



SAFETY INVESTIGATION REPORT

202002/005

REPORT NO.: 04/2021

February 2021

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.

© Copyright TM, 2021.

This document/publication (excluding the logos) may be re-used free of charge in any format or medium for education purposes. It may be only re-used accurately and not in a misleading context. The material must be acknowledged as TM copyright.

The document/publication shall be cited and properly referenced. Where the MSIU would have identified any third party copyright, permission must be obtained from the copyright holders concerned.

MV NAVIOS AMITIE

Man overboard and loss of life of a crew member while rigging a combination pilot ladder in position 39° 59.92' N 026° 05.33' E

05 February 2020

SUMMARY

In the early hours of 05 February 2020, the bosun on board the Maltese registered bulk carrier *Navios Amitie* fell into the sea while rigging a combination pilot ladder. It was dark and the vessel was making way to the pilot station.

Information available to the safety investigation indicated that the bosun was alone on the accommodation ladder's lowest platform. None of the crew members witnessed the events which led to the bosun falling off the ladder.

It seems likely that the crew member fell into the water whilst lashing the accommodation ladder to the vertical pilot ladder. At the time of the accident, the crew member was not wearing a safety harness. It is very likely that he drowned because he had no lifejacket on.

The MSIU has issued two recommendations to the Company designed to enhance safety when the crew members are tasked to rig the accommodation and pilot ladders to the ship's hull.



FACTUAL INFORMATION

The vessel

Navios Amitie was a 39,643 gt Maltese registered bulk carrier, owned and managed by Kleimar NV, Belgium. She was classed with Nippon Kaiji Kyokai. The vessel was built by Universal Shipbuilding Corp., Japan in 2005 and had a length overall of 224.95 m. Her deadweight was 75,395 tonnes, corresponding to a summer draught of 13.84 m and a freeboard 5.35 m.

Propulsive power was provided by an internal combustion diesel engine Hitachi Zosen Nan-B&W 6S60MC Mark VI, producing 9800 kW at 110.9 RPM. The engine drove a single, fixed pitch propeller, giving a service speed of 14.8 knots in ballast condition.

Ship's crew

Navios Amitie had a crew of 19. All crew members were from the Philippines.

The master was 38 years old. In accordance with the STCW Convention, he obtained his Certificate of Competency under the provisions of regulation II/2. in 2014 and started sailing as a ship master in 2018. He joined the vessel at El Dekheila, Egypt on 28 January 2020. The chief officer was 48 years old. He began his sea going career in 1999 and obtained his STCW II/2 Certificate of Competency in 2017. He embarked the vessel on 11 October 2019. The second officer was 40 years old holding an OIC Certificate. He had been working on board *Navios Amitie* for seven months.

The bosun, who was lost overboard, had been working with the Company for four years. He had joined *Navios Amitie* on 07 July 2019. He was 34 years old at the time of the accident.

Environmental conditions

Information submitted by the vessel reported clear weather with visibility up to five nautical miles. The wind was South Southwest, Beaufort Force 8/9. The sea was rough with wave heights between two and three metres. The air and sea temperatures were recorded at 15 °C and 13 °C respectively.

Narrative¹

Navios Amitie departed El Dekheila, Egypt on 29 January 2020 in ballast condition². The departure drafts were 4.40 m forward and 6.80 m aft and a freeboard of 13.59 m. On her way to the loading port of Chornomorsk in Ukraine, she anchored off Çanakkale, Turkey for bunkers. Bunkering operations were completed on 05 February 2020.

An entry in the deck logbook recorded that the chief officer and bosun were on standby forward at 0020 and a toolbox meeting³ was carried out. At 0030, *Navios Amitie* started weighing anchor and at 0050, she resumed her passage. The vessel was navigating at seven knots in the East lane of the Çanakkale TSS. She was scheduled to pick up the Çanakkale pilot at 0230 for her transit through the Çanakkale Strait. The master was on the bridge, second officer was OOW and an AB was the helmsman. Once the anchor station was over, the master instructed the chief officer to prepare the pilot ladder⁴.

The chief officer along with the bosun, one AB, and two OS, set out to rig the pilot

¹ Unless otherwise stated, all times are ship's time (UTC + 3).

² She had about 19,836 tonnes of water ballast.

³ A toolbox meeting is an informal safety meeting that focuses on safe work procedures related to the specific job. It is generally conducted at the work site.

⁴ The master stated that he had reminded the chief officer to ensure that crew members wear lifejackets and safety harnesses.

ladder on the port side (which was the leeward side of the vessel). As *Navios Amitie* exceeded the 9.0 m height criterion, the pilot ladder had to be rigged in conjunction with the accommodation ladder / gangway, located abreast of cargo hold no. 4. Since it was dark, the overside floodlight was switched on (Figure 1).



Figure 1: Photo showing port side combination pilot ladder with overside light

The pilot ladder was lowered over the ship's side and the accommodation ladder was swung out and rigged. The bosun went down the accommodation ladder to the lower platform. After completing the lashing of the pilot ladder to the ship's hull (Figure 2), he called the OS on deck to fetch a piece of rope to secure the gangway to the vertical pilot ladder.



Figure 2: Pilot ladder lashed to the ship's hull

The bosun then climbed up to the main deck, collected the rope from the OS and descended the accommodation ladder to fasten the two ladders together. Soon after, the OS heard a scream from below. When he looked down, he saw the bosun in the water and called out man overboard.

The chief officer presently involved in the rigging, instantly reacted and threw the self-igniting light lifebuoy, and reported to the bridge that the bosun had fallen into the sea. A second lifebuoy with light was released by one of the crew members. The accident occurred at 0145 in position 39° 59.92' N 026° 05.33' E, about two nautical miles West of the Çanakkale Strait's pilot boarding area (Figure 3).

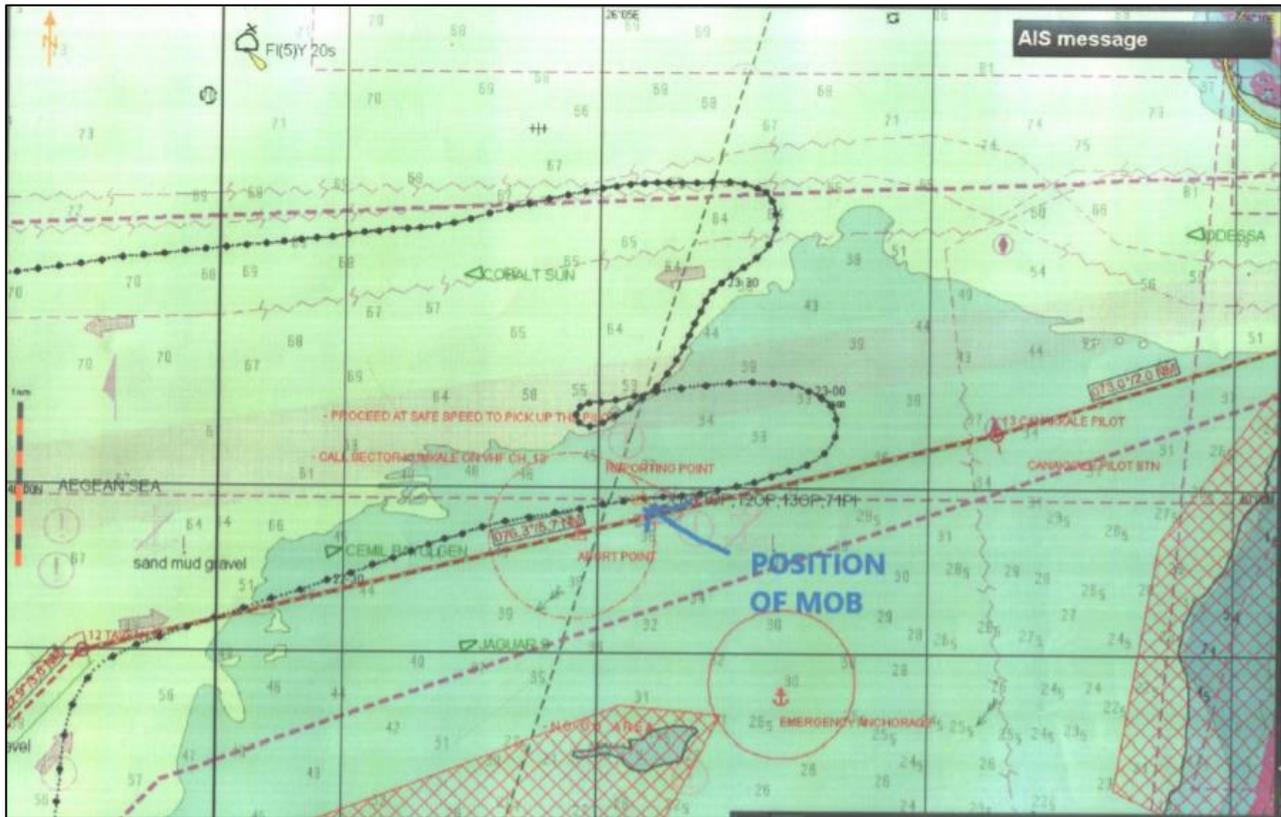


Figure 3: Position of MOB and *Navios Amitie*'s search track

Post-accident action

Upon hearing that the bosun had fallen overboard, the OOW rushed to the port bridge wing and released the bridge wing lifebuoy. He then pressed the event key on the ECDIS as a reference point (MOB) on the chart. Meanwhile, the master reduced speed, informed Kumkale (Çanakkale) VTS on the VHF radio and requested permission to turn the vessel back to rescue the bosun.

A general alarm was sounded, and a MOB was announced through the public address system. Lookouts were posted on each side of the vessel and the rest of the crew members were mustered at the muster station. By 0200, the vessel was on a reciprocal course, in the East lane of the TSS. Three lighted buoys were sighted but the crew members could not see the bosun⁵. The MOB position and search routes covered by

⁵ Due to the rough seas and possible risk of injuries, the rescue boat was not launched.

Navios Amitie are shown in Figure 3. The master made a request to Kumkale VTS to arrange search and rescue and decided to return to the anchorage area so as not hamper navigation of other vessels in the TSS.

At 0315, the Turkish Coast Guard commenced search and rescue operations at the site of the MOB position. However, despite the rescue efforts of the Coast Guard, the bosun was not recovered.

Voyage data recorder

The voyage data recorder captures navigational information, and records conversations between the bridge team members and other ships / shore authorities, which help to understand the events and actions taken on board. In this accident, although the VDR data had been saved by the bridge team, it could not be extracted due

to non-availability of card reader, neither on board nor ashore. Consequently, the saved data was overwritten during vessel's transit through the Çanakkale Strait.

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.

Fatigue

Analysis of the bosun's records of hours of rest submitted to the MSIU showed that he had 98 hours of rest in the previous seven days and 14 hours before being called to rig the combination pilot ladder. The records of the other crew members were also compliant with the MLC and STCW Convention requirements. Thus, fatigue was not considered to be a contributing factor to this accident.

Probable cause of the fall

At the time of rigging the combination pilot ladder, the vessel was experiencing rough seas with winds gusting at 50 knots and a wave height of between two and three metres. There was reportedly no rolling or pitching. Therefore, it was unclear what caused the bosun's fall from the accommodation ladder since none of the crew members tasked with the rigging witnessed the actual fall.

As noted above, the environmental conditions were severe. The probability of the waves buffeting the underside of the lower platform or its upper surface being wet from sea spray was not excluded by the safety investigation. Therefore, it seemed most likely that the bosun may have lost his

balance and / or slipped while securing the lower platform to the pilot ladder.

Although he had donned personal protective equipment (overall, safety shoes, gloves and helmet), he was wearing neither a life jacket nor a safety harness. In any case, if the bosun did survive any physical injuries, it was very likely that he would have immediately suffered from the severe effects of cold-water immersion and hypothermia. His chances of survival were probably very slim. At the time of the fall, the temperature of the sea was 13 °C and the bosun was not wearing any thermal protective clothing.

Requirements for working overside

The vessel's safety management system (SMS) specified that whenever work had to be carried overside, all equipment must be checked and a permit to work (SMS Form F16_01-B) had to be prepared and issued before commencing the overside work.

It was also required that a buoyancy aid and safety harness had to be worn, where there was a reasonable risk of crew falling or being washed overboard. Control measures documented in Risk Assessment Form RS_01 (Work Outboard - Preparation of Pilot Combination Ladder), had identified the use of a safety harness and a life jacket.

In addition to these safeguards, a responsible officer had to be in attendance to supervise the working personnel. Furthermore, the SMS stipulated that overside work must not take place when the ship is either underway, or if the ship is rolling.

Pilot transfer arrangements and the rigging of the pilot ladder in conjunction with the accommodation ladder

Where either the freeboard or the point of access on deck exceeds the height of 9.0 m, SOLAS Regulation V/23 requires that accommodation ladders or gangways are used in conjunction with vertical pilot

ladders for the embarkation or disembarkation of pilots (Figure 4). The pilot transfer arrangement is also addressed in IMO Resolution A.1045(27) – Pilot Transfer Arrangements.

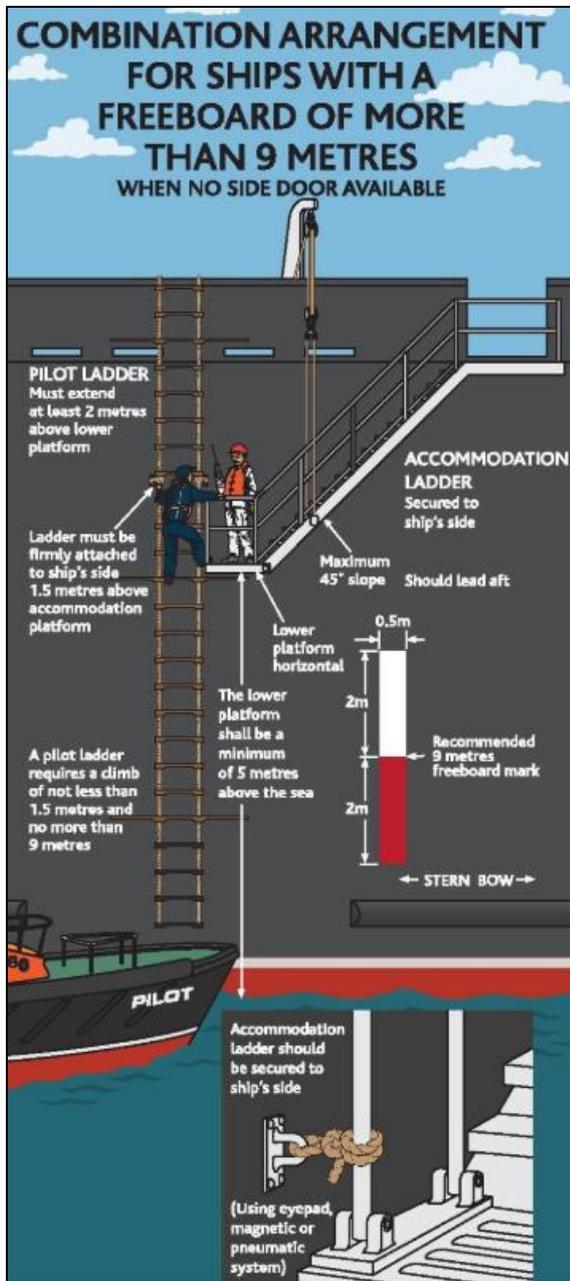


Figure 4: Extract from IMPA's poster showing pilot boarding arrangement for vessels with freeboard of more than 9.0 m

The pilot transfer arrangement on board the vessel was being rigged in accordance with the requirements of the SOLAS regulation.

Information presented to the MSIU showed that the toolbox meeting was carried out just before weighing the anchor. However, the meeting made no reference to the pilot ladder or another meeting being held at the work-site close to the combination pilot ladder. Therefore, it was unclear whether safe working methods were thoroughly examined considering the vessel's movement and prevailing weather conditions. Then, no formal risk assessment had been carried out and the permit to work procedure which consolidate general instructions and safety precautions was not filled in. None of the crew members donned a lifejacket or safety harness.

Since a combination pilot ladder is often rigged when the ship is underway, and the way the two ladders were being rigged and lashed to the hull seems to appear habitual and routine on *Navios Amitie*. The vessel's SMS requirement of not working over the ship side when underway or rolling thus could not be applied. Although combination pilot ladders (out of necessity) are prepared when entering or leaving port (where freeboard is over 9.0 m) and in the absence of specific guidelines in the SMS, the crew may have seen this task as routine, and a safe system of work had not been developed to address the hazards inherent in this practice.

During this safety investigation, the MSIU was unable to determine precisely why the SMS requirements for a life jacket and a safety harness were not observed. However, in view of the rigging practice on board, the safety investigation has not excluded the probability of the crew members perceiving these requirements as somewhat restrictive and cumbersome, impeding the task of securing the accommodation and the vertical pilot ladders to the ship's hull. Going down the accommodation ladder must have been based on similar, past, successful operations, which may have never been challenged on board.

Critical decision making on board

The vessel's SMS required that no work had to be carried out over the side when the vessel was underway. However, a decision by the master to prohibit the rigging of the accommodation and pilot ladders when the vessel is underway, may have complex consequences – not least the inability to embark a pilot (when the ship has a high freeboard).

The MSIU is aware that it is not uncommon in the industry for accommodation and pilot ladders to be rigged when the vessel is underway. This would therefore necessitate crew members to:

- a. expose themselves to elevated levels of risk;
- b. make trade-offs between safety and getting the job done; and
- c. create what are known as situation-specific rules⁶.

Situation-specific rules are a very important consideration in safety-critical domains because research suggests that it may be possible for decisions / judgments to be based on collective experiences, rather than Company procedures. This phenomenon, which would have developed over several years, is not malignant *per se*. Rather, it is a characteristic of any organisation which operates in an open environment.

However, unless this 'drift' is kept under control (by detecting it and bringing it to the attention of the Company for a thorough and objective analysis), situation-specific rules may contribute to entropic risk, which is the risk associated with system degradation, and which may also include work practices⁷.

⁶ Hayes, J. (2013). *Operational decision-making in high-hazard organizations. Drawing a line in the sand*. Surrey: Ashgate Publishing Limited.

⁷ Mol, T. (2003). *Productive safety management: a strategic, multidisciplinary management system for hazardous industries that ties safety and production together*. Boston: Butterworth-Heinemann.

Therefore, the ship-shore loop communication is critical to ensure adequate and timely corrective interventions at any level of the organisation.

Even still, keeping the situation under continuous check may not necessarily be a straightforward commitment because the significant experiences, which crew members would have in safe and unsafe situations would provide the necessary perception that the situation can and may be controlled without any major interventions.

It was therefore clear to the safety investigation that the crew member's decision to walk down the accommodation ladder was not motivated by his willingness to expose himself to high levels of risk. Rather, his actions were the result of him negotiating safety and the (normal) demands of working at sea, which had not been critically analysed.

One other aspect, which stood out was the absence of supervision, when the bosun was working over the side. *A prima facie*, this may also be seen as a contravention of Company procedures, and abnormal and unacceptable risk behaviour. However, the safety investigation is of the view that this lack of activity from the main deck was a sign that nothing harmful was being anticipated. Naturally, this comes at a cost, given that without supervision, crew members on deck could not maintain a wider perspective of what was happening over the side, hence impairing the possibility to take timely and effective decisions to influence a safe operation.

In line with the above, the safety investigation did not rule out yet another aspect of risk - the general acceptance that in any safety critical organisation, there is a level of residual risk⁸, defined as the level of

⁸ Nyoni, W., Pillay, M., Rubin, M., & Jefferies, M. (2017). *Organizational factors, residual risk management and accident causation in the mining industry: a systematic literature review*. Paper

risk present with all identified risk control measures in place, akin to system vulnerability⁹. All crew members on board any ship are aware of and have accepted residual risks; any shipboard activity, from the mooring / unmooring operation to the overhaul in machinery spaces have residual risks, and this operation was not unique.

As indicted in the definition, the proviso is that all identified risk control measures must be in place. Given that the safety investigation identified missing defence barrier systems, then it may be concluded that the system had a level of entropic risk and not only residual risk.

CONCLUSIONS

1. It is very likely, the bosun lost his balance while lashing the gangway to the vertical pilot ladder and fell into sea.
2. The bosun was not wearing a safety harness and he may have possibly drowned because he was not wearing a lifejacket.
3. The SMS required that overside working is undertaken neither when the ship is underway nor during ship's rolling. Since, combination pilot ladder is rigged when arriving or leaving port, the crew members could not comply with this requirement.
4. No formal risk assessment and no permit to work overside had been filled in. Consequently, weather conditions and vessel's movement were not considered.

5. Preparing a combination pilot ladder was seen by the crew members as normal routine work.
6. The crew may have perceived the use of a safety harness and life jacket as impeding the task of rigging and securing the combination pilot ladder to the ship's hull.

RECOMMENDATIONS

Kleimar NV is recommended to:

04/2021_R1 Review and revise the SMS procedure for working over the side to rig combination pilot ladders. The work permit and risk assessment forms should specifically identify this task taking account of vessel's movement and weather conditions.

04/2021_R2 Ensure that a formal risk assessment and permit to rig combination pilot ladder overside is carried out and ensure that relevant PPE is worn by the crew.

presented at the AHFE 2017 International Conference on Safety Management and Human Factors, Los Angeles, California.

⁹ Vaughan, D. (1996). *The challenger launch decision: risky technology, culture, and deviance at NASA*. Chicago: The University of Chicago Press.

SHIP PARTICULARS

Vessel Name:	<i>Navios Amitie</i>
Flag:	Malta
Classification Society:	NKK
IMO Number:	9328572
Type:	Bulk Carrier
Registered Owner:	Kleimar N. V.
Managers:	Kleimar N. V., Belgium
Construction:	Steel
Length Overall:	224.95 m
Registered Length:	217.40 m
Gross Tonnage:	39,643
Minimum Safe Manning:	14
Authorised Cargo:	Dry bulk

VOYAGE PARTICULARS

Port of Departure:	El Dekheila, Egypt
Port of Arrival:	Chornomosk, Ukraine
Type of Voyage:	International
Cargo Information:	In ballast
Manning:	19

MARINE OCCURRENCE INFORMATION

Date and Time:	05 February 2020 at 01:45 (LT)
Classification of Occurrence:	Very Serious Marine Casualty
Location of Occurrence:	Çanakkale Strait TSS
Place on Board	Overside
Injuries / Fatalities:	One fatality
Damage / Environmental Impact:	No damages
Ship Operation:	On passage
Voyage Segment:	Transit
External & Internal Environment:	The weather was clear. Visibility was five nautical miles. The wind was South Southwest (40 knots) with 2 to 3 m Southwest swell. The sea state was rough. The air and sea temperatures were recorded at 15 °C and 13 °C respectively.
Persons on board:	19