MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

SERIOUS MARINE CASUALTY | REPORT NO 24/2016 | NOVEMBER 2016

The grounding of French fishing vessels *Saint Christophe 1* (CN666535) and *Sagittaire* (CN764603) while alongside in Dartmouth resulting in the flooding and sinking of *Saint Christophe 1* on 10 March 2016

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SUMMARY

At about 2300 on 9 March 2016, the French fishing vessels, *Saint Christophe 1* and *Sagittaire* grounded and started to list on the falling tide while they were berthed alongside in Dartmouth harbour, where they had taken refuge from bad weather. *Sagittaire*'s crew raised the alarm and rigged chains to support the vessel as the tide fell, but *Saint Christophe 1* rolled onto its side and started to flood **(Figure 1)**. *Sagittaire* re-floated as the tide rose, but *Saint Christophe 1* continued to flood and was almost fully submerged at high water. Both crews were evacuated from their vessels without incident, and there was minimal pollution. *Saint Christophe 1* was salvaged on 2 April 2016, but was declared a constructive total loss by its insurance company.

The investigation concluded that the South Embankment Quay was an unsuitable berth for *Saint Christophe 1* or *Sagittaire* over low water. The investigation also identified that the Harbour Authority was fully aware that *Saint Christophe 1* would ground on the falling tide but, due to language difficulties, its staff were unable to make the fishing vessels' skippers aware of this.

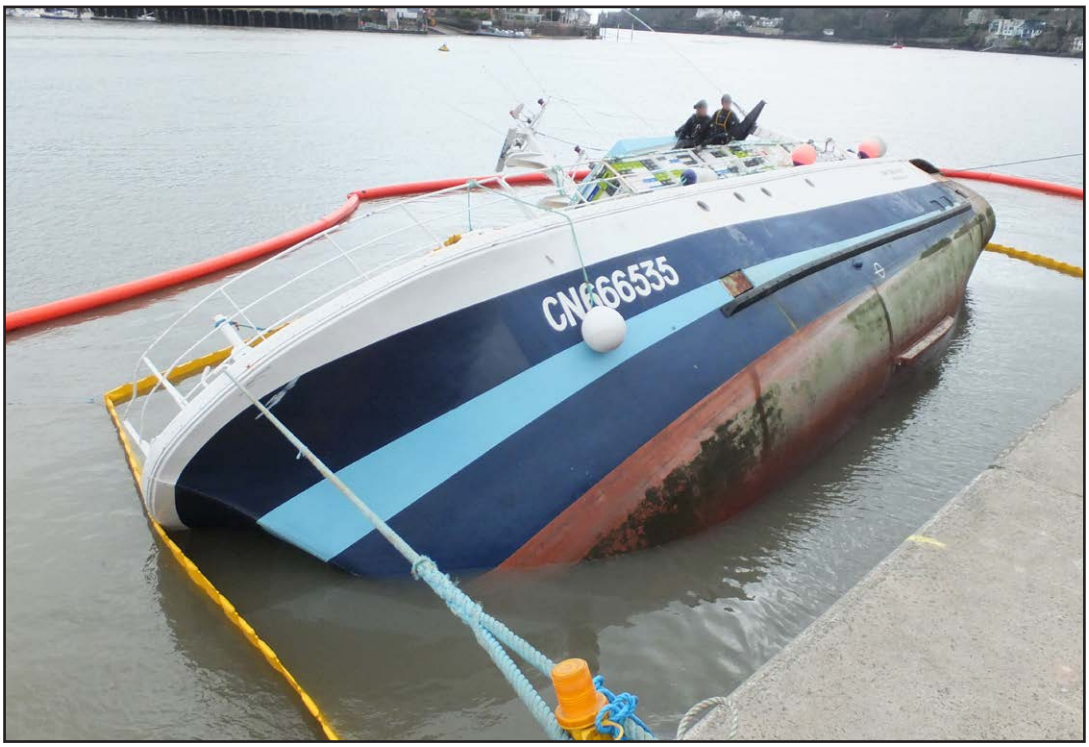

Figure 1: *Saint Christophe 1* sunk alongside South Embankment Quay

Following the accident, the Dartmouth Harbour and Navigation Authority took action to improve the information provided to port users on the use of its South Embankment Quay and other moorings. It has also undertaken to conduct a review of its existing risk assessments for the port. Dartmouth Harbour and Navigation Authority has requested the Maritime and Coastguard Agency to conduct a health check of its compliance with the Port Marine Safety Code.

This report makes recommendations designed to ensure that a comprehensive exchange of information is conducted before approval for vessels intending to enter Dartmouth is granted, and appropriate and effective control measures are established to address risks identified by the port.

A recommendation has also been made to the owners of *Saint Christophe 1* and *Sagittaire* which seek improvements in the vessels' suite of navigational charts, and to the Maritime and Coastguard Agency to undertake a Port Marine Safety Code health check for Dartmouth in 2017.

FACTUAL INFORMATION

Environmental conditions

At 1200 on 9 March 2016, the wind was north-north-westerly Force 7, gusting Force 9. It eased during the day and, at 2100, was north-north-westerly Force 5 to 6, gusting Force 7 to 8.

The mean tidal range in Dartmouth was 4.3m from a mean low water springs height of 0.6m, to a mean high water springs height of 4.9m. On the day of the grounding the tides were:

Tides			
Date		**Time**	**Height**
9 March 2016	Low Water	1213	0.15m
	High Water	1842	4.93m
10 March 2016	Low Water	0033	0.14m
	High Water	0702	5.18m

Narrative

Events leading up to the groundings

On 7 March 2016, the demersal trawlers *Saint Christophe 1*, *Sagittaire*, and *Maranatha 2* departed Port-en-Bessin, France and sailed to Lyme Bay, England, where they spent the following day fishing. During the early hours of 9 March 2016, the weather in the bay got progressively worse and, at about 0630, the skippers decided to cease fishing and head inshore to seek shelter.

At about 1300, the skippers decided to seek refuge in the nearby port of Brixham. As none of the crew felt confident communicating with the port authority in English, one of the skippers telephoned the maritime *Regional Operational Centre for Monitoring and Rescue* in Jobourg, France, and asked it to request entry on their behalf. Staff at the Jobourg maritime operational centre made the request to the Brixham harbour authority but were told that the port was full, and did not have the room to accommodate the three vessels. This information was relayed back to the fishing vessel skippers.

Maranatha 2's skipper suggested to the other two skippers that they head toward Dartmouth and, at about 1340, the Jobourg maritime operations centre was again contacted and asked to request permission on the skippers' behalf for the vessels to enter the port. On receiving the telephone call from Jobourg, the deputy harbourmaster (DHM) of the Dartmouth Harbour and Navigation Authority (DHNA)

considered the berthing options available to him with his team. He returned the call to Jobourg about 10 minutes later to confirm that the three boats could proceed to Dartmouth for refuge, but stipulated that the vessels had to arrive before 1630 that afternoon.

The DHM's preferred option was to secure the vessels on the harbour authority's mid-river mooring buoys **(Figure 2)**. However, the prevailing weather conditions made it unsafe for the harbour staff to operate the buoys, so he decided to berth the visiting fishing vessels on Dartmouth's Town Pontoon and South Embankment Quay. The DHM then instructed two of his river officers to use the harbour launch to intercept the vessels at the harbour entrance and escort them to their berths. The launch met the vessels at about 1515 and, using a series of hand signals, the river officers guided them up the river to their allocated berths.

The DHM and his river officers helped secure *Maranatha 2* to the Town Pontoon, and then the river officers assisted *Saint Christophe 1* to moor alongside the South Embankment Quay. *Sagittaire* was rafted outboard of *Maranatha 2* **(Figure 3)**. During this evolution each of the skippers experienced difficulty manoeuvring their boats alongside in the gusting winds and opposing flood tide. All three vessels were berthed port side alongside, and were secured with four lines: a head line, stern line, and forward and aft spring lines.

At about 1545, one of the river officers, who could not speak French, used hand gestures to indicate to *Saint Christophe 1*'s skipper that his vessel would ground alongside on the falling tide. *Saint Christophe 1*'s skipper thought that the river officer was telling him to make sure he tended his vessel's mooring lines as the tide went out. During the berthing operation, the skipper had observed echo sounder readings of about 9m and thought that there was plenty of water on the berth. The skipper indicated that he understood this information and thanked the river officer. The river officer then provided each skipper with a copy of the 2016/17 Dart Harbour Guide.

The second river officer, who could speak a few words of French, gave *Saint Christophe 1*'s crew directions to the nearest bank, supermarket, and other local amenities. Satisfied that the vessels were secure alongside, the DHM and his river officers left the quay.

At about 1630, a local fishing vessel owner called the DHNA office and raised concerns about the safety of *Saint Christophe 1* on the South Embankment Quay, and specifically asked if its skipper had been made aware that his vessel would ground as the tide receded. These concerns were passed to the DHM, who later called the harbourmaster and briefed him on the day's events.

During the evening, *Maranatha 2*'s skipper informed *Sagittaire*'s skipper that he intended to sail in the early hours of the morning. To avoid the need to awaken his crew in the early hours of the morning to allow *Maranatha 2* off the pontoon, *Sagittaire*'s skipper decided to move his vessel to berth at South Embankment Quay. At about 1900, shortly after high water, *Sagittaire* was berthed astern of *Saint Christophe 1*, port side alongside.

The groundings

After eating on board, the skippers of *Saint Christophe 1* and *Sagittaire* set mooring line watches and then went to bed. At about 2300, the crew watchman on board *Saint Christophe 1* went on deck to tend the lines. Once on deck, he discovered that the vessel had taken on a slight starboard list, away from the quay. The crewman began to look around the vessel to find the cause of the list, but as he did so the list increased. Unable to identify the problem, the crewman woke the skipper and the rest of the crew.

At about 2330, *Sagittaire*'s skipper awoke and got out of bed as he sensed his vessel list to starboard. The skipper alerted his crew and then went to the wheelhouse. When he looked forward he saw that *Saint Christophe 1* had taken on an even bigger angle of list and immediately checked the tide tables in the harbour guide. The skipper discovered that the tables did not commence until April 2016, and so used his mobile phone to check the tide times. At about 2340, having realised that his boat was aground,

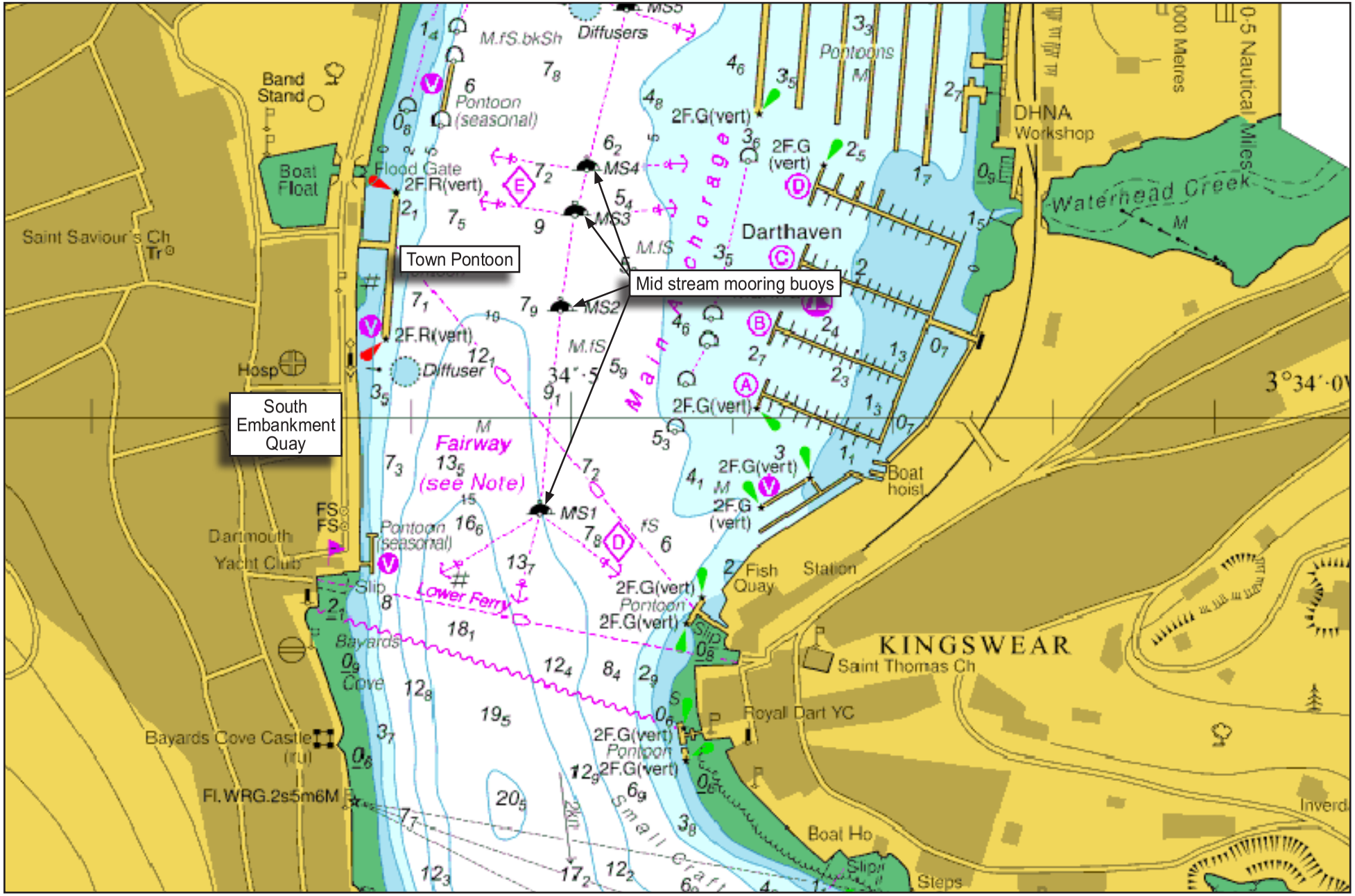

Figure 2: Chart showing Town Pontoon and South Embankment Quay

Figure 3: *Maranatha 2* and *Sagittaire* alongside Town Pontoon

the skipper called *Maranatha 2* and asked its crew to provide urgent assistance. *Maranatha 2*'s crew rushed to the South Embankment Quay and helped *Sagittaire*'s crew rig chains between the vessel and the quayside mooring bollards. Within a few minutes, *Sagittaire*'s list was arrested by the chains at an angle of about 20°.

By this time, *Saint Christophe 1* had listed much further from the quay and its stern line had parted. Unable to help, the other skippers called the emergency services. As the tide continued to ebb, *Saint Christophe 1* continued to roll further away from the quay and, once it assumed a list of approximately 60°, water started to flood into the vessel through the galley and mess room scuppers. At approximately 00:25 the fire service alerted the harbourmaster to the developing situation, who then referred them to the Maritime and Coastguard Agency (MCA).

At about 0040, a fire tender from Dartmouth's local fire service and an RNLI inshore lifeboat arrived on scene. The firemen used their ladder to evacuate *Saint Christophe 1*'s crew from the stricken vessel on to the quay. The crew of *Sagittaire* climbed off the stern of their vessel into the RNLI lifeboat and were transferred ashore.

At 0050, the MCA contacted the harbourmaster to apprise him of the emergency situation. Half an hour later, having identified a risk of pollution, the MCA updated the harbourmaster and asked him to attend the harbour. As the tide rose, *Saint Christophe 1* began to flood through its portholes and watertight doors that were open when the crew evacuated the vessel. At about 0230, DHNA staff were on scene with pollution prevention equipment, which was quickly deployed. The harbourmaster arrived about 40 minutes later and mobilized the port's external pollution control contractors.

Sagittaire re-floated with the rising tide, and was moved to the vacated Town Pontoon. *Saint Christophe 1* remained on its side and at high tide it was almost fully submerged.

Saint Christophe 1 and *Sagittaire*

Saint Christophe 1, built in 1984, was a 22m long, polyester resin hulled, demersal stern trawler. The boat was manned by a crew of five French nationals and, in the absence of its owner, was being skippered by its regular first mate, who was fully qualified to undertake this task.

Saint Christophe 1 was based in Port-en-Bessin on the north coast of France, where it would remain afloat at all tidal states. It was designed to sit starboard side alongside to land fish and load stores and, therefore, it was usually starboard side heavy. On arrival in Dartmouth it had a draught of about 2.8m and a slight starboard list **(Figure 4)**.

Figure 4: *Saint Christophe 1* berthing alongside South Embankment Quay
Note: the slight starboard list

The vessel had several watertight doors and hatches to various compartments and accommodation spaces. Post-accident inspection revealed that most of the watertight doors and hatches were either lashed open, or were impossible to close and make watertight, having been disabled at some time in the past. Portholes on the starboard side were also open to allow for ventilation.

Saint Christophe 1 had an array of navigation plotters and fish finding equipment installed, including echo sounder and electronic chart displays. Although fishing in Lyme Bay, the skipper did not plan to visit ports in the UK, and therefore did not have large scale electronic or paper charts, for the ports of Brixham or Dartmouth.

Sagittaire, built in 1990, was a 23.6m long, steel hulled demersal trawler and had a draught of about 2.8m on arrival in Dartmouth. It was manned by a crew of five French nationals; its skipper was an experienced fisherman and owned the vessel.

Dartmouth harbour

Dartmouth harbour is situated at the mouth of the River Dart in south Devon, between the towns of Dartmouth on the west bank and Kingswear on the east bank. Predominantly used by yachts and pleasure craft, the harbour could accommodate vessels of up to 183m in length moored between the mid-river mooring buoys, and had a variety of alternative mooring locations, including quayside berths and walk-ashore pontoons.

Dartmouth harbour was a trust port governed by a harbour board. The port was operated by DHNA, whose chief executive was also the harbourmaster and a member of the harbour board. A former chairman of the board was engaged as the Designated Person (DP) to provide independent assurance to the board regarding the operation of the port's safety management system.

DHNA safety management system

The DHNA operated the port in accordance with the policies and procedures set out in its safety management system (SMS). The SMS was compiled in 2011 by the incumbent harbourmaster and his team, and it contained a number of emergency plans and a suite of risk assessments. The SMS was discussed frequently at board meetings and it had been reviewed and updated 1 month before the accident.

The SMS contained three risk assessments relating to commercial fishing: *Transit within harbour limits*, *Bunkering* and *Landing catch*. The risk assessment for landing catch explained that this activity was conducted on the South Embankment Quay, outside the harbour office. Due to the tidal situation grounding at the berth was identified as a hazard. The controls listed to mitigate the risk of grounding were:

- Skippers to be made aware that the landing area was not a long term berth.
- Vessels to be crewed by a competent skipper.
- Skipper to be aware of water depths and tidal constraints in the harbour.

The DHNA had also identified possible language difficulties as a potential risk. A previous harbourmaster had compiled a list of Dartmouth berth holders who had become *'Friends of Dartmouth'* and had linguistic abilities. These individuals had agreed to act as translators in the event of an identified need. This list included at least one fluent French speaker. At the time of the incident, neither the harbourmaster nor his deputy were aware that this list had been created.

The port authority's SMS was audited annually by its DP, who had, at times, been critical of the DHNA. The quality of the risk assessments in the SMS was questioned during an audit in October 2013, when the DP noted that: "*the HM considers the current RA's to be satisfactory*". The DP made further critical reference to the quality of DHNA risk assessments, and the process of their review, during subsequent audits in March 2015 and March 2016.

Port Marine Safety Code

The Department for Transport (DfT) introduced its non-mandatory Port Marine Safety Code (PMSC) in 1996 in order to improve port safety standards. The MCA administered the code on behalf of the DfT. Once a port had implemented the requirements set out in the PMSC, through its SMS, it could formally declare itself compliant with the code by submitting a return to the MCA. The DHNA had declared itself compliant in 2012 after a verification audit by the DP. The DHNA had submitted a further compliance self-declaration in 2015.

In order to identify any potential areas for improvement and to highlight good practice, the MCA aimed to conduct about eight PMSC health checks each year, targeted at different types of ports across all parts of the UK. In 2015, there were about 450 statutory ports in the UK, of which 152 had declared compliance with the PMSC. The DHNA SMS had not been subjected to an MCA health check.

Guidance on implementing the PMSC is provided in a guide to good practice[1]. Within this guide, *Section 6.3 Promulgation of Survey and Navigation Information* includes, inter alia, the following guidance:

> *6.3.1. A harbour authority is responsible to ensure that the mariner is provided with the necessary information to ensure the safe passage of his vessel in the port. It is vital for procedures to be in place to make sure that this information is given out as soon as possible*
>
> *6.3.6. Where tidal heights vary from that predicted, warnings should be made over the appropriate VHF channel. Where tidal variations potentially affect vessels alongside or at a mooring, consideration should be given to alerting the relevant shipping agents if the vessel risks taking the ground or could otherwise be put at risk…*

Harbour information and guidance

The DHNA harbour office in Dartmouth was on the South Embankment Quay. During the winter period (from the beginning of October to the end of March), it was manned until 1700 most weekdays, but was closed at weekends. Harbour patrols over that period worked from 0830-1630 on weekdays only.

The home page of the DHNA's website (www.dartharbour.org) gave daily tide times and heights, and included the facility to change the site language from English into Dutch, French and German.

The DHNA also produced an annual harbour guide that contained information about the port and tide times. The guide was leisure orientated and was published on 1 April each year to coincide with the port's annual mooring fee renewal date.

Reference to the website was made prominently and frequently in the harbour guide, along with contact telephone numbers, that included an out-of-hours contact.

DHNA berths

There was a variety of berths on the river, predominantly for use by leisure craft. The Dart Harbour Guide contained limited information about the berths and referred users to the harbour office or to the DHNA website. Within the DHNA website, information for commercial users was limited to the mid-river mooring buoys, but the website further stated:

> *Other commerical berths exisit and all vessel operators should contact the harbour office for further information on berth locations and suitability. Please be aware that the mooring and safety of the vessel/crew remains solely the responsibility of the Master.* [sic]

There was no information on the DNHA website concerning any limitations and use of South Embankment Quay, and only a scant reference buried in the 'Sailing Directions' section of the Dart Harbour Guide.

In January 2015, the harbour seabed had been surveyed on behalf of the DHNA. The depths alongside South Embankment Quay where *Saint Christophe 1* and *Sagittaire* berthed were found to be between 0.9m and 1.4m below chart datum. The charted depth beneath *Saint Christophe 1* was 0.4m less than the depth below *Sagittaire*, and, having a similar draught, this meant that *Saint Christophe 1* grounded

[1] Guide To Good Practice On Port Marine Operations Prepared In Conjunction With The Port Marine Safety Code, dated March 2015.

just before *Sagittaire*. The survey indicated that the seabed, which consisted of mud and loose compacted silt, sloped away from the quay wall. Measurements taken by divers after the accident found a 2.5m increase in depth over a distance of 10m away from the quay wall **(Figure 5)**.

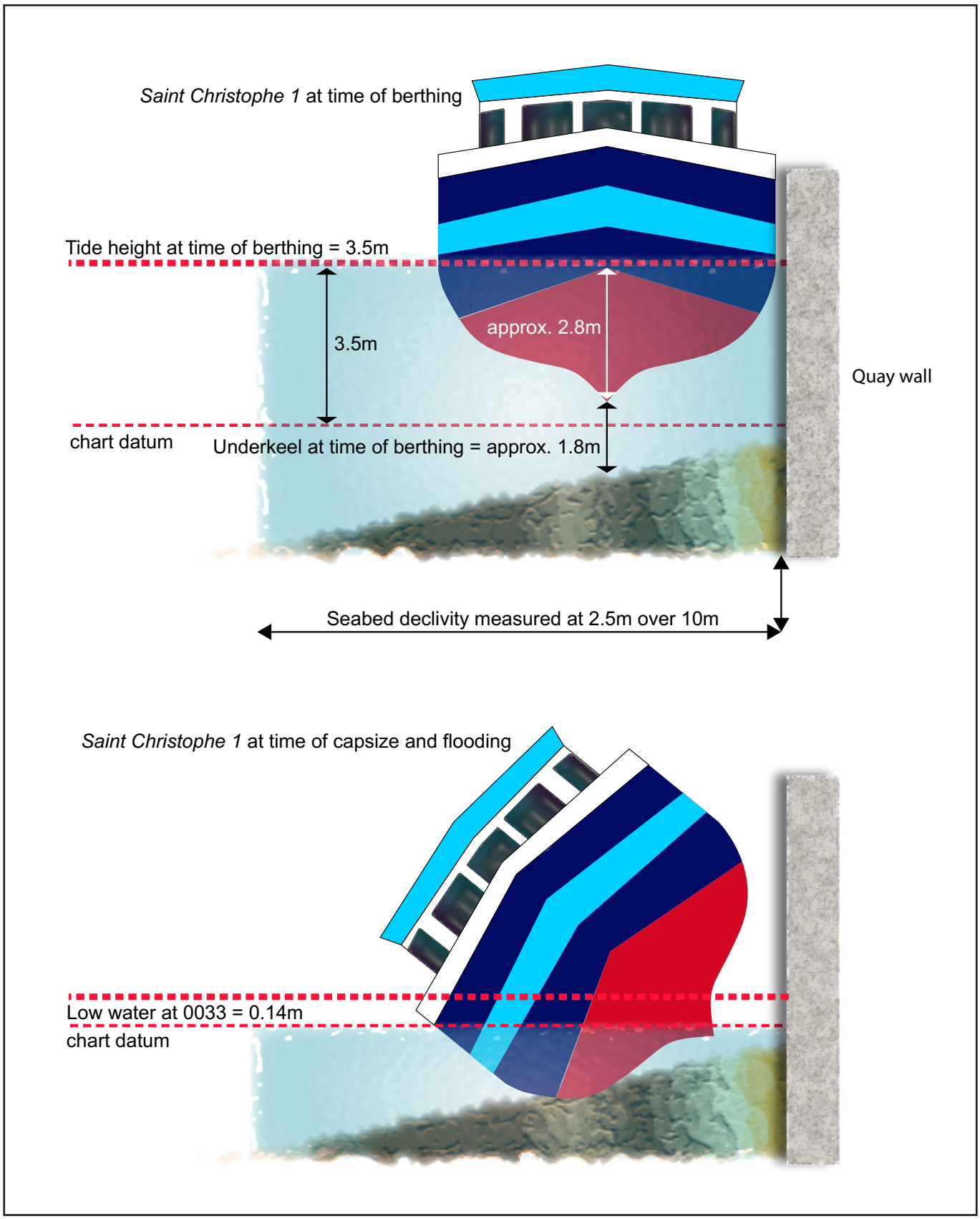

Figure 5: *Saint Christophe 1* water depth on arrival and when capsized

ANALYSIS

The accident

Saint Christophe 1 and *Sagittaire* listed heavily away from the South Embankment Quay because they grounded on a steeply sloping bed of compacted mud and silt as the tide ebbed. *Saint Christophe 1* rolled past its downflooding points because, unlike *Sagittaire*, its crew did not respond quickly enough to secure the vessel to the quay to arrest the developing list.

Saint Christophe 1 began to take on water while the tide was falling once it had rolled past the angle at which downflooding would occur. As the tide rose, the vessel continued to flood progressively because many of its watertight openings had been disabled, or had not been shut. It is possible that the vessel could have righted itself had its watertight openings been fully operational, and had they been closed.

The harbour authority's decision to berth *Saint Christophe 1* on South Embankment Quay

Having received the request from the Jobourg maritime operations centre for the three French fishing vessels to seek refuge in Dartmouth, the DHM spent 10 minutes considering his options for berthing the vessels before accepting them into the harbour. During this time he ruled out use of the mid-river moorings due to the hazard to personnel operating on the buoys in the prevailing conditions, and instead chose to berth two vessels on the Town Pontoon and one at South Embankment Quay.

The DHM was aware that any vessel berthed at South Embankment Quay would be aground at low water, but he did not attempt to forewarn the skippers with information about the berths their vessels were to occupy or to check that any of their vessels could take the ground on a steeply sloping berth. Had he taken the opportunity during his return call to Jobourg maritime operations centre to ask the staff there to relay this key information to the skippers, all concerned would have understood the limitations of Dartmouth as a port of refuge.

Further opportunities occurred for the DHM to seek assurance that one of the visiting vessels could safely take the ground when the river officers met them at the harbour entrance and subsequently when they were berthed alongside. Although one of the river officers attempted to explain the limitations of the berth using hand gestures to the skipper of *Saint Christophe 1*, the skipper did not understand the communication. Consequently, not only was *Saint Christophe 1* exposed to the risk of grounding, but *Sagittaire* was also placed at risk when its skipper later decided to shift berth to South Embankment Quay.

That the fishing vessel berthed at South Embankment Quay would have to take the ground at low water was important information, and the DHM should have taken steps to assure himself that it was understood by the skippers of the visiting vessels. If the harbourmaster or his deputy had been aware of the existence of the list of people with linguistic skills that the DHNA could call on for such tasks, one of them could have been called upon on this occasion.

If the DHM had not been sure about the risks associated with one of the fishing vessels grounding, the warning provided by the local fisherman should have stimulated him into taking further steps both to check the local hydrographic chart and that *Saint Chistophe 1*'s skipper understood the hazards, and was content with the situation.

The skippers' decision to moor their vessels on South Embankment Quay

The skippers of *Saint Christophe 1* and *Sagittaire* would not have kept their vessels alongside South Embankment Quay overnight had they known they would ground at low water on a 1 in 4 sloping berth. However, while the skippers of all three vessels had decided to stop fishing and to seek shelter from the weather, they displayed a very relaxed attitude to the safety of their vessels in port. Specifically, *Saint Christophe 1*'s skipper assumed, because there had been ample depth of water as his vessel approached South Embankment Quay, that sufficient depth would be available alongside at all states of the tide. And, *Sagittaire*'s skipper assumed it was safe to berth at the same quay as *Saint Christophe 1*. None of the skippers attempted to check the tide information for Dartmouth, which was available in French on the DHNA website, nor did they use their echo sounders to check their under keel clearance once alongside.

It is generally accepted[2] good practice that vessels' masters

> *"… should provide the relevant port or pilotage authority with basic information regarding their arrival intentions and ship characteristics such as draught and dimensions,.."*

And that following receipt of this information, the port authority

> *"…should pass relevant information back to the ship… Such information should include as a minimum: the pilot boarding point; reporting and communications procedures; and sufficient details of the prospective berth; anchorage and routeing information to enable the master to prepare a provisional passage plan to the berth prior to his arrival."*

While the skippers of *Saint Christophe 1*, *Sagittaire* and *Maranatha 2* did not intend to visit the UK when they departed Port-en-Bessin to fish in Lyme Bay, they were ill-prepared to use the UK south coast harbours as ports of refuge despite a period of poor weather being forecast. The vessels were not carrying any of the local harbour charts and they were reliant on the internet for harbour and tidal information. Given this lack of onboard information, it was essential for them to communicate with the harbour authority to establish that their vessels could safely berth in the port.

Opportunities to exchange information occurred during the initial relayed conversations with the DHM that were facilitated by Jobourg maritime operations centre and again after the berthing operations. While there were significant language barriers to overcome, the skippers should not have allowed the port officers to depart until they had a clear understanding of the times and of heights of high and low water, the minimum depth to be expected alongside, and any other information relevant to the safety of their vessels, such as the sloping nature of the seabed at the berth.

Risk assessment and SMS

The DHNA had discharged its responsibility to conduct regular surveys of the harbour, and in its risk assessment for vessels landing catch at South Embankment Quay had identified taking the ground on a falling tide as a potential hazard. The controls listed to mitigate against this hazard included that skippers should be competent, and that they should be aware that the landing area was not a long term berth, and of the water depths and tidal constraints in the harbour. The DHNA did not have a risk assessment for vessels taking the ground at South Embankment Quay.

[2] International Best Practices for Maritime Pilotage, Section 2, Provision of Information for Berth to Berth Passage Planning, at http://www.ukpandi.com/knowledge/article/international-best-practices-for-maritime-pilotage-1983/

Despite DHNA's risk assessment for fishing vessels landing catch at South Embankment Quay, there were no harbour procedures or method statements to give effect to the relevant control measures. Consequently, while the DHM and river officers knew that *Saint Christophe 1* would ground at low water, and that they should check the skipper understood this, they were either unaware that the berth sloped steeply away from the quay wall, or were unaware of its potential significance. Further, the competency requirement for skippers using the berth had not been defined, so they could not check the skipper was appropriately qualified. Even had the duty harbour staff exchanged information with the visiting vessels before approving their entry to Dartmouth, the failure to give effect to the control measures in the risk assessments meant it is likely that the exchange would not have included details about the depth of water and sloping seabed at South Embankment Quay.

Emergency response by the fishing vessel crews

Once *Sagittaire*'s skipper had identified that his vessel was aground, his quick thinking in seeking assistance from *Maranatha 2*'s crew to rig chains to the quayside undoubtedly prevented his vessel from capsizing further. The decision to evacuate the vessel was prudent given that it was not known whether or not the quayside bollards would hold the vessel as the tide continued to ebb.

Saint Christophe 1's skipper was slower to react and, once it became apparent that his vessel was in significant danger, it was too late to rig retaining lines. However, had he made more effort to prevent downflooding by having his crew close and secure all water and weathertight openings, and rig pumps before they climbed ashore, it is possible that his vessel would not have been lost.

Emergency response by the port

Once the emergency services had been alerted, the local fire service personnel and RNLI lifeboat crew reacted swiftly to rescue the crews of the two fishing boats.

The MCA staff on the scene were quick to assess the risk of pollution and alert the harbour authority. The location of the oil tanks and vent pipes on board *Saint Christophe 1* meant that there was little pollution into the harbour once the boat had flooded. However, the rapid deployment of floating booms around *Saint Christophe 1*, and the installation of surface skimmers to remove the small amounts of oil that did escape the vessel, prevented the risk of pollution in the wider harbour.

CONCLUSIONS

- *Saint Christophe 1* listed heavily at the South Embankment Quay berth because it was allowed to ground on a steeply sloping bed of compacted mud and silt as the tide fell.

- *Saint Christophe 1* flooded and became a constructive total loss because many of its watertight openings had either been disabled or left open and it rolled past the point at which downflooding would occur.

- The DHM should have taken steps to assure himself that the skipper of *Saint Christophe 1* understood the limitations of the berth at South Embankment Quay.

- The skippers should not have allowed the port officers to depart until they had a clear understanding of the times and heights of high and low water and the minimum depth to be expected alongside.

- The skippers of *Saint Christophe 1*, *Sagittaire* and *Maranatha 2* were ill-prepared to use the UK south-coast harbours as ports of refuge despite a period of poor weather being forecast.

- The DHNA had identified taking the ground at South Embankment Quay on a falling tide as a potential hazard. There were, however, no harbour procedures or method statements to give effect to the control measures identified in the DHNA's risk assessment for the use of berths at the quay.

- Had *Saint Christophe 1*'s skipper been able to close the watertight openings and rig pumps before the crew climbed ashore to evacuate the vessel, it is possible that *Saint Christophe 1* would not have been lost.

- The swift response of the emergency services, MCA and harbour authority staff ensured the crew were safely rescued and the risk of widespread pollution was minimised.

ACTION TAKEN

The **Dartmouth Harbour and Navigation Authority** has:

- Included information about the use of South Embankment Quay and other moorings in its draft Moorings' Policy 2016-2020.

- Commenced a review of its existing risk assessments.

- Requested to the Maritime and Coastguard Agency that a Port Marine Safety Code health check is performed on its port in 2017.

RECOMMENDATIONS

The **Maritime and Coastguard Agency** is recommended to:

2016/150 Perform a Port Marine Safety Code health check upon the Dartmouth Harbour and Navigation Authority in 2017.

The **Dart Harbour Navigation Authority** is recommended to:

2016/151

- Provide guidance to its duty harbourmasters and river officers about the information they are required to exchange with visiting vessels before approving their entry into the harbour.

- Review the control measures identified in its risk assessments and ensure procedures are in place to make them effective.

The **owners of *Saint Christophe 1* and *Sagittaire*** are recommended to:

2016/152 Review their carriage arrangements to ensure appropriate charts and publications are available for likely ports of refuge in their area of fishing operations, in compliance with Chapter 6, Division 226 of Volume 5 du réglement applicable aux navires: Navires de Pêche.

SHIP PARTICULARS

Vessel's name	*Saint Christophe 1*	*Sagittaire*
Flag	France	France
Classification society	n/a	n/a
IMO number/fishing numbers	CN 666535	CN 764603
Type	Demersal trawler	Demersal trawler
Registered owner	Privately owned	Privately owned
Manager(s)	n/a	n/a
Year of build	1984	1990
Construction	Polyester	Steel
Length overall	22.0m	23.6m
Registered length	n/a	n/a
Gross tonnage	141.8	169.6
Minimum safe manning	Not applicable	Not applicable
Authorised cargo	Not applicable	Not applicable

VOYAGE PARTICULARS

Port of departure	Port en Bessin	Port en Bessin
Port of arrival	Dartmouth	Dartmouth
Type of voyage	Fishing	Fishing
Cargo information	Not applicable	Not applicable
Manning	5	5

MARINE CASUALTY INFORMATION

Date and time	10 March 2016 0300	9 March 2016 2330
Type of marine casualty or incident	Serious Marine Casualty	Marine Incident
Location of incident	Dartmouth	Dartmouth
Injuries/fatalities	0	0
Damage/environmental impact	Vessel sunk, some diesel loss	None
Ship operation	Berthed alongside	Berthed alongside
Persons on board	5	5