Report on the investigation of

the grounding and subsequent loss of

mfv *Betty James*

Isle of Rhum

on 10 July 2000

Marine Accident Investigation Branch
First Floor
Carlton House
Carlton Place
Southampton
United Kingdom
SO15 2DZ

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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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Figure 1 *Betty James* Aground

Figure 2 Chart Extract Showing Intended and Actual Tracks

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

EPIRB	Emergency Position Indicating Radio Beacon
FRC	Fast Rescue Craft
GPS	Global Positioning System
gt	Gross Tonnage
kW	kilowatt
m	metres
MCA	Maritime and Coastguard Agency
MGN	Marine Guidance Notice
MRSC	Maritime Rescue Sub-Centre
UTC	Universal Co-ordinated Time
VHF	Very High Frequency

SYNOPSIS

Mfv *Betty James* landed her catch in Mallaig, Scotland, on the evening of 9 July 2000, then sailed at 0015 the following day to return to the fishing grounds. At 0230 she ran aground. The person on watch had fallen asleep and a planned alteration of course to take the vessel between the isles of Rhum and Eigg was missed. A watch alarm was fitted and working, but it failed to wake either the watchkeeper or the crew asleep below in the accommodation.

Maritime Rescue Sub-Centre (MRSC) Oban reported the accident to the MAIB by telex at 0243 UTC 10 July, and an investigation started later that day.

It is considered that several factors caused the watchkeeper to fall asleep.

- He had experienced a disrupted sleeping pattern since the vessel sailed on 3 July.
- He probably had no more than 6 hours sleep in the previous 24.
- He had consumed three bottles of beer while in Mallaig.
- He was alone in the wheelhouse.
- Wheelhouse practices and ergonomics allowed him to conduct his watch while seated, and kept him inactive.
- The presence of a television, video recorder and domestic radio in the wheelhouse encouraged a recreational, rather than working, environment.

Acknowledging that disrupted sleep is an unavoidable aspect of a fisherman's life at sea, the recommendations in this report are aimed at eliminating the factors that in this case turned fatigue into sleep.

PARTICULARS OF FV *BETTY JAMES* AND ACCIDENT

Vessel details

Vessel name	:	*Betty James*
Registered Owner	:	Castlebay Fishing Company Ltd
Port of registry	:	Oban
Flag	:	UK
Type	:	Fishing Vessel
Built	:	1988 UK
Construction	:	Wooden
Registered length	:	16.49m
Gross tonnage	:	130.00
Engine power and/or type	:	370.00kW

Accident details

Time and date	:	0130 UTC 10 July 2000
Location of incident	:	Isle of Rhum
Persons on board	:	Four
Injuries / fatalities	:	None
Damage	:	Loss

SECTION 1 - FACTUAL INFORMATION

1.1 BACKGROUND INFORMATION

Betty James was previously known as *Sharon's Rose* until Castlebay Fishing Company Ltd purchased and renamed her in May 2000. She was moved to Mallaig on 29 May and conducted two fishing trips during June 2000; the first for seven days and the second for 16 days. She sailed on 3 July and landed her catch of prawns and monkfish in Mallaig on 9 July. The grounding occurred after sailing from Mallaig to return to the fishing grounds.

1.2 THE CREW

The skipper, John Muir, joined the vessel on 16 May in Peterhead. He had been at sea since leaving school in October 1985 working on board several vessels as deckhand and mate prior to the incident. This was the first vessel he had skippered. He holds a Class 2 (Fishing) Certificate.

The three remaining crew, all deckhands, were uncertificated. Peter Matheson, who was on watch at the time of the grounding, had been at sea for ten years working on board four other vessels. He joined *Betty James* on 13 June, and this was his second fishing trip onboard. Craig Mackay had been at sea for two and a half years and had served on board two other vessels; he joined *Betty James* on 20 May. Gordon Matheson had been at sea for 22 years, but this was his first trip since August 1999.

All of the crew had attended approved fire-fighting and first-aid training courses and, with the exception of Gordon Matheson, all had completed an approved sea survival training course.

1.3 NARRATIVE OF EVENTS

All times are local (UTC+1). All courses are magnetic.

At 1830 on 9 July 2000, *Betty James* arrived at Mallaig, Scotland, to land her catch. As a quay was not immediately available she first took on ice, before moving alongside at 2000. The landing of 150 boxes was completed at 2130.

Between 2145 and 2215 the three deckhands went ashore to the Marine Hotel bar where they were joined at about 2300 by the skipper. The crew remained there until returning to *Betty James* at midnight. They then had a cup of tea before sailing for the Hillies Edge fishing ground (in the vicinity of 56° 40'0N, 007° 00'W) at 0015.

The skipper took the steaming watch out of Mallaig until relieved by Peter Matheson at 0115, when approximately south of Sleat Head. The vessel was being steered by autopilot on a course of about 250° at a speed of 7 knots.

Before leaving the wheelhouse the skipper asked Peter Matheson if he was fit to take the watch, and instructed him that if he was feeling too tired he was to call him or the next watch. He also directed that the 5½ hour passage to Hillies Edge was to be divided equally among the three deckhands. The skipper then went to bed.

A few minutes later, Peter Matheson left the wheelhouse to make a sandwich. He returned at approximately 0125, turned on the wheelhouse lighting, reduced the volume on the radio, and sat down to read the Sunday newspapers. Between 0135 and 0145 he fell asleep and at 0230 *Betty James* grounded on rocks on the south-east coast of the Isle of Rhum.

Awoken by the noise and impact of the grounding, the skipper went straight to the wheelhouse where he saw cliffs directly ahead and to starboard. He immediately took the propeller out of gear as it was still driving ahead. The vessel was listing about 20° to starboard and the watch alarm was sounding continuously. Peter Matheson, who appeared shocked, was standing looking out of the starboard window. The skipper reset the watch alarm.

The other two deckhands arrived in the wheelhouse soon after and were instructed to check below for damage. The skipper then called for assistance, firstly by mobile telephone to *Arnisdale*, which had sailed from Mallaig shortly after *Betty James*, and then via VHF radio channel 16 to Oban Coastguard.

The skipper switched to hand-steering and attempted to manoeuvre *Betty James* by using astern power and moving the rudder, but this had no effect. The vessel was moving from upright to starboard on an even keel and, although Craig Mackay and Gordon Matheson reported that she was not holed, the rocking motion worsened.

As a precaution, the skipper told the others to don lifejackets and then to launch the port liferaft. The list gradually increased until the skipper had difficulty standing in the wheelhouse and decided to abandon ship.

Having informed the coastguard that he was abandoning the vessel, he joined the other crew in the liferaft. The painter was then detached, and they paddled for *Arnisdale* which was now only a quarter of a mile away. The crew were eventually recovered by *Arnisdale* and taken back to Mallaig. Other than shock, there were no injuries.

When the Mallaig lifeboat arrived on scene at about 0330, two lifeboatmen were transferred to *Betty James* by FRC. They checked for damage, and stopped the engine which had been left running. The EPIRB, which had not been activated, was also removed.

Subsequent movement on the rocks caused by the tide and wind, together with unsuccessful attempts to refloat the vessel, caused the vessel's watertight integrity to be breached and she was eventually lost.

Figure 1

Betty James aground

1.4 ENVIRONMENTAL CONDITIONS

At the time of the grounding the wind was north-north-westerly force 5 and the sea slight. Visibility was good and there was no precipitation. It was nautical twilight but, because of heavy cloud cover and no moon, it remained a dark night. It was neap tides and the predicted height of tide at the time of grounding was 4.7m, being one hour before high water in Mallaig. The predicted tidal stream was north-north-westerly at 0.1 knot.

1.5 ALCOHOL CONSUMPTION/MEDICATION

During their visit to the Marine Hotel bar in Mallaig the skipper drank three pints of lager shandy, and Peter Matheson drank three bottles of beer. Neither had taken drugs, nor was on any form of medication. The remaining crew consumed similar quantities of alcohol.

1.6 SLEEP PATTERNS/WATCH ROUTINES

After sailing from Mallaig on 3 July, *Betty James* trawled for prawns and monkfish on the Stanton Banks to the south-west of Barra Head. The routine worked was 1 hour shooting the nets, 6 hours towing, and 1 hour hauling. This gave the crew the opportunity to sleep for the last 3 hours of each tow and a maximum of 9 hours in every 24. The skipper divided the watchkeeping on passages to and from the fishing grounds equally among the three deckhands.

Peter Matheson had between 4 and 6 hours sleep in the 24 hours before the grounding; his last period of sleep was between 0800 and 1130 on 9 July. He was aware on arriving at Mallaig on 9 July that, when the vessel sailed, he would be on watch for the first third of the 5½ hour passage to Hillies Edge.

1.7 NAVIGATION

The passage from Mallaig to the Hillies Edge fishing grounds had been drawn on a chart and was shown on the Decca video plotter. The first track of approximately 250° was from a position half a mile west of Mallaig towards Rhum Sound. From a position to the north-west of Eigg the track then ran south-westerly through the centre of the channel between Rhum and Eigg. An approximation of the intended track is shown at **Figure 2**.

Betty James's position was monitored using the Decca video plotter with a Global Positioning System (GPS) input. An off-track error alarm facility, which could have been set to indicate when the vessel was a specified distance off the planned track, was not in use.

Two radars were fitted, but only one was working and this was kept on the 6-mile range scale. Neither John Muir nor Peter Matheson used visual bearings or radar ranges to check the vessel's position after leaving Mallaig. The echo sounder, which was not fitted with a depth alarm, was switched on.

Figure 2


Reproduced from Admiralty Chart 2208 by permission of the Controller of HMSO and the UK Hydrographic Office
MALLAIG
RHUM
handover - approx 0115
watchkeeper fell asleep - approx 0140
missed course alteration - approx 0205
intended track
actual track
Location of grounding - 0230

1.8 WHEELHOUSE ENVIRONMENT AND ERGONOMICS

The enclosed wheelhouse was fitted with two chairs, one on each side, separated by a central console. The radar, Decca video plotter, autopilot, VHF radios, television, video recorder and domestic radio could be used while remaining seated in either chair. The port wheelhouse window (the lee window) was open, and the wheelhouse heaters were switched off.

1.9 WATCH ALARM

A watch alarm was fitted to the Robertson AP 40 autopilot which was activated when automatic steering was selected. The alarm beeped intermittently every 4 minutes and, if not reset by one of two reset buttons within a minute, sounded a continuous tone. One of the reset buttons had been repaired, and the system was functionally tested a week before the grounding. The watch alarm could be heard in the wheelhouse and galley area but not in the accommodation, and could be reset by the wheelhouse watchkeeper while seated. The alarm was sounding continuously when Peter Matheson returned to the wheelhouse, after making a sandwich, at about 0125 and when the skipper arrived in the wheelhouse following the grounding at about 0230.

1.10 WHEELHOUSE PRACTICES

The skipper and crew acknowledged that it was acceptable for a person on watch to leave the wheelhouse unattended for unavoidable reasons for instance, to wake up a relief. The watchkeeper also regularly spent the majority of his watch seated on one of the chairs provided.

A television, video recorder and a domestic radio were fitted in the wheelhouse, but there were no formal guidelines stating when, and under what circumstances, these were to be used at sea. There was no consensus among the crew regarding when they were allowed to use this equipment while on watch.

Copies of relevant 'M' Notices and Marine Guidance Notes were stowed in a drawer in the wheelhouse, along with other formal documentation. Apart from the skipper, none of the crew were aware of their presence or content.

The reading of newspapers while on watch was a practice accepted by the skipper. The use of wheelhouse general lighting at night while underway was not.

1.11 RISK ASSESSMENT

Cabern Ltd had conducted a formal risk assessment on behalf of the previous owners, and the documentation stayed with the vessel following her sale. It is believed this was stowed in a drawer in the wheelhouse. The risk assessments produced for the vessel highlighted that the wheelhouse watchkeeper being absent from, or asleep in, the wheelhouse was potentially 'very harmful'. These assessments do not appear to have been disseminated to the crew.

1.12 SURVIVAL EQUIPMENT

The vessel was fitted with two liferafts, and carried seven lifejackets. The skipper, Peter Matheson and Craig Mackay had their own survival suits. When abandoning ship and transferring to a liferaft, Peter Matheson and Craig Mackay were wearing survival suits but no lifejackets, the skipper was wearing a lifejacket but no survival suit, and Gordon Matheson was wearing neither a survival suit nor a lifejacket.

SECTION 2 - ANALYSIS

2.1 SAFE NAVIGATION AND PROPER LOOKOUT

The skipper had prepared a passage plan to take *Betty James* from Mallaig to the intended fishing grounds. The safe passage of the vessel and, ultimately, the safety of her crew, depended on the watchkeeper remaining in the wheelhouse and awake to follow the plan and maintain a proper lookout. He fell asleep at about 0140. An alteration of course shown on a chart and displayed on the video plotter, which should have been carried out at about 0205, was missed, and the vessel ran aground.

2.2 FATIGUE

Peter Matheson probably had no more than 6 hours sleep in the 24 hours before the grounding. However, he was aware that he would be taking the first wheelhouse watch after sailing from Mallaig but opted to accompany the rest of the crew to the Marine Hotel bar, rather than taking the opportunity to rest.

By asking Peter Matheson if he was fit to take the watch, then telling him to call either himself or the next watchkeeper if he felt too tired, the skipper demonstrated that he was conscious of the need of the person on watch to be alert. He went to bed only after being assured by Peter Matheson that he was fit to take the watch.

Taking charge of the navigational watch at 0115 on 10 July, Peter Matheson felt no more tired than he had on previous occasions. It is apparent, however, that he was more fatigued than either he or the skipper appreciated.

While the disrupted sleeping patterns experienced when trawling appear to be a key factor in his tiredness, poor catches during this particular trip had allowed the crew the opportunity to get a maximum of about 9 hours sleep per day when fishing. It is therefore likely that Peter Matheson's propensity to fall asleep was increased by other factors.

The effects of drinking alcohol when tired can be quicker and more pronounced than an individual may expect. Three bottles of beer is a moderate quantity of alcohol to consume, which under normal circumstances might have had only a negligible effect on Peter Matheson. However, given that in the previous seven days he had not consumed any alcohol nor had any periods of sleep greater than 4 hours duration, it is possible that the alcohol consumed by Peter Matheson had a greater soporific effect than he realised.

Any tendency for him to fall asleep was probably further exacerbated by the working routines and ergonomics in the wheelhouse. The reliance placed on the video plotter for the vessel's safe navigation, along with the lack of ship echoes on the radar, meant there was little to tax Peter Matheson on taking over the watch. Initially he felt he had sufficient time to leave the wheelhouse to make a sandwich, and on his return he considered it quiet enough to put on the bridge lights and sit down and read newspapers. He was able to monitor and control all key equipment and instrumentation while remaining seated, and from this position could reset the watch alarm. After a week of disrupted sleep and several beers, Peter Matheson was now

sitting down in the wheelhouse with little to do except read the newspapers. With the radio on low volume in the background, the balance was tipped and he fell asleep.

2.3 WATCH ALARM

The watch alarm was functioning correctly when Peter Matheson left the bridge to make a sandwich, and was sounding when the skipper arrived in the wheelhouse following the grounding. It is therefore presumed that it was working at the time Peter Matheson fell asleep, but was not loud enough to wake him, or any other crew.

2.4 VIDEO PLOTTER OFF-TRACK ALARM

Once a passage plan has been put into the Decca CVP 3500 video plotter, guard zones can be inserted on each side and parallel to the track at a distance selected by the operator. As soon as a vessel is off-track and crosses one of the guard lines, a visual alarm appears on the screen and an audible beeping alarm sounds. Had this facility been used the alarm would have activated as soon as the vessel passed through the course alteration waypoint by the specified distance. However, as this alarm was not as loud as the watch alarm that was already sounding, it is difficult to assess whether it would have woken the sleeping watchkeeper.

2.5 WHEELHOUSE PRACTICES

The practice of the crew leaving the wheelhouse unattended, albeit briefly, was unsafe. The vessel's risk assessment states "Skippers should ensure that an adequate lookout is kept at all times and that the vessel can be controlled to respond to any situation. Watchkeepers should not leave the wheelhouse unattended." Although the grounding occurred while the watchkeeper was in the wheelhouse, the grounding or a similar type of incident could have occurred when Peter Matheson was in the galley. Under the circumstances there was no reason why he left the wheelhouse to make a sandwich; he could have made one before taking over the watch.

The skipper had firm views of when and under what circumstances the television, video recorder and domestic radio could be used in the wheelhouse. However, these were not formally laid down as guidelines to the crew. This resulted in different interpretations regarding their use. The skipper believed that in some circumstances such equipment, along with other activities such as reading, helped to alleviate boredom, particularly when towing. This may have been true to a certain extent, but at least two problems would have been encountered. First, a watchkeeper watching the television could not have maintained a proper lookout and second, a recreational rather than a formal working environment may have been generated. In a recreational environment, a person is likely to feel comfortable, and, if the conditions are right, he may be more prone to falling asleep than otherwise might be the case.

The use of general overhead lighting in the wheelhouse would have severely impaired Peter Matheson's ability to maintain a proper visual lookout.

MGN 84 (F), issued by the (Maritime and Coastguard Agency) MCA, explains the need for fishing vessels to maintain a proper navigational watch at all times. It states, "Both the skipper and the watchkeepers should take full account of the quality and quantity of rest taken when determining fitness for duty. Particular dangers exist when the watchkeeper is alone. It is all too easy to fall asleep, especially when sitting down in an enclosed wheelhouse. Watchkeepers should ensure they remain alert by moving around frequently, and ensuring good ventilation." The document provides further guidance in other key areas including: the conduct of navigation; the use of navigational equipment; the use of watch alarms; the over-reliance on video plotters; and the need to maintain a proper lookout. This information, along with the vessel's risk assessment documentation which highlighted the dangers of leaving the wheelhouse unattended and the watchkeeper falling asleep, was available onboard *Betty James* but was not passed on to her crew.

2.6 ABANDONING SHIP

The skipper's reactions when awoken by the vessel grounding appear to have been controlled and logical. On arriving in the wheelhouse he was quick to recognise that the vessel was still driving ahead, and that the watchkeeper was in a state of shock. He took charge of the situation, directed the other crew to check for damage, and attempted to manoeuvre the vessel off the rocks. When it became apparent that help was required he quickly requested the nearest vessel for assistance and notified Oban Coastguard.

As the situation deteriorated he donned a lifejacket, and directed the crew to do likewise. They did not follow his orders. He also took the precaution of launching a liferaft in good time, before the vessel's movement would have made it difficult. His decision to abandon the vessel was taken only when the vessel's list made it difficult to stand in the wheelhouse.

The donning of personal survival suits by two of the crew was prudent and would have enhanced their chances of survival had conditions been worse and assistance not close at hand.

The transfer to the liferaft occurred without incident and the decision to paddle towards *Arnisdale* rather than the nearer shoreline was sensible. The crew would have had little control of the liferaft as it approached the rocky shoreline in the surf and may well have sustained injuries while trying to get out.

Although the skipper left the engine running when the crew abandoned the vessel, this did not impact on subsequent events.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

1. *Betty James* grounded on the south-east corner on the Isle of Rhum at 0230 on 10 July 2000. [1.3]

2. The grounding was not due to any mechanical failure on board *Betty James* or any deficiency of navigational aids in her vicinity. [1.3]

3. The grounding occurred within an hour of high water and she could not be refloated. [1.3,1.4]

4. The vessel was not holed at the time of grounding but subsequent movement and attempts to refloat the vessel resulted in breaches in her watertight integrity and loss of the vessel. [1.3]

5. The passage had been pre-planned and was drawn on the chart and displayed on the video plotter. [1.7]

6. There was one person on watch in the wheelhouse from 0115 until the time of the incident. [1.3]

7. Navigation was conducted by visual reference to the video plotter and radar. No fixes or other positional information was transferred to the chart. [1.7]

8. The wheelhouse watchkeeper left the wheelhouse unattended from between 0120 and 0125 and was then asleep from about 0140 until the time of grounding. [1.3]

9. The wheelhouse watchkeeper had experienced a disrupted sleeping pattern for the seven days before the incident and had been awake for 14 hours since his last period of rest. [1.6]

10. The wheelhouse watchkeeper had consumed three bottles of beer 1 to 2 hours before taking over the watch. [1.3, 1.5]

11. The wheelhouse watchkeeper fell asleep while sitting, reading the newspapers with the domestic radio playing in the background and the wheelhouse lighting switched on. [1.3]

12. The watch alarm was working correctly but failed to wake the wheelhouse watchkeeper. [1.3, 1.9]

13. The watch alarm could not be heard in the accommodation area. [1.9]

14. A risk assessment had been conducted by the previous owners. The documentation remained with the vessel following her sale but its contents had not been disseminated to the new crew. [1.11, 2.5]

15. The planned alteration of course to take the vessel between Rhum and Eigg, which should have occurred at 0205, was missed and the vessel continued on her 250° heading. [1.3]

16. The person on watch did not awake until the vessel grounded. [1.3]

17. The crew did not make full use of the survival equipment available when abandoning ship:

    a. Only three members of the crew possessed survival suits and only two of these donned them prior to getting into the liferaft. [1.12]

    b. Seven lifejackets were carried but only the skipper put one on before getting into the liferaft. [1.12]

18. One of the crew had not completed the mandatory sea survival course. He was not wearing a survival suit or a lifejacket when he abandoned ship. [1.2, 1.12]

3.2 CAUSES

1. The immediate cause

The immediate cause of the accident was the person on watch in the wheelhouse falling asleep and failing to alter course as planned. [2.1]

2. Other causes and underlying factors

1. The watch alarm was not loud enough to wake the watchkeeper in the wheelhouse or any of the crew in the accommodation. [2.3]

2. Disrupted sleeping patterns during the previous seven days caused a degree of fatigue. [2.2]

3. The consumption of alcohol whilst in Mallaig may have increased the likelihood of the watchkeeper falling asleep. [2.2]

4. The failure of the watchkeeper to take the opportunity to rest in Mallaig probably increased his fatigue. [2.2]

5. Wheelhouse practices and layout probably increased the likelihood of Peter Matheson falling asleep in that:

    - all key equipment could be monitored and the watch alarm reset by the watchkeeper while seated. [2.2]

    - there was only one person in the wheelhouse. [2.2]

    - the fitting of the television, video recorder and domestic radio in the wheelhouse without guidelines or strict control over their usage, created a recreational rather than a working environment. [2.5]

- by relying totally on electronic aids to navigate there was little for the watchkeeper to do apart from monitor the vessel's progress at 7 knots on the video plotter. [2.2]

6. The crew's lack of awareness of the contents of MGN 84 (F) and the vessel's risk assessment documentation probably contributed to poor wheelhouse practices. [2.5]

7. The off-track error alarm facility of the video plotter, which may have woken the watchkeeper, was not used. [2.4]

SECTION 4 - RECOMMENDATIONS

4.1 **The owner, Castlebay Fishing** is recommended to:

1. Improve the effectiveness of watch alarms

a. Wake a sleeping watchkeeper in the wheelhouse.

b. Consider fitting watch alarms in the accommodation areas of all its vessels to wake other crew when not routinely acknowledged by the watchkeeper in the wheelhouse.

c. Consider sighting watch alarm reset buttons out of reach of the wheelhouse watchkeeper when seated in a fixed wheelhouse chair.

2. To improve wheelhouse practices

a. Ensure that the crews of all its vessels are familiar with the contents of the appropriate risk assessment documentation, M Notices and Marine Guidance Notes via the establishment and promulgation of wheelhouse procedures. In particular the requirements to remain in the wheelhouse at all times and to maintain a good radar and visual lookout should be emphasised.

b. Encourage crews to remain active whilst on watch and discourage watchkeepers from sitting down for prolonged periods.

c. Discourage watchkeepers from relying heavily on GPS and video plotters. This can be achieved by insisting that visual and radar fixes, along with a dead reckoning position, are maintained on the chart.

d. Remove televisions, video recorders and domestic radios from the wheelhouse, or issue strict guidance on their use.

3. To improve general safety and survival arrangements

a. Discourage crews from consuming alcohol when ashore for brief periods and taking a navigational watch shortly after.

b. Ensure all crew have completed the mandatory safety courses.

c. Stress to crews the importance of wearing lifejackets in potentially hazardous situations.

d. Although not a mandatory requirement, provide survival suits for all crew for use in an emergency.

Marine Accident Investigation Branch
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