Bulk carrier grounds after dragging anchor

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Overloaded dinghy has fatal outcome

Overloading a dinghy in strong currents, and wearing an unclipped lifejacket, proved a fatal mistake for a man who drowned only metres from a jetty.

Three men with a combined weight of almost 350 kilograms were heading out for a fishing trip on a lagoon, in a 3.6 metre aluminium dinghy designed to carry a maximum weight of around 200 kilograms.

The skipper, in his 60s, who was not a strong swimmer, was wearing work boots, heavy clothing, and a lifejacket that was not properly fastened. He started the outboard motor of his dinghy at the boat ramp but it was immediately affected by the fast-running tide. A crewman was holding the wharf and boat from the stern, trying to steady it, but had to let go of both when fishing rods in the rod holder got caught on the side of the dinghy, causing it to capsize and begin to sink, with the three men ending up in the water.

The strong current made it very difficult to swim to safety, with heavy clothes dragging the trio down. Two were wearing lifejackets that were not properly fastened, and the crewman who fell had yet to put his lifejacket on, though it was in the boat. He swam to the end of the sinking vessel, then struck out for the end of the wharf. At that point he heard the skipper yelling for help and tried to swim to him, but was having difficulty staying afloat.

People on another nearby jetty threw drums to the skipper hoping he would reach out for one, and use it as buoyancy. Seeing this, the crewman swam back to where a woman on the wharf was holding out a stick. He grabbed it to steady himself, then reached for a rope tied to the wharf, which he held on to for a rest.

The third man was left hanging from the wharf railing when the boat capsized. He could only hold his weight briefly before dropping into the water. His lifejacket was unclipped, and came off straight away. Kicking off his shoes and shedding his heavy jacket stopped him from sinking, and he got himself to safety.

Meanwhile, members of the public were still trying to help the skipper who was struggling to keep his head above water. One man had jumped in to help but was unable to support the skipper’s weight by himself. Another man jumped in to help, but the skipper was already unresponsive. A third man paddled a dinghy over to help support the sinking man, and the three pulled him back to shore, and on to the jetty.

A passing nurse performed CPR until Police and Ambulance arrived to take over, but the skipper did not survive.

This tragedy highlights how important it is to wear your lifejacket, properly fitted and done up, before going out on the water.

Had their lifejackets been worn properly, this man would have had a much better chance of survival, and his companions would not have had such close calls.

Heavy clothing hampers your ability to stay afloat if you end up in the water from an unforeseen accident. This man wore his work boots as he had just finished mowing lawns, and went straight out on the boat. When his boat capsized, and he was trying to keep afloat without the help of a lifejacket, the extra weight of the heavy boots dragged him down. This shows the choice of clothing and footwear that is worn when boating can sometimes be critical to staying safe.

Overloading a vessel can be a major factor in capsizing incidents. In this case, the weight of the three men, along with equipment such as the tackle box and chilly bin, was almost double what the dinghy was designed for. The boat was already destabilised, riding low in the water, and at increased risk of capsizing, when the crewman stumbled and put his full weight on the edge of the dinghy.

Incorrectly loading a vessel also destabilises it. In this case two of the crew were in the stern at the time of the capsize, instead of the three men dispersing their weight along the length of the dinghy.

The outboard motor may also have caused the dinghy to jump forward when it was started, as it was a model without a clutch. This may have been another reason why the crewman fell. The dinghy would also have been difficult to steer as the skipper was not able to properly attach the motor to the transom. Ensuring that a motor can be fitted properly to a vessel, and is regularly serviced, is essential for safe boating.

The dinghy had no buoyancy chambers fitted to enable the hull to support people in the water in the event of capsize. Polystyrene or a similar material can be fitted under the seats to ensure older vessels, without these chambers, remain buoyant in such situations.
A dragging anchor left undetected for several hours resulted in 12 holes in the ballast tanks of a bulk carrier when it grounded on a rocky reef off a west coast port last year.

The Master managed to refloat the vessel without assistance but failed to report the grounding, as required by the Maritime Transport Act. He was fined $2000 after pleading guilty to a charge of failing to notify Maritime NZ. No spill of oil was detected but the incident posed a potential threat to the 21 crew, and could have had a serious impact on the environment.

The 177 metre bulk carrier had discharged cargo at Tauranga and Auckland – where a Port State Control inspection found no deficiencies – before rounding Cape Reinga on its way to the west coast. The vessel anchored 2.4 nautical miles, or about 4km, off the port in the late morning, and was scheduled to berth at midnight to unload a further cargo of soya bean pellets.

The starboard anchor was let go with eight shackles, or 220 metres, of cable in the water at a charted depth of 27 metres. The crew plotted the anchor position on the chart and a 370 metres radius safety swinging circle was drawn. New positions were plotted during the afternoon and evening, but the crew did not realise the ship was dragging its anchor in a south easterly direction, and was slowly closing on the coast astern.

At 4pm the chart shows that at the handover from the Second Mate to the Chief Mate the vessel was about 1.5 cables, or 280m, outside the safety swinging circle first plotted.

The crew had plotted the anchor position on the chart, and new positions were plotted during the afternoon, but they still did not realise the ship was dragging its anchor. The weather and sea conditions continued to
The grounding occurred because a sequence of defences failed: The anchor did not hold; the results of the position monitoring were not comprehended and escalated up the chain of command; and the integrity of the failed windlass caused a further critical delay in remedial action.

- Anchorage, however sheltered, can become untenable very quickly in sudden bad weather. It is imperative that at the first signs of deteriorating weather the main engine is put on immediate notice and the relevant crew notified.

- Anchoring equipment is not designed to hold a ship off a fully exposed coast in rough weather. The International Association of Classification Societies advises such equipment is intended for temporary mooring of a vessel within a harbour or sheltered area, and in good holding ground conditions.

- When at an anchorage, all navigational aids must be used to monitor the vessel’s position and the relative positions of other ships. In addition to electronic navigational aids, shore transit bearings should be used, whenever possible, as a quick means of detecting whether a vessel is dragging anchor.

- Contrary to the Master’s Standing Orders, the use of visual fixing techniques, in particular the use of transit bearings, was ignored. These could have provided an early warning that the vessel was moving closer to shore.

- The Standards of Training, Certification and Watchkeeping (STCW) for seafarers provides guidance for the Officer in Charge of the navigational watch at anchor. This includes that a proper lookout must be maintained; the ship’s position should be plotted regularly; and the Master notified, and all necessary preventative measures taken if the ship drags anchor.

- In this case, GPS positions were recorded in the anchor position logbook every hour on the hour. Radars and Electronic Chart Display and Information System (ECDIS) were both operational and available to the Office on Watch. The anchor position was plotted on the chart at regular intervals, together with the maximum bridge swinging circle which showed the vessel was dragging anchor. However, it was not comprehended and acted on.

- Neither of the Officers on Watch believed that the vessel was closing on the shore. Instead, they believed the third officer had probably incorrectly plotted the original anchor ‘let go’ position.

- Alarms for the GPS and Automatic Radar Plotting Aid (ARPA) were not activated, so two of the more important navigational aids were incapable of providing the Officer on Watch with a warning. Although the Chief Mate set the anchor drag alarm on the radar just after 5.30pm, when it activated at 7pm no-one investigated the reason for it sounding.

- This case underscores the need for the bridge crew to heed warnings; always cross-check sources of information; and escalate causes of concern.

- Had the Master been called earlier, he would have had more time to develop a contingency plan – to proceed to sea, let out more cable, and/or drop a second anchor; as well as shorten the notice for the main engine.

- The defective clutch on the starboard windlass shortened further the time the Master had to rectify the situation. This might have been avoided if more weight had been taken off the cable by using of the main engine to change the position of the vessel. Instead, heaving commenced before the main engine was available, and when the cable was leading across the bow. This significantly increased the load on the windlass and probably contributed to its failure.

- The Master could have called for the assistance of tugs earlier in the evening as a precaution. However, in the prevailing wind and sea conditions, and with the close proximity to navigational dangers, they may not have been effective.

- Given the seriousness of the situation, the Master could have considered other options to halt the drag. They include letting go the port anchor; or releasing the bitter end of the starboard cable, to allow the vessel to manoeuvre clear.

- Any maritime accident, or incident such as this, must be reported immediately to Maritime NZ. Within minutes of the grounding the First Mate and Master were aware the vessel’s hull had been breached. The First Mate heard, and felt, air being forced out of the fore peak vent pipe, and reported it to the Bridge. Reporting the incident immediately can greatly reduce the response time for Maritime NZ to react to a potential environmental incident.

- Had the radio call not been made by Port Control there is no evidence that the Officer of the Watch would have identified his vessel was dragging anchor; so there may have been a further delay in preventative action being taken, and a more serious grounding.

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deteriorate, with gale-force westerlies and swells rising to four metres. By shortly after 6pm, the vessel had edged a kilometer closer to shore from its first position.

The Chief Mate had set the anchor drag alarm soon after 5.30pm, but when the alarm sounded at around 7pm it was subsequently cancelled. A VHF radio call from the local Port Control at around 8pm was the trigger for the Master and crew to finally take action.

The Master arrived on the Bridge at the same time as the call from Port Control was being received. By that stage the vessel was 1400 metres closer to the shore – and was only 1300 metres from danger.
The Master ordered the anchor to be raised and the engine room to start readying to be able to manoeuvre the vessel away from the coast.

The Chief Mate went forward with the Bosun and two crew members to begin heaving the anchor. But in the heavy swell and worsening winds – and without the engine being operational to position the vessel for easy pulling – there was too much weight on the cable.

This resulted in further delay, until the engine was operational and the heaving could begin again at 8.20pm. Ten minutes later the Chief Mate reported four shackles were on deck, but that heaving had stopped because the windlass clutch level and pawl had slipped out of position.

A temporary fix had to be fashioned, using a chain block, before heaving could recommence a further 30 minutes later, at 9pm. The Master informed the vessel’s owners and charterers of the possible need to request tug assistance, and rang Port Control at 9.05pm to request a tug come to their aid.

With less holding power due to the reduced amount of cable in the water, the bulk carrier continued drifting closer to shore. The Master used the main engine to try and control the vessel while the rest of the cable and anchor was heaved aboard; but by then the wind speed had increased to an average 35 knots from the west, with the vessel rolling heavily in the 4m north-westerly swell.

At 9.22pm the cable and anchor had not been fully recovered and the Master requested a second tug for assistance. Fifteen minutes later the huge anchor was finally off the seabed, and the Master briefed Port Control and cancelled his request for tugs.

However, by this time, the echo sounder showed depths of less than a metre, and at 9.38pm the cargo vessel grounded. Lying port side on a reef, the Chief Mate reported the ship was taking on water in the fore peak tank.

The Master ordered “full ahead” at 9.40pm, but initially no head-way was made. Over the next few minutes the engines slowly managed to pull the 20,000 gross ton vessel off the reef. Once clear, the Master ordered soundings to be taken of all ballast, bilge and fuel tanks.

The Environmental Protection Authority decided to charge the Master under section 12 and section 338 of the Resource Management Act for damage to the reef resulting from the grounding.

Temporary repairs took about three weeks to complete to the satisfaction of the surveyor, and then the carrier sailed for Singapore to dry-dock for permanent repairs.
Open hatches lead to death of crewman

Propping up a hatch cover on the deck of a fishing trawler resulted in the death of a crewman who fell 6.9 metres, through two hatches, to the floor of an empty fish well.

The vessel was in port for maintenance, and contractors had requested that one of the hatches on the main deck be “vented”, so they could run electrical cables between decks. Pieces of four-by-two wood were placed under two corners of the hatch cover to create a gap of about five centimetres between the open side of the cover and the edge of the hatch.

While at sea the hatch is kept closed, with the hatch cover fitting snugly into a steel lip so that the top of the cover is flush with the deck. It is secured in this position from below with turnbuckle fasteners.

Directly below, on the wet deck, is the hatch cover for the port number 8 fish well. While it is normally kept closed, the cover on the fish well was removed that day to enable cleaning. During a voyage there would be brine in the fish well, which would break the fall – but on that day the well was empty, having just been cleaned.

Other crew had walked on to the vented hatch cover on deck during the day with no incident. But when the victim did so, the cover rotated and he and the 2x2 metre cover fell through the opening. He fell through the two hatch openings to the bottom of the well, with the 165kg hatch following and coming to rest on his hands.

The captain was alerted and got the navigator to call emergency services while he rushed to the well. The captain administered first aid, as relayed from emergency services by the navigator, but the crewman died at the scene.

The fishing company operating the vessel was fined $48,000 and ordered to pay $35,000, after being prosecuted by Maritime NZ under section 6 of the Health and Safety in Employment Act 1992 for failing to take all practicable steps to ensure the safety of its employees while at work.
The first duty of the company owning the trawler, under section 8 of the Health and Safety in Employment Act, is to eliminate the hazard to the safety of its staff.

The vented hatch was unsecured and presented the same hazard of a fall from height as an open hatch.

At the time of the accident, the company rated the hazard posed by vented hatches as “one out of 10” on its hazard rating system. This meant the company considered the arrangement was unlikely to cause an accident; but if it did, it would be unlikely to be serious.

After the accident, the company took immediate steps to ensure all hatches are either closed or, if open, protected by guardrails or cordoned off with a rope erected two metres from the edge of the hatch.

Another option, or practical step to ensure the safety of employees, would have been to prop up the hatch cover — with timber or steel positioned across the hatch, instead of at the corners — and secure the cover using an extended turnbuckle mechanism.


The hatch opening — the hatch cover normally fits flush to the deck and fastened below.

The view from the fish well with the two open hatches above.
Attempting to haul 120 tonnes of fish on to the deck of a vessel with marginal stability set off a disastrous chain of events for the crew of a trawler operating in the southern Pacific Ocean.

In one of the New Zealand’s worst cases of lives lost due to poor vessel stability, the Coroner’s Court heard that mismanagement by the ship’s Master and a poor safety culture were other contributing factors to the capsize and sinking of the foreign-owned vessel fishing within New Zealand’s 200 nautical-mile fishing zone.

Miraculously, 45 of the crew were saved in an operation coordinated by the Rescue Coordination Centre New Zealand; but six lives were lost, including the ship’s Master. The lessons from this tragedy are a telling reminder as to why stability issues must be taken seriously by vessel owners and Masters.

Several crew noted the 82 metre trawler felt unbalanced even as it departed from a New Zealand port with a number of fuel tanks not full. This created a “free surface” effect, with the motion of the vessel causing fluid to move – and so shifting the centre of gravity of the vessel.

The Court heard that once at the fishing site vessel stability was further affected by up to 45cm of seawater covering the second deck, from hoses that fed into three fish pounds. The fish processing factory on this deck was operated by shifts of workers round the clock.

Initially good weather mitigated handling problems caused by instability, as did the fact that the processed catch more than off-set fuel used.

However, the situation deteriorated in the early hours of the morning when the factory was ready to accept more fish and a substantially loaded net was partially hauled on board. Because the large catch was unbalancing the vessel, the Bosun told the first officer to open the cod-end and release some fish back into the sea.

This was not done as the first officer felt he had to talk to the Master, who had resumed command. The Master ordered the crew to continue to haul the net, but because of the size of the catch it could not be fully pulled on to the slipway. About five metres of net, compacted with around 30 tonnes of fish, remained in the water.

The weight of the fish in the water caused the vessel to list to port. The Master then ordered the net to be dropped back into the sea. When this did not work, he ordered the net to be manually cut and fish discarded, but by now seawater was pouring into the vessel and the catch was too compacted to be discarded.

The Bosun tried to winch the net from the port to the starboard side of the vessel. Meanwhile the Master ordered the first officer to offload fish from the factory.

Because of the urgency, the first officer went to the factory rather than phone the order through. He found it awash with water and reported to the Master that the engine room was also filling up.

The Master directed the ship’s Navigator to increase to full speed and turn to port, but the vessel would not respond.

Attempts to pump the engine room failed due to the volume pouring in through the port-side stairwell. By this stage, the ship was listing up to 44 degrees to port and sinking.

When the captain finally gave the order, in Korean, to abandon ship – and made a distress call about 4.30am – the majority of the crew had already managed to put on lifejackets and life rafts were being launched.

Another foreign chartered fishing vessel operating in nearby waters was quickly on the scene and rescued most of the crew, while eight other international ships and a Royal New Zealand Air Force P3 Orion continued the search for survivors.
A smaller net and haul may have prevented the catastrophe. The mouth opening of the final trawl net, in this case, would have been the size of six tennis courts; 140 metres wide and 50 metres high. Two days earlier a 24 metre cod end on a trawling net had burst and was replaced with a 30 metre cod-end – increasing the weight of fish in the end of the net.

The helmsman said there were three times more fish than usual in the nets, with the haul estimated as in excess of 120 tonnes. Around five or six tonnes would have been on the 15 metre ramp at the stern of the vessel, with the rest trailing in the sea “like a big silver sausage”, the Court heard.

The effect of hauling a large bag of fish on board causes the stern of the vessel to “squat” and the bulbous bow to rise out of the water – reducing stability.

The evidence was that the entire port side of the factory deck was flooding as the ship listed. The watertight doors down to the engine room should have been closed, along with the factory deck portholes.

The port side waste chute could have been closed, as is designed to be done to prevent the ingress of seawater in heavy weather. Doors at the end of the conveyor belt should also have been closed.

An expert told the Court that the decision to trawl in the evening to catch more fish, when the factory storage space was congested, indicated poor judgment.

However, he considered that the weight of the fish in the net was not the full cause of the ship capsizing.

The watertight integrity of the ship and the Master’s mismanagement of the situation were also key factors.

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The Master and officers should have been more open to safety matters being communicated to them, and the crew should have been properly trained in safety procedures. An authoritarian culture on the ship is likely to have prevented crew from escalating safety concerns, and systematic failures to ensure the crew was properly trained also contributed to the foundering.

The safety of the crew should always be of primary concern for the ship’s management, rather than the financial cost and “loss of face” from dumping fish in such an emergency.

New Zealand’s inability in the past to enforce provisions such as those contained in the Health and Safety Employment Act 1992 were highlighted in this and other cases. The limited jurisdiction that New Zealand had over Foreign Chartered Vessels (FCVs) has since been reviewed. Legislation now makes it compulsory for all FCVs to be reflagged by May next year (2016). See our article about the first Japanese vessel to be reflagged, on page 6 of this issue of Safe Seas.
It is up to the skipper to maintain his/her vessel’s stability, in order to keep the vessel safe from capsize and protect the lives of those on board.

The basic forces that create or reduce stability are the same for any vessel. Stability is determined by the force of buoyancy provided by the underwater parts of a vessel, coupled with the combined weight of its hull, equipment, fuel, stores and load. These forces can also be adversely affected by the prevailing weather conditions and sea-state.

Understanding the factors that influence stability will assist skippers to make the right decisions and take the right actions to keep their vessels safe.

**PLANNING FOR STABILITY**

The stability of a vessel changes throughout a trip. It is important to be aware of how stability can change and to plan ahead for the worst-case scenario.

Different stability situations include:
- leaving port with full fuel and stores, but no fish
- being at a fishing site with a full catch
- coming home with a full catch and not much fuel or stores
- coming home with a small catch and not much fuel and stores.

Factors such as full fuel tanks normally being low down in a vessel and having some catch loaded in the hull can help stability, while reduced fuel, fishing operations, and rough weather and sea-state can reduce it.

Any significant hazard needs to be formally identified in a vessel’s onboard safety system, and measures put in place to avoid or reduce the risk to the vessel and its crew.

MNZ strongly recommends vessels are fitted with an inclinometer. These are not expensive and help raise awareness of stability issues for all people on board.

**HOW TO MAINTAIN A VESSEL’S STABILITY**

1. **KEEP WEIGHT LOW**

New equipment added higher up on a vessel, or replacing gear with heavier equipment raises the centre of gravity and reduces the boat’s stability. Less catch can be loaded safely and a smaller wave and/or lower angle of roll will cause the boat to capsize.

2. **AVOID OVERLOADING**

The heavier the load in the hold, the lower the vessel’s freeboard and buoyancy will be. Loading extra catch on deck lifts the centre of gravity, reduces the freeboard and makes the vessel more top heavy.

Overloading a vessel before motoring home is highly dangerous in a rough sea.

3. **KEEP EXCESS WATER OFF**

A wave on deck or downflooding can add tonnes of extra weight and produce a strong rolling force (known as ‘free-surface effect’). The extra weight drastically lowers freeboard, raises the centre of gravity and, when the water shifts, tries to roll the boat over.

Reduce the risk by:
- avoiding conditions where breaking waves or following seas could swamp the decks
- keeping freeing ports open and unobstructed while at sea
- ensuring doors and hatches are closed and secured when they need to be
- keeping bilges and melted ice to a minimum
- ensuring bilge alarms are working
- keeping fuel and ballast tanks either full or empty.

4. **SECURE THE LOAD**

Stow a vessel’s load, gear or catch on the centerline, or balanced port and starboard. Secure it so that it can withstand wave impact, rolling and wind loading without shifting. Keep the stowed positions as low as possible.
HAZARDS FOR FISHING VESSELS

Stabilisers

Make provision in your vessel’s safety manual for each of these potential hazards when using stabilisers:

- lowering or swinging the arms into position, and recovering them afterwards
- deploying and recovering the plate, lifting surface or ‘bird’
- lifting the arms and plates
- having stabilisers deployed in a deteriorating sea-state.

Stow the plates, lifting surfaces or birds on deck when not in use.

Trawling, dredging and towing

In a rough sea-state or if the vessel is heavily loaded, the combined effect of these factors on a vessel’s stability may be dangerous:

- tow-line tension pulling the stern lower in the water, reducing the freeboard aft
- the load’s downward weight taking the vessel lower in the water
- tension on the lines, transferred through the towing point or blocks, dramatically lifting the vessel’s centre of gravity.

Fouling or snagging of fishing gear

With any gear stuck on the seabed, a vessel is extremely vulnerable to hazards such as reduced freeboard, steep angles and rolling forces from tension on the lines.

Pay close attention to the effects on the vessel’s stability when undertaking operations to free the gear, because of the extra loads needed to free the gear.

Lifting and pulling on board

If you are lifting a catch, its weight is not acting where the object is, but at the top of the lifting point, block or winch that is lifting it. A sudden jump in the vessel’s centre of gravity can be very dangerous.

This shift in the centre of gravity applies to stern lifters as well. Any winch, block, wheel or lifting point used on an A-frame at the stern of a vessel will transfer some or all of the weight of the catch to that point. Similarly, for lifting or winching at the side, the weight acts at the point of lifting.

Every lift is only as safe as the load lifted, the condition of the vessel and the sea-state, size and direction.
This combination, of relatively untested waters and a driver that did not have a lot of experience with the boat, adds to the potential dangers of jet boating.

Drivers should be thoroughly familiar with the handling and performance of their craft before they get behind the wheel.

Downstream stretches are often more difficult to navigate, and less experienced drivers are advised to take their turn at the wheel travelling upstream instead.

This party had boated several rivers before deciding to turn around at 4.30pm when they were unsure of their ability to negotiate rapids further upstream. Fatigue may have been a factor and needs to be taken into account when planning day outings.

The members of the party were well prepared for an emergency, with a personal locator beacon, first aid kit and spare gear such as dry clothing. Additionally, it would have been useful to contact the commercial jet boat operator for that river to get information about its conditions ahead of the trip, and carry a hand-held VHF radio.

There is no guarantee that use of the radio would have sped up the rescue – but it may have helped. In addition to immediately setting off a beacon, one of the drivers of the other boats, and a passenger, did rush downriver to where they launched, and drove to the nearest farmhouse to telephone for assistance.

The Coroner ruled that the time taken to retrieve the injured man and transfer him to hospital was understandable due to the remote location of the accident.

A copy of the overall Finding was sent to the New Zealand Jet Boat Association, with a request that the outcomes be notified to members, to discourage other relatively inexperienced jet boaters from taking control of a boat in areas of significant hazard.
Driver error leads to jet boating fatality

Swapping drivers towards the end of a day’s jet boating on several rivers contributed to the death of a passenger, after he was injured when the boat struck a large rock and flipped.

The man, in his 60s, was found lying face-down in the river, apparently unconscious. The other occupants, and passengers of a boat ahead, carried him to shore, and set off a personal locator beacon to alert rescue services.

At that point, the man was able to let his companions know he had a sore back and was having difficulty breathing. As the party was in a remote location, it was six hours before he was finally able to be delivered to hospital by helicopter. He had multiple fractures, and suffered a fatal heart attack during emergency surgery – which was complicated by an existing heart condition.

The Coroner found that changing the driver, late in the afternoon on a relatively unfamiliar downstream stretch of the river, caused the crash that led to the man’s death.

The new driver had considerable experience in his own smaller boat but had only driven his friend’s jet boat a few times. He seemed unsure of the boat’s handling and performance. The accident happened on a more difficult downstream stretch of river. The jet boat hit a rock, and the driver failed to accelerate away from crashing into another larger rock – which caused the vessel to overturn.

The boat was only a few years old and well maintained. The group of nine, travelling in a convoy of four boats, was well organised, with everyone wearing lifejackets. Other essential equipment was on-hand, such as a first aid kit, spare clothing and a personal locator beacon.
Dive operator sentenced after propeller fatality

A man died after being struck by the propeller of a commercial vessel when he dived down believing he needed to free its anchor, during an excursion at a popular dive spot last year.

The victim was the last client in the water and was planning to re-board after the final dive of the day. After being told by the skipper that the anchor was snagged, he remained on the duck board, ready to dive and free the anchor if required.

The crewman then told the skipper that the anchor winch had freed the anchor. Despite further communication between those involved, the skipper was not aware when he started the engine that the diver had gone back into the water.

Twin unguarded propellers protrude under the rear sections of this 14-metre catamaran, approximately 1.5 metres from where divers enter and exit the water. When the skipper put the engine into gear and moved the vessel forward, one of the propellers struck the diver and entrapped him.

He was unconscious when crew and fellow divers cut him free, and lifted him back on-board. They administered CPR, but the victim was pronounced dead soon after by a paramedic from the rescue helicopter.

As a result of its investigation, Maritime NZ prosecuted the company and the skipper under sections 15 and 19 of the Health and Safety in Employment Act 1992 for failing to take all practicable steps to ensure that no action or inaction at work caused harm to any person. Both parties pleaded guilty to the charges and were fined $50,000 and $25,000 respectively, and ordered to pay $50,000 and $30,000 in reparations.
Due to poor operational procedures and standards of communication, the skipper of the vessel assumed the diver was not in the water. He failed to check and engaged the vessel’s engines with fatal consequences.

Operators of all vessels must ensure that swimmers and divers are well clear of propellers before engaging them, and proceed with extreme caution in situations where swimmers and divers may be close to vessels.

There was an evident risk of miscommunication occurring in the context of a diver being told first to prepare to enter the water, and then, not to enter the water. A clear system of closed loop communications should be the practice used. This involves the receiver being asked to repeat back instructions so the sender knows the receiver has heard and understood the instructions.

There should always be a procedure that only trained people, such as crew, are permitted to dive under a vessel to free the anchor.

The twin propellers were not guarded. The installation of propeller guards – even partial guarding – is a practical step that can be taken to prevent the risk of harm to divers and swimmers.

There was no mention of the hazard of propellers in the vessel’s hazard register. It is a requirement under the Health and Safety in Employment Act 1992 (HSE Act), and referred to in the vessel’s safety manual, that hazards must be identified.

All hazards should be recorded in the hazard register, and safety warnings about propellers should be included:
• in briefings for all dives
• in a diagram on-board the vessel to show the danger areas for swimmers and divers.

Crews should be audited to ensure safety procedures are followed.

Maritime NZ is concerned about the number and seriousness of incidents caused by propeller strike in recent years. The lessons from this and similar accidents should be incorporated into operational procedures for vessels involved in diving and swimming operations.

Propeller strike can cause severe and often fatal injuries. In the interests of public safety, persons responsible can expect a strong response from enforcement authorities, to send a clear message of the consequences where operators are found to be at fault.