Investigation report

D10/2010M

MSC LIESELOTTE, serious accident in ship's cargo hold on 1 June 2010

Translation of the original Finnish report

This investigation report was written to improve safety and prevent new accidents. The report does not address any possible responsibility or liability caused by the accident. The investigation report should not be used for purposes other than the improvement of safety.

INVESTIGATION NUMBER: D10/2010M **INVESTIGATOR:** Risto Lappalainen
COMPLETED: 18.11.2010

Occurrence time:	1.6.2010
Place of occurrence:	The cargo hold of moored vessel.
Nature of occurrence:	While berthed the vessel's Chief Electrician and the Electrician trainee had gone to cargo hold no.1 to fix an extractor, which was broken. The lights of the cargo hold were out of order. According to workers, they had torches and helmets with them. The Chief Electrician fell approximately three meters from the tween-deck to the bottom of the cargo hold. He seriously injured his head.
Parties involved :	The vessel's Chief Electrician.
Consequences or damages:	The vessel’s Chief Electrician was badly injured.
Weather:	Had no role in this accident.
Lighting:	The cargo hold was completely dark, because the lights were out of order and the hatch covers were closed. According to workers they had torch and helmets with them.
Other circumstantial factors:	The safety fence had been removed from the tween-deck on the left side of the cargo hold.

1 EVENTS AND INVESTIGATION

1.1 MSC LIESELOTTE

Figure 1. MSC LIESELOTTE.

MSC LIESELOTTE is a container ship, built in 1983. Classification survey for the ship was made on 26.5.2010 in Antwerp, Belgium. Last Port State Control (PSC)-inspection was carried out on 1.6.2010 in Kotka, Finland. No deficiencies were notified. The vessel's Safety Certificates are valid until January 2013.

General information

Name of vessel	MSC LIESELOTTE
Owner	Compania Naviera Lieselotte S.A.
Company	Mediterranean Shipping Co S.A.
Operator	Mediterranean Shipping Co S.A.
Charterer	Mediterranean Shipping Co S.A.
Flag	Panama
Home port	Panama
IMO[1]-number	8201674
Call Sign	HPDX
Type	Container Ship
Crew	30
Class	Bureau Veritas
Ice class	IA
Place and time of construction	Warnemünde, Germany 1983
Loa/ Lpp	203.06 m/192.73 m
Breadth	25.4 m
Draught	9.82 m
Gross/Net	21586/ 7160
Dead weight	21370 t
Main Engine/ Power output	B & W/ 15882KW

[1] International Maritime Organization

Manning

The ship's crew comprised of 29 persons. 25 of them were Indian, three were Ukrainian and one was from Bangladesh.

1.2 Overview of the accident event

The Chief Electrician of the ship and the Electrician trainee had gone to Cargo hold no 1 to check an extractor which was broken. They went to the cargo hold through a manhole on the deck (Figure 2). After getting to the tween-deck of the cargo hold (Figure 3) they noticed that the ligths were out of order. The cargo hold was completely dark. According to workers they had torch-lights and helmets with them. The Electrician trainee walked on the tween-deck to the other side of the hold. He tried to find the control unit of the extractor. The Chief Electrician remained on the tween-deck. At 15.55 the trainee heard a sound of a falling. A moment later he noticed that the Electrician had fallen about three meters to the bottom of the hold (Figure 4).

Figure 2. Manhole to hold no1 in Port side (Kymenlaakso Police)

Figure 3. Casing to the cargo hold. (Kymenlaakso Police)

1.3 The accident site

Ladders end up to the tween-deck which can be seen in the figure 4. The hatch covers of the hold were closed and the lights were out of order. It was completely dark in the hold. According to the Electrician trainee they had torch lights with them. The red arrow in Figure 4 shows the place where the Chief Electrician fell.

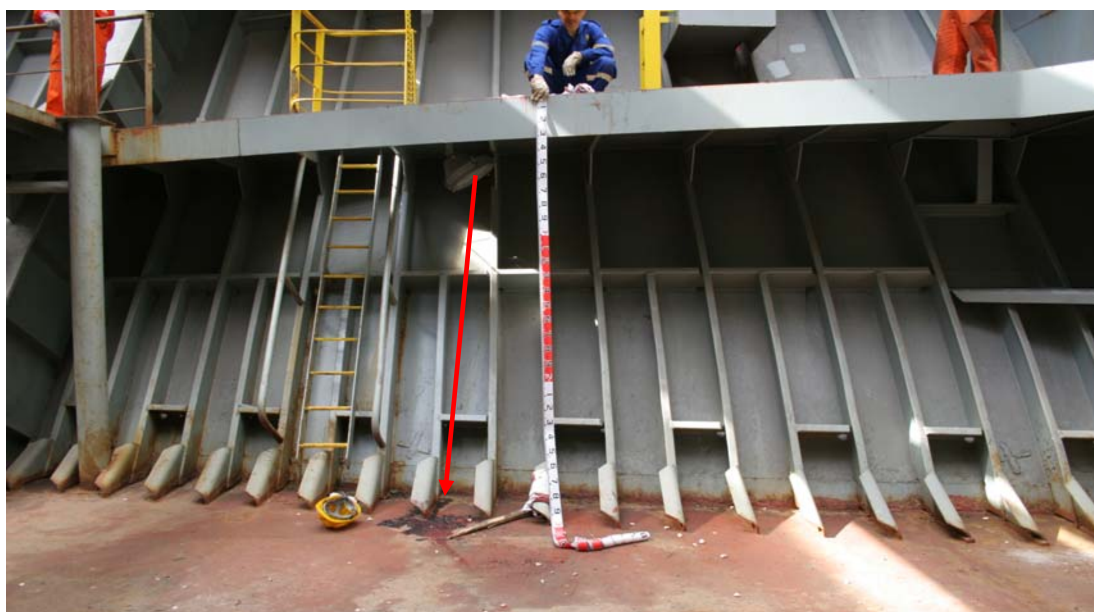

Figure 4. It's about 3 meters from the tween deck to the bottom of the cargo hold. (Kymenlaakso Police)

The tween-deck from where the Chief Electrician had fallen can be seen in Figure 5. It was not known, when the safety fence of the tween-deck had been removed.

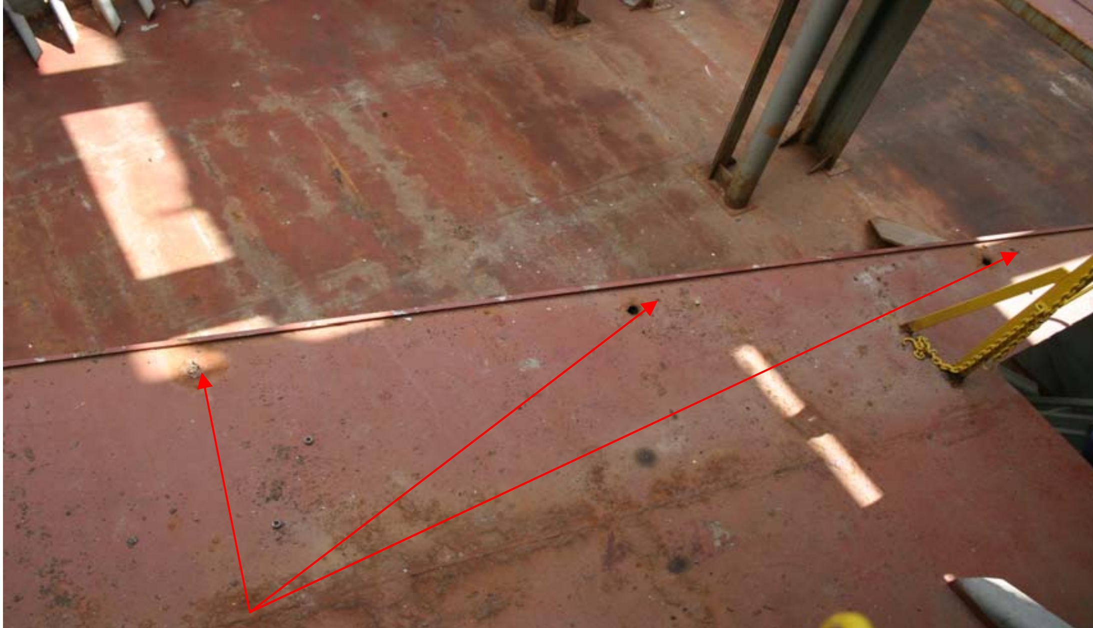

Figure 5. The holes for the removed safety fence poles on the tween-deck. (Kymenlaakso Police)

Action after incident

Using the VHF-phone Electrician trainee reported the accident immediately to the AB on watch. The AB informed the Duty Officer, who made the General Alarm onboard and called then the Emergency Response Centre. The patient was set the on the "bamboo stretcher" and carried to the deck by the crew to wait the paramedics.

1.4 Damages

The Chief Electrician was seriously injured.

1.5 Rescue activities

Alerting activities

The Emergency Response Centre received the information at 16.06. Kymenlaakso Rescue Department's Kotka unit was alarmed at 16.10 and Kymenlaakso Police at 16.40.

An ambulance unit K190 (care level) started the task A741 at 16.11 and the unit was at the accident site at 16.20. An ambulance K193 (basic level) was as a back up unit. Other units weren't called since the task code A741 means transportation of injured person.

The Emergency Response Centre didn't report about the accident neither to the duty officer of the Finnish Transport Safety Agency inspection unit nor to the Occupational Safety Inspection Agency.

Launching of rescue operations

At the destination the paramedics were informed about the accident. The information was as follows: the patient has fallen in the ship's cargo hold, the drop was about 3–4 meters. The paramedics assessed the situation immediately. The patient had much blood on his occipital and he was unconscious. The gangway of the ship had been lifted horizontally and the stretcher had been bound in to it. By lowering the gangway the patient was downed to the quay, next to the ambulance.

An accurate assessment of patient’s situation was made. The paramedics consulted a doctor and according to the doctor's instructions the patient was medicated with painkillers and the patient was sedated.

When assessing the level of consciousness by the international Glasgow Coma Scale (GSC-scale) the test result was 3, which means that the patience is deeply unconscious. Also a respiratory passage was ensured by intubation.

A transportation of the patient started at 16.53. First Aid Dispensary of Kotka hospital had received an advance notice.

1.6 Investigations onboard the accident vessels

On the next day the Kymenlaakso police had already investigated the Accident site, took photos and shortly heard the crew about the accident. The Police made a report from their own investigations.

The Master of the vessel and the Electrician trainee were heard during the accident investigation.

The inspectors of Finnish Transport Safety Agency had taken PSC-control on the ship earlier on the accident day. There were no deficiencies. On the day after the accident the P & I[2] representative, Kymenlaakso Police, inspector of the Finnish Transport Safety Agency and the inspector of Occupational Safety Agency made their own investigations onboard.

1.7 Provisions and regulations guiding the operations

International legislation

The Convention no.134[3] of the International Labour Organisation, ILO, is focused on the Occupational Safety of Seafarers. In the Resolution it is highlighted the utmost

[2] Protection & Indemnity
[3] Prevention of Accidents (Seafarers) Convention, 1970 (No. 134)

importance of prevention the accidents with special dangers onboard the vessels. Finland ratified the Convention 1974.

National legislation

When a vessel is berthed in a Finnish harbour, she is in Finnish territory and subject to Finnish legislation. In other words, while in Finland a vessel may not violate Finnish safety codes, such as Occupational Safety regulations.

The meaning of the *Occupational Safety and Health Act* **(738/2002)** is to improve working environment and working conditions and thereby ensure and keep up working ability, prevent occupational accidents, diseases and other harms to employees' physical or mental health which are caused by work or working environment.

Duties for employers and employees both demands of working and working conditions are enacted in the law.

Regulations on personal protective equipment, such as personal fall arrest systems, are included in the Government Decision on the *Selection and Use of Personal Protective Equipment* **(1407/1993).**

The Government Decree *of Using and inspecting tools used while working* **(403/2008)** enacts the safety standards of safety structures which are used when working in aloft.

The Government Decision on the W*orking environment onboard* **(417/1981)** enacts the occupational safety of physical conditions, passages and equipments of the working spaces both inside and outside the ship.

Administrative orders and instructions

Fall protection. An employer is due to observe a working environment, a state of a working community and safety of the habits continually. Additionally the employer has to observe an effect of the Act carried out on safety and health of the work. The protective structures and fall protection must be structured in such way that they prevent or stop falling. Fences and other structures which generally prevent falling must be continuous except the places where there is a gate to stairs or ladder. If the safety fence of device has to be removed temporarily because of carrying out a task, substitutive safety acts has to be done. It is not allowed to work before these safety acts have been done. The safety structure or device must be returned immediately after the work has been finished or suspended.

Law of Occupational Safety **(738/2002)** 8§

The Government Decree *of using and inspecting tools, which are used while working (403/2008), 26 §*

Lighting. In the working place there shall be proper and effective lighting with regards the work and labour condition. In the working spaces and walkways there has to be

appropriate general lighting. In working areas and staircases, ladders and manholes where necessary, there has to be spotlights. Differences in the illumination levels endangering working safety are not accepted.

Law of Occupational Safety (738/2002) 8, 34 §

The Government Decision on the working environment onboard (417/1981) 14 §

Compilation of work instructions. An employer is obligated to take care of employee safety and health in work with necessary actions. Thus an employer has to consider the facts related to the work itself, working circumstances, working environment and facts related to employee's individual character. An employer has to inform adequately an employee about the elements of danger and ill effects related to the place of work.

Law of Occupational Safety (738/2002) 8, 10, 14 §

Instructions and Teaching the employee. An employer is obligated to inform adequately an employee about the elements of danger and ill effects on the place of work and to take care that an employee, considering one's professional suitability and working experience, is adequately familiarized with the environment of a working place and the work itself. Teaching and guidance about the prevention of the ill effects and danger related to the work must be given to an employee. Teaching and guidance must be given to an employee also to avoid safety and health threatening caused by the work. Also adjustment, cleaning, maintenance and repair work as well as malfunctions and unusual situations must be included to the teaching.

Law of Occupational Safety (738/2002) 8, 14 §

2 ANALYSIS

Based on the accident investigation, the discussion with the Electrician trainee and the information from the Master of the vessel, the causes for the accident were:

The cause for the actual accident was that the safety fence of the Port-side tween-deck in the cargo hold had been removed. In addition it was completely dark in the cargo hold, since the lights in the cargo hold were out of order and the hatch covers were closed. The lighting of the hold was still out of order 2.6.2010 when the investigation was carried out.

Onboard there were no instructions about the maintenance work in the cargo hold. Further, the employer hadn't introduced the worker adequately to the safe working in a cargo hold. It can be considered that the accident happened partly due these reasons.

The rescue operation by the crew and the authorities succeeded properly. The information flow between the authorities didn't work in an appropriate way in all parts.

3 CONCLUSIONS

The causes of the accident are

- The safety fence on the tween-deck in the Cargo hold no.1 had been removed.
- It was completely dark in the hold, because the lights didn't work and the hatch covers of the hold were closed.
- There were no instructions onboard about maintenance work in the cargo holds.
- The Crew hadn't been introduced adequately to the safe working in cargo holds by the employer.

4 SAFETY RECOMMENDATIONS

4.1 The implemented correcting measures

A Safety fence has been installed to the accident site (Figure 6). The passage in the SB-side has been painted with warning coloration.

Figure 6. A Safety fence installed after the accident on the left and the painted passage on the right.

4.2 Safety recommendations

1. *Onboard the vessel detailed working guidance should be created for the work in cargo spaces.*

An employer is responsible to take care of the work related safety and health of one's employees with necessary actions.

2. *The crew has to be familiarized in to the safe methods of work in the cargo spaces.*

An employer is obligated to inform adequately an employee about the elements of danger and ill effects on the place of work and to take care that an employee, considering one's professional suitability and working experience, is adequately familiarized with the environment of a working place and the work itself.