

SUB-COMMITTEE ON SHIP DESIGN AND  
CONSTRUCTION  
8th session  
Agenda item 14

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**REVIEW OF THE GUIDELINES FOR THE REDUCTION OF UNDERWATER NOISE  
(MEPC.1/CIRC.833) AND IDENTIFICATION OF NEXT STEPS**

**Comments on SDC 8/14/1 and text proposal for review of the 2014 Guidelines**

**Submitted by Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and European Commission**

**SUMMARY**

*Executive summary:* This document comments on document SDC 8/14/1 by Canada et al. and suggests some specific texts for possible revision of the *Guidelines for the reduction of underwater noise from commercial shipping to adverse impacts on marine life* (MEPC.1/Circ.833)

*Strategic direction, if applicable:* 1, 2 and 3

*Output:* To be confirmed

*Action to be taken:* Paragraph 5

*Related documents:* MEPC 75/14, MEPC 75/14/2; SDC 8/14/1 and SDC 8/14/2

**Introduction**

1 This document is submitted in accordance with paragraph 6.12.5 of *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.2) and comments on the annex to document SDC 8/14/1 submitted by Canada et al. This document is submitted to also express support for the SDC's recommendation for review of the 2014 Guidelines.

2 In the annex to document SDC 8/14/1, Canada et al. propose a new outline for revising the 2014 Guidelines and include suggestions for improvements for consideration by SDC.

**Aims**

3 This document comments on document SDC 8/14/1 by Canada et al. The co-sponsors invite the Sub-Committee to consider the suggestions for improvements made therein.

4 Furthermore, the proposals for a new output on reducing underwater noise were already postponed and eventually referred to SDC. Given the urgency, the co-sponsors suggest that Canada et al.'s submission be used as a basis for the work on the matter, and, with an aim to achieve early consensus, by this submission the co-sponsors are anticipating some suggestions to complement the various elements for the review of the 2014 Guidelines made in document SDC 8/14/1 by Canada et al. In view of this, the annex to this document includes some specific suggestions for consideration by the Sub-Committee.

**Action requested of the Sub-Committee**

5 The Sub-Committee is invited to consider the information above and in particular the annex to this document, as deemed appropriate, with a view to using it as a reference document for further elaboration within its work in order to swiftly complete the revision of the Guidelines.

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## ANNEX

### SUGGESTIONS FOR POSSIBLE REVISION OF THE GUIDELINES FOR THE REDUCTION OF UNDERWATER NOISE FROM COMMERCIAL SHIPPING TO ADDRESS ADVERSE IMPACTS ON MARINE LIFE

#### **1 Preamble**

1.4 *The effective mitigation of URN from shipping requires a strategy addressing the issue at multiple levels and involving multiple stakeholders. Considering the characteristics of sound propagation in water, taking into account that sound is the main mechanism used by fauna for social interactions, reproduction, navigation, detection of obstacles and preys, analysing information regarding hearing ranges and the use of sound by different species, there is an unequivocal overlap between the most relevant noise sources from shipping and the use of sound by different species as a main mechanism to interact with their environment. Responses to underwater noise levels are observed for the main groups of species, marine mammals, fish and invertebrates, corresponding to behavioural changes, masking and physiological responses, depending on the group species. Impacts of shipping noise have been addressed based on field observations, laboratory experiments and modelling approaches.*

#### **6 Baselineing**

6.1 *The following operational parameters should be taken into account:*

- *geographical areas*
- *laden/ballast conditions*
- *navigation through restricted areas*

6.2.1 *An assessment should be made of the marine habitats in which a ship operates, including any seasonal considerations. In particular, attention should be given to the known presence of species such as those in the following groups:*

- *cetaceans: dolphins and whales*
- *pinnipeds: seals, sea lions and walruses*
- *sirenians: manatees and dugongs*
- *marine fissipeds: polar bears and sea otters*
- *fish*
- *invertebrates*

6.2.2 *Use should be made, to the extent possible, of the means available to measure the underwater noise the ship produces. This would in turn provide additional information to the crew of the ship to help lower the total sound emitted along a route. Issues such as the optimization of the ship's vessel trim, can reduce the required power and therefore propeller cavitation noise. Another possibility is to install sensors to monitor URN sources including – but not limited to – cavitation, such that an appropriate speed can be selected depending on where the vessel is sailing. Consideration should be given to integrating data of the various noise sources from the ship in existing onboard data collection systems.*

6.3.1 *Consideration should be given to establish a baseline of the underwater noise generated by ships. An assessment should be made to determine the noise characteristics of ships relative to their type, design and operational conditions, including ice conditions.*

6.3.2 *The following design and maintenance parameters, including those established by the shipyards, should be taken into account:*

- *type of ship*
- *hull design*
- *propellers*
- *propulsion machinery installations*
- *design speed*
- *ice class*

6.4 *Obtaining incentives related to environmental performance on underwater noise should be pursued. These could be, for instance, based on underwater noise class notations or the voluntary sustainability certification as evidence of noise performance. Conversely, authorities should promote the establishment of rewarding schemes to incentivize the implementation efforts to reduce underwater noise by responsible companies and ships.*

## **8 Implementation and monitoring**

8.1 *Monitoring programmes developed on specific standard, composed of observational measurements and models, are essential for assessment and mitigation purposes.*

8.2 *Companies should contribute to the understanding of noise characteristics of different vessel types, as well as the dependence of noise levels on various design and operational parameters, as well as seasonal effects on ambient noise through dedicated and opportunistic measurements.*

8.3 *Authorities should promote the development of regional and national modelling programmes, combining advanced ship noise source level models with propagation models to produce sounds maps for different vessels in order to understand the pressure of different activities and how they can be managed.*

## **9 Energy efficiency and URN reduction**

9.1 *Although there are many options for ship noise abatement, several energy efficiency measures can also produce an improvement in noise performance and provide positive synergies with climate policies.*

9.2 *Considerations should be taken at design stage to reduce propeller cavitation as an effective means to reduce underwater radiated noise. Measures aiming to reduce propulsion power and propeller thrust loading, with the appropriate safety caveats, are required to benefit energy efficiency, emission reduction and underwater radiated noise reduction. Wind assistance and optimized hull design and regular maintenance, aimed at reducing hull resistance, are all effective measures for reduced emissions and noise.*

9.3 *Particular scrutiny should be given to the co-design of hull and propeller as a unit, such that a uniform wake field is created to reduce propeller cavitation, as this will also increase energy efficiency, and reduce emissions.*

***Suggested Annex to the Guidelines – Integrated tool to evaluate potential URN, costs and implications for fuel efficiency***

*A tool covering all URN policies, noise sources, species, impacts, ship categories and mitigation measures should be developed. The tool can analyse in more detail all aspects of URN, and can be specifically used by Authorities, Companies and Ships to evaluate the relationship between noise sources, mitigation measures, and impact, taking into consideration the technology readiness level, the benefits, etc.*