Report on the investigation of

a fatal accident to a crew member

on board the bulk carrier

Evangelos CH

at the Zulu Anchorage, River Thames Estuary

on 20 November 2000

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(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the cause with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

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GLOSSARY OF ABBREVIATIONS

AB	Able seaman
bhp	brake horse power
ISM	International Safety Management Code
m	metre
UTC	Universal Co-ordinated Time

SYNOPSIS

The accident was notified to the Marine Accident Investigation Branch (MAIB) on 20 November 2000, and an investigation began that day. The accident happened while the 17,308gt Cypriot-registered bulk carrier *Evangelos CH* was at anchor in the River Thames, awaiting the allocation of a berth.

The deck crew, which included the third officer, was in the process of closing the hatch covers after cleaning out the holds. To close them completely, the wire lead from the winch was unshackled manually, and changed from one position and secured to another while the hatch covers were partially open.

The third officer fell into the cargo hold after climbing on to the partially open hatch covers. The fall was fatal.

Although nobody witnessed the accident, the third officer is thought to have lost his footing as he approached the edge of the hatch cover to unshackle the wire lead.

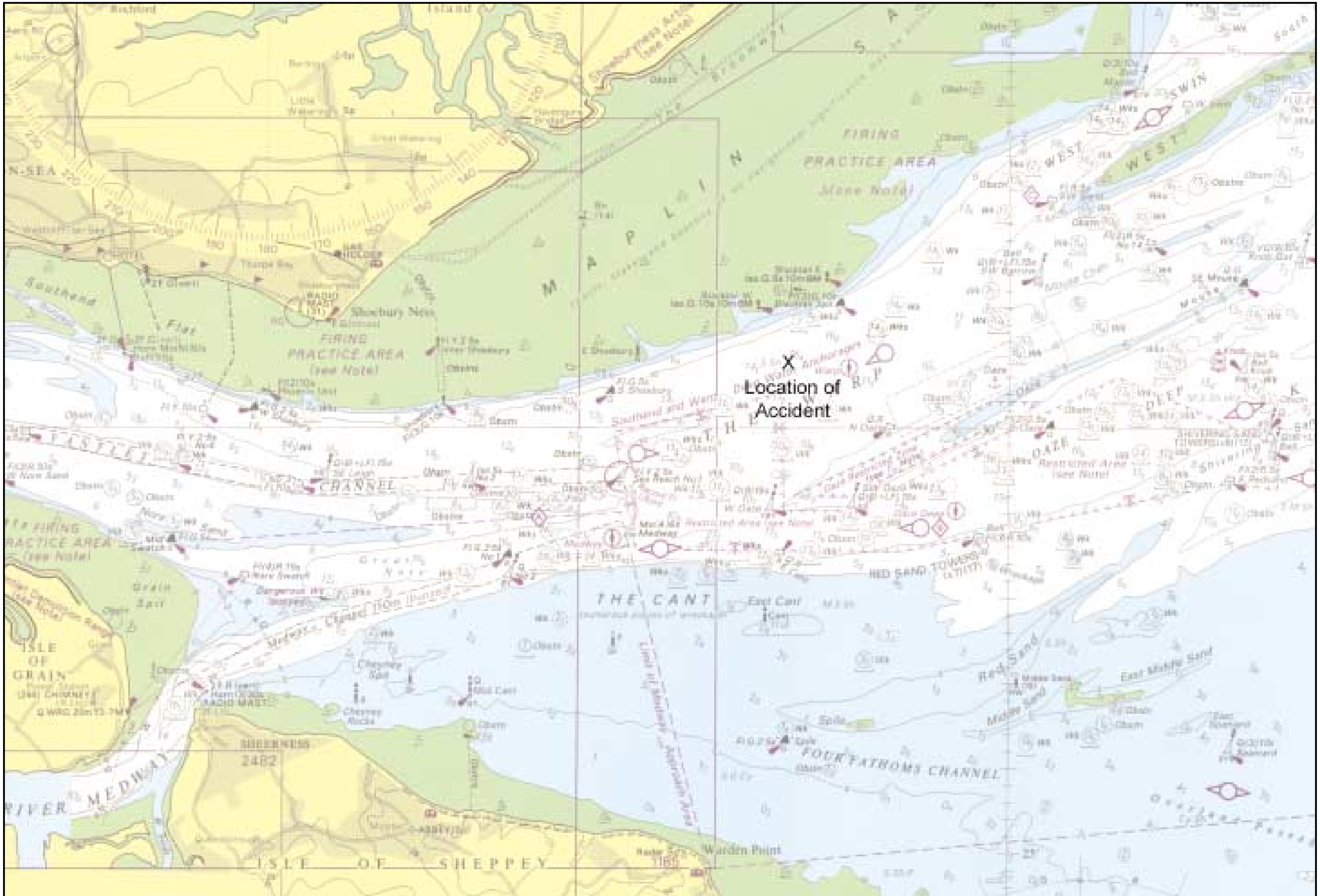
The probable cause was one, or a combination of, the following factors:

- an oily substance on the deck;
- rainfall making the hatch covers wet; or
- a tripping hazard created by the butt of an old welded eye.

Contributory causes were:

- the third officer's decision to place himself in immediate danger by climbing on to the hatch covers;
- the crew being unaware of the correct technique for closing the hatches;
- the lack of a written procedure for the correct operation of the hatch covers;
- the unsafe practice of closing the hatch covers being allowed to continue due to complacency over a period of time;
- the shadow area created by the masthouse;
- the changed position of a welded eye;
- no anti-skid paint on the hatch covers; and
- no safety harness or helmet worn by the casualty.

Recommendations have been made to the manager of the vessel, Worldwide Ocean Chartering, of Piraeus, Greece, to ensure that in light of this accident, and in accordance with the ISM Code, a written procedure for the opening and closing of hatch covers is introduced. It has also been recommended to ensure that all deck crew members are fully versed in the correct technique for closing the hatch covers.



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SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF EVANGELOS CH AND ACCIDENT

Vessel details

Registered owner	:	Heavy Waves Maritime
Manager	:	Worldwide Ocean Chartering SA
Port of registry	:	Limassol
Flag	:	Cyprus
Type	:	Bulk carrier
Built	:	1976 Taiwan Shipbuilding Corporation, Keelung
Classification society	:	Polski Rejestr Statkow
Construction	:	Steel
Length overall	:	181.31m
Gross tonnage	:	17,308
Engine power and/or type	:	8,350kW Sulzer, Single Screw
Service speed	:	15 knots

Accident details

Time and date	:	2030 (UTC) 20 November 2000
Location of incident	:	Zulu Anchorage, Thames Estuary 51° 31’ N 001° 53’ E
Injuries/fatalities	:	1 fatality
Damage	:	None

Figure 1

Main deck

Figure 2

No 3 Hold

1.2 NARRATIVE OF EVENTS

On 19 November 2000 *Evangelos CH* set sail in ballast from Ghent for the port of Tilbury, London, where she was due to load a cargo of grain for discharge at Trieste, Italy.

At 1000, the next day, the Thames pilot embarked at the boarding point, from where the ship was directed to proceed to anchor and await the availability of a berth.

At 1350, she dropped anchor at the Zulu Anchorage in the Thames Estuary, some 3.5 miles east-south-east of Shoeburyness Point. Since leaving Ghent, the deck crew, under the supervision of the bosun and a deck officer, was engaged in cleaning the holds ready for the next cargo.

Earlier that day the first officer, who had been on deck supervising the cleaning of the holds, slipped on deck, causing a suspected fracture to his right knee. The master informed the authorities of the accident, and the first officer was transferred ashore by helicopter at 1430, shortly after the pilot had left the vessel.

Hold cleaning continued throughout that day under the supervision of the second officer. During the remainder of the day there were intermittent light rain showers. At 1800, after his watch, the third officer joined the second officer, bosun, and two ABs on deck, to assist in finishing the cleaning, and closing the hatch covers, as heavy showers were forecast.

At approximately 1930, the two ABs and the third officer began closing the hatches. Nos 1 and 2 hatch covers were closed without incident. The second officer was on deck but not actually engaged in this task and the bosun was in No 6 hold, repairing a damaged pipe.

During the closing of the hatch covers, one of the ABs manned the winch on the mast house, while the other stood by on the port side of the deck, giving guidance to his colleague operating the winch. The third officer, on the starboard side of the deck, had elected to carry out the task of climbing on to the hatch covers, and to unshackle and reposition the wire lead. He was not wearing a safety helmet or a safety harness, both of which were available for use.

When No 3 hatch covers were heaved to a position approximately 1.5m from being fully closed, the winchman slackened back on the wire in preparation for unshackling. The third officer then climbed on to the hatch covers, with the intention of changing the wire lead.

The height of the hatch coamings, and the restricted view from the winch, meant that this was the last time either of the ABs saw him alive.

Shortly after the third officer had climbed on to the hatch covers, both ABs were alerted by a loud thud. The AB on deck immediately climbed on to the hatch covers. At the same time he alerted the other members of crew on deck, who then joined him. As they looked down they could see the third officer lying motionless at the bottom of the hold.

They informed the master immediately, opened the hatch covers fully and went down into the hold. From the nature of the third officer's injuries, they suspected the accident had been fatal. The master informed the authorities ashore, and instructed the deck crew to transfer the third officer to the sick bay.

At 2330 a doctor, accompanied by a police inspector, attended *Evangelos CH*. As they walked aft to the sick bay, the police inspector slipped several times on what he suspected was oil or grease on the entire starboard side of the deck.

On arrival at the sick bay, the doctor confirmed that the third officer had died.

The following morning at approximately 0900, *Evangelos CH* docked at Tilbury and the third officer's body was taken ashore.

1.3 DESCRIPTION OF VESSEL

Evangelos CH was built in 1976 and regularly traded worldwide. She was a conventional general bulk carrier with six holds.

The depth of each cargo hold was approximately 12m. All six holds were fitted with standard single pull MacGregor hatch covers **(Figure 2)**. The hatch covers on each hold were closed by means of a single wire from a dedicated winch. These winches were housed on one of the three mast house tables situated between the holds, on the main deck.

1.4 THE CREW

The vessel had a complement of 26 crew members. The master was Greek and the chief officer, chief engineer, second engineer and bosun were Russian. The second officer, third officer and the third engineer were Burmese. The remainder of the crew were either Burmese or Indian.

The master held a Greek master's first class certificate of competency. He had been employed on merchant vessels since 1963 and had been serving as master since 1985. He took command of *Evangelos CH* on 17 August 2000.

Most of the officers had served on board for several months.

The deck crew, were experienced seafarers, some of whom had served on board for more than a year.

1.5 THE THIRD OFFICER

The casualty was the 31 year old, third officer, who held a Burmese third officer's certificate of competency. He had been employed on merchant vessels since 1993, first as a deck cadet, and then as third officer from 1996. He joined *Evangelos CH* on 12 September 2000.

He was described as a willing and capable officer, who on occasions appeared to be too "eager".

There was no evidence of any drug or alcohol involvement in the accident. The postmortem report confirmed this. There was also no evidence of fatigue; before the accident the third officer had been on anchor watch from 1200 until 1800, having slept from 0600 until 1000.

At the time of the accident the third officer was dressed in a boiler suit and rubber sea boots. He was not wearing a safety helmet or harness.

1.6 OPERATION OF HATCH COVERS

The hatches were closed by heaving a wire on to one of the winches situated on the mast house table. This wire was fed through a pulley to the underside of the table, and shackled to a welded rigid eye on the leading edge of the first section of the hatch covers **(Figure 3)**.

To open the hatches, the winch was first reversed until enough slack was created in the heaving wire. The wire was then passed through a pulley at the opposite end of the hold, and then heaved.

The design of this arrangement allowed the hatches to be opened and closed without having to unshackle the heaving wire from the leading hatch cover. Under normal circumstances, this meant that no member of the crew needed to be on top of the hatch covers when they were partly open.

However, when closing the hatches, the crew found it necessary to change the securing point to enable them to close the hatch covers fully. When the hatch covers were partly closed **(Figure 4)**, the wire was unshackled from the leading hatch cover and reshackled to another welded fixed eye on a trailing section of the hatch covers.

This improved the lead of the wire during the final stages of the operation, and enabled the winch to close the interconnecting sections of the hatch covers completely.

It is not known how long this procedure had been followed.

Figure 3

Leading edge of hatch cover showing wire, shackle, and butt of old eye

Figure 4

Leading hatch cover in approximate position at the time of the accident

1.7 NO 3 HATCH COVERS

The surfaces of No 3 hatch covers were painted with standard marine gloss paint. No anti-skid additive had been used.

At some time during the life of the vessel, a rigid welded eye, previously used for shackling the heaving wire, had been changed from a position approximately 0.3m from the edge of the hatch cover, to a position right on the leading edge **(Figure 3)**.

The butt of the old eye was protruding approximately 50mm above the level of the hatch cover.

During the hours of darkness when the decks lights were on, the mast house cast a shadow over the first metre or so of No 3 hatch covers.

1.8 ENVIRONMENTAL CONDITIONS

The weather conditions at the time of the accident were light and variable winds, with a slight sea swell. The visibility was good, with light intermittent rain showers.

1.9 ISM CODE

The International Safety Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code), which came into force on 1 July 1998 for bulk carriers over 500gt, sets international standards for the safe management and operation of ships. It requires companies to document and implement clear procedures, standards and instructions for safety management on board.

Part of the requirements of the ISM Code, requires a company to provide safe working practices, identify risks, and establish suitable safeguards.

Evangelos CH had been ISM Code accredited. As part of the accreditation, a quality and safety system was in operation, which did identify safe standard operating procedures for various tasks aboard the vessel. This included the need to wear a safety harness and helmet whenever head injuries were possible. However, there was no specific written procedure for opening or closing the hatch covers.

The designated person ashore was an employee of Worldwide Ocean.

1.10 CLOSING OF HATCH COVERS - TECHNIQUE

Following the accident, the hatch covers on No 3 hold were tested for their effectiveness in fully closing. It was possible to close them fully without having to climb on to the hatch covers to reposition the wire lead.

If the hatch covers were closed at normal speed on the winch until 75% of the covers were in place, then increasing the winch speed at that stage would close the hatch covers fully. This is a technique, confirmed by the hatch manufacturers, MacGregor, commonly carried out by ships' crews.

1.11 SUBSEQUENT ACTION

Since the accident the MCA, whose surveyors attended the vessel, recommended that the original technique for closing the hatches should be adopted at all times, and the crew trained accordingly.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents from occurring in the future.

2.2 THE ACCIDENT

There were no eyewitnesses to the accident. Neither the AB operating the winch, nor the AB on deck, actually saw what happened because of the restricted view from their respective positions.

The evidence suggests that when the third officer climbed on to the hatch covers to unshackle the wire lead, he lost his footing as he approached the edge of the leading hatch cover. The probable cause was one, or a combination of factors.

The deck surface was covered in an oily substance, and possibly caused the first officer's accident earlier in the day. The third officer was wearing rubber sea boots. Had the soles been covered in an oily substance there is a strong possibility he slipped on the hatch covers, which had not been treated with anti-skid paint. The fact that it had been raining intermittently throughout the day, making the hatch covers wet, could have also been a contributory factor.

It is also possible that the third officer tripped on the butt of the old welded eye or was unable to distinguish the edge of the leading hatch cover because of the shadow area created by the masthouse.

2.3 HATCH CLOSING PROCEDURE

The hatch covers were designed so that it was not necessary for anybody to climb on, or off, them when they were being opened or closed. In addition to this, the original welded eye, set back from the edge of the leading hatch cover, was properly placed for the opening and closing operation.

It is unknown when the position of the welded eye was changed, but its effect was a change in the procedure. This change of procedure meant that a crew member not only had to climb on and off the hatch covers to change the wire lead when they were partly open, but also had to position himself right on the edge of the leading hatch cover to be able to unshackle the wire.

This procedure introduced a new risk. Nevertheless, the method of closing the hatches was passed from one deck crew to another, and was accepted as the only method. The risk, which was avoidable, was not identified. Consequently, no safeguards were put in place and over a period of time the crew became complacent, accepting this procedure as the norm.

2.4 ACTION BY THE CASUALTY

The third officer should have realised the danger into which he was putting himself when carrying out this procedure for opening and closing the hatch covers.

An experienced officer should have understood the risks involved in climbing on to the top of hatch covers when they were only partly closed. Measures should have been in place to safeguard against the risks involved.

Had the third officer not placed himself in immediate danger by taking the risks involved, the accident would not have happened.

2.5 ISM CODE

The ISM Code requires a company to provide safe working practices, identify risks and establish suitable safeguards.

A quality and safety system was in operation, but there was no written procedure for the opening and closing of hatch covers. There should have been; even if it was merely a reflection of the manufacturer’s procedure.

Even though there was no written procedure in place covering the opening and closing of the hatch covers, a comprehensive ongoing risk assessment should have identified the unsafe practice which was being adopted.

Had this been the case, the accident could have been avoided.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

1. The accident was caused by an unsafe practice, which was allowed to continue on board the vessel, when closing the hatch covers. [2.3]

2. There were no eyewitnesses to the accident. [2.2]

3. The exact nature of the third officer's fall is not known. [2.2]

4. It was not necessary for anybody to climb on top of the hatch covers, when they were being opened or closed. [2.3]

5. By the time the accident happened, this procedure for closing the hatches was an accepted practice. [2.3]

6. The deck crew were unaware of the correct technique for closing the hatches. [2.3]

7. There was no written procedure, in the quality and safety system on board, for the operation of the hatch covers. [2.5]

3.2 CAUSE

The most probable cause of the accident, which led to the fall of the third officer, was his losing his footing on the hatch cover because of one, or a combination, of the following factors:

The oily substance on the deck.

The rainfall, which made the hatch covers wet.

The tripping hazard created by the butt remaining from the previous welded eye.

3.3 CONTRIBUTORY CAUSES

1. The third officer's decision to place himself in immediate danger by climbing on to the hatch covers.

2. The crew being unaware of the correct technique for closing the hatches.

3. The lack of a written procedure for the operation of the hatch covers.

4. The unsafe practice of closing the hatch covers being allowed to continue due to complacency over a period of time.

5. The shadow area created by the masthouse.

6. The changed position of the welded eye.

7. No anti-skid paint on the hatch covers.

8. No safety harness or helmet worn by the casualty.

SECTION 4 - RECOMMENDATIONS

Worldwide Ocean Chartering is recommended to:

1. Ensure that in light of this accident, and in accordance with the ISM Code, a written procedure for the opening and closing of hatch covers is introduced.

2. Ensure that all deck crew members are fully versed in the correct technique for closing the hatch covers.

Marine Accident Investigation Branch
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