

CASUALTY ANALYSIS PROCEDURE **(document FSI 17/WP.1, annex 2)**

1 PROPOSED PROCESS OF ANALYSIS OF CASUALTY INVESTIGATION REPORTS

1.1 Casualty investigation reports are submitted to the IMO Secretariat and in accordance with the terms of reference of the Sub Committee. They are grouped in categories and assigned to various reviewers who form the Correspondence Group on Casualty Analysis. The categories based on “initial event” are:

- | | |
|---|---|
| .1 Collision | .6 Machinery damage |
| .2 Stranding or grounding | .7 Damages to ship or equipment |
| .3 Contact | .8 Capsizing or listing |
| .4 Fire or explosion | .9 Missing |
| .5 Hull failure or failure of watertight doors, ports, etc. | .10 Accidents with life-saving appliances |
| | .11 Other |

Correspondence Group Analyses

1.2 Intersessionally, the members of the Correspondence Group prepare casualty analyses of individual reports prepared by Administrations. They are provided to the analysts preferably via electronic documents held in GISIS, or alternatively from hard copies provided by the Secretariat. The analysis of each casualty is tentatively entered in GISIS pending review by the reporting Administrations. The reporting Administration shall be given 21 days after notification by the Secretariat to respond assuring that the analyses are representative of the significant factors of the reports (FSI 10/17, paragraph 9.30). If there is no response within 21 working days, the analyses are made available on GISIS to all IMO members.

1.3 From the various analyses carried out, each analyst submits a report to the coordinator of the Correspondence Group, drafting out any lessons to be learned for presentation to seafarers. Safety issues identified during the analysis that need further consideration will be included in the Correspondence Group report to the Sub-Committee. If the Sub-Committee considers it appropriate, the safety issue will be added to the terms of reference of the Casualty Analysis Working Group (CAWG).

1.4 Following the review process by the reporting Administrations, confirming that the analyses are representative of the significant factors of the reports, the analyses will be made accessible to all IMO Members as a document on the IMODOCS database for review 8 weeks before the Sub-Committee meeting. The analysts and all CAWG members should review this summary prior to the Sub-Committee meeting in order to be prepared for the discussions in the CAWG. All marine casualty reports analysed by the Correspondence Group will be made available to the CAWG during the Sub-Committee meeting.

Casualty Analysis Working Group Activities

1.5 When the CAWG convenes at the Sub-Committee meeting, the Working Group reviews and validates the work of the Correspondence Group in the CAWG’s report to the Sub-Committee.

1.5*bis* At each Sub-Committee meeting the Secretariat provides CAWG participants with hard copies of all analyses completed intersessionally.

1.6 The CAWG also examines the analysis of investigation reports to determine if there are potential safety issues in way of trends or recurring contributing factors. This includes an ongoing consideration of analyses that had been entered in the GISIS casualty database and any other relevant information that is contained in databases or other reports. Any potential safety issue is submitted to the Sub-Committee for its review.

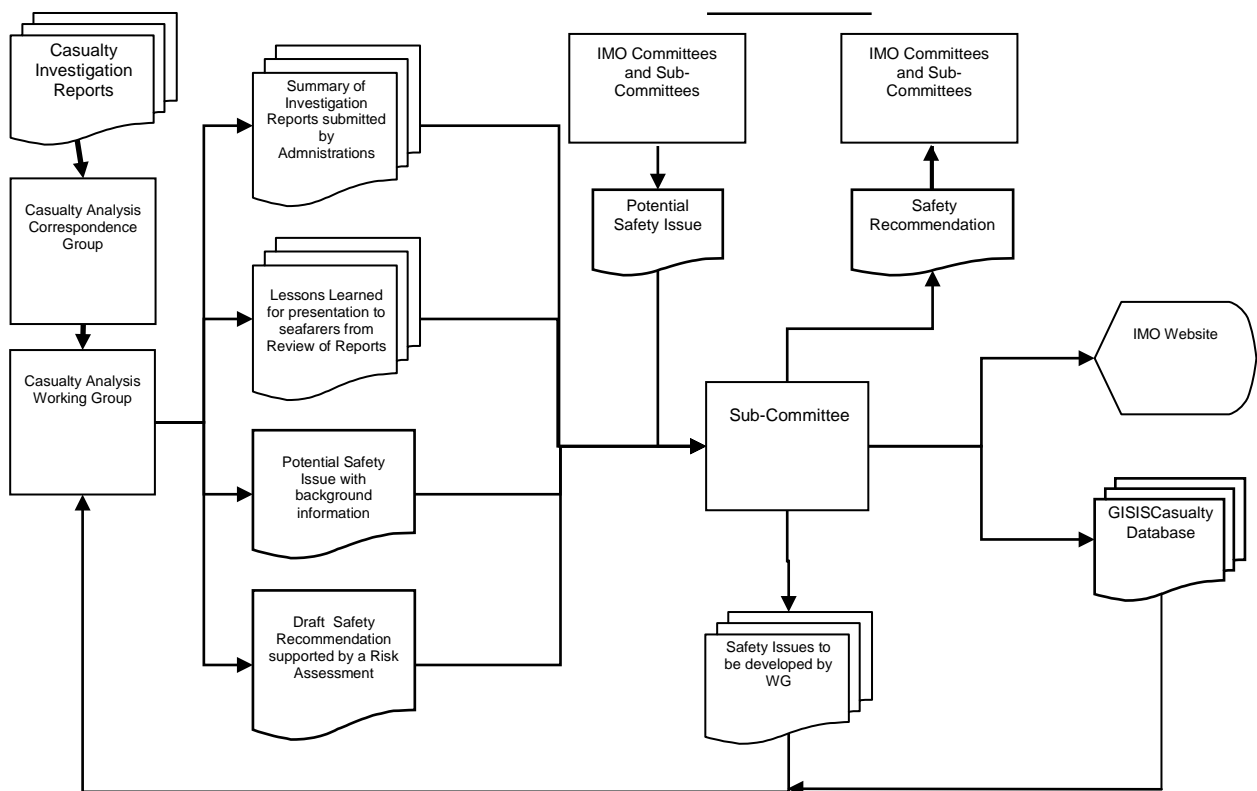
1.7 A potential safety issue may also be identified by another Sub-Committee which, as a result of its work or its review of casualty information, notes that a potential safety issue may exist and asks the Sub-Committee to determine if the CAWG should assess the issue further. A third means of identifying a potential safety issue is where an IMO Member submits a paper providing appropriate information for the consideration of the Sub-Committee.

1.8 Where appropriate the CAWG will assess the safety issue, using the methodology described in the following section. Upon completion of the assessment, the group submits a draft safety recommendation to the Sub-Committee for consideration.

1.9 The CAWG at each session of the Sub-Committee, will submit the following:

- .1 THE ANALYSIS OF CASUALTY REPORT;
- .2 draft lessons learned for presentation to seafarers;
- .3 potential safety issues, when appropriate; and
- .4 draft safety recommendations, when appropriate.

1.10 The following is a graphic representation of the typical flow of casualty information:



2 PROCEDURE FOR EVALUATING SAFETY ISSUES THAT NEED FURTHER CONSIDERATION

Gathering Information

2.1 When the Sub-Committee directs the Working Group to assess a safety issue, the CAWG has only included information relating to a number of casualties where reports have been submitted to IMO. Recognizing that these reports are only those that are serious or

very serious casualties, further fact-finding may be required to validate the safety issue. Therefore, the Sub-Committee, when directing the CAWG to undertake an assessment of the safety issue would, at the same time, ask participants of the Sub-Committee to provide information that they may have in national databanks.

Hazard Identification

2.2 The CAWG conducts a review of casualty reports submitted to IMO where contributing factors are pertinent to the validation of the safety issue. Additional information provided by Administrations is reviewed. The identification of a hazard starts with the determination of safety significant events leading up to the casualties in order to identify any commonality. The events are analysed to determine what actions occurred or conditions were present during the time leading up to the event and present an unacceptable level of risk. Such actions and/or conditions are identified as hazards and risk assessments are carried out.

Estimated Risk Assessment

2.3 The level of risk is assigned to the hazard by determining the frequency of a hazard occurring and the consequences of that hazard.

2.4 With respect to frequency, the group may include the following in their considerations:

- .1 Is there a history of occurrence like this one or is this an isolated occurrence?
- .2 How many similar occurrences were there under similar circumstances in the past?
- .3 How many pieces of equipment are there that might have similar defects?
- .4 How many operating or maintenance personnel are following or are subject to the practices or procedures in question?
- .5 To what extent are there organizational, management, or regulatory implications which might reflect larger systemic problems?
- .6 What percentage of the time is the suspect equipment or the questionable procedure or practice in use?

2.5 With respect to adverse consequences, the group may consider:

- .1 How many persons could be affected by the risk?
- .2 What could be the extent of property damage?
- .3 What could be the environmental impact?
- .4 What is the potential commercial impact?
- .5 What could be the public and media interpretation?

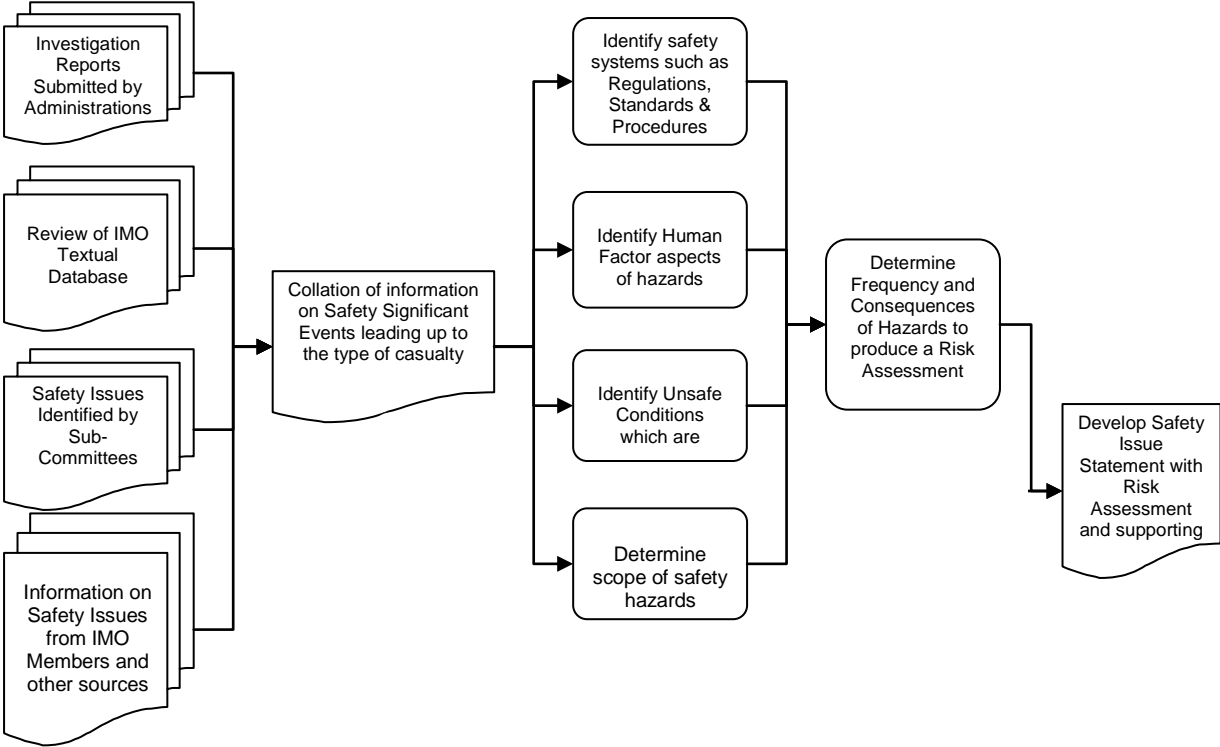
2.6 An assignment of risk as high, medium, or low is based upon the criteria found in the appendix. Where the CAWG identifies a hazardous situation where the estimated risk is high, a draft safety issue statement is developed for review by the Sub-Committee.

FSI Safety Recommendation

2.7 The CAWG prepares a report of a draft safety recommendation and submits it to the Sub-Committee. The report contains the safety issue statement, a description of the hazards and an assessment of risk. There shall also be an indication of the scope of the safety issue which describes the normal circumstances leading up to a hazardous situation within a segment or portion of the ship operations. The CAWG includes a description of hazards not assigned a high risk.

2.8 The Sub-Committee has the opportunity to agree with and accept the report, ask that further analysis be conducted, or advise that it does not agree with the report. Where it concurs with the CAWG, the FSI Sub-Committee forwards the recommendation to the appropriate Committee or Sub-Committee for their consideration and action.

2.9 The following is a graphic representation of the process to validate a safety issue:



APPENDIX

Assignment of Estimated Risk Level

- 1 Risk analysis has two components:
 - .1 probability of adverse consequences; and
 - .2 severity of consequences.
- 2 The evaluation of risks is undertaken using available data, supported by judgments on the severity of potential adverse consequences and the probability of those consequences.
- 3 The Risk Matrix below would be used for guidance in doing qualitative assessments.

		Probability of Adverse Consequences (Over Time)				
		<i>Frequent</i>	<i>Probable</i>	<i>Occasional</i>	<i>Unlikely</i>	<i>Most Improbable</i>
of Consequence	<i>Catastrophic</i>	High	High	High	Medium	Medium-Low
	<i>Major</i>	High	High	High-Medium	Medium	Low

	<i>Moderate</i>	High	Medium	Medium	Medium-Low	Low
	<i>Negligible</i>	Low	Low	Low	Low	Low

4 Definitions – Probability of adverse Consequences

4.1 *Frequent* – Likely to occur often during the life of an individual system or occur very often in the operation of a large number of similar systems (equipment, vehicle, planes, vessels, etc.).

4.2 *Probable* – Likely to occur several times in the life of an individual system or occur often in operation of a large number of similar systems.

4.3 *Occasional* – Likely to occur sometime in the life of an individual item or system, or will occur several times in the life of a large fleet, similar items, components or system.

4.4 *Unlikely* – Unlikely, but possible to occur sometime in the life of an individual item or system, or can reasonably be expected to occur in the life of a large fleet, similar items, components or system.

4.5 *Most Improbable* – So unlikely to occur in the life of an individual item or system that it may be assumed not to recur. Or, it may be possible, but unlikely, to occur in the life of a large fleet, similar items, components or system.

5 Definitions – Severity of Consequences

5.1 *Catastrophic* – Death or loss of system or plant such that significant loss of production, significant public interest, or regulatory intervention occurs or reasonably could occur.

5.2 *Major* – Severe injury, major system damage, or other event that causes some loss of production, that affects more than one department, or that could have resulted in catastrophic consequences under different circumstances.

5.3 *Moderate* – Minor injury, minor system damage, or other event generally confined to one department.

5.4 *Negligible* – Less than the above.
