



DMAIB

DANISH MARITIME ACCIDENT
INVESTIGATION BOARD



POLAR AASSIK

Summary report on fire

15. MARCH 2021

SUMMARY REPORT ON FIRE ON POLAR AASSIK ON 15 MARCH 2021

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Photo: POLAR AASSIK on fire
Source: Private photo

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This is a summary of the investigation results of the Danish Maritime Accident Investigation Board found to be relevant in the context of an accident investigation.

The purpose of the summary of the investigation is to disseminate knowledge acquired by the accident investigation board in connection with the investigation of an accident and which may be of interest to parts of the maritime industry.

This investigation summary concerns the fire on the Greenland fishing vessel POLAR AASSIK, which broke out on 15 March 2021 while the ship was fishing in Disko Bay. The summary focuses on the origin of the fire and the circumstances that rendered fighting the fire difficult.

POLAR AASSIK



Figure 1: POLAR AASSIK
Source: <http://www.shipspotting.com>

Name:	POLAR AASSIK
Type of vessel:	Stern trawler
Nationality/flag:	Greenland
Port of registry:	Nuuk
Call sign:	OXQI
Year of build:	1989
Shipyard/No:	Solstrand Slip & Båtbyggeri A/S/54-1988
IMO no.:	8718914
IMO operator no.:	1539953
Lenght overall:	33.50 m
Breath overall:	10.40 m
Max. draught:	6.52 m
499Deadweight:	235 t
Engine rating:	1,560 kW
Hull material:	Steel

The accident

POLAR AASSIK was a Greenland fishing vessel used for shrimp fishing in West Greenland. On the evening of March 15, 2021, the ship was trawling in the southern part of Disko Bay near Qasigiannuit. The crew consisted of 10 persons. After the shift change, which took place around 1830, the master and chief engineer were on the bridge, while the rest of the ship's crew were in the ship's mess three decks below the bridge and in the accommodation at the front of the ship (Figure 2).

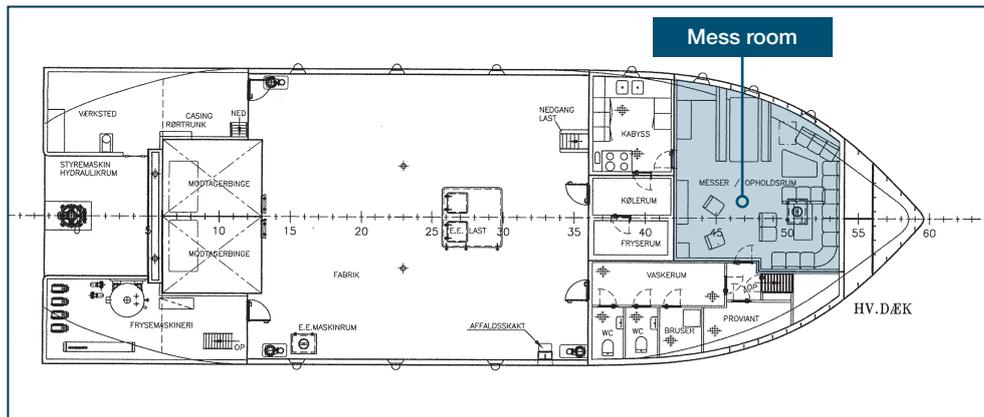


Figure 2: Mess room on POLAR AASSIK
Source: Polar Seafood/DMAIB

Around 1845, the ship's 2nd engineer detected a smell of smoke in the mess. He thought that the smoke came from the bow thruster compartment, situated under the seating arrangement in the mess, so he proceeded to crawl into the space. Once he had made sure that the smoke did not originate there, he climbed back into the mess. Immediately afterwards, the ship's chief mate arrived in the mess and reported that the toilet by the locker room was on fire (Figure 3). The 2nd engineer immediately ran out there.

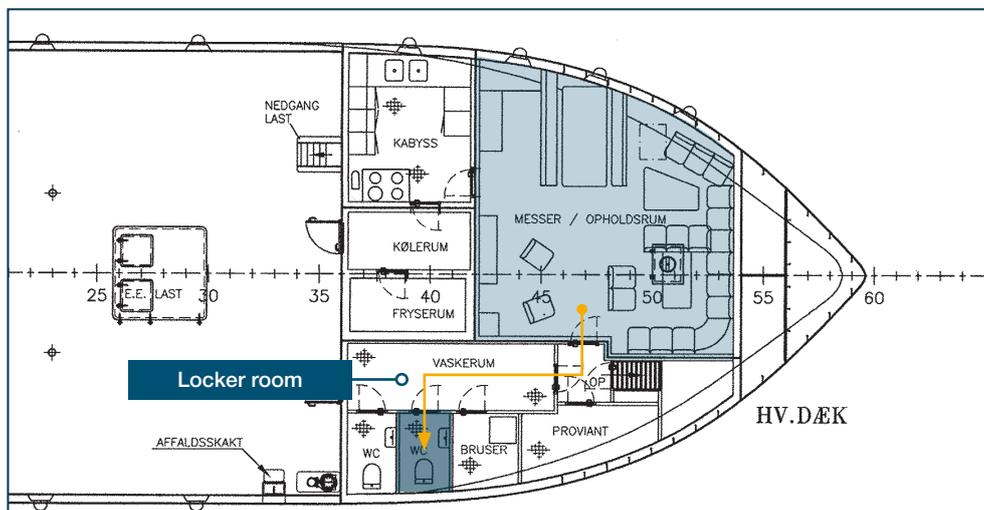


Figure 3: Toilet room and access from the mess on POLAR AASSIK
Source: Polar Seafood/DMAIB

When the 2nd engineer reached the toilet and opened the door, he was met with thick black smoke, and he heard the ship's fire alarm was activated. The 2nd engineer quickly closed the door to the toilet and then proceeded down to the engine room to fetch a CO₂ fire extinguisher. When he was back at the toilet, he opened the door to the room and activated the CO₂ extinguisher. He then rushed up to the muster station on the bridge deck. After having made the distress call, the master went down to the muster station, where he found that the entire crew had assembled. The master and 2nd engineer donned smoke diving gear and went down through the smoke-filled corridor with a pressurised fire hose. By the time they reached the locker room, they had so little air left in their oxygen bottles that the whistle on their breathing apparatus were activated. They there had to to withdraw.

Around 2000, the fishing ship PANI II arrived to assist. PANI II came alongside the POLAR AASSIK. The master, chief mate, chief engineer and 2nd engineer of POLAR AASSIK remained on board while the rest of the crew crossed to PANI II. The master and chief engineer donned breathing apparatus and now advanced towards the site of the fire from the aft through the ship factory. However, they ran out of air before reaching the fire site and were thus obliged to retreat. A little later in the evening, the shore firefighters arrived from Qasigiannuit. They took over responsibility for fighting the fire on POLAR AASSIK. During March 16, the fire department repeatedly tried in vain to fight the fire (Figure 4). On March 17, 2021 at 1915, POLAR AASSIK sank at a depth of about 300 meters.



Figure 4: Firefighters on POLAR AASSIK
Source: Private photo

Investigation

On 16 March 2021, the Danish Maritime Accident Investigation Board was contacted by the Danish Maritime Authority and was notified about the fire on POLAR AASSIK. The accident investigation board decided to open an investigation due to the serious nature of the accident and because firefighting on board fishing vessels is a focus area for the accident investigation board. This is due to a recent history of several serious fires on fishing vessels over which the ships' crews have not been able to gain control.

The investigation was limited by the fact that the accident investigation board could not carry out technical fire investigations on board POLAR AASSIK, as the ship was foundered at a depth of about 300 meters. For the same reason, the accident investigation board was unable to establish the details of the foundering of the ship. The investigation was focused on finding the origin of the fire, possible sources of ignition and the spread of the fire. The purpose of the investigation was to clarify why the crew of POLAR AASSIK failed to gain control of the fire at the early stage of the fire.

The onset and spread of the fire

The investigation into the onset and spread of the fire consisted of a review of ship drawings, interviews with selected crew members, image documentation from the Joint Arctic Command, private photos and police reports.

The investigation found that the origin of the fire was in the toilet room by the locker room. There were several possible sources of ignition in the toilet room, but the most likely source of ignition was a heat blower, aimed to keep the room frost free. As the accident investigation board was unable to carry out the technical fire investigation on board, the circumstances surrounding the spread of the fire could not be clarified. On the basis of the information gathered, it could be established that the fire quickly spread upwards and forwards in the ship (Figure 4). The spread of the fire spanned 48 hours, until the ship sank.



Figure 5: POLAR AASSIK on 17 March 2021, when the ship sank

Source: Joint Arctic Command

Firefighting

Initial response to the fire

When the 2nd engineer opened the door to the toilet room (Figure 5), he was met with thick black smoke, but he saw no flames and there was no noticeable heat development. He thus assessed it to be a small fire that could be extinguished with a CO₂ fire extinguisher. POLAR AASSIK was characterised by small spaces and narrow corridors that quickly became smoke-filled. At the same time, there were materials in the toilet room that could develop large amounts of black smoke in a short time. In the minutes while the 2nd engineer fetched the CO₂ fire extinguisher, the locker room became smoke-filled, rendering it impossible to initiate an effective response to the fire.

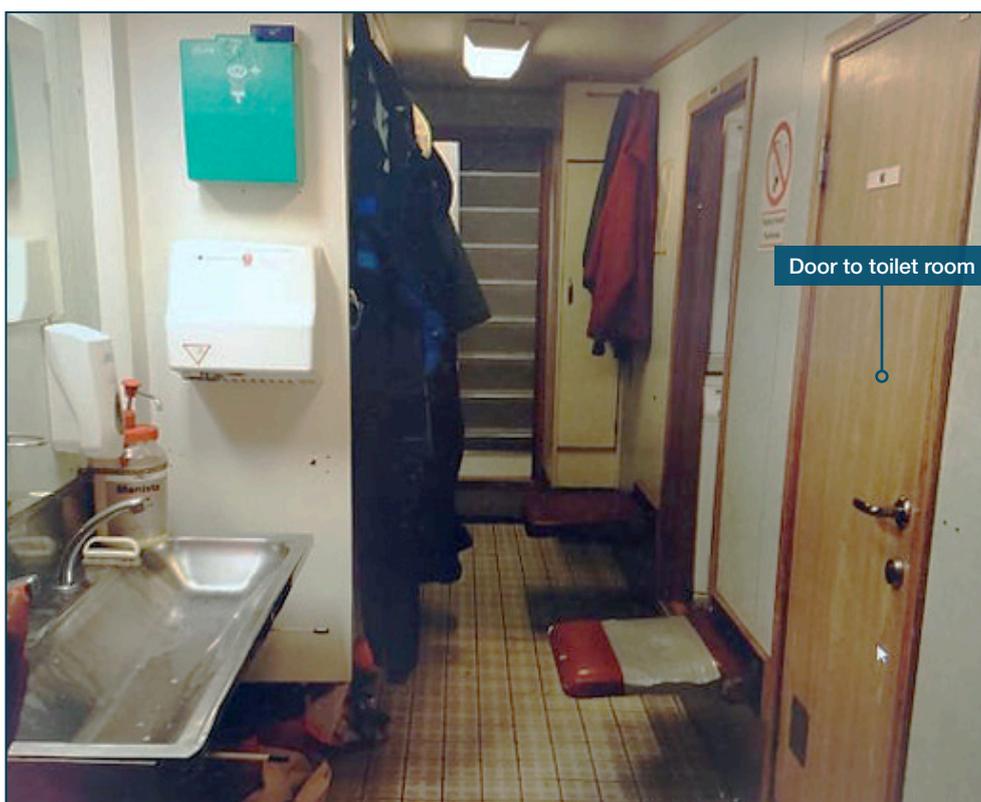


Figure 6: Locker room and door to toilet room
Source: Polar Seafood

Firefighting efforts

The heavy smoke development meant that the crew could not continue firefighting efforts early in the course of the fire without the use of breathing apparatus. By the time it took to muster the crew and launch the ship's fire response, the fire had developed so violently that it was no longer possible to fight the fire without the use of firefighter equipment and fire hoses. During the firefighting efforts, the ship's fire preparedness showed its limitations:

- The handling of the pressurised fire hoses and hose couplings down through the accommodation with its narrow corridors, sharp corners, door thresholds and frames was central to the firefighter teams running out of air before reaching the fire.

- The ship was equipped with two breathing apparatuses with no possibility of refilling the air bottles. This meant that the crew had only one attempt to gain control of the fire. When it failed, the crew had no option but to leave the ship or to obtain assistance for fighting the fire. In addition, there was no possibility for the ship's remaining crew members to come to the rescue of the firefighters, should problems arise.
- The ship's crew were not experienced firefighters, and periodic fire drills were not common practice on board. The above issues were thus not recognised before the fire, which evoked an uncertainty in the onboard firefighters, reinforced by the fact that they were not able to communicate effectively with one another.

Safety learning

The fire on POLAR AASSIK showed that the ship's fire response was only intended to deal with fires which could be handled by firefighters immediately after its onset and before widespread smoke development. As the firefighting efforts failed, the ship had to be evacuated.

Previous investigations by the accident investigation board have shown that fishing vessels generally possess limited fire preparedness, and the crew must prepare for the evacuation of the ship when it is clear that the fire cannot immediately be extinguished. Early preparation for evacuation is essential for crew safety.

EMMALIE – Fire on 12 December 2019, DMAIB (2020)

"Electrical fires can occur anywhere on the ship and can rapidly develop to an extent that exceeds the ship's firefighting capacity. Therefore, an early evacuation effort is essential to ensuring the survival of the crew."

VESTURLAND – Fire on 7 January 2017, DMAIB (2017)

"The capacity of fishing vessels, such as VESTURLAND, to extinguish fires is limited by the amount of equipment and the lack of structural fire protection to contain the fire within certain areas of the vessel. Therefore, it is essential that fires are detected as early as possible enabling the vessel's crew to respond without entering smoke filled areas with little knowledge about the extent of the fire. Given that most fishing vessels are of limited size, an early decision has to be made whether to attempt to extinguish the fire or to abandon the vessel while there is enough time to do it in an orderly manner. On 7 January 2017, the master made the decision within 10 minutes. This early decision to abandon the vessel made it possible for the crewmembers to be evacuated safely."

