

REPORT

Marine 2017/04



REPORT ON OCCUPATIONAL ACCIDENT, FALL ON BOARD MARINOR (LAGQ7) ON 21 DECEMBER 2015 OFF THE COAST OF CALIFORNIA

AIBN has compiled this report for the sole purpose of improving safety at sea. The object of a safety investigation is to clarify the sequence of events and root cause factors, study matters of significance for the prevention of maritime accidents and improvement of safety at sea, and to publish a report with eventually safety recommendations. The Board shall not apportion any blame or liability. Use of this report for any other purpose than for improvements of the safety at sea shall be avoided.

This report has been translated into English and published by the Accident Investigation Board Norway (AIBN) to facilitate access by international readers. As accurate as the translation might be, the original Norwegian text takes precedence as the report of reference.

Photo of ferry on the Norwegian west coast: Bente Amandussen

TABLE OF CONTENTS

NOTIFICATION OF THE ACCIDENT	3
SUMMARY	3
1. FACTUAL INFORMATION	5
1.1 Sequence of events.....	5
1.2 Weather and sea conditions	8
1.3 Vessel, crew and onshore organisation	8
1.4 Implemented measures.....	9
2. ANALYSIS	10
2.1 Introduction.....	10
2.2 Assessment of the sequence of events	10
2.3 Assessment of the shipboard safety management.....	10
3. CONCLUSION.....	11
3.1 Findings with a bearing on safety	11
3.2 Other investigation results	11
4. SAFETY RECOMMENDATIONS	11
DETAILS ABOUT THE VESSEL AND THE ACCIDENT	12

NOTIFICATION OF THE ACCIDENT

On 22 December 2015, the Accident Investigation Board Norway (AIBN) was notified by the Norwegian Maritime Authority of an occupational accident on board the product tanker *Marinor* causing the death of one crew member that had occurred on 21 December 2015.

On 22 December 2015, the AIBN decided to initiate an investigation into the accident.

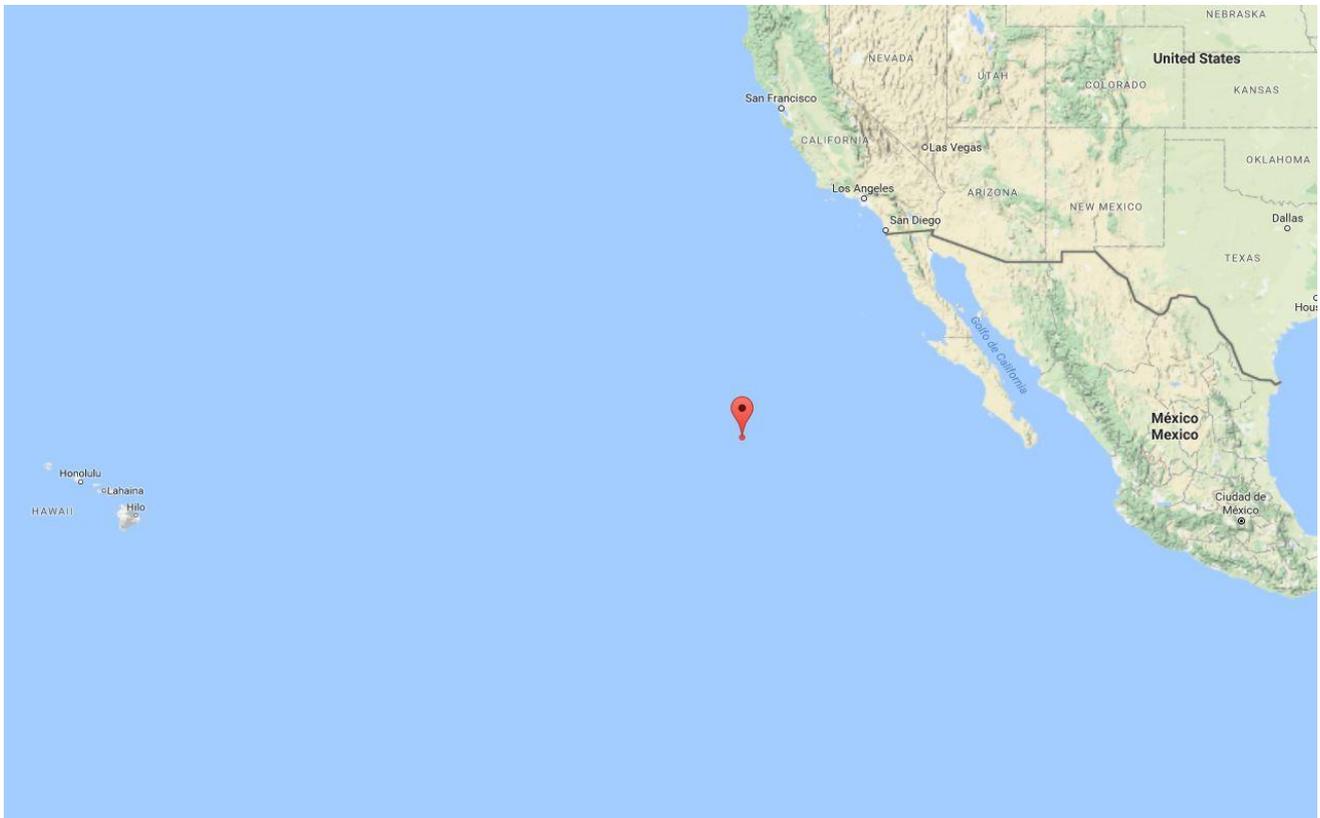


Figure 1: *Marinor's* position in the Pacific Ocean when the accident occurred. Map: Google maps

SUMMARY

On Sunday 20 December, at sea while preparing for an announced US Coast Guard (USCG) inspection that was to take place while the tanker was berthed in Los Angeles, the crew found that one lashing turnbuckle for the free-fall lifeboat had corroded.

No work permit was issued for this maintenance job, since the work would take place at a height of only just over one metre and in an area secured by railings.

The able bodied seaman (AB) who carried out the maintenance work told the bosun that, while carrying out the work, he had observed that the forward hook for the free-fall lifeboat was in need of lubrication, and he asked the bosun for help to steady the ladder he had erected in the position of the forward hook in the davit.

According to the bosun, he tried to prevent the work operation from being carried out, but he nonetheless held on to the lower part of the ladder while the AB climbed up without any form of fall protection. When the AB had climbed part of the way up the ladder, it suddenly slipped on the deck without the bosun being able to keep it steady or stop it from slipping. The AB fell along with

the ladder and ended up motionless on the deck next to the ladder. He died three hours later from the injuries he had sustained.

The AIBN assumes that both the bosun and the AB were aware that lubrication of the forward hook for the free-fall lifeboat without a risk assessment and work permit was a deviation from procedure and the originally planned maintenance job, and reckons that this was overlooked for the sake of completing the job of readying the vessel before arrival at the destination.

The AIBN points out that documents on safe work processes are not enough to prevent accidents; it is also necessary to ascertain what makes well-trained crew members choose to take a higher risk when carrying out a scheduled task. In that connection, the AIBN would like to point out that the crew's right and duty to stop hazardous work should be emphasised in the implementation of the system.

After the accident, the management company has recognised the need for improving compliance with the safety management system, and it has announced the implementation of a number of measures. Many of these measures are in accordance with the conclusions of the AIBN's analysis. Based on the owners' measures following the accident, the AIBN has decided not to submit any safety recommendations.

1. FACTUAL INFORMATION

The information obtained is based on interviews with *Marinor's* crew, conducted by the US Coast Guard (USCG) while the tanker was berthed in Los Angeles on 23 December 2015, on reports and internal documentation provided by the management company Thome Ship Management Pte. Ltd.

1.1 Sequence of events



Figure 1: The product tanker *Marinor*. Source: Thome Ship Management Pte. Ltd.

1.1.1 Background

On 30 November 2015, after loading a Jet A1 product, the product tanker *Marinor* left Onsan in South Korea with estimated time of arrival (ETA) in Los Angeles for unloading on 22 December 2015.

On Sunday 20 December, at sea while preparing for a USCG inspection that was to take place while the tanker was berthed in Los Angeles, the crew found that one lashing turnbuckle for the free-fall lifeboat had corroded. It was not possible to move the securing pin. The job of removing the rust was carried out there and then, but it was decided to do a more thorough job the next day. The chief mate explained to the able bodied seaman (AB) who was to carry out the work that the job only involved rust removal and painting of the turnbuckle.

Early Monday morning, bosun 1, bosun 2 and the pumpman went to the bridge to discuss the work schedule for the day with the chief mate. The work consisted of preparations for the call in Los Angeles, including the maintenance job on the turnbuckle.

The chief mate specifically pointed out to bosun 1 that the job only involved removal of remaining rust and painting the turnbuckle, and that the AB on completing the job should participate in the cleaning work together with the rest of the deck crew.

No work permit was issued for this job, since the work would take place at a height of only just over one metre and in an area secured by railings, see Figure 2 and 3. The chief mate carried out a verbal risk assessment of the maintenance job together with the two bosuns. It was mandatory practice on board to use relevant personal protective equipment (PPE) (helmet, gloves, coveralls, protective footwear etc.) for this type of work.



Figure 2: The lifeboat muster area, where the agreed maintenance job was to be carried out (working area marked with a red ring). Photo: Thome Ship Management Pte. Ltd.



Figure 3: The photo on the right shows the turnbuckle and the securing pin (marked with a red ring) after the maintenance job had been carried out. Photo: USCG

1.1.2 The occupational accident

The vessel, which was in loaded condition, was rolling moderately in the swells. The chief mate and the two bosuns discussed possible risks involved in the job, and the instructions were that no work was to be carried out at height.

At 09:00, the chief mate conducted his usual morning round on board.

Bosun 1 has stated that he was in the paintshop cleaning some painting equipment together with a deck cadet, when AB came by and said that he had completed the maintenance job on the turnbuckle and the securing pin.

The AB said that, while performing the job, he had observed that the forward hook for the free-fall lifeboat needed to be lubricated with WD40 penetrating oil. He asked bosun 1 to assist him by steadying a ladder he had positioned on deck below the lifeboat to reach the forward hook in the davit, see Figure 4 and 5.



Figure 4: The free-fall lifeboat and the forward hook (marked with a red ring). Photo: USCG



Figure 5: The ladder as positioned by the able seaman to reach the forward hook. Photo: USCG



Figure 6: The ladder was unstable, among other things because both feet were not in firm contact with the deck. Photo: USCG

The height from the deck to the forward hook was 4.8 metres. The ladder was five metres long and was equipped with rubber feet at the bottom of each leg. The rubber feet were significantly worn. The ladder was not secured with ropes or in any other way, and it was unstable because both feet were not in firm contact with the deck, see Figure 6.

According to bosun 1, he tried to prevent the work operation from being carried out, but he nonetheless held on to the lower part of the ladder while the AB climbed up. According to the management company's internal report, the AB climbed up the ladder without any form of protection (safety line, helmet etc.). Bosun 1 stated that, when the AB had climbed part of the way up the ladder, it suddenly slipped on the deck without bosun 1 being able to keep it steady or to stop it from slipping. At 09:30, the AB fell along with the ladder and ended up motionless on the deck next to the ladder.

1.1.3 Rescue and resuscitation attempts

Bosun 1 immediately called for the deck cadet to assist him with the AB. The AB lay flat out on his back on the deck. He appeared to be unconscious and they were unable to make contact with him.

The chief mate was informed of the AB's fall onto the deck by the deck cadet. Shortly afterwards, the fire alarm sounded after a crew member had pressed the alarm button to notify everyone on board of the accident.

The chief mate instructed one of the deck officers who was off duty to prepare for receiving the patient in the ship hospital. A stretcher was brought to the accident site and the patient was placed on the stretcher. The chief mate had now arrived at the accident site, and he helped to strap the patient correctly to the stretcher and was present while the patient was transferred to the ship hospital.

The vessel's master contacted CIRM Roma for medical advice at 09:35, and also contacted the agent at 10:21 for possible assistance from the USCG. The USCG in San Diego contacted the vessel at 11:50 and said that a helicopter could reach the vessel within 2.5 hours.

First aid was administered in the ship hospital.

At 12:00, the patient stopped breathing, and defibrillation was initiated. At 12:30, the 39-year-old patient was pronounced dead.

1.2 Weather and sea conditions

The accident happened in conditions of daylight and, according to the vessel's master, good visibility, with a west-north-westerly wind of 10 m/s and a significant wave height of 2 metres.

1.3 Vessel, crew and onshore organisation

1.3.1 The vessel

The product tanker *Marinor* was built at the Brodosplit yard in Split in Croatia in 2008. The vessel traded internationally and was registered in the Norwegian International Ship Register (NIS) at the time of the accident. The vessel had valid certificates issued by DNV-GL.

1.3.2 Safety management

The management company had established a safety management system for the operation of *Marinor* in accordance with the ISM Code. The following excerpt from the management system is of relevance to the accident:

Safety and Health (S&H) Document No 007 'Hazardous Work', section 7.8 'Working aloft/Over-the-side' states that working aloft means working at heights of more than two metres above deck.

A risk assessment shall be carried out and a 'Working over-the-side Permit' (TSM Form No 090E) shall be used for any work at heights of two metres or more above deck.

Document No 005 specified the type of PPE equipment to be used for work at heights of two or more metres above deck.

1.3.3 The crew

The crew consisted of a total of 25 persons. The chief engineer was a Croatian national and the rest of the crew were Philippine nationals. All mandatory competence certificates were in accordance with applicable rules and regulations.

1.3.4 Owners and management company

The owner Viken Shipping AS was based in Oslo. The Singapore-based management company Thome Ship Management Pte. Ltd. was responsible for the technical operation of the vessel.

1.4 **Implemented measures**

Shortly after the accident, the management company's executive management sent a circular to all the vessels in the fleet. The circular described three recent undesirable incidents that had occurred within the Thome fleet, the most dramatic of which was the occupational accident on board *Marinor*. Experience and proposed measures to prevent recurrence were described, and the vessels' masters were urged to organise extraordinary meetings with their respective crews as soon as possible. The purpose of these meetings would be to explain the incidents and the consequences of such actions, and to review relevant procedures.

An internal investigation of the accident by the management company concluded with a number of recommendations, and corrective and preventive measures. The following were some of the main initiatives taken:

- As a corrective measure, the ladder that was used in the accident was removed.
- Preventive measures included a review of applicable procedures (work at height, safe work practice, use of STOP CARDS etc.).
- Accidents and incidents were to be included as a topic in connection with shipboard familiarisation of new employees and at crew conferences.
- Senior management would review the accident and the CEO would address the accident and the company's commitments in a separate document.
- A 12-month campaign on behaviour-based safety would be initiated for all vessels in the fleet. During the first six months, the focus would be on an increased practical understanding of safety among the crew, with the focus on working position, ergonomics, tools etc. During the next six months, the focus would be on implementing this practical understanding in areas such as navigation, engine room operations, ship operations etc. A campaign update would take place every month, among other things to discuss relevant chapters of the guidelines relating to good work procedures.

One month after the accident, the CEO sent a communication to all vessels in the fleet, in which he addressed the accident and the company's commitments. The focus was on attitudes to safety and on the company's own mantra: '*we do it safely or not at all*'.

2. ANALYSIS

2.1 Introduction

Facts and interviews that form the basis for the AIBN's analysis of the occupational accident were collected by the USCG on board *Marinor* while it was berthed in Los Angeles, shortly after the incident. Relevant documentation from the vessel's management company has also been used.

The object of the analysis has been to identify the factors that contributed to the accident and that have a bearing on safety, with the aim of improving safety at sea.

2.2 Assessment of the sequence of events

What started out as a simple lubrication job led to work aloft, which was defined in *Marinor's* safety management system as work at heights of more than two metres above deck. It was clearly stated in the procedure that a risk assessment and a work permit were required for work aloft.

The AIBN assumes that the AB was aware that lubrication of the forward hook for the free-fall lifeboat without a risk assessment and a work permit was a deviation from the procedures and the originally scheduled maintenance job. The AIBN also assumes that his own assessment of the additional work required in connection with the lifeboat job led him to fetch a ladder himself to get the job done.

Bosun 1, who was asked by the AB to steady the ladder while the AB climbed up to carry out the lubrication job, could have stopped the job. The ladder was not suitable for the job since it was not secured in any way. It was unsteady and the rubber feet on the ladder legs were significantly worn.

The AIBN assumes that, like the AB, bosun 1 was mostly concerned with completing the preparation of the vessel before arrival at the destination, which on this particular voyage entailed a port state inspection.

2.3 Assessment of the shipboard safety management

The AIBN finds that the procedure for work aloft was clearly not complied with in this work situation, which means that the safety management did not work as the barrier it was intended to be.

The AIBN points out that, even though the management company had clear procedures in place in its safety management system for work aloft, there is nonetheless a need to ensure sufficient focus on completing necessary preparations within safe limits.

Documents on safe work processes are not enough to prevent accidents; it is also necessary to ascertain what makes well-trained crew members choose to take a higher risk when carrying out a scheduled task. In that connection, the AIBN would also like to point out that the crew's right and duty to stop hazardous work should be emphasised in the implementation.

After the accident, the management company has recognised the need for improving compliance with the safety management system, and it has announced the

implementation of a number of measures. Many of these measures are in accordance with the conclusions of the AIBN's analysis. Based on the owners' measures following the accident, the AIBN has decided not to submit any safety recommendations.

3. CONCLUSION

3.1 Findings with a bearing on safety

a) Despite the fact that the management company had a safety management system approved by the maritime authorities, the accident occurred anyway. The company has implemented corrective measures after the accident.

3.2 Other investigation results

b) The crew had not conducted a risk assessment prior to commencing the work.

c) The rubber feet that were used on the ladder were significantly worn, and the ladder was therefore not suitable for use on board a vessel in operation.

4. SAFETY RECOMMENDATIONS

The investigation of this occupational accident has not identified areas in which the Accident Investigation Board Norway deems it necessary to submit safety recommendations for the purpose of improving safety at sea.

Accident Investigation Board Norway

Lillestrøm, 2 March 2017

DETAILS ABOUT THE VESSEL AND THE ACCIDENT

Vessel	
Name	<i>Marinor</i>
Flag state	Norway / NIS
Classification society	DNV-GL
IMO number / call signal	9332626/LAGQ7
Type	Product tanker
Build year	2008
Owner	LR Ice Shipping Eleven Ltd.
Operator/ Responsible for ISM	Thome Ship Management Pte. Ltd., Singapore
Construction material	Steel
Length	228.5 m.
Gross tonnage	42,893
The voyage	
Port of departure	Onsan, South Korea
Destination port	Los Angeles, USA
Type of voyage	International voyage
Cargo	Jet A1
Persons on board	25
Information about the accident	
Date and time	09:30 LT (18:30 UTC) on 21 December 2015
Type of accident	Very serious marine accident
Place/position where the accident occurred	The coast of California, in position: N 23 23.4 W 124 23.4
Place on board where the accident occurred	Poop deck
Injuries/deaths	One crew member died
Damage to vessel/the environment	No
Vessel operation	Maintenance work
At what point of its route was the craft	At sea
Environmental conditions	Daylight, good visibility, SW current 0.4 knots and wave height approx. 2 m.