Erik
 - 4.7. PIANC Minsu Jeon

- | | | |
|------|---|------------------------------|
| 4.8. | CIE | Alwyn Williams |
| 4.9. | WWA Update | |
| 5. | Advertising Presentations (planned during the working period) | |
| 5.1. | Extending Buoy Life While Reducing Emissions and Costs | Ed Steijn, Sabetoflex |
| 5.2. | Twining lighthouses project | NLB/JCG |
| 5.3. | The Internet of Things (IoT) technology based on Aids to Navigation for maritime safety | ETRI |
| 5.4. | IALA World-Wide Academy Update | WWA |
| 5.5. | Replacement of mercury rotary systems of French lighthouses | Emma Rieu-Stephan,
Cerema |
| 5.6. | Resilient PNT approaches | Florin Mistrapau |
| 5.7. | Update on the Irish Lights Lighthouse Tourism and Heritage Conference | William Dunning |
| 5.8. | Presentation on Australian Lighthouses | Ian Clifford |
| 6. | Overview of planned work for ENG19 | |
| 6.1. | WG 1 - Visual & Physical AtoN | Malcolm Nicholson |
| 6.2. | WG 2 - Radionavigation Services | Jeffrey van Gils |
| 6.3. | WG 3 - Heritage and culture forum | Peter Hill |
| 7. | Establish Working Groups and Task Groups | |

End of Opening Plenary

Approx. 13:00 UTC + 11 (02:00 UTC), 21st October

Working Groups to Progress Work Plan

14:00 UTC + 11 (03:00 UTC), 21st October to 17:30 UTC + 11 (06:30 UTC), 24th October

Closing of the physical week Plenary

Start 09:00 UTC + 11, 25th October (22:00 UTC, 24th October)

- | | | |
|------|--|-------------------|
| 8. | Report from Working Groups and Secretariat | |
| 8.1. | WG 1 – Visual & Physical AtoN | Malcolm Nicholson |
| 8.2. | WG 2 – Radionavigation Services | Jeffrey van Gils |
| 8.3. | WG 3 – Heritage and Culture forum | Peter Hill |
| 8.4. | Session Report | Alisa Nechyporuk |
| 9. | Summary of Output Papers for Review | Alisa Nechyporuk |
| 9.1. | Process for Comments | Alisa Nechyporuk |
| 10. | Close of Main Session | Alwyn Williams |

Closing of the physical week Adjourned for Approval Period of Output Documents

Session adjourns approximately 12:00 UTC + 11 (01:00 UTC), 25th October

Closing Plenary

Session recommences 07:30 UTC (08:30 CET), 4th November on Microsoft Teams

- | | | |
|-----|---|------------------|
| 11. | Opening of Online Session | Alwyn Williams |
| 12. | Review of Documents with Comments or Outstanding Issues | Alisa Nechyporuk |
| 13. | Review of Documents Approved | Alisa Nechyporuk |
| 14. | Date and venue of next meeting | Alwyn Williams |
| 15. | Close of Session | Alwyn Williams |

End of Closing Plenary and Session

Approx. 07:30 UTC (09:30 CEST), 4th November

ANNEX B

LIST OF PARTICIPANTS

First Name	Last Name	Member Type	Country	Organization	Email
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All papers are posted on the Committee section of the IALA website. Items in blue = late or updated paper.

Meeting	Agenda Item	Input Paper Title	Source	Action
ENG19-	1.4.1	Provisional Agenda ENG19	Secretariat	All
ENG19-	1.7.1	Programme for the week	Secretariat	All
ENG19-	1.8.1	Programme of the AtoN Engineering workshop	Secretariat	All
ENG19-	2.1.1	Report of ENG18 (ENG18-13.1.1)	Secretariat	All
ENG19-	2.1.2	Review of action items from ENG18	Secretariat	All
ENG19-	3.0	Input paper Committee meeting template	Secretariat	All
ENG19-	3.0.1	List of Input papers	Secretariat	All
ENG19-	3.1.0.1	Draft Guideline Developments and implications of maritime autonomous surface ships (MASS) for coastal authorities	DTEC2 / MASS TF9	All
ENG19-	3.1.0.2	Del2 MASS Publications Scoping Report v2.2	MASS TF9	All
ENG19-	3.1.0.3	Del3 Report on possible MASS related work items for the IALA committees	MASS TF9	All
ENG19-	3.1.0.4	Liaison note from ARM to ENG VTS DTEC on MASS Guideline Review post plenary	ARM18	All
ENG19-	3.1.0.4.1	Annex ARM proposals on Draft Guideline Developments and implications of maritime autonomous surface ships (MASS) for coastal authorities	ARM18	All
ENG19-	3.1.0.5	Liaison note from DTEC to ENG on Workshop on future radionavigation and radiocommunication systems	DTEC2	All
ENG19-	3.1.0.5.1	Revised Workshop proposal on future radionavigation and radiocommunication systems	DTEC2	All
ENG19-	3.1.0.6	Liaison note from ARM to ENG and DTEC on the Use of drones for AtoN Management	ARM18	All
ENG19-	3.1.0.6.1	Draft Recommendation use of drones for AtoN management	ARM18	All
ENG19-	3.1.0.6.2	Draft Guideline Use of Drones for AtoN Management	ARM18	All
ENG19-	3.1.0.7	Liaison note from ARM on the IALA AIS documentation	ARM18	All

ENG19-	3.1.0.7.1	Annex to Liaison note on the IALA AIS documentation	ARM18	All
ENG19-	3.1.0.8	Input paper on Sustainability Workshop (PAP54-7.3.3.1)	PAP54 / Chair ENG	All
ENG19-	3.1.0.8.1	Annex Programme overview v1.0	PAP54 / Chair ENG	All
ENG19-	3.1.0.9	Input paper on ENG documents review	Secretariat	All
ENG19-	3.1.0.10	Tech Review Summary Table	Secretariat	All
ENG19-	3.1.0.11	Liaison note DTEC to ARM, ENG, VTS, MASS TF on MASS Rec and Guideline	DTEC3	All
ENG19-	3.1.0.11.1	Revised draft Guideline on MASS for AtoN Authorities	DTEC3	All
ENG19-	3.1.0.12	Liaison note DTEC to all committees (and PAP) on digitalisation of waterways guideline	DTEC3	All
ENG19-	3.1.0.12.1	Draft IALA Guideline on Digitalization of waterways	DTEC3	All
ENG19-	3.1.0.13	Liaison note DTEC to ARM, VTS, ENG, PAP on IALA documentation relating to AIS	DTEC3	All
ENG19-	3.1.0.14	Liaison note to ENG on IMT-2030	DTEC3	All
ENG19-	3.1.0.15	Liaison note to ENG on Guideline G1158 VDES R Mode	DTEC3	All
ENG19-	3.1.0.16	Liaison note to all committees on IoT sensors	ARM19	All
ENG19-	3.1.0.17	Liaison note to ENG regarding Buoy Tender activities	ARM19	All
ENG19-	3.1.0.17.1	Draft Guideline on Buoy Tender Activities	ARM19	All
ENG19-	3.1.0.18	Liaison note to PAP and all committees on MRN intersessional work	ARM19	All
ENG19-	3.1.0.19	LN to ENG on the review of R0130 on Categorisation and Availability Objectives for Short Range AtoN	ARM19	All
ENG19-	3.1.0.20	Liaison note to ENG on remote monitoring	ARM18	All
ENG19-	3.1.0.21	Liaison note to VTS and ENG on draft IALA S-200 roadmap	ARM18	All

ENG19-	3.1.1.1	Review of Cone Fundamentals and Its Effect on Calculated Intensity of Measured Lights	GRAD / Chair ENG	WG1
ENG19-	3.1.1.2	Input paper on review of G1165 Sustainable Structural Design of AtoN	World-Wide Academy	WG1
ENG19-	3.1.1.2.1	Draft Guideline 1165 Sustainable Structural Design of Marine Aids to Navigation December 2021 Ed1.2 240907	World-Wide Academy	WG1
ENG19-	3.1.1.2.2	G1165 regional supplementary info Southern Pacific islands v3.0	World-Wide Academy	WG1
ENG19-	3.1.1.3	Input paper on Task 2.1.4 Leading Lines review	Intersessional	WG1
ENG19-	3.1.1.3.1	Task 2.1.4 Review of Leading Lights and Lines documentation - update ENG18 v2.0	Intersessional	WG1
ENG19-	3.1.1.4	Revised G1023 on Design of Leading Lines TG Initial Review 20_09_24 v2.0	Intersessional	WG1
ENG19-	3.1.1.4.1	Revised G1023 on Design of Leading Lines TG Initial Review	Intersessional	WG1
ENG19-	3.1.1.5	Input paper on G1037 Data Collection for Aids to Navigation Performance Calculation	China MSA	WG1
ENG19-	3.1.1.6	Proposal on amendments on G1066 Mooring Guideline	China MSA	WG1
ENG19-	3.1.1.7	AtoN Detection System Based on Image Processing Technology	China MSA	WG1
ENG19-	3.1.1.8	Proposal for the revision of Draft Guideline General Overview of a Floating AtoN	China MSA	WG1
ENG19-	3.1.1.9	Draft Guideline on Harmonised IoT Protocol for Visual AtoN	Peter Dobson	WG1
ENG19-	3.1.1.9.1	Annex Guideline Harmonised IoT Protocol For Visual AtoN - Intersessional	Peter Dobson	WG1
ENG19-	3.1.1.10	Input paper on Correcting for Temperature in the Measurement of Lights FINAL	GRAD / Chair ENG	WG1
ENG19-	3.1.1.11	Liaison note to ENG on general overview floating AtoN	ARM18	WG1
ENG19-	3.1.1.11.1	Draft guideline with comments on general overview floating AtoN	ARM18	WG1
ENG19-	3.1.2.1	NCSR 12 Recognition of augmentation systems in the World-Wide radionavigation systems	Intersessional	WG2
ENG19-	3.1.2.2	Input paper on recognition of augmentation systems	Intersessional	WG2

ENG19-	3.1.2.3	Input paper on Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service	China MSA	WG2
ENG19-	3.1.2.3.1	Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service	China MSA	WG2
ENG19-	3.1.2.4	Development of Advanced eLORAN Technology in the Republic of Korea	KRISO, MOF	WG2
ENG19-	3.1.2.5	Development Result of the Korean R-Mode test bed	KRISO, MOF	WG2
ENG19-	3.1.2.6	ROK Point Status	KRISO, MOF	WG2
ENG19-	3.1.2.7	S-240 data service through S-200 testbed system	KRISO, MOF	WG2
ENG19-	3.1.3.1	Proposal for updating G1075 on A Business Plan for the complementary use of a Heritage Lighthouse	China MSA	WG3
ENG19-	3.1.3.1.1	Annex Business plan for the complementary use of a Heritage Lighthouse (revised draft)	China MSA	WG3
ENG19-	3.1.3.2	An Exploration of the Branding and Marketing of Lighthouses	China MSA	WG3
ENG19-	3.1.3.3	Proposal for updating G1063 on Agreements for Complementary use of Lighthouses	China MSA	WG3
ENG19-	3.1.3.3.1	Annex Draft revised G1063 on Agreements for Complementary use of Lighthouses	China MSA	WG3
ENG19-	3.1.3.4	Replacement of mercury rotary systems of French lighthouses	Emma RIEU-STÉPHAN – Cerema – France	WG3
ENG18-	4.1.1	Final Report Council80	Secretariat	All
ENG18-	4.1.2	Report of PAP53	Secretariat	All
ENG19-	4.3.1	Report on IMO MSC 109	IMO	All
ENG19-	4.3.2	IALA Report on NCSR 11	Secretariat	All
ENG19-	4.4	Report IHO HSSC 16 June 2024	Secretariat	All
ENG19-	4.5	IALA Report on ITU-R WP5B meeting 14 to 24 May 2024	Stefan Bober	All
ENG19-	4.5.1	Liaison from ITU on Revision of Recommendation ITU-R M.1371-5	ITU	All
ENG19-	4.5.1.1	ITU revision Draft Recommendation M1371-5	ITU	All

ENG19-	4.5.2	Liaison from ITU on adopted and revised resolutions after World Radiocommunication Conference, Dubai, 2023	ITU	All
ENG19-	4.6.1	Final Report of the Digital@Sea North America 2024	RTCM	All

Working papers from ENG18

Meeting	Agenda Item	Input Paper Title	Source	Action
ENG18-	13.2.5	Draft Guideline on Medium Frequency R-Mode signal structure and navigation message	ENG18	ENG19
ENG18-	13.1.2	Liaison note to the WWA on Task Round Robin Light Measurement	ENG18	ENG19

Output documents are submitted to a body other than the Committee initiating the document for further review/action or as information.

Meeting	Output paper number		Source	Action
ENG19	9.2.1.1	Liaison note ENG to ARM Buoy Tender Activities	WG1	ARM20
ENG19	9.2.1.1.1	Draft guideline on Buoy Tender	WG1	ARM20
ENG19	9.2.1.2	Liaison note ENG to ARM on Categorisation and Availability Objectives for Short Range Aids to Navigation	WG1	ARM20
ENG19	9.2.1.3	Liaison note from ENG to ARM on the Use of drones for AtoN Management	WG1	ARM20
ENG19	9.2.1.3.1	Comments for Drone Recommendation	WG1	ARM20
ENG19	9.2.1.3.2	Draft Guideline Use of Drones for AtoN Management	WG1	ARM20
ENG19	9.2.1.4	Liaison note from ENG to ARM on remote monitoring	WG1	ARM20
ENG19	9.2.1.5	Liaison note from ENG to ARM on IoT sensors	WG1	ARM20
ENG19	9.2.1.6	New draft Guideline on Overview of a Floating AtoN	WG1	Council
ENG19	9.2.1.7	Revised Guideline G1077 Developing a Maintenance Strategy for Aids to Navigation	WG1	Council
ENG19	9.2.1.8	Revised Guideline G1175 Operation and management AtoN in extreme conditions	WG1	Council
ENG19	9.2.1.9	Liaison to Council on CIE Research Group on Cone Fundamentals	WG1	Council
ENG19	9.2.2.1	New draft Guideline on Medium Frequency R-Mode signal structure and navigation message	WG2	Council
ENG19	9.2.2.2	Liaison note to NSCR 12 on the Development of procedures and requirements for the recognition of augmentation systems in the WWRNS	WG2	Council
ENG19	9.2.2.3	Liaison note to IMO on Enhanced Radar Positioning Systems	WG2	Council
ENG19	9.2.2.4	Liaison to ARM on R0101 and R0146	WG2	ARM20
ENG19	9.2.2.4.1	R0146 Strategy for Maintaining Racon Service Capability (e-NAV-146) Ed1.1	WG2	ARM20
ENG19	9.2.2.5	Liaison to ARM on AIS Documentation	WG2	ARM20
ENG19	9.2.2.6	Revised Guideline G1158 VDES-R mode	WG2	Council
ENG19	9.2.2.7	Liaison note from ENG to ARM on MASS Guideline Review	WG2	ARM20
ENG19	9.2.2.8	Liaison note ENG to DTEC committee on digitalisation of waterways guideline	WG2	DTEC4
ENG19	9.2.2.9	S-240 DGNSS Station Almanac Product Specification v1.2	WG2	Secretariat
ENG19	9.2.2.10	Liaison note ENG to PAP on MASS Guideline	WG2	PAP

Working papers will remain within the Committee for further review during ENG20.

Meeting	Agenda Item	Working Paper Title	Source	Action
ENG19	9.2.1.10	Update G1037	WG1	to ENG20
ENG19	9.2.2.11	Draft guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service	WG2	to ENG20

Action Items for the IALA Secretariat

1. **The Secretariat** is requested to forward the working paper Update G1037 (ENG19-9.2.1.10) to ENG20.
2. **The Secretariat** is requested to forward the output paper Revised Guideline G1077 Developing a maintenance strategy for Aids to Navigation (ENG19-9.2.1.7) to the Council for approval.
3. **The Secretariat** is requested to amend the references to G1077 in section 4.8.1 and 4.8.3 of the NAVGUIDE, updating to them to refer to G1151 on Maintenance of AtoN structures.
4. **The Secretariat** is requested to forward the output paper Draft Guideline on AtoN in extreme conditions (ENG19-9.2.1.8) to the Council for approval, subject to approval. Upon approval, withdraw G1108, G1136 and G1175 from circulation.
5. **The Secretariat** is requested to forward the output paper New draft Guideline on Overview of a Floating AtoN (ENG19-9.2.1.6) to Council for approval.
6. **The Secretariat** is requested to forward the New draft Guideline MF R-Mode signal structure and navigation message (ENG19-9.2.2.1) to the Council for approval.
7. **The Secretariat** is requested to forward Revised Guideline G1158 VDES R-Mode (ENG19-9.2.2.6) to the Council for approval.
8. **José-Luis Martin** is requested to identify the primary submitter for the document titled Development of procedures and requirements for the recognition of augmentation systems in the WWRNS (ENG19-9.2.2.2) and inform the Secretariat before the council input deadline.
9. **The Secretariat** is requested to forward the document titled Development of procedures and requirements for the recognition of augmentation systems in the WWRNS (ENG19-9.2.2.2) to IMO NCSR12 for Council approval, pending the identification of the main submitter.
10. **The Secretariat** is requested to forward the liaison on AIS Documentation (ENG19-9.2.2.5) to ARM for further consideration.
11. **The Secretariat** is requested to forward the liaison note on MASS Guideline Review (ENG19-9.2.2.7) to ARM for further consideration.
12. **The Secretariat** is requested to forward the liaison note on digitalisation of waterways guideline (ENG19-9.2.2.8) to DTEC for further consideration.
13. **The Secretariat** is requested to forward the liaison on MASS Guideline Updates (ENG19-9.2.2.10) to PAP for further consideration.
14. **The Secretariat** is requested to forward the information paper on Enhanced Radar Positioning Systems (ENG19-9.2.2.3) to IMO NCSR12 for Council approval.
15. **The Secretariat** is requested to forward liaison to ARM on R0101 and R0146 (ENG19-9.2.2.4) and R0146 Strategy for Maintaining Racon Service Capability (e-NAV-146) Ed1.1 (ENG19-9.2.2.4.1) to ARM for further consideration.
16. **The Secretariat** is requested to release S-240-DGNSS-Station-Almanac-Product-Specification version 1.2 (ENG19-9.2.2.9), S-240 version 1.2 GML Schema (ENG19-9.2.2.9.1) and S-240 DGNSS Station Almanac Feature Catalogue version 1.2 (ENG19-9.2.2.9.2) (can be found on the fileshare <https://nextcloud.iala-aism.org/index.php/f/323001>).
17. **The Secretariat** is requested to assist the editing team with the IALA Heritage Web Page editing as required.

18. *The **Secretariat** is requested to inform **Council** for considering the commendation of ENG19 of Lingao Lighthouse, China, together and to determine IALA Heritage Lighthouse of the Year 2025 at Council in December 2024.*
19. *The **Secretariat** is requested to organise a formal presentation of the IALA HLY accolade to the recipient at a suitable event to which the recipient is in attendance.*
20. *The **Secretariat** is requested to send an e-bulletin out in July 2025 reminding members of the opportunity to nominate lighthouses for IALA HLY and of the 30th September deadline for doing so to ensure consideration for the 2026 award.*

Action Items for Participants

21. ***Sarah Robinson** is requested to update the draft guideline on Leading Lights intersessionally as discussed in ENG19 committee meeting and submit as input to ENG20 committee meeting.*
22. ***Lingyan Wang** and **Link Powell** are requested to update the draft guideline on measurement intersessionally as discussed in ENG19 committee meeting and submit as input to ENG20 committee meeting.*
23. ***Lingyan Wang** is requested to draft an interim measurement guideline based on E200-3, and submit as input to ENG20 committee meeting.*
24. ***Greg Hansen** is requested to submit an input paper to ENG20 on buoy maintenance strategies.*
25. ***Jose Andrés Fombuena** is requested to coordinate intersessional work and submit an input paper to ENG20 on the revised G1066 document.*
26. ***Peter Dobson** is requested to schedule intersessional work on the Harmonisation of IoT Protocol and submit an input paper to ENG20.*
27. *That **Committee participants** interested in supporting the development of the Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service between sessions are invited to contact the task leader Qian Sun (qbcouple@163.com).*
28. *That **Committee participants** interested actively want to participate to the drafting group the MASS guideline for AtoN authorities should contact Jillian Carson-Jackson (jillian@jcjconsulting.net). The first meeting is scheduled 13 January 2025 and will be a online meeting.*
29. ***Seong Woo Son** and **Gillian Burns** are requested to coordinate WG3 work maintaining the Heritage Web Page through to completion within the Task Period and **Korea Institute of Aids to Navigation** and **NLB** respectively are requested to support them in this.*
30. ***Sarah-Jane Lakshman** is requested to continue coordinating WG3 work in the production of a Technical or Guidance document on ‘good practice in modernizing heritage lighthouses whilst minimizing negative heritage impact’ and **AMSA** is requested to support them in this.*
31. ***WG3 participants** are requested to submit any relevant examples of minimizing impact to heritage when installing and/or upgrading equipment inside historic lighthouses to **Sarah-Jane** intersessionally.*
32. ***Peter Hill** is requested to continue coordinating WG3 work Managing the process for the IALA HLY Accolade through to completion within the Task Period and **Trinity House** is requested to support them in this.*

33. **Ke RAXUAN** is requested to continue coordinating WG3 work in creating the Heritage Module for the WWA L1.1 AtoN Manager Course through to completion within the Task Period and the **Navigation Institute of JiMei University** is requested to support them in this.
34. **WG3 participants** are requested to submit any relevant examples of managing heritage lighthouses to **Ke Raxuan** intersessionally prior to ENG20.
35. **Jiwon SIM** is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1080 Ed.1 through to completion by Autumn 2025 (ENG21) and **Korea Institute of Aids to Navigation** is requested to support them in this.
36. **Naehyuk Yoo** is requested to continue to coordinate WG3 work in reviewing IALA Guidance G1093 Ed.1 for completion and **Korea Institute of Aids to Navigation** is requested to support them in this.
37. **Juan Liu** is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1063 Ed.1 through to completion in Autumn 2025 (ENG21) and **China Maritime Safety Administration (MSA)** is requested to support them in this.
38. **WG3 participants** are requested to submit any relevant examples of third-party partnerships for complementary use to **Juan LIU** intersessionally prior to ENG20.
39. **Zhenyu GUO** is requested to continue coordinating WG3 work in reviewing IALA Guidance documents G1074 Ed.1 for completion by Spring 2025 (ENG20) and G1075 Ed.1 for completion by Spring 2026 (ENG22) and **China Maritime Safety Administration (MSA)** is requested to support them in this.
40. **WG3 participants** are requested to submit any relevant examples of third-party partnerships for complementary use to **Zhenyu GUO** intersessionally prior to ENG20.
41. **Zhenyu Guo** is requested to continue coordinating WG3 work in reviewing IALA Guidance documents G1074 Ed.1 for completion by Spring 2025 (ENG20) and G1075 Ed.1 for completion by Spring 2026 (ENG22) and **China Maritime Safety Administration (MSA)** is requested to support them in this.
42. **Committee Members** are requested to raise awareness of the IALA HLY award in their respective organisations and to submit nominations for lighthouses they consider to have heritage or cultural value.

Working Group 1**Visual & Physical AtoN**

Chair – Malcolm Nicholson, SPX Aids to Navigation

Vice-chair – Lingyan Wang, China Maritime Safety Administration and

Aw Eng Soon, Maritime and Port Authority of Singapore

First name	Last name	Organisation
Lindberg	Jonas	SPX Aids to Navigation Oy
Mirza Ismaeel	Shaheen	Middle East Navigation Aids Services - MENAS
Rasmussen	Travis	US Coast Guard
Ronan	Autret	Cerema
Powell	Link	The General Lighthouse Authorities of UK and Ireland
Dobson	Peter	Trinity House
Goethals	Nick	Shipping Assistance Division (Flemish Government)
Andrés Fombuena	José	Mediterraneo Senales Maritimas S.L.
Lasma	Sami	Finnish Transport Infrastructure Agency
Burns	Gillian	Northern Lighthouse Board - Scotland
Hothersall	Joseph	Northern Lighthouse Board - Scotland
Yoo	Naehyuk	Korea Institute of Aids to Navigation(K-AtoN)
Cardoso	Sergio	DIREÇÃO-GERAL DA AUTORIDADE MARITIMA - DIREÇÃO DE FARÓIS
Hansen	Greg	Australian Maritime Safety Authority
Steinke	Dean	DSA Ocean
Atkins	Daniel	Australian Maritime Safety Authority
Cassidy	David	Go Deep Aids to Navigation
Marpegan	Mariano Luis	Emepa S.A.
Royal Petersen	Joergen	Danish Maritime Authority
Gustafsson	Sigge	Swedish Maritime Administration
Son	Seon Young	Ministry of Oceans and Fisheries
Stephan	Emma	Cerema
Keskküla	Pärtel	Estonian Transport Administration

Working Group 2

Radionavigation Services

Chair – Jeffrey van Gils, Ministry of Infrastructure and Water Management of Netherland

Vice-chair – Stefan Gewies, German Aerospace Center - Institute of Communications and Navigation

– Sun Qian, China Waterborne Transport Research Institute, Ministry of Transport of the People's Republic of China

First name	Last name	Organisation
Zamarin	Jeffrey	US Coast Guard
Noguchi	Hideki	Japan Coast Guard
Martin Sanchez	Jose Luis	ESSP-SAS
Park	Sanghyun	KRISO Korea Research Institute of Ships and Ocean Engineering
Liu	Chunhai	Shanghai Rokem Affiliate Affiliate IndustrialCo Ltd
Mistrapau	Florin	GMV
Skinsley	Terry	Australian Maritime Safety Authority
Han	Younghoon	KRISO – Korea Research Institute of Ships and Ocean Engineering
Pearson	David	Maritime New Zealand
Menard	Johnny	Swedish Maritime Administration
Mueller	Paul	Orion Maritime Systems Pte Ltd
Hernoe	Xavier	Direction générale des affaires maritimes, de la pêche et de l'aquaculture
Sun	Qian	China Maritime Safety Administration
Wang	Xiaoye	China Maritime Safety Administration
Symonds	Nathan	Observer
Rooke	Vincent	Observer
Dou	Lu	China Maritime Safety Administration
DeLore	Richard	Observer

Working Group 3**Heritage and culture forum**

Acting Chair – Sarah-Jane Lakshman, Australian Maritime Safety Authority

Acting Vice-Chair – William Dunning, Trinity House, General Lighthouse Authorities of England, Wales, the Channel Islands and Gibraltar

First name	Last name	Organisation
Ke	Ranxuan	Jimei University
Burns	Gillian	Northern Lighthouse Board - Scotland
Noguchi	Hideki	Japan Coast Guard
Yoo	Naehyuk	Korea Institute of Aids to Navigation(K-AtoN)
Oliveira	António	DIREÇÃO-GERAL DA AUTORIDADE MARITIMA - DIREÇÃO DE FARÓIS
Bae	Yong Chan	Ministry of Oceans and Fisheries
Hansen	Greg	Australian Maritime Safety Authority
Sim	Jiwon	Korea Institute of Aids to Navigation(KATON)
Lee	WonShok	Hongik University
Greco	Mario	Italian Navy - Direzione Fari e Segnalamenti
Marotta	Francesco	Italian Navy - Direzione Fari e Segnalamenti
Bin Samat	Syamsul Aminuddin	Light Dues Board Peninsular Malaysia
Clifford	Ian	Observer
Zhen Yu	Guo	China Maritime Safety Administration
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