ACCIDENT REPORT

Report on the investigation of the

foundering of the fishing vessel

Piedras

78 nautical miles south-west of Mizen Head, Ireland

on 1 June 2022

MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

VERY SERIOUS MARINE CASUALTY REPORT NO 5/2024 JUNE 2024

The United Kingdom Merchant Shipping

(Accident Reporting and Investigation)

Regulations 2012 – Regulation 5:

"The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

All MAIB publications can be found on our website: www.gov.uk/maib

For all enquiries:

Marine Accident Investigation Branch
First Floor, Spring Place
105 Commercial Road
Southampton
SO15 1GH
United Kingdom

Email: maib@dft.gov.uk
Telephone: +44 (0)23 8039 5500

Press enquiries during office hours: +44 (0)1932 440015
Press enquiries out of hours: +44 (0)300 7777878

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

SYNOPSIS 1

SECTION 1 – FACTUAL INFORMATION 2

1.1 Particulars of *Piedras* (FD528) and accident 2
1.2 Narrative 3
1.3 Environmental conditions 6
1.4 *Piedras* 6
1.4.1 Vessel description 6
1.4.2 Vessel management 8
1.4.3 Crew 8
1.4.4 Fishing operations 8
1.4.5 Vessel modifications 11
1.4.6 Vessel surveys and hull damage 11
1.4.7 Vessel stability 11
1.4.8 Bilge and seawater cooling systems 12
1.5 *Piedras* safety 13
1.5.1 Electronic safety devices 13
1.5.2 Personal lifesaving equipment 13
1.5.3 Liferafts 13
1.5.4 Vessel safety paperwork 14
1.6 *Venture Breeze* 14
1.6.1 Vessel description 14
1.6.2 Voyage data recorder 14
1.7 Regulation and guidance 15
1.7.1 Regulations and guidance relevant to flooding 15
1.7.2 International Labour Organization Work in Fishing Convention 18
1.7.3 Watchkeeping 18
1.8 Previous similar accidents 19
1.8.1 *Diamond D* – flooding, capsize and sinking 19
1.8.2 *Riemda* – sinking leading to total constructive loss 19
1.8.3 *Dorneda* – capsize and sinking 20
1.8.4 *Ocean Way* – flooding and foundering 21
1.8.5 *Vertrauen* – flooding and sinking 21

SECTION 2 – ANALYSIS 22

2.1 Aim 22
2.2 Overview 22
2.3 The flooding 22
2.3.1 Potential causes 22
2.3.2 Response to the flooding 24
2.3.3 Floodwater management 24
2.4 The foundering 25
2.5 Distress calls and the response 26
2.6 Voyage data recording 26
2.7 Abandon ship and the rescue 26

SECTION 3 – CONCLUSIONS **28**

3.1 Safety issues not directly contributing to the accident that have been addressed or resulted in recommendations 28

SECTION 4 – ACTION TAKEN **29**

4.1 MAIB actions 29
4.2 Actions taken by other organisations 30

SECTION 5 – RECOMMENDATIONS **32**

FIGURES

Figure 1: The general location of the accident

Figure 2: *Piedras* listing to port with smoke or steam visible at the stern

Figure 3: Side scan sonar image of *Piedras* sitting upright on the seabed at 850m depth

Figure 4: *Piedras*

Figure 5: *Piedras* general arrangement

Figure 6: *Piedras* trawl doors

Figure 7: *Piedras* net arrangement

Figure 8: *Piedras* trancanil

Figure 9: Simplified diagram of the engine room seawater and bilge system

TABLES

Table 1: Fishermen's Safety Guide flood action plan

Table 2: MAIB flood source hypotheses

Table 3: MAIB floodwater management hypotheses

ANNEXES

Annex A: MAIB Safety Bulletin SB2/2023, issued 24 August 2023

Annex B: MAIB safety flyer to the fishing industry

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

°C	-	degrees Celsius
2/E	-	second engineer
AIS	-	automatic identification system
APT	-	annual performance test
C/E	-	chief engineer
CIAIM	-	Comisión Permanente de Investigación de Accidentes e Incidentes Marítimos (Permanent Commission for the Investigation of Maritime Accidents and Incidents)
DSB	-	Deutsche Schlauchboot GmbH
DSC	-	digital selective calling
EPIRB	-	Emergency Position Indicating Radio Beacon
ftm	-	fathom – a unit of depth equivalent to 1.8 metres or 6 feet
GMDSS	-	Global Maritime Distress and Safety System
HRU	-	hydrostatic release unit
ILO 188	-	International Labour Organization Work in Fishing Convention, 2007 (No. 188)
kt/kts	-	knot/knots
LOA	-	length overall
m	-	metre
Met Office	-	Meteorological Office – the UK national weather service
MCA	-	Maritime and Coastguard Agency
MF	-	medium frequency
MGN	-	Marine Guidance Note
MGN 587 (F)	-	ILO 188 Health and safety Amendment 1: responsibilities of fishing vessel owners, managers, skippers and fishermen
mm	-	millimetre
MSN	-	Merchant Shipping Notice
nm	-	nautical mile
PFD	-	personal flotation device
PLB	-	personal locator beacon
RL	-	Registered Length
SAR	-	search and rescue

SART	-	search and rescue transponder
Seafish	-	Sea Fish Industry Authority
Survitec	-	Survitec Group Limited
Su-Nav	-	Su-Nav Ship Management Limited
t	-	tonnes
USN	-	United States Navy
UTC	-	universal time coordinated
VDR	-	voyage data recorder
VHF	-	very high frequency
VLIZ	-	Vlaams Instituut voor de Zee (Flanders Marine Institute)

TIMES: all times used in this report are British Summer Time (UTC+1) unless otherwise stated.

Piedras

SYNOPSIS

On 1 June 2022, the 35.5m fishing vessel *Piedras* experienced an uncontrolled flood while fishing 78 nautical miles south-west of Ireland. The vessel subsequently foundered and has not been recovered. The crew abandoned ship to their one working liferaft and were rescued, uninjured, by a nearby fishing vessel.

Piedras had recently completed one haul and had started the next trawl when the engine room bilge alarm sounded. The chief engineer attempted to pump the engine room bilges but this did not reduce the floodwater levels. The skipper contacted a nearby fishing vessel to ask for help and *Piedras*'s crew recovered their net and shut the seawater system isolation valves in an attempt to stem the water ingress. The skipper issued a distress message and then ordered the crew to abandon ship; a passing bulk carrier, *Venture Breeze*, did not respond to the distress call. As the flood spread beyond the engine room, the crew launched their liferafts but only one inflated correctly.

The investigation established several potential causes of the flood and the possible reasons why the floodwater was not brought under control. It is possible that trawl doors damaged *Piedras*' hull when they were recovered causing the initial flood in the engine room and that secondary flooding resulted in the eventual capsize then foundering. However, other hypotheses for both events could not be ruled out.

Shortly after this accident, MAIB made safety recommendations to Survitec Group Limited about the servicing and certification of its liferafts by approved service stations and has since issued a safety bulletin with further recommendations. Survitec Group Limited has subsequently cancelled its relationship with the approved service station of concern, Confer Marin S.L. and conducted an audit of all potentially impacted liferafts. In light of these actions no further recommendations have been made to Survitec Group Limited.

In a letter to Su-Nav Ship Management Limited, as the ship management company for *Venture Breeze*, the Chief inspector of Marine Accidents suggested that the company conduct a detailed check of the vessel's voyage data recorder to verify that a full 30-day record was available and take action to ensure that the standards of watchkeeping on board *Venture Breeze* were compliant with statutory requirements. These suggestions were acknowledged by Su-Nav Ship Management Limited.

SECTION 1 – FACTUAL INFORMATION

1.1 PARTICULARS OF *PIEDRAS* (FD528) AND ACCIDENT

VESSEL PARTICULARS	
Vessel's name	*Piedras*
Flag	UK
Classification society	Not applicable
IMO number/fishing numbers	FD528
Type	Stern trawler
Registered owner	Nia Limited
Manager(s)	Nia Limited
Construction	Steel
Year of build	1976
Length overall	35.5m
Registered length	32.45m
Gross tonnage	295
Minimum safe manning	Not applicable

VOYAGE PARTICULARS	
Port of departure	Castletownbere, Ireland
Port of arrival	Castletownbere, Ireland (intended)
Type of voyage	Deep sea
Cargo information	Fish
Manning	11

MARINE CASUALTY INFORMATION	
Date and time	1 June 2022 at 1234
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	78nm south-west of Mizen Head, Ireland
Place on board	Engine room
Injuries/fatalities	None
Damage/environmental impact	Vessel lost, negligible harm to the environment
Ship operation	Fishing
Voyage segment	Mid-water
External & internal environment	Wind Beaufort force 3; sea state 2; good visibility
Persons on board	11

1.2 NARRATIVE

At approximately 1900 on 29 May 2022, the stern trawler *Piedras* (FD528) departed from Castletownbere, Ireland with 11 crew members on board. Seven hours later, the vessel arrived at its fishing grounds **(Figure 1)** and the crew began their continuous cycle of shooting, trawling and recovering nets for the next 2 days.

Reproduced from Admiralty Chart BA 2 by permission of HMSO and the UK Hydrographic Office

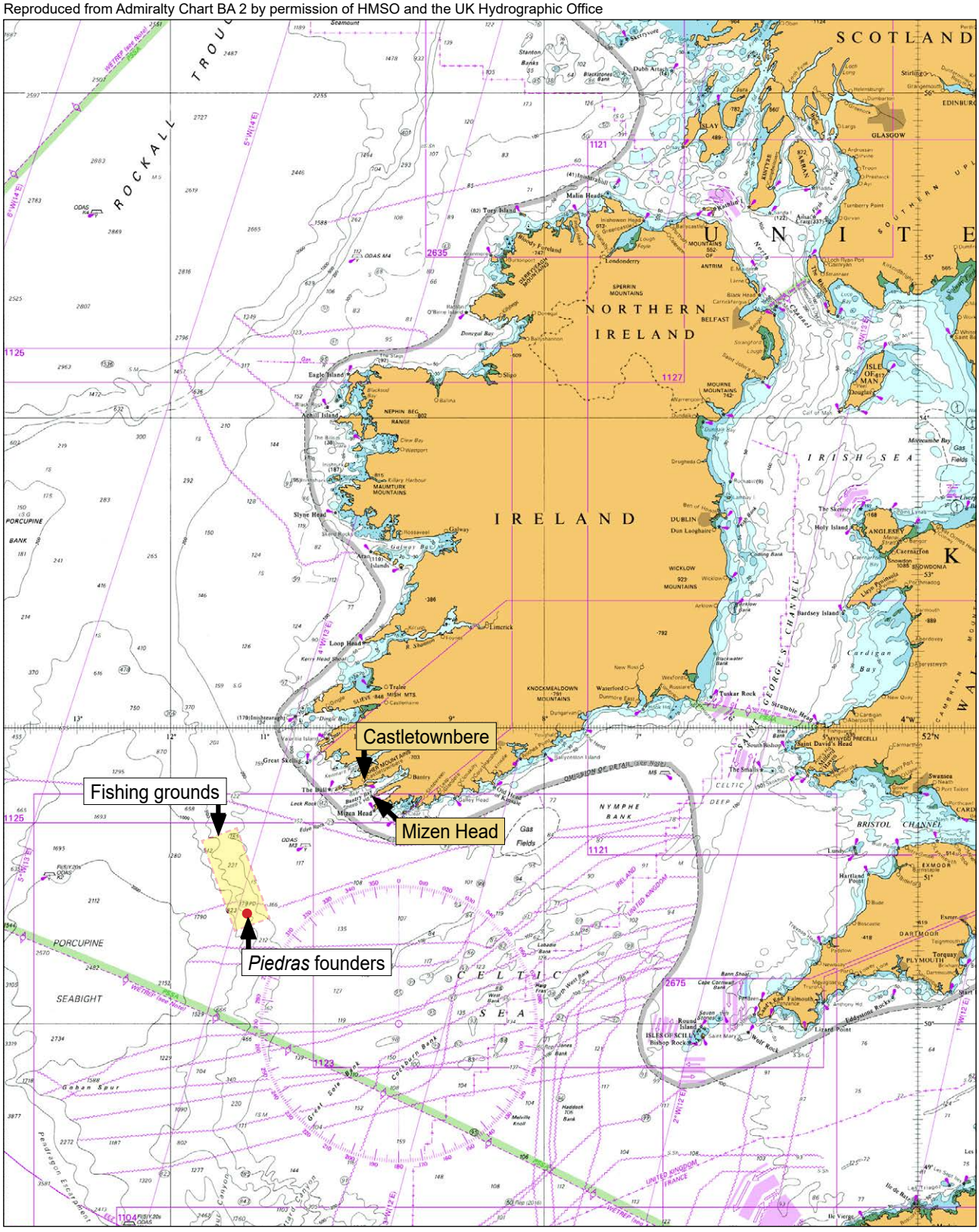


Figure 1: The general location of the accident

By about 0400 on 1 June, the crew had recovered the starboard net and finished shooting away the port net, the deckhands then processed the catch before sleeping. At the same time, the second engineer (2/E) handed over the engineering watch to the chief engineer (C/E) with nothing abnormal noted. After conducting a quick check of the machinery spaces, the C/E started cleaning and maintaining equipment in the fish processing room.

At about 0500, the skipper took over the navigational watch in the wheelhouse from the mate. At approximately 0600, the C/E heard the engine room bilge alarm sound and descended to the engine room via the starboard accessway, where he noted floodwater level with the floor plates. He started the bilge pump, but this made no difference to the water levels in the engine room and so he reported the flood to the skipper. The C/E believed that the floodwater was likely to be coming from seawater cooling pipes and after some discussion, the skipper agreed to recover the port net and stop the engine to investigate the flood.

At 0614, the skipper of *Piedras* called the crew of a nearby fishing vessel, *Armaven Uno* (M1170), by WhatsApp to inform them that there was a flood on board and that he believed it to be containable. By about 0630, the crew of *Piedras* had recovered the port net and the C/E and 2/E started isolating the main engine's cooling water system. By this stage, water was splashing up onto the main engine's flywheel and they reported seeing the water make a small *fountain* near the aft end of the engine. It soon became apparent that the isolations to the main engine's cooling water system were making no difference to the rate of flooding. At 0633, the skipper again called *Armaven Uno* via WhatsApp, stating that the flood may not be controllable and that he might need help.

At 0645, the skipper switched the automatic identification system (AIS) on to high power. At 0704, Armaven Uno, its nets having been recovered, proceeded south towards *Piedras*. At 0711, the skipper called *Armaven Uno* again and asked for immediate assistance as he no longer believed that the flood was controllable. At about 0747, the Marshall Islands registered bulk cargo vessel *Venture Breeze* detected *Piedras* near stationary 6.9 nautical miles (nm) ahead and just to the south of its planned track. *Venture Breeze* also tracked *Armaven Uno* about 11nm to the north and heading south-south-east at around 10.5 knots (kts). Approximately 4 minutes later, *Venture Breeze* altered course 10 degrees to port to open out its closest point of approach with *Piedras*.

At 0815, *Piedras* sent an undesignated distress message via medium frequency (MF) digital selective calling (DSC)[1] using its Global Maritime Distress and Safety System (GMDSS)[2]. *Venture Breeze* was 2nm to the north-west of *Piedras* and continued its passage. About 3 minutes later, the coastguard on Valentia Island, Ireland, called *Piedras* on the MF distress frequency but received no response. By 0822, *Venture Breeze* had paralleled its original heading and was 1.2nm to the north of *Piedras*. At 0823, the Valentia Island coastguard issued a "Mayday Relay"[3] broadcast on MF DSC. The skipper of *Piedras* called the Valentia Island coastguard 2 minutes later, advising that the vessel was flooding, there were 11 people on board and assistance was required. The skipper also informed the coastguard that *Armaven Uno* was approximately 30 minutes away. At 0831, Valentia Island

[1] A digital alerting system that, on the press of a single button, can send a vessel's identity, position and the nature of its distress to all DSC-equipped vessels and shore stations within range.

[2] A worldwide maritime communication system used for transmitting distress messages at sea and routine maritime communications.

[3] An international emergency code used in voice radio communications and transmitted on behalf of a vessel in distress.

coastguard began calling *Venture Breeze* via MF voice communication. After 3 minutes, having received no response, the Valentia Island coastguard sent *Venture Breeze* a routine DSC message.

At some time, the engineers on *Piedras* had stopped the bilge pump because it was overheating and had started the fish room/fire pump and configured it to suck from the engine room bilges and discharge overboard. With the floodwater still rising, the crew used the deck crane to lift a diesel-driven emergency salvage pump up from the fish processing room and placed it on the upper deck by the stern ramp. The emergency salvage pump's suction hoses were then run via the starboard accessway down to the engine room and the discharge hose was draped over the stern ramp.

The salvage pump removed negligible volumes of floodwater and, with the water level having risen to the main deck above the engine room, the crew of *Piedras* put on immersion suits and donned lifejackets in preparation to abandon ship. The crew manually released the port side liferaft but, despite pulling on its painter line several times, the liferaft failed to inflate correctly. The crew then released and successfully launched the starboard side liferaft by the same method. The crew disconnected the emergency salvage pump suction hose to allow the starboard engine room accessway to be secured. Shortly afterwards, the skipper gave the order to abandon ship.

At 0910, *Armaven Uno* reported that the crew of *Piedras* had boarded the liferaft and were transferring over from *Piedras* to *Armaven Uno*. The skipper and C/E of *Piedras* initially stayed on board *Piedras* to attempt to save their vessel. When they did abandon *Piedras* they were not wearing lifejackets and the skipper's immersion suit was tied off around his waist. At about 0940, an Irish Air Corps fixed-wing aircraft arrived on scene. At 0949, *Armaven Uno* reported that all 11 crew members had been recovered from *Piedras*. At 0959, the Shannon-based Irish Coast Guard rescue helicopter arrived on scene carrying two salvage pumps. At 1006, *Armaven Uno* reported to the Valentia Island coastguard that *Piedras* was on fire, smoke having been observed near the vessel's stern.

Image courtesy of Irish Air Corps

Figure 2: *Piedras* listing to port with smoke or steam visible at the stern

At 1018, *Piedras* was listing heavily to port with smoke or steam visible at the stern **(Figure 2)**. The partially inflated port liferaft had by this time drifted away and was not recovered. Other helicopter assets were stood down by the Valentia Island coastguard as the crew had been safely recovered. By 1047, the fire on board *Piedras* was reported as out and the port list was described as worsening. By 1111, all air search and rescue assets had departed the scene to return to their bases. At 1234, *Piedras* sank and *Armaven Uno* started its passage to Castletownbere. By 1247, a ship of the Irish Naval Service L.É. *Samuel Beckett* had arrived on scene and recovered floating debris for the next 3 hours; there was no significant pollution on the sea surface. At approximately 2000, *Armaven Uno* arrived at Castletownbere and the crew of *Piedras* disembarked.

On 11 August 2022, RV *Belgica* was conducting a research cruise on behalf of the Flanders Marine Institute (VLIZ) and positively identified the position of the wreck of *Piedras* at 50° 43.61'N 011° 11.15'W in a depth of 850m below mean sea level. The vessel was aligned on an east-south-east heading, seemingly intact and upright with a slight list to port **(Figure 3)**.

Image courtesy of Vlaams Instituut voor de Zee (Flanders Marine Institute)

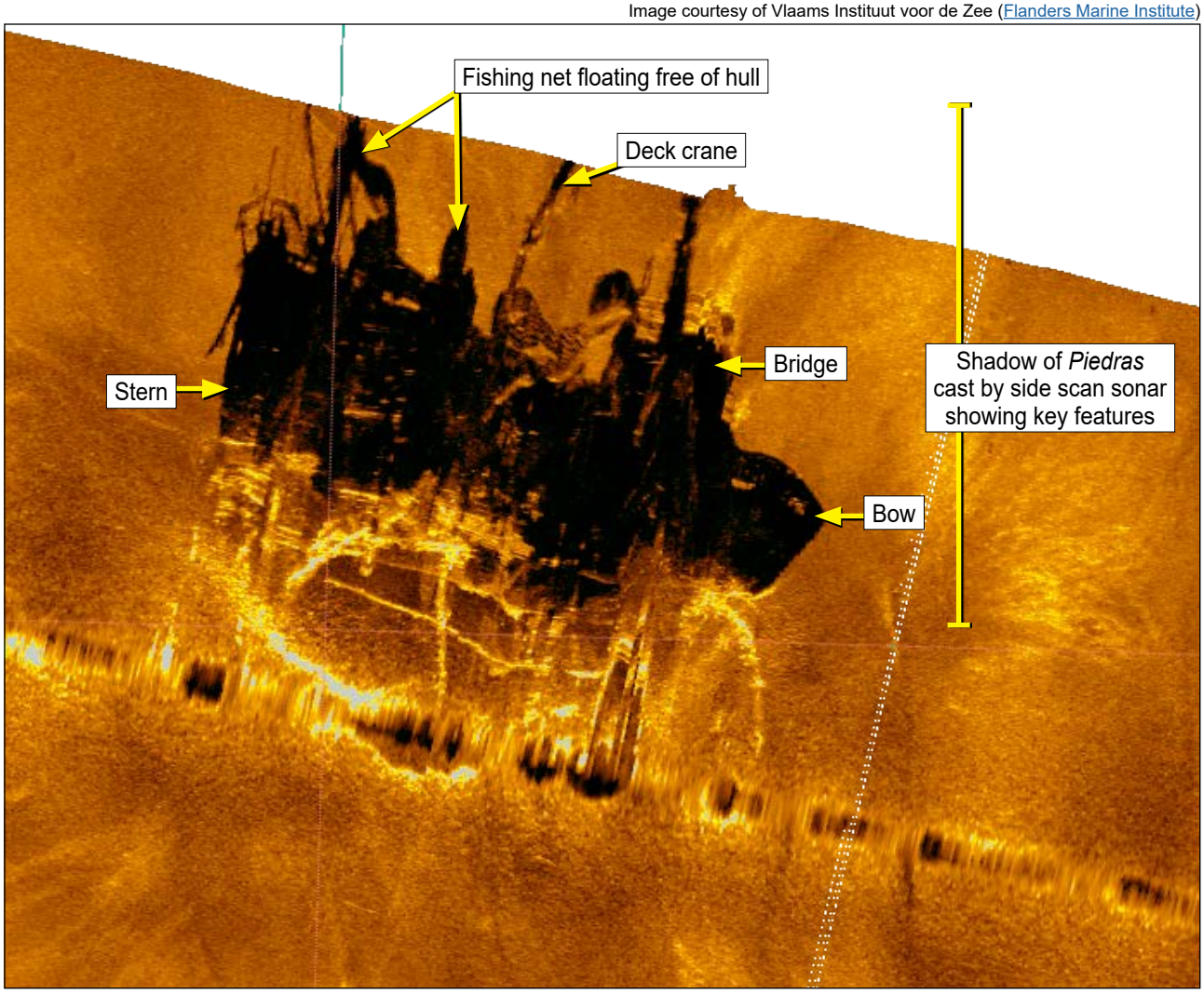


Figure 3: Side scan sonar image of *Piedras* sitting upright on the seabed at 850m depth

1.3 ENVIRONMENTAL CONDITIONS

On 1 June 2022, sunrise was at 0436 and visibility was good. The wind was Beaufort force 3, from the east-north-east and the sea state was smooth with a low, short, westerly swell.

1.4 *PIEDRAS*

1.4.1 Vessel description

Piedras **(Figure 4)** was a 32.45m registered length steel-hulled stern trawler built in 1976 by Construcciones Navales Santodomingo SA in Vigo, Spain.

Image courtesy of FleetMon

Figure 4: *Piedras*

The general arrangement of *Piedras* **(Figure 5)** comprised a forward wheelhouse, hydraulic deck winches at the forward end of the upper deck, a fixed aft gantry above a hatch down to the fish processing room, a stern ramp and a ramp door. The upper deck had a raised gunwale and there was a pilot boarding door at the vessel's midships, on the port side. A hydraulic crane was positioned aft of the pilot boarding door; this was used to disembark the catch from the fish room via a hatch on the upper deck just aft of the hydraulic deck winches. The main deck included, from bow to stern: the crew's accommodation and a galley; a between-deck store; a fish processing room; a fish reservoir; and a steering gear compartment.

For illustrative purposes only: not to scale

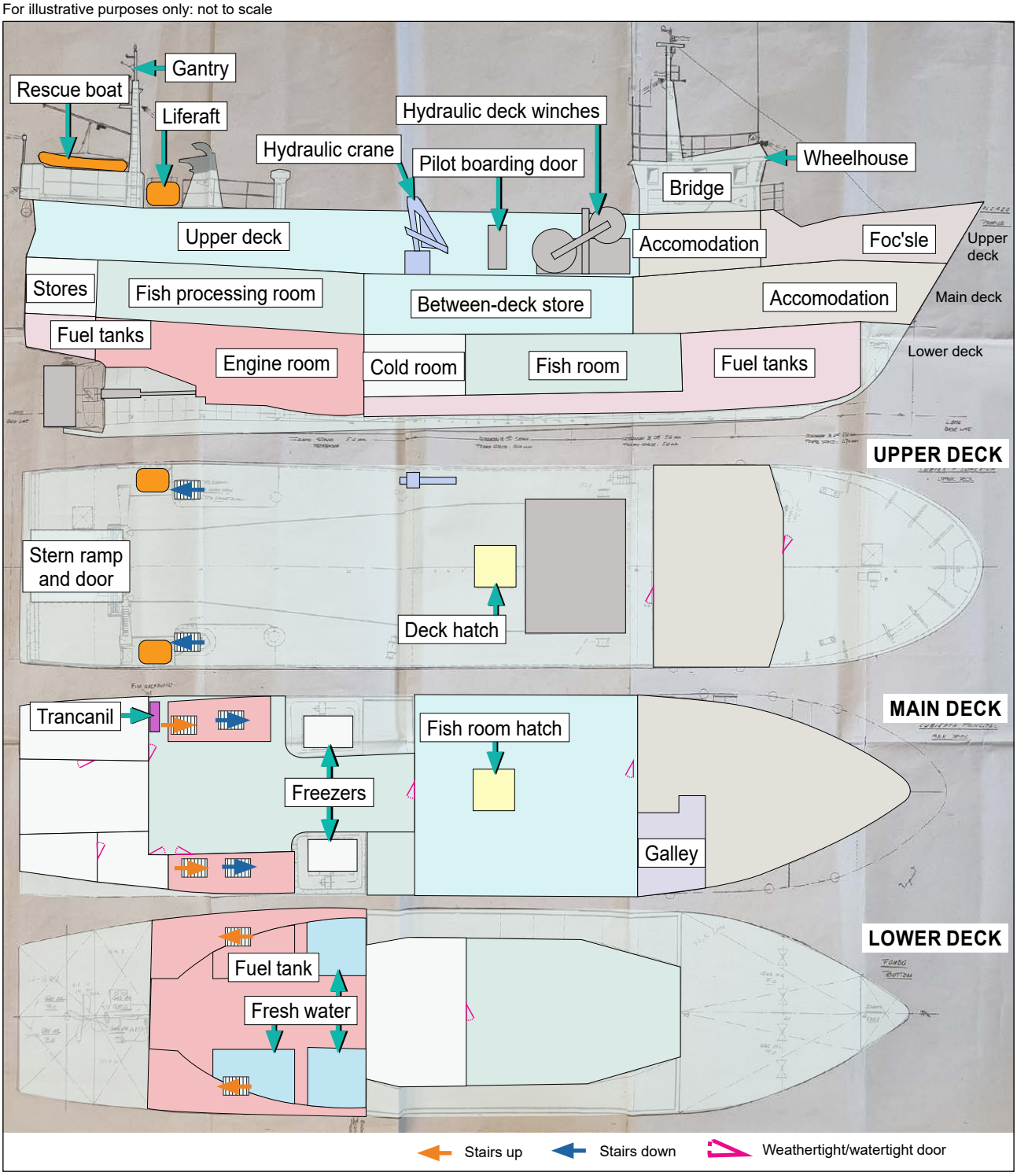


Figure 5: *Piedras* general arrangement

The lower deck contained fuel tanks; a forward fish room; an aft fish room (cold room); and the engine room.

At the time of the flooding, the two large hatches on the upper deck (the fish room hatch and the fish processing room hatch) were shut and some watertight doors above the waterline were tied open.

1.4.2 Vessel management

Between 1976 and 2003, there had been several changes to both the ownership of *Piedras* and the vessel's name[4]. Since late 2002, *Piedras* had been owned by the UK registered company Nia Limited, as the vessel's sole operators and the only vessel in the fleet. Nia Limited was a family business that employed Hooktone Limited, based in La Coruña, Spain, to liaise with the Maritime and Coastguard Agency (MCA), deliver advice and coordinate MCA inspections and surveys for *Piedras*.

1.4.3 Crew

The 11 crew on board *Piedras* were nationals of Spain, Morocco, Ghana and Peru and the vessel's working language was Galician, although Castilian Spanish, Arabic, Akan and some limited English were spoken among subgroups. Some of the crew had extremely limited reading and writing skills in the Galician, Castilian Spanish and English languages, though all were knowledgeable in their profession as fishers. Just two of the crew spoke English with confidence. The skipper, mate and C/E were all native Galician Spanish; the 2/E was Moroccan, with language skills in both Arabic and Galician Spanish.

The owners of *Piedras* were working to define minimum safe crewing levels. The crew's hours of work and rest were logged in line with the International Labour Organization Work in Fishing Convention (ILO 188), which came into force on 16 November 2017.

The crew had attended all the statutory training courses and held the relevant approved qualifications. The owners had also arranged regular safety training on board through a third-party provider; while this training covered evacuation drills and emergency response training, there was no specific content on flood management or the development of a flood action plan. On 16 May 2022, the day *Piedras* departed Marin, Spain, the crew had completed training in evacuation procedures and how to put on an immersion suit.

The skipper had been in command of *Piedras* for 4 years and had 29 years' service as a skipper. The C/E had over 20 years' engineering experience and had attained his diploma in 2021; this trip was his first on board *Piedras*. The 2/E had qualified in 2017 and had served on board *Piedras* for 2.5 years at the time of the accident.

1.4.4 Fishing operations

The two nets carried on board *Piedras* were stowed and deployed from a winch on the main deck. Two trawl doors, weighing 1,400kg each, were stowed at the stern when not in use **(Figure 6)**; when deployed, these guided and kept the net open **(Figure 7)**.

[4] The vessel previously operated as *Tarpon* (from build until January 1989), *Reda III* (January 1989 until March 2001), *Dany* (March 2001 until September 2001) and *Mary Christie* (September 2001 until January 2003).

Image courtesy of the Maritime and Coastguard Agency

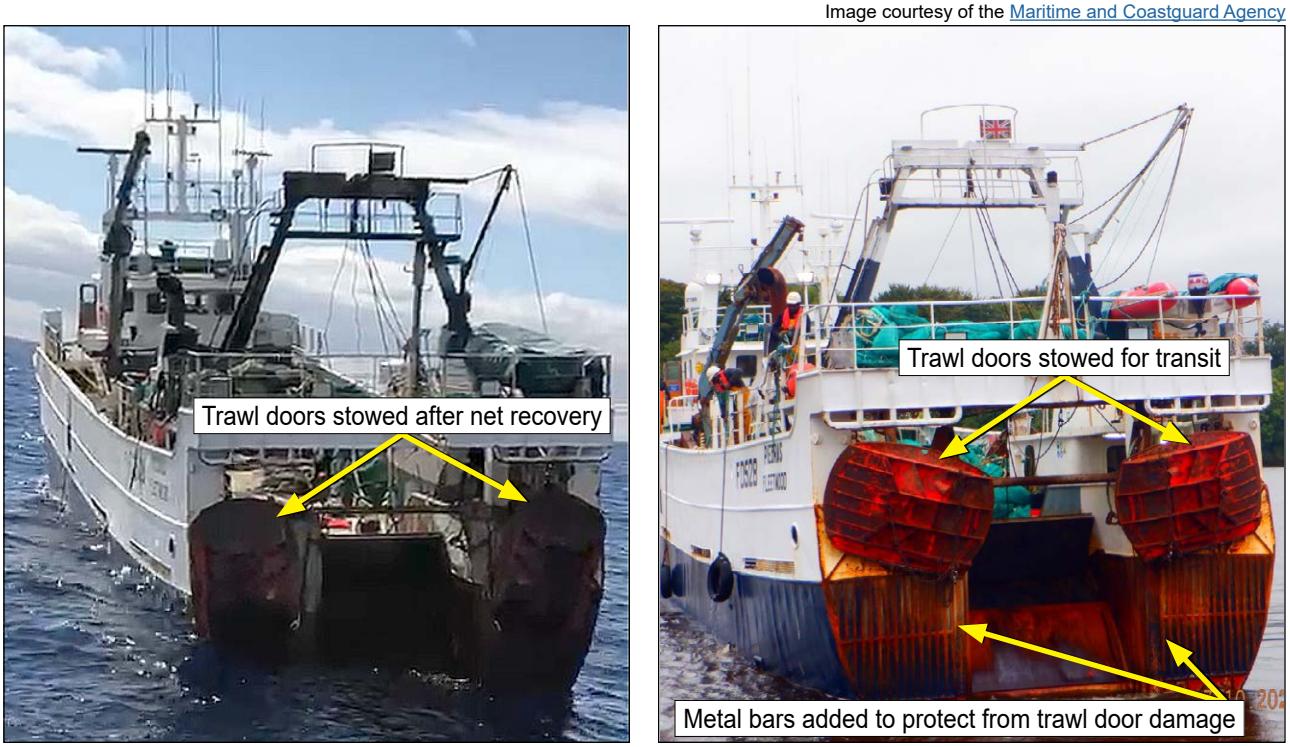


Figure 6: *Piedras* trawl doors

For illustrative purposes only: not to scale

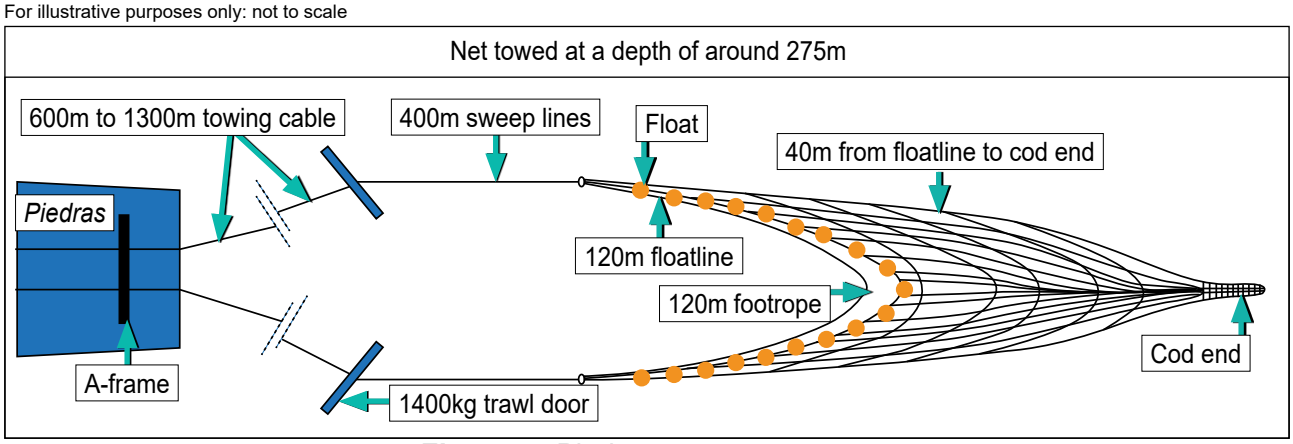


Figure 7: *Piedras* net arrangement

Piedras trawled in deep sea and operated a cyclical process of recovering one net, shooting the other net, processing the fish and carrying out net repairs. On average, each cycle took 3.5 hours to complete. The crew would alternate between the port and starboard nets, making sure there was always one net out and fishing.

A fish gut sluice, known as a trancanil, was located port side aft of the fish processing room. The trancanil **(Figure 8)** was fitted with a manual watertight flap that could be pinned into three separate positions: closed, half open and fully open. At the inboard end of the trancanil was a further watertight flap, which could be fitted to a hopper when in the open position. During the processing stage the crew used the hopper as a receptacle for fish offal, which was then discharged back into the sea via the trancanil. Seawater was pumped into the trancanil to prevent it becoming blocked by the discharging fish offal. The wheelhouse was fitted with a remote trancanil indicator to allow crew to see whether the trancanil was in the open or closed position. The trancanil remained rigged to the hopper during fishing trips and was only secured in poor weather.

Image courtesy of FleetMon

Figure 8: *Piedras* trancanil

Piedras routinely deployed from Marin, Spain for just over 2 months at a time. Regular port calls were normal to offload catches of fish, change over personnel, restock food and water and embark fuel. It was common for *Piedras* to be at sea for between 6 to 14 days before calling in to ports such as Castletownbere and Killybegs, Ireland, or Londonderry, Milford Haven and Newlyn, UK. MCA inspections and surveys were often timed to coincide with UK port visits.

1.4.5 Vessel modifications

In 2002, *Piedras* was re-engined and fitted with a larger propeller shaft (150mm), oil lubricated stern tube and variable pitch propeller. The starboard side auxiliary engine was removed and the forward fish room was enlarged, reducing the size of the cold room by approximately 50%. The bilge system was also modified. In 2007, ten tonnes of fixed ballast was added to the forward end of the engine room. In recent years, *Piedras* had undergone minor updates and upgrades to wheelhouse equipment, ancillary machinery and fishing gear.

1.4.6 Vessel surveys and hull damage

Piedras had last undergone an out of water survey on 14 July 2020, while the vessel was in the Marin dry dock, Spain. On 5 October 2021, the MCA conducted *Piedras*'s third annual survey[5], in Londonderry, Northern Ireland; the MCA inspectors recorded 17 deficiencies and the vessel was detained. On 6 and 7 October 2021, the MCA revisited *Piedras* and noted that all the deficiencies had been rectified. Previous surveys had recorded that watertight doors and vents did not operate properly or were found tied open.

The most recent ultrasound survey of *Piedras*, during the 2020 out of water survey, had measured the thickness of the vessel's hull, deck plates, bottom plating, frames, brackets and longitudinal members. The thickness readings were within tolerance and did not demonstrate substantial corrosion. Historically, the deployment and recovery of the vessel's trawl doors during fishing operations had caused hull damage to *Piedras*, particularly in bad weather. The owner had welded metal bars to the aft transom and hull to protect the steelwork from trawl door damage but, during the 2020 dry docking, damaged hull plating between frames 10 and 14 needed to be replaced; this was due to deformation of the hull caused by the starboard trawl door striking it below the waterline, near the starboard aft freshwater tank **(**see **Figure 5)**.

1.4.7 Vessel stability

Piedras was built to *The Fishing Vessels (EC Directive on Harmonised Safety Regime) Regulations*, which enacted legislation annexed to the *International Maritime Organization (IMO) Torremolinos International Convention for the Safety of Fishing Vessels, 1977*, as subsequently modified by the *Provisions of the 1993 Torremolinos International Convention for the Safety of Fishing Vessels*. The regulations required an intact stability standard.

Approved in July 2012, the stability booklet for *Piedras* stated a draught[6] aft of 4.129m on arrival at fishing grounds and a draught aft of 4.172m on full load departure conditions from fishing grounds.

[5] *Piedras* was issued an International Fishing Vessel Certificate by the MCA on 1 July 2019. Annual surveys were conducted on 20 August 2019, 14 July 2020 (combined with an intermediate and out of water survey), and 5 October 2021.

[6] The depth of a vessel in the water, from the level of the waterline to the lowest point of the hull.

1.4.8 Bilge and seawater cooling systems

Piedras was equipped with two electrically-driven self-priming centrifugal pumps[7] that could be connected to the bilge system **(Figure 9)** and could be operated from independent power supplies. Each pump was capable of pumping around 40 cubic metres per hour with a 25m head[8]. Only one pump at a time could be selected to remove water from the bilges. The forward pump was normally used for fish room duties and as a fire pump, while the aft pump served as the nominated bilge pump. *Piedras* had one engine room bilge suction point at the aft end of the engine room. The engine room main bilge suction pipe and discharge pipes were 5 inches (127mm) in diameter.

For illustrative purposes only: not to scale

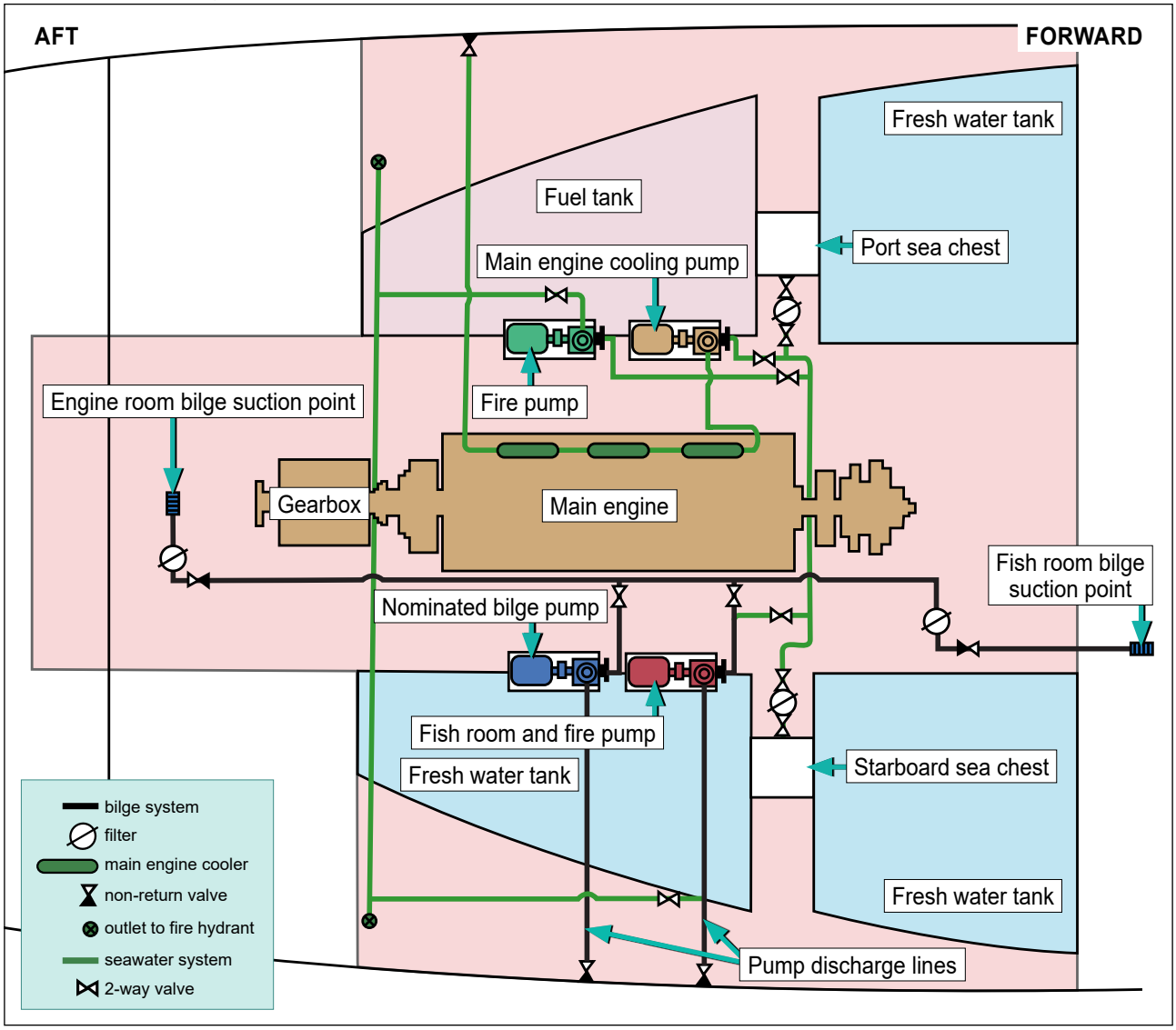


Figure 9: Simplified diagram of the engine room seawater and bilge system

The two sea chests, one on the port side and one on the starboard side, each had a seawater suction intake aligned with the forward end of the main engine. The sea chests were connected to each other by a pipe fitted with various valves that supplied water to several other systems on board; two electrically-driven seawater

[7] A pump that uses the rotation of its impellers to evacuate air from its suction side at startup before commencing its normal pumping mode. The pumps will still operate while drawing in a mixture of water and air.

[8] The vertical height that the pump can discharge at the listed rate.

pumps provided cooling water to the main engine coolers and the aft pump could be configured to supply the vessel's fire main. There were numerous overboard discharges from the engine room, all of which were above the waterline.

During the 2020 dry docking, the side valves associated with the engine room seawater suction and discharge systems were replaced, and their hull connections renewed. The seawater system pipes were also surveyed and replaced where needed.

1.5 *PIEDRAS* SAFETY

1.5.1 Electronic safety devices

Piedras was fitted with a GMDSS suite of radios, float-free Electronic Position Indicating Radio Beacon (EPIRB) and search and a rescue radar transponders (SART). *Piedras*'s EPIRB had floated free and operated correctly; it was subsequently recovered from the scene by L.É. *Samuel Beckett*. The crew had not taken any SARTs to the liferaft, and none were recovered.

1.5.2 Personal lifesaving equipment

Seven types of personal flotation device (PFD) were identified among the 16 recovered from *Piedras*. The PFDs varied in condition from pristine to poor. Thirteen immersion suits were also recovered, of which 12 were the same type; all were in good condition.

1.5.3 Liferafts

The vessel carried two 12-person inflatable liferafts, both of which had been manufactured by Deutsche Schlauchboot GmbH (DSB), a subsidiary of Survitec Group Limited (Survitec): the port side LR97 model was manufactured in August 1999 and the starboard side LR05 model was manufactured in March 2007. Both liferafts had been inspected in December 2021 by Comfer Marin SL, an authorised Survitec service station, and were certified until December 2022.

The port liferaft was not recovered following the accident. An inspection of the starboard liferaft found an expired SOLAS[9] pack. Items with a one-year life expectancy were found to have expired in 2008. Items with a five-year life expectancy were found to have expired in 2012. The certificates provided following the December 2021 inspection had recorded March 2023 expiry dates.

As a result of the investigation's initial findings indicating incorrect servicing routines, Survitec conducted further investigations into DSB liferafts certified by Comfer Marin SL. Survitec inspected a sample of liferafts that had been serviced by Comfer Marin SL during 2022, which were found to have the following defects:

- gas cylinders had not been tested;
- inflation hoses had not been replaced, with some found to be in poor condition;
- emergency pack items such as flares, first aid kits and repair kits had passed their expiry date;

[9] International Convention for the Safety of Life at Sea, 1974.

- internal and external light batteries had passed their expiry date;
- canisters displayed original labels and corroded strapping bands; and
- service record labels had not been completed.

Annual checks by the Capitanía Marítima de Vigo[10] and routine audits undertaken by Survitec before this accident had not identified any significant concerns about Comfer Marin SL's servicing activities.

1.5.4 Vessel safety paperwork

Piedras held a risk evaluation report, produced by a specialist company, that had been reviewed and reissued on 25 March 2022. The report included annexes detailing training and personal protective equipment.

Flooding risk was categorised as of medium probability and of high impact. Mitigations focused on watertight integrity, keeping freeing ports and scuppers clear, keeping bilge areas clear of obstructions and the conduct of periodic drills. The nature of the periodic drills was not specified.

The risk evaluation report also referenced a risk of water ingress through the trancanil and suggested keeping it closed when not in use as a mitigation to this risk.

A muster list assigning crew muster stations, written in Spanish, was held in *Piedras*'s wheelhouse. The muster list also specified emergency roles for some but not all of the crew, which included, first aid duties and calling the coastguard. The muster list did not assign responsibilities for the maintenance of watertight integrity, pumping floodwater or checking for water ingress. There was no specific flood action plan.

There was an on board printed copy of the MCA publication, The Fishermen's Safety Guide (published January 2008), that described safe working practices and emergency procedures for fishermen.

1.6 *VENTURE BREEZE*

1.6.1 Vessel description

Venture Breeze was a Marshall Islands registered 179.9m (LOA), bulk carrier built in 2016. The vessel was managed by Su-Nav Ship Management Limited (Su-Nav), Chennai, India. In late 2022, *Venture Breeze* was sold and renamed *Aegean Spiri*t. Su-Nav retained management responsibilities for the vessel until July 2023.

Venture Breeze was equipped with GMDSS and used an ECDIS[11] for navigation.

1.6.2 Voyage data recorder

Venture Breeze was fitted with a Headway HMT-100A voyage data recorder (VDR), which had also been installed on other vessels managed by Su-Nav. The VDR on board *Venture Breeze* was in date for its annual performance test (APT) and was

[10] Capitanía Marítima de Vigo is the local harbourmaster empowered by the Spanish government's ministry for transport to approve service stations.

[11] Electronic Chart Display and Information System.

designed to provide recordings of navigation data from the most recent 30-day period. The historic VDR data for the *Piedras* accident could not be recovered from *Venture Breeze* for the period 9 May 2022 to 1 June 2022, inclusive.

The MAIB had previously been unable to recover data for another Su-Nav vessel, *Venture Luck*, during a preliminary assessment of the vessel's possible grounding near Londonderry on 9 March 2022. This was due to a technical issue involving the same VDR make and model carried on *Venture Breeze*.

1.7 REGULATION AND GUIDANCE

1.7.1 Regulations and guidance relevant to flooding

Piedras was required to comply with Merchant Shipping Notice (MSN) 1873 (F)[12]. Among other things, section 4 of the Code stated that:

> *the bilge suctions and means of drainage shall be so arranged that water entering any main watertight compartment can be pumped out through at least two independent bilge systems and suctions; and*
>
> *The arrangement and sizing of the bilge system shall be such that the full rated capacity of the pump specified…can be applied to each of the watertight compartments…*[sic]

The Code required muster lists to show the specific duties assigned to individual crew members, including:

> *closing of watertight doors, fire doors, valves, scuppers, overboard chutes, sidescuttles, skylights, portholes and other similar openings in the vessel [sic]*

Practice musters and drills listed in the Code included safe abandonment of the vessel, fire drills, safe launch of lifeboats, liferafts and rescue boats. Training was also to include anchoring, person overboard recovery equipment and pollution prevention drills. The Code's list of training, muster and drill requirements did not include flood management.

Marine Guidance Note (MGN) 596 (F)[13] detailed the safety management responsibilities of fishing vessel owners and skippers, requiring them to:

> *…establish a safety and environmental protection policy which describes how the objectives… will be achieved; and*
>
> *…ensure that the policy is implemented and maintained on the vessel(s) and, if appropriate, in the shore based operation.* [sic]

On emergency preparedness, the owner was guided to *identify potential emergency situations, and establish procedures to respond to them and establish programmes for drills and exercises to prepare for emergency actions*.

[12] The Code of Practice for the Construction and Safe Operation of Fishing Vessels of 24m Registered Length and Over, Amendment No.1, published November 2018.

[13] Fishing Safety Management Code: Helping to improve the management of safety on Fishing Vessels.

Guidance on bilge systems and recommended additional equipment and actions to reduce the risk of catastrophic flooding was provided in MGN 165 (F)[14]. The instructions for actions to take in an emergency included:

- *Immediately try to find the cause of the flooding and shut the right sea valve. If in doubt, close all sea valves until the flooding stops.*
- *Start pumping the bilge as soon as possible.*
- *Do not concentrate on other matters, such as recovering the fishing gear. Deal with the flooding first.*

The Fishermen's Safety Guide carried on board *Piedras* contained a section on flooding, which referenced MGN 165 (F) and asked, *Is your vessel watertight*? The list of checks to determine the answer to this question included:

Inspect the hull regularly for damage and wastage

Close all windows and doors; secure hatches

Carry portable salvage pumps and a good length of suction hose

A revised Fishermen's Safety Guide was published in May 2014 and, following an MAIB recommendation after the investigation into the flooding and foundering of *Ocean Way* (see 1.8.4), was further revised in May 2020[15] to provide additional guidance on the preparation of risk assessments and a flood action plan. Details of the 2020 revision of the Fishermen's Safety Guide on flood action planning are at **Table 1**.

[14] Fishing Vessels: The Risk of Flooding, published 1 July 2001.

[15] https://www.gov.uk/government/publications/fishermens-safety-guide

Primary Action	Secondary Action	Vessel Dependent Action	Skipper/Crew Awareness
Sound Alarm	• Crew to muster stations with warm clothing/lifejackets on		• Be aware of muster station • Understand most suitable place to store lifejackets • Access lifejackets quickly • Know how to don lifejackets • Be aware of suitable clothing
Check for Water ingress	• Check location and amount of water ingress • Take tank soundings, it might be a fore peak tank breach rather than a hold	• Monitor bilge pumps and alarms	• Be aware of how to check alarms • Be aware of methods for stopping water ingress • Be aware how to take tank soundings
Inform Coastguard via DSC	• Send DSC Alert and follow up with VHF call		• Be aware of correct procedure
Prepare to fight flooding	• Keep skipper aware of water levels/ speed of ingress • Collect damage control kit	• Consider if bailer/ bucket will remove water • Consider if pumps will cope • Consider if additional pumps will help • Request portable pumps	• Be aware of bilge pump capabilities • Be aware how to operate bilge pumps • Able to conduct effective communication with skipper • Be aware how to use damage control kit
Prepare LSA		• Secure liferafts/ rescue boats in safe area • Provide safe means of boarding	• Know how to release and deploy liferaft
Consider Abandon Ship	• Close oil and fuel vents • Consider stability of vessel	• Consider evacuation of non-essential crew	

Table 1: Fishermen's Safety Guide flood action plan

1.7.2 International Labour Organization Work in Fishing Convention

On 26 March 2019, the MCA issued MGN 587 (F) Health and Safety Amendment 1: Responsibilities of Fishing Vessel Owners, Managers, Skippers and Fishermen. Based on ILO 188, this notice contained information and guidance for health and safety on board UK fishing vessels and included a list of responsibilities for vessel owners, operators, managers, skippers and fishermen. The MGN required a documented risk assessment for all fishing vessels, while those over 24m also needed to have documented safety procedures.

Paragraph 4.3 of MGN 587(F) stated that, among other responsibilities, the measures taken by owners of fishing vessels should include:

- *providing and maintaining plant, machinery and equipment and systems of work that are, so far as is reasonably practicable, safe and without risk to health; and*

- *providing any necessary information, instruction, training and supervision to ensure the health and safety of fishermen and that other persons on board the fishing vessel who may be affected by their acts or omissions.* [sic]

On risk assessment, MGN 587(F) stated that:

- *The fishing vessel owner must ensure that a suitable and sufficient risk assessment has been carried out and documented (see para 5.7) for all work activities on the fishing vessel. Measures should be taken to reduce risks as far as is reasonably practicable.*

- *The skipper and crew should be closely involved with the risk assessment, to take advantage of their practical knowledge and experience of the work, what can go wrong, and how to prevent that. But the fishing vessel owner has overall responsibility for ensuring that the risk assessment has been done and acted upon.*

- *The crew should be informed of the findings of the risk assessment and any measures taken for their protection and should be involved in reviewing the risk assessment…*

- *The risk assessment must be documented so that it is available to the skipper and crew of the vessel, and to authorised persons during inspections. A written risk assessment (hard copy or electronic) will help to ensure that when it is reviewed nothing is missed. Even if no changes are required, any documentation should be annotated to show that a review has been carried out.* [sic]

1.7.3 Watchkeeping

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers,1978 provided guidance on watchkeeping arrangements and principles, affirming that:

> *It is essential that officers in charge of the navigational watch appreciate that the efficient performance of their duties is necessary in the interests of the safety of life,…at sea…*[sic]

The master of every seagoing ship was required to ensure that:

> *the ship's radio station is adequately manned for the purpose of exchanging general communications – in particular public correspondence, taking into account the constraints imposed by the duties of those authorized to operate it;*

Further, and in the event that a vessel received a distress alert from another vessel:

- *the radio operator on watch should alert the master and, if appropriate, the radio operator designated as having primary responsibility for radiocommunications during distress incidents*

- *the radio operator designated as having primary responsibility for radiocommunications during distress incidents should evaluate the situation and immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.*[16]

1.8 PREVIOUS SIMILAR ACCIDENTS

1.8.1 *Diamond D* – flooding, capsize and sinking

On 16 August 2020, the 15.67m prawn trawler *Diamond D* sank after suffering hull damage and subsequent water ingress while trying to uncross its towing wires. The two crew abandoned the vessel, boarded its liferaft and were subsequently rescued uninjured (MAIB report 2/2022[17]).

The MAIB investigation found that the towing lines had become crossed during trawl gear recovery and established that the trawl doors had impacted the wooden hull repeatedly during actions to uncross these wires, which almost certainly allowed seawater ingress. The crew had been fully engaged in uncrossing their trawl wires and then recovering their fishing gear and did not realise that their vessel was taking on a list to starboard. The bilge alarm went unnoticed as the two crew were out on deck for a prolonged period. By the time the crew discovered the flood their vessel was already in a near capsize condition. The automatic electric bilge pumps had operated though were unable to keep up with the rate of water ingress. The exact source of the flooding was never determined. The crew abandoned ship to the liferaft shortly before *Diamond D* capsized and foundered.

Although no recommendations were made, the report highlighted crew preparations for flooding emergencies, the need to conduct regular checks below the waterline and the benefits of wearing PFDs at all times while working on deck.

1.8.2 *Riemda* – sinking leading to total constructive loss

On 23 December 2020, the 32.90m fishing vessel *Riemda* sank while recovering its net in the English Channel. All five crew members were rescued and survived the accident without serious injury. The Dutch Safety Board (DSB) report into the investigation was published in May 2022[18].

---

[16] The International Telecommunication Union Radiocommunication Sector is the United Nations body responsible for radiocommunications.

[17] https://www.gov.uk/maib-reports/flooding-capsize-and-sinking-of-prawn-trawler-diamond-d

[18] DSB https://www.onderzoeksraad.nl/en/page/18285/loss-of-fishing-vessel-23-december-2020

The DSB investigation found that *Riemda* heeled over to starboard while hauling in one of its fishing nets, immersing the deck to a depth of 1.5m. The starboard bilge pump was blocked by pieces of cordage and failed to function. Efforts to restart the bilge pump were unsuccessful. As the vessel heeled further to starboard, the fish waste discharge chute started to take on water. When the angle of list to starboard reached more than 50° the engine room air inlet went underwater, causing the stern of the vessel to fill completely with water. The crew abandoned ship when the vessel was lying at an angle of list of 90° in the water. *Riemda* was recovered 3 months after the accident but had suffered irreparable damage.

The Dutch Ministry of Infrastructure and Water Management was recommended to tighten legislation on compartment watertight integrity and adjust the regulations to guarantee bilge system resilience when a vessel experiences a significant list. The Fisheries Sector Council and international fisheries sector organisations were recommended to share the lessons from this case and increase awareness about hull openings in watertight compartments.

1.8.3 *Dorneda* – capsize and sinking

On 10 July 2018, the 42.74m deep-sea trawler *Dorneda* capsized and sank while recovering its net off the coast of Argentina. One crew member was recovered deceased, one crew member was missing, presumed dead, and 25 crew survived (CIAIM[19] report 08/2021[20]).

The CIAIM investigation established that modifications to *Dorneda* had led to the fish waste chute being closer to the water level than at build. *Dorneda* was overloaded on its departure from port and had a permanent list to starboard; the discharge from the fish waste chute was also on the starboard side of the vessel. In preparation for fishing operations, the fish waste chute had been left open and connected up to fish processing machinery via a fish waste conveyor system. This allowed a clear route for seawater to enter the fish processing room. As water entered the fish processing room it accentuated the permanent list and then spread into the engine room through watertight doors that had been left open.

Engine room bilge alarms did not operate, and the flooding went unnoticed during net recovery. Once the flood was discovered the crew could not close the fish waste chute due to the fish waste conveyor system obstructing its watertight lid. Watertight integrity was not maintained and the flood continued to spread. The abandonment of *Dorneda* was confused and chaotic. *Dorneda* was unable to recover from the heavy list to starboard and capsized and sank.

The CIAIM report highlighted the risks of immersing the fish waste discharge chute that had been exposed by long-term modification work and overloading. The report further highlighted that watertight integrity was not maintained.

The owners were recommended to establish safer working procedures in the fish processing room on all its vessels and verify that watertight integrity could be achieved quickly (including the fish waste hopper). The General Directorate of the Merchant Marine was recommended to ensure that the closure mechanisms of fish waste hoppers were accessible, operable and compliant with applicable regulation.

---

[19] Investigation report by the Comisión Permanente de Investigación de Accidentes e Incidentes Maritimos – Permanent Commission for Maritime Accidents and Incidents. CIAIM is the Spanish marine safety investigation authority and has similar roles and responsibilities to that of MAIB.

[20] https://www.transportes.gob.es/recursos_mfom/comodin/recursos/ic_08-2021_dorneda_web_.pdf

1.8.4 *Ocean Way* – flooding and foundering

On 3 March 2017, the 23m fishing vessel *Ocean Way* foundered 18nm north-east of Lerwick, Scotland after flooding (MAIB report 10/2018[21]). The vessel's five crew were rescued uninjured.

Ocean Way's starboard net had come fast on a seabed obstruction. During the recovery of the fishing gear the port trawl door struck the hull heavily, causing a flood. The crew were unable to access the lower part of the aft compartment, which was below the accommodation area, to inspect for damage. Despite its size, the aft compartment was not fitted with a bilge suction line and so the crew used portable pumps to deal with the flooding. However, the ingress of water exceeded the pumping effort and *Ocean Way* succumbed when an escape hatch submerged and the vessel suffered overwhelming downflooding.

The MCA was recommended to clarify guidance on the requirement for bilge suctions in watertight compartments and update the Fishermen's Safety Guide to include guidance on the preparation for, and emergency response to, flooding emergencies.

1.8.5 *Vertrauen* – flooding and sinking

On 19 July 2001, the 23m wooden fishing vessel *Vertrauen* sank 75 miles north-east of Peterhead, Scotland after flooding (MAIB report 29/2002[22]). The crew of four was rescued.

Vertrauen's port net became snagged on a seabed obstruction and the crew spent several hours trying to haul it, during which the vessel started to flood. Damage caused by contact between the port trawl door and the hull was the most likely source of the ingress, although flooding via pipework could not be ruled out. The bilge alarm did not alert the crew to the flooding because the audible signal was not working at the time of the accident. By the time the crew discovered the floodwater, it was too deep for them to be able to locate the source. The two electrically-driven bilge pumps were disabled when the floodwater reached the associated transformer box.

The flooding was not contained and the crew abandoned ship; they were rescued seconds before *Vertrauen* sank by the stern.

The MCA was recommended not to accept two electrically-driven bilge pumps as being powered by separate means unless the electricity supply for each was completely self-contained.

[21] https://www.gov.uk/maib-reports/flooding-and-sinking-of-stern-trawler-ocean-way

[22] https://www.gov.uk/maib-reports/flooding-and-sinking-of-twin-trawler-vertrauen-about-75-miles-off-peterhead-scotland

SECTION 2 – ANALYSIS

2.1 AIM

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

2.2 OVERVIEW

Piedras was fishing with its port net out and the most recent catch processed when the crew first became aware of the flooding of the engine room. It is unclear what caused the engine room to flood and why the crew's attempts to isolate the engine's cooling water system and efforts with the bilge pump were unsuccessful in controlling the flood. Once the engine room was lost it is likely that secondary flooding into the trancanil and through *Piedras* led to the vessel's eventual capsize and foundering.

Once the alarm was raised and the order to abandon ship given, the crew managed to transfer over to *Armaven Uno* without injury despite the failure of the port liferaft to fully inflate. It is possible that the port liferaft failed to function because it had not been serviced correctly for many years preceding the accident. *Venture Breeze* did not respond to the distress call or subsequent calls from the Valentia Island coastguard because watchkeeping standards were not consistently followed.

This section of the report will analyse the possible causes of the flood, the reasons why the flood was not controlled and the eventual capsize and foundering of *Piedras*. It will also consider other contributory safety issues, including the distress calls, watchkeeping standards, voyage data recording, lifesaving equipment and vessel abandonment.

2.3 THE FLOODING

2.3.1 Potential causes

The crew of *Piedras* were unable to identify the initial source of the flooding into the engine room.

The investigation analysed potential causes of the flooding and tested several hypotheses, rating the probability of each scenario based on the position of flooding, the material state of *Piedras* and whether the actions of the crew affected the flood rate. The summary of this analysis is at **Table 2**.

The lack of sufficient evidence, including *Piedras* itself, meant that the exact cause of the initial flooding could not be determined. Similar to the probable failure mechanisms considered in the *Vertrauen* and *Diamond D* cases, it is possible that the hull plating was holed or cracked by one or both trawl doors during their last recovery. However, the other potential means of flooding that were analysed cannot be ruled out. If trawl door collision did occur it went unheard by the crew of *Piedras*, possibly due to the general noise levels experienced during fishing operations.

Hypothesis description and effect	Consideration for	Consideration against	Likelihood[23]
Seawater cooling pipe failure Uncontrolled water ingress into engine room from damage pipe	Method could deliver the volumes of floodwater noted	No evidence of engine overheating, indicating seawater cooling system to engine was not compromised System isolations made no apparent change to rate of flooding	Remote
Hull damaged by trawl doors Hull plate hole or crack, leading to uncontrolled water ingress into engine room	Evidence of previous trawl door damage to hull plating (under engine room) High stress impact from trawl door edge could generate a crack to hull plating Approximate location of floodwaters consistent with previous damage Common cause of catastrophic hull damage in previous accidents	No trawl door collision noted by crew before flooding Two-hour duration between last trawl door recovery and engine room bilge alarm sounding	Possible
Inlet pipe failure; hull side of isolation valves Uncontrolled water ingress into engine room	System isolations made, no apparent change to rate of flooding i.e. flooding was from pressure side of valve	Inlet pipes replaced in 2018 Thickness survey, conducted in 2020, recorded inlet pipes in good condition Observed position of flooding inconsistent with location of inlet pipes	Remote
Stern seal failure Uncontrolled water ingress into engine room via stern tube (around propeller shaft)	Observed position of flooding near to stern tube	Observed flood rate exceeds likely volumes from this source No loss of oil from stern tube system noted by crew No oil leak into engine room noted by crew No recent history of stern seal leakage noted by crew	Remote
Loss of propeller shaft Uncontrolled water ingress into engine room via stern tube	Observed position of flooding near to stern tube	No evidence of shaft loss, engine overspeed or loss of propulsion High rate of flooding would be expected	Remote
Deliberate act Uncontrolled water ingress into engine room		No evidence	Remote

Table 2: MAIB flood source hypotheses

[23] Rated, from low to high, as impossible, remote, possible, probable, very probable.

2.3.2 Response to the flooding

Piedras was fitted with two independently powered bilge pumps that could be configured to pump out the engine room and fish room. This arrangement complied with the bilge pumping requirements of the Code and provided the means to deal with some degree of flooding in these compartments.

Although the crew followed the duties assigned by the muster list, these procedures did not focus on how to deal with a flood. Nevertheless, measures described in MGN 165 (F) on *what to do in an emergency* were partially followed: bilge pumps were used as soon as possible and sea valves were closed. However, MGN 165 (F) also advised trying to find the cause of the flood and concentrating on the flood before recovering fishing gear; this was not done. It is possible that earlier investigation into the source of the flood might have allowed time to identify and make temporary arrangements to stem the water flow before the water level became too high.

The superseded 2008 Fishermen's Safety Guide carried on board *Piedras* did not include information about a flood action plan **(**see **Table 1)**, which had been detailed in the revised 2020 guide that was current at the time of the accident. Consequently, lessons learned from the *Ocean Way* accident that led to the addition of a flood action plan in the 2020 revision of the Fishermen's Safety Guide were not available to *Piedras*'s crew. However, the ability of the crew to communicate in English was limited and it is highly likely they would have been unable to make use of the Fishermen's Safety Guide or understand the vessel's risk assessments. It was apparent that the vessel's safety documentation did not fully comply with MGN 587 (F) or MGN 596 (F) as a *safety and environmental protection policy* was not fully established, *potential emergency situations* were not identified and *drills and exercises to prepare for emergency actions* were not stated.

Despite the length of time taken for *Piedras* to sink, watertight and weathertight doors were left tied open before, during and after the vessel's abandonment and the status of the trancanil, as referenced in the on board risk assessment, was not checked. Thus, the Code's requirements to ensure that muster list duties included the closing of watertight doors and overboard chutes were not followed. During their preparations to abandon *Piedras*, the crew did not monitor ship bilge pump discharges, identify the source of the water ingress or apply effective damage control measures. Although the crew had received some training and carried out drills, it is highly likely that the lack of flood response training meant the crew were ill-prepared to deal with this emergency.

2.3.3 Floodwater management

The MAIB analysed the floodwater management actions taken by the crew of *Piedras* and tested three hypotheses and rated the probability of each scenario. The summary of this analysis is at **Table 3**. Insufficient evidence, including the lack of *Piedras* itself, meant it was not possible to determine the exact reason why the attempts to combat the flooding were unsuccessful. It is apparent that the volume of water coming into the engine room exceeded the amount being pumped overboard. It was not established whether the ingress exceeded the capabilities of the bilge pumps or if the bilge pumps and/or bilge system were defective.

Hypothesis description and effect	Consideration for	Consideration against	Likelihood
Bilge pumps did not work; discharge not open Floodwaters not discharged	No reports of overboard discharge having been checked, therefore rate of water discharge unknown Flood overwhelmed the engine room	Engine room bilge pump was reported running; fish room pump was reported running Overheating of engine room bilge pump could be caused by high operating load, i.e. high pumping rate	Possible
Bilge pump suction blocked or partially blocked Floodwaters partially discharged or discharged up to the point of blockage/partial blockage	No reports of overboard discharge having been checked for water flow, therefore rate of water discharge unknown Overheating of engine room bilge pump could also be caused by low flow rate Flood overwhelmed the engine room	Fish room pump did not overheat	Possible
Bilge pumps worked correctly but rate of floodwater ingress was greater than pump's capacity Floodwater accumulation in engine room increased	Overheating of engine room bilge pump could be caused by high operating load, i.e. high pumping rate for long period	No reports of overboard discharge having been checked, therefore rate of water discharge unknown Use of emergency salvage pump did not appear to alter the rate of flooding	Possible

Table 3: MAIB floodwater management hypotheses

2.4 THE FOUNDERING

Piedras started to list to port when the engine room flooded, which fully submerged the trancanil. During the abandonment, floodwaters were seen on the deck above the engine room. It was not possible to determine if this water was coming directly from the engine room accessways or via the trancanil, or both. In the cases of both *Riemda* and *Dorneda* the fish waste chute was found to be the source of the floodwater; it is therefore possible that, with the hopper still in place and the watertight flap pinned open, the trancanil in *Piedras* was a significant source of secondary flooding that deluged the fish processing room and spread through the vessel.

Although both of the main fish hatches were shut, some watertight doors above the waterline remained tied open. It is possible that other internal watertight doors may also have been left open. With the vessel abandoned, no one was available to check or reinstate these barriers to stop the spread of primary and secondary floodwaters. The shipped waters caused *Piedras* to become unstable and, 2.5 hours later, capsize to port before the loss of buoyancy caused the vessel to sink by the stern.

As *Piedras* was built to intact stability with no damage stability requirements, it is impossible to know to what degree improved structural watertight separation would have prevented or delayed the vessel's foundering.

2.5 DISTRESS CALLS AND THE RESPONSE

The 2-hour delay between the crew of *Piedras* being alerted to the flood and a DSC distress alert being sent increased the chances of the vessel's loss. The early warning about the flood by the crew of *Piedras* to *Armaven Uno* did allow a good response to their rescue but did not help save the vessel itself. In delivering the alert using WhatsApp rather than the GMDSS DSC system, there was a period of 2 hours when only one other vessel was aware of the distress situation *Piedras* was experiencing.

The response to the GMDSS DSC alert by the Valentia Island coastguard was rapid and it is possible that an earlier alert might have provided enough time to land the salvage pumps carried on board the rescue helicopter on *Piedras* for the crew to deploy. However, it is unknown whether this would have made any tangible difference to the rate of flooding that *Piedras* experienced.

It is unclear why *Venture Breeze* neither noted nor responded to both the MF DSC alert issued by *Piedras* and the "Mayday Relay" broadcast by the Valentia Island coastguard. The GMDSS equipment on *Venture Breeze* was found to have functioned correctly, although no record of the DSC alert was recovered. The Valentia Island coastguard's routine DSC message to *Venture Breeze* was recovered from on board *Venture Breeze*. No technical reason for the crew's lack of response was evident. The investigation considered it likely that the quality of watchkeeping on board the vessel did not meet the required standard. Consequently, the opportunity for emergency assistance from *Venture Breeze* was not available to *Piedras*.

Given that *Venture Breeze* was within visual range of *Piedras*, a distress call from the skipper, on the very high frequency (VHF) radio by either DSC or via Channel 16[24], would have been appropriate in addition to the MF DSC distress calls. Distress smokes and flares are often another efficient way of indicating distress to nearby vessels that might have missed the original GMDSS messages.

2.6 VOYAGE DATA RECORDING

Venture Breeze was fitted with a VDR but, despite extensive efforts, no data could be recovered for the period of the *Piedras* accident. The availability of VDR data might have provided insight into the actions on board *Venture Breeze* while *Piedras* was in distress.

A VDR health check similar to an APT was conducted and established that the equipment was functioning correctly. The investigation could not replicate the VDR fault and found no evidence to suggest that the data was tampered with. It is possible that attempts to download VDR data by the ship's crew on being instructed to so might have served both to discover that data was not being recorded and to restart correct recording of data.

2.7 ABANDON SHIP AND THE RESCUE

The abandonment of *Piedras* was severely hampered when the port liferaft failed to operate correctly. Post-accident examination of the starboard liferaft found that it had not been fully serviced since its manufacture in 2007 and the investigation

[24] VHF Channel 16 (156.8 megahertz) was designated as an international distress, safety and calling radio frequency.

considered it highly likely that the port liferaft would have had a similar service history. The subsequent investigation by Survitec into the approved liferaft service station found that multiple liferafts had been incorrectly serviced. It is therefore possible that the failure of the port liferaft was due to a lack of servicing during the 14-year period between 2008 and 2022. The owners of *Piedras*, like many other ship owners and skippers and the MCA, had been reliant on certification from the authorised service station. It was highly fortunate that the starboard liferaft did function and that this allowed the safe abandonment, rescue and survival of the entire crew.

Although the abandonment of *Piedras* was not assisted by checklists and muster lists that assigned specific responsibilities during an emergency, all 11 members of the crew survived the accident. However, some crew members put themselves at greater risk of drowning and/or cold water shock by wearing their PFDs and immersion suits incorrectly.

SECTION 3 – CONCLUSIONS

The analysis of *Piedras* accident identified several safety issues, detailed in section 3.1 below, and resulted in the following conclusions:

1. *Piedras*' engine room flooded; the crew never identified the source of the floodwater, which remains unknown. It is possible the water ingress was caused by damage from an unnoticed trawl door strike, but other sources cannot be ruled out. [2.3.1]

2. It is possible that *Piedras* suffered secondary flooding due to the trancanil being open to the sea. Floodwater spread to other compartments and led to the capsize and foundering of the vessel. [2.4]

3. The crew of *Piedras* did not have an effective flood action plan or relevant training. [2.3, 2.4]

4. It is likely that the multinational crew of *Piedras* did not understand the risk assessments and other safety documents held on board due to language issues. [2.3]

3.1 SAFETY ISSUES NOT DIRECTLY CONTRIBUTING TO THE ACCIDENT THAT HAVE BEEN ADDRESSED OR RESULTED IN RECOMMENDATIONS

1. The port liferaft on board *Piedras* failed to function as designed, possibly due to a lack of effective servicing. [2.7]

2. *Venture Breeze* did receive a routine DSC call from the Valentia Island coastguard but did not respond to it. [2.5]

3. It is likely that the crew of *Venture Breeze* did not respond to either the MF DSC distress call from *Piedras* or subsequent calls from the Valentia Island coastguard because the quality of their watchkeeping did not meet the required standards. [2.5]

4. That VDR data from *Venture Breeze* could not be recovered and replayed for the period of the accident. [2.6]

SECTION 4 – ACTION TAKEN

4.1 MAIB ACTIONS

- On 29 July 2022, the Chief Inspector of Marine Accidents wrote to the chief executive officer of **Survitec Group Limited** to issue the following recommendations to:

  2022/129 *Ensure that the corrective actions identified during the audit of its authorised service station 375, in July 2022 are verified as completed and that there is an appropriate level of oversight to confirm that the future servicing of liferafts by this station is rigorous and in accordance with statutory requirements.*

  2022/130 *Take urgent action, as appropriate, to provide robust assurance that all liferafts serviced by the authorised service station 375 within the past 5 years are fully functional and comply with statutory requirements. This should include informing all affected customers of the potential risks that their liferafts may not be compliant and of any immediate actions required to ensure their effectiveness.*

  These recommendations were accepted by **Survitec Group Ltd** (see section 4.2).

- On 24 August 2023, the **MAIB** issued Safety Bulletin 2/2023[25] **(Annex A)** with the following recommendations:

  ***Survitec Group Limited** is recommended to:*

  S2023/103 *Distribute a copy of this safety bulletin to all vessel owners and operators that have had Deutsche Schlauchboot GmbH liferafts certified by the service station Comfer Marin SL during the period 1 January 2017 to 30 June 2022 and continue to take actions to urgently address recommendation 2022/130.*

  ***All vessel owners and operators that have had DSB liferafts certified by the service station Comfer Marin SL during the period 1 January 2017 to 30 June 2022** are recommended to:*

  S2023/104M *Immediately contact their nearest approved Survitec liferaft service station to arrange for the liferafts to be urgently re-inspected and serviced to ensure they are fully functional and comply with statutory requirements.*

- On 20 December 2022, the Chief Inspector of Marine Accidents wrote to the chief executive officer of **Su-Nav Ship Management Limited** to suggest that the organisation:

  conduct a check of VDR data (including images and audio) records for the full preceding 30 days, during the next VDR Annual Performance Test for all vessels in your fleet carrying the Headway HMT-100A VDR. It is important that this check does not just verify that the data set is available but also that a full replay of the data can be made.

[25] https://www.gov.uk/maib-reports/safety-warning-issued-about-servicing-and-certification-after-a-liferaft-failed-to-inflate-during-an-emergency

take immediate action to ensure that the standards of watchkeeping on board the Venture Breeze are compliant with statutory requirements, with particular regards to maintaining a good lookout on all radio distress equipment and the response to emergency situations.

These suggestions were acknowledged by **Su-Nav Ship Management Limited**.

- On 28 June 2023, the Chief Inspector of Marine Accidents wrote to the Spanish deputy assistant director for Safety, Pollution and Maritime Inspection in the General Directorate of the Merchant Marine to highlight issues regarding the servicing and certification of the liferafts on board *Piedras*.

- On 3 June 2024, the Chief Inspector of Marine Accidents wrote to Nia Ltd to suggest that the organisation takes steps to:

  Ensure it adopts a formal flood action plan and thorough muster list that incorporates watertight integrity checks and implements crew training in flood response for any future ships it owns.

  Ensure that risk assessments are developed in collaboration with future crew and documented in a way that is understood by the crew and adapted to their language abilities as required.

- The **MAIB** has also issued a safety flyer to the fishing industry **(Annex B)**.

4.2 ACTIONS TAKEN BY OTHER ORGANISATIONS

Survitec Group Limited has:

- In July 2022, conducted an audit of the approved liferaft service station and subsequently terminated its approval of the station to act as a Survitec liferaft servicing provider.

- Identified the liferafts serviced by the approved liferaft service station over the preceding 5 years.

- In November 2022, issued Survitec Alert Service Bulletin 13/22 – *A LR 07 liferaft: Immediate recall of liferafts serviced by Comfer Marin SL.*

- Contacted the Capitania Marítima de Vigo[26] to advise them of the alert service bulletin and inform them that Comfer Marin SL is no longer an approved Survitec service agent.

- Undertaken an initial investigation of the issues identified by the MAIB by inspecting a sample of liferafts serviced in 2022 by Comfer Marin SL and rectifying the defects found.

- Produced, and started working through, a plan to conduct focused inspections of impacted liferafts by a Survitec-owned service station.

[26] The local harbourmaster empowered by the Spanish government's ministry to approve service stations.

The **Marshall Islands Maritime Administrator** has:

- On 29 December 2022, contacted Su-Nav to note the concerns highlighted in the MAIB letter dated 20 December 2022 and requested action to be taken on navigational watchkeeping standards and the performance of VDRs fitted to ships flagged to the Marshall Islands under its management.

- Contacted Su-Nav to gain further details of the accident involving *Venture Luck* on 9 March 2022.

The **Ministerio de Transportes, Movilidad y Agenda Urbana** has:

- Confirmed, through the Capitanía Marítima de Vigo, that Comfer Marin SL is no longer authorised to operate as a liferaft inspection/service station for DSB/Survitec liferafts.

- On 15 September 2023, issued a letter to all IMO member states informing them of the serious risk to the safety of life at sea that could be posed by the lack of proper maintenance of liferafts.

SECTION 5 – RECOMMENDATIONS

In view of the actions already taken, no recommendations have been made.

MAIB Safety Bulletin SB2/2023, issued 24 August 2023

MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

SAFETY BULLETIN

SB2/2023 AUGUST 2023

Extracts from The United Kingdom Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 Regulation 5:
"The sole objective of a safety investigation into an accident under these Regulations shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of such an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."

Regulation 16(1):
"The Chief Inspector may at any time make recommendations as to how future accidents may be prevented."

Press Enquiries:
+44 (0)1932 440015

Out of hours:
+44 (0)300 7777878

Public Enquiries:
+44 (0)300 330 3000

NOTE
This bulletin is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

All bulletins can be found on our website:
https://www.gov.uk/maib

For all enquiries:
Email: maib@dft.gov.uk
Tel: +44 (0)23 8039 5500

Potential failure of Deutsche Schlauchboot GmbH (DSB) liferafts serviced by Comfer Marin SL, Marin, Spain identified following the foundering of the fishing vessel *Piedras* (FD 528) south-west of Mizen Head, the Republic of Ireland on 1 June 2022

Recovered *Piedras* starboard liferaft

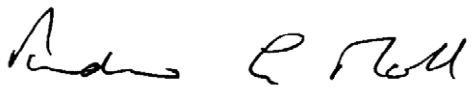
MAIB SAFETY BULLETIN 2/2023

This document, containing safety lessons, has been produced for marine safety purposes only, on the basis of information available to date.

The Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 provide for the Chief Inspector of Marine Accidents to make recommendations at any time during the course of an investigation if, in his opinion, it is necessary or desirable to do so.

The Marine Accident Investigation Branch is carrying out an investigation into the foundering of the fishing vessel *Piedras* (FD 528), 78 nautical miles south-west of Mizen Head, the Republic of Ireland, on 1 June 2022.

The MAIB will publish a full report on completion of the investigation.



Captain Andrew Moll OBE
Chief Inspector of Marine Accidents

NOTE

This bulletin is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall not be admissible in any judicial proceedings whose purpose, or one of whose purposes, is to apportion liability or blame.

This bulletin is also available on our website: www.gov.uk/maib
Press Enquiries: 01932 440015 Out of hours: 0300 7777878
Public Enquiries: 0300 330 3000

BACKGROUND

On 1 June 2022, the engine room of the UK registered stern trawler *Piedras* (FD 528) flooded while fishing 78 nautical miles south-west of Mizen Head, the Republic of Ireland in Beaufort force 3 winds and smooth seas. The crew of *Piedras* were unable to contain the flooding and the skipper gave the order to abandon the vessel. The crew manually released the port liferaft and pulled the painter, but it failed to inflate correctly. The starboard liferaft was successfully launched by the same method. The crew used this liferaft to transfer to a nearby fishing vessel. *Piedras* capsized and sank over 2.5 hours later.

INITIAL FINDINGS

MAIB's investigation identified that *Piedras* was equipped with two 12-person SOLAS[1] approved liferafts manufactured by Deutsche Schlauchboot GmbH (DSB), a subsidiary of Survitec Group Limited (Survitec).

The port liferaft carried on board *Piedras* was an LR97 model and the starboard liferaft was an LR05 model. The annual certification[2] for both liferafts had been issued by the marine liferaft service station Comfer Marin SL (identity number 50826; previously 375), in Marin, Spain. Comfer Marin SL had been accredited by Survitec as one of its approved liferaft servicing agents.

It was not possible to determine the cause of the port liferaft's failure to deploy correctly, as it was not recovered after the accident. It was last observed drifting in an inverted orientation, having apparently released from its canister and partially inflated **(Figure 1)**.

Figure 1: The port liferaft, floating inverted and partially inflated

Subsequent examination by the MAIB of the SOLAS A[3] pack in the recovered starboard liferaft **(Figure 2)** found that:

- the first aid kit had not been replaced since it was supplied in 2007;
- the liferaft repair kit had expired in September 2008;

[1] International Convention for the Safety of Life at Sea, 1974, as amended.

[2] Merchant Shipping Notice 1873 Amendment No.1 (F) – The Code of Practice for the Construction and Safe Operation of Fishing Vessels of 24m Registered Length and Over – stated that every inflatable liferaft must be serviced at intervals not exceeding 12 months and in accordance with Marine Guidance Note 548 (M&F) Life-Saving Appliances – Inflatable SOLAS Certificated Liferafts, Lifejackets, Marine Evacuation Systems and Repair of Inflated Rescue Boats – Servicing Requirements and Approved Service Stations.

[3] Refers to liferafts fully loaded with food and water rations, flares, and a first aid kit.

- the torch batteries had expired in January 2010;
- all of the pyrotechnics had expired in March 2010; and
- all of the food and water supplies had expired in January 2012.

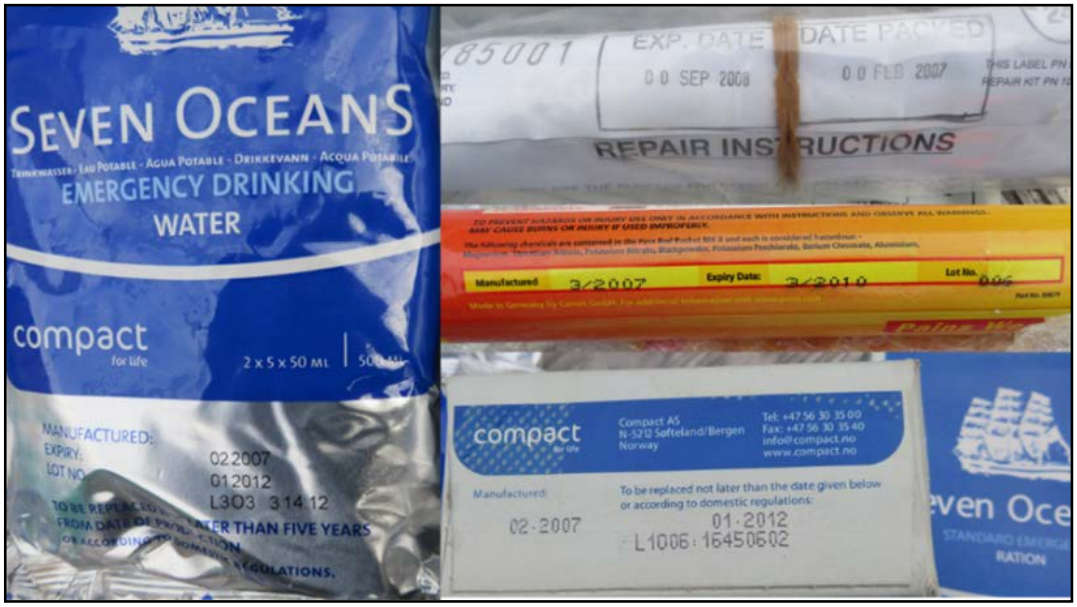


Figure 2: Examples of the expired consumable items in *Piedras*'s starboard liferaft

The starboard liferaft had not been correctly serviced since its manufacture in March 2007, despite having been routinely certified by Comfer Marin SL.

Survitec conducted further investigations into DSB liferafts certified by Comfer Marin SL and inspected a sample of liferafts that had been serviced by Comfer Marin SL during 2022, which were found to have the following defects:

- gas cylinders had not been tested;
- inflation hoses had not been replaced, with some found to be in poor condition;
- emergency pack items such as flares, first aid kits and repair kits had passed their expiry date;
- internal and external light batteries had passed their expiry date;
- canisters displayed original labels and had corroded strapping bands; and
- service record labels had not been completed.

Annual checks by the Capitanía Marítima de Vigo[4] and routine audits undertaken by Survitec before this accident had not identified any significant servicing issues with Comfer Marin SL. Survitec has been unable to contact all potentially affected liferaft owners and operators and, consequently, has been unable to fully assure all identified liferafts of concern. With a gas inflation test being required at 5-yearly intervals[5] Survitec recognised that a routine annual service may not, on its own, highlight all the potential problems resulting from the significant servicing issues identified.

[4] Capitanía Marítima de Vigo is the local harbourmaster empowered by the Spanish government's ministry for transport to approve service stations.

[5] IMO Resolution A.761(18) as referenced in Marine Guidance Note 548 (M&F).

SAFETY ISSUES

Safety issues identified during the initial stages of the investigation included:

- Both of the liferafts carried by *Piedras* exhibited deficiencies that were sufficient to raise concerns relating to their servicing and certification; it is likely that these deficiencies contributed to the failure of the port liferaft to function correctly during the abandonment of the vessel.
- There is a risk that DSB liferafts certified by the service station Comfer Marin SL in Marin, Spain might not function correctly when deployed.

MAIB ACTIONS

The **MAIB** has:

- Written to Survitec and highlighted the issues identified with the liferafts carried on board *Piedras* and issued recommendations 2022/129 and 2022/130, as detailed below:

  2022/129 *Ensure that the corrective actions identified during the audit of its authorised service station 375, in July 2022, are verified as completed and that there is an appropriate level of oversight to confirm that the future servicing of liferafts by this station is rigorous and in accordance with statutory requirements.*

  2022/130 *Take urgent action, as appropriate, to provide assurance that all liferafts serviced by the authorised service station 375 within the past 5 years are fully functional and comply with statutory requirements. This should include informing all affected customers of the potential risks that their liferafts may not be compliant and of any immediate actions required to ensure their effectiveness.*

- Written to the Comisión Permanente de Investigación de Accidentes e Incidentes Marítimos (CIAIM)[6] to advise them of concerns regarding the servicing of the liferafts on board *Piedras* and the possibility that other liferafts serviced by Comfer Marin SL may be similarly affected.
- Issued this safety bulletin to inform vessel owners and operators potentially affected by the identified issues relating to liferafts serviced by Comfer Marin SL.
- Written to the Ministerio de Transportes, Movilidad y Agenda Urbana[7] to ask it to assist Survitec in identifying vessel owners and operators that have had DSB liferafts certified by the service station Comfer Marin SL during the period from 1 January 2017 to 30 June 2022.

[6] Comisión Permanente de Investigación de Accidentes e Incidentes Marítimos – Permanent Commission for the Investigation of Maritime Accidents and Incidents. CIAIM are the Spanish marine safety investigation authority and have similar roles and responsibilities to that of the MAIB.

[7] The Ministry of Transport, Mobility and Urban Agenda (MITMA) is the Spanish government's ministry for transport.

ACTIONS TAKEN BY OTHER ORGANISATIONS

Survitec Group Limited has:

- Conducted an audit of Comfer Marin SL in July 2022 and subsequently terminated its approval of the station to act as a Survitec liferaft servicing provider.
- Issued Survitec Alert Service Bulletin 13/22 – *A LR 07 liferaft: Immediate recall of liferafts serviced by Comfer Marin SL* – dated 17 November 2022 to its approved service stations in support of the immediate recall of the 230 liferafts that had been certified by Comfer Marin SL over the preceding 5 years.
- Contacted the Capitanía Marítima de Vigo to advise them of the alert service bulletin and inform them that Comfer Marin SL is no longer an approved Survitec service agent.
- Undertaken an initial investigation of the issues identified by the MAIB by inspecting a sample of liferafts serviced in 2022 by Comfer Marin SL and rectifying the defects found.

The **Ministerio de Transportes, Movilidad y Agenda Urbana** has:

Confirmed, through the Capitanía Marítima de Vigo, that Comfer Marin SL is no longer authorised to operate as a liferaft inspection/service station.

RECOMMENDATIONS

Survitec Group Limited is recommended to:

S2023/103 Distribute a copy of this safety bulletin to all vessel owners and operators that have had Deutsche Schlauchboot GmbH liferafts certified by the service station Comfer Marin SL during the period 1 January 2017 to 30 June 2022 and continue to take actions to urgently address recommendation 2022/130.

All vessel owners and operators that have had DSB liferafts certified by the service station Comfer Marin SL during the period 1 January 2017 to 30 June 2022 are recommended to:

S2023/104M Immediately contact their nearest approved Survitec liferaft service station to arrange for the liferafts to be urgently reinspected and serviced to ensure they are fully functional and comply with statutory requirements.

Issued August 2023

MAIB safety flyer to the fishing industry

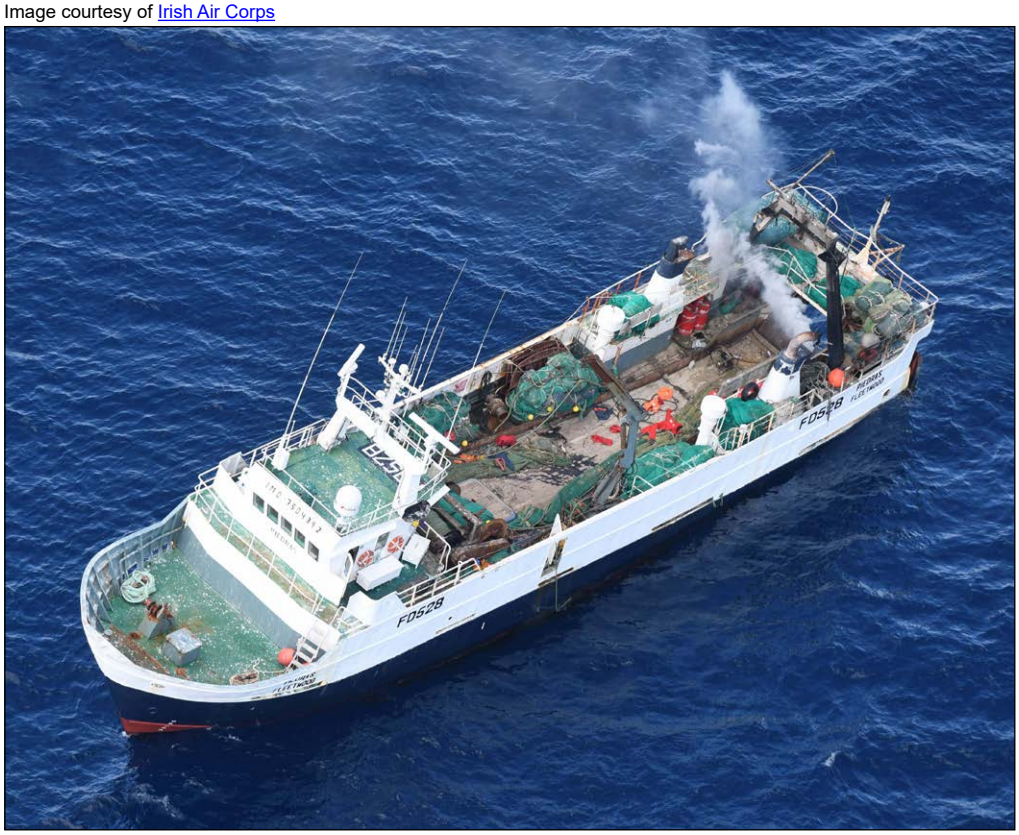
MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

SAFETY FLYER TO THE FISHING INDUSTRY

Flooding, capsize and foundering of the stern trawler *Piedras* (FD528), 78 nautical miles south-west of Mizen Head, Ireland on 1 June 2022

Image courtesy of Irish Air Corps



Piedras

Narrative

At 1234 on 1 June 2022, the UK registered stern trawler *Piedras* capsized and sank about 78 nautical miles south-west of Mizen Head, Ireland, following an uncontrolled ingress of seawater into the engine room that started during fishing operations. The crew first became aware of the flood at about 0600, but the source of the flooding was not determined and their attempts to pump out the floodwater were unsuccessful.

The skipper of *Piedras* had contacted a nearby fishing vessel *Armaven Uno* and, over 2 hours into the flood, sent an undesignated distress message via the Global Marine Distress and Safety System (GMDSS). Deciding that the vessel was lost, the skipper of *Piedras* gave the order to abandon ship. The abandonment was hampered as one of its two liferafts failed to function correctly. Fortunately, the second liferaft was successfully deployed and used by the 11 crew members. By 0949, the crew of *Armaven Uno* had rescued the entire crew of *Piedras* from the liferaft. *Piedras* eventually capsized and sank to the seabed.

Safety lessons

1. The crew of *Piedras* were alerted to the flood by the engine room bilge alarm but recovered their trawl before fully investigating the flood source. Floods are dangerous and should be dealt with immediately; early identification of a flood source provides the best opportunity to stop the leak and pump out floodwater. Securing watertight doors and hatches in the closed position can help to keep a vessel afloat, even if one compartment is flooded. The Fishermen's Safety Guide[1], published by the Maritime and Coastguard Agency, details what actions to take in the event of a flood.

2. The skipper of *Piedras* sent the initial requests for help using WhatsApp, which limited the options for assistance and rescue to just one vessel. Sending an early distress message via GMDSS gives the best opportunity to alert rescue teams and receive external help and resources such as salvage pumps. Very high frequency radio calls and the use of handheld, parachute, and smoke flares can be an efficient way of indicating distress to nearby vessels that might have missed the original GMDSS messages.

3. The multinational crew of *Piedras* crew were unable to understand the vessel's safety documents, including risk assessments, which were not available in their native language. It is essential that safety critical information can be understood by everyone on board.

This flyer and the MAIB's investigation report are posted on our website: www.gov.uk/maib

For all enquiries:
Marine Accident Investigation Branch
First Floor, Spring Place
105 Commercial Road
Southampton
SO15 1GH

Email: maib@dft.gov.uk
Tel: +44 (0)23 8039 5500

Publication date: June 2024

1 https://www.gov.uk/government/publications/fishermens-safety-guide

Marine Accident Report

INVESTORS IN PEOPLE