Report on the investigation of the death of a crewmember after falling down a pumproom hatch on the motor tanker *INGA* at Pembroke on 7 July 2000

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The Merchant Shipping

(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 AND ACRONYMS

BST	British Summer Time
cm	centimetres
m	metres
MAIB	Marine Accident Investigation Branch
VHF	Very High Frequency radio

SYNOPSIS

At 1437 BST on 7 July 2000, the MAIB was informed of a serious injury to a crewmember on board the Liberian oil tanker *Inga* while alongside Texaco No 2 berth at Pembroke, Milford Haven.

The MAIB was later informed that the crewmember had been pronounced dead. Two inspectors were despatched to the scene that afternoon and an investigation began.

The incident occurred while the vessel was berthing after a short period at anchor. The deceased was one of the vessel's two pumpmen, and was noticed to be missing from his mooring station by the manifold.

After a brief search, his body was discovered lying on the bottom plates of the pumproom directly below an unguarded hatch. It was quickly realised he was badly injured; shore paramedics were called for and he was declared dead at 1530.

The pumproom hatch was found to have been kept open by the crew as a regular practice when at sea. This was to assist with ventilation, heat and lighting of the space. Only one pumproom fan was fitted; without this fan running the cargo pumps could not be started. The opening of the hatch effectively reduced the running hours of the fan.

There were no eyewitnesses to the pumpman falling down the hatch, but it is believed that he sat on the lip of the hatch to examine a blister on his foot and overbalanced.

Safety recommendations have been made to the owner concerning guarding the hatch when it is open, and keeping it closed, except when used for its designed purpose.

PARTICULARS OF *INGA* AND ACCIDENT

Vessel details

Registered owner	:	Clipstone Navigation
Manager	:	Latmar Columbia
Port of registry	:	Monrovia
Flag	:	Liberia
Type	:	Oil Tanker
Built	:	1990
Classification society	:	Det Norkse Veritas
Length overall	:	178.96m
Gross tonnage	:	18,625

Accident details

Time and date	:	Between 1300 and 1420 BST 7 July 2000
Location of incident	:	While berthing at No 2 berth Texaco refinery Milford Haven
Persons on board	:	24
Injuries/fatalities	:	1 fatality

SECTION 1 - FACTUAL INFORMATION

1.1 Background

The Liberian oil tanker *Inga* was built in 1990 and regularly traded in North Europe. She had 14 cargo tanks and carried oil products. The vessel had a cargo pumproom immediately forward of the accommodation, a conventional design for an oil tanker. She had four cargo pumps situated in the pumproom which were used for the cargo discharge.

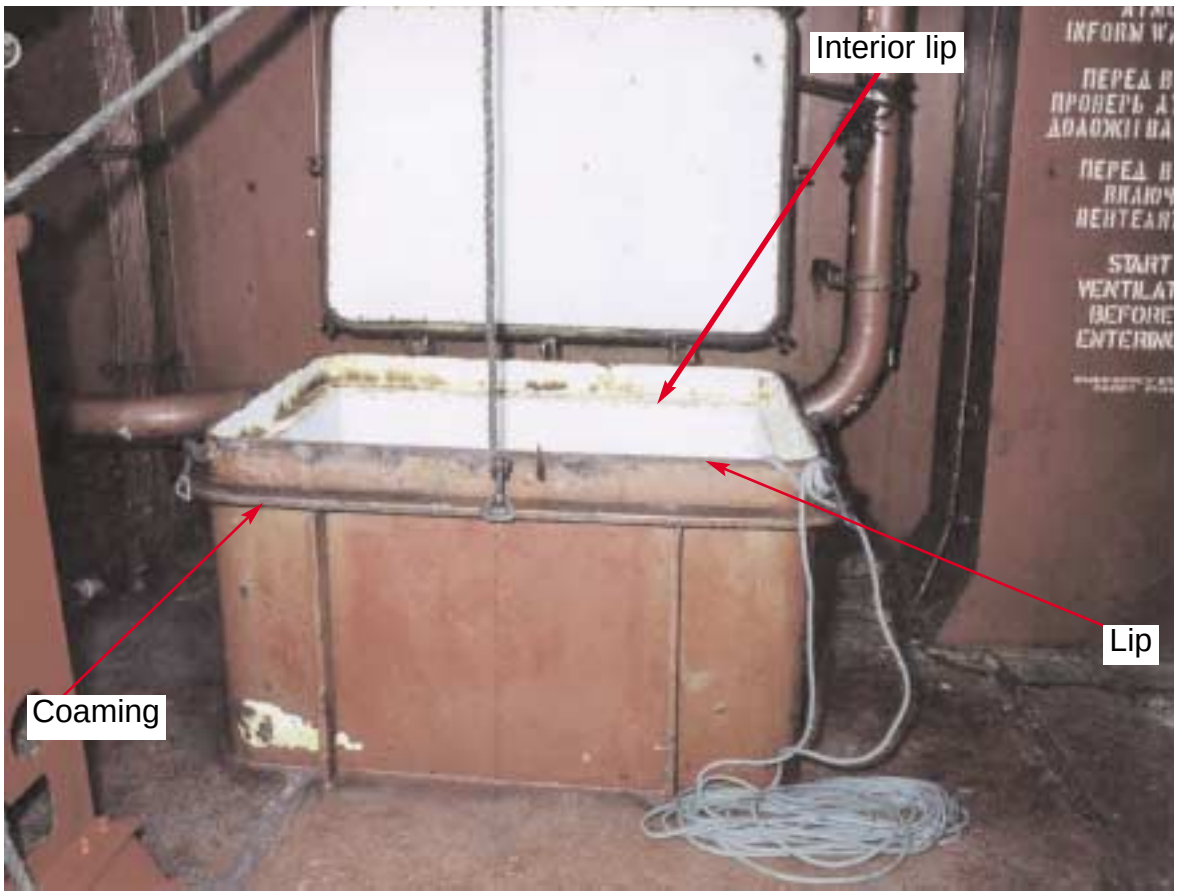
The vessel's manager was Latmar Columbia, and the operator was Columbia Ship Management. She was a hard working vessel, normally spending no more than a day in port loading or discharging with, typically, only a few days spent at sea between ports.

Inga had instructions from her charterer to discharge her cargo of vacuum gas oil loaded in Gothenburg, Sweden, at the Texaco refinery Pembroke. This refinery is situated within Milford Haven, a major oil port equipped with oil terminals for deep-draught ships serving several refineries. The Texaco refinery lies on the south side of the Haven, opposite Milford Haven. Her berth was No 2 berth, situated on the east of the refinery's two jetties.

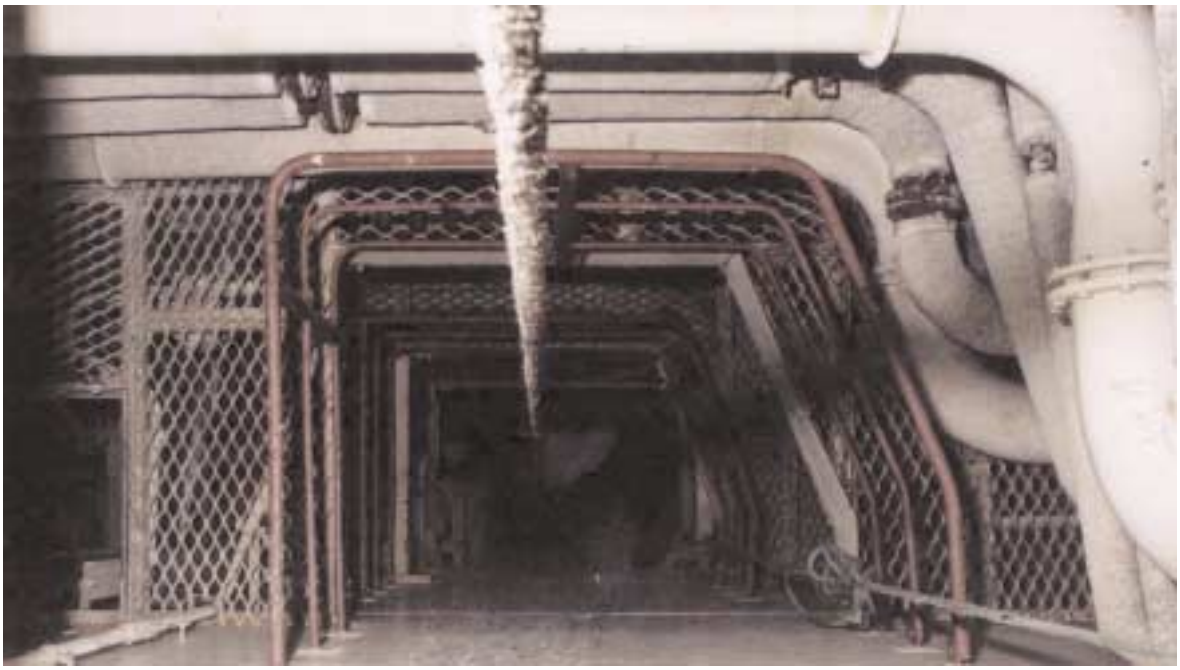
1.2 The pumproom

An electrical interface prevented the pumproom lighting from operating until 15 minutes after the fans were switched on. This, therefore, discouraged the crew from entering if it was not sufficiently ventilated. There was only one pumproom fan fitted, which was required to be running not only for the lighting to operate, but also for the cargo pumps to be started. Without this fan and the engine room fan running, there was an electrical interface which prevented the cargo pumps from starting. The lighting and ventilation for the pumproom were operated from the cargo control room.

The pumproom hatch was just to port of the centreline, and immediately forward of the accommodation. It measured 1.0m x 1.4m and was designed for raising and lowering machinery and equipment to and from the pumproom. A small davit was located on the deck by the forward starboard side of the hatch, for use in lowering and raising equipment, and also for opening and closing the hatch lid. A rope was used to keep the hatch lashed open. The hatch had no ladder fitted, but did have a small lip, 7cm wide and 11cm below the lip on top of the coaming, running around the interior. The distance from the main deck to the pumproom bottom plates was 13.7m. It was a straight drop with no obstructions.



Pumproom hatch looking from forward



View down pumproom hatch looking from forward side

It had been the practice on this vessel to keep the hatch open, weather permitting, to assist with the ventilation, lighting and temperature of the pumproom. In port the hatch was kept closed to comply with port regulations concerning the closing of hatches, doors and ports during cargo operations. There were hydrocarbon detectors in the pumproom connected to an alarm system. These detectors were calibrated monthly, and had not been known to alarm in recent months before the accident.

1.3 The crew

The vessel had 24 crew on board on 7 July; all were of Latvian nationality with the exception of one Ukrainian motorman. The normal crew complement was 22. However, at the time of the accident two crew members from the crew change made in Gothenburg on 1 July remained for handover purposes. They were due to leave the vessel later on the day of the accident. The vessel's two crews worked a 4 months on 4 months off rotation, and most had had at least two years experience on Inga.

The vessel carried two pumpmen, responsible for maintaining and operating the cargo machinery and valves (both on deck and in the pumproom). One pumpman was always on duty while the vessel was alongside, because of the frequency of valve and pump operations. During berthing one assisted with the mooring operations aft, while the other stood by the manifold amidships and communicated the vessel’s position in relation to the shore, discharging arms to the bridge to line up the vessel correctly. At sea the pumpman normally worked from 0800 to 1700, while in port they shared an 8 hours on 8 hours off routine.

The deceased was the older and more experienced of the two pumpmen and had, like most of the rest of the crew, joined the vessel the week before in Gothenburg. He was, however, new to *Inga* but had served several times on her sister vessel. He was 51 years old, and had been a pumpman for 8 years. He had a second engineer’s licence and had previously served as an engineer officer. He was a quiet man, unfamiliar to the majority of the crew, but was in good spirits and did not appear to be depressed or experiencing any personal problems. There was no evidence of drug/alcohol involvement, and he had worked a total of 6 hours in two spells on the day of the incident, having finished working at 1700 on the day before. He had a current medical certificate, and was apparently in good health. He had, however, recently complained to at least two crew members about a blister on the base of his left foot.

1.4 Environmental conditions

During the passage on the day in question the weather conditions were good, overcast but dry; there was a fresh northerly wind but no unusual vessel motion.

1.5 Narrative of events

Inga loaded a full cargo of 26,747 tonnes of vacuum gas oil in Gothenburg, Sweden, and departed on 3 July 2000. The vessel anchored off Milford Haven at 1350 BST on 6 July, as the berth was occupied by another vessel. The pilot boarded at 1215 the next day for the passage to No 2 berth at the Texaco refinery, Pembroke. The passage normally took about 1.5 hours from the anchorage to the berth.

At 1300 both pumpmen were sitting in the messroom smoking when the crew were called to stations in preparation for mooring. They then left the messroom and proceeded to their respective mooring stations of aft (junior) and amidships (senior pumpman).

Two tugs were made fast at 1318. The junior pumpman made the aft tug fast and then had a few minutes to spare before berthing. He proceeded amidships, with the intention of assisting the senior pumpman fit the cargo reducers on to the manifold in preparation for discharge. He was surprised not to see the pumpman there, and assumed he had gone back inside the accommodation for a smoke. He did, however, notice his keys and hand-held radio lying on the deck by the manifold. After a few minutes, he returned to the stern for mooring.

The master and chief officer, who were both on the bridge, realised, just prior to berthing, the senior pumpman was not standing by the manifold. Using the hand-held VHFs and the public address system (which can be heard on deck), they attempted to instruct him to contact the bridge. They received no response, and *Inga* berthed without the pumpman at the manifold.

The first line was sent ashore at 1350. A fresh onshore breeze was blowing and the pilot engaged the two tugs pulling the vessel during berthing in order to land gently on to the berth. The vessel was all fast at 1420, starboard side to No 2 berth.

The junior pumpman returned to the manifold, having completed his mooring duties aft at 1410. He found the reducers as he had left them, with no sign of the other pumpman. He asked the chief officer by radio if he had seen his colleague, and was instructed to look for him. He went to the accommodation and looked in the pumpman’s cabin, the toilets and the messroom, but he was not there. He returned to the deck and noticed a pair of gloves neatly folded one on top of the other and a left boot, by the pumproom hatch. He looked into

the pumproom through the hatch and saw the senior pumpman's body lying on the bottom plates. This was at the all-fast time of 1420.

The general alarm was sounded, announcements made to the ship's crew, and the emergency party and first-aid party were mustered and went straight to the pumproom hatch. The ventilation was started and, after a brief consultation about the possibility of oxygen deficiency and/or toxic fumes being present, the chief officer, second officer and chief engineer went into the pumproom with hand-held torches and checked the body for signs of life. A pulse could not be found. A brief attempt at resuscitation was made, but it was soon realised that the pumpman was dead. It was decided not to move the body, and to await the shore paramedics and authorities.

The deceased was wearing a blue boiler suit. He had his right safety boot on, and both socks. His red safety helmet was lying next to him.

At 1425 Milford Haven port control was contacted, and shore paramedics requested to attend. An ambulance arrived at the vessel at 1454, followed by a doctor. Death was confirmed at 1530.

The body was removed later that evening, and the area around the pumproom was initially sealed off pending a police investigation.

The postmortem showed that the deceased had died from multiple injuries.

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 occurring in the future.

2.2 Pumproom hatch

It was accepted that the pumproom hatch was opened as a standard practice at sea to assist with the ventilation, lighting and temperature control of the pumproom. The fan appears to have been run only whenever personnel were working in the pumproom.

The pumproom fan was of prime commercial importance to the vessel as she could not discharge without it. The restriction in its running time can be said to be commercially-driven.

It is unusual for there to be only one pumproom fan on a tanker, meaning no built-in redundancy in the event of failure.

The hatch was designed for raising and lowering machinery and equipment to and from the pumproom. It was not designed with the intention of it being open for ventilation or other purposes, all the time the vessel was at sea.

None of the crew can recall there ever having been a cover plate fitted, despite the presence of the lip running around the hatch interior.

There were no company instructions which specifically related to the opening and closing of this hatch.

The crew normally closed the hatch during heavy rain and bad weather. However, it is unseamanlike to open, at sea, a non-watertight opening on a tanker's main deck, given its low freeboard when loaded.

This hatch should, therefore, only have been opened for the purpose for which it was designed, namely to transfer equipment and machinery to and from the pumproom. It should have been kept closed at all other times. If this had been the case, then the hatch would not have been opened for arrival Pembroke, and this incident would not have occurred.

2.3 Circumstances of the fall

Nobody saw the deceased falling into the pumproom hatch. The last definite sighting of him was at 1300 as he left the mess room to go on stand-by for berthing. His body was discovered at 1420. In the 80 minutes between these times he was first looked for at about 1320 after the aft tug was made fast, before berthing, when the second pumpman went to the manifold to assist him in fitting the reducers.

He was not by the manifold at that time, and does not appear to have returned before berthing. He had, however, been to the manifold before 1320 to place his radio and keys there. It would have taken about 2 to 3 minutes to walk there from the mess room and back to the pumproom hatch. It is concluded therefore that the most likely time of his falling down the pumproom hatch was between 1303 and 1320. He had, therefore, probably been lying on the bottom plates of the pumproom for at least one hour before being discovered.

Why the pumpman came to fall can only be speculated. Suicide does not seem likely, as he was known to be in good spirits and not depressed. Drugs, alcohol and fatigue do not appear to have had any contribution to his death.

There is no reason to suggest that the deceased was standing or leaning on the hatch or looking down into the pumproom. It is possible he was considering closing the hatch. However, because of the weight of the lid, this was not normally done alone.

He had recently complained about having a blister on the base of his left foot, and his left boot and both gloves were found on the deck by the hatch. It is therefore likely that he had sat on the lip or the coaming of the hatch, and taken his boot off to examine his blister. His left sock had not been removed when the body was discovered. If he had sat directly on the lip of the hatch, and not the coaming, a small shift in balance of his body weight would have been enough to have caused him to fall into the hatch. Had he sat on the hatch coaming, then the base of his back would have been resting against the vertical part of the hatch between the coaming and the top. Overbalancing and falling into the hatch from this position would have been more difficult and unlikely.

It is therefore assumed that the deceased sat on the lip of the hatch to examine his left foot and overbalanced, possibly while about to remove his left sock, and fell into the pumproom. If the deceased did sit on the lip of the hatch this was unwise and unsafe.

SECTION 3 - CONCLUSIONS

3.1 Findings

1. The pumpman's body was discovered at 1420 BST on 7 July 2000 while *Inga* was alongside No 2 berth Texaco Refinery, Pembroke. [1.5]

2. The pumpman was last seen alive at 1300 the same day. [1.5]

3. The pumproom hatch was kept open at sea except in adverse weather conditions, to assist with ventilation, and control of heat and light. [1.2, 2.2]

4. The opening of the hatch allowed the pumproom fan to be operated with minimum running hours. [1.2, 2.2]

5. If the pumproom fan failed, the vessel was not able to discharge. [1.2, 2.2]

6. When the hatch was opened no cover was fitted. [2.2]

7. The deceased was suffering from a blister on his left foot. [1.3, 2.3]

8. The deceased had removed his left boot and both gloves, and had placed them on the deck by the pumproom hatch. [1.5,2.3]

9. No adverse or sudden movements of the vessel were experienced during the time from the pilot boarding to all fast. [1.4]

3.2 Cause

The most probable cause of the accident was the deceased removing his boot to examine the blister on his left foot, sitting on the lip of the hatch and overbalancing.

Contributory factors

1. The pumpman's assumed action of sitting on the lip of the hatch was unwise and unsafe.

2. The lack of a cover over the hatch when it was open.

3. The practice of opening the hatch at sea for a purpose other than for which it was designed.

4. The ventilation, lighting and temperature within the pumproom, which made the opening of the hatch at sea necessary.

5. The restriction in running hours of the fan to increase its operational life.

6. The provision of only one pumproom fan.

SECTION 4 - RECOMMENDATIONS

***Inga*'s owner, Clipstone Navigation** is recommended to:

1. Ensure the pumproom hatch on board *Inga* is guarded when open. A simple grating/cover plate on the interior lip would suffice.

2. Review and implement onboard procedures to remove the necessity for this hatch to be opened except for the purpose for which it was designed.

Marine Accident Investigation Branch
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