

Fishing Vessel Technical Advice

Fuel Contamination

An MAIB investigation into the grounding of a fishing vessel found that fuel contamination by water was the most likely cause. The main and auxiliary engines had stopped twice previously, the first time having been a couple of days before. Fuel filters were changed and bled, but no trace of water was noticed in the fuel.

Finally the main and auxiliary engines stopped again when the vessel was about one mile from land. Attempts to restart the main engine were unsuccessful and the vessel grounded on rocks.

Fuel Systems

Fishing vessels are often fitted with storage tanks from which fuel is transferred (or purified) into a service tank, situated above the engine level. The transfer may be carried out manually, but some systems do it automatically.

Fuel systems should be regularly checked for water by using the self-closing drain valve fitted at the bottom of the service tank. The neglect of such regular checks can be a problem with automatic transfer systems.

Larger vessels are fitted with settling tanks, allowing water to settle and be drained out of the fuel before transfer (or purification) to the service tank takes place. If significant amounts of water are shown draining from the tank, another tank should be used. It is very important to find the source of the water contamination, which may be entering either the storage or service tank.

Possible sources of fuel contamination by water

Water contamination in a fuel system is most likely from the air vent pipe fitted on exposed decks. Vent pipes must be fitted with an efficient means of closing them weather tight, but at the same time, they need to release any pressure build up inside the tank. One device for this is a ball non-return valve.

It is very important that vents pipes work correctly. The closing mechanism and exposed pipe should be checked regularly and any defects should be repaired (temporarily, if necessary) as soon as possible.

Fuel filling lines may also be a source of water contamination. Caps or flanges on these pipes must always be fully secured after fuel is taken on board.

Occasionally, contaminated fuel is supplied from ashore. It is rare, however, for diesel fuel to be supplied containing significant amounts of water.

On smaller vessels, fresh water tanks sometimes adjoin fuel tanks. This arrangement may be the cause of fresh water contamination of the fuel (and vice-versa!)

Purifiers and Coalescer Filters

Fuel purifiers and coalescer filters assist the removal (and examination) of water from fuel systems. However, one should not solely rely upon these. The service tank self-closing drain valve should still be checked regularly for water contamination.

Liferafts and Hydrostatic Release Units

Statistics show that up to 20% of liferafts are incorrectly secured and may not work in an emergency!

A liferaft may be your last resort in the event of an emergency at sea. It's important to know how and where to stow liferafts to maximise their potential availability and effective operation. It's equally important to know how to connect the hydrostatic release unit (HRU) - if it's wrongly connected, the liferaft simply cannot float free. *Marine Guidance Note (MGN) 104 (M+F) on Stowage and Float Free Arrangements for Inflatable Liferafts contains essential advice on these points, including colour diagrams of the correct (and incorrect) methods of connection of common types of HRU.

A life raft must be capable of two things:

1. Floating free and inflating automatically if the vessel sinks

You can achieve this by fitting a HRU, which releases automatically when the liferaft is submerged. The liferaft then starts to float away from the ship because of its internal buoyancy, pulling out the painter, which is now connected to the vessel only by the weak link at the end of the painter. When the painter is pulled all the way to the end, the gas cylinder is activated, and the raft inflates, the weak link is broken, and the liferaft will float to the surface, fully inflated and ready for boarding.

2. Being manually released and thrown overboard

In a more controlled abandon-ship situation, the liferaft retaining strap is released at the senhouse slip (Quick release clip) and the raft is physically thrown over the side. The painter is then pulled to inflate the liferaft. This system relies critically on the painter being made fast to a good strong point, such as the HRU if it is rigged correctly. If the raft is secured to the ship only by the weak link, and is thrown over the side, the dynamic shock of being thrown over board may break the weak link, instead of pulling out the painter, and the whole liferaft and painter may then be lost.

So, the liferaft and HRU **must** be fitted correctly, or else one or both of the above functions may not work.

Life Jackets

What checks should you do?

Fishermen should *regularly check* that the gas cylinders are firmly tightened into the release units on their lifejackets.

Owners of lifejackets fitted with manual or automatic release units should also *regularly* carry out the safety checks listed in *any* booklet supplied with a lifejacket.

These are:

- Check that the single point indicator (if fitted) is green
- Check that the expiry date has not been reached
- Check that the inflation handle is attached
- Check that the gas cylinder is firmly screwed into the release unit.

You don't know when you will need to abandon ship and this will often happen very quickly. Make sure lifejackets are quickly and easily accessible.

What can happen if you don't do these checks – A case history

Whilst trawling a vessel's net became snagged on the seabed. Attempts were made to free the net but the vessel started to list heavily, prompting the six man crew to muster on deck. The vessel quickly capsized and sank.

Three of the crew who had been working on deck were already wearing inflatable lifejackets. The skipper and the engineer both donned theirs whilst the mate, realising that his was stowed below deck, had no time to collect it before the vessel started to sink and was forced to abandon ship without one.

Before abandoning the vessel, the five crew wearing lifejackets tried to inflate them manually by pulling the release toggles, rather than waiting for automatic inflation on taking to the water. Only one of the five lifejackets inflated.

Three of the crew managed to board the liferaft. As in most cases, they all ended up in the water. Whilst attempting to board the upturned liferaft one of the men disappeared. He was one of those whose lifejackets had failed to inflate. He was never seen again.

Further information

If you would like any more information on above and/or the availability of any other fishing safety information please write to the Fishing and Code Vessel Safety Branch, Maritime and Coastguard

Agency, Spring Place, 105 Commercial Road, Southampton, SO15 1EG, Fax: 023 8032 9161 or leave a message on 023 8032 9150

Marine Equipment and Personal Protective Equipment Directive

1. MED

The Marine Equipment Directive (MED) was put in place to enable the free movement of marine equipment between European Union Member states. Manufactures of marine equipment are no longer required to have their products type approved by each administration and wheel marked equipment approved by a notified body can be used on any European ship. In the past there has been a lack of consistency in the application of the testing standard between Member States. This problem was resolved by the introduction of testing and monitoring procedures that each piece of equipment has to be manufactured to. The testing and monitoring procedures are carried out by appointed notified bodies. Details of United Kingdom notified bodies and the equipment that can be wheel marked under the MED are contained in MSN 1734 as amended. The UK MED regulations are contained in the Merchant Shipping (Marine Equipment) Regulations 1999.

Although the Marine Equipment Directive does not apply to Fishing Vessels, equipment so approved has replaced that previously UK (DOT) APPROVED for use by Merchant Shipping.

2. PPE

Information on the Merchant Shipping and Fishing Vessels Personal Protective Equipment Regulations 1999 is contained in Merchant Shipping Notice (MSN) 1731.

These regulations were put in place to ensure that, where risks cannot be removed or reduced to an acceptable level by other means, personal protective equipment should be available to workers. The Regulations require that equipment used for personal protection is suitable for the hazard and meets an acceptable standard. The type of equipment and the relevant standards that the regulations apply to are contained in Annex 1 of MSN 1731.

Q & A:

- **Are fishing vessels required to comply with the Marine Equipment Directive?**

Fishing vessels are not mentioned in the MED. They do not need to comply with the requirements of the Merchant Shipping (Marine Equipment) Regulation 1999 and MSN 1734 as amended but may do so. There is no requirement for fishing vessels to change any of their present safety equipment for MED equipment but they may find that only MED approved versions are available.

- **Can fishing vessels use MED wheel marked equipment?**

Fishing vessels can use equipment approved by the MED standard, this is identified by the Ships wheel mark issued by any EU notified body as part of their safety equipment. All MED equipment will be of an equivalent standard to SOLAS marked equipment.

- **Can fishing vessels use MED marked equipment as PPE?**

MED equipment is not designed to fulfil the role of PPE. Equipment approved to the PPE Directive should bear the CE mark and comply with the standards listed in Annex 1 MSN 1731.

PPE is required for day to day use. Safety equipment is for use only in emergency situation or during training.

Individual copies of MSN 1731 & MSN 1734 as amended are available:

Over the counter at MCAs Marine Offices and Coastguard Stations at various UK locations or by post from Mail Marketing (Scotland), Unit 6, Blooms Grove Industrial Estate, Norton Street, Nottingham, NG7 3JG.

Tel: 0115 901 3336. Fax: 0115 901 3334

Pipework - Stainless Steel

We are all concerned about the high losses of fishing vessels due to flooding. The condition of seawater pipework is a very important factor in helping to prevent such losses.

To their credit, some owners are choosing to fit stainless steel seawater pipework to reduce pipework corrosion. However, MCA would like to make the industry aware that some grades of stainless steel are not entirely suitable for marine use. So here's the technical jargon!

When used with seawater, austenitic stainless steels may be susceptible to chloride stress corrosion cracking, possibly leading to fracture. This is exaggerated in polluted water. Examples of austenitic stainless steels are 304/304L and 316/316L.

Increasing the nickel content is one solution (e.g. Alloy 330, 904L). Alternatively, duplex or ferritic stainless steels should be used (e.g. 329, 2205, 439, 26Cr 1 Mo).

So by all means fit stainless steel pipework, but choose the suitable grade.

Pollution from fishing gear – the hidden menace

Pollution from shipping frequently receives media attention, mainly due to the large and catastrophic oil spill incidents that have occurred (such as the *SEA EMPRESS*, the *ERIKA* and the

PRESTIGE oil spills). However, smaller scale pollution such as garbage, oil spills from bilge washing and catering waste continues daily, and the cumulative effect can be problematic. Such pollution results in incidents ranging from marine animals becoming entangled or ingesting plastics, to fouled propellers and fishing gear. Other sources of pollution are lost fishing nets, ropes, buoys, and lobster pots. Such items are frequently washed up onto beaches and, because their source is easily recognisable, the fishing industry is often blamed for the pollution, even though the losses may have been accidental.

Equipment washed up on the beach is only part of the problem. There are invisible consequences too. Plastic-based material can persist in the marine environment for many years and continue to threaten marine life, including the fish that are a source of fishermen's income. "Ghost fishing" - when lost fishing nets and traps continue to capture fish and non-target species - indiscriminately removes adults of reproductive age and immature fish from the population, which can lead to a general reduction of fish populations and effect the management and development of sustainable fish stocks.

Other consequences of lost fishing gear and discarded plastic are propeller fouling and intake blockages. These can take a considerable amount of time to untangle and unblock, and may endanger both vessel and crew, whilst wasting good fishing time.

Annex V (the Prevention of Pollution by Garbage from Ships) of the International Convention known as MARPOL 73/78, treats lost fishing gear as garbage. Although there is a worldwide ban on the dumping of plastics at sea, Annex V and the UK legislation which implements it, recognises that accidental losses of fishing gear at sea can occur.

As part of the Government's strategy to reduce marine pollution, all ports are now required to prepare a port waste management plan and provide adequate facilities for garbage reception, in consultation with regular port users. The EC Directive 2000/59/EC on Port Waste Reception Facilities for Ship Generated Waste and Cargo Residues has been implemented in the UK through the Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2003. These regulations require vessels to notify, land and pay a mandatory charge for the ports to receive and dispose of their garbage, and provide a list of contractors for vessels to form private contracts to dispose of oily waste, cargo residues and hazardous/noxious liquids.

It is a common misunderstanding that fishing vessels are exempt from these regulations. Fishing vessels are exempt from notifying ports of their waste and paying the ports a mandatory charge. However, fishing vessels are **NOT** exempt from landing their wastes (garbage, oily wastes, old fishing gear and nets etc.), either to facilities provided by the port and paid for as part of the harbour dues, or directly to a waste contractor through a private contract.

Each port plan will require a review at least every three years, so if there are concerns over the adequacy or provision of reception facilities in your port, these should, in the first instance, be discussed with the port authority. If the situation cannot be resolved, contact the MCA for further advice.

To help reduce pollution and minimise the risk of fouled propellers please remember the following:

- Carry out onboard procedures to minimise the accidental loss of fishing gear at sea.
- Bring all garbage and debris ashore for disposal at port waste reception or contracted facilities. This will reduce the detrimental effects of 'ghost fishing' and reduce propeller fouling.
- Ensure your views are taken into account in your port's waste management plan, and raise any inadequacies with the port authority.

The Environment Team in the MCA's Environment Quality Branch is happy to deal with any issues raised by this article. Tel: 023 80329 100 or Fax: 023 80329 204, E-mail: environment@mcga.gov.uk.

Risk Assessments

Under the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulation 1997 that came into force 31 March 1998, there is a general duty on employers to ensure the health and safety of workers and other persons so far as reasonably practicable. Under the legislation a written health and safety policy is required for vessels with more than five employees and all vessels need to have carried out a risk assessment.

In response to fishermen's concerns over health and safety requirements, the Sea Fish Industry Authority has produced the Fishing Vessels Safety folder to guide fishermen through completing their own risk assessment.

The Fishing Vessels Safety Folder, developed in conjunction with the Fishing Federations and the Maritime and Coastguard Agency, contains all the necessary forms required to comply with the above legislation. It comprises a policy statement document with checklist and risk assessment forms to cover most fishing vessels and fishing methods.

Further Information from:

Seafish Technology,
Seafish House,
St Andrews Dock,
Hull, HU3 4QE

Tel: 01482 327 837

Advice on completion of the forms is available from Alan Dean, 01482 327 837, a_dean@seafish.co.uk, or Josh rice, j_rice@seafish.co.uk

The National Federation of Fishermen's organisations, the Scottish Fishermen's Federation and the Northern Ireland Fishermen's Federation hold stocks for their members.

MCA Fishing Vessel Technical Advice

Stability

A fishing vessel's stability greatly depends upon its weight and centre of gravity. As is the case for many humans, as a vessel ages it can increase in weight. As time goes by, lots of minor changes to a vessel can add up. Most of this change perhaps being higher up, it will make the vessel less stable because of the rise in its centre of gravity.

An Age-old Weight Problem

As with any investment, much thought and planning goes into building a new fishing vessel. This is hardly surprising when you consider the financial implications involved.

What **is** surprising, however, is that a number of **new** vessels are likely to **fail** their second survey.

Owners-to-be would expect to be supplied with a vessel that will pass the MCA survey; enabling them to be issued with fishing vessel certificates in order to register and to fish.

Safe stability is a crucial part of the survey. A fishing vessel's stability greatly depends upon its weight and centre of gravity. As is the case for many humans, as a vessel ages it can increase in weight. As time goes by, lots of minor changes to a vessel can add up. Most of this change perhaps being higher up, it will make the vessel less stable because of the rise in its centre of gravity.

Rather than face unexpected future costs for vessel alterations, for them to pass stability requirements, the wise new owner-to-be should think again. Is that vessel with only narrow margins of stability such a good deal after all?

Do make sure there are sufficient margins for all those minor changes.

Do consult an expert and the MCA before making any major changes.

Do think ahead and ensure your vessel has sufficient stability for a safe and successful future!

If you would like any more information on above and/or the availability of any other fishing safety information please contact the Fishing Safety Branch.

Sea Worthiness

Fishing vessels and seaworthiness certificates – how are they regulated?

The Maritime and Coastguard Agency is responsible for the inspection and safety certification of UK fishing vessels. A fishing vessel between 15-24 metres has to be surveyed every five years, with an intermediate inspection between year 2 and 3, an MCA spokesman told *European Fish Trader*.

“The intermediate inspection is general and will check condition of the vessel, lifesaving and fire fighting equipment. The 5 year survey involves a thorough look at the hull, machinery and safety equipment and an out-of-water survey where we look at the hull”. “Sometimes it could take 2 days but with larger vessels it can be a process that spans over several days depending on the size of the vessel and its condition.”

Vessels of 24m and over are surveyed every four years with an intermediate survey every two years. The MCA usually sends out a reminder 6 months prior to the safety certificate expiry date so that the owner can be prepared.

“We send out information on preparing for survey to the owner and by doing so we can save time, and also save money for the vessel owner.”

A five-year survey usually requires a £ 1,500 deposit, surveyors time costs £94 per hour and is charged against the deposit, if a vessel is in good condition, and the survey is therefore quick, some of this deposit may be returned. A vessel in poor condition, which takes longer to survey, may cost the owner more money.

The spokesman said that there are 11 dedicated surveyors based around the UK. But it is not only at inspection times when the MCA is involved. The spokesman explained:

“Changes and repairs need to be reported to the MCA because they may invalidate the certificate, if for instance a bigger net drum is fitted, that may reduce the vessels stability, and a new inspection is necessary.”

For an inspection of a repair or change to the vessel the MCA would also charge an hourly rate of £94.

Safety Checks Save Lives

The Maritime and Coastguard Agency is responsible for the inspection and safety certification of UK fishing vessels. A fishing vessel between 15-24 metres has to be surveyed every five years, with an intermediate inspection between year 2 and 3.

At a recent MCA inspection of an under 10m vessel, it was found that the liferaft was incorrectly secured and would not have floated free. This was corrected by the skipper.

A few days later the same vessel sank and the crew spent five hours in the liferaft prior to their rescue after spotting a ship and using their last distress flare.

This case highlights some important facts

- The importance of correctly securing your liferaft

- The importance of carrying the right, in date and serviced safety equipment

This particular case has shown that these two factors can make the difference between life and death.

The Code of Practice for Small Fishing Vessels (MSN 1756) has been in force since 1 April 2001 and all under 15 metre vessel owners are required to its minimum requirements.

Owners must ensure that their vessels carry lifesaving, fire-fighting and safety equipment, appropriate to the length of the vessel. They must also carry out a risk assessment, for which a Seafish Risk Assessment Safety folder can be obtained from Seafish by telephoning 01482 327 837 or by faxing 01482 223 310. Owners must also complete an annual self-certification.

Inspections can be arranged by contacting your local Coastguard Office.

Alternatively, call the Fishing Vessel Helpline on 0845 601 4072 to arrange an inspection or to get advice on the Code or any other safety matter.

Small Vessel Stability Checks - Don't Upset Your Boat

Poor stability continues to be a cause of vessel loss and death. There are a number of ways to reduce the risk to yourself and your vessel.

1. Check you and your crew don't overload your vessel, piling too many pots on deck can reduce stability.
2. Check you and your crew secure gear when not in use.
3. Check that scuppers and freeing ports are not blocked or shut.
4. Check that the non-return flaps operate.
5. Check that water in fish boxes can drain away.
6. Don't allow water to be trapped on deck, keep it as clear as possible and allow water to drain.
7. Check the bilge alarms are working by testing them before every trip.
8. Check the bilges are dry regularly.
9. Check seacocks and valve chests are accessible and working effectively before every trip.
10. Check your pipework: check the whole pipe if one section springs a leak and don't just replace the failed part, it could all be faulty.

11. Adding a Netdrum, shelter or enlarging one already fitted can be dangerous, seek advice before doing it.

If you are in any doubt, get an expert to check it out.

Safety Alert - Salvage Pumps

Using portable petrol/diesel salvage pumps in a confined space

Two crewmen on board a fishing vessel had a lucky escape after being asphyxiated by fumes from a portable petrol driven salvage pump.

This incident happened on a 22m vessel fitted with an open shelter deck

The wooden vessel had sprung a leak and was taking in water in the fish room. The portable salvage pump was rigged up and was pumping water, but for some reason, either a lack of suction head or inadequate length of hose the pump was operating in the fish room.

One crewman went in to the fish room to attend the pump but he fell in the fish room. The second crewman instinctively went to help but was also overcome by fumes.

Luckily both survived.

Lessons to be learned

- a) Only use a petrol/diesel portable pump on an open deck.
- b) If you carry a salvage pump try it out to ensure that it will work on the open deck i.e. suction is long enough and pump has sufficient power to lift the water.
- c) In an emergency, take stock of the situation before rushing in and becoming another casualty.

Surveyors

When a pump is required to be carried have it demonstrated from the open deck to prevent recurrence of a similar incident.