



IALA ENG COMMITTEE

REPORT OF THE 21st SESSION OF THE IALA ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE

13 – 23 October 2025

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23 October 2025

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International Organization for Marine Aids to Navigation

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Report of the 21st session of the IALA Engineering and Sustainability (ENG) Committee Executive Summary

The 21st session of the ENG Committee was held from 13 to 23 October 2025, including the physical week at Commissioners of Irish Lights Headquarters (Dublin, Ireland) between 13 and 17 October, chaired by Alwyn Williams and vice-chaired by Michel Cousquer. The Secretary for the meeting was Alisa Nechyporuk.

88 participants from 28 countries. 18 participants attended online, and 17 participants attended for the first time.

The session began with an opening plenary and the physical week on Monday, 13 October, and continued until Friday, 17 October. The Chair welcomed everybody, both old and new participants, to the meeting and was pleased to see so many faces at ENG21. An approval period followed, and the virtual closing plenary was held on Thursday, 23 October.

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

Key outputs completed included:

ENG21	9.2.2.1	Revised Recommendation R0146 Ed2.0 Strategy for Maintaining Racon Service Capability
ENG21	9.2.2.2	Revised Recommendation R0101 Ed3.0 Marine Radar Beacons (Racons)
ENG21	9.2.3.2	Revised Guideline G1063 Partnership Agreements for Complementary Use of Lighthouse Property
ENG21	9.2.3.3	Revised Guideline G1074 The Branding and Marketing of Heritage Lighthouses

The following liaison notes were approved:

ENG21	9.2.1.1	Liaison note from ENG to ARM on AtoN for SIDS project
ENG21	9.2.2.3	Liaison note from ENG to DTEC on operational IALA MCP instance
ENG21	9.2.2.4	Liaison note from ENG to DTEC on Update of Emerging Technology Review
ENG21	9.2.2.5	Liaison note from ENG to DTEC on Draft Discussion Paper on IALA Vision Towards Digitalization
ENG21	9.2.2.6	Liaison note from ENG to DTEC on AI Guideline G1178
ENG21	9.2.2.7	Liaison note from ENG to DTEC on Digitalisation of Waterways Guideline
ENG21	9.2.3.1	Liaison note from ENG to Secretariat on change to the Selection Process of the Heritage Lighthouse

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Report of the 21st session of the IALA AtoN Engineering and Sustainability (ENG) Committee

1. INTRODUCTION

The 21st session of the ENG Committee was held from 13 to 23 October 2025, including the physical week at Commissioners of Irish Lights Headquarters (Dublin, Ireland), between 13 and 17 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, 13 October, and continued until Friday, 17 October. The Chair welcomed everybody, both old and new participants, to the meeting. An approval period followed, and the virtual closing plenary was held on Thursday, 23 October.

88 participants from 28 countries. 18 participants attended online, and 17 participants attended for the first time.



1.1 Welcome address from the Chief Executive of Irish Lights

The IALA Engineering Committee (ENG21) took part in the Headquarters of the Commissioners of Irish Lights in Dún Laoghaire as part of the programme following the IALA Sustainability in Aids to Navigation Workshop.

Delegates were warmly welcomed by Yvonne Shields O'Connor, Chief Executive of Irish Lights, who expressed her pleasure at hosting the IALA ENG Committee in Ireland and extended appreciation to IALA for choosing to hold both events in collaboration with Irish Lights.

In her remarks, Yvonne Shields O'Connor highlighted the strong and long-standing cooperation between IALA and Irish Lights in advancing innovation, safety, and sustainability within the global network of AtoN. She noted that the event provided an excellent opportunity to exchange practical experience and to showcase the organisation's ongoing work towards AtoN sustainable maritime operations.

She provided an overview of Irish Lights' mission and its transformation in recent years and explained that engineering, sustainability and climate resilience are now central to all aspects of the organisation's operations — from the design and maintenance of AtoNs to vessel management, data systems, and heritage preservation.

During the visit, delegates were invited on a tour of the Buoy Refurbishment and Engineering Facilities, where Irish Lights' technical staff presented the processes for buoy maintenance, light system calibration, and innovation in material design and energy efficiency. The demonstration illustrated how data and technology are being applied to reduce energy use, extend asset life, and minimise the environmental footprint of operations.

Yvonne Shields O'Connor concluded her address by thanking the Committee members for their participation and ongoing collaboration.

1.2 Welcome from the Deputy Secretary-General

The IALA Deputy Secretary-General opened the ENG21 Committee meeting with a very warm welcome to all participants, both attending in person and those joining online. He expressed great pleasure in being in Ireland and extended sincere thanks to Irish Lights for their kind hospitality and for hosting the meeting at their headquarters.

He acknowledged the Committee's busy agenda and the many valuable input papers prepared for discussion. In his remarks, the Deputy Secretary-General highlighted the outcomes of the recent Workshop on International Mobile Telecommunication for Marine AtoNs, which was hosted by the Federal Waterways and Shipping Agency in Karlsruhe. The workshop confirmed the strong potential of IMT and emphasised IALA's important role in representing AtoNs in the 6G development process. Cooperation with 3GPP has already been strengthened, and the workshop report has been submitted as an input paper to the Committee.

He noted that IALA is in a strong position, now comprising 42 Member States and a record total of three hundred and fifty members. The transition from the Association to the Organization has been successfully completed, and the formal dissolution of the Association will take place on 20 November. An agreement with the French Government has been finalized to enable the purchase of new headquarters, and once the contract is signed, IALA will have the opportunity to host meetings outside the headquarters from 2027 onwards.

The Deputy Secretary-General also announced that the next IALA Conference will be held in Mumbai, India, from 1 to 5 November 2027, and that the next Symposium, likely a VTS Symposium, is tentatively scheduled for January 2029. He further mentioned the recent Sustainability Workshop held in Dublin, describing it as very successful and a valuable contribution to IALA's ongoing work.

In closing, he wished all participants a productive and enjoyable meeting and expressed his gratitude for their continued contributions in the spirit of the IALA family, looking forward to the discussions throughout the week.

1.3 Approval of the Agenda

The agenda was reviewed and approved (ENG21-1.2.1).

1.4 Apologies and Introductions

Apologies from Jeffrey van Gils were received. A list of participants who attended ENG21 can be found on the IALA Dashboard for ENG and in Annex B.

1.5 Working Arrangements

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

IALA complies with the EU General Data Protection Regulations. A list of participants, including email addresses, will be included in the report of this meeting and may also appear in other committee-related platforms. Any participant who does not wish their contact details to be shared should inform 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.

1.6 Programme for the week

The deadline for submitting documents to the silent approval procedure was set to 23 October 2025, 09:00 UTC.

2. REVIEW OF ACTION ITEMS FROM ENG20

The Committee Secretary confirmed that all Secretariat actions from ENG20 were completed (input paper ENG21-2.1.1).

3. REVIEW OF INPUT PAPERS

3.1 Review of input papers to ENG21

Late input papers were received and are highlighted in the list of input papers (ENG21-3.0.1) in blue.

4. REPORTS FROM OTHER BODIES

4.1 IALA

4.1.1 IALA Council

Minsu Jeon, Technical Director, provided a summary of key outcomes from the second session of the Council, held from 9 – 13 June 2025 in Nice, France, alongside the UN Ocean Conference. This marked the first full Council meeting since the Organisation's transition to intergovernmental status.

The Council formally approved the revised Committee work programme. All proposed updates and progress reports submitted by the committees were endorsed, with many of the topics scheduled for further discussion during the current PAP week.

One notable decision was the establishment of a drafting group tasked with preparing a policy on co-sponsoring documents with other intergovernmental organisations. This initiative aims to improve clarity and consistency in how external papers are shared and supported. The matter was addressed further under agenda item 3.1.1.

In addition, the Council noted progress reports on future developments of the S-200 Product Specifications and associated technical services.

A further proposal from the ENG Committee was accepted regarding the Heritage Lighthouse of the Year award. Given the growing number of nominations, the revised process now limits Member States to one nomination per year. The period will run from 1 October to 30 September, with structured criteria covering heritage significance, conservation, public access and global promotion. Nominations will be reviewed by the ENG Working Group, then the ENG Committee, before final approval by Council.

Finally, the Council approved several liaison arrangements with external bodies, including:

- To IHO on S-125 Product Specification.
- To RTCM on Standard 10402.n.
- To IEC on S-421 schema and SECOM OpenAPI redistribution.

- Information paper to IMO MSC on VHF Data Exchange System for shore infrastructure.

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 most technical documents, including:

- R1005, Edition 3.0 – Conserving and promoting heritage Marine Aids to Navigation
- G1050, Edition 1.2 – Management of transfer of surplus lighthouse property
- G1189, Edition 1.0 – Measurement of marine light performance
- G1190, Edition 1.0 – Harmonised Internet of Things protocol for visual Marine AtoN

4.1.2 IALA Policy Advisory Panel (PAP)

Minsu Jeon provided an update on the outcomes of the 58th session of the Policy Advisory Panel (PAP), which took place from 9 to 12 September at the IALA Headquarters.

He highlighted several key points from the meeting. Firstly, the Panel agreed that the IALA Strategic Vision, as well as the “Drivers and Trends” document, should be refreshed to better reflect the evolving operational and technological environment. To support this review, PAP will hold a dedicated workshop at PAP 16, planned for February next year, with the objective of developing concrete recommendations for the next Work Programme.

Secondly, regarding the 2027–2030 Work Programme, the Panel confirmed the proposed timeline: the Committees will prepare their draft contributions throughout 2026, and the Secretariat will consolidate these for review by PAP in early 2027. This timeline will ensure that the Committees are able to balance new requests with their ongoing tasks, particularly those related to technical services and product specifications.

The Panel also discussed and noted several key outputs, including guidance for S-200, the S-201 Product Specification, and Guideline 11/28. The meeting concluded with an agreement on a harmonised way forward for upcoming deliverables.

In relation to S-230 (ASM), the Panel agreed that strong inter-committee leadership will be required to advance the work. The focus will be on technical review and coordination, and ARM and DTEC Committees will therefore hold a joint inter-committee meeting during the current session.

Finally, under the topic of working methods and next steps, PAP endorsed an updated “Output and Co-sponsoring Policy”, which will be submitted to the Council for consideration in December.

4.1.2.1 Sustainability WS

Alwyn Williams, Chair of the ENG committee, provided a report on the recent Sustainability Workshop, which took place last week at the Royal Marine Hotel, with the Working Group meetings held at Irish Lights.

He noted that the workshop had exceeded all expectations, highlighting the high quality of presentations and the breadth of topics covered. The sessions addressed the pressing realities of climate change, offering both a stark reminder of current challenges and a range of positive, practical ideas for addressing them. Presentations ranged from intergovernmental perspectives to very technical, hands-on approaches, demonstrating how sustainability can be advanced across multiple levels.

Alwyn Williams emphasised that sustainability encompasses not only environmental issues but also societal aspects and capacity-building, including skills development and training — all essential for ensuring a sustainable future for Marine Aids to Navigation, VTS, and the broader maritime community.

As the official report of the workshop is still under preparation, it will be made available at the next ENAV22 meeting. Early conclusions point to the need for continued engagement on this topic, with the suggestion to

organize further workshops dedicated to specific sustainability themes. He noted that sustainability should be viewed as an ongoing process, evolving alongside advances in science and technology.

He expressed sincere appreciation to Irish Lights for hosting both the workshop and the accompanying Irish Lights Conference, acknowledging their excellent organization, warm hospitality, and the memorable Irish Night. He also thanked all participants for their contributions and encouraged continued involvement in sustainability initiatives within IALA.

4.1.2.2. Future Radiocommunication and radionavigation

Hideki Noguchi, Chair of the DTEC Committee, provided information on the workshop on the future of radio navigation and radio communication, which has been approved by the Council and is now scheduled to take place from 9 to 13 February next year in Edinburgh, United Kingdom.

This workshop serves as an example of the integration between radio communication systems and radio navigation systems. In particular, when radio communication systems transmit highly accurate timing signals, multiple VTS (Vessel Traffic Service) stations can utilize them. Such terrestrial radio navigation systems are increasingly important as a complement to GNSS, which has experienced interference issues in recent years. The workshop will explore the potential dual use of systems: how radio communication systems can support radio navigation, and vice versa.

The primary purpose of the workshop is to develop guidance for authorities — both navigation and broadcasting/telecommunication authorities — on preparing for future radio navigation and communication systems. A steering committee has been established, comprising the Workshop Chair, the Chairs of Working Groups 2 of the Radio Navigation Working Group, and the Radio Communication Working Group.

Participants are encouraged to attend and contribute to the discussions. The workshop promises to provide valuable insights into the development and integration of radio navigation and communication technologies for the maritime sector.

4.1.3 2025-2027 Work Plan and Task Register

Michel Cousquer, Vice-Chair of ENG, provided an update on the use of online tools for managing work and tracking the Council-approved Task Plan. He emphasized that the Task Plan is actively being implemented through digital platforms to ensure efficient coordination and monitoring.

In particular, the online Task Register has been significantly improved since its previous iteration. These enhancements are designed to streamline task management, improve usability, and facilitate better tracking of progress across working groups. Michel Cousquer proposed to demonstrate the improvements and highlight the new features that have been implemented since the last update.

The Vice-Chair noted that these updates will support more effective management of tasks and actions, ensuring that the objectives of the Task Plan are followed through in a timely and organised manner.

The Technical Secretary of the Committee briefly explained and demonstrated the working area, such as the IALA Task Register, Committee Dashboard and Fileshare (Nextcloud).

4.2 Update on MASS task group

Minsu Jeon reported that the 11th IALA MASS Task Force meeting was held on 9 September this year, chaired by Maartin Berrevoets from the Netherlands and Captain Segar from Singapore. The group reviewed updates from IMO, IHO, and IALA Committees.

Key points include:

- IMO: The non-mandatory MASS Code is nearly complete, with only the Human Elements chapter remaining. Adoption is planned for MSC 111 in May 2026, while the mandatory version is expected to be delayed beyond 2030. Roadmap and funding-related work will continue until 2027
- IHO: Efforts continue to make navigation data queries readable under the S-100 framework; however, progress is limited due to unclear industry input
- IALA Committees: ARM leads draft recommendations on MASS, DTEC is progressing with related papers, and ENG continues reviewing and refining documents.

The MTF agreed to keep MASS guidelines practical and aligned with the IMO Code, focusing on navigation, digitalisation, and S-100/S-200 compatibility. With the Terms of Reference completed, the MASS Task Force has concluded, and further work will continue under PAP coordination to be discussed at the Council.

4.3 IMO

Minsu Jeon provided an update on recent developments within the IMO, drawing on outcomes from MSC110, NCSR12 and related intersessional meetings.

The PAP was informed that MSC 110 had approved draft amendments to SOLAS Chapter V introducing the VHF Data Exchange System (VDES) as a carriage requirement alongside AIS. Adoption is expected at MSC 111 in 2026, with entry into force on 1 January 2028. Guidelines for shore-based VDES infrastructure are currently under development.

Progress was also noted on the Code for MASS, with most of the chapters finalised. The chapter on the human element remains under review and is scheduled for further discussion.

MSC endorsed ongoing work on IP-based global connectivity to support S-100 products, including digital AtoN and S-200 activities. IALA has been invited to join the Correspondence Group on IMO's Maritime Digital Strategy.

Circulars were noted on cybersecurity and software maintenance procedures for shipboard navigation and communication systems.

A new output was agreed to develop performance standards for R-Mode, with completion targeted for 2027.

Turning to NCSR 12, the Technical Director reported that advanced guidance had been developed on IP-based connectivity between shore and ship systems. A Correspondence Group was established, with input expected between 2026 and 2028. The framework remains technology-neutral, with MCP and SECOM cited as examples.

Further draft amendments confirmed VDES as a carriage requirement, with performance standards under preparation. Amendments to Resolution A.1046(27) are also being developed to include S both space-based and ground-based augmentation systems.

SOLAS amendments will require MSI broadcasts via all recognised satellite services by 31 December 2026. The roadmap for NAVDAT and high-speed digital broadcasting of MSI and SAR data was progressed, with manuscript review underway by IHO and WMO.

A draft MSC circular was introduced on the carriage, backup and use of Electronic Nautical Publications (ENPs). A draft IMO position on agenda items was agreed and will be finalised at MSC 112.

4.4 IHO

Minsu Jeon briefed the Panel on recent activities, with a focus on harmonisation, product development and technical alignment.

He noted that several IALA documents, including G1128 and G1160, had been updated to reflect progress under the S-100 framework.

Work continued on the development and validation of S-200 series products, with structured testing across input, export, conversion and quality assurance. Sea trials had also been conducted to assess operational readiness.

Minsu highlighted the IALAs active cooperation with IMO, IHO and IEC, particularly in the portrayal and definition of AtoN features, integration with the IHO GI Registry and coordination on technical services for S-124 and S-125.

IALAs own Product Specifications, such as S-201, S-211 and S-240, were progressing through the S-100 WG and regional technical cooperation meetings. A dedicated IALA/IHO workshop on S-100-related topics is scheduled for 2026.

Efforts to harmonise terminology and definitions across IALA documentation and with the IHO Registry were also underway, supporting consistency and interoperability across datasets and services.

Finally, Minsu confirmed that training and capacity-building support was being provided to Member States on the use and implementation of S-200 datasets, with emphasis on operational integration and technical readiness.

4.5 ITU

Minsu Jeon provided an update on the recent outcomes from ITU-R Working Party 5B, which met in Geneva from April to May 2025.

The revision of Recommendation M.2092-1 on VDES included technical clarifications, updated message structures and a simplified low-power configuration (≤ 5 W), extending applicability to Class B AIS installations. These changes aim to support broader deployment and interoperability across vessel types.

Recommendation M.1371-5 on AIS was also revised, introducing AMRD messages, adjusted reporting intervals and updates to the AtoN table. A new “crew status” message was proposed, linked to the IMO MASS Code and intended to support autonomous vessel operations.

Updates to Recommendation M.585-9 on maritime identities introduced a new “freeform maritime identity” format, supplemental manufacturer identifiers and an extended 12-character structure to accommodate future system needs.

A new technical report was introduced on VDES R-Mode, examining its potential contribution to resilient PNT services. The report covers physical and link layer considerations, as well as authentication mechanisms.

Additional updates were initiated on NAVDAT, VHF radiotelephone equipment, Digital Selective Calling (DSC), AMRD protocols and Appendix 18 frequency allocations.

Minsu confirmed that the IALA had been invited to review the revised drafts for VDES, AIS and maritime identity and to contribute to the ongoing development of R-Mode standards.

4.6 PIANC

Mariano Luis Marpegan from Dragados y Balizamientos S.A. (Argentina) reported on PIANC as a sister organization to IALA, operating with a structure of commissions and working groups, producing reports on various topics such as inland waterways, ports, and environmental infrastructure. These reports support national sections, for example Argentina, by providing guidance on adapting navigation infrastructure and regulations to local conditions.

A special focus is given to Young Professionals, who engage in technical visits, meetings, and conferences to gain practical knowledge and contribute new ideas. Their activities help merge fresh expertise with the wider organization’s experience, fostering innovation in waterborne transport infrastructure.

Notable events in 2025 included the Annual General Assembly and Biennial Technical Visit in Busan, South Korea (13–16 May), attended by 50 young professionals from 18 countries. The programme featured technical site visits, presentations, and networking opportunities. Another major event was Smart Rivers in Memphis, Tennessee (8–

12 September), which hosted 350 participants from 20 countries for lectures, workshops, and discussions on current working group topics and recent publications.

Overall, PIANC continues to provide a valuable platform for international collaboration, knowledge exchange, and professional development in the field of maritime and inland waterway infrastructure.

4.8 CIE

Alwyn Williams reported on attendance at the CIE Scientific Conference, and mid-term meetings were held in Vienna in July. The three-day conference included a wide range of papers and discussions, followed by plenaries and technical committee meetings. Key topics included the impact of artificial light at night on wildlife, highlighting how different species such as moths and fish are affected by various light spectra, and emphasizing careful directional lighting to minimize ecological disruption. Practical examples were shared, including adjustments to flashing and rotating lights to reduce impacts on seabirds and sea turtles, showing solutions are highly location- and species-specific.

Another focus was the use of drones for photometric measurements, enabling luminance mapping rather than just intensity readings, offering improved data for sustainable lighting practices. During the plenaries, IALA's liaison with CIE was highlighted, with interest in collaborating on measurement guidance and uncertainty. A proposal was made to formalise this relationship through a memorandum of understanding. Other minor matters, such as cone fundamentals, continue under discussion with no immediate action expected.

Overall, the conference provided valuable insights into environmental impacts of lighting, measurement innovations, and potential collaborative opportunities between IALA and CIE.

4.9 WWA Update

Jaime Alvarez, Technical Officer of IALA WWA, noted that the Academy's mission is to ensure that all coastal States can meet their SOLAS Chapter V obligations, build capacity, and demonstrate conformance with IALA Standards, supporting the strategic goal of a sustainable and efficient global network of marine navigation.

During 2025, activities focused on education, training, and capacity-building missions in regions such as Indonesia, Iraq, Sri Lanka, Honduras, the Dominican Republic, and others. Training was delivered in multiple languages—English, French, Spanish, and Indonesian—covering subjects such as risk management, AtoN management, IRAP, and S-200 data production. Cooperation with IMO and regional hydrographic commissions also remained a strong component of the work.

Looking ahead to 2026, the Academy plans further missions in Gambia, Iraq, the Philippines, Vanuatu, and Timor-Leste, prioritising archipelagic and IMSAS-target countries. Training courses will continue in various regions and languages, with a focus on resilient PNT, digitalisation, and maritime informatics. Collaboration with the technical committees will be strengthened, including updates to the model courses (e.g., L1.4) and the development of new guidelines and skills for the digital environment.

The Academy also highlighted its role in linking Spanish- and Portuguese-speaking regions with IALA's technical work, with further regional meetings planned in Mexico in 2026. Closer cooperation with DTEC is sought to align digital skills training with committee expertise and ongoing tasks.

5. PRESENTATIONS

The following presentations were given at ENG21:

- Designing a Free-Form Lens, Paul Mueller, Orion Maritime Systems Pte Ltd
- Developing Low-cost, co-designed Marine AtoNs for SIDS & LDC, Professor Ashley Hall, Royal College of Art, Sarah Robinson, Hawkshill Consulting
- Introduction to Virtual Floor Mooring System, Joaquin Alarcon, Spain

- RIPTIDE 2 project, results of a resilient PNT demonstrator for maritime applications, Florin Mistrapau, GMV
- Proposal of VDES ground and mobile stations upgrade to enable SBAS data retransmission, Jose-Luis Martin, ESSP SAS
- Proposal on IALA Guideline G1180, Eduardo Diaz, GSC-EUSPA
- Maritime Ground-based GNSS Precise Positioning Services, Dr. Sanghyun Park (KRISO, ROK)
- Twined Lighthouse, Masatora Ono, Japan Coast Guard
- Lighthouse of the Year Stamp Crowdfunding Project, Jiwon Sim, KATON
- New Zealand Heritage Lighthouse of the Year Nominee, Jim Foye, New Zealand

6. REVIEW OF INPUT PAPERS

The input papers for ENG21 included new input papers and working papers from the previous session. The input paper list (ENG21-3.0.1) includes the working papers from ENG20.

The input papers were numbered according to the agenda and allocated to the relevant Working Group. The late input papers were referred to the participants' attention and 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 (acting Chair), Sun Qian
WG3 – Heritage and culture forum	Sarah-Jane Lakshman / Wonshok Lee

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

During the 21st session of the ENG committee, WG1 consisted of 29 members with a further 9 online and considered 4 input papers and a liaison note. The main task of the group was to update the task register and progress the tasks. The group reviewed the Liaison note ENG21-9.2.1.1 Regarding the AtoN for SIDs and contributed to a response.

The Chair and Vice-Chairs of the Working Group thanked all participants, both in person and online, for their hard work during the session and 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:

- ENG-2.1.4 Update R0112 Leading lights
- ENG-2.1.6 Update R0203(E200-3)
- ENG-2.3.2 Creating an overview guidance on maintenance of floating AtoN

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

8.1 ENG-2.1.4 Update R0112 Leading lights

Task group leader: Lingyan Wang

Input papers:

ENG21-3.1.1.5	Review of Leading Lights and Lines documentation
ENG21-3.1.1.5.1	Revised G1023 on Design of Leading Lines

Comments:

The task group worked further through the revised working version of Guideline G1023 Design of Leading Lines. The review was focused primarily on the "Daymarks" and "Additional Considerations" chapters, as well as the technical review of the whole guideline. The task group will continue to work on the guideline intersessionally, based on the comments of this meeting, and submit a new version for silent approval in the next meeting.

Key outcomes include:

1. The group concurred that both the length and the width of a rectangular daymark should form an angle of at least 1' for it to be visible.
2. Added a table which gives recommended colours for daymarks observed against some typical backgrounds.
3. Replaced the three formulas for calculating the length of a daymark under three different subtense angles (i.e., 1 minute, 3 minutes, and 6 minutes) with a single universal formula to improve conciseness, allowing calculation of both length and width with other angles.
4. Agreed that additional lights designated as passing lights should be given a different colour and character than leading lights due to the potential to mislead a mariner.
5. Identified a need to supplement the case of two types of daymarks: a backwards-tilted daymark and one with semi-transparent material.

Output:

ENG21-9.2.4.6 Revised G1023 on Design of Leading Lines

Action item(s):

Lingyan Wang and **Partel Keskkyla** are requested to update the Revised Guideline G1023 on Design of Leading Lines intersessionally and submit the updated document as input to the ENG22 committee meeting.

Task Group ENG-2.1.4 is requested to move the three categories of sensitivity and the simplified method of intensity calculation from the Revised Guideline G1023 on Design of Leading Lines to the file-share and IALA Wiki for future reference.

8.2 ENG-2.1.6 Update R0203(E200-3)

Task group leader: Lingyan Wang

Input papers:

ENG21-3.1.1.1	Draft Guideline on The Measurement of Marine Lights Performance
ENG21-3.1.1.1.1	Annex Draft Guideline on The Measurement of Marine Lights Performance

Comments:

The task group reviewed the guideline for the measurement of marine lights performance, which was drafted by China MSA and GRAD.

Key outcomes include:

1. The appendix of the guideline for the measurement of marine light performance has been drafted. This section now contains further technical guidance, including a range of basic and more advanced information to support the main body. Many improvements were made throughout, including the Device Under Test, Photometry, etc.
2. Many improvements to the main body of the guideline were completed intersessionally, including the detailed explanation of the goniophotometer, mounting and positioning, direct and conversion measurement methods, etc.
3. Comments were made throughout the document identifying further tasks to be conducted intersessionally, such as the guidance for calculating the 10th percentile intensity, terms definition, diagrams for the mounting of the device under test, updating the colour region plot, sector light plot, as well as general updates to improve clarity.

Output:

ENG21-9.2.4.7 Draft Guideline on The Measurement of Marine Lights Performance

Action item(s):

Lingyan Wang and **Link Powell** are requested to update the Draft Guideline on the Measurement of Marine Lights Performance on the measurement of marine lights performance intersessionally, and submit Draft Guideline as input to the ENG22 committee meeting.

8.3 ENG-2.3.2 Creating an overview guidance on the maintenance of floating AtoN

Task group leader: Philippe Renaudin

Key outcomes include:

The working group continued drafting the Guideline on overview guidance on maintenance of floating AtoN.

The last ENG20 session led to creating the plan of the guide and to completing the first paragraphs relating to the constituent parts of a buoy.

The Task Group has succeeded in completing the majority of the paragraphs and, more particularly, those concerning the equipment on board a buoy.

The TG has refocused maintenance on steel, plastic and fibreglass buoys, excluding lighthouse and lightship buoys.

Therefore, this guide describes all the key points to inspecting or renovating everything on a buoy (such as a checklist).

For the next session, the group will have to work on the following topics:

- The need to define renovation or periodicity criteria. But these are likely to become a reference. However, such criteria currently vary from one country to another. The variety of material qualities and environmental factors could explain this disparity.

- To follow the discussion on the synthetic mooring lines in connection with the current WG for G1066.
- To add photographs to complete the descriptions and illustrate the document, whether it is the equipment or the parts of the buoy.
- To develop a short paragraph on recycling.

Action item(s):

Philippe Renaudin is requested to review the Draft Guideline on overview guidance on maintenance of floating AtoN and add comments for further discussion during the ENG22.

Committee participants of Task Group ENG-2.3.2 are requested to share relevant photographs for the Draft Guideline on overview guidance on maintenance of floating AtoN using the IALA ENG fileshare area to complete the document during ENG22.

8.4 ENG-2.3.4 Update G1066 Design of floating AtoN moorings

Task group leader: Pierre-Luc Delange

Key outcomes include:

The Task Group worked individually on the intersessional period and had a pre-ENG21 meeting. During the intersessional work:

- The guideline was continued to be reordered.
- An EXCEL file with part of the calculations was developed.
- Part of the team continued working on various versions of the formula of the sinker.

During ENG21 work period:

- Revised and polished the section about chain mooring components, service life and maintenance.
- Proceed with the work on the Excel file (developed initially only for the transitional state), including calculations about the swinging radius and starting to adapt it for slack and taut states. We are trying to solve discrepancies between the taut and catenary swinging radius formulas, to integrate them into one if possible.
- Included an annexe about a specific hybrid mooring system developed by the A.P. Barcelona, and discussed the possibility of moving the annexes to the IALA wiki to make the document more concise.
- Decided to discard the idea of introducing operational and survival conditions.
- References to several Guidelines were included (G1077).
- Discussed the timing of the task with WG1 Chair and concluded to prioritise solving the catenary mooring Guideline and release a new version later with more information about the Hybrid Mooring System (or an entirely new Guideline).
- Progressed on the new calculations section, deciding on a general flow of work that aligns with the old formulas, changing the old method of the three different calculation cases for one where the transitional point is calculated and the designer decides a length. This integrates all the states into one single calculation method.

The intention is to do intersessional work to progress on:

- Preparing the Annexes for the migration to IALA Wiki.
- Finish the Excel file and make it as user-friendly as possible (the intention is to include it with the new guideline as an IALA resource, similar to the IALA Solar Tool).

- Solve the Sinker calculation.
- Continue creating the needed visual resources.
- Continue reviewing the Guideline G1066.
- Work on an example of mooring calculation (made without the help of a software tool).

Related documents located in the [TG fileshare folder](#):

- Table of Contents_Outline of Approach_2024-10-24.xlsx
- C_Symboles pour G1066
- Folder with Workshop IALA Illustrations
- Jandres IALA Mooring Tool_WIP
- G1066 Working copy WIP_V7 16-10-2025
- Flowchart

Action item(s):

Jose Andrés Fombuena is requested to coordinate intersessional work on the Task ENG-2.3.4 and submit an input paper to ENG22 on the Revised Guideline G1066.

8.5 ENG-6.3.1 Update G1008 Remote control and monitoring of AtoN

Task group leader: Peter Dobson

The Task Group met throughout the ENG21 work period, returning to the task of updating G1008 on Remote Control and Monitoring. The meeting was attended by 15 participants from 9 different countries.

The group reviewed the progress on the guideline last edited at ENG16 and collated various input papers that had been submitted since ENG12. The various input papers were used for input to aid in the development of an outline and a revised guideline structure.

The input paper ENG21-3.1.1.3 – The French strategy for monitoring AtoN was presented, which initiated discussion and development on where to install remote control and monitoring. It was also felt that this could be included as an annex to show a good example of how this can be achieved.

Progress was then made by editing some of the sections, with further work to be progressed inter-sessionally and at the next three committee meetings.

Related documents:

[Guideline 1008 Draft Update on remote control and monitoring](#)

Input papers reviewed or referenced:

- ENG12-3.1.11 Construction of standardised remote control and monitoring system of aids to navigation in China
- ENG12-3.1.5.3 Inputs for IALA G1008 rev1_MENAS
- ENG13-3.1.2.7 The application of Beidou remote control and monitoring system in China
- ENG14-n.n.n Development Status on Standardization of AtoN Management Systems-final
- ENG15-3.1.2.2 The communication methods of RCM and its advantages and disadvantages
- ENG18-3.2.1.4 Proposal on the Revision of Chapter 5 - Objectives of the Guideline G1008

- ENG18-3.2.1.4.1 Annex Comparison of the Advantages and Disadvantages of the AtoNs with or without RCMS
- ENG20-3.1.1.6 Proposal for The Revision of Guideline G1008 Remote Control and Monitoring of Marine Aids to Navigation
- ENG21-3.1.1.3 French strategy for monitoring AtoN

Action item(s):

Committee Members are requested to provide input papers to ENG22 detailing the systems and technology used for remote control and monitoring.

Peter Dobson is requested to arrange an intersessional meeting and submit an input paper to ENG22 on the revised draft guideline G1008 Remote control and monitoring of AtoN.

8.6 Task on Review of IALA Work Programme 2025-2027 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.

8 WORKING GROUP 2 – RADIONAVIGATION SERVICES (WG2)

During the 21st session of the ENG committee, the WG2 – Radionavigation services worked on several tasks regarding Positioning, Navigation and Timing

Referencing Document(s): ENG WG2 Work Program

The work plan was introduced, reviewed and adopted by the WG.

During the meeting, the WG added two new tasks:

- Task 3.1.3 Amendment G1180 to update at least OSNMA in the Guideline. Kaisu Heikonen kindly accepted the task leader position.
- Task 3.4.6 Develop a Guideline on Implementing and Maintaining a Racon System/Service. Paul Mueller kindly accepted the task leader position.

Two additional tasks will be added:

- Task on New Guideline on Ground-based GNSS Precise Positioning for Maritime Service. Sun Qian kindly accepted the task leader position.
- Task on Update Recommendation R0129. Florin Mistrapau kindly accepted the task leader position.

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.

Over the week, several presentations were given and discussed:

- Florin Mistrapau (GMV) on the RIPTIDE project.
- Eduardo Diaz (GSC-EUSPA) on the Amendment to IALA guidelines G1180, which resulted in a new task.
- Sanghyun PARK (KRISO), Sulgee PARK (KRISO) on Maritime Ground-based GNSS Precise Positioning Services.
- José-Luis Martin (ESSP SAS), on the retransmission of SBAS data through VDES.

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

- Reviewed several documents
- Developed further documents on high-accuracy positioning systems
- Developed further documents on Racons

Working documents have been placed in a folder marked as such within each task's sub-folder on the IALA file share.

Throughout the week's physical sessions, several focused WG sessions were held. The WG focused on the following tasks:

- Task 3.1.3 on Amendment G1180
- Task 3.2.1 on R-Mode development
- Task 3.2.2 on Develop the Recommendation and Guideline on R-Mode implementation (MF & VDES)
- Task 3.3.1 on Augmentation systems
- Task 3.3.2 on High-accuracy positioning systems
- Task 3.3.3. on Retransmission of SBAS data via VDES
- Task 3.3.4 on Develop a Recommendation on SBAS Service
- Task 3.4.3 on Modify R101 to recommendation and create new Guideline
- Task 3.4.4 on Modify R0146 to a recommendation
- Task 3.4.5 on Update G1010 Racon Range Performance
- Task 3.4.6 on Implementing and Maintaining a Racon System/Service (new task)
- Task 7.1.2 on Development S-200 product specification PNT Station almanac
- Task 8.1.1 on PNT technology review

9.1 ENG-3.1.3 on Amendment of G1180

Task group leader: Kaisu Heikonen

Input papers:

3.1.2.15	Update of G1180 with Galileo OSNMA
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Comments:

Eduardo Diaz gave a presentation on Galileo OSNMA functionality and amendments that should be made to IALA G1117 and G1180. During the discussion, a new work item was proposed for amendments to G1180. Kaisu Heikonen gently accepted the task leader for this Task Group.

The group agreed to include the amendments suggested in input paper 3.1.2.15 in the next version of Guideline G1180. A brief review of the Guideline was conducted, and additional sections were identified where updates or additional information might be needed. The group agreed to carry the draft Guideline forward as a working paper to the next meeting, and members were invited to provide further input to the ENG22.

Key outcomes include:

1. A new task for amending G1180 was created.
2. The first version of the updated G1180 was developed and will be carried over as a working paper to ENG22

Output:

ENG21-9.2.4.3 Draft G1180 Ed1.1

Action item(s):

Committee participants are invited to propose further amendments to Guideline G1180 on Resilient Position, Navigation and Timing (PNT) for consideration at ENG22.

The **Secretariat** is requested to forward the working paper ENG21-9.2.4.3 Draft G1180 Ed1.1 Resilient PNT (Task ENG 3.1.3) to ENG22 for further review.

9.2 ENG-3.2.1 R-Mode development

Task group leader: Stefan Gewies

Input papers:

3.1.2.5	Amendment to IMO Resolution A.1046(27)
3.1.2.5.1	Annex on R-Mode
	Draft of the R-Mode Receiver Performance Standard for IMO NCSR 13 https://nextcloud.iala.int/f/441450
	Report of the Joint IMO & ITU Expert Group https://nextcloud.iala.int/f/442726
	Presentation about DTEC WG 3 VDES R-Mode activities: https://nextcloud.iala.int/f/442598

Comments:

The working group reviewed both input papers and discussed the proposed amendment of the IMO Resolution A.1046(27) ("ENG21-3.1.2.5.1 Annexe on R-Mode") to consider R-Mode as an alternative terrestrial navigation system. Further changes to the text made after submission were also discussed and can be found in the working directory of the task group 3.2.1 with the file name "ENG21-3.1.2.5.1 Annex on R-Mode_with_comments_SG_TE_RR" on the file share. The committee is invited to review the document and provide further proposals for improvement of the document directly to Hideki Noguchi. It is planned that Japan will submit the proposed draft amendment to Resolution A.1046(27) to the IMO NCSR13 scheduled to be held from 22 to 26 June 2026.

A presentation about the ongoing DTEC WG3 VDES R-Mode activities highlighted the possibility of submitting additions for the IALA G1158 to the DTEC 6 meeting. The special focus of add-ons is on authentication and the scalable usage of resources in VDES (more or fewer slots).

Further, the presentation outlined the ongoing study item at ITU-R WP5B about the coexistence of VDES R-Mode to support the potential agenda item for an additional radionavigation service at the WRC'31. It is noted that the agenda for WRC'31 is set at WRC'27. The process for the agenda has started.

In addition, the report of the Joint IMO and ITU Expert Group Meeting from last week was shared. It addressed the request of the IMO to have an agenda item for the WRC'31 for VDES R-Mode.

Furthermore, the presentation outlined the IMO timeline for the development of an R-Mode Receiver Performance Standard:

- Submission deadline national (Germany): November 2025
- Submission deadline to European Commission: end of January 2026
- Submission deadline by IMO: March 20, 2026

A presentation of the draft IMO R-Mode Receiver Performance Standard (<https://nextcloud.iala.int/f/441450>) was given, and feedback was collected. Further feedback is requested and very welcome until the end of October 2025.

The working group identified the following options for how IALA can support the adoption of the IMO R-Mode Receiver Performance Standard:

1. Provide oral support at the Navigation, Communications and Search and Rescue (NCSR) meeting in June 2026.
2. Submit a "Comment Paper" for approval by the IALA Council (deadline: May 1, 2026).
3. Request the European Commission (EC) to co-sign the submission.
4. Include a statement of support in the IALA circular letter before NCSR 13.

Action item(s):

Committee members are invited to provide additional proposals for text improvement of the Amendment to IMO Resolution A.1046(27) directly to Hideki Noguchi (hideki.noguchi@gmail.com).

The Secretariat is invited to investigate how IALA can co-sponsor directly or indirectly the adoption of the IMO R-Mode Receiver Performance Standard and act as appropriate.

Committee members are invited to review the current draft of the R-Mode Receiver Performance Standard and provide feedback to Ronald Raulefs (Ronald.Raulefs@DLR.de) by October 31. Document for providing comments: <https://nextcloud.iala.int/f/441450>

9.3 ENG-3.2.2 on Develop the Recommendation and Guideline on R-Mode implementation (MF & VDES)

Task group leader: Stefan Gewies

Input papers:

3.1.2.8	ENG21-3.1.2.8 MF R-Mode performance prediction of ROK
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Comments:

The input document "ENG21-3.1.2.8 MF R-Mode performance prediction of ROK" was presented to the working group, accompanied by a presentation, and subsequently discussed. It was decided that the description of the calculation methods would be done in a generalised manner, not focused on the existing testbeds. The input paper will be integrated into the working paper "Draft Guideline on Implementation of MF and VDES R-Mode system and service".

Key outcomes include:

Updated Draft Guideline on Implementation of MF and VDES R-Mode system and service.

Output:

ENG21-9.2.4.1 Draft Guideline on Implementation of MF and VDES R-Mode system and service

Action item(s):

The **Secretariat** is requested to forward the WP Draft Guideline on Implementing MF and VDES R-Mode System and Service (ENG-9.2.4.1) as a working paper to ENG22 for further development.

9.4 ENG-3.3.1 Augmentation Systems

Task group leader: José-Luis Martin

Comments:

Regarding task 3.3.1, the WG discussed the proposal from Angela Barr (Australia) about the work already performed within IMO CG2 in terms of the development of SBAS DFMC & ARAIM Performance Standard. In this case, the work plan was presented, which was agreed at the IMO Correspondence Group (CG) level, and it was also proposed to work in the frame of IALA ENG WG2 to support this development. Now, Australia is working on a gap analysis by reviewing the reference documentation (IMO GNSS Performance Standards (GPS, Galileo, Beidou...), ICAO SARPS for SBAS DFMC, technical standards (MOPS) from RTCA/EUROCAE...) to identify those elements that should be considered within the IMO SBAS DFMC & ARAIM Performance Standard. It was also mentioned that IALA documents could also be part of the documents to be reviewed for the gap analysis. This gap analysis will be presented at IMO NCSR13 in 2026.

Finally, the committee agreed that the scope of this activity matches the scope of this task. Then, it was proposed to Angela Barr to share the gap analysis with the Task Group Leader for the task group to contribute to this development. Documentation shall be uploaded to the related folder within the file share.

Action item(s):

Committee participants are invited to support the development of the SBAS DFMC & ARAIM Performance Standard.

Angela Barr is invited to present the results of the gap analysis within the IMO SBAS DFMC & ARAIM Performance Standard to the ENG committee during ENG22.

9.5 ENG-3.3.2 High accuracy positioning systems

Task group leader: Sun Qian

Input papers:

3.1.2.1	Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service
3.1.2.4	Maritime Ground-based GNSS Precise Positioning Services

Comments:

Two documents were discussed and progressed in the working group.

The task group advanced its work on two input papers, namely ENG21-3.1.2.1 "Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service" and ENG21-3.1.2.4 "Maritime Ground-based GNSS Precise Positioning Services". Discussions were focused on refining the guideline content, clarifying the scope of maritime PPP applications, verifying performance parameters, and aligning the papers with relevant resolutions such as IMO Resolution 1046 and Resolution 915.

Subsequent to in-depth deliberations on core aspects pertaining to satellite-based Precise Point Positioning (PPP) and ground-based GNSS precise positioning, encompassing technical differentiators (e.g., variations in data dissemination channels and system architecture), the imperative for formulating supplementary guidelines, and the relevance to Aids to Navigation (AtoN) as well as maritime users across application scenarios such as port

operations, offshore activities, and survey missions. The group conducted a review of the input paper submitted by Korea and resolved to establish a new task. In line with the consensus reached during the discussions, this new task shall remain under the leadership of Sun Qian (China), the incumbent Task Group Leader.

The group worked further on the "Draft Guideline on GNSS Satellite-Based Precise Point Positioning (PPP) for Maritime Service," which will continue in the next session, due to pending tasks from this meeting, such as verifying existing/planned PPP system information, adjusting parameter table formats, and refining content. It is planned that the draft guideline will be further developed intersessionally, aiming to provide input to ENG22.

Key outcomes include:

- Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service is in progress.

Output:

ENG21-9.2.4.2 Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service

Action item(s):

The Republic of Korea is invited to provide an input paper on Ground-based GNSS precise positioning for ENG 22.

Committee members interested in contributing to the Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service and the new task are invited to express their interest via email to the task leader, Sun Qian, gbcouple@163.com.

The Secretariat is requested to forward the Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service (ENG21-9.2.4.2) as a working paper to ENG22 for further development.

9.6 ENG-3.3.3 on Retransmission of SBAS data via VDES

Task group leader: José-Luis Martin

Input papers:

3.1.2.6	Proposal of G1129 update to detail the retransmission of SBAS data through VDES
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Comments:

A presentation was given in relation to the input paper "ENG21-3.1.2.6 Proposal of G1129 update to detail the retransmission of SBAS data through VDES" presented in ENG21. The main objective is to continue the previous work done about the retransmission of SBAS data through VDES channels and messages presented and accepted in the DTEC committee (the complete definition of the payload within VDES ASM, VDE-TER and VDE-SAT messages). Thus, it is proposed that additional activities be done to enable the retransmission of those messages by the VDES ground station, as well as their processing by the mobile station on board. These activities shall be done in the frame of the ENG committee, but also in the DTEC committee. This will mean to present the content developed in both committees as well as to create a liaison among them (potentially to be proposed for DTEC6). The technical content to be developed most likely shall be split to be incorporated in G1129 and G1117 (to be decided). Support was required to work on this topic after ENG21 to be extended for the whole of 2026 at least.

Action item(s):

Committee participants are invited to continue intersessional work on the draft content for the G1129 and G1117 on retransmission of SBAS data through VDES channels and messages, to be produced and presented in DTEC6 and ENG22 committees, by contacting José-Luis Martin (jose-luis.martin@essp-sas.eu).

9.7 ENG-3.3.4 Develop a Recommendation on SBAS Service

Task group leader: José-Luis Martin

Comments:

Discussion was raised about the scope of the Recommendation. In this regard, the recommendation shall take into consideration the current Guidelines published by IALA (most likely G1152, G1129 and R1022) as well as the current services provided in the Maritime sector by some SBAS Service Providers (e.g. EGNOS/ESMAS). The task group leader will provide a draft document with recommendations to ENG22 for review and refinement.

Action item(s):

Committee members are invited to support the development of the Recommendation on SBAS Service by contacting José-Luis Martin by email (jose-luis.martin@essp-sas.eu).

9.8 ENG-3.4.3 on Modify R0101 to recommendation and create a new Guideline

Task group leader: Paul Mueller

Input papers:

3.1.2.2	Proposal for the Development of a Guideline on Technical Characteristics and the Use of Racon
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Comments:

The document was discussed, and the new guideline created from it was progressed in the working group. The revised Recommendation R0101 was completed.

Key outcomes include:

1. Recommendation R0101 Ed3.0 Marine Radar Beacons (Racons) work is complete.
2. Draft Guideline on the Use and Application of Racons is in progress.

Output:

ENG21-9.2.2.1 IALA Recommendation R0101 Ed3.0 Marine Radar Beacons (Racons)

ENG21-9.2.4.4 IALA Draft Guideline G11NN The Use and Application of Racons

Action item(s):

The Secretariat is requested to forward the revised Recommendation R0101 Ed3.0 Marine Radar Beacons (Racons) (ENG21-9.2.2.1) to the Council for approval.

The Secretariat is requested to forward the Draft Guideline on the Use and Application of Racons (ENG21-9.2.4.4) as a working paper to ENG22 for further development.

9.9 ENG-3.4.4 on Update R0146

Task group leader: Paul Mueller

Comments:

The recommendation was updated to current conditions. Work is complete.

Key outcomes include:

1. Recommendation R0146 Ed2.0 Strategy for Maintaining Racon Service Capability work is complete.

Output:

ENG21-9.2.2.2 IALA Recommendation R0146 Ed2.0 Strategy for Maintaining Racon Service Capability

Action item(s):

The Secretariat is requested to forward the revised Recommendation R0146 Ed2.0 Strategy for Maintaining Racon Service Capability (ENG21-9.2.2.2) to the Council for approval.

9.10 ENG-3.4.6 Guideline on Implementing and Maintaining a Racon System/Service (New Task)

Task group leader: Paul Mueller

Comments:

The new task was discussed. The task group does not have time to complete this task in the current session and will request that the task be carried over into the 2027-2030 work session.

Key outcomes include:

Added new task to the next Task Register Work Programme 2027-2030.

9.11 ENG-7.1.2 on Development S-200 product specification PNT Station almanac

Task group leader: Younghoon Han

Input papers:

3.1.2.3	Draft of S-241 product specification PNT Station almanac
3.1.2.3.1	S-241 Draft Product Specification
3.1.2.7	Proposal for the design concept of an integrated data model for S-200 PNT station almanac

Comments:

During the ENG21 meeting, discussions were held on the integration approach for the S-241 PNT Station almanac in accordance with the task plan. Two input papers related to this topic were submitted by the China MSA (ENG21-3.1.2.3 and ENG21-3.1.2.3.1) and the Republic of Korea (ENG21-3.1.2.7), and presentations and discussions took place within the task group.

It was agreed to adopt an integration approach referencing S-101, taking into consideration the interface with ECDIS. Development of data model for the PNT Station almanac will be discussed at the next meeting.

In addition, the draft document of S-241 (ENG21-3.1.2.3.1) submitted by China MSA will be used as a reference when developing the S-241 product specification document after the completion of the data model development.

Key outcomes include:

Design concept for S-241 PNT Station almanac data model

Output:

ENG21-9.2.4.5 S-241 Draft Product Specification

Action item(s):

The Secretariat is requested to forward the S-241 Draft Product Specification (ENG-21-9.2.4.5) as a working paper to ENG22 for further development.

9.12 ENG-8.1.1 PNT technology review

Task group leader: Jeffrey van Gils

Input papers:

3.1.2.9	Liaison note on operational IALA MCP instance
3.1.2.10	Liaison note on Update of Emerging Technology Review v2.0
3.1.2.11	Liaison note on Draft Discussion Paper on IALA Vision Towards Digitalization v2.0
3.1.2.12	Liaison note to all committees on AI Guideline G1178 v2.0
3.1.2.12.1	Revised G1178 An introduction to AI in IALA Domain
3.1.2.13	Liaison note to all committees on Digitalisation of Waterways Guideline v2.0
3.1.2.13.1	Draft Guideline on Digitalization of waterways
3.1.2.14	Liaison note on RTCM SC10402.3 standard
DTEC5-6.2.2.11	Input paper on Training in Implementation of Digital Solutions
DTEC5-6.2.2.11.1	Draft C1004 Global navigation satellite systems and e-navigation

Comments:

The input documents were discussed in the working group.

The group discussed the input paper:

- from DTEC about “Liaison note on operational IALA MCP instance” and draw up a liaison note to DTEC.
- from DTEC “Liaison note on Update of Emerging Technology Review v2.0” and draw up a liaison note to DTEC. During the discussion, it was not clear to the group who should proceed with this topic. The Chair of ENG WG2 will contact the Chair of DTEC WG2 to discuss this matter.
- from DTEC “Liaison note on Draft Discussion Paper on IALA Vision Towards Digitalisation v2.0” and draw up a liaison note to DTEC.
- from DTEC “Liaison note to all committees on AI Guideline G1178 v2.0” and draw up a liaison note to DTEC.
- from DTEC “Liaison note to all committees on Digitalisation of Waterways Guideline v2.0” and draw up a liaison note to DTEC.
- from RTCM: it was noted that IEC should be informed about the status of the RTCM SC10402.3 standard. Next to this, RTCM requested the R-Mode Baltic Sea project and the testbed project of the Republic of Korea to inform them about the test results of their use of R-Mode in combination with new RTCM SC10402.3 messages. During the discussion, it was noticed that the manufacturer could contact CIRM about this topic and ask CIRM to contact IEC on this matter.

During the meeting, Jaime Alvarez from the WWA gave a presentation about Training in Implementation of Digital Solutions and Draft C1004 Global navigation satellite systems and e-navigation. These were discussed, and amendments were proposed.

Key outcomes include:

1. The group supports the creation of an IALA MCP instance.
2. The group had some questions about IMT2020 PNT and its use in the maritime domain.
3. The group supported the IALA Vision Towards Digitalisation but was missing some topics.

4. The group took notice of AI in the IALA domain, drew a liaison note, and pointed DTEC to one of the AI projects that is starting up in the Netherlands.
5. The group took notice of the Digitalisation of Waterways Guideline and suggested some amendments.
6. The group agreed with RTCM on the way forward with the integrity and augmentation messages.

Output:

1. ENG21-9.2.2.3 Liaison note to DTEC supporting on operational IALA MCP
2. ENG21-9.2.2.4 Liaison note to DTEC on additions to the Emerging Technology Review v2.0
3. ENG21-9.2.2.5 Liaison note to DTEC on the Draft Discussion Paper on IALA Vision Towards Digitalization v2.0
4. ENG21-9.2.2.6 Liaison note to DTEC on AI in the IALA domain
5. ENG21-9.2.2.7 Liaison note to DTEC on the Digitalisation of Waterways Guideline V2

Action item(s):

Stefan Gewies and Younghoon Han are requested to inform RTCM about the test results of R-Mode testing.

The Chair of WG2 is requested to contact the Chair of DTEC WG2 on the matter of PNT over IMT2020/IMT2030.

9.13 Task on Review of IALA Work Programme 2025-2027 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. Two tasks were added: 3.1.3 on amending G1180 and 3.4.6 on Develop a Guideline on Implementing and Maintaining a Racon System/Service.

The Chair of WG2 is requested to update the task register with:

1. Task for a new Guideline on Ground-based GNSS Precise Positioning for Maritime Service.
2. Task for an Update Recommendation R0129.

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

During the 21st session of the ENG committee, WG3 – Heritage & Culture worked on several tasks regarding heritage-related guidance documents, the Heritage webpages and deliberated on the Heritage Lighthouse of the Year title holder for 2026.

1. REVIEW OF WORK PLAN

Referencing Document(s): ENG WG3 Work Program

The work plan was introduced, reviewed and adopted by the WG.

2. WORKING GROUP 3 – HERITAGE & CULTURE (WG3)

The Chair and Vice-Chair 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 and commended those joining online for their participation at often inconvenient times of the night and early morning.

Presentations:

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

- Heritage Lighthouse of the Year 2025 Lingao Lighthouse celebrations (Guo Zhenyu, China MSA)
- Tiritiri Matangi Lighthouse, New Zealand (Jim Foye, Maritime NZ)
- Twinned Lighthouse (Saichi, Japan Coast Guard)
- Lighthouse of the Year Stamp Crowdfunding Project (Jiwon Sim, KATON)

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
- Review of G1075 Ed.1 A Business Plan for the Complementary Use of a Heritage Lighthouse
- Review of G1080 Ed.1 Selection and Display of Heritage Artefacts
- Develop guidance document on 'good practice in modernising heritage lighthouses whilst minimising negative heritage impact'
- Review of the IALA Heritage webpages
- Deliberations on Heritage Lighthouse of the Year 2026
- Review of Heritage Lighthouse of the Year selection rules
- Review of input paper ENG21-3.1.3.1 Proposals for Adding a Template of the Lighthouse Volunteer Service Agreement to the Annex of G1063
- Review of input paper ENG21-3.1.3.2 The Celebration of IALA Heritage Lighthouse of the Year 2025
- Review of input paper ENG21-3.1.3.3 Proposal for Updating G1074 the branding and Marketing of Heritage Lighthouses

10.1 **ENG-2.6.1 on Maintaining the heritage webpage on the IALA website**

Task group leader: Professor Wonshok Lee (Hongik University) and Gillian Burns (Northern Lighthouse Board)

Comments:

The content and purpose of the online database of heritage lighthouses were discussed. It was determined that the current webpages are fit for purpose; however, there is scope to expand the promotion of IALA Heritage Lighthouses.

Discussions suggested adding a calendar feature to the heritage webpages to promote heritage lighthouse events. Participants voiced that the calendar could include details on attending such events, what live stream opportunities are available and other relevant information. This would encourage international audiences to participate in lighthouse events, either physically or remotely.

It was also voiced that an interactive map may be beneficial to visually highlight where heritage lighthouses are located around the world. Investigation as to the possibility of creating a calendar and/or map is required, as well as exploration as to how these features would be managed and reviewed if adopted on the IALA heritage webpages.

Key outcomes include:

1. As Chair, Sarah-Jane Lakshman was provided editor rights to the heritage webpages.

2. Heritage Lighthouse of the Year nominees for 2026 were added to the heritage webpages.

Action item(s):

Gillian Burns is requested to continue maintaining the IALA heritage webpage with assistance from Professor Wonshok Lee, and **NLB** and **Hongik University** are requested to support them in this.

Sarah-Jane Lakshman is requested to explore possibilities of creating a 'Heritage Lighthouse event calendar', and an interactive heritage lighthouse map on the IALA heritage webpages.

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

Task group leader: Sarah-Jane Lakshman (Trinity House)

Comments:

Sarah-Jane presented the draft document to the group. WG3 participants agreed that the document will be useful for AtoN managing authorities who are equipping heritage lighthouses with modern equipment to continue and/or improve AtoN capabilities, health and safety or disaster management. It was noted that while the principles encouraged in the guideline are beneficial in minimising impacts to heritage, the group expressed consideration for those AtoN authorities that face financial restrictions in managing heritage AtoN.

Key outcomes include:

1. Revisions were provided by a small task group throughout the week, and these revisions were assessed for relevance. Revisions included:
 - broadening the guideline to include adjacent buildings within the estate, specifically buildings that house AtoN equipment (e.g. foghorn buildings, auxiliary light buildings, etc)
 - minor term corrections and formatting
 - cross-references with other IALA heritage guidelines.
2. Sarah-Jane will seek feedback on the draft guideline from WG1 and WG2 to ensure the guideline is fit for purpose

Action item(s):

Sarah-Jane Lakshman is requested to continue coordinating WG3 work in the production of a Guidance document on 'Good practice in modernising heritage lighthouses whilst minimising heritage impact', and submit an input paper to ENG WG1 and WG2 for ENG22; **Trinity House** is requested to support them in this.

10.3 ENG-2.6.3 Manage the process for the IALA HLY accolade

Task group leader: Sarah-Jane Lakshman, (Trinity House).

Input papers:

3.1.3.2	The Celebration of IALA Heritage Lighthouse of the Year 2025
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Comments:

Updates to the HLY nomination process and selection rules were debuted this ENG21. Only nominations received in the preceding 12 months were considered for the accolade and only 1 nomination per IALA Member State was permitted for consideration. It was agreed that this process assisted managing the large task of evaluating nominated lighthouses – a list which had grown extensively since 2019.

The nomination process and selection rules were evaluated by WG3 participants and it was determined that the eligibility criteria of the new selection rules are too restrictive.

There was also discussion with the ENG Chair regarding a disruption to deliberations of Heritage Lighthouse of the Year 2028. These deliberations are due to take place in ENG25 (Autumn session) as per the selection rules. Working Group 3 has been advised that an ENG session will not take place in Autumn of 2027 due to its close proximity in time to the IALA Conference. This directly impacts the deliberations for the 2028 accolade.

Key outcomes include:

1. The group agreed that the new nomination process should be broadened to include IALA Associate Members. Rejection of nominations from these members goes against the spirit of IALA's heritage and culture values, and dismisses the contribution of Associate Members to Working Group 3 and the Engineering and Sustainability Committee.
2. The group determined the best option to avoid the disruption to deliberations of Heritage Lighthouse of the Year 2028 is to undertake them during ENG24 (Spring session 2027).
3. Sarah-Jane Lakshman prepared a liaison note outlining proposed changes to the existing selection rules, and outlining a request to undertake deliberation and selection of Heritage Lighthouse of the Year 2028 in ENG24.

Output:

ENG21-9.2.3.1 Liaison Note Proposal for the revision of the Heritage Lighthouse of the Year Selection Rules, and proposed change of session for deliberation of Heritage Lighthouse of the Year 2028

Action item(s):

The Secretariat is requested to submit the revised nomination process to the Council for approval.

Sarah-Jane Lakshman is requested to continue management of the IALA HLY accolade, and Trinity House is requested to support this.

10.4 ENG-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: The task group leader provided the latest draft of the heritage module and a small task group was formed to work on the scope and content intersessionally.

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, and the **Navigation Institute of JiMei University** is requested to support this.*

10.5 ENG-2.6.5a Review Guideline G1080 ED.1 The Selection and Display of Heritage Artefacts

Task group leader: Jiwon Sim (Korea Institute of Aids to Navigation)

Comments: Jiwon provided an in-depth planning update on the revision process of G1080. Revisions suggested include:

- Additional sections on Artefact Selection and Conservation
- Broadening sections on Exhibition to include guidance on planning and interpretation
- Additional sections on Archive Management
- Expand on the Ethics section to address ownership, provenance, donation and deaccessioning

- Additional annexes, such as artefact movement forms, risk assessments

The group agreed that guidance on archival digitisation is of ever-growing importance as organizations run the risk of losing valuable historical records. It was stressed that a revised version of this guideline is to strike a balance between museological vision and practical applicability by managers of artefacts.

Key outcomes include:

1. WG3 participants will provide further feedback and relevant example cases to the task group leader intersessionally, and a small group will work with the task leader to draft sections as mentioned above.

Action item(s):

Jiwon SIM is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1080 Ed.1 through to completion and Korea Institute of Aids to Navigation is requested to support them in this.

10.6 ENG-2.6.6 Review Guideline G1063 Ed.1 Agreements for Complementary use of Lighthouses

Task group leader: Juan Liu, (China MSA)

Input papers:

3.1.3.1	Proposal for Adding a Template of the Lighthouse Volunteer Service Agreement to the Annex of G1063
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Comments: Liu Juan presented the latest revised draft of G1063, which was considered by WG3 participants. Liu Ke (China MSA) also presented an input paper on the addition to the annex of the guideline: a Template of the Lighthouse Volunteer Service Agreement.

Key outcomes include:

1. The group considered the template agreement and determined that this was a beneficial addition to the annex and guideline as a whole. It provides an in-depth example of how AtoN managing authorities can draw up volunteer agreements at heritage lighthouse sites, and directly supports the aim to promote complementary use of heritage lighthouse property.
2. The task leader finalised revision of G1063, under its revised name “Partnership Agreements for Complementary Use of Lighthouse Property”. The scope of the guideline is to provide general guidance on developing and executing agreements with partner organisations for complementary use of the property.

Output:

ENG21-9.2.3.2 Revisions for G1063 Partnership Agreements for Complementary Use of Lighthouse Property

Action item(s):

The Secretariat is requested to submit the Draft Revised Guideline G1063 Partnership Agreements for Complementary Use of Lighthouse Property for silent approval.

10.7 ENG-2.6.7a Review Guideline G1074 Ed.1 Branding and Marketing of Historic Lighthouses

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

Input papers:

3.1.3.3	Proposal for Updating G1074 the Branding and Marketing of Heritage Lighthouses
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Comments:

During the ENG21 Meeting, the task focused on revising and reviewing the G1074 Guidelines; Guo Zhenyu provided the G1074 revised draft, which a small task group (William Dunning & António Oliveira) reviewed and helped refine at ENG20.

WG3 participants reviewed the revised draft and provided feedback, and Jim Foye (Maritime New Zealand) shared a useful case regarding charity cooperation to support the guideline.

Key outcomes include:

1. The G1074 guideline was revised and the scope was clarified. The core aim of this guideline is to offer general guidance on heritage lighthouse branding/marketing, with the inclusion of global lighthouse authority examples. While public access may be restricted for some authorities (due to work arrangements), it can apply to third parties undertaking business, charity work, or acting under a license. It was renamed "The Branding and Marketing of Heritage Lighthouses".
2. To improve the value of the guideline, the example cases utilised in appendices saw outdated/irrelevant cases replaced with relevant branding/marketing cases, ensuring alignment with the guideline's core aim and providing practical examples for use.

Output:

ENG21-9.2.3.3 Revisions for G1074 The Branding and Marketing of Heritage Lighthouses

Action item(s):

The Secretariat is requested to submit the Draft Revised Guideline G1074 The Branding and Marketing of Heritage Lighthouses for silent approval.

10.8 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 MSA)

Comments:

The latest draft of the G1075 was circulated with participants. Intersessional comments are requested from WG3 participants for further discussion at ENG22.

Action item(s):

Zhenyu Guo is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1075 Ed.1 and China Maritime Safety Administration (MSA) is requested to support them in this.

10.9 IALA Heritage Lighthouse designation and certification

Antonio Oliveira presented to the group the concept of a 'Process of Designation and Certification of IALA Heritage Lighthouses'. This is a potential process whereby heritage lighthouses from Member States and Associate Members are submitted for review to Working Group 3 and given formal recognition of their 'IALA Heritage Lighthouse' status.

Currently, lighthouses nominated for IALA Heritage Lighthouse of the Year are included on the IALA heritage webpages as 'IALA Heritage Lighthouses'. In recent years, the HLY accolade has garnered much attention, and the benefits associated with being named 'HLY' have been explored by WG3 across various ENG sessions.

It was posited that heritage lighthouses would benefit from being formally recognised as an 'IALA Heritage Lighthouse' - albeit to a lesser extent than the lighthouse selected as IALA HLY. Having a stamp of IALA could:

- Assist with funding or grant applications for projects targeted at AtoN heritage management

- Increase awareness of heritage lighthouses

Antonio presented initial ideas on what form the designation framework could take and how this could improve the IALA Heritage Lighthouse webpage. Antonio also drafted a certificate to generate discussion on how formal recognition of an IALA Heritage Lighthouse could look.

It was agreed by the group that this is a concept very worth exploring due to the benefits discussed above; however, they recognised that there is planning needed to solidify the process.

Action item(s):

Antonio OLIVEIRA is requested to draft an input paper for review for ENG22, further exploring the designation and certification of IALA heritage lighthouses, and **Direção De Faróis (Lighthouse Directorate)** support in this.

3. IALA HLY 2026

3.1 Nominations and means of arriving at a commendation

All participants of WG3 were invited to complete a ranking sheet with respect to nominees. 14 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 2026.

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.

3.2 The three lighthouses commended for consideration of IALA HLY 2026

Evangelistas Lighthouse, Chile



The Evangelistas Lighthouse, located at the perilous western entrance to Chile’s Strait of Magellan, stands as a monumental symbol of maritime heritage, technical achievement and human perseverance. Designed by Scottish engineer George Slight in 1896, the lighthouse marked the beginning of Chile’s organized effort to illuminate and govern its vast southern maritime territory. Built in one of the world’s harshest environments—with 150-knot winds and waves reaching 20 meters—the structure was a formidable engineering achievement. The cylindrical tower and adjoining keeper’s house retain their original European architectural style, and were declared a National Monument in 2009.

As a frontrunner in heritage management, the lighthouse has preserved its historical integrity while incorporating modern technologies for maritime safety. In 2023, it was recognized as a Centennial Weather Station by the World Meteorological Organization. The legacy of the lighthouse is promoted through educational curricula, media, and literature, including Chilean author Francisco Coloane’s iconic story *La gallina de los huevos de luz*. With 129 years of continuous operation, the Evangelistas Lighthouse remains a beacon of cultural identity, navigation safety, and heritage conservation, exemplifying world-class standards in lighthouse preservation.

Mull of Galloway Lighthouse, United Kingdom



Established in 1830, the Mull of Galloway Lighthouse is Scotland’s most southerly light and a shining example of heritage preservation. As one of Scotland’s “outstanding lighthouses,” it blends rich maritime history, community stewardship, and tourism innovation. The Mull of Galloway Trust, in partnership with the Northern Lighthouse Board, has transformed the site into a dynamic visitor attraction while safeguarding its historical integrity.

Unique features include the fully restored, operational foghorn—now the only one on mainland Scotland—and public access to the original engine room, where demonstrations showcase the lives of former lighthouse keepers. The light tower itself offers panoramic views and now hosts weddings. The three former keepers’ cottages serve as holiday lets, supporting the local economy.

In 2024, the lighthouse was officially ‘twinning’ with Japan’s Inubosaki Lighthouse – an agreement which celebrated shared heritage across continents. Extensive conservation, active community involvement, diverse educational programmes, and international collaboration position Mull of Galloway as a global leader in lighthouse heritage management.

With increasing visitor numbers, environmental stewardship, and year-round events, the lighthouse goes far beyond its navigational role

Portopi Lighthouse, Spain



The Portopí Lighthouse, located in Palma, Mallorca, is a unique maritime heritage landmark. First documented in 1300, it has continuously guided ships for over seven centuries, symbolizing both navigational aid and maritime communication. Relocated to its current site in 1617, its structure showcases architectural evolution across eras—medieval crenelations, a 15th-century base, an octagonal optical section, and a Neo-Gothic addition from 1927. It features Spain’s only operational catoptric optical system, making it globally rare.

Declared a National Historic-Artistic Monument in 1983, the lighthouse also houses the Permanent Exhibition of Maritime Signals, a premier European collection of restored lighting systems and equipment, and the Historical Archive of Maritime Signals, preserving centuries of records. The outstanding conservation includes full public access and educational programming, including free guided tours.

Portopí's dedication to heritage management, restoration, public outreach, and research positions it as a frontrunner in lighthouse preservation. It has hosted significant international events and remains a living tribute to lighthouse keepers and maritime history. Its enduring operation and educational mission embody the global values of lighthouse heritage.

After some discussion, ENG21 WG3 determined to commend Evangelistas Lighthouse, Chile, to IALA Council as IALA Heritage Lighthouse of the Year 2026.

Action item(s):

*The **Secretariat** is requested to send to the Council the commendation of ENG21 of Evangelistas Lighthouse, Chile, together with the determination of the IALA Heritage Lighthouse of the Year 2026 at the Council in December 2025.*

*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 IALA Heritage Lighthouse of the Year (IALA HLY) 2027 and beyond

The deadline for nominations to be considered for IALA HLY 2027 will be 30th of September 2026.

Output:

Recommendation for the commendation for the IALA Heritage Lighthouse of the Year 2026

Action item(s):

*The **Secretariat** is requested to send an e-bulletin out in July 2026, 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 2027 award.*

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

10.11 Review of IALA Work Programme 2025-2027 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:

- Minor updates to task names and task group leaders to ensure clarity on the online register.
- Tasks progressed this session were marked as such in the online register.

11 SUMMARY OF OUTPUT AND WORKING PAPERS

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

Outputs from ENG21 were approved by the Committee using the approval procedure. The output documents and working papers are listed in Annex D.

12 REVIEW OF SESSION REPORT

The draft report of the meeting (ENG21-13.1) was approved by the Committee at the Closing Plenary.

13 DATE AND VENUE OF NEXT MEETINGS

ENG22 is planned to be held between 13 – 17 April 2026 in IALA Headquarters.

Other IALA events will be publicised on the IALA website.

14 ANY OTHER BUSINESS

The participants of the ENG21 had a tour of the Buoy Refurbishment and Engineering Facilities, where Irish Lights' technical staff presented the processes for buoy maintenance, light system calibration, and innovation in material design and energy efficiency. The demonstration illustrated how data and technology are being applied to reduce energy use, extend asset life, and minimise the environmental footprint of operations.



15 CLOSING OF THE MEETING

The Chair thanked all the Committee participants again for their engagement and hard work. He hoped that all the participants would return to ENG22.

The WG2 acting Chair, Stefan Gewies, invited participants to the joint Project Seminar on Smart Maritime Future in the Baltic Sea Region, which will take place on 03 December 2025 in Copenhagen, Denmark. The future of safe and efficient navigation in the Baltic Sea is being shaped by three Interreg Baltic Sea Region projects: ORMObASS, MaDaMe, and Baltic Sea e-Nav. These projects address complementary aspects of the IMO e-navigation strategy to enhance maritime safety and efficiency. The projects bring together stakeholders from the maritime sector and work with them to implement cross-border solutions for safe and efficient maritime transport in the Baltic Sea of the future.

Registration is available here: <https://link.webropolsurveys.com/S/803BA4B467EC3166>

Contact person: Stefan Gewies, Stefan.Gewies@dlr.de

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



21st Session of the AtoN Engineering and Sustainability Committee (ENG21)

AGENDA

Opening Plenary

Start 09:00 UTC (10:00 IST), 13th October 2025

Venue: Commissioners of Irish Lights Headquarters

Harbour Road, Dun Laoghaire, Co. Dublin, Ireland

1. Introduction
 - 5.1 Welcome address from the Chief Executive of Irish Lights Yvonne Shields O'Connor
 - 5.2 Welcome address from the Deputy Secretary-General Omar Frits Eriksson
 - 5.3 Approval of the agenda Alwyn Williams
 - 5.4 Apologies and Introductions Alwyn Williams
 - 5.5 Working arrangements Alisa Nechyporuk
 - 5.6 Programme for the week Alisa Nechyporuk
2. Review of action items from last meeting Alwyn Williams
3. Review of input papers
 - 5.1 Review of input papers to ENG21 Alisa Nechyporuk
4. Reports from other bodies
 - 5.1 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. 2025-2027 Work Plan and Task Register Michel Cousquer
 - 5.2 Update on MASS task group Minsu Jeon
 - 5.3 IMO Hideki Noguchi
 - 5.4 IHO Minsu Jeon

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| 5.5 | ITU | Minsu Jeon |
| 5.6 | PIANC | Minsu Jeon |
| 5.7 | CIE | Alwyn Williams |
| 5.8 | WWA Update | Jaime Alvarez |
| 5. | Advertising Presentations | Alisa Nechyporuk |
| 6. | Overview of planned work for ENG21 | |
| 5.1 | WG 1 – Visual & Physical AtoN | Malcolm Nicholson |
| 5.2 | WG 2 – Radionavigation Services | Jeffrey van Gils |
| 5.3 | WG 3 – Heritage and culture forum | Sarah-Jane Lakshman |
| 7. | Establish Working Groups and Task Groups | |

End of Opening Plenary

Approx. 12:00 UTC (13:00 IST)

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Working Groups to Progress Work Plan

13:00 UTC (14:00 IST), 13th October to 16:00 UTC (17:00 IST), 17th October

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Closing Plenary of Physical Week

Start 08:00 UTC (09:00 IST), 17th October

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| 8. | Report from Working Groups and Secretariat | |
| 5.1 | WG 1 – Visual & Physical AtoN | Malcolm Nicholson |
| 5.2 | WG 2 – Radionavigation Services | Jeffrey van Gils |
| 5.3 | WG 3 – Heritage and Culture forum | Sarah-Jane Lakshman |
| 9. | Output Papers for Review | |
| 5.1 | Summary of Output Papers | Alisa Nechyporuk |
| 5.2 | Process for Comments | Alisa Nechyporuk |
| 10. | Close of Physical Session | Alwyn Williams |

End of Closing Plenary of Physical Week

Approx. 11:00 UTC (12:00 IST), 23rd October

Closing Plenary of Session

Session recommences 09:00 UTC (11:00 CEST), 23rd October on Microsoft Teams

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| 11. | Opening of Online Session | Alwyn Williams |
| 12. | Review of Documents Approved | Alwyn Williams |
| 13. | Draft report overview | Alisa Nechyporuk |
| 14. | Date and venue of next meeting | Alwyn Williams |
| 15. | Close of Session | Alwyn Williams |

End of Closing Plenary and Session

Approx. 10:00 UTC (12:00 CEST), 23rd October

ANNEX B

LIST OF PARTICIPANTS

N	First name	Last name	Member type	Country	Organisation
1	Mariano Luis	Marpegan	Affiliate	Argentina	Dragados y Balizamientos S.A.
2	Augusto	Amaya	Member State	Argentina	Servicio de Hidrografia Naval
3	David	Jeffkins	Member State	Australia	Australian Maritime Safety Authority
4	Angela	Barr	Member State	Australia	Australian Maritime Safety Authority
5	Shaheen	Mirza Ismaeel	Affiliate	Bahrain	MENAS - IFAN
6	Almir	Machado	Member State	Brazil	Marinha do Brasil- Diretoria de Hidrografia e Navegação
7	Alain Serge	Mbene Koah	Affiliate	Cameroon	Port Authority of Kribi
8	Cyrille Pierre	Ongolo Mayam	Affiliate	Cameroon	Port Authority of Kribi
9	Arhel Euloge	Mimfe'e Mba	Affiliate	Cameroon	Port Authority of Kribi
10	Lydie Dana Colette	Endale Dipita	Affiliate	Cameroon	Port Authority of Kribi
11	David	Cassidy	Affiliate Industrial	Canada	Go Deep - Aids to Navigation / Tidal Marine
12	Michael	Lassnibatt	Member State	Chile	Minister of Foreign Affairs of Chile
13	Lingyan	Wang	Member State	China	Maritime Safety Administration
14	Qian	Sun	Member State	China	Maritime Safety Administration
15	Juan	Liu	Member State	China	Maritime Safety Administration
16	Ranxuan	Ke	Affiliate	China	Jimei University

17	Xiaoye	Wang	Member State	China	Maritime Safety Administration
18	Huiwen	Zhou	Member State	China	Ministry of Transport of the People's Republic of China
19	Songbo	Zhu	Member State	China	Ministry of Transport of the People's Republic of China
20	Guo	Zhen Yu	Member State	China	Maritime Safety Administration
21	Ke	Liu	Member State	China	Maritime Safety Administration
22	Joergen	Royal Petersen	Member State	Denmark	Danish Emergency Management Agency under the Ministry of Resilience and Preparedness.
23	Tiit	Palgi	Associate	Estonia	Estonian Transport Administration
24	Pärtel	Keskküla	Associate	Estonia	Estonian Transport Administration
25	Kaisu	Heikonen	Member State	Finland	Finnish Transport Infrastructure Agency
26	Jonas	Lindberg	Affiliate Industrial	Finland	SPX Aids to Navigation
27	Michel	Cousquer	Affiliate	France	Cerema
28	Emma	Rieu-stephan	Affiliate	France	Cerema
29	Anne	Duret	Member State	France	Direction générale des affaires maritimes, de la pêche et de l'aquaculture
30	Xavier	Hernoe	Member State	France	Direction générale des affaires maritimes, de la pêche et de l'aquaculture

31	Vincent	Guigueno	Member State	France	Direction générale des affaires maritimes
32	Pierre-Yves	Martin	Affiliate	France	Cerema
33	Lars	Von Lilienfeld-toal	Member State	Germany	Federal Waterways and Shipping Administration
34	Stefan	Gewies	Affiliate	Germany	German Aerospace Centre - Institute of Communications and Navigation
35	Ronald	Raulefs	Affiliate	Germany	German Aerospace Centre - Institute of Communications and Navigation
36	Peter	Schneider	Member State	Germany	German Federal Waterways and Shipping Administration
37	Chris	Scully	Member State	Ireland	Department for Transport
38	Monica	Materazzi	Associate	Italy	Italian Navy - Direzione Fari e Segnalamenti
39	Francesco	Marotta	Associate	Italy	Italian Navy - Direzione Fari e Segnalamenti
40	Hideki	Noguchi	Affiliate	Japan	Japan Ship Technology Research Association
41	Michael	Card	Affiliate Industrial	Japan	Zeni Lite Buoy Co Ltd
42	Masatora	Ono	Member State	Japan	Japan Coast Guard
43	Saichi	Yoshihira	Member State	Japan	Japan Coast Guard
44	Yong Chan	Bae	Member State	Korea, South	Ministry of Oceans and Fisheries

45	Chungjin	Lee	Affiliate	Korea, South	Korea Institute of Aids to Navigation(KATON)
46	Jiwon	Sim	Affiliate	Korea, South	Korea Institute of Aids to Navigation(KATON)
47	Naehyuk	Yoo	Affiliate	Korea, South	Korea Institute of Aids to Navigation(KATON)
48	Sanghyun	Park	Affiliate	Korea, South	KRISO – Korea Research Institute of Ships and Ocean Engineering
49	Sulgee	Park	Affiliate	Korea, South	KRISO – Korea Research Institute of Ships and Ocean Engineering
50	Younghoon	Han	Affiliate	Korea, South	KRISO – Korea Research Institute of Ships and Ocean Engineering
51	Syamsul Aminuddin	Samat	Member State	Malaysia	Ministry of Transport Malaysia
52	Jim	Foye	Associate	New Zealand	Maritime New Zealand
53	Leif Arne	Larsen	Member State	Norway	Norwegian Coastal Administration
54	Stig Erik	Christiansen	Affiliate Industrial	Norway	Kongsberg Discovery AS-Seatex
55	Joanna	Leleniewska	Associate	Poland	Maritime Office in Gdynia – Poland
56	Sergio	Cardoso	Member State	Portugal	Portugal – Direção de Faróis (Lighthouse Directorate)
57	António	Oliveira	Member State	Portugal	Portugal – Direção de Faróis (Lighthouse Directorate)
58	Luis Carlos	Valério Coco	Member State	Portugal	Portugal – Direção de Faróis

					(Lighthouse Directorate)
59	Andrey	Leonov	Member State	Russia	Department of Navigation and Oceanography
60	Oleg	Gaidai	Member State	Russia	Department of Navigation and Oceanography
61	Kseniia	Ipatova	Member State	Russia	Department of Navigation and Oceanography
62	Mariia	Belozerova	Member State	Russia	Department of Navigation and Oceanography
63	Paul	Mueller	Affiliate Industrial	Singapore	Orion Maritime Systems Pte Ltd
64	Eng Soon	Aw	Member State	Singapore	Maritime and Port Authority
65	Joaquín	Alarcón	Member State	Spain	Puertos del Estado
66	Jose Luis	Martin Sánchez	Affiliate	Spain	ESSP-SAS
67	Florin	Mistrapau	Affiliate Industrial	Spain	GMV Aerospace and Defence S.A.U
68	Inmaculada	Armengol Moreno	Affiliate Industrial	Spain	GMV Aerospace and Defence S.A.U
69	Marcos	Lopez Cabeceira	Affiliate Industrial	Spain	GMV Aerospace and Defence S.A.U
70	Héctor	Llorca Llorca	Affiliate Industrial	Spain	GMV Aerospace and Defence S.A.U
71	José	Andrés Fombuena	Affiliate Industrial	Spain	Mediterraneo Señales Maritimas S.L.
72	Marina	Baño	Affiliate Industrial	Spain	Mediterraneo Señales Maritimas S.L.
73	Eduardo	Diaz	Affiliate	Spain	GSC / EUSPA
74	Johnny	Menard	Member State	Sweden	SWEDEN-Swedish Maritime Administration
75	Joseph	Hothersall	Member State	United Kingdom	Northern Lighthouse Board

76	Peter	Dobson	Member State	United Kingdom	Trinity House
77	Gillian	Burns	Member State	United Kingdom	Department of Transport
78	Link	Powell	Member State	United Kingdom	Department of Transport
79	Kevin	Sheridan	Member State	United Kingdom	Department of Transport
80	Sarah Jane	Lakshman	Member State	United Kingdom	Department of Transport
81	Alwyn	Williams	Member State	United Kingdom	General Lighthouse Authorities of the UK and Ireland
82	Chris	Macfarlane	Member State	United Kingdom	Northern Lighthouse Board
83	Steve	Keddie	Member State	United Kingdom	Trinity House
84	Matt	Randell	Affiliate Industrial	United States	Tideland Signal Manufacturing LLC
85	Lorrie	Costello	Associate	United States	US Coast Guard
86	Travis	Rasmussen	Associate	United States	US Coast Guard
87	Jaime	Alvarez	IALA WWA		IALA WWA

All papers are posted on the Committee section of the IALA website. Items in blue = late or updated paper.

Meeting	Agenda Item	Output Paper Title	Source	Action
ENG21	1.3.1	Provisional agenda v1.1	Secretariat	All
ENG21	1.6.1	Programme for the week	Secretariat	All
ENG21	2.1	Final report of ENG20	Secretariat	All
ENG21	2.1.1	ENG20 Action Items	Secretariat	All
ENG21	3.0	Input paper Committee meeting template	Secretariat	All
ENG21	3.0.1	List of input papers	Secretariat	All
ENG21	3.0.1.2	Report of MRN task group	Martijn Ebben, TGL	All
ENG21	3.1.1.1	Draft Guideline on The Measurement of Marine Lights Performance	China MSA	WG1
ENG21	3.1.1.1.1	Annex Draft Guideline on The Measurement of Marine Lights Performance	China MSA	WG1
ENG21	3.1.1.2	Introduction to Virtual Floor Mooring System	Joaquín Alarcón (Port of Barcelona)	WG1
ENG21	3.1.1.3	French strategy for monitoring AtoN	Emma Rieu-Stéphan (Cerema)	WG1
ENG21	3.1.1.4	Proposed updates to Model courses based on AtoN Engineering WS Outcomes	IALA WWA	WG1, WG2
ENG21	3.1.1.5	Review of Leading Lights and Lines documentation	TGL 2.1.4	WG1
ENG21	3.1.1.5.1	Revised G1023 on Design of Leading Lines	TGL 2.1.4	WG1
ENG21	3.1.1.6	Three Interesting Lenses	Paul F Mueller (OMS Maritime Systems)	WG1
ENG21	3.1.1.7	ICAO CIRCULAR 364	Secretariat	WG1
ENG21	3.1.1.7.1	Annex ICAO CIRCULAR 364	ICAO	WG1
ENG21	3.1.2.1	Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service	China MSA	WG2

ENG21	3.1.2.2	Proposal for the Development of Guideline on Technical Characteristics and the Use of Racon	China MSA	WG2
ENG21	3.1.2.3	Draft of S-241 product specification PNT Station almanac	China MSA	WG2
ENG21	3.1.2.3.1	S-241 Draft Product Specification	China MSA	WG2
ENG21	3.1.2.4	Maritime Ground-based GNSS Precise Positioning Services	Sulgee Park, Sanghyun Park (KRISO, R.O.K.), Woogyoung Park, Youngmin Lim, Seungcheol Lee (MOF, R.O.K.)	WG2
ENG21	3.1.2.5	Amendment to IMO Resolution A.1046(27) for the inclusion of backup system (R-Mode)	Hideki Noguchi (JSTRA)	WG2
ENG21	3.1.2.5.1	Annex on R-Mode	Hideki Noguchi (JSTRA)	WG2
ENG21	3.1.2.6	Proposal of G1129 update to detail the retransmission of SBAS data through VDES	ESSP	WG2
ENG21	3.1.2.7	Proposal for the design concept of an integrated data model for S-200 PNT station almanac	KRISO, MOF	WG2
ENG21	3.1.2.8	MF R-Mode performance prediction of ROK	KRISO, MOF	WG2
ENG21	3.1.2.9	Liaison note on operational IALA MCP instance	DTEC5	WG2
ENG21	3.1.2.10	Liaison note on Update of Emerging Technology Review v2.0	DTEC5	WG2
ENG21	3.1.2.11	Liaison note on Draft Discussion Paper on IALA Vision Towards Digitalization	DTEC5	WG2
ENG21	3.1.2.12	Liaison note to all committees on AI Guideline G1178	DTEC5	WG2
ENG21	3.1.2.12.1	Revised G1178 An introduction to AI in IALA Domain	DTEC5	WG2
ENG21	3.1.2.13	Liaison note to all committees on Digitalisation of Waterways	DTEC5	WG2, WG1
ENG21	3.1.2.13.1	Draft Guideline on Digitalization of waterways	DTEC5	WG2, WG1
ENG21	3.1.2.14	Liaison note on RTCM SC10402.3 standard	RTCM	WG2
ENG21	3.1.2.15	Update of G1180 with Galileo OSNMA	GSC / EUSPA	WG2

ENG21	3.1.3.1	Proposals for Adding a Template of the Lighthouse Volunteer Service Agreement to the Annex of G1063	China MSA	WG3
ENG21	3.1.3.2	The Celebration of IALA Heritage Lighthouse of the Year 2025	China MSA	WG3
ENG21	3.1.3.3	Proposal for Updating G1074 the Branding and Marketing of Heritage Lighthouses	China MSA	WG3
ENG21	4.1.1	Report of the 2nd session of the IALA Council	Secretariat	All
ENG21	4.3.1	Report on MSC110	Secretariat	All
ENG21	4.3.2	Report on NCSR12	Secretariat	All
ENG21	4.5.1	IALA Report on ITU-R WP5B meeting 29 April to 8 May 2025	IALA	All

Meeting	Agenda Item	Working Paper Title	Source	Action
ENG19	9.2.1.10	G1037 Ed2.1 Data Collection for Aids to Navigation Performance Calculation December 2009	WG1	to ENG20

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	Output papers	Source	Action
ENG21	9.2.1.1	Liaison note from ENG to ARM on AtoN for SIDS project	WG1	ARM
ENG21	9.2.2.1	Revised Recommendation R0146 Ed2.0 Strategy for Maintaining Racon Service Capability	WG2	Council
ENG21	9.2.2.2	Revised Recommendation R0101 Ed3.0 Marine Radar Beacons (Racons)	WG2	Council
ENG21	9.2.2.3	Liaison note from ENG to DTEC on operational IALA MCP instance	WG2	DTEC
ENG21	9.2.2.4	Liaison note from ENG to DTEC on Update of Emerging Technology Review	WG2	DTEC
ENG21	9.2.2.5	Liaison note from ENG to DTEC on Draft Discussion Paper on IALA Vision Towards Digitalization	WG2	DTEC
ENG21	9.2.2.6	Liaison note from ENG to DTEC on AI Guideline G1178	WG2	DTEC
ENG21	9.2.2.7	Liaison note from ENG to DTEC on Digitalisation of Waterways Guideline	WG2	DTEC
ENG21	9.2.3.1	Liaison note from ENG to Secretariat on change to the Selection Process of the Heritage Lighthouse	WG3	Secretariat
ENG21	9.2.3.2	Revised Guideline G1063 Partnership Agreements for Complementary Use of Lighthouse Property	WG3	Council
ENG21	9.2.3.3	Revised Guideline G1074 The Branding and Marketing of Heritage Lighthouses	WG3	Council

Working papers will remain within the Committee for further review during ENG21.

Meeting	Agenda Item	Working Paper Title	Source	Action
ENG21	9.2.4.1	Draft Guideline on Implementation of MF and VDES R-Mode system and service	WG2	to ENG22
ENG21	9.2.4.2	Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service	WG2	to ENG22
ENG21	9.2.4.3	Draft G1180 Ed1.1 Resilient PNT	WG2	to ENG22
ENG21	9.2.4.4	Draft Guideline on the Use and Application of Racons	WG2	to ENG22
ENG21	9.2.4.5	S-241 Draft Product Specification	WG2	to ENG22

Meeting	Agenda Item	Working Paper Title	Source	Action
ENG21	9.2.4.6	Revised G1023 on Design of Leading Lines	WG1	to ENG22
ENG21	9.2.4.7	Draft Guideline on The Measurement of Marine Lights Performance	WG1	to ENG22

Action Item Number	Action Items for the IALA Secretariat	Task Number
AI-ENG21-1	<i>The Secretariat is requested to forward the working paper ENG21-9.2.4.3 Draft G1180 Ed1.1 Resilient PNT (Task ENG-3.1.3) to ENG22 for further review.</i>	ENG-3.1.3
AI-ENG21-2	<i>The Secretariat is invited to investigate how IALA can co-sponsor directly or indirectly the adoption of the IMO R-Mode Receiver Performance Standard and act as appropriate.</i>	ENG-3.2.1
AI-ENG21-3	<i>The Secretariat is requested to forward the WP Draft Guideline on Implementing MF and VDES R-Mode System and Service (ENG-9.2.4.1) as a working paper to ENG22 for further development.</i>	ENG-3.2.2
AI-ENG21-4	<i>The Secretariat is requested to forward the Draft Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service (ENG21-9.2.4.2) as a working paper to ENG22 for further development.</i>	ENG-3.3.2
AI-ENG21-5	<i>The Secretariat is requested to forward the revised Recommendation R0101 Ed3.0 Marine Radar Beacons (Racons) (ENG21-9.2.2.1) to the Council for approval.</i>	ENG-3.4.3
AI-ENG21-6	<i>The Secretariat is requested to forward the Draft Guideline on the Use and Application of Racons (ENG21-9.2.4.4) as a working paper to ENG22 for further development.</i>	ENG-3.4.3
AI-ENG21-7	<i>The Secretariat is requested to forward the revised Recommendation R0146 Ed2.0 Strategy for Maintaining Racon Service Capability (ENG21-9.2.2.2) to the Council for approval.</i>	ENG-3.4.4
AI-ENG21-8	<i>The Secretariat is requested to forward the S-241 Draft Product Specification (ENG-21-9.2.4.5) as a working paper to ENG22 for further development.</i>	ENG-7.1.2
AI-ENG21-9	<i>The Secretariat is requested to submit the revised nomination process to the Council for approval.</i>	ENG-2.6.3
AI-ENG21-10	<i>The Secretariat is requested to submit the Draft Revised Guideline G1063 Partnership Agreements for Complementary Use of Lighthouse Property for silent approval.</i>	ENG-2.6.6
AI-ENG21-11	<i>The Secretariat is requested to submit the Draft Revised Guideline G1074 The Branding and Marketing of Heritage Lighthouses for silent approval.</i>	ENG-2.6.7a
AI-ENG21-12	<i>The Secretariat is requested to send to the Council the commendation of ENG21 of Evangelistas Lighthouse, Chile, together with the determination of the IALA Heritage Lighthouse of the Year 2026 at the Council in December 2025.</i>	
AI-ENG21-13	<i>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.</i>	

AI-ENG21-14	<i>The Secretariat is requested to send an e-bulletin out in July 2026, 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 2027 award.</i>	
Action Item Number	Action Items for Participants	Task Number
AI-ENG21-15	<i>Lingyan Wang and Partel Keskkyla are requested to update the Revised Guideline G1023 on Design of Leading Lines during the intersessional meetings and submit the updated document as an input to the ENG22 committee meeting.</i>	<i>ENG-2.1.4</i>
AI-ENG21-16	<i>Task Group ENG-2.1.4 is requested to move the three categories of sensitivity and the simplified method of intensity calculation from the Revised Guideline G1023 on Design of Leading Lines to the file-share and IALA Wiki for future reference.</i>	<i>ENG-2.1.4</i>
AI-ENG21-17	<i>Lingyan Wang and Link Powell are requested to update the Draft Guideline on the Measurement of Marine Lights Performance on the measurement of marine lights performance intersessionally, and submit the Draft Guideline as input to the ENG22 committee meeting.</i>	<i>ENG-2.1.6</i>
AI-ENG21-18	<i>Philippe Renaudin is requested to review the Draft Guideline on overview guidance on maintenance of floating AtoN and add comments for further discussion during the ENG22.</i>	<i>ENG-2.3.2</i>
AI-ENG21-19	<i>Committee participants of Task Group ENG-2.3.2 are requested to share relevant photographs for the Draft Guideline on overview guidance on maintenance of floating AtoN using the IALA ENG fileshare area to complete the document during ENG22.</i>	<i>ENG-2.3.2</i>
AI-ENG21-20	<i>Jose Andrés Fombuena is requested to coordinate intersessional work on the Task ENG-2.3.4 and submit an input paper to ENG22 on the Revised Guideline G1066.</i>	<i>ENG-2.3.4</i>
AI-ENG21-21	<i>Committee Members are requested to provide input papers to ENG22 detailing the systems and technology used for remote control and monitoring.</i>	<i>ENG-6.3.1</i>
AI-ENG21-22	<i>Peter Dobson is requested to arrange an intersessional meeting and submit an input paper to ENG22 on the revised draft guideline G1008 Remote control and monitoring of AtoN.</i>	<i>ENG-6.3.1</i>
AI-ENG21-23	<i>Committee participants are invited to propose further amendments to Guideline G1180 on Resilient Position, Navigation and Timing (PNT) for consideration at ENG22.</i>	<i>ENG-3.1.3</i>
AI-ENG21-24	<i>Committee members are invited to provide additional proposals for text improvement of the Amendment to IMO Resolution A.1046(27) directly to Hideki Noguchi (hideki.noguchi@gmail.com).</i>	<i>ENG-3.2.1</i>
AI-ENG21-25	<i>Committee members are invited to review the current draft of the R-Mode Receiver Performance Standard and provide feedback to</i>	<i>ENG-3.2.1</i>

	Ronald Raulefs (Ronald.Raulefs@DLR.de) by October 31. Document for providing comments: https://nextcloud.iala.int/f/441450	
AI-ENG21-26	Committee participants are invited to support the development of the SBAS DFMC & ARAIM Performance Standard.	ENG-3.3.1
AI-ENG21-27	Angela Barr is invited to present the results of the gap analysis within the IMO SBAS DFMC & ARAIM Performance Standard to the ENG committee during ENG22.	ENG-3.3.1
AI-ENG21-28	The Republic of Korea is invited to provide an input paper on Ground-based GNSS precise positioning for ENG 22.	ENG-3.3.2
AI-ENG21-29	Committee members interested in contributing to the Guideline on GNSS Satellite-based Precise Point Positioning (PPP) Service and the new task are invited to express their interest via email to the task leader, Sun Qian, gbcouple@163.com .	ENG-3.3.2
AI-ENG21-30	Committee participants are invited to continue intersessional work on the draft content for the G1129 and G1117 on retransmission of SBAS data through VDES channels and messages, to be produced and presented in DTEC6 and ENG22 committees, by contacting José-Luis Martin (jose-luis.martin@essp-sas.eu).	ENG-3.3.3
AI-ENG21-31	Committee members are invited to support the development of the Recommendation on SBAS Service by contacting José-Luis Martin by email (jose-luis.martin@essp-sas.eu).	ENG-3.3.4
AI-ENG21-32	Stefan Gewies and Younghoon Han are requested to inform RTCM about the test results of R-Mode testing.	ENG-8.1.1
AI-ENG21-33	The Chair of WG2 is requested to contact the Chair of DTEC WG2 on the matter of PNT over IMT2020/IMT2030.	ENG-8.1.1
AI-ENG21-34	Gillian Burns is requested to continue maintaining the IALA heritage webpage with assistance from Professor Wonshok Lee, and NLB and Hongik University are requested to support them in this.	ENG-2.6.1
AI-ENG21-35	Sarah-Jane Lakshman is requested to explore possibilities of creating a 'Heritage Lighthouse event calendar', and an interactive heritage lighthouse map on the IALA heritage webpages.	ENG-2.6.1
AI-ENG21-36	Sarah-Jane Lakshman is requested to continue coordinating WG3 work in the production of a Guidance document on 'Good practice in modernising heritage lighthouses whilst minimising heritage impact' and submit an input paper to ENG WG1 and WG2 for ENG22; Trinity House is requested to support them in this.	ENG-2.6.2
AI-ENG21-37	Sarah-Jane Lakshman is requested to continue management of the IALA HLY accolade, and Trinity House is requested to support this.	ENG-2.6.3
AI-ENG21-38	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, and the Navigation Institute of JiMei University is requested to support this.	ENG-2.6.4

AI-ENG21-39	<i>Jiwon SIM is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1080 Ed.1 through to completion and Korea Institute of Aids to Navigation is requested to support them in this.</i>	<i>ENG-2.6.5a</i>
AI-ENG21-40	<i>Zhenyu Guo is requested to continue coordinating WG3 work in reviewing IALA Guidance document G1075 Ed.1 and China Maritime Safety Administration (MSA) is requested to support them in this.</i>	<i>ENG-2.6.7b</i>
AI-ENG21-41	<i>Antonio OLIVEIRA is requested to draft an input paper for review for ENG22, further exploring the designation and certification of IALA heritage lighthouses, and Direção De Faróis (Lighthouse Directorate) support in this.</i>	
AI-ENG21-42	<i>Committee Members are requested to raise awareness of the IALA HLY award in their respective organizations and to submit nominations for lighthouses they consider to have heritage or cultural value.</i>	

Working Group 1

Visual & Physical AtoN

Chair – Malcolm Nicholson, SPX Aids to Navigation

Vice-Chair – Lingyan Wang, China Maritime Safety Administration

– Aw Eng Soon, Maritime and Port Authority of Singapore

Last name	First name	Organisation	Task Number
Travis	Rasmussen	U. S. Coast Guard	ENG-2.1.4
Mariano Luis	Marpegan	Dragados y Balizamientos	ENG-2.3.4
Augusto	Amaya	Navy Hydrography service	ENG-2.4.1
Joaquin	Alarcón	Puertos del Estado- Port of Barcelona	ENG-2.3.4
Huiwen	Zhou	China MSA	ENG-2.5.1,6.3.1
Peter	Dobson	Trinity House	ENG-6.3.1
Joanna	Leleniewska	Maritime Office in Gdynia - Poland	
Emma	Rieu-Stéphan	Cerema	
Sami	Lasma	Finnish Transport Infrastructure Agency	
Eng Soon	Aw	Maritime and Port Authority of Singapore	ENG-2.2.5
Sarah	Robinson	Hawkshill Consulting Limited	
Anne	Duret	Dgampa	ENG-2.1.4
Marina	Baño	MSM	ENG-2.3.4
José	Andrés Fombuena	MSM	ENG-2.2.3
Marina	Baño	MSM	
Leif Arne	Larsen	Norwegian Coastal Administration	ENG-2.1.4
Eng Soon	Aw	Maritime and Port Authority of Singapore	2.5.1
Joe	Hothersall	Northern Lighthouse Board	2.5.1
Syamsul Aminuddin	Samat	Malaysia Marine Department	2.5.1
Philippe	RENAUDIN	Cerema	Buoy maintenance guide
Gillian	Burns	Northern Lighthouse Board	2.5.1 Develop guidance on floating AtoN; 2.6.1 Maintain the Heritage web page on the IALA website
Matt	Randell	Tideland Signal	
Lingyan	Wang	China MSA	

Last name	First name	Organisation	Task Number
Link	Powell	GRAD	
Chris	Scully	Commissioners of Irish Lights	
Naehyuk	Yoo	Korea Institute of Aids to Navigation	
Chungjin	Lee	Korea Institute of Aids to Navigation	ENG-2.1.4
Syamsul Aminuddin	bin Samat	Malaysia Marine Department	
David	Jeffkins	Australian Maritime Safety Authority	
Joergen	Royal Petersen	Danish Emergency Management Agency under the Ministry of Resilience and Preparedness	

Working Group 2 Radionavigation Services

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

Acting Chair – Stefan Gewies, German Aerospace Centre - Institute of Communications and Navigation

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

Last name	First name	Organisation	Task Number
Inmaculada	Armengol	GMV	ENG-3.3.2, 8.1.1
Kevin	Sheridan	GLA Research & Development (GRAD)	ENG-3.3.2, 3.3.3, 3.3.4, 8.1.1
Jim	Foye	Maritime New Zealand	ENG-3.3.3
Emma	Rieu-Stéphan	Cerema	
Xiaoye	Wang	China MSA	
Ronald	Raulefs	DLR	ENG-3.2.1
Masatora	Ono	Japan Coast Guard	
Younghoon	Han	KRISO	
Kaisu	Heikonen	Finnish Transport Infrastructure Agency	
Johnny	Menard	Swedish Maritime Administration	
Malcolm	Nicholson	SPX AtoN	
Sanghyun	PARK	KRISO	
SULGER	PARK	KRISO	
Florin	Mistrapau	GMV	
Tiit	Palgi	Estonian Transport Administration	
Matt	Randell	Tideland Signal	
Angela	Barr	Australian Maritime Safety Authority	

Working Group 3 Heritage and culture forum

Chair – Sarah-Jane Lakshman, Trinity House

Vice-Chair – WonShok Lee, Hongik University

Last name	First name	Organisation	Task Number
Jim	Foye	Maritime New Zealand	ENG-2.6.3, 2.7.5, 2.6.8
Monica	Materazzi	Italian Navy - Direzione Fari e Segnalamenti	
Masatora	Ono	Japan Coast Guard	
Mohd Reduan	Mohd Ali	Malaysia Marine Department	
Jiwon	Sim	katon	
Gillian	Burns	Northern Lighthouse Board	
Sang Hoon	Youm	Yonsei University, Seoul, Korea	
YongChan	Bae	Ministry of Oceans and Fisheries	
Mohd Reduan	Mohd ali	Malaysia Marine Department	
Monica	Materazzi	Italian Navy - Direzione Fari e Segnalamenti	
Sarah Jane	Lakshman	Department of Transport UK	
Saichi	Yoshihira	Japan Coast Guard	
wonshok	lee	Hongik University	
António	Oliveira	Portuguese Lighthouse Directorate	ENG-2.6.6



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