MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

VERY SERIOUS MARINE CASUALTY | REPORT NO 15/2025 | OCTOBER 2025

Grounding and subsequent loss of the dive support vessel *Jean Elaine* in Saint Peter's Pool, Orkney Islands, Scotland on 22 July 2024

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

SUMMARY

On the afternoon of 22 July 2024, the 21.88m dive support vessel *Jean Elaine* **(Figure 1)** grounded on a falling tide while attempting to manoeuvre out of Saint Peter's Pool in Deer Sound, Orkney Islands, Scotland. The vessel developed a severe port list and suffered water ingress. Despite efforts to save the vessel, it was ultimately abandoned.

At the time of the accident, *Jean Elaine* was not certified for operation and the skipper's certificate of competence had expired. Heriot-Watt University, which was using the vessel for a research project, had not verified validity of the vessel or crew certification before its use.

The investigation identified that the accident occurred due to a lack of adequate planning and ineffective communication between the skipper and research team. The incident also highlighted the importance of effective oversight, risk management, and adherence to regulatory requirements when operating vessels in support of educational or scientific activities.

Image courtesy of Aitor Campos Jordan

Figure 1: *Jean Elaine* grounded in Saint Peter's Pool

FACTUAL INFORMATION

BACKGROUND

Jean Elaine had been contracted by Heriot-Watt University to support the work of Project Seagrass with an initiative launched in 2022 to restore marine habitats in the Firth of Forth. The purpose of the voyage was to transport a dive team to seagrass sites in Deer Sound to design a survey for long-term monitoring of the impact of seagrass[1] seed collection.

Narrative

At approximately 0800 on 22 July 2024, *Jean Elaine* departed Kirkwall to travel to Deer Sound, 6 miles to the south-east. It was the first of five planned days of diving operations.

The crew of *Jean Elaine* comprised the skipper, mate and a deckhand. The embarked passengers included a team of four divers – one from Heriot-Watt University (the project leader), one from Project Seagrass and two locally contracted divers – along with a diving supervisor from Heriot-Watt University. Except for the two locally contracted divers, all had previously dived from *Jean Elaine*. During the voyage to Deer Sound the diving team reviewed their plans for the day. The skipper played a pre-recorded safety briefing to the passengers, but not all the participants could recall hearing it.

At approximately 0930, *Jean Elaine* entered Deer Sound and stopped in a location designated as SPP East **(Figure 2)** in the project plan approved 3 weeks beforehand by the Heriot-Watt University diving officer.

Jean Elaine's inflatable boat was launched and the mate took the Project Seagrass diver to identify, using a bathyscope[2], a suitable section of seagrass for the programme. They marked the transect with a buoy and tape and then returned to *Jean Elaine*. At the same time, the project leader left *Jean Elaine* with the two locally contracted divers for a short dive to assess their competence.

At approximately 1145, after a 1-hour surface interval, the four divers paired up and dived from each end of the marked section, meeting in the centre and completing a survey of the seagrass. At about 1320, they returned to *Jean Elaine* for lunch.

The seagrass surveyed was not considered suitable for the programme. The project team therefore decided to explore some other sites. The Project Seagrass diver had previously snorkelled in Saint Peter's Pool and knew that seagrass was present there. It was decided that there was sufficient time to conduct a search in Saint Peter's Pool from the inflatable boat, using the bathyscope once again, before returning to Kirkwall. The approved project plan did not identify the need to assess or harvest seagrass from Saint Peter's Pool.

At approximately 1420, the mate again boarded the inflatable boat with the Project Seagrass diver and recovered the marking equipment from the SPP East location. They then proceeded directly to Saint Peter's Pool, where the diver assessed an area of seagrass in preparation for a dive the following day.

Shortly after the inflatable boat entered Saint Peter's Pool, the skipper manoeuvred *Jean Elaine* to follow it into the enclosed bay. The skipper was navigating using an application on a tablet computer. *Jean Elaine* remained in the bay while the survey was completed, and then recovered the team from the inflatable boat.

---

[1] A flowering plant that grows in shallow salt water in sheltered coastal areas and supports marine species, produces oxygen and stores carbon.

[2] An underwater viewing device, also known as an aquascope.

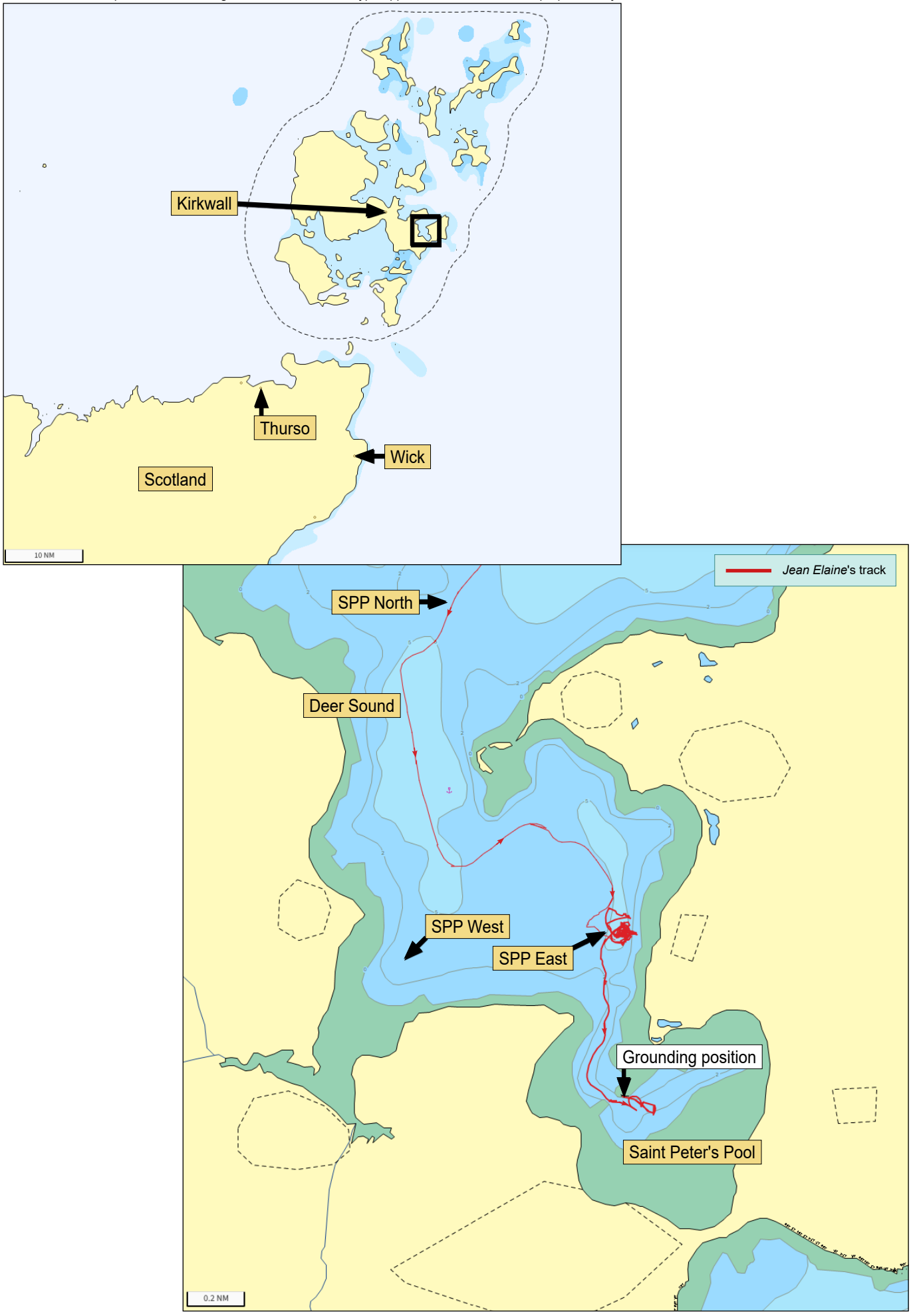

Figure 2: *Jean Elaine*'s track, grounding position and the three pre-identified dive sites in the (inset) Orkney Islands

Once the mate and Project Seagrass diver were back on board, the skipper turned *Jean Elaine* to exit Saint Peter's Pool. At 1500, during this manoeuvre, *Jean Elaine* grounded **(Figure 2)**.

The skipper attempted to manoeuvre the vessel free but, after trying for approximately 20 minutes, decided to wait, expecting the vessel to refloat on the high tide. *Jean Elaine* adopted a list to port as the tide receded.

Understanding that it could take several hours for *Jean Elaine* to refloat, a taxi was arranged for the two locally contracted divers and they were transferred to shore using the inflatable boat.

Jean Elaine's mate, the diver from Heriot-Watt University and the diver from Project Seagrass decided to make use of the available time and took the inflatable boat to conduct further inspections of the seagrass in the inner part of the sound, between SPP East and SPP West.

As the tide continued to fall, *Jean Elaine*'s list worsened **(**see **Figure 1)**. The skipper shifted four large air bottles from the port side of the wheelhouse to the starboard gunwale to try to counter the list, but this had no effect.

As the list increased further, the crew noted water had entered the engine room and the bilge alarm for the aft cabin sounded. *Jean Elaine* lost power, rendering the on board electric pumps inoperable. A fault caused the emergency generator to trip and the skipper decided to switch it off.

At 1731, shortly after noticing the water ingress, the skipper telephoned His Majesty's Coastguard Orkney and Shetland, requesting assistance from the Royal National Lifeboat Institution (RNLI). The skipper then called the mate by radio and instructed them to return to *Jean Elaine*. The skipper then told everyone on board to don protective clothing and abandon ship to the inflatable boat when it returned.

At approximately 1825, the RNLI all-weather lifeboat (ALB) based at Kirkwall arrived in a position to the north-west of *Jean Elaine* in Deer Sound. The ALB launched its own inflatable boat with two crew to take a salvage pump to the stricken vessel.

The inflatable boat from *Jean Elaine* exited Saint Peter's Pool and transferred the deckhand and remaining three members of the diving party to the ALB. The skipper and mate then returned to *Jean Elaine* to assist the RNLI crew members in their attempt to address the water ingress.

Unable to stem the rising water level in *Jean Elaine*, the salvage efforts were abandoned and the two inflatable boats returned to the ALB. Departing Deer Sound at 2005, the ALB reached Kirkwall at approximately 2200 with the inflatable boat from *Jean Elaine* in tow.

Environmental conditions

On 22 July 2024, the weather in the Orkney Islands was mostly dry with sunny spells and light winds. The maximum temperature was 15°C.

High water in Deer Sound on the day of the accident occurred at 1224 at a height of 3.03m above chart datum. The height of tide at the time of grounding was approximately 2.05m and falling, with low water reached at 1812 at a height of 0.74m. Tidal streams were negligible in the sound.

Deer Sound

Deer Sound is an inlet on the east coast of Mainland, Orkney Islands. The inlet opens to the north-east between Rerwick Head and Mull Head and contains several smaller inlets **(Figure 2)**, of which Saint Peter's Pool is one.

The Admiralty Sailing Directions provided information on Deer Sound and its approaches. The guidance indicated that the southern area of Saint Peter's Pool was shallow, rocky and dried out and stated that *local knowledge is required for navigation beyond the outer part of the sound*. The area had last been surveyed for the UK Hydrographic Office in 1912.

Jean Elaine

Jean Elaine was constructed in 1956 as a wooden fishing trawler. In 1994, *Jean Elaine* was converted to a dive support vessel for recreational and research diving in the Orkneys.

In May 2019, *Jean Elaine* was surveyed to the requirements of Marine Guidance Note (MGN) 280 (M): *Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot Boats – Alternative Construction Standards* published by the Maritime and Coastguard Agency (MCA). The vessel was certified as an Area Category 2 workboat, permitting it to carry up to 12 passengers a maximum of 60 nautical miles from a safe haven. The certificate was valid until 28 April 2024.

On 29 April 2024, *Jean Elaine* was examined out of the water for the renewal of its certificate. The examination was carried out by MECAL Ltd, a certifying authority authorised by the MCA to survey and certify vessels under MGN 280 (M). The survey identified sprung and rotten hull planking **(Figure 3)** and the certificate held by *Jean Elaine* was not renewed. The suspension of certificate notice issued by MECAL Ltd to the skipper of *Jean Elaine* stated that, *While this suspension notice is in force, the vessel must not operate commercially*.

Jean Elaine did not hold a valid certificate for the voyage undertaken on the day of the grounding.

Images courtesy of MECAL Ltd

Figure 3: *Jean Elaine*'s hull defects in April 2024

Crew qualifications and experience

Jean Elaine's skipper had over 30 years of experience operating the vessel and had held a commercially endorsed Royal Yachting Association (RYA) Yachtmaster Offshore certificate of competence. This certificate had expired on 15 July 2024. The skipper had started the revalidation process, but had not completed the application to the RYA. The revalidation required evidence of sea service and a medical fitness certificate.

The mate had served on board *Jean Elaine* for over 6 years. They held an RYA/MCA Yachtmaster Coastal certificate of competence and an RYA/MCA Level 2 Powerboat Handling certificate, both of which were commercially endorsed and valid at the time of the accident.

The deckhand was in their first 2 weeks of starting work at sea and had completed no formal training.

Passage planning

The skipper of *Jean Elaine* was familiar with the local waters, having previously operated the vessel in Deer Sound. This trip was the first time the skipper had taken the vessel into Saint Peter's Pool.

Jean Elaine did not carry paper navigation charts. The skipper navigated using an electronic navigation application installed on a tablet computer. The application used Navionics charts that were based on a combination of public and private data. It did not meet the standards set out in the MCA guidance contained in MGN 319 (M+F) Amendment 1 – electronic chart plotting systems for small vessels. The application displayed a digital chart of the area and provided a real-time position using the tablet computer's built-in global positioning system. The application contained a disclaimer that the charts it used were:

> *…an aid to navigation designed to facilitate the use of authorized government charts, not to replace them. Only official government charts and notices to mariners contain all information needed for the safety of navigation and, as always, the captain is responsible for their prudent use.*

No waypoints were plotted in the application being used, no written passage plan had been prepared, and there was no note of tidal information or hazardous/no-go areas. This reflected the skipper's routine practice rather than a departure from their usual approach to passage planning.

Project Seagrass

Project Seagrass was a marine conservation organisation committed to the protection and restoration of seagrass ecosystems.

In partnership with Heriot-Watt University, the organisation supported diving operations to identify and collect suitable seagrass samples for propagation. The university contracted vessels for the project.

Project Seagrass, Heriot-Watt University and the skipper of *Jean Elaine* had worked together on diving activities in the Orkney Islands. *Jean Elaine* had undertaken 17 trips over the preceding 10 years in support of the activities of Heriot-Watt University.

Independently, Project Seagrass had previously carried out snorkelling surveys within Saint Peter's Pool, identifying potential sources of suitable seagrass for harvesting.

Heriot-Watt University

Heriot-Watt University is a public research university based in Edinburgh, Scotland with a campus on the Orkney Islands. To support its maritime research projects, the university maintained a health and safety policy that included *Diving (UK) Procedures*. These procedures contained a set of annexed diving rules, intended to ensure that all diving under the auspices of Heriot-Watt University was *conducted in a manner to minimise accidental injury or occupational illness*. The diving rules included a section on boat safety that stated, among others:

- *Boats used in University diving operations must be properly equipped, in safe working order, and be under the control of competent and trained personnel;*
- *Personnel acting as Skipper/coxswain must hold the minimum required operating ticket for the survey class of the vessel in use and must operate within the specified limits from shore*
- *Close communication must be maintained between the Skipper and Diving Supervisor to ensure actions are coordinated to maintain safety*
- *boats used in support of the university's work or research will need to comply with the Safety of small workboats and pilot boats: a code of practice issued by the Maritime and Coastguard Agency* [sic]

The university had never formally reviewed *Jean Elaine*'s or the skipper's certification; instead, these were assumed to be in place based on verbal assurances from the skipper that the vessel was appropriately certified and the previous commercial activity of the vessel.

Project plan and risk assessment

Heriot-Watt University's diver, the project leader, created a project plan with an accompanying risk assessment for the planned activities. The plan was reviewed and discussed in a project briefing held three days before the expedition started. The briefing was attended by the project leader, the Project Seagrass diver and *Jean Elaine*'s skipper.

The project plan identified three survey locations within Deer Sound, labelled SPP North, SPP East and SPP West **(**see **Figure 2)**. Though the project plan named Saint Peter's Pool within it, none of the survey locations were within the pool and the plan did not contain any contingency to expand the scope of survey should the nominated sites prove unsuitable.

The plan identified the roles and responsibilities of the project team members but did not outline the skipper's role, or include a communication protocol between the skipper and project team. Tidal information was included in the plan.

The risk assessment appended to the project plan outlined the diving risks and their mitigations. Where the risk was associated with the operation of the vessel, the risk assessment deferred to the responsibilities of the skipper. Annex 1 to the risk assessment indicated that *Jean Elaine* held an *in-date MCA Code of Practice Category II certificate* [sic]. No risk assessment for operating within Saint Peter's Pool was carried out.

REGULATION AND GUIDANCE

The SOLAS Convention

Chapter V of the International Convention for the Safety of Life at Sea (SOLAS), 1974 was applicable to the operation of *Jean Elaine* and required that:

1. *Prior to proceeding to sea, the master shall ensure that the intended voyage has been planned using the appropriate nautical charts and nautical publications for the area concerned, taking into account the guidelines and recommendations developed by the Organization*[3].

2. *The voyage plan shall identify a route which:*

   .1 Takes into account any relevant ships' routeing systems;

   .2 Ensures sufficient sea room for the safe passage of the ship throughout the voyage;

   .3 Anticipates all known navigational hazards and adverse weather conditions; and

   .4 Takes into account the marine environmental protection measures that apply, and avoids as far as possible, actions and activities which could cause damage to the environment.

Royal Yachting Association guidance

The RYA Passage Planning handbook[4] provided guidance on how to prepare for sea voyages on small vessels. This included:

- *Tides: check the tidal predictions for your trip and ensure they are fit for what you are planning to do.*

- *Navigational dangers: make sure you are familiar with any navigational dangers you may encounter during your boating trip. This generally means checking an up-to-date chart and a current pilot book or almanac.*

Similar accidents

On 20 July 2023, the motor vessel *Channel Queen* grounded while passing over the wreck of the steam ship *Varvassi* near the Needles, Isle of Wight, England (MAIB report 7/2024[5]). The investigation found that there was no charted navigational passage plan and navigational aids were not effectively used.

On 31 May 2020, the wooden hulled leisure motorboat *Globetrotter* sank in 5m of water during a sea angling trip off the coast of Fleetwood, England (MAIB report 10/2021[6]). The investigation found that the vessel was not seaworthy and had not been properly prepared for a trip to sea. It also concluded that the boat probably grounded and sustained damage below the waterline during its passage out of harbour. Although the owner was an experienced leisure boat user, they had little appreciation of the risks they were taking or the importance of passage planning.

[3] International Maritime Organization Resolution A.893(21) – Guidelines for Voyage Planning.

[4] Chennell, P. (2011), reprinted 2022, page 8.

[5] https://www.gov.uk/maib-reports/grounding-and-subsequent-loss-of-commercial-swim-event-support-vessel-channel-queen

[6] https://www.gov.uk/maib-reports/sinking-of-the-wooden-hulled-motorboat-globetrotter-with-loss-of-1-life

ANALYSIS

Overview

Jean Elaine grounded in Saint Peter's Pool while manoeuvring within the confined bay following a change in the day's diving plan. The grounding occurred on a falling tide, and ultimately resulted in failure of the hull planking leading to the loss of the vessel. This section explores the contributory factors, including shortcomings in passage planning; the condition of the vessel; communication breakdowns; and failure to follow established procedures.

Passage planning and navigational awareness

The grounding occurred because *Jean Elaine* entered Saint Peter's Pool without adequate planning or assessment of the risks in doing so. Despite the skipper's sailing experience around the Orkney Islands, this was the first time they had navigated into Saint Peter's Pool. There was no written passage plan or risk assessment covering the operation, and the skipper relied solely on an unapproved navigation application to monitor the vessel's position.

The lack of a documented passage plan was not in line with the SOLAS requirement that all voyages be planned with consideration of appropriate charts, tidal information and navigational hazards.

The skipper had an established practice of not appraising all of the relevant information available, including tidal calculations, to develop a plan for the intended passage. With no plan in place, the skipper was unable to effectively monitor the vessel's progress against it.

The lack of planning and assessment of the navigational risks associated with taking *Jean Elaine* into unfamiliar waters close to shore, and on a falling tide, put the vessel and people on board at risk.

Change of plan and communication breakdown

The dive team made the decision to assess the seagrass in Saint Peter's Pool after it became clear that the seagrass bed at SPP East was unsuitable for the programme. This change to the project plan was a departure from the initial plan and the risk of doing so was not assessed. With no procedure in place for a reconsideration of risks should a plan be amended, the project leader was not prompted to reassess the risk and therefore the hazards associated with entering Saint Peter's Pool were not identified.

There was no clear protocol for communication between the skipper and the dive team despite Heriot-Watt University's own diving rules requiring close communication between the skipper and diving supervisor. The lack of coordination between the activities of the dive team and the crew of *Jean Elaine* influenced the skipper's decision to make an unplanned passage into Saint Peter's Pool and placed the vessel at risk.

The skipper took *Jean Elaine* into Saint Peter's Pool, mistakenly believing that another dive was to take place and wanting to remain close to the inflatable boat. The skipper followed the inflatable boat into the enclosed bay without a full understanding of the dive team's intentions in the location or the risk to *Jean Elaine* in doing so.

Vessel condition and certification

Jean Elaine was not certified for commercial operation at the time of the accident as the vessel's certification had not been renewed following the survey in April 2024, which identified significant structural issues with the hull. Its insurance was invalid due to the lack of certification. The poor condition of the hull planking likely reduced its ability to resist the localised loading it experienced as *Jean Elaine* listed onto the seabed as the tide fell. Additionally, the skipper had not revalidated their certificate of competence. Given the requirements for revalidation of the skipper's Yachtmaster Offshore qualification, it was unlikely that this omission contributed to the accident.

Oversight and safety assurance

Heriot-Watt University required both the vessels and crews used for diving operations to be appropriately certified. There was no process requiring the certification to be verified at the time of use. Despite its prolonged use of *Jean Elaine*, Heriot-Watt University had never verified the vessel certification or checked the crew's qualifications and instead relied on assurances and assumptions that *Jean Elaine* met the university's requirements for its use.

The lack of positive assurance of the certification of *Jean Elaine* was an ineffective barrier to prevent the use of an uncertified and potentially unseaworthy vessel to support diving operations, placing participants at unnecessary risk.

CONCLUSIONS

- *Jean Elaine* ran aground because it entered Saint Peter's Pool, a body of water that was too shallow for the vessel's draught on a falling tide.
- There was no passage plan to support the safe navigation of the vessel. Consequently, the risk to *Jean Elaine* from its passage into Saint Peter's Pool was not identified.
- The communication between the project team and the skipper was ineffective, resulting in a lack of coordination of the activities of the vessel and the dive team.
- *Jean Elaine* was not certified for operation at the time of the accident.
- The poor condition of *Jean Elaine*'s hull likely contributed to its failure following the grounding.
- Heriot-Watt University did not ensure that *Jean Elaine* was appropriately certified before the expedition.

ACTION TAKEN

MAIB actions

The Chief Inspector of Marine Accidents has written to the chief executive of Universities UK to highlight the lessons learned from the investigation into the accident and request that these are shared with its members.

Actions taken by other organisations

The **Maritime and Coastguard Agency** has issued a Notice of Concern to Heriot-Watt University raising serious concerns over the university's use of an uncertified and unseaworthy vessel. The notice reminded the university of its duty of care to ensure the safety and suitability of vessels used in educational activities.

Heriot-Watt University has revised its procedures to require positive confirmation of valid vessel and crew certification as a condition for chartering a vessel.

Project Seagrass has implemented a procedure for the verification of vessel and crew certification before joining any chartered voyage.

RECOMMENDATIONS

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

VESSEL PARTICULARS	
Vessel's name	*Jean Elaine*
Flag	UK
Classification society	Unclassified
IMO number/fishing numbers	902675
Type	Dive support vessel
Registered owner	Privately owned
Manager(s)	Privately managed
Year of build	1956
Construction	Wood, former fishing vessel
Length overall	21.88m
Gross tonnage	73.18
Minimum safe manning	2
Authorised cargo	Not applicable

VOYAGE PARTICULARS	
Port of departure	Kirkwall, Scotland
Port of arrival	Kirkwall, Scotland
Type of voyage	Diving operations – scientific research
Cargo information	Not applicable
Manning	3 crew, 5 passengers

MARINE CASUALTY INFORMATION	
Date and time	22 July 2024 at 1500
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Saint Peter's Pool, Orkney Islands, Scotland
Place on board	Hull
Injuries/fatalities	None
Damage/environmental impact	Vessel constructive total loss
Vessel operation	Diving support
Voyage segment	On passage
External & internal environment	Daylight, good visibility
Persons on board	8