Report on the investigation of

the death of Michael John Beedie

a fisherman from the fishing vessel

Alma C (N54)

on Turbot Bank about 55 miles west-by-south of

Thyborøn in Denmark

on 25 January 2001

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The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the cause with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

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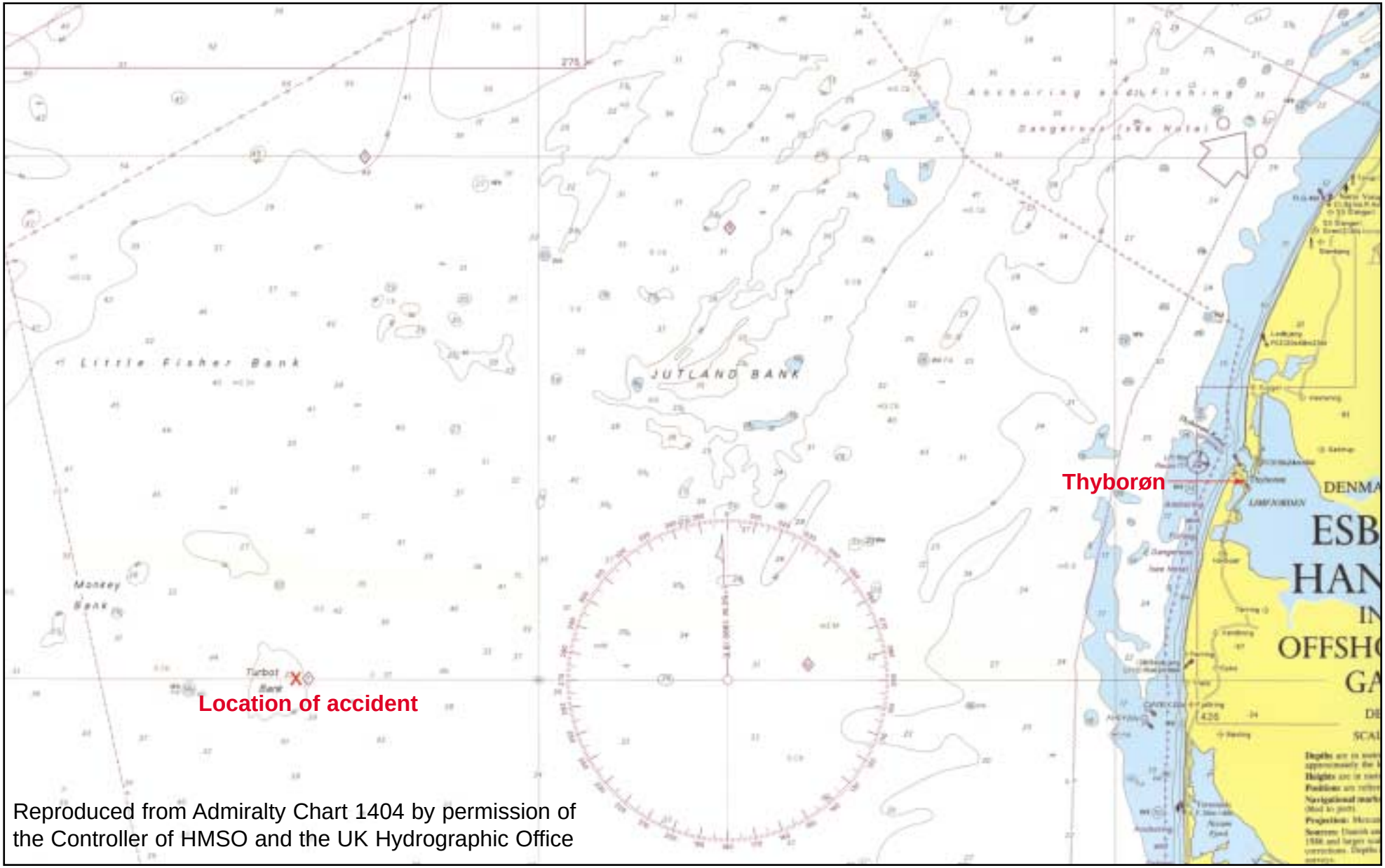
GLOSSARY OF ABBREVIATIONS AND ACRONYMS

C	Celsius
ETA	Estimated time of arrival
GPS	Global positioning system
kHz	Kilohertz
kW	Kilowatts
m	metres
MCA	Maritime and Coastguard Agency
MF	Medium frequency
SFIA	Sea Fish Industry Authority
UTC	Universal co-ordinated time
VHF	Very high frequency

TERMS

Williamson Turn	Where a vessel's helm is put hard over towards the side from which a person has fallen. After the course has changed 60° from the original course, the rudder is put hard over to the opposite side. The vessel is then steadied up once the reciprocal course is reached. Speed is adjusted as necessary and the vessel should return to the original position at which the turn was commenced.



Reproduced from Admiralty Chart 1404 by permission of the Controller of HMSO and the UK Hydrographic Office

SYNOPSIS

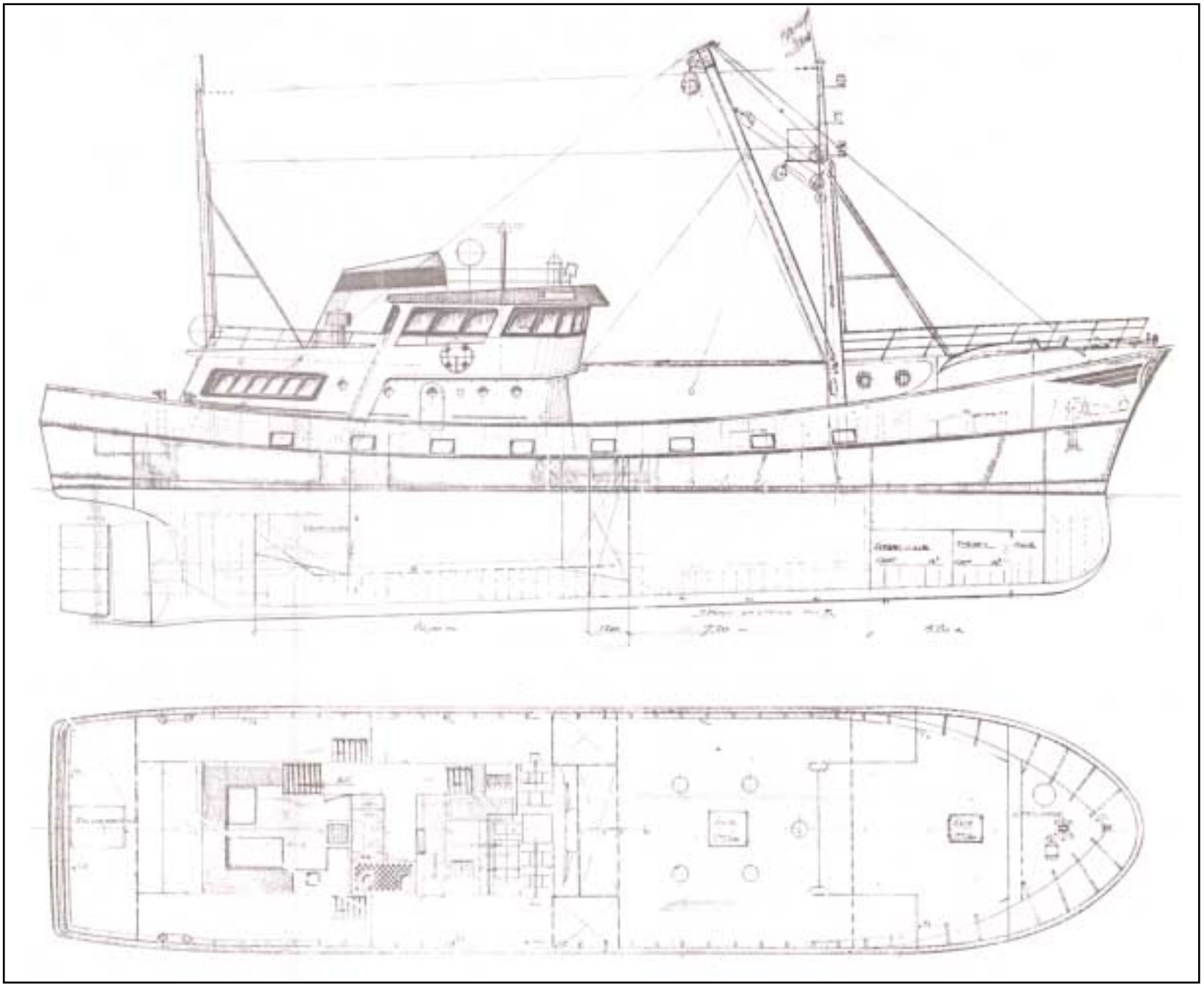
At about 0530 (UTC) on 25 January 2001, Michael Beedie was thrown overboard from the UK-registered beam trawler *Alma C* by the movement of a towing chain. When he was recovered back on board, he was found to be dead. The Danish Maritime Authority informed the MAIB of the accident at 1557 that day. Captain P Kavanagh carried out the investigation.

At the time of the accident, *Alma C* had finished fishing operations and the crew members were stowing the fishing gear on deck, in preparation for sailing back to port. The vessel was on the Turbot Bank, which is about 55 miles west-by-south of Thyborøn in Denmark, and was stopped in the water. The wind was southerly force 4 to 5, the visibility was more than 3 miles and it was dark.

The beams had been brought inboard and were lying fore and aft just inside the port and starboard bulwarks. The port forward beam shoe was resting on its heaviest part on the deck. However, the aft beam shoe was resting on its trailing edge with its heaviest part uppermost, making it unstable. Michael Beedie was waiting for his colleagues to finish their tasks, and was standing near the after beam shoe. As the vessel rolled, the beam shoe fell towards Michael Beedie, who probably jumped up to avoid the beam, and leant over the aft towing chain. As the vessel moved again the chain became tight and threw him over the side into the sea.

The alert was raised immediately and a lifebuoy, with a smoke marker/light, was thrown to him, but he could not reach it. The vessel drifted away from him and the crew lost sight of him in the dark. After noting the Global Positioning System (GPS) position, the skipper made a Williamson Turn using the smoke marker/light as a reference point. He also called other vessels in the area and the Danish Coastguard. The reflective tape on Michael Beedie's jacket was seen in the light of parachute flares, which had been set off by the crew, and he was eventually recovered back on board. However, he showed no signs of life and, later that day, his body was landed in Thyborøn.

A recommendation has been made to the owner to formalise a number of safety measures into the vessel's risk assessment.



Alma C plan and elevation

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *ALMA C* AND ACCIDENT

Vessel details

Registered owner	:	Supreme Fishing
Port of registry	:	Newry (N54)
Flag	:	United Kingdom
Type	:	Beam trawler
Built	:	1974 in Netherlands
Construction	:	Steel
Length overall	:	33.7m
Gross tonnage	:	251.0
Engine power	:	925kW
Service speed	:	10 knots

Accident details

Time and date	:	About 0530 (UTC) on 25 January 2001
Location of accident	:	Latitude 55° 59'.83 N Longitude 006° 34'.30 E on Turbot Bank, about 55 miles west-by-south of Thyborøn, Denmark
Persons on board	:	6
Injuries/fatalities	:	One fatality
Damage	:	None

1.2 ALMA C

1.2.1 The vessel

The vessel was a conventional, Netherlands-built, beam trawler and had been under the Netherland's registry until the present owners bought her in 1991. Up to that time she had been under the continuous survey of the Netherlands inspectorate. Her new owner registered her under the UK flag, and in 1992 she was granted her fishing vessel certificate. The certificate was renewed in 1995, but she was later changed to the Irish registry for commercial reasons. This arrangement did not go as planned, and in 2000 she was brought back again to the UK registry. The MCA surveyed the vessel in November 2000. A letter of satisfaction with the survey was made at the time, but a certificate was not issued because the registry procedures had not been completed, and a new stability book was still awaited from the owner's consultant. The survey showed a number of deficiencies, of which the starboard manoverboard lifebuoy light and smoke marker/light had to be renewed before sailing.

1.2.1 The beams

The two beams were each 11m long with a beam shoe at each end. Each beam had five tickler chains in 15m, 16m, 17m, 18m, 19m and 20m lengths strung between the beam shoes. These chains were in front of the mouth of the net. As they raked the seabed, the fish rose and were caught in the net. Each time the nets were hauled, only the cod ends were brought inboard to empty the catch, while the beams remained outboard. Only when the vessel was steaming between fishing grounds, or returning or travelling from port, were the beams brought in board. When they were inboard they ran fore and aft against the side bulwarks of the fore deck.

1.2.3 The lifesaving equipment

The vessel had the following lifesaving equipment:

2 x 6-person liferafts, stowed on the wheelhouse top;

1 x lifebuoy with buoyant lines, on each side of the whaleback on the main deck;

1 x lifebuoy with buoyant lines, on each side, and outboard of, the bridge wings;

1 x lifebuoy with smoke marker/light and line, on each side of the guardrails of the top deck of the boat deck;

8 x lifejackets – six in the cabin and two in the wheelhouse;

4 x line throwing appliances;

12 x parachute ship's distress signals; and

1 x 3.5m inflatable boat, stowed aft of the wheelhouse.

1.2.4 The crew

At the time of the accident, there were six crew members of Irish and British nationalities.

The deceased, Michael John Beedie, a British national, was 30 years old. He had been a fisherman since leaving school, and had been with the company for about two years. He held a class 2 motor fishing certificate of competency, which was issued in October 1999, in which case he would have taken a sea survival course. One of the exercises for this course was to board a liferaft in a swimming pool. However, this did not require a participant to swim unaided as lifejackets were worn. He had been serving mainly on board *Margret C*, another of the company's beam trawlers. He had a trip off over the Christmas period but, when he was ready to return, *Margret C* had already sailed for her fishing grounds and he was given a trip on *Alma C* as an extra deckhand.

The skipper, an Irish national, was 51 years old. He had worked on board fishing vessels since the age of 18, serving as an engineer for 20 years. However, he obtained his skipper's certificate about six years before the accident, and had been skipper since then, serving on beam trawlers.

1.3 ENVIRONMENTAL CONDITIONS

The wind was southerly force 4 to 5 and the visibility was more than 3 miles.

Civil twilight was at 0657 and sunrise was at 0740; therefore, it was dark at the time of the accident.

From the *Admiralty Sailing Directions - North Sea (east) Pilot* the mean sea surface temperature, for January and for the position of the accident, was 4.5°C.

1.4 NARRATIVE OF EVENTS

All times are UTC.

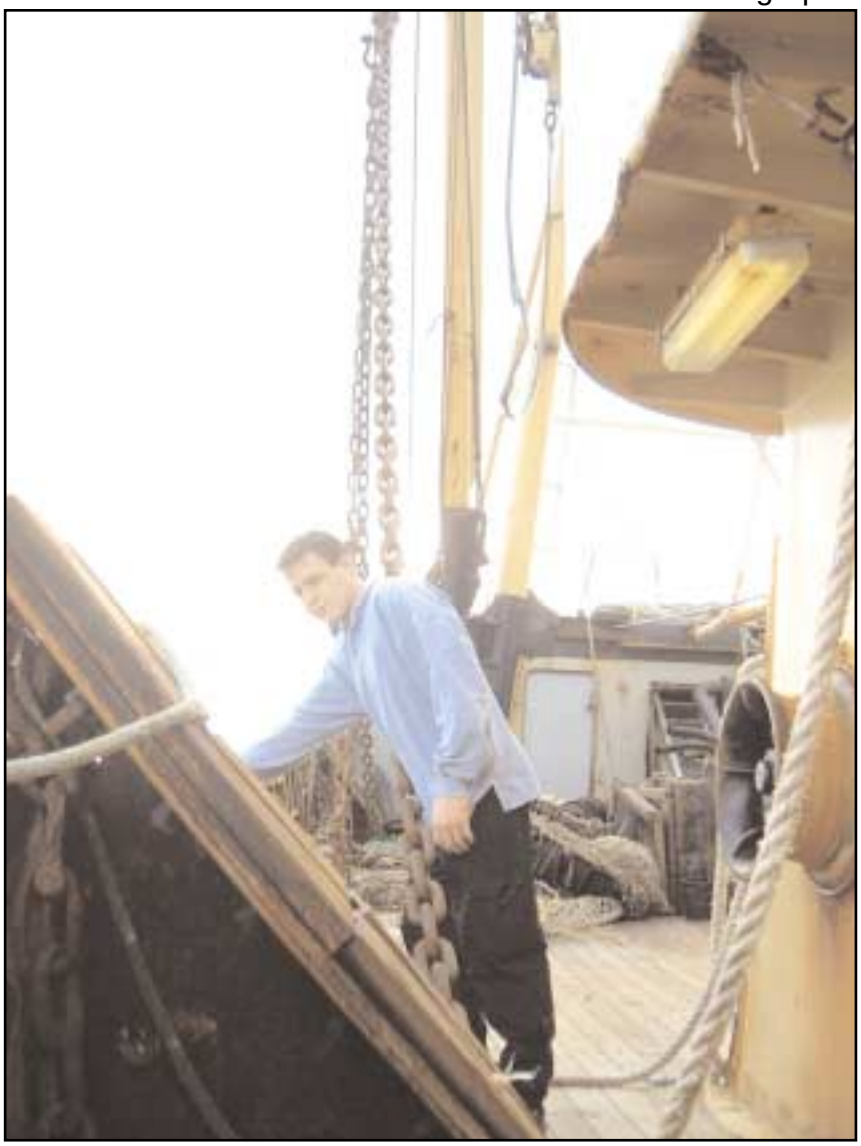
On 16 January 2001, *Alma C* left Ijmuiden, in the Netherlands, for the fishing grounds west of Denmark. However, she developed a problem with her ice-making machine and, on 18 January, the vessel visited Thyborøn, in Denmark, to load ice.

After seven days of fishing, it was decided to return to Ijmuiden to land the catch. The fishing gear was hauled in and the two cod ends were emptied of their catch on the fore deck. Because this was the last haul before setting off for port, both beams and the nets were heaved and placed in a fore and aft line, inboard of the fore deck bulwarks. *Alma C* was stopped in the water. Two deckhands were attending each beam, while another deckhand stood on the centreline in front of the wheelhouse, where the skipper was operating the winches.

The fore and aft beam shoes were resting against the bulwarks, and the tickler chains were still outboard. At the fore end of the port beam, one of the deckhands was lifting each tickler chain inboard using a gilson hook. Michael Beedie was standing near the aft end of the port beam, and between it and the accommodation superstructure, waiting for the deckhand at the forward end to complete his task.

The vessel was rolling in the seaway, causing the after beam shoe to move away from the bulwark and towards Michael Beedie. Then, as the vessel rolled again, the aft towing chain tightened **(see photograph 1)**. The deckhand forward saw Michael Beedie being thrown by the chain and he shouted out. The other deckhand, standing forward of the wheelhouse, turned round and saw Michael Beedie going over the side of the vessel and shouted, “man overboard”. The skipper heard the shout, went to the port side, and saw Michael Beedie in the sea, who in turn shouted to his colleagues that he could not swim.

Photograph 1



A re-enactment of the accident by a colleague
of Micheal Beedie

The two deckhands ran to a lifebuoy (with a line and a smoke marker/light attached) and threw it towards Michael Beedie, but he was unable to reach it. They pulled the lifebuoy back in and cut the smoke marker/light off so that they could throw the lifebuoy nearer to him. They then threw the smoke marker/light back into the sea. However, they lost sight of Michael Beedie when he drifted away on the port quarter and outside the loom of the vessel's lights.

Just after the manoverboard alert, the skipper had quickly noted down the vessel's position from the GPS set. He started a Williamson Turn and he also made a "Mayday" distress call on VHF radio channel 16 and on MF 2182kHz. The calls were heard by Lyngby Radio in Denmark (timed at 0530) and by two Netherlands beam trawlers in the area, one of which was about 0.75 mile away. Lyngby Radio informed Århus rescue centre of the incident. Coastguards at Ijmuiden in the Netherlands, and Stavanger in Norway, also received the distress call. Unsuccessful attempts were made by the shore authorities to contact the distress caller. A Danish rescue helicopter was scrambled at 0535 and it was airborne by 0602, with an ETA of 40 minutes at the accident scene.

Although they could see the smoke marker/light as a point of return, the crew used parachute flares to light up the area during their search for the casualty. The vessel's searchlight was inoperative at the time. They saw the retro-reflective tape on the shoulders of his jacket, and the vessel was manoeuvred towards him. However, by this time Michael Beedie was face down in the water. The vessel passed him several times before they could get alongside, but the crew managed to get a boat-hook into his clothing, grab him and haul him onboard. However, the crew members could find no signs of life.

At 0613, *Alma* C reported to the shore authorities that the man overboard had been recovered onboard, but that he was dead. The Danish authorities then terminated the search and rescue attempt.

1.5 PUBLISHED GUIDANCE

The following are relevant extracts from MCA's *Fishermen and Safety - a guide to safe working practices for fishermen*.

MAN OVERBOARD PROCEDURES

When a man overboard situation occurs, it is essential that the right actions are taken quickly as the cold temperature of the water will rapidly reduce the person's ability to survive.

ACTION

IF YOU SEE SOMEBODY GO OVERBOARD IN GOOD VISIBILITY

- *Raise the alarm by shouting **"Man Overboard"** to alert all on board.*
- *Immediately throw the lifebuoy together with its smoke marker/light unit*

overboard. The person in the water may not be able to reach it however it will mark his approximate position.

- *Ensure that the helmsman is aware of the situation. He should mark the vessel's position - most navaids have a MOB function. It may prove vital if contact with the person in the water.*

- *Act as lookout (or ensure that somebody else does), watch the person in the water and point at them continuously. Keep the helmsman advised*.

- *If it is safe and depending on how the fishing gear is deployed, the helmsman should start to turn as quickly as possible. Delay increases the distance and possibility of losing sight of the person in the water.*

IF YOU SEE SOMEBODY GO OVERBOARD IN POOR VISIBILITY

- *In poor visibility or when the weather and sea state are heavy the "Williamson Turn" is a good way for the helmsman to get back on to a reciprocal course which will take you back down the track.*

- *put the helm hard over to starboard and add 60° to your initial course.*

- *on the new heading, put the helm hard over to port.*

- *when the compass is reading the initial course + 180° steer the reciprocal course and the casualty should be ahead of you.*

- *During hours of darkness a white parachute flare, which will pick up the retro reflective tape on clothing/buoys, can be used to illuminate the area. Remember night vision will be impaired if you look at the flare.*

ADDITIONAL FOLLOW-UP ACTION

- *The following additional actions should also be considered depending on the circumstances:-*

- *Sound an alarm of 3 long blasts if there are other vessels in the vicinity.*

- *Initiate a Pan broadcast.*

- *Advise Coastguard of the situation.*

- *Consider starting an appropriate search pattern if the person in the water is missing.*

RECOVERY

- *Recovering a person from the water can be very difficult and fishermen have drowned alongside the vessel because their colleagues were unable to recover them.*

- *Every vessel should have an action plan for recovery of a person from the water. Make sure that you know the necessary equipment and what to do.*

- *Crew members effecting the rescue of a person from the water should wear a lifejacket, complete with harness and lifeline, to ensure that they do not get pulled into the water as well - this is vital if a crew member goes over the side to assist in a rescue.*

- *A rescuer should only enter the water as a* ***last resort****.* ***Don't*** *compromise your own safety and do not leave your vessel dangerously undermanned.*

LIFEJACKETS AND BUOYANCY AIDS

- *Each year some 20-30 UK fishermen die due to incidents which occur in the course of fishing. Incidents such as men being knocked, dragged or simply falling over board and incidents where vessels collide, capsize, run aground or founder. In many cases fishermen needlessly drown and yet had they worn a lifejacket their lives would have been saved.*

Footnote: Marine Guidance Note 155(F), which is published by the MCA, discusses and compares the buoyancy equipment available to fishermen.

ROPES AND LINES, ETC

- *Ropes, cables, lines and chains when in use can be dangerous: they can snap, suddenly become taut, jump a fair lead, etc so:*

- *If you are not involved, stay well clear of a rope or cable, etc, which is moving, especially if it is under strain.*

FISHING DANGERS

- *Be alert when gear is being shot or hauled and watch out for shackles or swivels which may jam in blacks. If you are not directly involved in the operation - stand clear!*

1.6 THE MERCHANT SHIPPING AND FISHING VESSELS (HEALTH AND SAFETY AT WORK) REGULATIONS 1997

The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997, which came into force on 31 March 1998, require both employers and employees to carry out certain duties.

Advice about complying with the Regulations is given in *Marine Guidance Note MGN 20* entitled *Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997*, from which extracts are taken relevant to this case.

Section 2 states:

Under the Regulations, it is the duty of employers to protect the health and safety of workers and others affected by their activities so far as is reasonably practicable. The principles for ensuring health and safety are:

(a) the avoidance of risks, which amongst other things includes the combination of risks at source and the replacement of dangerous practices, substances or equipment by non-dangerous or less dangerous practices, substances or equipment;

(b) the evaluation of unavoidable risks and the taking of action to reduce them;

(c) adoption of work patterns and procedures which take account of the capacity of the individual, especially in respect of the design of the workplace and the choice of work equipment, with a view to alleviating monotonous work and to reducing any consequent adverse effect on workers' health and safety;

With regard to employees' duties, section 17, *Duties of Workers*, states:

(a) take reasonable care for their own health and safety and that of others on board who may be affected by their acts or omissions;

(b) make proper use of plant and machinery, and treat any hazard to health and safety with due caution.

1.7 RISK ASSESSMENT

Advice on carrying out risk assessment is also given in *Marine Guidance Note MGN 20* entitled *Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997*.

Annex 1, *Risk Assessment* Section 3 Principles of "*risk assessment*" states:

3.1 A risk assessment is intended to be a careful examination of what, in the nature of operations, could cause harm, so that decisions can be

made as to whether enough precautions have been taken or whether more should be done to prevent harm. The aim is to minimise accidents and ill health on board ship.

3.2 The assessment should be firstly to identify hazards that are present and then establish whether a hazard is significant and whether it is already covered by satisfactory precautions to control the risk, such as permits to work, restricted access, use of warnings signals or personal protective equipment, including consideration of the likelihood of the failure of those precautions which are in place.

Section 5, *What should be assessed?* states:

5.1 The assessment should cover all risks arising from work activities of workers on the ship. The assessment is not expected to cover risks which are not reasonably foreseeable.

5.2 Employers are advised to record the significant findings of their risk assessment. Risks which are found trivial, and where no further precautions are required, need not be recorded.

However, risks, which are deemed to be moderate to intolerable, require the introduction of control measures or the operation to be prohibited.

Section 8, *When to assess?* states:

8.1 Risk assessment should be seen as a continuous process. In practice, the risks in the workplace should be assessed before work begins on any task for which no valid risk assessment exists. An assessment must be reviewed and updated as necessary, to ensure that it reflects any significant changes of equipment or procedure.

The *Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations 1999* states that:

Personal protective equipment shall be used when risks cannot be avoided or reduced to an acceptable level by means of work that are safe and without risk to health or by means of collective protection or by means which are in use equally or more effective.

This was the first voyage under the UK flag and a risk assessment had not yet been carried out, although the vessel did carry a SFIA pro-forma booklet on the subject.

Since the accident, Supreme Fishing has carried out a risk assessment.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations, if any, with the aim of preventing similar accidents occurring again.

2.2 THE ACCIDENT

The accident happened when fishing operations had been finished and the crew members were stowing the fishing gear on deck before travelling back to port.

Alma C was not making way through the water, and she had the wind and seas on her port quarter. The crew went through the normal procedure of hauling the beams to the side of the vessel so that the cod ends could be brought inboard and emptied of the catch. Once the catch had been cleared, the main warps were heaved in and the derricks topped even higher so that the beams could be lifted over the bulwarks. When the beams had been turned parallel to the fore and aft line of the vessel, they were lowered on to the main deck, just inside the bulwarks, and the net was gathered and laid out on the fore deck. The beams had not yet been secured against the bulwarks.

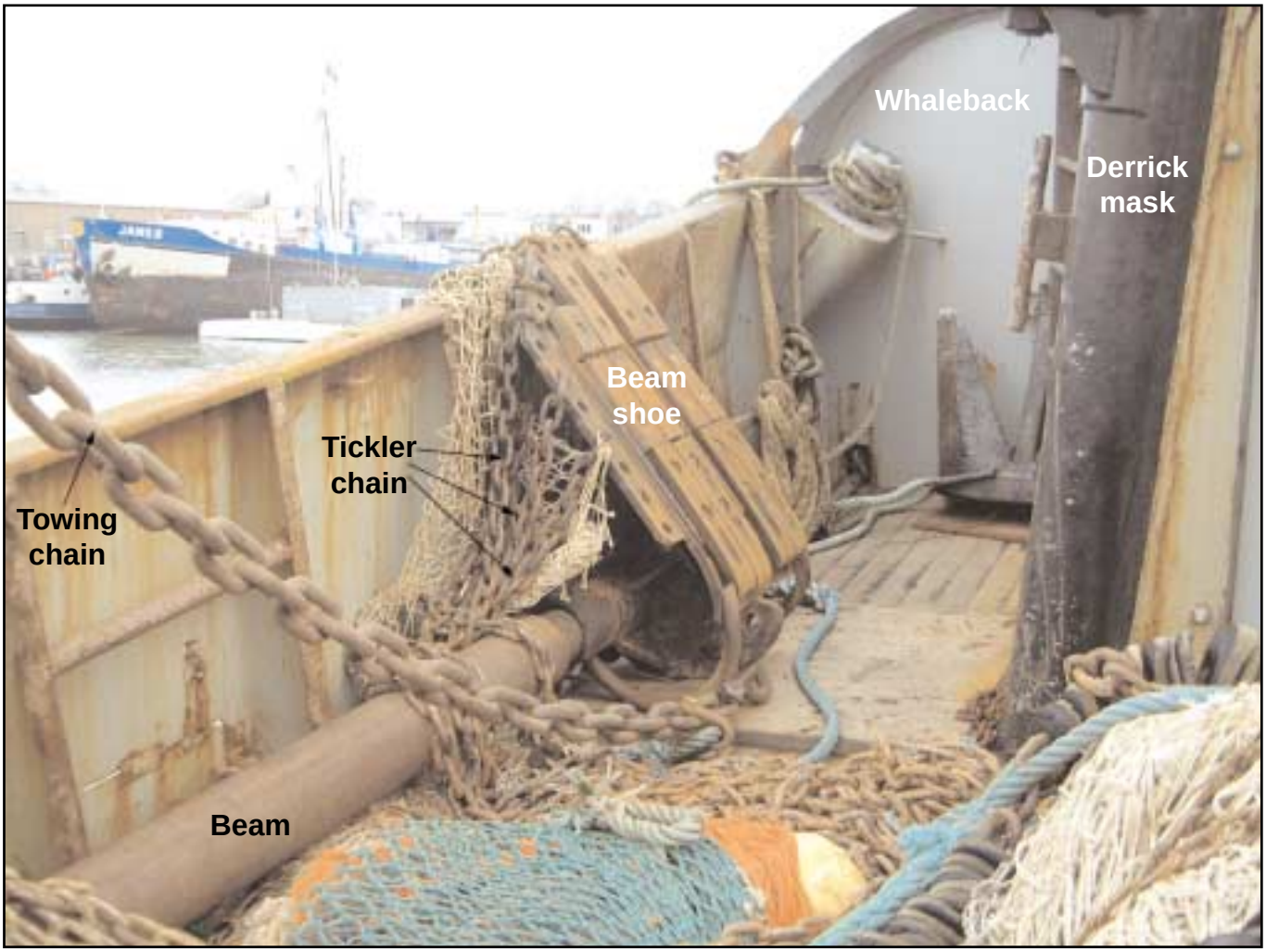
Photographs 2 and 3 were taken during the MAIB investigation, and they show both beam shoes resting up against the bulwarks, both facing in the same direction and resting on deck on their heaviest parts. At the time of the accident, the tickler chains needed to be brought inboard. This was being carried out by crew members on each side of the vessel, while Michael Beedie was waiting near the aft end of the port beam.

Photographs 4 and 5, taken by the Danish Maritime Authority the day after the accident when the vessel berthed at Thyborøn, show that the aft port side beam shoe was in the opposite position* to the forward beam shoe, which was in the same position as photograph 2. For some reason, while the beam was brought inboard, the aft beam shoe had landed upside down and had come to rest on its trailing edge with its heaviest part propped up against the bulwark, making it top heavy and unstable. This is shown in diagram 1. When the vessel rolled, the after beam shoe fell away from the bulwark and inboard towards Michael Beedie. He probably jumped up to avoid the beam, and leant over the after towing chain, as shown in photograph 1. However, the vessel rolled back causing the derrick and the upper blocks to move and, in turn, caused the towing chain to suddenly become tight under Michael Beedie's midriff. This sudden movement of the towing chain was of such force that he was thrown overboard.

(*Note: The beam shoes can revolve round the bar of the beam at each end. This allows the beams shoes to ride over the ridges on the seabed.)

While waiting for his next task, Michael Beedie must not have realised that the after part of the beam was unstable and was about to fall over towards him. He had been standing close to the beam and the superstructure he was caught between the two. He had been standing in a place of danger, and the consequences of this are described above **(see section 1.4)**.

Photograph 2



The forward end of the beam

Photograph 3

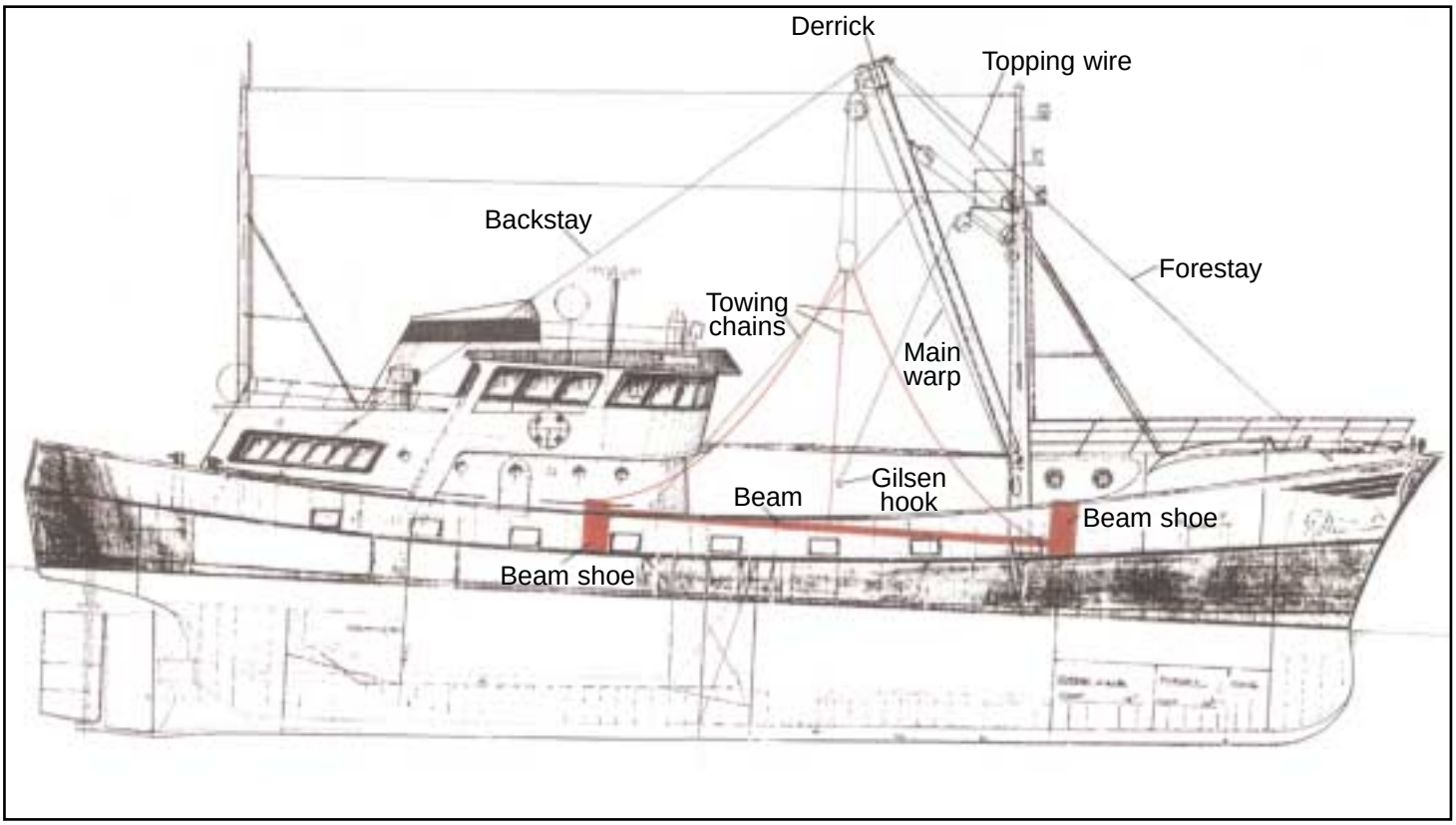
Photograph 4

View from aft of the beam shoe having fallen down onto the deck

Photograph 5

View from forward of the beam shoe having fallen onto the deck

Diagram 1



A diagram showing the beam just after it had been brought in board

2.3 HEALTH AND SAFETY/RISK ASSESSMENT

There have been a number of accidents on fishing vessels, in which fishermen have been badly injured or thrown overboard, when they have come into contact with a rope or a wire which has suddenly tightened by the movement of the vessel. These accidents illustrate that there is considerable force in a wire or a rope which has become suddenly tight and emphasise the need for fishermen to stand well clear of them.

It is reasonably foreseeable that crew members could come into contact with many ropes, wires and heavy equipment, in the confined space of the fore deck of a fishing vessel. To minimise the risk, procedures to ensure crew members stood in a safe position when not actually carrying out operational tasks, should have been in place. Clearly, Michael Beedie was not standing in a safe position, and he was at risk **(see section 1.4)**. A formal risk assessment could have identified that risk, and appropriate control measures could have been implemented.

2.4 THE RECOVERY

While the outcome of the recovery was not successful, it would seem that *Alma C*'s crew did as much as they could to rescue Michael Beedie **(see section 1.4)**. Shortly after he had gone overboard, the crew members experienced difficulties in throwing the lifebuoy close to him and he could not reach it, possibly because he could not swim. Although he had completed a sea survival course, it had not prepared him for swimming without a lifejacket **(see section 1.1.4)**. Before Michael Beedie disappeared in the darkness, as the vessel drifted quickly away from him, the crew did not have time to use other buoyancy aids, such as more lifebuoys, the inflatable dinghy or even a liferaft. The skipper noted down the position quickly, informed other vessels and the Danish coastguard of the accident and made a Williamson Turn using the smoke marker/light as a reference point. Although the skipper had made a distress broadcast, the emergency services ashore were unable to contact the vessel. The skipper was probably too busy trying to manoeuvre the vessel and locate the man overboard, to respond. Nevertheless, a helicopter was scrambled to assist the search.

Michael Beedie was wearing a jacket fitted with retro-reflective tape and, notably, some was on his shoulders, making him visible on the surface of the sea in the light of the parachute flares. Had he not been wearing such a jacket, he might never have been found.

It is unfortunate that the searchlight (which was not part of the statutory safety equipment) was not working at the time of the accident. Had it been, the light, together with his reflective jacket, might have helped speed up the recovery, and they might have reached him before he lost consciousness. However, because it is not known how long he remained conscious, it is uncertain whether the searchlight would have made any difference to the outcome.

The vessel was carrying an inflatable boat (which was not part of the statutory safety equipment), but this was not used in the recovery attempt because it did not have an outboard motor. Because of the time it would have taken to launch the boat and row to Michael Beedie, the skipper thought it would be quicker to get close to him by manoeuvring the fishing vessel.

Neither the Danish nor Scottish authorities established the cause of death by postmortem examination: it might have been because of injuries sustained by the towing chain, by hypothermia, by drowning or a combination of any of the three. By wearing a lifejacket or a buoyancy aid **(see section 1.4 and 1.6)**, his chances of survival would have been greatly increased.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

1. The fishing operations had finished and the crew members of *Alma C* were stowing the fishing gear on deck before travelling back to port. [2.2]

2. During this time, the vessel was stopped in the water, with the wind and seas on the port quarter. It was dark. [2.2]

3. The port and starboard beams had been brought inboard and landed on the fore deck, parallel to the fore and aft line of the vessel. [2.2]

4. The beam shoes at each end of the beams were resting against the bulwarks, and were not secured. [2.2]

5. The beam shoe at the after end of the port beam was resting against the bulwark in such a way that it was top heavy and unstable. [2.2]

6. Michael Beedie was standing near the after end of the port beam and next to the superstructure of the accommodation. [2.2]

7. As the vessel moved in the seaway, the after beam shoe fell on to the deck and towards Michael Beedie. [2.2]

8. In trying to avoid the beam, he probably jumped up and leant over the slack towing chain. [2.2]

9. The vessel moved again, causing the towing chain to suddenly become tight under Michael Beedie's midriff. [2.2]

10. The force of the chain tightening threw Michael Beedie over the side of the vessel and into the sea. [2.2]

11. The fall overboard was witnessed by two of the crew members, who brought it to the skipper's attention immediately. [1.4]

12. The crew members had difficulty throwing a lifebuoy with a smoke marker/light attached close enough to Michael Beedie, for him to reach, and had to make a second attempt. [2.4]

13. As the fishing vessel drifted away from Michael Beedie, he disappeared in the darkness, despite the retro-reflective tape on the shoulders of his jacket. [2.4]

14. The skipper carried out the correct procedures of calling nearby vessels and the shore authorities, quickly noting down the GPS position as a reference point, and making a Williamson Turn. [2.4]

15. It is unfortunate that the searchlight was not working as this, together with his reflective jacket, might have helped speed up the recovery. It is unknown, however, whether it would have made any difference to the outcome. [2.4]

16. The inflatable boat was not used in the recovery attempt, as the skipper thought it would be quicker to get close to him by manoeuvring the fishing vessel. [2.4]

17. When the crew had set off parachute flares, Michael Beedie was seen again by the retro-reflective tape on the shoulders of his jacket. [2.4]

18. By this time Michael Beedie was face-down in the water, and when he was brought aboard *Alma C* he showed no signs of life. [2.4]

19. Since the accident, Supreme Fishing has carried out a risk assessment.

3.2 CAUSE OF THE ACCIDENT

1. The after port beam shoe had landed on deck upside down and was unstable. [2.2]

2. While waiting for his next task, Michael Beedie was standing too close to, and between, the beam shoe and the accommodation superstructure, and he was in a place of danger. [2.2]

3. Michael Beedie must not have realised that the after part of the beam was unstable and was about to fall towards him. [2.2]

4. The movement of the vessel in the seaway caused the beam shoe to fall towards Michael Beedie. [2.2]

5. In trying to avoid the heavy equipment, he probably jumped up and leant over the towing chain, which tightened, again caused by the movement of the vessel, and threw him overboard. [2.2]

6. There were no procedures to ensure crew members kept clear of heavy equipment and wires/ropes, by standing in a safe position when not actually carrying out operational tasks. [2.3]

7. A risk assessment had not been carried out. [2.3]

8. Michael Beedie, possibly because he could not swim, was unable to reach the lifebuoy, which had been thrown to him. [2.4]

9. Before Michael Beedie disappeared in the dark, the crew did not have time to use other buoyancy aids, such as more lifebuoys, the inflatable dinghy or even a liferaft. [2.4]

10. The recovery operation might have been hampered because the searchlight was not working. [2.4]

11. Because he was not wearing a lifejacket or buoyancy aid, his chances of survival were greatly reduced. [2.4]

SECTION 4 - RECOMMENDATIONS

Supreme Fishing is recommended to:

1 Formalise the following safety measures into the vessel's risk assessment:

- Procedures for beam shoes to be landed with the heaviest part on deck
- Procedures for crew members not to stand in places of danger when not directly involved in operations; and
- The wearing of buoyancy aids while working on deck.

Marine Accident Investigation Branch
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