MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

VERY SERIOUS MARINE CASUALTY | REPORT NO 18/2013 | JULY 2013

Fatal injuries to a crewman while securing a tug's tow wire on board the bulk carrier *WAH SHAN*

River Humber
2 October 2012

For all enquiries:

Email: maib@dft.gsi.gov.uk
Tel: 023 8039 5500
Fax: 023 8023 2459

SUMMARY

At about 0712 on 2 October 2012, the carpenter on board the capesize[1] bulk carrier *Wah Shan* was struck by a messenger line while he was attempting to secure a tug's tow wire in preparation for the vessel berthing. The coastguard advised that the quickest means of evacuating the casualty was for the vessel to carry on and berth as soon as possible. *Wah Shan* berthed at Immingham at 0804 and a paramedic boarded immediately to examine the carpenter, Mr Wang Ji-Yue. Mr Wang Ji-Yue was pronounced dead at 0815. The post-mortem report concluded that he had died from a fractured neck.

The investigation found that: the risks involved in securing the tug's tow wire had not been properly considered; the aft mooring party used poor seamanship practices and did not function as an effective team; and the configuration of the aft mooring deck did not provide an obvious method of heaving up the towline safely. The factors resulted in the crew adopting an unsafe method for heaving the tow line on board, which ultimately resulted in the fatal injury to the carpenter.

Wah Shan's managers have taken a number of positive actions to help prevent a similar accident from recurring. They have also been recommended to improve their training programmes to develop good seamanship practices and leadership skills. The International Chamber of Shipping has agreed to promulgate a safety flyer based on this report to its members to help improve awareness of the safety issues. The MAIB has written to the shipyard where *Wah Shan* was built, to encourage the designers there to review and improve the mooring arrangements on future vessels of this type.

Image courtesy of Willem Oldenburg

[1] Capesize is the term normally used to define the size of large bulk carriers in excess of 100,000 dwt.

FACTUAL INFORMATION

Narrative

Wah Shan departed Ijmuiden in The Netherlands at 2300 on 30 September 2012. At 0430 on 2 October, two pilots working on behalf of Associated British Ports, Immingham, joined the vessel at the Humber light float. The vessel navigated up the River Humber on her approach to Immingham and at 0630 the master announced arrival stations using the public address system. The carpenter was the first to arrive at the aft mooring station, followed by the second officer, a welder, an oiler and a wiper. At 0655 four tugs arrived at Sunk Spit Buoy to meet the vessel and assist it to berth alongside. Two tugs, one forward and one on the starboard shoulder, were made fast by a team of seven deck crew at the forward mooring station. A third tug stood by at the starboard quarter and the twin-unit Voith Schneider tug, *Alma,* approached stern-first towards *Wah Shan*'s stern **(Figure 1)**.

As preparations were made to connect the tug's tow wire, *Alma* and *Wah Shan* were positioned stern to stern maintaining an approximate speed of 6.4 knots through the water. *Alma*'s skipper and chief engineer were in the wheelhouse and the mate was on the aft deck. The chief engineer operated the winch for the tow wire and the skipper was in charge of navigation. *Wah Shan*'s deck was approximately 13m above the tug's deck and it was not possible for the crew in *Alma*'s wheelhouse to see what was happening on *Wah Shan*'s aft mooring deck.

At around 0700, *Wah Shan*'s carpenter lowered the ship's messenger line through the aft centreline Panama fairlead to *Alma*. The mate of *Alma* received the line and tied it to the tug's messenger line which was attached, in turn, to the steel tow wire. The aft mooring team on *Wah Shan* took up the slack in the messenger lines and attempted to heave up the tow wire by hand. *Alma*'s mate realised what *Wah Shan*'s crew were trying to do and he indicated to them, by shouting and using hand gestures, to use a winch to heave up the tow wire.

The carpenter passed the messenger lines through the aft centreline bitts and then diagonally across the deck, past the inboard side of the starboard winch, to a pedestal fairlead which was forward of the winch. He then passed the messenger line around the pedestal fairlead so it led off the outboard side of the fairlead to the warping drum **(Figure 2)**. He then piled the free end of the

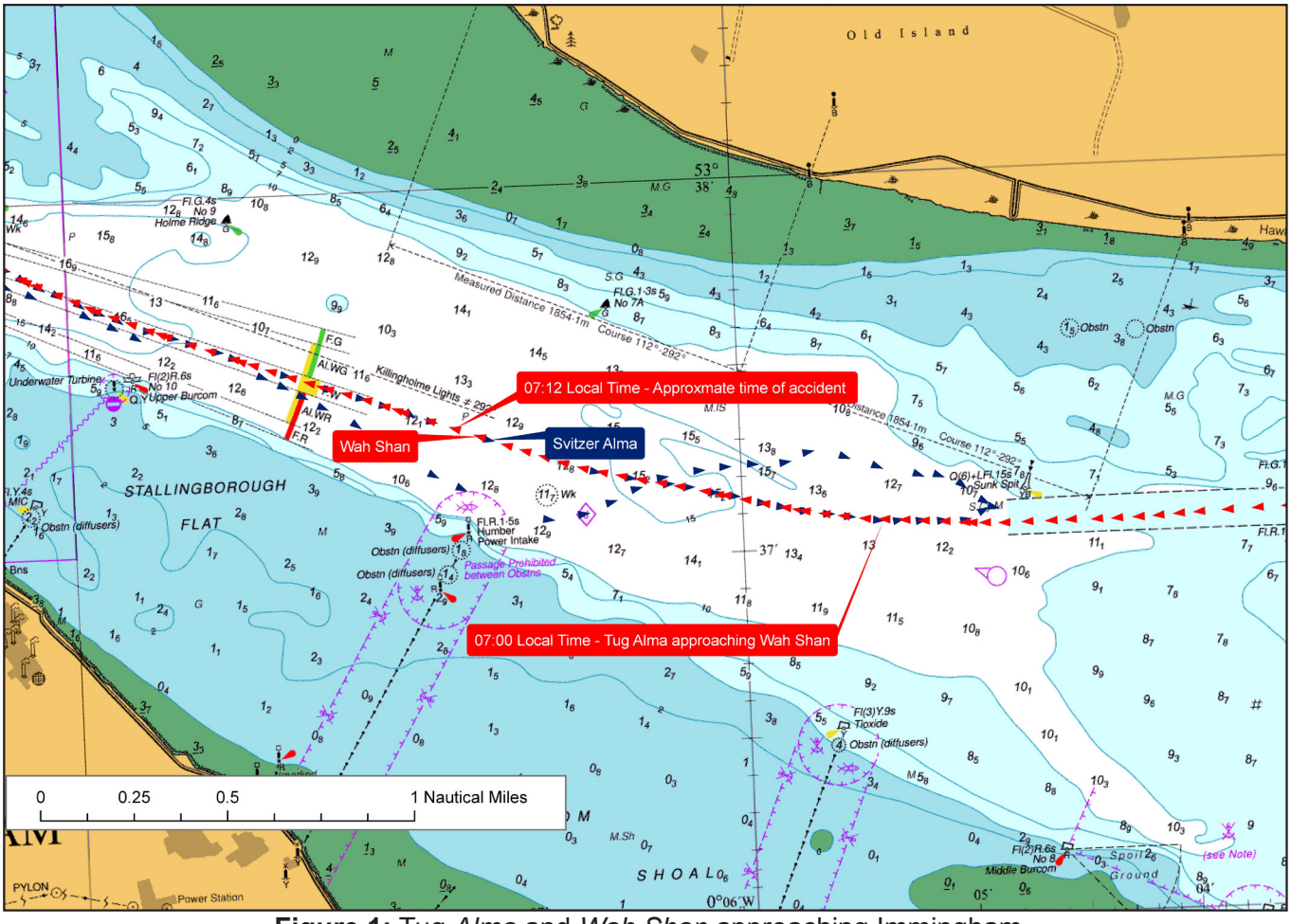

Figure 1: Tug *Alma* and *Wah Shan* approaching Immingham

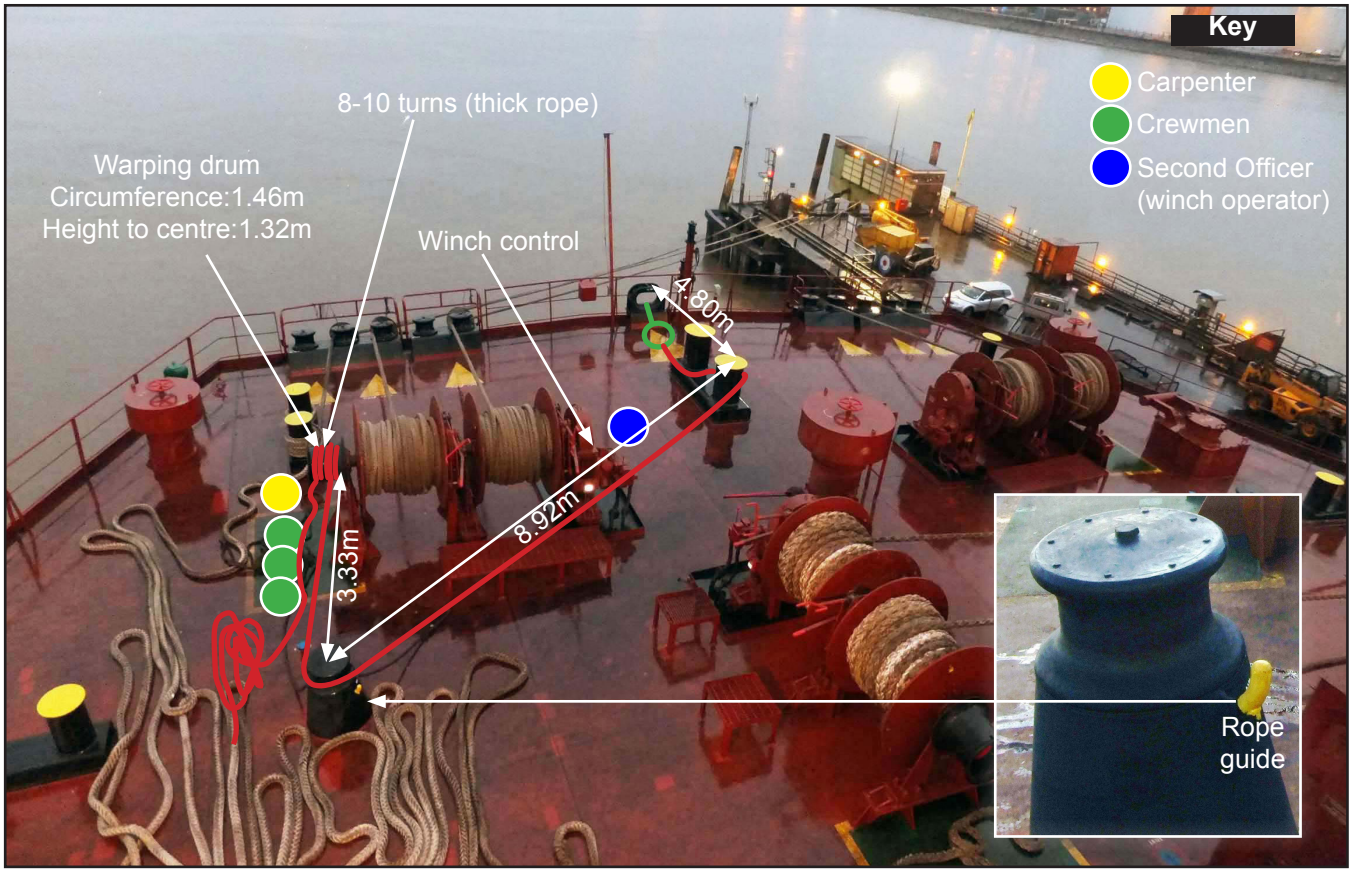

Figure 2: Layout of mooring equipment and messenger line routing at the time of the accident

messenger line on the deck between the pedestal fairlead and winch and heaved it in by hand until all the slack line was taken up. Finally, the carpenter turned up the messenger line onto the warping drum, winding it on to the drum from the underside and leading it back towards the pedestal fairlead. The welder operated the winch controls, which were located at the opposite end of the winch (on the inboard side) to the warping drum. When standing at the winch controls, the welder could not see the carpenter due to the rope guards on the winch's main drums. The second officer stood at the aft railing to watch the tow wire as it was heaved up, while the two engine room ratings stood by to help secure it.

The carpenter had taken approximately eight to ten turns of the messenger line around the drum; and these turns accumulated towards the outboard end of the drum as it rotated due to the angle of the lead from the pedestal fairlead. The free end of the messenger line then became entangled in 'riding turns'[2], causing it to be heaved back into the warping drum with the part under tension. As this was happening, the tow wire came up onto *Wah Shan*'s deck and the towing eye nearly reached the aft bitt. As heaving continued, the messenger line slipped off the side of the warping drum causing the tow wire to drop back down towards the tug. The messenger line slipped off the side of the warping drum on at least four occasions, with the eye of the tow wire sometimes dropping all the way down to the gunwale of the tug. This prompted the tug skipper to call *Wah Shan*'s pilot using the very high frequency radio (VHF) to enquire if there was a problem with securing the tow wire.

Between 0705 and 0710, in response to the call from the tug, one of the pilots went to the starboard aft side of the bridge deck to check the mooring operations. Seeing that the messenger line was tangled up and twisted as it led onto the warping drum, he immediately returned to the bridge and asked the second pilot to have a look.

At around the time the first pilot was entering the bridge, the messenger line slipped off the drum again. The welder stopped the winch and went around to the drum side to investigate what was happening. Seeing the tangled condition and the build-up of the line on the outer end of the warping drum, he advised the carpenter to remove the messenger line from the warping drum and start again. The carpenter insisted on carrying on as

[2] A line is normally led onto a warping drum and sufficient turns taken (normally about three) so that there is enough friction for the rotating drum to pull the tensioned line. The free, or slack, part of the line should then be led away from the drum in the opposite direction and coiled down neatly well clear of the tensioned part. If the slack part of the line becomes tangled, or is trapped underneath the tensioned part it continues to rotate and is pulled back onto the warping drum. This is referred to as a 'riding turn'.

before, and persuaded the welder and the two engine ratings to help him push the messenger line further onto the body of the warping drum. The second officer took over the winch control and started heaving very slowly. By this time, the carpenter was standing with his head a few centimetres away from the drum. Suddenly he was heard to cry out. The second officer stopped the winch and quickly moved around to the drum end. There, he found the carpenter slumped forward on the messenger line with a loop of rope hanging loosely around his neck. The crew members removed the loop and gently laid the carpenter on the deck. At 0712, the second officer informed the master about the accident using his ultra high frequency radio.

Meanwhile the second pilot, who was as yet unaware of the accident, had moved to the aft side of the starboard bridge deck. He saw a crew member lying on the deck and asked the master, who was already standing there, if he knew what had happened. The master told him that there had been an accident and emulated a slashing action across his neck with his hand.

The casualty was tended to by one of the crew members while the others secured the tow wire using the port winch, assisted by a team from the forward mooring station that had arrived to help. The casualty was moved to a stretcher and prepared for evacuation, during which time he showed no signs of life. The pilot on the bridge called the local coastguard by VHF radio and requested assistance. The coastguard informed the pilot that it would take up to 50 minutes for the helicopter to arrive[3] and a decision was taken for the vessel to berth as soon as possible and evacuate the casualty once alongside. Meanwhile, the carpenter was covered with blankets and made comfortable.

At 0804, *Wah Shan* came alongside, where an ambulance team was waiting. After examining the carpenter, the paramedic declared him deceased at 0815. The post-mortem report stated the cause of death to be *fracture dislocation of the cervical spine*[4].

[3] Between 0800 and 2200, the search and rescue helicopters operate on 15 minutes notice to mobilise and on 45 minutes notice outside these hours.

[4] Cervical spine is the anatomical term for neck.

Ship manager

Wah Shan was one of seven bulk carriers managed by the Sincere Navigation Corporation, based in Taiwan. Of the seven vessels, five were 'capesize'.

Crew

There were 23 crew members on board *Wah Shan*. The master, chief officer, chief engineer and second engineer were from Taiwan; the rest of the crew were from the People's Republic of China. The working language on board was Mandarin.

The deceased, Mr Wang Ji-Yue, was 35 years old and reputed to have been a hard working and responsible crew member. He was qualified as an able bodied seaman capable of being part of a navigational watch (STCW[5] II/4). He joined Sincere Navigation in February 2012 as an ordinary seaman on board *Wah Shan* and was subsequently promoted to the role of carpenter in June 2012. He had previously been employed as bosun and carpenter in other companies. At the time of joining, and again after his promotion, Mr Wang Ji-Yue had signed an '*Elementary Basic Safety Familiarization Checklist*' and a '*Specific Shipboard Familiarization Checklist*' which included familiarisation with mooring equipment. He was well rested and was wearing appropriate personal protective equipment including helmet, gloves and safety boots at the time of the accident. He was 1.69m tall.

The master had joined the vessel in February 2012. He was 64 years old and had 12 years' experience as master, having joined Sincere Navigation as a third officer in 1984. He had a limited command of the English language.

The second officer was 31 years old and held STCW II/1 Certificates of Competence issued by the administrations of the People's Republic of China and the Republic of Panama. He had joined the vessel in October 2011 and kept the midnight to 0400 and noon to 1600 watches at sea. On the day of the accident he had slept about 2 hours before the accident and had 6 hours rest the previous evening. He reported that he did not feel unduly affected by fatigue on the morning of the accident.

The chief officer was responsible for the forward mooring station and the second officer for the aft mooring station. The forward and aft mooring teams always comprised the same crew members. In addition, two deck ratings were assigned to

[5] STCW: International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

rigging the accommodation ladder and gangway. Except for the engine ratings, all the members in the aft mooring team had completed the mooring winch familiarisation programme. This concentrated on the operation of the winches and did not cover securing tow wires or heaving in messenger lines.

Mooring and towing arrangements

There were three Rauma Brattvaag (Rolls Royce) hydraulic mooring winches on *Wah Shan*'s aft deck: one on each side and the third just to the starboard side of the centreline. Snap back zones were marked at all the fairleads around the edge of the deck. Each winch had a warping drum and two drums for storing mooring ropes. One of the hydraulic pipes connected to the starboard outer winch showed signs of chafing. A reconstruction of the lead used for the messenger line indicated that the chafing was consistent with the messenger line rubbing against the pipe **(Figure 3)** as it passed from the centreline bitts to the pedestal fairlead. The hydraulic pipes on the port winch also had minor chafing marks. Steel platforms were provided by each winch so that crew could reach up to apply the brakes.

The messenger lines from both *Wah Shan* and *Alma* were identical 38m long, 32mm diameter polypropylene ropes. *Alma*'s steel tow wire was 44mm in diameter and weighed 7.8 kg/m. While the use of steel wire ropes is common, a significant number of tugs use towlines made from synthetic fibre. These materials are significantly lighter than a steel wire of equivalent diameter and strength and therefore can often be heaved in by hand. *Wah Shan*'s centreline bitts were fitted with a loop to which a stopper[6] could be attached. A stopper was not rigged during the first attempt to heave up the tow wire prior to the accident. Following the accident, a stopper was rigged, and it was used successfully during the second attempt to secure the tow wire.

From February 2012, when most of the current crew members had joined *Wah Shan*, stern tugs had been used around 20 times when the vessel arrived at or departed from ports. The winches had been used to lift up the tow wire of stern tugs on only three or four of these occasions. Of the remainder, the tow wires were physically lifted up by the mooring team, often helped by the crew members who were assigned to rig the gangway.

Shortly after the accident, *Wah Shan*'s master in consultation with marine surveyors acting on behalf of the ship owner produced a sketch showing what he considered to be a better alternative method of heaving in a tow wire **(Figure 4)**. The designated person ashore (DPA) from Sincere Navigation carried out an investigation on board after the accident and produced a different plan showing the method that he thought to be 'correct' **(Figure 5)**. The forward mooring and towing arrangements were more simply arranged and are shown in **(Figure 6)**.

MAIB inspectors went on board a randomly selected bulk carrier arriving at Immingham to study the process used to secure a tug aft. The selected vessel was a Panamax[7] size bulk carrier and the tug *Alma* was in attendance. The mooring equipment on this vessel was well positioned, making it readily apparent how a messenger line should be led from the centreline fairlead to the warping drum. The entire operation, beginning with sending a heaving line to the tug and ending with the eye of the towing pennant on the bitts, took less than 5 minutes. The mooring equipment on the bulk carrier's aft deck is shown in **(Figure 7)**.

Safety management system

Wah Shan's safety management system (SMS) documentation was provided on board in both Mandarin and English languages. The system required an '*operational risk check list*' for deck operations to be completed by the chief officer, for engine operations by the the chief engineer, and by both for combined deck and engine operations. It also required the master to confirm that risk control procedures were appropriate and to ensure they were in place during the operations.

Surveyors from the Maritime and Coastguard Agency (MCA) carried out a Port State Control Inspection on *Wah Shan* shortly after the accident. Several deficiencies were recorded, including one which noted that an operational risk checklist for joint operations by the deck and engine departments was not available on board at the time. The MCA surveyors asked the master to search for the document, and the master confirmed that no such document had been produced for the mooring operation. The DPA's subsequent accident investigation report included a completed

[6] A stopper is used to take the strain off a wire or rope to allow the free end to be attached to the bitts. The stopper normally consists of a length of chain or rope (other types with special grips or chocks are also available), secured to a strong loop at the base of a set of bitts. A chain stopper is then crossed over the wire so that there is enough friction to grip the wire.

[7] The largest size vessel which can transit the Panama Canal – smaller than capesize vessels.

Figure 3: Chaffing marks on hydraulic pipe of starboard winch

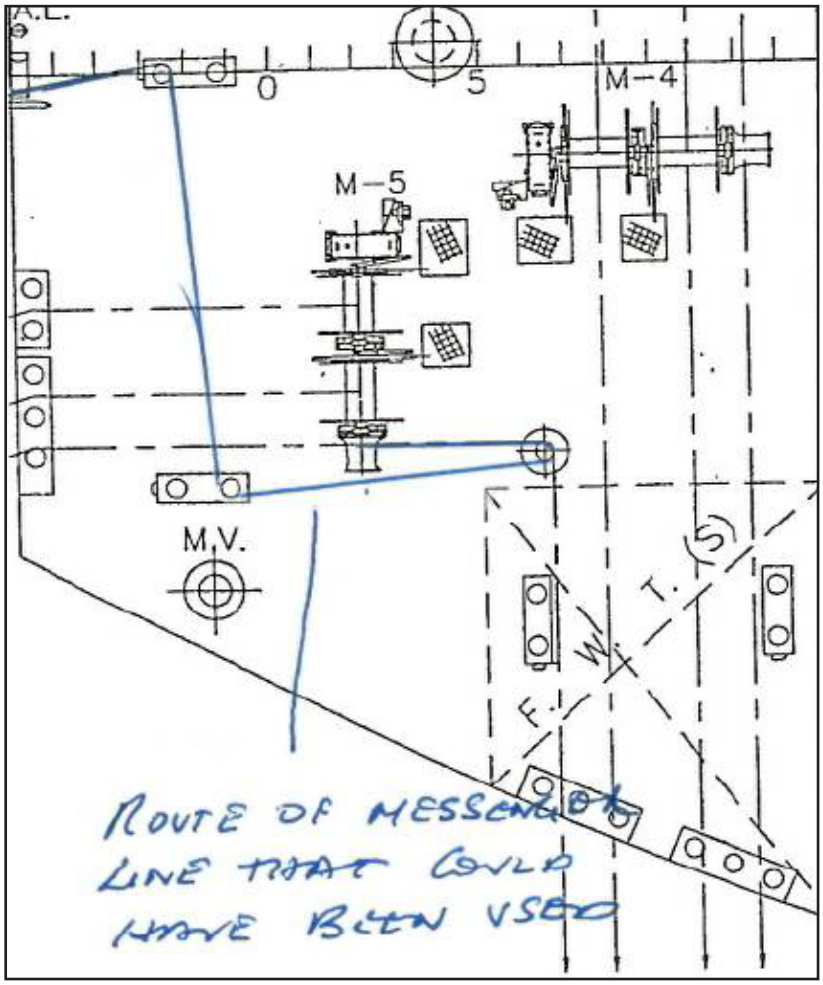

Figure 4: Initial suggestion for an alternative method to take the towline

Figure 5: DPA's suggestion for the 'correct' method to take the towline

Figure 6: Forward mooring arrangement on *Wah Shan*

Figure 7: Aft mooring deck on a bulk carrier visited by MAIB

copy of a risk checklist for the mooring operation dated September 2012, signed by the master, chief officer and bosun (who was nominated as the 'person in charge').

Guidance on best practice

'*Mooring Equipment Guidelines*', a widely used textbook published by the Oil Companies International Marine Forum (OCIMF), recommends that fairleads and warping drums should be located such that the fleet angle[8] does not exceed 1.5º. The publication states that a ship's mooring equipment should be designed for diverse requirements including mooring in port, single point moorings, multi buoy moorings, tug handling and barge mooring; therefore, all possible line leads for the various requirements must be considered. In the section 'Requirements for tug handling', the book states that there should be suitable equipment for hauling the tug's line on board, '*to lead the heaving line onto the warping head of a mooring winch*' using, '*suitable pedestal fairleads, guide posts or bollards.*'

The OCIMF publication '*Effective Mooring*', provides eight safety reminders to crew who are working with synthetic mooring ropes. These are:

1. *Do not surge synthetic ropes on the drum end … it may stick to the drum or bitt and jump …*
2. *Do not stand too close to a winch drum or bitt when holding and tensioning a line … Stand back and grasp the line about one metre from the drum or bitt*
3. *Do not apply too many turns over the warping drum end …*
4. *Do not bend the rope excessively*
5. *Do not stand in the bight of a rope*
6. *Do not stand close to a rope under load*
7. *Do not leave loose objects in the line handling area*
8. *Do not have more people than necessary in the vicinity of a line*

The MCA's publication, '*Code of Safe Working Practices for Merchant Seamen* (COSWP)' was referred to in *Wah Shan*'s SMS as a source of additional information. Regarding the attachment of a tug's tow wire, COSWP states:

[8] The 'fleet angle' describes the orientation of a line as it leads onto a rotating drum. Ideally a line should be lead onto a drum at right angles to the axis of the drum. The fleet angle is the angle between an imaginary line at right angles to the drum's axis and the line itself. If the fleet angle is too great, the line will not lead onto the drum evenly and will gather at one end, potentially causing the line to snag or be dragged off the end of the drum.

'A messenger should be used to heave the tug's tow wire on board by a winch, and then a stopper used while the eye is placed around the bollard. Only enough turns of the messenger should be used on the warping drum end to heave in the tow wire.'

Team work and the use of design to prevent accidents

In a publication sponsored by the MCA, '*The Human Element: a guide to human behaviour in the shipping industry*', (2010, Dick Gregory and Paul Shanahan), the authors indicate that violation of established rules is typically due to three different reasons:

- When people attempt to solve a novel, but immediate problem using limited knowledge and experience.
- When people resort to short-cuts which have proved effective in the past.
- When supervision is ineffective.

The authors quote established research in the subject of team skills, stating that there are five main team skills:

- Team leadership, which includes the ability to direct, coordinate and motivate team members, as well as engaging with them in planning and feedback sessions;
- Team members' ability to monitor each other's performance;
- Supportive behaviour of team members, who are proactive in their understanding of others' tasks and willing to share some of the load if necessary;
- Adaptability, or the ability for team members to respond to external changes and modify their own work accordingly, and;
- Team orientation, or the degree to which team members see the team's goal as their own.

The publication '*The engineer's view of human error*' by Trevor Kletz, a fellow of the Royal Academy of Engineering, states:

We can, of course, change people's performance by better training and instructions, better supervision and, to some extent, by better motivation. What we cannot do is enable people to carry out tasks beyond their physical or mental abilities or prevent them making occasional slips or lapses of attention. We can, however, reduce the opportunities of such slips and lapses of attention by changing designs or methods of working.

Voyage Data Recorder

Wah Shan's voyage data recorder (VDR) was manufactured by the Japan Radio Company (JRC) Limited. It was serviced, and had its annual performance test (APT) certificate issued, at Ijmuiden on 28 September 2012. The VDR service engineer reported that the system was operational when he left the vessel at around 1500 UTC.

During the APT, the service engineer remarked that the expiry date for the reserve power battery was June 2012; an order for a replacement was placed with JRC with the intention that the new battery would be fitted when the vessel called at Immingham. As part of the APT, the service engineer switched off the mains power supply and noted that the battery power was switched off automatically after 2 hours of recording. This test established compliance with the performance requirement standard for VDRs (IEC61996-1[9]). The service engineer was unable to test the write mechanism for archiving the VDR data as neither he nor the crew had an appropriate recording disc available. He used his laptop to extract data directly from the VDR.

Wah Shan's crew members received and fitted the new battery on 2 October after the vessel had arrived alongside at Immingham. The MAIB examined the data stored on the VDR's hard drive disk. No data had been recorded between 2022 UTC on 28 September and 1633 UTC on 2 October. The DVD RAM[10] write mechanism of the VDR was found to be defective and there was no evidence to establish that it had ever worked.

Regulation 18 of SOLAS Chapter V, '*Approval, Surveys and Performance Standards of Navigational Systems and Equipment and Voyage Data Recorder'* states that during the APT, the accuracy, duration and recoverability of the recorded data should be verified. IEC61996-1 states:

'Means shall be provided to ensure that the recorded data may be saved by an appropriate method following an incident …'

[9] International Electrotechnical Commission (IEC) standard 61996-1.

[10] DVD RAM Digital Versatile Disc Random Access Memory.

On 29 September 2012, the American Bureau of Shipping (ABS), *Wah Shan*'s classification society, issued the annual 'cargo ship safety equipment certificate' confirming that the vessel's VDR met the required standards.

Previous fatal accidents in similar circumstances

Since 1992, five fatal accidents have been reported to the MAIB that have been caused by tow wires and messenger lines during the process of securing a tug to a ship.

- In 1992, the chief officer on board the dry cargo vessel *Ocean Express* was killed by a whiplash injury to the neck caused by a parted messenger line
- In 2007, a crew member on the tug *Retainer* suffered a fatal whiplash injury to his chest as the tow rope, which had snagged on the mooring equipment, suddenly released.
- Similar accidents on the refrigerated cargo vessel *Ice Bird* (2002) and the tug *Englishman* (2008) killed two crew members.
- In 2009, a crew member from the container vessel *Ever Smile* was killed when he was struck by a messenger line which had jumped off the warping drum causing him to fall overboard.

ANALYSIS

Fatigue, drugs and alcohol

There was no evidence to suggest that the effects of fatigue, drugs or alcohol contributed to this accident. Although the second officer had only two hours of rest after his watch on 2 October, he had rested well during the previous evening and reported that he did not feel unduly tired. His behaviour on the morning of the accident was not considered to be due to fatigue. The post-mortem examination of Mr Wang Ji-Yue found no evidence of recreational drugs or alcohol in his system that might have impaired his performance at the time of the accident.

The accident

A significant amount of energy would have been stored in the polypropylene messenger line due to the weight of the tow wire and the friction as the messenger line led through the bitts resisted the tension created by the warping drum. In addition, the line would have been twisted each time a turn of rope slipped off the warping drum. The riding turns which accumulated on the warping drum would have created a complicated system – some turns would be trapped by their neighbours so that they were not under tension; other turns that were not trapped might experience the full amount of tension in the line. Any twist in a particular section of line might have caused a bight of rope to rotate rapidly as it came off the warping drum.

During the accident, it was considered likely that one or more turns of the messenger line came off the warping drum in such a way that these forces were suddenly released, forming a bight that rapidly uncoiled in a whiplash action. Given that the height of the drum above the deck was 1.55m, Mr Wang Ji-Yue's neck would have been adjacent to the upper part of the warping drum. The post-mortem report stated that he had suffered a fractured neck. Hence, it is almost certain that Mr Wang Ji-Yue was fatally injured when a section of the tensioned messenger line slipped off the end of the warping drum and struck him on the neck.

It was considered very unlikely that Mr Wang Ji-Yue's injuries were caused by him being dragged into, or around, the warping drum even though a loop of the messenger line was found around his neck. The loop was much more likely to have been a bight formed in the part of the messenger line that had been trapped under the riding turns and isolated from the section which was under tension. Also, a bight of rope rotating as the warping drum turned would not have contained sufficient energy to inflict such a serious injury so rapidly.

There was no evidence to suggest that the actions of the stern tug *Alma* contributed to the accident in any way. The tug crew maintained sufficient slack in the tow wire by matching *Wah Shan*'s course and speed, and, by paying out the wire from their winch as necessary.

Seamanship

The crew members at the aft mooring station on *Wah Shan* attempted to heave in *Alma*'s steel tow wire by hand, and they only stopped when they were advised against doing so by the tug's crew. Apart from lifting the weight of the wire from the tug up to the stern of *Wah Shan* (at least 100kg), there would also have been a considerable amount of friction as the wire passed through the stern fairlead and onto the centreline bitts. It would have required the co-ordinated effort of several people to heave in the steel tow wire successfully and without injuring anyone. There was also the risk that any relative movement between *Alma* and

ACTION TAKEN

MAIB actions

The MAIB has written to the ship builder, CSBC Corporation, Taiwan, highlighting the importance of considering safe working methods when designing equipment layouts.

The MAIB has also asked the International Chamber of Shipping to disseminate a short safety flyer based on this report to its members in order to raise awareness of the safety issues identified from this accident.

Actions taken by other organisations

The **Sincere Navigation Corporation** has taken the following actions:

- Carried out an accident investigation on board *Wah Shan*
- Issued a fleet circular entitled '*Precautions in mooring and tug operations*' which includes:
  - Reiteration of the SMS requirement to use the 'Operational Risk Check List' to assess, control and mitigate the risk of towing and mooring operations.
  - A requirement to display the correct mooring and towing arrangements both on the bridge and at mooring stations.
  - An instruction to officers in charge of mooring teams to dynamically assess the risk of the planned task, including the layout and lead of lines.
  - An instruction to senior officers to carry out familiarisation for new crew members and to demonstrate correct practices when there is a change of crew member in charge of mooring operations.
- Provided crew manning companies with a mooring and tug operations summary with illustrations in order to aid in the safety training of joining crew members.
- Provided all vessels in the fleet with computer-based training packages on safe mooring and towing operations, to be included as part of shipboard training programmes.

The **Maritime and Coastguard Agency** produced a report about the accident which was copied to the MAIB and the Panamanian administration.

RECOMMENDATIONS

The **Sincere Navigation Corporation** is recommended to:

2013/220 Improve the effectiveness of the safety management systems on board its managed vessels by:

- Ensuring crew have the necessary technical competence to complete hazardous tasks
- Improving leadership and team-working skills among their crews
- Encouraging crew members to develop the habit of carrying out effective risk assessments before carrying out any hazardous tasks.

Safety recommendations shall in no case create a presumption of blame or liability

SHIP PARTICULARS

Vessel's name	*Wah Shan*
Flag	Panama
Classification society	American Bureau of Shipping
IMO number/fishing numbers	9268825
Type	Bulk carrier
Registered owner	Newton Navigation Limited, Marshall Islands
Manager(s)	Sincere Navigation Corporation, Republic of China (Taiwan)
Construction	Steel
Build	2003, China Shipbuilding Corporation, Kaohsiung (Taiwan)
Length overall	289m
Gross tonnage	91165
Minimum safe manning	14
Authorised cargo	Dry bulk

VOYAGE PARTICULARS

Port of departure	Ijmuiden, The Netherlands
Port of arrival	Immingham, UK
Type of voyage	Short international
Cargo information	Coal
Manning	23

MARINE CASUALTY INFORMATION

Date and time	2 October 2012, 0712
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	53º 31' 00N, 000º 10' 00E
Place on board	Aft mooring deck
Injuries/fatalities	1 fatality
Damage/environmental impact	None
Ship operation	Arrival
Voyage segment	River passage
External & internal environment	17 knots, SW wind, daylight, calm sea, dry, good visibility
Persons on board	23