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**GUIDELINES FOR UNDERWATER RADIATED NOISE REDUCTION IN
INUIT NUNAAT AND THE ARCTIC**

The Marine Environment Protection Committee, at its eightieth session (3 to 7 July 2023), having considered the Guidelines for underwater radiated noise reduction in Inuit Nunaat and the Arctic, which had been developed by the Inuit Circumpolar Council, agreed to disseminate them for utilization by interested parties. The Guidelines are set out in the annex.

ANNEX

GUIDELINES FOR UNDERWATER RADIATED NOISE REDUCTION IN INUIT NUNAAT AND THE ARCTIC

Foreword

1 These supplementary Guidelines are intended to provide additional information and guidance to operators transiting Inuit Nunaat and the Arctic. As well, they are intended to enable engagement of Inuit and other Indigenous communities and the incorporation of Indigenous Knowledge in the review of the *Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life*.

Definitions – AHDR Arctic, Inuit Nunaat, and Indigenous Knowledge:

2 *Arctic Human Development Report (AHDR) Arctic Boundary* - the AHDR boundary incorporates the definition outlined in the Arctic Monitoring and Assessment Programme (AMAP) reports from 1997 and 2002 and is fully inclusive of Inuit Nunaat, more expansive than the Polar Code, and takes into account ecosystem function and wildlife habitat.¹ AMAP is one of six Working Groups of the Arctic Council.

3 *Inuit Nunaat² (Inuit Homeland)* - is an area composed of Inuit Nunangat, Canada; Alaska, USA; Greenland, Denmark; and Chukotka, Russian Federation.

4 *Indigenous Knowledge* is a systematic way of thinking applied to phenomena across biological, physical, cultural, and spiritual systems. It includes insights based on evidence and acquired through direct and long-term experiences and extensive and multigenerational observation, lessons, and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation. Under this definition, Indigenous Knowledge goes beyond observations and ecological knowledge, offering a unique "way of knowing".³

Unique Arctic and Inuit Nunaat operating environment:

5 Inuit Nunaat is a unique environment and adverse impacts to marine wildlife and ecosystems in this area from shipping noise may be significantly increased as a result. The Arctic Ocean and its coastal seas not only serve as highways for Inuit over the ice in winter and in the open water season, but also are essential for harvesting, culture and livelihoods. Shipping is an integral part of the Inuit communities in all the circumpolar regions. Inuit way of life is intricately tied to the Arctic ecosystem, and Inuit culture, knowledge systems and the region's biodiversity are bound together. Inuit rely on marine transportation for the delivery of necessary goods and services. In many diverse ways, shipping and the ocean are the lifelines for Inuit remote communities.

¹ Geographic shape files can be downloaded from <https://arcdata.is/cesium-dev/>

² Inuit Nunaat map
<https://www.rcinet.ca/eye-on-the-arctic/wp-content/uploads/sites/30/2021/09/19-icc-0583-inuit-nunaat-map-2b-hpai-1-2-1536x1187.jpg>

³ <https://www.inuitcircumpolar.com/icc-activities/environment-sustainable-development/indigenous-knowledge/>

6 Sound levels throughout Inuit Nunaat and the Arctic are lower than elsewhere⁴ making them more vulnerable to noise increases from industrial activity. An Arctic Council⁵ report from 2021 found that underwater noise from increased shipping doubled in parts of the Arctic Ocean in just six years, from 2013 to 2019. The geography and properties of Inuit Nunaat and the Arctic are different to non-polar waters. Sea ice together with the shallowness of the seabed, shallowness of the deep sound channel, water temperature and changing salinity gradients affect underwater sound propagation. Sound travels farther underwater at shallower depths. Thus, vessel ice breaking and increases in commercial shipping have a higher potential for sound disturbance than in other oceans.⁶

7 Inuit Nunaat and the Arctic are home to endemic marine wildlife that rely on sound for their biological activity. Arctic whales show some of the most sensitive responses to noise of any cetacean.⁷ Arctic marine life and ecosystems may be uniquely negatively impacted by the introduction of underwater radiated noise from commercial ships. Behavioural changes as a result of noise from commercial ships have been observed in marine wildlife⁸, representing significant risks to Indigenous communities for whom harvesting these marine species is fundamental to their livelihoods.

Noise management planning in Inuit Nunaat:

8 Inuit and Indigenous peoples have extensive knowledge about underwater radiated noise impacts on marine wildlife, and its impacts in sensitive areas. This knowledge should be used by mariners in voyage planning and operations in order to minimize impacts to sensitive marine species and local communities.⁹

9 Ships operating in Inuit Nunaat should consider the special characteristics of the region and the activities within them which could increase the impacts of underwater radiated noise. This includes the presence of noise-sensitive species, and potential interference with Indigenous hunting rights.

10 Operational approaches¹⁰ could be particularly important for ships to reduce shipping noise in Inuit Nunaat and the Arctic (e.g. icebreakers), and for all ships that operate in national and international designated protected areas, Indigenous Conserved and Protected Areas (ICPAs), areas with concentrations of wildlife that are noise-sensitive, and areas of importance to Inuit communities where additional measures need to be taken to decrease the adverse impacts of shipping noise on marine wildlife. Ship speed reduction has been proven to significantly decrease a ship's underwater radiated noise emissions and should be adopted more broadly in Inuit Nunaat and Arctic waters¹¹, where it is safe to do so.

4 <https://pame.is/projects/arctic-marine-shipping/underwater-noise-in-the-arctic>

5 *ibid*

6 https://link.springer.com/chapter/10.1007/978-3-030-44975-9_6

7 <https://pame.is/document-library/pame-reports-new/pame-ministerial-deliverables/2021-12th-arctic-council-ministerial-meeting-reykjavik-iceland/787-underwater-noise-pollution-from-shipping-in-the-arctic/file> (page 46)

8 <https://www.sciencedirect.com/science/article/pii/S096456911500160X>

9 <https://www.sciencedirect.com/science/article/pii/S1462901119309451>

10 https://irc.inuvialuit.com/sites/default/files/2021-02/PVM%20Booklet_final2021.pdf

11 https://publications.gc.ca/collections/collection_2021/mpo-dfo/Fs152-9-2021-5-eng.pdf (page 4)

11 Ship operators and owners transiting Inuit Nunaat and the Arctic should consider retrofitting ships in ways that could help reduce their underwater radiated noise emissions. This includes the use of electric engines, changes to propellers and bow design, or flow control devices attached to ship hulls.

12 Shipowners and operators should contribute to monitoring impacts of underwater radiated noise from shipping on marine wildlife and results should be used to further support actions resulting in a reduction of underwater radiated noise impacts to wildlife. This type of monitoring should use both Indigenous Knowledge and scientific methods where appropriate. Monitoring data should be made available to researchers and Indigenous communities affected by ship noise.

13 Ship operators and owners transiting Inuit Nunaat and Arctic waters should study and monitor (and report) their underwater radiated noise emissions and their cavitation patterns to optimize their operations and reduce their acoustic signature.

14 Efforts should be made to support community-led shipping governance efforts, including building Inuit capacity and infrastructure to understand and manage underwater radiated noise from shipping and its impacts on marine species and coastal communities.
