

Report from the Division for Investigation of Maritime Accidents

## **Container ship SORØ MÆRSK Accident to seafarer, engineer scalded by steam and hot water 4 November 2008**



### **Factual information**

#### **The ship**

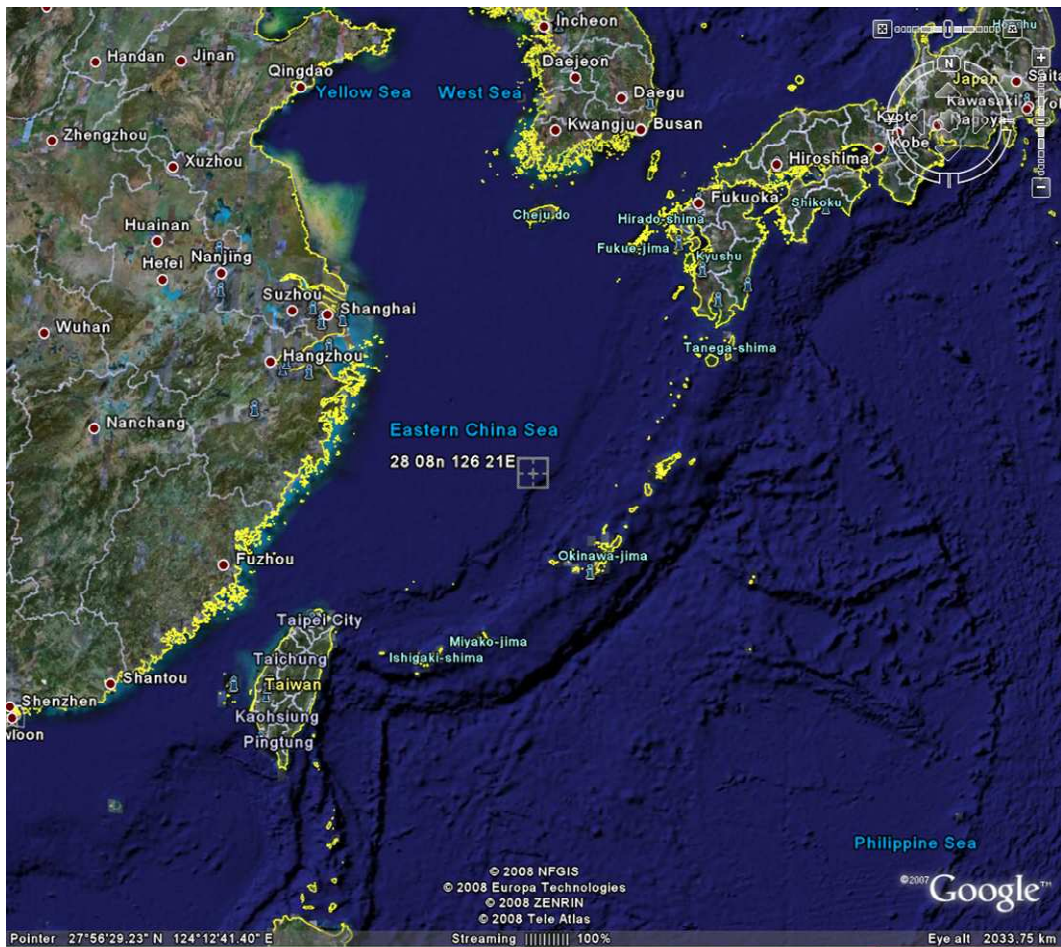
SORØ MÆRSK is a diesel propelled container ship of 91560 GT with a crew of 25.

#### **The accident**

On 4 November 2008, when the ship was on position 28°08' N – 126°21' E, navigating in the Eastern China Sea bound for Yokohama, the 4<sup>th</sup> engineer was seriously scalded when he was cleaning a drain pipe. After having received first aid on board the ship he was taken to hospital by a helicopter from Japan Coast Guard.

#### **The engineer**

4<sup>th</sup> engineer is 29 years of age. He is certified as a watch keeping engineer, holding a certificate "RC Engineer Officer" among a long range of other certificates of training and skills.



Picture: Google Earth

## Narrative

On 3 November 2008, while making his night round, the 4<sup>th</sup> engineer noticed that the dirty water drain from the fuel oil separators was obstructed.

The drain, a 2½" pipe, was supposed for draining water and oil from four fuel oil separators into a common dirty water tank ventilated to the atmosphere. The drain pipe was heated by steam tracing and furnished with a blind flange for opening and cleaning of the pipe as a part of the ship's design.

Next day, he informed 2<sup>nd</sup> engineer about the problem and they decided to proceed to clean the draining pipe, a job considered ordinary and not at all dangerous.

First, he dismantled the draining cap from separator and saw the pipe was clogged inside. He poured some diesel oil into the drain, trying to dissolve the sludge but nothing happened. After that, he tried to poke a wire rope into the pipe, but likewise with no effect.

He tracked the drain pipe and found a visiting flange (blind flange) right under the ceiling in the generator room situated under the fuel oil separator room.

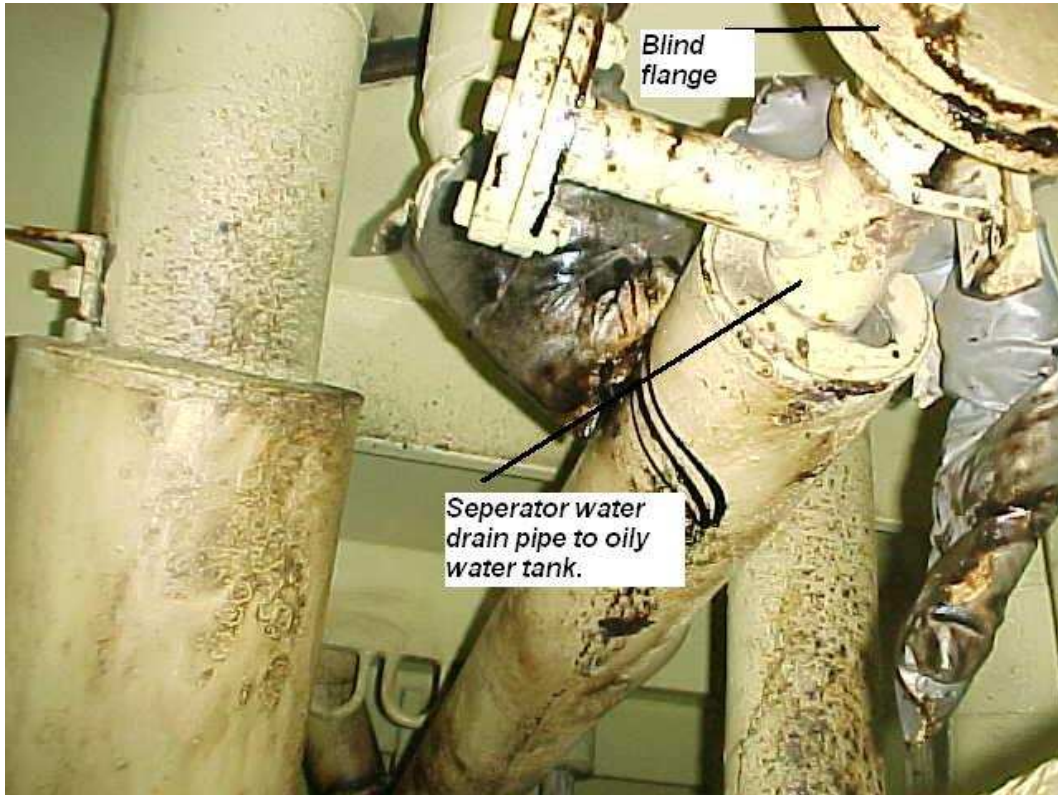


Photo: chief engineer, m/v SORØ MÆRSK



Photo: chief engineer, m/v SORØ MÆRSK

Together with the 2<sup>nd</sup> engineer, it was decided to dismantle the flange in order to obtain a better position for cleaning the pipe. The 4<sup>th</sup> engineer made a draining system from a funnel, a ¾" plastic hose and a 200 litres drum in order not to make mess and proceeded dismantling the flange.

The 4<sup>th</sup> engineer loosened the four bolts of the flange, bit by bit, until nothing came out of the pipe. That slowly draining of the pipe took about 15 minutes.

After that, he was able to dismantle completely the flange. I took a look inside the flange and saw that the pipe was almost 90 % clogged from its diameter (the pipe is horizontal in that position – generator room).

After maximum 10 seconds, the sludge inside burst out and hit the engineer all over. It was between 1300 and 1330.

The engineer was scalded in his face, on his neck, arms, and hands, thighs, fore-legs, ankles and feet. He hurried to his cabin to shower and cool the burnt surfaces and clean the skin from oil with soap. At 1405 hours, he called the chief officer for help stating he was in severe pain due to the scalding/burns.

The chief officer hurried to the 4<sup>th</sup> engineer's cabin. On his way he met the master who was notified about the incident.

The 4<sup>th</sup> engineer was transferred to the ship's hospital where he was put in the bath tub and cooling with cold water was continued. The engineer received first aid and treatment for his burns and to prevent chock.

Radio Medical recommended evacuation, so the injured engineer was taken to hospital on Okinawa by helicopter from Japan Coast Guard.

At 1826, the evacuation was completed and the vessel resumed the voyage to Yokohama.

### **Others**

After the accident, 2<sup>nd</sup> engineer refitted the blind flange on the drain pipe without problems. The pipe was then without pressure.

### **Analysis and conclusions**

The 4<sup>th</sup> engineer was hit and scalded by steam, hot water and oil streaming out from the pipe after manipulating an obstruction in the pipe with a wire.

A steam pressure had obviously been building up in the pipe.

It seems like there were two obstructions in the drain pipe, and in the confined space between the obstructions water and oil was heated by the steam tracing, thus creating steam pressure.

It was not expected that steam pressure could build up inside the pipe, because it was a drain pipe leading to an open tank.

Working with the drain pipe was not considered risky at all.

On board the ship there was no focus on the risk by working on a steam tracing heated pipe conveying water.

The ship has a work risk assessment (safe job analysis) on computer. However, at the time of this incident it was not covering work on steam heated pipes.

Work risk assessment was not used on board as an active tool for mapping the risk areas in the engine room.

## **Initiatives**

On 10 November 2008 an extraordinary safety committee meeting was held on board to evaluate on the accident in question:

*The accident area was investigated by the safety committee without finding any defects.*

*It was stated, that the accident was caused by a blocked drain pipe and pipe under unexpected pressure.*

*All personnel should consider what can go wrong when carrying out certain tasks and bear in mind to be cautious and seek assistance if needed.*

*A safety sign has been made and placed in the accident area.*

(Abridged by the Investigation Division)

Furthermore the shipping company has informed that the risk management procedure has been changed to incorporate working on piping with heat tracing throughout.

## **Recommendations**

1. The Investigation Division recommends that the shipping company ensures that the work risk assessments on board are used by the relevant crew to map the risk areas in the engine room.
2. The Investigation Division recommends the shipping company that the risk assessments are being updated and dealt with by the relevant crew members.