SHERIFFDOM OF TAYSIDE, CENTRAL AND FIFE AT DUNFERMLINE

[2022] FAI 9

DUNF-B206-20

DETERMINATION

BY

SHERIFF LORNA A DRUMMOND QC

UNDER THE INQUIRIES INTO FATAL ACCIDENTS AND SUDDEN DEATHS ETC (SCOTLAND) ACT 2016

into the death of

BRIAN SMITH

Dunfermline, 1 March 2022

The Sheriff, having considered the information presented at an inquiry on 24, 25 and 27 January 2022 under section 26 of the Inquiries into Fatal Accidents and Sudden Deaths etc (Scotland) Act 2016 finds and determines in accordance with section 26(2)(1)(a) and (2) as follows:

1.

(a) Mr Brian Smith died at about 1555 hours on 28 February 2019 at Dock M, Rosyth Dockyard, Rosyth, Fife.

(b) The accident resulting in his death occurred also at about 1555 hours on 28 February 2019 at Dock M, Rosyth Dockyard, Rosyth, Fife.

(c) The cause of death was head, neck and chest injuries as a consequence of Mr Smith stepping from the Cherry Sand towards the quay, with his foot either just missing the quay or slipping off it, hitting the quay with his upper body, being crushed between the quay and the vessel and falling into the dock.

(d) The cause of the accident was Mr Smith climbing over the bulwark when the vessel was about 3 metres away from the quay, not complying with instructions to step inboard, and thereafter stepping from the Cherry Sand towards the quay when about a metre and a half away from it and without permission from the bridge to do so.

(e) Precautions which could reasonably have been taken, and had they been taken might realistically have resulted in the death, or any accident resulting in the death, being avoided are:

(i) Mr Smith complying with instructions not to climb over the bulwark or stand on the rubbing band, while the vessel was away from the quay;

(ii) Mr Smith stepping inboard when instructed to do so from the bridge and by Mr Fountain;

(iii) Mr Smith waiting until the shoulder of the vessel was touching the quay and as close to the height of the quay as was possible before stepping ashore;

(iv) Mr Smith not stepping ashore until he obtained permission from the bridge to do so;

(v) Aborting the manoeuvre as soon as Mr Smith climbed over the bulwark.

(vi) Using line handlers to take the mooring lines and avoiding having a crew member step ashore until the vessel was properly secured;

(vii) Removing the chains from the quayside to allow a bollard to be lassoed and avoiding having a crew member step ashore until the vessel was properly secured;

(f) Defects in the system of working which contributed to the death or any accident resulting in the death were as follows:

(i) Failure to follow and enforce the safe system of working to use linesman and lasso a bollard when possible;

(ii) An absence of a vessel specific risk assessment addressing the risks involved in self-mooring the Cherry Sand with appropriate control measures including alternatives to self-mooring.

(g) Other facts relevant to the circumstances of the death are as follows:

(i) That there had been a recent accident on the Cherry Sand, before Mr Smith's accident, involving injury whilst disembarking during self-mooring procedures;

(ii) The absence of any MCA guidance on self-mooring.

2. I have no recommendations to make under section 26(1)(b).

NOTE

Introduction

[1] This is a mandatory public inquiry under section 2(3) of the Inquiries into Fatal Accidents and Sudden Deaths etc (Scotland) Act 2016 into the death of Mr Brian Smith as his death was a result of an accident that occurred whilst he was acting in the course of his employment.

The participants and their representatives at the inquiry

[2] The Procurator Fiscal issued notice of the inquiry on 8 October 2020. After various preliminary hearings, evidence was heard on 24 and 25 January 2022, with submissions on 27 January 2022. The following parties were represented at the inquiry:

The Crown: Mr Urquhart, Fiscal Depute

Associated British Ports, t/a UK Dredging: Mr B Smith QC

The Maritime and Coastguard Agency: Ms Toner, Advocate

Mr James Howard: Ms Connelly, Advocate

Rosyth Royal Dockyard Limited: Mr Gray QC

Mr Darren Dodsworth: Mr C Smith, Advocate

The witnesses

[3] The parties agreed much of the evidence by way of joint minute which was read out at the start of the inquiry. Most of the witnesses' evidence in chief was by way of their witness statements. The witnesses were cross-examined and re-examined orally by the parties by video link. Evidence was led from Mr Stuart Fountain (Able Seaman), Mr Darren Dodsworth (Operations Manager), Mr James Howard (Chief Officer), Mr Suresh Gadi (Engineer), Mr Christopher Pepper (Able Seaman, cook), Mr James Steer (Safety and Compliance Manager, Associated British Ports) and Mr Richard Johnston (Harbour Master, Rosyth Royal Dockyard Limited). Mr Dodsworth adopted the statement lodged before the inquiry as his evidence in chief but chose not to answer any further questions on legal advice and on the basis that the answers might incriminate him. Mr Howard did not adopt his statement as his evidence in chief on the basis that the answers might incriminate him. Captain Emma Tiller (Marine Accident Investigation Branch ("MAIB") investigator), Mr Simon Alletson (Maritime Coastguard Agency ("MCA") surveyor), Captain Marsh and Captain Simpson all spoke to reports submitted as productions. Captain Tiller was unable to give opinion evidence and restricted her evidence to the factual parts of the report by the Marine Accident Investigation Branch ("MAIB"). Captains Marsh and Simpson were cross-examined in accordance with minutes of questions approved by the court in advance. Captains Marsh and Simpson agreed a joint minute identifying matters that were and were not in dispute between them.

The legal framework

[4] The inquiry is held under section 1 of the Fatal Accidents and Sudden Deaths etc (Scotland) Act 2016 (the 2016 Act). Under section 1(3), the purpose of the inquiry is to:

> "(a) establish the circumstances of the death, and;
>
> (b) consider what steps (if any) might be taken to prevent other deaths in similar circumstances."

[5] Under section 26 of the Act, as soon as possible after the conclusion of the evidence and submissions the sheriff must make a determination setting out -

(a) the sheriff's findings as to:

(a) when and where the death occurred;

(b) when and where any accident resulting on the death occurred;

(c) the cause or causes of the death;

(d) the cause or causes of any accident resulting in the death;

(e) any precautions which –

(i) could reasonably have been taken, and

(ii) had they been taken might realistically have resulted in the death or any accident resulting in the death, being avoided;

(f) any defects in any system of working which contributed to the death or any accident resulting in the death;

(g) any other facts, which are relevant to the circumstances of the death; and

(b) such recommendations (if any) as to any of the following matters as the sheriff considers appropriate:

(a) the taking of reasonable precautions;

(b) the making of improvements to any system of working;

(c) the introduction of a system of working

(d) the taking of any other steps,

which might realistically prevent other deaths in similar circumstances.

[6] An inquiry is an inquisitorial process and it is not the purpose of an inquiry to establish civil or criminal liability. The standard of proof is the civil standard of proof on the balance of probabilities.

Summary of evidence

[7] This summary reflects the terms of the joint minutes, the statements and oral evidence. Where there was a conflict in the oral evidence I address that below.

[8] Mr Brian Smith was born on 20 January 1947. He died on 28 February 2019 at Dock M, Rosyth Dockyard, Rosyth, Fife. He was 72 years old. He was employed as a relief master on the MV Cherry Sand ("the Cherry Sand") at Rosyth Dockyard in Fife. The Cherry Sand is a self-propelled grab hopper dredger. It has a crane which pulls material from the seabed and stores it in a container on board. The material is then dropped in a corner in the dock.

[9] The registered owner of the Cherry Sand is Associated British Ports.("ABP"). It is managed by UK Dredging (UKD), a division of ABP. The Cherry Sand mainly docks in Humber. On 22 February 2019, UKD was awarded a contract at Rosyth Dockyard to dredge a wide approach channel in the dock for the arrival of HMS Queen Elizabeth. The Cherry Sand arrived in Rosyth on 23 February 2019.

[10] The Cherry Sand had a permanent A crew and B crew, each crew working two weeks on and two weeks off. In February 2019, the usual master of the Cherry Sand was attending a training course. Mr Smith was selected as relief master by UKD through a recruitment agency. Mr Smith was fully qualified and appropriately certificated as a master. He had not worked on the Cherry Sand or for UKD before.

[11] Mr Smith took over command of the Cherry Sand at 1200 hours on 24 February 2019. Mr Dodsworth, UKD operations manager, met Mr Smith on Monday 25 February and joined the crew. Mr Dodsworth had more than 20 years' experience with UKD. The crew changed over on Wednesday 27 February. In addition to Mr Smith and Mr Dodsworth, the following crew were on board: Mr James Howard as Chief Officer/Mate; Mr Suresh Gadi as Chief Engineer; Mr John Yates as second engineer; Mr Stuart Fountain as Able-Seaman/Crane Driver and Mr Chris Pepper as Able-Seaman/Cook.

[12] On 27 February, Mr Dodsworth and Mr Howard discussed how they would work the mooring operation. Mr Howard's normal duties included mooring and unmooring the vessel. As Mr Dodsworth was planning on leaving the vessel the following evening, they agreed that Mr Howard would take control of manoeuvring the

vessel and dredging. Mr Dodsworth would assist as required. Mr Smith volunteered to take over mooring. Mr Dodsworth was satisfied having been with Mr Smith over the previous three days, that Mr Smith was fit enough and capable of undertaking this task. Mr Smith had observed the mooring operation and procedures. Mr Dodsworth having gone through the procedures with Mr Smith, was satisfied he fully understood them. Mr Smith was expressly instructed not to step outboard until the Cherry Sand was alongside and he was told to do so by the bridge.

[13] At 7am on 28 February Mr Dodsworth assembled the crew for a briefing. There was a conflict in the evidence before the inquiry as to whether Mr Smith was present at that meeting. The report prepared by the MAIB stated that Mr Smith had not been present. In oral examination Captain Tiller explained that she had prepared the first draft of the MAIB report but that others had contributed thereafter. Whilst she could not reveal the source of the conclusion that Mr Smith had been present, she stated that it had been reached after having spoken to all or most of the crew. When challenged about that in cross-examination, Captain Tiller said she could not comment as it would stray into providing opinion evidence. In examination-in-chief she indicated that the evidence before her strongly indicated that Mr Smith was not present. Unfortunately all the other evidence before the inquiry from the crew was clear that Mr Smith was present. I have no explanation as to why different information has been given to the inquiry and to the MAIB. However, I have no reason to disbelieve the consistent evidence of all crew members to the inquiry and I prefer to proceed on their direct evidence rather than on a report by someone else of what has been said at a different

time by unidentified crew members. I therefore find that Mr Smith was present at the morning briefing.

[14] Mr Dodsworth had called the meeting because there had been a recent incident on the Cherry Sand which had involved the other crew. The ship's mate had fallen and fractured his wrist. It was reported as having occurred as a result of falling down some steps. However it was subsequently discovered that it had occurred when the mate had been stepping shore across a fender, contrary to Company policy. The master and the mate had lied to cover up the cause of the accident. Both were disciplined and lost their jobs. Mr Dodsworth stressed to all crew at the morning briefing that nobody was to go ashore until the vessel was alongside touching the quayside, safely stopped and only then after instruction from the bridge. That morning Mr Smith went ashore to let the moorings go and followed the instructions without incident. Thereafter the Cherry Sand was working in the docking area dredging the basin.

[15] Around 1530 hours, the Cherry Sand prepared to moor to discharge waste at M Berth, an area within the harbour and close to decommissioned submarines. Mr Smith went forward on the deck along with Mr Fountain. Mr Howard was at the helm on the bridge. Mr Dodsworth was also on the bridge. Mr Dodsworth, Mr Howard, Mr Fountain and Mr Smith each had radios for communication. Mr Smith was wearing full PPE. At around 1550 hours Mr Smith was standing on the port side near the bow. As the Cherry Sand approached the quay on its port side at about a 45 degree angle, and about 3 metres from the quay, Mr Smith climbed over the bulwark (the solid metal rail around the vessel). Mr Howard and Mr Dodsworth instructed

Mr Smith by radio to climb back inboard until the Cherry Sand was alongside. Mr Fountain, standing nearby on deck at the bow, gave the same verbal instruction to Mr Smith. However, Mr Smith did not climb back inboard. When the Cherry Sand was about a metre and a half from the quay, Mr Smith stepped from the vessel towards the quay. Mr Smith thereafter fell into the water and disappeared from view.

[16] Mr Fountain shouted "full astern" and the vessel started to move away from the quay. Mr Fountain threw a lifebuoy to Mr Smith. Mr Dodsworth called port control to inform there was a man overboard and to seek assistance. Mr Howard pressed the audible alarm. Within minutes Mr Fountain, Mr Pepper and Mr Howard launched the vessel rescue boat. Mr Howard and Mr Fountain crewed the rescue boat and recovered Mr Smith from the water. Mr Smith was then transferred to the safety vessel operated by Rosyth Royal Dockyard Ltd and taken ashore where lifesaving efforts continued. Paramedics pronounced Mr Smith's life extinct at 1615 hours on 28 February 2019.

[17] CCTV footage of the accident was played to the inquiry. It shows Mr Smith stepping from the Cherry Sand to the quay. Mr Fountain described how he thought he could see on the footage that Mr Smith fell onto the chains located at the edge of the quayside.

[18] On 7 March 2019, Dr Robert Ainsworth, Consultant Forensic Pathologist conducted a post mortem examination of Mr Smith. The cause of death was stated to be: 1(a) Head, neck and chest injuries; 1(b) Watercraft-related incident

[19] Following the accident, the MAIB conducted an investigation. The MAIB investigates marine accidents involving UK flagged vessels worldwide and all vessels in

UK territorial waters. The MAIB produced a report and annexes following their investigation. At page 7 of the synopsis of the report, it is stated that:

> "The chief officer was still manoeuvring the vessel towards the berth when the master took a single step towards the quayside. Cherry Sand was too far away from its berth with the result that the master's foot missed the quay and his upper body struck the quay wall and the vessel. He was crushed by the moving dredger before slipping into the water.".

[20] Paragraph 1.10.3 of the MAIB report records the findings of an internal investigation carried out by ABP following the accident. They are as follows:

- The immediate cause of the accident was that the Cherry Sand's master made three critical deviations from the prescribed safe system of work. These were:
  - The master had climbed outboard of the bulwark without permission from the bridge.
  - The master had climbed over the bulwark before the vessel was tight alongside.
  - The master was in a position on the rubbing band that was forward of the best optimal position and therefore was not level with the quay edge.
- Linesmen had not been made available, resulting in the requirement to step ashore.
- There was no positive record to confirm that the risk assessment and safe system of work had been fully understood by all crew.

- The generic mooring risk assessment and safe system of work had not been reviewed within a 12 month period.
- There was no specific risk assessment for mooring practices at Port Babcock Rosyth.

[21] At paragraph 1.11, reference is made to the ISM Code, section 7, shipboard operations which stated that:

> "The Company should establish procedures, plans and instructions, including checklists as appropriate, for key shipboard operations concerning the safety of personnel, ship and protection of the environment. The various tasks should be defined and assigned to qualified personnel.".

[22] Section 3.1.5 of UKD's IMS fleet procedures set out the procedures to be followed when mooring, unmooring and anchoring. It states at section 3.1.6:

> "Due to the nature of the vessels' operation, it may be necessary to embark or disembark whilst the vessel is in the lock or alongside when unmoored. This practice is acceptable as long as mooring the vessel is not impracticable or unsafe in the circumstances and all safety precautions have been carried out in accordance with the risk assessment and safe system of work."

The risk assessment UKD/002 is at Annex B of the MAIB report. The risks were last assessed by UKD on 30 April 2018 and was due for review on 29 April 2019.

[23] In addition UKD required ships' staff to draw up their own local risk assessments and safe system of work following the same format as UKD but specific to each vessel. These were generated by the master who was also responsible for reviewing them at intervals not greater than 12 months. The safe system of work is at Annex C of the MAIB report. It had last been reviewed on 31 July 2017.

[24] At paragraph 1.12.1 of the MAIB report, it is recorded that the quayside was equipped with chain barriers to prevent personnel from falling into the dock (as shown in figure 6 of the report). The chains could be removed to allow access to mooring bitts or facilitate the rigging of a gangway. Captain Tiller confirmed in oral examination that they could be removed to allow a bollard to be lassoed for mooring purposes. The chains had not been removed at the time of the accident.

[25] In oral examination Captain Tiller accepted that it was possible that Mr Smith having climbed over the bulwark, was standing on the part of the deck which protruded beyond the bulwark. Part of the bulwark had been cut out as a freeing port and at that point the deck extends about 10cm from the bulwark.

[26] The MCA investigated the accident in their capacity as an Executive Agency responsible throughout the UK for implementing the Government's maritime safety policy. Mr Simon Alletson, Principal Surveyor, MCA, conducted an investigation into the accident and produced a report. He did not interview crew members individually but took a group statement. He noted that on the morning of the accident a briefing on operations was given including on berthing which was logged. For the berthing at the waste berth a tool box talk was given and was also logged. He confirmed the arrangements were that for the berthing and unberthing Mr Howard was to steer, Mr Dodsworth was to oversee from the bridge and Mr Smith had volunteered to take the lines. For unberthing, Mr Smith went ashore to release the mooring lines and returned on board without any problems. When preparing to moor, Mr Smith went forward with Mr Fountain. Full PPE was worn. It was stressed that the line handler

was to remain on board and inside the bulwark until the vessel was alongside and given permission by the bridge to go ashore. Approximately 3 metres from the quay, Mr Smith climbed over the bulwark. Mr Fountain told him to get back inside the bulwark. This was repeated by Mr Howard and Mr Dodsworth over the radio from the bridge. At about 1 to 1.5 metres from the quay, Mr Smith went to step across. He was seen hanging from the chains on the quayside and then fell into the water. Mr Fountain shouted "astern astern" and the boat started to move away from the quay. Mr Fountain shouted man overboard and deployed the lifebuoy.

[27] Mr Alletson concluded from the CCTV footage which was shown to the inquiry that it appeared as if Mr Smith managed to get a foot on the quay but that his foot had then slipped off and he fell forward apparently striking the quayside before falling between the vessel and the quay and disappearing from view. When Mr Alletson went to inspect the quayside area with police it was noted that on the quay wall, adjacent to the midships of the Cherry Sand (once it was moored), there was an area of what appeared to be blood, matter and hair, significantly aft of where the mooring lines were to be placed. A scuff mark which could have indicated a slip was also seen. From the CCTV he confirmed that was the area that Mr Smith had attempted to step ashore.

[28] Mr Alletson examined the risk assessment and safe system of work. He concluded that there was no systemic failure which lead to the accident but rather it was the result of Mr Smith failing to follow accepted and proper procedures for operations of this nature.

[29] Mr James Steer, safety and compliance manager with ABP explained that UKD has a fleet of six ships and he is responsible for safety and compliance. At the beginning of 2018 he audited the Cherry Sand and gave them a "major non-conformity" because there were no dredge risk assessments prepared. He returned 6 months later and found the same thing had happened again. He also explained that he had prepared a report into the previous incident involving the other crew which he had finalised on 28 February, the day of Mr Smith's accident, and sent to the MAIB as soon as possible after that.

[30] Following Mr Smith's accident, UKD carried out a full and detailed review of company procedures. Although they were satisfied that the systems and procedures in place were adequate to allow operations to be conducted safely, they have since ceased the practice of crew stepping ashore unless the vessel is secured alongside. The reason for that decision was to prevent further incident from any persons violating safety critical procedures. The MCA Code of Safe Working Practices for Merchant Seafarers (COSWP): Self-mooring Operations now states "Where reasonably practicable appropriately trained shore-side personnel should be available to assist with mooring operations" (26.7.1). It is recognised that self-mooring may be a reasonably practicable operation provided that the unique hazards have been mitigated (26.7.2). A safe system of work for the activity incorporating a risk assessment and method statement should be provided. That should consider that access to some quays might give rise to further risk. Additionally consideration should be given to the size and type of vessel in relation to the berth and/or mooring buoy …" (26.7.3). Only if it is not possible to achieve full or

partial mooring of the vessel prior to embarkation or disembarkation using the specified methods (including lassoing a bollard), should crew transit to or from the quay or berth while the vessel is unsecured (26.7.9). They have created a crew coordinator role to assist in recruiting temporary crew members.

[31] The UKD General Risk Assessment for the Cherry Sand dated 30 April 2018, which was in place at the time of the accident, identifies various risks and control measures. The risks include "fall from vessel to water" for persons embarking and disembarking. Amongst the causes identified were "gap between ship and shore too large" and the likely consequences "slight injuries from impact on water, death by drowning, being crushed between the vessel and dock". The ways to prevent it are identified as "Leave gate closed until vessel alongside and Master/OOW has approved of transfer; wear lifejacket and safety boots; ensure vessel thrusting on to jetty; if not briefed or lack of experience, briefed supervisor at embarkation point". Under the heading "safe system of work" for "embarkation/disembarkation" the identified risks are falling from vessel to water and jumping from height to dock. The method adopted is:

> "Once Master/OOW approved of embarkation/disembarkation, open gate and step on or off vessel. Close gate on completion and inform master/OOW that transfer is complete".

[32] Another identified hazard is "jumping from height to jetty/dock or ships deck" with persons embarking/disembarking at risk of harm as a result of large height

difference between deck and jetty. The likely consequences include "soft tissue damage or broken bones, particularly ankles". Ways to prevent that are described as:

> "ensure minimal height difference, ballast to achieve safe height; if safe height not achievable alternative means can be used if suitable equipment available."

A further identified hazard is "embarkation/disembarkation" where the identified risks are noted as "falling from a vessel to water, jumping from height to jetty/dock or ships deck; struck from moving traffic on quayside." The method used is:

> "Once Master/OOW approved of embarkation/disembarkation, open gate and step on or off vessel; close gate on completion and inform Master/OOW that transfer is complete."

[33] UK Dredging's document Safe System of Work No 5 revised 31 July 2017 and in place at the time of the accident, states:

> "GENERAL INSTRUCTIONS – Mooring Vessel
>
> 1. All personnel must wear the required PPE as dictated by their duties; ….
>
> 7. Linesmen should be used when possible; …
>
> 11. If possible the crew member going ashore should do so in the locks with the vessel alongside. **Person going ashore should seek permission from Bridge before boarding or disembarking the vessel and ensure it is as safe as is practically possible to do so.**
>
> 12. **Whenever possible the forward spring should be thrown to a bollard and made fast, and the vessel steamed gently ahead on it to maintain a steady position alongside.** The spring should not be made fast until the vessel is stopped. Or nearly stopped over the ground, and only after being told to do so by the bridge. Care should be taken when making fast that sudden excessive weight does not come into the spring line.
>
> 13. **When stepping ashore from the vessel to the quay the crewmember should wait until the vessel is tight alongside and step from a position as close to the height of the quay as is possible when given permission from the Bridge**, and always have another crew member in attendance to

> see his safely ashore. Do not climb over the coaming or stand on the rubbing band, while the vessel is away from the quay. (The last sentence is highlighted in red in the original text – the bold emphasis has been added). "

[34] Mr Richard Johnston was Deputy Harbour Master and Operations Support Manager at Rosyth Dockyard at the time of the accident, employed by Rosyth Royal Dockyard Limited ("RRDL"). He stated that at the time of the accident, it was the practice to routinely offer line handlers to commercial vessels. That is still the practice today. He had not been involved in any conversations relating to whether the Cherry Sand required line handlers on the day of the accident. He confirmed that on 28 February 2019, RRDL employed five or six individuals with line handling training. They were not dedicated line handlers and all worked on other duties. However it would have been possible to take them off other tasks to provide line-handling services that day if required. RRDL would usually require around a day's notice if line handlers to plan who could be used. If for any reason RRDL was unable to provide line handlers, or if services were required outside normal working hours, RRDL would hire line handlers from elsewhere. There were four line handlers on duty on the day of the incident. There may have been more on duty employed by other businesses but RRDL do not keep records of that. The line handlers were all available to provide line handling duties on 28 February if required. In cross-examination he was asked if there was any discussion about using line handlers. He stated that he was not party to it, but he believed that there was a conversation between the Harbour Master and

Mr Dodsworth about whether line handlers were required. He understood they agreed that as self-mooring happens regularly line handlers would not be required.

[35] The inquiry also heard evidence from Captain Marsh and Captain Simpson. They agreed that there were no industry recommendations or MCA guidelines on self-mooring of vessels at the time of the accident so that vessel operators had to produce their own risk assessments and systems of work. Self-mooring is an industry-wide practice, particularly utilised on dredgers and other small commercial cargo vessels. The ideal way to moor would be to always to use line handlers. They agreed that line handlers could have been used but in practice it generally does not happen and there would be practical difficulties if line handlers had to be constantly standing by. Alternatively, the quayside chains could have been removed to allow the crew to lasso the mooring bollards without leaving the vessel until it had been secured. As line handlers were not used nor the chains removed, the vessel had to self-moor.

[36] They both also agreed that UKD's risk assessment for self-mooring was generic and not vessel specific in that it referred to the use of bow thrusters and bulwark doors and the Cherry Sand had neither. This difference should have been noticed by UKD or third parties during audits but had not been. The only way to berth a vessel of this type is to approach the quay from an angle so that the shoulder will always contact the quay first. With no bow thrusters the vessel cannot come alongside the quay until there is already a line ashore which means someone had to cross to the quay from the shoulder of the vessel. The point of contact has to be hard against the quay with minimal movement before anyone steps ashore.

[37] They further agreed that even if the vessel was hard against the quay no one should go ashore until whoever was at the helm said it was safe to do so and the person going ashore was instructed so to do. Mr Smith should not have stepped over the bulwark when he did. The primary cause of the accident was the conduct of Mr Smith who disobeyed the procedures and verbal instructions. Bulwark doors are located on the flat side and not the shoulder of a vessel. A bulwark door, if one had been fitted on the Cherry Sand, would not have assisted in the self-mooring operation as it could not be used until the vessel was flat against the quay which was not possible for a vessel without bow thrusters until the vessel had been moored. The emergency response by the crew was excellent. Mr Smith held the necessary Certificate of Competence and Seafarer Medical Certificate (ENG 1) and was accordingly qualified to act as the master of the vessel.

[38] There were two matters the experts disagreed upon: (1) Whether, when the deceased climbed over the bulwark and stood on the rubbing band outboard of the vessel, those on the bridge should have aborted the manoeuvre of bringing the vessel against the quay and spoken to him or continued with the manoeuvre and spoken to him thereafter; and (2) whether the fact that the UKD risk assessment remained generic and not vessel specific was relevant to the accident. I address both matters below.

Issues for the Inquiry and parties' submissions

[39] The parties invited me to make findings in line with those that I have made above in relation to section 26(2)(a) to (c).

The cause of death or cause of any accident resulting in the death

[40] Mr Smith was a master with experience of dredging operations though not specifically a grab hopper vessel and he had never worked on the Charry Sand before. He had observed self-mooring operations and carried them out himself. He had worked alongside Mr Dodsworth, the operations manager on the Cherry Sand for three days before the accident and been lead through the mooring operations and procedures. He had been specifically instructed not to step outboard the Cherry Sand until the vessel was alongside and he was told to so by the bridge. He was instructed at the morning briefing on 28 February not to go ashore until the vessel alongside, safely stopped and he was given permission from the bridge. He had the required certification and was suitably experienced to be employed as a master. Although his medical certificate was not fully completed, it did state that he was fit to carry out his duties. He was a hill walker and appeared to be physically fit to manage these tasks.

[41] From the CCTV footage and evidence it appears that Mr Smith climbed over the bulwark without much difficulty. It is not clear whether he was standing on the rubbing band or the part of the deck that extended beyond it for 10cm. There is a height difference between the rubbing band and that of the quay which varies as the band curves round the vessel. Captain Simpson estimated the distance across and down that Mr Smith stepped was about a metre or so when away from the quay. Mr Smith can be seen to climb over the bulwark when the vessel is about 3 metres from the quay and then to step across towards the quay when the vessel is about 1.5 metres away from the

quay. It is not known whether he stepped off and misjudged the distance to the quay or lost his balance. However, from the evidence of Mr Fountain, Mr Alletson and the MAIB report I find that he either just missed the quay or had one foot on the quay and slipped off it, hit the quay with his upper body, was crushed between the quay and the vessel and fell into the dock. That is consistent with Mr Alletson's evidence that there was blood on the side of the quay.

[42] Mr Smith climbed over the bulwark while the Cherry Sand was 3 metres or so away from the quay. He disobeyed instructions to climb back inboard. Contrary to instructions, he did not wait for the vessel to be alongside before stepping ashore. He did not wait for permission from the bridge before stepping ashore. Had Mr Smith complied with instructions, the accident would not have occurred. I therefore find that the direct cause of the accident was Mr Smith's actions.

Precautions that could reasonably have been taken and, had they been taken, might realistically have resulted in the death being avoided

[43] I accept the submission made by ABP that any finding under this head should not contain any indication as to whether a person was under a duty at common law or statute, to take the precaution identified and I do not make any such indication. The expression "might realistically" have been "avoided" envisages not a probability but a real or live possibility that the death might have been avoided by the reasonable precaution. Reasonableness relates to the availability and suitability of the precautions.

[44] From the analysis of the cause of the death above, it follows that, had Mr Smith followed instructions and not acted in the way he did, the death could have been avoided. Specifically, reasonable precautions which he could reasonably have taken and had he taken might realistically have avoided the death or accident resulting in the death were:

(i) Mr Smith complying with instructions not to climb over the bulwark or stand on the rubbing band, while the vessel was away from the quay;

(ii) Mr Smith stepping inboard when instructed to do so from the bridge and by Mr Fountain;

(iii) Mr Smith waiting until the shoulder of the vessel was touching the quay and as close to the height of the quay as was possible before stepping ashore; and

(iv) Mr Smith not stepping ashore until he obtained permission from the bridge to do so.

[45] The Crown invited me to make a finding under paragraph (e) that:

> "a precaution by which the accident resulting in Brian Smith's death might reasonably have been avoided would have been if, when he failed to return inboard of the bulwark when so instructed, those on the bridge had aborted the manoeuvre of bringing the vessel against the quay".

Aborting the manoeuvre

[46] I recognise that the response by the crew to Mr Smith stepping ashore when he did was an immediate one, reacting as they did within seconds. Mr Fountain immediately threw a lifebuoy and shouted "astern". Those on the bridge responded

instantly and manoeuvred the vessel away from the quay. The rescue boat was launched as soon as possible and the Rosyth vessel alerted. Mr Smith was quickly recovered from the water although tragically life-saving attempts were unsuccessful. I commend the crew for their very swift response.

[47] Should the bridge have aborted the manoeuvre at an earlier stage when they saw Mr Smith climb over the bulwark? The CCTV footage shows the vessel moving very slowly (estimated at about 0.5 knots) and about 3 metres away from the quay when he climbed over the bulwark. Captain Simpson explained at that point the vessel was moving forward. Depending on the state of the engine controls, there would have necessarily have been a delay whilst the engine was put into neutral, the clutch engaged and put into astern. Captain Simpson's opinion was that without any contact with the quay acting to stop the forward motion, it would not have been possible to have carried out the manoeuvre to move the vessel away in the short space of time available before Mr Smith stepped ashore. Captain Simpson explained that to abort the manoeuvre would have carried its own risks. It cannot be known what would have occurred had the manoeuvre been aborted. He suggested that is speculation what would have occurred but amongst the possibilities are that a fall might have occurred in any event with all the risks inherent in Mr Smith being in the water next to a large moving vessel. Captain Marsh disagreed with Captain Simpson. He considered that there was time to pull the bow away from the quay and that the manoeuvre was not different from that seen in the CCTV footage. It could have been carried out smoothly and should have been carried out at an earlier stage as soon as Mr Smith climbed over the bulwark.

[48] The crown conceded that the crew did not have a great deal of time to react. From the time when Mr Smith stepped over the bulwark to when he stepped across towards the quay, just 30 seconds had passed. Part of that time was taken up with instructions being given from the bridge and deck to Mr Smith to climb back inboard. It was also conceded that it could not be determined what would have happened had the manoeuvre been aborted and that Mr Smith's fall overboard could not be excluded. The crown suggested that nonetheless it seems unlikely that Mr Smith would have stepped from the vessel had it moved further from the quay. The manoeuvre could have been carried out smoothly and without risk of throwing Mr Smith off. Even if he had fallen after the bow had been brought away, he would not have been crushed between the vessel and the quay.

[49] It seems to me that as soon as Mr Smith climbed over the bulwark he was in imminent danger. Whilst I recognise there was a very limited time within which to react, some 30 seconds, and that it was a reasonable and necessary step to instruct Mr Smith to climb back inboard immediately, I also consider it was a reasonable precaution to have immediately aborted the manoeuvre. It can be seen from the CCTV footage that the manoeuvre can be carried out smoothly and within a short time period. Had the bow begun to move away from the quay, it cannot known what action Mr Smith would have taken. However, there would have been an increased gap between the vessel and the quay and much less risk of him being crushed between the vessel and the quay if he were to fall into the water. It also seems to me that had he been aware that the vessel was immediately pulling away from the quay and the distance

between the quay and the vessel increasing, it is less likely he would have attempted to step across towards the quay. The CCTV footage shows that the manoeuvre was capable of being carried out smoothly. In my view it was a reasonable precaution to have aborted the manoeuvre as soon as Mr Smith climbed over the bulwark when it was away from the quay whilst instructing him to climb inboard. In my view that precaution might realistically have resulted in the death being avoided in the sense that was a real or live possibility that Mr Smith would not have attempted to step ashore or would not have been crushed between the vessel and the quay.

Use of line handlers and lassoing a bollard

[50] No party proposed that a reasonable precaution that might realistically have avoided the death or accident resulting in death, was to use alternative methods of mooring. Whilst self-mooring is an accepted practice, particularly for small commercial vessels, UKD's IMS fleet procedures state that is only acceptable:

> "so long as mooring the vessel is not impracticable or unsafe in the circumstances and all safety precautions have been carried out in accordance with the risk assessment and safe system of work".

The risk assessment makes no mention of alternative methods of mooring. However, the safe system of work No 5 at paragraph 7 provided that "Linesmen should be used when possible" and at paragraph 12 that "Whenever possible the forward spring should be thrown to a bollard and made fast".

[51] I heard from Mr Johnston that there was a conversation between Mr Dodsworth and the Harbour Master about the use of line handlers. He did not hear the

conversation himself but understood that what was agreed was that no line handlers would be used because the vessel regularly self-moored. Mr Dodsworth declined to answer questions and his statement says nothing about any such conversation.

Mr Johnston's evidence that there were line handlers available and that the quayside chains could have been removed to facilitate lassoing a bollard was not challenged at the inquiry by any party. Removing the chains would have increased the area for the crew to land and made it possible to lasso a bollard without having to place a crew member ashore. Providing line handlers would have made it unnecessary for a crew member to step ashore while the vessel was unmoored.

[52] Mr Smith QC, representing ABP, submitted that I could not make a finding that it was a reasonable precaution to have used line handlers/removed chains to lasso a bollard as it was speculative as to whether or not it was reasonably practicable to have done so. He submitted that there may well have been practical difficulties to do with the presence of submarines nearby or the need to moor out of working hours.

[53] Mr Johnston's understanding was that line handlers were available and could be used on 28 February 2019. He understood that following a conversation between the Harbour Master and Mr Dodsworth the decision was taken to self-moor.

Captains Marsh and Smith agreed that the ideal way to moor was to use line handlers. Their evidence that there could be practical difficulties if line handlers had to be constantly standing by was not consistent with the evidence of Mr Johnston who explained that linesmen were indeed available on 28 February at Rosyth although one day notice was required to use them. The quayside chains could have been removed to

allow the crew to lasso the mooring bollards. Mr Johnston also explained that it would have been possible to take line handlers off other tasks on which they were working to provide line handling services on the day of the accident if they had been required. Even if they had been unable to provide line handlers or the service was required outside working hours RRDL could have hired a line handler from elsewhere. Line handlers have been supplied to RRDL on a number of occasions and continue to be provided.

[54] Mr Johnston did not state in his evidence in chief or in cross-examination that there were any difficulties with providing line handlers to take lines in M Berth or to remove/ chains or any other practical difficulties. Whilst it is known that there were submarines nearby, and the vessel required to approach the quay at a 45 degree angle, I did not hear any evidence that these factors would have had any impact on the practicability of using line handlers or lassoing a bollard. No such suggestion was ever made to any witness. I can only proceed on the evidence I heard which was that line handlers were available and that the chains could have been removed, that there was a conversation about using line handlers but that it was decided to self-moor. Although self-mooring was an acceptable practice, it was only acceptable if carried out in accordance with the safe system of work which included using line handlers and bollards when possible. The evidence suggests that it was possible. It is obvious that had such precautions been taken, they would have avoided the need for a crew member to step ashore before the vessel was moored and might realistically have resulted in the death being avoided.

Section 26(2)(f) Defects in any system of working which contributed to the death or any accident resulting in the death

[55] The generic risk assessment by UKD dated 30 April 2018 was not vessel specific. It referred to the use of bulwark gates and the need to wait for the vessel to be thrusting alongside and for the master's permission before disembarking. However, that was not a system that could be used on the Cherry Sand. It was not possible for the vessel to be thrusting alongside as it had no bow thruster. There were no bulwark gates either. To that extent the generic risk assessment was not applicable to the Cherry Sand. As Captains Marsh and Simpson agreed, those errors should have been picked up by UKD. In addition, the generic assessment made no reference to line handlers or other mooring techniques. There was no local risk assessment carried out by UKD or ABP specific to the mooring operations of the Cherry Sand. In particular there was no risk assessment assessing the risks and control measures for how the Cherry Sand self-moored in practice and assessing what measures could be put in place to reduce any risks including consideration of alternative methods of mooring. Berthing and unberthing operations on a commercial vessel such as the Cherry Sand require specific risk assessment.

[56] The safe system of work produced by UKD was dated 31 July 2017 and had not been reviewed since then. It included measures that were different from the generic risk assessment. It envisaged three methods of mooring: (1) that line handlers would be used when possible, (2) that whenever possible the forward spring should be thrown to

a bollard and made fast, and (3) that a person should step ashore when the vessel was tight alongside and from a position as close to the height of the quay as is possible and when permission was given from the bridge. Nobody was permitted to climb over the bulwark or step on the rubbing band while the vessel was away from the quay. The crew were required to wear personal protective equipment.

[57] I accept the evidence that the crew of the Cherry Sand were familiar with how the self-mooring operation was agreed to be carried out in practice at Rosyth. The vessel approached the quay at a 45 degree angle and a crew member stepped over the bulwark when the shoulder of the vessel was touching the quay. The crew member was only to step ashore when permission was given to do so from the bridge. The crew were equipped with radios and PPE. There was no use of line handlers and bollards were not lassoed.

[58] Whilst the crew understood the self-mooring practice as described above, the practice did not conform to the safe system which identified use of line handlers and lassoing of bollards when possible. Whilst the safe system instructed use of line handlers and lassoing bollards, that practice was not being followed or enforced at Rosyth when the facilities were available. The generic risk assessment made no reference to these alternative methods of mooring and was out of step with the safe system of working which was in any event not being followed or enforced.

[59] [59] These deficiencies in the risk assessment and in enforcing the safe method of working were in my view defects in the system of working. Did they contribute to the death or accident resulting in the death? I have identified the direct cause of death

was Mr Smith's actions. I have also found that had precautions such as aborting the manoeuvre and using alternative methods of mooring been taken, they might have realistically avoided the death or accident resulting in the death. It follows that insofar as there was a failure to follow and enforce the alternative methods of mooring set out in the safe system of working, that was a defect in the system of working which contributed to the death or accident resulting in the death. The system of work provided for line handlers and lassoing of bollards when possible but this was not followed on the Cherry Sand. The evidence established these were available. Had these alternative methods been adopted, the accident would have been avoided. Whilst the direct cause of the accident was Mr Smith disobeying known procedures for self-mooring, the failure to use line handlers or lasso bollards, contributed to the death.

[60] I conclude also that the deficiencies in the risk assessment contributed. There was an absence of a vessel specific risk assessment. The generic assessment included control measures that were not applicable on the Cherry Sand. A specific risk assessment would have identified the risks involved in self-mooring and disembarking the Cherry Sand. It would have identified alternative methods of mooring as control measures. That is consistent with subsequent risk assessments for the Cherry Sand and guidance from the MCA. It was submitted by ABP that there was no causal connection between the failure to have a specific risk assessment and the accident resulting in death. However, in my view, a risk assessment sets out control measures and instructions to crew about how to safely carry out an operation. Where there is no such assessment specific to the vessel's mooring operations, and where the existing risk assessment is

generic and inapplicable in part, it seems to me these features contributed to the accident occurring. Had there been a specific risk assessment including those control measures, in my view, that would have emphasised to crew the need to use alternative methods of mooring when possible. Had that been emphasised in the risk assessment and understood by the crew, it seems to me to be likely that alternative methods would have been used. Had alternative methods been used, there would have been no need to step ashore whilst the vessel was not secured. The failure to have such a vessel specific risk assessment in my view has contributed to the death or accident resulting in the death.

Recommendations under Section 26(1)(b) and (4) of the Act, to take reasonable precautions, make improvements to any system of working, introduce a system of working or take any other steps which might realistically prevent other deaths in similar circumstances to that of Mr Smith

[61] Since Mr Smith's death there have been a series of reviews which have addressed the precautions and defects that I have identified above. UKD rules and MCA guidance now provide that crew should not step ashore until the vessel is secured (see summary at section 4 and 5 of the MAIB report). Accordingly I do not consider it necessary to make any recommendations under section 26(1)(b).

Section 26(2)(g) any other facts relevant to the circumstances of the death

The significance of the earlier incident

[62] The evidence established that at the briefing meeting on 28 February 2019 Mr Dodsworth discussed the previous incident with the crew. The crew were aware that it had involved injury to a crew member during disembarkation and resulted in the mate and master losing their employment. The crew were reminded of the safety procedures and aware of the consequences of failing to comply with the instructions on self-mooring. I do not know if the earlier incident was indicative of a culture of covering up as is suggested in the MAIB report. However, given that Mr Smith's accident also involved injury during disembarkation, it is relevant that another accident had recently occurred on the Cherry Sand during disembarkation too.

The absence of MCA self-mooring guidance

[63] The crown invited me to find that the absence of any official guidance as to self-mooring was relevant to the circumstances of death. The MAIB recommended in its report that the MCA amend the Code of Working Practices for Seafarers to include guidance for the safe completion of mooring operations, including, specifically, the circumstances where it is permissible for crew to carry out self-mooring operations. The guidance is now incorporated into the Code of Safe Working Practices for Merchant Seafarers.

Conclusions

[64] Following the submissions made and my analysis of the evidence, I find that the precautions set out at paragraph 1.(e) above, could reasonably have been taken and, had they been taken, might realistically have resulted in the death, or accident resulting in the death, being avoided (section 26(2)(e)). I also find that the defects in the system of working identified in paragraph 1.(f) contributed to the death (section 26(2)(f)). Other facts relevant to the circumstances of death are as stated in paragraph 1.(g) above (section 26(2)(g)). I make no recommendations under section 26(1)(b) and (4).

[65] I would like to thank all the witnesses for the time, co-operation and assistance they gave to the inquiry. I am also very grateful to all agents and counsel involved for their assistance in preparing for and conducting the inquiry and in narrowing down the matters at issue. Finally, I wish to express my sincere condolences to Mr Smith's family and friends for their tragic loss.