Waves flood passenger ferry

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Forty-two passengers and two crew had to be rescued from a 14 metre catamaran commuter ferry, after it was struck by two large waves while making a scheduled harbour crossing.

The force and weight of water crashing over the bow cracked two of the five wooden mullions (vertical window dividers) across the front of the cabin. Four panes of glass shattered and the cabin began to flood. As water rushed in through the windows, the forward doors were forced outwards, allowing more water to enter and further reduce the vessel’s freeboard.

One engine stalled, affecting the vessel’s ability to manoeuvre, and it began to drift. Because the bilge pumps for that hull were powered by the engine, the pumps had no power and there was no way to remove the water. Emergency services and other vessels promptly responded and all those on board were rescued.

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Fourty-two passengers and two crew had to be rescued from a 14 metre catamaran commuter ferry, after it was struck by two large waves while making a scheduled harbour crossing.
The day began like any other for the ferry, which is registered to carry a total of 91 passengers. The company followed its standard processes for determining the conditions, based on the forecast and observations, and it was assessed as safe to sail. However, the weather suddenly deteriorated as the ferry left port, and the master was considering suspending the sailing when the waves struck.

The master of the ferry company had followed the correct internal procedure for deciding whether to cancel the service. In this case, the forecast and conditions indicated it was safe to operate, but the sudden weather deterioration and severity was unforeseen.

There is always potential for conditions to rapidly change and it is important not only for crew but also for passengers to know how to respond in an emergency. Since this incident, the crew has made improvements to ensure passengers are familiar with the vessel’s safety procedures.

System failures and structural weaknesses have been identified and remedied. The vessel’s bilge pumps were not able to operate when the engine shut down and, with no back-up pumps, the vessel had no means of pumping out the water flooding on board. The vessel has subsequently been fitted with 12 volt bilge pumps with auto-float switches and these can work independently of the main engines.

A 240 volt portable pump is now available, and hand pumps have also been installed. The mullions and window glass have been reinforced.

As a further enhancement to the vessel’s safety system, an automatic identification system (AIS) has been installed to track and monitor vessel movements. In the event of the ferry unexpectedly encountering severe weather conditions, the AIS will let emergency services know where the vessel is, so that they can quickly provide assistance.
A fixed-fire suppression system saved a fishing vessel and its crew from a reignited engine room fire. Fire broke out on the 14 metre commercial vessel after hydraulic oil from a burst fuel line started spraying onto the battery bank.

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melling smoke coming from the engine room, the master shut down the engine and blocked off the engine room vents. He then opened the engine room hatch, but was confronted with thick smoke and flames. The fire had cut power to his radio, but he was able to make an emergency call to a nearby vessel using a satellite phone.

By this time the blocked vent ports and closed engine room hatch appeared to have suffocated the fire. When the smoke had cleared, the master re-entered the engine room, sprayed the battery bank with a foam extinguisher and started work on makeshift repairs.

However, once the vessel began heading back to port, a second and more substantial engine room fire broke out. Again the master blocked the engine room ports, but damage from the previous fire meant he could not shut down the engine or turn off the hydraulic pump. The running pump was feeding the fire with 60 litres of hydraulic fuel per minute. The master set off the fixed-fire suppression system, which immediately extinguished the fire. Had it not worked, the vessel would almost certainly have been a total loss.

The suppression system cost about 1.5 percent of the vessel’s estimated value, and was not a requirement on the vessel, but an additional safety precaution thought prudent by the master. It proved its worth by saving the vessel, and preventing the crew from being forced to abandon ship.

Burning hydraulic oil mist is exceptionally dangerous, and can produce toxic gases in combination with burning batteries. The master placed himself at considerable risk in entering the engine room to discharge the foam extinguisher. Fire extinguishers are effective only on small and contained fires. Remote extinguisher ports are a safer discharge route.

The vessel was not fitted with any automatic early fire detection system. The engine room hatch had to be opened to check for fire, which instantly introduced enough oxygen to cause the heated fuel oil to burst into flames.

Had a battery bank been fitted in the wheelhouse to supply communications equipment, the master would not have lost contact during the fire. He was, however able to call a nearby vessel using a satellite phone.

Once there has been a fire on board, there is a greatly increased risk of a second fire. Take precautions and monitor the situation.

For more information, see the September 2010 LOOKOUT! safety feature on fire fighting.
A runaway yacht collided with several other yachts when its skipper decided to move it during a storm late at night, setting off a chain of events.

The skipper had taken shelter in a bay occupied by four other yachts and a catamaran used for backpacker accommodation. Gale force winds and large seas were forecast and, in preparation, the skipper laid out a second anchor and let out 30 metres of chain on each one. He also tried unsuccessfully to secure the yacht to a small yellow mooring buoy close by.

During the night, the skipper checked the yacht’s position and concluded that the anchors were dragging. The beach appeared to be close and, with a 4 metre spring tide expected, he feared becoming grounded.

The skipper decided to move into the middle of the bay by motoring forward, pulling the anchors from the mud and dragging them behind the yacht to the new position, where he intended to raise them and re-anchor.

As he steered the yacht across the bay, the skipper missed seeing the anchor light of another yacht and collided with it.

He kept motoring forward, then lost steerage as his yacht’s anchor chains snagged the ground tackle of another yacht, setting it adrift. The boats swung together and locked. Without power, they drifted down and collided with a third yacht.

Eventually someone came alongside in an inflatable and boarded the runaway yacht, cutting the other two loose. As it motored away to a new mooring, the runaway yacht again failed to see another yacht’s anchor light and hit the vessel.

Once freed, the other two yachts were swept onshore and grounded, lucky to miss some charted rocks and a kayak carrier anchored just offshore. They were also fortunate they grounded an hour and a half after high tide, and so avoided being dumped even higher up the beach. The yachts were beached until the following mid-morning when, with a great deal of assistance, they were able to be launched with the changing tide.

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**LOOKOUT POINTS**

- **Had the yacht’s skipper ensured his anchors were fully secure, he may not have needed to change position at the height of the storm.** Although he had tried to take precautions by lowering a second anchor, his main anchor should have been heavy and strong enough that he could be confident of his yacht staying secure in heavy weather.

- The skipper of the yacht decided to move around a busy anchorage in darkness and at the height of a storm, without hauling up the anchors. As a result, his vessel became tangled and, in the ensuing chaos, collided with other yachts and caused two of them to run aground.

- The skipper failed to see the anchor lights of two vessels, resulting in two collisions. Apart from the potential for injuries and loss of life in the prevailing rough conditions and spring tide, there was also the risk of sustaining damage to his own and other vessels and being held liable for the repair costs. The damaged yachts’ insurance companies sought and received damages from the owner of the runaway yacht.
Boat capsizes crossing river bar

Two men were thrown into the sea when the engine of their 6 metre runabout stalled as they crossed the bar at a river mouth.

The tide was going out and the men tried to get across by riding a wave in. The engine cut out and before the men could restart it, the boat was capsized by a second wave.

One man was pinned underwater between the boat and rocks. He had a bad gash to the head and was unconscious when a surfer who’d witnessed the capsize reached him. The rescuer supported him in the water while the rip carried them 300 metres down the coast, where they struggled ashore, and were met by emergency services.

The second man was helped ashore by another surfer.

Both men suffered shock and hypothermia, and one had a head injury, but they were aware the outcome could have been much worse and considered themselves fortunate to have survived.

These tips are available as a sticker. Email epublications@maritimenz.govt.nz

To learn more about crossing a bar:

- attend a Coastguard Boating Education bar crossing course
- practise crossing the bar under guidance from an experienced skipper with local knowledge
- read the information on the MNZ website: maritimenz.govt.nz/bar-crossing
- order a sticker: email epublications@maritimenz.govt.nz
- watch our crossing the bar clips on YouTube: www.youtube.com/boatsafetyinnz
A crew member died after being thrown from a powerboat when it overturned during a high-speed race on a tidal lake.

The race, an annual event, has a course of about 34 kilometres, raced in two phases. The boats travel anti-clockwise in the first phase and clockwise in the second. Vessels taking part have to comply with strict boating criteria and are inspected by an approved scrutineer before the race gets underway.

MNZ allows the maritime rules relating to speed to be uplifted for the event. However, it does impose conditions governing race safety, public safety, oil spill response, litter and the need to advertise the event.

The accident involved a 5.6 metre powerboat purpose-built for marathon racing at speeds up to 120 km/h. While it was the crew member’s first time crewing in a race, the skipper was highly experienced. Water conditions and visibility on the day were considered good.

The first phase of the race was completed without incident. Then, during the first lap of the second phase, now travelling in a clockwise direction, the boat crossed the wake of another boat while rounding a buoy, and as it crossed back the skipper lost control. He later said it felt as though the boat slid sideways in the back.

The boat went sideways to the course and capsized, throwing both the driver and crew member into the lake. The outboard motor was torn from the boat, with a portion of the transom still attached.

Rescue boats were quickly on the scene and a paramedic, who was crewing in another of the race boats, administered first aid. The skipper and crew member were able to swim to the boats and then walk on land, but the crew member’s condition began to rapidly deteriorate. She was transferred to hospital with serious chest and head injuries, and died three days later.

The outboard motor was torn from the boat, when it went sideways and capsized, throwing both the driver and crew member into the lake.

The outboard motor still attached to a broken section of transom.

LOOKOUT! POINTS

- The boat was salvaged from the lake and examined. Investigators considered the vessel to be in good overall condition with no mechanical faults that might have caused the accident.

- The skipper was experienced and operated safely within the race context, with no evidence of having operated in a reckless or dangerous manner.

- The exact cause of the capsize was not able to be established, and is thought to have been the result of a combination of factors as outlined below.

- During racing, there is minimal contact between the hull of each boat and the water surface, and the lack of friction combined with high speed allows little room for error – any handling or mechanical errors can quickly result in a major accident.

- Riding over the wake would have exposed even more hull and further reduced the control and/or manoeuvrability of the vessel.

- There was evidence of a structural fault in the transom, caused by the plywood becoming wet and delaminated over time, possibly following a collision the boat had some months earlier. This fault may have been what caused part of the transom to separate from the boat with the engine attached. However, it was not clear whether the transom broke and caused the accident, or broke in the accident.

- Race organisers always ensure the water depth of the lake is adequate for speedboat events. If this had not been the case, as a boat rides over the wake of a boat in front, it could drop into the hollow formed by the wake and strike the bottom of lake while travelling at high speed. This possibility was considered and discounted.

- At the coronial hearing for the crew member, the ambulance service criticised the race organisers for not having had independent, dedicated rescue personnel at the event. Organisers should conduct a risk analysis to ensure appropriate levels of rescue and ambulance care for events involving high-speed and potentially dangerous racing.

- When the accident occurred, a competitor in the race (who was also an off-duty paramedic) had needed to abruptly switch roles to act as a rescuer.

- MNZ is currently amending uplifting procedures for high-speed events to ensure paramedics are on hand should anything go wrong.

- The coroner also recommended that the fitting of seatbelts should be considered, to prevent those on board from being thrown from boats during racing.
A stevedore fell 2.6 metres from the unguarded edge of this large hatch and received serious injuries.
Workers lashing and de-lashing containers on ships were involved in a series of similar accidents within several months. These incidents highlight the high-risk nature of this work activity.

In the first incident, a man slipped between two hatches, breaking his wrist and tearing tendons. He needed an operation on his wrist and was off work for several months. The man acknowledged he could have taken greater care about where he was stepping, in view of the dangerous nature of his work.

A few weeks later, a man fell 2.6 metres off the unguarded edge of a hatch while he was directing a crane lifting containers from a ship. His injuries included a broken nose and cheekbone, fractured skull, soft tissue damage to his shoulder, and a fracture to his right arm. He was unable to return to work for several months.

The man had been trained, supervised and empowered to do this type of work safely. Identified fall hazards on the ship were well managed using covers, gratings, stanchion and chain or solid metal guard rails. The area where the accident occurred was unable to be guarded, but the man had no reason to be working there at the exposed edge and could have undertaken the work from a safer location.

Within several weeks, another man was lifting lashing rods free of containers from above his head and directing their fall onto the deck when a rod bounced and struck him on the side of the head.

He sustained a cut that required stitches and several days away from work. The company’s procedures made it clear that rods had to be carefully lowered by hand, and not be allowed to fall uncontrolled.

Soon after that incident, a man fell 2.9 metres from an area adjacent to the top of a vertical ladder and through a hatch. He suffered serious injuries to his head, spine, chest and abdomen and his recovery was expected to take about a year.

The man had chosen to work in the position next to where he fell so that he could see the numbers on the ends of containers.

This was despite the company allowing containers to be lifted to a safe position so that numbers could be read.

The ship’s owner has since taken action to ensure that numbers on containers are clearer, and to find engineering solutions for fall hazards on the ship.

Not long afterwards, a stevedore fell 2.9 metres through an opening in a walkway at the top of a vertical ladder. He had been looking upward while using a pole to de-lash containers. He suffered a gash to his leg requiring staples and stitches.

The accident occurred shortly after he had climbed the ladder, neglecting to close the hinged cover. This was despite the company’s policy requiring employees to close covers when working within 2 metres of such openings.
A stevedore fell 2.9 metres through the gap in the foreground, which was at the top of a vertical ladder.

A view of the gap from below. The stevedore had just climbed up the ladder and was standing off to the left when he slipped and fell.

**LOOKOUT POINTS**

- Slips, trips and falls are the most common workplace hazard for stevedoring. Where employees were expected to be working and at risk of falling, appropriate safety measures were in place to protect or cover any opening in a deck or exposed edge.

- Lashing and de-lashing work is undertaken by shore personnel rather than ship’s crew. The incidents are covered under the Health and Safety in Employment Act. However, no apparent legislative breaches were identified.

- The employer had well-established health and safety procedures and a clear commitment to ensuring the safety of their employees.

- The victims and other employees interviewed spoke highly about the induction, training, and supervision they had received. The injured men said they were well supported by their employer’s safety policies, and they felt empowered to refuse to undertake any work when they felt it would not be safe to do so.

MNZ’s free DVD, Container Lashing and De-Lashing, provides an overview of the relevant safety requirements for this work. Contact epublications@maritimenz.govt.nz to order a copy, or watch the lashing and delashing clips online: visit www.youtube.com/user/CommercialVesselsnz.
From 1 January to 31 December 2012 there were 29 fatalities – 15 in the commercial sector and 14 in the recreational sector.

This compares with 3 commercial and 20 recreational fatalities in 2011.