

MARITIME SAFETY COMMITTEE
100th session
Agenda item 10

MSC 100/10/5
28 September 2018
Original: ENGLISH

HUMAN ELEMENT, TRAINING AND WATCHKEEPING

Fatigue among Panama Canal tugboat captains

Submitted by ITF

SUMMARY

Executive summary: In order to support the Committee in pursuing the establishment of a robust fatigue management guidelines and its effective implementation, this document introduces research with recommendations and proposals on tugboat captains' fatigue issues that were consequently identified after launching the expanded new Panama Canal

Strategic direction, if applicable: 1

Output: 1.23

Action to be taken: Paragraph 8

Related documents: Resolution A.1110(30); resolution A.1047(27); MSC/Circ. 1014 and HTW 5/16

Background

1 Since the opening of the expanded Panama Canal channel on 26 June 2016, there have been several significant operational changes in working patterns. The new Canal led to an increase in the number of vessels making Canal transits and therefore needing more tugboat assists. Furthermore, larger vessels, such as neo-Panamax, were possible to transit and required as many as seven tugboats to assist them into and through the new locks and continuous escort, unlike the Panamax vessels, which needed no such tugboat assistance.

2 In the light of the widening of the Canal and an increase in both the number and size of vessels transiting, the required number of tugboats and tugboat captains was impacted. However, the Panama Canal Authority unilaterally eliminated the position of second captain that serves on the tugboats during transits through the widened locks in order to cope with the unbearable additional workload, leaving only one captain to maintain ongoing control of the tugs in both lock systems.

3 In April 2017, there was an accident where a tugboat collided with a United States Coast Guard cutter in the Canal after its captain had fallen asleep. The tugboat captains' concerns regarding their perceived fatigue were elevated by the changes in tugboat operations. Tugboat captains' workload was determined to have increased and caused fatigue owing to the exposure to additional workload factors.

4 In June 2018, the International Transport Workers' Federation (ITF), therefore, conducted research to assess whether Panama Canal tugboat captains were operating under fatiguing schedules, and if so, determine the effects of that fatigue on the health of the Canal tugboat captains and the safety of Panama Canal operations.

Methodology

5 Fifty-five out of the approximately 150 active tugboat captains were interviewed to assess:

- .1 the work/rest schedules they had been maintaining;
- .2 the work-related health effects from their work and work schedules;
- .3 stress-related effects; and
- .4 the effects of fatigue-inducing aspects of their schedules on the safety of Panama Canal operations.

Outcome of the research

6 The examination of the work schedules was consistent in demonstrating that the tugboat captains were subject to two different sources of fatigue and, on occasion, three sources:

- .1 circadian disruption to their sleep patterns from having insufficient time to adjust to the abrupt, ongoing eight-hour changes in their shifts, causing chronic fatigue;
- .2 extended time on task in shifts that often were 12 hours or more in length and on cognitively demanding tasks that required extended periods of concentration; and
- .3 insufficient time to rest following these extended shifts, with several captains working over 20 continuous hours, causing acute fatigue in addition to the ongoing chronic fatigue.

Recommendations and proposals

7 Taking into consideration the criticality of the Panama Canal for the Government and people of Panama as well as for international trade and commerce, investments for a sustainable minimum level of safety for the Canal tugboat operations and for the workers' health and safety must be made. In order to mitigate fatigue and prevent pivotal safety-related risks in tugboat operations, the research report provides recommendations and proposals encompassing general occupational health and safety aspects and avenues for the Government and Authority, as set out in the annex.

Action requested of the Committee

8 The Committee is invited to consider the information provided and the proposals and the recommendations on occupational health and safety resulting from fatigue, as set out in the annex, and take action as appropriate.

ANNEX

EXECUTIVE SUMMARY

In June 2018, the International Transport Workers' Federation (ITF), on behalf of the Union de Capitanes y Oficiales de Cubierta (UCOC), which represents tugboat captains operating in the Panama Canal, commissioned Dr. Isabel Gonzalez, an occupational medicine physician and Dr. Barry Strauch, a transportation human factors specialist, to conduct research whether Panama Canal tugboat captains, under the oversight and management of the Panama Canal Authority, were operating under schedules that were fatiguing, and if so, determine the effects of that fatigue on the health of the Canal tugboat captains and the safety of Panama Canal operations.

The tugboat captains' concerns regarding their perceived fatigue were heightened by changes in tugboat operations since April 2016, the opening of the widened Panama Canal. The widened Canal led to an increase in the number of vessels making Canal transits, and therefore needing more tugboat assists. Further, widening of the canal allowed larger, "neo-Panamax" vessels to transit the Canal. The vessels require at least two tugboats to assist them through the new locks, unlike the Panamax vessels that need no such tugboat assistance.

Nevertheless the widened Canal resulted in an increase in both the number and size of vessels transiting the Canal, the number of tugboats and tugboat captains did not increase accordingly. Further, several weeks before the interviews for the research were commenced the Panama Canal Authority unilaterally eliminated the position of the second captain, that served on the tugboats during transits through the widened locks, leaving only one captain to maintain ongoing control of the tugs throughout new lock transits. The tugboat captains perceived that their workload increased as a result of both factors.

Drs. Strauch and Gonzalez interviewed 55 of the approximately 150 active tugboat captains to assess; 1) the work/rest schedules they had been maintaining during the 30 to 60 days preceding the interviews, 2) the work-related health effects from their work and work schedules, 3) stress related effects from their work, and 4) the effects of fatigue-inducing aspects of their schedules on the safety of Panama Canal operations.

The examination of the work schedules were consistent in demonstrating that the tugboat captains were subject to two different sources of fatigue and on occasion three sources: 1) circadian disruption to their sleep patterns from having insufficient time to adjust to the abrupt, ongoing eight-hour changes in their shifts, causing chronic fatigue, 2) extended time on task in shifts that often were 12 hours or more in length, on cognitively demanding tasks that required extended periods of concentration, and 3) insufficient time to rest following these extended shifts, with several captains working over 20 continuous hours in the days preceding the interviews, causing acute fatigue in addition to the ongoing chronic fatigue.

The fatigue-inducing schedules were found to impact several aspects of tugboat captains' health, including increases in hypertension, sleep disorders, gastrointestinal disorders from irregular eating schedules, which has led to overweight and obesity, and anxious depressive syndrome. The fatigue-inducing schedules were found to have a direct, negative impact on the safety of Canal operations because of the pronounced degradation in cognitive performance from fatigue. Taking into consideration cognitive skills which are needed for safe tugboat operations, including situation awareness, vigilance, attention, and decision making are also the skills that degrade when someone is fatigued. Consequently, the ability of the captains to maintain safe operations is limited. The tugboats play a key role in the transit of large vessels with hazardous material cargoes through narrow and complex waterways. The potential for a catastrophic fatigue-related accident increases with increase of tugboat captain's fatigue.

This was seen in an accident in April 2017 which a tugboat collided with a US Coast Guard cutter in the Canal after its captain fell asleep. The absence of Panama Canal Authority action in response to that accident and to the tugboat captains' requests for improving their work schedules is related to the fact that the safety culture of the Authority aggravates the risk of harm to Panamanian citizens, jeopardizes the ongoing operations viability of the Canal locks, and increases the likelihood of environmental catastrophe.

Several recommendations are made to the Government of Panama to enable maintaining a minimum level of safety and to reduce the risk to the health and safety of the tugboat operators.

Recommendations and proposals

The following recommendations are made premised on the criticality of the Panama Canal to the Government and people of Panama as well as to international trade and commerce. Investments must be made to secure the health and safety of its workers so that the safety of the Canal operations can be sustainable. This has become particularly important due to the increases in the number and size of vessels transiting the Canal since the opening of the expanded channel on June 26, 2016.

Therefore, in accordance with the research outcomes, the following occupational health recommendations and propositions were made:

- .1 Involve tugboat captains in decision making concerning their working conditions and solutions to work-related issues. This strengthens the application of the Occupational Health and Safety Policy of the company.
- .2 Restructure the Authority's medical personnel division by including all qualified and experienced physicians in the field of occupational medicine.
- .3 Investigate all occupational marine accidents and occupational diseases by qualified and objective personnel and report directly to the Government of Panama and not to the Authority.
- .4 Establish a mechanism within the Government of Panama and the Authority to ensure that all safety and occupational health recommendations are fully considered and implemented promptly.
- .5 Implement a fatigue risk management system to ensure operational safety and reduce exposure to work-related adverse health effects. It is also proposed that the Panamanian Government require the Authority to do the following:
 - .1 Establish written hours of service rules for operational personnel to:
 - .1 take circadian rhythms into account by providing sufficient time for tugboat captains to adjust their sleeping patterns to each schedule change;
 - .2 limit the number of continuous hours that tugboat captains are permitted to work;
 - .3 provide rest facilities near tugboat captain work sites; and

- .4 provide a minimum rest period between shifts to allow tugboat captains' sufficient rest to counter the effects of extended work periods and night-time tugboat operations.
 - .2 Restore the second captain during transits through the new locks.
 - .3 Establish an organizational structure that:
 - .1 allows operational personnel to report safety-related deficiencies without reprisal to personnel within the organization with the authority and willingness to correct them;
 - .2 conducts investigations to all occupational and marine accidents objectively by experienced and qualified investigators and issues its findings and recommendations directly to the Government of Panama and not to the Authority; and
 - .3 follows up on recommendations made to the Government of Panama and not the Authority to ensure that all recommendations are fully considered and implemented promptly.
-