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FLAG STATE IMPLEMENTATION

Study on incidents of explosions on chemical and product tankers

Report of the activities of the Inter-Industry Working Group (IIWG)

Submitted by ICS, IAPH, IACS, CEFIC, OCIMF, INTERTANKO and IPTA

SUMMARY

Executive summary: This document summarizes the activities and conclusions of the Inter-Industry Working Group (IIWG) formed to investigate fires and explosions on chemical and product tankers. It reports on measures intended to prevent recurrences of such incidents being taken by the industry and proposes measures for consideration by the Committee

Action to be taken: Paragraph 18

Related documents: MSC 79/22/8; MSC 79/23; FSI 13/23; MSC 80/24; and resolution A.971(24), annex, part 1, high-level actions 5.2.2 and 5.2.3

Background

1 The Maritime Safety Committee, at its seventy-ninth session (1 to 10 December 2004), considered document MSC 79/22/8, submitted by France, summarizing the findings of the casualty investigation into the explosion on board the **Chassiron** and making certain recommendations with regard to operational practices and equipment for smaller tankers. MSC 79 noted that industry associations were investigating a number of similar incidents and invited ICS to submit the results of its work to the Organization at the earliest opportunity.

2 ICS, IAPH, IACS, CEFIC, OCIMF, INTERTANKO and IPTA, as part of the Inter-Industry Working Group (IIWG), formed a steering committee in January 2005, which appointed a working group drawn from members of the individual organizations together with the International Group of P&I Clubs. From a database of incidents that have occurred over the past 25 years the IIWG identified 35 occurrences that involved fires and explosions in cargo areas of chemical and product tankers. The Group set itself the task of identifying the root causes and establishing whether there were any common factors, with the objective of identifying corrective actions that would prevent any further similar incidents. In order to achieve this objective a number of task groups were formed to study different issues and potential corrective measures.

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Discussion

3 A letter was sent on behalf of the IIWG to the owners and/or operators of the ships involved in the incidents identified, requesting that they provide any information they might have to the Group. Data provided on the various incidents was of variable quantity and quality, although the Group felt that some value was derived from all the data received. Despite the invitation made by MSC 80 to the relevant Administrations to provide further information on the findings of the investigations into recent casualties, little new information was provided to the IIWG.

4 While the limited availability of casualty investigation reports hindered the work of the IIG, the data received from various sources was sufficient to enable a number of conclusions to be reached.

5 The incident analysis revealed that:

- .1 the majority of incidents involved ships of less than 20,000 dwt and occurred at sea;
- .2 in the majority of cases the ship was tank cleaning, venting or gas freeing when the incidents occurred;
- .3 the personnel was directly involved in many of the incidents;
- .4 failure to follow established procedures was observed in a significant number of incidents;
- .5 in several cases the tank atmosphere had apparently not been evaluated or was not being monitored;
- .6 in most cases ignition occurred within a tank;
- .7 none of the incidents occurred during the use or operation of inert gas; and
- .8 the majority of incidents involved cargoes covered by MARPOL Annex II.

Further information on the analysis of incidents will be submitted to MSC 81 as an information paper.

6 Based on the work of the various task groups established, the IIWG concluded that:

- .1 the analysis did not identify as a cause for the fires and explosions any technical or operational factors not previously recognized;
- .2 the most significant contribution to the incidents in question was a failure to follow cargo operation guidelines and procedures (at both shipboard and ship management level). This would point toward a failure within the companies' safety culture;
- .3 manning levels were not considered a material factor. Questions were raised however, regarding crew's competence and training in a number of cases;

- .4 the incident investigation reports reviewed did not indicate any contradictions or discrepancies within the existing International Safety Guide for Oil Tankers and Terminals (ISGOTT) or the ICS Tanker Safety Guide (Chemicals) or between these guides and SOLAS;
- .5 industry practices such as chemical spraying or steaming, which can be undertaken safely under certain circumstances if controlled safety procedures are followed, were contributory causes to a number of incidents, with static electricity noted as a possible ignition source in association with such practices;
- .6 in-tank pump failure was identified as a causal factor in at least one incident and other mechanical sources of ignition, such as from rotating equipment within a cargo tank, might have been the cause in a small number of incidents;
- .7 establishing and maintaining known tank atmospheres have been shown to be problematic and this has been a contributory factor in many of the incidents;
- .8 confusion over the exact nature of a particular cargo, due to provision of the wrong Material Safety Data Sheets (MSDS) information, contributed to one incident; and
- .9 the provision of inert gas to product tankers under 20,000 dwt chemical tankers is technically feasible. However a number of safety, operational, environmental and other implications have been identified in association with its application to such ships.

Industry measures

7 Having concluded that the failure to follow procedures was the primary cause of the incidents in question, the industry has established a task group on human factors to enhance efforts to identify and address factors influencing procedural compliance on board tankers.

8 As an early initiative the IIWG has identified the ICS publication “Safety in Chemical Tankers” as one vehicle for producing general guidance and this will be updated to promote best industry guidelines and practices.

9 The Group noted an apparent limited understanding within the industry of the causes, dangers and potential consequences of static electricity, which many reports identified as a possible ignition source. Measures will be sought through ongoing work on human element-related issues to raise awareness of this issue at all levels. This will include the revision of the relevant section of the ICS publication referred to above.

10 Prior to the formation of the IIWG the co-authors of ISGOTT (i.e. IAPH, ICS and OCIMF) had begun a review of the guide. This review has been completed and amendments to the text include enhanced guidance with regard to safe cargo operations.

11 The industry is considering the establishment of a group to review cargo-related operational practices to meet shippers’ requirements, to the extent that they may have contributed to some of the incidents, with a view to providing further guidance.

12 A proposal has been submitted through the Evaluation of Safety and Pollution Hazards (ESPH) Working Group and the BLG Sub-Committee that an MSC circular be issued emphasizing the importance of the use of the Proper Shipping Name for the carriage of IBC Code products. The IIWG would commend this to the Committee.

Recommendations

13 The IIWG recommends that the MSC/MEPC Working Group on the Human Element take note of the findings of the IIWG with regard to the failure to follow established procedures and endorse the efforts of the industry referred to in paragraph 7.

14 Although the prime cause of the incidents was a failure to follow procedures and a number of the incidents occurred during periods when the vessel was incorrectly assumed to be gas-free, the IIWG nevertheless recommends that as an additional safety measure the Committee give consideration to amending SOLAS to provide for the application of inert gas to new oil tankers of less than 20,000 DWT and to new chemical tankers. If the Committee wishes to consider the application of inert gas to existing ships, the IIWG would suggest that this should be based on the principles of resolution A.900(21) on Objectives of the Organization in the 2000s including a Formal Safety Assessment (FSA) study, and a cost/benefit analysis. The industry confirms its commitment to participate fully in any such studies.

15 In considering the above the IIWG would recommend that the Committee take note of the complexity inherent in operational procedures on chemical tankers.

16 The Group recommends that international safety standards be developed in relation to the design and operation of in-tank pumps. IACS has expressed its willingness to develop a Unified Requirement on the subject, which has the support of the industry.

17 The IIWG believes that the anonymous sharing of data relating to incidents and near misses should be encouraged and would recommend the promotion and enhancement of appropriate systems to this end.

Action requested of the Committee

18 The Committee is invited to give consideration to the above and to take action as appropriate.
