

## Isle of Man Ship Registry

Casualty Investigation Report No. CA 135

### **"POLARIS"**

Sinking

on 23rd November 2019

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## Summary

At around 18:15 on 23<sup>rd</sup> of November 2019, the fishing boat *Polaris* sank west of Port Erin (the Isle of Man) after sustaining damage to the hull resulting in flooding of the underdeck compartments. Two crew members abandoned the sinking vessel and were successfully rescued from the water by the fishing boat *Lynn Marie* which was in the vicinity and proceeded to the scene after receiving a mayday call.

The mayday call was received by Belfast Rescue Coordination Centre (RCC) who coordinated search and rescue operations involving the Douglas Marine Operations Centre (MOC), the Royal National Lifeboat Institution lifeboats (RNLI) and the Isle of Man Coastguard. The RNLI lifeboat was deployed from Port Erin and arrived to the scene. By the time of the lifeboat's arrival, both fishermen were already safely on board *Lynn Marie* and decided to remain there until the boat's arrival to Peel, where they were disembarked and checked by emergency services.

There were no injuries reported and because of the immediate arrival of the *Lynn Marie* both fishermen remained in the water for about 10 minutes. The liferaft from *Polaris* had been later picked up from the water by RNLI lifeboat. It was automatically released by the hydrostatic unit when vessel sank but fishermen were not able to reach it whilst they were in the water.



Figure 1 / f/v Polaris in May-2018

## Factual Information

<b>Vessel's name / port letters / reg. No.</b>	<b>Polaris / PL193 / M226</b>
<b>Flag</b>	Isle of Man
<b>Owner</b>	Privately owned
<b>Construction</b>	Wood
<b>Year/place of built</b>	1980 / Whitby
<b>Length overall / registered length</b>	12.8 m / 11.77 m
<b>Breadth</b>	4.75 m
<b>Draft</b>	2.41 m
<b>Gross tonnage</b>	23.44
<b>Voyage particulars/ cargo information</b>	Peel to west of Port Erin and Bradda Head, catching scallops 3.5 nm from shore.
<b>Location of incident</b>	3.5 nm/ 302° from Milner's Tower (Bradda Head Tower); 54°07.438N; 004°51.666 W
<b>Damage/ environmental impact</b>	Vessel is now an obstruction on the scalloping ground. 3,000 litres of Diesel Oil and 120 litres of hydraulic oil was most probably released into the sea. Plastic (canisters), minor quantities of domestic rubbish and polypropylene ropes also floated free.
<b>Weather</b>	2-3 ENE at the time of the incident / water temperature 11°C.
<b>Persons on board</b>	2

## Narrative of Events

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### 23<sup>rd</sup> November 2019

**04:50** Polaris departed from Peel with two crew members on board (skipper and deckhand).

**06:00 – 16:50** Vessel was engaged in scallop dredging along west coast of the island.

**16:50 – 18:00** Last haul of the day (dredging operation) with heaving up the gear in the end.

**18:00 - 18:08** The skipper was recovering the gear when he heard a “clap” sound from the engine exhaust. He also heard the bilge alarms. He left the winch controls, went down to the engine room to investigate and found that engine room was taking in water and flooding. He went to the wheelhouse to broadcast a Mayday by VHF radio. After broadcasting both crew climbed on top of the wheelhouse and remained there until boat was fully submerged. The liferaft reportedly could not be launched due to lack of time before the boat submerged.

**18:08** The Mayday call was received by Belfast RCC and the fishing boat Lynn Marie which was 0.5 nautical miles away from the Polaris.

**18:22** Lynn Marie reported to Belfast RCC that 2 crew members were picked up from the water.

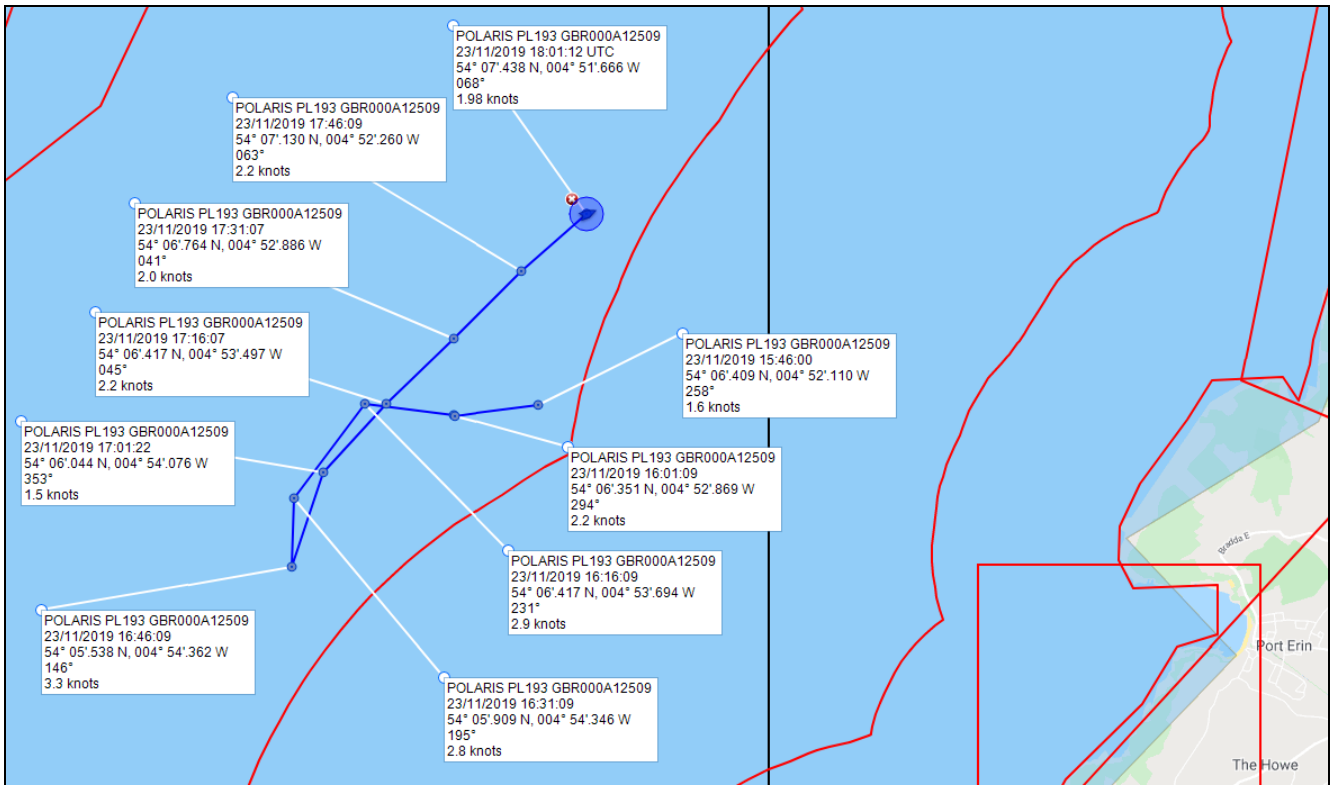
**19:03** The crew of RNLI attempted to transfer the rescued crew from Lynn Marie to RNLI lifeboat, but both crew members decided to remain on board Lynn Marie.

**19:25** The EPIRB was located and deactivated by RNLI crew.

**20:18** Lynn Marie arrived in Peel. Rescued crew members were assessed by medics and police.

**20:40** All stations stood down.

Following the incident the liferaft and EPIRB were picked up by RNLI. The liferaft was punctured during transportation back to shore. The EPIRB was deactivated and stored at Douglas Harbour office.



Scheme: an extract from the ship's tracking system.

## Comment and Analysis

### **Description of scallop dredging.**

The dredges consist of triangular frames, about 750mm, with toothed bars at the front to extract scallops from the seabed and force them into a collecting bag behind it while moving over the seabed. This bag is made of chain links forming a chain mesh on the bottom and polypropylene netting on the top.

The dredges are towed behind a heavy spreading bar, usually one from each side of the vessel. The bar has two bobbin wheels for rolling over the seabed.

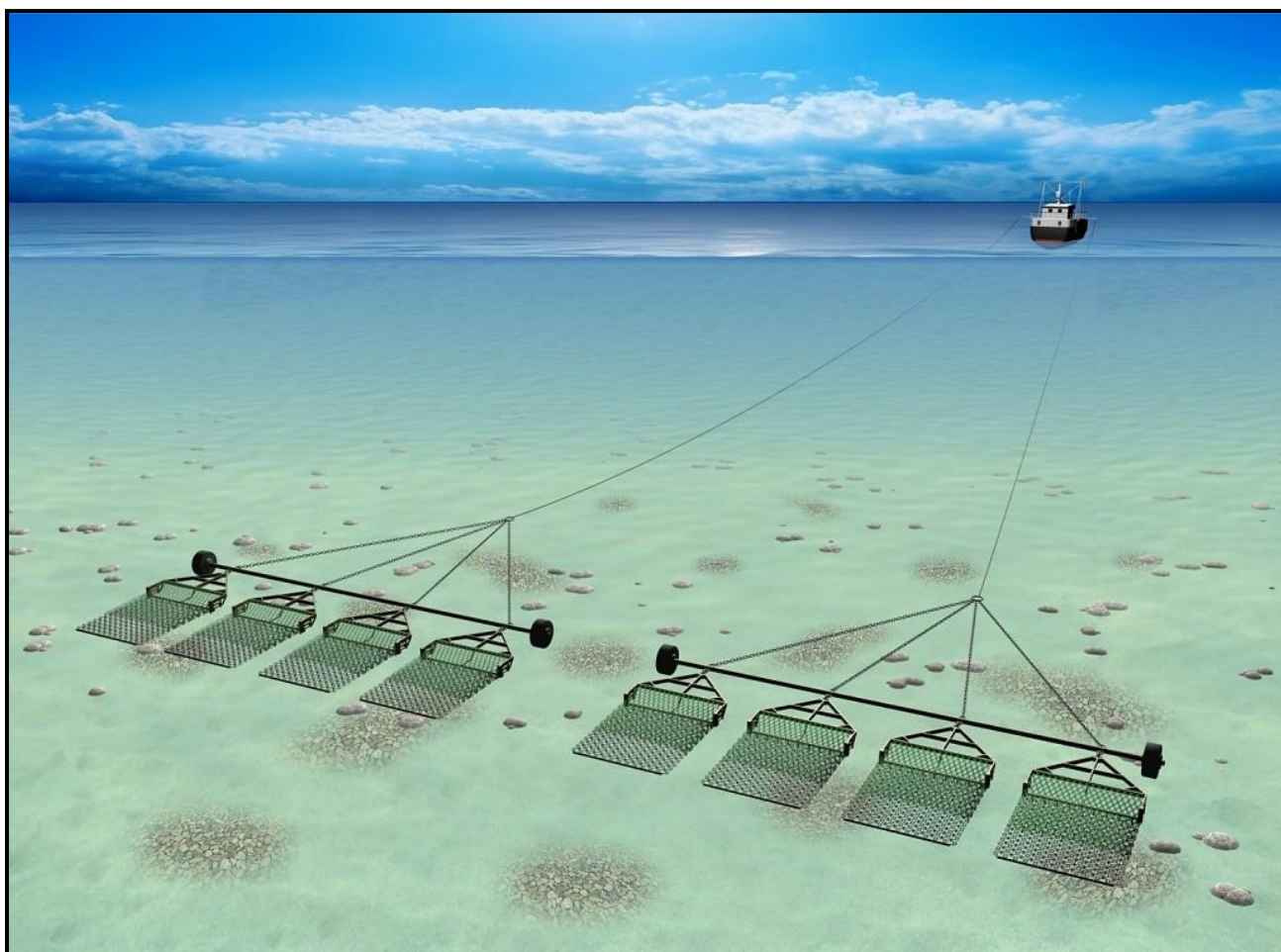


Figure 2 / Scallop dredging / source - seafish.org

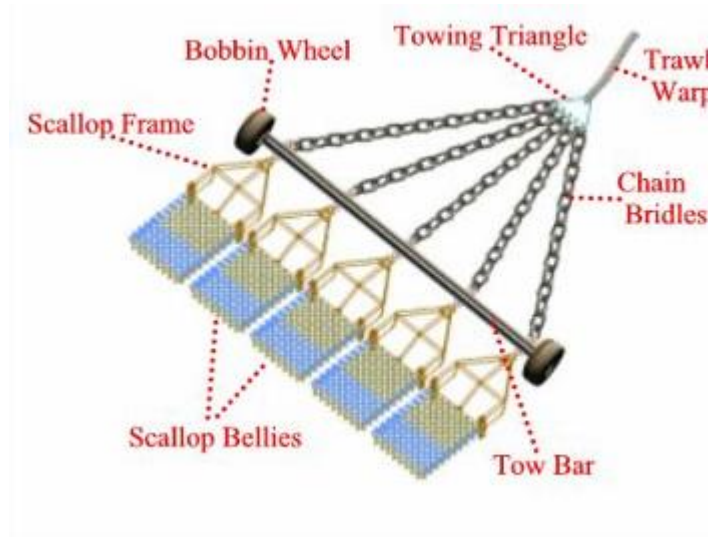
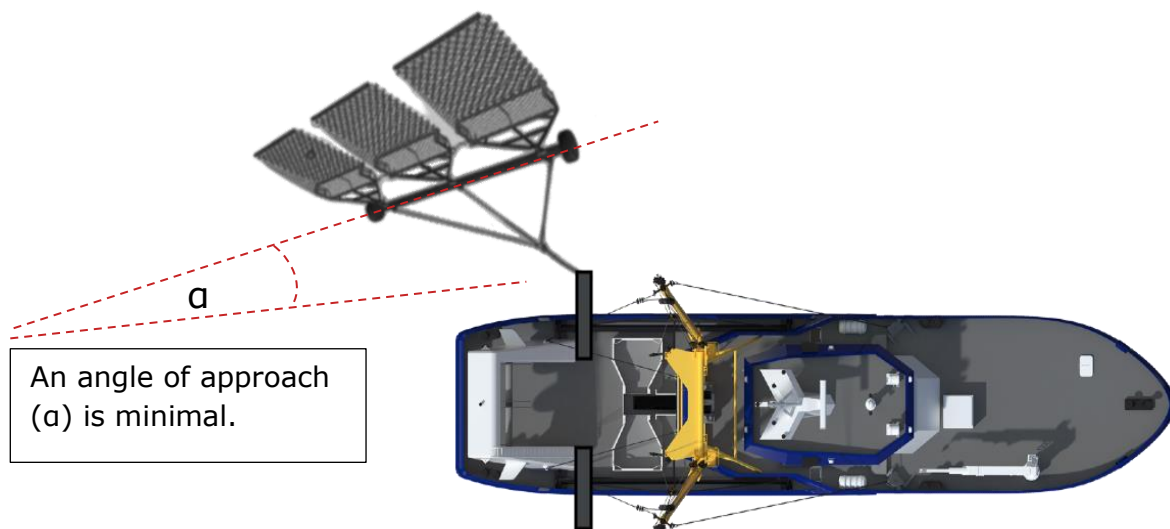


Figure 3, dredging gear/source: seafish.org

**Examples of heaving (pulling) the dredges and securing them on board at various angles of approach.**



**Figure 4, angle of approach.** Models' source - Scottish Marine and Freshwater Science Vol 3 No 7, and [www.pngbarn.com](http://www.pngbarn.com)

The final stage of picking up the gear should ensure that the tow bar is approaching the vessel's side at the minimum angle and speed. The angle shall be as close to  $0^\circ$  (parallel) as possible and the pulling speed shall be minimal to avoid heavy contact with the ship's hull.

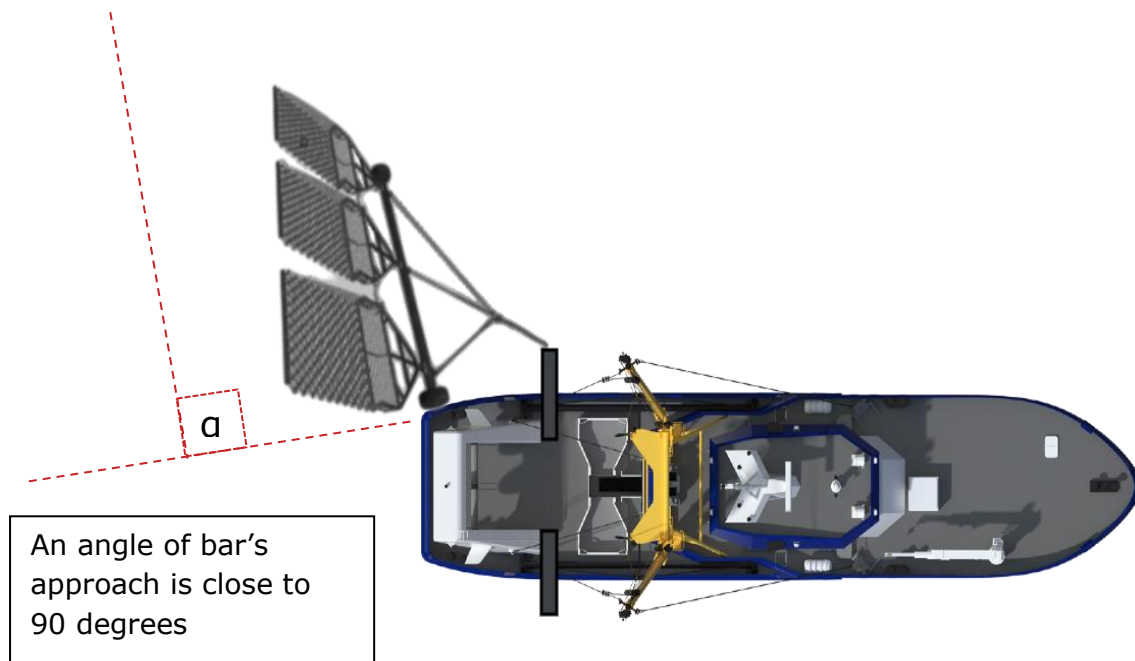
According to statements provided by the skipper of Polaris and skippers of other boats, sometimes the bar may approach at a right angle. This can happen unintentionally, due to



ship's rolling, ship's heading or mishandling the gear. When the bobbin wheel touches the hull, the operator has to turn the gear manually towards the boat's side until it is parallel.

### **Example of heaving (pulling) the dredges and securing them on board at right angles**

When bar approaches at right angles, it involves more risks due to inevitable contact with the vessel's hull. Situations like this shall be avoided, however due to sea conditions and rigging arrangements it may not always be possible.



**Figure 5, angle of approach.** Models' source - Scottish Marine and Freshwater Science Vol 3 No 7, and [www.pngbarn.com](http://www.pngbarn.com)

According to statements provided by the skipper, the flooding started after or during picking up the dragging gear, but it was noticed when the gear was already out of the water and in the process of being secured alongside. The skipper also confirmed that the towing bar approached the hull at the right angle (approximately 90°) and could hear the gear hitting the hull. It was explained that it happens often and it was assumed the boat was designed to withstand the impact.

## Ship's hull

The hull was made of wood (planks with caulking in between planks). The hull was last inspected in May 2018 during out water inspection and found satisfactory by the attending surveyor.



Figure 6. Port quarter/ May-2018



Figure 7/ Port quarter / May-2018 / The area where damage was confirmed by divers

### Diving report summary

Divers inspected the wreck on 23<sup>rd</sup> January at a depth of 40.5m (+/- tide). The visibility was poor due to sediment. The findings confirmed what was suspected by the skipper- there was hull damage (a hole) in the area of the port quarter. The size of the hole was approximately 1m<sup>2</sup>.

The underwater survey revealed that the plank was missing on the port side and the edges of the neighbouring planks showed evidence of forcible loss with splintering damage. The damage most likely occurred before the vessel touched the seabed because there were no missing planks in the vicinity of the hole.

The port side dredges were found secured on board. It may indicate that crew had time to complete securing the dredges while the water was coming through the damage unnoticed.

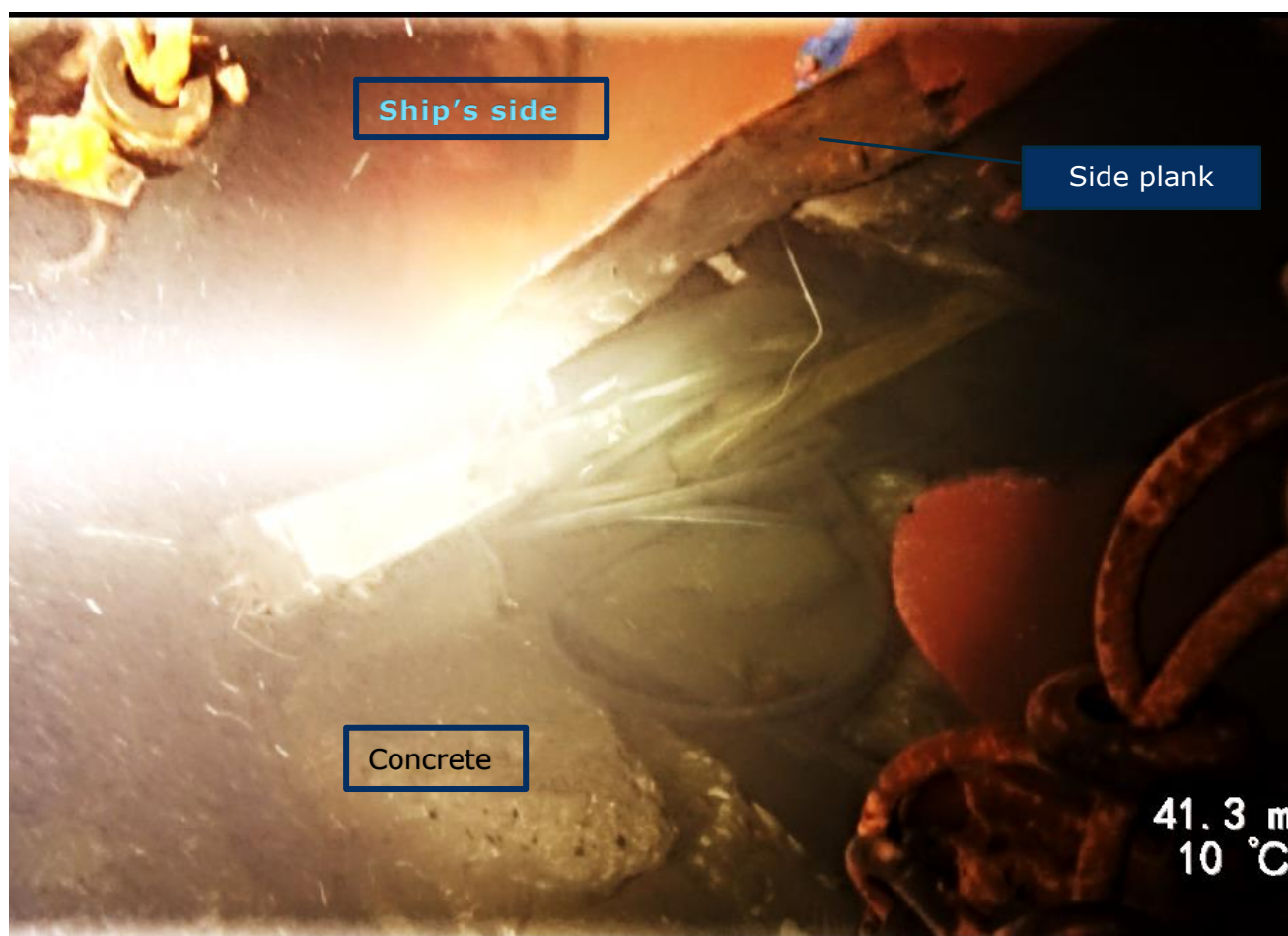


Figure 8 / port quarter damage

The presence of **concrete** blocks under the damage indicates that it was most probably used as ballast and was put over the wood planks on the inner side of the hull. This was also confirmed by the skipper, that concrete was in place and put there by one of the previous owners. The shape of the edge of the damaged **side plank** may indicate that the wood was weakened by rot. However, it cannot be concluded that this was the primary and the only reason of hull failure.

## Human Factor

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Both seafarers were experienced and well familiar with ship's rigging and capabilities of the equipment (windless power, weight and dimensions of the tow bar). The vessel departed from Peel at 04:50 and started *shooting*<sup>1</sup> at 06:00. It made 5 successful *hauls*<sup>2</sup> and the flooding started during the final stage of the 6<sup>th</sup> haul around 18:00. The voyage lasted 13 hours 12 minutes before the accident. Crew had been working (performing physical tasks) even longer, since they had to prepare the boat for departure at 04:50 and spend some time commuting to the harbour. According to a statement of facts, both crew members had been working for 14 hours by the time of the accident. The weather at the time of departure was 5-6 Bft. ENE, improving during the day to 2-3 Bft. NE at the time of the accident. It can be concluded that fishermen most probably experienced significant vibration (rolling, pitching and yawing) for at least 4-7 hours and moderate to low vibration for the final 6 hours of the voyage.

### **Fatigue**

According to studies on the average human performance, the risk of fatigue could be considered as high due to combination of weather conditions and long working hours. Fatigue can cause performance decrements and may have affected how the gear was handled during the final pick up.

### **Working hours during scalloping season and applicable legislation**

The Fisheries Division of the Department of Environment, Food and Agriculture (DEFA) limited the fishing activity to 06:00-18:00. This 12-hour period does not include preparations, sailing to and from the fishing spot and generally is not intended to regulate crew working hours.

Long working hours are common in the fishing industry during scalloping season, where fishermen can work up to 16 hours a day for several consecutive days. *There is no requirement to monitor hours of work on fishing vessels. There are no guidelines for mitigating fatigue factors which, would apply exclusively to the Isle of Man fishing boats.*

There is no applicable legislation in place which would set limits on working time on the Isle of Man registered fishing vessels. However, it is expected that the risk of fatigue is included in the health and safety assessment which is required by the Code.

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<sup>1</sup> "shooting" – lowering gear in the water for dredging.

<sup>2</sup> "hauling" – pulling, bringing gear back from the water to the side of the vessel.

## Conclusions

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Hull damage was the most probable cause of the foundering and sinking.

1. The hull damage occurred due to a combination of factors:

- The manner in which the gear was handled, resulting in the gear hitting the hull during pick up; and,
- the hull failed to sustain the force of the impact.

The design of the boat and material's strength are expected to withstand contacts with own fishing gear. However, avoiding such contacts shall be considered as good practice.

2. The long working hours and the weather conditions resulted in the high risk of fatigue, which should have been taken into account by all on the fishing boat.

3. The visual appearance of the planks in the damaged area, and the fact of unexpected hull failure may indicate that the hull was affected by rot. The presence of concrete may indicate that areas of inner hull which were covered by it could not be accessed for visual inspection and therefore potential deterioration could not be identified. This, however, may not be the primary reason for the damage to the vessels hull.

## Recommendations

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1. The use of concrete as permanent ballast on wooden boats shall be avoided where possible. If use of concrete is the only option to meet stability criteria, consideration should be given by the owners to how the inner part of the hull can be inspected. In any case, preference shall be given to concrete in bags or blocks, which can be safely secured and removed for inspection of hull.
2. The Owners should ensure that risk of fatigue is included in the risk assessment required by regulation 9 of the Code. The boat's maintenance, preparation for voyage, unloading the catch and other work-related activities shall also be taken into consideration when planning the next fishing trip. The crew shall be provided with information about risks of fatigue and its mitigation.
3. Skippers and crew shall be mindful about gear's speed and direction during final stage of recovery and the potential damage the gear can make to the hull when approached at right angle.
4. The Ship Registry is to promulgate this to the fishing fleet so lessons can be learnt.