

Marine safety investigations & reports

Engine room fire on board *MPV Everest*, Southern Ocean, 5 April 2021

Investigation number:

MO-2021-003

Status: Active



Phase: Evidence collection

This preliminary report details factual information established in the investigation's early evidence collection phase, and has been prepared to provide timely information to the industry and public. Preliminary reports contain no analysis or findings, which will be detailed in the investigation's final report. The information contained in this preliminary report is released in accordance with section 25 of the Transport Safety Investigation Act 2003.

The occurrence

On the evening of 31 March 2021, the Bahamas-flagged multi-purpose vessel *MPV Everest* (Figure 1) departed a location approximately 100 nautical miles (NM) off Mawson research station in the Australian Antarctic Territory, bound for Hobart, Tasmania. There were 37 crew and 72 expedition staff^[1] on board for the 3,328 NM passage to Hobart. The ship had been on location for the previous 17 days to effect a changeover of Australian Antarctic Division (AAD) station personnel and conduct station resupply and refuelling operations via helicopter.

Figure 1: *MPV Everest* in Antarctica

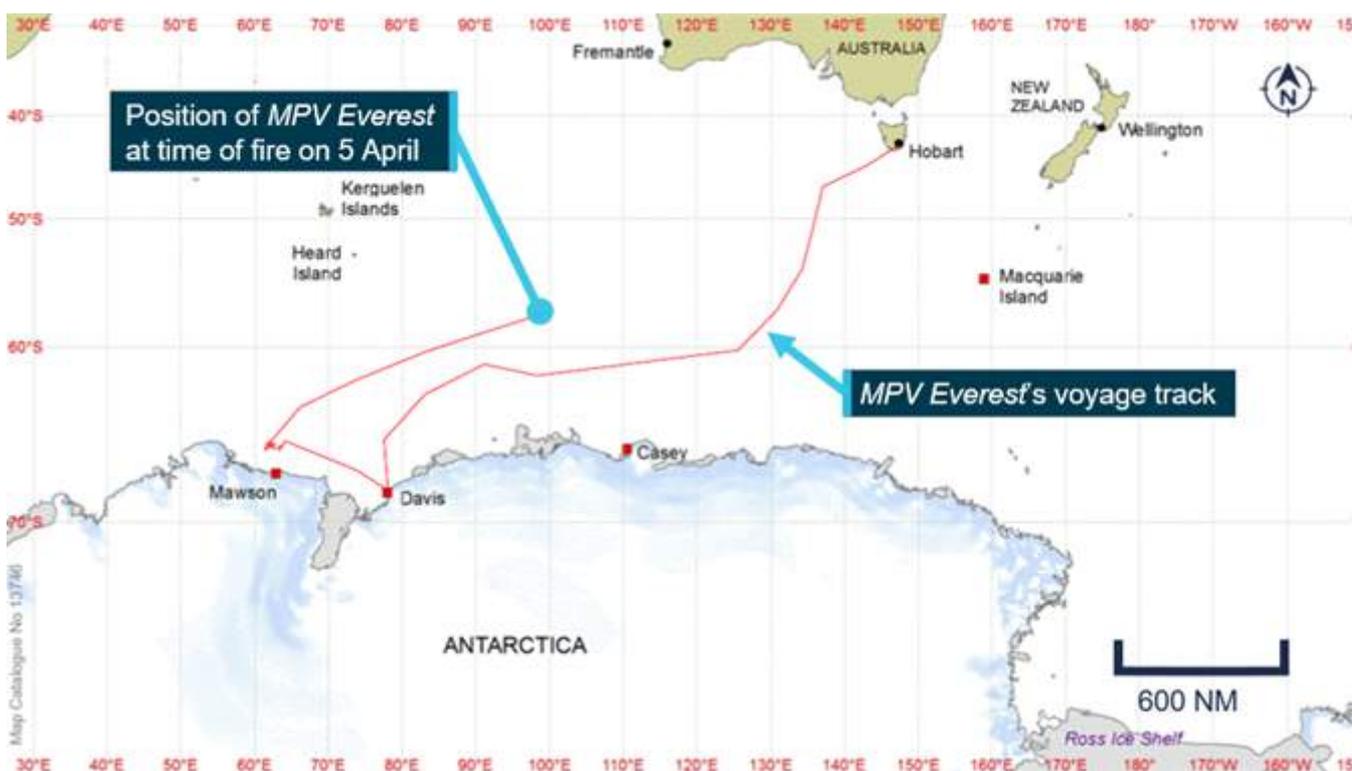


Source: Australian Antarctic Division

On the evening of 3 April, the ship exited polar waters, crossing the 60°S parallel of latitude northbound and continued its passage across the Southern Ocean with about 2,549 NM to go to Hobart.

At 0800 ship's time^[2] on 5 April, *MPV Everest* was about 1,075 NM north-east of Mawson station on a north-north-easterly course and making good 11 knots (Figure 2). Power for propulsion was being provided by engine numbers 2 and 3 in the port engine room, and number 6 in the starboard engine room.^[3] Engine numbers 4 and 5 in the starboard engine room were out of service at the time. The weather at the time was recorded as south-south-easterly winds at 20 knots with 2 m seas on a 6 m west-north-westerly swell.

Figure 2: Overview of *MPV Everest's* area of operation and position at the time of the fire



Source: Australian Antarctic Division, modified and annotated by the ATSB

At about 0925, recorded data from the ship's integrated automation system (IAS) showed a routine fuel transfer to top-up the port fuel oil settling tank (located in the port engine room) was started. About an hour later, the ship's master and doctor were in the master's office, located one deck below the navigation bridge (bridge), which overlooks the main and upper accommodation decks aft. Shortly before 1100, they saw large flames erupting from the open louvres in the port engine room's exhaust casing located one deck above the upper accommodation deck, aft of the accommodation block (Figure 3).

Figure 3: *MPV Everest*



Note the location of the port engine room exhaust casing above deck.

Source: Australian Antarctic Division/Maritime Construction Services, annotated by the ATSB

The flames quickly engulfed two rubber watercraft and equipment stowed inboard of the exhaust vent casing and set them alight (Figure 4). The master hurried up to the bridge and raised the alarm by announcing on the ship's public address system that there was a fire, instructing crew and expedition staff to report to their emergency muster stations. As expedition staff began mustering at their stations on the forecastle deck, the ship's crew were preparing fire-fighting equipment and hoses.

Figure 4: Flames from the port engine room exhaust casing



Source: Jason Mawbey

Meanwhile, the chief engineer, who was working on engine numbers 4 and 5 (in the starboard engine room) heard the fire alarm and went to the engine control room (ECR). There the chief engineer observed that the IAS indicated active fire detectors in the port engine room. The chief engineer, accompanied by the third engineer, went to investigate and, on opening the watertight door to the port engine room, they saw thick smoke and burning material.

The chief engineer noted the water mist fixed fire-extinguishing system was active. They retreated, shut the watertight door and returned to the ECR. The chief engineer broadcast a report on the ship's ultra high frequency (UHF) radio emergency channel, activated the emergency stops for all three engines in the port engine room and instructed the second engineer to shut the fuel quick closing valves for the port engine room.

A few minutes later, number 6 engine in the starboard engine room also shut down due to being overloaded, and all power, including propulsion, was lost. Limited electrical power was restored using the emergency generator but there were problems with its use, including its location near the flames from the exhaust casing. As a result, the number 6 engine was restarted and its electrical output was connected to the emergency switchboard.

The crew attempted to extinguish the burning watercraft, boundary cool the exhaust casing and douse the flames from it with fire hoses. A team of two crew equipped with fireman suits, self-contained breathing apparatus (SCBA) and fire hoses attempted to shut the louvered fire dampers on the outside of the casing with limited success. Some expedition staff also joined the firefighting efforts by manning some hoses.

At about 1115, the master had confirmation that all personnel on board had been accounted for. Shortly after, the master instructed the chief engineer to manually re-activate the water mist system in the port engine room. A situation report was subsequently provided to the Australian Maritime Safety Authority's (AMSA) Joint Rescue Coordination Centre (JRCC) Australia.

The chief engineer monitored the temperature at the port engine room watertight door with an infrared thermometer, and when the reducing temperature had stabilised, the water mist system was stopped. The chief engineer, electro-technical officer and an expedition staff member with professional firefighting experience ashore then entered the engine room equipped with fireman

suits, SCBA sets, a charged hose and a fire extinguisher. They confirmed that the fire had been extinguished and safely exited the engine room.

Shortly before 1400, the mustered expedition staff were stood down. There were no injuries to anyone on board.

At about 1820 that evening, passage was resumed after restoring propulsion with two engines located in the starboard engine room (the port engine room and machinery within were unusable).

On the next day, 6 April, the master diverted *MPV Everest* to Fremantle, Western Australia, rather than continue to the more distant Hobart. Contact was maintained with JRCC Australia, which continued to monitor the ship's progress toward Fremantle.

On 12 April afternoon, *GO Spica*, an offshore support vessel contracted by *MPV Everest*'s owners as a precautionary measure to escort the ship to Fremantle, rendezvoused with it.

On the afternoon of 13 April, *MPV Everest* was safely alongside at berth 11 in Fremantle's inner harbour.

Context

MPV Everest

MPV Everest is a Bahamas-registered, ice class, multipurpose construction vessel, built at the Keppel Singmarine yard in Singapore in 2017. At the time of the fire, the ship was owned by New Orient Marine, a subsidiary of Luxembourg-based Maritime Construction Services (MCS), managed by Fox Offshore and classed with Bureau Veritas. *MPV Everest* had a multi-national crew of 37 personnel from 12 countries including Polish, Dutch, Russian and Indonesian nationals.

MPV Everest was chartered by the Australian Antarctic Division (AAD) to undertake two voyages to Antarctica to resupply and effect personnel changes at the Australian research stations in Antarctica (Casey, Davis and Mawson stations).

Initial damage assessment and inspection

The fire resulted in two AAD watercraft being destroyed on deck along with some other associated equipment in the vicinity (Figure 5). The fire also resulted in substantial damage to the port engine room including to machinery and electrical cabinetry (Figure 6).

Figure 5: Fire damage on deck including the burnt-out watercraft adjacent to the casing



Source: Fox Offshore

Figure 6: Fire damage inside the port engine room



Source: Fox Offshore

During initial inspections of the fire-damaged engine room, the crew observed fuel oil dripping down into it from within the exhaust vent casing above. In addition to the exhaust piping for the engines, air vent pipes for several engine room fuel oil tanks and other spaces are situated within the casing. Some of these vent pipes terminate on top of the casing while others terminate internally within the casing (Figure 7). Those that terminated inside the casing, included the port fuel oil settling tank that was being filled on the morning of the fire. The IAS data indicates that this tank probably overflowed sometime after 1030 that morning.

Figure 7: Port engine room exhaust casing (inset photo: close up of internal vent pipes)



Source: ATSB

Further investigation

Specialist ATSB investigators attended *MPV Everest* in Fremantle to collect relevant physical, documentary and electronic recorded evidence and interview the master and relevant crew. A number of AAD expedition staff were also interviewed and the collection of other relevant evidence is being progressed.

The investigation is continuing and will include the following subject areas:

- origin and cause of the fire and its development, and all associated factors
- operation of fuel transfer system, including pumps, piping, alarms and automation
- performance of the ship's firefighting equipment
- effectiveness of the ship's emergency response, including readiness and drills
- shipboard communication systems (internal and external)
- verification, interpretation and analysis of recorded data
- analysis of relevant human factors
- effectiveness of the ship's polar operational capability.

Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

A final report will be released at the conclusion of the investigation.

General details

Occurrence details

| | | |
|--------------------------|--|---------------------------|
| Date and time: | 5 April 2021 – 1058 ship's time (UTC +7 hours) | |
| Occurrence category: | Serious incident | |
| Primary occurrence type: | Fire/explosion | |
| Location: | Southern Ocean | |
| | Latitude: 57° 53.400' S | Longitude: 098° 10.400' E |

Ship details

| | |
|-------------|--------------------|
| Name: | <i>MPV Everest</i> |
| IMO number: | 9769130 |
| Call sign: | C6CZ6 |
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|-------------------------|--|
| Flag: | Bahamas |
| Classification society: | Bureau Veritas |
| Departure: | Mawson Station, Australian Antarctic Territory |
| Destination: | Hobart, Tasmania |
| Ship type: | Multi-purpose construction vessel |
| Builder: | Keppel Singmarine |
| Year built: | 2017 |
| Owner(s): | New Orient Marine, Singapore |
| Manager: | Fox Offshore, Singapore |
| Gross tonnage: | 21,943 |
| Deadweight (summer): | 7,189 t |
| Summer draught: | 8.2 m |
| Length overall: | 145 m |
| Moulded breadth: | 30 m |
| Moulded depth: | 13 m |
| Main engine(s): | 4 x Bergen B32:40V (5,760 kW) and 2 x Bergen C25:33 (1,920 kW) |
| Total power: | 26,880 kW |

| | | |
|-----------|---|---------------------|
| Speed: | 13 knots | |
| Injuries: | Crew – 0 | Supernumeraries – 0 |
| Damage: | Substantial damage to port engine room, two watercraft and other loose equipment destroyed on deck. | |

- [Expedition staff included Australian Antarctic Division expeditioners, voyage management staff, Australian Bureau of Meteorology forecasters and Helicopter Resources personnel.](#)
- [All times referred to in this report are ship's time, which was Coordinated Universal Time \(UTC\) + 7 hours.](#)
- [The ship's electrical power generating plant comprised four 5,760 kW and two 1,920 kW marine diesel engines distributed in two separate engine rooms. One small engine \(number 1\) and two large ones \(numbers 2 and 3\) were located in the port engine room, and the other large engines \(numbers 4 and 5\) and smaller one \(number 6\) were in the starboard engine room. The fuel used on board was marine gas oil, specifically Special Antarctic Blend diesel..](#)

General details

| | | | |
|---|---------------------------------|------------------------------|-------------------------|
| Date: | 05 April 2021 | Investigation status: | Active |
| Time: | 1058 ship's time (UTC +7 hours) | Investigation level: | Defined |
| Location (show map): | Southern Ocean | Investigation phase: | Evidence collection |
| State: | International | | |
| Release date: | 19 May 2021 | Occurrence category: | Serious Incident |
| Report status: | Preliminary | Highest injury level: | None |
| Anticipated completion: | 2nd Quarter 2022 | | |

Vessel details

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|--------------------------|--|
| Vessel | <i>MPV Everest</i> |
| Flag | Bahamas |
| IMO | 9769130 |
| Sector | Other |
| Type of operation | Supply |
| Damage to vessel | Substantial |
| Departure point | Mawson Station, Australian Antarctic Territory |
| Destination | Hobart, Tasmania |