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Regional Waste Management Strategies for Arctic Shipping, Regional
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**Regional Waste Management Strategies for Arctic Shipping
Regional Reception Facilities Plan (RRFP) and
Proposal for IMO Consideration¹**

References and Related documents: (All documents may be accessed on the PAME password-protected website)

AMSA II(D) Final Report, Specially Designated Marine Areas In The Arctic High Sea, DNV REG NO.: 2013-1442 / 17JTM1D-26, REV 2, 11 MAR 2014
PAME (II) 15/4.7/b/USA, RU, CA, FI, GL(DK), and NO / Regional Reception Facilities Plan (RRFP) Project Update
PAME (I) 116/4.6/a/USA, RU, CA, FI, GL(DK), IS and NO / Regional Reception Facilities Plan (RRFP) Project Update
Resolution MEPC.264(68) International Code for Ships Operating in Polar Water (Polar Code), 15 April 2015
Resolution MEPC.265(68) Amendments to MARPOL Annex I, II, IV and V, 15 April 2015
MEPC.1/Circ.834, Consolidated Guidance for Port Reception Facility Providers and Users, 15 May 2015
Resolution MEPC.221(63) 2012 Guidelines for the Development of a Regional Reception Facilities Plan, 2 Mar 2012
PAME I-2016 final RoDs

Background

This paper summarizes the work of PAME's Regional Reception Facilities Experts Group (RRF-EG), on the development of the concept of regional arrangements for MARPOL reception facilities (RRF) to address challenges for Arctic shipping and at Arctic ports. This paper includes proposals for the development of regional ship's waste management strategies with the goal of 100% compliance with IMO's MARPOL Convention and Polar Code Amendments to MARPOL. The Polar Code entered into force in January 2017 and IMO Contracting States (including all Arctic States) must comply with provisions agreed to in the Polar Code amendments to MARPOL and all other MARPOL provisions as they apply to ships and port States. Ships operating in polar waters, including ships based in the Arctic and near-Arctic as well as ships transiting Arctic waters (e.g., Northern Sea Route and Northwest Passage), will face unique challenges.

While Polar Code Amendments to MARPOL will challenge shipboard waste management due to discharge restrictions of operational waste in Arctic waters, all port States, including Arctic port States, under existing provisions in the MARPOL Annexes, must ensure the provision of adequate port reception facilities (PRF) for ship-generated waste. In order to meet this challenge PAME RRF-EG members agreed that one approach to addressing PRF requirements in MARPOL for Arctic ports would be to consider the concept of regional agreements for waste management and reception of MARPOL wastes at ports in Arctic and near-Arctic areas. Regional waste management strategies may help solve some of the challenges unique to Arctic shipping while meeting the spirit, if not the letter, of MARPOL in

¹ By USA, Russian Federation, Canada, Finland, Kingdom of Denmark (Greenland), Iceland, Sweden and Norway

the Arctic. In 2014, PAME established a regional reception facilities expert group (RRF-EG). The RRF-EG presented their work plan and terms of reference at PAME (II) 2014 and the project was subsequently included in PAME's Work Plan (2015-2017) as approved by the SAOs.²

This paper is a final report of the RRF-EG on the project plan and terms of reference and includes a path forward, with approval of AC SAOs, for Arctic Council countries, through their IMO Delegations, to bring this work to the attention of IMO's Marine Environment Protection Committee (MEPC) for consideration.

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The Co-Chairs are grateful for the input from all RRF-EG members whose comments and edits are reflected herein.

Summary of RRF-EG Terms of Reference (TOR)/Project Tasks (PAME (I) 15/4.5/c; PAME (II) 15/4.7/b; PAME (I) 16/5.)

A regional arrangement (RA) is one approach that may allow Arctic countries and Arctic ports servicing ships calling at ports, or departing for or returning from Arctic regions, to provide adequate reception of MARPOL wastes without undue delay to ships. As noted in our PAME I 2016 progress report, with the Polar Code ([Resolution MEPC.264\(68\)](#)) coming into force as of 1 January 2017, consideration must be given to specific provisions in Polar Code amendments to MARPOL relating to discharge restrictions of operational wastes from ships. In this context the RRF-EG considered relevant IMO guidance relating to regional arrangements (Resolution MEPC.221(63)) and development of a regional reception facilities plan (RRFP) already adopted by IMO for other ocean areas, and challenges identified and proposals and alternatives considered herein, by the RRF-EG, for managing ship's wastes in the Arctic. Note: the original Terms of Reference are based, in part, on the IMO guidance for the development of a RRFP.

Task 1. Identification of the region.

Arctic waters, for the purposes of the Polar Code Amendments are defined in Resolution MEPC 265(68) (15 May 2015). A regional ship's waste management strategy, including a

² [PAME Work Plan \(2015-2017\)](#), at pp 5, 20-23 (Annex II).

regional reception facility plan; one or more formal or informal bi-lateral or multi lateral regional arrangement (RA) for PRF and alternative region-wide national and bi-lateral or multi-lateral approaches, would necessarily include near-Arctic waters. Such near-Arctic ocean areas could include waters adjacent to both Arctic countries and near-Arctic countries falling outside the Polar Code definition.

Task 2. Identify unique circumstances and challenges that affect the ability of port States in the area to provide adequate port reception facilities with due consideration for Polar Code Amendments to MARPOL.

Summarized here are potential waste management challenges for ships operating in Arctic regions, include:

- Annex I oily waste: discharge prohibited (all) and must be retained on-board;
- Annex II, Noxious liquid substances (NLS) or NLS mixtures: (all) must be retained on board;
- Restrictions for discharges of sewage near land, fast ice, or ice shelf; and
- Some or all MARPOL Annex V wastes may need to be retained onboard. Additional restrictions exist for cargo residues and cargo hold wash water.

Additional unique operational challenges for both ships and ports may include:

- longer routes between ports, more days at sea due to weather delays, port closures, changing ice movements and local ice conditions;
- logistics and costs to install and operate waste collection, storage, treatment and disposal equipment and technologies in remote Arctic areas;
- too few ships calling at ports thus diminishing economic viability and sustainability of PRFs and/or increasing the need for government and/or private sector support;
- potential need for ships to deviate from planned routes to make use of a specific PRF; and
- ability of PRF operators to manage ship-generated wastes in an environmentally sound manner.

Task 3. Challenges associated with costs and possible benefits identified for a regional approach to ships waste management.

PAME I 16/5.6/a identified challenges related to costs associated with PRFs located in the Arctic and outlined of a regional waste management. Summarized here, they include:

- it may be impossible or at best, prohibitively expensive, for every Arctic port to receive ships' waste in an environmentally sound manner;
- many ports may only be operational during the summer navigation period;
- increased cost to ship owners/operators and ultimately, to consumers;
- operational costs, environmental risks and social impacts on coastal communities;
- environmental impacts associated with collecting, storing, transporting and disposing of ship-generated wastes and cargo residues discharged to a port reception facility;
- risk of pollution from shore-side sources associated with waste collection and disposal sites.

Benefits of a regional approach may include:

- minimizing risks associated with waste disposal facilities located in remote regions or only seasonally operational;
- sharing of waste management resources, infrastructure costs, maintenance costs; and
- promoting viable reuse and recycling opportunities.

Considering the challenges identified herein for both ships and ports in the Arctic, there is little doubt that there is a demonstrated compelling need to address the issue of ship's waste management and unique circumstances facing Arctic maritime stakeholders. Additionally, the Arctic RRFP outlined herein includes workable alternatives for ship owners and port operators that may be considered.

Task 4. Long-range Arctic regional reception facilities plan (RRFP)

This Task was covered in PAME (II) 15/4.7/b. It is likely that the compelling need to address Arctic waste management on a regional scale will continue far into the future.

Task 5. Types of ships and the needs of each type of ship.

Refer to Table 1, PAME I 16/5.6/a. which provides general information on the types of ships that might be expected in Arctic regions, and the PRF needs based on the amount of expected (Annex V) wastes generated. A footnote to the table indicates that international guidance on shipboard waste management and calculating PRF needs of ships is available from [ISO 21070, International Standard for shipboard waste management \(2011\)](#). Similar methodology can be used to calculate quantities of other types of wastes requiring PRF.

Task 6. An Arctic RRFP will identify the route(s) and ports of call for ships in the region.

As noted in PAME (II) 15/4.7/b, for a specific RA, it will be necessary to reliably project the shipping patterns, routes and voyages of ships, generally in the region, in addition specific routes to specific destinations and the planning for RRF in the context of a RRFP will depend on the specific type(s) of ships and the routes to be used, and may depend on the number of voyages to a particular destination, the specific types of ships, and seasonal factors.

Task 7. Identify stakeholders (in the RRFP) and include consultations with them.

It is imperative that waste management strategies be put in place that will address the needs of all stakeholders, and protect the Arctic marine and coastal environment, as well as its indigenous peoples and local communities. An RRFP should generally identify stakeholders and any RA should list specific stakeholder information and, where necessary, points of contact. Due consideration must be given to the needs of all stakeholders, and protection of the Arctic marine and coastal environment, as well as its indigenous peoples and local communities.

Project Deliverables

Annex I, Arctic RRFPP

The Arctic RRFPP deliverable at Annex I may be used as a template and combined planning guide which will be useful in the general development of a practical, workable regional waste management strategy which will identify stakeholders and address the needs of ships, port operators, Arctic communities and the Arctic marine environment. The Arctic specific template is based on IMO guidance found in Resolution MEPC.221(63). The template is designed to be used to develop regional waste management strategies to address the needs and challenges facing Arctic shipping, and as guide for developing specific bilateral and multilateral agreements or arrangements between Arctic States and flag and port States of all who would engage in shipping activities in the Arctic.

Annex II, Draft Submission to IMO/MEPC by Sponsored or Supported by all AC countries.

The RRF-EG discussed in previous progress reports intersessionally, and generally agreed at the at PAME I 2016 in Stockholm, that formal recognition of a RRFPP and the concept of managing MARPOL wastes from shipping in the Arctic on a regional basis would only be effective if such an approach were considered appropriately by IMO within the context of existing regulatory framework of MARPOL and via an appropriate submission in the form of a paper to IMO's Marine Environmental Protection Committee (MEPC). The draft IMO submission would request that the Committee (MEPC) consider the guidance outlined in the Arctic RRFPP at Annex I, and take appropriate action leading to adoption by the Committee of a Resolution based on the submittal. The paper should be sponsored by one or more of the Arctic Council countries through their IMO member delegation(s) and supported by all AC countries.

Project Completion

Deliverable: Annex I, Arctic RRFPP Outline. Note that it now includes all elements of the "Planning Aid" discussed in our progress report to PAME I 16.

Deliverable: Annex II, Working paper on draft IMO Submission to a future IMO MEPC meeting.

As agreed at PAME-II 2014, and set forth in Annex II of PAME Work Plan 2015-2017, the RRFPP project is to be completed by December 2016. Draft documents submitted here to be finalized by December 2016 with the consensus of all AC Country Delegations with an eye toward submission of the Arctic RRF final paper, with attachments, to MEPC for consideration.

Recommendations

The co-sponsors of this paper recommend that PAME II-2016:

Final formatting and layout will be done following the Juneau SAO meeting

- Consider the Deliverable at Annex I and encourage PAME delegations, PAME Permanent Participants and Observers to review and comment on the RRFP and Planning Aid.
- Consider a submission to IMO based on the working paper at Annex II, Regional Reception Facility Plan – Outline and Guidance for the Arctic Region, decide on process and encourage PAME delegations, PAME Permanent Participants and Observers to review and comment on the text in the working paper as appropriate.
- Deliver final documents for review and comment to SAOs for their review and comment prior to preparing final drafts for submittal via AC country delegations to IMO.

ANNEX I

Regional Reception Facilities Plan (RRFP)-Outline and Planning Guide for the Arctic

Based, in part, on Resolution MEPC.221(63), 2 March 2012, “Guidelines for the development of a Regional Reception Facilities Plan”

Part I Developing a Regional Reception Facilities Plan

As originally proposed, the concept of RA was meant to apply to certain small island States because of those States' unique circumstances and because such arrangements are the only practical means to satisfy the requirement to ensure for the provision of adequate port reception facilities (PRF). This proposal applies the guidance in MEPC.221(63) to the unique challenges in Arctic region. Further, the concept of regional arrangements is encouraged as a possible alternative for ensuring adequacy of PRF under MARPOL Annex VI as reflected in the 2011 Guidelines (MEPC.199(62), 15 July 2011). It has been recognized by the Organization that waste management planning on a regional basis and the establishment of regional arrangements can provide an alternative solution for ensuring that ships do not have an incentive to discharge waste into the environment, including the atmosphere, and that ports and terminals within a region can meet the requirements of MARPOL Annex VI regulations.

1. Objective

Development of a regional approach to managing MARPOL wastes from ships and provide for adequate reception facilities for such wastes, without causing undue delay to ships, in the unique and challenging Arctic marine environment.

2. Application

The existing IMO guidelines were developed to provide guidance on regional port reception facility arrangements (i.e. Regional Arrangements or RA) and meeting the needs of international ships calling at ports and terminals within an identified geographical region. This RRFPP Outline and Planning Guide is meant to be used to develop and formalize a regional waste management approach for the Arctic and provide alternatives for managing ship's waste in compliance with existing MARPOL regulations. The purpose of this document is to provide guidance for ship owners and operators and flag and port states while recognizing the unique challenges for ships in the Arctic. The guidance provided herein includes practical and workable solutions for managing operational wastes from ships. These solutions may include national, bi-lateral or multi-lateral RA or a combination of RA and RSWRC. Additional solutions may include innovative ship design, advanced waste management technologies for ships and ports and guidance on route planning and transiting Arctic regions prior to departure and upon making the first port of call after leaving arctic regions.

3. Definitions and Acronyms

RRFP - Regional Reception Facilities Plan

RSWRC - Regional Ships Waste Reception Centre - a port identified in a RRFPP where adequate PRF for MARPOL wastes are available

PRF - Port Reception Facility

RA – Regional Arrangement – national, bi-lateral, or multi-lateral

4. Identification of the Arctic region

4.1 The definition of Arctic waters adopted in the amendments to MARPOL making the use of the environment-related provisions of the Polar Code mandatory (*Res.MEPC.265(68)*, *Amendments to MARPOL Annexes I, II, IV and V*), is as follows:

“For the purposes of the Polar Code, Arctic waters means those waters which are located north of a line from the latitude 58°00′.0 N and longitude 042°00′.0 W to latitude 64°37′.0 N, longitude 035°27′.0 W and thence by a rhumb line to latitude 67°03′.9 N, longitude 026°33′.4 W and thence by a rhumb line to the latitude 70°49′.56 N and longitude 008°59′.61 W (Sørkapp, Jan Mayen) and by the southern shore of Jan Mayen to 73°31′.6 N and 019°01′.0 E by the Island of Bjørnøya, and thence by a great circle line to the latitude 68°38′.29 N and longitude 043°23′.08 E (Cap Kanin Nos) and hence by the northern shore of the Asian Continent eastward to the Bering Strait and thence from the Bering Strait westward to latitude 60° N as far as Il'pyrskiy and following the 60th North parallel eastward as far as and including Etolin Strait and thence by the northern shore of the North American continent as far south as latitude 60° N and thence eastward along parallel of latitude 60° N, to longitude 056°37′.1 W and thence to the latitude 58°00′.0 N, longitude 042°00′.0 W.”



Fig. 1 Resolution MEPC.265(68) 15 May 2015.

4.2 A regional ship's waste management strategy, including a RRF, one or more formal or informal bi-lateral or multi lateral regional arrangement (RA) for PRF, and possible alternative region-wide national and bi-lateral or multi-lateral approaches, would necessarily

include near-Arctic waters. Such near-Arctic ocean areas could include waters adjacent to both Arctic countries and near-Arctic countries falling outside the Polar Code definition.

4.3 A specific, formal, RA should include the identification of departure and arrival ports for specific routes/voyages, including ports along the route identified as RSWRC, if any. An example might include a formal RA for a ship owner with cargo ships providing regular liner service between known ports, or passenger ferries or cruise ships. These ports could be added to a map or chart similar to the one shown at Fig 1.

4.4 As an alternative to formal bi-lateral or multi-lateral RA for ships on longer voyages without plans to stop while transiting the Arctic region, the port of departure (whether in the Arctic, near-Arctic, or well outside the Arctic regions) should be clearly identified. The route to be taken should be added to the map or chart, and the first port of call at the completion of the voyage should be clearly identified. The information should be available from the voyage plan prior to departure. The Master of a ship intending to transit Arctic waters should ensure that prior to departure:

- all MARPOL wastes on-board prior to departure are discharged to an adequate reception facility;
- there is adequate storage for all MARPOL wastes generated on-board for the entire duration of the voyage; and,
- the first port-of-call upon leaving Arctic waters at the end of the voyage, or a RSWRC along the intended route, has adequate capacity for all wastes generated and stored on-board for the duration of the voyage. Note: if the voyage is to a destination in the Arctic and the ship will return to the same port then the Master must ensure there is adequate storage on-board for the entire voyage.

5. Identification of the unique circumstances that impact the ability to provide adequate PRF in the Arctic

The following is a summary of the unique circumstances and challenges that have been identified for providing PRF in Arctic Ocean areas:

- poor access due to insufficient or uncharted depths in channels from sea to ports or inadequate piers/terminals within a port or no port infrastructure to receive ships or wastes from ships at anchor;
- high costs of and difficulty in constructing new infrastructure due to remoteness or geological characteristics of the port;
- some countries have many small settlements spread out over a large geographical area;
- changing ice conditions which would prevent practical use or siting of PRF;
- landside environmental concerns regarding waste processing and disposal facilities for ship's waste, due to permafrost, space limitations, community support, the ability of the domestic waste stream to accommodate the additional burden from ships, the availability and capacity of local populations to staff the facilities, and the proximity to environmentally sensitive areas, protected habitats, designated refuges, or culturally sensitive areas;
- PRF in logistically challenging remote areas (seasonally or year round) or complete inability to operate at some PRF during winter months due to seasonal ice conditions; and,
- It may be prohibitively expensive for every Arctic port to receive ships' waste in an environmentally sound manner. Such excessive costs thus increase the cost to

ship owners/operators and ultimately, to consumers. Indirect costs such as environmental risks or impacts on coastal communities will also need to be quantified and taken into consideration when assessing the viability of reception facilities. While equipment and technologies may generally exist for ultimate disposal of ships' wastes, it may be cost prohibitive to install such equipment and technologies in remote areas. Doing so may also create unacceptable risks in ecologically or culturally sensitive areas. In addition, for the foreseeable future, the number of ships calling on Arctic ports will remain relatively low, even with projected increases, which will further increase the cost of reception facilities per transfer of waste.

6. Other Alternatives to RA

6.1 Some countries in the Arctic already have strict discharge limits and regulations for ships intending to transit Arctic waters within their jurisdiction. For example, in waters subject to one country's jurisdiction, ships on domestic voyages to and from its Arctic ports typically discharge wastes at the last port of call before entering Arctic waters and keep waste on board until arrival at the next port of call beyond Arctic waters. Ships transiting these waters discharge waste at the last port of call prior to entering these waters and/or in accordance with MARPOL limits and must retain their MARPOL wastes until they are beyond Arctic waters subject to its jurisdiction. In some cases, arrangements have been made for the discharge of waste at Arctic mining sites. Ships on voyages of extended duration in these waters will have been designed to accommodate the volume of waste expected for the voyage duration and may have installed on-board equipment/technologies for managing waste without discharging it into the sea. Ships in waters subject to another Arctic coastal state's jurisdiction must ensure that they have sufficient tank capacity for collection of all oil residues taking into consideration the type of ship, power plant and duration of the voyage in those waters. Additionally, ships must ensure they have sufficient capacity for collection of operational wastes (including sludge and residues) given the expected duration of the voyage in these waters .

6.2 Both coastal states have observed that these practices and technologies are effective in avoiding discharges of oil and oily mixtures in Arctic waters, even when limited shore-side support is available. This is a good example of a "domestic" RA.

6.3 For some destination shipping (such as in the foregoing example where PRF may be available at Arctic mining sites) an alternative may be to provide temporary storage at a seasonal site and transport accumulated wastes to processing centers (outside the Arctic at established facilities) for re-use, recycling, energy recovery, or ultimate disposal, thus mitigating at least some of the challenges outlined above.

7. An RA concept for the Arctic and projections for the long term

Projections clearly indicate a long term trend of retreating ice and the possibility, at least seasonally, of significant increases in shipping in all sectors. While conditions that will change the nature of Arctic shipping are already evident and improvements in Arctic port infrastructure will follow as shipping increases, challenges will persist far into the future, even as the extent of sea ice diminishes. Additionally, the Arctic will remain an environmentally sensitive area requiring collective efforts to protect marine areas of the Arctic. For this reason the RRF will consider both international and domestic shipping needs with respect to waste reception facilities.

8. The need for a broad regional waste management strategy for the Arctic

Considering the circumstances for both marine and landside waste management outlined in section 5 above, the Arctic region already faces its own challenges. As shipping increases, pollution prevention will become a broad regional imperative. Pollution sources from beyond the Arctic - air pollution carried from industrial centers much further south and micro-plastics carried on deep ocean currents flowing into the Arctic from both the Atlantic and Pacific Oceans - is already a problem. Increases in shipping from all sectors will only exacerbate conditions, and a broad regional approach a long term imperative.

9. Calculating the needs international and domestic shipping

Several studies have been conducted and data continues to be collected on shipping patterns and the types of ships having voyages, and calling on ports in the Arctic. Nearly every Arctic Council country, and other countries have an interest in, and have ships in the Arctic. Data analysis, to date, shows that the number and type(s) of ships vary considerably from year to year based on local conditions, extent and duration of both annual and multi-year ice in both the eastern and western Arctic. Additionally, transits through the major eastern and western straits leading to the Arctic show considerable annual variation in the numb and type(s) of ships.

Fortunately, as shipping increases, the quantities of waste from shipping can be calculated. Table 1 provides an outline of the types of shipping that can be expected in Arctic regions, and the PRF needs based on the amount of expected wastes generated.

Table 1. AMOUNT OF MARPOL ANNEX V WASTE GENERATED ON-BOARD A SHIP

Ship Type	Number of Persons on Board	Type of Voyage	Duration of Voyage (in Arctic Waters)	Amount of Waste Generated*
Cargo Ship (>400 GT)	20	Transit NSR or NWP	7-14 days	210-420 kg
Cargo Ship	20	Destination (Remote Mining Sites, Resupply Arctic villages/towns)	5-10 days	150-300 kg
Research Vessel (>400 GT)	25-50	Destination (Research Station)	10-30 days	375-2250 kg
Fishing Vessels (Individual pot or trawl)	6-8	Destination (Fishing Grounds/Banks)	5-10 days	45-120 kg
O & G Exploration/Offshore	10-15	Destination (Drilling Sites)	7-14 days	105-315 kg

Support Vessels (OSV)				
Cruise Ship (Passenger Vessel)	15-3000	Destination (Remote villages/coastal areas/fjords)	7-15 days	210-90,000 kg
Cruise Ship (Passenger Vessel)	15-3000	Transit NSR or NWP (with possible stops/port calls)	15-30 days	450-180,000 kg

*Available guidance on shipboard waste management is from [ISO 21070, International Standard for shipboard waste management \(2011\)](#). The average waste generation on most commercial vessels (except cruise ships) is approximately 1.5 kg/person/per day. For cruise ships the estimate is somewhat higher for passengers at approximately 2.0 kg/person/per day.

As shipping data become available, or as a formal RA are developed or ship Master develops a voyage plan, it will only be necessary to determine the type, number of persons on-board, route and duration of the voyage to determine the amount(s) of waste generated and the on-board storage needs and the capacity needs of the RSWRC or the first port of call after leaving Arctic waters.

10. Identification of the specific types of ships in the Arctic

10.1 Different types of ships in the Arctic will generate different types and quantities of operational wastes and residues, all of which are prohibited from discharge into Arctic waters. For a specific bi-lateral or multi-lateral RA the type of ship(s) must be clearly identified and should use the methodology outlined in the example above or other recognized calculations (for other MARPOL wastes) to determine the needs of the ship and the storage capacities that will be required. For Arctic voyages, ships should be designed for voyages of longer duration and with adequate storage space for all wastes generated.

10.2 For single voyages to or transiting the Arctic Ocean, between ports or countries within or outside Arctic regions, whether an RA is in place or not, the MASTER should carefully consider all aspects of the voyage and the voyage plan and should consider all aspects of the ship waste management plan to ensure that adequate waste storage space is available the entire voyage.

11. Voyage Patterns

11.1 Studies have been undertaken by PAME and others to identify both international and domestic shipping patterns in Arctic and near-Arctic waters. Figure 3 shows the western portion of the Northern Sea Route and the waters between Norway and Svalbard and around Greenland, Iceland and the Davis Strait. Much of this area tends to be ice free and navigable year round due to the effect of the Gulf Stream. Significant ship traffic in these areas include

fishing vessels, research vessels (scientific survey), oil and gas survey/seismic vessels, offshore support vessels (OSV), cargo vessels to and from mining operations and offshore oil and gas facilities. The waters between eastern Russia and US/Alaska have seen less traffic (approximate annual transits average between 200 and 400 vessels of various types in recent years) due to significant seasonal ice buildup in the Bering (Including the Bering Strait), Chukchi, Beaufort and East Siberian Seas.

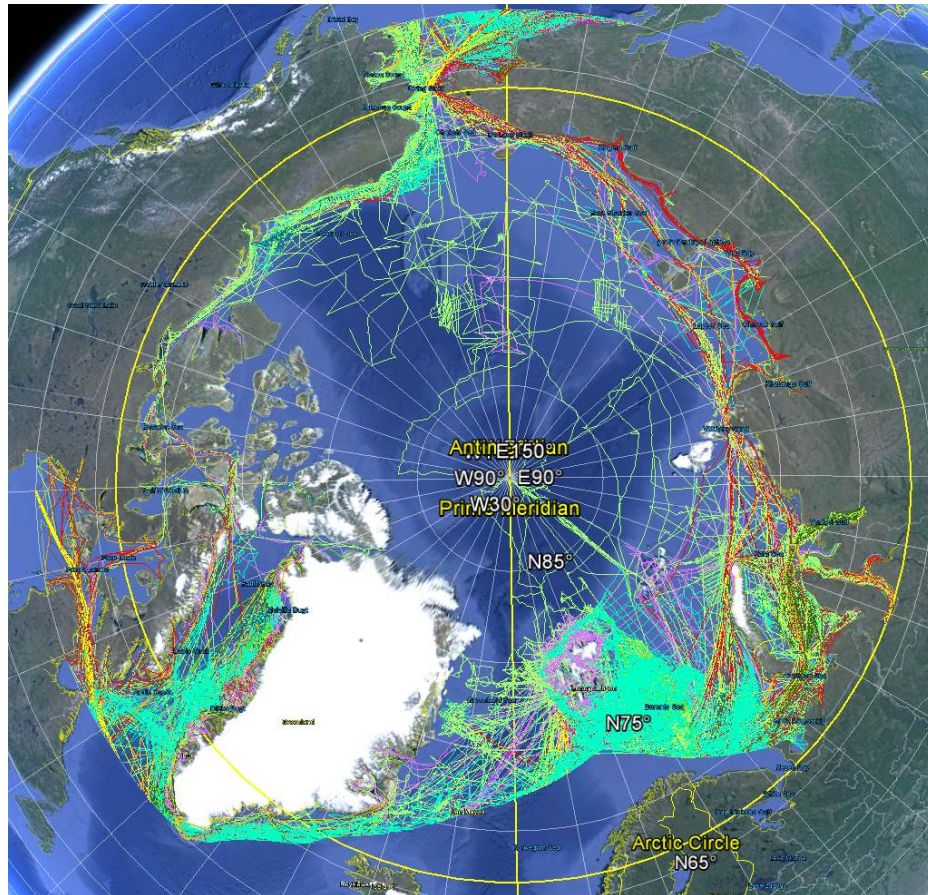


Fig 2. Ship traffic in the Arctic and near-Arctic from Accumulated 2012-2013 Legend: Green-low, yellow-medium, red-high traffic routes/voyages. (Courtesy The Norwegian Coastal Administration/DVN/WWF).

11.2 At the present time, very few cruise ships (either destination or transiting) have been documented (one transit in 2016).

11.3 A formal RA will be covered by a RRF and should include details of specific voyages to be undertaken along with all other required information, voyage plan, route, ports of call, identification of RSWRC either along the route, prior to entering Arctic waters or upon departing Arctic waters (i.e. last port of call or next port of call), and a detailed waste management plan for the ships covered under the RA/RRFP.

12. Additional Considerations

Quarantine waste disposal and other local requirements, including cultural impacts on native villages, especially those that depend on subsistence fishing and whaling, should be considered.

13. PRF in the Arctic and Near-Arctic

Many near Arctic ports, especially those in ice-free (year round or seasonal) areas presently in compliance with MARPOL PRF regulations and data is available in various formats. Most IMO member Arctic countries have uploaded data on Arctic and near-Arctic port into the IMO's Global Integrated Shipping Information System (GISIS) data base on Port Reception Facilities. Additional limited information on established Arctic and near-Arctic ports is also available from the "World Port Index", PUB 150 (US), and various on-line data bases such as World Port Source <http://www.worldportsource.com/ports/region.php>.

14. Identification of RSWRC

The RRFPP for a specific RA will identify appropriate RSWRC for specific voyages. If no PRF are available at any port along an intended route covered by the RRFPP for a specific RA, the RRFPP should include information regarding ports of departure and the first port of call for the ship upon leaving Arctic waters. The RRFPP should include particulars for ports, including capacity to accept all MARPOL wastes accumulating during the voyage through Arctic waters.

15. Ports with limited facilities in the Arctic

Some Arctic ports may have limited facilities and may only be ice free on a seasonal basis or may have very limited waste disposal and treatment facilities. Some ports may have no treatment facilities and may have limited storage and transport facilities. Such ports should be identified in an Arctic RRFPP for a specific RA.

16. Central point(s) of Contact for specific RA

While points of contact for both flag state and port state authorities are listed in the GISIS database, an RA should include a designated point of contact for all parties to the specific RA and this information should be listed in the RRFPP, and agreed to by all parties to the RA.

17. Other POC Functions

The central point of contact should be responsible for coordinating all relevant information and ensuring that the correct information is included in the GISIS PRF module. Additionally, the central point of contact may be called upon to respond to reports of inadequacy, especially at designated RSWRC and forward such information on reports of inadequacy to IMO, Port States and Flag States.

18. Lead government authority for RA

Parties to an RA should agree on and designate one government authority from one of the parties to a specific RA in the submitted RRFPP with all contact details.

19. Identification of stakeholder roles/responsibilities

Stakeholders should be clearly identified with contact information provided and should include but may not be limited to:

- Port State Authorities of a party to the RA
- Flag State Authorities of ships intending to follow routes covered by the RRFPP and the specific RA (these may include non-Arctic states)
- Specific Port Authorities for all ports of call along an intended route and for RSWRC at identified ports as noted in the RRFPP
- Ship owners/operators intending to use routes covered by the RRFPP and the specific RA

- Local, National and Regional environmental, maritime, safety and security and permitting authorities

20. Period of Review

An Arctic RRFPP for a specific RA should be reviewed as necessary (as determined by the Parties to the RA) and not less than every two years.

21. Consultants

The Parties to a specific RA should consult with all stakeholder and stakeholder may wish to engage expert consultants from industry on matters such a ship design, waste management, waste disposal technologies and operation of RSWRC.

Part 2 Consultation with MEPC on a Regional Reception Facilities Plan

22. Submission to MEPC

In accordance with the IMO RRFPP guidance, the draft RRFPP for a specific RA should be submitted by participating governments to MEPC for review and comment with detailed information as noted in the following section.

23. Submission Criteria

- .1 region clearly defined
- .2 compelling need
- .3 contributes positively to meeting MARPOL obligation
- .4 identified RSWRC
- .5 stakeholder roles
- .6 central point of contact nominated
- .7 period of review

24. Comments/report to committee

This proposal for an Arctic RRFPP submittal is intended to be used as a template and guidance for development of a specific RA submittal for consideration by MEPC.

25. Finalizing RRFPP

The parties to a specific RA, using the above template and format, should gather all relevant information for the final RRFPP, taking into account the review and comments provided by the Committee prior to implementation.

Part 3 Communication of Information

26. Article 11(1)(d) of MARPOL – Communicate to IMO

The RA is a formal document and should be transmitted to IMO.

27. Input the Data on PRF into GISIS

As noted above, the central point of contact should ensure that all relevant information is uploaded to the GISIS PRF module.

Part 4 Alleged inadequate PRF and RA reporting (MEPC.1Circ.834)

The most current guidance on reporting of inadequacies at PRF can be used by ship masters or ship owners, through their Flag State Authority to IMO. The same procedure can be used to report inadequacies at Port States party to an RA and operating under an RRFPP.***

ANNEX II

RRFP draft IMO Submission to a future IMO MEPC meeting



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MARINE ENVIRONMENT PROTECTION
COMMITTEE
NNth session Agenda item NN

MEPC NN/NN
dd Month YYYY Original: ENGLISH

MEPC Agenda Item Title

Regional Reception Facilities Plan (RRFP)-Outline and Planning Guide for the Arctic

**United States, Kingdom of Denmark, Iceland, Norway,
Sweden, Finland, Russian Federation, Canada**

SUMMARY

Executive summary: Based in part on resolution MEPC.221(63), this RRFP Outline and Planning Guide is meant to be used to develop and formalize a regional waste management approach for the Arctic and provide alternatives for managing ship's waste in compliance with existing MARPOL regulations. A draft Regional Reception Facilities Plan for use as a planning guide for an Arctic regional reception facility concept is presented for review and comment by the Committee

Strategic direction: 9

High-level action: 9.0.1

Planned output: 9.0.1.1

Action to be taken: Paragraph 9

Related document: MEPC 63/23, Res.MEPC199(62), MEPC 62/24

Background

1 IMO recognized the unique challenges that Small Island Developing States (SIDS) experience in providing adequate reception facilities for ships' waste in the *2000 Guidelines for ensuring the adequacy of port waste reception facilities* (resolution MEPC.83(44)).

2 As originally proposed, the concept of RA was meant to apply to certain small island States because of those States' unique circumstances and because such arrangements are

the only practical means to satisfy the requirement to ensure for the provision of adequate port reception facilities (PRF). This proposal applies the guidance in MEPC.221(63) to the unique challenges in Arctic region. Further, the concept of regional arrangements is encouraged as a possible alternative for ensuring adequacy of PRF under MARPOL Annex VI as reflected in the 2011 Guidelines (MEPC.199(62), 15 July 2011). It has been recognized by the Organization that waste management planning on a regional basis and the establishment of regional arrangements can provide an alternative solution for ensuring that ships do not have an incentive to discharge waste into the environment, including the atmosphere, and that ports and terminals within a region can meet the requirements of MARPOL Annex VI regulations.

3 The IMO Guidance on RA states that Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, “taking into account the guidelines developed by the Organization”, (Res. MEPC.221(63)) *2012 Guidelines for the Development of a Regional Reception Facilities Plan*. The guidance provide herein includes practical and workable solutions for managing operational wastes from ships which may include national, bi-lateral or multi-lateral RA or a combination of RA and RSWRC and innovative ship design. It also contains guidance on advanced waste management technologies for ships.

3.1 The concept of RA is encouraged as a possible alternative for ensuring adequacy of reception facilities under MARPOL Annex VI (Res.MEPC.199(62)). It has been recognized by IMO that waste management planning on a regional basis and the establishment of RA can provide an alternative solution for ensuring that ships do not have an incentive to discharge waste to the marine environment, including the atmosphere, and that ports and terminals within a regional can meet the requirements of MARPOL Annex VI regulations.

Unique circumstances in the Arctic Region

4 The following is a summary of the unique circumstances and challenges and benefits that have been identified by the Arctic Council’s Protection of the Arctic Marine Environment (PAME) Work Group for providing PRF in Arctic Ocean areas.

4.1 Challenges include:

- poor access due to insufficient or uncharted depths in channels from sea to ports or inadequate piers/terminals within a port or no port infrastructure to receive ships or wastes from ships at anchor;
- high costs of and difficulty in constructing new infrastructure due to remoteness or geological characteristics of the port;
- some countries have many small settlements spread out over a large geographical area.
- changing ice conditions which would prevent practical use or sighting of port reception facilities;
- landside environmental concerns regarding waste processing and disposal facilities for ship’s waste, due to permafrost, space limitations, community support, the ability of the domestic waste stream to accommodate the additional burden from ships, the availability and

capacity of local populations to staff the facilities, and the proximity to environmentally sensitive areas, protected habitats, designated refuges, or culturally sensitive areas;

- PRF in logistically challenging remote areas (seasonally or year round) or complete inability to operate at some PRF during winter months due to seasonal ice conditions; and,
- it may be prohibitively expensive for every Arctic port to receive ships' waste in an environmentally sound manner. Such excessive costs thus increase the cost to ship owners/operators and ultimately, to consumers. Indirect costs such as environmental risks or impacts on coastal communities will also need to be quantified and taken into consideration when assessing the viability of reception facilities. While equipment and technologies may generally exist for ultimate disposal of ships' wastes, it may be cost prohibitive to install such equipment and technologies in remote areas. Doing so may also create unacceptable risks in ecologically or culturally sensitive areas. In addition, for the foreseeable future, the number of ships calling on Arctic ports will remain relatively low, even with projected increases, which will further increase the cost of reception facilities per transfer of waste.

4.2 Benefits include:

- minimizing risks associated with waste disposal facilities located in remote regions or only seasonally operational;
- sharing of waste management resources, infrastructure costs, maintenance costs; and
- promoting viable reuse and recycling opportunities.

Application of the concept of Regional Reception Facilities for the Arctic Region

5 In 2006 PAME undertook a study, the Arctic Marine Shipping Assessment (AMSA), and identified, among other factors, a significant gap in information relating to Arctic ports and port infrastructure. By 2012 a further AMSA progress report by PAME's Shipping Expert Group (SEG) identified significant challenges facing Arctic ports and the development of port infrastructure associated with MARPOL Annex regulations requiring PRF adequate to meet the needs of ships calling at Arctic ports.

6 In order to meet this challenge PAME agreed that one novel approach to meeting PRF requirements in MARPOL could be to consider the concept of regional agreements for waste management and reception of MARPOL wastes at ports in Arctic and near-Arctic areas. Regional approaches may help solve some of the challenges unique to Arctic shipping and promote compliance with MARPOL and the Polar Code in the Arctic. PAME agreed to initiate a regional reception facilities expert correspondence group (RRF-EG) with an initial task to outline a work plan and terms of reference for an Arctic RRF/RA approach.

7 The PAME RRF-EG drafted the Arctic RRF Outline and Planning Guide document at Annex I, taking into account the RRF Guidelines.

8 In accordance with part 2 of the RRF Guidelines, the draft Arctic RRF Outline and guidance is presented in the annex to this document and submitted to MEPC NN for review and comment. IMO RRF Guidelines provide a list of suggested criteria that the

Committee may use to assist in its review (paragraph 23), and state that any substantive comments should be reflected in the report of the Committee.

9 The co-sponsors/supporters of this document represent all eight Arctic Council countries.

Action requested of the Committee

10 The Committee is invited to take note of the information in this document and review and comment as appropriate on the draft Regional Reception Facilities Plan Outline and Planning Guide for the Arctic Region as presented in the annex, and take appropriate action.
