

Report on the investigation
of the fire on board the
fv *Ross Alcedo* (FH628)
while underway about 32 miles
north-west of the Isles of Scilly
on 16 January 2000

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Extract from
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 causes 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, ACRONYMS & TERMS

BST	-	British Summer Time
EPIRB	-	Electronic Position Indicating Radio Beacon
GPS	-	Global Positioning Satellite
HRU	-	Hydrostatic release unit
MCA	-	The Maritime and Coastguard Agency
MF	-	Medium Frequency
MRCC	-	Maritime Rescue Co-ordination Centre
RNLI	-	Royal National Lifeboat Institute
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency
AO	-	A structural bulkhead or door constructed of steel or equivalent, suitably 'stiffened', and so constructed as to be capable of preventing passage of smoke and flame to the end of the 60 minute standard fire test.
A60	-	A structural bulkhead or door constructed of steel or equivalent, suitably 'stiffened', and so constructed as to be capable of preventing passage of smoke and flame to the end of the 60 minute standard fire test, so insulated where necessary with suitable non-combustible materials that if the division is exposed to a standard fire test the average temperature on the unexposed side of the division shall not increase more than 139°C above the initial temperature nor shall the temperature at any point, rise more than 180°C above the initial temperature within 60 minutes.
Halon	-	A type of fire extinguishing gas
"long liner"	-	a fishing vessel using multiple lines, each fitted with a number of fish hooks for fishing
"Mission"	-	Mission to Deep Sea Fishermen building



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SYNOPSIS

On Sunday 16 January 2000, at 0355 UTC, the Maritime Rescue Co-ordination Centre (MRCC) Falmouth notified the Marine Accident Investigation Branch (MAIB) that the fishing vessel *Ross Alcedo* was on fire 32 miles NW of Scalloway. The situation was monitored throughout the day and an investigation began on Monday 17 January, when the vessel was towed into Falmouth.

Ross Alcedo was a 32m fishing vessel operating out of Falmouth, usually working as a “long liner” off the west coast of the Hebrides and fishing for deep-water sharks. She was registered in Falmouth, and had a full term UK fishing vessel certificate. At the time of the accident, she had a crew of 16, mainly Spanish or Portuguese, with a British skipper. Vessel modifications carried out in La Coruña, Spain to the accommodation and working areas, enabled her to obtain a certificate as a factory ship. This allowed her to pack skinned fish on board, ready for sale.

She left Falmouth on Saturday 15 January at 1730 for Killybegs, County Donegal without a second engineer on board. He had been injured on the way north from Spain and another crew member had been appointed to assist the chief engineer until a replacement joined in Ireland. The vessel proceeded from Falmouth to Land’s End without incident with the skipper on watch. At midnight he was relieved by the mate and turned in. The assistant engineer had been in the engine room since sailing and, at the same time as the watch changed in the wheelhouse, was relieved by the chief engineer. The vessel was doing about 10 knots with the weather on the starboard quarter.

At about 0200, the chief engineer went to the wheelhouse to talk to the mate. Shortly afterwards the mate smelled smoke and, on opening the wheelhouse hatch to the accommodation, saw fire and smoke emerging from the open engine room door. He immediately went to call the skipper, while the chief engineer called the crew and shut the engine room door. The skipper sounded the general alarm and sent a “Mayday”. Falmouth Coastguard, and the merchant vessel *Cranz II*, which was in the immediate vicinity, responded. The skipper, realising the fire was rapidly getting out of control, collected his VHF handset, and organised the evacuation of the vessel. *Cranz II* closed and prepared to pick up the survivors. *Ross Alcedo*’s skipper and crew boarded one of the liferafts, and rowed across to *Cranz II* where they were picked up.

The coastguard monitored the situation while two helicopters made their way out to the stricken vessel. On arrival, the helicopters lifted the crew off and returned to the mainland. Two of *Ross Alcedo*’s crew were slightly injured from smoke inhalation and minor burns.

The burning vessel was monitored by the coastguard tug *Far Minara* who towed it back to Falmouth once the fire had burnt itself out. On arrival, the fire brigade confirmed the fire was out. The vessel was then brought alongside for inspection and survey. Although the fire was known to have started in the engine room, it has not been possible to reach a conclusion as to where, or how, it started.

SECTION 1 - FACTUAL INFORMATION (all times UTC)

1.1 PARTICULARS OF VESSEL

Name	:	<i>Ross Alcedo</i>
Official No	:	B14056
Fishing No	:	FH 628
Port of Registry	:	Falmouth
Gross Tonnage	:	183.78
Overall Length	:	32.20m
Breadth	:	7.30m
Maximum Draught	:	3.30m
Year of Build	:	1973, Echevarria, Spain Modified La Coruña, Spain 1999
Construction	:	Steel, with aluminium superstructure
Type	:	Trawler (re-registered as factory vessel, January 2000)
Main Engines	:	B&W Type 6723, 552kW diesel
Crew	:	17
Owners	:	Elcon Leisure Ltd, Western Docks, Falmouth, Cornwall TR11 4NJ
Date and Time	:	16 January 2000, about 0233 UTC
Place of Incident	:	32 miles north west of the Isles of Scilly
Position of Incident	:	50° 25.8' N, 006° 56' W
Injuries	:	Minor, smoke inhalation
Damage	:	Fire damage to wheelhouse, accommodation, smoke/soot and minor heat damage in engine room



General views of vessel after return to Falmouth



1.2 BACKGROUND TO VOYAGE

- 1.2.1 *Ross Alcedo* was owned by Elcon Leisure Limited of Falmouth, Cornwall and usually worked as a “long liner” off the west coast of the Hebrides, fishing for deep water sharks. She had a Spanish/Portuguese crew of 15 plus the skipper, and usually operated out of Falmouth. The British skipper joined the company in 1997, and had been *Ross Alcedo*’s skipper since then. She was issued with a full term UK Fishing vessel certificate on 16 December 1998. This was issued subject to the vessel remaining in class with Bureau Veritas.

She returned to La Coruña in December 1999 for modifications to the toilet and galley facilities to meet the standard required by the UK Environmental Health authorities for factory ships. These modifications, together with a new cabin arrangement on the starboard side, better lighting in other crew cabins, and a new dry food store on the starboard side were carried out between 15 December 1999 and 12 January 2000.

- 1.2.2 Other work was carried out in the engine room, including the overhaul of the port generator and the replacement of some pipework, but the extent of other work is not known. The work was finished on 12 January, and *Ross Alcedo* sailed for Falmouth that day.

During the passage north, the vessel ran into bad weather and the second engineer reported that, while leaving the engine room via the galley exit, he had been thrown from the ladder on to the port engine room bulkhead, injuring himself in the process. On arrival in Falmouth at 2315 on 14 January, the second engineer was taken ashore to the hospital for examination. The hospital discharged him 3 days later, and he returned to Spain.

- 1.2.3 On the morning of 15 January at about 0900, the environmental health officers arrived on board for their inspection. They carried out a thorough survey, and by 1100 were satisfied that *Ross Alcedo* complied with the regulations. A factory ship number was then allocated to the vessel. Before they left, they told the vessel’s agent that this was the standard that they would like to see on his other vessels.

1.3 NARRATIVE

- 1.3.1 At 1730 the same day, Saturday 15 January, the vessel sailed for Killybegs, County Donegal, to pick up a second engineer to replace the one left in Falmouth. To cover the engine room during the short voyage, the skipper, after consulting the chief engineer, made up one of the new deckhands into an engine room assistant. This man had had some experience of engines, and was the most suitable of those available. The crew normally worked a 6-hour watch system, with the chief engineer taking the 0600-1200 and the 1800-2400 watches. Having an untrained assistant in the engine room, the chief engineer was asked to vary his sleeping hours so that the assistant was never alone there for longer than 3 to 4 hours. Although this would put a strain on the chief engineer, the 36-hour passage time to Ireland, combined with both the chief engineer and his new assistant having been rested in Falmouth, the skipper felt that this arrangement would be satisfactory.

- 1.3.2 The skipper took the watch on leaving Falmouth, taking *Ross Alcedo* via the Lizard, and setting a course for the Seven Stones light vessel. They crossed the traffic separation zone and, off Land's End, with the Seven Stones abeam on the port side, set course for the Fastnet Rock at about 2215. The mate, who had been asleep since 1700, was called by the skipper, told what course they were on, their position and where they were going. He was also instructed to call him should he have any doubts, but to call him anyway at 0300.

The vessel at that time was doing about 10 knots with the weather on her starboard quarter. When the skipper turned in, the main engine was doing about 690 rpm, the starboard generator was on, and all necessary auxiliaries were functioning normally.

At midnight, the chief engineer relieved the assistant engineer, who had been on watch in the engine room since leaving Falmouth.

- 1.3.3 During the next couple of hours, the vessel proceeded on her voyage without any apparent problem using the automatic pilot. The weather was good, with only a moderate swell. At about 0155, the chief engineer came up into the wheelhouse to clean his hands and to talk to the mate. While they were talking, they became aware that something was burning. The mate immediately went to the rear of the wheelhouse, and opened the hatch giving access to the stairs leading down to the main deck accommodation and galley. On opening it, he saw black smoke and flames emitting from the open engine room door, and spreading into the cross-alleyway. Realising that the situation was serious, he shut the hatch and went to call the skipper, who was in his cabin at the rear of the wheelhouse.

Meanwhile, the chief engineer went out of the port side of the wheelhouse and down to the main deck, to warn the crew who were asleep in their cabins. When the skipper arrived in the wheelhouse he checked the equipment immediately - everything was showing normal. He opened the hatch at the top of the bridge stairs, looked down, and saw flames and thick black smoke coming out of the engine room door. The chief engineer was in the alleyway trying to shut the engine room door. The skipper asked the mate if the crew had been called and was told that the chief engineer had called them. At that point, the skipper sounded the fire alarm and told the mate to go down and tell the crew to muster on the fore deck, on top of the shelter deck, and then to inform him when everybody had mustered.

- 1.3.4 The skipper then looked around the bridge to assess the situation, confirming that all equipment was still working: radar, GPS, lights etc. The chief engineer shut the engine room door, and went round to the aft end of the accommodation to check the door leading from the engine room into the galley and messroom. The bosun had just emptied the galley fire extinguisher into the engine room but without any noticeable effect. The chief engineer then shut that door before going back on deck to try and activate the CO₂ system.

The mate, who had by then returned to the wheelhouse, told the skipper that everybody had been accounted for. The skipper quickly dressed, while the mate put the MF set on the emergency frequency 2182 kHz. On starting to transmit a "Mayday", a vessel called

on the VHF asking if the vessel near her was on fire. The skipper confirmed this, but said that they were still assessing the extent of their situation. The coastguard were told of the situation, that a merchant vessel was closing and that the crew were likely to be abandoning the vessel. At 0236, the coastguard called the rescue services, Rescue 193 from RNAS Culdrose, R169 from RAF Chivenor and the St Mary's lifeboat from the Isles of Scilly.

The skipper looked out of the wheelhouse door and saw the chief engineer try, unsuccessfully, to get to the CO₂ cabinet. He too attempted to reach the cabinet, but was prevented by the flames.

- 1.3.5 With the fire now starting to get out of control, the skipper ordered the crew to launch the liferafts. They managed to get the starboard one over the side but, the fire prevented them from getting near the port one. The skipper ordered the mate to get the EPIRB, while he checked that the starboard liferaft was inflated and the right way up. On seeing that this was so, he ordered the crew to pull the liferaft to the forward end of the vessel, as this was the easiest place to board it. He then ordered all the crew, bar the chief engineer and himself, to board the liferaft and to wait for both of them before casting off. They were not to cut the painter until the skipper ordered them to do so. The skipper could see then that the flames were getting bigger and higher, and that the fire was growing in intensity.

At 0245, the skipper returned to the wheelhouse and used the MF set to call Falmouth coastguard, and to tell them that they were abandoning the vessel. The coastguard wished them good luck and said that two helicopters would be called and would shortly be on their way. The skipper told them that a merchant vessel was standing by to help. The coastguard included this information in a "Mayday" relay at 0256. He then went to his cabin where, despite thick smoke, he managed to find his hand-held VHF set. Returning to the fore deck, he, and the chief engineer, boarded the liferaft. After cutting the painter and moving away from *Ross Alcedo*, the skipper spoke to the master of the cargo vessel using channel 16 on the VHF set, telling him that the crew were all accounted for and in the liferaft. The master replied that he could see them and that once they were clear of the vessel, he would come and pick them up.

- 1.3.6 To move away from the burning vessel, the skipper ordered both ends of the liferaft canopy to be opened and, using two paddles at each end, the crew slowly rowed the liferaft clear of *Ross Alcedo*. Once clear, the sea anchor was thrown overboard, and the skipper opened up the provisions bag, giving each crew member a seasickness tablet. They then waited for the cargo vessel to come alongside. At 0301, the coastguard made contact with *Cranz II*, a Cypriot general cargo vessel, which reported that they were 10m from the liferafts and were about to recover the crew of *Ross Alcedo*. Two of *Cranz II*'s crew were on her fore deck with heaving lines, and after three or four attempts, those in the liferaft caught a line and the liferaft was pulled alongside. A pilot ladder had been rigged on the cargo ship and the crew climbed on board one at a time, the skipper being the last man out of the liferaft.

At 0316, the coastguard arranged for its tug *Far Minara* to get underway and to steam towards the casualty's position.

Once on board *Cranz II*, the skipper went to the bridge and told the master that they were all on board. He then spoke to Falmouth Coastguard using *Cranz II*'s MF set, telling them that they were all accounted for, and off the fishing vessel.

- 1.3.7 The coastguard asked the skipper if anyone was seriously injured. The skipper told them that nobody was, although he was concerned about the amount of smoke that both he, and the chief engineer had inhaled. He also told them that one of the deckhands had cut his head and was complaining about a sore hand. By 0346, the first Sea King helicopter was on scene, with a doctor on board. The coastguard said that the chief engineer, the injured man and the skipper should go in the first helicopter. The skipper told him that he would not go until all the crew were off the vessel. The chief engineer and the deckhand were sent in the first helicopter and, with the second helicopter now also on scene, preparations were made to lift everybody off. Meanwhile, the cook mentioned that he had a burn on his arm. He said that he had not mentioned it earlier as he had been unaware of it. At 0441, the St Mary's lifeboat arrived on scene and stood by the burning vessel, reporting the position as 50° 24.8N, 007° 00.3W.

Before being lifted, the skipper went back to the bridge of *Cranz II* and told the coastguard of the cook's injury. They said that he would be attended to on arrival. The skipper then went on to the main deck of the vessel to watch the crew being lifted off in pairs. Finally he was lifted off, together with the winchman from the helicopter. At 0503 *Cranz II* reported that both helicopters had left the scene and that she was continuing her voyage. At 0525, the St Mary's lifeboat was released and started to make her way back to base.

On the way in, the skipper was given oxygen due to his smoke inhalation. On arrival at Culdrose at about 0545, they were taken by bus to the medical facility where a doctor examined them and issued them with dry clothing. They were then moved to the Mission at Newlyn where they were given breakfast and measured up for new clothes. The skipper remained with the crew all day, but in the evening he moved to Falmouth and booked in at the Sailors' Home.

The coastguard lost radio contact with the St Mary's lifeboat at about 0622, and felt some concern until it was re-established three minutes later. The coastguard tug *Far Minara* arrived at the casualty at 1059. By 1235 it had secured a line aboard, and was towing the vessel towards Falmouth.

- 1.3.8 Next day the skipper went with the pilot launch, salvors, harbour master, and the Maritime and Coastguard Agency (MCA) surveyors, to look at *Ross Alcedo* which had been towed in by the coastguard tug. Two salvage experts boarded to take temperatures and, when they returned, they said that there were a number of hot spots up to 200° C. After discussions between the salvors and the harbour master, it was decided that it was safe enough to bring the vessel into Falmouth and for it to be berthed alongside. The skipper boarded with two salvage men, and stayed on board until she berthed in Falmouth at 1055.

Cranz II was in ballast on a voyage to Flushing, the master was German, the mate Polish. The mate, who was on watch, had seen the flames and called the master. An

unknown vessel which was in the vicinity at the time of the accident, did not communicate, but sailed on without stopping.

1.4 CREW PARTICULARS

Ross Alcedo's 16-man crew consisted of the regular skipper, bosun plus five crew, together with a new mate, chief and second engineers, and six new deckhands, cook etc. The skipper is a UK national, with the remaining crew members being either Spanish or Portuguese.

The skipper joined *Ross Alcedo* initially in June 1997 and, apart from leave periods, had been her skipper since that time. He held a Second Hand Full ticket, which he obtained in 1975 while working out of Lowestoft, UK. Since then he had been sailing either as mate, relieving skipper, or skipper.

The chief engineer joined the vessel for the first time on departure from La Coruña. In his statement to insurers of the vessel he said that he had been sailing as a chief engineer for the previous 18 months, but no details of his qualifications or experience were made available.

No details are known of the other members of the crew.

1.5 DESCRIPTION OF VESSEL

- 1.5.1 *Ross Alcedo* was a 32.2m steel hulled fishing vessel fitted with a full length shelter deck, aluminium enclosed centre section and wheelhouse, and steel forward and aft sections. The hull was divided, from forward, into forecastle store, fishroom, engine room and fuel bunkers, fish oil tanks, and steering gear compartment aft.

The shelter deck forward and aft were the working and processing areas, with the crew accommodation and galley/messroom constructed on a steel deck within a central aluminium deck house. The upper reaches of the engine room were also in this central section, and were encased within uninsulated steel bulkheads with access into the accommodation and galley/messroom via two AO steel doors. The aluminium wheelhouse was built above the forward part of the deck house. The accommodation block housed a combined galley/mess deck aft, with access forward through the upper engine room spaces into the cross-alleyway. On the starboard side of the engine room bulkhead was a four-man cabin, with access forward into the cross-alleyway. On the port side were toilets and washrooms.

Forward of the cross-alleyway were two four-man cabins with a central stairway up to the wheelhouse. Port and starboard doors led out on to the shelter deck. The wheelhouse contained two two-berth cabins aft of the access stairway, with a full width wheelhouse front forward. Port and starboard access doors were fitted on the wheelhouse wings.

Exemptions from the requirements of regulation 56 “structural fire protection” relating to A60 standard protection between engine room spaces and accommodation were granted by MCA in 1994.

- 1.5.2 The vessel was fitted with a B&W type 6723, 552kW diesel engine, with two Caterpillar 3306 diesel generators supplying 130kVA at 220v ac. A small emergency 40kVA generator unit was fitted together with a 300A/hour battery system. A high level bilge alarm was fitted in the engine room aft. There were two electrically driven-bilge pumps, plus two electrically-driven fire pumps fitted, and one manually operated semi-rotary fire pump.

In the upper section of the engine room, at main deck level, on the port side were four diesel oil storage tanks and a lub oil storage tank. The diesel oil tanks provided ready use fuel to the main and auxiliary engines. A long fore and aft drip tray was fitted beneath the run down valves.

Remote stops were fitted to the engine room ventilation, fuel separator, and transfer pump and to the galley cooker and galley ventilation. Emergency trips for the four settling and purified fuel tanks were also fitted.

A four-zone fire detection system was fitted covering:

Zone 1	Bridge deck and cabins (smoke detectors - ionisation)
Zone 2	Main deck cabins (“ “ - “)
Zone 3	Galley (one smoke & one optical)
Zone 4	Engine room (six smoke detectors)

Fire extinguishers were fitted as below:

Machinery space	2 x 9 litre water 5 x 9 litre foam 2 x 10kg dry powder
Crew spaces	2 x 9 litre foam 1 x 10kg dry powder
Wheelhouse	2 x 5kg CO ₂ 1 x 9 litre foam

The engine room was also covered by a fixed total flooding CO₂ three-bottle system operated from a cabinet on the starboard side on top of the shelter deck.

Two Viking 16-person inflatable liferafts were fitted, one port and one starboard. Both were fitted with hydrostatic release units (HRUs). A Jotron EPIRB, type TRON 30S was also carried.

- 1.5.3 Details of the fishing gear, winches etc and the fittings in the galley/messroom are not known.

Modifications carried out to the accommodation and food preparation spaces while the vessel was in La Coruña resulted in the Port Health Authority, Falmouth, issuing her with a “Unique Approval No”. No details of the work carried out was available. It did, however, satisfy the requirements of the Food Safety (Fishing Products and Live Shellfish) (Hygiene) Regulations 1998 (SI 994). This enabled the vessel to meet the requirements for dog fish skinning followed by packaging aboard, prior to arrival in port.

1.6 THE WEATHER

The state of the weather at the time of the incident was recorded by the coastguard as:

Wind force	3
Wind direction	360°
Sea state	3
Sea swell	2
Visibility	5

1.7 EXTENT OF DAMAGE

- 1.7.1 The fire damage was extensive and affected the shelter deck, main deck, wheelhouse and funnel deck house casing, accommodation, engine room and hydraulic deck machinery.

The aluminium wheelhouse had melted and burnt, with all wheelhouse equipment destroyed (**Figure 1**).

The steel shelter deck and side plating had buckled and distorted, with other areas being heavily affected by smoke. The aluminium centre section of the deck house had melted and burnt, with all dividing bulkheads within the accommodation completely destroyed.

The steel bulkheads containing the upper section of the engine room (diesel oil tanks etc) were intact, although had buckled due to heat. The deckhead and skylights of the engine room had disappeared, although the steel exhaust pipes for both the main engine, and the generators, remained (**Figure 2**).

- 1.7.2 The engine room, below main deck level, had suffered less damage, although fittings and cables fitted to the deckhead were damaged by heat and smoke. The ventilation trunking supplying air to the engine room was blocked at the outlets with melted aluminium and general debris. The whole area was heavily sooted with debris from the accommodation above by lying over the main engine and machinery sited within the open area. Actual fire damage in the engine room was minimal (**Figures 3 - 8**).

Although the damage was severe, the hull remained watertight while the vessel remaining moored alongside in Falmouth Docks. Although it was originally suggested that the vessel would be towed to Spain for rebuilding, this solution was abandoned and it was decided to scrap her.

Figure 1



Fire damage to accommodation and wheelhouse

Figure 2



Remains of upper part of engine room showing complete collapse of the engine room crown

Figure 3



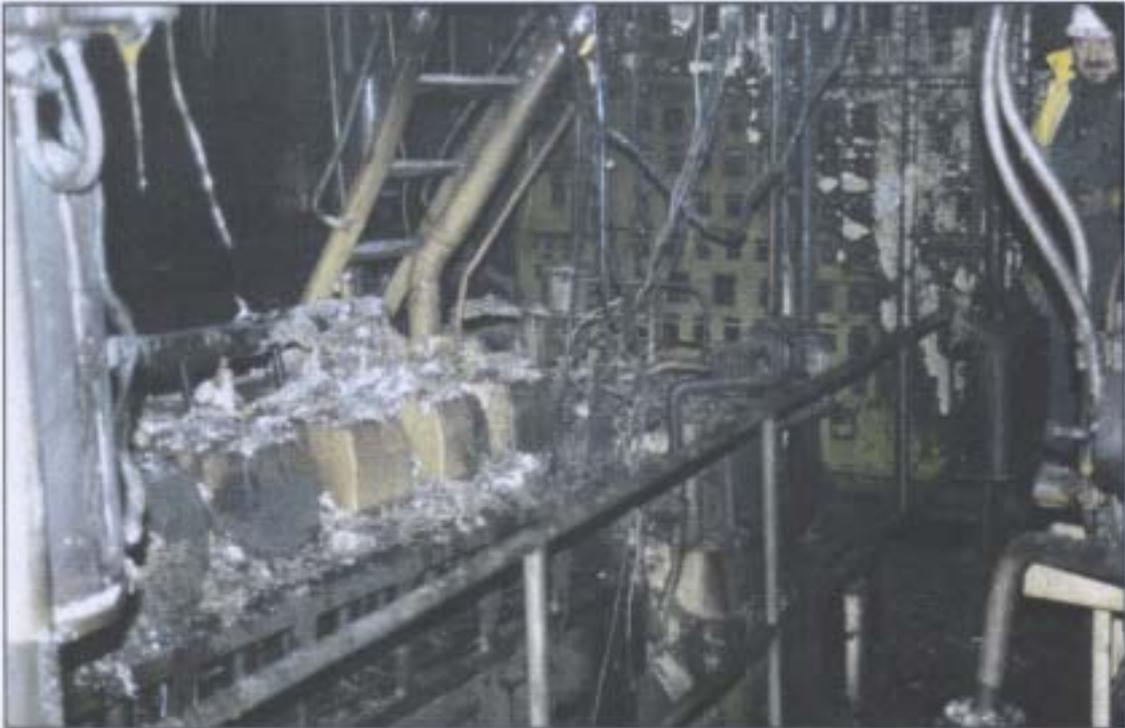
Smoke and heat damage in engine room

Figure 4



Vent trunking outlet blocked by melted aluminium and general debris

Figure 5



View across main engine showing debris from upper parts of engine room.
Note absence of fire damage

Figure 6



View of generator - covered in soot and debris but otherwise undamaged

Figure 7



General view of engine room showing deckhead smoke and heat damage

Figure 8



Heat and smoke damage to engine room deckhead

SECTION 2 - ANALYSIS

2.1 RELIABILITY OF WITNESSES AND OTHER EVIDENCE

- 2.1.1 Immediately after the incident and before declarations could be taken, the Spanish crew of the vessel were repatriated. The master, a UK citizen although normally domiciled in La Coruña Spain, remained in this country and made himself available for interview.

The master gave a full and frank account of the incident and some of the background to the circumstances, both during the previous repair period in Spain and his observations on the crew. Many of the details contained within that declaration could not be clarified due to the absence of any collaborative evidence or statements. That is not to say the details are or were wrong, only that they could not be confirmed from other sources.

- 2.1.2 During the investigation it became apparent that further details as to the condition of the engine room, immediately prior to the outbreak of the fire, needed to be established. Efforts were made through the local agent in Falmouth, International Port Services Ltd, to contact the owners and through them, the chief engineer.

Information requested was not largely supplied. A statement was given by the chief engineer in response to a series of questions asked on behalf of MURIMAR, the Spanish hull and machinery insurer, but none of the information contained in this statement addresses the areas in which MAIB was interested, and was of no assistance to the investigation. Despite repeated requests for information as to the whereabouts of the chief engineer, no information was supplied.

In view of the scarcity of information from both the owner and chief engineer, the question as to the whether the fire was accidental, or was as a result of arson, cannot be answered.

2.2 ACTIONS OF CREW

- 2.2.1 According to the details supplied by the skipper, the actions of the mate on discovering the fire were generally correct. Having smelled smoke, he investigated, saw that a fire had broken out in the engine room, and immediately called the skipper. What he failed to do, was to sound the fire alarm. He did tell the chief engineer to call the crew, but the proper response was to sound the alarm. The chief engineer's first duty should have been to concentrate on shutting the engine room doors, not being diverted to call the crew. Although he did both, it is probable that time was lost ensuring that the crew were awake before the doors were closed. Closure of the skylights and the early release of the CO₂ might have contained the fire and prevented the loss of the accommodation and wheelhouse structure.
- 2.2.2 The skipper, on being called, reacted correctly by immediately assessing the condition of the vessel, confirming that the fire was in the engine room and checking that the fire alarm had been sounded. His subsequent actions on arranging the crew

evacuation, as well as keeping the coastguard fully informed of the situation, followed good standard practice. Similarly, his direction and control of the crew when in the liferaft was good, as were his actions when safely on the rescue vessel. He kept the coastguard fully informed, which allowed them to organise the rescue with the minimum of confusion.

- 2.2.3 With only the skipper's declaration being available, all the remainder of the crew having been repatriated to Spain, it has not been possible to establish, with any certainty, where everybody was immediately before, and after, the fire was discovered, nor what their reaction was.

2.3 THE ORIGIN OF THE FIRE

- 2.3.1 The severity of the fire and the extent of damage to the vessel's wheelhouse and accommodation made any meaningful examination as to the original seat of the fire very doubtful. The statements made by the skipper and the chief engineer identified the origin of the fire as being in the engine room. Flames were seen coming from the open engine room door, but no other information is available.

The position of the debris in the engine room and, in particular, the upper section of the space, all suggest that a fierce fire occurred in the vicinity of the diesel oil fuel tanks. That the fire in this area was intense could be seen from the state of the tanks and the distorted fuel valve stems on the after series of tanks.

- 2.3.2 Although the mate, chief engineer, and skipper all saw flames and smoke coming out of the open engine room door, the speed with which the fire appears to have spread from that area to the starboard accommodation, raises questions about the original seat of the fire. The mate and chief engineer have suggested that they had only been talking in the wheelhouse for a few minutes before they became aware of smoke. The engine room door was then shut by the chief engineer 3 or 4 minutes later. Yet it appears from the little information available that shortly after this, the fire had engulfed the four berth cabin on the starboard side with such intensity, that nobody was able to get near the CO₂ control station on the next deck up.
- 2.3.3 The main engine and generator exhausts pass through the forward upper part of the engine room in proximity to the oil tanks, and although they would have been insulated, it is not known what condition the insulation was in, or if all flanges were covered. As neither the original seat of the fire, nor the source of ignition, have been identified, it is open to speculation as to how the fire occurred. If the origin of the fire was at the top of the engine room by the fuel tanks, a number of possible scenarios are:
- a. Clothes might have been hung in the area to dry, fallen across the exhaust and started to smoulder. (This is a possibility, but the chief engineer had only left the engine room via this area some few minutes earlier on his way to the wheelhouse.)

- b. The oil tank drip tray had become full, and overflowed on to an un-insulated part of the exhaust trunking.
- c. The exhaust trunking had become soaked with oil during the trip north from Spain and, after leaving Falmouth, the oil had been slowly evaporating, the vapour then coming into contact with a hot part of the exhaust trunking and igniting.

Unfortunately, the chief engineer, who was the last man in the engine room, returned to Spain before he could be interviewed. He has given a statement to the Spanish insurers, but this did not include what was happening in the engine room immediately before he appeared in the wheelhouse.

- 2.3.4 If the fire occurred in the deckhead due to a possible electrical fault, and then spread into the engine room and starboard accommodation, the speed at which the fire spread is more easily explained. It still does not explain however, why, with the skipper's cabin backing onto the CO₂ control cabinet, and no report of that cabin being on fire, access to the CO₂ control was not attempted at an early stage (**Figure 9**).

2.4 OTHER CONSIDERATIONS

There are a number of other points which should be noted:

- a. The engine room door into the cross-alleyway and accommodation was left open. As such, the integrity of the structural fire protection using an A0 fire door at the entrance to the engine room was lost. There is no explanation as to why this door was left open, or for what purpose. The open/closed position of the door into the messroom/galley at the time of the fire is unclear.
- b. The crown of the engine room, which comprised an aluminium funnel structure with, according to the drawings, a steel casing with skylights, had disappeared completely. It does raise the question as to whether, during the various conversion works, the steel had been replaced with an aluminium structure. It is likely that the steel work would have distorted rather than melted. The fire spread to the accommodation, either by heat transmission through steel bulkheads, or into the funnel space and through the accommodation deckheads (**Figure 10**).
- c. The fire detection system, which had last been inspected in October 1998 and passed as satisfactory, did not function. No explanation has been offered as to why this was so, only that for some reason the system was not tested on departure from La Coruña. In itself, a functioning fire detection system would not have prevented the fire, but it would have given an early warning and allowed the fire to be contained within the engine room and to be dealt with by the CO₂ total flooding system. It may be that during the modification to the accommodation and working areas, the fire detection system was disconnected and, on completion of the work, not re-instated and tested.

Figure 9



View of CO₂ station on top of shelter deck for engine room flooding

Figure 10



Debris from aluminium deck structure and insulation at shelter deck level
in upper part of engine room

- d. The apparent speed with which the fire engulfed the messroom and starboard accommodation, preventing access to the CO₂ control station on the starboard side of the main deck, does raise the question as to how long the fire had been going before it was discovered. The aluminium deck house, although having poor resistance to heat, still requires some time before it collapses and burns. If the fire originated in the upper part of the engine room, it needed to reach, and pass through, the four-man cabin outboard of the engine casing before it would affect access to the CO₂ control station on the deck above.

Discussion with the chief engineer might well have resolved many of the unanswered questions posed by this incident.

2.5 RESCUE SERVICES

The response of both the rescue services and the passing merchant vessel *Cranz II* to the developing emergency was immediate and positive. Communication between all three parties was maintained, with essential and accurate information being passed to coastguard at the earliest opportunity.

Co-operation between the master of *Cranz II* and *Ross Alcedo*'s skipper was maintained throughout using a hand-held VHF, which enabled the local rescue attempts to be co-ordinated. The coastguard rescue helicopters, one from Culdrose and one from Chivenor, carried out the airlift of the survivors with their usual efficiency, taking the crew to Culdrose for treatment of smoke inhalation and small burns, and the issue of dry clothes.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

- 3.1.1 *Ross Alcedo* was properly registered in Falmouth, with an experienced fishing skipper in command. [1.2.1, 1.4]
- 3.1.2 The chief engineer was new to the vessel, with no details of his qualifications or experience being known. [1.4]
- 3.1.3 When the fire was discovered at about 0200, the mate was on watch in the wheelhouse together with the chief engineer who had just come up from the engine room. [1.3.3]
- 3.1.4 The engine room door to the accommodation forward was open when the fire was discovered. [1.3.3]
- 3.1.5 The vessel was fitted with a four-zone fire detection system covering the accommodation, galley, wheelhouse and engine room. This system failed to operate or give any warning of the fire in the engine room. [1.5.2, 2.4c]
- 3.1.6 The crown of the engine room, which is shown on the drawings as having a steel enclosure together with skylights, had disappeared. This suggests it had been replaced with an aluminium structure. [2.4b]
- 3.1.7 Not much is known about the condition of the engine room prior to the fire as the chief engineer returned to Spain before he could be interviewed. [2.1.2]
- 3.1.8 Although flames and smoke were seen coming out of the engine room door, the speed at which the fire spread raises questions as to both the seat of the fire and the source of ignition. [2.2]
- 3.1.9 As all crew, apart from the skipper, had been repatriated to Spain before they could be interviewed; it has not been possible to establish the whereabouts of everybody prior to the outbreak of the fire. [2.2.3]
- 3.1.10 Co-operation between the skipper of *Ross Alcedo, Cranz II*, and the coastguard was good throughout the incident with clear and accurate communication being maintained between all parties during the rescue. [2.2]

3.2 CAUSE OF THE FIRE

The cause of the fire, its seat and the source of ignition remain in doubt. Although a fire did occur in the upper parts of the engine room in the vicinity of the diesel oil tanks at main deck level, it is not clear how or why this fire spread so rapidly throughout the accommodation. This rapid spread prevented access to the CO₂ control station on the top of the shelter deck.

SECTION 4 - RECOMMENDATIONS

Elcon Leisure Limited, Falmouth is recommended to:

1. Ensure that the skipper and crew of any fishing vessel that it owns or manages, is fully aware of the importance of maintaining the structural fire protection of machinery spaces by fitting self-closing mechanisms to all access doors.
2. Make sure that the skipper and crew are aware of the need to carry out basic fire and emergency drills, and the need to regularly test fire detection systems;
3. Ensure that in any future event or accident, arrangements should be made for the crew to be available for interview before repatriation.

As the vessel has now been scrapped, there are no recommendations relating directly to *Ross Alcedo*.

NOTE

Two similar incidents on UK-registered trawlers, *De Kaper* (GY 269) and *Be Ready* (LK377) found that a fire, which had started in the immediate vicinity of the engine room door, spread rapidly into the accommodation due to an engine room door being secured in the open position.

In both these cases, the integrity of the structural fire protection was destroyed because the fire resistant doors were open.

**Marine Accident Investigation Branch
February 2001**

General arrangement of vessel

