BSAFE

INCIDENT CASE STUDY

No.7 | MAY 2021

FATAL CRUSH INCIDENT

THE SECOND OFFICER (2/O) ON A GENERAL CARGO SHIP WAS FATALLY INJURED WHEN HE WAS CRUSHED BETWEEN THE SHIP'S GANTRY CRANE AND A STACK OF CARGO HOLD HATCH COVERS (FIGURE 1) DURING POST-CARGO LOADING OPERATIONS WHILE ALONGSIDE IN PORT. THE 2/O WAS ATTEMPTING TO PASS BETWEEN THE HATCH COVERS AND THE STATIONARY CRANE ON THE MAIN DECK, WHEN THE CHIEF OFFICER (C/O) DROVE THE CRANE AFT, TRAPPING AND CRUSHING THE 2/O AGAINST THE HATCH COVERS.

FIGURE 1 RECONSTRUCTION SHOWING A CREW MEMBER IN THE GAP BETWEEN THE LADDER PLATFORM AND STACKED HATCH COVERS.
SOURCE: MARINE ACCIDENT INVESTIGATION BRANCH (MAIB), © CROWN COPYRIGHT, 2020

WHAT HAPPENED

The general cargo ship was berthed alongside and commenced loading a cargo of cement on the day before the incident. Shortly before midnight, the 2/O came on watch, and the C/O, who had been on cargo watch from 1800, remained on duty until the loading of the cargo was completed at 0115. The 2/O remained on watch until the C/O took over again at 0540.

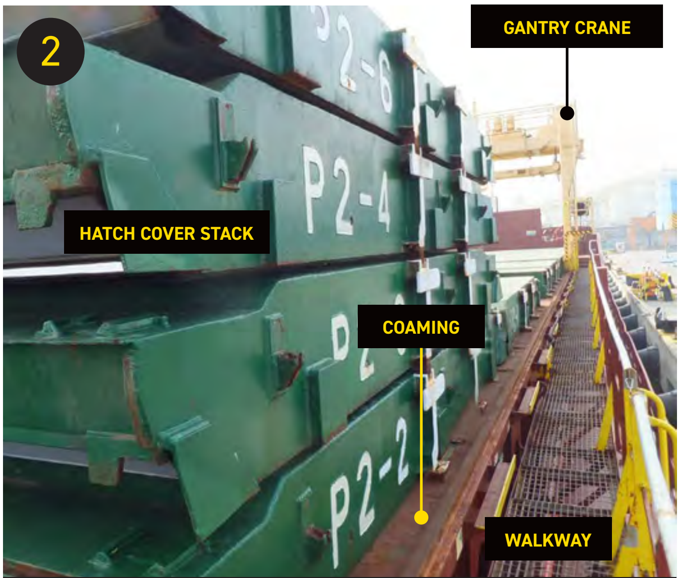

FIGURE 2 STARBOARD WALKWAY LOOKING FORWARD SHOWING STACK OF HATCH COVERS AND GANTRY CRANE.
SOURCE: MARINE ACCIDENT INVESTIGATION BRANCH (MAIB), © CROWN COPYRIGHT, 2020

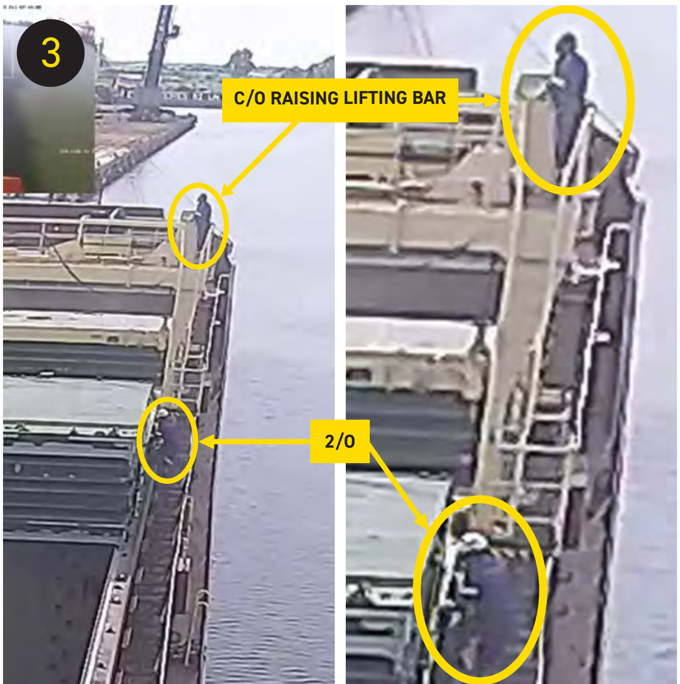

FIGURE 3 ZOOMED CLOSED-CIRCUIT TELEVISION (CCTV) SCREENSHOT LOOKING FORWARD SHOWING THE 2/O CLIMBING ONTO THE CARGO HOLD HATCH COAMING AT 0944:10.
SOURCE: MARINE ACCIDENT INVESTIGATION BRANCH (MAIB), © CROWN COPYRIGHT, 2020

WHAT HAPPENED (CONTINUED)

After 0830, the C/O started to lift and close the pontoon-type hatch covers using the ship's rail-mounted gantry crane **(Figure 2)** and instructed the deck crew to commence cleaning cement dust from the hatch coamings. These tasks had to be completed before departure.

At about 0900, the agents informed the master that the pilot would be boarding at 1130, and not 1400, as the sailing time had been brought forward. The C/O therefore advised the master that all available hands would be needed to complete the cleaning and it was agreed that the 2/O would be called back on deck.

The 2/O arrived on deck at about 0930 and commenced sweeping dust from the hatch cover landing surface on the starboard side of the aft cargo hold coaming. The 2/O was wearing overalls, safety shoes and a safety helmet. One of the two able-bodied seamen (AB) was sweeping dust from the top of the aft hold's hatch covers, while the other AB and the deck cadet were working on the port side walkway cleaning the top of the forward hold coaming. The C/O remained on the gantry crane, moving various hatch covers. The deck cadet and two ABs were wearing face masks and eye protection, but the 2/O and C/O were not.

At 0942, the C/O moved a hatch cover to the forward end of the forward hold and lowered it into position and at 0943, he started to drive the gantry crane aft. At the same time, the 2/O finished sweeping and started to walk forward along the walkway, stopping briefly to speak to the AB working on the aft hold hatch cover. At 0944, the C/O stopped the crane just short of a stack of hatch covers at the forward end of the aft hold and started to raise the crane's lifting bar. At 0944:10, the 2/O arrived at the forward end of the hatch cover stack and climbed onto the hatch coaming **(Figure 3)**.

As he stepped towards the gap between the crane and the stacked hatch covers **(Figure 4)**, the lifting bar cleared the hatch cover stack and the C/O drove the crane aft. The 2/O screamed as he was trapped and crushed between the hatch covers and the crane's ladder access platform **(Figure 1)**.

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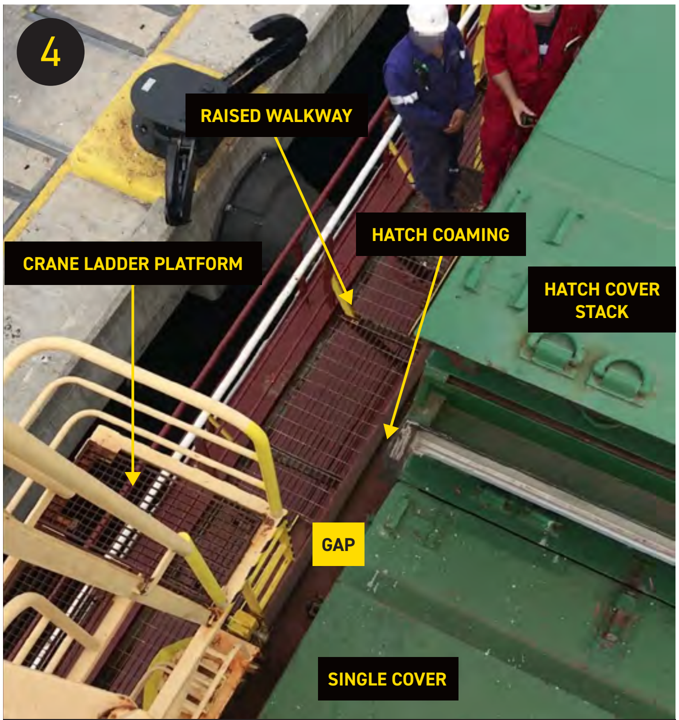

FIGURE 4 RECONSTRUCTION SHOWING THE DISTANCE BETWEEN THE CRANE LADDER PLATFORM AND THE STACK OF HATCH COVERS WHEN THE 2/O CLIMBED ONTO THE COAMING.
SOURCE: MARINE ACCIDENT INVESTIGATION BRANCH (MAIB), © CROWN COPYRIGHT, 2020

FIGURE 5 ACCESS TO STARBOARD EMERGENCY STOP BUTTON.
SOURCE: MARINE ACCIDENT INVESTIGATION BRANCH (MAIB), © CROWN COPYRIGHT, 2020

WHAT HAPPENED (CONTINUED)

The crane stopped abruptly and the C/O immediately reversed the crane. As the crane moved forward, the 2/O was rolled between the crane's ladder platform and the hatch covers and he then fell off the coaming onto the walkway below. As he fell, his head struck the guardrails on the side of the walkway. Reacting to the 2/O's screams, the ABs and the deck cadet rushed to the scene. The 2/O was lying on his back on the walkway and soon lost consciousness and stopped breathing. The deck crew immediately commenced cardio-pulmonary resuscitation (CPR).

The C/O called the master on his very high frequency (VHF) radio and informed him that the 2/O had fallen and asked him to call an ambulance. The master made his way to the scene within a minute, then returned to the superstructure and called the ship's agent, who alerted the emergency services. The master also called the Designated Person Ashore (DPA) and told him that the 2/O had fallen on deck.

At about 1005, two emergency medical teams arrived and the C/O told them that the 2/O had fallen from the coaming onto the walkway. Despite the efforts of the medical teams, the 2/O was declared deceased at 1100. The attending doctor told the master and C/O that the 2/O had possibly died as a result of a heart attack. However, the post mortem report concluded that the 2/O had experienced a violent accidental death, resulting from internal bleeding due to organ rupture. He had also suffered multiple fractures. The 2/O's toxicology report stated that his blood alcohol content (BAC) was 117mg per 100ml[1]. The incident occurred on the 2/O's birthday.

The investigation noted that an emergency stop button was fitted to the crane platform, but the 2/O would have been unable to reach this while in the gap between the platform and covers **(Figure 5)**.

[1]Since 2011, the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended (STCW), has required the BAC for seafarers to be limited at 50mg/100ml.

LESSONS LEARNED ON NEXT PAGE

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LESSONS LEARNED

THE FOLLOWING LESSONS LEARNED HAVE BEEN IDENTIFIED. THESE ARE BASED ON THE INFORMATION AVAILABLE IN THE INVESTIGATION REPORT AND ARE NOT INTENDED TO APPORTION BLAME ON THE INDIVIDUALS OR COMPANY INVOLVED:

- The 2/O was crushed while he was trying to walk between the gantry crane and a stack of hold hatch covers when the C/O began to move the gantry crane aft at the same time. This reduced the gap between the crane's ladder platform and covers to around 130mm, trapping the 2/O.
- The 2/O was unaware that the C/O was about to move the crane, while the C/O was unaware that the 2/O was under the crane and about to climb through the gap. The 2/O's and C/O's situational awareness would have been enhanced if effective communications had been established and the deck operations had been properly controlled.
- Once the 2/O was within a couple of metres of the crane, he would not have been visible to the C/O at the gantry control position. Before moving the crane, the C/O should have moved from the crane's control position to check the walkways and ensure the area directly below was clear.
- The gantry crane was fitted with a loud warning bell and flashing amber light, but these only operated while it was moving. The 2/O would have been alerted to the crane's imminent movement if it had been fitted with a pre-movement warning device.
- The crane's deck level emergency stop buttons could only be operated from the walkways and could not be reached by the 2/O before and after he became trapped.
- The risk assessment and procedure for operating the gantry crane could have been clearer. However, the incident would have been avoided if the stated safety controls had been implemented.
- The investigation concluded that the onboard safety culture was weak given that established safe systems of work were not being followed, personnel were working close to moving equipment and unprotected edges, and were not wearing adequate levels of PPE for the tasks.
- The 2/O's judgment and perception of risk were probably adversely affected by alcohol. The company's drug and alcohol policy allowed the crew to drink in moderation provided they were always under the legal limit. However, this policy was not being effectively enforced.
- Although the medical personnel were not informed of the full circumstances of the 2/O's injuries, it is unlikely that this affected his survival chances. All known details of an incident should always be communicated to ensure the most appropriate medical treatment can be provided.

CONTACT

For more information on this incident email lossprevention@tindallriley.com

THIS CASE STUDY IS DRAWN FROM THE INVESTIGATION REPORT 18/2020 PUBLISHED BY THE MARINE ACCIDENT INVESTIGATION BRANCH (MAIB) (© Crown copyright, 2020) AT:
https://www.gov.uk/maib-reports/crush-incident-on-general-cargo-vessel-karina-c-with-loss-of-1-life