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ANY OTHER BUSINESS

Heavy fuel oil use by vessels in Arctic waters

Submitted by, Clean Shipping Coalition, Friends of the Earth International, Pacific Environment, and WWF[1]

SUMMARY

Executive summary:	This paper presents the co-sponsors concerns about the continued use of heavy fuel oil (HFO) in the Arctic and highlights a number of recent developments aimed at reducing the risks associated with HFO use in Arctic waters. It includes an annex containing extracts from a recent submission to the Arctic Council's Protection of the Arctic Marine Environment Working Group on mitigating the risks associated with HFO use in the Arctic.
Strategic direction:	7.1, 7.3
High-level action:	7.1.2, 7.3.1
Output:	
Action to be taken:	Paragraph 12
Related documents:	DE 54/23; DE 56/10/10, DE 56/INF.14; DE 57/11/11; MEPC 65/22; MEPC 69/20/1, MEPC 69/21.

Introduction

1 IMO's Strategic Plan 2016–2021 recognises the need to identify and address possible adverse impacts (strategic direction 7.1) and the need to keep under review measures to reduce adverse impacts on the marine environment caused by ships (high level action 7.1.2). In addition, the UNFCCC Paris Agreement includes commitments to pursue efforts to limit global temperature increases to 1.5 degrees Celsius above pre-industrial levels, as well as to increase the ability to adapt to the adverse impacts of climate change

[1] The preparation of this document was assisted by the International Council on Clean Transportation, Ocean Conservancy, Environmental Investigation Agency, Iceland Nature Conservation Association.

and foster climate resilience[2]. During MEPC 69, the Committee considered MEPC 69/20/1 submitted by the co-sponsors, which identified the hazards and risks posed by heavy fuel oil (HFO)[3] use to the Arctic environment, and invited interested Member Governments and international organizations to submit proposals for a relevant new output to address this matter to a future session[4].

The risk of HFO use in the Arctic

2 The recent grounding of the *Champion Ebony* off Nunivak Island in the Bering Sea is a stark reminder that much remains to be done to safeguard the Arctic and adjacent seas and the coastal communities from the risks associated with shipping in remote Arctic waters. This tanker, on route to supply fuel to villages in the region, had over 14 million gallons of petroleum products on board[5]. If spilled, they could have devastated local resources, and the local community would have been on the front line of an oil spill response with virtually no infrastructure or capacity to address a risk of that scale. Fortunately, this time, a spill did not occur.

3 A review[6] of the problems posed by spills of heavy fuel oils, by the International Tanker Owners Pollution Federation (ITOPF) concluded "Where the impact and costs of a spill are a concern, it should be recognised that the consequences of heavy fuel oils can be more prolonged because of the persistent nature of the product. The threat to vulnerable marine life such as seabirds as well as economically sensitive resources can therefore on occasions last longer in the event of a heavy fuel oil spill." Meanwhile, a new report[7] investigating the ecological, economic and social costs of marine / coastal spills of fuel oils (refinery residuals) concludes that the cost of three parameters studied (the cost per tonne of oil spilled, the cost per tonne of oily waste recovered from sea surface and shoreline, and the cost per kilometre of oiled coast cleaned) strongly supports the implication that polar and sub-polar HFO spills are more costly, in terms of response and impact than those occurring in environments which are neither remote nor polar / sub-polar. The report further concludes that polar and sub-polar HFO spills, by virtue of their remoteness, the extreme weather and sea state conditions, and the relative lack of marine environmental, shoreline morphological and historical hydrocarbon baseline data, are very difficult to respond to and may cause high levels of environmental and socio-economic impacts.

4 In addition to the risks of oil spills, the ongoing use of HFO in the Arctic poses a further threat to the polar environment. HFO use as fuel produces harmful and significantly higher emissions of sulphur and nitrogen oxides and black carbon than other fuels. Black carbon is transported according to regional meteorological conditions and strongly absorbs visible light. When it falls on light-coloured surfaces, such as Arctic snow and ice, the amount of sunlight reflected back into space is reduced and thus contributes to accelerated snow and

[2] Decision 1/CP.21 Adoption of the Paris Agreement. Annex. The Paris Agreement. Article 2.

[3] The term heavy fuel oil in this document denotes residual marine fuel or mixtures containing predominately residual fuel and some distillate fuel, such as intermediate fuel oil.

[4] MEPC 69/21 Report of the Marine Environment Protection Committee on its Sixty-Ninth Session. Paragraph 20.3 – 20.4.

[5] Falsey, J., 2016. Coast Guard: No spill in grounding of tanker carrying fuel to Southwest Alaska villages. *Alaska Dispatch News*. Available at: http://www.adn.com/alaska-news/2016/06/25/coast-guard-no-spill-in-grounding-of-tanker-carrying-fuel-to-southwest-alaska-villages/

[6] Ansell DV, Dicks B, Guenette CC, Moller TH, Santner RS, and White IC, 2001. A Review of the Problems Posed by Spills o Heavy Fuel Oils. The International Tanker Owners Pollution Federation Ltd 2001.

[7] Deere-Jones, T., 2016. Ecological, Economic and Social costs of marine / coastal spills of fuel oils (refinery residuals). A Report to the European Climate Foundation.

ice melt[8]. One study[9] estimated that in 2010 Arctic shipping black carbon emissions amounted to 1,230 tonnes and would double by 2030 based on business as usual and high growth scenarios. These emission estimates were found to be consistent in magnitude for the business as usual scenario with a further independent study[10].

Developments to reduce the risk posed by the use of HFO

5 Over a decade ago, Antarctic Treaty Parties adopted a Decision[11] on the use of HFO in the Antarctic because of the relatively high risk of fuel release due to conditions such as icebergs, sea ice and uncharted waters and the high potential of environmental impacts associated with a spill and emission of HFO. Consequently, in March 2010, MEPC adopted a Resolution introducing a new Chapter to MARPOL Annex I prohibiting the use or carriage as fuel (or cargo) of HFO in the Antarctic area.

6 Since 2009, the Arctic Council's Protection of the Arctic Marine Environment (PAME) Working Group has been assessing the risks associated with the use of HFO following the landmark Arctic Marine Shipping Assessment (AMSA) which concluded "the most significant threat from ships to the Arctic marine environment is the release of oil through accidental or illegal discharge"[12].

7 In 2011, a Report[13] commissioned by the PAME Working Group found that "in light of the particular HFO properties, significant risk reduction will be achieved if the onboard oil type is of distillate type rather than HFO".

8 Earlier this year in February 2016, in recognition of the risks posed by HFO in Arctic waters, the PAME Working Group invited Arctic Council Member States, Permanent Participants and Observers to submit proposals for mitigating the risks associated with the use and carriage of HFO by vessels in the Arctic.

9 Subsequently, on 10 March 2016 President Obama and Prime Minister Trudeau committed to "determine with Arctic partners how best to address the risks posed by heavy fuel oil use and black carbon emissions from Arctic shipping" in the U.S.–Canada Joint Statement on Climate, Energy, and Arctic Leadership[14].

10 In May, 2016, the U.S.–Nordic Leaders' Summit issued a Joint Statement[15] which, while affirming their commitment to safeguarding the Arctic environment, committed to working "towards the highest global standards, best international practice, and a precautionary approach, when considering new and existing commercial activities in the Arctic….".

Measures to reduce the risks associated with HFO use in the Arctic

[8] Azzara A, Minjares R and Rutherford D, 2015. Needs and opportunities to reduce black carbon emissions from maritime shipping. International Council on Clean Transportation (March 23).

[9] Corbett JJ, Lack DA, Winebrake JJ, Harder S, Silberman JA, and Gold M, (2010). Arctic shipping emissions inventories and future scenarios. Atmos. Chem. Phys. 10, 9689 – 9704.

[10] Paxian A, Eyring V, Beer W, Sausen R, and Wright C, 2010. Present-Day and Future Global Bottom-Up Ship Emission Inventories Including Polar Routes. Environmental Science & Technology 44 (4): 1333-1339.

[11] Decision 8 (2005) ATCM XXVIII-CEP VIII, Stockholm. Use of Heavy Fuel (HFO) in Antarctica.

[12] Arctic Marine Shipping Assessment 2009 Report (AMSA, 2009). Arctic Council, April 2009 (5).

[13] Det Norske Veritas AS, (DNV, 2011), "Report for PAME: Heavy Fuel in the Arctic (Phase 1)" (2).

[14] https://www.whitehouse.gov/the-press-office/2016/03/10/us-canada-joint-statement-climate-energy-and-arctic-leadership

[15] https://www.whitehouse.gov/the-press-office/2016/05/13/us-nordic-leaders-summit-joint-statement

11 The co-sponsors have attached as an Annex to this paper extracts from the submission to the PAME Working Group by the Circumpolar Conservation Union (CCU) and WWF. The selected extracts relate to the use of HFO and carriage of HFO bunkers and ballast in the Arctic. Due to the dependence of some local communities on HFO for household use, the co-sponsors recognise that a more tailored approach to address HFO carriage as cargo in the Arctic may be necessary.

Action requested of the Committee

12 The Committee is invited to note the concerns of the co-sponsors and the recent developments aimed at reducing the risks associated with the use of HFO in the Arctic.

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Annex

Selected extracts relevant to reducing the risks associated with the use of HFO and carriage of bunkers in the Arctic taken from ….

Proposals for mitigating the risks associated with the use and carriage of HFO by vessels in the Arctic

Prepared for submission to the PAME Shipping Expert Group

Introduction

In recognition of the risks posed by heavy fuel oil in Arctic waters, in February 2016, the Arctic Council's Protection of the Arctic Marine Environment (PAME) Working Group invited Arctic Council Member States, Permanent Participants and Observers to submit proposals for mitigating the risks associated with the use and carriage of HFO by vessels in the Arctic. In response, the Circumpolar Conservation Union (CCU) and WWF submit the following recommendations for consideration by PAME.

While the International Maritime Organization (IMO) is the appropriate international body to regulate heavy fuel oil (HFO) use and carriage, as well as black carbon emissions from international shipping operating in the Arctic, there are a number of steps the Arctic Council and PAME can take toward safeguarding the Arctic marine environment and Arctic inhabitants, including indigenous peoples. These steps could also spur additional and/or hastened action on the issue at the IMO. Thus, we have intentionally linked our recommendations to PAME to potential IMO outcomes.

Addressing the risks associated with HFO in the Arctic should be undertaken through two strategies, each requiring solutions tailored to the Arctic region:

- Addressing the use of HFO on board and carriage of HFO as bunker and ballast,
- Addressing the carriage of HFO as cargo (refined and crude).

For the reasons outlined below, CCU and WWF believe that phasing out HFO use in the Arctic is the most effective available mitigation strategy and should be a priority at this time, and we respectfully submit the following language for PAME's consideration:

"In recognition of the rapid pace of Arctic change and in accordance with the 2015-2025 Arctic Marine Strategic Plan's Goal 3 – Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts – PAME encourages Arctic states and interested Observers to work together within the IMO to address the risks associated with the use of HFO in the Arctic and identify mitigation measures, with the aim to phase out the use of HFO and carriage of HFO for use as ship fuel (bunker) and ballast in the region by 2020."

- CCU and WWF further recommend, in line with the recommendatory measure in the IMO's Polar Code that encourages ships to apply regulation 43 of MARPOL Annex I when operating in Arctic waters, that PAME develop guidelines for phasing out the use of HFO in the Arctic.

"PAME further encourages Arctic states and interested Observers to consider additional mitigation measures to reduce the risks associated with the carriage of HFO as cargo, such as routeing measures and/or mandatory reporting."

- CCU and WWF recommend that PAME investigate the volume of HFO carried as cargo and the routes used to help inform the protection of sites that may be particularly vulnerable to HFO spills, such as areas of ecological and biological significance and/or areas with a direct connection to local communities dependent on marine resources.

Strategy to address the use of HFO and carriage of bunkers and ballast

Proposals

A) Amendment to MARPOL 73/78

The simplest and most direct mechanism to reduce harmful emissions and take a significant step toward mitigating spill impacts would be to prohibit HFO use, as well as the carriage of HFO as bunker and ballast in the Arctic, through an amendment to MARPOL Annex I. Similar to Regulation 43 in Chapter 9 of the same Annex, which applies to the Antarctic, an Arctic-specific regulation that addresses HFO use and carriage as bunker and ballast could achieve the recommended phase out by 2020.

While Arctic vessel traffic and corresponding emissions of black carbon are projected to increase in the near and mid-term[16], black carbon emissions in some parts of the Arctic from land-based sources are already declining or are expected to fall due to stricter regulations[17], increasing the relative importance of addressing emissions from shipping. Switching from HFO fuel to alternative fuel, such as low-sulphur distillate fuel, is expected to reduce black carbon emission levels by on average 30 percent[18]. Furthermore, the high fuel sulphur content of HFO prevents the use of diesel particulate filters (DPFs) that are estimated to remove 80-90% of black carbon emissions[19].

Prohibiting the carriage as bunker and ballast will also be a significant step in reducing the risks from HFO spill impacts. Estimated figures for 2012 from Det Norske Veritas (DNV) indicate that, although only 28 percent of the vessels operating in the Arctic used HFO, HFO accounted for 75 percent of the total bunker fuel mass onboard of all vessels operating in the region[20]. The International Council on Clean Transportation (ICCT) is working to update and expand upon the DNV analysis over the next couple of months. The ICCT plans to estimate Arctic vessel activity, fuel carriage, fuel consumption, and air emissions for 2015, with projections to 2020 and 2025. Preliminary results are expected in August 2016.

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[16] AMAP (2015). Summary for Policy-Makers: Arctic Climate Issues 2015, Short-lived Climate Pollutants, AMAP Secretariat (7).

[17] EPA (2012), "Report to Congress on Black Carbon." March (177).

[18] Lack, D. A. and Corbett, J. J. (2012) Black Carbon from Ships: A Review of the Effects of Ship Speed, Fuel Quality and Exhuast Gas Scrubbing, Atmos. Chem. Phys. 12: 3985-4000 10.5194/acp-12-3985-2012.

[19] Azzarra, Alyson, R. Minjares and D. Rutherford (2015), "Needs and opportunities to reduce black carbon emissions from maritime shipping." The International Council on Clean Transportation, March 23.

[20] DNV (2013). HFO in the Arctic-Phase 2, for Norwegian Environmental Agency, DNV Doc. No./Report No.: 2013-1542-16G8ZQC-5/1, 6, 33 (2013).

PAME Actions

- To encourage the IMO to consider an HFO-use phase out, Arctic states could agree to voluntarily heed the Polar Code's encouragement not to use HFO in the Arctic and request the same from Arctic Council Observers. While this would only apply to a limited number of flag states, it would show significant leadership from those most impacted by HFO use in the region.

- Alternatively, or in addition, Arctic states could consider building on PAME's regional reception port facilities work and take action or develop HFO voluntary guidelines from a port state perspective.

- PAME could invite the ICCT to its PAME-II 2016 meeting to present on the findings from its research described above and allow those findings to inform any PAME products on HFO during this work program.

- On behalf of PAME, an Arctic state could submit PAME's work products on HFO from this biennium to the IMO's Marine Environment Protection Committee with recommendatory action.

- To support rapid implementation and compliance with an HFO-use phase out in the Arctic, PAME could commission research on the environmental benefits and economic feasibility of alternative fuel use in Arctic shipping.

B) Revision of the Polar Code

Another way to manage the risks associated with the use of HFO would be to revise the IMO's International Code for Ships Operating in Polar Waters (Polar Code). While the Polar Code takes commendable steps toward limiting the environmental impact of shipping in Polar Regions, it lacks any accounting for air emissions and falls short of requiring that vessels use an alternative to heavy fuel oil when operating in the Arctic (though it does encourage it).

A measure to prohibit the use of HFO and carriage of HFO as bunker and as ballast would require amendment of Part IIA Chapter 1 of the Polar Code. This would introduce a new operational requirement phasing-out or immediately prohibiting HFO use and HFO carriage as bunker and ballast in Arctic waters. Such a measure would have the same impact as described above – an on-average 30% reduction in black carbon emissions[21], as well as diminished risk from the impacts of an HFO spill – but is a less direct way of achieving the same result from a procedural standpoint.

Such a measure would be a natural progression of recent work to address the risks associated with shipping in polar waters, and in discussions on the Polar Code some IMO Member States indicated support for a measure banning the use of HFO in Arctic waters. However, this route would still ultimately require amending MARPOL 73/78, since the Polar Code is mandatory only through amendments of the SOLAS and MARPOL Conventions. Furthermore, the Polar Code only comes into effect from January 2017 and is not due to be re-opened or reviewed at this time. The next phase of work on the Polar Code will most likely focus on safety aspects

[21] Lack, D.A. and Corbett, J.J, (2012).

of non-SOLAS vessels, such as fishing vessels, private yachts and small cargo ships under 500GT.

PAME Actions

- In line with the recommendatory measure in the IMO's Polar Code, which encourages ships to apply regulation 43 of MARPOL Annex I when operating in Arctic waters, PAME could develop guidelines for phasing out the use of HFO in the Arctic.

C) Arctic emission control area (ECA)

The IMO could also reconsider the implementation of an emission control area (ECA) in some or all of Arctic waters. Irrespective of the pending IMO decision on a 2020 versus 2025 global sulphur cap (0.5%) implementation date, the pace of climate change in the Arctic and particular risks associated with oil pollution in cold water warrant early and/or additional action to reduce emissions of SOx, NOx, and particulate matter. However, to be an effective mitigation measure, an ECA would require companion measures, such as limiting or eliminating the use of scrubbers thus minimizing HFO spill risk.

One of the reasons the North American ECA does not include the Arctic is because traffic levels were too low at the time of adoption to meet a negotiated threshold. The facts that vessel traffic levels and emissions are increasing[22], low carbon economies are becoming a reality, and northern communities are demanding fair and equal treatment warrant a re-examination of the geographic application of the North American ECA.

Introducing an Arctic ECA could allow for stricter requirements for air emissions of SOx, NOx and particulate matter, including a requirement for the maximum sulphur content in fuels to be no more than 0.1%. Such a measure would address local Arctic pollution problems in areas with higher background concentrations of pollutants and vulnerability to pollution load, while simultaneously reducing black carbon emissions and negative health impacts. An Arctic ECA would not on its own address the risks of spills and impacts on ecosystems and wildlife, including the threat to the food security of local indigenous people; it would need to be coupled with an APM/PSSA as described below. Additionally, an Arctic ECA does not imply a requirement on type of fuel, so any fuel meeting the sulphur limits could be compliant, including low sulphur heavy fuel oils and heavy fuel oils with the use of scrubbers. Therefore, an Arctic ECA would not reduce the need for oil pollution preparedness and response teams to be able to respond to an HFO spill and may not address black carbon emissions as effectively as other measures.

PAME Action

- Arctic states could commission and submit an analysis of shipping air emissions impacts on communities, wildlife and habitats in the Arctic to the IMO.

D) Designation of Areas to be Avoided (ATBA) and other routeing measures

To further reduce the risk of an HFO spill in Arctic waters, the designation of specific routeing measures (e.g. two-way traffic routes and areas to be avoided [ATBAs]) around hazardous areas or sensitive marine habitats should be considered.

[22] AMAP (2015), *AMAP Assessment 2015: Black carbon and ozone as Arctic climate forcers.*

The majority of the Arctic is poorly charted[23]. Established routes that direct vessel traffic such as traffic separation schemes, recommended tracks or two-way routes can be created in more adequately charted, safer-to-navigate areas. These measures decrease incidents such as ship groundings, collisions with other vessels, ice, or subsistence users, etc. A defined route will be critical in areas of the Arctic where the risks of these incidents are high, such as in the 53-mile wide Bering Strait.

ATBAs can complement traffic routes or exist independently of other routeing measures. ATBAs exist in areas of known or potential hazards, as well as in areas of heightened ecological significance.[24] ATBA designations have been delineated in the U.S. Arctic[25] near the Aleutian Islands "in order to reduce the risk of a marine casualty and resulting pollution and damage to the environment."[26] At the March 2015 meeting of the IMO Maritime Safety Committee's Navigation, Communications and Search and Rescue (NCSR) Sub-Committee, the United States' proposal made in NCSR 2/3/5 emphasized the benefits of several ATBAs to help reduce the risk of shipping accidents, as they impose a safe distance between ships and shoreline. This, in turn, protects habitat from an HFO spill caused by grounding and provides additional time to mount a response to maritime emergencies. However, routeing measures and ATBAs, although extremely useful in the mitigation of HFO spills, do not directly address the impacts of emissions from ships.

PAME Actions

- PAME could contribute its considerable expertise on Arctic ecology and environment to develop voyage-planning criteria including low impact corridors to assist mariners in avoiding hazards and sensitive areas.

Conclusion on HFO use

Of the suite of the IMO policy proposals outlined in this submission, CCU and WWF recommend an amendment to MARPOL 73/78 Annex I introducing a prohibition on the use of HFO and the carriage of HFO for use as ships' fuel (bunker) and ballast in Arctic waters. As noted above, there are specific actions PAME could take within the Arctic Council to support and/or expedite an HFO-use phase out in the Arctic.

[23] AMAP (2015), *AMAP Assessment 2015: Black carbon and ozone as Arctic climate forcers.*

[24] International Maritime Organization. (2013). Ships' Routeing 2013 Edition. Ships and Routing 2013 Edition.

[25] The US Arctic as defined in: The US Arctic Research and Policy Act (ARPA) of 1984 as amended 1990, 15. U.S.C §§ 4101-4111.

[26] SN.1/Circ.331. Routing Measures Other Than Traffic Separation Schemes. 2015. Available at: http://www.ak-mprn.org/wp-content/uploads/2015/12/IMO-SN.1_Circ.331-dated-13-July-2015.pdf