



DUTCH
SAFETY BOARD

Fall from height

Fatal accident on board the Zealand
Rotterdam - 23 November 2019



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The Hague, March 2022

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Cover photo: Q-Shipping

The Dutch Safety Board

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This report is published in the Dutch and English languages. If there is a difference in interpretation between the Dutch and English versions, the Dutch text will prevail.

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RECOMMENDATIONS

The Dutch Safety Board issues the following recommendations to the ship manager Q-Shipping:

1. Even in cases where a vessel is completing its final journey for the ship manager, maintain a full experienced crew, and deploy any new crew members as supernumeraries, in a learning role, not as replacements for original crew members. In all cases, ensure a common working language in which all crew members can communicate with one another.
2. At all times, ensure sufficient time is available to take the specified measures per the Safety Management System (SMS) on board and to follow the procedures, also in situations where there is time pressure. For the development of procedures for high-risk activities, such as attaching a grab to a crane, follow the occupational hygiene strategy.
3. Ensure that supervision by the ship manager of vessels that do not regularly visit European ports is implemented effectively. This should take place irrespective of whether the supervision is provided from a Dutch or foreign office.



ir. J.R.V.A. Dijsselbloem
Chairman Dutch Safety Board



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1 INTRODUCTION

On Saturday 23 November 2019 at 16.40 hours LT¹, at a sea anchorage close to Mumbai, India, an AB² fell from a grab on one of the ship's cranes on board the Dutch bulk carrier Zeeland Rotterdam. The AB fell onto the main deck below, suffering fatal injuries. At the time, the vessel was anchored in the roads of Mumbai (see Figure 1).

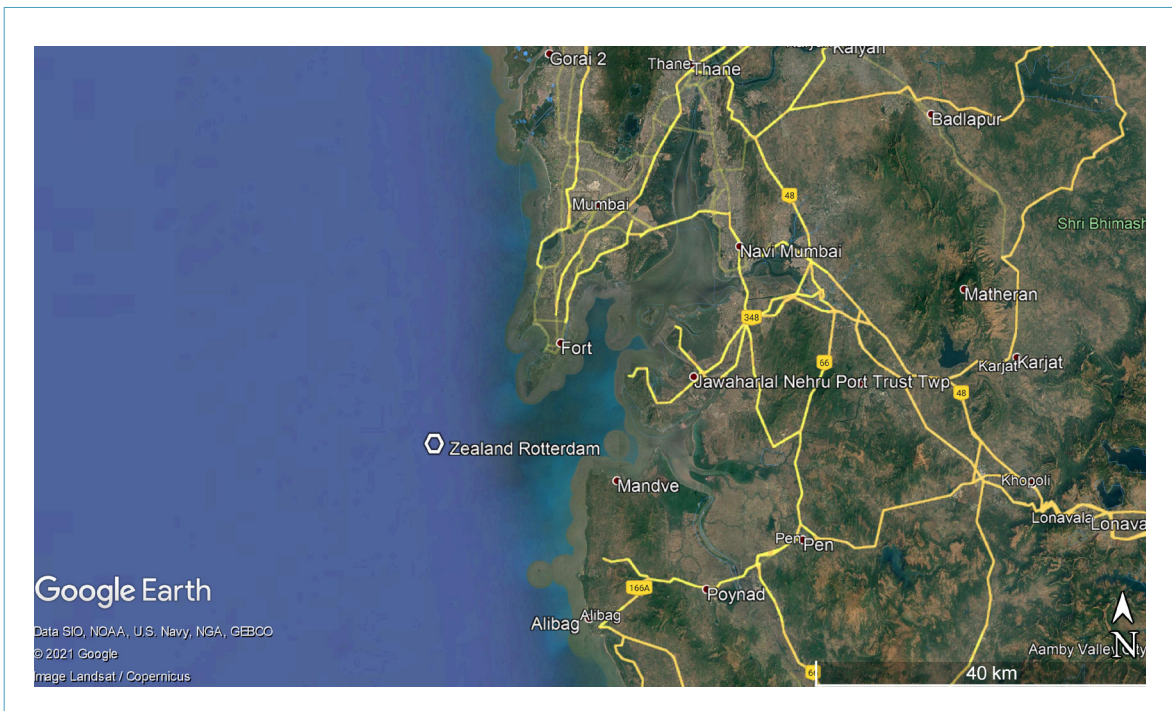


Figure 1: Location of Zeeland Rotterdam at the time of the accident. (Source: Google Earth)

The incident has been classified as a very serious accident as defined in the Casualty Investigation Code of the International Maritime Organization (IMO) and Directive 2009/18/EC of the European Parliament and Council. This means that the Netherlands, as the flag state, bears the obligation to ensure that an investigation is carried out. This obligation to carry out an investigation is also laid down in the Safety Board Decree. As the Coastal State, the maritime authorities of India have been classified as a Substantially Interested State. Given the nationality of the victim, the Philippines have also been designated as a Substantially Interested State.

1 All times in this report are shown in local time in Mumbai (UTC +5.30 hours)
2 An able body seaman (AB) is a naval rating of the deck department with more than two years' experience at sea and considered "well acquainted with his duty"

Investigation approach

The information issued by the ship manager immediately following the accident revealed that the ship in question was due to be handed over to a new owner/flag state in the port of Mumbai, in the days following the occurrence. Because the vessel would no longer be sailing under the Dutch flag after the transfer, and because the affected crew members were due to disembark, investigators of the Dutch Safety Board looked into all possibilities of travelling to India as quickly as possible. Consideration was also given to the possibility of postponing the moment of transfer. However, in the limited time available, it proved impossible to obtain a visa. Based on issues of competence it also proved impossible in practice for a postponement of the transfer to be arranged from the Netherlands. This led to extensive discussions with the Dutch Public Prosecution Service and the supervisory authority (the Human Environment and Transport Inspectorate - ILT). Eventually, after a number of days, it was possible to establish contact with the maritime authorities in India. Before the vessel was transferred, they carried out a brief investigation on board. The information collected in this process was passed on to the Dutch Safety Board in the form of an abbreviated initial report. Following the outbreak of the COVID-19 pandemic, it was no longer possible to make contact with the colleagues in India³, and no definitive report was ever received.

The affected ship manager did issue investigation information to the Dutch Safety Board, including an internal investigation report. The Safety Board also questioned a number of Dutch shipping companies about the usual practices surrounding the transfer of a ship. Based on this information, it was possible to carry out a limited investigation into the accident.

Because the Dutch Safety Board was unable to carry out its own investigation on board the ship on location and/or to interview the affected crew members, in the case of this investigation the decision was taken to not go into the details of the functioning and operation of the crane installation in question. Any information about the installation that is included in the investigation is based on file information received.

The decision was also taken within the investigation, to not go into the details of the medical evacuation, despite the fact that it became clear that the medical evacuation did not take place via the standard channels, and was therefore carried out without the assistance of a doctor or medically trained professional. However, relevant information from India important with regard to this subject is not available. For that reason, the Safety Board has issued no statement on whether the way the medical evacuation was carried out had any influence on the death of the victim.

³ Because contacts with the Indian colleagues were disrupted following the outbreak of the COVID-19 pandemic, which meant that no further consultation could take place, information issued to the Safety Board on a confidential basis could not be attached to this report, as an appendix.

This report answers the following investigation questions:

1. How and under what circumstances was the AB able to fall from the grab and subsequently end up on the deck below?
2. What safety management measures and work agreements were in place on board the vessel, and were these adequate for limiting the falling hazard?
3. How had the owner and/or manager of the safety management system (SMS) ensured that familiarization and regular work could be carried out safely and responsibly, during the transition period?
4. How can the ISM manager and Dutch maritime authorities adequately supervise the safe operation of a Dutch-flagged ship sailing for longer periods of time exclusively in another, less accessible, part of the world?

2 BACKGROUND INFORMATION

Ship and crew

The Zealand Rotterdam (hereinafter referred to as the vessel) was built in 2012 at STX Offshore & Shipbuilding Company Limited in Changwon, South Korea. Until 1 December 2019, Zealand Rotterdam B.V. (hereinafter referred to as the owner) was owner of the vessel, and operations were managed by Q-Shipping B.V. (hereinafter referred to as the ship manager). The ship manager has the main office in the Netherlands and a branch office in Turkey. The work of the company was divided between these two offices, whereby inspections on board ships were mainly carried out from Turkey. The Dutch offices were responsible among others for crew management. For the crew of the vessel, the ship manager had a contract with Marlow Netherlands (hereinafter referred to as the crewing agency).

Since the accident, the name, owner and manager of the vessel have changed. For some time the vessel sailed under Turkish flag, under the name DD Karadeniz. The new owner was the Turkish company Karadeniz Maritime Transport. On 1 August 2020, the vessel once again changed its name and flag. The Karadeniz S, with a Panamanian owner, is now sailing under the flag of Panama.

In the period prior to the accident, the vessel operated as what is known as 'tramp shipping'⁴ and was deployed mainly in transatlantic and South-east Asian regions for commercial reasons. As a result, the frequency with which the vessel called at a Dutch or Western European port was low. At the time of the accident, the crew of the vessel consisted of nineteen persons from four different nationalities. The crew member who subsequently died from his fatal injuries was an AB of Filipino nationality. He had come aboard in February 2019. All crew members, with the exception of those with Turkish nationality, were engaged via the Dutch crew manager. The crew members with Turkish nationality were engaged via the new Turkish owner. With a crew of 19, the vessel easily satisfied the crewing requirements of 13 imposed by the flag state for vessels of this type.

⁴ Tramp Shipping refers to operations without fixed routes and/or fixed frequencies, whereby vessels are chartered for one or more trips.

Table 1: Positions and nationalities of crew members of the Zealand Rotterdam

Position	Nationality
Captain	Russian
First officer	Ukrainian
Second officer	Ukrainian
Third officer	Turkish
Chief engineer	Turkish
Second engineer	Russian
Assistant engineer	Filipino
Cook	Filipino
Bosun	Filipino
AB 1	Turkish
AB 2 (victim)	Filipino
AB 3	Filipino
AB 4	Turkish
AB 5	Filipino
AB 6	Filipino
Fitter	Turkish
Oil man	Filipino
Motorman	Filipino
Observer	Turkish

Cranes and grabs

The vessel is equipped with four ship cranes from which a grab can be suspended (Figure 2 and Figure 3). The connection between the grab and the ship's crane is made from a platform of the deck of the vessel.



Figure 2: Grab on platform on board the Zeeland Rotterdam. (Source: Q-Shipping)

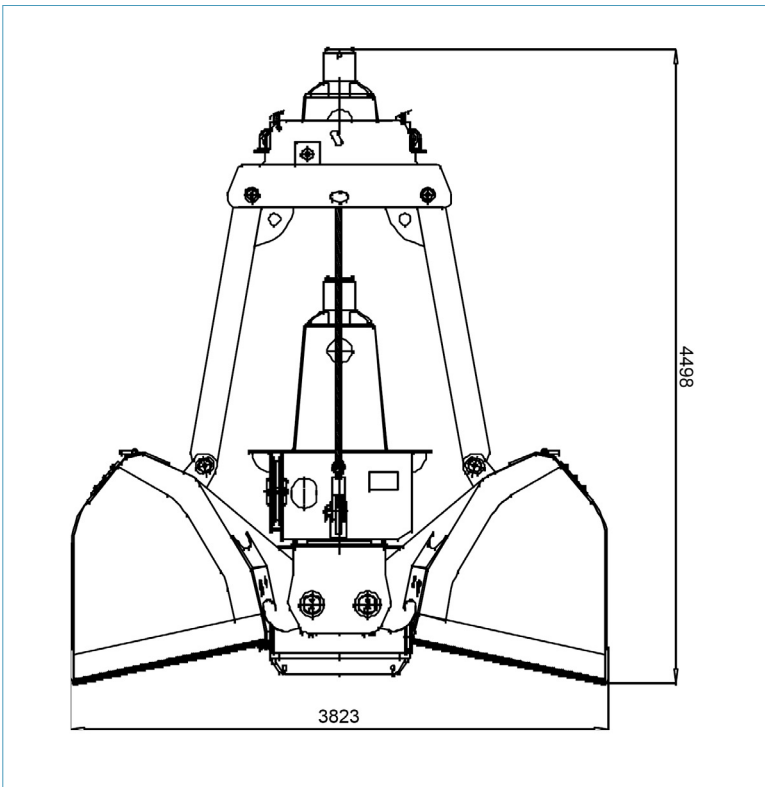


Figure 3: Diagrammatic representation of the grab with dimensions in millimetres. (Source: User manual radio remote control - Q-Shipping)

3 COURSE OF EVENTS

The vessel in question was travelling from Singapore to Mumbai, India, with a cargo of bulk goods. This was the vessel's final journey before the owner, management and flag were to be changed and transferred into Turkish ownership.

A number of weeks previously, part of the new Turkish crew came on board to be introduced to and sail on the vessel. This was based on an agreement between the ship manager and the new owner. On 5 November 2019, these six crew members came on board the vessel. Five of them came on board to replace old crew members. The report received by the Dutch Safety Board from Indian investigators⁵ revealed that with one exception, these new crew members spoke limited English so that communication between the old (Russian, Ukrainian and Filipino) crew and the new (Turkish) crew mainly took the form of hand signals.

On Saturday 23 November 2019, following the journey from Singapore, the vessel was anchored in a sea anchorage of the coast of Mumbai, India. The vessel was forced to wait at the anchorage for permission to sail to its unloading location at sea nearby the port of Mumbai (see Figure 1). The captain received this permission on that day, relatively unexpectedly, at around 15.30 hours⁶. Unloading was due to take place one day later, on 24 November. At around 16.30 hours, an agent of the local port agency provider (DPA) arrived with his boat alongside the vessel, to discuss the procedures for unloading.

Part of the preparation for unloading was the fitting of the grabs on the four ship's cranes. The grab involved in the occurrence was placed on a platform that protruded two and a half metres above the deck. The top of the grab to which the crane hook had to be attached protruded over six and a half metres above the deck.

These preparations were carried out on all four ship cranes. At around 16.30 hours, one of the newly engaged Turkish crew members was operating the front crane. This was the first time that the crew member in question had operated the crane. He was accompanied by an experienced crew member, for instruction. The bosun, another AB who had recently come aboard and two Filipino AB (including the victim) were stood close to the grab. At around 16.40 hours, the bosun and the ABs were at work attaching the hook to the front crane on the grab platform, whereby one of the AB (the victim) had climbed onto the grab via the steps present on the grab. The officer that was on board as an observant was also involved with the process, but walked away to find the first officer. After the hook had been attached to the grab, the bosun descended from the platform. The crane operator moved the hook towards the grab. The two ABs used a messenger line to guide the crane hook. The AB on the grab was still working to release the lashing on the grab.

⁵ The Indian investigators did come aboard and spoke to the remaining crew members.

⁶ All times are in local time.

At that moment, the lifting block on the crane made a sudden swinging motion, colliding with the AB. The crew member then fell over backwards and landed on the deck below, on his head. During the investigation, it was not possible to determine with certainty the cause of the sudden swinging of the lifting block.

At the moment of the accident, none of the crew members involved were wearing the personal protective equipment (PPE) specified on board, such as a helmet and fall protection.

Almost immediately following the fall, the captain was informed of the accident. He sent the second officer to perform first aid. A request was sent to Mumbai VTS to arrange transport to shore, accompanied by a doctor or medic, but according to the captain of the vessel, Mumbai VTS made it known they were unable to arrange transport. The boat of the DPA agent, a small tugboat, was subsequently used to transport the injured crew member. He was accompanied on the journey by another crew member. When the victim disembarked from the vessel, he was still conscious. His condition worsened while en route. On arrival at the hospital in Mumbai, it was confirmed that he had died.

4 ANALYSIS

This analysis concerns various aspects that played a role in this accident. Because it was not possible to clarify exactly what happened on board the vessel in question, it is possible that certain aspects played a greater or lesser role in the actual accident. The analysis starts close to the occurrence, before gradually zooming out to a broader scope, where possible.

Due to the lack of relevant information from the local authorities, it has not been possible to further analyse the circumstances surrounding the medical evacuation.

A ship manager (ISM manager) is required to mitigate risks on board a ship, according to a systematic approach. Naturally, this first requires that the processes and risks on board be thoroughly mapped out. A good systematic approach is to follow an *occupational health strategy*:

Start at the source of the risk. The operator must first remove the source of the risk. Is it necessary in the first place to climb onto the grab in order to suspend the grab from the crane? Should the work at that time be carried out in those circumstances? Are there possible alternatives?

Collective measures: if measures at source cannot be implemented, or do not mitigate the entire risk, the operator must consider measures to further limit the risks for everyone (protection).

Individual measures: if the risk is still not sufficiently reduced once the measures have been taken, the operator must first limit the risk for individual employees by reducing their exposure to the risk. This can for example be achieved through organizational measures such as implementing a procedure.

The final possibility available to the operator is to provide **personal protective equipment**, such as a helmet and fall protection. The employer must supervise the use of this equipment, but employees themselves are required to use the personal protective equipment, and to follow the appropriate instructions.

At crew level

On board the vessel, it was standard practice to hold a toolbox meeting every morning. During this meeting, the tasks and related risks for the day ahead were discussed with and by the crew. A toolbox meeting was also held on the day of the accident. However, during the toolbox meeting, the activities relating to the preparation of the cranes were not discussed because at the time of the toolbox meeting, it was not yet known that those tasks would have to be carried out on that day.

In itself it is not unusual for last minute tasks to be planned on board a ship. In those cases, it is standard practice and a fixed requirement that a Last Minute Risk Assessment (LMRA) be carried out before the start of the work. The purpose of the LMRA is to ensure that both the officers on the bridge and the crew members responsible for the task consider and discuss the potential risks, in advance. In this case, in the hours leading up to the accident, no LMRA took place on board.

It was discussed during the toolbox meeting that while carrying out work on deck and in the engine room, the correct personal protective equipment (PPE) had to be worn, including the use of fall protection when working at height. However, during the work, the duty officer did not supervise the wearing of the appropriate PPE.

The crew were informed about two hours in advance that the vessel was due to be unloaded into barges that would come alongside at the unloading location that day. The crew did not organize an additional toolbox meeting, or carry out an LMRA. The statements from the crew members revealed that PPE was not always worn, in situations when the work had to be done in a hurry. In this case, the victim was wearing neither a helmet nor fall protection, even though both were available on board.

The ring from which the grab is suspended from the crane could be lowered sufficiently that it could be reached from the platform. This would have removed the risk of the crew member falling from the grab, at the source. The Safety Board was unable to determine clearly why the procedure on board was such that it became necessary to climb onto the grab.

The work was not discussed during the toolbox meeting and no Last Minute Risk Assessment (LMRA) was carried out. In addition, the victim was not wearing the appropriate personal protective equipment (PPE) such as a helmet and fall protection.

The Safety Board was unable to ascertain clearly why the procedure on board the vessel was such that it became necessary to climb onto the grab in order to attach it to the crane. It has been determined that if a different method had been employed as intended by the manufacturer of the grab, it would not be necessary to climb onto the grab.

At ship level

Because in the week of the occurrence the vessel was due to change both owner and flag state, in advance of the changeover, half of the old crew had already been replaced three weeks earlier, by new crew members. The new crew was supplied by the new owner. This offered the new crew an opportunity to gain experience on the ship. Contrary to standard practice⁷ in such situations, the new crew members were not placed on board as observers, but in fact immediately replaced part of the old crew, and were allocated an active contributing role. The new owner did also install an additional officer on board, as observer.

As usual, the old crew had been supplied via the Dutch crewing agency. The additional new Turkish crew members were engaged by the new Turkish owner in consultation with the Turkish office of the ship manager. The crew had valid certificates (Dutch recognition of their license). With regard to the qualifications of the new crew members, there was no consultation between the parties. Both financial and logistic considerations played a role.

The statements received revealed that the way in which the observer role was fulfilled meant that the officer in question regularly issued orders that were contrary to orders issued by the duty officers. Interviews with the crew members by the Indian investigators revealed that in particular the new crew members tended to listen more to the observer than to the more experienced officers on board.

The investigation revealed⁸ that the new crew members shared almost no common language with the old crew, with the exception of one crew member; the already mentioned observer. This made verbal communication difficult. As a result, communication mainly took the form of the standard hand signals and gestures common in shipping practice, while the observing crew member regularly acted as interpreter. As previously mentioned, the role of the observer in fact went further than simply translating; he also issued orders not issued by the ship's officers.

The Safety Board was not able to determine the cause of the sudden swinging movement of the lifting block, and the subsequent fall of the victim from the grab. It was previously determined that there is no direct necessity for the crew member to climb onto the grab. In this regard, two scenarios emerged from the Indian investigation report:

1. The first scenario is based on the statements of the crew members. The vessel was said to have made a rolling motion, as a result of which the lifting block began to swing, and hit the victim. However, the weather data and the logbook indicate that the sea was calm, in addition to which, when working at sea, account must be taken of the risk of unexpected rolling motions at any time.
2. The second scenario is that the crane operator unintentionally swivelled the crane, causing the lifting block to hit the victim. The crane operator had no previous experience with the crane on board the vessel.

⁷ The Safety Board consulted with various other Dutch shipping companies.

⁸ Source: Interviews held on board the vessel by the Indian authorities.

- There was no good match between the old and new crew members. There was no prior consultation on the correct qualifications and competences. There was no common language and the new crew members had no experience with the vessel. In addition, the officer whose only role was that of observer in fact regularly took over command from the duty officers.
- It became sufficiently clear from the investigation that the victim was hit by the suddenly moving lifting block. This does not however determine with any certainty the underlying cause of the swinging of the lifting block.

At ship manager / ship owner level

The ship safety management system (SMS) specifies that the crew members must speak a common language in order to be able to sail and carry out the work on board. This is in fact also a legal requirement. There were sufficient English-speaking crew members on board to satisfy the minimum crewing requirements. However, the crew members, who were unable to speak good English, were deployed during the trip, to carry out work on board and three of them fulfilled a position as required per the Minimum Safe Manning Document (MSMD). The investigation revealed that the written requirements from the SMS were complied with, for example the signing as approved by each individual crew member of the documents drawn up in English relating to the familiarization instructions. However, the statements show that in practice, all spoken communication took place via the only crew member with a good command of English and Turkish. Although there is an international standard for hand signals for crane drivers⁹, it was not possible to determine with any certainty whether this standard was employed.

In addition, as previously stated, it is not common practice in such situations prior to the transfer of a ship to already replace a substantial proportion of the experienced old crew with an inexperienced new crew, to carry out operational tasks. It is more common to install part of the new crew as observers, to become acquainted with the vessel and its special features under the full supervision of the old crew. The new observer crew members are then not expected to carry out any actual tasks on board. In essence, arranging an appropriate and competent crew is a responsibility that must be correctly organized and planned by the ship manager. If this requirement is not met, at all times the captain is the last link in the chain, who is authorized to decide whether or not to set sail.

It is up to the ship manager to provide a crew that fully satisfies the ship crewing requirements. In this case, the ship manager should have checked in advance whether the crew supplied from two different sources was sufficiently matched in terms of knowledge and qualifications, and certainly with regard to a common working language.

A number of Dutch shipping companies were consulted on the standard approach to organizing a ship transfer. It became clear from the answers that the preference is to have the transfer carried out in the vessel's old or new home port. It is however not uncommon for the transfer to take place in transit, as in this case, because it can be more efficient and as a result save costs.

Prior to the journey, the ship manager failed to place a crew on the vessel that was able to communicate in the same language, as required by the ISM and the law.

The ship manager replaced part of the crew prior to the transfer of the vessel, as a result of which new crew members came on board without specific experience with the vessel, and for the most part without a common language with the old crew.

Supervision

The ship manager

The vessel in question was a vessel that was deployed mainly in transatlantic and South-east Asian regions for commercial reasons. For that reason, the vessel in principle no longer travelled to the Netherlands or the surrounding countries. The annual inspections required by the ship manager were carried out by the ship manager's Turkish branch office or the Dutch head office, depending on the location of the ship. The ship manager's Dutch head office was responsible for the ship's crew, but for this task made use of the services of an external company (crewing agency). As standard, the ship manager's Dutch head office used this crewing agency and undertook no further activities, for example monitoring the safety culture on board the ship in the form of training, officers' days, etc. In other words, there were no direct ties or relationships between the deployed crew members, and the ship manager. The ISM, certificates and for example the familiarization statements and permits were all in good order, at least on paper. The relevant documents were also remotely available. Due to the way in which the work was shared between the ship manager's two offices, it was not always clear at the Dutch office how the work on board, such as the loading and unloading of the vessel, was carried out in practice. As a result, at the ship manager's Dutch office, there was not always a clear picture of the safety culture on board, and how the requirements were complied with.

Following the accident, the ship manager did go on board its vessels to discuss the accident with the crew members, and to reinforce the importance of the use of personal protective equipment (PPE) and fall protection.

The ship manager had no clear picture of the situation on board in practice.

In this case, responsibility for safe operations on board the vessel and the prevention of this specific accident lay with the ship manager and the crew.

Government supervision

Ships are required to comply with safety and environmental requirements. The flag state of a ship is responsible for the relevant supervision. In the Netherlands, this task is the responsibility of the Human Environment and Transport Inspectorate (ILT).

In accordance with IMO and/or EU regulations, the government carries out two types of inspection, relating to safety on board seagoing vessels, namely flag state inspections and Port State Control (PSC) inspections. The flag state inspections are similar to PSC inspections, with an additional focus on certain national requirements. The ILT carries out these inspections on Dutch flagged ships.

Port State Control inspections are performed internationally, where seagoing vessels worldwide are inspected by national inspectors. Within the forms of supervision, this can be considered as supervision of compliance. These inspections are carried out on board irrespective of the flag state under which the vessel is sailing, except ships sailing under the flag of the controlling port state. Memoranda of Understanding (MoUs) have been drawn up worldwide, within which the results of inspections can be exchanged. For the European Member States, this is a compulsory EU directive,¹⁰ which takes effect within the (larger) region of the Paris MoU.

By means of its flag state inspections, the ILT determines whether vessels comply with the Maritime Labor Convention (MLC, 2006).¹¹ Vessels that are found to comply are issued with a certificate that is valid for 5 years. In addition, all ships must be inspected at least once every three years. These MLC-related inspections have been outsourced by ILT to a number of approved organizations.

The ILT performs these enforcement inspections, among others on the basis of IMO resolutions.¹² Due to lack of capacity, not all Dutch vessels are regularly inspected. The ILT keeps a record of the performance of ship managers. All vessels of poorly performing ship managers are inspected, while for ship managers that show a medium to high level of performance, random inspections are carried out of their vessels. In addition, vessels may also be inspected if the ILT receives specific signals, such as the seizure of a vessel, abroad.

¹⁰ EU-directive 2009/16/EG

¹¹ For ships not requiring certificates (below 500 GT) there is a regime that they are inspected by the flag state and the report of this inspection serves as proof of compliance (for a period of up to 3 years).

¹² Resolution A.973(24)

For a number of vessels and shipping companies, insufficient data are available to draw up a performance profile. The ILT is constantly working to remove these blank spots, but in its opinion the situation is not ideal due to the current system of prioritization. The focus of supervision is on Dutch vessels in Dutch ports.¹³ Vessels that rarely if ever visit Dutch ports are therefore not inspected. As a consequence, they cannot be included in the assessment of the shipping company. The ILT does include the Port State Control inspections carried out on Dutch ships in accordance with the Paris MoU, in its assessments. With regard to the vessel involved in this occurrence, it has been determined that no recent inspection data were available in the database of the Dutch supervisory body.

The ILT is working to develop a new flag state supervision system. This includes the development of a new selection tool, and vessels that rarely if ever visit the Netherlands will at least be submitted to an office audit, which aims to monitor safety and environmental requirements and to determine the safety structure.

When carrying out flag state inspections, the Human Environment and Transport Inspectorate (ILT) as the Dutch maritime supervisory body comes up against the same kinds of problems as ship managers, due to a lack of capacity for carrying out flag state inspections on board Dutch vessels abroad. It should be noted that the ship manager's responsibility is not comparable with the responsibilities regarding governmental tasks.

The investigation revealed that with regard to flag state inspections by the Dutch government (ILT), there was certainly a blank spot with regard to Dutch flagged vessels operating beyond the scope of the Dutch government. However, the investigation also revealed that it is extremely unlikely that a timely and complete flag state inspection undertaken by ILT could have prevented this accident. In this case, responsibility for safe operations on board the vessel and the prevention of this specific accident above all lay with the ship manager and the crew.

The vessel in question had escaped from the supervision of both the ship manager and the Dutch supervisory body (ILT). Due to structural capacity problems at the time of the accident, the supervisory body was unable to carry out structural inspections on Dutch flagged ships that rarely if ever visited a European port.

However, even with a correctly functioning system of flag state inspections, it can be argued that the likelihood of this form of supervision actually preventing an accident of this kind is minimal.

13 Almost a literal quote from Inspection Programme Flag State Supervision, 2014

5 CONCLUSIONS

In this investigation, the Safety Board has not only drawn conclusions that relate to the direct cause but also relate in greater depth to a number of other aspects, such as crewing requirements, ship transfers, supervision by the ship manager and the Dutch flag state inspection of ships that have been beyond the scope of the Dutch supervisory body for a longer period of time.

The accident and the direct cause

While attaching a grab to a crane, an AB fell off the grab because the lifting block made a sudden swinging movement, and bumped into the AB. While working at height, the AB was not wearing a safety helmet or fall protection - despite the fact that both were available, and compulsory.

The investigation was unable to clarify whether the lifting block moved due to a movement of the crane or the rolling of the vessel. However, both possibilities are inherent in working on a ship, and the possibility of unexpected movements must be taken into account at any time.

The immediate need for climbing onto the grab to carry out this fatal action was not determined. According to the procedure for attaching the grab to the crane, as intended by the manufacturer of the grab, this task can be carried out from the platform, without climbing onto the grab. The ship manager failed to consider these aspects sufficiently in advance, for example on the basis of an occupational health strategy.

The underlying factors

Before starting work with the crane, no toolbox meeting was held, and no Last Minute Risk Assessment (LMRA) was performed. Pressure of time and the fact that contrary to the requirements there was no common working language, played a role in the accident.

With regard to the transfer of the vessel to the new owner, the decision was taken to make the transfer in transit, whereby part of the old crew was replaced by new, crew members with no experience on this specific ship, who were nonetheless tasked with carrying out work. In this connection, the ship manager did not take into account the lack of ship-specific experience among the new crew members, and the almost complete lack of a common language between the old and new crew members. The ship manager has final responsibility for this situation, even when engaging one or more other parties as crewing agency.

Supervision

Because the vessel had rarely if ever been present in the Netherlands or near the Netherlands over the past few years, both the ship manager's Dutch head office and the Dutch supervisory body (ILT) had no clear picture of the state of affairs on board the vessel. Technical supervision of the on-board operations was in this case entrusted by the ship manager to the shipping company's Turkish branch office due to the geographical location of the ship.

At the time of the accident, Dutch flag state inspections by the ILT were not carried out on vessels rarely if ever visiting the Netherlands. As a result, on the part of the Dutch government, too, there was little or no knowledge of the operations on board.

The Safety Board concludes that it is extremely unlikely that a flag state inspection could have prevented an accident of this kind. Responsibility for the safe performance of work in this case lies entirely with the relevant ship manager in the preparation phase, and with the officers on board the vessel, in the implementation phase.

In summary

The investigation into the fatal accident on board the Zealand Rotterdam revealed that the ship manager in question made a number of choices that had a negative impact on safety on board the vessel. Due to these choices made, the safety of the crew on board the vessel was endangered. In practice, choices of this kind often have a favourable outcome. In this case, indirectly, they led to a fatal accident.

Binding agreements embedded in the safety management system (SMS) were certainly not complied with in all cases. The basic rule on board any vessel is that all personal protective equipment (PPE) must be worn or used, if specified, and that all work must be discussed in advance in a toolbox meeting or during a Last Minute Risk Assessment. These rules were not complied with on board the vessel in question. Pressure of time may never be allowed to play a role with regard to these basic agreements. In addition, a non-standard procedure was employed for attaching the grab to the crane. In assembling the crew, it should also have been clear that there was insufficient knowledge of a common language. Finally, it became clear that by replacing part of the old crew with a new inexperienced crew, there was insufficient ship-specific experience to ensure safe completion of the journey from Singapore to Mumbai, and the related work tasks.

6 RECOMMENDATIONS

The Dutch Safety Board issues the following recommendations to the ship manager Q-Shipping:

1. Even in cases where a vessel is completing its final journey for the ship manager, maintain a full experienced crew, and deploy any new crew members as supernumeraries, in a learning role, not as replacements for original crew members. In all cases, ensure a common working language in which all crew members can communicate with one another.
2. At all times, ensure sufficient time is available to take the specified measures per the Safety Management System (SMS) on board and to follow the procedures, also in situations where there is time pressure. For the development of procedures for high-risk activities, such as attaching a grab to a crane, follow the occupational hygiene strategy.
3. Ensure that supervision by the ship manager of vessels that do not regularly visit European ports is implemented effectively. This should take place irrespective of whether the supervision is provided from a Dutch or foreign office.

RESPONSES TO THE DRAFT REPORT

In accordance with the Dutch Safety Board Act, a draft version of this report was submitted to the various stakeholders. The following parties were asked to check the report for factual inaccuracies and inconsistencies:

- Q-Shipping
- Minister of Infrastructure and Water Management.

The responses received were dealt with in the following manner:

- Rectifications to factual inaccuracies, additions at detail level and editorial comments were adopted by the Safety Board (wherever relevant). The appropriate sections of text have been adjusted in the final report.
- Wherever the Dutch Safety Board did not adopt the content of reactions, an explanation is given as to why the Board made that decision.

All responses and the explanatory notes appear in a table that can be accessed via the website of the Dutch Safety Board (www.safetyboard.nl).

VESSEL DATA

Vessel data at the time of the occurrence	Zealand Rotterdam
Photograph:	 <p>(Source: Q-Shipping)</p>
Call letters:	PCRF
IMO number:	9477440
Flag State:	The Netherlands
Home port:	Amsterdam
Type of ship:	Bulk carrier
Classification society:	RINA Services S.p.A.
Year of construction:	2012
Shipyard:	Jinhoe
Length overall (Loa):	190.0 m.
Length between perpendiculars (LPP):	183.3 m.
Breadth:	32.26 m.
Actual draught:	18.5 m.
Gross Tonnage:	33312
Engines:	B&W Diesel 6S50MC-C
Propulsion:	1 propeller
Maximum propulsion capacity:	9401 kW
Maximum speed:	14.4 knots
Vessel certificates:	All valid



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