Isle of Man Ship Registry

Casualty Investigation Report No. CA 111

M/V VIRTSU

Fatal accident

17th April 2010

Statement of Intent

Extract from

The Isle of Man Merchant Shipping

(Accident Reporting and Investigation)

Regulations 2001 – Regulation 4:

“*The fundamental purpose of investigating a casualty, an accident, or an incident under these Regulations 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”

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Summary

On 17th April 2010 whilst handling mooring ropes on the vessels forecastle deck, a fatal accident occurred involving the bosun on board the Isle of Man registered vessel Virtsu. Although the alarm was raised very soon after the event was thought to have occurred (there were no actual witnesses), due to the degree of injury received, resuscitation attempts proved unsuccessful.

Narrative of events

Although a formal work plan is carried out weekly, due to the changing nature of the vessels environment, this is modified verbally on a daily basis as weather conditions permit. However, as the vessel was on passage and the weather was fine and settled with little pitching or rolling, this did not need to be done and the scheduled work was to be carried out as normal.

At approximately 07:50hrs the Bosun discussed the day's work with the Chief Officer (who was on watch) before going to advise the crew what was needed to be done.

The working day started normally at around 08:00hrs with the Bosun advising two able seamen (AB1 and AB2) to work in the forward void spaces of the forecastle head where the hatch raising and lowering hydraulics are located, the work involved being to de-scale and prepare both spaces for painting the following day.

AB1 was working in the starboard void space and AB2 was working in the port void space, it was intended that they should finish the job and clean the space afterwards so that it would be ready to receive paint in the morning without further preparation.

The AB's then proceeded with their days work, in a relatively small work environment with noisy equipment. They wore appropriate protective equipment including ear protectors, goggles, masks and gloves, the doors were kept closed to limit the mess carrying through to the adjacent forecastle space.

The Chief Officer found that there was a certificate on board for two new mooring ropes (received 8th March 2010) and since the forward mooring ropes had been reported by the previous crew (5th March 2010) as being in poor condition but had not yet been changed, the Bosun was contacted by the Chief Officer to discuss the matter and to plan what to do about it.

Since the ropes as they were currently wound on the drum appeared to be in a fair condition and it may have been the inner portions which were poor, it was agreed that the ropes would be visually inspected for their condition when mooring the vessel in the port of Taganrog the following day when they were wound off the drums during the normal mooring process.

Shortly before 16:00hrs, the Chief Officer went to the bridge to receive his handover of the navigational watch from the second officer.

At approximately the same time, the Bosun went to the forecastle space to inspect how work there was progressing, he saw both AB's were nearing completion and that the preparation would soon be finished.

At approximately 16:45hrs AB1 having finished his work went to check how AB2 was progressing, he saw that he too would soon be finished, he also noticed however that the door to the forecastle deck which should have been closed, was in fact open.

He went to close the door and when in a less noisy environment to the one he had just been working, noticed the mooring winch motors were in use. Although the drum was not at the time turning, the lever (which is adjacent to the exit from the forecastle store) was in the position which would slacken off or pay out the ropes. As he moved the lever to neutral, it was at this point he saw the Bosun caught up in the rope around the port rope drum. He quickly identified he would need assistance and immediately went to raise the alarm.

As there was no communication forward, AB1 ran the length of the main deck (approximately 70m) to the ships office and the nearest phone to call the bridge.

The Master had gone to the bridge at 16:50 to check on the navigational situation which was congested due to the approaches of the Kerch Strait southern traffic separation scheme. With approximately eight vessels in close proximity in a crossing and overtaking situation the Chief Officers full attention was required. Within a few seconds of the Masters arrival, the alert call from AB1 came in stating that the Bosun had been involved in a bad accident up forward.

The Master immediately took command from the Chief Officer and instructed him to go forward with AB1 to assess the situation.

AB2 meanwhile had of his own accord also come onto the forecastle, saw the Bosun and tried visually raising the alarm on the bridge by waving his arms and shouting, by which time AB1 and the C/O had arrived forward, between all three of them, they released the Bosun from the drum by reversing its rotation to relieve tension on the coils of rope holding him to it.

The Bosun had sustained very severe leg, chest and head injuries with significant blood loss. There was no sign of breathing or a pulse, he was however still warm and the C/O commenced to give CPR in an attempt to revive him. Unfortunately he showed no response and the Master was advised by the Chief Officer at 17.10hrs on 17th April 2010 that the Bosun was dead.

The Bosun's body was brought aft by AB1, AB2, the Electrical Engineer and Second Engineer where it was covered until the vessel berthed in Taganrog the following day, AB2 was a close personal friend of the Bosun's both at home and at sea.

After the incident was reported to relevant parties, ships staff undertook a preliminary investigation to try and determine how the bosun had become trapped. As there were no witnesses to the actual event, the following comment/analysis is based on available evidence, talking to ships staff and relates to general seamanship knowledge and practices.

Because there was a fatality on the vessel, the Russian Office of Transport Prosecutor boarded at 14.35hrs on 18th April to conduct an investigation by interviewing staff and observing the scene of the accident to determine if a criminal offence had occurred or not, the deceased was taken to the city morgue by local authorities at 16.45hrs, his personal effects were also removed from the vessel. The police report is still pending.

Comment and analysis

Whilst there were no witnesses to the actual incident, the following sequence of events have been created as the likely cause of the accident and is created from statements taken from crew members and from the subsequent investigation.

It would appear that the Bosun, after having seen how AB1 and AB2 were progressing, went onto the forecastle deck, set the port mooring winch lever to slacken off and began laying out the mooring rope as it came off the drum by himself.

Normal stowage of ropes on the port drum (these pictures show the new ropes), the forecastle deck extends forward from the windlass position in the direction of the rope (where they would normally be laid in preparation for mooring or changing the ropes).

There is a control lever either side of the gearbox to allow the operator (shown on the starboard lever) to control either the port or the starboard drum independently

Arial View of the accident area/forecastle deck showing the normal lead of the mooring rope.

The Bosun would in most probability have been working in close to get a new hand hold and walk backwards (towards the bow) with the rope to lay it out, before going in close again to get another hand-hold. It is likely that when the tension of walking backwards was released, the coils of rope still on the drum slackened slightly.

It is surmised, that at this point the free end of the rope became snagged between coils still on the drum and snatched the rope back towards the drum again and commenced heaving rather than slackening, giving very little time for the Bosun to either release his grip or jump clear. Another possibility is that the Bosun had unknowingly stepped inside a bight (a loose loop of rope) which got caught around his leg, either way he was dragged back into the rope drum. It was difficult to determine if he was pulled in hand first or leg first since he made at least three revolutions incurring severe physical damage with the winch foundations and drum/coils before the electric motor became stalled by other coils of rope around the mooring drum axle itself.

Actual ropes/drum, note that the free end is between coils approximately centre of the rope drum in the left hand picture, in the right hand picture see also loose turns caught around the drum axle which eventually stalled the electric drive motor.

AB1 upon completing his work noticed the door from the forecastle space to the forecastle deck was open when he would expect it to be closed, went to investigate and was the first to witness the accident. He immediately went to raise the alarm.

View of the exit to the forecastle space and view of the exit from the forecastle deck, the exit partially obstructs the view of the control levers from the bridge.

Weather conditions

The weather at the time of the incident was settled with good visibility and is not considered a contributing factor.

Alcohol

The company have a strict alcohol policy and it is not permitted to consume any alcohol within four hours of going on watch, as the Bosun had almost finished his working day, no alcohol should have been consumed within the last 11 hours.

Alcohol is not considered a contributing factor.

Fatigue

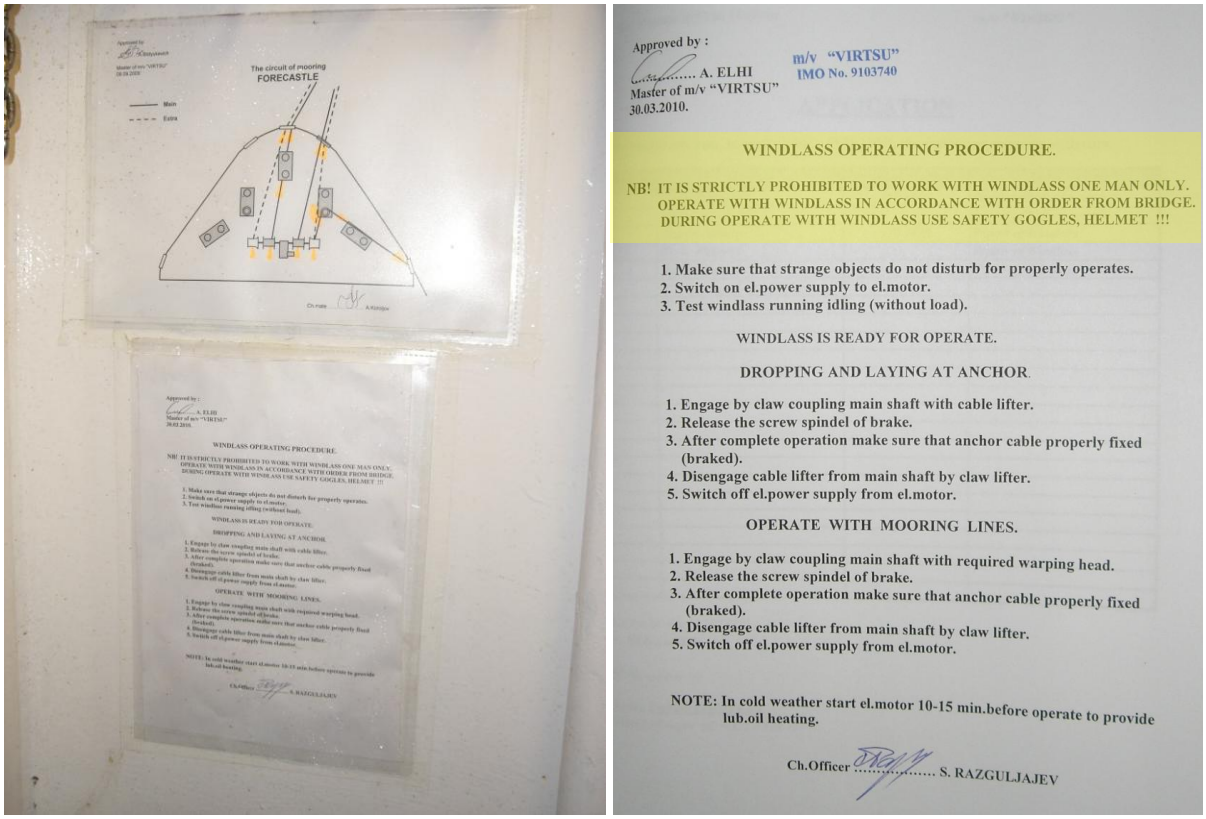
On the current trading pattern, although port turnaround times are often between eight and fourteen hours, the voyage duration between ports allows enough time to get sufficient rest (records of work and rest periods support this).

Lack of proper rest is not considered a contributing factor.

Safety Management System

The Safety Management System operational procedures were followed in that formal weekly work meetings were carried out on board and daily work is verbally discussed by department heads to see if the days scheduled work remains valid or needs to be modified in any way.

The SMS includes a procedure for anchoring and mooring operations that states this should not be done alone and under instructions from the bridge, unfortunately this was not followed.



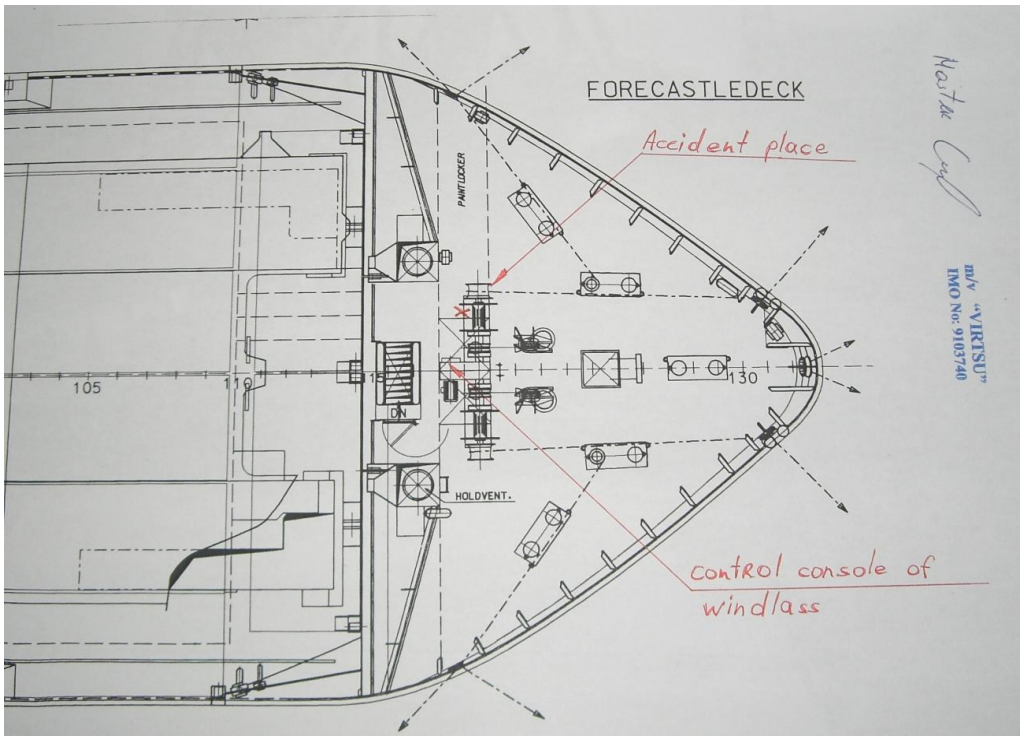
Left picture - mooring procedure posted beside the start switch for the windlass motors. Right picture - showing mooring operation instructions, both are updated with new master signature and dated 30.03.2010 (highlighted section only in this report for emphasis)

The two able seamen who were instructed to scale and prepare for painting the port and starboard void spaces in the forecastle were correctly attired. Keeping the doors closed to contain the dust which would be produced by mechanical scaling had the downside that it was very noisy inside the space being worked requiring ear defenders for protection and so isolated the men from their environment (in their own words, neither of them heard a cry for help).

The discussion between the Chief Officer and the Bosun regarding the mooring ropes was normal enough. What is very important however, was the understanding to inspect the condition of the existing ropes during the mooring operations in Taganrog the following day which appears to have been forgotten by the Bosun.

The complicated navigational situation had the Chief Officer’s full attention; no-one had contacted him regarding working on the forecastle so he wasn’t expecting any such activity. As the winch is placed directly in front of the exit from the forecastle space itself, the actual winch control levers are partially hidden from view from the bridge so he wouldn’t be able to see if there was a second person there or not.

View of the windlass from the bridge, control levers are partially hidden by the steps from the forecastle space.



Layout of the forecastle deck showing accident location and control lever location

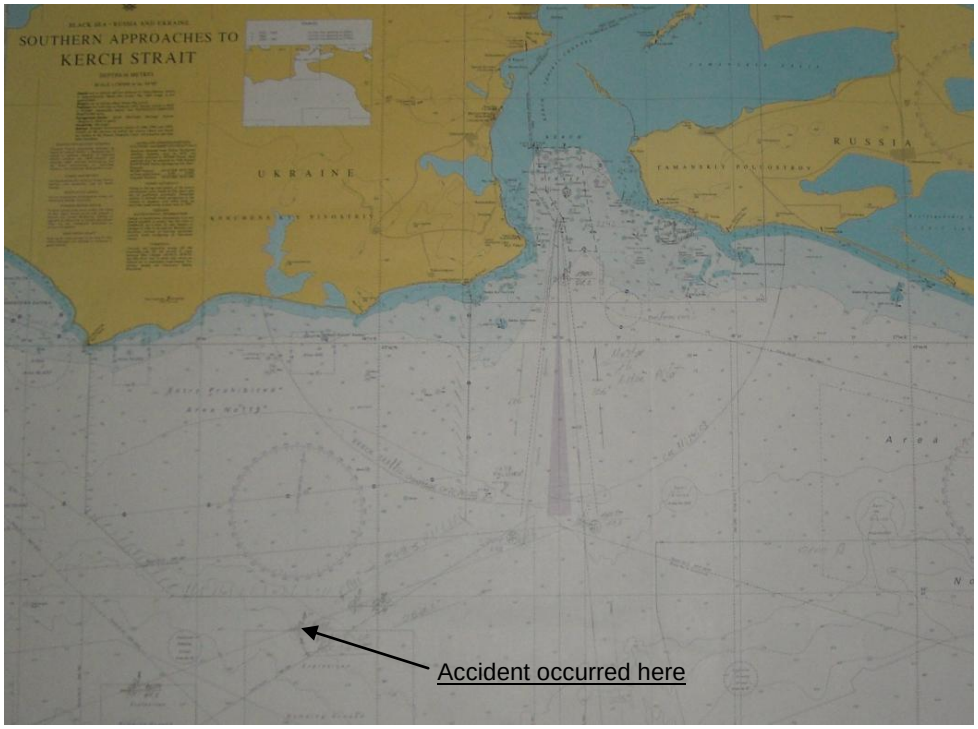


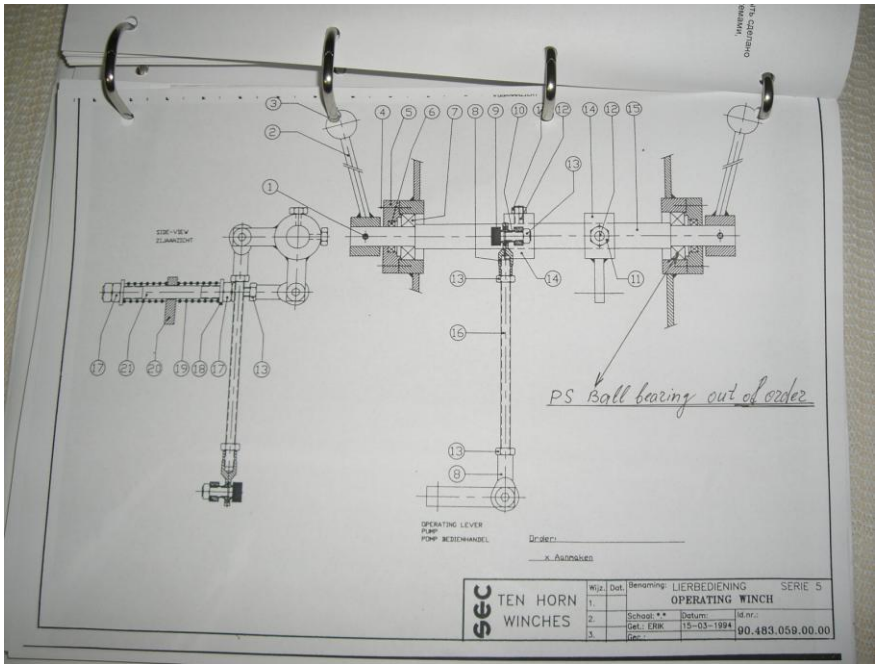
Chart of the approaches to the Kerch Strait southern traffic separation scheme showing the area the accident occurred.

It was fortunate that the master had arrived on the bridge only seconds before the alert was raised as it meant there was someone to immediately take command of the vessel allowing the Chief Officer to go forward with as little delay as possible.

Operation of the mooring winch.

Ships engineers undertook to examine the winch control system after the accident and whilst it was determined the port lever bearing had partially collapsed and was partially seized, it was still operational (since AB1 put it into the neutral position to stop the winch) and still required a conscious movement to put into the slacken (or heave) position.

The chief engineers report states that since 29th March (when he joined) and 17th April (when the accident occurred) some thirteen mooring operations had taken place in Taganrog and Constanta without any reported problems.



Working diagram of the winch control levers.


Internal view of the winch controls levers after examination.

The Bosun should never have tried to handle the mooring rope and work the controls by himself, not only does it conflict company procedures, it is also bad general seamanship.

The Code of Safe Working Practices for Merchant Seamen, describes mooring operations and associated hazards.

As there was no-one to finely control the motors, there was no-one to maintain a slight tension on the free end of the rope was paid out, there was no-one to stop the drum movement and there was no-one to raise the alarm when things went badly wrong.

The incident was discussed at length in a safety meeting on board the vessel, though it was difficult to establish the exact sequence of events. It was decided by ships staff, to carry out further training for all crew utilising one of the safety videos supplied by the company, which deals specifically with the topic of mooring and associated rope-handling hazards.

The ropes on this vessel are only 48mm diameter polypropylene and would be fairly easy to manually handle by one person. Perhaps this gave the Bosun a false confidence.

Unfortunately we will never now have the opportunity to ask, since coupled with unmonitored, independently powered machinery they proved to be a lethal combination.

Conclusions

The most probable explanation for the accident was that the Bosun decided to take advantage of remaining work time and took it upon himself, to act alone and without informing the bridge, to lay out the line on the forecastle deck for inspection.

At some point the Bosun became caught in the coils of rope and was dragged into and around the drum, becoming very severely injured in the process.

In the absence of a second person, no-one could stop the windlass or reverse its direction immediately the Bosun became trapped.

Sustained injuries were so severe that resuscitation attempts were not successful and the Bosun lost his life.

Recommendations

We can offer only a few recommendations in this sad incident.

- Never attempt to do a job requiring more than one person to do it safely, alone.
- Do not ignore company procedures – very specific risks are involved with this particular operation and means to minimise the hazards are clearly written.
- Ensure crew are trained in mooring/anchoring hazards within their normal workplace familiarisation which is part of the Safety Management System on board.
- Circulate and discuss the incident amongst the fleet to raise awareness of the accident, the hazards and also the correct procedures to follow.