MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

VERY SERIOUS MARINE CASUALTY | REPORT NO 21/2014 | AUGUST 2014

Capsize and foundering of the beam trawler *SALLY JANE*
Christchurch Bay
17 September 2013

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SUMMARY

At approximately 0600[1] on 17 September 2013, the 13.6m fishing vessel *Sally Jane* capsized suddenly while beam trawling in Christchurch Bay, England. The vessel's skipper and mate abandoned the vessel and boarded a liferaft. They were rescued by a lifeboat approximately 2 hours later, during which time *Sally Jane* had sunk. Both men suffered from mild hypothermia.

Sally Jane

The MAIB investigation identified:

- *Sally Jane* capsized due to a loss of transverse stability, probably caused by a difference in the weight of the contents of its port and starboard trawl nets.
- The uneven loading was most likely due to the contents in the starboard side trawl net breaking free.
- The vessel's heeling moment was exacerbated by the length and angle of the derricks.
- The vessel quickly flooded and sank because the hatches to the fish and engine rooms were not secured.
- The information in the stability particulars book had not been periodically verified through lightship checks and it was not used by the vessel's skippers.
- The emergency position indicating radio beacon did not activate as it probably became trapped in the starboard trawl net when the vessel capsized, inverted and then sank.

No recommendations have been issued as a consequence of this investigation.

[1] All times in this report are UTC+1, unless otherwise stated.

FACTUAL INFORMATION

Narrative

At approximately 0100 on 17 September 2013, the mate on board the 13.6m length overall (LOA) beam trawler *Sally Jane* took over the wheelhouse and deck watch from the vessel's skipper. *Sally Jane* was trawling to the south of Christchurch Ledge on the south coast of England **(Figure 1)**, an area in which the vessel regularly fished.

During the watch handover, the skipper instructed the mate to complete two or three more hauls and then tow towards the west. Bad weather was forecast and the skipper intended to shelter in Poole. When the watch handover had finished, the skipper went to rest in his bunk in the accommodation below **(Figure 2)**.

Sally Jane then trawled in westerly and easterly directions over the same ground covered during the skipper's watch for approximately 5 hours. During this time, the mate hauled the nets on two occasions. At about 0600, *Sally Jane* was towing its gear towards the east when the crewman decided that it was time to turn back to the west.

In preparation for the turn, the mate hauled both beam trawls to the surface and then applied the main drum winch brakes. He then 'clutched-in' and hauled the topping lifts (the wires that are used to raise and lower the derricks) in order to slightly raise the derricks from which the beam trawls were suspended. The derricks had been raised about 10° above the horizontal when suddenly, and without warning, *Sally Jane* slewed to port and rolled onto its port side. The mate shouted a warning to the skipper below but he had no time to operate the drum winch brakes in order to release the fishing gear.

Within seconds, *Sally Jane* was flooding rapidly through the galley window and the fish room and engine room deck hatches. The mate managed to scramble out of the starboard wheelhouse door above him. He then released the liferaft from the wheelhouse roof. The liferaft inflated but it was upside down and its painter was still attached to the vessel.

Meanwhile, the skipper, who had been thrown from his bunk on the starboard side of the accommodation to the port side of the compartment, struggled to escape. The accommodation was filling with water, there was no lighting and the skipper could not find any foot or handholds. Nevertheless, aided by the rising water level, the skipper managed to make his way into the wheelhouse. As the skipper then tried to escape from the wheelhouse, *Sally Jane* inverted. Fortuitously, the sudden rush of water into the wheelhouse that followed swept him into the sea.

The skipper swam to the sea surface, where he and the mate righted and then climbed into the liferaft. Once inside, the skipper untied its painter. He and the mate then bailed out water as the liferaft drifted to the east with the wind and tidal stream. The skipper noticed that the liferaft's emergency pack was split. The pack contained a quoit and line, three hand-held flares, a torch and paddles, which was significantly less equipment than the skipper had expected.

The skipper was dressed only in his boxer shorts and the mate in light clothing. They soon became cold and huddled together to keep warm. The liferaft continued to drift to the east over the Shingles bank. *Sally Jane*'s bow remained visible above the sea surface for a short period but the vessel eventually foundered. Diesel fuel oil was later seen in the vicinity.

Just before 0800, the skipper set off a red hand-held flare. The flare was seen by a member of the public ashore who telephoned the coastguard. The Royal National Lifeboat Institution (RNLI) all-weather lifeboat (ALB) from Yarmouth, Isle of Wight and a rescue helicopter were tasked to investigate. *Sally Jane*'s skipper released the two remaining red flares and the ALB located the liferaft in Totland Bay **(Figures 1** and **3)** at about 0833. The skipper and the mate were recovered on board the ALB; both were suffering from mild hypothermia.

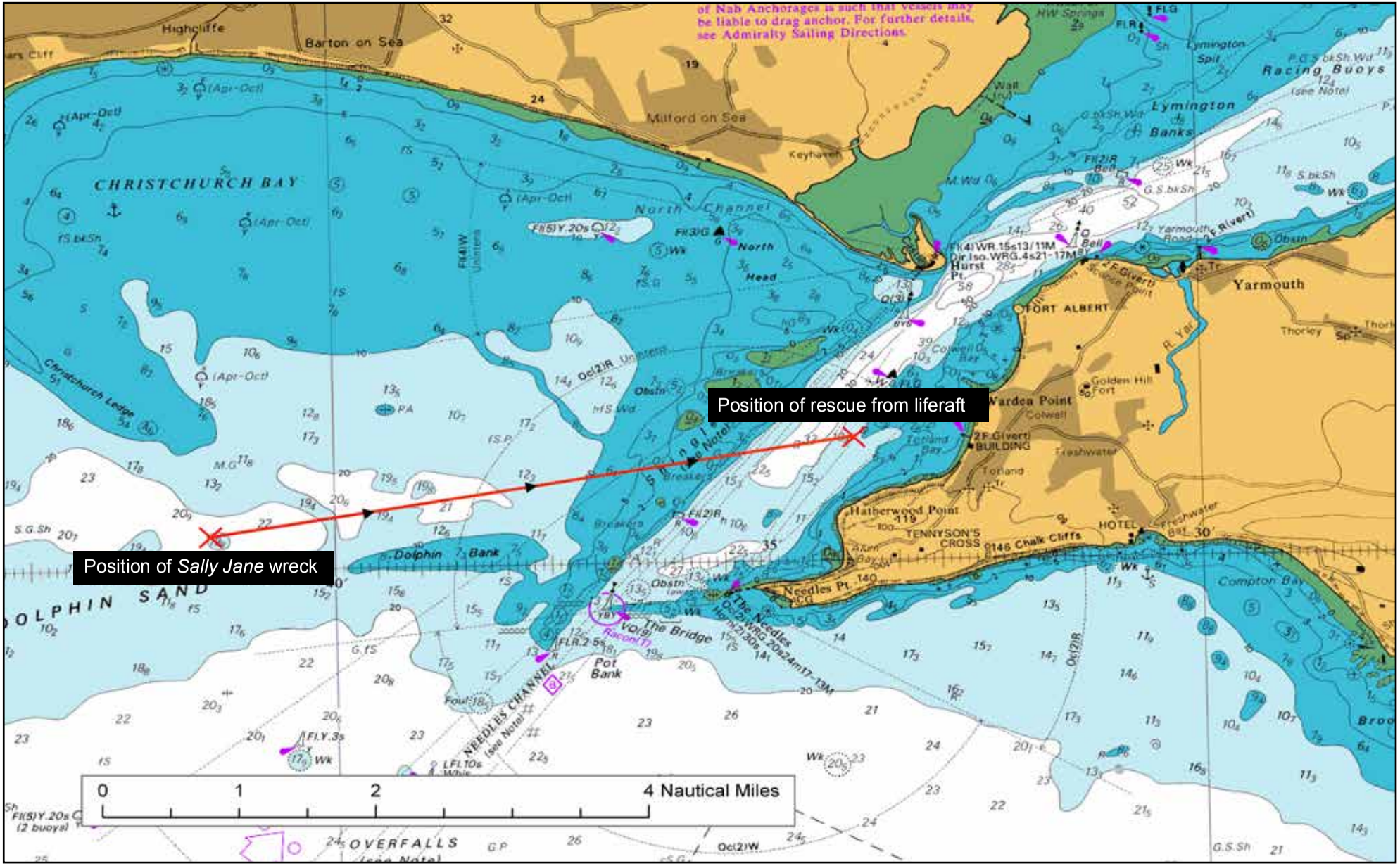

Figure 1: Extract of chart BA 2045 showing direction of drift of liferaft

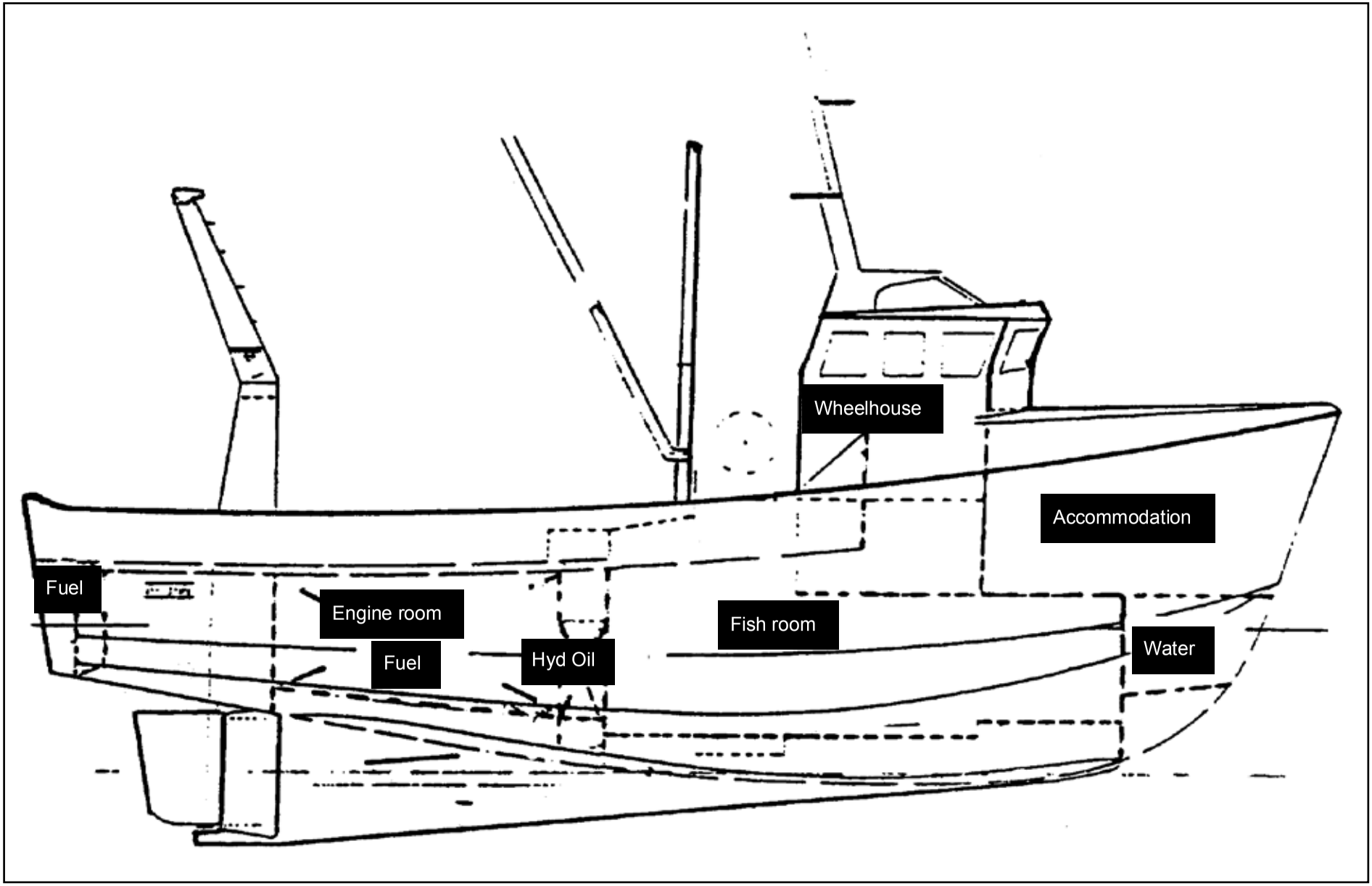

Figure 2: Layout of *Sally Jane*

Image courtesy of RNLI

Figure 3: Recovery of *Sally Jane*'s crew from liferaft

Environmental conditions

The wind was from the west-north-west at force 4 to 5. The sea was moderate and the visibility was good. The tidal stream at the time of the accident was setting to the east at a predicted rate of between 1.7 and 2.2 knots. The air temperature was 10°C and the sea water temperature was 17°C. Civil twilight occurred at 0612 and sunrise was at 0645.

Beam trawling

A beam trawl is a net held open by a steel beam which is towed along the seabed to catch demersal[2] fish species such as plaice or Dover sole. Skids or wheels are attached to the ends of the beam to assist its passage across the seabed. Twin beam trawlers, such as *Sally Jane*, use a beam trawl on both port and starboard sides **(Figure 4a)**. The width of a beam trawl is usually between 4m and 12m and varies according to the engine power of the vessel towing it along with national and local regulations. *Sally Jane*'s beam trawls were 4.5m wide.

A beam trawl is lowered to and raised from the seabed using a steel wire attached to a derrick, which needs to be long enough to raise the trawl to a height which allows the fishing gear to be safely recovered back on board. The length of the derricks fitted on board *Sally Jane* was 7.2m. When shooting and towing beam trawls, the derricks are lowered outboard to the horizontal position so that the trawl is clear of the vessel's side. When hauling, it is common practice for the derricks to be raised slightly above the horizontal to enable the deck crew to reach a rope tied to the skids at the front on the trawl which is attached to the cod-end at the rear of the net.

Figure 4 illustrates the positions of the derricks and beam trawls during the various stages of fishing operations.

[2] Demersal fish are bottom feeders. They can be contrasted with pelagic fish, which live and feed away from the bottom in the open water column.

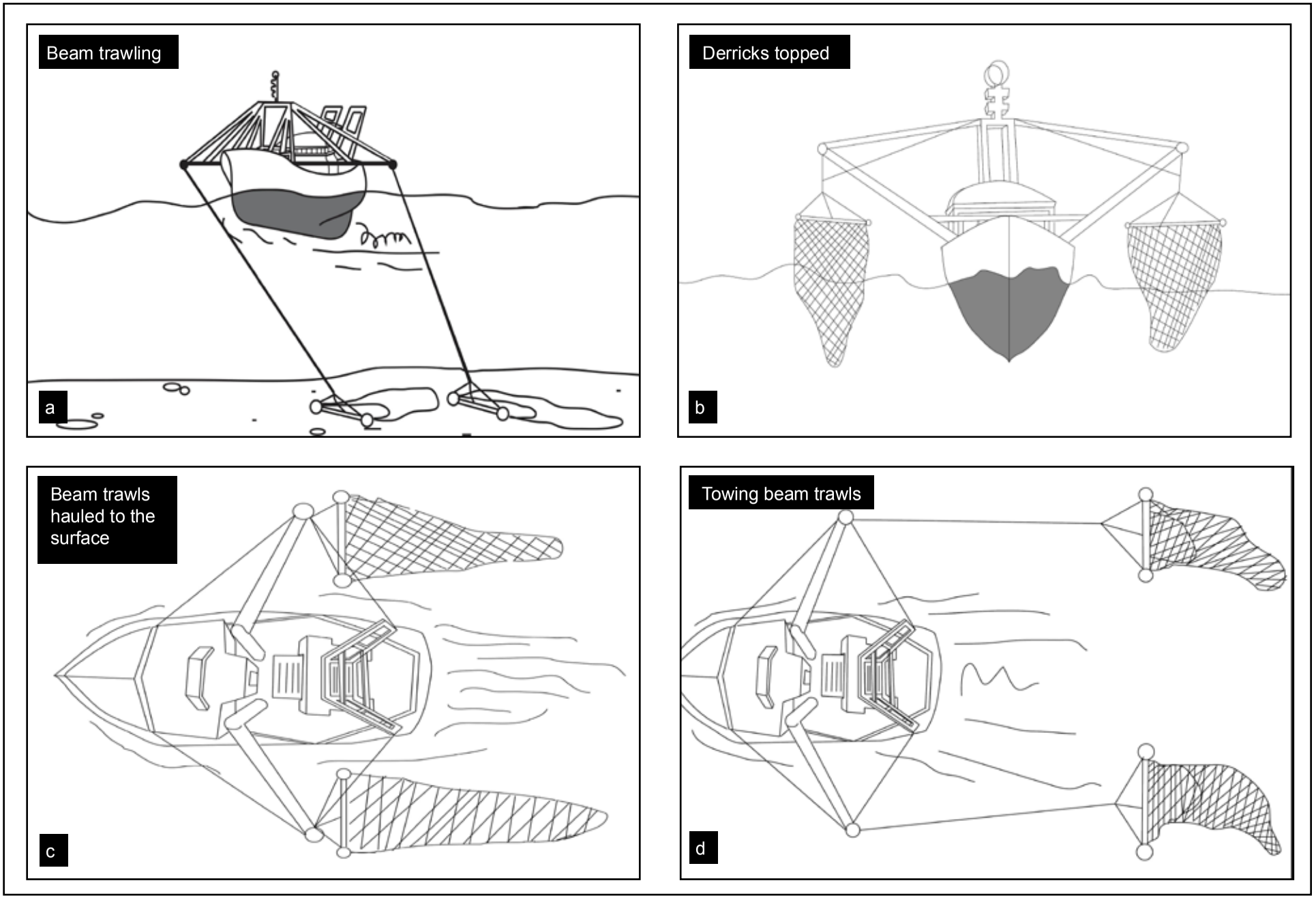

Figure 4: Beam trawling

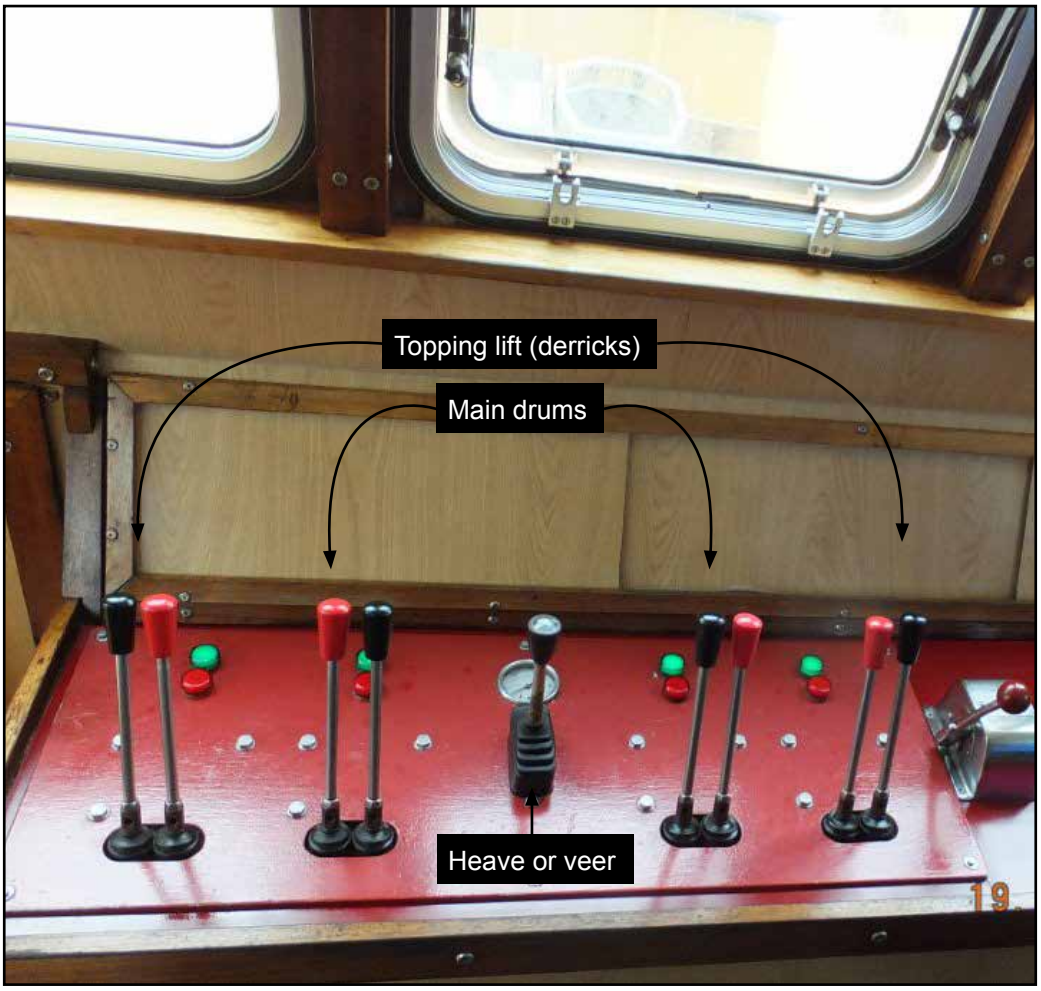

Figure 5: Winch controls (vessel similar to *Sally Jane*)

Vessel and equipment

Sally Jane was built in 1990 at Newbury Engineering Ltd, Newhaven. It was one of approximately 20 similar vessels built at the yard between 1985 and 2007, and was designed as a multipurpose vessel capable of beam trawling, scallop fishing and stern trawling. *Sally Jane* was fitted with a 201kW Cummins 855 main engine that also provided power to the winch hydraulics.

A four-drum Bopp hydraulic winch was used to operate the fishing gear. Two winch drums housed the main towing wires, which were also used to raise and lower the beam trawls to and from the seabed. The other two winch drums were used for the derrick topping lifts. The controls for the winch drums were sited on a console at the back of the wheelhouse **(Figure 5)**. The two centre pairs of levers controlled the towing wires and the outer pairs controlled the derricks. The black levers operated the drum brakes (on/off) and the red levers controlled the clutch engagement (clutch in/out). The lever controlling the direction of rotation ('heave' or 'veer') of the winch drums selected was located centrally, between the other winch control levers.

The liferaft carried on board *Sally Jane* was a 4-man liferaft which contained a Royal Ocean Racing Club (RORC) survival pack[3]. The liferaft was not SOLAS approved and was secured on the wheelhouse roof with a hydrostatic release unit (HRU) to allow float-free operation. A senhouse slip-hook enabled the liferaft to be released manually.

[3] The survival pack included a sea anchor, a floating quoit and line, a floating knife, two paddles, bellows, a bailer, a sponge, a watertight torch, spare batteries and bulb, a repair kit, anti-seasickness tablets, a survival manual, a table of rescue signals, three red hand flares, a whistle and a first-aid kit.

Four lifejackets with inherent buoyancy and four inflatable 'constant wear' lifejackets were stored in the accommodation. A McMurdo E3 406MHz emergency position indicating radio beacon (EPIRB) was secured on the top of the aft gantry by an HRU. The EPIRB had been due for service in June 2012 and the replacement date on the HRU was August 2013.

Crew

The skipper was 31 years old and he had fished since leaving school. He had been the skipper of *Sally Jane* for the last 6 years, having also previously been a member of the crew for 6 years. The skipper had completed the four mandatory Seafish[4] training certificates (basic sea survival, basic first-aid, basic fire-fighting and prevention and safety awareness) and, since June 2009, he had held the Seafish Skipper (under 16.5m) (Silver) qualification[5]. Among other things, the Silver qualification required the skipper to have attended a 1 day intermediate stability awareness course.

The mate was 49 years old and had been fishing for almost 25 years. His fishing experience varied from large beam trawlers to smaller inshore boats. He had also completed the four mandatory Seafish training courses and had worked on *Sally Jane*, as crew, for 6 years.

Working pattern

Sally Jane routinely beam trawled off the south coast of England. Each fishing trip was usually between 5 and 6 days, with the vessel's catch being landed in either Shoreham or Poole. When trawling, the duration of each tow between hauls was between 1 and 2 hours, depending on the ground being worked. When at sea, the deck hatches to the fish and engine rooms were closed but not secured.

When towing towards the east in the area to the south of Christchurch Ledge, it was usual practice to haul the beam trawls to the surface before reversing course towards the west. This procedure was followed to try and avoid picking up unwanted stones, mud and debris, and damaging the nets, which was likely if the vessel was turned with the trawls on the seabed.

When fishing, the skipper and the mate kept wheelhouse watches as follows:

- 0900 – 1800 skipper on watch
- 1800 – 0100 skipper and mate on watch
- 0100 – 0900 mate on watch

Refit and recent operation

In early September 2013, *Sally Jane* completed a short refit in which the majority of the work was either cosmetic or routine maintenance. No structural work was undertaken. *Sally Jane* sailed from Shoreham on 12 September. The vessel had been fuelled and was loaded with ice, fish boxes and water. It was usual practice to fill all fuel tanks when refuelling.

[4] Seafish - the Sea Fish Industry Authority works across all sectors of the UK seafood industry to promote good quality and sustainable seafood, and to improve the safety and standards of training for fishermen.

[5] The skipper under 16.5m qualification is a voluntary qualification which was introduced by Seafish to improve safety in this sector of the fishing industry. There are two grades of qualification: 'Silver' and 'Gold'. To qualify for a 'Silver' qualification, in addition to the four mandatory courses, a fisherman must also complete a 1 day basic engineering course, a 2 day watchkeeping course, a 1 day intermediate fishing vessel stability awareness course. He must also hold a short range Very High Frequency (VHF) radio certificate.

The following 36 hours were spent beam trawling south of Eastbourne. *Sally Jane* returned to Shoreham for several hours during the morning of 14 September. While alongside, the crew landed the catch and a defect with the fish room refrigeration system was repaired; no more fuel, water or ice was taken on board.

On sailing from Shoreham, *Sally Jane* trawled between Shoreham and Littlehampton until heading for Poole during the afternoon of 15 September to shelter from bad weather that had been forecast. Overnight, the skipper slept at home and the mate slept on board the vessel. The vessel sailed at 0730 the following morning (16 September); the catch was not landed and no fuel, water or ice was embarked.

Ownership and management

Sally Jane was owned by Leach Fishing Enterprises Ltd but was being sold to Sally Jane Fishing Ltd under a long-term arrangement. Under the terms of the arrangement, Sally Jane Fishing Ltd was responsible for the day to day running of the vessel, including its safety and safety management. Sally Jane Fishing Ltd owned another similar beam trawler, *Jane Elizabeth*, and was managed by an experienced fisherman who had previously skippered *Sally Jane* for 12 years.

Dive survey

The wreck of *Sally Jane* was found on 22 September 2013 by the Trinity House Vessel *Patricia* using side scan sonar. The vessel was in a depth of 22m and was lying on a seabed of sand, silt and small rocks.

On 13 November 2013, a dive survey was conducted. The weather conditions during the dive were calm but visibility was limited to between 1 and 2m.

The main findings of the dive survey were:

- *Sally Jane* was listed to starboard by approximately 35°
- Both derricks were raised to approximately 10° above the horizontal
- Both port and starboard sets of beam trawl gear were hauled all the way to the derrick heads
- The port trawl cod-end was full of mud/clay
- The inner pairs of winch control levers (trawl wires) were in the ‘brake on/ clutch out’ positions. The outer pairs were in the ‘brake off/clutched in’ positions
- The ‘heave/veer’ control lever for the winch was in the neutral position
- The fish room and engine room hatches were open
- The EPIRB was missing from its casing on the aft gantry **(Figure 6)**
- A halogen deck light on the port side of the gantry was missing

Due to technical difficulties encountered during the dive survey, the cod-end of the starboard trawl net was not sighted. However, the net moved without resistance when pulled.

Figure 6: Empty EPIRB housing

Previous capsize

In 1998 *Sally Jane* capsized when alongside in Aldrington basin, Shoreham. The MAIB investigation into the accident[6] identified that the immediate cause was inadequate transverse stability. It also identified that:

- *Sally Jane* capsized after the fishing gear had been hauled to the tops of the derricks.
- The vessel had just returned from her first trip following a 3 week refit and it was light on fuel, water and ice.
- There was insufficient data on the condition of the vessel before it capsized to determine the underlying cause. It was probably either a reduction in the vessel's stability due to the refit or an imbalance between the derrick loads.

[6] Sally Jane – 27 July 1998

Stability particulars book

Following capsize in 1998, *Sally Jane* was re-floated and was completely refitted. During the refit, the vessel was inclined and its stability was assessed by a naval architect. As a result, 4.5t of additional ballast was put into *Sally Jane* in the form of steel punchings and concrete.

The naval architect produced a stability particulars book, which indicated that *Sally Jane* met the standard required for beam trawlers of 15m length overall (LOA) or over. The standard is detailed in Merchant Shipping Notice (MSN) 1770(F) *The Fishing Vessels Code of Safe Working Practice for the Construction and Use of 15 metre length overall (LOA) to less than 24 metre registered length (L) Fishing Vessels* and requires that for beam trawlers, the minimum stability criteria be increased by 20%.

The stability particulars book also advised that the aft fuel tanks should not be filled to more than 50%. During the 15 years since the stability particulars book was produced, no lightship checks[7] were conducted to establish whether the vessel's weight or centre of gravity had altered.

Stability requirements

Currently there are no statutory requirements for fishing vessels under 15m to have approved stability data, although it is strongly recommended by the Maritime and Coastguard Agency in Marine Guidance Notice (MGN) 427(F) *Stability Guidance for Fishing Vessels of under 15m Overall Length*. MGN 427 also contains information on the methods available to assess the stability characteristics of under 15m LOA vessels and on their safe operation.

ANALYSIS

Capsize

It is evident that *Sally Jane* capsized suddenly and without warning. A basic stability analysis, based upon the data provided in the vessel's stability particulars book and an estimation of its condition at the time, showed that the most likely cause of the capsize was a significant weight imbalance between the trawl nets leading to a loss of transverse stability.

Given the raised position of *Sally Jane*'s beam trawls **(Figure 4b** and **4c)**, the depth of water in the area **(Figure 1)** and the speed of capsize, such imbalance could only have been caused by the contents of the starboard net suddenly releasing due to the net ripping or failing in some way. Although the state of the starboard cod-end could not be verified, the free movement of the net when it was tugged by the divers seems to confirm that it was empty when the vessel sank. It is also possible that the port net came fast on an object on or near the sea surface, but there is no evidence to support this scenario.

The mud and clay found in the port net during the dive survey shows that a significant weight had accumulated in its cod-end by the time it was raised. Given the absence of a list during the raising of the gear, it is likely that a significant weight had also accumulated in the starboard net. Therefore, the weight of the nets when first raised would have been balanced. However, as soon as the contents of the starboard net broke free when the nets were on the sea surface, only the weight of the port net and its contents would have been acting on the vessel. The weight in the port net, acting from the top of the derrick and its position outboard, were sufficient to produce a heeling moment capable of quickly pulling *Sally Jane* onto its port side.

[7] A lightship check is undertaken to ensure that a vessel's weight growth is within acceptable limits.

In these circumstances, the only way that capsize could have been prevented was for the crewman in the wheelhouse to release the winch brakes. However, the vessel's slewing and rolling to port were sudden and violent. Therefore, it was not surprising that the mate was quickly knocked off balance and was unable to reach the winch controls despite the control levers being accessible and simple to operate.

Dangers of beam trawling

The dangers of beam trawling are detailed in MGN 415(F) *FISHING VESSELS: The Hazards Associated with Trawling, including Beam Trawling and Scallop Dredging*, which states:

> *The nature of trawling, especially beam trawling, can result in serious accidents occurring at sea. Analysis of casualty data has shown that human error, failure of equipment, snagging of gear and loss of stability are recurring factors.*

The risk of the loss of stability is potentially greater for beam trawlers that are less than 15m LOA which, unlike larger beam trawlers, are not required to have a stability assessment or have an additional 20% reserve of stability. However, even where a stability assessment has taken place, it is impossible for all loading scenarios to be predicted. Even vessels with an additional 20% reserve of stability might not be able to cope with the more extreme loading conditions. Therefore, it is important that consequences of uneven or imbalanced loading are reduced as much as possible on all beam trawlers through equipment selection and operational procedures.

In this case, the MAIB's basic stability analysis of *Sally Jane* showed that the length of the derricks and the topping of the derricks prior to the contents of the starboard net releasing, contributed significantly to the resulting heeling moment.

Sally Jane's derricks were 7.2m long, and trawl beams were 4.5m long. Therefore, with the derricks lowered to the horizontal when shooting and hauling the nets, the clearance between the vessel's side and the inner beam end would have been 3.5m. Such a large clearance appears excessive. Although the use of shorter derricks might have required a change in working practices to enable the fishing gear to be safely recovered on board, the use of shorter derricks would have improved the vessel's stability during such safety critical operations.

In addition, raising the derricks slightly might have seemed a sensible precaution when turning. However, as the weight of the beam trawl acted from the suspension point at the derrick head, topping the derrick just 10° lifted the outboard end of the derrick by 1.25m. Consequently, the vessel's centre of gravity was raised and its reserve of stability was reduced.

The righting lever curves illustrating three scenarios[8], produced during the stability analysis, are shown at **Figure 7**. In **Figure 7**:

- The blue curve shows the righting lever with the derricks at 0° elevation and a weight of 2te in each net. The righting lever is positive and the area under the curve indicates that there is a reserve of stability.

- The red curve shows the righting lever with the derricks at 10° elevation, with 2te of weight in the port nets and 1te of weight in the starboard net (simulating 1te of its contents breaking free). In this case little righting moment remains, leading to the vessel readily capsizing. It is likely that *Sally Jane* was in a similar condition when lost.

- The orange curve shows the righting lever with shorter derricks (the derrick length used was 5.7m) at 0° elevation (providing 2m clearance between the vessel's side and the inner end of the beam trawl), with 2te of weight in the port net and 1te of weight in the starboard net. In this case, the area under the curve is larger than in the loss condition (red), therefore preventing immediate capsize and allowing more time for corrective action, such as the release of the winch brakes, to be taken.

[8] In the diagram, the area below the righting lever curves is proportional to the vessel's reserve of stability.

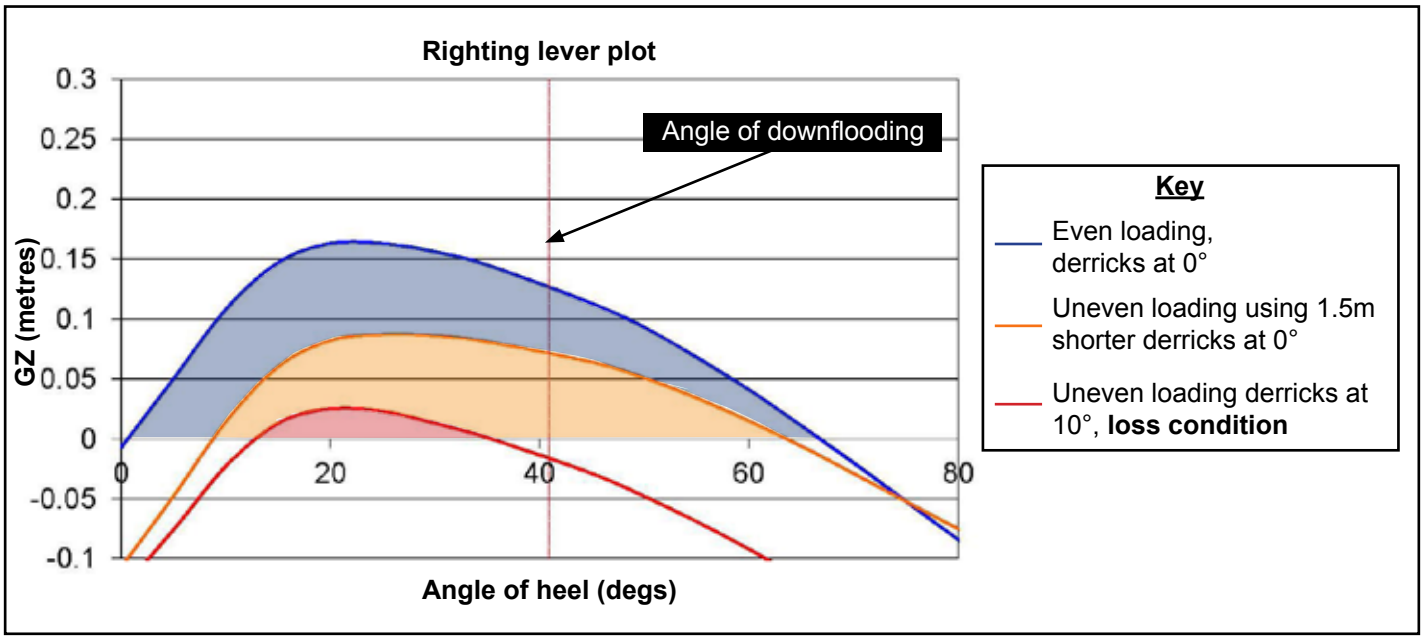

Figure 7: Righting lever plot

Flooding and inversion

MGN 415(F) also states:

> *Watertight and weathertight doors and hatches should be kept closed at sea when not in use.*

This is sound advice that reiterates good seamanship practice. Fishing is a hazardous activity, particularly when towing and hauling. Therefore, it is vital that watertight integrity is maintained on board fishing vessels even if it is not always convenient. Following the capsize of the beam trawler *Betty G* in July 2012[9], the closure of the engine and fish room hatches restricted the rate of progressive flooding when the vessel lay on its side. This provided the vessel's crew sufficient time to successfully launch and abandon into a liferaft.

It is evident from the dive survey of *Sally Jane* that its engine room and fish room deck hatches were not secured. Consequently, when the vessel rolled onto its port side, the hatch lids would have swung open. Sea water would have then quickly and freely flooded into the compartments and contributed to the vessel's rapid inversion. In only slightly differing circumstances, the skipper could have easily been trapped in the wheelhouse by the inrush of water rather than flushed from it.

Stability information

A stability assessment of *Sally Jane* was completed by a naval architect following her capsize in port in 1998. A stability particulars book was also produced, which indicated that the vessel satisfied the additional 20% reserve of buoyancy requirement for larger beam trawlers. However, as 15 years had lapsed since the stability assessment, and no lightship checks had been conducted during that time, the accuracy of the stability data contained in the vessel's stability particulars book must be treated with caution.

A stability assessment of a vessel is only 'a snapshot in time'. Vessels are invariably changed or modified in ways that affect their stability characteristics. Unless regular lightship checks are completed (usually every 5 years) to establish if there have been any changes to a vessel's weight or centre of gravity, it is impossible to determine if the stability information remains valid. Consequently, it is not known whether *Sally Jane*'s stability was better or worse in 2013 than it was in 1998.

[9] MAIB report No 6/2013

Nonetheless, despite the absence of lightship checks, much of the guidance in the book would have still remained valid. However, it was not followed. In particular, *Sally Jane*'s freeboard aft was small: a factor that was reflected in the guidance provided in the stability particulars book, which restricted the loading of fuel in the aft tanks to 50%. Despite this, the aft tanks were routinely filled. Although this might not have been contributory to the vessel's capsize on this occasion, the failure to take note of such important information and advice is of concern. More so, because the actions of *Sally Jane*'s skipper in this respect were probably no different to those taken by many other skippers. All too often stability information is available but it is either not read, not understood, or ignored.

Survivability

In view of the rapid speed of *Sally Jane*'s capsize and inversion, the skipper and mate did exceptionally well to escape from the vessel, particularly as the skipper had been asleep in his bunk. The men did not have the time or the opportunity to don the lifejackets stowed in the accommodation. Both would also have been debilitated to some degree by the inrush of the sea water that, although relatively warm for the UK coast, would have caused some shock.

The quick-thinking of the mate to release the liferaft was crucial. Although the liferaft was secured with an HRU, the HRU would not have activated with the vessel on its side. It might also not have activated immediately after the vessel inverted due to it being at an insufficient depth of water. As the skipper and the mate were not wearing lifejackets, were scantily dressed, and the EPIRB did not activate, their chances of survival would have reduced considerably without the liferaft. The liferaft probably inverted when it inflated because its canister was rotated when released.

Once the skipper and mate had righted the liferaft, climbed on board and untied the liferaft's painter, they were cold but relatively safe. Although the liferaft's painter had still been attached to *Sally Jane*, the painter would have detached when the vessel sank provided the 'weak link' in the liferaft securing arrangement had been properly fitted. Nonetheless, the skipper's untying of the painter was a sensible precaution.

The crew's actions in preparing and bailing the liferaft, huddling together to delay the onset of hypothermia, and their use of the red flares as they approached land clearly highlighted the benefits of the sea survival training the men had completed. The RORC survival pack had split and therefore some of its contents were probably lost during the inversion and righting of the liferaft. Consequently, *Sally Jane*'s crew were left with the bare minimum required to survive. It should be noted that even when intact, the survival pack carried did not contain as much equipment as SOLAS-approved packs. In particular, it did not contain thermal protective aids, parachute flares or nourishment, all of which would have been highly beneficial in this case.

EPIRB

Sally Jane was fitted with an EPIRB to alert rescue services and prompt a swift rescue. It was located on top of the aft gantry in a casing secured with an HRU, and was intended to float free when the vessel capsized.

The EPIRB fitted to *Sally Jane* did not transmit an alert and has not been found. It was over a year overdue for a service and the HRU was a month out of date. However, the most likely reason that the EPIRB did not activate as intended was because of its vulnerable position on the aft gantry. As a deck light fitting was also missing from the gantry, it is likely that when the vessel capsized to port the starboard beam and trawl swung across the top of the gantry, removing the light fitting and the EPIRB, trapping the beacon in the starboard trawl net.

Although space is at a premium on small fishing vessels and priority is given to equipment intended for fishing operations, careful consideration should be given to the siting of essential safety equipment. Apart from its vulnerability on top of the gantry it would have been very difficult for the crew to retrieve the EPIRB or release it manually in an emergency situation.

CONCLUSIONS

It is most likely that:

- Sally Jane capsized due to a loss of transverse stability caused by the difference in the weight of the contents of its port and starboard trawl nets.
- The uneven loading was due to the contents in the starboard side trawl net breaking free.
- The vessel's heeling moment was increased by the length and angle of the derricks.
- The vessel quickly flooded and inverted because the hatches to the fish and engine rooms were not secured.
- The information in the stability particulars book had not been periodically verified through lightship checks and it was not used by the vessel's skippers.
- Had the liferaft not been available, the chances of the crew's survival would have reduced significantly.
- The EPIRB did not activate because it was unable to float-free.

RECOMMENDATIONS

No recommendations have been made as a result of this investigation. However, the circumstances of this accident should serve as a reminder to fishermen of the inherent and ever-present danger of the sudden loss of stability when beam trawling.

SHIP PARTICULARS

Vessel's name	*Sally Jane*
Flag	UK
Classification society	Not applicable – subject to inspection
Fishing number	SM 74
Type	Fishing vessel – beam trawler
Registered owner	Leach Fishing Enterprises Ltd
Manage	Sally Jane Fishing Ltd
Year of build	1990
Construction	Steel
Length overall	13.6m
Registered length	11.07
Gross tonnage	18.06

VOYAGE PARTICULARS

Port of departure	Poole
Port of arrival	Not applicable
Type of voyage	Fishing

MARINE CASUALTY INFORMATION

Time and date	0600 on 17 September 2013
Type of marine casualty or incident	Very serious marine casualty
Location of incident	Christchurch Bay, England
Place on board	Ship
Injuries/fatalities	None
Damage/environmental impact	Vessel lost
Ship operation	Fishing
Voyage segment	Mid water
External & internal environment	West-north-west 4 to 5; moderate seas; good visibility.
Persons on board	2