



**Bundesstelle für Seeunfalluntersuchung**  
**Federal Bureau of Maritime Casualty Investigation**  
Federal Higher Authority subordinated to the Ministry of Transport  
and Digital Infrastructure

Investigation Report 272/14

**Very Serious Marine Casualty**

**Fatal accident**  
**on board the MV MAERSK SURABAYA**  
**on 1 September 2014 off Shanghai**

28 August 2015

The investigation was conducted in conformity with the Law to improve safety of shipping by investigating marine casualties and other incidents (Maritime Safety Investigation Act – SUG) of 16 June 2002, amended most recently by Article 1 of 22 November 2011, BGBl. (Federal Law Gazette) I p. 2279.

According to said Act, the sole objective of this investigation is to prevent future accidents and malfunctions. This investigation does not serve to ascertain fault, liability or claims (Article 9(2) SUG).

This report should not be used in court proceedings or proceedings of the Maritime Board. Reference is made to Article 34(4) SUG.

The German text shall prevail in the interpretation of this investigation report.

Issued by:  
Bundesstelle für Seeunfalluntersuchung – BSU  
(Federal Bureau of Maritime Casualty  
Investigation)  
Bernhard-Nocht-Str. 78  
20359 Hamburg  
Germany



Director: Volker Schellhammer  
Phone: +49 40 31908300  
posteingang-bsu@bsh.de

Fax: +49 40 31908340  
[www.bsu-bund.de](http://www.bsu-bund.de)

## Table of Contents

1	SUMMARY.....	5
2	FACTUAL INFORMATION.....	6
	2.1 Photo.....	6
	2.2 Ship particulars.....	6
	2.3 Voyage particulars.....	7
	2.4 Marine casualty or incident information .....	8
	2.5 Shore authority involvement and emergency response.....	9
3	COURSE OF THE ACCIDENT AND INVESTIGATION .....	10
	3.1 Course of the accident .....	10
	3.2 Investigation .....	10
	3.2.1 Scene of the accident.....	10
	3.2.2 Course of the accident .....	11
4	ANALYSIS.....	12
	4.1 Weather report .....	12
	4.2 Scene of the accident.....	12
	4.3 Course of the accident according to witness testimony.....	14
5	CONCLUSIONS.....	15
	5.1 Analysis of the accident.....	15
	5.2 Safety measures taken after the accident .....	15
	5.3 Conclusion.....	18
6	SOURCES .....	18

## Table of Figures

Figure 1: Photo of ship .....	6
Figure 2: Nautical chart .....	8
Figure 3: Extract from the general arrangement plan (side view) .....	10
Figure 4: Extract from the general arrangement plan (top view).....	11
Figure 5: Access to cargo hold 9 from the main deck.....	13
Figure 6: Access to deck containing the engine room casing.....	13
Figure 7: Central main floodlight at the transverse passageway .....	14
Figure 8: Image of the deckhand picking up the water hose and discovering the electrician.....	15
Figure 9: Edge of drop.....	17
Figure 10: Access to deck containing the casing.....	17

## 1 Summary

At about 0842<sup>1</sup> on 1 September 2014, the ship's electrician was found seriously injured in cargo hold 9 of the MV MAERSK SURABAYA, which was anchored off Shanghai. Despite the immediate initiation of medical care, the casualty succumbed to his injuries.

---

<sup>1</sup> All times shown in this report are local = UTC + 8

## 2 FACTUAL INFORMATION

### 2.1 Photo

© Hasenpusch Photo-Productions



Figure 1: Photo of ship

### 2.2 Ship particulars

Name of ship:	MAERSK SURABAYA
Type of ship:	Container ship
Nationality/Flag:	Germany
Port of registry:	Hamburg
IMO number:	9330068
Call sign:	DDSX2
Owner:	Reederei Claus-Peter Offen (GmbH & Co.) KG
Year built:	2006
Shipyard/Yard number:	Daewoo Shipbuilding Marine Engineering Yard No. 4115
Classification society:	Germanischer Lloyd
Length overall:	332.58 m
Breadth overall:	43.20 m
Gross tonnage:	94,322
Deadweight:	108,350 t
Draught (max.):	14.50 m
Engine rating:	68,520 kW
Main engine:	Doosan Engine Co., Type 12 K98MC-C
(Service) Speed:	25.4 kts
Hull material:	Steel
Qty. 20 TEU:	8,400
Minimum safe manning:	22

### 2.3 Voyage particulars

Port of departure:	Qingdao, China
Port of call:	Shanghai, China
Type of voyage:	Merchant shipping International
Cargo information:	Containers
Manning:	22
Pilot on board:	No
Canal helmsman:	No
Number of passengers:	None

## 2.4 Marine casualty or incident information

Type of marine casualty or incident:	Very serious marine casualty, one dead seaman
Date, time:	01/09/2014 at approx. 0842
Location:	Off Shanghai
Latitude/Longitude:	$\phi$ 31° 11.0'N $\lambda$ 122° 46.4'E
Ship operation and voyage segment:	Anchored, awaiting order/connecting voyage
Place on board:	Cargo hold 9
Human factors:	Yes, violation
Consequences (for people, ship, cargo, environment, other):	One dead seaman

Excerpt from Nautical Chart BA 1206 Outer Approaches to Shanghai

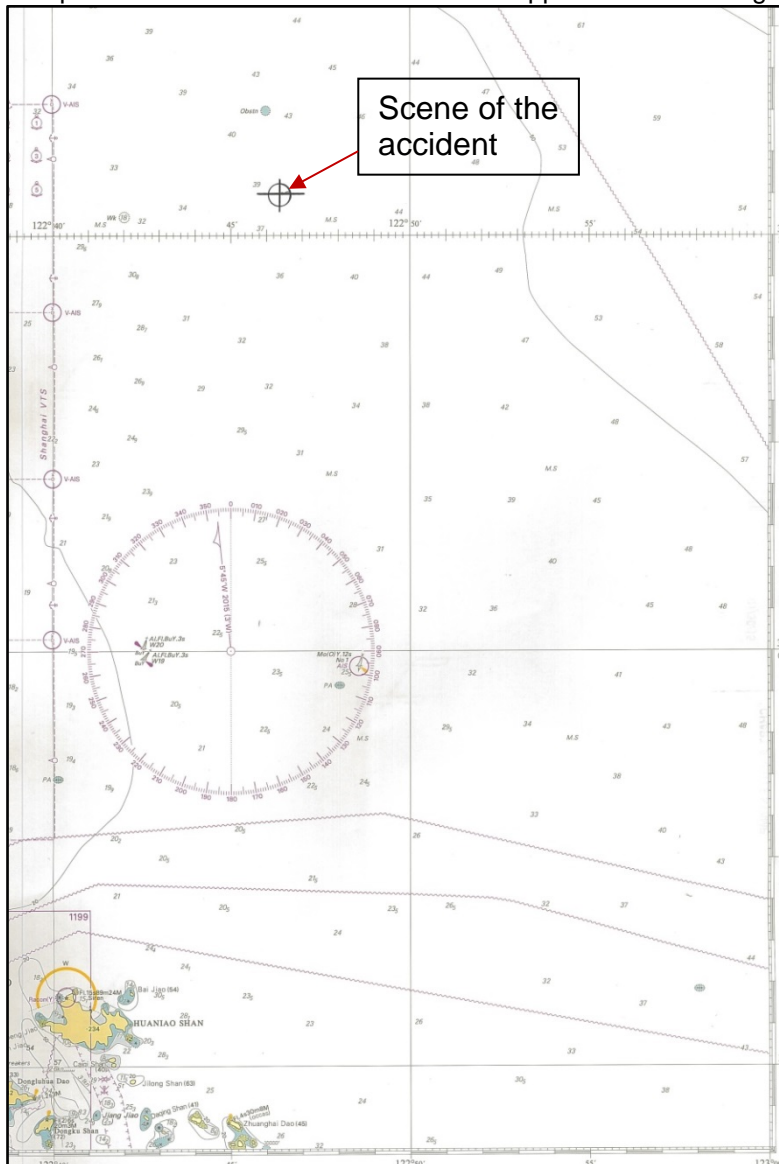


Figure 2: Nautical chart



## 2.5 Shore authority involvement and emergency response

Agencies involved:	Maritime Rescue Co-ordination Centre (MRCC) Shanghai Medico Cuxhaven Harbour Police Shanghai Criminal Detection Team Shanghai
Resources used:	Oxygen, defibrillator, helicopter
Actions taken:	First aid, cardiopulmonary massage, attempts at resuscitation
Results achieved:	Person deceased

### 3 COURSE OF THE ACCIDENT AND INVESTIGATION

#### 3.1 Course of the accident

The MV MAERSK SURABAYA was anchored off Shanghai. The 58-year-old ship's electrician was occupied with checking the lighting in the cargo holds and replacing or repairing light sources where necessary. Inter alia, he climbed into cargo hold 9 to carry out this work. A deckhand and the bosun found him lying prone on the tank deck at about 0842.

Despite immediate attempts at resuscitation, the ship's electrician succumbed to his injuries on board at about 0930.

#### 3.2 Investigation

The owner informed the Federal Bureau of Maritime Casualty Investigation about the accident at about 1730 on the day it occurred and forwarded any necessary documents immediately. The scene of the accident was surveyed on 23 April 2015 in the port of Algeciras, Spain.

##### 3.2.1 Scene of the accident

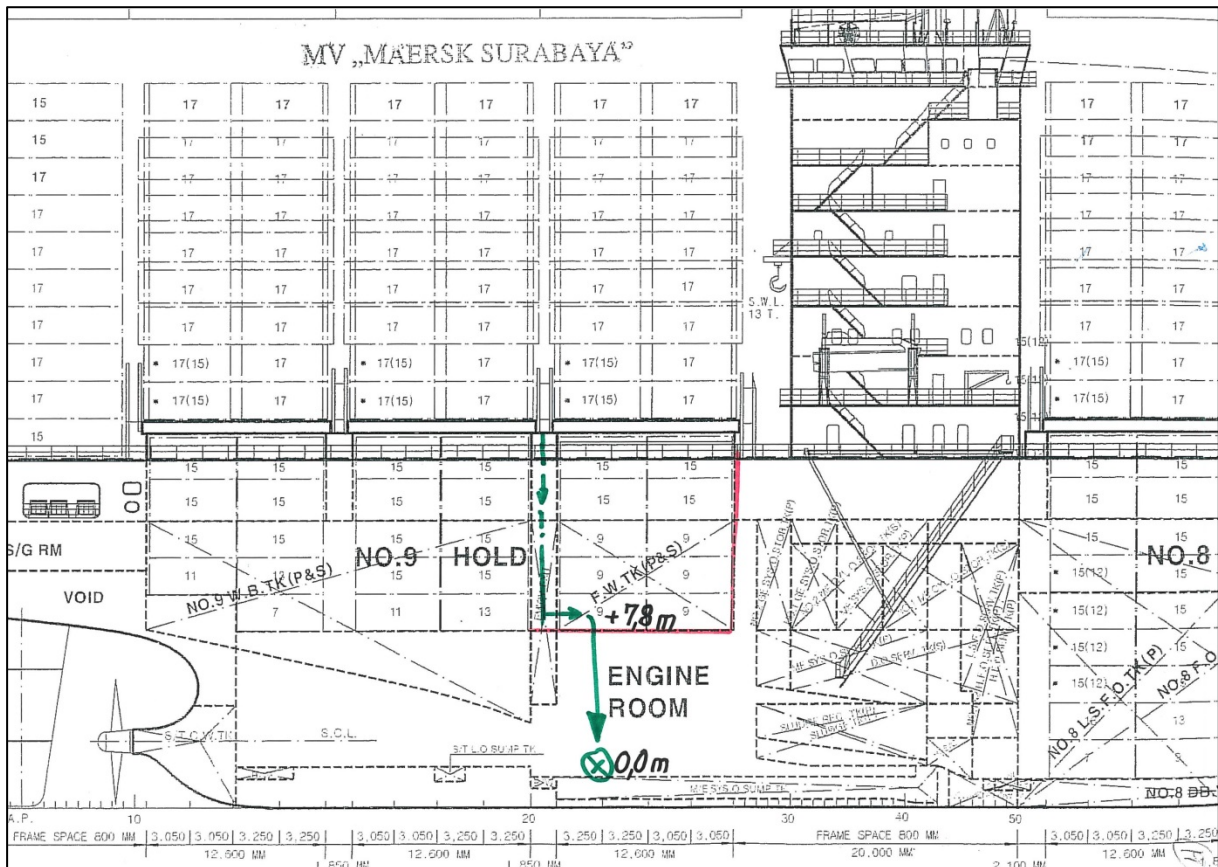


Figure 3: Extract from the general arrangement plan (side view)

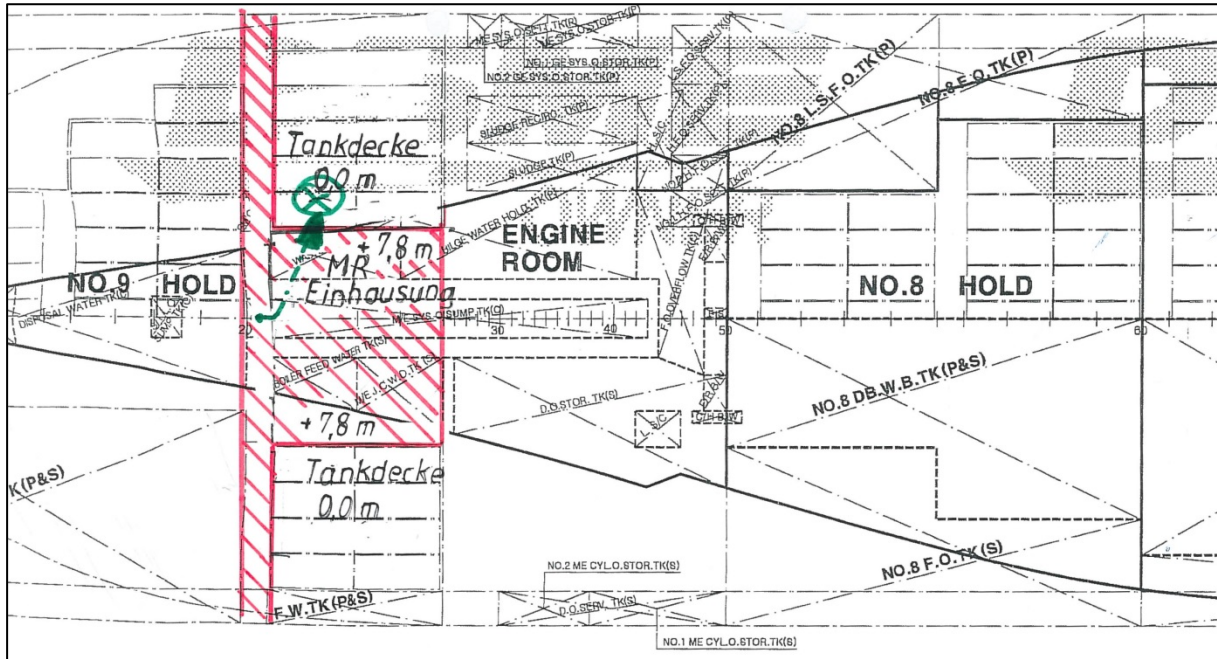


Figure 4: Extract from the general arrangement plan (top view)

The first section of cargo hold 9, which is located directly aft of the bridge, contains casing of 7.8 m in height from the engine room, which is located before it. This casing runs longitudinally from the aft engine room bulkhead, frame 25, up to the transverse passageway, frame 20 (see red shading). The casing is about 15 m in breadth and only in the middle laterally. The casing does not run down the sides and is open for a depth of about 7.8 m (three container layers) to the top of the tank.

### 3.2.2 Course of the accident

On the day of the accident, when the bosun and a deckhand had to clean the cargo hold and the top of the casing with water, it was noticed that only a few fluorescent tubes were on in the cargo hold and the main floodlights were defective. The electrician had to change the light sources to re-establish good illumination in the cargo hold.

At about 0830, the electrician climbed down to the bosun, who was already in the cargo hold. He immediately repaired one of the main floodlights, which was located on the casing in the transverse passageway. The bosun and the deckhand, who had now also arrived, started their work in the cargo hold and were in the process of unrolling water hoses on the casing when the deckhand noticed the electrician lying prone 7.8 m deeper on top of the tank.

The bridge was alerted immediately and attempts at resuscitation carried out in the cargo hold. However, the electrician succumbed to his injuries at the scene.

No eyewitnesses observed the course of the accident directly.

## **4 ANALYSIS**

The following analysis deals with the circumstances that led to the accident and action taken to prevent such accidents in the future.

### **4.1 Weather report**

The Maritime Division of Germany's National Meteorological Service (DWD) was requested to prepare an official report on the weather and sea conditions in the sea area off Shanghai, China, for the period 0600 to 1600 local time (2200 UTC on 31 August 2014 to 0800 UTC on 1 September 2014).

#### Weather situation

On 1 September 2014, a localised low-pressure system with no front and core pressure of 1,008 hPa prevailed slightly north-west of the area of the accident.

#### Wind

Model analyses of the mean wind at a height of 10 m above the water surface and observations suggest that in the area of the accident a south-east wind (from 140 degrees) of force 4-5 Bft (about 15 kts) turned slowly to the south-west (from about 230 degrees) and dropped to 3 Bft (about 8 kts). Due to the high probability of showers and thunderstorms, gusts of force 8 Bft (about 35 kts), mostly from the west, occurred in the vicinity of showers and thunderstorms.

#### Significant sea state

As a result of the limited persistence of the maximum mean wind force and the wind direction, which was turning right steadily, the wind sea reached no more than 1 m. At the same time, swell of 0.5-1 m in height moved in from the east. In all probability, the combined significant sea state thus reached wave heights of only about 1 m.

### **4.2 Scene of the accident**

The cargo hold is accessed from the main deck. The transverse passageway and decks can be entered using a ladder via a small hatch cover. Further access to the deck containing the engine room casing is beneath the main deck five container levels lower. A crossbar secures access to the deck containing the casing. The lowest deck, the tank deck, is accessible from the transverse passageway via other ladders on the port and starboard sides.



Figure 5: Access to cargo hold 9 from the main deck



Crossbar

Figure 6: Access to deck containing the engine room casing

### 4.3 Course of the accident according to witness testimony

The bosun and a crew member were tasked with cleaning cargo hold 9. The work started at about 0805 and it was found in the process that the main floodlights in the cargo hold were not on. The bosun, who had already climbed down into the cargo hold, sent the deckhand to the ship's office to request operation of the switch. The lights were still not on when the deckhand reappeared at the cargo hold hatch at 0810. The deckhand then ran back to the ship's office, from where the electrician was informed about the defective lighting. The electrician appeared at the cargo hold hatch at about 0820; the bosun told him that first the lighting in the transverse passageway, the main floodlights, should be checked and then the lighting at the sides. The deckhand reappeared at the hatch at about 0825 and saw the electrician descend.



Figure 7: Central main floodlight at the transverse passageway

The central main floodlight is installed in the transverse passageway about 1.50 m above the deck containing the engine casing. This light is accessible from the transverse passageway without tools or opening the crossbar/entering the deck containing the engine casing. The electrician apparently fixed this light by replacing the light source. The deckhand saw that the lighting was now on in the middle when he climbed into the hatch at 0830 or shortly after. At this point, the bosun had already begun cleaning on the starboard side of the deck containing the casing and instructed the deckhand to collect the hose and nozzle from the port side. The deckhand then went to the deck containing the casing and while picking up the hose saw the electrician lying prone about 7.8 m deeper on the tank deck.

The ship's management was informed of the accident involving the electrician at about 0845 and first aid was administered immediately.



Figure 8: Image of the deckhand picking up the water hose and discovering the electrician

## 5 CONCLUSIONS

### 5.1 Analysis of the accident

The 58-year-old electrician had sufficient experience in the operation of the ship. It was his second voyage on this ship and he had been on board for almost eight months prior to the day of the accident. Hours of work and rest were observed.

It is not clear why the electrician went onto the deck containing the engine room casing. It is reasonable to assume that he wanted to count the defective light sources after carrying out the repair on the central main floodlight so as to collect them from the store. It is possible that he stumbled on the water hose or otherwise slipped in the process and fell onto the tank deck.

None of the three seamen was wearing fall protection equipment.

### 5.2 Safety measures taken after the accident

The owner reviewed the accident extensively and took various measures to prevent such an accident in the future. The owner issued the following safety recommendation for its ships three weeks after the accident:



**Safety & Environmental Bulletin**  
**No: 06/2014**

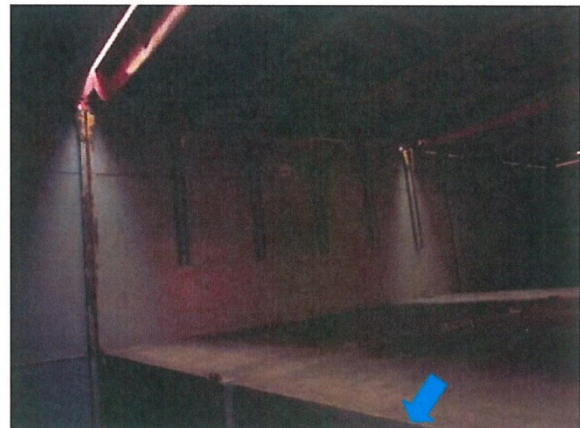
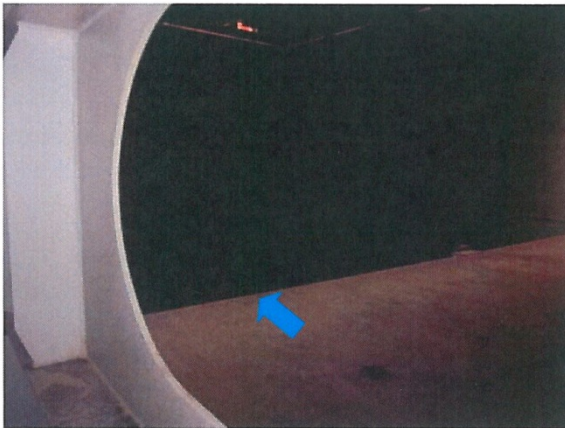
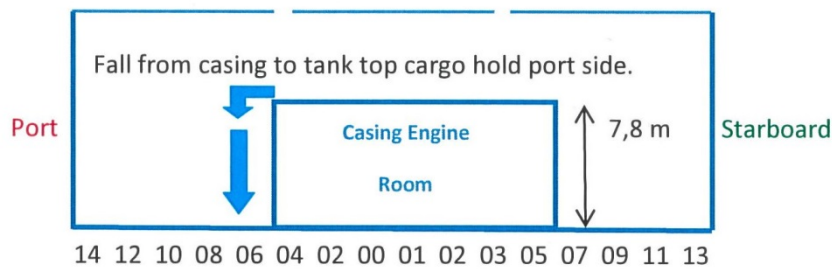
*Reederei Claus-Peter Offen  
 Kaufmannshaus  
 Bleichenbrücke 10  
 D-20354 Hamburg*

Given information shall be discussed during Shipboard Management and Safety Committee Meeting

**PLS FIND BELOW MENTIONED INFORMATIONS REGARDING TWO ACCIDENTS OCCURRED IN OUR FLEET.**

**A: FATAL ACCIDENT: DURING CHECKING/REPAIRING ILLUMINATION IN CARGO HOLD**

Electrician checked and repaired illumination and spot lights in cargo hold no. 9 (behind accommodation). Hold no. 9 contains an engine room casing (7,8 m = 3 container high). After change of a spotlight bulb he walk on the engine room casing (reason unknown – assumedly to check lightning port side of walkway) and he felt on tank top. He suffered mortal injuries. Directed initiated first aid measures and reanimation carried out professionally but without success.



**Corrective / Preventive Action:**

- Areas with potential of falling from high shall be tiger marked.



The BSU surveyed the ship in Algeciras, Spain, on 23 April 2015 and observed the following measures that were introduced to enhance safety.





Figure 9: Edge of drop

The owner's safety bulletin was implemented on board and edges on the engine room casing that pose a risk of falling have been marked with continuous oblique yellow and black stripes. Furthermore, pictograms that indicate the risk of falling were displayed at the deck access point at the recommendation of the BSU:

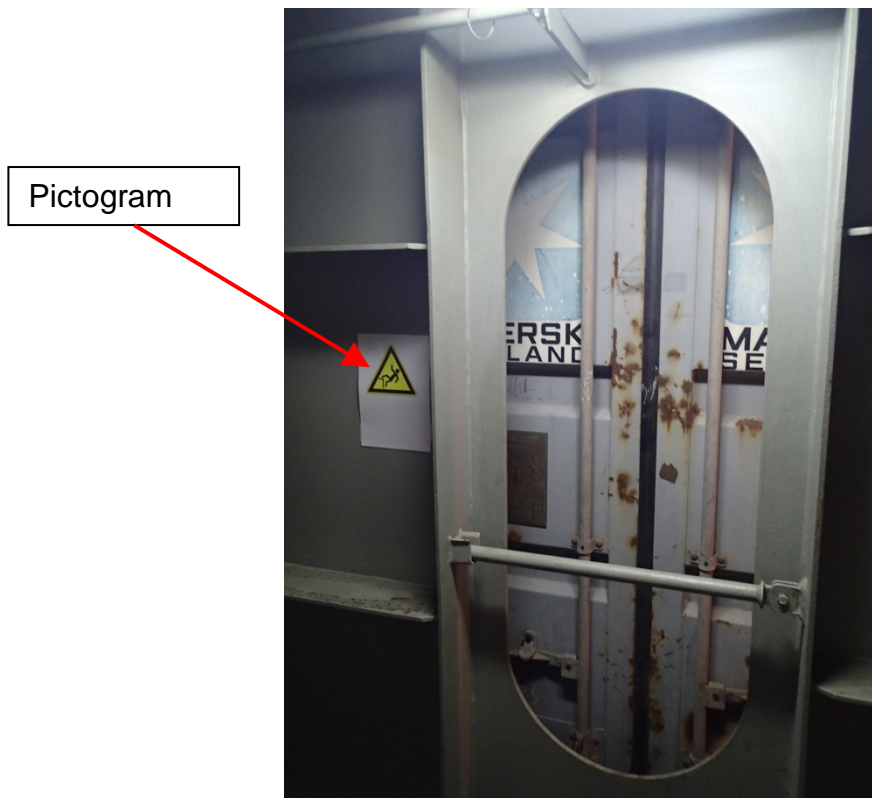


Figure 10: Access to deck containing the casing

### **5.3 Conclusion**

In all likelihood, the accident was the result of carelessness on the part of the electrician. Although the measures of the owner taken after the accident focus attention when working in a cargo hold, such accidents cannot be ruled out entirely in the future.

Publication of safety recommendations is dispensed with given the measures already taken by the owner.

## **6 SOURCES**

- Enquiries of the BSU
- Written statements
  - Ship's command
  - Owner
- Witness accounts
- Nautical charts and ship particulars, Federal Maritime and Hydrographic Agency (BSH)
- Official weather report by Germany's National Meteorological Service (DWD)
- Documentation, Ship Safety Division (BG Verkehr)
  - Accident Prevention Regulations (UVV See)
  - Guidelines and codes of practice
  - Ship files