



Investigation report

B3/2008M

M/S LEMO, fire in the galley of the vessel off Kotka on 22.11.2008

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.

Onnettomuustutkintakeskus
Centralen för undersökning av olyckor
Accident Investigation Board

Osoite / Address: Sörnäisten rantatie 33 C **Address:** Sörnäs strandväg 33 C
FIN-00500 HELSINKI 00500 HELSINGFORS

Puhelin / Telefon: (09) 1606 7643
Telephone: +358 9 1606 7643

Fax: (09) 1606 7811
Fax: +358 9 1606 7811

Sähköposti: onnettomuustutkinta@om.fi tai etunimi.sukunimi@om.fi
E-post: onnettomuustutkinta@om.fi eller förnamn.släktnamn@om.fi
Email: onnettomuustutkinta@om.fi or first name.last name@om.fi

Internet: www.onnettomuustutkinta.fi

Henkilöstö / Personal / Personnel:

Johtaja / Direktör / Director Tuomo Karppinen

Hallintopäällikkö / Förvaltningsdirektör / Administrative Director Pirjo Valkama-Joutsen
Osastosihteeri / Avdelningssekreterare / Assistant Sini Järvi
Toimistosihteeri / Byråsekreterare / Assistant Leena Leskelä

Ilmailuonnettomuudet / Flygolyckor / Aviation accidents

Johtava tutkija / Ledande utredare / Chief Air Accident Investigator Hannu Melaranta
(Leave of Absence)
Substitute Markus Bergman
Tii-Maria Siitonen

Erikoistutkija / Utredare / Air Accident Investigator

Raideliikenneonnettomuudet / Spårtrafikolyckor / Rail accidents

Johtava tutkija / Ledande utredare / Chief Rail Accident Investigator Esko Värttiö
Erikoistutkija / Utredare / Rail Accident Investigator Reijo Mynttinen

Vesiliikenneonnettomuudet / Sjöfartsolyckor / Marine accidents

Johtava tutkija / Ledande utredare / Chief Marine Accident Investigator Martti Heikkilä
Erikoistutkija / Utredare / Marine Accident Investigator Risto Repo

Käännös / Översättning / Translation

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SUMMARY

M/S LEMO, FIRE IN THE GALLEY OF THE VESSEL OFF KOTKA 22.11.2008

The M/S LEMO, sailing under the flag of St Vincent and Grenadines, was arriving in the Kotka Mussalo harbour on the morning of 22.11.2008 from Poland with a cargo of lime. When the vessel was less than three nautical miles from its berthing place, a fire alarm was given due to a fire in the galley at about 05:10.

Shortly after the discovery of the fire the pilot informed the VTS centre about the fire and they passed the information on, and thus at about 05:11 the Maritime Rescue Sub-Centre (MRSC) in Helsinki knew about the fire. The ship's crew had been woken up before the fire alarm to prepare the ship for berthing in the harbour so it was possible to send an investigation team immediately to check on the location of the fire. Once it was confirmed that it was in the galley, a group began initial fire fighting using hand extinguishers through a broken window of the galley, and it was decided to anchor the ship because of the amount of smoke that was being produced. Once they had received the information, MRSC had asked to send a pump crew from Kotka to the ship to extinguish the fire.

The pump crew from the Kotka fire and rescue service was transported to the vessel in a coast-guard patrol vessel and it they were at the scene of the fire at about 05:58. In less than an hour after this the fire on the vessel was under control and damping down operations and clearing up of the burned areas was begun. A three-man pump crew who had arrived from Helsinki by helicopter at about 06:55 also took part in this work.

About half an hour before the pump crew from Helsinki arrived, at about 06:20, the tug JANET from Kotka had been attached to the side of the M/S LEMO, and the pump crew from the Kotka fire and rescue service used its fire pump when extinguishing the fire in the galley. This powerful pump made sure there was sufficient working pressure in the fire hose.

At 07:12 the fire was extinguished and ventilation of the smoke had started. After this the vessel was towed to the Mussalo harbour quayside.

Serious personal injury was avoided. Only the chief engineer of the vessel had inhaled smoke when leaving his cabin after the fire had started. The cabin was located above the galley. He was taken to Kotka Central Hospital for examination.

During the investigation it was confirmed that it is possible to launch the rescue service quickly and that the arrival of external professional help on the ship was achieved without any special delay which, in this particular case, was helped by the fact that the position of the vessel at the time of the incident was near the harbour.

**ABBREVIATIONS USED**

AIB	Accident Investigation Board
CO ₂	Carbon dioxide
IMO	International Maritime Organisation
MRSC	Maritime Rescue Sub-Centre
M/S	Motor ship
PV	Patrol boat
P4	Duty manager
STCW	Seafarer's Training, Certification and Watchkeeping Code
VTS	Vessel traffic service



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FOREWORD

M/S LEMO was on a voyage from Gdansk in Poland to the deep water harbour of Kotka in Finland, when on 22.11.2008 at 05:10 when the vessel was already off the destination port, a fire alarm was given on the bridge indicating a fire on the vessel. The fire was confirmed as having broken out in the ship's galley. Immediately after this, the vessel was turned to the side, out of the fairway and anchored, after which the crew began to extinguish the fire and the VTS centre was informed of the situation.

The Accident Investigation Board received information about the incident the same morning, after which, once the vessel had been towed to the Mussalo deep water harbour, Marine Accident Investigator Risto **Repo** boarded the vessel to assess the damage caused by the fire.

The Accident Investigation Board decided to carry out an investigation into the case and established a commission of enquiry on 18.12.2008 to investigate the accident. Master Mariner Toimi **Sivuranta** was appointed chairman of the commission of enquiry and Marine Accident Investigator Risto Repo was appointed as a member. Ville **Grönvall**, MSc. (Tech.) was appointed as expert to the commission of enquiry. The investigation report has been translated into English by Lingsoft Translations.

The final draft of the report was sent for possible comments to Finnish Transport Agency, to the Owner of the ship and Master of the ship and to the Kymenlaakso Rescue Department.

The material used in the investigation is stored at the Accident Investigation Board Finland.



Picture 1. M/S LEMO in Mussalo harbour a few days after the accident.

1 EVENTS AND INVESTIGATIONS

1.1 Vessel



Picture 2. M/S LEMO

(© Aleks Lindström)

1.1.1 General information

Vessel name	LEMO
Type of vessel	Cargo vessel
Nationality (Flag)	St Vincent and Grenadines
Owner	Boro Shipping Ltd
IMO number	7902611
Radio call sign	J8B2761
Year of construction	1980
Place of construction	Uusikaupunki, Finland
Gross	2050
Length	79.00 m
Beam	12.60 m
Draught	5.43 m
Speed	12.3 m
Engine power	1839 kW
Deadweight	3085
Class	KM * L1 AUT2

1.1.2 Crew

Role on the vessel	Crew at the incident
Master	1
Mates	2
Chief Engineer	1
First Engineer	1
Deck hands	3
Engineer	1
Other personnel	1

In the case of an incident, for example a fire, every member of the crew is assigned their own role in the ship's emergency plan. The chief engineer is normally the fire chief.

The STCW defines the minimum level of fire fighting training for ships' personnel. Training is to be arranged for all personnel and the length of training in the Finnish training system is two days for crew level (A-VI/1-2), during which participants practice extinguishing different types of fire using various extinguishing methods. The fire fighting training for ships officers (A-VI/3) is more extensive. It lasts three (3) days and includes such things as fire extinguishing exercises in different parts of the ship (cabins, engine room etc.) using compressed air breathing apparatus while fire fighting. The training also includes management and organisation of fire fighting tasks.

There is also special training for ships' fire chiefs which lasts about two weeks.

1.1.3 The bridge and its equipment

In addition to the equipment for normal navigation, the fire safety equipment on the bridge includes a fire alarm panel which indicates the location of a fire both with lights and an audible alarm.



Picture 3. The bridge

1.1.4 Fire safety systems

The vessel has a fire safety system that complies with regulations which is made up of pumps that use seawater as an extinguishing agent, pipe work and hoses with nozzles, mobile extinguishing equipment and diagrams showing the fire fighting system. The engine room is equipped with a fixed CO₂ system.

1.1.5 Cargo

The vessel's cargo was 2,757 tonnes of lime. The loading port was Gdansk in Poland.

1.2 The accident

1.2.1 Weather conditions

The prevailing wind in the area of the accident was east north east at about 8 m/s and visibility was fair.

1.2.2 The voyage before the accident

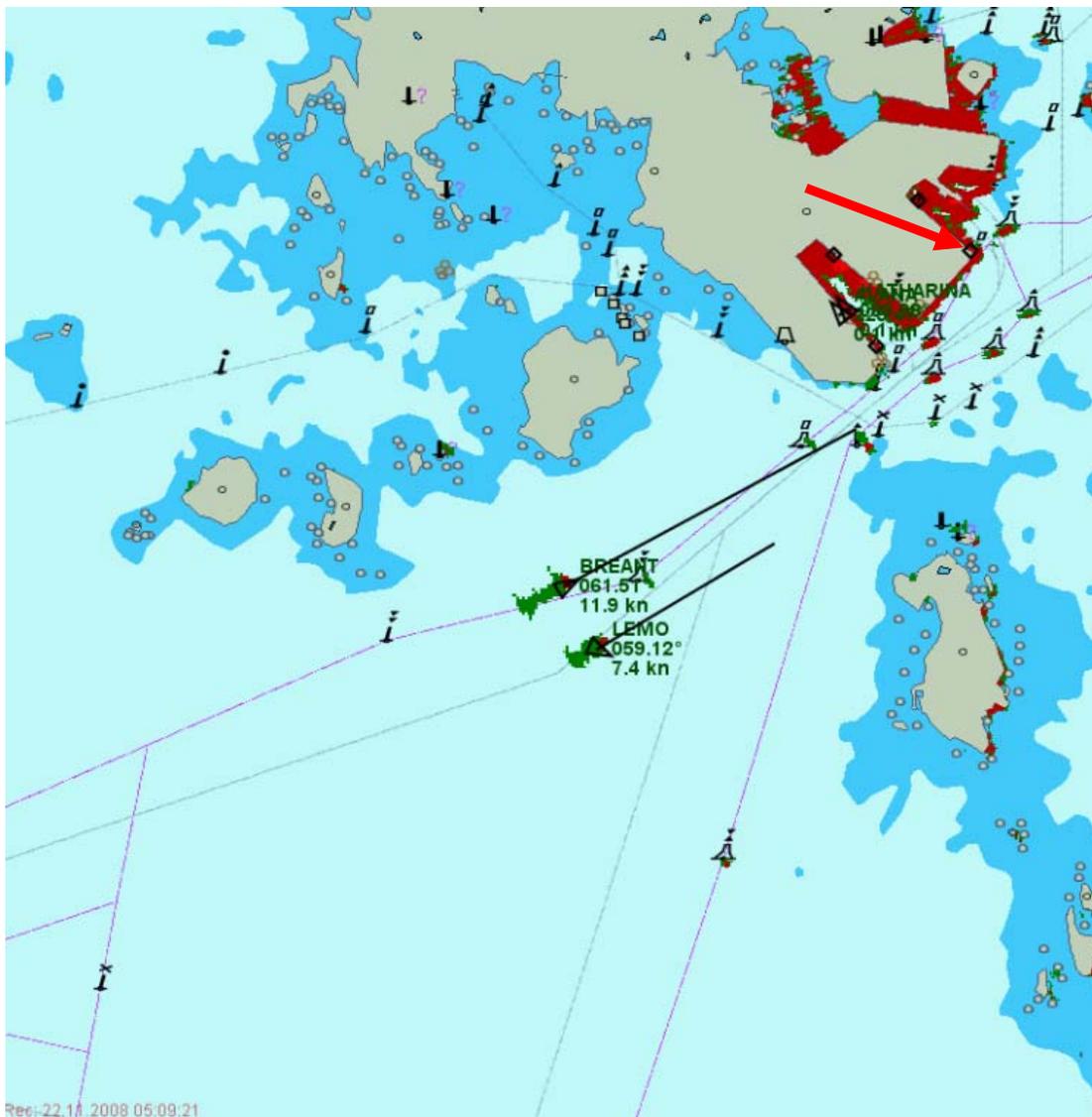
M/S LEMO left the port of Gdansk in Poland with a cargo of lime on 19.11.2008, at 13:50 local time, on a voyage to Finland and the port of Kotka.

The vessel took a pilot at the Tainio lighthouse on 22.11.2008 at 02:55 and the voyage continued following the 10.0 metre fairway towards the harbour of Mussalo. It is customary to offer the pilot coffee during pilotage, so after midnight the ship's cook had got the coffee ready in the galley. According to the maritime declaration, this was the last event in the galley before the fire started.

As the vessel was approaching Kotka's Mussalo deep harbour on 22.11.2008 at 05:10, the vessel's fire alarm system was triggered indicating a fire.

1.2.3 Location of the incident

The vessel's position when the alarm sounded was about 60°24,10 N, 026°52,80' E (Picture 4.). The distance to the harbour from here was about 2.6 nautical miles.



Picture 4. Fire alarm incident position at about 05:10. The red arrow indicates the LEMO's destination. (Source: Finnish Transport Agency - maritime sector, VTS-registration, Gulf of Finland Sea Traffic Centre)



Picture 5. The LEMO's position after anchoring at about 05:18. The MS BREANT followed the LEMO to offer assistance should the situation require it. (Source: Finnish Transport Agency - maritime sector, VTS-registration, Gulf of Finland Sea Traffic Centre)

1.2.4 Fire, fire fighting and alarm measures

When the fire alarm was triggered the vessel was already close to the harbour and the crew had been woken to prepare to fasten the vessel to the quayside. When the fire alarm was given, the personnel were also immediately ready to act to confirm the location of the fire and start the initial fire fighting. None of the personnel had noticed anything unusual after waking up. The ship's chief engineer had probably woken up after the alarm was given and left, lightly dressed, to try to get from his cabin to outside areas, though areas already filled with smoke.

Fire fighting and alarm measures taken are listed on the following page in Table 1.

Table 1. *Actions related to the incident in table form. The information in the table is based on hearings, the maritime declaration and register information from different authorities.*

Time	Measures taken
05:10	The fire alarm panel on the bridge (bells, lights) gave an alarm of a fire on the vessel and the Master sent an investigation team to confirm the cause of the alarm and to check the location and afterwards went himself with two of the ship's crew to investigate the situation. Smoke began to come onto the bridge.
05:10	The pilot informed the VTS centre of the fire saying that the fire was in the engine room and began to turn the ship out of the fairway to anchor it.
05:11	The Maritime Rescue Sub-Centre (MRSC) in Helsinki received the information about a fire in the engine of a vessel named LEMO off Mussalo and communicated it further to the Emergency Response Centre of South East Finland and asked them to send a fire vessel to the location.
05:14	Through the Emergency Response Centre of South East Finland, the MRSC alerted the rescue service units and the Kotka coastguard patrols.
05:15	The vessel's ventilation system was shut down, the Master informed the shipping company about what had happened. The vessel was anchored and the personnel who were prepared for the initial fire fighting got to work immediately it had been confirmed that the fire was in the galley.
05:18	The pilot announced that the vessel was anchored and that it was not possible to be in the internal areas on the bridge because of the thick smoke. VTS acknowledged this and informed the pilot that a fire fighting team had been alerted and a helicopter. Initial fire fighting was begun using hand extinguishers through a broken galley window.
05:23	VTS informed the maritime traffic inspector about the fire.
05:24	MRSC telephoned the Helsinki Duty Manager and requested a fire fighting team to be sent with the helicopter to the Kotka foreshore. The three man team began to prepare to leave from Malmi.
05:25	MRSC passed the information about the incident to the duty manager.
05:29	MRSC informed the helicopter pilot and the vessel's pilot that the fire fighting team were on their way.
05:30	After the vessel's crew had used 7 hand held extinguishers while fighting the fire, a water hose from the vessel's fire pipe work was used. The water spray was used to try to stop the fire spreading by cooling the firewalls in the space where the fire was.
05:31	MRSC dispatched the helicopter and the Malmi fire fighting team to the vessel.
05:34	Once the fire fighting team from the Kotka rescue service had been informed about the situation, MRSC announced that the group would arrive on a Kotka patrol boat.
05:34	MRSC passed on information about the incident to the AIB duty manager.

05:56	Coastguard patrol boat 124 arrived at the side of the vessel bringing a fire fighting team (1+4) from the Kotka fire station.
05:58	Once the fire and rescue service fire fighting team had boarded the vessel they were given initial information about the fire and familiarised themselves with the vessel's layout diagrams. According to the Master of the LEMO the fire was in the vessel's galley and one cabin. After an initial investigation the fire fighting team began to prepare to extinguish the fire, but on realising that the power of the motor atomizer they had brought with them was not sufficient to maintain a working pressure, they used a hose connected to the vessel's water fire extinguishing system and tackled the fire via the left hand door leading through the mess that was shown to them by the ship's personnel. However, there were things on the inside of the door blocking it which made it difficult to open the door and move in the space. The fire fighting team moved to the right hand side door which a heat camera showed as being at a temperature of 150 degrees.
06:05	The pilot found a man on the boat deck in indoor clothes, slippers on his feet, upset, cold and confused. He was helped into the coastguard's boat into the warm and safe away from the fire. The patient was placed in a hypothermia bag after an initial examination. It became clear later that he was the chief engineer on the vessel.
06:20	The tug JANET attached itself to the side of the LEMO at about 06:20. The fire fighting group found a work hose on the tug JANET, next to the ship, to which they fastened their own spray nozzle and attacked the fire in the galley. The fire in the galley was quickly put out.
06:30	Part of the fire fighting team stayed to ensure the fire had been extinguished and part checked the health of the vessel's personnel. The two men checked the fire was extinguished, then went on to fight the fire in the areas above the galley.
06:36	The MRSC requested and received permission from the Master of the LEMO to land firemen onto the deck from the helicopter. There was still fire in one cabin.
06:55	The helicopter landed on the deck, discharged the fire fighting team (1+2) and immediately rose into the air. The group that had just arrived carried out the cleaning up in the upper areas with the aid of a heat camera.
07:12	The fire was extinguished and smoke ventilation was started up.

1.2.5 Evacuation of the crew

The people on the vessel were not evacuated. The M/S BREANT, which remained next to the LEMO from when the fire was discovered, had voluntarily prepared for a possible evacuation, until the MRSC gave the vessel permission to continue her voyage at 05:50 and announced that if evacuation were necessary it could be carried out by the Kotka patrol boat.

The tug JANET was also ready to evacuate at the location, as was the tug VEGA which arrived at the scene a little later.

1.2.6 Measures taken after the incident

At 07:29 the tug VEGA at the scene began to tow the vessel to the Mussalo harbour at Kotka where the vessel was berthed at 08:55.

1.2.7 Personal injuries

The vessel's chief engineer had possibly been slightly poisoned through smoke inhalation. He was also cold after wandering about on deck while lightly dressed. When the pilot found him on the boat deck it was almost an hour after the fire alarm had gone off. He showed slight symptoms of infarction and chest pains. After the fire was extinguished the patient was taken by the Kotka coastguard's vessel to receive further treatment.

1.2.8 Damage to the vessel

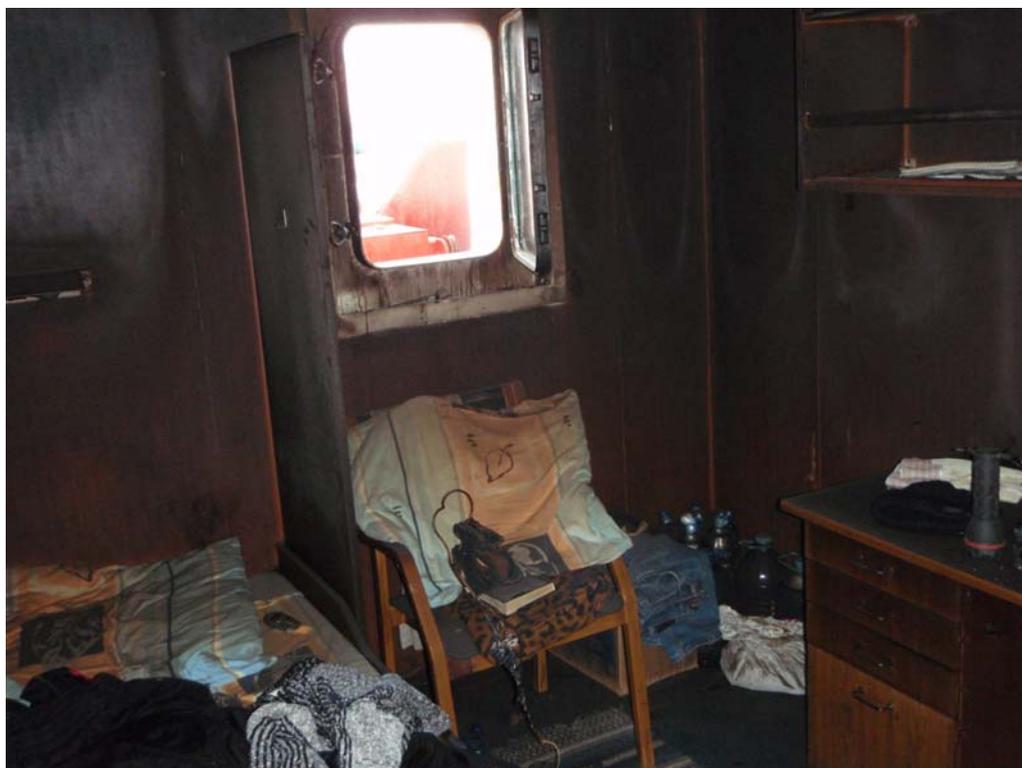
The vessel's galley, the mess and the cabins above the galley had suffered badly from the fire and heat. The surface material in these areas, electrical cables, textiles and furniture were partly burned. All of the areas around the fire site and especially the areas above it had suffered smoke damage. Picture 9 shows the location of the cabins in relation to the galley and the mess located next to the galley.



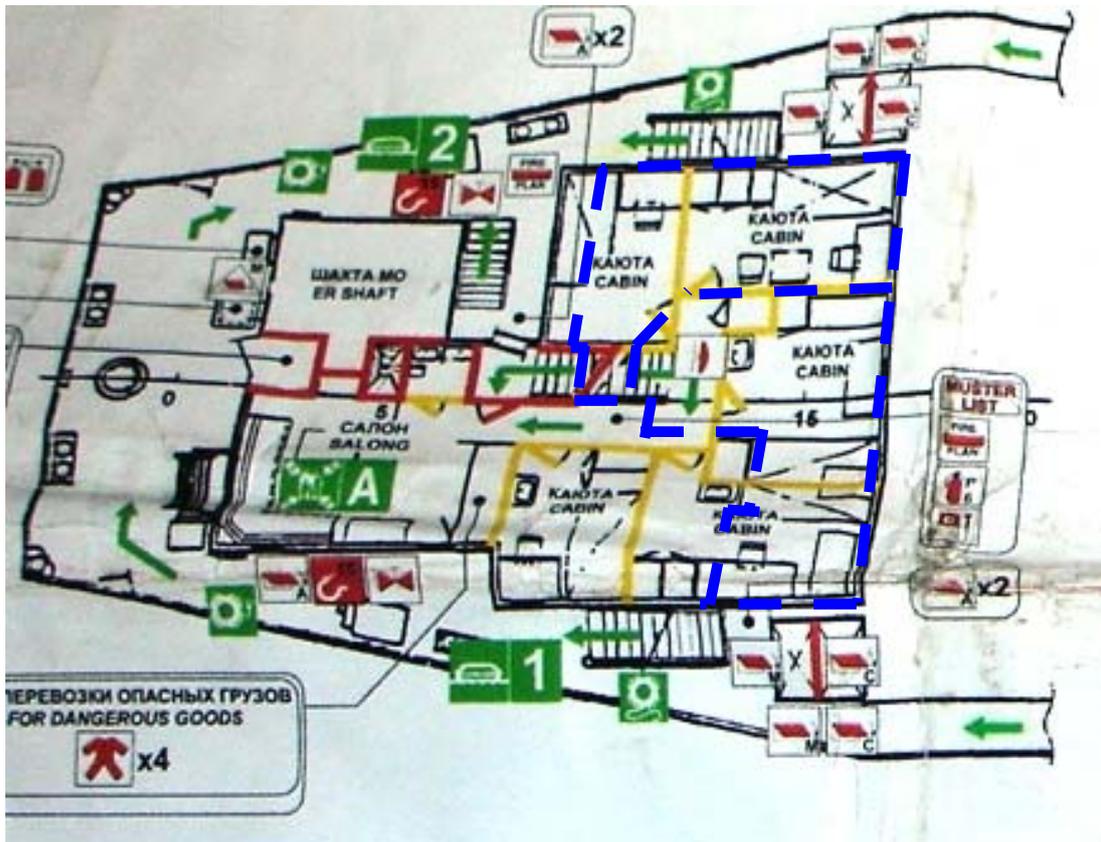
Picture 6. *The ship's galley after the fire. The galley has been cleaned up after the fire. On the right in the picture the door can be seen from where the fire service attacked the fire in the galley. The picture also shows the fire extinguishers that were totally or partly used initially.*



Picture 7. Central gangway from the cabin deck to the galley level. (Kymenlaakso fire and rescue service picture)



Picture 8. The cabin above the galley



Picture 9. Cabin areas situated above the galley and mess. The broken blue line outlines the boundaries of the galley and mess.

1.2.9 Navigation and communications equipment

There was no interference with the navigation equipment during the vessel's voyage before the fire nor while it was at anchor.

Contact was maintained initially using the VHF telephone and later by mobile phone.

1.2.10 Recording devices

The vessel did not use electrical recording of data.

1.2.11 VTS and the operation of monitoring systems

The investigators had the VTS recorded data from the time of the fire incident during the vessel's voyage. On the basis of this data the vessel's route could be determined, radio traffic and the timing of the incident, particularly the first moments of the fire.

1.3 Special investigations carried out

1.3.1 Investigations on the accident stricken vessel

In the days following the fire, representatives of the Accident Investigation Board interviewed the Master of the vessel as well as the pilot and the leader of the fire fighting team. At the same time, the areas damaged by the fire were photographed.

The police carried out an investigation on the vessel while it was berthed. According to the report, there was no evidence of a crime related to the starting of the fire. The cause of the fire was suspected to be an electrical fault.

1.3.2 Documents used in the investigation

The investigators had at their disposal the Maritime Rescue Sub-Centre list of measures taken, Kymenlaakso fire and rescue service accident report as well as the police' investigation report and the documents of the maritime declaration.

2 ANALYSIS

2.1 Cause of the fire

The investigation was not able to establish the cause of the fire. At the start of the investigation the area that was worst damaged by the fire, the galley, had been stripped out of burnt equipment, working surfaces and cupboards. Only unburned but carbonised insulation and soot covered steel firewalls were visible.

On the basis of interviews and the maritime declaration documents, the crew of the vessel identified the location of the fire as in the galley at a very early stage. They broke the windows in the galley deck structure bow firewall and through these began to empty the fire extinguishers into the starboard side of the galley area (cf picture 10 following). At this stage the glow of the flames could be seen in the galley as the smoke had not had time to obscure visibility. On this basis it was decided that the most likely starting place for the fire was the forward right hand (starboard) corner of the galley. In this part of the galley there were working surfaces and cupboards fastened to the front wall and possible sources of the fire were a coffee maker and a cooker and it was assumed that the fire started as the result of an electrical fault or overheating.

According to the maritime declaration the last event in the galley before the fire started was making coffee for the arrival of the pilot, bearing in mind that it was a little after midnight so that other electrical equipment was not known to have been used after the coffee machine. After that the men on duty in the engine room had walked by the galley at about 04:00 on their way to the engine room without noticing anything unusual. The crew of the LEMO believed that the fire was started by the coffee machine.

The second potential cause of the fire, the cooker, was situated a little further towards the centre of the ship from the coffee machine. The ship was built in 1980, so that over 29 years of use, a lot of inflammable fat had had time to build up around the cooker when food was being prepared, in spite of it being cleaned. The largest fire load was in that part of the galley which meant that the fire would spread very efficiently whether the cause of the fire was the cooker or something else. The fire service thought that the cooker was the more probably cause of the fire.

The main objectives of fire prevention on ships can be classified as follows:

1. Prevention of ignition
2. Discovery of the fire as early and reliably as possible and swift measures to start extinguishing the fire
3. Effective extinguishing of the fire and prevention of re-ignition
4. Restricting the area of the fire (fire compartments)
5. Limiting the consequences of a fire

In preventing ignition, safety attitudes are the key. A good attitude towards safety is often seen in careful execution of basic measures, such as keeping areas tidy and ensuring equipment is in good condition. However, it can be difficult to prevent ignition as the range of causes of a fire is often broad, ranging from various activities of people, to

faults in electrical equipment. Thus one cannot prepare for all causes of ignition in advance. Therefore the individual cause of a fire may not always be significant from the point of view of the safety of a vessel. On the other hand, early recognition and effective extinguishing can often be more easily influenced and they are thus key in minimising fire damage to a ship.

2.2 Analysis of the fire alarm

As the vessel was approaching Viikari sound the fire alarm was given on the bridge indicating a fire on the vessel. The Master checked the location of the fire from the fire alarm table on the bridge. There was evidently some uncertainty as to the location of the fire once the alarm had been given, possibly as the result of the interpretation of the information provided by the fire alarm on the bridge. According to the pilot, the Master announced that the location of the fire was the engine room, and the pilot passed this information to the VTS centre when he informed them about the fire. The Master sent an investigation team to check the location of the fire. The location of the fire was not certain until the investigation team had seen through the window that the fire was in the galley located on the level of the main deck.

Smoke had already begun to come onto the bridge and it was decided to anchor the vessel as quickly as possible, even though the destination port was very close, so the pilot started to turn the vessel out of the fairway. This was a good solution as fire on ships generally plays a role in secondary accidents: the consequences of a fire either cause a new accident or the fire is started as a consequence of the actual accident. If the vessel had continued its voyage towards the harbour after the fire alarm, after about ten minutes it would have been in the narrows of Viikari sound where stopping and anchoring could easily have resulted in being driven to the side from the fairway and thus into danger of running onto rocks.

At the time of the fire alarm the vessel was approaching the harbour and the crew were preparing to berth the ship. Thus they were also quickly ready to start to fight the fire.

The fire chief, as identified by the vessel's emergency plan, did not take a management role in fighting the fire at any stage. He had inhaled smoke after waking in his cabin after the alarm had gone off and had to walk from there to the outside though smoke filled areas and lightly dressed. Once he arrived outside he was in quite a confused state. The pilot found him outside in the cold about 55 minutes after the alarm had gone off. On this basis, after the alarm had been given, there was not sufficient attention paid on the vessel to ensuring that all the members of the crew had got out safely from internal areas.

2.3 Analysis of the initial fire fighting

The ventilation system was shut down down when the vessel was anchored. The crew started to fight the fire through a broken window in the firewall on the bow side of the galley using powder and CO₂ hand held fire extinguishers. The Master took part in fighting the fire. When the hand held extinguishers (7) were empty, the attempt to extinguish the fire was continued by spraying water into the galley through the broken window with

the ship's fire hose. The actual place where the fire pocket was could not be defined exactly. This was possibly caused by the generation of smoke and also by the location of the place the fire was found in, as there was no direct line of vision to the fire. The place of the fire could only be seen from the glow of flames on the starboard side of the galley. Therefore the extinguishers were emptied into the galley space more or less randomly as was the water used after this.

The probable place where the fire started was in the right hand forward corner (c.f. picture 10 following), in which case fire fighting with water spray via the door from the right hand side of the deck would have led to a better end result. If the ship's crew had been able to do this immediately, the fire in the galley would probably have been extinguished or the fire would have considerably contained before the arrival of the fire service when they fought the fire in the galley through this same door. As it was the fire, and the rise in temperature caused by the smoke and gas, continued for about an hour before the actions taken by the fire service. The consequence of this delay was that the temperature in the cabin areas above, rose considerably so that a fire pocket was created in this area too.

The initial actions taken by the crew of the vessel to fight the fire continued until the fire fighting group from the Kotka fire station arrived on the vessel. The initial fire fighting was able to limit the rise in temperature by cooling the surfaces of the fire area and at the same time reducing the temperature of the gases rising from the fire.

2.4 Analysis of the extinction of the fire

Three doors led into the galley and the mess as follows (picture 10): one from the staircase from the internal areas in the centre of the ship, one from the left hand side from the deck of the vessel before the mess and then on into the galley, and one from the right hand side from the deck straight into the galley. The crew of the vessel did not dare open the doors into the burning areas because of the heat, but rather decided to leave this work to be done by the professional firemen. As was earlier stated in paragraph 2.3, this consequence of this decision was that the fire was given about an hour to build up strength before the measures taken by the fire fighting team who arrived on the vessel.



Picture 10. Entrances to the galley at the galley level (black arrows). The red fire shape in the picture indicates the probable place where the fire started and the green ellipse shows the galley windows through which the attempts to extinguish the fire were made.

In the event of fire, personal safety is of primary importance, in this case the safety of the crew, and it should not be endangered through recklessness or through fire fighting based on insufficient information or skill. On the other hand, it is generally easier to extinguish a fire in its early stages, and the longer a fire onboard ship develops the less safe the crew becomes.

Safely entering a burning, smoke filled space with no visibility, equipped with breathing apparatus and dressed in fire fighting gear, demands good mastery of fire fighting techniques which is gained through lots of practice in authentic conditions. According to the Master of the vessel, there was a fire drill on the ship on 15.11.2008 and the drill also included the use of breathing apparatus.

Once the fire fighting team from the Kotka fire service had arrived on the vessel, the pilot clarified the correct location of the fire for them and explained that it was in the galley and not in the engine room as had been communicated earlier. The power of the motor atomizer that the fire fighting group had brought with them was insufficient to maintain enough working pressure and so they decided to start extinguishing the fire with a hose connected to the vessel's fire fighting pipework.

The crew showed the fire fighting team the door into the mess on the left hand side of the vessel. There was material in front of the door on the inside and moving in the area was difficult, so the team decided to move to fight the fire through the right hand side door that led directly into the galley. The temperature of the door at that time was about 150 degrees.

The fire pump used to pump the water was changed twice so the the water pressure in the hose would be sufficient for effective fire fighting. First of all the motor atomizer that the firemen had brought with them was used, but the working pressure it generated was immediately seen to be insufficient. After this a fire hose connected to the ship's fire extinguisher pipework was used which was then changed for a hose connected to the fire extinguisher pipe work of the tug JANET. This ensured that there was enough pressure in the hose to which the fire service's own spray nozzle was connected. With this equipment the team started fire fighting in the galley and quickly brought the fire in that area under control.

In spite of the short delay in getting sufficient pressure in the fire hose, the fire fighting team from Kotka carried out their work swiftly, extinguishing the fire in the galley and afterwards extinguishing the fire pockets on the cabin deck. The firemen from Kotka were on the scene in less than an hour from the alarm being given. The two fire fighters who arrived from Helsinki by helicopter, were on the scene within two hours of the alarm being given and finished off extinguishing the fire and clearing up in the cabins so the whole job was over in about two hours of the alarm being given.

The result of water being used to extinguish the fires was that the water, that accumulated inside the ship, formed a free surface of liquids which weakened the stability of the ship. The initial stability was also reduced by the accumulation of water in spaces above the centre of gravity of the vessel. These facts in conjunction with some external force that affects the stability of the ship, such as wind or waves, could, in the worst case, result in the ship capsizing. For this reason the amount of water used in extinguishing ship fires has to be controlled.

The investigators are not aware that there was any discussion about the affect of the water on the stability of the vessel during the fire fighting. This could be important, especially in a situation where the fire fighting team came from outside the ship and thus did not necessarily know about this issue.

If the fire had been discovered at sea before the arrival of the pilot, it might have been several hours after any request for help sent to land, before a fire fighting team got to the fire. If, in such a situation, the personnel had not dared to start fire fighting by going into the area where the fire was to be extinguished while wearing compressed air breathing apparatus and then extinguishing the fire, simply cooling the firewalls from outside the areas that were burning would possibly not have been enough to prevent the fire from getting out of control. In such a case the damage to the vessel would clearly have been more extensive. Personal injury may also not have been avoided.

Probably the most important fact that got the ship through the fire with relatively little damage, was the time the fire started. The ship was getting close to the harbour so the crew was awake and was preparing to berth the ship at the jetty and was thus also ready to start fire fighting quickly.

2.5 Analysis of the rescue operation

The rescue operation was started after the pilot had informed the VTS centre about the fire and shortly afterwards confirmed that it was not possible to be on the bridge because of the amount of smoke that was being generated. The VTS centre confirmed that it had requested that a fire fighting team be sent to the location as well as other assistance. Helsinki MRSC received information about the incident and started to direct the rescue operation. A three-man fire fighting team was also sent to the scene by helicopter from Helsinki.

The incorrect information given to external parties regarding the location of the fire was not corrected until the unit from the Kotka fire service arrived on the vessel. In the investigators' opinion, the provision of incorrect information to the rescue and fire fighting teams regarding the location of the fire did not increase any particular danger nor hinder the rescue operation or extinction of the fire, because the ship's personnel knew where the fire was located soon after the alarm was given, and the correct information was passed on to the fire fighting team as soon as they came onto the ship.

3 CONCLUSIONS

A fire on a vessel at sea always causes a significant threat to the safety of the vessel's personnel, to the vessel itself and possibly also to the marine environment. The location of a fire should be quickly identified on a vessel and fire fighting should begin immediately using the equipment and methods best suited to the situation, taking into account the location of the fire, the vessel's cargo, the possible risks caused by inappropriate methods of fighting the fire, possible risks of the fire spreading etc.

Fire incident

1. The fire alarm system gave warning of the fire, but there was some confusion about the location of the fire.
2. The investigation team that was dispatched identified the location of the fire quickly.
3. The ship was anchored immediately.
4. Initial fire fighting was started quickly once the location had been confirmed.
5. Several hand held fire extinguishers were emptied into the area and after this fire fighting continued with water to cool the firewalls.
6. External assistance was quickly dispatched to the scene.

Because the fire developed rapidly, the decision to anchor the vessel and start initial fire fighting probably saved the vessel and the environment from greater damage, because a few minutes after the start of the fire the vessel would have reached the narrow Viikari sound where anchoring would have been more difficult and operations on the bridge impossible.

The initial fire fighting, and cooling the galley area with water afterwards, slowed the spread of the fire sufficiently, and this gave the fire teams who arrived from Kotka and Helsinki the extra time needed to finally extinguish the fire successfully. However, if the ship's crew had been able to fight the fire with water spray in the galley immediately, the fire would probably have been extinguished or significantly contained before the arrival of the fire service. As it was, the fire and the increase in temperature caused by the smoke and gases from it were able to continue for about an hour, so that fire pockets also started in the cabin areas above the fire.

Probably the most important fact that got the ship through the fire with relatively little damage, was the time the fire started. The ship was getting close to the harbour so the crew was awake and was preparing to berth the ship at the jetty and was thus also ready to start fire fighting quickly.

4 RECOMMENDATIONS

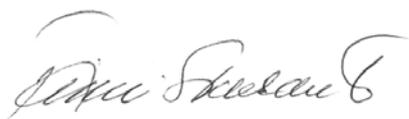
The investigation board will not make any safety recommendations, but wishes to draw attention to the following facts.

As a minimum, the vessel should have fire fighting equipment in working order that meets the requirements of the SOLAS Convention, and the personnel should be able to use it correctly.

When water is being used to extinguish a fire, the pump should be capable of generating sufficient pressure for the water spray from the nozzle to give sufficient protection for the fire fighter and also effectively cool a wide area where the fire is being fought.

The shipping company must ensure that the whole of the ship's company participates in the fire fighting exercises held on the ship in accordance with the legislation, and that they are taken seriously as required by a fire incident, and that the exercises are planned to that the situations are created to feel as realistic as is possible under the circumstances.

Helsinki, 12 May 2010

A handwritten signature in black ink, appearing to read "Toimi Sivuranta".

Toimi Sivuranta

A handwritten signature in black ink, appearing to read "Risto Repo".

Risto Repo

A handwritten signature in black ink, appearing to read "Ville Grönvall".

Ville Grönvall