



SAFETY INVESTIGATION REPORT

201807/016

REPORT NO.: 12/2019

July 2019

The Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011 prescribe that the sole objective of marine safety investigations carried out in accordance with the regulations, including analysis, conclusions, and recommendations, which either result from them or are part of the process thereof, shall be the prevention of future marine accidents and incidents through the ascertainment of causes, contributing factors and circumstances.

Moreover, it is not the purpose of marine safety investigations carried out in accordance with these regulations to apportion blame or determine civil and criminal liabilities.

NOTE

This report is not written with litigation in mind and pursuant to Regulation 13(7) of the Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011, shall be inadmissible in any judicial proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame, unless, under prescribed conditions, a Court determines otherwise.

The report may therefore be misleading if used for purposes other than the promulgation of safety lessons.

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MV ALTENAVI
Fatal fall in the cargo hold
in position 37° 30.4' N 008° 07.2' E
19 July 2018

SUMMARY

MV *Altenavi* was on a voyage from Bilbao, Spain to the Black Sea. On 19 July, during the sea passage and while crew members were about to start cleaning inside one of the cargo holds, a seafarer fell into cargo hold no. 1, while accessing the space through the forward access ladder.

Following the accident, the vessel altered her course towards Annaba, Algeria. Upon arrival at the anchorage, the injured seafarer was evacuated by boat to a local hospital for further treatment.

His medical condition, however, worsened a few days later and despite the doctors' efforts, the seafarer succumbed to his injuries.

The safety investigation identified missing physical and symbolic barrier systems inside the cargo hold from where it is believed that the seafarer fell.

On the basis of the safety actions taken by the Company, the MSIU has issued no recommendations.



FACTUAL INFORMATION

Vessel

Altenavi, a 4,891 gt general cargo, was built in 1987 and was registered in Malta. She was owned by Mintaca Shipping Company Ltd., managed and operated by Menken Ltd., Ukraine and classed with the Russian Maritime Register of Shipping (RMRS). The vessel's length overall was 107.55 m and her draught was 7.55 m, corresponding to a summer deadweight of 7,917.34 mt.

The vessel was fitted with three cargo holds, each divided into tweendeck and a lower hold. Each cargo hold was arranged with two access hatches and ladders - one at the forward end, and one at the aft end.

Propulsive power was provided by a 6-cylinder Pielstick 2-L medium speed, four-stroke diesel engine, producing 2,206 kW at 340 RPM. This drove a single, fixed pitch propeller through a reduction gearbox to reach an estimated service speed of 11 knots.

Crew members

The Minimum Safe Manning Certificate, issued by the flag State Administration in September 2013, required that the vessel was to be manned by at least 12 officers and ratings. At the time of the accident, *Altenavi* was manned by 14 crew members, comprising of the master, chief officer and deck officers, the chief engineer and two other engineers, a bosun, three deck and three engine room ratings and a cook. All crew members were Ukrainian nationals.

All officers and ratings were found in possession of required CoCs, flag endorsements (as applicable) and training certificates, as required by the STCW Convention.

The official language on board was English, although the working language was Russian.

The fatally injured crew member

This was the first contract which the crew member has signed with the Company and this had been his first engagement on board the ship.

The crew member had started his career as a seafarer in 2010 and had spent 13 months on two small river barges, and 23 months on four small size seagoing vessel (below 5,000 gt) navigating the Black, Mediterranean and Aegean seas.

He embarked on *Altenavi* as a seafarer on 06 June 2018 *i.e.*, 1.5 months prior to the occurrence. His certificate showed that he was qualifying to serve as a deck AB under STCW Reg. II/5. His medical fitness certificate dated 06 June 2018 and it also showed that he was fit to serve at sea.

Cargo hold configuration

The vessel is fitted with three cargo holds, divided into a lower hold and tweendeck. Reportedly, tweendeck pontoons had been removed in the past and since then, they have not been used any longer as the vessel was carrying only general and bulk cargoes. The tweendeck level was 4.05 m below the main deck, while the tank top was 4.75 m below the tweendeck (Figure 1).

Access ladders were split in two sections, with the uppermost section terminating at the tweendeck level (Figure 2).

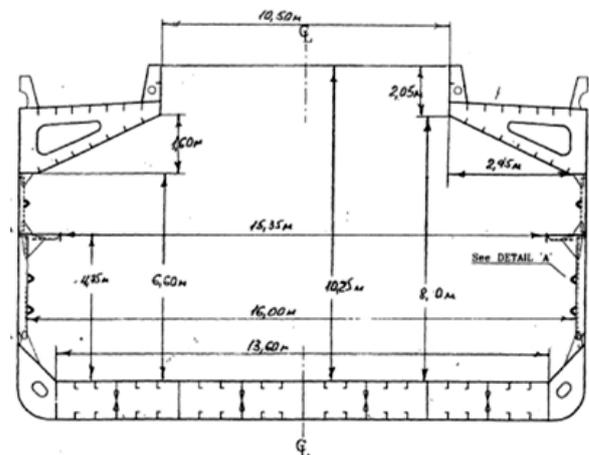


Figure 1: *Altenavi* midship section

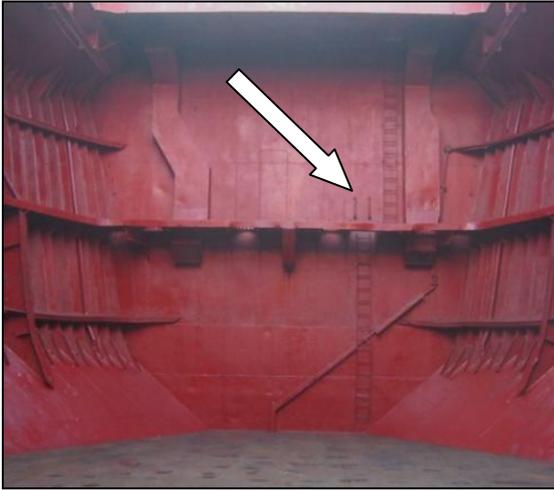


Figure 2: Forward bulkhead and access ladders

Weather conditions

Weather in the morning of 19 July was usual for the area and this period of the year. There was a fresh Easterly moderate breeze, and smooth sea. The air temperature was 25 °C.

Conditions in the cargo hold

In order to facilitate the maintenance job in cargo hold no. 2 and subsequently in cargo hold no. 1, both cargo holds were illuminated with two portable lights. One was placed to illuminate the tweendeck level and the other light was lowered inside the cargo hold on the tank top, where maintenance works were taking place¹.

The chief officer reported that the atmosphere inside the cargo holds had been checked before the permit to work had been issued in the morning and the oxygen level was found to be 22.4%. The oxygen level was measured by means of a Dräger type hand pump².

¹ Both portable lights were examined and found operational, readily available for use with lanyards, cables and plugs attached.

² The pump was found operational. The tubes expiry date was March 2019.

Narrative³

Altenavi loaded a shipment of steel plates in all three cargo holds in Ukraine. She arrived at her discharge port of Bilbao, unloaded her cargo and sailed out on 12 July 2018 at 1840 bound, as per instructions, for the Black Sea region, awaiting orders.

Preparation of cargo spaces for the new loading consisted of cleaning the cargo holds and chipping / spot painting of rusty areas or damaged paint on the tank top hopper plating caused by the previous cargo. Since the vessel was at sea, the cargo hold hatch covers were kept closed and secured and given that there was no permanent illumination inside, portable light arrangements had to be rigged.

On the date of the accident, two seafarers, Seafarer A (deceased) and Seafarer B carried out the first cleaning and touch-ups of lower cargo hold no. 2, under the guidance of the bosun. Maintenance in cargo hold no. 2 took about two hours, from 0800 to 1000. At 1000, the two crew members proceeded for a coffee break in the messroom.

It was recalled that after the coffee break, at about 1030, the bosun proceeded to cargo hold no. 1 and together with Seafarer B, he placed the two portable lamps at the tweendeck level. One of the lamps had to be lowered by the Seafarers to the tank top in order to facilitate maintenance at the site.

Seafarer A entered cargo hold no. hold 1 and climbed down to the tweendeck level, while Seafarer B watched from the access hatch at the main deck.

Seafarer B recalled that after reaching the tween deck level, Seafarer A walked out of his direct line of sight, presumably to proceed down to the cargo tank top (Figure 3).

³ Unless otherwise stated the time in this safety investigation report is UTC +2.

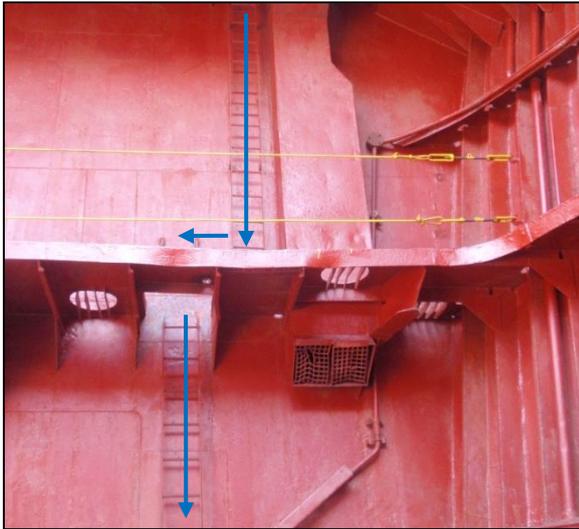


Figure 3: The way towards the lower cargo hold (yellow wire rope was fitted after the accident)

Soon after, Seafarer B heard a noise coming from the cargo hold. He called Seafarer A several times and getting no response, he went down the ladder to tweendeck platform. From that position, he saw Seafarer A on tank top of the cargo hold facing down. Seafarer A had also lost his safety helmet as a result of the fall.

Evidently clear that his colleague had fallen from a height, Seafarer B climbed up the ladder and rushed to the main deck where he met and reported the accident to the bosun. The latter proceeded to the accommodation and informed the master and the chief officer of the accident.

Post-accident events

Both the chief officer and the bosun went down to cargo hold no. 1 to check on the condition of the injured seafarer, who was unconscious, although breathing.

Very carefully, the injured crew member was transferred to a stretcher, and lifted by the ship's derrick to the cross deck, forward of cargo hold no. 1. In the meantime, the master had altered course and diverted to the nearest port, which was Annaba in Algeria, also calling the local MRCC for assistance.

The vessel arrived off Annaba port at 1430 on 19 July and a Coast Guard officer, a medical doctor and the ship's agent boarded the vessel about 10 minutes later. The injured crew member was examined and then transferred to a boat, which departed at about 1525.

Seafarer A was admitted to hospital but his condition took a turn for the worse and he passed away about two days later.

The vessel remained at anchorage pending coastal State investigations and formalities. She was eventually allowed to sail on 25 July, whereby she continued to her destination.

Cause of death

The injured crew member was suffering from a polytrauma due to injuries resulting from a fall from a height. He succumbed to his injuries in the hospital's intensive care unit.

ANALYSIS

Aim

The purpose of a marine safety investigation is to determine the circumstances and safety factors of the accident as a basis for making recommendations, and to prevent further marine casualties or incidents from occurring in the future.

Accident dynamics and immediate cause of the fall

The safety investigation could not identify with certainty the exact position from where Seafarer A had fallen into the cargo hold.

The bosun had recalled that together with Seafarer B, he had positioned two portable lights on the tweendeck platform - one to illuminate the platform itself, and the second light on the tweendeck opening to illuminate the tank top, *i.e.*, the area to be maintained.

Seafarer B, however, stated that together with the bosun, they had only lowered the two portable lights to the tweendeck platform, which were to be further positioned by the two crew members (Seafarers A and B) down in the cargo hold.

Although the sequence of events as recalled by the two crew members are not similar, it was plausible to conclude that in all probability, Seafarer A had entered cargo hold no. 1 in order to arrange the illumination of the working site and before proceeding to the tank top, he fell from the tweendeck to the tank top in the cargo hold.

During the visit on board, following the accident, it was noticed that the vertical ladder to the tweendeck was only half a metre away from the second ladder leading to the lower spaces of the cargo hold. Thus, it was hypothesized that had the lights been positioned as described by the bosun, then Seafarer A would have only stepped on tweendeck platform to hold to the second ladder leading to the cargo hold tank top.

The safety investigation was of the view that it was very probable that this was not done because otherwise, Seafarer B would not have approached the platform edge.

It was also noticed that had Seafarer A proceeded immediately to the ladder leading to the tanktop in the cargo hold, Seafarer B would not have lost sight of him. This was therefore indicative that Seafarer A was engaged in doing something else whilst standing on the narrow tweendeck platform (Figure 4) (e.g., arranging the lights).



Figure 4: Narrow tweendeck platform in cargo hold no. 1 (post accident photo showing the wire rope)

Missing safety barrier systems

Following the accident, two wire ropes were fitted throughout the entire run of the tween deck. Moreover, high-visibility markings were also painted in close proximity of the access ladders. These physical and symbolic safety barrier systems, however, were missing at the time of the accident.

It would also appear that these were very critical systems in cargo hold no. 1 (where the accident happened), given that in comparison to the tween deck width in cargo hold no. 2 (Figure 5), the former was much narrower.

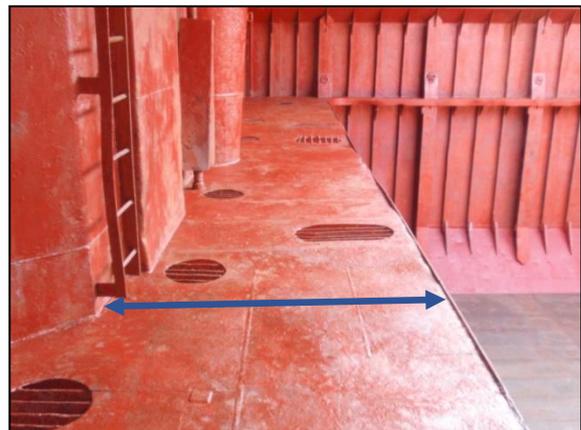


Figure 5: A much wider forward tweendeck platform inside cargo hold no. 2 (although the absence of physical and symbolic barrier systems are apparent)

The safety investigation could not determine the level of artificial lighting inside the cargo hold when the two seafarers accessed the space. It was definite, however, that the cargo hold hatches were closed at the time of entry.

The level of lighting inside the cargo hold was considered to be a potential contributing factor to the accident, with Seafarer B approaching the edge of the tweendeck platform without noticing that he was in imminent danger of falling down. This was especially true if the portable lights were either switched off at the time of the fall or, potentially, not pointing towards the tweendeck edge.

Fatigue

Records made available to the safety investigation indicated that the hours of rest and work for the crew member involved in the accident met the requirements stipulated in the STCW Convention. It was also established that the crew member had been well rested during and before the accident, but also on the day of the accident. Information did not suggest a behaviour which would have indicated that the crew member was fatigued.

Fatigue was therefore not considered to be a contributing factor to this accident.

Entry into cargo spaces

Records were maintained on the familiarization and training of crew members. Records showed that he had done all the prescribed familiarization training within six hours, 24 hours and seven days from boarding.

Neither the familiarization records nor any other record made reference to the narrow tweendeck platform in cargo hold no. 1. However, it was reported that although the SMS Form for enclosed space entry made no reference to the narrow tweendeck in cargo

hold no. 1, this issue used to be highlighted verbally prior to entries in the cargo holds.

The vessel's Shipboard Manual for Entering into Enclosed Space and Rescue defines cargo spaces as enclosed spaces when the cargo hold hatch covers are closed. The Manual thoroughly emphasizes the importance to test the atmosphere inside the enclosed spaces and did not address safe access and movement inside these spaces.

The SMS Form (*Permission for Entry in Enclosed Space No 09/18*)⁴ was issued on 19 July 2018 at 0800. Moreover, it was reported that prior to the entry, the cargo space was tested for oxygen and the test gave a reading of 22.4%. This measured level of oxygen prior to the entry was high (normal oxygen level in atmosphere is 20.9%), suggesting that the equipment may have not been used as prescribed by the manufacturers.

Risk assessment

The assessment of risk addressed the presence of an oxygen-deficient, flammable or toxic atmosphere. Likewise, the *General Precautions* section also referred to the atmosphere inside the enclosed space but with only a general text referring to the identification of potential hazards, their isolation, and making the place as safe as possible.

Two risk assessment forms were filled in prior to the maintenance work inside the cargo hold was initiated:

- *Risk Assessment Worksheet* No. 07 (Cargo hold cleaning); and
- *Risk Assessment Worksheet* No. 08 (Enclosed space entry - injury of personal (or crew)).

In both instances, falls from a height were the identified risks with 'high' and 'very high'

⁴ Document 3-13-ISM, revision 01, correction date 30.05.2011.

ratings. Countermeasures to minimise the relative risks were limited to instructions. The safety investigation did not find any indications that an assessment of the working environment (and eventual precautionary measures) was made on site.

Interviews with crew members confirmed that no safety harnesses were in use inside the cargo holds.

CONCLUSIONS

1. The crew member fell from the tweendeck platform to the tank top inside the cargo hold;
2. Physical and symbolic safety barriers systems, were missing at the time of the accident;
3. The tweendeck platform's width in cargo hold no. 1 was very narrow;
4. The level of lighting inside the cargo hold was considered to be a potential contributing factor to the accident, with Seafarer A approaching the edge of the tweendeck platform without noticing that he was in imminent danger of falling down;
5. The vessel's Shipboard Manual for Entering to the Enclosed Space and Rescue did not address safe access and movement inside the cargo spaces;
6. Countermeasures to minimise the risks of a fall from a height were limited to instructions;
7. No safety harnesses were in use inside the cargo holds.

SAFETY ACTIONS TAKEN DURING THE COURSE OF THE SAFETY INVESTIGATION⁵

A fixed safety line system (to attach the lanyard with a safety harness) was fitted at the location of the accident. Hi-visibility yellow/black markings were painted on the tweendeck platform (Figure 5).

Railings and cages around access ladders were installed on the tweendeck platforms.

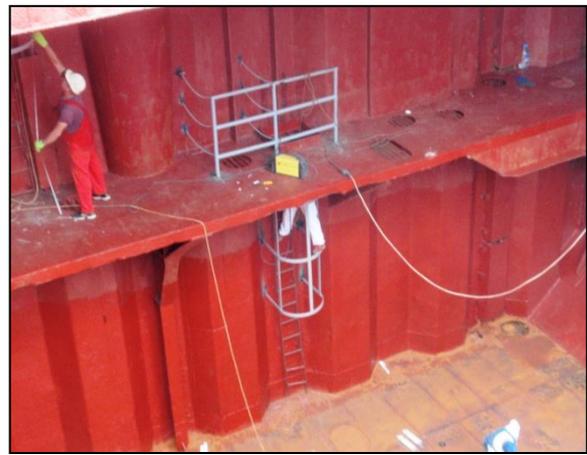


Figure 5: Physical barrier systems fitted after the accident

RECOMMENDATIONS

On the basis of the actions taken by the Company, no safety recommendations have been made.

⁵ Safety actions shall not create a presumption of blame and / or liability.

SHIP PARTICULARS

Vessel Name:	<i>Altenavi</i>
Flag:	Malta
Classification Society:	Russian Maritime Register of Shipping (RMRS)
IMO Number:	7917018
Type:	General Cargo
Registered Owner:	Mintaca Shipping Company Ltd.
Managers:	Menket Ltd.
Construction:	Steel
Length Overall:	107.55 m
Registered Length:	100.84 m
Gross Tonnage:	4891
Minimum Safe Manning:	12
Authorised Cargo:	General cargo in bulk

VOYAGE PARTICULARS

Port of Departure:	Bilbao, Spain
Port of Arrival:	On order
Type of Voyage:	International
Cargo Information:	In ballast
Manning:	14

MARINE OCCURRENCE INFORMATION

Date and Time:	19 July 2018 at 10:55 (LT)
Classification of Occurrence:	Very Serious Marine Casualty
Location of Occurrence:	37° 30.4' N 008° 07.2' E
Place on Board	Cargo hold
Injuries / Fatalities:	One fatality
Damage / Environmental Impact:	None reported
Ship Operation:	In passage
Voyage Segment:	Transit
External & Internal Environment:	Fresh Easterly moderate breeze, and smooth sea. The sea was clear and the air temperature was 25 °C.
Persons on board:	14