MCIB
Marine Casualty Investigation Board

REPORT INTO A FIRE
ON BOARD THE
IRISH REGISTERED VESSEL
MV "INISHFREE"
ON 21 FEBRUARY, 1997.

The Marine Casualty Investigation Board was established on the 5th, June 2002 under The Merchant Shipping (Investigation of Marine Casualties) Act 2000

CONTENTS

1. SYNOPSIS.

1.1 In the early hours of the morning of February 21st 1997, a fire occurred in the galley area of the Irish registered cargo vessel "Inishfree" when the vessel was docked in Newport, South Wales. One crewmember, Mr. Declan Byrne died, two others were in intensive care in hospital for some time afterwards and seven were admitted to hospital for observation but were released later on that day.

2. FACTUAL INFORMATION

2.1 The following are the principal particulars of the "Inishfree":-

Name:	INISHFREE. (Ex."Lenneborg")
Port of Registry:	ARKLOW.
Official Number:	402878.
Owners:	Coastal Shipping Ltd, North Quay, Arklow.
Built:	1983 (Netherlands).
Length (overall):	82.38 metres.
Beam:	15.83 metres.
Draft:	7.46 metres.
Propulsion:	"Wartsila" diesel engine of 2048 kW, driving a single variable pitch propeller.
Steering:	Twin-ram electro-hydraulic operating a single semi-balanced rudder.
Gross Registered Tonnage:	3222.
Nett Tonnage:	1743.
Deadweight:	5412.
Classification Society:	Bureau Veritas.

The "Inishfree" had been purchased by Coastal Shipping Ltd during the previous month, January 1997 and brought on to the Irish Register. It had already undertaken two voyages for the Company and this was its third voyage.

The vessel was a typical, single hold, general cargo ship having the accommodation and machinery located aft. Two 16 ton, electro-hydraulic, deck cranes were fitted on the starboard side of the upper deck to facilitate cargo handling.

The vessel had all the required statutory certificates for a ship of this type.

2.A1 Accommodation:

A 1.1 The accommodation, which was located at the after end of the vessel, was divided into four tiers consisting of the upper deck (main deck), poop deck, boat deck and navigating bridge deck (See Appendix 1). Accordingly, no accommodation was located below the upper or main deck level.

A 1.2 The galley, dining area, lounge, storerooms, laundry and washrooms were located on the first tier, the upper or main deck level (See Appendix 2).

A 1.3 The sleeping accommodation was located on both the second and third tiers, the poop deck and the boat deck levels (See Appendix 3 & 4).

A 1.4 The combined wheelhouse and radio station was located on the fourth tier, the navigating bridge deck (See Appendix 5).

A 1.5 Access was provided from upper deck level upwards to the other decks via external and internal stairways. Access to the machinery spaces, located below the upper deck, was downwards via internal stairways from upper deck level and via a stairway located at the aft port side of the accommodation at poop deck level which was accessed from outside.

A 1.6 The accommodation was originally designed to cater for fourteen persons.

2.A.2 Galley, dining and lounge areas:

A 2.1 The galley and the adjacent dining and lounge areas were located across the forward part of the lower tier of accommodation. The galley was located on the starboard side, the dining area in the middle and the lounge area on the port side (see Appendix 2 & 6). A standard door, which was not self closing and which incorporated a ventilation louvre (grille) near the bottom, provided access from the after side of this area to a small lobby. This lobby incorporated doorways leading to the linen store and washroom areas and the stairway leading upwards to the other accommodation levels. A doorway led from the washroom area to the engine room. An emergency escape door was fitted in the forward bulkhead of the dining area to provide an alternative route to the open deck in the event of the normal exit route being unavailable.

A 2.2 The galley was subdivided from the dining/lounge area by a steel fire resisting bulkhead. The door, fitted in this bulkhead and leading from the galley area into the dining/lounge area, was of a fire resistant type fitted with self-closing hinges. However, the door was also fitted with a "spring-clip" type of device for holding the door in the open position.

A 2.3 The galley was fitted with the usual appliances, microwave oven, refrigerator, meat slicer, electric kettle, toaster, coffee making machine, etc. The main cooking device was an electric range having four hotplates and an oven, which was located in the middle of the floor area with "walk-around" access from all sides. The control switches for the range were mounted on the after vertical face of the range.

A 2.4 The ventilation arrangements for the galley consisted of a supply and an extraction system. The supply system consisted of a ducting which conveyed fresh air from a fan, located in the fan-room, to small outlet fittings distributed throughout the galley and storeroom deckheads. Normally, excess air from this type of system would "spill out" into the adjacent spaces and would be extracted by the general extraction system serving the stairwells, accommodation alleyways, etc.

A 2.5 In addition, the galley was fitted with a dedicated extraction system to serve the area over the range in order that cooking odours and vapours would be extracted directly. An extraction unit was fitted in the deckhead (ceiling), over the range, which incorporated wire mesh filters, which would act as traps for oil vapours, which would condense on the mesh and accordingly, would not be carried into the ventilation trunking where they would pose a serious fire hazard. This extraction unit was connected via galvanised steel trunking to the bulkhead between the adjacent stores area and the fan room. The ducting then changed into a fabricated steel structure as it passed through the bulkhead into the fan room. Within the fan room, the ducting reverted to galvanised steel trunking (300mm round section) which passed to the aft, inboard side of the fan room to the extraction fan itself and was attached to the fan with a short flexible fabric transition piece. The fan was attached to another steel "box" which connected it to the funnel casing and to atmosphere. (See Appendix 6).

A 2.7 A door, in the after bulkhead of the galley, provided access to the general food storage area and the main "walk-in" deep freezers.

A 2.8 The dining and lounge areas were of "open-plan" layout with decorative dividing structures of wooden construction. The dining area was fitted with the usual fixed dining tables and chairs. The lounge area was fitted with tables, chairs, settees, bookcases, television, etc.

2.A.3 Fire-fighting equipment, fire alarm and detection system:

A 3.1 The various fire extinguishing appliances, extinguishers, hoses, nozzles, breathing apparatus, etc, were all fitted in compliance with the requirements of the SOLAS Convention for a vessel of this size and type. However, all of the portable fire extinguishers on the vessel were of the dry-powder type and the requirements of the Irish Administration requires that at least 50% of them be changed for types more suitable for the fire risk in certain areas. When the vessel was surveyed for registration on the Irish Flag, the owners were instructed to supply these new extinguishers within one month and these were being placed on board at Newport. One x 7 kg dry powder extinguisher was mounted on the galley bulkhead, adjacent to the door leading to the dining area.

A 3.2 The accommodation areas were not covered by any fixed fire detection system nor was it required that such a system be installed. However, a fire detection system was fitted in the machinery spaces as this was a requirement for the UMS (Unattended Machinery Spaces) condition in which the vessel was certificated to operate. The fire detection system fitted was of "Salwico" manufacture. The main control unit was capable of serving five circuits or "loops". However, only two of these loops were being utilised on the "Inishfree" and these served different areas of the machinery spaces including the steering compartment.

A 3.3 The detector heads (sensors) in the machinery spacers were a mixture of smoke and heat sensitive types. The main detection control and display panel was located in the main console in the wheelhouse. Alarm monitors or "slave" units were fitted in the chief and second engineer's cabins so the alarm system could be switched to whoever was designated to be on duty at a particular time.

A 3.4 The ship's fire alarm system consisted of alarm bells, which were fitted throughout the accommodation and machinery spaces so that they would be audible from everywhere in those areas. These alarm bells could be activated by a push-button located on the bridge console and at different points in the accommodation and engine room.

A 3.5 Two self-contained breathing apparatus (SCBA) were carried on board and were located in the cross-alleyways on the poop and boat deck levels.

2.A.4 Manning:

The "Inishfree" was operating with a crew of eight as outlined below:-

NAME	POSITION	NATIONALITY
David Johnstone	Master	British
Stuart Hodge	Ch.Mate	British
Maben Haugh	Ch.Engineer Officer	British
Declan Byrne	Category 1 Seaman	Irish
William Kealy	Category 2 Seaman	Irish
Stephen MacLeod	Category 2 Seaman	British
Anthony Connor	Trainee	British
Marcus Bickerdike	Eng'Officer Cadet	Irish

A 4.1 Mr. Jeremy Langdon and Mr. Michael Kennedy, two of the Company Superintendents, had joined the vessel in Newport and were living on board during the vessel's stay in port in order to supervise ongoing modifications and repairs to the vessel. This meant that a total of ten persons were living on board the vessel at the time of the incident.

A 4.2 The manning and certification of the crew of the "Inishfree" was in accordance with the requirements of the Irish Administration. The Master, Chief Mate and Chief Engineer had attended the required four-day fire-fighting courses. None of the ratings had attended any fire-fighting training nor were they required to do so under the regulations applying at that time.

2.A.5 Operating practices on board:

A 5.1 It is standard practice on small vessels engaged on this type of trade (short voyages) to have particular routines on board so that the relatively small crew can carry out all of the necessary functions needed to operate the vessel safely.

A 5.2 The master and chief mate operated a "six hours on" and "six hours off" rota. The chief engineer and engineer cadet were day workers, i.e. they worked throughout the day with the engine room being unattended at night.

A 5.3 The ratings operated a seven-day rota where galley duties, day work and watch keeping duties were rotated every week. However, this rota could be altered in the event of any emergency or if operating circumstances warranted a change.

A 5.4 The person assigned to galley duties would normally be in the galley from 0700 until 1900 each day (with various breaks). The galley was normally left open at all times so that those on "out of normal hours" duties could cater for themselves, if necessary. However, the stores area, adjacent to the galley, would be locked if the person assigned to galley duties was not actually present in the galley. In any case, sufficient food would always be left in the galley fridge so that a meal or snack could be prepared if required.

3. THE EVENTS PRIOR TO THE INCIDENT

3.1 3.1 The "Inishfree" had loaded a cargo of 5003 tonnes of manganese ore at Boulogne on Monday February 17th 1997 and sailed at about 1800 hrs that evening bound for Newport in South Wales.

3.2 The vessel encountered moderate to rough sea conditions, winds of Force 8/9 with overcast and showery weather as she sailed down the English Channel towards Land's End. These conditions persisted as the vessel turned northwards having rounded Land's End. At about 2200 hrs on February 19th, when the vessel was off Wolf Rock (near Land's End), the engine room fire alarm activated indicating fire in Zone 2, which covers the upper engine room levels. The ship was operating in the UMS (Unattended Machinery Space) mode at this time and accordingly, no personnel were present in the machinery space. The alarm was observed by the Chief Engineer on the repeater alarm unit in his cabin and he went immediately to the engine room to investigate the cause of the alarm.

3.3 The Chief Engineer had discovered that the main engine water outlet pipe 'O' ring had blown out, spraying water over the hot exhaust filling the engine room with steam thus activating the fire detection system.

3.4 It was necessary to stop the main engine to carry out repairs. Falmouth Coast Guard and the owners of the vessel were notified immediately that the vessel was stopped but in no immediate danger. However, the UK Coast Guard decided to send the Sennen Cove Lifeboat (RNLI) and the tug/stand-by vessel "Falmanara" (on contract to the Coast Guard) to stand by the "Inishfree" as they were concerned with the vessel being on a lee shore in bad weather conditions. These vessels were on location at about 2345 hrs. The "Inishfree" maintained frequent radio contact with the Coast Guard keeping them updated on their position and the status of the repairs. Repairs were satisfactorily completed and the vessel was underway again at about 0130 hrs. The tug and lifeboat were "stood down" at about 0100 hrs.

3.5 The "Inishfree continued on her voyage to Newport and arrived off the port at about 1400 hrs. The vessel had to wait some time for other traffic to clear the channel but she eventually was secured alongside Dowd's Wharf in Newport at about 1830 hrs on February 20th with the vessel's port side against the quay wall. The discharging of the cargo was not due to commence until 0600 hrs on the following day, February 21st and accordingly, the crew would "have the night off". Shore contractors were coming on board to carry out some carpentry work on the bridge necessary to ensure the vessel's compliance with GMDSS requirements (communications/radio equipment).

3.6 The Chief Mate, seaman Kealy, seaman Byrne and cadet Bickerdike went ashore to the Seamen's Mission. This meant that the Master, Chief Engineer, seaman MacLeod, trainee seaman Connor, Superintendent Langdon and Superintendent Kennedy remained on board.

3.7 Mr. MacLoed, the rating who was currently performing galley duties, was nominated to remain on board during the night and he was instructed to ensure that everything in the galley was in order before going to bed. Seaman Byrne, before going ashore, had asked seaman MacLeod to leave out some potatoes so that he could cook them when he returned on board. Seaman MacLoed prepared some potatoes and left them in a pot beside the microwave oven.

3.8 Seaman McLeod secured the galley before leaving the area and ensured that all of the galley electrical equipment was switched off before he left.

3.9 The Chief Mate returned on board at about 2330 hrs with Byrne, Kealy and Bickerdike following at about 2400 hrs. Everyone had gone to their cabins at about 0030 hrs with the exception of the Chief Engineer, who was watching television in the lounge and seaman Byrne who was also in the lounge. The chief engineer had fallen asleep and was awoken by seaman Byrne at about 0130 hrs. The Chief Engineer decided to go to bed around this time and as he left the lounge/dining area, he noticed that seaman Byrne was in the galley preparing food.

4. THE INCIDENT

4.1 At about 0310 hrs, the fire alarm was activated.

4.2 Mr.Langdon was woken by the alarm and rushed out into the alleyway where he noticed smoke. He immediately thought that this might have been associated with the work which had been carried out on the bridge. He went to the bridge and found no evidence of fire or smoke there. He then returned to the boat deck level where he met the Master, who had been awoken by smoke in his cabin, and the Chief Mate.

4.3 The Master went to the bridge and noticed that Zone 2 (upper areas) of the engine room fire alarm system had been activated. He immediately activated the general alarm, which sounds throughout the accommodation and machinery space areas. He also used channel 16 on the VHF Radio to advise that the "Inishfree" had a fire on board and also stated the name of the berth where the vessel was moored. Avonmouth Radio responded, asked for a repeat of the details given and they then confirmed that the fire brigade had been notified. The Master blew the ship's whistle for about thirty seconds (in accordance with the Port's procedures), acknowledged the fire alarm on the console and then left the bridge.

4.4 Concurrently, the Chief Engineer had responded to the alarm which had indicated on the repeater panel in his cabin. He met Mr.Langdon and the Chief Mate as he left his cabin and all three proceeded to the engine room via the stairs at the after port side of the accommodation at poop deck level which is accessed from outside. The Chief Engineer switched off the engine room ventilation fans but could see little or no evidence of smoke in the main engine room areas.

4.5 The Chief Engineer then decided to check the upper areas of the engine room including the fan room area, which is accessed from the workshop area in the upper engine room. When he opened the door of the fan room, he immediately noticed that the fan space was full of smoke but with no obvious fire in the space. He switched off the fans and closed the door again.

4.6 The Chief Engineer, the Chief Mate and Mr. Langdon then went to the washroom area and found that this was also full of thick smoke. This indicated to them that the fire was in the accommodation areas.

4.7 They then used the outside ladders to move back up the accommodation levels and they met the Master at the boat deck level and advised him that the fire appeared to be in the accommodation areas. Mr.Langdon then returned to his cabin to don additional and more suitable clothing as he had left the cabin in a rush, with insufficient clothing, when the alarm sounded.

4.8 The Master descended the internal stairs leading from the boat deck to the poop deck level. However, he was unable to open the door at the bottom of this stairs as it appeared to be obstructed on the other side of the door.

The Chief Engineer and Chief Mate came down to assist and the Master managed to squeeze through the door opening. He found Mr. Kennedy lying at the back of the door in an unconscious state. They were joined by seaman Kealy at this stage and between them they managed to remove Mr.Kennedy to the open area on the port side of the boat deck. Before the Master left the poop deck level, he heard trainee seaman Connor shouting from his cabin. The Master told him to stay there and that they would return for him in a few moments.

4.9 Mr.Langdon and the Chief Engineer commenced tending to Mr. Kennedy and Mr. Langdon then used his mobile telephone to contact the Ambulance Service (this call was recorded, by the Ambulance Service, as being made at 0321 hrs).

4.10 Seaman MacLeod had escaped from his cabin to the open deck through the window in the cabin as he had tried, unsuccessfully, to open the door outside his cabin which led out on to the deck.

4.11 The Chief Mate donned a breathing apparatus and descended the stairs to the poop deck level. He located trainee seaman Connor in his cabin and led him to safety on the port side of the open poop deck area.

4.12 The Chief Mate then returned to the poop deck alleyway, still using breathing apparatus, and began a search of the area. He located cadet Bickerdike lying on the deck in seaman Byrne's cabin (forward, port cabin) with his feet in the open doorway of the cabin). He managed to drag cadet Bickerdike to the adjacent door on the port side of the accommodation alleyway, leading out on to the poop deck. He was joined by seaman Kealy (who was on the open deck) and together they managed to bring cadet Bickerdike to the open deck area on the port side of the poop deck.

4.13 At this stage, Mr. Kennedy and cadet Bickerdike were lying unconscious on the boat deck. Seaman Connor had also collapsed (probably with shock) in this area and all three were being tended by the Mr. Langdon, the Chief Engineer, seaman MacLeod and seaman Kealy.

4.14 During these operations, the Master had returned to the bridge to advise Avonmouth Radio, using the VHF radio, of the current situation in relation to the fire and that he had a serious casualty on board (referring to Mr. Kennedy at that stage).

4.15 The Chief Mate returned to the poop deck level and continued his search (still using breathing apparatus). He then decided to descend the stairs leading down to the lounge/dining area and as he moved further downwards he noticed that the smoke was denser and the heat was increasing. He decided to return to the boat deck to advise the Master of the situation. The Master donned the other breathing apparatus and returned with the Chief Mate to the lounge / dining area in order to search the area together.

4.16 Both men began a systematic search of the lounge/dining area and they noticed that visibility improved as they moved towards the port side of the area. They discovered seaman Byrne lying on his back on the deck, just forward of the outboard table. He appeared to be unconscious and they began to carry him towards the doorway leading to the stairs.

4.17 They were just beginning to ascend the stairs when they were joined by two firemen, from the shore fire brigade, and together they removed seaman Byrne to the open deck. The Master and the First Mate had both noted that the galley door was closed as they passed that area.

4.18 The fire brigade had arrived on the scene at 0321 hrs and assumed control of the situation with the Master and Chief Mate providing the assistance with ship's drawings, stability information, advice on accommodation layout, crew list, etc. It was quickly established that all of the crew had been accounted for and consequently, the fire brigade decided to tackle the source of the fire. Based on the experience and observations of the Master and Chief Mate when they were searching the lounge/dining area, it appeared that the most likely source of the fire was the galley.

4.19 The fire brigade personnel descended the stairs leading to the galley area and noticed that the door (from the lounge/dining area) was closed. They entered the galley and began to tackle the fire. They quickly identified the source of the fire as a chip pan on the galley range, which continued to re-ignite when they managed to extinguish the fire (because the cooking oil was so hot that its vapours automatically ignited again). They were unable to switch off the range element as the switches had been damaged (some of the knobs had melted) and thereby isolate the heat source and so they decided to lift the chip pan and throw it out through one of the portholes, into the dock. This immediately removed the source of the fire and once the Chief Engineer had isolated the electrical power to the area, they continued to "dampen down" as required.

4.20 The Ambulance Service had arrived on scene at 0327 hrs. They determined that seaman Byrne was dead and his body was removed to the mortuary. Mr. Kennedy, cadet Bickerdike and trainee seaman Connor, Mr. Langdon, seaman MacLeod and seaman Kealy were taken to hospital for treatment and observation. Mr. Langdon, seaman MacLeod, seaman Kealy and trainee seaman Connor were released from hospital over the next 24 hours. Both Mr. Kennedy and cadet Bickerdike required a long period in hospital to overcome the effects of smoke inhalation. Cadet Bickerdike had also suffered a head injury, which may have occurred as he fell in the alleyway/ cabin. Both men recovered fully from their injuries.

5. OBSERVATIONS/DAMAGE CAUSED

5.1 The upper galley area was badly damaged by fire with the main damage concentrated immediately over the range and extending towards the door leading to the lounge/dining area. Deckhead (ceiling) panels had burned away, electrical fittings had melted and the extraction unit was almost totally destroyed. Galley equipment was damaged by heat and/or smoke to different extents depending on their location relative to the fire. Heavy smoke and sooty deposits were evident on all flat or working surfaces in the galley. The upper part of the door, leading to the lounge/dining area, and the upper area of the bulkhead linings in the dining area adjacent to this door, were also fire damaged. Heat and smoke damage was evident in the adjacent lounge/dining area and this damage ranged from a maximum at the galley door to a minimum on the port side of the area. Heat and smoke damage (but to a lesser extent) was observed to the door leading to the lobby, in the lobby itself and in the stairway leading upwards. Smoke staining was evident in a decreasing extent up through the accommodation as far as the boat deck level.

5.2 Heat and smoke damage was also observed in the stores area immediately aft of the galley but the deep-freeze units appear to have been unaffected apart from some smoke staining on the doors.

5.3 The galley ventilation trunking was examined in the fan room and showed evidence that it had been subjected to considerable heat internally. The trunking was blackened with all of the paint melted off and lying on the deck in strips. (see photographs at Appendix 7)

5.4 The galley door, leading to the lounge/dining area, was very badly burned and charred in the upper 50% of the door. However, the majority of the burning and charring was on the surface, which would be towards the dining area, if the door was closed. This indicated that the door must have been open during the fire. However, considerable damage was also noted on what would be the back of the door in the open position. This side of the door should have been screened or sheltered from the worst effects of fire. Similarly, fire damage was also noted on the bulkhead area, which would have been protected behind the door, if it was open. It was noticed that a small square piece of the top corner of the door was missing (see photographs at Appendix 7). This was the area where the spigot piece of the door "hold-open" device was mounted. This fitting was found lying on the deck at the bottom of the door. The mounting screws, used to attach the fitting to the door, were still in the holes of the fitting. The socket piece or receiver for this fitting was still in position on the bulkhead behind the door.

5.5 This indicated that the door was open during the early stages of the fire, which exposed the "front" of the door to the fire and heat. This was confirmed by holding the door open and tracing the fire damaged pattern across the door and on to the bulkhead in the lounge/dining area (see photographs at Appendix 7). The worst effects of the fire would have been experienced in the upper parts of the door and it is likely that the top corner burned away or was reduced in

strength to the extent that the fitting pulled out of the door. This would have allowed the door to close, which was its position when observed by the Master and Chief Mate and later confirmed by the fire brigade. It also explains how the "back" of the door and bulkhead in this area suffered the amount of fire damage sustained, as these areas would be exposed when door closed.

5.6 Examination of the remains of the electrical switches on the galley range indicate that the oven and three of the four hot plates were switched off. However, it was also confirmed that the remaining hot plate was switched on, at "position 3", which is the maximum setting on this switch. This was the hotplate on the after outboard side of the range and this was where the fire brigade located the burning chip pan.

5.7 Examination of the ship's side, outside the two portholes, did not reveal any evidence of smoke damage in this area indicating that both portholes were either fully shut during the fire or were only slightly open which would have allowed any draught to be inwards and up through the accommodation.

5.8 Examination of the galley range, all the physical evidence of fire and smoke damage and the information provided by the fire brigade, indicated that the seat of this fire was the chip pan situated on the after outboard hotplate of the range.

5.9 The temperature of the hotplates on a range of this type is varied by altering the position of the control switch. However, this merely regulates the heat from the hotplate as distinct from the heat of the material being cooked within a pot on the hotplate. Overheating of food say, being boiled in water in a pot, will cause the pot to "boil-over" harmlessly. However, overheating of cooking oil can lead to the auto-ignition temperature of the oil being exceeded. Accordingly, open pots or pans should not be heated on a range as there is no real control over the temperature of the oil within the pot as distinct from the heat being generated in the hotplate. Deep-fat fryers, which are designed for this function, contain devices to regulate the temperature of the oil in the unit and ensure that it remains at a safe level below the auto-ignition temperature of the oil.

5.10 The temperature of cooking oil in a chip pan during cooking is usually in the region of 200˚C. The temperature at which the vapours from this oil will spontaneously ignite is in the region of 300˚C to 350˚C. The temperature of an electrical hotplate can reach in excess of 500˚C. Accordingly, the temperature of the cooking oil can exceed its auto-ignition temperature if the cooking process is not closely monitored.

5.11 In this case, it is probable that the chip pan did overheat to the extent that the vapours from the oil ignited spontaneously or the pot "spilled-over" and the oil ignited in contact with the hotplate. The fire then added additional localised heat to the chip pan, which would have the effect of increasing the rate at which the oil was vapourising which would cause the fire to increase in intensity.

5.12 The flames and heat extended upwards and outwards towards the dining area and the stairwell/lobby area through the open door of the galley. However, after some time and exposure to significant flames and heat, the catch, which held the door open, failed or became detached from the door thus allowing the door to close under the action of its self-closing hinges. The charring on the door surfaces would indicate that some considerable time elapsed before the door closed and accordingly, heat and smoke would have been billowing into the dining/lounge area for some time. The heat distortion to plastic light fittings, the television, etc, as well as the considerable smoke damage in this area indicate that considerable heat and smoke was experienced in the area.

5.13 It is reasonable to conclude that, if Mr. Byrne was attending to the chip pan, he would have noticed the fire starting and would have taken immediate action including raising the alarm. Similarly, if he was awake in the lounge area, he would have noticed the fire and acted accordingly.

5.14 It is very likely that Mr. Byrne had fallen asleep in the lounge area and was unaware of the events unfolding in the galley. It is probable that he was overcome by the dense smoke, which must have filled the space in which he was sitting. It is also possible that he was awoken briefly as he would have experienced breathing difficulties but was totally overcome by the dense smoke when he stood up causing him to collapse on the deck where he was found. It was established that Mr. Byrne died from the effects of smoke inhalation.

5.15 It is impossible to know when the galley door would have closed. However, the extent of fire damage and charring on the "back" of the door indicates that it was exposed to flame and heat for some time. Nevertheless, the closing of this door would have greatly reduced the amount of heat extending upwards along the lobby stairway. This would have been very helpful in making it possible for the Chief Mate and Master to descend the stairs during their search.

5.16 There was no evidence that Mr. Byrne had made any attempt to use the forward escape door from the dining area.

6. CONCLUSIONS

6.1 The most likely cause of this fire on the "Inishfree" was overheating of the cooking oil in an unattended chip pan on the galley range. This caused the cooking oil to be heated to such an extent that the vapours ignited either through spontaneous combustion or by overflowing oil coming in contact with the hotplate.

6.2 It is most likely that Mr. Byrne had switched on the range and placed the chip pan on the hotplate and then retired to the lounge to allow it to "heat up". It is probable that he then fell asleep in the lounge and had not noticed the fire starting. Mr. Byrne was overcome by the dense smoke and died as a result of smoke inhalation.

6.3 The door leading from the galley to the dining/lounge area was open for some time in the early stages of the fire but eventually closed when the securing catch became detached after the door material was weakened by burning.

6.4 The dining/lounge area, the lobby and up through the stairway to the poop deck level were exposed to heat and considerable amounts of smoke especially during the period when the galley door was open. All of the personnel, located on the poop deck level, were exposed, to greater or lesser degrees, to the effects of smoke. The smoke was restricted in gaining access to the boat deck and bridge deck levels by the door at the bottom of the stairs from the poop deck level.

6.5 It is probable that the engine room fire detection system had been activated by smoke, from the melting paint on the overheating ducting in the fan room, gaining access to the upper engine room areas.

6.6 The Master, Chief Mate, Chief Engineer and Mr. Langdon acted quickly and correctly in dealing with this situation and it is likely that their actions saved lives. The master followed the correct procedures, laid down by the Newport port authorities, for such an emergency.

6.7 The vessel was not fitted with a fire detection system in the accommodation areas, which would have detected the presence of fire or smoke at an early stage. However, the "Inishfree" was not required to have such a system fitted under the applicable regulations.

6.8 The "Inishfree" was well maintained and in a clean condition throughout. It complied with all the applicable requirements in relation to certification under the different international conventions including manning requirements as determined by the Irish Administration.

6.9 It was noted that the crewmembers seemed to be unaware of their emergency duties and were not familiar with the "muster list" which shows each person’s duties in an emergency. Furthermore, no record could be found that a fire drill had been carried out to ensure that all of the crew would be familiar with the

location of the fire fighting equipment, the appropriate action in a fire situation, etc. It is a requirement of the SOLAS Convention that such drills are carried out every month and within 24 hours of leaving port when the number of new personnel exceeds 25%. In this case, almost 50% of the crew were new to the vessel and a fire drill should have been carried out. However, there is no evidence that the outcome of this particular incident would have been any different if drills had been carried out.

6.10 Despite the bad weather experienced during the voyage, the engine breakdown and the delay in entering Newport Docks, there was no evidence that stress or fatigue were factors in this incident. There was no evidence of any personnel or discipline problems on board and the use of alcohol was not a factor in the incident.

7. RECOMMENDATIONS.

7.1 The following recommendations are made in order to prevent a recurrence of this type of accident:

(1) Open chip pans or similar open utensils containing cooking fats or oils should never be used on board ship. Shipping companies should issue internal instructions to all their ships and seagoing personnel banning the use of such cooking utensils and methods, under any circumstances.

(2) Cooking, which involves quantities of oil or fat, should only be carried out using proper deep-fat fryers which comply with marine specifications. Such units must be fitted with dual thermostatic devices which will ensure isolation of the electrical supply in the event of failure of the normal regulating thermostat. Such deep-fat fryers must be secured in position to prevent movement in rough weather conditions.

(3) The owners and Masters of all Irish registered vessels must ensure that on- board training, together with frequent drills, is carried out to ensure that all crewmembers are familiar with their duties in an emergency. Crewmembers must also be instructed in relation to the location and use of fire-fighting and life-saving equipment. Furthermore, all crewmembers, especially those who may not have attended formal fire-fighting training, should be instructed on how to react in smoke filled situations.

(4) Owners should consider the installation of fire detection equipment in high-risk areas, such as galleys, even where no such requirement exists in the regulations.

(5) Personnel assigned to galley duties, should receive special instruction in relation to the fire risks associated with galleys including the risks with unattended grilling or frying, the need to keep extraction filters, hoods and ducting clean and free from grease, safe disposal of combustible food packaging, safe use of deep-fat fryers, etc. Unauthorised or untrained personnel should not have access to the use of cooking facilities in galleys.

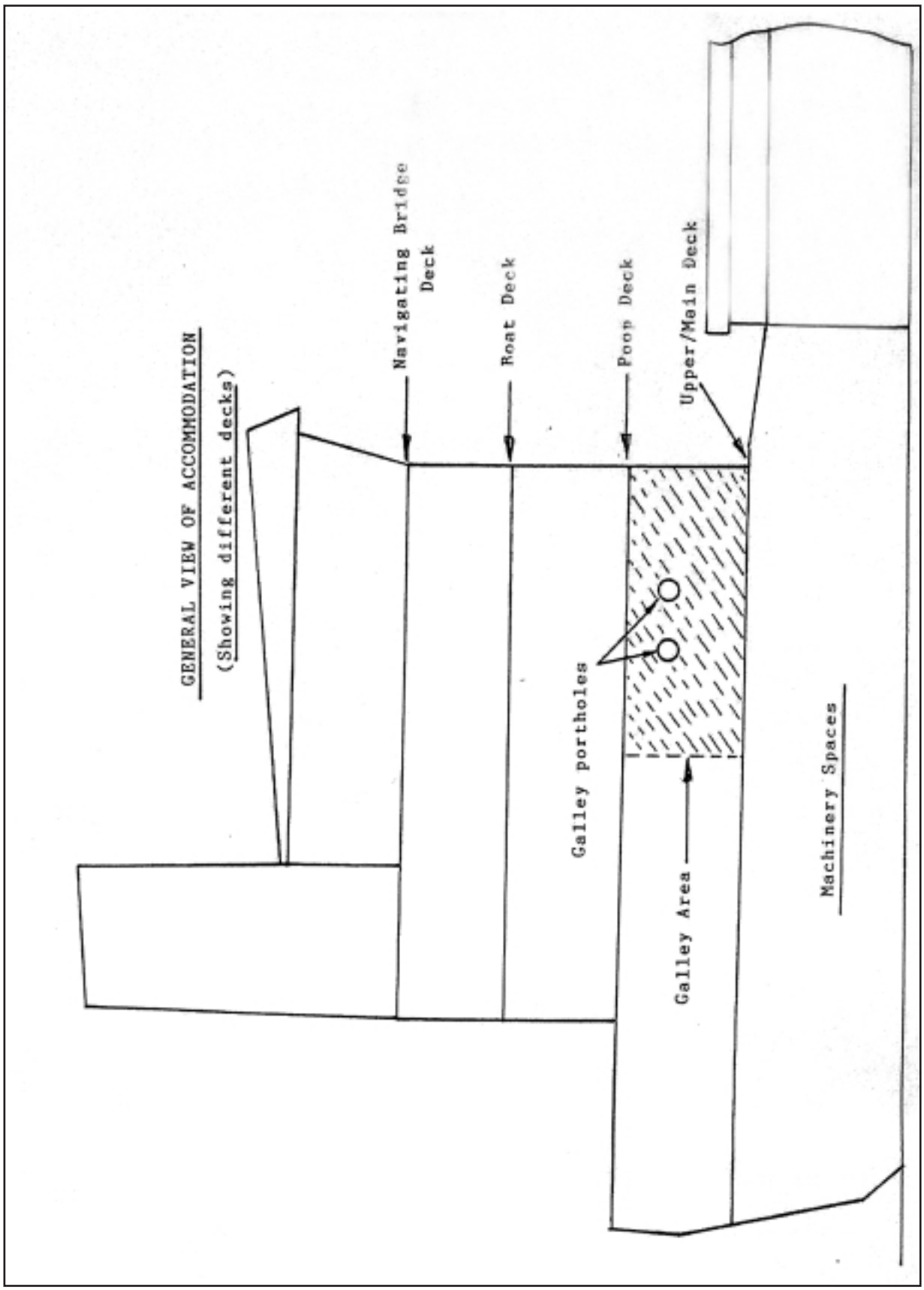
(6) Fire doors should never be secured in the open position unless such securing involves a mechanism which will ensure that the door will close in the event of fire e.g. by remotely released magnetic devices or fusible links which will melt in a fire situation. Fixed hooks or similar devices must not be used.

(7) The Department of Communcations, Marine and Natural Resources should issue a Marine Notice bringing to the attention of all owners, masters, skippers, officers and crewmembers of all Irish registered merchant and fishing vessels, the lessons learned from this accident and making them aware of the above recommendations.

8. APPENDICES

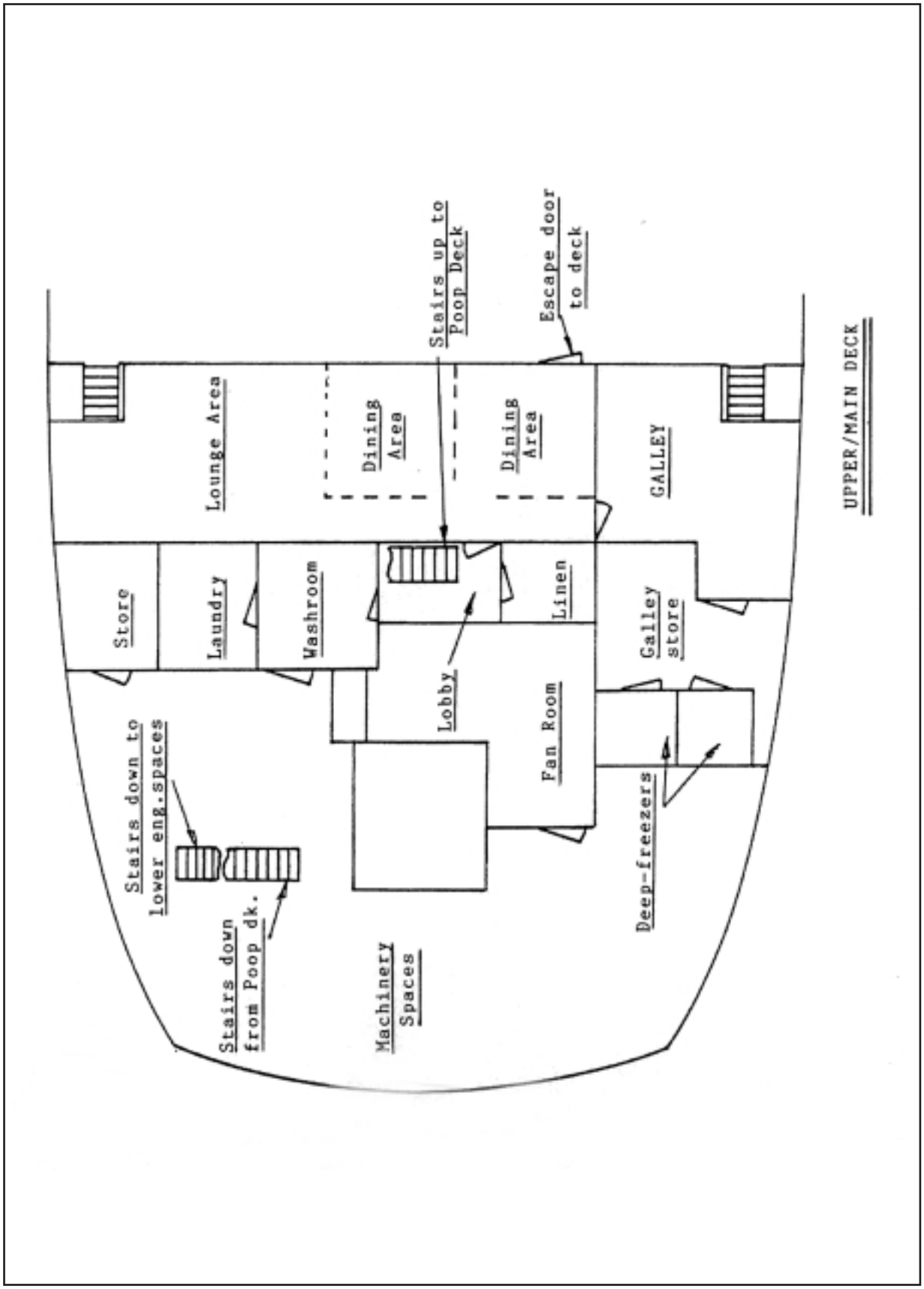
Appendix 1	General View of Accommodation.
Appendix 2	Upper / Main Deck
Appendix 3	Poop Deck
Appendix 4	Boat Deck
Appendix 5	Navigating Bridge Deck
Appendix 6	Fire Origin Location
Appendix 7	Photographs

Appendix 1 General View of Accommodation.

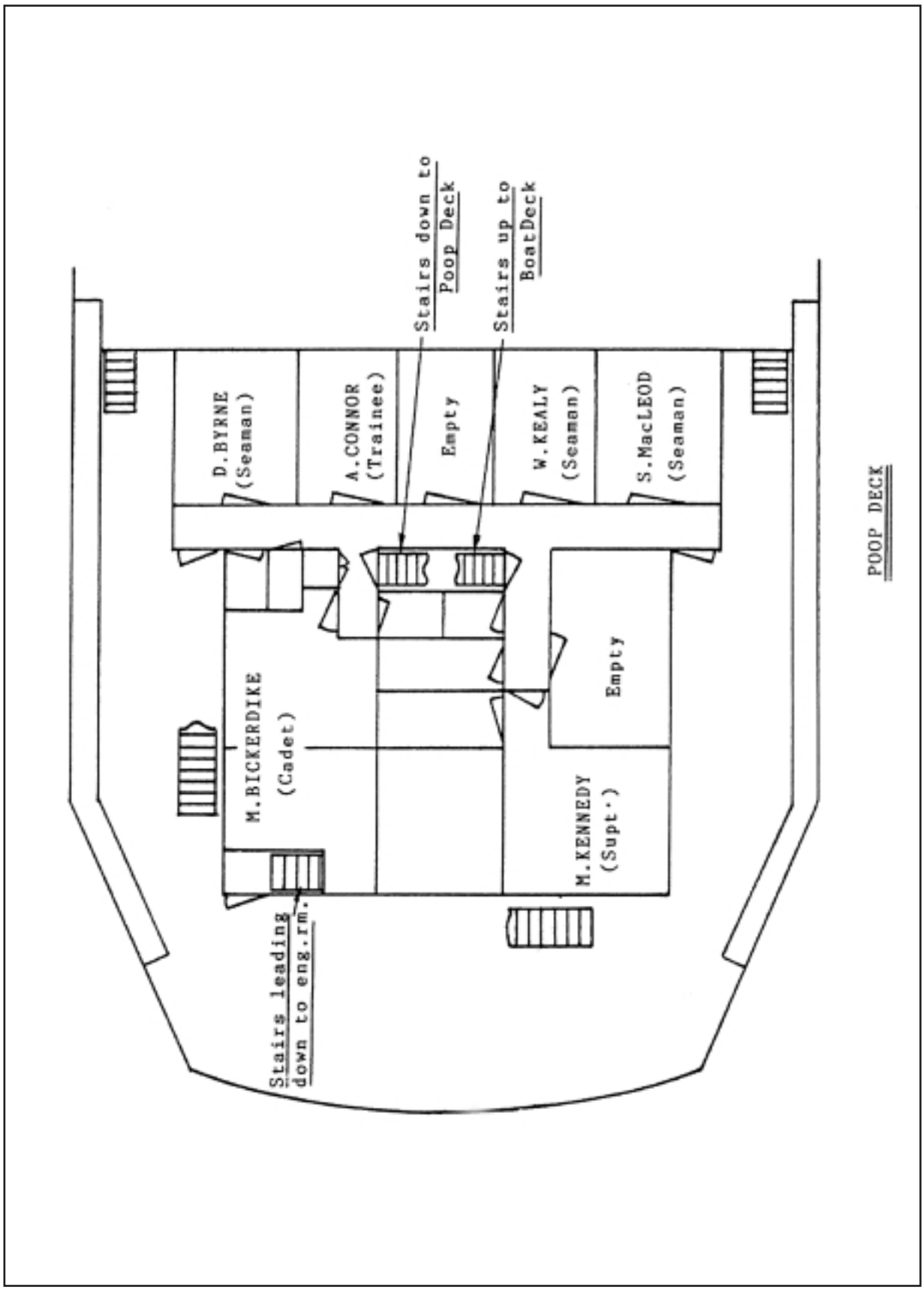


APPENDIX 2.

Appendix 2 Upper / Main Deck

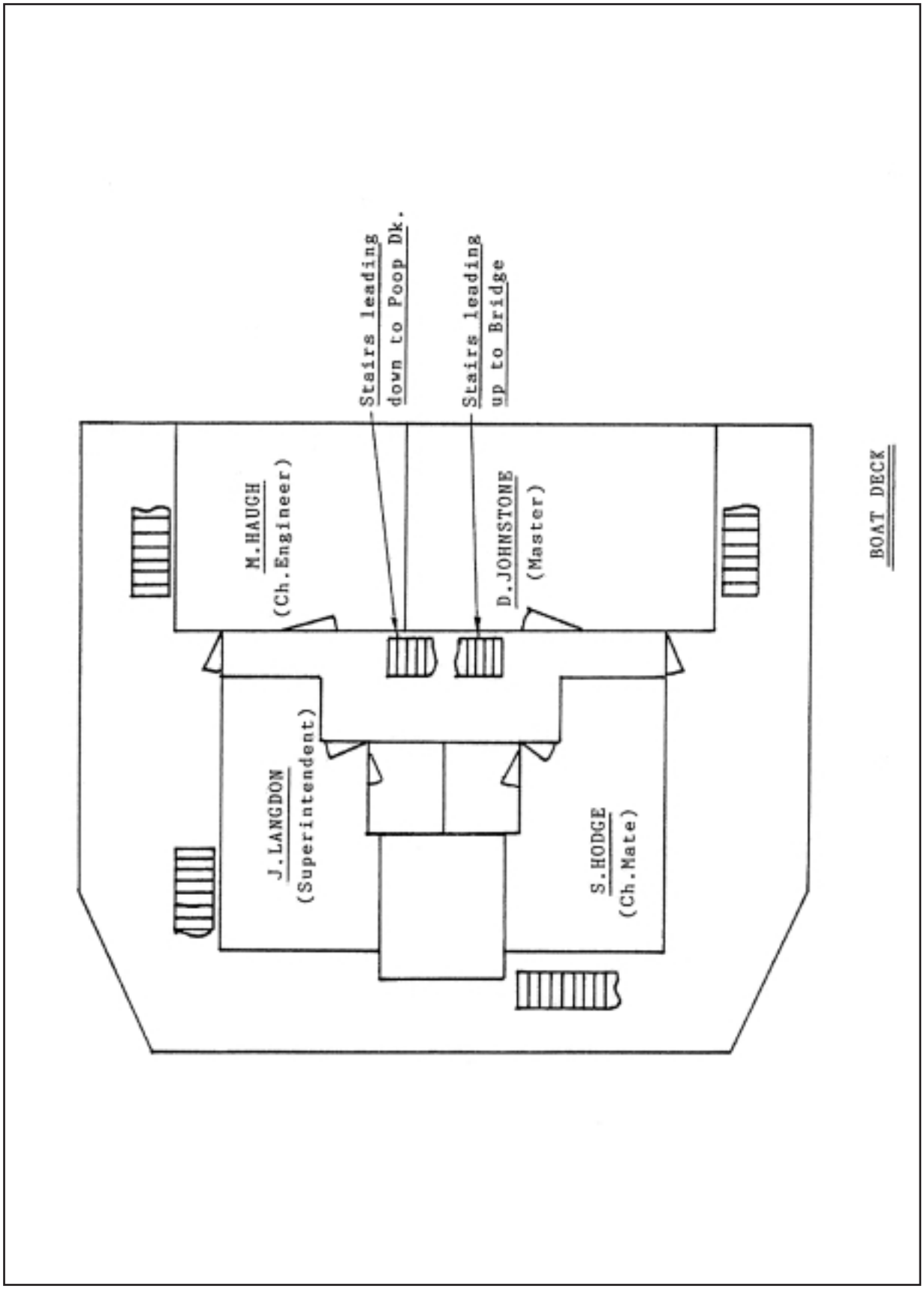


Appendix 3 Poop Deck

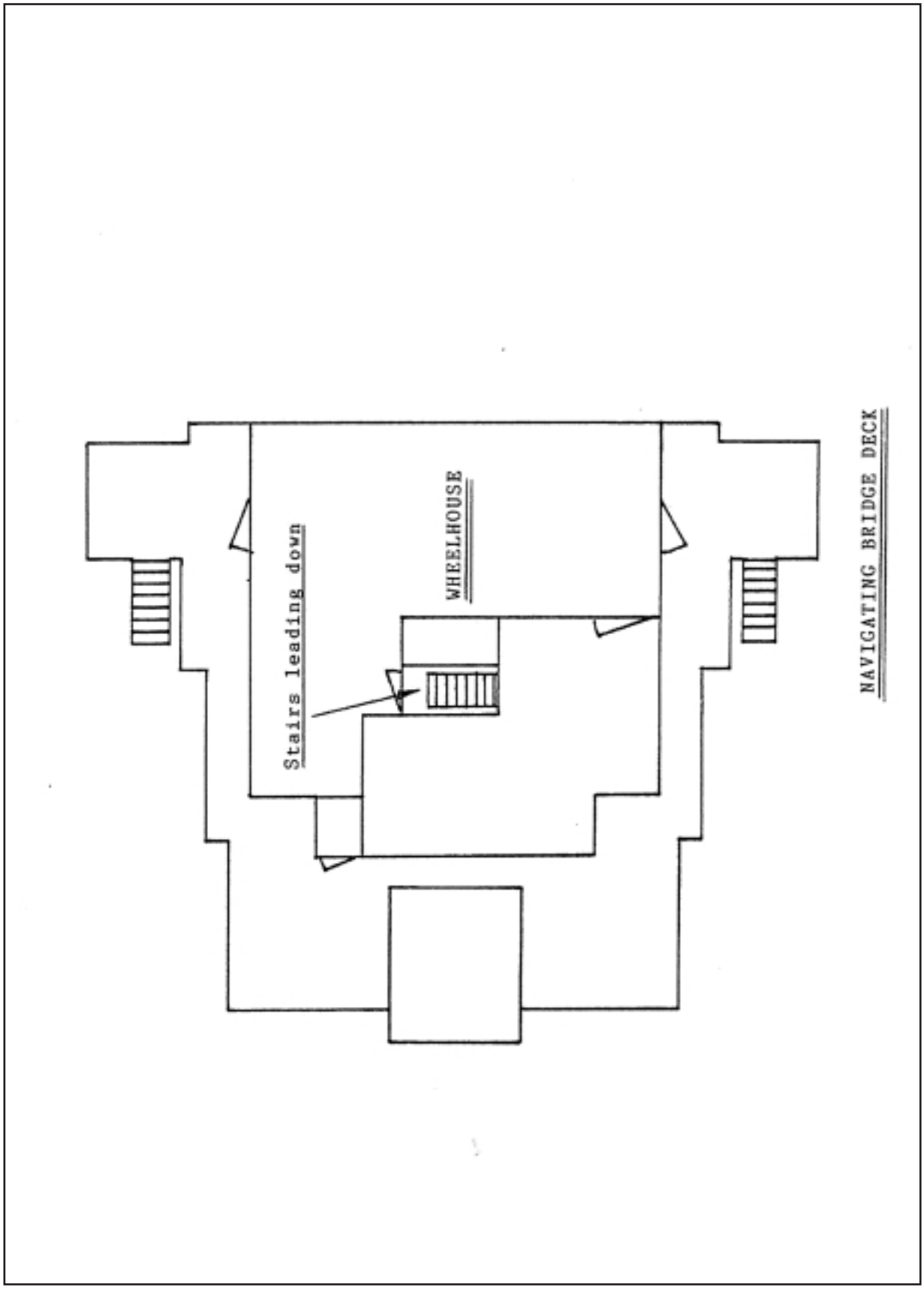


APPENDIX 4.

Appendix 4 Boat Deck

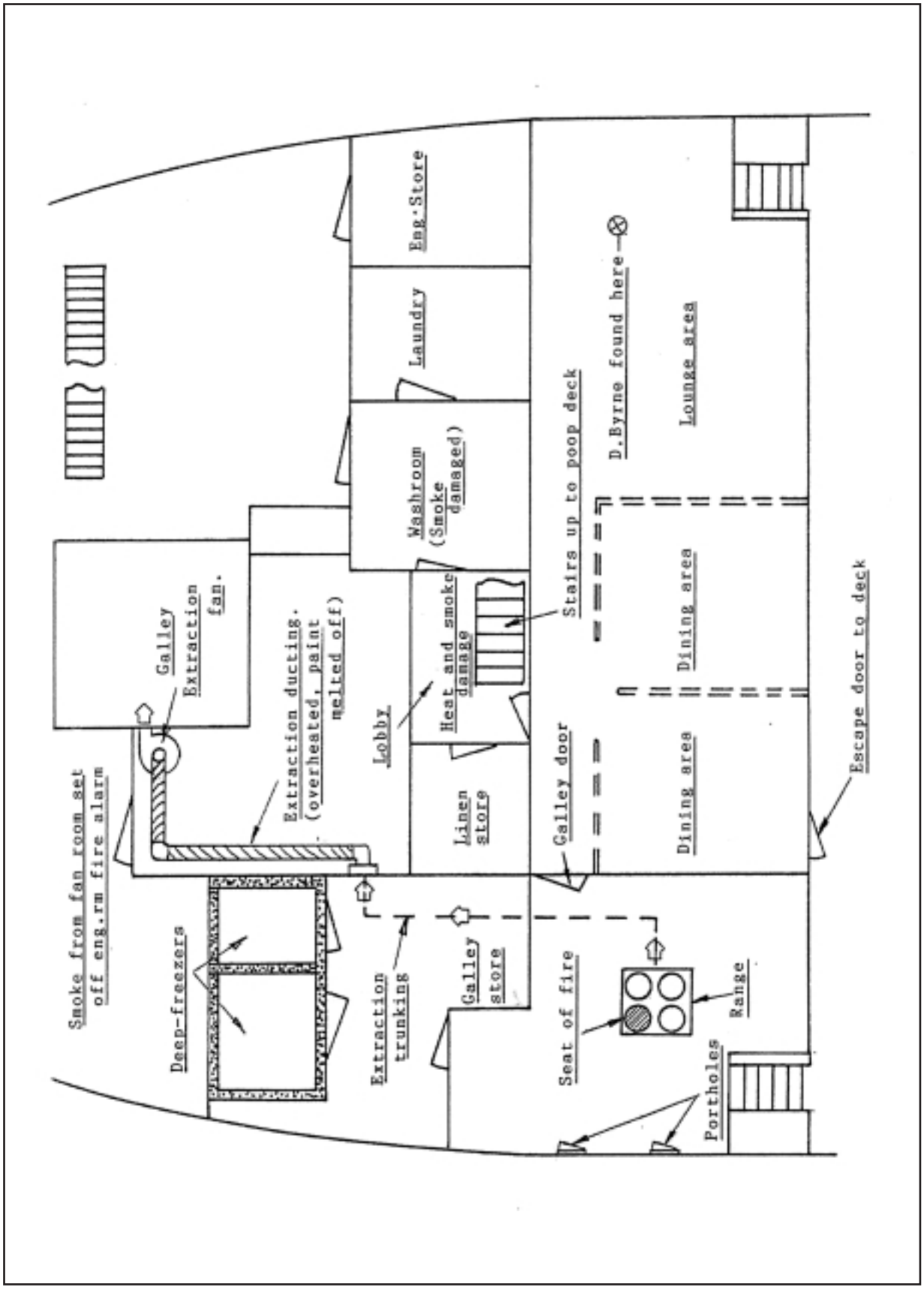


Appendix 5 Navigating Bridge Deck



APPENDIX 6.

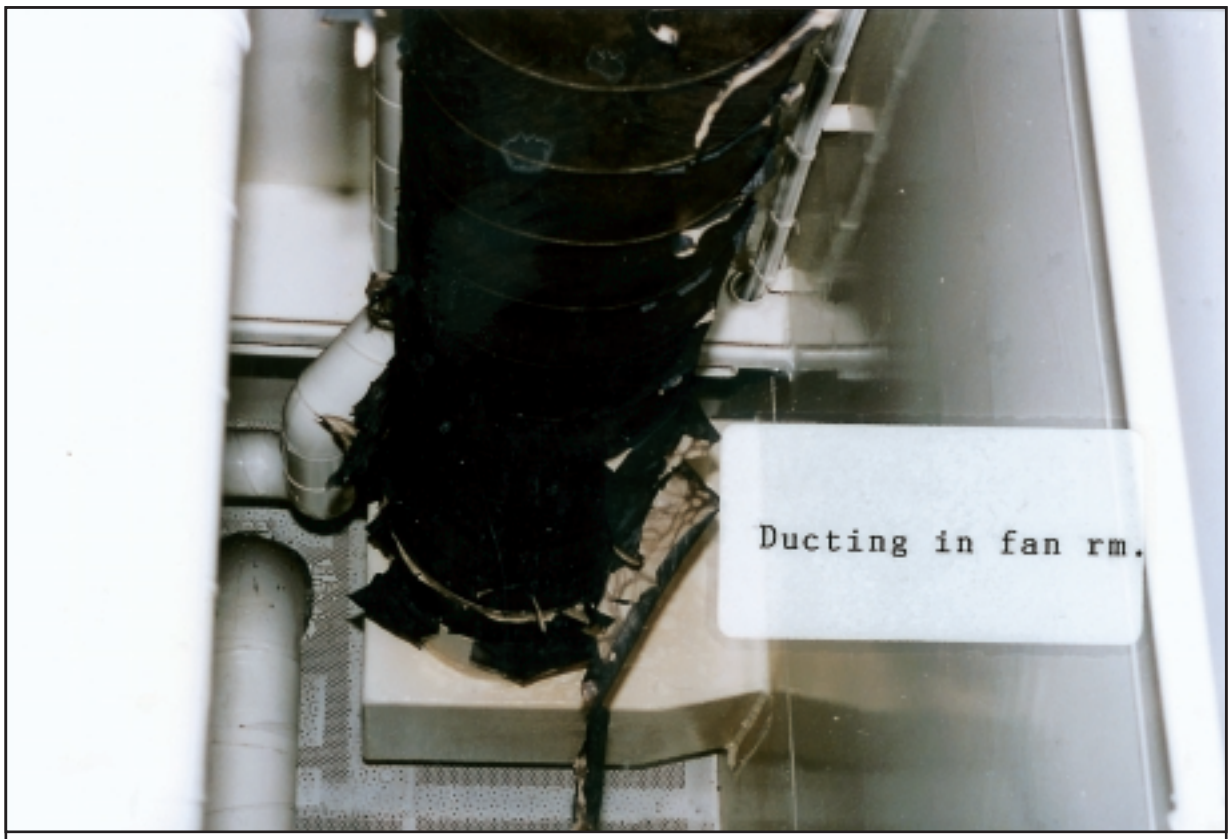
Appendix 6 Fire Origin Location



Appendix 7 Photographs

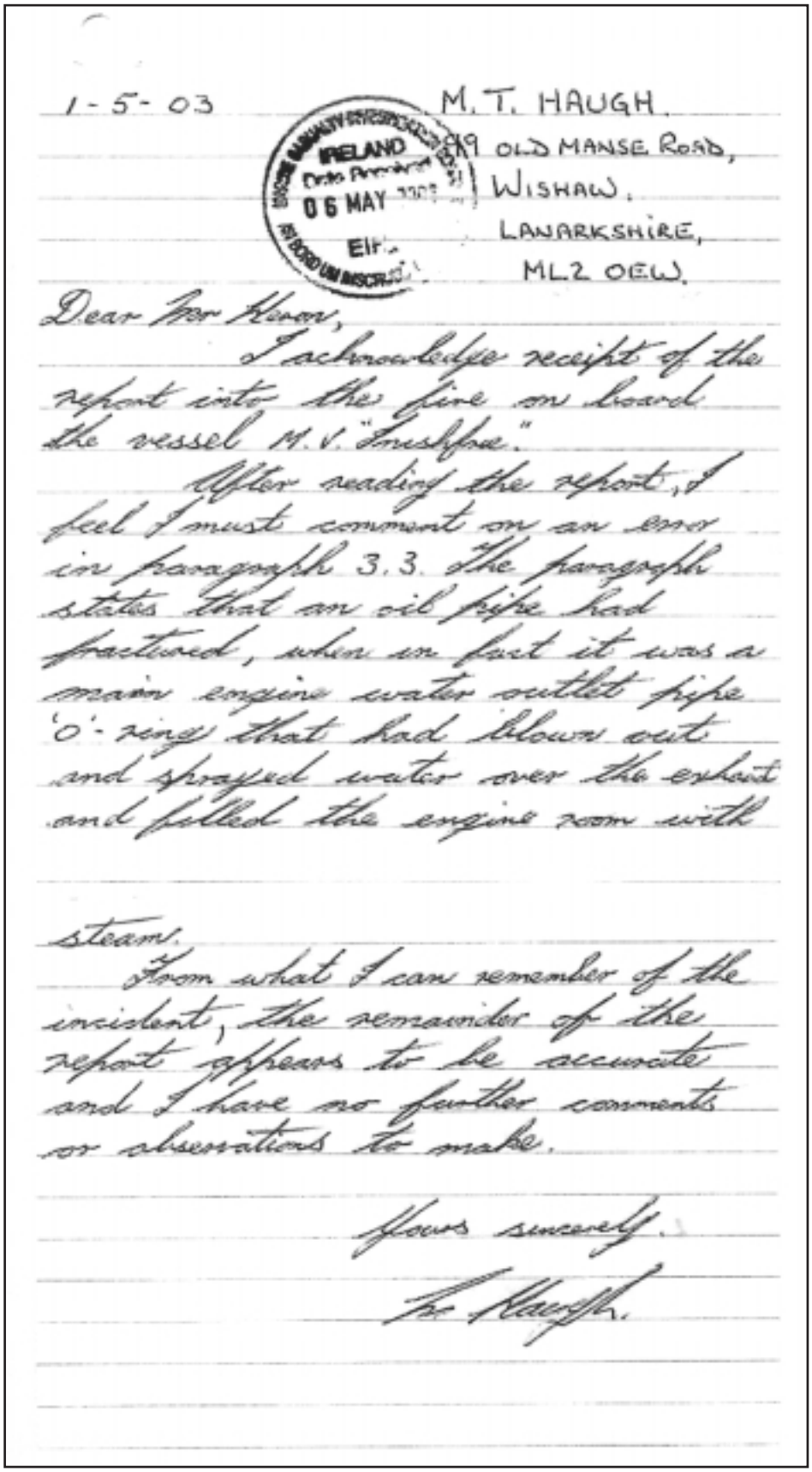
APPENDIX 7.

CONTD.


Ducting in fan rm.


Extractor fan and
ducting in fan rm.

8. INDEX OF CORRESPONDENCE RECEIVED



1-5-03

M. T. HAUGH.
79 OLD MANSE ROAD,
WISHAW.
LANARKSHIRE,
ML2 0EW.

IRELAND
06 MAY

Dear Mr Kevan,

I acknowledge receipt of the report into the fire on board the vessel M.V. "Insulfire."

After reading the report, I feel I must comment on an error in paragraph 3.3. The paragraph states that an oil pipe had fractured, when in fact it was a main engine water outlet pipe 'O'-ring that had blown out and sprayed water over the exhaust and filled the engine room with steam.

From what I can remember of the incident, the remainder of the report appears to be accurate and I have no further comments or observations to make.

Yours sincerely,

T. Haugh.

MCIB Response
The MCIB has amended the Report accordingly.

CONTD.

Irish Coast Guard
GARDA CÓSTA na hÉIREANN

IRELAND
Date Received
29 APR 2003
EIRE

Mr Dick Heron,
Secretary,
Marine Casualty Investigation Board,
29-31 Adelaide Road,
Dublin 2.

28th April 2003.

Re: Draft Report into a fire on board the Irish Registered Vessel M.V. "Inishfree" on 21 February 1997, and yours dated 23 April 2003.

Your Ref: **MCIB 26.**

Dear Mr Heron,

I acknowledge receipt of the above draft report.

The Irish Coast Guard has no comment or observation to make on this report.

Yours sincerely,

Eamon Torpay
SAR Operations Manager
IRCG HQ.

Department of Communications, Marine and Natural Resources, Leeson Lane, Dublin 2, Ireland.
An Roinn Cumarsáide, Mara agus Acmhainní Nádúrtha, Lána Chill Mochargán, Baile Átha Cliath 2, Éire.
Tel: +353 1 678 2324, Fax: +353 1 678 2269, Email: admin@irishcoastguard.ie

MCIB Response
NOTED.

C/O Arklow Shipping ltd.
North Quay
Arklow
Co Wicklow

May 7, 2003

The Chairman
Marine Casualty Investigation board
29-31 Adelaide road.
Dublin 2,
Ireland

Your ref: MCIB 26

Dear Mr O'Donnell:

Thank you for my copy of the Draft Report into the fire aboard the Irishfree on 21st February 1997 .

The only comment or observation I wish to make is I would like to commend the actions of Mr W Kealy, Mr S Macleod and Mr A Connor whom I thought acted in a professional manner in a difficult and dangerous situation considering their ages and experience.

I consider the report to be fair and balanced and hopefully will go someway into helping avoid this happening in the future.

Sincerely,

Stuart Ian Hodge

IRELAND
Date Received
12 MAY 2003
EIRE

MCIB Response
NOTED.

CONTD.

To: Mr. D. Heron

From: M.Bickerdike

Re: "Innishfree" Draft report.

Date: 01-06-2003-06-12

Dear Sir
Thank you for the opportunity to review the report of the incident on the Mv "Innishfree". I am satisfied with its content and have nothing further to add. I hope this letter reaches you in good time and helps with your endeavours.

Yours sincerely

M.Bickerdike.

MCIB Response
NOTED.