PAME I-2020: Annex I to Agenda item 6.2(c)

Submissions received on the interpretation of the Polar Code

As of 17 January 2020, submissions have been made by the following states; Denmark, UK, USA, Iceland, the Russian Federation, Poland, Canada and Spain. Two submissions have been received from Spain; both are included in the overview.

1. The relationship between ship category, ice/polar class, ice conditions and POLARIS as a decision support tool

Norway

Even if the ice/polar class assigned to the ship is part of the decision on the category of the ship, it is not the only parameter.

During the development of the Polar Code, some requirements were specifically linked to the category as defined in the Polar Code.

Although, some capacities of the ship, such as ice strengthening, may permit operation in more severe ice conditions than given in the definitions of the ship category, the ship is not allowed to operate in ice conditions more severe than given by the definition of the ship's category. The reason for this is that there are not only the separate capacities of the ship that will give the category, but the ship must adhere to all regulations for the category. For example, a category C ship is not allowed to operate in ice conditions defined for a category B ship although the ship is built with a Baltic ice class that allows for operation in ice conditions corresponding to first-year ice up to 1-meter thickness in the Baltic sea.

Further, the result of POLARIS or similar acceptable tools may result in more serve ice conditions than given in the definitions of ship category. POLARIS shall only be used as a decision support tool on board and is not involved in deciding the ship category. The ship category is a result of the ice class assigned to the ship and the compliance with all requirements related to the category.

A category A ship shall be built with IACS polar class 1-5. A category B ship shall be built with IACS polar class 6-7. A category C ship may be built with a lower ice class than IACS polar 7, as a Baltic ice class or without an ice class. Other standards offering an equivalent level of safety may be used on a case-by-case evaluation. Only ships intended to operate exclusively in ice free waters may be built without any ice class.

Spain

Currently Spain only has one certified ship, as a result, the Spanish experience with POLARIS is at an early stage and consequently Spain is not using it as a decision support tool.

However, Spain is basing the ship's category on the Recognized Organization acceptance. Therefore, the ship is not allowed to operate in ice conditions more severe than given by a RO.

Currently, as Norway indicates in his template: One category A ship shall be built with IACS polar class 1-5. Another category B ship shall be built with IACS polar class 6-7. And a category C ship may be built with a lower ice class than IACS polar 7, as a Baltic ice class or without an ice class. Only ships intended to operate exclusively in ice free waters may be built without any ice class.

Spain

We agree with Norway comments.

Category A: IACS UR I1 PC1-PC5

Category B: IACS UR I1 PC6-PC7

Category C: IACS UR I1 PC6-PC7

Respect to Polar Class (PC), Category C doesn`t have ice class assigned to the ship in the IACS UR I1. We think that only is necessary meet the requirement of a recognized organizations by the Administration.

Respect to POLARIS (MSC.1/Circ.1519) We agree with Norway comments: the result of POLARIS or similar acceptable tools may result in more serve ice conditions than given in the definitions of ship category. POLARIS shall only be used as a decision support tool on board and is not involved in deciding the ship category.

Russian Federation

Even if the ice/polar class assigned to the ship is part of the decision on the category of the ship, it is not the only parameter.

To obtain a category A, ship structure should comply with the requirements for IACS polar class 1-5 or RS ice class Arc6-Arc9 or Icebreaker6-Icebreaker9.

To obtain a category B, ship structure should comply with the requirements for IACS polar class 6-7 or Baltic ice class IA-IASuper or RS ice class Arc4-Arc5.

To obtain an ice strengthened category C, ship structure should comply with the requirements for Baltic ice class IB-IC or RS ice class Ice1-Ice3.

United States

With regards to scantlings of Category A and Category B ships, the Coast Guard accepts the applicable standards of IACS as noted in the Polar Code's footnotes of Regulation 3.3.2.

The IACS Polar Class of a vessel is a key factor in developing the ship category for the Polar Code but it is not the sole contributor. Even if a ship is assigned an IACS Polar Class which permits operation in more severe ice conditions than those defined in the ship's Polar Code Category, the ship is not allowed to operate in ice conditions more severe than those given in the ship's category as established by the Polar Code. A ship must adhere to all requirements assigned to a category in order to operate in the polar waters that correspond to that respective category. The Coast Guard generally accepts the interpretations of those Classification Societies authorized to issue Polar Ship Certificates on behalf of the U.S. Coast Guard.

Owners and operators are encouraged to become familiar with the Polar Operation Limit Assessment Risk Indexing System (POLARIS) in addition to existing national systems if available, such as the Canadian Artic Ices Regime Shipping System known as the AIRSS system. These systems may assist in accurately assessing operational limits; however, a ship's category designation depends on fulfilling all of the requirements for that specific category.

Poland

When assigning the category of the ship according to the Polar Code, the ice/polar class cannot be the only element taken into account.

Canada

Polar Class/ice class is not the sole variable determining a ships Polar Code category, though a ship is limited in operation based upon this category even if ice class may be 'higher'.

A Category A ship is nominally PC 1-5 and Category B PC 6-7. However, these are only references meaning that Polar Code categories could align with the ice class notations. Indeed, category C ships may not be ice strengthened at all.

2. Ice conditions for a category C ship to operate in

Norway

We are aware that there are different views about the ice types and ice concentrations a category C ship may operate in.

A category B ship is defined as a ship, not included in category A, designed for operation in polar waters in at least thin first-year ice, which may include old ice inclusions. Further, a category B ship shall be built in accordance with Polar Class 6 or 7 of IACS URI Requirements concerning Polar Class or other standards offering an equivalent level of safety. Thin first-year ice means first-year ice 30 – 70 cm thick.

So far, we may say that a category B ship may operate in at least first-year ice 30 – 70 cm thick which may include old ice inclusions.

A category C ship is defined as a ship designed to operate in open water or in ice conditions less severe than those included in categories A and B.

An ice condition less severe than first-year ice 30 – 70 cm thick, which may include old ice inclusions, may be interpreted as

- First-year ice 30-70 cm thick, not including old inclusions,
- First-year ice of less than 30 cm thickness, which may include old ice inclusions, or
- First-year ice of less than 30 cm, not including old ice inclusions.

Norway would welcome a common interpretation of the ice conditions a category C ship may operate in.

Spain

The Code is kind of ambiguous when defining category C ship, therefore when Spain issued a certification to her only ship as category C, some operational limitations were added to ensure the ship's safety.

A common interpretation of the ice conditions a category C ship would be really rewarding.

Spain

Respect to category C: We think that the most indicated option is: First-year ice of less than 30 cm thickness, which may include old ice inclusions.

Russian Federation

In the Polar Code conditions for a category C is defined as open water or ice conditions less severe than those included in categories A and B.

So, the range of possible conditions variations is quite wide. We suppose that more detailed description of the allowable conditions will be useful.

UK

None of this is an exact science; if we consider design scenarios in isolation then many ships operating in Polar waters should not be there. Baltic ice is all first-year ice of fairly consistent local thickness except where pressure ridges exist.

Baltic classes are by definition only built/designed to operate in first year ice i.e. no old ice inclusions of sea or of land origin. Additionally, the Baltic classes, with the exception of 1A Super, are designed to operate in fairways of broken ice or with ice breaker escort. This might suggest that most of the Baltic class passenger ships navigating in Polar waters are outside of their design envelope. However, the manner in which they are operated does not suggest that they are unsafe.

A Cat C ship may be ice strengthened or may not be ice strengthened. Even if not ice strengthened, a Cat C ship will have some capability of operating in ice; as does a Cambridge punt. However without knowing the scantlings of the vessel, the diminution as a result of corrosion, the material properties, displacement etc it is not possible to guess what the capabilities in ice will be; the only safe position is that unstrengthened Cat C ships should not navigate in ice unless a ship specific assessment has been performed.

This issue should not be the focus of too much attention since the solutions appear to be too binary to be practical. The capabilities of the ship are detailed in the PWOM and there is no requirement for Administrations to approve the document thereby putting the onus on the operator.

United States

Category A ships are designed (permitted) to operate in polar waters with at least medium first-year ice (0.7m-1.2m) which may include old ice inclusions. Category B ships are designed (permitted) to operate in polar waters with at least thin first year ice (0.3m-0.7m) which may include old ice inclusions. Category C ships are designed (permitted) to operate in polar water or in ice conditions less severe than those included in Category A or B.

This means that any condition that is considered less severe than polar waters with at least thin first year ice (0.3m-0.7m), which may include old ice inclusions, is a condition that Category C ships may operate.

The Coast Guard generally accepts the interpretations of Category C ice conditions by those Classification Societies authorized to issue Polar Ship Certificates on behalf of the U.S. Coast Guard.

Ships that are not assigned a Polar Class notation under IACS UR requirements concerning Polar Class, (Category C Ships), may submit for an equivalency. The process for this equivalency is outlined in Part 1B, Chapter 4 of the Code.

Poland

Ice conditions for category C according to Polar Code are unclear and require clarification

Canada

While Canada has not encounted varying interpretations of the type of ice conditions appropriate for category C ships, Canada is nevertheless supportive of further exploing common interpretations as proposed by Norway.

3. The Polar Water Operation Manual (PWOM)

Norway

The polar code does not require the polar water operational manual to be approved. The manual should be a living document used on board and updated as necessary.

The manual is essential for the certification process, in addition to be user friendly for the crew on board. The manual shall contain capacities and limitations found in the operational assessment, it shall be ship-specific and the "Model table of contents for the Polar Water Operational Manual (PWOM)" in Appendix 2 of the Polar Code is recommended to be used.

Denmark

Denmark agree with Norway that the PWOM should be a living document used on board and updated as necessary. It should be handled by the Administration and ROs similar to how the rest of the ISM system is approved and audited.

Spain

Even if the Code does not require that the Administration approves the polar water operational manual, the manual is an essential document that should be carefully read during the certification process. Also, the manual should be used on board and updated as necessary.

Spain highly recommends using "Model table of contents for the Polar Water Operational Manual (PWOM)" in Appendix 2 of the Polar Code.

Spain

We agree with Norway comments.

Russian Federation

There are numerous regulations in Polar Code Part I-A that imply prerequisites (criteria) in their application to the ship depending on results of operational assessment required by paragraph 1.5 of Part I-A. Since all of these criteria could not be reflected in Polar Ship Certificate (Part I-A, para 1.3.5) as operational restrictions and limitations of the ship, PWOM is the only onboard document, which shall contain essential information on all specific criteria applied in relation to establishment of the ship's compliance with the regulations of Part I-A of the Code (e.g. operating in areas and during periods where ice accretion is likely to occur, potential for abandonment onto ice or land, operation in extended periods of darkness, escorted or escort ship, etc). It is supposed that in such matter some improvement and/or additional interpretations is needed for Chapter 2 of Part I-A or Appendix 2 (model table of PWOM contents).

Another issue is a language of PWOM. As the Chapter 2 of Part I-A and additional guidance of Part I-B and Appendix 2 do not provide any provisions on what language should be used in PWOM, a common interpretation might be given through SOLAS Reg.V/14.3 and 14.4, as follows: PWOM shall be made, at least, in working language of the ship; in addition to working language, English are to be used for PWOM procedures related to bridge-to-bridge and bridge-to-shore safety communications as well as to communications on board between pilot and bridge watchkeeping personnel.

The manual should be a living document used on board and updated as necessary. It should not be neither too long or too short and always easy to understand for the crew.

UK

This is the safety backbone of the Code detailing the capabilities and limitations of the ship and should ideally follow the guidance in appendix II of the Code.

United States

The Polar Water Operation Manual (PWOM) should be developed taking into account the operational assessment. The PWOM may be reviewed by the Authorized Classification Society and/or by the Administration but it is not required to be approved. The PWOM is, however, required to be followed by the vessel.

Poland

With reference to the PWOM manual (although it does not require approval), we believe that it is an important element of the ship equipment and its content should be subject to verification by RO for compliance with the guidelines

Canada

Canada has delegated the issuance of Polar Ship Certificate's (PSC) to Recognized Organizations. Polar Water Operational Manuals (PWOM), on the other hand, are not explicitly approved by an Administration or a RO acting on its behalf. Instead, Canada views PWOMs as similar in many respects to a ships Safety Management System (per the ISM Code) and are therefore to be developed and maintained by the ship owner or authorized representative. SDC 1 WP.4 states:

"With regard to possible approval of a PWOM by an Administration, the group generally agreed that [the] PWOM need not be approved by Administrations, however, any operational limitations will have to be approved by the Administration."

Accordingly, while the PWOM need not necessarily be approved, certain components of it (e.g. info on ship-specific capabilities and limitations (per the operational assessment), methodology for determining operational limits in ice, etc.) will nevertheless need to be reviewed by an RO given its relationship to the issuance of a Polar Ship Certificate.

4. Ice accretion and damage stability calculations

Norway

The Polar Code chapter 4 introduces the weight of a theoretical ice accretion to all types of ships operating in polar waters. The ice accretion is added to compensate for the added weight on the ship and the adverse effect to the ship's stability caused by icing the ship may suffer from in some weather conditions. This ice accretion is also used in the 2008 Intact Stability Code, mainly for fishing vessels and offshore support vessels. The weight of ice is calculated by the same method by the two instruments, but the text in the two instruments differs slightly.

This difference in wording between the polar code and the 2008 intact code has led to questions if the ice accretion has to be considered in both intact stability and calculation of the damage stability limiting curves when calculating stability according to the polar code. The 2008 intact stability code includes the ice accretion in both intact stability and damage stability limiting curves.

The SDC1 discussed the matter and concluded that consensus was not reached to include ice accretion in both intact and damage stability calculations. During the preparation of the polar code, it was not intended to deviate from the way of treating ice accretion outside polar areas.

Interpretation

IMO and SDC should once again look into this issue to clarify whether the ice accretion is to be included in the damage stability limiting curves. In the meantime, the “intact conditions” in 4.2.1 should be read as “condition of loading”.

Denmark

Denmark agree with Norway that IMO and SDC should once again look into this issue to clarify whether the ice accretion is to be included in the damage stability limiting curves.

Spain

At this moment, Spain interprets that ice accretion is applicable to intact stability. However, if IMO and SDC look into this issue and resolve to include it in damage stability, Spain l accept it.

Spain

We agree with Norway comments regarding that the 2008 IS CODE / Part B / Chapter 6 is equivalent to POLAR Code / PART I-A / 4.3.1, but we remember that 2008 IS CODE / Part B is not mandatory and POLAR Code is mandatory.

Both are applied only to stability in intact conditions.

POLAR Code / PART I-A / 4.2.1 says: ships shall have sufficient stability in intact conditions when subject to ice accretion, and POLAR Code / PART I-A / 4.3.1 is required only to 4.2.1.

We think that comply with 2008 IS CODE / Part B / Chapter 6 is sufficient to comply with the functional requirement required in POLAR Code / PART I-A / 4.3.1 regarding Ice accretion.

Respect to damage stability calculations, Polar Code doesn´t say anything about that the ships should have sufficient residual stability following ice damage and ice accretion. However, we think that ice accretion should be considered in the damage stability calculations, since this is a factor that can significantly influence in the residual stability following ice damage.

Russian Federation

Regulation 4.3.1 of the Polar Code «Stability in intact conditions» contains the icing allowance values which should be considered in intact conditions.

Item 6.3.1 Part B of Code on Intact Stability which states allowance for ice accretion also does not contain any references to damage stability calculations.

So icing allowance applied to intact stability calculations only.

UK

It has been argued that consideration of both ice accretion and damage at the same time is applying two misfortunes concurrently; a principle not applied in SOLAS.

UK do not see ice accretion as a misfortune; it is a foreseeable loading condition which may occur repeatedly and therefore should apply to both intact and damage stability calculations of all ships operating in areas where ice accretion may occur. This principle is established in the Intact Stability Code and it is not for the Polar Code to overturn. If the application to damage stability calculations is to be challenged, then it should be done from within the Intact Stability Code.

There is however some conjecture as to whether the same extents of accretion for FV should apply to much larger ships.

United States

The Polar Code functional requirements for the calculation of ice accretion was taken from the 2008 Intact Stability Code section 1B which are guidelines for fishing vessels and offshore support vessels. The Intact Stability Code does not require ice accretion to be included in the calculation of the damage stability limiting curves as Norway states.

Further, in order for ice accretion to occur there have to be environmental conditions which simultaneously exist such as sea spray, wind, air temperature considerably lower than the water temperature, etc. These conditions, particularly sea spray, do not normally occur when operating in areas with moderate ice coverage. Damage stability curves are based on hull breaches/flooding which would be more likely to occur when a vessel is operating in ice covered waters. Applying ice accretion to damage stability curves would be subjecting vessels to meet damage stability requirements (one for flooding/hull breaches and one for ice accretion) that do not occur together in the same operating conditions and could be particularly difficult for vessels to comply with.

The wording of the Polar Code should stay as is.

Poland

The matter of considering ice accretion of the ship when assessing the ship's stability both in intact and emergency conditions requires clarification and appropriate decision by the IMO

Canada

Canada is of the view that the Polar Code is clear in that it does not introduce new requirements for ice accretion calculations under damaged conditions.

Pursuant to Polar Code regulation 1.1.1, a ship shall be considered to meet a functional requirement when the ship’s design and arrangements comply with all the regulations associated with that functional requirement.

Accordingly, paragraph 4.3.1 indicates the regulatory requirements to meet the functional requirements of 4.2.1 in intact conditions. Whereas paragraph 4.3.2 indicates the regulatory requirements to meet the functional requirements of 4.2.2 in damaged conditions.

Therefore, considering that there is no cross-reference between the requirements in 4.2.1/4.3.1 for ice accretion, and 4.2.2/4.3.2 for damage stability, and considering the language in 1.1.1 which clearly states that functional requirements can be considered met only though compliance with the associated regulations, it remains Canada’s interpretation that the Polar Code’s ice accretion criteria does not apply under damaged conditions and is not a prerequisite for issuance of a Polar Ship Certificate.

5. Removal of ice accretion

Norway

Ice removal equipment must be dimensioned in relation to the ship's design and available crew.

Accumulated ice must not fall down and destroy other structures. Available personnel with regard to manual ice removal must be sufficient to keep ice accretion at an acceptable level over time.

Exposed areas should be covered / shielded to prevent accumulation of ice. In general, surfaces should be smoot to reduce the risk of icing. Where this design point is not possible or appropriate, systems should be provided to ensure that the ice and snow does not accumulate (heating, etc.). An

analysis to identify the equipment needed based on the size, design and operation of the ship should be carried out. The equipment shall be effective and ensure minimal risk exposure of personnel in relation to falling ice, working in an unsafe environment and exposure to environmental conditions. Equipment like axes, wooden clubs, spades, salt, glycol etc. shall also be available on board.

Spain

Spain thinks that ice removal equipment must be dimensioned in relation to the ship's design and available crew. This operation must be done carefully in order to not damaging other structures or people. Also, systems should be provided to ensure that the ice and snow do not accumulate in points of the structure where the removing is not possible.

Spain

We agree with Norway comments.

Russian Federation

Icing prevention systems (heating, tents, covers) and icing removal systems (pneumatic systems, anti-icing liquids, mechanical devices) should be available onboard. A vessel bow shape should be preferably designed to ensure effective water drain to prevent icing accumulation.

United States

This allows vessel owners and operators to establish their ship specific means to monitor and remove ice from the vessel surfaces. Creating rules that prescribe how ice is monitored or removed reduces operational flexibility for the vessel and crew as well as restricts implementation and development of new technologies. How ice accretion will be monitored and how ice will be removed would be an appropriate inclusion in the PWOM.

Poland

The ship's structure should be such as to limit or prevent ice accretion; nevertheless, means for mechanical or chemical removal of ice should always be available on the ship depending on the size / capacity of the crew, size of the ship and way of operation

Canada

In the spirt of the Polar Code’s goal-based structure and the latitude it affords to ships, Canada is supportive of leaving the text concerning ice accretion as is, rather than introducing or substituting with prescriptive language.

S_{mom}, probability to survive heeling moments

Norway

The polar code 4.3.2.1 specifies that s_i, as defined in SOLAS regulations II-1/7-2.2 and II-1/7-2.3, shall be equal to one (1). This implies that the factor S_{mom} of SOLAS regulation II-1/7-2.4 shall not be applied for a passenger ship when calculating residual stability after ice damage.

Spain

As indicated by the Code.

Spain

We don´t agree with Norway comments.

The Polar Code is clear, only the factor si, as defined in SOLAS regulations II-1/7-2.2 and II-1/7-2.3, is equal to one, regardless of the type of ship, passenger or cargo ship.

To apply SOLAS regulations II-1/7-2.4, the factor smom, i must be calculated to passenger ships and only for cargo ships smom, i shall be taken as unity.

Russian Federation

Regulation 4.3.2.1 of Part I-A Polar Code states that si factor should be calculated without consideration of Smom (SOLAS regulation II-1/7-2.4).

We suppose that MSC should once again look into this item because according to Resolution A.1024(26) which was foregoing to Polar Code states that si should be calculated without exclusion of any exceptions.

United States

The United States does not have enough experience in calculating the residual stability after ice damage on passenger ships as we have very few U.S. flagged International Passenger ships with this issue. We therefore cannot support or oppose the claims made by Norway in regard to calculating the residual stability after ice damage on passenger ships.

CHAPTER 12 – MANNING AND TRAINING

Russian Federation

12.2 and 12.3

If you are operating in Polar waters chances that you may enter areas with ice concentration higher than 1/10 are relatively high, so to be ready for that Master and Chief Mates should have polar water advanced training, while other deck officers would suffice Polar water basic training.

To obtain Certificate in Advanced Training for ships operating in polar waters Master and Chief mate should meet the requirements for certification in Basic Training, complete approved seagoing service on board a ship operating in polar waters or equivalent seagoing service, in the deck department at the management level or while performing watchkeeping duties in an operational level, and for a period of at least 2 months, and complete an approved advanced training course which meet the standard of competence in the STCW Code, § A-V/4, paragraph 2.

The following areas are being discussed now to become equivalent for getting required seagoing service on Russian Flagged vessels in addition to polar waters in case of navigation during ice season: Baltic sea, Barents Sea, Sea of Okhotsk, Japanese sea.

12.3.2

To agree with item 12.3.3 - the Master is always responsible for the safety of ship, so even if the person under 12.3.2 is available Master, Chief mate and officers in charge of a navigational watch should always have at least Polar water basic training certificate.

12.3.4

The Polar Code/PWOM provisions require that the crew shall be trained in the use of the personal and group survival equipment provided to support survival for the maximum expected time of

rescue. As a result of this requirement if the ship is operating in ice with concentration higher than 1/10 all crew is highly recommended to have Polar water survival training attended

General comments

Iceland

By the end of the 1980s, most of the Icelandic cargo ships, falling under the scope of SOLAS 1974, had been flagged out. Consequently, there are currently no Icelandic merchant ships falling under the scope of SOLAS 1974 and, therefore, none falling within the scope of the Polar Code. For the obvious reason, Icelandic maritime administration, ICETRA, has not issued any Polar Ship Certificates to date.

The position of Iceland

Iceland supports Norway's position that in order to ensure success of the Polar Code, it is of great importance to work towards facilitating a harmonised implementation and enforcement of the Code's provisions. In that sense, cooperation is the key to solving these challenges, and both the IMO and Arctic Council have important roles to play in that context. Within PAME, Iceland has supported those initiatives, for efficient implementation of the Code, including within the already up and running Arctic Shipping Best Practice Information Forum (ASBPIF), which has gained significant attention, helping to create the correct behavioural approach to maritime safety and environmental protection. Iceland supports Norway's view that PAME should develop an overview of the Arctic States' interpretation of the Polar Code.

Iceland agrees with Norway that there is a need to encourage member governments of the Arctic Council, through PAME, to work towards a harmonised implementation of the Polar Code. To that end, Iceland supports Norway in urging PAME to develop an overview of the respective Arctic States' interpretation of the Polar Code.

Iceland's interpretation of the Polar Code and future work on possible amendments

Although there are currently no merchant ships sailing under the Icelandic flag, this may change in the future. Consequently, Iceland follows any developments on Polar Code interpretation closely and will continue to monitor any proposals for amendments to the Polar Code. Iceland supports any initiatives that may help maritime administrations and the relevant stakeholders to enhance maritime safety in the Arctic sea areas and to environmental protection in the Arctic.