

Extract from The United Kingdom Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 – Regulation 5:

“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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MV SCOT PIONEER

Fatal injury to a crewman during cargo operations

Belview Port, Waterford

27 October 2011

SUMMARY

At 1438 (UTC+1) on 27 October 2011, an able seaman (AB) on board the UK registered cargo vessel *Scot Pioneer* fell into a void space at the forward end of the ship's cargo hold. The vessel was loading cargo at Belview Port, Waterford, Eire. Although paramedics treated the AB at the scene, he died from his injuries a short while later.

The AB fell when attempting to leave the cargo hold via a wooden footbridge leading from an upper opening in the hold's forward portable bulkhead. The MAIB investigation found that:

- The opening in the portable bulkhead was designed to provide ventilation to the hold, not a means of access.
- The footbridge was an ad-hoc arrangement and was not fitted with any means to prevent a person from falling.

- Several of the crew involved in the cargo operations recognised the risks of using the footbridge but did not raise their concerns on board

Following the accident, *Scot Pioneer's* managers removed the forward portable bulkhead, reviewed the access arrangements to the cargo hold, and issued a fleet safety circular highlighting the need to provide safe means of access. In addition, the Chief Inspector of Marine Accidents has strongly advised the owners and operators of *Scot Pioneer's* nine sister vessels to ensure that crews do not use the upper openings in the portable forward bulkhead to access the hold unless a proper risk assessment has been conducted and a safe means of access, which guards against a fall from height, has been provided. In view of the action taken, no recommendations have been made.



Scot Pioneer

FACTUAL INFORMATION

Vessel and crew

Scot Pioneer, operated by Scotline Ltd, was one of nine Icerunner 3650 general cargo vessels built in Peters Shipyards in the Netherlands that were equipped with a forward portable bulkhead in the cargo hold. The vessel entered service in 2006. She was purchased by Scot Pioneer Shipping Ltd in 2008 and was primarily used to transport timber or timber products within Northern Europe. *Scot Pioneer* had sailed from Varberg, Sweden, with a cargo of packaged timber on 20 October 2011. Following port visits to Belfast, Warrenpoint in Northern Ireland, and Wicklow in Eire, during which the vessel remained alongside overnight, *Scot Pioneer* secured alongside Belview Port, Waterford at 2325 on 26 October 2011.

The vessel's crew comprised a master, a chief officer and a cadet from the UK, a Croatian chief engineer and four Filipino ratings. The deceased, Florentino Jorge Dela Peña (Jorge), was 51 years old and first worked on board *Scot Pioneer* in July 2010. He was engaged on his second 8 month contract on board and was the most experienced of the vessel's ABs. Consequently, he was regarded by the rest of the crew as the bosun. At the time of his fall Jorge was wearing overalls, safety boots, a high visibility waterproof coat and a safety helmet. The tread on the safety boots was in good condition.

Cargo hold and access

Scot Pioneer's single hold had a capacity of 4929m³ and was equipped with three portable bulkheads to facilitate the simultaneous carriage of different cargoes. When not in use, two of the portable bulkheads were stowed at the aft end of the hold. The third portable bulkhead was stowed in the forward part of the hold and was rarely used (**Figures 1 and 2**). Narrowing of the hold prevented the forward portable bulkhead from stowing flush with the forward bulkhead, and when in its stowed position there was a 1.22m void between the forward portable bulkhead and the end of the hold. The portable bulkheads were fitted with recessed vertical ladders on

both sides. The hold had 10 hatch covers which were numbered sequentially from forward to aft (1-10), and which were moved by a straddle lift.



Figure 1: Forward portable bulkhead

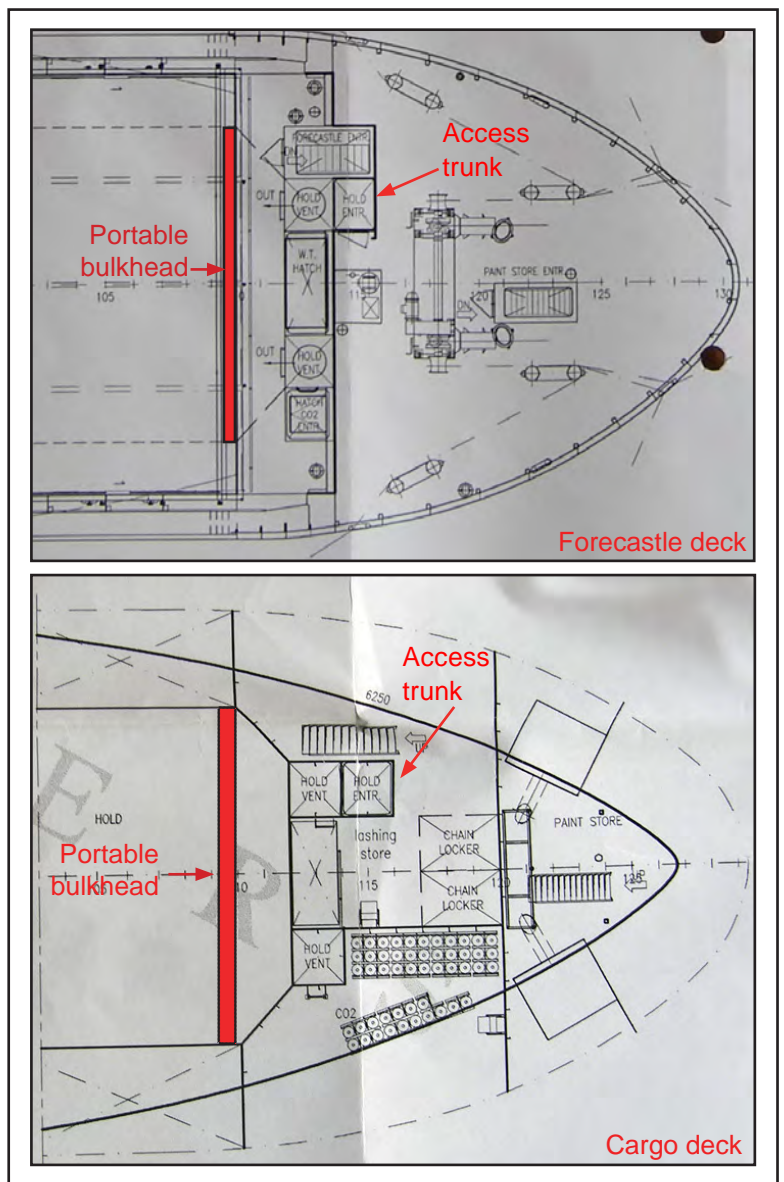


Figure 2: Positions of portable bulkheads

The forward portable bulkhead had four openings (**Figure 1**) which were 0.95m wide and 1.35m high and could be sealed with wooden shuttering if required. Access to and from the bottom of the cargo hold from the forecastle deck was via an access trunk that contained two vertical ladders, separated by a landing (**Figure 2**). At cargo deck level was an opening that led from the access trunk to the 1.22m void space between the hold's forward bulkhead and the forward portable bulkhead. The hold was then accessed through either of the lower openings in the portable bulkhead. There was a similar opening in the access trunk at the level of the landing between the two vertical ladders.

To enable access to the cargo hold when the lower bulkhead openings were obstructed by cargo, a wooden footbridge had been constructed that spanned the gap between the opening by the landing of the access trunk and the upper opening on the port side of the portable bulkhead (**Figure 3**). The footbridge was 5.2m above the bottom of the hold and was made of three planks of wood joined by timber cross-braces at each end, that also retained it in position. A similar bridge provided access between the upper opening on the starboard side of the portable bulkhead and a store recessed in the forward bulkhead in which one of the cargo hold floodlights was mounted (**Figure 4**).



Figure 3: Wooden bridge access to hold

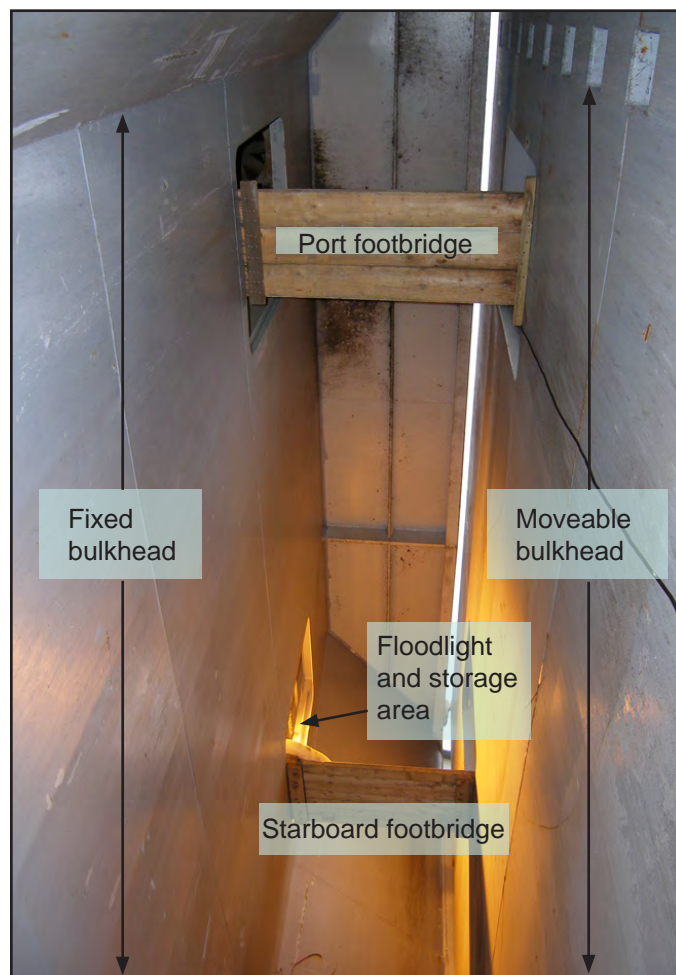


Figure 4: Wooden bridge accesses looking upwards from the port side of the cargo deck

The upper openings in the portable bulkhead were provided by the shipbuilder solely to assist with the ventilation of the hold, not to facilitate access. The wooden footbridges had not been provided by the shipbuilder but were on board when Scott Pioneer changed ownership in 2008. The use of the bridge to access the hold was infrequent, being only possible when a part-cargo was loaded.

In 2011, there were only three occasions, all in Waterford, during which the ship's crew loaded and secured a part-cargo and possibly used the footbridge. In all other cases, the loading and securing of part-cargoes was completed by stevedores who accessed the hold via a crane basket. A number of the crew recognised the risks of using the bridge to access the hold, but had not raised their concerns. The master was not aware that the footbridges existed.

Narrative

During the morning of 21 October 2011, *Scot Pioneer's* 10 cargo hold hatch covers were opened in preparation for the loading of a cargo of packaged orientated strand board (OSB). It was intended to stack the OSB five packages deep throughout most of the hold, but only four packages deep at its forward end. The weather was dry and there was a light breeze. Hatch covers 1 to 5 were stacked on top of hatch cover 6, and the remaining 4 hatch covers were stacked forward of the superstructure.

Loading commenced at 1040 and the ship's crew went for lunch 20 minutes later. At 1200, the chief officer, the cadet, Jorge and another AB met on the forecastle in readiness to start securing the cargo that had been loaded into the forward part of the hold. The cargo securing clamps were lowered by derrick from the forecastle onto the cargo at the forward end of the hold on three wooden pallets and in a plastic bin. Air bags and dunnage were also dropped into the hold. The crew then entered the hold either by climbing down the recessed ladder set in the forward portable bulkhead (**Figure 1**) or by climbing down the access trunk vertical ladder and crossing the footbridge leading to the upper opening on the port side of the forward portable bulkhead (**Figure 5**).

The air bags were positioned between the packages of OSB and then inflated to enable the clamps to be positioned. By this time, the motorman had also joined the crew in the hold.

At 1245, the stevedores stopped for lunch, by which time the hold had been loaded as far aft as the cargo hatch covers would allow. The crew continued to secure the loaded cargo and then started to move the clamps aft in readiness to secure the rest of the cargo once it was loaded.

Just before 1250, Jorge suggested to the chief officer that he re-arrange the forward cargo hatches so that the stevedores could carry on loading cargo when they returned from their lunch break. The chief officer agreed, and Jorge climbed the recessed ladder on the forward portable bulkhead and walked aft to operate the straddle lift. He closed hatch covers 1, 2 and 3, which covered the forward part of the hold, and placed hatch covers 4, 5 and 6 on top of hatch cover 3.

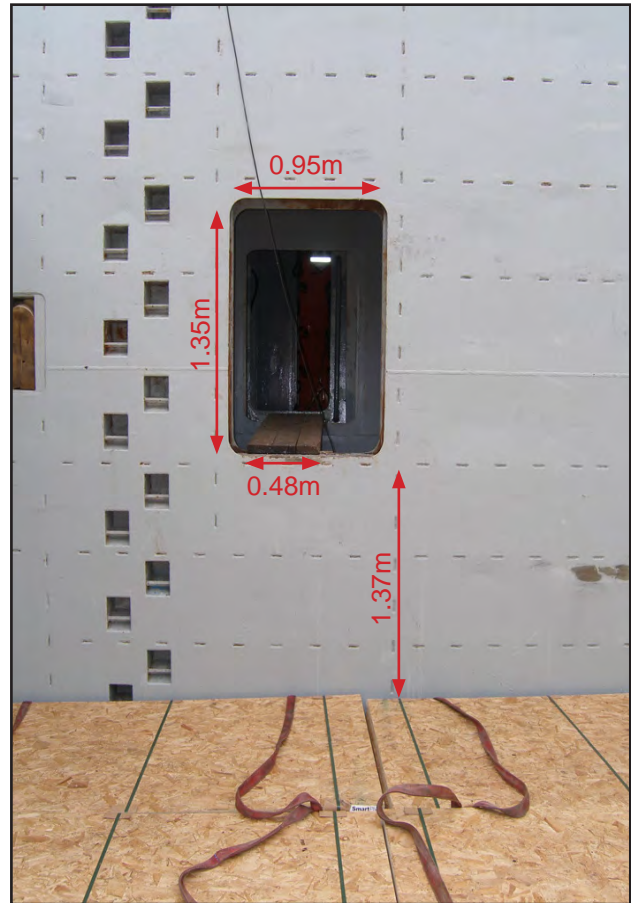


Figure 5: Upper opening in forward portable bulkhead

Jorge then climbed down from the straddle lift and returned to the hold via the access trunk and the wooden footbridge in order to assist with the moving of the clamps.

At approximately 1338, the chief officer, the cadet, the AB and the motorman were carrying clamps aft when they heard a thud behind them. They all turned round and quickly realised that Jorge was not there. The crew rushed to the upper opening on the port side of the portable bulkhead and looked down towards the bottom of the void space. Initially, nothing was seen due to the darkness; the floodlight in the upper recess on the starboard side of the void space was not illuminated. However, Jorge was soon located below with the aid of a torch.

The cadet and the AB crossed the footbridge to the access trunk and climbed down the lower vertical ladder to the bottom of the void space. Jorge was found lying on the deck face down and unconscious; he was still breathing but had a wound to his head. The AB soon left the void space to fetch the ship's oxygen set.

Meanwhile the chief officer and motorman crossed the footbridge and climbed up the upper vertical ladder to the access trunk to raise the alarm. When the chief officer arrived in the wheelhouse, he was uncertain of the telephone number to call for the emergency services in Eire. Therefore, at 1341, he telephoned the ship's agent and requested an ambulance. He then briefly sounded the general alarm and woke the master, who was sleeping in his cabin.

The master dressed and went to accompany the cadet who was reassuring Jorge, keeping his airway clear, and administering oxygen. By this time, the stevedores had returned from lunch and the cadet suggested that the cargo at the forward end of the hold be removed to enable Jorge to be evacuated. The cargo hatch covers were opened and the forward packages of the cargo were unloaded.

Paramedics arrived on scene at 1400 and secured Jorge on a stretcher. At 1446, he was lifted from the hold using a shore crane and was transferred to a waiting ambulance. Jorge was declared deceased at Waterford hospital at 1505.

The postmortem examination concluded that Jorge died: *'due to hypovolemic shock secondary to severe traumatic chest injuries consistent with having been obtained in a fall.'* Toxicology tests did not detect any traces of drugs or alcohol in Jorge's blood.

Safety management

During external and internal international safety management (ISM) audits conducted on board Scot Pioneer in March and August 2011, respectively, no non-conformities were identified.

The vessel's safety management system (SMS) included risk assessments for 16 identified hazards, which included the moving of portable bulkheads, timber deck cargoes, the lashing and unlashings of deck cargo, and working aloft. The risk assessments did not include any references to hold access and they were last reviewed in March 2011.

Scot Pioneer's cargo securing manual contained generic guidance on personal safety including: the wearing of suitable PPE, recognising fall hazards

and ensuring personnel were medically fit and adequately trained. The manual included:

A fall hazard exists whenever personnel are working within 0.9m of the unprotected edge of a work surface that is 3m or more above the adjoining surface and 0.3m or more, horizontally, from the adjacent surface [sic]

On board Scot Pioneer, safety meetings had been held monthly. During the previous 12 months, two minor accidents were discussed during safety meetings that had involved working in the hold. The first involved the use of a portable ladder, and the second concerned a minor injury to a shore worker.

ANALYSIS

The fall

Nobody saw Jorge fall, but it is clear that he must have fallen as he tried to exit the cargo hold via the upper opening in the forward portable bulkhead. This was the only route available as the usual access from the bottom of the hold through the lower opening in the bulkhead was blocked by cargo, and the recessed ladder was no longer viable as its top was blocked by the forward hatch covers. There were no portable ladders available or rigged further aft.

There is no evidence to show how Jorge fell, but given the vessel's recent sailing schedule and the results of the toxicology tests following postmortem examination, it is apparent that neither drugs nor alcohol impaired his behaviour and he was unlikely to be suffering from fatigue. In addition, as the tread on Jorge's boots was in good condition, and it was dry, it is considered unlikely that he slipped.

Provision of a safe means of access

The UK's Merchant Shipping (Safe Movement on Board Ship) Regulations (SI 1988/1641), requires employers and masters to:

'ensure that safe means of access is provided and maintained to any place on the ship to which a person may be expected to go.'

In this case, it is evident from **Figures 3** and **4** that:

- The narrow wooden footbridge between the forward portable bulkhead and the access trunk was not fitted with guard rails or toe boards
- The openings at either end of the footbridge were not high enough to allow the crew to pass through without stooping
- To access or leave the footbridge at the forward end required the crew to step over the opening at the top of a vertical ladder
- The aft end of the footbridge was 1.37m above the packaged cargo below.
- The void space between the bulkheads was not well lit, particularly when the hatch covers were closed.

The use of the footbridge as a means of access to and from the cargo hold was therefore unsafe and did not meet the criteria for the safe movement of personnel or the standards for hold access detailed in the Code of Safe Working Practices (CoSWP) for Merchant Seamen.

Introduction and use of footbridge

Although the upper openings in the forward portable bulkhead were designed to ventilate the cargo hold, it is clear that the openings were used by the ship's crews as a means of access soon after the vessel entered service in 2006. The wooden footbridges were in place when the vessel changed ownership in 2008, and their basic construction (**Figure 3**) indicates that they were possibly manufactured on board.

The introduction of the footbridges almost certainly resulted from the forward bulkhead seldom being used and therefore remaining in its stowed position. This was a condition probably not anticipated during the vessel's design. The possibility that the crews on board the other Icerunner 3650 vessels have introduced similar ad hoc arrangements to gain access both to the hold and to the bulkhead recess housing the hold floodlight, when a part cargo is loaded, cannot be ruled out.

Recognition of risk

The use of the footbridge to access the cargo hold on board *Scot Pioneer* was infrequent. Nonetheless, in view of the danger of a fall from height associated with its use, it is of concern that the suitability of the footbridge had never been assessed or challenged. The footbridge was in place when the vessel was purchased by Scot Pioneer Shipping Ltd, and it had apparently remained in situ for most of the time since then. However, the risks posed by the footbridge, which were readily apparent even when observing from a distance (**Figure 1**), and clearly met the criteria of a fall hazard as defined in the vessel's cargo securing manual, had not been identified during the various audits, inspections and risk assessments undertaken. Moreover, the risks had not been highlighted by the vessel's crews.

Audits and inspections are inevitably a sampling process. Therefore, the ability of the auditors and inspectors who attended Scot Pioneer to identify that both of the footbridges were unfit for purpose would have been dependent on several factors, including the areas of the vessel visited during the audits and whether the hatch covers were open or closed. Indeed, even the master was unaware that the footbridges were in place. However, the crew involved in cargo operations used the footbridges and although some were concerned for their safety when crossing them, their concerns were never raised either formally or informally.

Emergency response

Scot Pioneer's crew reacted swiftly following Jorge's fall. The cadet's action was particularly commendable given the seriousness of the situation, the limited room available in which to work, and his relative inexperience. In addition, as the chief officer did not know the telephone number to alert the emergency services, his use of the ship's agent to raise the alarm was pragmatic. On this occasion, raising the alarm via the ship's agent did not result in a delayed response but, in differing circumstances, a call direct to the emergency services would have been more expeditious.

CONCLUSIONS

- Florentino Jorge Dela Peña fell as he tried to exit the cargo hold via a raised wooden footbridge that was not fitted with any means of preventing a fall, and was therefore unsafe.
- The footbridge was an ad-hoc arrangement utilising a conveniently located ventilation opening in the forward portable bulkhead.
- The footbridge was infrequently used, but allowed access to the cargo hold when a part-cargo was carried.
- It is possible that similar unsuitable means of access has been provided in sister vessels.
- Several of the crew involved in the cargo operations recognised the risks of using the footbridge but did not raise their concerns on board.
- The crew reacted swiftly and positively after the fall, but it would have been beneficial for them to have had contact details of local emergency services available.

ACTION TAKEN

MAIB actions

The **Chief Inspector of Marine Accidents** has:

- Strongly advised the owners and operators of other Icerunner 3650 ships fitted with a forward portable bulkhead, that crews should not use the upper opening in the forward portable bulkhead to access the hold unless a proper risk assessment has been conducted and a safe means of access, which guards against a fall from height, has been provided.

Actions taken by other organisations

Intrada Shipping Management Ltd has:

- Removed both the wooden footbridges and the forward portable bulkhead from *Scot Pioneer*.
- Modified the access arrangements to the hold, including the fitting of guards or closures on openings as necessary.

- Issued a fleet circular to all its vessels requiring masters and safety officers to carry out an extraordinary safety meeting to discuss safe access/movement and working aloft issues, with particular focus on access into the cargo holds and the guidance provided in the CoSWP.
- Reviewed the access arrangements on board its vessels and arranged for remedial actions to be taken where necessary.

Belview Port has:

- Reiterated via its safety committee the need for the masters and crews of visiting vessels to be aware of the telephone number to call should emergency services be required to attend.

The **Maritime and Coastguard Agency** has:

- Conducted an additional ISM audit of *Scot Pioneer* on 21 February 2012.

Recommendations

In view of the actions taken, no recommendations have been made.

SHIP PARTICULARS

Vessel's name	<i>Scot Pioneer</i>
Flag	UK
Classification society	Lloyd's Register
IMO number	9331347
Type	General Cargo Ship
Registered owner	Scot Pioneer Shipping Ltd
Manager(s)	Intrada Ships Management Ltd
Construction	Steel
Length overall	89.99m
Length between perpendiculars	84.95m
Gross tonnage	2528
Minimum safe manning	6 (Near Coastal)
Authorised cargo	Solid bulk, containers

VOYAGE PARTICULARS

Port of departure	Wicklow
Port of arrival	Waterford
Type of voyage	Short international
Cargo information	In ballast
Manning	8

MARINE CASUALTY INFORMATION

Date and time	27 October 2011 at 14:38 (UTC+1)
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Belview Port, Waterford
Place on board	Forward end of cargo hold
Injuries/fatalities	1 fatality
Damage/environmental impact	None
Ship operation	Alongside, loading cargo
Voyage segment	Moored alongside in port
	Wind: Light breeze
External environment	Sea state: calm
	Visibility: moderate
Internal environment	Unlit
Persons on board	8