

Report on the investigation of
Maria H
striking the Keadby railway bridge
29 May 2002

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Extract from
The Merchant Shipping
(Accident Reporting and Investigation)
Regulations 1999

The fundamental purpose of investigating an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999 is to determine its circumstances and the causes with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

This report is not written with liability in mind and is not intended to be used in court for the purpose of litigation. It endeavours to identify and analyse the relevant safety issues pertaining to the specific accident, and to make recommendations aimed at preventing similar accidents in the future.

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ABP	-	Associated British Ports
BST	-	British Summer Time (UTC+1)
CHA	-	Competent Harbour Authority
DWT	-	Deadweight tonnage
ETA	-	Estimated time of arrival
HPL	-	Humber Pilots Ltd
ISM Code	-	International Safety Management Code
kW	-	kilowatt
M	-	metre
MCA	-	Maritime and Coastguard Agency
MHWS	-	Mean High Water Springs
PEC	-	Pilotage exemption certificate
UTC	-	Universal co-ordinated time
VDR	-	Voyage data recorder
VTS	-	Vessel traffic service

SYNOPSIS



On the evening of 29 May 2002, the Antigua and Barbuda registered general cargo vessel *Maria H* struck the railway bridge at Keadby on the river Trent.

The vessel had loaded steel pilings on Top Gunness berth, which is situated about 150m downriver of Keadby bridge. She was berthed port side alongside, facing upriver, which required her to turn off the berth before heading downriver towards the Humber and, eventually, the sea.

The vessel had a pilot on board and the last line was let go about 1½ hours before HW. The vessel was then swept on to the bridge under the influence of an approximate 3-knot spring flood tide.

The vessel suffered extensive damage to her wheelhouse, foremast and mainmast. The master was injured, suffering lacerations to his left leg. The railway bridge was only superficially damaged. No pollution occurred as a result of the accident.

The investigation found conflicting evidence regarding a number of issues.

The cause of the accident was control of the vessel being lost during the flood tide while close downriver of the Keadby railway bridge. Further contributing factors were identified which included:

- The decision to single up and move the vessel astern before turning around or leaving the berth.
- A manoeuvring plan apparently not being successfully communicated to, understood, and agreed by all parties.
- The long spring line forward being on the drum end of the forward winch and not made fast on bitts.
- The last remaining line being let go before the vessel had swung.
- The inexperience of both the master and the pilot in conducting unberthing operations on the Trent.
- The pilot being prepared to begin the singling-up operation, and possibly the swinging operation, sooner than the ideal time because of one or more of the following:
 - the falling water levels further downriver
 - the presence of an inbound vessel
 - the linesman being required by another vessel.

Action has since been taken by Associated British Ports (ABP) (Humber) to address the relevant issues by issuing a general notice to pilots and updating its Pilot Operations Manual.

A Chief Inspector's letter has been sent to the owner of *Maria H* concerning departure planning.

Figure 1



Maria H

Photograph courtesy of FotoFlite

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *MARIA H* (Figure 1) AND ACCIDENT

Vessel details

Registered owner	:	Klaus Hulsermann, Duisburg, Germany
Port of registry	:	Haren/Ems
Flag	:	Antigua and Barbuda
Type	:	General cargo
Built	:	Papenburg, Germany in 1985
Classification society	:	Germanischer Lloyd
Construction	:	Steel
Length overall	:	74.86m
Gross tonnage	:	1297
Engine power and/or type	:	MAN 4SA 441 kW with clutches, flexible couplings and single-reduction reverse geared to screw shaft and left-hand fixed pitch propeller
Service speed	:	8.5 – 9 knots
Other relevant info	:	Bow thruster 115 kW, conventional rudder

Accident details

Time and date	:	2103 BST on 29 May 2002
Location of accident	:	Keadby railway bridge, river Trent
Persons on board	:	7 (6 crew & pilot)
Injuries/fatalities	:	One person injured
Damage	:	Wheelhouse and masts substantially damaged

1.2 BACKGROUND

1.2.1 Keadby railway bridge (see Figure 2)

Keadby railway bridge, also known as King George V bridge, was built over the river Trent in 1916 and was originally designed to lift, to allow vessels to pass. However, the bridge had not been lifted for several decades. It carried both the railway line, from Cleethorpes to Doncaster, and the A18 road. It was owned and maintained by Railtrack. The steel bridge was in three sections supported by two concrete buttresses and had a vertical clearance at MHWS of 5.1m.

1.2.2 Top Guinness berth (see Figure 3)

This berth was about 150m downriver of Keadby bridge, on the east bank of the Trent. The river was about 130m wide at this point.

Vessels berthed port side alongside, faced upriver towards the bridge, which required a turn off the berth before heading downriver towards the Humber and, eventually, the sea.

The flood tide could easily set a vessel on to the bridge and ABP's guidelines to pilots required a vessel, berthed port side alongside, not to depart the berth *until the tide has died, approximately high water Keadby – 30 mins.*

1.2.3 The vessel

Maria H was owned by the regular master, a German national. He was on leave at the time of the accident. The vessel normally traded around north Europe, often using inland waterways. It was quite normal for her to dry out and ground while alongside on river berths.

The vessel did not have, and was not required to have, a safety management system in place, in compliance with the International Safety Management (ISM) Code.

1.2.4 Humber pilots

At the end of 2001, a new pilotage service was introduced on the Humber with the competent harbour authority (CHA), Associated British Ports (ABP), employing pilots directly. The previous pilotage service, Humber Pilots Limited (HPL), was involved in an industrial dispute with ABP, which included strike action from 12 December 2001, at which time the new service took over pilotage.

Figure 2



Keadby railway bridge

Figure 3



Top
Guinness
berth

Keadby, looking west

1.3 THE CREW

The master was Polish and was 63 years of age. He had spent 32 years in the fishing industry, including several years as skipper, before joining the merchant navy in 1992. He had served on merchant vessels as relief master on several occasions, and had worked on *Maria H* as both mate and relief master for just over 12 months including leave periods. He normally relieved the master/owner when the latter went on leave. On this particular trip he had joined, as mate, on 9 November 2001, and had been relief master since 27 March 2002. He had been to Gunness once before as master, a week before the accident, and several times as mate. He did not hold a PEC and, therefore, always took a pilot. The night before the accident he had slept from 2100 until 0800.

The remaining five crew consisted of the mate and motorman, both Polish, a Portuguese ordinary seaman, an Italian deckhand and a Brazilian deckhand.

1.4 THE PILOT

The pilot was 46 years of age and had been at sea for 29 years. He had served as master on ro-ro passenger ferries and joined ABP on 3 December 2001. He undertook pilot training for the lower river and qualified as a class 2 pilot for the majority of the lower river on 14 January 2002. This class had an upper limit of 6.5 metres draught and 20000 dwt. He was then piloting until 14 April 2002 when he was taken out of normal duty for training on the upper river and the remainder of the lower river. On 14 May 2002, he qualified as a class 2 pilot for all areas. He was on the second day of his 14-day working period, and *Maria H* was the third vessel he had piloted during this period. He had not piloted a vessel on the Trent since qualifying. He had been to Top Gunness twice before, while training, once for berthing and the other time for an intended departure which was cancelled. He had not piloted *Maria H* before but had been on board similar vessels.

1.5 ENVIRONMENTAL CONDITIONS

At the time of the accident, the wind was SW'ly force 4, the weather was fine and the visibility good. Sunset was at 2118 BST. High water was at 2229 BST with a height of 4.3m on a spring tide. The tidal stream was flooding at about 3 knots. The clearance under Keadby bridge at the time of the accident was just over 6m.

1.6 NARRATIVE (ALL TIMES BST)

See **Figure 4** for sequence of events.

Maria H discharged her cargo of steel plates and coils in Goole and departed at 0742 on 29 May 2002, bound for Top Gunness berth in Keadby to load a cargo of steel piling for discharge in Germany.

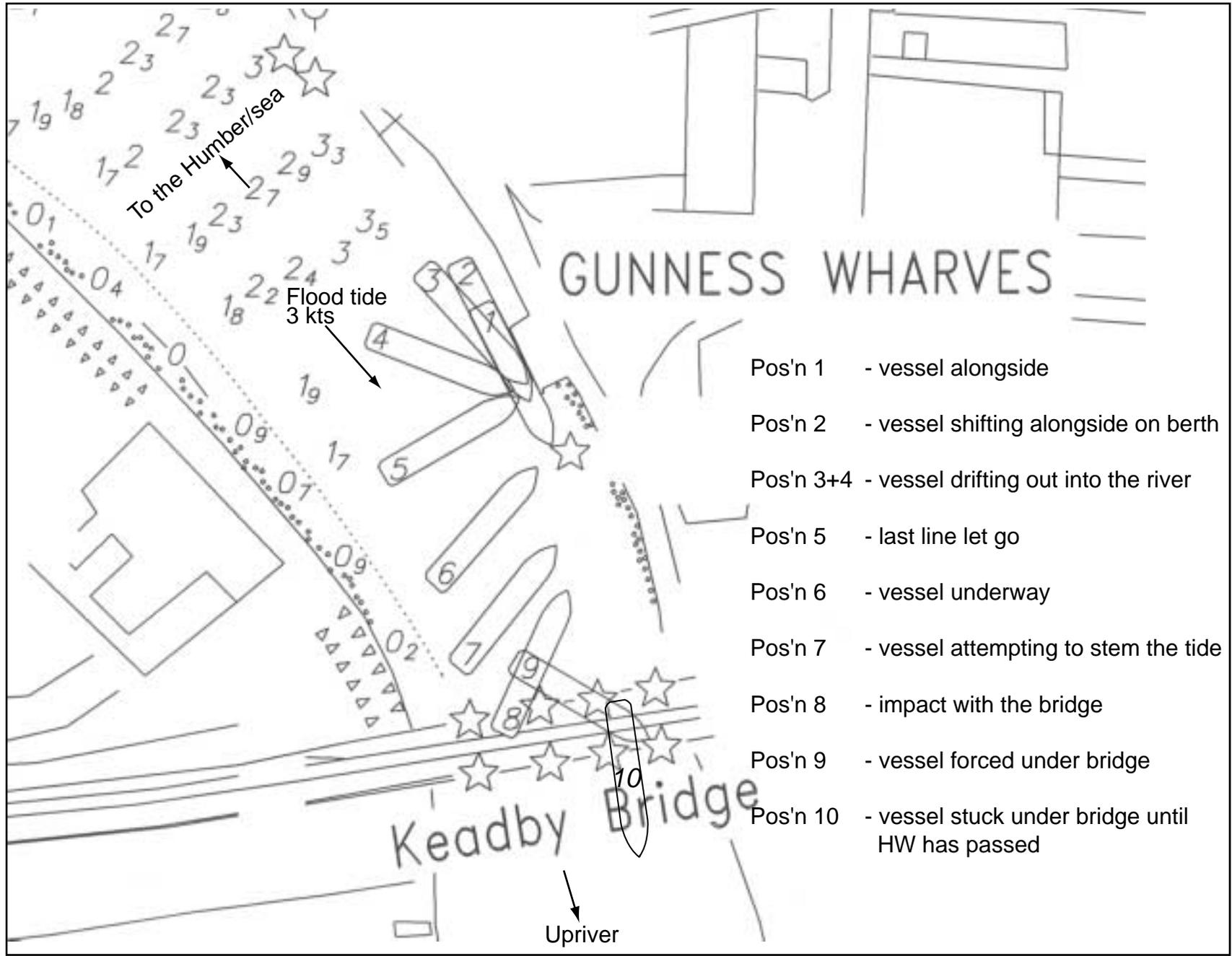


Figure 4

Sequence of events

High water was at 0955 and the tide was ebbing when the vessel arrived on the berth and she, therefore, berthed port side alongside at 1042. Loading began shortly after the vessel came alongside and continued all day. The vessel completed loading in the early evening, and a pilot was ordered for 2030. Her draught was 3.2m even keel and air draught 18.6m. The tie-up forward was one headline, one breastline and one spring.

The pilot was called at 1820 and told to be in the pilot office for 1920. He had departed his previous vessel at 0730 and had slept from 0800 to 1300. He shared a car with another pilot who was assigned to unberth *Sagitta*, another vessel berthed starboard side alongside on Fina berth close downriver of *Maria H*, and two other pilots bound for vessels at Grove.

The pilot boarded at 2020, and went to the bridge where he met the master. There then followed a discussion regarding the intended manoeuvre. The master informed the pilot about the vessel's propeller being left-handed, the rudder configuration, the bow thruster size and the normal speed being about 8.5 knots. From this information, the pilot deduced the vessel was not very powerful. It was agreed that a spring would be run around from the starboard bow and used for leverage during the swinging operation so as to head downstream. It was also agreed that the vessel would move astern a few metres to prevent the bow becoming trapped and also give better leverage for the swing. At around the same time, the vessel would single up, letting go the breastline, which would become the long spring. This was so that the linesman could be used while he was available, as he would soon be required by *Sagitta*. The pilot informed the master that two ships were inbound for both Fina and Top Guinness berths. The pilot did not ask VTS or the other vessels direct for their ETAs.

There is a conflict of evidence as to whether the plan was to single up, move astern and stay on the berth until closer to high water, turn around and resecure alongside, or leave immediately.

The master had the conduct of the navigation and sat in the bridge chair throughout the accident, with the pilot standing to one side of him.

The master spoke to his crew, who were standing by fore and aft, in Polish, which the pilot was unable to understand. The pilot told the master that it was now okay to move astern; the master used the engines to move the vessel to the required position. The vessel singled up to a sternline, the original spring forward and the long spring run around from the starboard bow. This latter line was led to the port winch, via roller fairleads, and turned around the drum end.

There is conflicting evidence as to whether the pilot then advised the master to take up the slack on the stern line, or to let it go. The pilot's attention was then focused on checking if the long spring line was snagged under the anchor. While he was looking forward, the master told his crew aft to let go the sternline.

The crew slackened down the sternline and told the linesman to let it go, which he did.

The stern then started to move out into the river under the influence of the tide. The vessel was swinging, pivoting on the long spring forward and, to a lesser extent, the original forward spring. The original spring was then let go as the long spring provided a better pivot. The vessel, in a short period of time, was 90° to the berth and the master and pilot were confident she would soon be stemming the tide.

At this point, the spring line came under a lot of tension and started surging on the drum end. It then slackened abruptly and a bight of the line entered the water. Seeing this, the pilot and master became concerned that the vessel was not yet stemming the tide and had lost the pivoting ability of the one remaining line. Conversations then took place, in Polish, between the master and the crew forward.

The remaining line was then let go by the linesman. There is a conflict of evidence as to whether he was told to let it go by the crew forward.

The vessel was now virtually beam on across the river and at the mercy of the flood tide. The bow thruster was put to port, the rudder hard-over to port and the engine ahead. The engine was not put to full ahead initially, as the master was concerned that it might stall; it was set to about half ahead; the pilot advised maximum power ahead.

The head started to come around to port and the engines were put to full ahead about 40m from the bridge. At this point, the port anchor was dropped, it took more than one attempt to let go but, once out, was clearly dragging and did not have much impact; about 2 shackles were let out.

Shortly after 2100, the vessel struck the bridge from astern. The mainmast was badly damaged and the wheelhouse was pushed forward about 45°. The wheelhouse windows shattered and the master's left leg was lacerated.

The vessel then pivoted on the central buttress of the railway bridge and was, at one stage, lying starboard side alongside the bridge. The bow then went under the eastern side of the bridge, removing the foremast, and the vessel was then wedged in position with the wheelhouse remains preventing the entire vessel from moving upriver under the bridge (**see Figure 5**).

As the tide continued to rise, the wheelhouse became more compacted and further damage occurred. A barge was contacted, and came alongside the starboard quarter and took the master back to the berth. An ambulance then took him to hospital.

The emergency services were called and Railtrack officials closed the bridge to cars and trains for inspection.



Vessel stuck under bridge (taken from east bank)

The pilot was then on deck and, together with the mate, decided to wait until high water passed and then use the anchors to reberth. Ballast was put in forward as the pilot was concerned the remains of the foremast might be caught on the bridge as the vessel moved astern. The rudder controls, but not the engine, could be operated from the bridge, by now a precarious and hazardous place. The pilot did not want to use the engine directly from the engine room because communications would have to be relayed.

The port anchor was weighed initially and then, as the vessel started to drift astern, both anchors were let go and worked as required until lines were sent ashore and the vessel reberthed at Top Gunness, with the assistance of a Humber rescue launch, at 0030 on 30 May 2002.

The master returned subsequently to the vessel, after medical treatment, at 0045. He had taken, and passed, an alcohol breath test while at the hospital.

The master required further medical attention to his leg. The vessel suffered extensive damage to her wheelhouse, foremast and mainmast (**see Figures 6 & 7**). The bridge sustained only superficial damage and was closed for 2 hours until inspections were completed. No pollution occurred as a result of the accident.

The vessel remained alongside until the next day, when she was moved to a lay-by berth at Keadby and then on to Burton Stather. In July 2002, she was taken to Hull for repairs.

After the accident, the MCA detained the vessel following a Port State Control inspection. She was subsequently repaired and released by the MCA in late September 2002.

Figure 6



Damage to vessel

Figure 7



Damaged wheelhouse

1.7 ACTION TAKEN SINCE THE ACCIDENT

Since the accident the CHA has issued General Notice to Pilots No 35 (**see Annex**), and has updated its Pilot Operations Manual with respect to departure from Top Gunness berth when a vessel is berthed port side alongside. The procedure includes a need to:

- Discuss the intended manoeuvre to swing the vessel on the berth, including the timings of such a manoeuvre in relation to HW Keadby, with all interested parties.
- Not attempt to single up until the flood tide has eased sufficiently, usually not earlier than 30 minutes before HW Keadby.
- Resecure the vessel starboard side to the berth when there is insufficient time remaining after completing the swing to continue on passage to sea.

1.8 MASTER/PILOT RELATIONSHIP

The vessel's master is charged with the responsibility for the safety of his vessel; pilots are engaged to assist with navigation in confined waters and to facilitate port approach, berthing and departure. The pilot is the local expert and has unique specialised knowledge and ability, but he never takes command of the vessel. He will normally advise the master as necessary and usually have full conduct of the navigation. This is, however, very different from having command of the vessel. The master has the ultimate responsibility and it is often the case, especially on small vessels, that, during manoeuvring, the master chooses to take the conduct of the navigation himself, with the pilot continuing to provide advice.

SECTION 2 - ANALYSIS

2.1 AIM

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

2.2 THE MANOEUVRE

2.2.1 Planning

Good communication and clear planning is essential in the master/pilot relationship, especially as the pilot may be unfamiliar with the vessel and the master unfamiliar with the port.

In this case, the extent of the agreed plan cannot be ascertained with certainty because of conflicting evidence. If a Voyage Data Recorder (VDR) had been fitted, voice recordings could have been used to verify the detail. Unfortunately, *Maria H* did not have, and was not required to have, a VDR fitted. The common ground is that it was agreed that a spring would be run around from the starboard bow and used for leverage during the swinging operation. It was also agreed that the vessel would move astern a few metres to prevent the bow becoming trapped, and also give better leverage for the swing. At around the same time, the vessel would single up, letting go the breastline, this line becoming the long spring. This was so that the linesman could be used while he was available, as he would shortly be required by *Sagitta*.

A conflict arises as to whether the pilot intended to leave the berth when the above was completed, turn around and resecure alongside, or to stay alongside until much closer to high water.

If the pilot's intention was to turn around and resecure alongside or leave the berth at this time, then this was extremely hazardous, given the strength of the tidal stream, and was also contrary to the CHA's own guidelines stating that vessels should wait until approximately 30 minutes before high water. If his intention was to stay, then the master did not understand this because he instructed the crew aft to let go the sternline. The sternline was let go at about 1½ hours before high water, one hour before the guideline.

Apparently, a plan for leaving the berth was not successfully communicated to, and understood and agreed by, all parties, which should have included the linesman, the crew, and the pilot on *Sagitta*.

Neither VTS, nor the pilot, had been aware which side alongside *Maria H* was berthed. The pilot found out when he arrived at the berth. The pilot's pre-planning would obviously revolve around which side to the vessel was berthed

and whether she would be able to make it down the river in one tide. When VTS scheduled inbound traffic for this berth, the fact that vessels berthed port side alongside were required to wait until high water was almost reached before swinging, was not taken into account.

The pilot could have checked on the ETA of the inbound vessel by calling her direct, as he knew her name, or by calling VTS. However, he chose to do neither.

The pilot was prepared to begin the singling-up operation, and possibly the swinging operation, sooner than the ideal time because of one, or more, of the following:

- the falling water levels further downriver
- the presence of an inbound vessel
- the linesman being required by another vessel.

When scheduling inbound traffic, taking account of the need for vessels, berthed port side alongside, to swing near HW, would help to alleviate any concern the pilot and master might have in departing the berth without delay. This has since been addressed by ABP (**see Section 2.2.3**).

On boarding the vessel, the pilot and the master were aware it was still over two hours until high water. In exchanging information and formulating an agreed plan, taking full account of the following might reasonably have led them to allow *Sagitta* to sail first, and for *Maria H* to stay in position on the berth, with all lines made fast until closer to slack water:

- The strength of the tidal stream.
- The close proximity of the low bridge upstream.
- The vessel's low engine power.
- The master's concern about the engine stalling.
- The potential language problems that might exist.
- The potential for parties to misunderstand the intentions of others.
- The pilot's inexperience on the Trent since qualifying.
- ABP's guidelines not to depart the berth until approximately 30 minutes before HW.

2.2.2 Actions

Before leaving the berth

If the pilot intended to stay on the berth, his suggestion to move the vessel astern and single-up was based on his assumption that the master understood his intention to remain alongside. The master, however, believed that the pilot intended to manoeuvre after moving astern and not to wait for the tide. The decision to single-up and move astern, was made with the pilot's full knowledge that there was still over an hour until the CHA's guideline's recommended time for unberthing. With the strength of the flood tide at this time, and having to wait for at least an hour, it would have been wise to have held on to all the vessel's lines and to have stayed in position until the recommended time. The inbound vessel, the linesman being required by another vessel and the falling tide, while on passage downriver, might have contributed towards the pilot's decision.

There was an assumption made by the master, that the pilot had carried out this manoeuvring operation before. The master had been to the berth several times as mate, but only once before as master. The pilot had not worked on the Trent since qualifying. The previous experience of both the master and the pilot in conducting the operation was, therefore, extremely limited, although both were aware of the principles and requirements involved in turning around or departing the berth. If one or both had been more experienced it is quite likely that more caution would have been shown, and the decision to move would not have been made.

The pilot had a training period considerably shorter than an HPL pilot would have had before piloting a vessel departing a berth on the Trent. His training period was, however, intensive and included detailed examination regarding manoeuvring on the Trent at all states of the tide. He had, therefore, duly satisfied the CHA that he was suitable to pilot a vessel of this size. He had also successfully performed unberthing operations during spring tides, elsewhere in the district, before this accident and was a very experienced shiphandler on all sizes of vessel.

The master could have refused to turn around or leave the berth or to move his vessel astern and single up, if he considered it unsafe, regardless of his interpretation of the pilot's advice. However, he agreed to do both.

The master decided to take the conduct of the navigation himself for the manoeuvre. He preferred to do his own manoeuvring while berthing and unberthing. It is quite normal on small vessels for the master to take over the conduct of the navigation himself, during manoeuvring operations, with the pilot continuing to advise.

The master is normally more familiar with his vessel's manoeuvring characteristics than the pilot, although the pilot is more familiar with the port than the master. The manoeuvre had been discussed upon the pilot boarding, with the pilot talking the master through the procedure. As long as the pilot continues to provide advice, there is no reason to believe it will have an adverse effect on the safe conduct of the operation.

Good communication and clear planning is essential in the master/pilot relationship and all parties involved in the operation should be made aware of, and agree to, the plan. The evidence suggests there were misunderstandings between the master, the pilot, the linesman and the crew. Because of the conflicting evidence, the extent of the agreed plan is uncertain.

However, regardless of what the agreed plan was, the vessel's sternline was let go at a time when the pilot was distracted, thereby denying him an opportunity to recover the situation. *Maria H* then drifted out into the river and began swinging to the flood, pivoting on the long forward spring line.

On leaving the berth

The vessel was swinging and, in a short period of time, was 90° to the berth. The master and pilot were confident that she would soon be stemming the tide.

The remaining line then surged and jumped off the drum end, and a bight of it entered the water. This line was then let go by the linesman. There is conflicting evidence as to whether or not the crew forward told the linesman to let it go.

Having the spring line turned around on the drum end, and not made fast on the bitts, indicates there was an assumption made by the crew that the line would hold on the drum end. The load on the line while under the influence of the flood tide was great. This suggests that the crew underestimated or were unaware of the load that was to be taken by the line. Making the line fast on the bitts would have eliminated the possibility of the line surging, jumping off the drum end and becoming slack.

If the line had not been let go it could have been heaved up again and made fast. However, it was let go and this option was removed.

Once the line was let go, control was lost and the flood tide dictated the direction and rate at which the vessel was set upriver towards the bridge.

On the last line being let go

Once the last line was let go, the master and pilot realised that there was a serious problem. The bridge was close and *Maria H* was being set down towards it very quickly.

The bow thruster was put to port, the rudder hard over to port and the engine ahead. If the tide could be stemmed, the situation would be under control.

The engine was not put to full ahead initially, as the master was concerned about stalling, based on past experiences. The pilot advised maximum power ahead; however, the master set the engine to about half ahead.

The vessel was starting to come around to port, helped by the engine being put to full ahead about 40m from the bridge. The port anchor was dropped in a vain attempt to slow her; nevertheless, she struck the bridge.

Maria H had a full ahead speed of only about 8.5 to 9 knots and this, together with the delay in putting the engine to full ahead, contributed to the master not being able to regain control in the time available. The master's concern about stalling was understandable as he did not want to lose the engine completely. However, given the circumstances, putting the engines full ahead was a risk worth taking.

The vessel almost stemmed the tide and, given a few more metres, the master might well have had the situation under control. Once the bridge was struck, the tide took over and the damage and injury were caused. The vessel almost went right under the bridge; only the remains of the wheelhouse prevented this. If she had gone under the bridge she would have drifted out of control further upriver, most likely grounding and/or striking another obstruction.

The pilot and the ship's crew performed well in bringing the vessel alongside, after high water was passed, without further incident.

2.2.3 Procedures

The safety margin permitted for vessels to turn just before high water and then proceed downriver was not great; a slight delay meant the vessel might miss the tide and have to wait for the next high water. When an inbound vessel was scheduled, the margin became even more critical as a delay might mean the inbound vessel having to wait for the vessel alongside to unberth. This would require seeking a lay-by berth or having to turn and stem the tide.

VTS scheduled vessel arrivals and departures, and the ABP's data centre allocated the pilots. At the time of the accident neither was aware which side to vessels were berthed at Top Gunness. The inbound vessel was also unaware that the vessel was port side to and required swinging. The pilot found out when he arrived on the berth.

The procedures put in place since the accident, by virtue of *General Notice to Pilots No 35 (see Annex)*, ensure that VTS and the data centre are aware which side to vessels are berthed. There is also a provision for swinging the vessel at slack water, resecuring her starboard side to, and sailing on the next tide.

Top Gunness berth is about 150m from the bridge. This distance, along with the strength of the tidal current, makes it imperative that berthing or unberthing is made with particular caution.

2.3 LANGUAGES/NATIONALITIES

Maria H had a crew of six, three of whom were Polish. The remaining three were Portuguese, Italian and Brazilian respectively. This mix of nationalities and languages, while being far from untypical on the modern commercial ships, gave rise to the possibility of confusion and misunderstanding, potentially leading to errors during routine operations. In an emergency situation, time and errors may be critical to the outcome.

The ISM code requires ship's personnel to be able to communicate effectively in the execution of their duties. However, the vessel was not required to comply with the Code nor to designate a single language for use. The three crew who were not Polish had to communicate with the three Poles in Polish or English. This was far from ideal for Italian and Portuguese speakers.

There is evidence to suggest that the orders given by radio from the master to the crew were prolonged, protracted affairs, apparently involving much discussion and repeating.

An MAIB inspector, who visited the vessel after the accident, became quickly aware of the language mix and what he considered were resulting difficulties in clear communication.

It is uncertain the extent, if any, to which the language-mix contributed to the accident. However, it was significant that the master was speaking to the crew in Polish, which the pilot did not understand. The pilot was, therefore, unable to verify that the operation was proceeding, or about to proceed, according to plan.

SECTION 3 - CONCLUSIONS

3.1 CAUSE AND CONTRIBUTING FACTORS

3.1.1 The cause

The cause of the accident was the vessel losing control during the flood tide while close downriver of the Keadby railway bridge. [2.2]

3.1.2 Contributing factors

1. The decision to single up and move the vessel astern before turning around or leaving the berth. [2.2.1]
2. A manoeuvring plan apparently not being successfully communicated to, understood and agreed by, all parties. [2.2.1]
3. The long spring line forward being on the drum end of the forward winch and not made fast on bitts. [2.2.2]
4. The last remaining line being let go before the vessel had swung. [2.2.2]
5. The strength of the flood tide. [2.2.2]
6. The proximity of the Keadby railway bridge to the berth. [2.2.2]
7. The master's decision not to put the engine full ahead immediately the last line was let go. [2.2.2]
8. The low power of the main engine. [2.2.2]
9. The inexperience of both the master and the pilot in conducting unberthing operations on the Trent. [2.2.2]
10. The pilot being prepared to begin the singling-up operation, and possibly the swinging operation, sooner than the ideal time because of one or more of the following: the inbound vessel; the linesman being required by another vessel; and the falling tide while on passage downriver. [2.2.1]

3.2 OTHER FINDINGS

1. When scheduling inbound traffic, taking account of the need for vessels berthed port side alongside to swing near HW, would help to alleviate any concerns the pilot and master might have in departing the berth without delay. This has since been addressed by ABP. [2.2.1,2.2.3]
2. Voice recordings from a VDR could have verified exactly what the plan was; unfortunately a VDR was not fitted on board *Maria H.* [2.2.1]

3. The sternline was let go at a time when the pilot was distracted, thereby denying him an opportunity to recover the situation. [2.2.2]
4. The vessel was coming around to port and stemming the tide as she struck the bridge. Given a few more metres, the master might have had the situation under control. [2.2.2]
5. The vessel almost went under the bridge and, if she had done so, would have drifted out of control further upriver possibly causing more damage. [2.2.2]
6. The pilot and ship's crew performed well in bringing the vessel back alongside after high water had passed. [2.2.2]
7. It is uncertain the extent, if any, to which the language-mix on board contributed to the accident. [2.3]
8. The pilot was unable to verify that the operation was proceeding, or about to proceed, according to the agreed plan because he did not understand Polish. [2.3]
9. The procedures put in place by ABP (Humber) since the accident, by virtue of General Notice to Pilots No 35, and its updated Pilot Operations Manual with respect to departure from Top Guinness berth when a vessel is berthed port side alongside, will help to prevent a similar accident in the future. [1.7,2.2.1,2.2.3]

SECTION 4 - ACTION TAKEN

1. The procedures put in place by ABP (Humber) since the accident, by virtue of General Notice to Pilots No 35 and its updated Pilot Operations Manual, will help to prevent a similar accident in the future.
2. A Chief Inspector's letter has been sent to the owner of *Maria H* recommending the company to:
 - Ensure that departure plans are successfully communicated to, and understood and agreed by, all parties, including the master, pilot, crew, and relevant shore personnel.

**Marine Accident Investigation Branch
March 2003**

ABP General Notice to Pilots No 35



GENERAL NOTICE TO PILOTS

NO. 35

RIVER TRENT

Gentlemen

A recent incident at Top Gunness and the subsequent MAIB investigation has highlighted a need for us to reiterate the guidelines for arrival and, especially, departure from Trent wharves. If a pilot has to berth port side to he should ensure that VTS, Humber are aware of this fact prior to disembarking from the vessel (at Keadby notification is required if vessel is starboard side to).

VTS will forward this information to the Data Centre who will, in turn, forewarn the pilot allocated to sail the vessel and also the pilot of any vessel inbound for the same berth.

At Top Gunness, especially, care must be taken with both the timing and execution of the manoeuvre to swing on the berth prior to departure for sea. The pilot will board approximately 2 hours before HW Keadby and should discuss the manoeuvre in detail with the master and agree timings. It is imperative that the master, his crew and the boatmen ashore understand what is required. The manoeuvre should not be attempted sooner than 30 minutes before HW and on spring tides will need to be undertaken even closer to HW slack.

The pilot and master must also decide whether there will be sufficient time to swing the vessel and proceed to sea within the requirements of the passage plan. On ballast ships it should be possible to accomplish this but with a laden vessel it may be that there is only sufficient time to swing the vessel, re-secure her starboard side to the berth and re-order sailing for the next tide. The pilot of any inbound vessel due for the berth will have to be notified ASAP and will then arrange for the most suitable lay-by berth.

Additionally, when departing from Top Gunness with vessel starboard side to care must be taken on big spring tides to avoid leaving the berth too early and struggling to get round Keadby Bight with a very strong tide setting the vessel onto the berths at Keadby.

Capt P J Cowing
PILOTAGE OPERATIONS MANAGER

18 June 2002