

**Departmental investigation
into a fatality
aboard the offshore supply vessel
SHELF SUPPORTER
off the north-west coast of Australia
on 29 December 1993**



Incidents at sea



**DEPARTMENT OF
Transport**

Navigation Act 1912
Navigation (Marine Casualty) Regulations
investigation into a fatality
aboard the offshore supply vessel
SHELF SUPPORTER
off the north-west coast of Australia
on 29 December 1993

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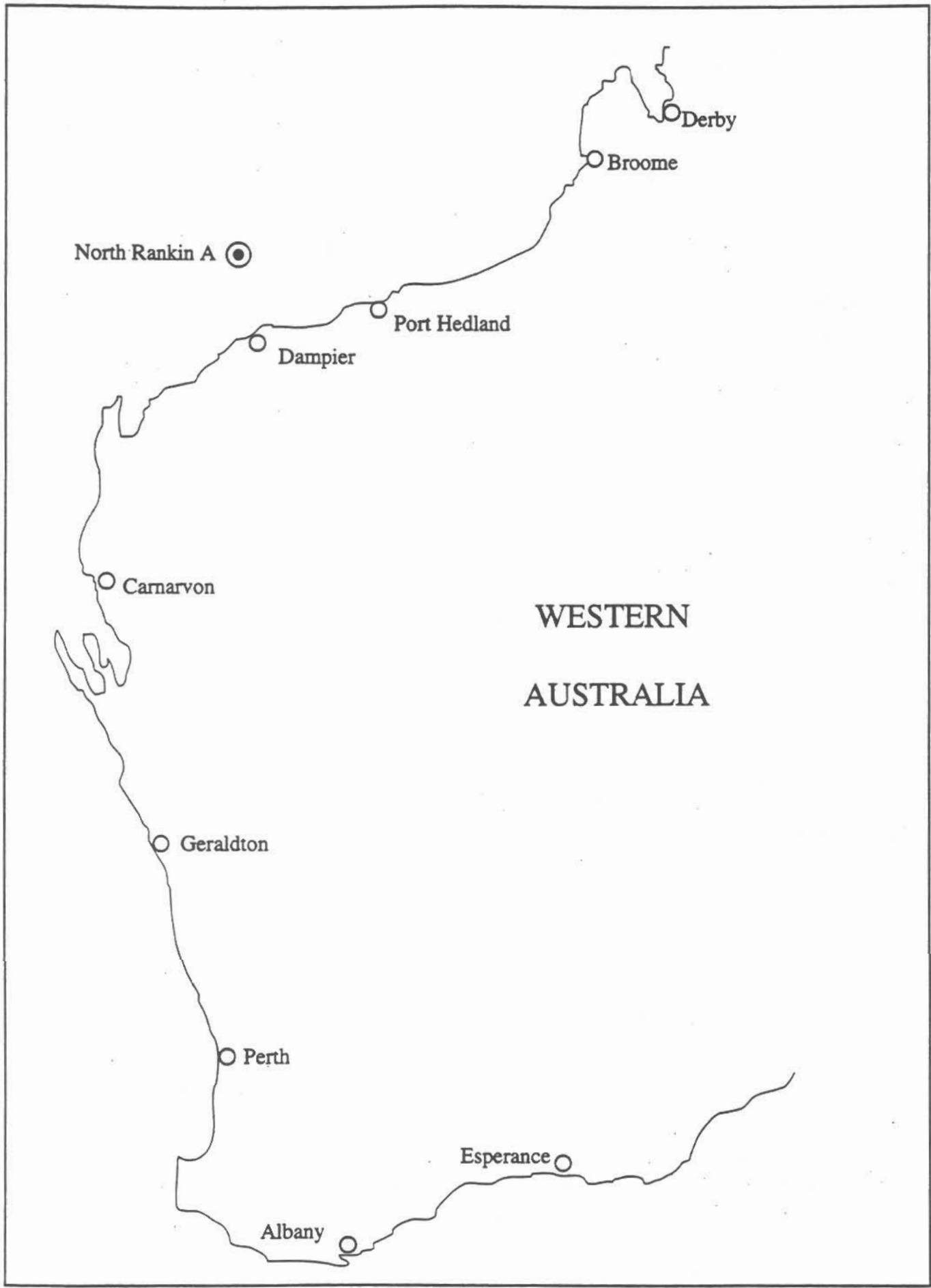
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Shelf Supporter

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North Rankin A ●

Derby

Broome

Port Hedland

Dampier

Carnarvon

WESTERN
AUSTRALIA

Geraldton

Perth

Esperance

Albany

Summary

Early on the morning of 29 December 1993, the Australian offshore supply vessel Shelf Supporter was discharging a deck cargo of empty skips and a container to North Rankin A platform, 70 miles north-west of Dampier. The weather was fine with the wind from the south-west at 20 knots.

The Master was manoeuvring the vessel, maintaining position, from the after end of the bridge, looking out over the cargo deck.

Seas were breaking over the stern, but conditions were not such as to cause the cancellation of cargo operations.

While a skip was being hoisted to the platform the two-man deck watch aboard Shelf Supporter decided to re-spool a wire used to secure the cargo, onto the winch. While this wire was being released from a block, a sea broke over the stern. Despite a warning from the Master, one of the two men on deck was crushed between the vessel's own rubbish skip and an empty skip when it was moved by the seawater.

Sources of information

Shelf Supporter

Master, Mate, Greaser and AB/Acting Cook

North Rankin A platform

Crane driver

The Inspector gratefully acknowledges the advice provided by the Director of the Department of Pathology, Royal Canberra Hospital.

The vessel

Shelf Supporter is an offshore oil industry supply vessel, built in 1985, owned by Mermaid Sound Port & Marine Services Pty Ltd, a member of the Woodside Group, and employed for the most part in support operations at the North Rankin Field production platforms, off the north-west coast of Australia. Of typical offshore supply vessel design, 68m in length and with a breadth of 16.08m, Shelf Supporter was purpose built for supporting underwater operations and is not fitted with either towing or anchor handling equipment, although the vessel is fitted with a stern roller to facilitate the handling of lifts over the stern. The large, clear after deck also enables the vessel to carry stores and equipment to and from offshore units and to act as a storage vessel for equipment from a rig or platform, should the need arise.

The vessel is equipped with a fully computerised dynamic positioning system, which includes a clump weight/taut wire with deflection sensor, twin full azimuth thrusters aft and two bow thrusters. Position can also be maintained manually, a single joystick controlling all thrusters; to adjust position, the joystick is moved in the required direction of movement. For underwater operations the vessel is equipped with a remotely operated vehicle and an "A-frame" gantry at the stern.

Normal marine manning is a complement of 11 - Master, Mate, Chief and Second Engineers, Electrician, 4 AB's, Greaser and a

Cook. Three of the AB's maintain a normal "four on, eight off" watch routine, the fourth AB and the Greaser being day workers. In addition, a number of specialist, non-marine personnel are carried to operate the Remote Operated Vehicle (ROV). Marine personnel work a five-week swing, the ROV personnel change on a weekly basis.

Operations

Underwater operations, such as maintenance on platform structures, are normally conducted only during daylight hours and the normal routine is for Shelf Supporter to make fast to a mooring buoy for the night. While moored to the buoy, the three AB's maintain bridge watches, the vessel acting as "stand-by vessel" in case of emergency on the platform or rig.

The normal routine is for the vessel to slip from the buoy at 0600, to proceed to the platform. Mail, stores and any spares and equipment, including waste skips, are transferred between platform and vessel, after which the vessel deploys to the requirements of the ROV operators. Underwater operations terminate between 1800 and 1900, when Shelf Supporter returns to the mooring buoy.

In December 1993, the crew swing change took place in Dampier on Wednesday 15th. Between 15 and 24 December the vessel was involved in routine operations which included a cargo run from King Bay Supply Base to the North Rankin A Platform, located 70 nautical miles north-west of Dampier.

On 24 December, a cargo was back-loaded from North Rankin A, where the Master transferred to the vessel from Shelf Ranger. Shelf Supporter then proceeded to King Bay Supply Base, Dampier, where the vessel remained over Christmas.

On 28 December, a deck cargo, consisting of one standard 20-foot reefer container, six empty five-tonne skips and one empty mini skip, was loaded onto the after deck for delivery to North Rankin A. Loading was planned and carried out by the owner's King Bay personnel, after consultation with the vessel's staff. The mini skip was loaded on the starboard side of the deck, the container and five-tonne skips in a block stow on the port side, aft of and leaving a gap of about one metre from the vessel's domestic five-tonne waste skip. The container was placed right aft, fore and aft against the safety rail, two skips were placed in-line against the safety rail forward of the container, then three skips in-line immediately inboard of the container and two outer skips. The sixth skip was placed in an athwartships position, at the forward end of the stow.

To move heavy equipment, such as anchors and equipment for the drilling rigs, around the deck, offshore supply vessels use what are referred to as tugger wires. These are relatively small (15mm - 20mm) diameter wires, stowed on their own winches, one each side at the forward end of the working deck. The direction of pull is facilitated by passing the wires through snatch blocks, which can be secured in various places along the working deck.

Lashing of the deck cargo, to prevent it moving in a seaway, was carried out by

the vessel's crew, using the tugger wires and winches. On the port side, the wire was passed through a snatch block made fast to the safety barrier, just forward of the cargo stow, then passed aft inboard of the cargo, to be made fast to the safety barrier aft of the stow. When hauled tight by the winch, the wire secured the cargo in a tight block stow against the port safety barrier.

The vessel's cook had paid off over Christmas, having injured himself, and before the vessel sailed from Dampier, one of the AB's agreed to act as cook until such time as a relief cook could be engaged. Although this reduced the number of AB's available for deck work, the Master did not consider that it would affect the vessel's operations unduly, as the Greaser, who had completed Integrated Rating training, was available to work on deck to assist the watch AB during any cargo operations.

During offshore cargo operations there is the ever present risk of seas breaking over the stern of supply vessels. It is part of normal procedure that the crew on deck are responsible for keeping an eye on the sea and for warning each other when a sea is about to break over the stern. They are supported by, but not reliant upon, the Master or Mate at the bridge controls, who, if their attention is not diverted elsewhere, will broadcast a warning over the fixed loud-hailer system.

Six ROV operators joined and Shelf Supporter sailed late in the afternoon of 28 December, to proceed to the North Rankin A platform, making fast to the "stand-by vessel" mooring buoy shortly before midnight.

The incident

The Platform Manager on North Rankin A had requested that Shelf Supporter be alongside for 0615 on Wednesday 29 December, to transfer the container and skips to the platform. The Master went to the bridge shortly after 0530, the vessel was made ready and the watch AB temporarily left the bridge to go to the forecastle to slip the vessel from the buoy at 0550. The vessel then proceeded towards the east side of the platform, to position under the crane. The draught at this time was calculated as being 5.1m forward and 5.5m aft, providing a freeboard aft of 1.6m. From entries in the deck log book, the wind was from the south-west at 20 knots, the sea about 1.3m with a south-westerly swell running at about 2 metres.

The Greaser, who was to assist with the cargo transfer, went out on deck to start work at 0600. Finding no-one around, he made his way to the bridge, where he said he made a comment to the Master about the rough weather and the safety of working on the after deck. The Master was at the *manoeuvring controls and talking to North Rankin A on the VHF* and made no indication that he had heard the Greaser's comments. When interviewed later, he could not recall being aware of the Greaser's presence on the bridge at that time.

The Master manoeuvred the vessel so as to approach the crane position stern first and stern to the sea; he approached slowly to minimise the amount of water breaking on board over the stern.

The AB and Greaser went to the changing room, where they donned orange overalls, sea-boots and hard hats, and then went out to the after deck in readiness to discharge the cargo. They were immediately wet to mid-thigh by a sea that had broken over the stern. The two men released the tugger wire lashings on the deck cargo and re-spooled the starboard wire onto the winch drum. The AB then went to swing out the "A-frame", the normal practice for cargo and personnel transfer operations. While at the after end he had to jump onto a ladder as a sea broke over the stern. Before they could re-spool the port wire, the vessel had arrived under the platform's crane and the lifting hook had been lowered to just above their heads. They therefore left the port wire flaked along the deck, and attended to attaching the hook to the first lift.

Working in the galley since 0500, preparing breakfast, the Cook considered whether he should place the safety racks on the stove, to prevent the pots and pans from sliding off. When taking over, he had been advised by the previous cook that in rough weather he *should put the safety racks on and reduce the water level in the bain marie and drain the fat from the deep fryer*. However, he decided that the motion of the vessel did not warrant these measures.

The Mate went out on deck at about 0615, to swing out the taut wire. Finding this had already been done, he went to the bridge where the Master asked him to take the cargo manifest to the crew members on deck, for delivery to the platform. He donned

boots and safety helmet and went out on deck, where he found water swirling around to a depth of about 15 to 20 centimetres; his legs became soaked to mid-thigh. He walked around the after deck, to see that the two seamen were all right. The AB, when being handed the manifest, said that it was a little bit wet, but OK. The Mate then took the mail and newspapers, just received from the platform, to the mess-room.

The Master maintained the vessel in position using the joystick control, his attention being directed towards the "A-frame" at the aft end of the vessel and the pile structure of the platform. He found the vessel rode most comfortably on a heading of 035 - 040 degrees, with the sea slightly on the port quarter. The stern of the vessel rose and fell with the swell, the crests of the waves lapping at the top of the stern roller. Occasionally a sea actually broke over the stern and, if able to, he called a warning to the two men on deck, using the vessel's fixed loud-hailer system. The seawater rolled up the deck at the same speed as the sea/swell passed the vessel. Conditions down on deck were not sufficient to cause him concern, he did not consider them to be "marginal", where a master will consider aborting operations.

The deck cargo was all individually preslung, requiring the two men on deck only to place the ring of a lift on the hoisting hook, when it was lowered to them by the platform crane driver, and then to stand clear. The two men expected the container to be lifted off early, but the crane driver, who directs

which unit he wants, lifted the skips. The first, which was lifted off at 0625, was the one right aft, inboard of the container, then the next one forward, and then the next one forward again, the one immediately aft of the skip stowed athwartships.

Water, from seas breaking over the stern was shifting the tugger wire flaked out on the deck and when the weight of the third skip was taken by the crane it skidded across the deck, over the tugger wire. While the third skip was being hoisted to the platform, the two men, who were standing just inboard of the vessel's domestic skip with the AB standing forward of the Greaser, decided to spool the port tugger wire onto the winch drum. The Greaser asked the AB to watch out for him and said that he would move outboard of the safety barrier in the event of a sea coming up the deck. He then dropped to all fours, crawled between the athwartships skip and the vessel's skip and opened the snatch block, releasing the tugger wire. Just as he had done this, he heard a warning call of water on deck and moved outboard, beyond the safety barrier, sensing movement of the athwartships skip and hearing a "muffled grunt" as he did so.

Standing up and turning, the Greaser saw that the AB was pinned between the vessel's rubbish skip and the empty athwartships skip, the athwartships skip having pivoted and moved forward at the inboard end. He called to the AB, who he described as being slumped forward, with his chin just above the lip of the skip - his tongue protruding, his feet apart and his arms

hanging away from his sides. The Greaser got no response, and so ran to the accommodation to summon help.

One of the crane drivers on North Rankin A was standing on the production deck of the platform, waiting to receive one of the skips. He heard the warning call of water on deck on the vessel's system and saw the water run along the deck, at a depth he estimated as being about 60cm. He then became aware of the seaman pinned between the two skips with his arms on top of the skip. He broadcast an urgency announcement on the platforms loud-hailer system and then used his radio to summon the two platform paramedics.

The Master, concentrating on maintaining position, saw the sea breaking over the stern and broadcast a warning to the two men on deck. He watched as the water ran up the deck, at a depth he put at about 30cm, and became aware of the AB just forward of the athwartships skip, standing upright, facing aft, arms bent at the elbows, as if leaning on the top of the skip. He saw the athwartships skip move forward and the ease with which it was moved by the water amazed him. The AB did not appear to move and became caught between the two skips. His impression was that the AB was just pinned between the forward side of the athwartships skip and the aft, inboard corner of the vessel's skip, and only needed releasing. He did not think that it was too serious.

As the broadcast warning was being made on the platform, he noticed the Greaser running forward and assumed

that he was going to summon help. He noted the time as 0640.

The Greaser opened the door to the accommodation, saw the Cook standing at the galley sink and called to him that there was an emergency on deck and that he needed his help. The Cook responded immediately and went out on deck, at the Greaser's request collecting a crowbar from a locker on the way, a medium sized one being the only one he could find.

The Cook's impression, when he arrived on the scene, was that the AB was standing on his own weight, with head arched back looking up at the platform, and with arms and hands out as if to push the skip off. He did not think the AB was seriously injured, just waiting to be released.

The two men tried to lever the athwartships skip clear of the AB, but were unsuccessful, bending the crowbar in their efforts. The Cook dropped the crowbar, saying that they needed the tugger wire, to pull the skip clear. The Mate arrived on the scene at this time, having been alerted by a telephone call. Helping the Greaser *with the crowbar, and then with the Cook pushing on the skip*, they managed to move the skip sufficiently to release the AB, who fell sideways to his right, striking his chin on the rim of the skip as he fell to the deck. The Master's impression was that the fall was "lifeless".

The AB was pulled out from where he had fallen between the skips, and was taken up the deck to as safe a place as possible. Although there had been no signs of blood initially, after the AB

had fallen to the deck, blood started running from his mouth and nose.

The Master was signalled to manoeuvre the vessel to provide a more comfortable and drier situation, and the Mate requested a member of the crew to bring the "Oxy-viva" resuscitation equipment. At 0648, two paramedics from the platform were lowered on board in a personnel basket, bringing another "Oxy-viva" set with them. The two paramedics took charge of administering to the AB.

The Mate checked over the AB and was unable to detect any signs of pulse or breathing, but attempts at resuscitation proceeded for about 30 minutes, blood having to be cleared from the AB's mouth at frequent intervals. From the looseness of the AB's jaw, it was apparent that it was broken, and his neck was swollen.

The Master manoeuvred the vessel around to the west side of the platform at 0700 and at 0716 the AB was transferred to the platform. There he was examined by a registered nurse,

visiting the platform to lecture to the platform personnel, and she determined that the AB was dead.

At 0855, a trained counsellor assigned to the platform boarded Shelf Supporter, remaining on board talking to the crew until 1210.

All underwater operations for the day were cancelled and Shelf Supporter stood off, clear of the platform, to await instructions. The container was urgently required by the platform and was discharged at 1720.

A Senior Constable of the Western Australian Police, accompanied by two trauma councillors, arrived on board at 1730, having been flown out by helicopter from Dampier. Shelf Supporter was then released to proceed to Dampier, departing from the North Rankin Field at 1815 and berthing at the King Bay Supply Base at 0700 30 December.

The initial post mortem report indicated that death was the result of crushing of the chest and that the AB had suffered fractured ribs and spine.

Comment

The AB standing the 4-8 watch was a man of 52 years of age, who had been a seafarer for over 30 years. Initially serving with the British Merchant Navy, he transferred to the Australian Merchant Service in 1982 and since that time, although not continuously employed in the offshore industry, had served on about 20 different offshore supply vessels. Just how he came to be pinned between the two skips is uncertain.

He was of relatively powerful build and was known to exercise with weights. He was not known to be suffering from any hearing impediment (reportedly he had a good ear for music) and it is therefore unlikely that he would have failed to hear the warning broadcast by the Master over the loud-hailer system.

Just before the accident, he had been standing forward of the Greaser, inboard of the vessel's skip. There would appear to be two possible courses of events:

When the Greaser dropped to his knees and crawled between the two skips, the AB appears to have moved a couple of paces aft, to keep watch over the top of the athwartship skip. In such a position he would have been pushed backwards by the movement of the 985kg weight skip.

Alternatively, he may have stooped down to grasp the tugger wire released by the Greaser, to pull it clear. On hearing the warning he may have stood upright, but then had no time to move clear. The fact that he fell to his right when released, may indicate that he was moving, or had started to move to his right, towards the safety barrier.

The AB was 181cm tall. The fact that his chin, according to the Greaser, was close to the lip of the skip, could indicate that he may have either been rising, or dropping at the time he was pinned. The crane driver, from his vantage point on the platform, was not immediately aware of him, indicating the AB may have been bending down. However, the Master was aware of him, apparently standing upright, just before the skip moved.

The investigating officer consulted the Director of the Department of Pathology, Royal Canberra Hospital. On the basis of the injuries described in the post mortem report and of photographs of the skips, the Director considered the AB had most probably been standing up against the athwartships skip, and the closeness of his chin to the skip was the natural result of the head slumping forward.

Whatever the AB's movements were, the movement and speed of movement of the skip forward on the deck, caused by the seawater travelling up the deck, apparently caught him unawares and pinned him with his back against the after inboard corner of the vessel's skip.

Sea conditions

Offshore support vessels frequently work in moderate and even rough seas. Because of their design, long low after deck, generally with no protective stern bulwark, seas breaking over the stern are commonplace and working with water swirling about the deck is an accepted operational condition.

No safety parameters are laid down, in fact it would be virtually impossible to do so. It is left to the individual master's experience and discretion as to when it is too rough and too dangerous for the crew to work on the after deck. This perhaps creates a grey area, when the weather is "marginal". However, the crew members themselves will advise the master if they consider the conditions on the deck are becoming too dangerous. When a master declares that he is aborting operations, this is accepted by the offshore unit being serviced.

At the time of the incident, from the record in the vessel's log book the sea was running at about 1.3m and the swell at about 2m. Due to a malfunction, the North Rankin wave rider buoy was not recording data during the early hours of 29 December and at the time of the incident, only resuming recording data at 0800 that morning. The data logged at 0800, being the average over the previous hour, indicated a sea height of 1.9m at a period of 6.7 seconds from 229 degrees, and a swell of 0.6m at a period of 13.8 seconds from 254 degrees. Similar conditions continued throughout the morning and this wave rider buoy data can therefore

be considered indicative of the sea conditions at the time.

Apart from the Greaser's initial stated concern, all, including the AB, appeared to consider that the conditions were workable. From the wave rider buoy data this is considered to be the case, that the sea conditions were not too rough for cargo transfer operations to be conducted.

It is worthy of note that the horizontal speed of a wave in metres per second is 1.56 times the wave period in seconds. Thus the speed at which the sea was running was 10.45m/sec, and the speed of the swell 21.53m/sec. In addition, there is likely to be a slight acceleration on impact with the stern of the vessel. The athwartships skip was stowed 20m from the stern, therefore the time factor between the sea actually breaking over the stern and striking the skip was only a matter of one or two seconds. The Greaser was aware of the skip moving and of a "grunt" by the AB, as he moved the short distance, less than a metre, to outboard of the safety barrier.

Although warnings may be called out to the crew working on deck, the crew in fact have little time in which to react. If a sea breaks over the stern and they have not seen it approaching, their reactions have to be instinctive.

Operational procedure

Normally, the procedure for cargo and personnel transfers between supply vessel and offshore unit is for the supply vessel to go in on the lee side of the unit, stern first. Offshore units are

of multi-pillar support type and the pillars provide very little protection, the effect of the pillars being more to break up the sea so as to make it more choppy.

The main reasons behind the lee side approach is the mariner's natural instinct not to get too close to windward of a danger, plus the fact that if the supply vessel should be disabled for any reason, it will be blown clear, not into the offshore unit. Also, during transfer operations the supply vessel is controlled from the position in the after part of the bridge, overlooking the after deck, thus the master is able to keep an eye on the sea, which he would not be able to do if stern-to on the windward side.

In positioning Shelf Supporter stern to North Rankin A platform and stern to the weather, the Master was following standard operational practice.

Actions of Deck Watch

Before cargo transfer operations commenced, the AB and Greaser released both the tugger wires securing the cargo and re-spooled the starboard wire onto its winch. The port tugger wire was released from the after securing point, but because the crane driver had lowered the hook for the first lift, that wire was not re-spooled, instead it was left lying flaked along the deck.

When it was observed that the port wire might be damaged if the skips skidded across the deck as they were being lifted, the two men decided to re-spool it. This decision is considered to have been quite reasonable and in

accordance with good seamanship. However, it was this decision, coupled with an apparent belief that the position immediately forward of the athwartships skip was a safe one, that resulted in the AB being where he was when the sea broke along the deck, and his being crushed between the skips.

The act of leaving the port wire lying flaked along the deck, instead of re-spooling that one also once the first lift was clear, was not in accordance with good seamanship and the delay in re-spooling the wire resulted in the athwartships skip becoming exposed before action was taken.

Vessel design features

On some offshore supply vessels the stern roller is raised slightly, providing some protection to the after deck. A number of offshore supply vessels, mainly dedicated platform support vessels and the smaller classes of supply/anchor handling vessels, are fitted with solid hinged stern gates, which provide additional protection to cargo and to crew members working on the deck. On Shelf Supporter the top of the stern roller is below deck level and no stern gate is fitted, so the after deck is completely open to the sea.

Trim considerations

The draught of Shelf Supporter on the morning of 29 December was said to be 5.1m forward and 5.5m aft, providing a stern trim of 0.4m.

Had the vessel been trimmed to an even keel, this would have increased the freeboard aft by 0.2m, which may have reduced the amount of water

coming over the stern. It is considered that this is something that should be borne in mind when cargo transfer operations are to be carried out.

Inducing a trim by the head to increase the freeboard aft is not considered desirable, as this can have a marked detrimental effect on a vessel's manoeuvrability.

Cargo stowage

Oblong units of cargo are normally stowed in a fore and aft position, as was the case in this instance.

However, as one of the skips was stowed alongside the 20-foot container, the sixth skip became an odd one and was stowed athwartships, across the forward end of the stow. This neatly blocked off the stow and provided demarcation for the end of the cargo from the vessel's equipment.

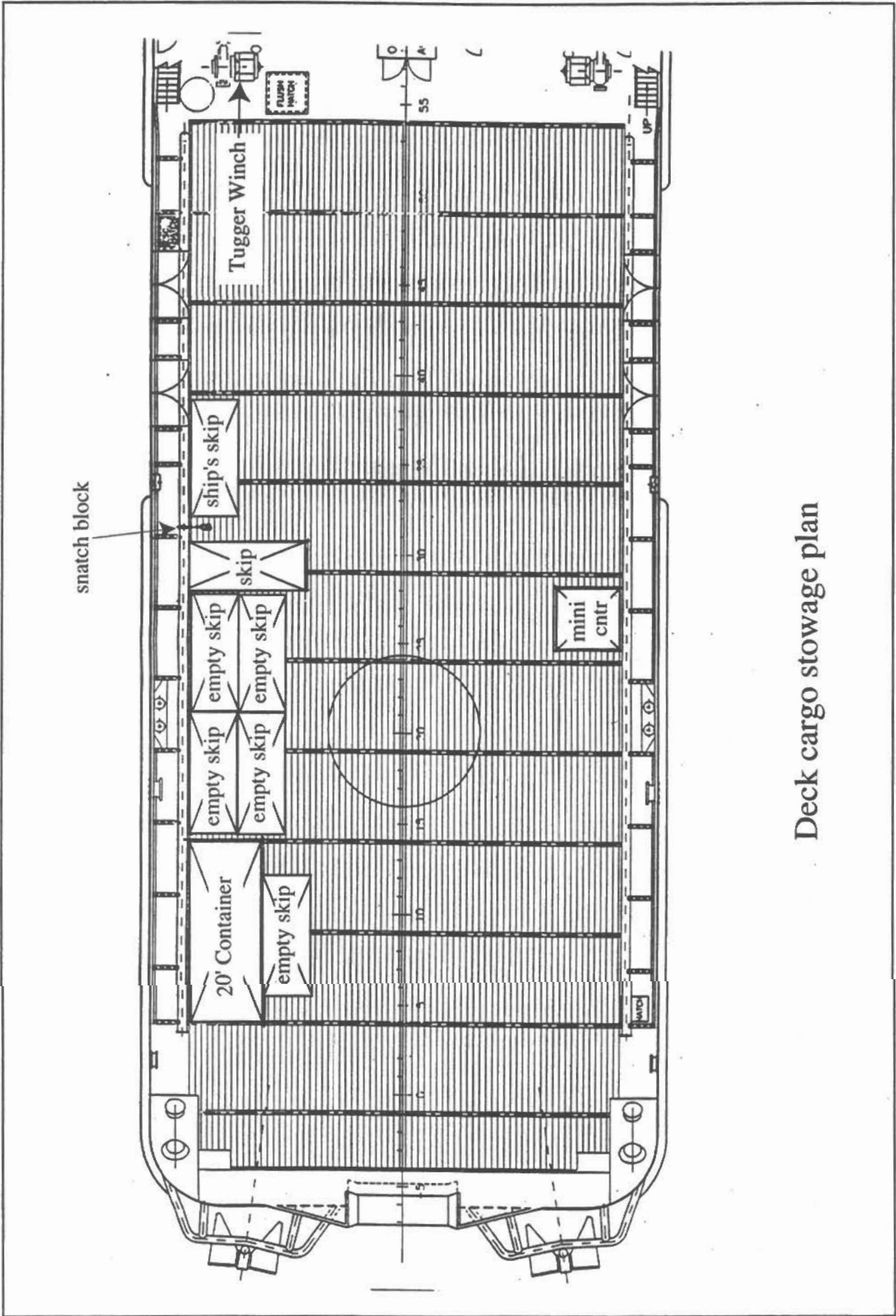
Once the protection of the three inboard skips had been removed, the athwartships skip became vulnerable, any seas breaking over the deck striking against its side, rather than the end. The weight of the water striking the skip may have been sufficient to cause the skip to move, but the depth of the water may also have been sufficient for the inboard end of the skip to float slightly, which would have made the movement of it easier. In this respect it is considered that the angled end of the skip may have assisted the lifting effect of the water. It is worthy of note that following an inquiry into offshore industry cargo operations in Britain, the priority phasing out of boat-shaped skips was recommended because of this and other inherent factors.

Athwartships stowage, particularly of empty skips and other forms of bin, is considered by the Inspector to be undesirable, due to their greater vulnerability to movement by seas breaking on board. Where unavoidable for any reason, skips stowed in such a manner should be discharged first from the vessel. In this instance, it is considered stowage on the starboard side with the mini-skip, where there was ample space, would have been more appropriate.

Shortly after the incident, the skip was found to contain about 30cm of seawater, which was most probably present at the time of the incident. This would have increased the weight of the skip by 1.5 tonnes, making a total weight of just under 2.5 tonnes, therefore requiring a greater force to move it.

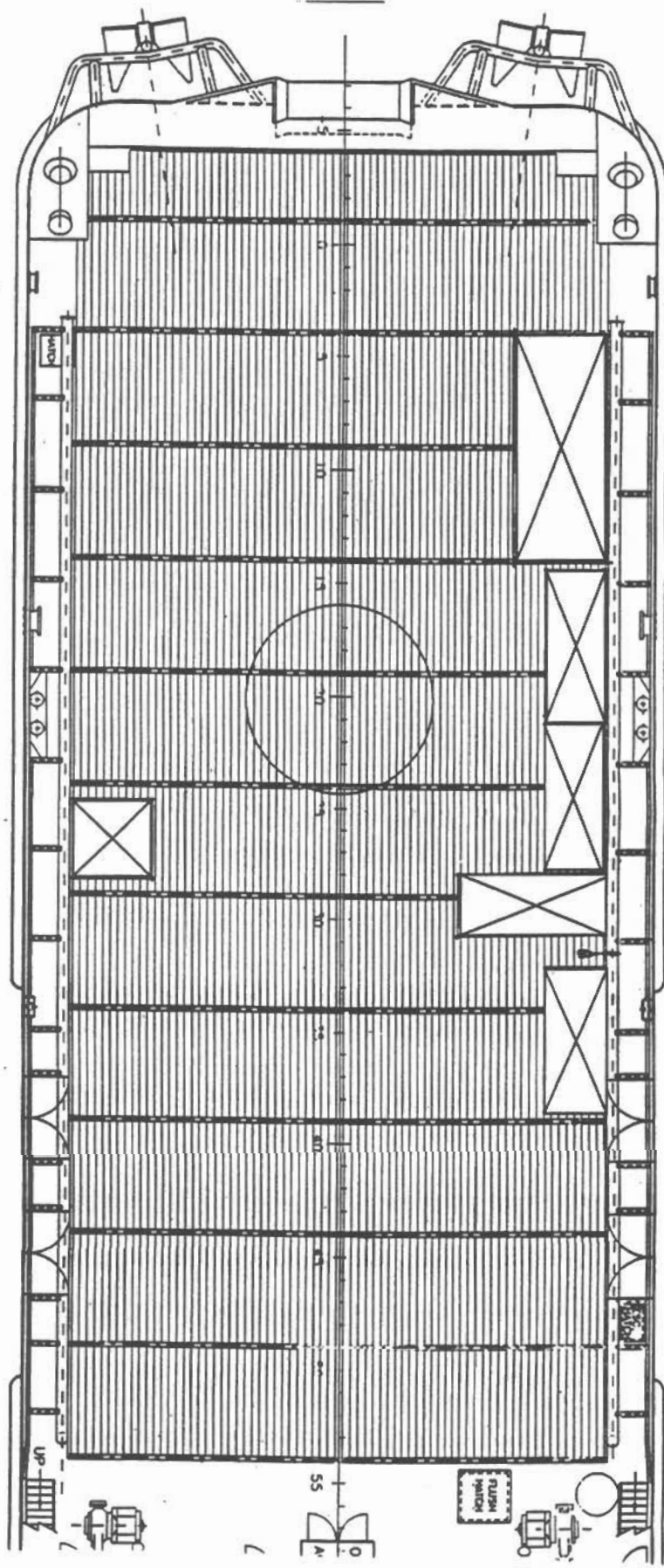
The actual weight of each skip is 985 kilos. The base measures 3.07m x 1.61m supported by four bearers each 8cm high. When empty, a skip requires a minimum depth of 27.5cm saltwater in order to float. With the added weight of 1.5 tonnes of seawater, the skip would require a minimum depth of 54.75cm in order to float.

The Master estimated the depth of water running along the deck as [not more than] 30 cm, although the platform crane driver considered that the depth was probably about 60cm. In 30cm of water, the skip would have had a negative buoyancy of about 1.36 tonnes. Because of the ease with which the skip is said to have moved, it is considered that the depth of water running along the deck was greater



Deck cargo stowage plan

Deck cargo stowage plan immediately prior incident.



than estimated by the Master, and that the skip was probably close to being afloat.

It is also possible that the sloshing, or free surface effect of the water in the skip may have aided the skip's movement.

Cargo lashing

The lashing of deck cargo in block stows with the tugger winch wires is common practice throughout the Australian offshore industry. It is simple, easy to set up and quick to release. However, it has the big disadvantage that once removed all of the deck cargo is unsecured until discharged.

The simplest way to overcome this problem would be for the tugger wire to be tightened up again between lifts. However, to avoid the wire snagging a lift, the wire would have to be pulled and held well clear, greatly increasing the exposure time for the crew.

An alternative is for individual chain or webbing lashings, with quick release arrangements. However, such an arrangement would also have inherent problems. Again, crew members would be exposed to danger for longer periods, and where a rig just wanted a particular lift, the lashings may not be readily accessible.

The Inspector notes that at least one major study into the safety of offshore supply vessel cargo operations [Captain P H King, Trinity House, London, into North Sea operations for United Kingdom Department of Transport, 1992] has been carried out. Despite individual companies or their affiliates being involved in operations world wide there seems to be a failure by the international offshore industry to fully disseminate safety information.

Communications

An issue raised by the incident is that of communications.

The crew of Shelf Supporter had expected that the 20 foot container would be off-loaded first, but this did not eventuate, the crane driver deciding to take the empty skips before the container. It is considered that the cargo operation should be fully discussed between the platform/rig manager and the supply vessel master and the order of operations agreed, before the vessel goes alongside.

Before the two crewmen were able to spool the port tugger wire on the winch, the crane hook was lowered to just above their heads, causing them to leave the wire to hook on the first lift. Although time may be at a premium, it is considered that crane hooks should not be lowered to the supply vessel until such time as the crew on deck have signalled their readiness.

Conclusions

It is considered that:

- 1 The sea conditions at the time of the incident were not such as to warrant the cancellation of cargo operations.
- 2 There was no apparent reason why the AB should not have heard the warning made by the Master.
- 3 The AB was apparently caught unawares by the forward movement of the skip.
- 4 The decision to re-spool the port tugger wire, to prevent it from being damaged, was in accordance with good seamanship but, coupled with an apparent belief that the position immediately forward of the athwartships skip was a safe one, resulted in the AB being in such a position so as to be crushed between the two skips.
- 5 The act of leaving the port tugger wire lying flaked along the deck, and not re-spooling it on the winch as soon as the first lift was clear, was not in accordance with good seamanship and the delay in re-spooling the wire resulted in the athwartships skip becoming exposed before action was taken.
- 6 Athwartships stowage, particularly of empty skips and other forms of bin, is undesirable, due to their greater vulnerability to movement by seas breaking on board.
- 7 All cargo operations should be fully discussed between the platform/rig manager and the supply vessel master and the order of operations agreed, before the vessel goes alongside.
- 8 Although time may be at a premium, crane hooks should not be lowered to the supply vessel until such time as the crew on deck have signalled their readiness.

Finding of Coronial Inquiry

The Port Hedland Coroner handed down the findings of his inquiry into the death of the seaman on 4 July 1994. He found that the death was caused by way of accident and added two "riders":

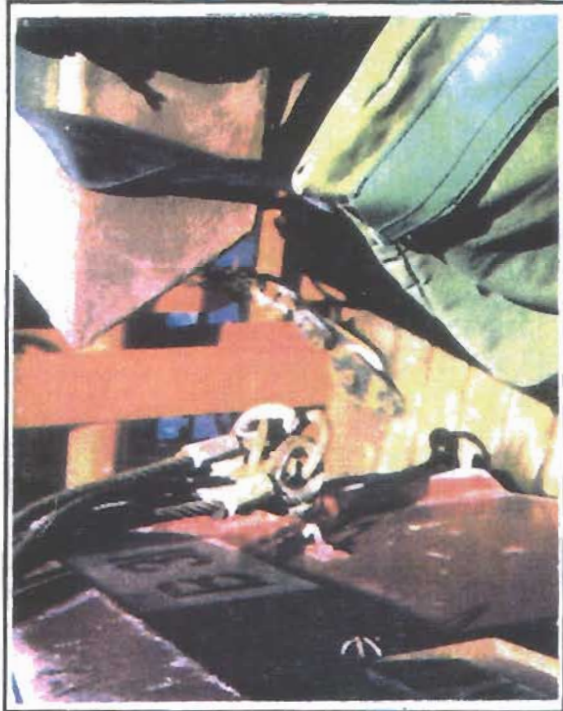
1. The recovery of tugger wires should be completed at the *commencement of unloading* deck cargoes.
2. The cross stowage of cargo (athwartships) of empty skips or bins should not be practised as they are more vulnerable to movement because of the larger area exposed to water washing over the deck.



View from manoeuvring position



Close view of moved skip



Opened snatch block



Comparative height of skip

Submissions

Under sub-regulation 16(3) of the Navigation (Marine Casualty) Regulations, if a report, or part of a report, relates to a person's affairs to a material extent, the Inspector must, if it is reasonable to do so, give the person a copy of the report, or the relevant part of the report. Sub-regulation 16(4) provides that any such person

may provide written comments or information relating to the report.

The report was sent to the Master, Mate, Greaser and Cook of Shelf Supporter, Mermaid Sound Port & Marine Services P/L and to the Petroleum Division Safety Branch of the Western Australian Department of Minerals and Energy.

A submission was received from Mermaid Sound Port & Marine Services P/L and, where considered appropriate, the text of the report has been amended.

Actions taken

As a result of their own investigation and consideration of the report of the Departmental investigation, Mermaid Sound Port & Marine Services P/L issued a number of Standing Orders on safety issues to their masters. These Standing Orders:

- warned of the dangers of cargo shifting and instructed that unless special circumstances dictated otherwise, athwartships stowage of containers should be avoided and rubbish skips should be stowed longitudinally with the sloped face forward;

- instructed that cargo operations were not to proceed until fully agreed between the master and platform/rig;

- instructed that all wires used for securing cargo must be cleared and stowed at the time they are removed;

- stipulated that crane operators must not place the hook over the deck until advised that the vessel is ready;

- advised masters that they should always consider increasing the freeboard aft for offshore cargo operations;

- reminded masters that they have full authority over the commencement or cessation of cargo operations where safety of the vessel or personnel is concerned.

The Company is also investigating the installation of a removable stern barrier aboard its vessels, to provide additional protection to crew and cargo.

Details of vessel

Name	Shelf Supporter
IMO Number	8405440
Type of vessel	Supply vessel/dive support, fire fighting, deck cargo
Flag	Australian
Owner	Mermaid Sound Port & Marine Services P/L, Woodside Offshore Petroleum P/L
Crew (marine)	11
Year of build	1985
Yard	Australian SB Industries (WA)
GRT	1595
NRT	619
Length overall	68m
Breadth	16.08m
Engine Power	Diesel Electric 3000 kW
Classification Society	Det Norske Veritas