Report on the investigation of

the grounding of

fv *Primrose*

on the Island of Rhum

on 15 June 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

kW	-	kilowatt
MCA	-	Maritime and Coastguard Agency
MGN	-	Marine Guidance Note
RNLI	-	Royal National Lifeboat Institution
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency radio

SYNOPSIS

On 15 June 2001, the MAIB was informed that the stern trawler *Primrose* had grounded on the Isle of Rhum. An investigation started that day.

Primrose landed her catch in Mallaig, on the evening of 14 June, then sailed in the early hours of the next day to return to the fishing grounds. At 0320, she ran aground. The person on watch had fallen asleep and had failed to alter course sufficiently to take the vessel between the isles of Rhum and Eigg. The watch alarm was not working and had been landed ashore for repairs, and the vessel had sailed one man short of her normal complement.

The vessel was refloated at high water later that day, with the assistance of Mallaig lifeboat. There was superficial hull damage, and water damage to the accommodation and engine room. No injuries or pollution were sustained as a result of the grounding. *Primrose* was later repaired and re-entered service.

The cause of the grounding was the person on watch in the wheelhouse falling asleep and failing to make the required alteration of course.

A number of contributing factors were identified.

Recommendations have been made to the vessel's owner and to the Maritime and Coastguard Agency (MCA) which, if implemented, will reduce the risk of a similar accident happening in the future.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF FV *PRIMROSE* AND ACCIDENT

Vessel details

Registered owner	:	C W Duncan, Fraserburgh
Port of registry	:	Fraserburgh
Flag	:	UK
Type	:	Fishing vessel
Built	:	1972 Sandhaven
Construction	:	Wood
Length overall	:	22.13m
Gross tonnage	:	112
Engine power and/or type	:	328kW

Accident details

Time and date	:	0220 UTC 15 June 2001
Location of incident	:	Southern tip of Isle of Rhum
Persons on board	:	Three
Injuries/fatalities	:	None
Damage	:	Superficial hull damage and water damage to accommodation and engine room

1.2 NARRATIVE

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

The crew of three rejoined *Primrose* in Mallaig on Monday 11 June 2001, after 4 days leave. A fourth crew member did not turn up; the vessel, therefore, sailed one man short of her normal complement. The prawn fishing was good and, accordingly, the workload was high. On Thursday 14 June, the deckhand, who was to be later on watch at the time of the grounding, slept from 0430 until 0930.

Primrose returned to Mallaig to land her catch at 2100 that night. It was almost a full catch of around 50 boxes. She then took on ice and fuel. The crew left the boat at about 2230 and went to the fishermen's mission for a shower. They then went to a local bar and consumed 2 pints of beer each.

The crew returned to *Primrose* and, shortly after midnight, the vessel left Mallaig. The skipper stayed in the wheelhouse while the other crew stowed the mooring ropes. The deckhand who was due to take the first watch made himself a sandwich and then went up to the wheelhouse. The vessel was outside Mallaig harbour at this time and heading for a waypoint off Rhum which would lead to the Hillies Edge fishing ground.

Figure 1

fv *Primrose*

The course was about 255° and speed 8 knots. Both radars were on, the port radar on 3-mile range and the starboard radar on 6-mile range. The echo sounder was on; an alarm was fitted to it but it was not being used. The internal wheelhouse door and an outside window were open.

The skipper handed over the watch and stayed talking with the deckhand for about 10 minutes. He pointed out the alteration and the courses to follow. At about 0130, the skipper told the deckhand to call him if in doubt and also told him to ensure the deckhand stayed awake. He then left the wheelhouse and retired to his bunk to sleep. The third deckhand was already asleep at this time.

The deckhand on watch noted there was another slower outbound vessel on the port side. Two other vessels were inbound and passed by safely. The deckhand was feeling tired and sat down in the wheelhouse chair.

At around 0230, the waypoint was reached. Due to the close proximity of the other vessel being overtaken on the port side the deckhand altered course to port only about 10°, intending to alter the full amount once the other vessel had been passed safely. The other deckhand was due to be called about 10 minutes later for his watch. Shortly after making the alteration, the deckhand fell asleep.

At 0320 *Primrose* grounded on the southern tip of the Isle of Rhum. The deckhand was awoken by a series of bumps and bangs. The skipper was also woken and reached the wheelhouse in seconds. He saw the engine controls were still set to full ahead and he stopped the engine. He looked out of the wheelhouse windows and could see the vessel was hard aground about 50 metres from the shore, close to a cliff face.

The other deckhand came up to the wheelhouse. The crew members then began checking around the vessel for damage. None was found, and the bilges were dry.

About 10 minutes after the grounding, the skipper called Stornoway coastguard on VHF channel 16. The crew donned survival suits, had lifejackets standing by, and readied both liferafts for launching. Mallaig RNLI lifeboat was launched at 0345.

About 10 minutes after the VHF call to the coastguard another fishing vessel, *Three Sisters*, arrived and stood by. At 0430 Mallaig lifeboat reached the scene.

With the tide ebbing and the vessel's position becoming more precarious, the crew were all taken off *Primrose* by the lifeboat. The vessel started to list to starboard on the falling tide. The angle of heel was about 45° at one point, and water began pouring through the forward hatch and accommodation openings. The lifeboat secured a rope and heaved on it to keep the boat close to the upright **(see Figures 2 and 3)**.

Figure 2

Primrose aground

Figure 3

After low water had passed, the vessel started falling over to port on the rising tide. The skipper reboarded her to attempt to restart the engines in preparation for refloating at high water. The boat then started to heel further to port, so the skipper returned to the lifeboat.

At about 1200, the vessel was refloated. She was well down in the water because of the amount of water shipped. The lifeboat towed her back to Mallaig, with the portable pumps from the lifeboat in use on passage.

Once safely alongside at about 1400, the hull was found to be intact and suffering only superficial damage. There was, however, substantial water damage to the accommodation and the engine room.

Primrose was eventually slipped in Mallaig and repairs were made before she re-entered service.

1.3 ENVIRONMENTAL CONDITIONS

The weather at the time of the grounding was an easterly force 3 wind with a slight swell. Visibility was more than 12 miles and the skies were clear. It was a neap tide and high water at Eigg was at 0117, 2 hours before the grounding.

1.4 BACKGROUND

Primrose was a wooden stern trawler built in 1972. She was operated out of Mallaig during the summer months by her owner, fishing for prawns **(see Figure 1)**.

Her crew normally worked a 10 day trip, followed by 4 days leave. Her normal crew complement was four.

1.5 THE CREW

Her skipper was 31 years old and had been at sea for about 15 years. He held a Deck Officer Certificate of Competency (Fishing Vessel) Class 2 and had been skipper for 6 years. He had worked on *Primrose* for about a year.

The other two crew members did not hold certificates of competency.

The deckhand who was on watch at the time of the grounding was 25 years old. He had been at sea for 11 years, and had worked on *Primrose* for about 4 months.

The other deckhand was 35 years old and had been at sea for 19 years. He had worked on *Primrose* for 8 months.

1.6 WHEELHOUSE ENVIRONMENT

Two seats were fitted in the wheelhouse; one was a stool, the other, on the port side, a chair **(see Figure 4)**. There was no external door to the wheelhouse, however, an internal door, on the starboard side, led down to the accommodation.

The wheelhouse windows could be opened for ventilation. The wheelhouse sometimes became very hot because the engine exhaust trunking was located immediately aft of it.

Figure 4

Wheelhouse chair

1.7 MGN 137 (M + F)

Marine Guidance Notice 137 (M+F), issued by the MCA, is a reminder to all UK ships and fishing vessels, wherever they may be, and other ships and fishing vessels operating in UK territorial waters, of the legal requirements for keeping a proper lookout, especially during the hours of darkness. It strongly advises all vessels in UK territorial waters not to operate with the officer of the navigational watch acting as the sole lookout during hours of darkness.

MGNs were carried on board *Primrose* and were available to her crew.

1.8 MGN 84 (F)

Marine Guidance Notice 84 (F) issued by the MCA explains the need for fishing vessels to maintain a proper navigational watch at all times. An extract is given below:

"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."

1.9 RISK ASSESSMENT

No risk assessments had been made with respect to any consequential peril to the vessel resulting from a particular work activity.

1.10 WATCH ALARM

A watch alarm was fitted in the wheelhouse. It was designed to sound every 15 minutes, and allowed about a minute for the watchkeeper to cancel it. If it was not cancelled a louder alarm sounded.

The alarm had not been working and two trips previously it had been landed ashore for a local electrician in Mallaig to repair. At the time of the incident it was still under repair, and had not been returned to the vessel.

1.11 PREVIOUS INCIDENTS

On 10 July 2000, the fishing vessel *Betty James* ran aground on the Isle of Rhum about 2 miles north-east of where *Primrose* grounded. The MAIB investigated the grounding and published a report (report No 34/2000). The investigation found the lone watchkeeper had fallen asleep after taking the first watch after departure Mallaig. He had suffered a disrupted sleeping pattern, had consumed alcohol while ashore in Mallaig and was sitting down, alone in the wheelhouse. There were no injuries, but *Betty James* could not be refloated and was subsequently lost.

On 17 May 1994, the fishing vessel *Halton* grounded on Rhum, very close to where *Betty James* grounded, after the lone watchkeeper had fallen asleep. The vessel had landed her catch in Mallaig and departed almost immediately.

The MAIB has 52 other fishing vessel groundings in this area on its database.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributing factors and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

2.2 THE GROUNDING

2.2.1 Manning

The vessel's normal complement was four. One man had failed to turn up, but the decision to sail anyway was made. The increased workload resulting from being one man short was to be shared among the three remaining crew. In addition, normally the skipper would have had two crew on watch. Because they were one man short, the decision was made to have just the one man on watch in the wheelhouse, contrary to the advice given in MGN 137 (M + F). This strongly advises that two men are on watch during the hours of darkness.

2.2.2 Fatigue

The fishing happened to be good on this trip and resulted in a heavy workload. The crew, therefore, were tired and suffered disrupted sleep patterns.

The deckhand on watch at the time of the grounding had slept from 0430 until 0930 on the day before the grounding. The accident occurred at 0320. Therefore, he had had 5 hours sleep in the previous 24 hours, and had not slept for 17 hours before he fell asleep. This was in addition to his having worked the previous 4 days with a similar disrupted sleep pattern.

During the skipper's handover he had told the deckhand to call him if in doubt, and also told him to ensure he stayed awake. This demonstrated that he was conscious of the need for the watchkeeper to be alert and of the possibility that he could fall asleep.

The deckhand knew he would be taking the first watch after departure Mallaig, but opted to go with the rest of the crew to a bar ashore, rather than taking the opportunity to rest.

The effects of drinking alcohol when tired can occur more quickly and be more pronounced than expected. He drank 2 pints of beer, which is a moderate amount and would normally have had a minimal effect on him. However, given his lack of sleep and increased workload, the alcohol probably had a greater adverse effect than he realised.

He was aware he was tired when he came on watch, and decided to sit down in the wheelhouse chair. He also knew there was no watch alarm. The decision to sit down further exacerbated any tendency for him to fall asleep. Due to the tiredness he was feeling, and the absence of a watch alarm, he should have moved around frequently to remain alert. This would have been in accordance with the advice given in MGN 84 (F).

He also had the option of calling the skipper or the other deckhand to come and relieve him, but chose not to do so, possibly because they, too, were tired and his watch was ending shortly.

The wheelhouse environment was not conducive to remaining alert. The temperature was nearly always high at sea because of the proximity of the engine exhaust. There were no external doors which could have increased the ventilation. At the time of the accident, an external window was open, together with the internal accommodation door; despite this the temperature was high on a warm summer's evening.

The deckhand was due to be relieved about 10 minutes after he fell asleep, but unfortunately was unable to stay awake for this short remainder of his watch.

2.2.3 Watch alarm

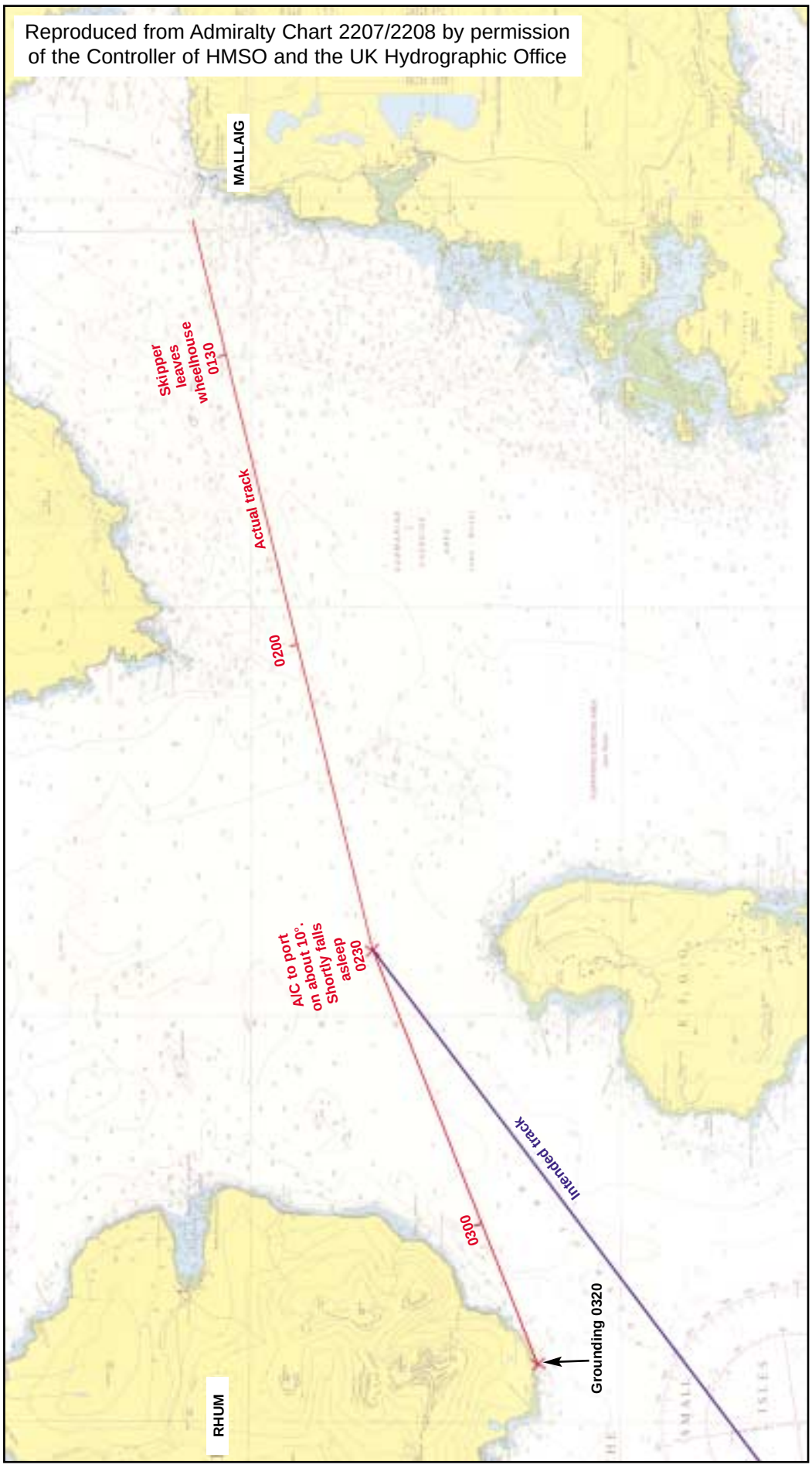
The watch alarm had been sent ashore for repairs, but these had not been completed. Therefore the vessel sailed without one. An operational watch alarm could have alerted the watchman within a few minutes of his falling asleep, and could also have awoken others if he had failed to cancel it. This control measure, for reducing the inherent risks involved with a sole watchkeeper asleep at sea, was not implemented. If the watch alarm had been fitted, and been operational, probably it would have woken the watchkeeper and the vessel might not have grounded.

2.2.4 Navigation

On departure Mallaig, vessels bound for the south pass between Rhum and Eigg. A straight course from Mallaig leads to a waypoint where an alteration of course is required **(see Figure 5)**. If this alteration is missed, the vessel will eventually ground on Rhum.

The deckhand was still awake when the vessel arrived at the waypoint, and would have made the full alteration but, because of the close proximity of a vessel on his port side, which he was overtaking, he only altered course to port by about 10 degrees, fully intending to make the full alteration once the other vessel was passed and clear. Unfortunately, he fell asleep shortly after making the small alteration. The vessel therefore continued on this course and grounded on the southern tip of Rhum.

Figure 5


Reproduced from Admiralty Chart 2207/2208 by permission of the Controller of HMSO and the UK Hydrographic Office
MALLAIG
Skipper leaves wheelhouse 0130
Actual track
0200
AIC to port on about 10°. Shortly falls asleep 0230
Intended track
0300
Grounding 0320
RHUM

The echo sounder was operating at the time of the grounding. It had an alarm function fitted which would have sounded when the under-keel clearance was reduced to a preset depth. This alarm function was not enabled at the time but, had it been, might have been loud enough to have woken the deckhand before the grounding and, therefore, allowed him to have taken evasive action.

2.2.5 Risk assessment

If a formal risk assessment had been made with respect to the vessel grounding, this might have identified certain risks as being unacceptable, and also might have influenced some decisions which were taken, in particular:

- The decision to sail without an operational watch alarm;
- The decision to sail without the normal crew complement;
- The decision to have just one man on watch during the hours of darkness; and
- The decision to leave Mallaig, after landing the catch, without ensuring the crew had had sufficient rest.

2.3 PREVIOUS INCIDENTS

This is not the first grounding the MAIB has investigated of vessels out of Mallaig where the watchkeeper has fallen asleep. Vessels call frequently at Mallaig to land their catches and depart again almost immediately. By the very nature of a fisherman's life at sea, invariably sleep patterns are disrupted. If other circumstances combine, possibly supplemented by control measures such as watch alarms not being implemented, it is possible the watchkeeper may fall asleep. This is dangerous anywhere at sea, but upon departure Mallaig, if the alteration at the waypoint north of Eigg is not made this will lead to the vessel grounding on Rhum.

SECTION 3 - CONCLUSIONS

3.1 CAUSES AND CONTRIBUTING FACTORS

3.1.1 The causes

1. The person on watch in the wheelhouse falling asleep and failing to make the required alteration of course. [2.2.4]

2. The proximity of another vessel, which did not allow the full alteration to be made upon arrival at the waypoint. [2.2.4]

3. The decision to alter course by only 10° because of the proximity of the other vessel. [2.2.4]

3.1.2 Contributing factors

1. *Primrose* sailed with a crew of three, one man short of her normal complement. [2.2.1]

2. The prawn fishing was good on this trip, and accordingly, the workload was high. [2.2.1]

3. Because the vessel was one crew member short of her normal complement, the skipper decided to have just one man on watch during the hours of darkness, contrary to the advice given in MGN 137 (M + F). [2.2.1]

4. The deckhand on watch had had 5 hours sleep in the previous 24 hours, and had not slept for 17 hours before he fell asleep. This was in addition to his having worked the previous 4 days. [2.2.2]

5. The deckhand knew he would be taking the first watch on departure Mallaig, but opted to go with the rest of the crew to a bar ashore, rather than taking the opportunity to rest. [2.2.2]

6. The deckhand drank 2 pints of beer while ashore, which, given his lack of sleep, probably had a greater adverse effect on him than he realised. [2.2.2]

7. The deckhand chose to sit down on watch, contrary to the advice given in MGN 84 (F), despite his being aware he was tired, and knowing the watch alarm was not fitted. [2.2.2]

8. The temperature was high in the wheelhouse, mainly because of the proximity of the engine exhaust. [2.2.2]

9. The watch alarm was not fitted as it was ashore for repairs at the time of the grounding. [2.2.3]

10. The echo sounder alarm, which was fitted, was not being used at the time. [2.2.4]

3.2 OTHER FINDINGS

1. If a formal risk assessment had been made with respect to the vessel grounding, it might have identified certain risks as being unacceptable and influenced some decisions which were taken. [2.2.5]

2. A high number of incidents similar to this one have occurred on vessels operating out of Mallaig. [2.3]

SECTION 4 - RECOMMENDATIONS

The owner, C W Duncan, is recommended to:

1. Develop a policy and implement measures to ensure compliance for his vessels covering safe manning, wheelhouse manning, navigational procedures, rest and crews' consumption of alcohol.

The Maritime and Coastguard Agency is recommended to:

2. Conduct a publicity campaign, aimed at the fishermen operating out of Mallaig, highlighting the lessons to be learned from this and previous grounding incidents in the area.

Marine Accident Investigation Branch
April 2002