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# Crew member fatality on board the bulk carrier *Polska Walczaca* at sea off Queensland 15 November 2010

## Abstract

On 15 November 2010, the engine room fitter/storekeeper (storekeeper) on board the Vanuatu registered bulk carrier *Polska Walczaca* died as a result of injuries he received when he fell from the ship's number five cargo hold ladder while repairing a section of its hand railing.

The ATSB investigation could not determine why the storekeeper fell from the cargo hold ladder. However, it was found that, at the time, he was not wearing a safety harness and his hardhat was probably not fastened correctly.

The investigation did not identify any organisational or systemic issues that might adversely affect the future safety of marine operations.

## FACTUAL INFORMATION

### *Polska Walczaca*

*Polska Walczaca* (Figure 1) is a conventional panamax<sup>1</sup> bulk carrier which has nine cargo holds located forward of the accommodation.

The ship was built in 1992 by Burmeister & Wain Skibsværft, Denmark. It has an overall length of 228.53 m, a moulded breadth of 32.22 m and a moulded depth of 19.0 m. At the ship's summer draught of 14.119 m, it has a deadweight of 73,505 tonnes.

Propulsive power is provided by a single Mitsui MAN B&W 5S60MC single acting, direct reversing, two-stroke diesel engine. The engine develops 8,010 kW at 95 rpm and drives a fixed pitch propeller. The ship has a service speed of about 13.7 knots<sup>2</sup>.

Figure 1: *Polska Walczaca*



1 A ship that is limited in size to the dimensions of the Panama Canal.

2 One knot, or one nautical mile per hour equals 1.852 kilometres per hour.

At the time of the accident, *Polska Walczaca* was registered in Vanuatu and classed with Det Norske Veritas (DNV). It was owned by Saturn Six Shipping, Bahamas, and managed by the Polish Steamship Company, Poland.

The crew consisted of 21 Polish nationals, all of whom were appropriately qualified to hold their positions on board the ship.

The master had 18 years of seagoing experience, all of which was on board Polish Steamship Company bulk carriers. He held a master's certificate of competency and had been sailing as master for about 8 years. He had previously been master on board *Polska Walczaca* and rejoined the ship on 28 October 2010.

The chief mate started his seagoing career in 1987 with the Polish Steamship Company and had been employed by the company ever since. In 2005, he obtained his chief mate's certificate of competency and soon afterwards began sailing at that rank. He joined *Polska Walczaca*, his third panamax ship, for the first time on 28 October 2010.

The storekeeper had 36 years of seagoing experience, all of which was with the Polish Steamship Company. He joined *Polska Walczaca* on 28 October 2010. He had previously sailed on board the ship a few years earlier.

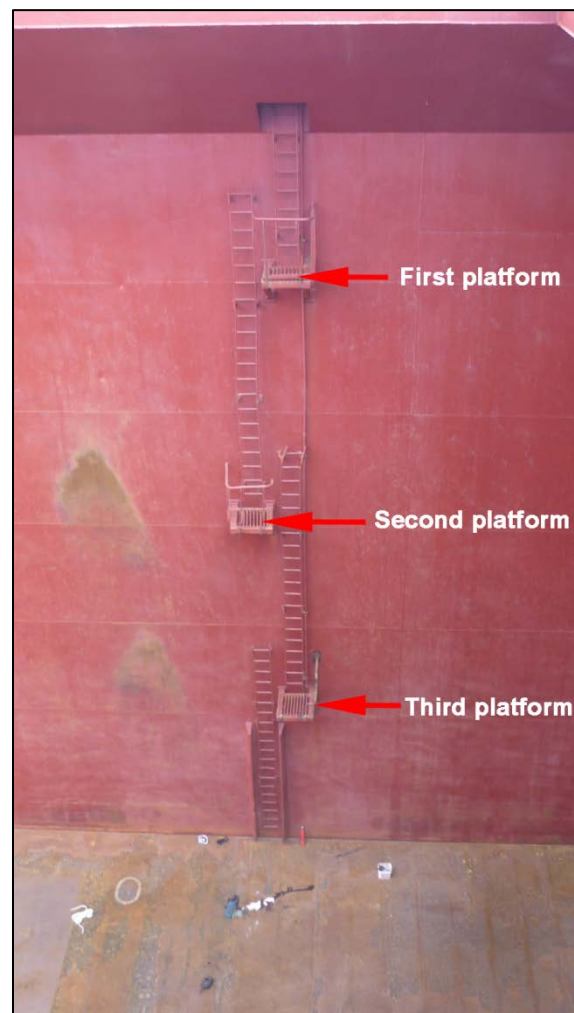
## The accident

On 3 November 2010, *Polska Walczaca* departed, in ballast, from Hong Kong, China, bound for Port Kembla, Australia.

During the voyage, the crew carried on with their normal watchkeeping routines and general maintenance tasks. Their main task, cleaning of the cargo holds, was progressed over the first 10 days of the voyage.

When the cargo hold cleaning was completed, the chief mate inspected the holds to check that they were ready for loading. He noted that there was some water in the hold bilge wells and that the handrail around the third platform of the number five cargo hold ladder was damaged and would need to be repaired (Figure 2).

**Figure 2: Number five cargo hold ladder: note that the handrails have been removed from around the third platform**



At about 0815<sup>3</sup> on 15 November, the chief mate met with the storekeeper and the ordinary seaman in the ship's office. He instructed the two men to repair the hand railings around the third platform of the number five cargo hold ladder. The chief mate had already filled out the necessary permits for the job, so the three men discussed the precautions to be taken. The storekeeper and the ordinary seaman then signed the permits and went to work.

The two men gathered the equipment they needed and went to the number five cargo hold manhole. They opened the manhole hatch and, since they had decided to leave the hatch covers closed, lowered a halogen light, some tools and a power cable down to the third platform.

<sup>3</sup> All times referred to in this report are ship's time, Coordinated Universal Time (UTC) + 11 hours.

At about 0900, the storekeeper entered the hold and climbed down the ladder to the third platform. He set up the light about a metre above the platform and then used an angle grinder to remove the damaged sections of hand railing so that they could be repaired in the workshop.

At about 1000, the storekeeper climbed out of the hold with the damaged sections of hand railing in hand. He and the ordinary seaman then went for a coffee break.

At about 1020, the storekeeper and the ordinary seaman went to the welding workshop on the poop deck to repair the damaged hand railing. They finished repairing the railing just before 1200, so they decided to have lunch and then agreed to meet at the number five cargo hold manhole afterwards.

At about 1310, the chief mate went out on deck to check what progress the storekeeper and the ordinary seaman were making. The weather was fine and the ship was gently rolling about 2 to 3° on a long swell of about 2 m.

The storekeeper had not yet returned from lunch, so the ordinary seaman explained to the chief mate that the sections of hand railing had been straightened and that they were about to weld them back in place. The chief mate then went to his cabin.

At about 1315, the storekeeper arrived at the manhole. He and the ordinary seaman lowered a small portable welding machine, the sections of hand railing and a bucket filled with tools and equipment to the second platform.

The storekeeper climbed down to the second platform while the ordinary seaman remained on deck. When he got there, the storekeeper moved the equipment from the second platform. The ordinary seaman could only see as far as the second platform because of the lighting, so he lost sight of the storekeeper at about this time.

About 5 minutes later, the ordinary seaman heard a noise that sounded like something falling. He called out to the storekeeper but received no reply. He then climbed down the hold ladder to the first platform to check what had happened. When he reached the platform, he could see the storekeeper lying on the tank top. The ordinary seaman climbed out of the hold and ran for help.

At about 1325, the chief mate heard heavy footsteps on the stairs outside his cabin. When he went to check what the commotion was, he saw the ordinary seaman who told him that there had been an accident.

The chief mate ran up the stairs to the bridge, reported the accident, grabbed his hand-held radio and then went to the cargo hold.

The master heard loud voices outside his cabin so he also went to the bridge. After he had been told what had happened, he sent the second mate to get the oxygen unit and the first aid kit. The second mate then went to assist the chief mate.

The chief mate climbed down the number five cargo hold ladder. When he reached the bottom of the ladder, he could see the storekeeper lying on the tank top. He was bleeding from his head and a foamy pink fluid was coming from his mouth. The chief mate checked the storekeeper's vital signs. He was unconscious and his pulse was weak.

About 2 minutes later, the second mate arrived with the oxygen unit and first aid kit. He and the chief mate then provided the storekeeper with first aid treatment. They applied a dressing to his head wound and placed him on his side.

At 1344, the master called the Australian Rescue Coordination Centre (RCC) requesting medical assistance and an evacuation (medivac) for the injured storekeeper. At that time, *Polska Walczaca* was in position 23° 31.2'S 154° 02.5'E, about 160 miles<sup>4</sup> east of Gladstone, Australia.

The RCC asked the master to change course and steam towards the Australian coast. The RCC also informed the master that a medivac would be organised. He was then put through to a Royal Flying Doctor Service (RFDS) doctor<sup>5</sup>.

The master explained to the doctor that the storekeeper had probably fallen from a height and that he was unconscious and had a weak pulse. The doctor told the master that the storekeeper should not be moved and that he should be given oxygen.

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<sup>4</sup> A nautical mile of 1852 m.

<sup>5</sup> The RFDS provides the Australian telemedical advice service to ships at sea.

The master passed the advice to the chief mate and then turned the ship towards the coast. When the ship had steadied on a westerly heading, he instructed the crew to open the number five cargo hold hatch covers so that the lighting in the hold would be better. He then reported the accident to the ship's managers and the Port Kembla agent.

At about 1400, the RCC contacted the master and confirmed that a medivac helicopter had been arranged. The master was told to continue on his current heading and that the helicopter would rendezvous with the ship at about 1600.

When the master finished speaking to the RCC, he telephoned the engine room and asked the chief engineer to give him maximum possible speed.

The storekeeper's condition was starting to deteriorate, so, at about 1500, the master called the RCC. He was asked to forward some information about the ship so that it could be relayed to the medivac helicopter and was then put through to the RFDS doctor.

The master explained to the doctor that the storekeeper's breathing was getting weaker, his pulse was hard to detect and that his eyes showed only a slight reaction to light. The doctor told the master that the storekeeper should be given cardio pulmonary resuscitation (CPR)<sup>6</sup>.

The crew administered CPR, but the storekeeper's condition did not improve. This information was provided to the doctor and he advised the master that the storekeeper was possibly dead, but that the CPR should be continued and that the storekeeper should be given adrenalin. The adrenalin was administered but the storekeeper's condition did not improve.

The storekeeper's skin was now a bluish colour, he had no pulse, he was not breathing and his eyes showed no reaction to light. This information was passed on to the doctor who, at 1600, told the master that the storekeeper had died.

The medivac was cancelled, the storekeeper's body was taken out of the cargo hold, the hatch covers were closed and the ship was then turned towards Port Kembla.

On 17 November, *Polska Walczaca* anchored off Port Kembla while waiting for a berth. On 18 November, police officers boarded the ship to investigate the storekeeper's death and, later that day, they took his body ashore.

## ANALYSIS

### The accident

At about 1320 on 15 November, the storekeeper was found lying unconscious, face down on the tank top in number five cargo hold, at the base of the hold's aft access ladder. His hardhat was about 3 m away from where he was found, the welding machine was nearby, as were the bucket and some of the tools he had been using. However, his safety harness was still lying on the third platform.

The storekeeper was last seen about 5 minutes before the accident, when the ordinary seaman lost sight of him when he moved off the second platform and onto the third section of ladder. It is likely that, in the 5 minutes between when the storekeeper left the second platform and when he fell, he was able to move the welder, the sections of railing and the bucket of tools to the third platform.

The dimensions of the ladder platforms were about 810 mm x 900 mm. They were designed as a landing to hold a single person while moving from one section of ladder to the next. The third platform was about 5 m above the tank top and its hand railings had been removed. It is also likely that the storekeeper, a welding machine and its power cables, a bucket of tools, a safety harness and sections of hand railing were all on the platform at the time. Furthermore, the fitter had rigged a light about 1 m above the platform and this would have added to the congestion on the platform.

As a result, the platform would have been very congested and a dangerous place to stand and work.

A post mortem examination concluded that the storekeeper died as a result of traumatic injuries

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<sup>6</sup> An emergency procedure consisting of external cardiac massage and artificial respiration.



to his head, thorax<sup>7</sup> and pelvis. This is consistent with the evidence, showing that he fell from a height in the cargo hold.

Post mortem toxicology tests detected low levels of alcohol (0.011 g/100 ml) in the storekeeper's blood. The post mortem report noted that this level of alcohol concentration was insufficient to impair work or cognitive skills. The toxicology tests did not detect the presence of any other drugs.

There is no evidence that indicates why the storekeeper fell. However, it is possible that he had started working on the third platform and that he tripped over one of the many items on the platform and, with no barrier to prevent a fall, fell to the tank top below.

## Safety equipment

On the morning of 15 November, the chief mate filled out the appropriate work permits (Hot Work, Working Aloft and Enclosed Space Entry) for the repair of the number five cargo hold ladder hand railings and had them signed by the master. The permits listed the safety requirements for the task and the 'Working Aloft' permit included the following statement:

Protective helmets, harness with safety lines are donned.

At about 0815, the chief mate, the storekeeper and the ordinary seaman discussed what needed to be done to repair the railings. During the conversation, the chief mate outlined the safety requirements for the job. The storekeeper and the ordinary seaman then signed the permits, indicating that they understood the safety requirements. However, when the storekeeper was found, he was not wearing a safety harness and his hardhat was not on his head.

### Safety harness

The chief mate had explained to the storekeeper and the ordinary seaman that they should use a harness when working at height. The working aloft

permit requirements also included the use of a safety harness.

The storekeeper was working at height as soon as he entered the cargo hold and should have been wearing a harness from that time. This would have ensured that he could have clipped the harness's lanyard onto a strong point, like a ladder, at any time.

It is possible that the storekeeper either decided to not wear the harness, or to put it on when he was on the third platform. Both of these options were a violation of the directions given to him by the chief mate and those contained in the working aloft permit.

Why the storekeeper decided not to use the harness could not be established. However, it is a natural human tendency to take the path of least effort<sup>8</sup>. Therefore, it is possible that he chose not to do so because it was easier than putting it on and having to connect/disconnect the lanyard as he moved around.

### Hardhat

The storekeeper was wearing a hardhat when he was last seen by the ordinary seaman. However, when he was found lying on the tank top, his hardhat was about 3 m away. Furthermore, it was relatively undamaged; indicating that it was probably not on the storekeeper's head when he landed on the tank top.

Hardhats are designed to protect the wearer's head in the case of a knock or a fall and they are fitted with a chin strap to better ensure they remain in place.

Since the hard hat was not on the storekeeper's head when he was found, it is likely that he did not have its chin strap fastened.

Had the chin strap been appropriately fastened, the hardhat would have remained in place and it would have afforded his head some protection when he fell from the cargo hold ladder and landed on the tank top.

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<sup>7</sup> The thorax is the region of the body formed by the sternum, the thoracic vertebrae, and the ribs. It extends from the neck to the diaphragm, and does not include the upper limbs. The heart and the lungs reside in the thoracic cavity, as well as many blood vessels.

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<sup>8</sup> James Reason, *Human Error*, Pg 196.

## FINDINGS

### Context

On 15 November 2010, the storekeeper on board the Vanuatu registered bulk carrier *Polska Walczaca* died as a result of injuries he received when he fell from the ship's number five cargo hold ladder while repairing a section of its hand railing.

From the evidence available, the following findings are made with respect to the accident. They should not be read as apportioning blame or liability to any particular organisation or individual.

### Contributing safety factors

- It is likely that, when he fell, the storekeeper was working on the third platform of *Polska Walczaca*'s number five cargo hold ladder, about 5 m above the tank top.
- The third platform did not have any hand railings. The storekeeper had removed the hand railings and was in the process of re-fitting them when he fell.
- The storekeeper was not wearing an appropriately fitted and tethered safety harness when he fell.
- The storekeeper was wearing a hardhat when he fell, but its chinstrap was probably not properly fastened. As a result, the hardhat did not offer the protection it may have had it been properly secured.

### Other safety factors

- It is possible that the storekeeper tripped over one of the many items that were on the small platform at the time. These items included a light, a welding machine and its power cables, a bucket of tools, a safety harness and sections of hand railing.

## SOURCES AND SUBMISSIONS

### Sources of Information

*Polska Walczaca*'s master and crew

The Polish Steamship Company

New South Wales Department of Justice and Attorney General

### References

James Reason, *Human Error*, Cambridge University Press, 2003

### Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to *Polska Walczaca*'s master, chief mate and ordinary seaman, the Polish Steamship Company, Russ Larkin and Associates on behalf of Vanuatu Maritime Services, the NSW Police, the NSW Department of Justice and Attorney General and the Australian Maritime Safety Authority (AMSA).

Submissions were received from *Polska Walczaca*'s master and chief mate, the Polish Steamship Company, the NSW Department of Justice and Attorney General and AMSA. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.