INTERNATIONAL MARITIME ORGANIZATION

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Agenda item 18

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WORK PROGRAMME

Proposal for a new output to amend circular MSC.1/Circ.1321

Submitted by Canada, United Kingdom, IACS and Interferry

SUMMARY

Executive summary:	This document proposes a new output to develop amendments to MSC.1/Circ.1321 on *Guidelines for measures to prevent fires in engine-rooms and cargo pump-rooms* to include provisions for the use of thermal imaging cameras.
Strategic direction, if applicable:	7
Output:	None
Action to be taken:	Paragraph 18
Related documents:	None

Introduction

1 This document is submitted in accordance with the relevant provisions of the draft revision of *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.5) (MSC 109/22, paragraph 19.14 and annex 26), and proposes a new output to develop amendments to MSC.1/Circ.1321, in particular to include a new section in part III, chapter 2, section 1.2.1 (Inspection and maintenance).

Background

2 The co-sponsors believe that the inspection and maintenance provisions for the insulation of hot surfaces and high temperature surfaces as set out in MSC.1/Circ.1321 should be expanded to recommend the use of thermal imaging cameras when inspecting insulation installations.

3 In the opinion of the co-sponsors, the current method for inspecting insulation in engine-rooms, cargo pump-rooms and other fire prone spaces by taking spot temperature measurements at the insulation surface is not effective as it only provides an indication of high temperature at the location where the measurement is taken. The current method does not provide assurance that the insulation is effective in maintaining acceptable surface temperatures over the complete area where the insulation is installed.

4 The co-sponsors believe that amending MSC.1/Circ.1321 to recommend the use of thermal imaging cameras in the inspection of the insulation will provide further assurance that the insulation is effective over the entire area being protected.

5 Reference is made to the UK Marine Accident Investigation Branch (MAIB) report on the incident (MAIB Investigation Report 20-2024: Stena Europe[1]), which states that the fire ignited on a main engine, when pressurized fuel, from a loose fuel pipe connection, sprayed onto a high temperature exhaust pipe, and that neither of the designed protections against fuel fires (spray shielding on fuel pipes and insulation of hot surfaces) were effective.

Discussion

6 Part II, chapter 2, section 5.3 of MSC.1/Circ.1321 states, "A regular check of equipment should be made to confirm that the insulation is in place"; and part III, chapter 2, section 1.2.1 states, "A regular check of equipment or material should be made to confirm that the insulation is correctly installed". However, there is no further clarification on how this check should be carried out.

7 According to the UK MAIB Investigation Report 20-2024, following the fire, the operator of **Stena Europe** inspected rectification work on the insulation installed in other engine rooms onboard the **Stena Europe** using an infrared spot thermometer and found no hot surfaces on the insulation covering the main engines. However, subsequent inspection by the UK MAIB using a thermal imaging camera identified surface temperatures in excess of 220°C (maximum allowed temperature for surfaces as per MSC.1/Circ.1321) on all of the main engines that were being run at the time.

8 Thermal imaging cameras are widely available and are simple to use. Many ships already carry thermal imaging cameras as part of the ship's fire-fighting equipment.

9 According to the UK MAIB, they received 65 reports of engine-room fires attributed to flammable liquid igniting on an exposed hot surface between 2015 and 2025.

10 It is the view of the co-sponsors that thermal imaging cameras are not expensive and that inspection using thermal imaging cameras is no more onerous or time-consuming than other methods for inspection of the insulation in engine-rooms, cargo pump-rooms and other fire prone spaces, and has significantly higher success in identifying hot spots exceeding the 220°C temperature limit.

11 Considering the contents of paragraphs 6 to 10 above, the co-sponsors are of the opinion that it is appropriate to recommend that thermal imaging cameras are used in the inspection of insulations installed in engine-rooms, cargo pump-rooms and other fire prone spaces and that the introduction of this provision will be a cost-effective method for reducing the incidence of fire in these spaces.

[1] The accident report can be found at the following link: https://www.gov.uk/maib-reports/engine-room-fire-on-board-ro-ro-passenger-ferry-stena-europe.

Proposed amendments and industry standards

12 Part II, chapter 2, section 5.3 of MSC.1/Circ.1321 is amended in conjunction with a footnote, reflecting the existing industry standards, as follows:[2]

"5.3 A regular check of equipment should be made to confirm that the insulation is in place. When maintenance or repair of equipment has been carried out, checks should be made [when running in normal operating conditions using thermal imaging cameras approved in accordance with international or recognized standards acceptable to the Organization*,] to ensure that the insulation covering the high temperature or hot surfaces has been properly reinstalled or replaced[. ~~; surface temperature should be measured if considered necessary.~~]

[* Refer to [IEC 60825-1, EN61326, 60079-10-1, ISO 18251]"

13 Part III, chapter 2, section 1.2.1 of MSC.1/Circ.1321 is amended in conjunction with a footnote, reflecting the existing industry standards, as follows :[2]

"1.2.1 A regular check of equipment or material should be made [when running in normal operating conditions using thermal imaging cameras approved in accordance with international or recognized standards acceptable to the Organization*] to confirm that the insulation is correctly installed. When maintenance or repair to equipment has been carried out, checks should be made to ensure that the insulation covering the heated surfaces has been properly reinstalled or replaced. Special attention should be paid to the following:

.1 insulation areas where vibration may be present;

.2 discontinuous part of exhaust gas piping and turbo charger; and

.3 other suspect parts.

[* Refer to [IEC 60825-1, EN61326, 60079-10-1, ISO 18251]"

Output

14 The Committee is invited to consider including an output on "Developing amendments to MSC.1/Circ.1321 to include provisions for use of thermal imaging cameras" in the Committee's post-biennial agenda.

Administrative requirements

15 The completed checklist for identifying administrative requirements is set out in annex 1.

[2] Modifications in grey shading.

Human element

16 The completed checklist for considering human element issues contained in annex 5 to the draft revision of MSC-MEPC.1/Circ.5/Rev.5 is set out in annex 2. The proposal introduces a new recommendation for how insulation is checked after installation or post-modification. This proposal only introduces clearer provisions for undertaking the inspection and as such no impact on the human element is anticipated.

Urgency

17 It is proposed to include the output in the Committee's post-biennial agenda, with one session needed to complete the item, assigning the SSE Sub-Committee as the associated organ.

Action requested of the Committee

18 The Committee is invited to consider the background and the proposals in paragraphs 14 and 17, and to take action, as appropriate.

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ANNEX 1

CHECKLIST FOR IDENTIFYING ADMINISTRATIVE REQUIREMENTS

This checklist should be used when preparing the analysis of implications required in submissions of proposals for inclusion of outputs. For the purpose of this analysis, the term "administrative requirement" is defined in accordance with resolution A.1043(27), as an obligation arising from a mandatory IMO instrument to provide or retain information or data.

Instructions:

(A) If the answer to any of the questions below is **YES**, the Member State proposing an output should provide supporting details on whether the requirements are likely to involve start-up and/or ongoing costs. The Member State should also give a brief description of the requirement and, if possible, provide recommendations for further work, e.g. would it be possible to combine the activity with an existing requirement?
(B) If the proposal for the output does not contain such an activity, answer **NR** (Not required).
(C) For any administrative requirement, full consideration should be given to electronic means of fulfilling the requirement in order to alleviate administrative burdens.

1. Notification and reporting? Reporting certain events before or after the event has taken place, e.g. notification of voyage, statistical reporting for IMO Members	**NR**	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
2. Record keeping? Keeping statutory documents up to date, e.g. records of accidents, records of cargo, records of inspections, records of education	**NR**	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
3. Publication and documentation? Producing documents for third parties, e.g. warning signs, registration displays, publication of results of testing	**NR**	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
4. Permits or applications? Applying for and maintaining permission to operate, e.g. certificates, classification society costs	**NR**	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		
5. Other identified requirements?	**NR**	Yes □ Start-up □ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)		

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ANNEX 2
CHECKLIST FOR CONSIDERING HUMAN ELEMENT ISSUES BY IMO BODIES

Draft revision of MSC-MEPC.1/Circ.5/Rev.5, annex 5

	1 **Question**	**2** **Yes/ No**	**3** **IMO references**	**4** **Considerations**	**5** **Instructions**
Workload			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
1	**Does the "output" affect workload?**				
1.1	**On board, especially in the already intensive phases of the voyage and port operations to:**	**No**	~~*Revised guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies*~~ ~~(MSC-MEPC.7/Circ.8)~~ ~~*Guidelines on fatigue*~~ ~~(MSC.1/Circ.1598)~~ ~~*Principles of minimum safe manning*~~ ~~(Resolution A.1047(27))~~ ~~*Guidelines for the investigation of accidents where fatigue may have been an issue*~~ ~~(MSC/Circ.621)~~	Not intensive phase as the inspections or tests required will be scheduled.	
1.1.1	Operations including navigation, cargo and engineering	No		Operations will be modified regarding testing of insulation but will not increase burden on crew,	

	1 Question	2 Yes/ No	3 IMO references	4 Considerations	5 Instructions
1.1.2	Maintenance of the ships structure and its equipment	Yes		Clarification of the testing requirements will improve safety	
1.1.3	Onboard administration in support of the ships' management systems	Yes		Perhaps in record keeping and testing schedules	
1.1.4	Onboard administration related to regulation involving flag States, classification societies, port State and other bodies such as charterers and port authorities	Yes		May involve administrative procedures for proper implementation.	
1.1.5	Increased workload or time pressure on personnel if involved in implementation of changes prior to the implementation date	No		Requires minimal planning and the rest will be to comply with amended clarifications.	
1.2	**Ashore, in a manner that would affect the ships operation to:**	No		Schedules of tests and inspections as per normal working procedures.	
1.2.1	Companies' administration	Yes		Update on procedures/records for engine-room insulation maintenance.	
1.2.2	Flag State, port State and classification societies administration such that certification and other processes are compromised or delayed	Yes		As safety compliance measures should be effectively adhered to. So timely implementation of testing requirements will avoid delays.	

	1 Question	2 Yes/ No	3 IMO references	4 Considerations	5 Instructions
Decision-making			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
2	**Does the "output" impact decision-making on board the ship?**				
2.1	By confusion with existing requirements and regulations	No		The proposal seeks to remove any confusion and hence seeks to clarify the relevant requirements.	
2.2	By changing responsibilities as laid out in the ISM Code	No		The usual working procedures as per testing requirements will be followed	
2.3	By creating complexity in its implementation and/or in the safety management systems	No		No complexity will be created in this case as the proposal will seek to provide clarification of the relevant test requirements.	
2.4	By requiring increased mental effort, such as the need to find, transform and analyse data or result in the need to make judgements based on incomplete information	No		No change in mental effort from the current requirements. There may be reduced effort due to the clarification provided.	
2.5	By limiting the time available to establish situational awareness, decide, communicate (possibly across time zones) or check	No		Not applicable	
2.6	By increasing reliance on judgement and administrative controls to manage major risks such as oil spills and collisions	No		Not applicable	

	1 Question	2 Yes/ No	3 IMO references	4 Considerations	5 Instructions
Living and working environment			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
3	**Does the "output" affect the living and working environment?**		*Guidelines on the basic elements of a shipboard occupational health and safety programme* (MSC-MEPC.2/Circ.3) *Guidelines on fatigue* (MSC.1/Circ.1598)		
3.1	By interfering with existing arrangements for abandonment, fire-fighting and other emergency plans or procedures	No		This will only ensure compliance with safety requirements but will not interfere.	
3.2	By introducing new materials that could create an explosion, fire, environmental or occupational health risk	No		This only involves determination of test and inspection dates and requirements	
3.3	By introducing new high energy sources such as high-voltage, high pressure fluids	No		No new high energy sources are introduced by the proposal	
3.4	By affecting access or egress and causing lack of ventilation in working spaces	No		Clarification of testing arrangements only is envisaged by the proposal, therefore there should be no effect on [access or egress arrangements] [habitability of accommodation spaces]	
3.5	By affecting the habitability of accommodation spaces due to noise, vibration, temperatures, dust and other contaminants	No		Clarification of testing arrangements only is envisaged by the proposal, therefore there should be no effect on [access or	

	1 Question	2 Yes/ No	3 IMO references	4 Considerations	5 Instructions
				egress arrangements] [habitability of accommodation spaces]	
Operation and maintenance			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
4.	**Does the "output" affect the operation and maintenance of the ship, its structure or systems and equipment?**		~~*Revised guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies*~~ ~~(MSC-MEPC.7/Circ.8)~~		
			~~*Guidelines for bridge equipment and systems, their arrangement and integration (BES)*~~ ~~(SN.1/Circ.288)~~		
			~~*Principles of minimum safe manning*~~ ~~(Resolution A.1047(27))~~		
			~~*Issues to be considered when introducing new technology on board ships* (MSC/Circ.1091)~~		
			~~*Guideline on software quality assurance and human-centred design for e-navigation*~~ ~~(MSC.1/Circ.1512)~~		
			~~*Guidelines for the standardization of user interface design for navigation equipment*~~ ~~(MSC.1/Circ.1609)~~		

	1 Question	2 Yes/ No	3 IMO references	4 Considerations	5 Instructions
4.1	By introducing equipment that the user may find difficult to operate or maintain or may be unreliable	No		New equipment is introduced by this proposal however it is easy to operate, maintain and is reliable.	
4.2	By introducing new and/or novel technology, or technology that changes the role of the person	No		The proposal does not introduce novel technology and does not change the role of the person	
4.3	By introducing requirements for new competencies and roles	No		The proposal does not introduce requirements for new competencies or roles	
4.4	By overloading existing infrastructure such as power generation and ventilation systems	No		There will be no impact on existing infrastructure by this proposal	
4.5	By poor integration with existing systems and controls	No		Not applicable	
4.6	By introducing new and unfamiliar operations/procedures	No		The proposal does not introduce [new or unfamiliar operations or procedures] [new or unfamiliar operating interfaces]	
4.7	By introducing new and unfamiliar operating interfaces?	No		The proposal does not introduce [new or unfamiliar operations or procedures] [new or unfamiliar operating interfaces]	
4.8	By introducing risks to the ship during any modifications required prior to the implementation date of the output	No		Modification of equipment or ship not required.	

	1 Question	2 Yes/ No	3 IMO references	4 Considerations	5 Instructions
Measures to address the human element			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
5.	**Does the "output" require changes to:**		*Shipboard technical operating and maintenance manuals* (MSC.1/Circ.1253) *Revised guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies* (MSC-MEPC.7/Circ.8)		
5.1	Training	No		Required training would already be expected to have been existing	
5.2	Practical skill development and competences	No		Required skills would already be expected to have been existing on board	
5.3	Operating, management and/or maintenance procedures	Yes		Rectify existing procedures as per new proposal once adopted	
5.4	Information/manuals for operation and maintenance	Yes		Maintenance manual to be updated in accordance	
5.5	Spares outfit	Yes		Where required spares to also be in compliance with requirements	
5.6	Occupational safety requirements including guarding and PPE	No		Would be as usual	
5.7	Shore support	Yes		Shore support will have to adjust to meet clarified testing regime	