ROLE OF THE HUMAN ELEMENT

Information on bridge resource management deficiencies in maritime accidents

Submitted by China

SUMMARY

Executive summary: This document provides information on the study of 1,227 maritime accident investigation reports with findings related to deficiencies in bridge resource management as a result of causation analysis.

Strategic direction, if applicable: 6

Output: 6.15

Action to be taken: Paragraph 9

Related documents: None

Introduction

1 Human factors have been considered as one of the major contributing factors of maritime accidents. Bridge resource management (BRM) makes use of all the resources available to the ship’s team, including equipment, information and human resources, to achieve safe and efficient operations, which has been proved to be an important tool to improve ship safety and prevent reoccurrences of similar accidents.

2 China carried out a study on 1,227 maritime accident investigation reports publicly released from 2000 to 2018, and found that almost half of those accidents were related to deficiencies in bridge resource management.

Analysis

3 Among all those accidents, collision and contact take the large share, accounting for 37.2% of the total number, followed by grounding and stranding, which constituted 20.9%...
of the cases. About 11.2% of the cases were associated with fire and explosion, and 30.7% involving other kinds of accidents such as man overboard, crane failure, oil spills, etc.

4 For all kinds of accidents, the causes frequently identified were related to BRM deficiencies including inadequate risk management (15.5%), failure in communication (13.2%), poor situation awareness (10.3%), improper lookout (8.1%) and inappropriate use of equipment (5.5%).

5 Maritime technology has dramatically changed the resources available to mariners. Sophisticated equipment and other automation provide new source of information and assistance. Marine officers should develop new skills to utilize these new technologies effectively. The following is a summary of causes and contributing factors of accidents related to bridge resource management.

6 Case 1: At about 1150 UTC on 6 January 2018, oil tanker MV S collided with the bulk carrier MV C in East China Sea. The collision breached the cargo tanks of MV S, resulting in the leakage of condensate oil and consequent fire and explosions and eventual sinking of the vessel, 3 crew members of MV S lost their lives and 29 crew members were missing, and resulting in marine environment pollution. MV C suffered extensive structural damage to her bow and burn damage to other areas. The causes and contributing factors of this accident can be summarized as follows:

.1 Both vessels failed to comply with the requirements of rule 5 and rule 7 of the COLREG, neither maintaining a proper lookout nor determining if risk of collision exists. Both vessels had not noticed the change in navigational status of the other.

.2 The 3/O of MV S was passive to avoid collision with small vessels and expected the small vessels to take action although she was a give way vessel. This was evidenced by the readout of audio data from her VDR as follows:

"3/O said: Oh, he's talking to another one. You know, never answer these calls. Because if you don't answer, it is not ok to action. But if you answer, he seems ... he confirms with you about his action. So he takes action, whatever he said in the radio and you don't understand. But if you don't answer, he shall be forced to take action to make himself clear, understand? AB: And this does not comply with the rules that I must oblige......"

.3 There was insufficient communication between the watchkeeping personnel of both vessels. The 3/O of MV S was too confident and ignored the AB's reminders. Their communication could not be effective as the AB was afraid of expressing his opinions. The information was not fully shared between the watchkeeping personnel of MV C during their hand-over/take-over. The C/O told the relieving 3/O that the traffic was clear and did not mention the situation between their own vessel and other vessels.

.4 AIS had been used on board MV C as the sole means of collision avoidance. The C/O did not see the radar echo of MV S, only by the AIS signal displayed on port radar determined the CPA with MV S. The 3/O thought MV S was a fishing vessel by the AIS symbol (there was no radar echo) and no collision risk alarms came to his mind.
7 **Case 2:** On 16 September 2009, container ship MV M ran aground on Monggok Sebarok reef in the Singapore Strait. The vessel altered her course to starboard to give way to three vessels exiting Jong Channel. This caused her to head towards the reef with the intention of altering her course to port and resuming her original planned track after passing astern of the third vessel. Despite warnings from Coastal Vessel Traffic Information System (VTIS), the vessel did not reduce speed or alter course in sufficient time to prevent her from grounding. Substantial damage was sustained to the fore part of the vessel. The following decisions and actions taken by the bridge team contributed to the vessel running aground:

.1 The movement of the engine telegraph from full ahead manoeuvring to half ahead had no effect on the engine speed; neither the master nor the chief officer appreciated this at the time.

.2 The master’s assessment of the situation and decision to alter course to starboard were based on his observation of true vectors and relative trails of the radar targets; no trial manoeuvre was carried out.

.3 The master and chief officer misinterpreted the information received from VTIS in respect of which three vessels it had referred to.

.4 The master and chief officer became irritated by the frequent interventions by VTIS, which resulted in important information from VTIS being missed.

**Conclusion**

8 Noting that failures of bridge resource management are involved in all the above cases, China would like to bring the information of bridge resource management deficiencies to the attention of all stakeholder when using lessons learned from marine accidents in seafarers' training and education to avoid occurrence of similar accidents in the future.

**Action requested of the Sub-Committee**

9 The Sub-Committee is invited to note the information provided.