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WORK PROGRAMME

Proposal for a new output to revise MSC-MEPC.3/Circ.4/Rev.1

Submitted by Bahamas, Canada, Marshall Islands, New Zealand United Arab Emirates, IACS, Intercargo, InterManager and Nautical Institute

SUMMARY

Executive summary:	A review and reclassification of historical reportable occurrences has highlighted shortcomings in the taxonomy used in MSC-MEPC.3/Circ.4/Rev.1 *on Revised harmonized reporting procedures – Reports required under SOLAS regulations I/21 and XI-1/6, and MARPOL, articles 8 and 12,* which form the basis of reports made to the Marine Casualties and Incidents (MCI) module in GISIS. In this context, this document proposes a new output to review the circular, which was issued in 2014, as soon as practicable.
Strategic direction, if applicable:	7
Output:	Not applicable
Action to be taken:	Paragraph 23
Related documents:	MSC-MEPC.3/Circ.4/Rev.1; III 10/18; MSC 110/18/15 and, MSC 110/WP.2

Background

1 Circular MSC-MEPC.3/Circ.4/Rev.1 was issued in 2014 and provides the taxonomy with relevant structure for data entered into the Marine Casualties and Incidents (MCI) module in the Organization's Global Integrated Shipping Information System (GISIS).

2 As part of a project to modernize its casualty and incident data management, the Bahamas conducted a data cleansing exercise. This involved reviewing and reclassifying 7,602 reportable occurrences spanning 12 years of data using the taxonomy in the annex to MSC-MEPC.3/Circ.4/Rev.1.

3 This comprehensive review coincided with discussions which took place at the tenth session of the Sub-Committee on Implementation of IMO Instruments (III), where the Working Group on Lessons Learned and Safety Issues Identified from the Analysis of Marine Safety Investigation Reports was tasked with considering document III 10/4/3 (InterManager), which requested the III Sub-Committee to take note of its report, in particular regarding the analysis

of accidents within enclosed spaces, falls and occurrences involving survival and rescue craft on board ships and consider additional sub-categories within the GISIS MCI module.

4 During its deliberations, the Working Group brought up the potential review and revision of MSC-MEPC.3/Circ.4/Rev.1. In this regard, it was noted that this would require a new output. Following the Group's recommendation, III 10 invited interested Member States and international organizations to submit proposals for a new output to revise MSC-MEPC.3/Circ.4/Rev.1 as per MSC-MEPC.1/Circ.5/Rev.6 (III 10/18, paragraph 4.46.1).

5 The Bahamas et al. submitted MSC 110/18/15, proposing a new output to revise MSC-MEPC.3/Circ.4/Rev.1. The Group of Chairs identified that the submission did not provide a description of practicality, feasibility and proportionality of the proposed output (MSC 110/WP.2, annex 2, section 19). This submission is made to include the missing elements of the original proposal, including an illustrative solution.

Need

6 The data reclassification exercise conducted by the Bahamas revealed limitations in the current taxonomy that need to be addressed to improve the quality of casualty reporting. These limitations, combined with the outcome of the deliberations of III 10's Working Group on Lessons Learned and Safety Issues Identified from the Analysis of Marine Safety Investigation Reports, demonstrate the need to update MSC-MEPC.3/Circ.4/Rev.1 and, by extension, the GISIS MCI module to ensure:

.1 complete and accurate capture of all types of casualties and incidents;

.2 focused capture of detail to support meaningful analysis and facilitate the identification of trends;

.3 higher levels of reporting through removal of obstacles to complete data entry; and

.4 alignment with current marine safety investigation best practices.

7 Co-sponsors consider these improvements as essential for maintaining the effectiveness of GISIS as a tool for improving maritime safety through data-driven decision making.

Analysis of the issue

8 The exercise carried out by the Bahamas highlighted shortcomings with the contents of the tables in the appendices to MSC-MEPC.3/Circ.4/Rev.1 when attempting to capture the fundamental aspects of the reportable event or providing supplementary information:

.1 high-level classification gaps and inconsistent granularity: whilst many of the tables present incredibly specific options, there is a lack of useful granularity in several areas, and there are significant omissions at the highest level (for example, there is no means to record a death resulting from an oxygen-deficient or toxic atmosphere, nor a loss due to a parametric rolling event);

.2 limited analytical framework: the prescribed approach for recording casualty analysis data is overly reductive – fostering a simplistic approach to identifying contributory factors that does not align with current language

employed in the conduct of no-blame investigations. Errors are not linked to preconditions or organizational factors, failing to demonstrate error development chains. As a result, errors are not traced to design flaws (equipment, interfaces, procedures), resulting in generic interventions. The analysis taxonomy is not model-based and lacks a hierarchical structure and therefore fails to capture vital causal information, resulting in incomplete findings. This situation specifically hinders efforts towards human-centric improvements;

.3 over complication of reporting: extensive specific data requested in the supplementary information does not add value to further analysis. Providing answers to these exact questions creates a significant burden on reporting States and, as a result, completion is low; and

.4 outdated terminology: the language used to describe the safety recommendation focus does not reflect current practice or guidance provided to analysts for analysis of the quality of marine safety investigation reports.

9 The identified issues have been addressed in the preliminary solution attached as annex 1 for illustrative purposes.

10 To avoid creating a new epoch of data, clear data mapping can ensure that existing reports will not be lost for the purposes of data analysis. The evolutionary approach suggested in the proposed amendments to MSC-MEPC.3/Circ.4/Rev.1 will enable direct reclassification for the majority of event types. Human intervention or use of existing technology – Application Programming Interfaces (API) will enable application of the new taxonomy to mis-classified and non-classified casualty events and operations[*].

Analysis of implications

11 The proposed output will not result in any additional costs to the maritime industry or additional legislative and administrative burdens.

12 The completed administrative checklist, as set out in annex 6 to the *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.6), is set out in annex 2.

Benefits

13 The proposed revision of the Circular MSC-MEPC.3/Circ.4/Rev.1 would deliver the following benefits:

.1 enhanced data quality: an intuitive, comprehensive and precise taxonomy would ensure that reporting of casualty events are more complete and better reflect the actual circumstances of casualties and incidents, leading to more accurate trend analysis and targeted safety improvements;

.2 strengthened safety analysis and enhanced GISIS MCI module utility: a more robust analytical framework would support better identification of systemic issues and contributory factors. This would result in more effective safety

[*] If the SHIELD (Safety Human Incident & Error Learning Database) taxonomy is adopted for classification of human and organizational contributory factors, the e-HURID API could be used to review existing reports and assign the appropriate (defined) condition.

recommendations and preventive measures, thus enhancing the value of the utility of the GISIS MCI module as a tool for maritime safety analysis and decision-making;

.3 utilizing a structured, model-based human factors taxonomy will generate high-quality human factors data, enabling robust human reliability analysis and quantitative assessment of human error. This, in turn, supports human factors informed risk modelling and consequence analysis. As a result, human-centric interventions can be systematically incorporated into cost-benefit assessments, removing long-standing bottlenecks to enhancing maritime safety; and

.4 moving forward with a revision in a timely manner would enable any amendments to the MCI module to be considered alongside the ongoing revision of GISIS without duplication of effort.

Industry Standards

14 The proposal seeks to improve the contents of the tables in the appendices to MSC-MEPC.3/Circ.4/Rev.1 while encouraging Member States as well as industry to adopt the same taxonomy so that the data transfer as one of the reporting means could be easily carried out, and there is no conflict with existing industry standards.

IMO's objectives

15 The proposed revision of the Circular MSC-MEPC.3/Circ.4/Rev.1 is directly relevant to the Organization's goal of improving maritime safety and environmental protection by ensuring accurate and comprehensive collection and analysis of data concerning marine casualties. This data is crucial for identifying trends, understanding the causes of accidents, and developing effective recommendation and preventative measures. Simplifying reporting to GISIS could also increase the timeliness of data availability for the industry.

16 The proposal fully supports strategic direction 8 (Ensure organizational effectiveness) of the Organization's Strategic plan for the six-year period 2024 to 2029, which includes consideration of means for strengthening the Organization's technical and analytical capabilities to collect, manage, analyse and report on relevant information and data. Furthermore, since one of the specific limitations that would be addressed relates to the accurate recording of information concerning accidents within enclosed spaces, the proposal also supports strategic direction 6 (Address the human element).

17 Furthermore, the proposal for a new output of the Circular MSC-MEPC.3/Circ.4/Rev.1, would support strategic direction 7, as it would ensure that information from various sources, including GISIS, is fed back into the Organization's regulatory processes, enabling informed decisions when reviewing existing regulations and developing new ones.

18 Ensuring better-quality data capture within a structured causal chain analysis model will also improve the quality of data-analysis efforts, such as the important work carried out by the Secretariat and the World Maritime University last year (documents III 11/4/2 and III 11/4/3).

Output

19 The co-sponsors propose the establishment of a new output with the title "Revision of the MSC-MEPC.3/Circ.4/Rev.1 on casualty-related matters, reports on marine casualties and incidents". The new output is expressed in SMART terms:

.1 **Specific:** The output aims to build upon the existing MSC-MEPC.3/Circ.4/Rev.1 as it is an evolution rather than a revolution. It will address high-level omissions, improve granularity in key areas, update language to reflect current best practices and provide a comprehensive approach to identify contributory factors. This will enable more effective analysis of casualty data.

.2 **Measurable**: Using the boundary of keeping the original text where consensus cannot be achieved, a final text can be provided by the end of a single session.

.3 **Achievable**: A proposed draft text is attached as annex 1. This has been created using a review of an extensive dataset and further refined with the input of marine accident investigation bodies. Further refinement to create a final text is achievable in a single session.

.4 **Relevant**: This work will inform the ongoing GISIS review project and complement the update of the Casualty Investigation Code. Timely completion of the work will ensure the new digital architecture is fit for purpose. Delays may mean that the MCI module will need to be adjusted twice.

.5 **Time-bound**: It is expected that the output could be completed in a single session, meaning a final text would be available in line with the project requirements of the GISIS review.

Human element

20 A completed checklist for considering human element issues by IMO bodies is set out in annex 3 to this document (MSC-MEPC.1/Circ.5/Rev.6, appendix of annex 5).

Urgency

21 Prompt completion of the proposed review of MSC-MEPC.3/Circ.4/Rev.1 would be preferable, considering its connection to the ongoing full review of GISIS. A review of the taxonomy would also complement the update to the Casualty Investigation Code.

Road map

22 To ensure that work on the taxonomy is completed in line with the ongoing review of GISIS, it is proposed that the new output be included in the 2028-2029 biennial agenda of the Committee, with the III Sub-Committee as the appropriate sub-committee. A single session is required for the completion of the work. It is also proposed that the new output, if approved, be added to the provisional agenda for III 14.

Action requested of the Committee

23 The Committee is invited to note the information provided above, and to consider the proposal for a new output on "*Revision of* MSC-MEPC.3/Circ.4/Rev.1 on *casualty-related matters – Reports on marine casualties and incidents*", as outlined in paragraph 14, taking into account the proposed amendments to MSC-MEPC.3/Circ.4/Rev.1, as set out in annex 1, and take action as appropriate.

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ANNEX 1

PROPOSED AMENDMENTS TO MSC-MEPC.3/CIRC.4/REV.2

LIST OF APPENDICES

Appendix 1: generic information

Appendix 2: factual information, relating to each ship involved in a marine casualty or marine incident

Appendix 3: casualty analysis data, relating to each ship involved in a marine casualty or marine incident

Appendix 4: supplementary information, required in particular circumstances relating to each marine casualty or marine incident

Appendix 5: Field Value Option Tables:

Table 1: Marine safety investigating State/Administration/Nationality
Table 2: Safety recommendation focus
Table 2B: Safety recommendation target
Table 3: Location of initial marine casualty or marine incident
Table 4: Casualty event
Table 5: Casualty event severity
Table 6: Sea state
Table 7: Wind force
Table 8: Natural light
Table 9: Visibility
Table 10: Type of weather
Table 11: Ice
Table 12: Ship operation/Task operation
Table 13: Oil cargo~~/bunkers~~ type & quantity
Table 13B: Bunkers type & quantity
Table 14: Dangerous goods in packaged form
Table 14B: Cargo / Containers lost overboard – non dangerous cargo
Table 15: Chemicals in bulk ~~pollution category~~
Table 16: Accident event
Table 17: Rank
Table 18: Relevant training
Table 19: ~~Error type~~ Human action
Table 20: Temporary related contributing factors
~~Table 21: Permanent related contributing factors~~
Table 22: Operational contributing factors
Table 23: Management/organizational contributing factors
Table 24: Equipment system
Table 25: ~~Type~~ Mode of system/equipment failure
Table 26: Hazardous material type
Table 27: ~~Type of~~ hazardous effect of material ~~effect~~
Table 28: Environmental effect phenomenon
Table 29: External agencies system
Table 30: External agencies task affected

Annex 1

Revised harmonized reporting procedures – Reports required under SOLAS regulations I/21 and XI-1/6, and MARPOL, articles 8 and 12

APPENDIX 1

Generic Information

General

Field number	**Field description**	**Field value type**
.1*	Marine safety investigating State	See table 1
.2*	Number of ships involved	Number
.3	Actions taken	Text
.4	Safety recommendation focus (loop for more than one safety recommendation)	See table 2 (multi-choice)
.5	Safety recommendation acceptance	Y/N/Partial
.6	Safety recommendation	Text

Generic casualty data

.1	Summary of events	Text
.2*	Date of initial marine casualty or marine incident (local)	Numbers
.3*	Time of initial marine casualty or marine incident (local)	Numbers
.4*	Position of initial marine casualty or marine incident – latitude	Numbers
.5*	Position of initial marine casualty or marine incident – longitude	Numbers
.6*	Location of initial marine casualty or marine incident	See table 3
.7*	~~Overall~~ casualty event	See table 4
.8*	~~Overall occurrence~~ Severity of casualty	See table 5

External environmental data

.1	Sea state	See table 6
.2	Wind force	See table 7
.3	Natural light	See table 8
.4	Visibility	See table 9
.5	Type of weather	See table 10
.6	Ice	See table 11

APPENDIX 2

Factual information
(relating to each ship involved)

1 Ship particulars

.1*	IMO number	Number/Auto[1]
.2*	Name of ship	Text/Auto
.3	Call sign	Text/Auto
~~.4~~	~~MMSI number~~	~~Number/Auto~~
.5*	Flag State	Auto
.6*	Type of ship (drop list to include high speed craft)	Auto
.7	Gross tonnage	Auto
.8	Length overall	Auto
.9	Classification society	Auto
.10	Registered shipowner	Auto
.11	~~Ship's~~ Operator / Company	Auto
.12	Year of build	Auto
.13	Deadweight	Auto
.14	Hull material	Auto
~~.15~~	~~Hull construction~~	~~Auto~~
.16	Propulsion type	Auto
.17	Type of bunkers	See table 13B
.18	~~Number of crew on ship's certificate~~ Minimum safe manning	Number
.19	~~Number of passengers on ship's certificate~~ Maximum passengers carried	Number

2 Voyage data

.1	Type of cargo	Text
.2	Packaged dangerous goods or marine pollutants on board	Y/N/U[2]
.3	Number of crew on board	Number
.4	Number of passengers on board	Number
.5	Number of other persons on board	Number

3 Casualty data

.1	Primary casualty event ~~(loop for more than one casualty event)~~	See table 4
.2*	~~Casualty event~~ Severity of casualty	See table 5
.3	Ship operation	See table 12 (multi-choice)
~~.4~~	~~Under pilotage~~	~~Y/N/U~~
.5	GMDSS used	Y/N/U
.6	Life-saving appliances used	Y/N/U
.7	Ship abandoned	Y/N/U
.8	VDR / S-VDR ~~fitted~~	~~Y/N/U~~ Data useable/

[1] "Auto" means "automatically populated".

[2] Y/N/U means Yes/No/Unknown.

		Data not useable / Data not available / Not fitted
~~.9~~	~~VDR / S-VDR information available~~	~~Y/N/U~~
~~.10~~	~~VDR / S-VDR information downloaded~~	~~Y/N/U~~
~~.11~~	~~VDR / S-VDR information useable~~	~~Y/N/U~~

4 Consequences

.1	Number of crew dead or missing ~~crew~~	Number
.2	Number of passengers dead or missing ~~passengers~~	Number
.3	Number of other persons dead or missing ~~persons~~	Number
.4	Number of crew seriously injured	Number
.5	Number of passengers seriously injured	Number
.6	Number of other persons seriously injured	Number
.7	~~Total loss of ship~~ Damage to ship (select highest applicable outcome)	Total loss / Unfit to proceed / Damaged but fit to proceed / No significant damage
~~.8~~	~~Material damage to ship~~	~~Y/N/U~~
~~.9~~	~~Breach of hull causing flooding~~	~~Y/N/U~~
~~.10~~	~~Ship unfit to proceed to sea~~	~~Y/N/U~~
.11	Damage to third parties ~~damage~~ (including non-ship source pollution)	Text
.12	Ship generated pollution – oil cargo type & quantity	See table 13A (multi-choice)
.13	Ship generated pollution – ~~oil~~ bunkers type & quantity	Table 13B (multi-choice)
.14	Ship generated pollution – chemicals in bulk ~~pollution~~ category & quantity	Table 15 (multi-choice)
.15	Ship generated pollution – cargo/containers including packaged dangerous goods and marine pollutants type & quantity lost overboard	Table 14A Table 14B

APPENDIX 3

Casualty analysis data
(relating to each ship involved)

For each casualty event

.1	Accident event (loop as required for more than one accident event)	See table 16

For ~~each~~ "human ~~erroneous~~ action" ~~accident event~~

~~.1~~	~~Subject – age~~	~~Number~~
~~.2~~	~~Subject – gender~~	~~M/F/U~~[3]
~~.3~~	~~Subject – nationality~~	~~See table 1~~
.4	Subject – rank	See table 17
~~.5~~	~~Subject – time at sea~~	~~Number~~
.6	Subject – time in present rank	Number
.7	Subject – time held current qualification	Number
.8	Subject – Certificate of competency ~~(type)~~	Drop down (STCW/Others)
.9	Subject – State issuing certificate of competency	See table 1
.10	Subject – time served with current employer	Number
~~.11~~	~~Subject – time with related experience~~	~~Number~~
~~.12~~	~~Subject – duration of handover~~	~~Number~~
.13	Subject – record any relevant lack of ~~relevant~~ training	See table 18 (multi-choice)
.14	Subject – hours of rest in last 24 hours	Number
.15	Subject – hours of rest in last 7 days	Number
.16	Subject – number of rest periods in last 24 hours	Number
~~.17~~	~~Subject – longest rest period in last 24 hours~~	~~Number~~
~~.18~~	~~Subject – hours of sleep in last 24 hours~~	~~Number~~
~~.19~~	~~Subject – hours of sleep in last 7 days~~	~~Number~~
.20	Subject – time on duty before marine casualty or marine incident	Number
~~.21~~	~~Subject – time since last sleep period before marine casualty or marine incident~~	~~Number~~
.22	Subject – watchkeeping pattern (drop down list: day work, 4 on/8 off, or 6 on/6 off, or 12 on/12 off, or Other)	~~Y/N/U~~ (drop down list: day work, 4 on/8 off, or 6 on/6 off, or 12 on/12 off, or Other)
.23	Subject – time served on board ship (current contract / since last leave) ~~up to occurrence/continuous service]~~	
.24	Task operation	See table 12
~~.25~~	~~Description of accidental event~~	~~Text~~
.26	~~Error type~~ Human Action	See table 19
.27	Temporary related contributing factors	See table 20

[3] M/F/U means Male/Female/Unknown.

		(multi-choice)
~~.28~~	~~Permanent related contributing factors~~	~~See table 21 (multi-choice)~~
.29	Operational contributing factors	See table 22 (multi-choice)
.30	Management contributing factors	See table 23 (multi-choice)

For each "system/equipment failure" ~~accidental event~~

.1	Subject – equipment system	See table 24
.2	Subject – equipment type	Text
.3	~~Type~~ Mode of system/equipment failure	See table 25
~~.4~~	~~Description of accidental event~~	~~Text~~
.5	Operational contributing factors	See table 22 (multi-choice)
.6	Management contributing factors	See table 23 (multi-choice)

For each "hazardous material effect" ~~accidental event~~

.1	Subject – material type	See table 26
.2	Type of effect	See table 27
~~.3~~	~~Description of accidental event~~	~~Text~~

For each "environmental effect" accidental event

.1	Subject – phenomenon	See table 28
~~.2~~	~~Description of accidental event~~	~~Text~~

For each "external agencies" ~~accidental event~~

.1	Subject – system	See table 29
.2	Task affected	See table 30
~~.3~~	~~Description of accidental event~~	~~Text~~
.4	Operational contributing factors	See table 22 (multi-choice)
.5	Management contributing factors	See table 23 (multi-choice)

APPENDIX 4

Supplementary information

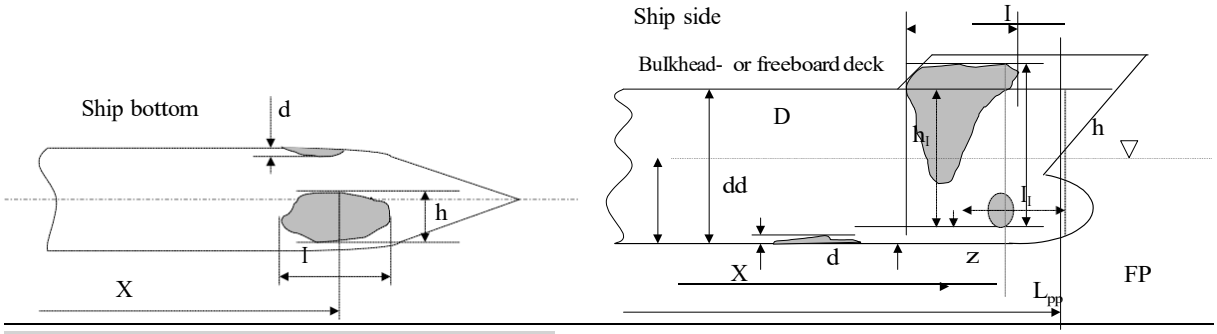
1 If "fire/explosion" casualty event (Field at appendix 2.3.1) and "packaged marine dangerous goods or marine pollutants on board" (Field at appendix 2.2.2) – then complete following ~~appendix 4~~ data.

1.1 Cargo(es) involved in casualty
1.1.1 Proper Shipping Name: UN Number: IMO Hazard Class:
1.1.2 ~~Name and address of manufacturer, or consignor, or consignee:~~
1.1.3 Type of packaging/container:
1.1.4 Quantity ~~and condition~~ of goods:
1.1.5 Stowage/securing arrangements:

1.2 Mis-declared, non-declared or non-compliant dangerous goods a factor in the casualty (yes/no)
1.2.1 If yes: details of mis-declared, non-declared or non-compliant dangerous goods. Name and address of consignor and consignee
~~1.2 Pollution - goods lost overboard (yes/no):~~
~~If yes:~~
~~Lost goods floated or sank:~~
~~Lost goods released from packaging (yes/no):~~

2 ~~**If "breach of hull causing flooding" (Field at appendix 2.4.9) AND "flooding/foundering" casualty event (Field at appendix 2.3.1) AND and 25 metres or more "length overall" (Field at appendix 2.1.8) – then complete following appendix 4 data**~~

~~2.1 Nature of damage:~~
~~2.2 Length between perpendiculars L_{pp}:~~
~~2.3 Moulded breadth B:~~
~~2.4 Moulded depth D (to bulkhead deck in passenger ships and freeboard deck in non-passenger ships, or to the uppermost completed deck if bulkhead or freeboard deck are not specified):~~
~~2.5 Draught before damage di:~~



~~2.6 Ship side (port/starboard/bottom):~~
~~2.7 Damage position (fore ship/afterbody/cargo hold/rudder/engine room/other):~~
~~2.8 Position (height) with reference to WL:~~
~~2.9 Damage type (below and above/above but not below/below but not above/within – the physical limits of the ship structure):~~
~~2.10 Distance from AP to centre of damage X:~~
~~2.11 Distance from base line to the lower point of damage Z:~~

2.12 Length of l: Height of h: Penetration d:
2.13 damage l_4: damage h_4: damage d_4:
2.14 dd mid: dd fore: dd aft: (draughts after damage):
2.15 dd mid calc:
2.16 Hole in ship: Y/N Struck ship: Y/N
Ship to ship collision: Y/N Striking ship Y/N
(If damage extends above bulkhead/freeboard deck, additional dimensions should be given for the part located below this deck, these being marked with suffix "$_4$"):
2.17 Speed of damaged ship at time of impact in knots:
2.18 Speed of second ship at time of impact in knots:
2.19 Angle of encounter:
2.20 Did the ship sink: Y/N
If so:
2.20.1 Time taken to sink and manner of sinking:
2.21 Appropriation of breached compartment(s) (e.g. machinery room, cargo hold, etc.):
2.22 Type and quantity of cargo in damaged compartment, if any:
2.23 Were there any special circumstances which influenced the results of damage (e.g. open watertight doors, manholes, side scuttles or pipes, fractures, etc.)?:
2.24 Position of watertight bulkheads in vicinity of damage (distance from AP to each of them):
2.25 How many compartments flooded?:
2.26 Was there a double bottom in the damaged area? Y/N
If so:
2.26.1 Indicate whether the inner bottom was breached:
2.27 Separate penetration from the bulbous bow? Y/N
2.28 Transverse subdivision bulkhead damaged? Y/N
2.29 Collision bulkhead damaged? Y/N
2.30 Damage assessment:
2.31 Any additional information considered useful:

3 **If "capsize/listing" casualty event (Field at appendix 2.3.1) OR "total loss of ship" (Field at appendix 2.4.7), AND 25 metres (15 metres for fishing vessels) or more in "length overall" (Field at appendix 2.1.8) – then complete following data**

3.1 Length between perpendiculars L_{pp}:
3.2 Moulded breadth B:
3.3 Moulded depth D (to bulkhead deck in passenger ships and freeboard deck in non-passenger ships, or to the uppermost completed deck if bulkhead or freeboard deck are not specified):
3.4 Draught amidships to assigned loadline or subdivision line:
3.5 Service conditions (light or loaded, with approximate percentage of cargo, stores, fuel and passengers):
3.6 Disposition of cargo:
3.7 Stowage factor of cargo:
3.8 Type and quantity of deck cargo, if any:
3.9 Quantity of water ballast, if any:
3.10 Wave length:
3.11 Wave height:
3.12 Direction of wind relative to ship's head (degrees):
3.13 Direction of waves relative to ship's head (degrees):
3.14 Speed of ship at time of casualty:
3.15 Name, length and height of enclosed superstructures and deckhouses above deck to which D was measured:
3.16 Bilge keels: width: longitudinal extent:

~~3.17 Depth of bar keel, if any:~~
~~3.18 Was water trapped on deck?~~
~~If so:~~
~~3.19 Indicate the extent:~~
~~3.20 Were all vulnerable openings effectively closed at time of casualty?:~~
~~3.21 Was the ship under action of helm at time of casualty?:~~
~~3.22 Were any special instructions relative to this ship in existence concerning the maintenance of stability, e.g. filling tanks, etc.?:~~
~~3.23 Were any voyage limits and/or weather restrictions imposed for the ship?:~~

~~For ship in fully loaded homogeneous arrival condition (with 10% stores, fuel, etc.):~~
~~3.24 Draught (amidships):~~
~~3.25 Displacement:~~
~~3.26 Centre of gravity above moulded base line:~~
~~3.27 Metacentric height (uncorrected):~~
~~3.28 Distance between the transverse metacentre and centre of buoyancy:~~
~~3.29 Reduction in GM due to any free surface of liquids:~~
~~3.30 Block coefficient of fineness of displacement:~~
~~3.31 Coefficient of fineness of midship section:~~
~~3.32 Coefficient of fineness of waterplane:~~
~~3.33 Height of centre of buoyancy above moulded base line:~~
~~3.34 Lateral are of ship's profile (including erections, etc.) exposed to wind:~~
~~3.35 Distance between centre of lateral area of ship's profile exposed to wind and corresponding waterline:~~
~~3.36 Estimated rolling period (P-S-P):~~
~~3.37 Rated amplitude of roll (maximum):~~
~~3.38 Angle of heel for immersion of uppermost continuous deck:~~
~~3.39 Righting levers based on centre of gravity corrected for any free surfaces, for the following angles of heel: 0º,10º,20º,30º,40º,50º,60º,70º,80º,90º:~~
~~3.40 Maximum righting lever:~~
~~3.41 Angle of maximum stability:~~
~~3.42 Angle of vanishing stability:~~

~~For ship in condition at time of loss:~~
~~3.43 Draught (amidships):~~
~~3.44 Displacement:~~
~~3.45 Centre of gravity above moulded base line:~~
~~3.46 Metacentric height (uncorrected):~~
~~3.47 Distance between the transverse metacentre and centre of buoyancy:~~
~~3.48 Reduction in GM due to any free surface of liquids:~~
~~3.49 Block coefficient of fineness of displacement:~~
~~3.50 Coefficient of fineness of midship section:~~
~~3.51 Coefficient of fineness of waterplane:~~
~~3.52 Height of centre of buoyancy above moulded base line:~~
~~3.53 Lateral are of ship's profile (including erections, etc.) exposed to wind:~~
~~3.54 Distance between centre of lateral area of ship's profile exposed to wind and corresponding waterline:~~
~~3.55 Estimated rolling period (P-S-P):~~
~~3.56 Rated amplitude of roll (maximum):~~
~~3.57 Angle of heel for immersion of uppermost continuous deck:~~
~~3.58 Righting levers based on centre of gravity corrected for any free surfaces, for the following angles of heel: 0º,10º,20º,30º,40º,50º,60º,70º,80º,90º:~~
~~3.59 Maximum righting lever:~~
~~3.60 Angle of maximum stability:~~
~~3.61 Angle of vanishing stability:~~

~~3.62 Lightship displacement:~~
~~3.63 Centre of gravity above moulded base line:~~
~~(It is desirable to attach a sketch of statical stability curves, drawn for both the below loading conditions, using the following scales:~~
~~20 mm for every 10º angle of inclination~~
~~10 mm (or 20mm) for every 0.1 metre of righting lever)~~

4 **If "fire/explosion" casualty event (Field at appendix 2.3.1) AND "very serious" casualty severity (Field at appendix 2.3.2) – then complete following data.**

~~4.1 Wind direction:~~
4.2 Part of ship where fire broke out:
~~4.3 Explain how persons on board were alerted:~~
4.4 Means by which fire was initially detected: Fixed fire detection system/by ship's crew or passenger/not known:
4.5 ~~Briefly, describe the performance of structural fire protection (fire resisting and fire retarding bulkheads, doors, decks, etc.) with respect to: containment and extinguishment of any fire in the space of origin, protection of means of escape or access for firefighting, adequacy of structural fire protection:~~
4.6 Ship's portable fire-extinguishing equipment used (foam, dry chemical, CO_2, water, etc.):
4.7 Fixed fire-extinguishing installations used: ~~at site of origin of fire (specify the type), adjacent areas (specify the type):~~
4.8 ~~Were fixed fire-extinguishing systems used in an attempt to extinguish the fire?:~~
~~4.9 Did the use of fixed fire-extinguishing systems contribute to the extinguishment of the fire?:~~
4.10 ~~Briefly explain the~~ ~~a~~Action taken by the crew to contain, control and suppress the fire and explosion in the space of origin:
4.11 ~~Was o~~Outside assistance provided ~~(e.g.~~ shoreside firefighters / firefighting tug / other ship / none
If shoreside firefighters ~~so~~:
~~4.12 What equipment was used?:~~ Report on whether firefighters were trained, resourced and briefed for firefighting onboard ships
~~4.13 Determine qualifications and training of all ship's crew involved in the firefighting operations:~~
~~4.14 Report on whether company or industry procedures, including hot work procedures, were in place and relevant to the operation concerned:~~
~~4.15 If the procedures were in place, were they correctly implemented?:~~
4.16 Time taken to fight fire from first alarm: to control the fire; once controlled, to extinguish the fire:
4.17 Total duration of fire:
~~4.18 Damage caused by fire: loss of life or injuries to personnel, to the cargo, to the ship, release of pollutants:~~
~~4.19 Was there an adequate supply of air on board for self-contained breathing apparatus or was outside assistance needed to supply such air?:~~

5 **If "GMDSS used" (Field at appendix 2.3.5) – then complete the following data.**

5.1 GMDSS sea area(s) ~~or sea areas~~ for which radio equipment was installed:
5.2 GMDSS sea area at time of casualty:
5.3 ~~Description of~~ Distress and safety radio communications used, ~~including particulars of~~: ~~means of communication~~ multiple check (radiotelegraphy, radiotelephony,

INMARSAT SES, DSC, SART, EPIRB, PLB) ~~and frequencies used for distress alert by ship, distress relay by RCC, SAR coordinating communications; use of alarm signal; contents of distress message; RCC(s), ships, coast station or coast earth stations which acknowledged distress message (state time and position~~);

5.3.1 language difficulties encountered: (Yes/No)

~~5.4 If the ship was abandoned, description of distress radio communications and location signals from survival craft:~~

~~5.5 If a satellite EPIRB or EPIRB was used for alerting and/or locating survivors, give details (frequency, type of activation, etc.) and which LUT/CES or coast station received the alerting signal:~~

5.6 Description of on-scene radio communications, including surface/air communications:

6 **If "oil cargo" (2.4.12) OR "~~oil~~ bunkers" (2.4.13) OR "chemicals in bulk" (Field 2.4.14) OR "packaged dangerous goods and marine pollutants" (Field 2.4.15) "quantity spilled" or "lost overboard" total 500 tonnes or more – then complete the following data. Non-mandatory.**

Direct Natural Resources Damages

Loss of wildlife:	
.1	Impact on birds
.2	Impact on marine mammals
.3	Impact on fish
.4	Impact on the marine life, including invertebrates
Loss of fisheries:	
.1	Fin fish
.2	Shellfish
.3	Fish farming
Damage to the marine environment:	
Damage to the shore environment:	
Habitat Degradation:	
.1	Soft habitats (salt marshes, mangroves, mudflats)
.2	Shoreline (beaches)
.3	Rocky coasts/reefs, including coral
.1	No action
.2	Pending
.3	Action taken, i.e.

7 **If "life-saving appliances used" (Field at appendix 2.3.6) – then complete the following data.**

7.1 ~~Wave height (observed):~~

7.2 Sea temperature ºC:

7.3 Air temperature ºC:

7.4 ~~Warm climates: Y/N:~~

7.5 Inflatable liferaft involved?

If so:
7.5.1 Capacity: POB: Davit launched?: Y/N
7.6 Marine Evacuation System (MES) involved?
If so:
7.6.1 Vertical? Slide?
7.7 Lifeboat involved?
If so:
7.7.1 Capacity: POB: Davit launched? Free fall?:
7.8 Buoyant apparatus involved?:
7.9 Ship's rescue boat involved?:
~~7.10 Launching appliances involved?:~~
~~If so:~~
~~7.10.1 Capacity: POB:~~
7.11 Other life-saving appliance involved?:
If so:
7.11.1 Capacity: POB:
7.12 Immersion suit / Anti-exposure suit used?:
7.13 Lifejacket used?:
7.14 Personal Flotation Device (PFD) other than a lifejacket used?:
~~7.15 Anti-exposure suit used?:~~
7.16 Lifebuoy used?:
~~7.17 Reason for deployment of life-saving appliance: emergency evacuation/abandonment/crew training/deployment as required by regulations/ approval trials (give details):~~

APPENDIX 5

FIELD VALUE OPTION TABLES

Table 1

Marine safety investigating State/Administration/Nationality

As per GISIS nomenclatures

Table 2

Safety recommendation focus

.1	~~Carriage of cargo~~ Legislation and compliance
.2	~~Electrical installation~~ Standards, equipment and maintenance
.3	~~Fire protection/firefighting equipment~~ Management factors
.4	Human factors
.5	~~Life-saving equipment~~ Safety management
.6	~~Machinery~~ Emergency response
.7	~~Operational practice~~ No recommendations made
.8	~~Radio installation~~
.9	~~Safety of navigation~~
.10	~~Seaworthiness~~
~~.11~~	~~Stability~~
~~.12~~	~~Other~~
~~.13~~	~~No safety recommendations~~

Table 2B

Safety recommendation target

.1	Owner / Operator / Company
.2	Cargo owner / shipper / other cargo interest
.3	Equipment manufacturer / shipyard
.4	Classification Society
.5	Industry body / trade association
.6	Flag State administration – national rule change
.7	Coastal State administration – national rule change
.8	Flag State administration – international rule change
.9	Other

Table 3

Location of ~~initial~~ primary marine casualty or marine incident

.1	At berth
.2	Anchorage
.3	Port
.4	Port approach
.5	Inland waters / canal / river

.6	~~Canal~~
.7	~~River~~
.8	~~Archipelagos~~
.9	Coastal / archipelagic waters
.10	Open sea
.11	Unknown
.12	Strait/channel
.13	Traffic separation scheme / Inshore traffic zone / separation zone / precautionary area
New	Recommended route / track
.14	Offshore installation

Table 4

Casualty event

.1	Collision	own ship not under way
.2		with multiple ships
.3		with other ship
.4	Grounding/stranding	while drifting
.5		while under power
New		at anchor / alongside
.6	Contact (allision)	with fixed object
.7		with floating object
.8		with flying object
New		with ice
~~.9~~	Fire/explosion	fire in machinery space
New		fire in galley
New		fire in accommodation space
New		fire in cargo space
New		fire on deck
New		fire in other space or location
.10		explosion - flammable gas
New		explosion - non-flammable gas
New		explosion - steam
New		explosion - other
.11	Hull failure	
New	Heavy weather	
New	Pollution	oil cargo
New		bunkers
New		chemicals in bulk
New		dry cargo or containers (including packed dangerous goods and marine pollutants)
New		other source of pollution
~~.12~~	~~Loss of control~~	~~loss of containment~~
~~.13~~		~~loss of directional control~~
~~.14~~		~~loss of electrical power~~
~~.15~~		~~loss of propulsion power~~
.16	Ship/equipment failure or damage	Propulsion / control system
New		Auxiliary machinery / electrical power
New		Discharge monitoring equipment
New		Steering gear / direction control
New		Cargo / deck machinery
New		Mooring / anchoring equipment
New		Lifting appliances / equipment
New		Lifesaving appliances
New		Firefighting equipment
New		Navigation / communication equipment
		Other
.17	~~Capsize/listing~~	Capsize
.18	Loss of stability	List/loll - cargo shift / liquefaction
New		List/loll - ballast / fuel changes
New		List/loll - other cause
New		Parametric / synchronous rolling event

New		Surfing/broaching
New		Deadship rolling
.19	~~Flooding/foundering~~	Loss of stability due to flooding
.20		Vessel foundered (flooded and lost)
.21	Ship missing	
.22	~~Occupational accident~~ Injury to person	~~body movement under or with physical stress (generally leading to an internal injury)~~ Internal injury caused by body movement (e.g. slipping without falling, lifting an object)
.23		~~body movement without any physical stress (generally leading to an external injury)~~ External injury due to an object (e.g. cut by sharp object, crushed by moving machinery)
.24		~~breakage, bursting, splitting, fall or collapse of material agent~~ Hit by breaking, falling or flying object
.25		~~overflow, overturn, leak, flow, vaporization, emission of material agent~~ Inhalation of dust, smoke, liquid, steam, or gas
.26		~~electrical problems, explosion, fire~~ External injury from exposure to heat (including liquids and steam), cold, hazardous materials, or electricity
.27		~~loss of control of machine, means of transport or handling equipment, hand-held tool, object, animal~~
New		Oxygen deficient / toxic atmosphere
.28		~~shock, fright,~~ Violence or ~~aggression,~~ threat, ~~presence~~
.29		Slipping, stumbling, falling ~~of person~~ overboard
.30		Slipping, stumbling, falling ~~of person~~ to a lower level
.31		Slipping, stumbling, falling ~~of a person~~ on the same level
New		Drowning onboard
.32		~~Others~~
.33	Other	
~~.34~~	~~Unknown~~	

Table 5

Casualty event severity

.1	Very serious marine casualty
.2	Marine casualty
.3	Marine incident

Table 6

Sea state

.1	0 – Calm glassy – (0m)
.2	1 – Calm rippled – (0 – 0.1m)
.3	2 – Smooth – (0.1 – 0.5m)
.4	3 – Slight – (0.5 – 1.25m)
.5	4 – Moderate – (1.25 – 2.5m)
.6	5 – Rough – (2.5 – 4m)
.7	6 – Very rough – (4 – 6m)
.8	7 – High – (6 – 9m)
.9	8 – Very high – (9 – 14m)
.10	9 – Phenomenal – (+14m)
.11	Unknown

Table 7

Wind force

.1	0 – Calm – knot (0 – 1) m/s (0 – 1)
.2	1 – Light air – knot (1 – 3) m/s (1 – 2)
.3	2 – Light breeze – knot (4 – 6) m/s (2 – 3)
.4	3 – Gentle breeze – knot (7 - 10) m/s (4 – 5)
.5	4 – Moderate breeze – knot (11 – 16) m/s (6 – 8)
.6	5 – Fresh breeze – knot (17 - 21) m/s (9 -11)
.7	6 – Strong breeze – knot (22 – 27) m/s (11 – 14)
.8	7 – Near gale – knot (28 – 33) m/s (14 – 17)
.9	8 – Gale – knot (34 – 40) m/s (17 – 21)
.10	9 – Strong gale – knot (41 – 47) m/s (21 – 24)
.11	10 – Storm – knot (48 – 55) m/s (25 – 28)
.12	11 – Violent storm – knot (56 – 63) m/s (29 – 32)
.13	12 – Hurricane – knot (+64) m/s (+33)
.14	Beaufort Scale: Unknown

Table 8

Natural light

.1	Daylight
.2	Twilight
.3	Night
.4	Unknown

Table 9

Visibility

.1	Very poor – ~~Vis < 0.5nm~~ <1000m (0.54 nm)
.2	Poor – ~~0.5 <= Vis < 2nm~~ between 1000m and 2 nm
.3	Moderate – between 2 ~~<= Vis~~ and 5nm
.4	Good – between 5 ~~<= Vis~~ and 25nm
.5	Very good – ~~Vis~~ > 25nm
.6	Unknown

Table 10

Type of weather

.1	Clear/partly cloudy
.2	Overcast
.3	Visibility reduced by fog, haze or smoke
.4	Rain or drizzle
.5	Snow (or rain and snow mixed)
New	Thunderstorm(s), with or without precipitation
~~.6~~	~~Humidity~~

Table 11

Ice

.1	Thickness (m) (drop down list)
.2	Percent coverage (drop down list)
.3	Type of ice (drop down list – multi year, 1st year, etc.)

Table 12

Ship operation/Task operation

.1	~~Being towed~~		
.2	~~Emergency~~		
.3	Fishing	Gutting/handling/stowing fish	
.4		Preparing/stowing fishing gear	
.5		Shooting/hauling fishing gear	

.6		Towing fishing gear	
.7	Normal service	Alongside / moored / anchored	
.8		Ballasting / de-ballasting / ballast exchange	
.9		Berthing	
.10		Bunkering	
.11		Cleaning / washing tanks	
.12		~~Dropping/hoisting~~ Anchoring / mooring operations	
.13		Embarking / disembarking people	
.14		On passage	~~Displacement mode~~
.15			~~Non-displacement mode~~
.16			~~Transitional mode~~
.17		Loading cargo (not STS)	
.18		Maintenance / repairs	
.19		Manoeuvring / turning	
.20		Open/close doors, hatches, etc.	
.21		~~Repairing~~	
.22		Starting/stopping engine	
.23		Taking stores	
.24		~~Turning~~	
.25		Under pilotage	
.26		Unloading / discharging cargo (not STS)	
.27		~~Water ballast exchange~~	
.28	~~Sailing~~	~~Beam reaching~~	
.29		~~Broad reaching~~	
.30		~~Close reaching~~	
.31		~~Cruising using engine~~	
.32		~~Head to wind~~	
.33		~~On the port/starboard tack~~	
.34		~~Running~~	
.35		~~Set and lower a sail~~	
.36		~~Tacking~~	
.37		~~Gybing~~	
.38	Special service	Disposal of residues/slops	
.39		Dredging / underwater operations	
.40		Drifting	
.41		Drilling	
.42		~~Gas freeing~~	
.43		Hove-to/dodging	
.44		Ice breaking / ice breaker assistance	
.45		Idle, off-hire	
.46		~~In icebreaker assistance~~	
.47		Offshore support	
.48		Inerting / gas freeing	
.49		~~On watch~~ Stand by / guard duty	
.50		Replenishment at sea operations	
.51		~~Rowing/paddling~~ Under oars	
.52		Ship-to-ship transfer of cargo	

.53		Towing/pushing	
.54		Trials / drills / tests	
.55		Under tow / push	
.56		Anchor handling	
New		Under sail / wind assisted propulsion	
New		SAR operation	
.57	Other		
~~.58~~	~~Unknown~~		

Table 13

Oil cargo~~/Bunker type~~ & quantity

	Dropdown list from MARPOL Annex 1, Appendix 1, applies to each item below	Quantity lost
.1	Asphalt solutions	
.2	Oils	
.3	Distillates	
.4	Gas Oil	
.5	Gasoline blending stocks	
.6	Gasolines	
.7	Jet fuels	
.8	Naphta	
.9	Unknown	
.10	None	

Table 13B
Bunker type & quantity lost

	Dropdown list	Quantity lost
.1	Marine Fuel Oil / Intermediate Fuel Oil / Heavy Fuel Oil	
.2	Marine Gas Oil / Diesel Oil / Gasoline	
.3	Hydrogen	
.4	Liquified Natural Gas / Liquified Petroleum Gas / CNG / DME	
.5	Ammonia	
.6	Biofuel (methanol / FAME / HVO / other)	
.7	Other fuel (please specify)	

Table 14A

Cargo / containers lost overboard - dangerous goods in packaged form

Class (IMDG Code)		Proper Shipping Name	UN number	Quantity lost ~~overboard~~
.1				
.2				
.3				
.4.1				
.4.2				

Class (IMDG Code)		Proper Shipping Name	UN number	Quantity lost ~~overboard~~
.4.3				
.5.1				
.5.2				
.6.1				
.6.2				
.7				
.8				
.9				

Table 14B

Cargo / Containers lost overboard – non-dangerous cargo

Cargo	Packaging / Storage	Quantity lost

Table 15

Chemicals in bulk ~~pollution category~~

		Quantity lost
.1	Category X	
.2	Category Y	
.3	Category Z	
.4	Category OS	
.5	Unknown	
.6	None	

Table 16

Accident event

.1	Human ~~erroneous~~ action
.2	System/Equipment failure
.3	Hazardous material ~~effect~~
.4	Environmental effect
.5	~~External agencies~~ Other agent or vessel
.6	Unknown

Table 17

Rank

.1	Master / skipper
.2	Chief mate
.3	Deck officer
.4	Chief engineer ~~officer~~
.5	Second engineer ~~officer~~

.6	Engineer officer
.7	Trainee / cadet
.8	Radio personnel
.9	Rating deck
.10	Rating engine
~~.11~~	~~Others~~
.12	Electro-technical officer
.13	~~Electro-technical~~ Rating electro-technical
.14	~~Skipper~~
.15	Other crew member
.16	Pilot
.17	Other non-crew member
.18	Unknown

Table 18

(Lack of) Relevant training

.1	Basic training	Personal survival techniques
.2		~~Fire prevention and firefighting~~ Fire firefighting and prevention
.3		Elementary first aid
.4		Personal safety and social responsibilities
.5		~~Basic safety familiarization~~
.6		~~Ship specific familiarization~~
.7	Advanced training	Advanced firefighting
.8		Proficiency in survival craft and rescue boat
.9		Proficiency in fast rescue boat
.10		~~Shore-based firefighting~~
.11	Specific training and familiarisation	Automatic Radar Plotting Aids
.12		Bridge ~~team~~ resource management
.13		Crane operation
.14		Crew resource management
.15		ECDIS
.16		GMDSS
.17		Oil tanker specialized
.18		Chemical tanker specialized
.19		Integrated bridge
.20		Liquefied gas tanker specialized
.21		~~Passenger ship familiarization~~
.22		Passenger ~~ship~~ safety, cargo safety and hull integrity
.23		~~Passenger ship~~ crowd management
.24		~~Passenger ship~~ crisis management
.25		~~Passenger ship safety, cargo safety, etc.~~
.26		~~Ship/engine control~~
.27		Tanker familiarization
.28		Towing operations
.29		Dynamic positioning
.30	Training not according to national law	

.31	Other	
~~.32~~	~~None~~	
~~.33~~	~~Unknown~~	

Table 19

Human action ~~Error type~~

.1	Observation
.2	Interpretation
.3	Planning / Intention
.4	Action

Table 20

~~Temporary related~~ Contributing factors (select all that applies)

.1	Distraction
.2	Fatigue
.3	Fear
.4	Inattention
.5	Memory failure
.6	Performance variability
.7	Physical or physiological stress
.8	Psychological stress
.9	Alcohol or drugs
.10	Non-prescription/Prescription medication
.11	Other (specify)

~~Table 21~~

~~Permanent related contributing factors~~

~~.1~~	~~Cognitive bias~~
~~.2~~	~~Cognitive style~~
~~.3~~	~~Functional impairment~~

Table 22

Operational contributing factors

Social environment

.1	Less than adequate labour-management relations
.2	less than adequate communications
.3	Language problem
.4	Social and cultural barriers and conflicts
.5	Person-to-person conflict/animosity
.6	Inadequate safety/risk awareness
.7	Inappropriate or adventurous behaviour/comportment
.8	Resistance to change

Supervision

.9	Lack of coordination of tasks
.10	Inadequate work preparation
.11	Inadequate briefing/instruction
.12	Lack of resources
.13	Poor Supervision
.14	Inadequate work procedures
.15	Conflicting orders/priorities
.16	Inappropriate peer pressure

Manning

.18	Long working periods, excessive overtime
.19	Frequent change of watch schedule
.20	Inappropriate person assigned
.21	Too high workload/low workload
.22	Idleness, waiting
.23	Low job satisfaction, monotony
.24	Lack of responsibility for own job
.25	Inadequate manning

Personnel

.26	Lack of motivation/morale
.27	Lack of skill
.28	Lack of knowledge
.29	Less than adequate physical/physiological capability
.30	Less than adequate mental and psychological state

Workplace conditions

.31	Anthropometric factors, dimensions
.32	Lack of information, inadequately presented information
.33	Display design, controls
.34	Inadequate illumination
.35	Hazardous/disorderly workplace

Internal environment

.36	Noise, vibration
.37	Sea motion, acceleration
.38	Temperature, humidity
.39	Toxic substance, other health hazards
.40	Lack of oxygen

Inadequate tools and equipment

.41	Right tools and equipment unavailable
.42	Less than adequate assessment of needs and risks
.43	Inadequate tool or aid
.44	Inadequate standards or specifications
.45	Use of wrong equipment

Maintenance

.46	Failure not detected during maintenance
.47	Lack of maintenance
.48	Inadequate maintenance
.49	Improper performance of maintenance/repair
.50	System out of operation

Navigational/Geographical constraints

.51	High traffic density hinders vessel control
.52	Hindrances in the seaway
.53	Restricted fairway/channel

Emergency response

.54	Contingency plans not followed
.55	Inadequate/lack of training
.56	Lacks initiative to deal with emergencies
.57	Training ignored
.58	Inadequate control of life-saving equipment
.59	Lack of command and control
.60	Inadequate/erroneous information to passengers

Table 23

Management/organizational contributing factors

Impact on business climate

.1	Economic conditions
.2	Market change
.3	Bad relation with other organization
.4	Extreme competition

Organization and general management

.5	Policy, ethical values
.6	Focus on liability and punishment
.7	Communication policy
.8	Standard set by example
.9	Company loyalty and commitment
.10	Response to feedback from employees
.11	Ship undermanned
.12	Support from land organization
.13	Too wide control span
.14	Authoritarian command style
.15	Unclear roles and responsibility
.16	Cross-pressure from schedule and economy
.17	Lack of communication and coordination

Operations management

.18	Pressure to keep schedule and costs
.19	Inadequate procedures and checklists
.20	No review of critical tasks/operations
.21	Management training

Safety and environmental management

.22	Critical system and cargo documentation
.23	Inspection/internal audits
.24	Follow-up of non-conformities
.25	Incident reporting, analysis, improvement
.26	Work instruction
.27	Concern for quality improvement
.28	Inadequate promotion of safety
.29	Less than adequate safety plan and programme
.30	Less than adequate formal safety assessment, risk analysis

Occupational health management

.31	Information about health risks
.32	Personal protective equipment
.33	Health control of personnel
.34	Workplace inspections

.35	Substandard hygiene on board
.36	Less than adequate medical services provided
.37	Follow-up of programmes and plans
.38	No off-the-job safety policy

Personnel management

.39	Hiring and selection policy
.40	Inadequate training programme
.41	Selection / training of officers
.42	Control with use of overtime
.43	Opportunity for advancement
.44	High turnover, lack of continuity

System acquisition

.45	Substandard components
.46	Substandard contractors
.47	Control of contractors
.48	Verification of contract requirements
.49	Inadequate testing

Design

.50	Deviation from standards/specifications
.51	Inappropriate regulations
.52	Design error
.53	Less than adequate design verification
.54	Less than adequate system review and evaluation
.55	Less than adequate change management

Maintenance policy

.56	Lack of priority to maintenance
.57	Lack of competent repair personnel
.58	Less than adequate planning
.59	Lack of follow-up and compliance check

Emergency preparedness

.60	Emergency plans
.61	Emergency procedures
.62	Management training
.63	Crisis handling
.64	Maintenance of life-saving equipment
.65	Inadequate fire-fighting equipment
.66	Emergency training programme
.67	Life-saving equipment
.68	Lack of decision support
.69	Lack of warning systems

Regulatory activities

.70	Regulatory procedures
.71	Regulatory standards
.72	Regulation
.73	Inspection and survey
.74	Monitoring
.75	Surveillance
.76	Audit
.77	Checks

Table 24

Equipment / system

.1	Auxiliary machinery
.2	Ballast
.3	Bilge, drain
.4	Cargo
.5	Cargo securing
.6	Cargo tank venting
.7	Navigational lights or sound signals
.8	Compressed air
.9	COW
.10	Deck machinery
.11	Doors, hatches, ports, etc.
.12	Dredging
.13	Electrical appliances
.14	Electrical installation
.15	Exhaust gas
.16	Fire protection
.17	Fishing gear
.18	Fixtures/fitting
.19	Freshwater
.20	Fuel
.21	IGS
.22	Internal communication, alarms except related to fire
.23	Life-saving appliances
.24	Lifting appliances
.25	Lubrication
.26	Manoeuvrability/DP system
.27	Shipborne Navigational equipment and systems (drop down list include: RADAR, ECDIS, Echo Sounders, GPS, Magnetic compass, Gyro compass, NAVTEX receiver, AIS)
.28	Pollution prevention
.29	Propulsion machinery
.30	Radio communication
.31	Sewage
.32	Ship structure
.33	Stability calculations/loading instrument
.34	Steam generation

.35	Stripping
.36	Ventilation
.37	Welding appliances
.38	Other
.39	Unknown
.40	CCTV

Table 25

~~Type~~Mode of system/equipment failure

.1	Structure failure	Deformation (bulges, deflections, buckling)
.2		Fractured (breaks or incipient cracks)
.3		Penetrated, holed
.4	Containment failure	
.5	Physical binding or jamming	
.6	Vibration	
.7	Fails to remain (in position)	
.8	Fails to open	
.9	Fails to close	
.10	Fails open	
.11	Fails closed	
.12	Internal leakage	
.13	External leakage	
.14	Fails out of tolerance (high)	
.15	Fails out of tolerance (low)	
.16	Inadvertent operation	
.17	Intermittent operation	
.18	Erratic operation	
.19	Erroneous indication	
.20	Restricted flow	
.21	False actuation	
.22	Fails to stop	
.23	Fails to start	
.24	Fails to switch	
.25	Premature operation	
.26	Delayed operation	
.27	Erroneous input (increased)	
.28	Erroneous input (decreased)	
.29	Erroneous output (increased)	
.30	Erroneous output (decreased)	
.31	Loss of input	
.32	Loss of output	
.33	Shorted (electrical)	
.34	Open (electrical)	
.35	Leakage (electrical)	
.36	Other	
.37	Unknown	

Table 26

Hazardous material ~~type~~

.1	Cargo	
.2	Deck stores	
.3	Engine stores	
.4	Fuel	
~~.5~~	~~Provisions~~	
.6	Residues/wastes	Oily waste
.7		NLS waste
.8		Garbage
.9		Sewage
.10		Ozone-depleting substances
.11		Exhaust gas-cleaning residues
.12	Other	
~~.13~~	~~Unknown~~	

Table 27

~~Type of~~ Hazardous effect of material ~~effect~~ (select all that applies)

.1	Cargo liquefaction	
.2	Cargo shifting	
.3	Chemical reaction	Corrosive effects
.4		Dust effects
.5		Explosive mixture
.6		Poisoning
.7		Flammable mixture
.8		Radiation
.9		Spontaneous combustion
.10		Toxic fumes or gas
.11	~~Insufficient stability~~	
.12	Overflow/leak/escape	
.13	Oxygenation	
.14	~~Structural damage~~	
New	Cryogenic effects	
.15	Other	
.16	Unknown	

Table 28

Environmental effect phenomenon

~~.1~~	~~Wind~~ Heavy weather
.2	~~Wave~~ Green/white water
New	Abnormal wave
.3	Current (different to predicted)
.4	Tide (different to predicted)

.5	Shallow water effect / squat
.6	Channel / bank effect
.7	Hydrostatic head
.8	Lightning
~~.9~~	~~Whiteout~~
~~.10~~	~~Fog, haze, smoke~~ Reduced visibility
.11	Rain, snow, hail
.12	Unexpected Ice / ice thicker than forecast
.13	Icing
.14	Debris
.15	Multi-phenomenon
.16	Other ship interference~~ference~~action
.17	Uncharted underwater obstruction
.18	Entanglement in rope/net (own ship's)
.19	Entanglement in rope/net (other ship's or source unknown)
.20	Natural disaster/tsunami
.21	Other
~~.22~~	~~Unknown~~

Table 29

External agencies ~~system~~

.1	~~Coastal~~ Vessel Traffic Service (VTS)
.2	Navigation aids
~~.3~~	~~Navigation sign, buoy, etc.~~
.4	Pilot service
.5	Pollution response
~~.6~~	~~Port VTS~~ Vessel Traffic Management
.7	RCC / SAR centre
.8	SAR ~~craft~~ asset
.9	Towing / salvage service
.10	Other
.11	Unknown

Table 30

External agencies task affected

.1	Monitoring
.2	Coordination
.3	Communication
.4	Planning
.5	Operation
.6	Other
.7	Unknown

***

ANNEX 2

CHECKLIST FOR IDENTIFYING ADMINISTRATIVE REQUIREMENTS

<table>
<tr><td colspan="3">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.</td></tr>
<tr><td>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</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)

No new reporting requirements.</td></tr>
<tr><td>2. Record-keeping?
Keeping statutory documents up to date, e.g. records of accidents, records of cargo, records of inspections, records of education</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)

No new record-keeping requirements.</td></tr>
<tr><td>3. Publication and documentation?
Producing documents for third parties, e.g. warning signs, registration displays, publication of results of testing</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)

No new documentation requirements.</td></tr>
<tr><td>4. Permits or applications?
Applying for and maintaining permission to operate, e.g. certificates, classification society costs</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)

No new permits.</td></tr>
<tr><td>5. Other identified requirements?</td><td>NR</td><td>Yes
✓ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">No new documentation requirements.</td></tr>
</table>

***

ANNEX 3

CHECKLIST FOR CONSIDERING AND ADDRESSING THE HUMAN ELEMENT

	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 the answer to the question is "yes" identify considerations. If the answer is "no" make a 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		This proposal is for a new output for a revision of MSC-MEPC.3/Circ.4/Rev.1 to address high-level omissions of data, improve granularity in key areas, update language to reflect current best practices and guidance for marine safety investigation reports and promote a more comprehensive approach to identifying contributory factors, aligning with current no-blame investigation practices. The proposal does not call for a change to any IMO instrument that will have a direct effect on the workload of seafarers, managers or other parts of the industry. The proposed revision of MSC-MEPC.3/Circ.4/Rev.1 would deliver enhanced data quality, strengthen safety analysis and enhance GISIS MCI module utility, this aligns with ongoing work to improve GISIS and efforts could correlate with the output to review the Casualty Investigation Code, if approved.	Not applicable.

1.1.1	Operations including navigation, cargo and engineering	No		As above.	Not applicable.
1.1.2	Maintenance of the ship's structure and its equipment	No		As above.	Not applicable.
1.1.3	Onboard administration in support of the ships' management systems	No		As above.	Not applicable.
1.1.4	Onboard administration related to regulation involving flag States, classification societies, port State and other bodies such as charterers and port authorities	No		As above.	Not applicable.
	1	2	3	4	5
1.1.5	Increased workload or time pressure on personnel if involved in the implementation of changes prior to the implementation date	No		As above.	Not applicable.
1.2	**Ashore, in a manner that would affect the ship's operation to:**	No		This proposal is for a new output for a revision of MSC-MEPC.3/Circ.4/Rev.1 to address high-level omissions of data, improve granularity in key areas, update language to reflect current best practices and guidance for marine safety investigation reports and promote a more comprehensive approach to identifying contributory factors, aligning with current no-blame investigation practices. The proposal does not call for a change to any IMO instrument that will have a direct effect on the workload of seafarers, managers or other parts of the industry. The proposed revision of MSC-	Not applicable.

				MEPC.3/Circ.4/Rev.1 would deliver enhanced data quality, strengthen safety analysis and enhance GISIS MCI module utility, this aligns with ongoing work to improve GISIS and efforts could correlate with the output to review the Casualty Investigation Code, if approved.	
1.2.1	Companies' administration	No		As above.	Not applicable.
1.2.2	Flag State, port State and classification societies administration such that certification and other processes are compromised or delayed	No		As above.	Not applicable.

	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 the answer to the question is "yes" identify considerations. If the answer is "no" make a 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		This proposal is for a new output for a revision of MSC-MEPC.3/Circ.4/Rev.1 to address high-level omissions of data, improve granularity in key areas, update language to reflect current best practices and guidance for marine safety investigation reports and promote a more comprehensive approach to identifying contributory factors, aligning with current no-blame investigation practices.	Not applicable

				The proposal does not call for change to any IMO instrument that will have a direct effect on the workload of seafarers, managers or other parts of the industry. As noted in paragraph 11 of the proposal, the proposed revision of MSC-MEPC.3/Circ.4/Rev.1 would deliver enhanced data quality, strengthen safety analysis and enhance GISIS MCI module utility, this aligns with ongoing work to improve GISIS and efforts could correlate with the output to review the Casualty Investigation Code, if approved.	
2.2	By changing responsibilities as laid out in the ISM Code	No		As above.	Not applicable.
2.3	By creating complexity in its implementation and/or in the safety management systems	No		As above.	Not applicable.
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		As above.	Not applicable.
2.5	By limiting the time available to establish situational awareness, decide, communicate (possibly across time zones) or check	No		As above.	Not applicable.
2.6	By increasing reliance on judgement and administrative controls to manage major risks such as oil spills and collisions	No		As above.	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 the answer to the question is "yes" identify considerations. If the answer is "no" make a proper justification*	*Identify how human element considerations should be addressed in the output*
3	**Does the "output" affect the living and working environment?**				
3.1	By interfering with existing arrangements for abandonment, fire-fighting and other emergency plans or procedures	No		This proposal is for a new output for a revision of MSC-MEPC.3/Circ.4/Rev.1 to address high-level omissions of data, improve granularity in key areas, update language to reflect current best practices and guidance for marine safety investigation reports and promote a more comprehensive approach to identifying contributory factors, aligning with current no-blame investigation practices. The proposal does not call for change to any IMO instrument that will have a direct effect on the workload of seafarers, managers or other parts of the industry. As noted in paragraph 11 of the proposal, The proposed revision of MSC-MEPC.3/Circ.4/Rev.1 would deliver enhanced data quality, strengthen safety analysis and enhance GISIS MCI module utility, this aligns with ongoing work to improve GISIS and efforts could correlate with the output to review the Casualty Investigation Code, if approved.	Not applicable.

3.2	By introducing new materials that could create an explosion, fire, environmental or occupational health risk	No		As above.	Not applicable.
3.3	By introducing new high-energy sources such as high-voltage, high-pressure fluids	No		As above.	Not applicable.
3.4	By affecting access or egress and causing a lack of ventilation in working spaces	No		As above.	Not applicable.
3.5	By affecting the habitability of accommodation spaces due to noise, vibration, temperatures, dust and other contaminants	No		As above.	Not applicable.

	1 **Question**	**2** **Yes/No**	**3** **IMO References**	**4** **Considerations**	**5** **Instructions**
Operation and Maintenance			*Other relevant references may be added* *Strike out references that are not relevant*	*If the answer to the question is "yes" identify considerations. If the answer is "no" make a 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?**				

	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		This proposal is for a new output for a revision of MSC-MEPC.3/Circ.4/Rev.1 to address high-level omissions of data, improve granularity in key areas, update language to reflect current best practices and guidance for marine safety investigation reports and promote a more comprehensive approach to identifying contributory factors, aligning with current no-blame investigation practices. The proposal does not call for a change to any IMO instrument that will have a direct effect on the workload of seafarers, managers or other parts of the industry. As noted in paragraph 11 of the	Not applicable.

				proposal, The proposed revision of MSC-MEPC.3/Circ.4/Rev.1 would deliver enhanced data quality, strengthen safety analysis and enhance GISIS MCI module utility, this aligns with ongoing work to improve GISIS and efforts could correlate with the output to review the Casualty Investigation Code, if approved.	
4.2	By introducing new and/or novel technology, or technology that changes the role of the person	No		As above.	Not applicable.
4.3	By introducing requirements for new competencies and roles	No		As above.	Not applicable.
4.4	By overloading existing infrastructure such as power generation and ventilation systems	No		As above.	Not applicable.
4.5	By poor integration with existing systems and controls	No		As above.	Not applicable.
4.6	By introducing new and unfamiliar operations/procedures	No		As above.	Not applicable.
4.7	By introducing new and unfamiliar operating interfaces?	No		As above.	Not applicable.
4.8	By introducing risks to the ship during any modifications required prior to the implementation date of the output	No		As above.	Not applicable.

	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 the answer to the question is "yes" identify considerations. If the answer is "no" make a proper justification*	*Identify how human element considerations should be addressed in the output*
5	**Does the "output" require changes to:**				
5.1	Training	No		This proposal is for a new output for a revision of MSC-MEPC.3/Circ.4/Rev.1 to address high-level omissions of data, improve granularity in key areas, update language to reflect current best practices and guidance for marine safety investigation reports and promote a more comprehensive approach to identifying contributory factors, aligning with current no-blame investigation practices. The proposal does not call for change to any IMO instrument that will have a direct effect on the workload of seafarers, managers or other parts of the industry. As noted in paragraph 11 of the proposal, The proposed revision of MSC-MEPC.3/Circ.4/Rev.1 would deliver enhanced data quality, strengthen safety analysis and enhance GISIS MCI module utility, this aligns with ongoing work to improve GISIS and efforts could correlate with the output to review the Casualty Investigation Code,	Not applicable.

				if approved.	
5.2	Practical skill development and competencies	No		As above.	Not applicable.
5.3	Operating, management and/or maintenance procedures	No		As above.	Not applicable.
5.4	Information/manuals for operation and maintenance	No		As above.	Not applicable.
5.5	Spares outfit	No		As above.	Not applicable.
5.6	Occupational safety requirements including guarding and PPE	No		As above.	Not applicable.
5.7	Shore support	No		As above.	Not applicable.