



NEWS BRIEF: SDC 9

The IMO Sub-Committee on Ship Design and Construction (SDC) held its 9th session from January 23 to 27, 2023. This Brief provides an overview of the more significant issues progressed at this session.

KEY DEVELOPMENTS

- Revised Guidelines for the Reduction of Underwater Noise
- Emergency Towing Equipment for Ships Other Than Tankers
- Revised Guidance on Passenger Ship Systems' Capabilities after a Fire or Flooding Casualty
- MODU Code Prohibition of Asbestos on All Units

ABS RESOURCES

- ABS Regulatory News (link)
- ABS Class Notations Underwater Noise and External Airborne Noise (link)
- ABS Sustainability Services: Ship Radiated Noise (link)
- ABS Global Marine Services (link)
- ABS My Digital Fleet[™] (link)
- ABS Rules and Guides (link)

WORLD HEADOLIARTERS

1701 City Plaza Drive Spring, TX 77389 USA P 1-281-877-6000 F 1-281-877-5976 ABS-WorldHQ@eagle.org www.eagle.org

© 2023 American Bureau of Shipping. All rights reserved.

CONTENTS (CLICK TO FOLLOW)

REDUCTION OF UNDERWATER NOISE FROM SHIPS

- Revised Guidelines for the Reduction of Underwater Noise
- Future Progression of the Workplan on Underwater Noise Reduction

SOLAS DEVELOPMENTS

- Guidelines on Alternative Design and Arrangements for SOLAS Chapter
 II-1 Safety Objectives and Functional Requirements
- Emergency Towing Equipment for Ships Other than Tankers (Amendments to SOLAS Regulation II-1/3-4)
- Revision of the Performance Standards for Water Level Detectors on Bulk Carriers and Single Hold Cargo Ships Other Than Bulk Carriers (Resolution MSC.188(79))

PASSENGER SHIP SYSTEMS' CAPABILITIES AFTER A FIRE OR FLOODING CASUALTY

 Revision of the Interim Explanatory Notes for the Assessment of Passenger Ship Systems' Capabilities After a Fire or Flooding Casualty (MSC.1/Circ.1369)

UNIFIED INTERPRETATIONS TO PROVISIONS OF IMO SAFETY, SECURITY AND ENVIRONMENT-RELATED CONVENTIONS

- Interpretation of Requirements for Mooring Arrangements and Equipment
- Clarification on Penetrations in Watertight Divisions Pressure Testing after a Fire Test
- Interpretation of Amendments of SOLAS Chapter II-1
- Revision to the Unified Interpretations of the 2008 Intact Stability Code (MSC.1/Circ.1537/Rev.1)

OTHER DEVELOPMENTS

- Further Development of the IP Code and Associated Guidance
- Revision of the 1979, 1989 and 2009 MODU Codes to Prohibit Use of Materials Containing Asbestos
- Safety Measures for Non-SOLAS Ships Operating in Polar Waters
- Amendments to the 2011 ESP Code
- Experience Gained with Larger FRP Structures in Ship Construction

January 30, 2023 **2** | Back to Top



REDUCTION OF UNDERWATER NOISE FROM SHIPS

Revised Guidelines for the Reduction of Underwater Noise

Underwater noise pollution from ships is a growing environmental concern. At its sixty-sixth session, the Marine Environment Protection Committee (MEPC) acknowledged the concerns that a significant portion of the underwater noise generated may be related to commercial shipping and approved the *Guidelines for Reducing Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life* (MEPC.1/Circ.833). In June 2021, MEPC 76 decided to review the Guidelines and identify next steps to further prevent and reduce underwater radiated noise (URN) and to encourage action. The issue was referred to the Ship Design and Construction (SDC) Sub-Committee for action.

At this session, the Sub-Committee finalized the draft *Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Adverse Impacts on Marine Life*, pending final approval at MEPC 80 (Jul.2023). The draft Revised Guidelines have been further developed to improve their structure, effectiveness and clarity. The Sub-Committee also discussed whether sensitive sea areas should be defined and it was agreed to use the term "national and international designated protected areas", in line with the existing terminology used in chapter 11 of the Polar Code. The Revised Guidelines may be applied to any ship, considering their design and construction and modifications, as well as their operation.

Highlights of the Revised Guidelines include the following:

New Section on Underwater Radiated Noise Management Planning (URNMP)

The new Section 5 on Underwater Radiated Noise Management Planning (URNMP) is added to the Revised Guidelines. Given the complexities associated with ship design and construction and the various approaches to reducing URN, shipowners and designers should undertake URN Management Planning at the earliest design stages. Similarly, URN Management Planning may be carried out for existing ships as far as reasonable and practicable.

URN Management Planning is intended to be a flexible tool that allows a customized approach, and may include establishing the baseline (predicted or actual) of a ship's URN, setting URN targets which should be specific and where possible, quantitative and evaluating, alone and in combination, various technological, operational and maintenance approaches to reduce URN. Two model templates, with varying levels of detail are provided to help guide shipowners/designers in this process.

Energy Efficiency Compliance Measures and Underwater Radiated Noise (URN) Relationships

The Revised Guidelines include a dedicated section about the relationship between the Energy Efficiency Compliance Measures and Underwater Radiated Noise. Many of the energy efficiency improvement options to meet energy efficiency regulations (EEDI, EEXI and CII) may result in an improvement in URN performance and could provide positive synergies with climate policies. Designers, builders, shipowners and operators should investigate and consider the risk of increasing URN with ship design to achieve lower EEDI, EEXI or CII.

Incentive Schemes

The Revised Guidelines include a separate section for the maritime authorities, financial and insurance institutions and others to promote establishing incentive schemes to support the implementation of underwater radiated noise monitoring programs and noise reduction efforts by suppliers, designers, builders, shipowners and operators, where considered appropriate. Examples of incentives are discount on the port dues, fairway fees, discount or extra services or products, promotion, among others.

January 30, 2023 3 | Back to Top



Design, Technical, Operational and Maintenance Noise Reduction Approaches

The initial ship design and build stages are critical for reducing underwater noise by considering the hull and propeller design, wake flow improvement, propulsion system and onboard machinery, etc. It is unlikely to be practical for existing ships to match the underwater noise performance achievable by new designs, except for retrofitting propellers. For all vessels, the operational and maintenance approaches like optimizing voyage planning, especially in sensitive areas, reducing ship speed, reducing hull roughness by utilizing proper coatings, maintaining the hull and propeller clean, proper maintenance of the moving parts and machinery, help to keep the noise levels low. The following table summarizes the design, technical, operational and maintenance noise reduction approaches that are applicable to new and/or existing ships.

Table 1 Summary of design, technical, operational and maintenance URN reduction approaches applicable to new and/or existing ships as far as practicable.

URN Reduction Approaches	New ship	Existing ship
Optimize ship hull form (and appendages) design for hydrodynamic performance and homogenous wake field to reduce cavitation	x	
Optimizing propeller design to reduce cavitation, optimizing load, ensuring a uniform water flow and hull- propeller interaction and careful selection of the propeller characteristics such as: diameter, blade number, blade area, pitch, skew, rake and sections and innovation material	x	x
Emerging technologies like wind-assist technologies to reduce propeller loading and cavitation noise	X	х
Air injection to propeller	x	x
Wake flow improvement	x	x
Careful selection of onboard machinery and installation with appropriate structure- borne noise levels control measures, proper location of equipment in the hull and optimization of foundation structures	X	
Machinery installation and isolation for instance resilient mount and flexible coupling in four-stroke engines with a reduction gear, vibration isolation mounts and improved dynamic balancing for reciprocating machinery	x	
Optimizing the ship's trim to reduce the required power and therefore propeller cavitation noise	x	x
Improving voyage planning (optimum route, coordinated across fleets, sensitive marine areas/sea-ice covered region)	X	х
Reducing speed for ships equipped with fixed pitch propellers	x	x
Ship routeing to avoid sensitive marine areas including well-known habitats or migratory pathways	х	х
Propeller maintenance (and cleaning/coating)	x	x
Hull maintenance (coating and grooming)	x	x

Recommendations

Shipowners, designers and operators and other stakeholders are encouraged to use the most appropriate updated noise measurement standards for their context. ABS offers such recommended standards through optional notations, "Underwater Noise and External Airborne Noise".

Next Steps: The Revised Guidelines will be progressed to MEPC 80 (Jul.2023) for approval. MEPC 80 is invited to approve the convening of an expert workshop on the relationship between energy efficiency and underwater noise.

January 30, 2023 **4** | Back to Top



SOLAS DEVELOPMENTS

Guidelines on Alternative Design and Arrangements for SOLAS Chapter II-1 - Safety Objectives and Functional Requirements

The Sub-Committee made progress on the revision and finalization of the Safety Objectives and Functional Requirements for SOLAS Chapter II-1, which pertains to machinery installations (part C), electrical installations (part D) and additional requirements for periodically unattended machinery spaces (part E). The progress made includes:

- identifying failure modes and hazards for both Part C and Part E,
- finalizing draft goals, functional requirements and expected performances for both Part C and Part E

Revised Alternative Design and Arrangements Guidelines (MSC.1/Circ.1212/Rev.1)

At the previous session, the Sub-Committee endorsed the time frame for further development of goals, functional requirements and expected performances for SOLAS chapter II-1, parts C, D and E with the aim to amend the Revised guidelines on alternative design and arrangements for SOLAS chapters II-1 and III (MSC.1/Circ.1212/Rev.1). The Sub-Committee agreed to

- finalize the draft goal, functional requirements and expected performances of SOLAS chapter II-1, part C, for inclusion as a separate appendix to the Revised Guidelines (MSC.1/Circ.1212/Rev.1), considering the outcome of the failure modes/hazards identification; and
- further develop the draft goal, functional requirements and expected performances of SOLAS chapter II-1, part E, taking into account the outcome of the hazard identification, for inclusion as a separate appendix to the Revised Guidelines (MSC.1/Circ.1212/Rev.1);

The Revised Alternative Design and Arrangements Guidelines will apply to all SOLAS passenger ships and cargo ships, that require agreement for an alternative design arrangement under SOLAS II-1, Part F, Regulation 55. The Guidelines aim to cover the technical aspects of the alternative design and arrangements and will not be applied to the type approval of individual, materials, components, or portable equipment.

Next Steps: Work on this subject will continue at SDC 10 (Jan. 2024).

Emergency Towing Equipment for Ships Other than Tankers (Amendments to SOLAS Regulation II-1/3-4)

At MSC 103, the Committee considered proposals for an extension of the requirements for emergency towing arrangements in SOLAS regulation II-1/3-4, which was initially developed based on a lesson learned from the Braer incident in 1993, where a tanker was grounded off Shetland in Scotland after the loss of power in stormy weather conditions. SOLAS regulation II-1/3-4 is applicable to tankers of not less than 20,000 tonnes deadweight. Now the Sub-Committee agreed on the extension of the requirements to new ships other than tankers of not less than 20,000 gross tonnages. Also, the Sub-Committee considered to amend the Guidelines on emergency towing arrangements for tankers (resolution MSC.35(63)) and to develop a complete new set of guidelines on emergency towing arrangements on new ships other than tankers. The Sub-Committee agreed to the draft amendments to SOLAS regulation II-1/3-4 and to work on the Guidelines with a target completion year by 2025.

Next Steps: The amended Regulation II-1/3-4 applies to all types of large new ships and will enter into force on 1 January 2028, if adopted before 1 July 2026. The Sub-Committee endorsed further work, in particular to develop a new set of guidelines for emergency towing arrangements on new ships other than tankers, as well as consequential amendments to the existing guidelines on tankers.

January 30, 2023 **5** | <u>Back to Top</u>



Revision of Water Level Detectors Performance Standards on Bulk Carriers and Single Hold Cargo Ships Other than Bulk Carriers (Resolution MSC.188(79))

The Sub-Committee considered a proposal about an amendment to paragraph 2.2.2 of the *Revised Performance Standards for Water Level Detectors on Bulk Carriers and Single Hold Cargo Ships Other than Bulk Carriers* (Resolution MSC.188(79)/Rev.1) that was adopted at MSC 105, to clearly distinguish installation heights of detectors between requirements of applicable SOLAS regulations:

- the installation heights of sensors at pre-alarm and main-alarm levels, as required by SOLAS regulations II-1/25.3, II-1/25-1.2 and XII/12.1, should be measured from the upper surface of the inner bottom.
- the installation heights of bilge level sensors (an alternative permitted by SOLAS regulation II-1/25-1.3) should be measured from the bottom of the bilge well, if the bottom of the bilge well is below the upper surface of the inner bottom.

Next Steps: The Revised Resolution will be progressed to MSC 107 for adoption, for dissemination as MSC.188(79)/Rev.2.

PASSENGER SHIP SYSTEMS' CAPABILITIES AFTER A FIRE OR FLOODING CASUALTY

Revision of the Interim Explanatory Notes for the Assessment of Passenger Ship Systems' Capabilities after a Fire or Flooding Casualty (MSC.1/Circ.1369)

The MSC, at its 102nd session, considered a proposal to revise the Interim explanatory notes for the assessment of passenger ship systems' capabilities after a fire or flooding casualty (MSC.1/Circ.1369) and the related circulars so as to reflect the technology developments, alternative fuels and industry experience since the initial adoption of the Circular MSC.1/Circ.1369.

The Sub-Committee received a proposal for the revisions needed in Circular MSC.1/CIRC 1369, including the following suggested updates:

- The list of navigational equipment on the bridge should include the Ship's Automatic Identification System (AIS), which needs to remain operational after a fire casualty.
- The crew on duty should be informed of the alarm signals from the fire and smoke detection system and the flooding detection system in time. Therefore, the alarm devices should still be able to operate normally in the continuously manned space after the casualty.
- A passenger ship newly delivered after construction or major conversion or an existing passenger ship, in
 exceptional circumstances, which is required to undertake an international voyage to its designated
 destination and exceed the designed "Safe Return to Port" SRtP range during voyage, may be exempted
 by the Administration from any of the requirements of SRtP regulations for a single voyage, provided that it
 complies with safety requirements which are adequate in the opinion of the Administration for the voyage.
- The operational procedure should be provided to ship's crew, and it should include the following
 information, but not limited to the redundancy or segregation of essential systems, roles and
 responsibilities of designated crew, the location of spare parts, the location of valves, list of manual actions
 and necessary instructions for complex local/remote operation.
- The corresponding radiocommunications may be provided according to the SRtP voyage and the sea area covered by the SRtP voyage to satisfy the requirements.

Next Steps: The Sub-Committee agreed to establish a Correspondence Group and to continue the review of MSC.1/Circ.1369 in light of the experience gained since the entry into force of the SOLAS regulations on safe return to port, application of the Explanatory Notes and the available industry standards. Further guidance will be developed for new identified areas and new interpretations in the Explanatory Notes.

January 30, 2023 **6** | Back to Top



UNIFIED INTERPRETATIONS TO PROVISIONS OF IMO SAFETY, SECURITY AND ENVIRONMENT-RELATED CONVENTIONS

Interpretation of Requirements for Mooring Arrangements and Equipment

The Sub-Committee agreed to a proposed unified interpretation of SOLAS Regulation II-1/3-8 for mooring arrangements and equipment. This interpretation clarifies the criteria for the application of *Revised Guidance on Shipboard Towing and Mooring Equipment* (MSC.1/Circ.1175/Rev.1), *Guidelines on The Design of Mooring Arrangements and the Selection of Appropriate Mooring Equipment and Fittings for Safe Mooring* (MSC.1/Circ.1619), and *Guidelines for Inspection and Maintenance of Mooring Equipment Including Lines* (MSC.1/Circ.1620). These circulars will be effective for ships constructed on or after 1 January 2024, with the exception of MSC.1/Circ.1620, which will be effective for all ships from 1 January 2024.

Next Steps: A circular incorporating this unified interpretation will be progressed to MSC 107 (Jun.2022) for further consideration and approval.

Clarification on Penetrations in Watertight Divisions – Pressure Testing after a Fire Test

The Sub-Committee agreed to a proposed unified interpretation of SOLAS Regulation II-1/13.2.3, concerning penetrations in watertight divisions on a passenger ship for pressure testing after a fire test. Any penetration used for the passage of heat sensitive piping systems through a watertight bulkhead on a passenger ship must be tested with the heat sensitive piping and approved for watertight integrity post fire.

Next Steps: A circular incorporating this unified interpretation will be progressed to MSC 107 (Jun.2022) for further consideration and approval.

Interpretation of Amendments of SOLAS Chapter II-1

The Sub-Committee agreed to a proposed draft interpretation of amendments of SOLAS chapter II-1 adopted by resolutions MSC.474(102) and MSC.482(103). The document proposes a unified interpretation about the expressions "ships constructed before 1 January 2024" and "Multiple hold cargo ships other than bulk carriers and tankers constructed on or after 1 January 2024".

- The interpretation addressing Resolution MSC.474(102) clarifies which set of requirements shall apply to ships with a contract date before 1 January 2024 but with a construction date between 1 January 2024 and 1 July 2024.
- For Resolution MSC.482(103), the SOLAS regulation II-1/1 defines the term "ships constructed" as those whose keels have been laid or are at a similar stage of construction. However, it does not provide a definition for the term "Multiple hold cargo ships other than bulk carriers and tankers constructed on or after 1 January 2024", thus, an interpretation was required.

Next Steps: A revised circular incorporating this unified interpretation will be progressed to MSC 107 (Jun. 2022) for further consideration and approval.

Revision to the Unified Interpretations of the 2008 Intact Stability Code (MSC.1/Circ.1537/Rev.1)

The Sub-Committee considered a proposal regarding revision of the Unified Interpretations of the 2008 Intact Stability Code (MSC.1/Circ.1537/Rev.1) for the interpretation of down-flooding point to be realigned in its scope of application to all criteria addressed by the 2008 Intact Stability Code.

Next Steps: A circular incorporating this unified interpretation will be progressed to MSC 107 (Jun. 2022) for further consideration and approval.

January 30, 2023 7 | Back to Top



OTHER DEVELOPMENTS

Further Development of the IP Code and Associated Guidance

Following the finalization of the draft SOLAS chapter XV and the associated draft *Code of Safety for Ships Carrying Industrial Personnel* (IP Code) at SDC 8 (Jan. 2022) and the subsequent adoption of the same at MSC 106 (Nov. 2022), the Sub-Committee initiated its second phase of work to address outstanding matters related to the IP Code, including clarifying the interaction between the IP and SPS Codes, incorporating provisions for passenger ships and, with respect to high-speed craft carrying IP, provisions for sleeping berths and for high-speed craft carrying more than 60 persons.

However, the Sub-Committee did not receive concrete proposals from Member States to further develop these clarifications, and therefore no working group was established at this session to progress this subject. The Chair of the Sub-Committee highlighted that the second phase of this work has started and submissions are needed that include proposals and recommended actions to consider.

Next Steps: It is expected that submissions with proposed clarifying guidance on application of the IP Code will be submitted to SDC 10 (Jan. 2024). If no such proposals are received by the Sub-Committee, then standard IMO practices would suggest that this work item be closed without action after two consecutive meetings with no submissions to progress the work.

Revision of the 1979, 1989 and 2009 MODU Codes to Prohibit Use of Materials Containing Asbestos

Following progress made by an intersessional correspondence group, the Sub-Committee finalized amendments to the 1979, 1989 and 2009 MODU Codes establishing a prohibition on new installation of asbestos-containing materials (ACM) onboard offshore units. A unified interpretation has also been proposed to accompany these amendments, serving to clarify:

- 1) "New installation" of ACM means any new physical installation onboard (i.e. repaired, replaced, maintained or added);
- 2) Documentation practices associated with confirming the absence of asbestos in newly installed materials are subject to audit as per the Safety Management System of the unit; and
- 3) During surveys required by the MODU Codes, Administrations or recognized organizations acting on their behalf should verify that ACMs are not installed on MODUs by reviewing asbestos-free declarations and supporting documentation for the structure, machinery, electrical installations and equipment covered by the corresponding MODU Codes.

Additionally, the Sub-Committee also finalized the *Guidelines for Maintenance and Monitoring of Materials Containing Asbestos on Board MODUs*, to support implementation of the prohibition on ACM on MODUs. The purpose of these Guidelines is to aid in establishing a maintenance and monitoring program for minimizing exposure of anyone on board to asbestos while the MODU is in service or in a shipyard.

Next Steps: The draft amendments will be sent to MSC 107 (Jun. 2023) for approval and subsequent adoption, along with the associated interpretations and guidelines. A date of 1 January 2024 is proposed for the entry into force of this ACM prohibition.

Safety Measures for Non-SOLAS Ships Operating in Polar Waters

Following work at SDC 7 (Feb. 2020) to develop recommendatory safety guidelines for two specific non-SOLAS ship types that regularly operate in polar waters (fishing vessels of 24m in length and over and pleasure yachts of 300 GT and above not engaged in trade), the Sub-Committee continued to pursue development of additional guidelines to address polar operations of both commercial yachts and cargo vessels in the 300 GT to 500 GT

January 30, 2023 **8** | Back to Top



range. However, the Sub-Committee did not receive concrete proposals from Member States to further develop these additional guidelines and therefore no progress was made at this session on this subject. The Chair of the Sub-Committee highlighted that no submissions on this subject have been made for two consecutive meetings.

Next Steps: Because no proposals on this subject have been received by the Sub-Committee for two consecutive meetings, standard IMO practices would suggest that this work item be closed without action. However, at the request of several delegations, this agenda item will be held in abeyance as part of the Sub-Committee's post-biennial agenda, pending anticipated submissions to SDC 10 (Jan. 2024) on this subject to begin developing these safety measures.

Amendments to the 2011 ESP Code

The Sub-Committee finalized a draft amendment to the annexes of the 2011 ESP Code (2019 Amendments) clarifying the role of Administrations and their Recognized Organizations with regard to approval and certification of a firm engaged in thickness measurement of hull structures. Due to inconsistency in the definition of "Administration" in the 2019 amendments to the ESP Code (*Administration* means either the Administration or an organization recognized by the Administration) which is different from the term as defined in the SOLAS, MARPOL and the Load Line conventions, concern was raised that Administrations could be omitted from being able to participate directly in the document review and certification of firms engaged in thickness measurements of hull structures. Minor revisions were made to confirm the authority of an Administration to participate in these activities.

Next Steps: The draft amendments to the 2011 ESP Code will be progressed to MSC 107 (Jun. 2023) for further consideration and approval.

Experience Gained with Larger FRP Structures in Ship Construction

Building on the previously approved *Interim Guidelines for Use of Fibre Reinforced Plastic (FRP) Elements Within Ship Structures: Fire Safety Issues* (MSC.1/Circ.1574), the Sub-Committee received a proposal for further development of these Interim Guidelines in order to expand the regulatory basis for utilization of FRP structures in vessel design. The current Interim Guidelines are limited to smaller FRP elements (i.e. structure that may be removed without compromising the safety of the ship), but Member States agreed that the expanded use of lightweight structures in ship construction could significantly increase the energy efficiency of ships. The Interim Guidelines currently do not fully address the risks of progressive structural collapse or global loss of structural integrity due to fire and therefore would not suitably address constructed fully or partially of FRP materials. The submitted proposal highlights recent EU research projects which have extensively investigated the fire safety aspects of FRP ship structure and could support a broad revision of the Interim Guidelines.

Next Steps: Interested Member States and Observer Organizations are expected to propose to MSC 107 (Jun. 2023) that this subject be added to the agenda of SDC 10 (Jan. 2024).











January 30, 2023 9 | Back to Top

CONTACT INFORMATION

NORTH AMERICA REGION

1701 City Plaza Dr. Spring, Texas 77389, USA Tel: +1-281-877-6000 Email: ABS-Amer@eagle.org

SOUTH AMERICA REGION

Rua Acre, nº 15 - 11º floor, Centro Rio de Janeiro 20081-000, Brazil Tel: +55 21 2276-3535

FUROPE REGION

111 Old Broad Street
London EC2N 1AP, UK
Tel: +44-20-7247-3255
Email: ABS-Eur@eagle.org

Email: ABSRio@eagle.org

AFRICA AND MIDDLE FAST DEGION

Al Joud Center, 1st floor, Suite # 111 Sheikh Zayed Road P.O. Box 24860, Dubai, UAE Tel: +971 4 330 6000 Email: ABSDubai@eagle.org

GREATER CHINA REGION

World Trade Tower, 29F Room 2906, 500 Guangdong Road, Huangpu District, Shanghai, China 200000

Tel: +86 21 23270888

Email: ABSGreaterChina@eagle.org

NORTH PACIFIC REGION

11th Floor, Kyobo Life Insurance Bldg. 7, Chungjang-daero, Jung-Gu Busan 48939, Republic of Korea

Tel: +82 51 460 4197

Email: ABSNorthPacific@eagle.org

SOUTH PACIFIC REGION

438 Alexandra Road

#08-00 Alexandra Point, Singapore 119958

Tel: +65 6276 8700 Email: ABS-Pac@eagle.org

© 2022 American Bureau of Shipping. All rights reserved.

