

Extract from The United Kingdom Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 – Regulation 5:

“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an such investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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**Fatal accident during cargo discharge of the bulk carrier
Graig Rotterdam
Alexandria Port, Egypt
18 December 2016**

SUMMARY

On 18 December 2016, *Graig Rotterdam* (**Figure 1**) was discharging cargo at anchor in Alexandria Port, Egypt. At 1109 (UTC¹+2), the bosun, Qin Zhigang, fell overboard and into a barge that was secured alongside after the timber deck cargo stack on which he was standing partially collapsed. Although the ship's crew provided first-aid following the accident, the bosun later died of his injuries.

The MAIB investigation concluded that poor stevedoring practices probably contributed to the unsecured cargo stack collapsing and that no measures were in place to prevent the bosun from falling overboard.

Graig Ship Management Limited has been recommended to take action designed to enhance safe working practices during the loading, carriage and discharge of timber cargoes. The vessel's charterer, Norlat Shipping Limited AS, has been recommended to ensure masters are provided with the required information needed to safely transport timber deck cargo.



Figure 1: Graig Rotterdam

¹ Universal Co-ordinated Time.

FACTUAL INFORMATION

Cargo loading

The bulk carrier *Graig Rotterdam* loaded a cargo of packaged sawn timber in the Finish ports of Rahja and Oulu for discharge in Alexandria, Egypt. This was the first time a timber cargo had been carried on board the ship.

A supercargo², appointed by the charterer, Norlat Shipping Limited AS, attended the ship, supervised the loading, and provided guidance to the chief officer on cargo loading and securing, and ship stability requirements.

The deck cargo was stacked four packages high on top of the hatch covers and six high on deck. Following the supercargo's instruction, the ship's crew secured the deck cargo by means of top-over lashings³ using chains and turnbuckles supplied by the charterer (**Figure 2**).

The ship's crew constructed wooden ladders at the forward and after ends of the deck cargo stack to afford access between the accommodation superstructure and the forecastle. Access forward was only possible by walking on top of the deck cargo.



Figure 2: *Graig Rotterdam* at sea with timber deck cargo secured by top-over lashings

² The supercargo was a Russian national who had been employed by the charterer since 1995. He had worked as a supercargo since 2011 and had previously served as master on ships exclusively carrying sawn timber cargo.

³ A top-over lashing is a frictional method of lashing that applies vertical pressure, increasing the friction force between the outer stows of deck cargo and the ship's deck/hatch cover. Chains are secured to eyes on each side of the deck and passed over the top of the longitudinally stowed cargo. The chains are then joined using turnbuckles that can be tightened as required.

Passage

The weather on passage to Alexandria was good and the ship's crew checked the deck cargo lashings daily, tightening the turnbuckles as required.

On 12 December, *Graig Rotterdam* arrived off Alexandria and was anchored in the outer anchorage, awaiting instructions.

Cargo discharge

On 16 December, *Graig Rotterdam* was anchored in the inner anchorage in preparation for cargo discharge.

The chief officer completed a checklist entitled 'Timber Cargo Operations' and attached to it a generic risk assessment entitled 'Loading and Un-loading of Timber Cargoes'. He then conducted a cargo operations briefing with the deck officers and crew. He also met with the stevedore foreman. They discussed the discharge plan but did not discuss safe systems of work.

The ship's crew removed the deck cargo lashings and, at 1400, cargo discharge commenced into barges secured alongside the anchored ship⁴. All aspects of the cargo discharge, including operation of the ship's cranes, were carried out by shore stevedores as required by the charter party.

Cargo discharge was scheduled to last 15 days and continued on 17 December.

The accident

On the morning of 18 December, the chief officer carried out a cargo operations briefing with the third officer (3/O), the bosun and two other duty crew. He also met with the stevedore foreman and discussed the cargo discharge plan for the day and how much cargo had already been discharged.

Two barges were located on *Graig Rotterdam*'s starboard side, and one barge was positioned on its port side forward. The barges were secured with mooring ropes attached to the deck cargo packages (**Figure 3**). Deck cargo was being discharged from the stacks on top of numbers 2 and 3 hatch covers into the two barges located on the ship's starboard side using two of the ship's cranes.

At 1109, the chief officer, who was in the cargo office, saw on a CCTV⁵ monitor a partial cargo collapse from the port side of the ship. He called the bosun several times on his radio to enquire what had happened. There was no response. He then called the 3/O and instructed him to go on deck and to see what had happened. The master, who had heard the radio calls, went to the bridge and ordered cargo operations to stop.

The stevedores informed the 3/O that the bosun had been standing on top of the deck cargo stack that had collapsed, and that he had fallen with the cargo. The 3/O relayed this message to the master and chief officer by radio. The master alerted the crew, who began a search of the water around the ship, and requested shore assistance.

At 1135, 10 of the ship's crew transferred to the barge that was secured on the port side. They manually lifted timber that had fallen into the barge during the cargo collapse until they located the bosun. CPR⁶ was commenced and the bosun was placed in a stretcher before being transferred ashore by launch.

At 1330, the ship's agent advised the master that the bosun had died.

⁴ It was the usual practice in Alexandria for ships carrying timber cargo to discharge their cargo into barges, and for the barges to transport the cargo to the quay.

⁵ Closed circuit television camera. *Graig Rotterdam* had two CCTV cameras: one monitoring the port side of the ship and the other monitoring the starboard side.

⁶ Cardio-Pulmonary Resuscitation.

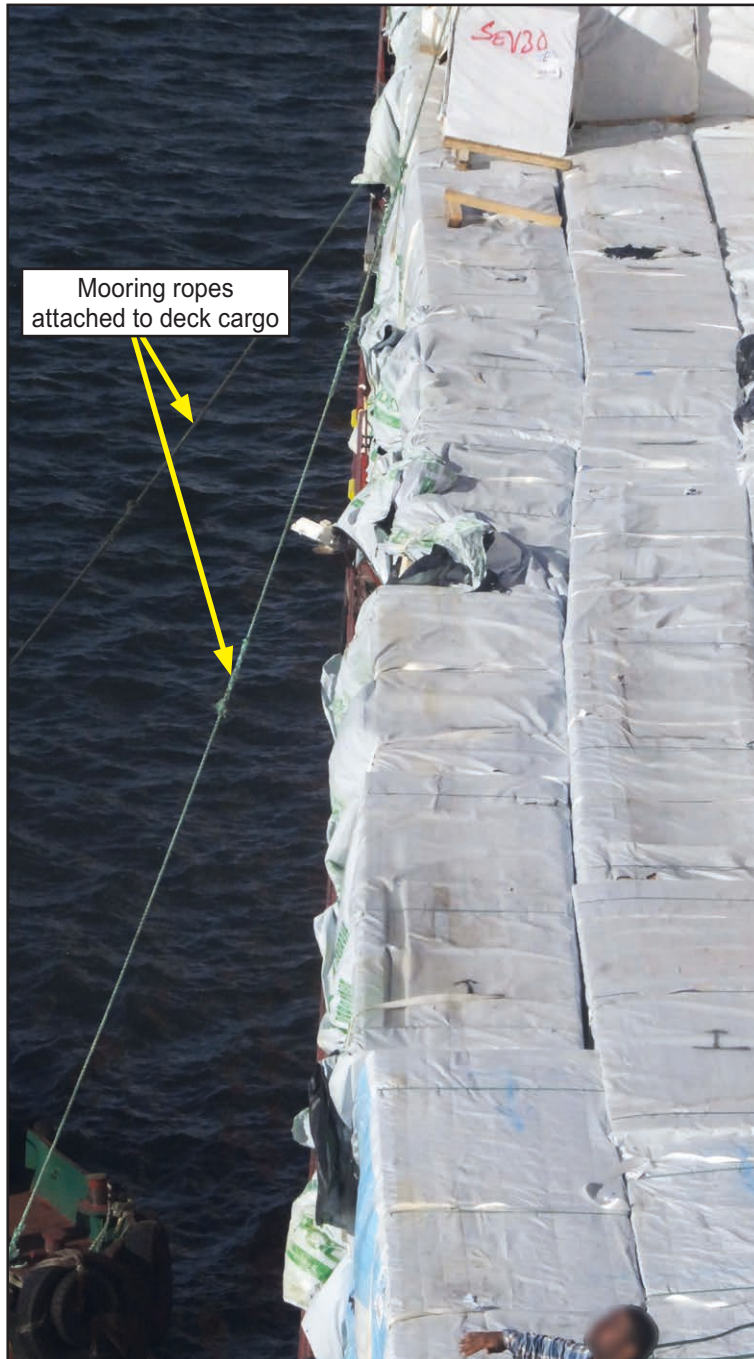


Figure 3: Cargo barges secured to deck cargo packages

Graig Rotterdam

Graig Rotterdam was a UK registered bulk carrier, built in China in 2012. The ship had a single deck with five cargo holds and four cargo cranes. It was owned and managed by Graig Ship Management Limited, Cardiff. *Graig Rotterdam* traded worldwide, carrying a wide variety of bulk cargoes.

The ship's cargo securing manual (CSM) detailed the requirements for the carriage of timber and timber deck cargoes. The ship was not fitted to accommodate uprights⁷ and did not carry lashings appropriate for securing timber deck cargo.

The CSM had been approved by the UK Maritime and Coastguard Agency (MCA) in October 2012, and the timber deck cargo loaded on the ship at the time of the accident had been secured for passage in accordance with the CSM's requirements.

Crew

Graig Rotterdam had 20 crew, all Chinese nationals. All crew held the STCW⁸ certificates of competency required for their positions on board. They also met the Convention's requirements concerning hours of work and rest.

The master was 36 years old and had been assigned to *Graig Rotterdam* since it was built, initially as chief officer prior to being promoted to master in December 2012. He had no previous experience of carrying timber deck cargo.

The chief officer was 35 years old. He had been employed by Graig Ship Management Limited since 2012 and this was his first contract as chief officer. It was his first contract on *Graig Rotterdam* although he had sailed on its sister ship, *Graig Cardiff*. The chief officer, who also had no previous experience of carrying timber deck cargo, was supervising cargo discharge operations from the cargo office at the time of the accident.

The bosun, Qin Zhigang, was 46 years old. It was his first contract with Graig Ship Management Limited and his first trip on *Graig Rotterdam*. He had joined the ship on 19 October 2016. At the time of the accident, he was conducting security rounds and monitoring operations for any damage caused to the ship. He was wearing a boiler suit, safety boots and a safety helmet.

⁷ Uprights are vertical supports, normally made of steel, placed in sockets or secured to the deck, hatch cover or hatch coaming of a ship at the side of a deck cargo stack used to contain and secure the stack. On smaller ships, uprights can be made from timber.

⁸ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended.

The cargo

Graig Rotterdam was carrying 45,775m³ of sawn timber in 12,479 individual packages, each package weighing approximately 2 tonnes. The timber was held together with metal bands and each package was pre-rigged with cargo slings before loading. The top and sides of each package were covered with a plastic protective coating.

The cargo was destined for 24 cargo receivers in Alexandria. Each receiver's packages were marked with identifying spray paint when loaded, with their stowage locations recorded on the supercargo's cargo plan. During discharge, packages were frequently repositioned to enable access to individual receivers' packages.

The cargo collapse

Approximately 20 packages of timber fell from the port side of the stack on top of number 1 hatch cover. Some of the packages fell into the water and the remainder fell into the barge that was secured on *Graig Rotterdam*'s port side forward (**Figure 4**).

The barge was unmanned at the time of the accident and already contained some packages.



Figure 4: Port side cargo barge, immediately after cargo collapse

Company instructions

Graig Ship Management Limited operated a Safety Management System (SMS) as required by the International Safety Management (ISM) Code.

The SMS included a generic risk assessment entitled 'Loading and Un-loading of Timber Cargoes'. With regard to an identified hazard of timber not being stowed correctly, control measures included '*Only experienced and qualified crew to work on board and Familiarisation training given prior to operations*' [sic]. The risk assessment identified neither the risk of falling from the top of a deck cargo stack nor the risk of falling as a result of a deck cargo stack collapse during discharge operations.

The SMS Dry Cargo Operations Manual included the following:

'6 *Refer to Log & Timber Cargo Operations Checklist...*

...The carriage of logs and timber products presents unique risks, the importance of which must be appreciated by all crew...

...A risk assessment for each type of cargo should be undertaken to identify hazards and ensure control measures...

6.2.4 *Catwalks should be installed on top of deck cargo for safe access from superstructure to fore decks as per IMO regulations...*

6.3 *As per company procedures, the Cargo Operations Briefing shall be used as an opportunity to highlight areas of personal safety and actions in the event of an emergency...*

6.3.1 *Although stevedore operations are largely controlled locally, the ship's crew are reminded to remain vigilant to risk to personal safety...*

6.3.3 *...All crew are reminded of the duty to stop unsafe work.*

6.3.5 *To prevent personnel falling, particularly when the cargo is stowed to the full allowed width and height of the vessel, a safety harness can be used to sling the cargo. In any case, the cargo should be discharged from around the centerline...*

The dangers posed by these products cannot be overemphasised and we require that all personnel on-board are aware of the dangers and steps are in place to avoid any hazardous occurrences.

6.6 *Officers and crew on board vessels carrying timber cargoes shall be selected where possible in accordance with the Company's recruitment and selection criteria to ensure suitably experienced crew are employed onboard.' [sic]*

The SMS checklist entitled 'Timber Cargo Operations' was completed by the chief officer and verified by the master prior to cargo discharge operations commencing in Alexandria. The checklist made no reference to accessing the timber deck cargo stacks or cargo securing lashings, but it did refer to completing a risk assessment, for which guidance was provided elsewhere in the SMS. The chief officer attached a copy of the generic risk assessment entitled 'Loading and Un-loading of Timber Cargoes' to the checklist, but a further risk assessment was not completed.

IMO Code of Safe Practice for Ships Carrying Timber Deck Cargoes

The provisions contained in the IMO Code of Safe Practice for Ships Carrying Timber Deck Cargoes (TDC Code) 2011 are recommended for all vessels of 24m or more in length, engaged in the carriage of timber deck cargoes. The supercargo, who supervised the loading in Finland, provided a copy of the Code to the chief officer as *Graig Rotterdam* had not previously carried a timber cargo. The purpose of

the Code is to ensure that timber deck cargoes are loaded, stowed and secured to prevent, as far as practicable, throughout the voyage, damage or hazard to the ship and persons on board as well as loss of cargo overboard.

The Code states the following information as applicable for each parcel of cargo should be provided by the shipper and collected by the master or his representative:

- *'total amount of cargo intended as deck cargo;*
- *typical dimensions of the cargo;*
- *number of bundles;*
- *density of the cargo;*
- *stowage factor of the cargo;*
- *racking strength for packaged cargo;*
- *type of cover of packages and whether non-slip type;*
- *relevant coefficients of friction including covers of sawn wooden packages if applicable.'*

With regard to cargo securing for passage, the Code states:

'2.10.12 Uprights should be fitted when required by this Code and as prescribed in the ship's cargo securing manual in accordance with the nature, height or character of the timber deck cargo.'

7.1 Longitudinally stowed round wood, loose sawn wood and sawn wood packages with limited racking strength should be supported by uprights at least as high as the stow.'

With regard to cargo access while on passage, the Code states:

'A.3.14 If there is no convenient passage on or below the deck of the ship, a sturdy catwalk with strong railings should be provided above the deck cargo...'

2.8.9 As an alternative [to a catwalk] a lifeline, preferably a wire rope, may be erected above the timber deck cargo such that a crew member equipped with a fall protection system can hook onto it and work about the timber deck cargo. The lifeline should be:

.1 erected about 2m above the timber deck cargo as near as practicable to the centreline of the ship...'

With regard to cargo discharge, the Code states:

'A5.6 Personnel involved in the discharge process should be dressed with appropriate clothing, i.e., hardhats, proper footwear, gloves, etc., according to the ship's and harbour requirements.'

A.5.7 While working on the cargo there should be provisions to attach a safety harness.

A.5.9 Safe access should be available to the top of, and across the cargo stow.'

Health and safety of crew and stevedores

Marine Guidance Note (MGN) 492 (M+F), Health and Safety at Work: Protecting those not employed by the ship owner, which is published by the MCA, states:

'It is not only the employer who has a duty of care towards their workers under the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997...

Each employer has a duty of care both to workers and to others on board who are affected by their business.

The Company has a duty to coordinate health and safety for all workers and others on board, by working with and sharing information with other employers, including contractors temporarily on board ship.

Workers should take care for, and report any concerns about, the safety of contractors operations in the same way as they would for ship's crew.'

Regulation 21(1) of The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 states:

'It shall be the duty of every worker aboard a ship to which these Regulations apply -

a to take reasonable care for the health and safety of himself and of any other person aboard ship who may be affected by his acts or omissions'...

Stevedoring practices

The International Labour Organization's (ILO) code of practice 'Safety and health in ports' (2005) contains advice on operations in port. Section 2.1.4 states:

'Contractors and labour or service providers should cooperate with port authorities and other bodies working in port areas to protect the safety and health of all persons who may be affected by their activities. In particular, they should ensure that:

- all workers they employ or supply are appropriately trained and competent to perform the work they are required to do in port areas;*
- all such persons are appropriately supervised;*
- all plant and equipment that they supply or use is of sound construction and properly maintained in a safe condition;*
- they supply such information as is necessary to others who may be affected by their activities;*
- they cooperate with the port authority, other employers and any other relevant bodies.'*

Cargo discharge operations ceased following the accident until the arrival of MAIB inspectors and representatives of Graig Ship Management Limited. Once approval had been granted to re-commence cargo discharge, the following poor stevedoring practices were observed, many of which were later raised by the master in a letter of protest addressed to all involved parties:

- Knotted cargo slings (**Figure 5**) and open shackles being used as hooks (**Figure 6**) to lift cargo.
- Walking on the edge of deck cargo stacks (**Figure 7**).



Figure 5: Knotted cargo slings



Figure 6: Open shackles used as cargo hooks

- Personal protective equipment (PPE) not being worn (**Figure 7**).
- Cargo packages being dropped onto the deck or into the water (**Figure 7**).
- Barges being secured to deck cargo stacks (**Figures 7, 8 and 9**).
- Smoking while on the deck cargo stacks.
- Climbing and being lifted by crane from barges to the ship.

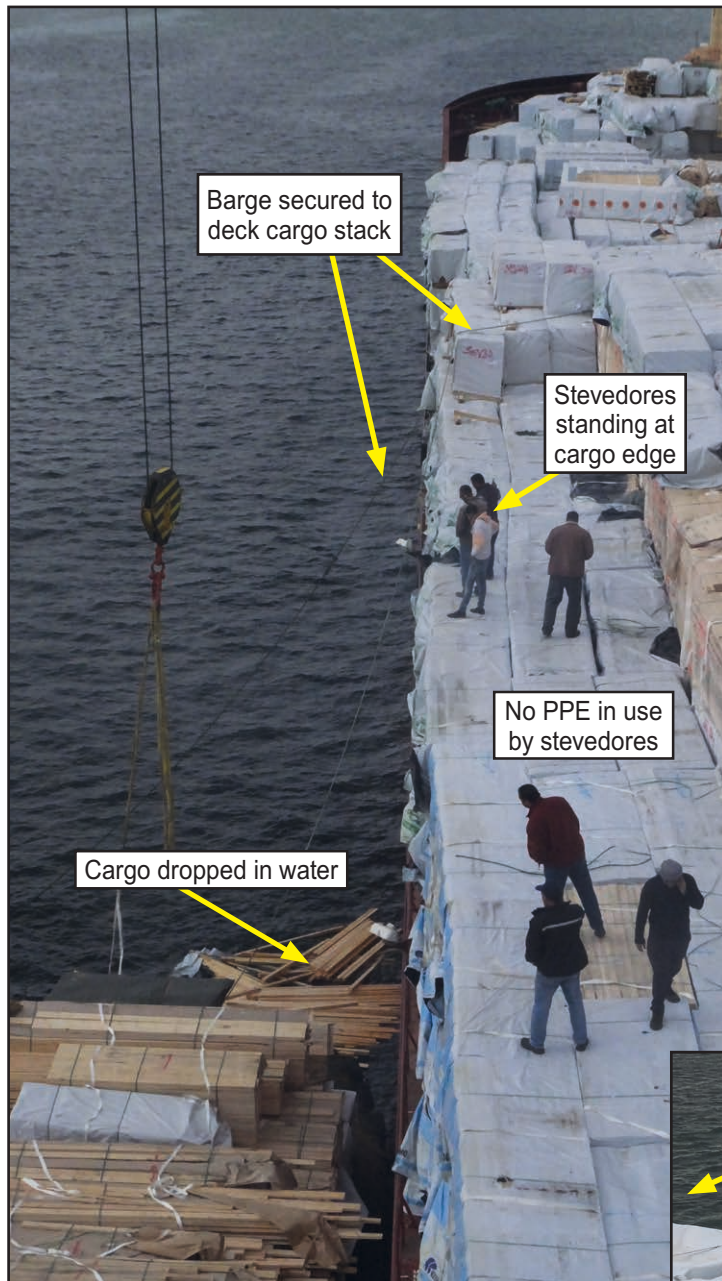


Figure 7: Poor stevedoring practices

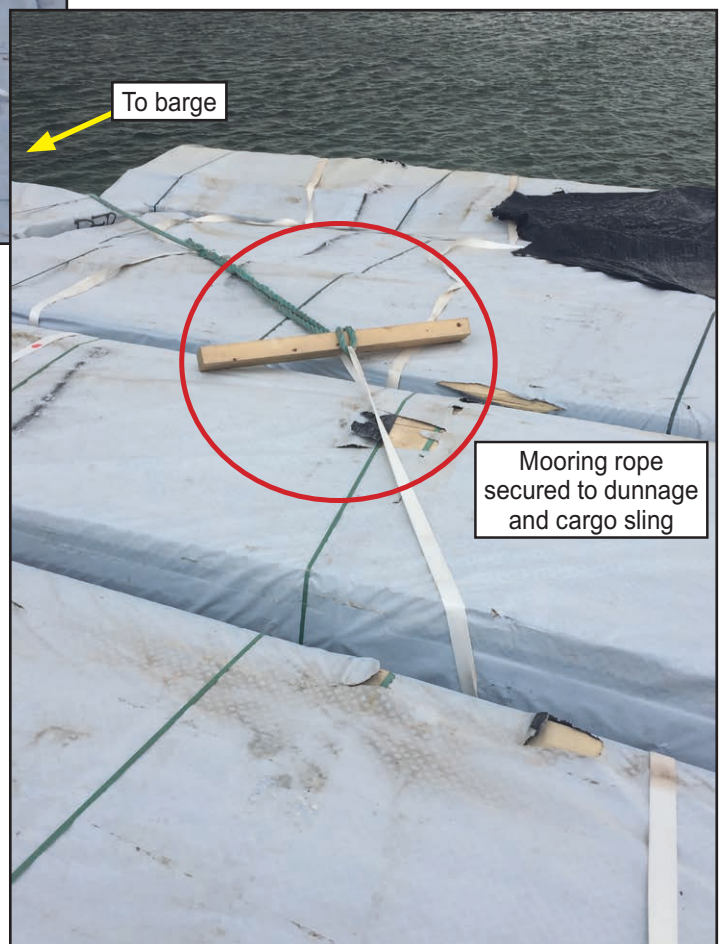


Figure 8: Barge mooring rope attached to deck cargo stack

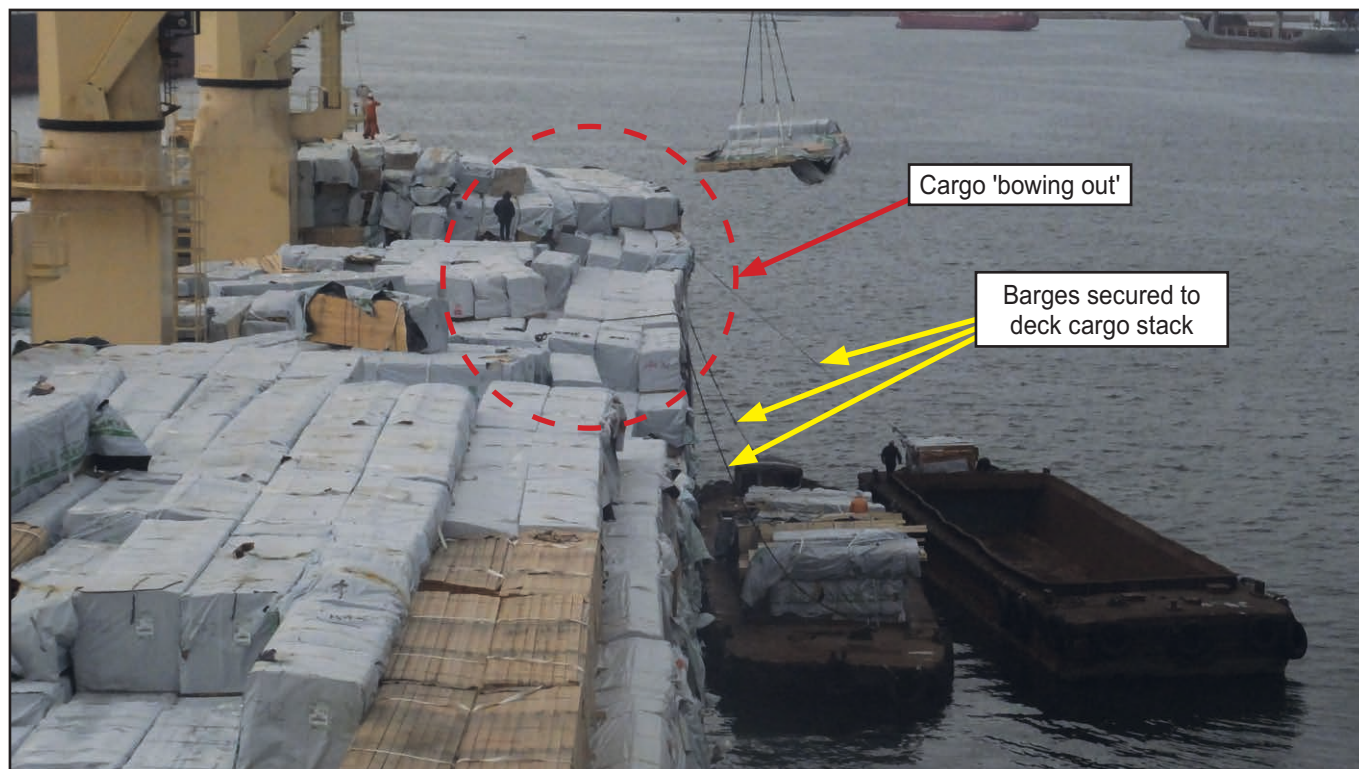


Figure 9: Cargo 'bowing out' in fore part of vessel

ANALYSIS

Accident overview

The bosun fell overboard and into a barge that was secured alongside, after the timber deck cargo stack on which he was standing partially collapsed. At the time of the accident, cargo was being discharged from an adjacent stack into barges on the starboard side of the ship. Shore stevedores who were working in the vicinity were not available for interview.

In the absence of witness evidence, it has not been possible to establish with certainty how the accident occurred. However, poor stevedoring practices probably contributed to the unsecured cargo stack collapsing, and no measures were in place to prevent the bosun falling overboard.

Deck cargo securing arrangements

The deck cargo had been secured for passage in accordance with the ship's CSM, which assumed the packages had sufficient racking strength so as not to require the use of uprights. Consequently, when all cargo lashings were removed prior to commencing cargo discharge, nothing other than friction and the strength of the metal banded package construction was left to hold the timber deck cargo in place. While the stability of the deck cargo stow when secured with top-over lashings on passage was sufficient, the stability of the stow once the lashings had been removed was insufficient to counter the effects of ship movement, cargo repositioning, dunnage displacement, barges securing to deck cargo stacks, and cargo discharge operations over a prolonged period. In this regard, there was evidence that the cargo was 'bowing out' after the securing lashings had been removed, particularly in the fore part of the vessel (Figure 9).

The rigidity of timber packages is of great importance for the stability of the deck cargo and the racking strength of the timber packages should be taken into consideration when securing systems are designed. *Graig Rotterdam's* master was not advised of the cargo package racking strength prior to the cargo being loaded in Finland.

Uprights provide an additional means of securing timber deck cargo packages with limited racking strength for passage, in accordance with the TDC Code. There is no evidence that the cargo packages carried on *Graig Rotterdam* had insufficient racking strength so as to require them to be supported by uprights while on passage. However, provision of uprights would have helped prevent a deck cargo stack from collapsing once the securing lashings had been removed in circumstances such as those faced by *Graig Rotterdam* in Alexandria Port, Egypt. There were two other ships discharging packaged timber cargoes to the same terminal in Alexandria at the time of the accident. Both ships were fitted with steel uprights (Figure 10).



Figure 10: A vessel, with steel uprights, discharging a timber deck cargo at the same anchorage

The majority of the timber packages had protective plastic covers. High friction coatings can be incorporated into plastic covers and, although this makes the covering more expensive, it provides a means of improving the safe transport of these cargoes. *Graig Rotterdam*'s master was not advised if the plastic covers incorporated any friction resistance prior to the cargo being loaded in Finland.

Oversight and control of cargo discharge

The charter party instructed that the cargo was to be discharged by shore stevedores, yet this did not absolve the ship's management from its duty of care towards the health and safety of both the ship's crew and the shore stevedores throughout the cargo discharge. While the chief officer met with the stevedore foreman on the day of the accident, poor stevedoring practices that had previously been witnessed by the ship's crew were not discussed and so were allowed to continue.

Shore stevedore co-operation with other parties is promoted in the ILO's code of practice 'Safety and health in ports'.

What constitutes a reasonable level of care required to be performed by the crew of a UK registered ship may differ significantly from that exercised by shore stevedores in a non-UK port. In such circumstances, as in the case of *Graig Rotterdam* and Alexandria Port, it may be difficult for the ship's management to establish an agreed working practice with the shore stevedores that reflects as high a level of safety as it would wish. However, it should not prevent the master from attempting to reduce risks to as low as reasonably practicable by expressing his concerns both directly to the shore stevedores and in the form of a letter of protest to the charterer. It should also not prevent him from isolating the ship's crew

from the identified risks. If the stevedore working practices do not change as a result, the master should consider ceasing cargo operations and, in the case of unacceptable risks, should not hesitate to do so, as instructed in the company's SMS Dry Cargo Operations Manual.

The discharge method was random. Cargo packages were selected for discharge by the cargo receiver. Packages were often lifted and repositioned on board while searching for a cargo receiver's individual package, prior to it being loaded onto the barge. Cargo packages were also witnessed being lifted from the barges and put back on board. A more uniform and disciplined discharge would have reduced the possibility of destabilising the cargo.

Although the master's concerns were eventually expressed by means of a letter of protest, they were not raised until after the accident. Graig Ship Management Limited's SMS instructions drew attention to stevedore operations and the need for the ship's crew to remain vigilant to risk to personal safety. However, they were silent on the need to proactively engage with shore stevedores for the purpose of maintaining and developing a safe system of work during cargo operations. While a supercargo had been appointed by the charterer to supervise the loading of the timber cargo, a supercargo had not been appointed to supervise its discharge, and so a valuable point of liaison between the ship's crew and the shore stevedores was unavailable.

Safety on the deck cargo

Graig Ship Management Limited's SMS risk assessment entitled 'Loading and Un-loading of Timber Cargoes' identified neither the risk of falling from the top of a deck cargo stack nor the risk of falling as a result of a deck cargo stack collapse.

The SMS checklist entitled 'Timber Cargo Operations' made no reference to accessing timber deck cargo stacks or cargo securing lashings. However, an SMS instruction required catwalks to be installed on top of deck cargo for safe access from the accommodation superstructure to the forecastle while the ship was on passage. Although the ship's crew constructed wooden ladders to access the top of the deck cargo from both the accommodation superstructure and the forecastle, a catwalk was not constructed and, contrary to the provisions of the TDC Code, no alternative to a catwalk, such as a lifeline, was provided.

A further SMS instruction required personnel to wear a safety harness when slinging cargo and that cargo should be discharged from around the centreline. However, without provision of a lifeline, there were no readily available means for attaching a safety harness, contrary to TDC Code advice. Furthermore, the SMS instruction took no account of the fact that deck cargo would inevitably be discharged from locations other than those close to the ship's centreline.

The design of the ship was such that the crew had to pass over the top of the deck cargo frequently when the vessel was at sea, and both the crew and stevedores had to access the top of the deck cargo stacks during cargo discharge operations. Without edge protection or any means of fall arrest, the risk of falling from the top of a deck cargo stack, or as a result of a deck cargo stack collapse, was significant. While the risk was recognised in the TDC Code and the SMS Dry Cargo Operations Manual, the ship's crew did not consider the level of risk while on passage to be sufficient to warrant installation of a catwalk or for safety harnesses to be worn. Further, the risk of falling during cargo discharge operations did not feature in the generic risk assessment, and it was not identified and addressed in either a risk assessment or at the cargo operations briefing conducted by the chief officer. A contributing factor to these omissions is likely to have been both the master's and chief officer's lack of previous experience of carrying timber deck cargo, despite this being a stated aspiration in Graig Ship Management Limited's SMS Dry Cargo Operations Manual, and a stated requirement in its generic risk assessment entitled 'Loading and Un-loading of Timber Cargoes'.

While the ship's crew were not actively engaged in the cargo discharge, they frequently accessed the cargo stacks. The bosun's role on deck at the time of the deck cargo stack collapse was to carry out security rounds and to monitor operations for any damage caused to the ship. He played no part in the

actual cargo discharge. While the ship's crew were equipped with and wore PPE, the PPE provided no defence in the event of a fall from height or collapse of the stack. The bosun perceived little risk from accessing the cargo stack. Had the actual level of risk been recognised, a safer means of conducting his task could have been considered.

CONCLUSIONS

- It has not been possible to establish with certainty how the accident occurred. However, poor stevedoring practices probably contributed to the unsecured cargo stack collapsing, and no measures were in place to prevent the bosun from falling overboard as a result.
- With the deck cargo lashings removed, the cargo packages stowed on deck had insufficient stability to counter the effects of ship movement, cargo repositioning, dunnage displacement, barges securing to deck cargo stacks, and cargo discharge operations over a prolonged period.
- The use of uprights would have helped prevent a deck cargo stack from collapsing once the securing lashings had been removed.
- Prior to loading, the master was not advised of either the deck cargo package racking strength or the frictional resistance of its plastic covering. Such information would have enabled him to make a more informed assessment of the deck cargo stack's stability and security.
- Poor stevedoring practices that had previously been witnessed by the ship's crew were not discussed with the stevedores' foreman and so were allowed to continue. Graig Ship Management Limited's SMS instructions were silent on the need to proactively engage with shore stevedores for the purpose of maintaining a safe system of work during cargo operations.
- A supercargo had not been appointed to supervise the cargo discharge operation, and so a valuable point of liaison between the ship's crew and the shore stevedores was unavailable.
- Without the provision of a lifeline, there were no readily available means for attaching a safety harness. Without edge protection or any means of fall arrest, the risk of falling from the top of a deck cargo stack, or as a result of a deck cargo stack collapse, was significant.
- The ship's crew did not consider the level of risk while on passage to warrant the need for a catwalk to be installed or for safety harnesses to be worn. This lack of recognition extended to the increased risk of falling during cargo discharge operations. A contributing factor to these omissions is likely to have been both the master's and chief officer's lack of previous experience of carrying timber deck cargo, despite this being a stated aspiration in the company's SMS.

ACTION TAKEN

Graig Ship Management Limited has taken a number of actions, including the following:

- A fleet circular has been distributed highlighting safety issues identified from its internal investigation of the accident, including a need to agree all tasks with the stevedore foreman before starting cargo operations.
- The company's SMS generic risk assessment entitled 'Loading and Un-loading of Timber Cargoes' has been amended to include a hazard of unsafe stevedore working, with a control measure requiring the master to cease operations immediately and to notify the company and charterer.
- A company safety focus for 2017 has been designated 'cargo operations'.

RECOMMENDATIONS

Graig Ship Management Limited is recommended to:

- 2017/149** Reinforce and, as appropriate, modify its Safety Management System with respect to the carriage of timber cargoes to ensure:
- A lifeline or other means for attaching a safety harness is available to counter the risk of ship's crew or shore stevedores falling from the top of a deck cargo stack or as a result of a deck cargo stack collapse.
 - Where possible, appoint a master or chief officer with experience of the cargo type being carried.
 - Ship's crew proactively engage with shore stevedores for the purpose of maintaining a safe system of work during cargo operations.

Norlat Shipping Limited AS is recommended to:

- 2017/150** Ensure that all cargo information, as required by the IMO Code of Safe Practice for Ships Carrying Timber Deck Cargoes, is provided to the master or his representative prior to loading cargo for all ships that it charters to carry timber deck cargo.

Safety recommendations shall in no case create a presumption of blame or liability

SHIP PARTICULARS

Name	<i>Graig Rotterdam</i>
Flag	UK
Classification society	DNV GL
IMO number/fishing numbers	9602186
Type	Bulk carrier
Registered owner	Graig Rotterdam Shipping Limited
Manager(s)	Graig Ship Management Limited
Year of build	2012
Construction	Steel
Length overall	179.95m
Registered length	176.75m
Gross tonnage	24187
Minimum safe manning	15
Authorised cargo	Bulk cargo

VOYAGE PARTICULARS

Port of departure	Not applicable
Port of arrival	Not applicable
Type of voyage	International
Cargo information	Packaged sawn timber
Manning	20

MARINE CASUALTY INFORMATION

Date and time	18 December 2016, 1109 (UTC+2)
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Alexandria Port, Egypt
Place on board	Main deck, port side forward
Injuries/fatalities	One fatality
Damage/environmental impact	Minor damage to ship structure
Ship operation	Cargo discharge
Voyage segment	At anchor
External & internal environment	Sea state: smooth, moderate breeze
Persons on board	33