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Amendments to the Regulations on environmental safety for ships and mobile offshore units

1. Introduction

The Norwegian Maritime Authority (NMA) has laid down amendments to the Regulations of 30 May 2012 No. 488 on environmental safety for ships and mobile offshore units.

The new rules include general amendments to the sewage provisions of sections 9 and 10 of the Environmental Safety Regulations and special provisions for the world heritage fjords. We lay down the same sulphur requirements as in emission control areas (ECAs) for the entire world heritage area, stricter requirements for NO_x emissions, prohibition against the discharge of sewage and grey water, requirement for an environmental instruction and prohibition against incineration of waste on board ships in the world heritage fjords.

2. Consultation

The proposed amendments were circulated for review from 4 June to 14 September 2018. In addition, the proposal was submitted to the EEA for review. Due to consultative comments, the Norwegian Maritime Authority considered it necessary to submit proposed amendments for review. This new consultation was circulated for review on 29 October 2018, with deadline for comments on 10 December 2018. Since the background was known, the deadline was set to six weeks. The new consultation was also submitted to the EEA for review, with deadline for comments on 6 February 2019. Both consultation processes resulted in a number of comments, which have been summarised in two matrices, both attached to this Circular.

3. Background

In 2005, the West Norwegian Fjords, i.e. the five fjords the Nærøysfjord, Aurlandsfjord, Geirangerfjord, Sunnlyvsfjord and Tafjord, were inscribed on UNESCO's World Heritage List. The two fjord districts, henceforth called the Geirangerfjord area and the Nærøysfjord area, are situated 120 km apart and are geologically speaking examples of classic fjord landscapes. They show how the landscape has evolved from the last ice age up until today. For the West Norwegian Fjords, the inscription is based on the fulfilment of two selection criteria: 1) natural beauty and 2) geology.

Norway are committed to ensuring that the world heritage site the West Norwegian Fjords is not exposed to harm or influences threatening the outstanding universal values that formed the basis for the inscription on the World Heritage List. World heritage sites shall have a high status in Norway, this is ascertained in Storting White Paper No. 35 (2012-2013); Future with foothold: "The Norwegian level of ambition for honouring the commitments laid down in the Convention is high: The preservation of

Norwegian world heritage areas shall be beacons for best practice for culture and nature management, cf. Storting White Paper No. 26 (2006-2007), The Government's Environmental Policy and the state of the Environment.”

In 2016, the Ministry of Climate and Environment assigned the Norwegian Maritime Authority (NMA), in close cooperation with relevant actors, the task of mapping emissions and discharges in Norwegian fjords with cruise traffic. The assignment was limited to the Geirangerfjord, Nærøyfjord and Aurlandsfjord. The NMA presented the results from the mapping in the report “*Discharges and emissions from ships in fjord areas with heavy cruise traffic*” of 5 May 2017. The results showed, *inter alia*, that the level of nitrogen oxides (NO_x) in the air is a periodic issue, depending on meteorological conditions and the number of ships. They also found instances of high levels of particulate matter (especially small particles) in the areas. In periods, the port calls also cause visual pollution in the form of visible smoke clouds consisting of particulate matter, NO_x, sulphur oxides (SO_x) and water vapour. In the report, a number of measures were proposed.

In a letter dated 28 June 2017, the Ministry of Climate and Environment asked that the NMA in line with these recommendations work towards implementing measures applicable to all commercial traffic in the world heritage fjords, both local and international traffic, by the end of 2018. In connection with this work, Menon Economics were commissioned to perform a socioeconomic analysis – *Report Socioeconomic analysis of environmental requirements for vessels in the world heritage fjords – Menon – Publication No. 3/18 by Simen Pedersen, Iselin Kjelsaas and Peter Aalen.*

The new rules include general amendments to the sewage provisions of sections 9 and 10 of the Environmental Safety Regulations and special provisions for the world heritage fjords. We lay down the same sulphur requirements as in emission control areas (ECAs) for the entire world heritage area, stricter requirements for NO_x emissions, prohibition against the discharge of sewage and grey water, regulations on the use of exhaust gas cleaning systems, requirement for an environmental instruction, prohibition against incineration of waste on board ships in the world heritage fjords and a limited power to grant exemption for ships which are protected or given status as historical by the Directorate for Cultural Heritage.

Legal basis for the regulatory amendments

Norway has the right to regulate its own territorial waters¹. The legal basis for the amendment provisions is sections 31 to 33 of the Ship Safety and Security, and the provisions are placed in the Environmental Safety Regulations². It is set out in the various provisions whether they are only applicable in the world heritage fjords. The world heritage fjords are defined in new section 10a third paragraph.

Comments on the provisions are specified below.

4. Comments on the provisions

Section 9 first paragraph

In section 9 first paragraph, we lay down an amendment to the wording to make it clearer that MARPOL's sewage regulations are only applicable from Lindesnes to the Swedish border (in Norwegian sea areas south of Lindesnes (N 57° 58'8 E 7° 3'4) to the dividing line between Norway and Denmark (N 57° 10'3 E 7° 3'4) and into the waters from the dividing line to the Swedish border). This means that ships of 400 gross tonnage and upwards or which are certified to carry more than 15 persons shall, as before, comply with MARPOL's regulations on sewage in these areas.

¹ United Nations Convention on the Law of the Sea, 10 December-1982 No. 1 Multilateral, adopted on 10 December 1982 and entered into force on 16 November 1994. Norway ratified the convention on 24 June 1996.

² Regulations of 30 May 2012 No. 488 on environmental safety for ships and mobile offshore units.

The amendment makes it clearer that the rules in MARPOL Annex IV regarding discharge of sewage apply only in Norwegian sea areas south of Lindesnes to the dividing line between Norway and Denmark and into the waters from the dividing line to the Swedish border. These rules set out that untreated sewage may only be discharged underway at a distance of more than 12 nautical miles from land.

For the remainder of the Norwegian coast, it is prohibited to discharge sewage into Norwegian sea areas closer than 300 metres from nearest mainland and islands for all ships, engaged on both domestic and foreign voyages, cf. section 10 second paragraph of the Environmental Safety Regulations. The provision does not entail an amendment of current law, and we have not received any comments on this.

Section 10 second paragraph second sentence

In section 10 second paragraph second sentence, we point out the reference to MARPOL in order to make it clear that discharge from sewage treatment plants satisfying the requirements of MARPOL Annex IV regulation 9.1 is not covered by the prohibition laid down in the first sentence. We have chosen this wording based on suggestions from the Norwegian Environment Agency. This provision does not entail an amendment of current law.

For ships with approved sewage treatment plants, the sewage is treated chemically or biologically and is considered neutral, and there are no restrictions as to where it may be discharged. The effluent shall not produce visible floating solids nor cause discolouration of the surrounding water, cf. MARPOL Annex IV regulation 11.1.2. Section 9 of the Environmental Regulations incorporates MARPOL Annex IV into Norwegian law. The Norwegian Bar Association proposes to repeat the prohibition contained in MARPOL Annex VI regulation 11.1.2 in the regulatory text, but this would lead to ambiguities has not been taken into account.

We hold on to terms used in other maritime regulations and do not take into account the Norwegian Environment Agency's suggestion to refer to sewage as "sanitary waste water". We have also explained the term "waterways" as "waters that are not sea". More information about this can be found in hearing matrix 1.

Some consultative statements, among others those from Carnival and Cruise Lines International Association (hereafter CLIA), call for sewage reception facilities. At present, there are no sewage reception facilities in the world heritage fjords. If reception facilities are established, it will be possible for the ships to deliver sewage there. Regardless of whether there are reception facilities or not, the companies still bear the responsibility for complying with the regulations. We have come to the conclusion that the operational pattern is so established that it will not be a problem for the vessels to comply with the sewage regulations in the world heritage fjords.

Details on the requirements for cleaning technology

We have received several comments regarding which requirements apply to sewage treatment plants. Scanship states the following: "We are a bit surprised that this is the desired approach, as Annex IV regulation 9.1 allows for simple treatment technology on older ships, which results in a not necessarily satisfactory treatment. As per today, there are no monitoring requirements in MARPOL IV. " According to Scanship, an acceptable approach to ensure control of discharges from sewage treatment plants needs to be considered. NCE Maritime CleanTech uses a similar argumentation.

Both Scanship and NCE Maritime CleanTech suggest that the same standard be introduced in Norwegian waters as in Alaska, and possibly as in the Baltic Sea Special Area. Carnival, among others, requests for clarification as to whether the world heritage fjords are intended to be a regime with requirements for the treatment of nitrogen and phosphorus similar to the ones applicable in the "Special Area".

The NMA points out that the Baltic Sea was designated a special area for sewage due to the major eutrophication issue, e.g. excessive loading of nutrients into the water bodies. This causes, among other things, algae bloom, oxygen depletion in the water, etc. The requirements for the Baltic Sea will take effect on 1 June 2019 for new ships and 1 June 2021 for existing ships. We have not considered introducing requirements for sewage emissions in the world heritage fjords like those that apply to “special area”, cf. MARPOL Annex IV regulation 1.6, cf. IV/11.3. We might consider this in the long term. We agree that the follow-up of sewage treatment plants has potential for improvement. We are working on a document for MEPC 74 proposing amendments to MARPOL Annex IV to allow better follow-up that the plants function as intended.

Grey water which has been treated in a sewage treatment plant, cf. MARPOL regulation IV/9.1.1

CLIA and Carnival ask for clarification of whether grey water treated in a sewage treatment plant as defined in MARPOL Annex IV regulation 9.1.1 is also exempt from the discharge provision of section 10 second paragraph first sentence:

“CLIA Europe proposes to include in SECTION 10, the following text: “For the purpose of this Regulation, “grey water” which is managed by a ship in accordance with MARPOL Annex IV, Regulation 9.1 is not considered “grey water”.

In our assessment, grey water which is treated in a type-approved sewage treatment plant in compliance with MARPOL Annex IV regulation 9.1.1 should no longer be considered grey water and fall under the exemption in section 10 second paragraph first sentence.

Section 10 third paragraph is repealed. This provision has been moved to section 9 and is somewhat reworded.

The current fourth and fifth paragraphs become third and fourth paragraphs.

Section 10a Special rules regarding discharge of sewage and grey water in the world heritage fjords

Section 10a first paragraph

Ships of 400 gross tonnage and upwards or which are certified to carry more than 15 persons are not allowed to discharge sewage into the world heritage fjords. This corresponds to the scope of application for the sewage regulations in MARPOL. The prohibition applies to ships engaged on both domestic and foreign voyages.

The reason for the prohibition is that the addition of sewage into fjords could have detrimental effects. Since the bodies of water in fjords are largely enclosed, the replacement of water is low, especially the deep water. This leads to long retention times and little renewal and outflow of substances being discharged from ships or land. The prohibition will contribute to reducing the discharge of sewage into the world heritage fjords and to increase the standing of the world heritage fjords. This rule will pose challenges to the local traffic in the world heritage fjords. Furthermore, stricter rules will incite the municipalities to establish sewage reception facilities. At present, there are no sewage reception facilities in the world heritage fjords.

Section 10a second paragraph

It is set out in section 10a second paragraph that ships of 2500 gross tonnage and upwards which are certified to carry more than 100 persons shall not be allowed to discharge grey water in the world heritage fjords.

Grey water means wash water from dishwashing, washbasins and other sinks, showers, laundry, bathtubs and similar. The definition has been taken from the guidelines for the implementation of MARPOL Annex V in resolution MEPC.219(63) paragraph 1.6.2.

The background for the prohibition is that discharge of grey water may lead to algae bloom and other damage to the natural environment. We assume that the recreational value will increase and that the

standing of the world heritage fjords will increase if the discharge of grey water is prevented. For the most part, cruise ships already have sewage cleaning systems or tanks for temporary retention of grey water installed, but we have little information as to how the smaller ships are equipped. We know that several ships have sewage cleaning systems that mix sewage and grey water, and for these ships, the regime for the discharge of sewage applies to the entire discharge.

Many of the consultative bodies are positive to this provision, for instance Viking Ocean Cruises, the municipality of Lærdal, the World Heritage Council for the West Norwegian Fjords, Zero and NCE Maritime CleanTech.

Scanship is positive about us imposing new requirements, but is nevertheless sceptical because the provision may have implications which have not been considered: "It is very positive that the NMA goes further than the IMO requirements, proposing a prohibition against grey water from ships of 2500 gross tonnage and upwards which are certified to carry more than 100 persons. Grey water represents up to 80% of the vessels' discharges to sea, and the material loads (kg/day organic material and particular matter to sea) could be 4 times higher for grey water than for black water. At the same time, we would like to stress that we are sceptical of the proposal as it is likely to have consequences which are currently not taken into account. As we understand this proposal, a possible consequence could be that ships are equipped with grey water tanks with larger capacity rather than on-board treatment solutions. Equipped with larger tanks, ships will be able choose to transport waste water to dumping areas outside the protected zone. This could cause unnecessary traffic and lead to concentrated emissions in the dumping areas."

The NMA would like to point out that cruise ships under construction or constructed in recent years are treating both sewage and grey water. We are not aware of ships building bigger tanks for grey water.

Tonnage limits

Additionally, we have received comments regarding the tonnage limit for grey water discharges set for ships of 2500 gross tonnage and upwards and certified for more than 100 persons.

The County Governor of Sogn og Fjordane and the County Governor of Hordaland write, among other things, that "in our opinion, this should be set lower so as to include the smaller tourist ships on the fjord, e.g. more than 30 persons."

The NMA refers to the fact that grey water discharges are related to the number of persons on board. It cannot be justified to impose the same requirements on smaller vessel as on cruise ships of 1000 or more passengers on board. We retain the provision as proposed.

Section 10a third paragraph

In section 10a third paragraph we have defined the term world heritage fjords. It is worth noting that the coordinates stated define the actual sea area constituting the world heritage fjords. In the application³ from when Norway applied for world heritage status for the world heritage fjords, the given coordinates drew up four lines. These lines covered a larger sea area than shown in the maps, and have followed the application and the subsequent adoption of the world heritage site the West Norwegian Fjords. In order to set out a correct delimitation we have stated the coordinates for the sea areas that constitute the world heritage fjords based on the maps included in the application.

Three maps showing the world heritage fjords are attached to this Circular.

Section 10a fourth paragraph

Section 10a fourth paragraph provides a legal basis for exemption from the rules regarding discharge of sewage in the world heritage fjords. Up until 2024, the Norwegian Maritime Authority may upon written

³ <http://whc.unesco.org/uploads/nominations/1195.pdf>

application grant a time-limited exemption during the adjustment period for ships running a regular service on a public contract and for ships offering an established fjord cruise service in the world heritage fjords. We are proposing the possibility for exemption in order to give companies on existing public contracts or with established businesses sufficient time to adapt to the new requirements. There are no reception facilities in the world heritage fjords, and the municipalities will need time to set up such facilities.

We have received a number of comments on this provision. Several see the need for such a legal basis for exemption.

Several consultative bodies, among others Scanship and Viking Ocean Cruises, believe that the power to grant exemptions must be limited. At the same time, CLIA and others have commented that the power to grant exemptions should be extended.

CLIA writes the following: «With regard to the time-limited permission possibly granted by the NMA per SECTION 10a for “established” cruise services, we have the understanding that no seagoing cruise ship with more than +/- 100 persons would fall under this definition. CLIA Europe therefore urges the NMA to also establish a similar procedure to other cruise ships, not being established cruise services. Based on the accompanying note this exemption process has been framed to ensure time for local communities to develop Port Reception Facilities.”

We have considered the comment from CLIA, but adhere to the provision stating that exemption may only be granted to ships running a regular service on a public contract and for ships offering an established fjord cruise service in the world heritage fjords. We do not provide for similar transitional rules for larger ships. We retain the provision as proposed.

Section 14b Special rules regarding emission of sulphur oxides (SO_x) from ships in the world heritage fjords

Section 14b includes special rules regarding emission of sulphur oxides (SO_x) from ships in the world heritage fjords. Ships in the world heritage fjords shall use either fuel with a low sulphur content, an approved closed loop exhaust gas cleaning system or an approved hybrid exhaust gas cleaning system in closed loop mode. Ships using an exhaust gas cleaning system to meet the sulphur requirement are required to use a device for reducing visible emissions to air.

The proposed regulation regarding emission of sulphur oxides in the world heritage fjords has changed during the work process. Originally, it was proposed that ships in the world heritage fjords should use either fuel with a sulphur content not exceeding 0.10% by weight or an approved exhaust gas cleaning system with a specified ratio. Following consultative statements from the consultation of 4 June, we proposed another regulation, which was circulated for review on 29 October 2018. The amended proposal implies prohibiting the use of exhaust gas cleaning systems as an equivalent solution to meeting the sulphur requirements in the world heritage fjords. This was intended to apply to both open loop, closed loop and hybrid exhaust gas cleaning systems.

Open loop exhaust gas cleaning systems reduce the sulphur emissions to air, but discharge acidic water to sea which contains sulphur and potentially ash, heavy metals and oil residues. Closed loop exhaust gas cleaning systems additionally remove sulphur oxides, but the wash water passes through the system several times, which results in a reduced volume. Furthermore, the water is treated by removing ash, heavy metals and oil residues as sludge, which must be disposed of at port reception facilities ashore. The wash water is stored in dedicated tanks on board, further treated if necessary, and may be discharged in open waters in compliance with the IMO's limit values. If the storage capacity is exceeded, limited amounts of wash water (bleed-off) may be discharged.

We have received a number of consultative comments on this provision.

Carnival requests that we reconsider our decision to prohibit the use of exhaust gas cleaning systems in the world heritage fjords and points out that the use of open loop exhaust gas cleaning systems involves less smoke than the use of closed loop exhaust gas cleaning systems. Carnival refers to the statement from the Norwegian Environment Agency and the proposal that the cruise industry should be requested to contribute to monitoring the water quality in the fjord arms before making a decision. Carnival points out that the exhaust gas is significantly worse when using MGO than when using heavy fuel oil (HFO) and exhaust gas cleaning systems (EGCS). Carnival points to the fact that they have a program for monitoring the wash water from their exhaust gas cleaning systems, and they believe that this wash water discharge does not have a significant or measurable impact on the world heritage fjords.

CLIA requests that we reconsider our proposal and explain the scientific basis. CLIA warns that the legislation could establish a dangerous precedent which could spread, and a prohibition against the use of exhaust gas cleaning systems would undermine the IMO and EU instruments. Further discussions may be found in matrix number 2.

MSC wants to use hybrid exhaust gas cleaning systems in closed mode and believes that such systems do not harm the environment: «Of particular concern, we see no basis to propose banning the use of hybrid EGCS systems that operate in closed loop mode. There is no scientific basis for such an unprecedented ban, and it would render essentially meaningless in Norway an overall technology investment by our Company alone of more than 100 million euro. In particular, we made investments per ship of several times the cost of open loop systems, so that our hybrid systems would be able to operate continuously, even in areas of unique environmental sensitivity, without discharging wastewater effluent. ... We do not see how the operation of these systems in any way risks the UNESCO World Heritage Site designation of the WHFs, nor do we believe that these systems result in any environmental harm, but rather provide significant environmental benefit. The alternative of utilising distillate fuels does not provide more environmentally effective solutions to the challenge of reducing SO_x and particulate matter emissions from ships. In most cases, EGCS systems operating in closed loop mode produce an emission stream that is of a higher quality than that produced by using ultra low sulphur marine fuels.”

The municipality of Stranda supports the proposal to prohibit the use of exhaust gas cleaning systems in the world heritage fjords. Cruise Norway and European Cruise Service AS, among others, support the prohibition against the use of open loop exhaust gas cleaning systems due to discharges to sea, but think that it should be allowed to use closed loop exhaust gas cleaning systems provided that the visibility of the exhaust gas satisfies specified criteria, and that the amount and visibility of the exhaust gas from ships using MGO is not exceeded.

The Norwegian Shipowners' Association (NSA) mainly supports the introduction of stricter environmental requirements in general and for ship traffic in the world heritage fjords in particular, but wants to allow closed loop exhaust gas cleaning systems: “We note that neither Rambøll’s report, the NEA’s report nor the NMA’s summary in the mentioned letter point to emissions or discharges from ships equipped with closed loop scrubbers as an environmental issue. In our opinion, there is thus no reason to prohibit the use of exhaust gas cleaning systems in closed mode. In their summary (“Pollution from ships in fjord areas with heavy cruise traffic, the Norwegian Maritime Authority”, 2 May 2017), Rambøll points out: “White smoke mainly consists of condensed water vapour, whereas grey/black or blueish colour indicates emission of soot/particles and non-burned hydrocarbons.” The Norwegian Environment Agency (NEA, cf. 2014/4539 dated 9 May 2018) evaluated the environmental effects of scrubber water discharge based on open loop systems, where sea water is mixed with exhaust gas and lead directly to sea. The NEA proposes to phase out and prohibit open loop scrubbers due to the risk of accumulation of heavy metals and high concentrations of PAH in closed fjords with limited circulation. However, the findings do not justify the use of closed loop systems.”

Norway supports and works actively in the IMO to put global measures in place. It takes a long time to implement international measures, and normally, these do not have retroactive effect. Due to the acute environmental problem in the world heritage fjords we consider it necessary to set special Norwegian requirements for these geographically restricted areas.

One of the main purposes of the world heritage fjords is to promote Norwegian nature, as untouched as possible. Large parts of the fjords are being marred by smoke from the ships, and the natural beauty of the fjord areas deteriorates. This happens regardless of whether the smoke is harmful to health, environmentally hazardous or not. The exceptional value of the world heritage fjords has been stressed. We have only limited knowledge of the damage potential of emissions and discharges from the exhaust gas cleaning systems, and we cannot exclude the possibility that certain substances, such as lead, mercury, nickel, copper, zinc, vanadium and benzo(a)pyrene, may accumulate in the innermost parts of the fjord arms, resulting in negative environmental effects in the threshold fjords over time. Visible smoke in the world heritage fjords must be reduced.

It is our conclusion that ships in the world heritage fjords shall either use fuel with a sulphur content not exceeding 0.10% by weight, an approved closed loop exhaust gas cleaning system or an approved hybrid exhaust gas cleaning system in closed loop mode. Ships using an exhaust gas cleaning system to meet the sulphur requirement are required to use a device for reducing visible emissions to air. We will not go deeper into the technical requirements of such a device, but assume that it will contribute to reducing visible smoke. There is no phase-in period for the installation of the device for reducing visible smoke. Ships which use an exhaust gas cleaning system to meet the sulphur requirements and do not have the relevant equipment must shift to marine gas oil (MGO) until such a device is in place and put into service.

The reason for this provision is largely based on the Norwegian Environment Agency's statement in a letter dated 9 May 2018 concerning environmental impacts of emissions and discharges from exhaust gas cleaning systems in the world heritage fjords. Their assessment concluded: «In our opinion, it is not very likely that the discharge of scrubber water results in acute toxic effects on the recipients. However, we cannot exclude the possibility that certain substances, such as lead, mercury, nickel, copper, zinc, vanadium and benzo(a)pyrene, may accumulate in the innermost parts of the fjord arms, resulting in negative environmental effects over time. All pollution is undesirable. The cruise industry is not a cogent reason for accepting deterioration of the water bodies in the world heritage fjords. In order for such activity to cause the least possible environmental damage, it is our opinion that open loop scrubbers should be phased out, and possibly banned, within a few years. For the time being, we think that the cruise industry should as a minimum contribute to monitoring the bodies of water in the innermost parts of the fjord arms. The monitoring should include the chemical state of sediments and biota with respect to the substances mentioned in this letter and any other relevant supporting parameters.”

Moreover, it is relevant to mention that other countries and ports have prohibited the use of open loop exhaust gas cleaning systems. These include the ports of California, Massachusetts, Belgium, Singapore, China and, most recently, Fujairah.

Supervision

Several consultative bodies have commented that older MGO-fuelled ships which are not equipped with modern cleaning technology emit highly visible black smoke in the world heritage fjords. The NMA will board ships emitting excessive smoke. Ships producing large amounts of smoke will be identified, and we will request the ships' environmental instruction, cf. section 14d.

Section 14c Special rules regarding emission of nitrogen oxides (NO_x) from ships in the world heritage fjords

In order to reduce the emissions of NO_x, we include a new provision in section 14c of the Environmental Safety Regulations on special rules regarding emissions of nitrogen oxides (NO_x) from ships of 1000 gross tonnage and upwards in the world heritage fjords.

Emissions of NO_x have been identified as a periodic issue in the world heritage fjords. Emissions of NO_x may be reduced by using SCR catalysts (Selective Catalytic Reduction) or by e.g. exhaust gas recirculation (ECR).

The new provision is based on the tiers set out in MARPOL Annex VI regulation 13, and the NMA states that the requirements be phased in as follows, regardless of year of construction:

- Tier I requirements to be satisfied within 1 January 2020
- Tier II requirements to be satisfied within 1 January 2022
- Tier III requirements to be satisfied within 1 January 2025.

Tonnage limit – ships covered by the provision

We have received several suggestions as to what should be the tonnage limit applicable to the special NO_x provisions for ships in the world heritage fjords.

On the one hand, the Norwegian Coastal Shipowners' Association emphasises that it would be more correct to set limits in terms of kilowatts, and that the tonnage limit should be increased from 1000 to 4000: "At present, vessels with an engine size below 749 kW are not covered by the current NO_x regime. These should be subject to the same legislation. In addition to engine size, the amount of gross tonnage covered by the Regulations should be increased. The Regulations propose 1000 GT. We are proposing to increase this limit to 4000 GT. In this way, most short sea shipping vessels that frequent these fjords would be exempt from the legislation."

On the other hand, Maritime Forum Norway argues that a lower limit of 1000 gross tonnage should not be set: "Related to the proposed requirements and introduction points for emissions of nitrogen oxides (NO_x), Maritime Forum Norway is of the opinion that there is no basis for delimiting the provisions to cover vessels over 1000 gross tonnage only. Emissions from smaller vessels navigating to and from cruise ships should not be exempt, nor should local ships and vessels on a regular service. In addition, emissions from such vessels should be reduced, and it tends to be easier for these vessels to comply with the requirements by making minor adjustments to the existing engine. The Norwegian maritime supplier industry delivers environmental technology adapted to ships of all sizes, and based on the large-scale investment in electrification of the ferry industry, the technology is also available for smaller vessels."

The County Governor of Sogn og Fjordane and the County Governor of Hordaland point out that: "By setting a limit of 1000 gross tonnage and upwards, nearly all the smaller local ships and vessels in regular service fall outside the scope, which was our intention as their contribution to NO_x emissions are of lesser importance in this connection. We believe the limit should be lower, because the emissions from a number of the small vessels are highly visible. The limit should also apply to all commercial ships/boats certified for more than 30 persons."

The NMA has registered that the vast majority of the NO_x emissions in the world heritage fjords derives from cruise ships. We proposed setting a limit of 1000 gross tonnage and upwards, and our intention was that nearly all the smaller local vessels and vessels in regular service would fall outside the scope. This is because the NO_x emissions from these ships are of lesser importance. The technical potential for retrofitting NO_x cleaning technology on existing machinery on board vessels of less than 1000 gross tonnage is, as far as we know, limited. The alternative is a shift to LNG or battery. There are big differences between the ships of this vessel group.

The NMA maintains that the provision applies to ships of 1000 gross tonnage and upwards in the world heritage fjords.

Phase-in of the NO_x provisions

The municipality of Lærdal, the municipality of Voss and Viking Ocean Cruises, among others, support stricter NO_x emission requirements and believe that the industry will have sufficient time to adapt to the new requirements.

The Norwegian Society for the Conservation of Nature, NCE Maritime CleanTech, Zero, Yara, the Norwegian Environment Agency and others propose to accelerate the requirements for phasing in the NO_x regulations.

Carnival, CLIA, Royal Caribbean Cruise Line (RCL), MSC, European Cruise Service AS and Maritime Forum Norway, among others, suggest to postpone the phase-in regime. Carnival points out a number of challenges related to the phase-in of the NO_x provisions. "This is a very significant and onerous set of requirements. For Carnival it would mean that a number of ships that are already planned to visit the WHF would be unable to enter the WHF and therefore may decide to leave Norway altogether. A number of ships that are currently employed in the WHF would be required to leave by 2020, and the majority that are visiting today would be unable to continue after 2022. ... Today none of our ships can meet the Tier III requirements except those that operate on LNG. From discussions with OEMS we do not believe that it will be possible to upgrade existing engines to meet the higher tier requirements leaving only abatement technology as a means to achieve this. This is extremely challenging to do when combined with SO_x removal."

The NMA points out that Norway has the right to regulate its own territorial waters. The provisions are applicable in a geographically limited area. We are aware of the consequences of the provisions. As from 2019, the cruise industry has three years to adapt to the Tier II requirements and another three years to adapt to the Tier III requirements. The supplier industry can retrofit Selective Catalytic Reduction (SCR) in order to reduce the emissions of NO_x and comply with the Tier III requirements. We expect several suppliers to come up with solutions during this period. The cruise industry represented by CLIA, Carnival and MSC has been informed of and involved in the process since 2016/2017. The Tier II requirements were set by the IMO in 2000, and many engines can be upgraded to meet these requirements.

Norway supports and works actively in the IMO to put global measures in place. It takes a long time to implement international measures, and normally, these do not have retroactive effect. Due to the acute environmental problem in the world heritage fjords, special regulations of the Norwegian world heritage fjords is considered necessary.

Access to equipment and equipment installation will necessarily take some time. Besides, NO_x treatment systems are still a relatively new technology. We have considered which requirements are justifiable and realistic and believe that the phase-in schedule balances the environmental interest and what is feasible for the companies.

Accelerating compliance with the Tier III requirements as a condition for exemption

We have taken into account comments received from the Confederation of Norwegian Enterprise, the Norwegian Hospitality Association, the Federation of Norwegian Coastal Shipping, the Norwegian Shipowners' Association and Hurtigruten, among others, and are setting up a possibility for exemption from the NO_x requirements stipulated in section 14c second paragraph.

A ship may be granted exemption from the NO_x requirements set out in MARPOL, if it can be documented that the ship will comply with the Tier III requirements not later than 1 January 2022. Such an acceleration of the Tier III requirements is a condition for granting exemption. Exemption may be granted to the individual ship upon application. The company must document how the ship will proceed to comply with the Tier III requirements not later than 1 January 2022. In an application for exemption the company must describe what kind of technology the ship will utilise in order to satisfy the Tier III requirements, including a detailed modification plan, and relevant signed contracts for the execution of the modification. When the modification is completed, the company must submit a copy of a new EIAPP certificate or a measurement report from a qualified actor to the NMA.

Section 14d Requirement for environmental instruction for ships of 10,000 gross tonnage and upwards sailing in the world heritage fjords

Ships of 10,000 gross tonnage and upwards sailing in the world heritage fjords shall have an environmental instruction specially adapted to operation in these areas. The environmental instruction shall ensure that the ship is operated as environmentally friendly as possible through technical and operational measures and crew training. The provision stipulates minimum requirements for the content of the instruction.

We have not been able to solve all challenges related to smoke and particles with concrete technical requirements in the Regulations. By requiring ships of 10,000 gross tonnage and upwards sailing in the world heritage fjords to have an environmental instruction, we will be able to register operational conditions and ensure that the ships operate as environmentally friendly as possible in the world heritage fjords. The companies are responsible of providing an environmental instruction for the individual ship operating in the world heritage fjords. The NMA may request to be sent the information. The instruction will also be requested during supervision.

Several consultative bodies support the introduction of an environmental instruction, and we have received constructive feedback.

Carnival and RCL state that the environmental instruction can be included in their security management system (SMS).

Tonnage limit – ships required to have an environmental instruction

It is the opinion of the County Governors of Sogn og Fjordane and Hordaland, the municipality of Aurland, the municipality of Lærdal, the management authority for the Nærøyfjord and the World Heritage Council for the West Norwegian Fjords, among others, that the environmental instruction should be introduced for all commercial ship traffic in the world heritage fjords.

In the NMA' opinion, there is no use in introducing the requirement for an environmental instruction for smaller vessels, as there is not much smaller vessel can do to change the operational pattern. Therefore, we retain the limit of 10,000 gross tonnage and upwards. As regards the comment that noise and waves should be included in the instruction, we refer to the fact that waves are connected to speed, and this falls under the responsibility of the Ministry of Transport and Communications and the Norwegian Coastal Administration.

Section 14e Special rules regarding incineration of waste on board ships in the world heritage fjords

In section 14e, we lay down a prohibition against incineration of waste on board ships in the world heritage fjords.

This is based on the fact that we wish to reduce smoke pollution in the world heritage fjords, both from ships underway and ships at berth or anchor in a port area. Both voyages and stays in the world heritage fjords are relatively short. We believe it is unproblematic for ships to defer the incineration of waste until they leave the world heritage fjords. Another option is to deliver waste ashore.

Carnival supports this provision and has already established this practice. Support is also provided by Cruise Norway.

Section 14f Special rules on ships in the world heritage fjords which are protected or given status as historical by the Directorate for Cultural Heritage

We take the comments from the Directorate for Cultural Heritage and the Norwegian Ship Preservation Association into account and introduce a limited power to grant exemption for ships which are protected or given status as historical by the Directorate for Cultural Heritage. The Norwegian Maritime Authority may upon written application grant exemption from the requirements of sections 10a, 14b and 14c for ships which are protected or given status as historical by the Directorate for Cultural Heritage. When

considering whether an exemption may be granted, emphasis is placed on whether the implementation of the requirements may interfere with the historical importance of the ship, whether the ship has a historical affiliation with the world heritage fjords, and the purpose of the special regulation of the world heritage fjords. It follows from general administrative law that special conditions may be established for such exemptions.

The Norwegian ambition is to preserve the Norwegian world heritage sites to be beacons for best practice for nature and culture management, cf. Storting White Paper No. 26 (2006-2007), "The Government's Environmental Policy and the state of the Environment". Moreover, this suggests that vessels which are protected or given status as historical will be included as a natural part of the Norwegian cultural heritage conservation and as a natural element of the same cultural landscape as the world heritage fjords seek to represent. At this point, we provide a safety measure to ensure that protected and historical vessels which historically belong to these areas still have the opportunity to operate in the world heritage fjords. An important historical dimension is thus preserved. This complies with the objective of creating wealth by this cultural heritage, as provided in the Storting White Paper No. 16 (2004-2005) "Living with cultural heritage".

Other

National requirements

A number of the consultative bodies propose that the requirements laid down for the world heritage fjords should apply to all Norwegian waters to increase the environmental impact. They also point to the risk of distortion of competition and the fact the cruise ship traffic will move from the world heritage fjords to other ports.

The NMA has considered the need in the world heritage fjords only.

Ban on heavy fuel oil

Hurtigruten is among several who have proposed a total ban on heavy fuel oil along the entire coast of Norway. The municipality of Lærdal, the municipality of Voss, Zero and the World Heritage Council for the West Norwegian Fjords propose a ban on the use of heavy fuel oil in the world heritage fjords and a ban on having heavy fuel oil in the tanks when sailing in the world heritage fjords.

The NMA has assessed the need for regulation of the world heritage fjords and, as mentioned above, a prohibition against heavy fuel oil was considered. A special regulation of Norwegian waters outside the world heritage fjords was not considered.

Parliamentary resolution

Furthermore, we have received a number of comments regarding the parliamentary resolution No. 672, in which the Storting decided that "the Government shall implement requirements and regulations for emissions and discharges from cruise ships and other vessels in tourist fjords and other suitable measures to ensure the phasing-in of low- and zero-emission solutions in the shipping industry until 2030, including a requirement for zero emissions from tourist ships and ferries in the world heritage fjords as soon as feasible and no later than 2026".

This parliamentary resolution falls outside of the NMA's mandate for this assignment.

5. Economic and administrative consequences

We have laid down some general provisions on sewage in sections 9 and 10. In addition, we have laid down special provisions which apply to ships sailing in and out of the world heritage fjords and to vessels sailing exclusively within the world heritage fjords. The special provisions for the world heritage fjords will entail changes and a need to adjust for the cruise industry and local industry players. There are many considerations to balance. Some of the provisions are connected with tonnage limits, others are not. We have tried to weigh the considerations for reducing emissions to air and discharges to sea and the value of the world heritage status against the available cleaning technology for ships, as well as the

consideration for industry players and tourism. The value of the various considerations was to a certain extent inevitably approximate. It is harder to estimate the value of a cleaner fjord and cleaner air than to calculate lost tourism income. We have laid down a number of provisions which we believe will collectively contribute to meeting the goal of conserving our world heritage fjords and reducing emissions and discharges and visible smoke.

Section 9 first paragraph

This is a clarification of the sewage provisions and restructuring of the provision. This does not entail an amendment of current law.

Section 10 second paragraph second sentence

In section 10 second paragraph second sentence, we emphasise the reference to MARPOL in order to make it clear that discharge from sewage treatment plants that satisfy the requirements of MARPOL Annex IV regulation 9.1 is not covered by the prohibition laid down in the first sentence. This does not entail an amendment of current law.

Section 10a first paragraph regarding discharge of sewage in the world heritage fjords

We lay down the provision stating that for ships of 400 gross tonnage and upwards or which are certified to carry more than 15 persons it is not allowed to discharge sewage in the world heritage fjords.

For cruise ships, the financial implications of the provision are considered minor, as most of these already have approved cleaning systems for sewage installed.

For smaller local vessels and ferries, the provision will have financial consequences, as some of these have tanks for retaining sewage, whereas others do not. The vessels which up until now have been allowed to discharge sewage in the fjord 300 metres from nearest land, will now have to deliver sewage to land or go further out in the world heritage fjords to discharge it. We are proposing to set up an exemption possibility for these vessels, which will give them the possibility to adapt to the new requirements. The Norwegian Maritime Authority may upon written application up until 2024 grant a time-limited permission to discharge sewage in the world heritage fjords to ships running a regular service on a public contract and to ships offering an established fjord cruise service. We are proposing the possibility for exemption to ensure the industry time to adjust. There will be a need to establish reception facilities ashore, which is the municipalities' responsibility. One alternative is to collect the sewage by a pump truck.

Section 10a regarding discharge of grey water in the world heritage fjords

It is set out in section 10a second paragraph that for ships of 2500 gross tonnage and upwards certified to carry more than 100 persons, it is not allowed to discharge grey water in the world heritage fjords. The administrative and financial costs associated with the proposal are assumed to be small.

Section 10a fourth paragraph on exemption

We are setting up an exemption possibility in order to provide companies on existing public contracts or with established businesses with sufficient time to adapt to the new requirements. Moreover, there are no reception facilities in the world heritage fjords, and the municipalities will need time to set up such facilities. As regards contracts for regular service permits for ferries in the Geirangerfjord area, the county of Møre og Romsdal has confirmed that new permits will be effective from 2022. In the Nærøyfjord area, no ferries are operated by the county, but there are commercial ferries with regular service permits. The county of Sogn og Fjordane has reached an agreement on a high-speed craft operating regular services between Bergen and Flåm from May to September. The contract will expire on 30 April 2022, and new tenders will be called in November 2019. From a socio-economic perspective, it is fortunate that the less established actors have time to adapt to the new provision.

Section 14b Special rules regarding emission of sulphur oxides (SO_x) from ships in the world heritage fjords

In two reports from Rambøll and Menon, it has been documented that the cruise ships are largely responsible for the SO_x emissions in the world heritage fjords. On page 6 of their report, Menon states that “cruise ships operating in the world heritage fjords in 2017 were responsible for approximately over 90% of the SO_x emissions in the fjords”.

The world heritage status warrants laying down equivalent requirements in the Geirangerfjord area as within the North Sea ECA. Up until now, it has been legal to use heavy fuel oil without any form of treatment in the Geirangerfjord area. The consideration for air quality and public health points towards making the requirements for sulphur emissions in the Geirangerfjord area more stringent. Additionally, the world heritage status warrants imposing further restrictions on discharges to sea to prevent potential accumulation of heavy metals in the world heritage fjords, both the Geirangerfjord area and the Nærøyfjord area, as these are threshold fjords with limited water exchange.

Ships may either use fuel with a sulphur content not exceeding 0.10% by weight, or have an approved closed loop exhaust gas cleaning system or an approved hybrid exhaust gas cleaning system in closed loop mode. Ships using an exhaust gas cleaning system to meet the sulphur requirement are required to use a device for reducing visible emissions to air.

Open loop exhaust gas cleaning systems

The use of open loop exhaust gas cleaning systems in the world heritage fjords is prohibited. For the cruise ships, it will be an inconvenience not be allowed to use their open loop exhaust gas cleaning systems in the world heritage fjords. According to the Menon report p. 7, “converting a scrubber system from open to closed loop is likely to be so expensive that it is not an actual alternative”. Consequently, the “cruise companies which own ships with open loop scrubber systems are thus faced with the option of switching to a low sulphur fuel, reemploying vessels in their own fleet, or visiting other destinations» (Menon p. 7). If the ships choose to switch to a fuel which satisfies the sulphur requirements (MGO), they will face increased operational costs.

Menon writes the following about socioeconomic consequences and uncertainty:

“The effect of scrubber water discharge over time is not known, but based on the components of scrubber water, there is reason to believe it will have a negative environmental impact. Our analysis suggests that the requirements for discharge of wash water from the scrubbers will imply that a significant percentage of those who are fitted with open loop scrubber systems, i.e. approximately 45% of the cruise ships, will either reemploy vessels in their own fleet, move their activity to other Norwegian fjords or switch to a low sulphur fuel. Switching to a low sulphur fuel will result in reduced discharge of wash water from scrubbers in the world heritage fjords. Moving cruise activity to other Norwegian fjords would imply that the discharge of wash water from the scrubbers would spread over a larger geographical area, and the discharge concentrations would be lower. It can therefore be argued that both response scenarios, switching to low sulphur fuels and moving cruise activity to other Norwegian fjords, provide an environmental benefit. Still, it is uncertain to what extent changes in the vessel traffic and the use of scrubbers could have an impact on, among other things, the amount of particles released. When estimating the socioeconomic costs, the costs of the cruise companies are not taken into account. Furthermore, we do not expect Norway’s tourism revenues to be affected by a shift in cruise tourism from the world heritage fjords to other Norwegian fjords. The capacity is likely to be sufficient in other fjords, so that the shipping companies will choose this alternative rather than winding up their activity in Norway. We thus expect that requirements for discharge of wash water from the scrubbers will be of socioeconomic benefit. This may suggest that the identified beneficial effects are greater than we have assumed, particularly the effect of “increased standing”. If so, it will only strengthen the robustness of the conclusion that this measure is socioeconomically beneficial.”

We stress the fact that both voyages and stays in the world heritage fjords are relatively short, and we therefore assume that the use of low sulphur fuel instead of heavy fuel oil will imply limited and manageable costs for the companies. From a socio-economic perspective, we believe it is justifiable to prohibit the use of open loop exhaust gas cleaning systems.

Closed loop exhaust gas cleaning systems and hybrid exhaust gas cleaning system in closed loop mode
Ships choosing to use an exhaust gas cleaning system to meet the sulphur requirement are required to use a device for reducing visible emissions to air. The installation of such devices will entail costs for the companies.

The requirement to remove water vapour from scrubbers is discussed in the Menon report p. 6: “Based on information from Cruise Lines International Association (CLIA) and the cruise company Carnival, we expect 60 to 70% of the world’s cruise ships to be fitted with scrubbers by 2020. There is no reason to believe that the percentage of ships with scrubbers is different in the world heritage fjords.

If the use of scrubbers leads to emissions of water vapour, the water vapour must be removed. Cruise ships with scrubbers emitting water vapour will either have to switch to fuel with a lower sulphur content or invest in systems which remove water vapour from the scrubber. In total, this investment cost has been estimated at less than 50–60 million NOK. Increased use of low sulphur fuel or installation of new systems may require increased operational and maintenance costs on the ships in question. When estimating socioeconomic costs of Norway, the cruise companies’ operational or investments costs are in principle not included. The reason for this methodical choice is that the cruise industry’s activity is not place-bound to Norway, and that they can move their operations to cruise destinations in other countries. Local traffic, such as car ferries and passenger boats, uses low sulphur fuels with a sulphur content of 0.10% and will most likely not be affected by the measure.”

Menon writes the following about socioeconomic consequences and uncertainty: “The value of reduced sulphur emissions as a result of the measure is assumed to be small. This is due to the fact that most cruise ships currently operate with a sulphur content of 1.10% or less in the world heritage fjords. This argument is strengthened by the fact that the overall sulphur emissions from the cruise ships are expected to decrease during the analysis period.

Removing visible water vapour from some cruise ships may contribute to improving the aesthetic experience for residents of the areas in question and tourists visiting Flåm and Geiranger. The measure may also contribute to increasing the standing of these areas in the future. Moreover, cruise ships emitting visible water vapour may choose a destination shift from Flåm and Geiranger to other Norwegian fjords. However, it is uncertain to what extent such a change would be triggered by the measure.”

Menon concludes that the measure of removing water vapour from scrubbers is socioeconomically beneficial.

On the one hand, we point out that installing a device for reducing visible smoke will have financial implications for the industry. On the other hand, the provision will have a positive impact on the standing of the world heritage fjords, and less visible smoke improve the aesthetic experience of tourists and residents of the world heritage fjords.

We believe that the socioeconomic benefits outweigh the costs.

Section 14c Special rules regarding emission of nitrogen oxides (NO_x) from ships in the world heritage fjords

We set a gradual phase-in of requirements for maximum NO_x emissions from ships in the world heritages fjords. There will be high costs related to stricter requirements for NO_x emissions. According to the Menon report p. 44, the consequences for the companies will be as follows: “However, companies with ships not satisfying the requirements nor expected to do so within the year in question, will face a choice whether to convert the ship, reemploy vessels within the fleet, visit another Norwegian fjord or to drop

Norway as a cruise destination. [...] In one of the interviews we have carried out, the conversion cost for converting to LNG technology (Tier III) was estimated to around 1 million NOK per megawatt, which in practice means investments of between 50 and 100 million NOK.

The proposed stricter requirements for NO_x emissions will also have socioeconomic consequences. Menon has estimated that the proposals will result in a loss of 250 million NOK over five years, divided between three destinations. Furthermore, Menon writes on p. 4: “Dialogue with the cruise industry suggests that the investment costs related to adapting ships not currently satisfying the requirements are high, especially for adaptation to Tier III. The value of adapting to Tier II is also limited since the Tier III requirement will enter into force only five years later. Based on these assessments, and the fact that each of the cruise ships visits the world heritage fjords a limited amount of times per year, there is reason to believe that the requirements for max. NO_x emissions will have little triggering effect on NO_x reducing adaptations of the ships, which would not have taken place in the null alternative. This is supported by the fact that several industry players have commented that it is not very likely that they will invest in larger conversions of ships or engine to adapt to individual destinations. Based on this, we believe that the cruise companies likely response will be to partly reemploy vessels in their own fleet, partly visit other Norwegian fjords and partly redirect the cruise to a destination in another country. Car ferries and smaller passenger vessels are expected to be forced to adapt to the requirements, among other things because they, to a larger degree than cruise ships, are place-bound. The adaptation is expected to occur by earlier replacement of older vessels.”

On p. 5, Menon continues: “We expect that the measure will result in a percentage of the cruise ships choosing to no longer visit Norway and that there will thus be fewer cruise ship tourists visiting Norway. This loss is estimated at a current value of 250 million NOK. The preconditions forming the basis of the estimation are described in detail in the report. The loss may be reduced if a percentage of the lost cruise ship tourists choose to travel to Norway in other ways. We also expect the cruise ship activity to Flåm and Geiranger to be reduced at the expense of increased activity in other Norwegian fjords. The destinations Olden/Loen, Skjolden and Åndalsnes, among others, are likely alternatives. This distortion does not represent a socioeconomic loss, but an allocative effect of the measure. Beyond lost tourism income, the measure will involve increased costs related to faster replacement of car ferries and smaller passenger vessels. The costs related to faster replacement of car ferries is expected to amount to 71 million NOK. The measure could also have negative implications for certain industry players.”

With regard to positive effects of NO_x reductions, Menon writes the following: “The value of reduced overall NO_x emissions from cruise ships, car ferries and smaller passenger vessels in Norway is estimated to have an overall socioeconomic value of 71 million NOK. Faster replacement and renewal of car ferries and smaller passenger vessels will also lead to reduced emissions of CO₂ and lower operational costs. These effects are valued at 15 and 20 million NOK respectively. We do not expect that the measure will trigger faster renewal of cruise ships or to affect their overall emissions of CO₂. Beyond this, it is expected that the measure will eliminate the number of days where the concentrations of NO_x and particle matter in the world heritage fjords are detrimental to health. We expect that the measure will have a positive health-related effect, mainly for at-risk permanent residents in the areas in question. However, it is uncertain whether the measure could cause negative health-related effects in other Norwegian fjords expected to see increased cruise tourism. The measure is also expected to have a positive impact on the standing of Norwegian fjords as travel destination, but it is uncertain how large the effect will be.”

The special rules regarding emission of nitrogen oxides (NO_x) from ships in the world heritage fjords are ambitious and demanding. Nevertheless, we believe that the requirements are realistic and sufficiently predictable for the industry. A number of considerations have been weighed. We believe that the socioeconomic benefits outweigh the costs.

Section 14c second paragraph – possibility of exemption from the NO_x requirements

The NMA may upon written application from a company grant exemption for a ship from the Tier I requirements set out in MARPOL Annex VI regulation 13, if it can be documented that the ship will comply with the Tier III requirements not later than 1 January 2022. This provision was desired by the industry and will have positive implications by making it easier for ships to satisfy the Tier III requirements at an earlier date.

Section 14d Environmental instruction for ships of 10,000 gross tonnage and upwards sailing in the world heritage fjords

In the opinion of the NMA, this provision will entail only minor administrative costs for the companies. The requirement for a separate environmental instruction for the world heritage fjords was introduced to raise the industry's awareness and ensure that each ship is operated as environmentally-friendly as possible. We believe that the socioeconomic benefits outweigh the costs.

Section 14e Special rules regarding incineration of waste on board ships in the world heritage fjords

It is the NMA's opinion that this provision has no financial implications. Both voyages and stays in the world heritage fjords are relatively short. We believe it is unproblematic for ships to defer the incineration of waste until they have left the world heritage fjords. Another option is to deliver waste ashore.

Section 14f Special rules on ships in the world heritage fjords which are protected or given status as historical by the Directorate for Cultural Heritage

It is the NMA's opinion that the limited power to grant exemptions has no financial implications. There are relatively few protected ships in Norway. Of a total of approx. 250 protected vessels, 54 hold a passenger certificate.

Summary

The provisions are, both individually and collectively, assumed to contribute to a cleaner environment in the world heritage fjords. The provisions may have some negative implications for the shipping industry, yet the advantages are expected to outweigh the disadvantages.

6. Attachments

Regulation concerning amendments to Regulations of 30 May 2012 No. 488 on environmental safety for ships and mobile offshore units

Matrix 1 – resulting from the consultation of 4 June 2018

Matrix 2 – resulting from the consultation of 29 October 2018

Map showing the world heritage fjords

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This document has been electronically approved, and therefore does not contain handwritten signatures.