

MARINE ACCIDENT INVESTIGATION BRANCH

Summary of Investigations No 2/93

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INTRODUCTION

No apologies are made for the fact that in this edition of the Summary of Investigations no less than eleven of the eighteen summaries concern fishing vessels. Accidents to fishing vessels and those on board account for well over fifty percent of the work of the Branch so there is plenty of material from which to select the summaries.

Only one of the eleven incidents resulted in loss of life, but loss of property and earnings and costs of repairs must have been considerable for the others.

A number of the incidents have common factors. There are many useful lessons to be learnt from reading the accounts: perhaps the most striking, which should be driven home loud and clear, is the need for the right equipment - and that it must be kept in good order. No less than seven of the reports point out the need for a bilge alarm; and in three of the seven an alarm was fitted but it did not function.

But it is not only bilge alarms which need to be well maintained. All equipment on board, whether it be the main propulsion system, the fuel system, the fishing gear, life-saving equipment, even galley equipment, needs to be maintained in first-class condition. Equipment which is allowed to fall into disrepair or on which faults are not rectified create hazards for all concerned which can have either disastrous or costly consequences. This message of course applies not only to fishing vessels but to all vessels, irrespective of type and size.

Chief Inspector of Marine Accident

August 1993

1. COLLISION WITH JETTY

Narrative

An 825 gross registered tonnage coastal tanker, registered in the UK, was fitted with a rotary vane electro-hydraulic steering gear. The two hydraulic pump units installed were each capable of being operated either singularly or in parallel. The hydraulic oil output from the pumps is directed into the appropriate rotary vane port by solenoid pilot valves. These valves are controlled from three locations; the wheelhouse steering console, by a remote wandering lead and locally at the pump. Auto-pilot control of the steering gear was also available.

The vessel, which was fully loaded with fuel oil products, left the oil terminal berth in the early hours of the morning. The projected course was to cross the harbour and then proceed seawards parallel to a disused jetty. At the time of departure the Master and the Chief Engineer were in the wheelhouse with No 2 steering gear hydraulic pump running - no steering gear test had been carried out prior to departure. During the passage across the harbour, the Chief Engineer went below whilst the steering gear hydraulic pumps were changed over from No 2 to No 1 unit. The vessel's speed at this time was about 6 knots. When the Master applied port helm to maintain his course parallel to the disused jetty, there was no immediate response. Increased port helm was applied, but the vessel swung rapidly to starboard causing her to collide with the jetty. Although damaged, the vessel was able to return to her original berth, discharge cargo and proceed to the dry dock for repairs.

Observations

Examination of No 1 steering gear, showed the solenoid pilot valve to be faulty, giving rise to erratic operation and loss of control. This erratic operation is thought to have been due to foreign bodies in the hydraulic fluid combined with wear within the valve assembly.

Testing of the steering gear prior to departure would probably have identified the problem and prevented the loss of steering control. Similarly, the use of both steering gear hydraulic pumps during the passage in confined waters would have prevented this incident.

Comment

Testing of steering gears prior to the commencement of a voyage is addressed in the Merchant Shipping (Automatic Pilot and Testing of Steering Gear) Regulations 1981. In the case of coastal vessels making frequent voyages, testing of the steering gear before departure on each voyage should form part of the normal operational procedures. The Regulations also require that in areas where navigation demands special caution, the Master shall ensure that the ship shall have more than one steering gear power unit in operation when such units are available and capable of simultaneous operation.

2. FLOODING OF AN OFFSHORE SUPPORT VESSEL

Narrative

A 52 metre offshore safety standby vessel was operating with a crew of 12 in very severe weather conditions. The wind strength was recorded as up to Force 12. A section of the vessel's starboard bulwark was carried away by the seas about mid afternoon. During the early evening, with the weather still severe, a list of some 15 ° to starboard was noticed. Because of the weather conditions no inspection of the weather deck could be carried out, but an internal inspection found flooding within the survivor accommodation on the starboard side. The depth of flooding prevented opening of the bilge valve in the space.

Assistance was requested from the Coastguard and other vessels in the area. The majority of the crew were evacuated by helicopter.

The Master corrected the list by partial deballasting and by pumping out the flooded space using a portable emergency pump. The vessel eventually reached port under her own power.

Observations

External inspection, performed in port, established that an air vent to the survivor accommodation had been carried away, thus opening this space to any seas breaking over the deck. As this vent was in the same area as the damaged bulwark it was concluded that the damage to the bulwark and air vent probably occurred at the same time.

Comment

Although an inspection of the weather deck at the time of the bulwark damage was impossible, any damage to the vessel's structure should have been assessed as soon and as far as was practicable. In this case ingress of water into the accommodation spaces should have been very quickly and easily identified by the simplest of internal inspections. This would have allowed the bilge valve for the space to be opened before flooding became serious, so enabling the crew to control the situation from the start of the incident.

3. HULL DAMAGE DURING CARGO LOADING OPERATIONS

Narrative

A single hold general cargo vessel of 1,326 gross registered tonnage loaded a cargo of irregularly shaped scrap steel. On leaving the loading berth and making her way outward, but before reaching the sea, the vessel developed a slight but increasing list to starboard. Although the weather conditions were good the Master immediately returned to a loading berth and concurrently took onboard soundings. It was very quickly established that the main hold was flooding, but the ship's bilge system had no difficulty in coping with the ingress of water and the vessel was able to be moved to a repair berth.

Closer inspection revealed that the side shell plating of the vessel had been holed, most probably due to impact by a sharp heavy piece of scrap during the loading operation.

Observations

It was a standard practice of the Master for all cargo space bilge systems to be inspected and tested after discharge and before loading any type of bulk cargo. The value of this practice, which is set out in the IMO "Code of Safe Practice for Solid Bulk Cargoes" (BC Code), was clearly demonstrated in this case. Had it proven to be impossible to pump out the bilges of the hold, the vessel could have been in serious difficulties.

Comment

Another recommendation contained within the BC Code is that bilges should be sounded on the completion of loading; an operation which was not performed in this case.

4. COLLISION BETWEEN A GAS CARRIER AND A SAIL TRAINING YACHT

Narrative

A 1,367 gross registered tonnage gas carrier was steering a course of 250° (T) at a speed of 9 knots in the western English Channel. A 10 metre sail training yacht, on a cruise from a west of England port to the Channel Islands, was steering a course of 122° (T) at a speed of about 6 knots. It was a fine summer night with a moderate breeze from the south-west and good visibility.

From the gas carrier, a red light was sighted about three points on the starboard bow and at close range. Course was altered to port. When the ship's head had reached about 230° (T) course was altered back to starboard. Collision occurred when the ship had almost regained her original heading, with the yacht crossing ahead.

From the yacht, the steaming lights of the gas carrier were seen about three points on the port bow showing a green sidelight. After twenty minutes the lights appeared to be two and a half points on the bow. It was thought that the ship would pass about a mile ahead of the yacht. A little later the lights, which were now at close range, became obscured from the cockpit by the sails and the dinghy on the cabin top. The collision followed.

In the collision, the port bow of the ship struck the port quarter of the yacht. The yacht was dismantled, extensively damaged and started to flood. Pyrotechnic distress signals were used: these enabled the ship to locate the yacht and all seven of her crew were taken on board, one having suffered a fractured thumb. They were later transferred to an RNLi lifeboat and landed ashore. The gas carrier, which was undamaged, subsequently resumed her voyage. The yacht, although later salvaged, was a constructive total loss.

Observations

1. The radar on the gas carrier was only being used for navigational purposes on a high range scale. For collision avoidance, the lookout being kept was a visual one by the Officer of the Watch and the navigating watch rating.
2. The required minimum range of visibility of the navigation lights shown by the sail training yacht was one mile.
3. There were seven people on board the sailing training yacht: the Skipper, who held a Coastal Skipper Certificate, the Mate, the Bosun and four trainees.
4. Although the Skipper was aware of the approaching ship, he had gone below and handed over the con to one of the inexperienced trainees with another youngster, who was suffering from seasickness, detailed to keep a lookout. The yacht took no action to avoid the collision.

Comment

1. The gas carrier was clearly the give-way vessel, but she failed to see the yacht until the vessels were already close to one another. At that late stage the action taken was grossly inappropriate and ineffective.
2. The yacht, although initially required to maintain course and speed, was permitted under Rule 17 of the Collision Regulations to take action herself, when it became apparent that the other vessel was not doing so. The Skipper should have been on deck, hands should have been called to stand by to handle the sails and efforts should have been made to draw attention, for example, by using the signalling lamp both to call up the other ship and to illuminate the sails.
3. When the situation had developed further and collision could not be avoided by the action of the give-way vessel alone, the yacht was required, also by Rule 17, to take such action as would best aid in avoiding the collision. This she could have done by putting the helm hard over to starboard into the wind, allowing the ship to pass to the south.
4. This collision could have had tragic consequences. It illustrates the vital necessity of proper lookout by all available means and appropriate action in ample time to avoid collision.

5. HYDRAULIC CARGO HOIST FAILURES ON RO-RO FERRIES

Narrative

Incidents involving the failure of hydraulic cargo hoists have been investigated. In four cases the main actuating cylinders have failed allowing hydraulic cargo hoists to fall uncontrollably to their lowest positions. In these cases the cause of failure has been the sudden fracture of all the set screws holding down the stuffing box of the hydraulic ram and bulk release of hydraulic fluid.

Observations

Investigations have shown that the failure in turn was due to over extension of the cylinder ram travel resulting in metal to metal contact and fatigue of the set screws because of:

1. Malfunction of electrical limit switches due to poor maintenance.
2. Absence of any mechanical stops designed and installed to limit the travel of the hydraulic ram.

Comment

Against this background it is appropriate to draw attention to the Merchant Shipping (Hatches and Lifting Plant) Regulations 1988 and its various provisions with regard to the design, testing, service and maintenance of the cargo hoist plants of vessels and the records to be kept on board for inspection. The relevant Regulations are numbers 7 to 10, and further detailed guidance is provided in Chapter 17 of the "Code of Safe Working Practices for Merchant Seamen" (1991 edition).

6. ENGINE ROOM FIRE AT SEA

Narrative

A 1,409 gross registered tonnage motor tanker was on passage in ballast when at 2030 hours the Chief Officer noted smoke issuing from the engine room skylights. The fire alarm was sounded and the crew mustered to their emergency stations. At about the same time, the Second Engineer left the engine room to report a severe fire on the main engine exhaust manifold.

At 2033 hours the Chief Engineer shut down the engine room ventilation fans and tripped the main engine fuel valves. Instructions were given to close all vents etc and an unsuccessful attempt was made to put out the fire by directing a portable foam extinguisher onto the fire from the engine room access. The main engine stopped approximately 3 - 4 minutes after closure of the fuel valves. The Chief Officer and an AB then entered the engine room wearing self contained breathing apparatus and tackled the fire locally with portable foam extinguishers. The fire was extinguished at 2040 hours.

A Pan message was sent at 2042 hours, but after the smoke had cleared and an inspection by the Chief Engineer and Chief Officer had been carried out, the Pan message was cancelled at 2059 hours. The main engine exhaust cladding was removed and No 3 unit cylinder head was found to have been blowing excessively. The fuel pump for this unit was removed and at 2310 hours the vessel continued her voyage to the UK at reduced revolutions.

Observations

1. No injuries to the crew or damage to the machinery have been reported.
2. This incident was probably brought about by hot exhaust gases leaking from No 3 cylinder head igniting dust, dirt and oily residues on the main engine exhaust trunking.
3. The subsequent actions of the crew in fighting the fire were correct and may well have prevented a more serious fire developing.

Comment

The watchkeeping and also the maintenance standards practised on this vessel must be in question. A cylinder head leaking to the extent that it causes a fire, is both very noisy and obvious to an efficient watchkeeping engineer. In the event that the leak had been reported, then particular vigilance in that area of the engine room should have been called for.

7. UNSAFE HOT WORK IN PORT

Narrative

A standby/diving support vessel was in port undergoing repair. Hot work was being undertaken in a tank located adjacent to an accommodation space. The work generated a gradual increase of heat in the divisional bulkhead linings which eventually caught fire. The fire was subsequently extinguished by the shore fire brigade.

Observations

1. There were no resultant injuries to personnel but fire damage extended throughout the accommodation and into the wheelhouse.
2. Linings had previously been removed from the immediate area of the divisional bulkhead in which hot work had been intended.
3. The fire water main on board was not readily available for use.
4. Although a fire watch patrol was in process, no person was assigned to specifically oversee the progress of the hot work concerned.
5. The ship manager and the shore contractor did not have a clear agreement as to who was responsible for fire watchkeeping.

Comment

1. Chapter 13 of the "Code of Safe Working Practices for Merchant Seamen" (1991 edition) and Merchant Shipping Notice No M.957 highlight the precautions which should be taken prior to and during welding and flamecutting operations.
2. Merchant Shipping Notice No M.1267 specifically addresses fire prevention and fire fighting aboard ships in port and emphasises the need for ship and shore staff to establish clearly defined instructions and practices.

8. FLOODING AND RECOVERY OF 16 METRE FISHING VESSEL

Narrative

A 16 metre fishing vessel, operating during the hours of darkness, had just shot her gear and was engaged in a tow when all of the vessel's lights failed. An immediate inspection of the engine room was made where seawater to floor plate level was found. Fortunately the cause of the flooding was quickly established as being a fractured cooling water pipe for the fish hold cooling system. This system was quickly and easily isolated to prevent further ingress of water. Although the main engine continued to run, the main engine driven bilge pump was ineffective due to the floodwater causing its belt drive to slip and fly off. Attempts to start the auxiliary engine, which drove another bilge pump, failed due to floodwater damage of the main battery set. Flooding was confined to the engine room by effective watertight bulkheads.

A distress call to the Coastguard resulted in the vessel being supplied with a portable pump by an RNLI lifeboat. This pump proved effective but as the main engine lub oil was now contaminated with seawater, the vessel was towed to harbour.

Observations

1. A bilge high level alarm was fitted in the engine room but did not operate.
2. Although the vessel had a second power-driven bilge pump, driven by the auxiliary engine, this pump was of no value due to the failure of the engine starting system which was shared with the main engine.
3. The value of maintaining bulkheads in a watertight condition, in order to limit the extent of any flooding, was clearly demonstrated in this case.

Comment

The vessel's owners have decided to duplicate the bilge high level alarm. Furthermore, they have decided to provide the auxiliary engine with its own dedicated starting system. Although neither of these modifications are required to satisfy regulations, they are both considered to be sensible and demonstrate how a responsible owner can make prudent modifications, which are in excess of the minimum requirements of the regulations, to enhance the safety of his vessel.

9. FLOODING AND BEACHING OF A SMALL FISHING VESSEL

Narrative

A 10 metre fishing vessel was on passage with three persons on board. The vessel had two main engines and both engines started to slow down coincidentally with fumes discharging from the engine casing vents. Inspection of the engine spaces revealed serious flooding, although the cause could not be established. Use of three bilge pumps controlled the water ingress until the Skipper beached the vessel. Subsequent pumping out of the compartment revealed a fractured watercooled flexible exhaust hose on one engine.

Observations

No bilge alarm was fitted to the machinery space. Early warning of flooding would have probably led to identification of the cause and would have allowed the Skipper to shut down the affected engine, thus preventing further ingress of water, and avoiding the need to beach the vessel.

Comment

The owner has replaced both engine flexible exhaust pipes with new reinforced rubber impregnated hoses. He has also fitted a high level bilge alarm to the machinery compartment.

10. LOSS OF A SMALL SINGLE HANDED FISHING VESSEL

Narrative

A fishing vessel of 10 metres length was on passage off the UK coast on a short delivery voyage. The vessel was being crewed by one person. During the early hours of the morning the vessel's electrical system failed causing the Skipper to inspect the engine space. A substantial amount of water was found in this space and was adjudged to be the cause of the electrical failure, but the depth of water prevented proper investigation of the cause of flooding. The bilge pump was put into operation and the Skipper changed course to head for a port of refuge. The pumping operation appeared to be controlling the water level, but some four hours after the flooding was discovered the vessel started to heel badly causing the Skipper to launch his liferaft and abandon his boat which sank shortly afterwards. The Skipper released a smoke canister which was seen by members of the public ashore and by a passing helicopter.

The Skipper was rescued by an RNLI lifeboat within two hours of him abandoning his vessel.

Observations

1. No operational bilge alarm was fitted in order to give an early warning of water ingress. Had the cause of the flooding been established earlier, simple rectification may have been possible.
2. It should be noted that this Skipper had also instructed his wife to contact the Coastguard in the event of him not making contact with her by a specified time; this she did, coincidentally at the time her husband was being landed from the lifeboat.

Comment

1. Although a fishing vessel of this size is not required to carry a liferaft, this incident demonstrates the value of doing so. Further, having someone ashore who is aware of a vessel's planned movements, although not proving vital in this case, is clearly a simple and prudent precaution.
2. An operational bilge alarm may well have allowed the flooding to be discovered earlier, so allowing the cause to be rectified before the incident developed into a full scale search and rescue operation.

11. OVERLOADING OF A SMALL FISHING BOAT

Narrative

A glass reinforced plastic fishing boat of about 5.5 metres length, operated by one man, commenced laying creels in good weather conditions. As the day progressed the weather deteriorated causing the fisherman to attempt to move his creels to a more sheltered position. During this operation the lone fisherman drowned.

Observations

1. The body of the fisherman was recovered; he had not been wearing a lifejacket.
2. The boat has never been recovered but it is known that additions had been made to it in the form of a large storage rack at the aft end. The capacity and position of this rack was such that, if filled to capacity with creels, the reserve stability and freeboard of the vessel is likely to have been seriously depleted.

Comment

1. Advice should be sought from a boat designer or Naval Architect before making any modification to a boat which might reduce freeboard and/or stability.
2. When working alone fishermen should be particularly aware of the need to wear a buoyancy garment.

12. POOR MAINTENANCE RESULTING IN FLOODING INCIDENTS ON TWO FISHING VESSELS

Narrative

VESSEL A

The Skipper of a 10.6 metres angling boat with eight anglers on board, and 40 miles out, alerted the Coastguard that the boat was taking on water fast. A helicopter and lifeboat were launched to stand by it. The Skipper was alerted to the flooding when the engine temperature alarm went off (the engine was stopped immediately) and he entered the engine room to investigate the cause of the problem. He discovered a high level of water in the bilge. The crew were unable to find the source of the leak and the engine was re-started. It then became apparent that the water was being ejected from a vent hole in the engine cooling water system. Apparently the plug to the vent hole had been removed two days earlier during routine maintenance and had not been adequately tightened down when it was re-fitted. The engine was stopped again, the vent securely sealed, and the boat pumped dry. The rescue services were stood down and the boat continued on its trip.

VESSEL B

The Skipper of an 8 metre creel boat with a crew of two on board alerted the Coastguard that the boat was taking water but that the pumps were coping and they were returning to port. The Skipper was alerted to a problem when he noticed that the engine ignition light was flashing. On entering the engine room to investigate he discovered 0.5 metre of water in the bilge, just up to the level of the alternator. The cause of the flooding was not immediately apparent because of the spray generated by the engine's drive belts rotating in the bilge water. It was considered inadvisable to stop the engine to investigate further, not only because it might have been impossible to re-start it due to the high level of water but also because the engine driven pump was necessary to cope with the flooding. The engine driven pump and a small electrical driven pump were started and were adequate to reduce the water level. It was subsequently discovered that the source of the flood water was the waste engine cooling water injected into the engine exhaust which was leaking from a loose pipe. Apparently, a length of the exhaust had been recently renewed and this pipe had not been secured when it was replaced.

Observations

1. Both crews were only alerted to the flooding when it had reached such a level as to interfere with the main engine and electrical systems.
2. It was fortunate that in neither case main engine power was lost, but there was a very real possibility that it might have been which could have led to very different conclusions to the incidents.

Comment

1. These incidents were entirely avoidable and resulted from a lack of attention to detail when carrying out repairs and maintenance.
2. Neither incident would have developed to the point of endangering the vessels and lives of the crews if the boats had been fitted with bilge alarms. These would have alerted the crews to a potential flooding problem before it became serious. Merchant Shipping Notice No M.1327 recommends the fitting of bilge alarms to **all** fishing boats regardless of length. To quote the Skipper of vessel B: "this whole affair would have been nipped in the bud with the installation of a bilge alarm".

13. BENEFITS OF SURVIVAL COURSES

Narrative

A fishing vessel of approximately 9 metres length, operating with a crew of two, started to behave in a very sluggish fashion whilst operating one mile from shore. Investigation soon established that the vessel was seriously flooded. Unfortunately the cause could not be found and the crew were very soon forced to abandon and take to their liferaft. The men were picked up by another fishing vessel and their vessel sank very soon afterwards.

Observations

1. No high level bilge alarm was fitted. The extent of flooding at the time of discovery was too great to establish the source of the ingress or to effect a remedy.
2. This vessel was equipped with an inflatable liferaft; an item which is not mandatory for fishing vessel of this size, although it is a strong recommendation of Merchant Shipping Notice No M.1467.
3. Both crew members had attended a safety training course in Sea Survival.

Comment

1. The lack of an effective bilge alarm is a common factor in many flooding incidents involving small fishing vessels. Without the early warning afforded by such systems, Skippers and crews often have little or no time to carry out repairs before their vessels become unstable and have to be abandoned.
2. The survivors of this incident expressed gratitude for the knowledge they had gained from their survival courses; claiming it "enabled us to do the right thing without panic". It should be noted that all fishermen, serving on registered fishing vessels, born after 1 March 1954 should have undertaken the Safety Training courses as set out in Merchant Shipping Notice No M.1367.

14. INJURY TO CREW MEMBER IN ENGINE COMPARTMENT

Narrative

This 20 metre fishing vessel was alongside and had completed landing her catch. The main engine was running but out of gear and with the clutch disengaged. A crew member then went into the engine compartment in order to check the oil levels and grease all moving parts. In order to gain easier access for greasing the stern tube, he decided to turn the propeller shaft using a crow bar between the coupling bolts. Having turned the shaft, the crew member left the crow bar in place whilst attending to the greasing. Meanwhile, the Skipper was requested to move the vessel to an adjacent berth. On engaging the gearbox, the crow bar turned with the shaft and struck the neck of the crew member.

Observations

The owner of the vessel reported that the crew member had entered the engine compartment without giving notice to anyone about his intentions. Although it was normal practice to grease the stern tube on return to port, it should not be done when the main engine is running. He has now issued instructions that no-one is to enter the engine compartment without telling the person in charge.

Comment

1. Great care should be taken when working on or near running machinery. Persons working on machinery which can be started remotely should place notices saying "DO NOT START - MACHINERY UNDER MAINTENANCE".
2. The crow bar should have been removed from between the coupling bolts once the shaft had been turned to the desired alignment. All tools should always be removed from the immediate area of work when the task they were being used for has been done.
3. Wherever possible someone should be advised before entering an unmanned machinery space, particularly if it is intended to work on the machinery.

15. ENGINE COMPARTMENT FIRE AT SEA

Narrative

A 16.2 metre wooden hulled fishing vessel was on its way out of port towards the fishing grounds. A fire was discovered in the engine room which developed very swiftly. The Skipper slowed the engine down and called on the crew member to investigate. On opening the engine room access, despite black oily smoke and the crew member trying to tackle the fire with an extinguisher, the fire quickly spread to the combined galley and wheelhouse. The Skipper managed to make a quick "MayDay" call before being forced to leave the wheelhouse. The liferaft was launched and both men climbed aboard after securing the painter to the handrail forward. As neither had, nor could find, a knife to cut the painter and although attempts were made to paddle away from the by now blazing vessel they continually drifted back alongside. This problem was eventually solved when the painter burnt through. Both men were rescued by other fishing vessels in the area with the vessel eventually being towed back to port.

Observations

1. The cause of the fire was thought to be the failure of a flexible lubricating pipe for the gearbox which resulted in oil being sprayed onto the hot turbo charger casing of the main engine.
2. A fixed water spray was fitted in the engine room, with the hand operated pump and controls on deck adjacent to the wheelhouse, but the speed of the developing fire prevented its use.
3. The fuel tanks in the engine room had open ended plastic gauges but fortunately the spring loaded gauge valves prevented any loss of contents.
4. A safety knife would have been included with the liferaft equipment but neither of the men could locate it.
5. The difficulty in freeing the liferaft from the painter could have resulted in injury or loss of life if the vessel had sunk or the fuel tanks exploded.

Comment

1. This type of incident is identified in Merchant Shipping Notice No M.1456 where it is recommended that suitable screening arrangements should be provided to deflect any fuel or leakage to a safe place.
2. The effect of vibration and the need for adequate securing arrangements for pipework should also be borne in mind, particularly so in the case of unmanned engine room spaces.

3. The use of the fixed water spray system may have assisted in preventing the spread of the fire, but the siting of the operating mechanism on deck adjacent to and above the engine room prevented its use. It is considered that such systems should be sited away from the protected space, not just outside it.

16. FLOODING AND SINKING OF A FISHING VESSEL

Narrative

While manoeuvring to come alongside a jetty, a 40 year old single skin wooden fishing vessel could not get astern power due to the morse control cable becoming fouled. This loss of control resulted in the bows of the vessel becoming jammed between two pillars of the jetty. There was no visible damage. The following morning the crew checked the bilges, and finding only small quantities of water, the vessel left port to go gill net fishing with a crew of three on board. She was on her fourth haul in the early afternoon when a crew member noticed sea water in the engine room. The mechanically driven bilge pump was engaged together with an electrically driven pump. At that stage there was not too much concern among the crew but the Skipper increased engine revs and headed towards port. The Coastguard was informed of the flooding about 45 minutes after its discovery. At that stage the estimated depth of water in the common bilge was 3 feet making it impossible to establish the cause of the flooding.

The crew donned lifejackets, launched the liferaft and secured it to the vessel ready for boarding. The vessel started going down by the head and it was decided that the crew would board the liferaft, while the Skipper stayed with the vessel as long as possible, finally boarding the liferaft shortly before the vessel sank in 56 metres of water. The crew were rescued from the liferaft by another fishing vessel and safely landed ashore.

The vessel's EPIRB activated when she sank, and was later recovered by the crew of the SAR helicopter.

Observations

1. Although this vessel was fitted with a bilge alarm, on this occasion it failed to operate thus severely reducing the time available for the crew to take corrective action.
2. The absence of watertight bulkheads in this vessel allowed widespread flooding to take place before discovery, making the execution of any remedial action difficult.

Comment

1. After the contact with the jetty pillars, the vessel should have been closely examined for structural damage. Subsequently, when proceeding to sea, a constant watch should have been kept for possible flooding.

2. The Coastguard should have been informed of flooding as soon as it was discovered, especially as this old wooden vessel did not have watertight bulkheads to restrict the flooding. Early notification would have given the Coastguard time to have a salvage pump flown out to the vessel, possibly preventing her from foundering.
3. This case highlights the value of having effective operational lifesaving equipment and crew members trained to use it.

17. AN EXAMPLE OF THE BENEFITS OF SEA SURVIVAL TRAINING

Narrative

A steel fishing vessel of 10 metres registered length was being operated single handed. There was a moderate sea with a south-westerly Force 6 wind blowing when she dropped into a trough of a wave and struck a large baulk of timber which broke one of the wheelhouse windows. On looking below, the Skipper found the forward compartment flooded. He then contacted the Coastguard on VHF Channel 16, reported his position and that he was sinking. He then donned his survival dry suit, secured all the hatches, launched the liferaft and entered it. A passing vessel spotted red flares and recovered the Skipper from the liferaft and later transferred him to a lifeboat. Together, the Skipper and the crew of the lifeboat managed to locate the partially submerged fishing vessel and put a tow line on board. She was towed to a safe area from which some time later she was salvaged. The Skipper was returned ashore uninjured.

Observations

1. Correctly the Skipper first contacted the Coastguard on Channel 16, and told them of the situation and his position. Using VHF enables the Coastguard to use direction finding to check the senders position, but when a portable phone is used this is not possible.
2. The Skipper very wisely carried and used a survival suit and a liferaft.
3. Closing the hatches must have helped keep the vessel afloat and in turn enabled her to be salvaged.

Comment

The Skipper had attended a Sea Survival Course and put into practice what he had learnt by providing and using the survival equipment.

18. SINKING FISHING VESSEL

Narrative

A wooden hulled fishing vessel of 16 metres length built in 1949 was trawling for prawns 120 miles east of Dundee. A large unidentified object caught in her net at about 1600 hours which was too heavy to haul on board. Attempts were made to clear the net without success and it was cut away at 0800 hours on the next day. The vessel then steamed for about two hours to a new fishing ground and began rigging a replacement net. Whilst carrying out this operation, it was seen that the fore hold and engine room were filling with water.

The two crew immediately took to a liferaft without issuing a radio distress call and very shortly afterwards the vessel sank. A float-free EPIRB was fitted but this did not come to the surface.

The crew were rescued by a helicopter which just happened to be over-flying the area and saw the wreckage. Neither of the vessel's crew suffered any injury and there was negligible pollution.

The cause of the sinking is not known but it was most probably hull planking failure, perhaps brought about by stress on the hull during the incident the previous afternoon.

Observations

1. The vessel was fitted with a bilge alarm but this was not operational.

Comment

1. The bilge alarm should be regularly tested, preferably daily. Timely indication that there is flooding is essential to allow remedial action to be taken or a call for assistance broadcast. Merchant Shipping Notice No M.1327 gives very good advice for the prevention of flooding of a fishing vessel.
2. The reason for the failure of the EPIRB to surface has not been identified but the following points should be noted in respect of the care and maintenance of EPIRBs:
 - 2.1 the EPIRB should be fitted and maintained as recommended by the manufacturer,
 - 2.2 the hydrostatic release unit requires renewing every two years and the battery every four years. The use of a competent service agent is recommended,
 - 2.3 the tether lanyard should not be affixed to the vessel's structure,

- 2.4 where an EPIRB has a switch that could turn the beacon off, this should be checked to ensure that it is in the "active" position so that the beacon will operate automatically when it floats free,
- 2.5 EPIRBs should be regularly inspected to ensure there is no build up of salt/funnel deposits that may inhibit either the release mechanism or the operation of the beacon in the water,
- 2.6 beacons should not be painted,
- 2.7 the EPIRB must be registered with the Department of Transport so that vessel information can be rapidly passed to Search and Rescue Authorities in the event of an emergency.

APPENDIX A

INVESTIGATIONS COMMENCED IN THE PERIOD 01/04/93 - 31/07/93

DATE OF ACCIDENT	NAME OF VESSEL	TYPE OF VESSEL	FLAG	SIZE	TYPE OF ACCIDENT
07.02.93	ANDROMEDA II/ ROEYBUEN	Fishing Vessel/ Fishing Vessel	UK Norway	26.35m 28m	Collision
04.03.93	JAMANDER	Fishing Vessel	UK	19.79m	Grounding
26.03.93	DALMARNOCK	Specialised Carrier	UK	2,266 grt	Machinery
14.04.93	JOY NIELSON	Fishing Vessel	UK	16.31m	Contact
17.04.93	CONDOR B	Passenger	UK	387 grt	Accident to Person
18.04.93	NIL DESPERANDUM	Fishing Vessel	UK	8m	Foundering
20.04.93	BERACHAH	Fishing Vessel	UK	19.05m	Accident to Person
24.04.93	NORTHERN VENTURE	Fishing Vessel	UK	23.35m	Foundering
26.04.93	DAYSRING II/ ANDROMEDA II	Fishing Vessel/ Fishing Vessel	UK UK	21.31m 24.20m	Collision
27.04.93	RADIANT DAWN	Fishing Vessel	UK	18.32m	Flooding
28.04.93	JOHANNA	Workboat	UK	-	Foundering
28.04.93	ALEX WATT	Fishing Vessel	UK	14.91m	Grounding
13.05.93	MAID OF THE FORTH	Pleasure Craft	UK	106 grt	Machinery
16.05.93	GRAN PIEDRA	Reefer	Cuba	3,456 grt	Machinery
20.05.93	MERAK	General Cargo	Cyprus	1,326 grt	Flooding
26.05.93	CALVADOS	Fishing Vessel	UK	20.14m	Fire
02.06.93	ORIENTAL BAY	Container	UK	50,235 grt	Accident to Person
03.06.93	BRITISH TRENT/ WESTERN WINNER	Oil Tanker/ Bulk Carrier	Bermuda Panama	15,649 grt 15,953 grt	Collision
10.06.93	BAZIAS 4	Ro-Ro Cargo	Romania	2,831 grt	Fire
14.06.93	INA B	Fishing Vessel	UK	15.09m	Fire
27.06.93	ST VINCENT/ TROENVERVAS	Fishing Vessel/ Fishing Vessel	UK Norway	36.27m 53m	Collision
30.06.93	LORD CHAD	Fishing Vessel	UK	14.10m	Accident to Person
02.07.93	MAID OF THE FORTH	Pleasure Craft	UK	106 grt	Machinery
04.07.93	ROYAL PRINCESS	Passenger Launch	UK	115 grt	Contact
07.07.93	MERCHANT VICTOR/ LIBERTY	Ro-Ro Cargo/ Fishing Vessel	Bahamas UK	1,598 grt 19.51m	Collision
12.07.93	SPARKLING STAR II	Fishing Vessel	UK	16.49m	Explosion
14.07.93	AMBER ROSE/ OPOSSUM	Fishing Vessel/ Naval Craft	UK UK	21.69m 2,030 grt	Collision
15.07.93	JAMES CLARK ROSS	Research	Falklands	5,732 grt	Hazardous Incident
21.07.93	AVON	Oil Tanker	Jamaica	43,622 grt	Grounding
28.07.93	SEACAT CALAIS	Cargo/Passenger	Australia	3,012 grt	Contact
29.07.93	CHERNOMORSKAYA SLAVA	Fishing Process	USSR	12,487 grt	Fire