Pointing to safer aviation

Winter 2025

vector

OUT OF THE BLUE

Fatal distraction

A pilot's best friend – or worst enemy?

Training in marginal weather

CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

// FATAL DISTRACTION

// A PILOT'S BEST FRIEND – OR WORST ENEMY?

// TRAINING IN MARGINAL WEATHER

Cover: Being well-prepared, well-equipped, and well-rehearsed in what to do in an emergency, probably saved this pilot's life. See our cover story, "Out of the blue" on page 10.

Photo: iStock.com/Gary Webber

// OUT OF THE BLUE

In this issue...

vector

CIVIL AVIATION AUTHORITY OF NZ

PUBLISHED BY THE Safety and Security Education team of the Civil Aviation Authority of New Zealand, PO Box 3555, Wellington 6140.

Tel: +64 4 560 9400
Fax: +64 4 569 2024
Email: **education@caa.govt.nz**

Published quarterly at the beginning of each season.

Design Gusto.

PUBLICATION CONTENT Unless expressly stated as CAA policy, the views expressed in *Vector* do not necessarily reflect the policy of the Civil Aviation Authority. Articles are intended for safety education and to stimulate discussion, and nothing in *Vector* is to be taken as overriding any New Zealand civil aviation legislation, or any statements issued by the Director of Civil Aviation, or the Civil Aviation Authority of New Zealand.

LETTERS TO *VECTOR*
Reader comments and contributions on aviation safety are welcome. Let us know your thoughts by emailing education@caa.govt.nz. We'll try to publish a selection in each edition, although they may be edited or shortened.

We'll only publish ideas and observations contributing towards safer aviation.

FREE DISTRIBUTION *Vector* is distributed to all New Zealand flight crew, air traffic controllers, aircraft maintenance engineers, aircraft owners, most organisations holding an aviation document, and others interested in promoting safer aviation. For flight crew and air traffic controllers, an aviation medical certificate must be held, and a New Zealand address given, to receive *Vector*. Holders of pilot or parachutist certificates issued by Part 149 certificated organisations can also apply to receive a free *Vector*.

Vector also appears on the CAA's website – subscribe to our email notification service to receive an email when it is published, **aviation.govt.nz/subscribe**.

CHANGE OF ADDRESS Readers receiving *Vector* free of charge should notify education@caa.govt.nz of any change of address, quoting your CAA participant number. Paying subscribers should notify Vertia.

PAID SUBSCRIPTIONS *Vector* is available on subscription only from Vertia, vertia.co.nz, email: info@vertia.co.nz, or freephone 0800 GET RULES (0800 438 785).

FSC www.fsc.org MIX Paper from responsible sources FSC®

Te Kāwanatanga o Aotearoa New Zealand Government

ISSN 1173-9614

BULLETS, SHRAPNEL, AND MILITARY DRONES

These are three potentially lethal reasons for pilots to stay well clear of military operating areas.

// The Puma UAS being launched by hand as part of a military training exercise.

Photo courtesy of NZDF.

At Ardmore aerodrome, south of Auckland, there's been a recent increase in itinerant pilots drifting into the nearby military operating areas (MOA), marked M201 on VNC C6.

The proximity of the MOA boundary to the eastern circuit approach is one factor that catches out itinerant pilots at this busy unattended[1] aerodrome.

The New Zealand Defence Force uses the MOA, intensively, 24/7. This means any aircraft straying into the restricted area puts itself at high risk of an occurrence, according to the NZDF and airport management.

Even pilots who are familiar with Ardmore aerodrome can stray into the MOA if they lose situational awareness in the circuit.

Jacob's bad day

Jacob – not his real name – is a case in point. He operates a helicopter charter business in the upper North Island, and he regularly flies in and out of Ardmore.

On this day, though, his tour group asked him to pick up a passenger at Ardmore on what should have been a direct flight from Hamilton to Waiheke Island. This abrupt change of plan, combined with the fact that Jacob was now approaching Ardmore from the south-east (different to his usual flight path into the circuit), affected what happened next.

"My whole routine changed, and there was a lot going on in the cockpit, with several passengers on board," Jacob says.

"I know where the MOA is, but this time it was on my right-hand side when I flew into the circuit. I hadn't taken time to take stock of the situation, and that's why I ended up in the MOA."

When Ardmore UNICOM contacted Jacob later to talk through the airspace breach, he realised why he had lost situational awareness.

"I had become a bit blasé. I wasn't paying enough attention to the route, I was more concerned with finding my slot in the sequence.

"When it became clear there was a passenger to pick up at Ardmore, I should have paused to reassess the situation and get more details about the approach into the circuit."

It's not just Jacob

Jacob's not alone in recently straying into the Ardmore MOA.

"The data's clear," says Allan Bostock, the General Manager of UNICOM at Ardmore Airport. "There have been five occurrences in the last few months – by both fixed-wing and rotary aircraft. There were 10 occurrences in the two years before that. It's almost invariably itinerant pilots who drift into the MOA."

He explains that the boundaries of the Ardmore MOA were expanded a few years ago, in consultation with aerodrome users.

"This brought the MOA boundary parallel to our downwind leg, about two nautical miles from our runway. And the height restriction went from 1700ft to 2300ft above sea level. It's quite a big area. Pilots should avoid tracking between Waterworks and Red Hill visual reporting points."

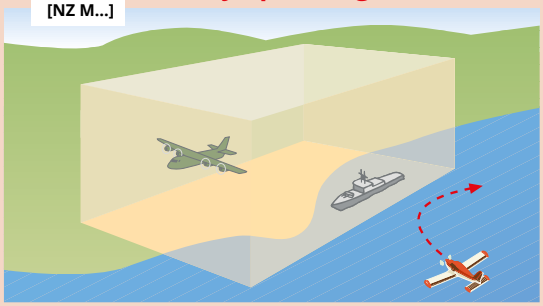
He says itinerant pilots coming from the south and south-east are more likely to stray into the MOA, because of its location relative to the circuit.

// Ardmore MOA is one of 27 military operating areas across New Zealand. They're depicted on visual navigation charts by the letter M, followed by three digits. iStock.com/mikulas1

1 Ardmore has a UNICOM service – see *Vector* (Summer 2023) at **aviation.govt.nz/vector**

Military operating area (MOA)

[NZ M...]



- **Military exercises – including live firing**
- **Enter only after authorisation from the administering authority, if:**
  - **a New Zealand registered aircraft; or**
  - **any other aircraft within New Zealand territory**

// Source: *New Zealand airspace* GAP booklet

Live fire, explosives training, drones

"MOAs are designated spaces where the NZDF conducts training and exercises," says Brett Arnold, the Battle Training Facility Manager at the Ardmore Military Training Area.

"This could include live firing, the use of explosives, and non-notifiable UA (unmanned aircraft) operations. Unauthorised aircraft must keep out of these restricted areas at all times.

"The Ardmore MOA is active 24 hours a day. It has live fire rifle ranges, and areas where we conduct explosives training. For example, if an aircraft is flying through the MOA, and a rifle round ricochets off something, it can go into the airspace at altitude with great velocity. This could be disastrous if it strikes an aircraft. The sites are designed for that not to happen, but there are no guarantees."

Explosives training also presents a potentially lethal hazard to aircraft flying in the MOA. Brett says blasts from explosions can create a shockwave that, when deflected off an angled piece of terrain, can bounce upwards into the path of an aircraft, creating turbulence, and potentially forcing it off its flight path.

Military UAs are another threat to aircraft entering the MOA.

Brett says training has to stop when an aircraft breaches the MOA, until clearance is given. NZDF personnel spend a lot of time monitoring flight radar apps and tracker information, and reporting breaches of the airspace to UNICOM.

Tips for pilots

The CAA's Andy McKay, a flight examiner and rotary-wing pilot who regularly uses Ardmore aerodrome, offers these tips to pilots:

1. **Do your preflight prep. Study the layout of Ardmore and its surrounding airspace. Understand the location of the MOA relative to the circuit and note visual landmarks to help maintain separation.**
2. **Where possible, brief yourself on the likely circuit traffic pattern before you arrive, using Ardmore's AWIB and information from local operators.**
3. **Use tools like GPS or electronic flight bags (EFBs) to display the restricted area on your navigation screen.**
4. **Plan your approach to the circuit well in advance. Determine your anticipated entry point and route, keeping in mind the location of the restricted area.**
5. **Fly a well-defined and predictable circuit, in line with the published procedures.**
6. **If you lose situational awareness, focus on maintaining separation from other aircraft and avoiding the MOA.**

For Jacob, the incident has changed his flying behaviour. He's learned to say no to customers who ask to divert at short notice.

"If I don't have time to go through the proper process, I say no. It's more important to get the job done safely than to accommodate last-minute requests from the customer."

// MORE INFORMATION

Download, or request a printed copy of, the *New Zealand airspace* Good Aviation Practice (GAP) booklet and the *New Zealand airspace* poster at **aviation.govt.nz/education**.

FATAL DISTRACTION

Staying focussed during low-level flying will help keep you from a wire strike.

Two pilots and two passengers narrowly avoided a wire strike in October 2023 while following the World Jet Boat Marathon.

Flying low and fast in a Robinson R44 over the Waimakariri River, and focussing on the race, the nearly invisible wires caught them by surprise.

The owner of the rotary-wing – medically grounded at the time and sitting in the front passenger seat – says they had only seconds warning to avoid certain death.

"My son and his partner were in the back. She saw spectators on the riverbank and asked him if this was the end of the race.

"He replied, 'Yes, that's the finish line'.

"I knew the area and it was the mention of 'finish line' that sparked my situational awareness.

"I called to our pilot, 'Wires here!'.

"We pulled up and three or four seconds later six high voltage lines passed harmlessly beneath us.

"Despite looking pretty damned hard for them after I called wires, I couldn't see them until they passed under us.

"They were invisible against the background."

The commercial pilot hired by the owner to follow the jet boats admits he became distracted by the race on the water.

"I was flying too low, and I got complacent.

"I'm lucky to be alive."

Fatigued and distracted

"You have to be so careful around wires," says Neil Moore, 10,000 plus air ambulance hours – and now Technical Advisor for the CAA.

"Early in my career, I worked for a couple of ag operators.

"It is generally accepted that wires play havoc with your depth perception against both sky and land backgrounds.

"They might look further away than they are, or a lot closer.

"You have to keep looking at other points in your field of vision such as power poles or pylons to give a more accurate location of the wires."

Mark Houston, CAA Unmanned Aircraft Inspector and seasoned ag pilot, says the low-level flying environment is unforgiving.

iStock.com/Stewart Watson

// The Waimakariri River. Can you see any wires? They are there.

// It's often the wire you know about that gets you. //

"The damage that a tensile bundle of steel and alloy wire threads will inflict on your thin gauge aluminium or fibreglass/carbon fibre construction is incredible.

"I've lost five friends to wires.

"Three of them knew the wires were there.

"It can happen to anyone. I hit a wire while dropping fertiliser.

"It was my 70th flight of the day, six hours in. Conditions were marginal and I pushed for one last flight.

"I was fatigued and distracted.[1]

"I hit the wire straight on with the propeller.

"It damaged two blades beyond repair. The broken wire ends flailed on strike, slashing both main wheel tyres, puncturing one.

"Somehow, I managed to get it back onto the strip.

"I was so lucky to survive."

Mark says an old instructor once told him, 'It's often the wire you know about that gets you'.

"These are wires you discuss in your briefing, but they appear suddenly during your workday."

This was the case with the R44 over the Waimakariri River.

The two pilots knew about the wires, and they were even brought up in the morning briefing as a potential hazard.

"It's not enough to know the wires are there," says Mark.

"Research shows that nearly half of wire strikes involve wires known to the pilot.[2]

"Several factors reduce the awareness and mitigation of hazards including sun position, dirty windscreens, and pilot scan.

"This research also says nearly all accidents with wires occurred with unmarked wires.

"And in most cases the pilots were flying too low."

Wired for distraction

Distraction can be a problem for even the most experienced pilots, says Mark.

"Half of wire strikes in Australia happen to pilots with more than 5000 hours experience.[3]

Other research shows nearly two thirds of ag operation wire strikes involve pilot distraction.[4]

Richard Rayward, Airline Flight Examiner and CEO of South Island-based Air Safaris, says pilots need discipline to handle distractions.

"Pilots must monitor and control the aircraft safely to the exclusion of everything else.

"You have to also maintain situational awareness, ignore distractions, and keep track of other traffic."

Richard says there are two kinds of distractions – immediate distractions which are sudden and unexpected – and the more subtle and gradual developments.

"On any flight, you cannot allow distractions to detract from your awareness of weather or uncommanded altitude gain or loss, for example in wave conditions.

"Filter out unwanted distractions and automatically assess the importance of extraneous factors.

"Decide whether you need to address a distraction then, or at a more appropriate stage of flight.

"Some distractions can be half-noted or ignored when pilots are busy – others not so easily.

"A pilot can ignore someone tapping them on the shoulder and asking, 'Is that Mount Cook?'.

"Whereas someone having a medical event, or a panic attack, will need urgent attention – always a challenge in a single-pilot operation.

"I've had a bird emerge from under the instrument panel and flap around the cabin.

"Once a wasp up the leg of my shorts stung me during take-off.

"Both big distractions!" »

1 "Pilots shouldn't be flying if they're feeling fatigued as this leads to inattentional blindness, attention tunnelling, greater levels of stress, and mentally overloads the pilot," says Alaska White, CAA Principal Advisor, Human Factors.
2 flightsafetyaustralia.com > search > one strike and you're out
3 flightsafetyaustralia.com > search > one strike and you're out
4 Google *Wire-Strikes in Agricultural Operations: A Focus Group Study FAA.*

// "Pilots must monitor and control the aircraft safely to the exclusion of everything else." Richard Rayward, CEO, Air Safaris. Photo courtesy of Air Safaris.

SICK OF DISTRACTIONS

"Several years ago, I was flying a group of deer stalkers up to the Growler airstrip in the upper Rangitata Valley, says Richard Rayward.

"Rather typically, there was a strong nor'west with showers in the valley. Pretty unpleasant conditions on the approach to land downhill into wind on the Growler.

"I was working hard, descending over the Matagouri bushes before touching down.

"Just then, an unfortunate hunter immediately behind me tried to contain violent sickness by cupping his hands over his mouth.

"The result was a whoosh over my head and shoulders, up on to the roof, and all over the windscreen and instrument panel.

"Surprised and half-blinded, I had to ignore the initial event and concentrate on going around.

"As I climbed away bits of half-digested food dropping off the headlining on to my face were not so pleasant!"

» Think wires, wires, wires

Neil Moore says in the 'old days' they would draw a diagram of the ag block and note the wires.

"We'd stick it to the instrument panel with 'WIRES!!' to attract the pilot's attention during flight.

"You just have to think 'wires, wires, wires' the whole time."

Keith McGregor, industrial pyschologist and formerly of the RNZAF, says pilots can brief passengers about potential hazards, asking those passengers to remind them when they're approaching those hazards.

"In the case with the jet boats, the pilot could have said to his passengers, 'There are some power cables in the race area so can I ask you all to say 'Stay clear of the cables' once we reach the river?

"Because the pilot has directed them to say this, he would not be offended when they do."

Mark Houston agrees, saying it's worth briefing passengers on engine start and on approaching an operating area.

"Engage them to look out and advise any likely hazards.

"Otherwise keep the cockpit sterile of chatter."

Pilots can aid this process by using apps already on the market allowing them to pinpoint hazards using GPS on a moving map.

The app will then provide a visual and audio alert within a given radius around the hazard.

But the app, of course, cannot alert the pilot to any hazards the pilot did not know about to start with.

Preparation and planning

Scott Griffith, Principal Advisor of the CAA's Emerging Technologies Programme, (and former RAF pilot) says the key to preflight preparation and planning is visualising the flight *before* you take off.

"This is called 'chair' flying – because it's done from the comfort of a chair on the ground.

"You imagine yourself flying the sortie from start to finish.

"You 'see' all the events you'll come across and note the actions you need to do.

"The advantage here is that you can imagine the whole flight along with any unusual aspects, such as a wire, to be aware of."

CAA Principal Advisor of Human Factors, Alaska White, agrees that chair flying can be helpful for pilots of varying experience and says it creates a sense of preparedness. But she says it does have its limitations and should not be relied upon as the only way to avoid distraction.

"Information gets consolidated in long-term memory through rehearsal and practice over time.

"And if you don't know the hazard is there to start with, you cannot make it part of your chair flying.

Then, once flying, if you're right into your plan, you're unprepared for an unexpected event."

Richard Rayward believes all pilots should be conducting a thorough check for distractions as part of their preflight preparations.

"This will catch an item such as a door not properly closed, or a seatbelt trapped and hanging out of a closed door.

"Once in the air we continue to take steps to reduce distractions.

"In our fixed-wing aircraft on scenic operations, we don't have the passengers included in the intercom system on headsets.

"Cabin speakers for the pilot-passenger address and in-flight commentary prevents distracting passenger comments through an intercom system.

"In our helicopters, where all passengers wear a headset, we generally just use earmuffs without a mic for children.

"Otherwise, they can be very noisy for the pilot at inopportune times."

Learning the hard way

The commercial pilot from the jet boat marathon says his near miss with wires has changed how he flies.

"These days, I'll ask myself what the best approach is to get a job done safely.

"Before entering the low-level environment for spraying or top dressing, I have a thorough check and plan of the area.

"I'll mark up hazards such as wires on our ag GPS.

"I try to minimise distractions as much as possible. Even if it means isolating my passenger's audio while I think, or turning down other radio chatter while I think.

"I fly at a height I know to be as safe as possible. Once I am happy then I proceed with caution.

"Unfortunately, it's taken a near miss like the one over the Waimak to make me a better pilot.

"But I'm glad to still be flying."

// NOW READ...

"Looking without seeing" about inattentional blindness, in our Winter 2022 edition of *Vector*. Go to **aviation.govt.nz/vector**.

OUT OF THE BLUE

A routine flight from Paraparaumu to Tākaka in November 2024 turns into a dramatic sea ditching.

Landing at Paraparaumu aerodrome to drop family members home after their visit to Golden Bay, Laurence (not his real name) waved them off, stowed their life jackets away and completed his preflight checks for the return journey.

All was well.

With winds of eight knots at 320 degrees and minimal cloud, Laurence climbed to 5000ft north of Cape Jackson, adjusting course to avoid cloud and turbulence.

With an outside air temperature of 5 degrees, Laurence used carb heat every few minutes, checking temperatures and pressures regularly. The engine was leaned appropriately.

Once clear of the turbulence, Laurence continued to use carb heat at regular intervals. The steady head wind had his ground speed at 75-80 knots, increasing to 90 knots in the second half of the flight, and the fuel was looking good.

He had been back in cruise for about 15 minutes when he used carb heat and noticed a 200 RPM drop.

"I left the carb heat on for longer than usual to make sure carb icing was not an issue. With the carb temperature at about positive 20 degrees, the RPM stayed stable and there was no sign of rough running or increasing RPM. The conditions were a steady 25 knots north-westerly, with high cloud."

Everything went quiet

"Then, as I closed the carb heat, the engine instantly popped, banged, and died. The prop was windmilling. I immediately applied carb heat hot, and full throttle, full mixture, and I swapped fuel tanks.

"The engine restarted and returned to 2000 RPM. I immediately adjusted the mixture while altering my course to run better with the wind and more towards land. I tried to climb.

"After this, the engine RPM never got above 2000 and felt like it was surging and not producing full power. This phase lasted about 10 seconds, during which I called Nelson Tower, identified myself, said I was having engine issues and to stand by.

iStock.com/Jim Lin

"After a short period trying various engine configurations, I got approximately 10-20 seconds or so at 2000 RPM.

"I was still trying to use that power to climb and I believe I gained about 350ft. That's when I made a Mayday call. The controller said they had me identified and asked for aircraft colour and persons on board.

"Once the engine died – I believe I was at about 3000ft – I trimmed the aircraft for 70 knots (best glide). The prop continued to windmill for about 30 to 45 seconds, or the first 500-800ft of glide. Then the prop stopped windmilling, and I made a radio call that I was going down.

"Everything went quiet. Like if you switch your car engine off while doing 100kph. The only sound was the wind passing over the plane.

"I set off my SOS satellite communicator and clipped it to the top of my life jacket. I opened my door and moved everything around me away. Then I grabbed my phone.

"At around 2000ft, the prop still wasn't moving.

"I went through the starting procedure for the engine – master on, primer locked, throttle and mixture set. I pressed the starter button. The prop did not move at all. I believed I could hear a clunk, like the starter engaging but not being able to spin the prop."

You're bloody plummeting!

"I checked my phone. My partner had messaged asking, 'All good?' She was watching Flightradar24 for my timing and saw I had adjusted course. I replied with 'Engine failure, called services, swimming soon'.

"Her reply? 'You're bloody plummeting, are you joking??'

"I pushed and tried the starter motor for the final couple of minutes of the glide, but I never saw the prop move from where it stopped originally.

"I did my final checks – SOS device still attached, door still open, headset removed. My last communication with Nelson Tower was to ask how long I would be waiting for, but at that stage they couldn't guess. »

» "In the last minute or so before impact, I continued my glide with the wind until I was about 100-200ft above water.

"I then turned into the wind to reduce my ground speed and got as low as I could, intending to stall the aircraft into the water at the point of contact.

"As I got within 20-50ft, I pointed the plane parallel to the waves so I could touch down crosswind, along the troughs between them.

"I braced my feet solidly on the rudder pedals, phone in my right hand and controls in both hands.

"Consistent with the electronic flight bag on my phone, I believe the approach speed shortly before impact was about 32-42 knots. I tried to get as slow as possible before contact with the water, and a final flare for as long as possible."

A solid wall of water hit me

"I thought hitting the water would be okay, but it was quite an impact.

"The main wheels hit first and immediately dug in. The nose plunged into the water, the windscreen imploded and a solid wall of water hit me.

"I must have taken a good breath, and I found myself with my eyes open underwater. At the time I didn't know I was upside down – I was disorientated.

"My biggest priority was to get the hell out of there and I was confident I could do it. I could see the door handle I had opened.

"But I *was* a bit anxious...

"I pushed off the cabin wall towards the door, and made my way through it, careful not to be snagged. My life jacket inflated during this process. In a few seconds, I was out.

"Immediately after getting out of the plane, I was standing on the wing of the upside-down aircraft. I climbed up the belly to the highest point on the tail. Along the way, I got my boot caught in the flaps. It was a reminder to make sure I didn't get caught up with the aircraft as it sank.

// Photos supplied by pilot, 'Laurence'.

"The nose remained the lowest point, and the tail pointed into the air. I had hoped I could sit on the tail as she floated for a while, but this was short-lived. The plane was steadily sinking, and within about four to six minutes, it was entirely under water.

"Throughout this, I managed to hold on to my phone. My phone dialled 111 automatically on impact, but I could not get a steady line for other calls.

"I got a couple of texts out to my partner saying, I was in the water but I was okay."

I could hear each one coming

"My plan now was to keep as warm as I could, stay floating and focus on the first 20 minutes. I don't like swimming on the best of days.

"I was on my back, and I began kicking and heading backwards into the waves, so I would have less water over my face.

"I was hoping rescue services would get an updated position from my SOS device.

"I've spent some time at sea, and I estimate the swell and chop was 1.5 metres with breaking whitecaps. Later, I found this aligned with the views of the harbourmaster and coastguard.

"The wind was 15-20 knots. Every couple of minutes a wave would crash over my head, covering my face with water.

"I could hear each one coming, which gave me a warning to sneak a breath in. Towards the end of the hour I was in the water, I believe the wind was decreasing. This ties in with the sun setting and the reported 10 knots from the pilot of the rescue helicopter.

"The first 20 minutes rolled into the next. I was starting to cool down, and I fought the urge to stop kicking[1].

"I reached back behind my head to ensure the satellite communicator was still attached, but instead found some material. It was a spray hood with a clear screen, which was part of my life jacket.

"I pulled this over my head and it covered my face. I tucked my arms inside it.

"This was great for two reasons – I had less water over my face from the whitecaps, and it had a bright hi-vis strip with reflectors that I could wave around once the helicopter was nearby. As required by Part 91, I also had a water-activated light attached to my life jacket.

"My game plan remained the same, keep kicking to stay warm and open the hood intermittently to hear or see the helicopter."

Feeling extremely small

"After about 50 minutes in the water I was cold, but I saw the Nelson Marlborough rescue helicopter heading straight at me from the expected direction.

"I lifted the hood and waved it around. I was confident they were right on the money and had me in sight, but I soon felt extremely small in between the whitecaps and swell.

"The helicopter nearly went right over me. They made a left turn after about half a mile and began their grid search. I continued my plan of waving with the spray hood and kicking.

"While the rescue helicopter was searching, I looked up to see what I thought was a commercial jet doing low passes. I now know it was the air force looking for me."

"After another three or four passes in about 10 minutes, the rescue helicopter descended and turned to me."

"You're welcome"

"I was massively relieved, but also hypothermic, and I can't be certain of my recollections and specific details after that.

"My memory is that the helicopter hovered just downwind of me, and a crew member was lowered down on the winch.

"She entered the water and swam towards me. I thanked her for coming, and she replied, 'You're welcome'. I asked if I could hold on to her and she said, 'Of course'." »

// Aircraft before salvage. Photo supplied by pilot, 'Laurence'.

1 CAA and FAA medical advice is that it's best to stay in a foetal position to conserve body heat.

Sinking like a stone

"There was a bit of a struggle to get the sling over my life jacket. The crew member deflated my life jacket, and this let the sling secure me fully.

"However, without the buoyancy of the life jacket, I sank like a stone and was a complete dead weight for the crew member.

"I was still locked on to her but there was slack in the winch rope. I took a good breath and did my best not to drag her under.

"She was extremely competent and remained holding me afloat even with me pulling her down. After a couple of minutes of this, the crew member gave a thumbs up to the helicopter above us.

"The helicopter was 75-100 feet away and the winch was slack, but then the helicopter moved towards us and the winch pulled us up out of the water.

"We got up to the skid and I fell into the floor of the helicopter. I eventually got up and onto a seat. From here my memory gets very fuzzy. I don't remember much of the flight."

Butt-naked atop the hospital

The helicopter landed at Nelson Hospital around 9pm. Laurence thanked the crew and climbed out of the aircraft.

He says the hospital team that met him off the helicopter were "phenomenal". They helped him out of his wet clothes, and – despite feeling exposed due to his "butt-nakedness on top of the hospital" – he says he was "unbelievably" grateful for their care and expertise.

As the hypothermia set in, he convulsed in his hospital bed as a medical team put on his oxygen mask.

But, remarkably, apart from some bruising on his lungs, Laurence was uninjured in his extraordinary ordeal.

// "She [the helicopter crew member] entered the water and swam towards me. I thanked her for coming, and she replied, 'You're welcome'."

Photo courtesy of Nelson-Marlborough Rescue Helicopter Trust.

WHAT LAURENCE LEARNED

"Engine management and attempting to start turned out to be futile, but when the issues occurred there was no panic because I followed the basic steps. I believe running through these steps consistently while flying makes this an automatic action.

"It's important to immediately talk to a station that's monitored, so your emergency call is heard, identified and received. Once I did this, I knew help would be coming. This gave me the hope I needed to make the next part easier.

"I recommend you explore your SOS device on the couch at home, so using it becomes a logical, easy process and doesn't induce panic. The SOS device was unbelievable, once I set it off.

"The satellite communicator's response team kept my father and partner constantly updated with detailed information. I will factor this device in for life.

"My life jacket was one of the key reasons I survived the incident. The spray hood was a lifesaving feature, by stopping water splashing my face and having hi-vis strips that helped the helicopter crew spot me.

"I also put a water-activated strobe light on the life jacket, which would have been good if the rescue had to continue after dark.

"I always fly with the life jacket crotch straps clipped in when flying over water. This is a small step on the ground, but it would be very difficult to do if gliding into the water.

"I'm unsure of the true science behind remaining in a ball in the water versus kicking my legs, but if I had to do it again, I would choose to kick.

"I believe this had two benefits – it kept my heart rate, blood pressure and core temperature up. It also gave me a mission to complete as I was aimed at the closest shore, about seven miles away.

"I knew I wouldn't get there due to the swell and waves, but it also kept me closer to the initial impact and last reading of the plane's emergency locator transmitter (ELT).

"Having a plan, with steps I could influence, was another key in my head. Remaining logical was a top priority – I didn't feel particularly panicked.

"I had a few steps to follow, and I focused on them – get the plane down as softly as possible, get out and free from the aircraft, stay afloat, and stay warm (have a mission, kick, and look for the helicopter).

"I grabbed my phone before I ditched, because another form of communication would be useful, and I could still grab the controls for impact."

WHAT LAURENCE WOULD DO DIFFERENTLY

"I had three other life jackets in the plane, but two were in the baggage compartment. Ideally, I would have kept these in the back seat and grabbed them before the impact.

"If my life jacket had not worked or had torn, having spares would have saved my life. I would have struggled to float without a life jacket.

"My phone dialled 111 automatically on impact. That was great, but the call kept dropping off and I couldn't answer incoming calls because I couldn't slide the wet screen to pick up the calls.

"A waterproof marine radio clipped to the life jacket would have been more useful – I would have had updated information on what was unfolding at their end, and how long I had to be in the water. And a diving 'safety sausage' would have made it easier for rescuers to see me."

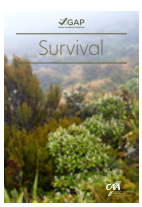
Laurence didn't update his ELT details with the Rescue Coordination Centre when he bought the plane.

"This meant one extra step for the RCCNZ, as they had to call the listed previous owner and get my information. That meant a delay I could well have done without!"

The engine

Laurence's aircraft has since been salvaged and the engine is awaiting examination. *Vector* will bring you up-to-date in a future issue if the cause of engine failure can ever be determined.

// NOW READ...



…the *Survival* GAP booklet at **aviation.govt.nz/education**. You can download a copy from there or order your own free printed copy via our online order form.

A PILOT'S BEST FRIEND OR WORST ENEMY?

iStock.com/Timothee Desmarets

How you implement tech in the cockpit determines its usefulness and safety.

In April 2011, a Dyn'Aéro MCR01 Club flew into the side of Mount Duppa near Nelson in poor weather conditions.[1]

The impact was not survivable.

The pilot had fitted the aircraft with a sophisticated but uncertified GPS moving map device, in which they likely placed a high degree of faith.

However, due to an error with the software, the moving map display showed the height of Mt Duppa as 1717 feet, not the correct 3717 feet.

Secondly, poor resolution data used by the system resulted in all displayed terrain to be 600ft lower than the actual terrain.

Both software issues, combined with the pilot's high level of reliance on this technology, were contributing factors to the accident.

Problems with technology may arise when the flood of additional information overwhelms a pilot's fundamental disciplines of looking out and listening, says CAA Flight Examiner Aaron Pearce.

"Pilots might think they have it covered with moving maps, ADS-B and ACAS, but that's only part of the picture."

A real risk is pilots becoming fixated on using a device or interpreting its display, to the detriment of their situational awareness, lookout, or even of flying the aircraft.

"The aircraft keeps moving forward while you're looking inside rather than out," Aaron says.

"Learning to incorporate the ADS-B display into the scan, is another vital component. It needs to become a part of the general instrument scan without degrading the lookout.

"We should still be eyes outside the cockpit more than 90 percent of the time.

"Flying in visual meteorological conditions is underpinned by the see and avoid principle, a well-developed and practised lookout, standard procedures, and standard airmanship – with or without tech.

"Pilots and instructors need to focus on getting the fundamental skills of lookout and a 'mental moving map' going, *before* introducing any supplemental technology.

"A listening watch, audible cues, or a target on a screen may give you the prompt to focus and enhance your lookout in a particular direction or area."

CAA Flight Examiner Katrina Witney agrees that any change in the display, from paper to digital, needs to be incorporated into the VFR scan.

"Any introduction of non-essential equipment into the cockpit should be used with caution.

"It should never be fitted to the aircraft so as to block the pilot's visual field."

Aaron Pearce adds that pilots should know when to put such technology aside.

"That's when it gets busy or when it's potentially a distraction from actually flying the machine.

"For example, the circuit environment is often not the place to be using ADS-B for separation.

"Eyes need to be up and outside, visually ensuring separation from other traffic.

"Flying the aircraft and maintaining separation from others must always come first. In visual meteorological conditions, this means eyes are outside."

And it's not just pilots straight off their PPL who need to be wary, says Aaron.

"The pilots who learned to fly 30 years ago are now incorporating tech into their flying.

"We're not just talking about tablets or moving map devices either – more and more aircraft have tech built in.

"A lot of it is cheap and relatively easy to use.

"But pilots should remember that technology fails and sometimes, especially with non-certified systems, you might not know it's failed. »

We should still be eyes outside the cockpit more than 90 percent of the time.

1 Aircraft accident report CAA occurrence number 11/1504

» "There's no design requirement for uncertified systems to self-monitor or give a warning in the case of failure."

Katrina Witney says any technologically enhanced aircraft needs additional type rating 'differences' training.

"If someone holds a C172 type rating in an analogue aircraft and wishes to fly a C172 equipped with a glass cockpit, they should be taught the differences, including how to handle emergencies and failures, prior to solo flight."

Pushing the limits of safety

Aaron Pearce says pilots need to be wary about technology causing them to push the limits of safety.

"It can give pilots a false sense of confidence. It lures them into situations they would never go normally.

"It can lead them into lower and lower visibility – well below their personal minimum, or even getting on top of a solid layer of cloud while VFR.

"The technology might put you in a place you don't have the skills to be."

Getting the better of tech

The best thing a pilot can do if they're new to technology in the aircraft, is to receive private instruction, says Aaron.

"Not all instructors are going to know about the piece of tech you have, so you must seek out the right person.

"For example, an angle of attack indicator in GA aircraft is a great and simple bit of kit.

"But unless it's correctly calibrated, and properly taught to and understood by the pilot, it could create more trouble and risk than flying without it."

Technology in the aircraft, including apps, should be understood first on the ground, before a pilot gets airborne.

"If your aircraft has a glass cockpit, invest in a ground power supply so you can sit in it with the systems running before you're in the air," says Aaron.

"That way, you can learn how to use and trouble shoot the tech front to back.

"If you know how to troubleshoot it on the ground, if anything happens in the air it's not so much of a distraction."

Even knowing how your aircraft's attitude affects the fuel warning reading is vital.

"Going to app developer roadshows, watching app lessons on YouTube™, and keeping the apps up-to-date are all things I'd recommend.

"Knowing the technology inside and out could save you from an embarrassing outlanding or, at the very least, a stressful diversion."

// Moving map displaying height for Mt Duppa as 1717 feet. The correct reading should have been 3717. The error was due to an overlap in the way the digital map was displayed, cutting off a fraction of the original map, making the 3 look like a 1. (The safety investigation noted that the avionics manufacturer swiftly corrected the display errors thought to have contributed to the accident.)

Source: Aircraft accident report CAA occurrence number 11/1504.

Photo courtesy of RCCNZ.

SWITCHED ON

The RCCNZ says a lot happens behind the little red ELT switch, which you may not fully appreciate.

An international system of satellites keep watch over the globe day-in and day-out from an altitude of 20,000 kilometres.

Ever watchful, they monitor constantly for distress signals and send that information to rescue coordination centres (RCCs) around the world.

Wreckage located

In early 2025, a number of these satellites detected the signal of an aircraft's emergency locator transmitter, or ELT, from the rugged terrain of the South Island of New Zealand.

Within 60 seconds, the Rescue Coordination Centre – RCCNZ[1] – in Lower Hutt had received the alert. Search and rescue officers assessed the location of the ELT and its registration details.

Normally, an ELT can be relied on to provide an exact position, but this is not always the case. In this instance, the satellites could only determine a location with a margin of error of 30 kilometres from where the ELT was transmitting. »

There are a few reasons why a satellite cannot pinpoint the location of an active ELT, including:

- the aircraft could have been in a hangar and the roof was blocking the signal, known as 'shielding'. This could imply the activation of the ELT was in error, usually when an aircraft is in maintenance.
- the aircraft was in flight and wasn't able to generate an accurate position. There could be an in-flight emergency or the ELT was simply activated in error.

The most concerning possibility is that the aerial or ELT could have been damaged during an accident or forced landing. An ELT is designed to activate on impact but the unit itself can be damaged.

1 The Rescue Coordination Centre New Zealand (RCCNZ) is New Zealand's national search and rescue organisation and is operated by Maritime New Zealand.

All ELTs and other distress beacons are required to be registered with the national distress beacon database. Officers check the database before dispatching a rescue team.

In the above instance, the ELT was registered to a commercial helicopter operator. Search and rescue officers called the designated contacts in the registration database, and they quickly advised that the aircraft was on a commercial job with one pilot and one passenger.

The commercial operator was also able to provide RCCNZ with tracking information.

This allowed RCCNZ to send a rescue helicopter with appropriate medical aid to the scene. The passenger had also activated a personal locator beacon (PLB) which was a valuable backup to the aircraft's ELT, and led rescuers straight to the scene.

Both on board had sustained moderate injuries.

The response by the operator and RCCNZ was smooth and timely, but this isn't always the case. This incident could have been very different.

"An alarming number of organisations and individuals have incorrect or outdated registration information for their aircraft," says Search and Rescue Officer Tom Rae.

"Sometimes a call is made to a person who left the organisation several years before. In some cases, with private aircraft, we've called the distress contacts to find the aircraft has changed hands several times over the years without the ELT registration being updated."

Fortunately, most ELT activations are during maintenance or are inadvertent, but having incorrect registration information is, according to Tom, "a disaster waiting to happen".

He asks, "If an accident happened to your aircraft, does RCCNZ have the correct contact details to respond in a quick and accurate fashion?"

Half of all distress beacons are registered incorrectly

In the last 10 years, nearly 9000 distress beacons of all types have been activated in New Zealand and its surrounding air and sea. This number includes more than 1500 ELTs.

RCCNZ has found only 51 percent of all distress beacons are correctly registered when they're activated, including ELTs. That means when the alarm sounds in the RCCNZ's operations room, search and rescue officers can't access the information they need without conducting an investigation.

"Your distress contacts can inform the RCC of important details, such as the number of people on board, aircraft type, the route taken, any hazards associated with the aircraft, or medical needs of those on board."

Your emergency contacts can usually also advise if the ELT has been inadvertently activated. ELTs can be triggered without you knowing, such as during a hard landing, or an equipment malfunction.

"RCCNZ needs to be able to call you or your emergency contact immediately to get you to check if that's the case," says Tom.

Not only could it save your life, you could save someone else's.

"Dedicated aeromedical aircraft and dedicated search and rescue aircraft are limited in number.

"So RCCNZ could be looking for you, when actually, you're safe and sound in a café somewhere! The aircraft we use to look for you – if we can't establish the reason for an ELT activation – could otherwise be used to provide life-saving help to someone else genuinely in need.

"You don't want to be that person."

When you buy or sell an aircraft, the ELT is not transferred into the new owner's name, so, as the new owner, this is your responsibility.

The new owner must also nominate some trusted distress contacts. Make sure everyone knows their obligations when this transaction occurs. Visit beacons.org.nz to register, check, or edit your registration. It's free.

Knowing is half the battle

"If your ELT activates, it might provide only a poor position due to impact damage or terrain shielding. Having another safety net – a PLB, your own flight following, or a SARtime – improves your survivability chances.

"We have a lot of advanced tools and experienced searchers, but as the saying goes, 'knowing is half the battle'," says Tom Rae.

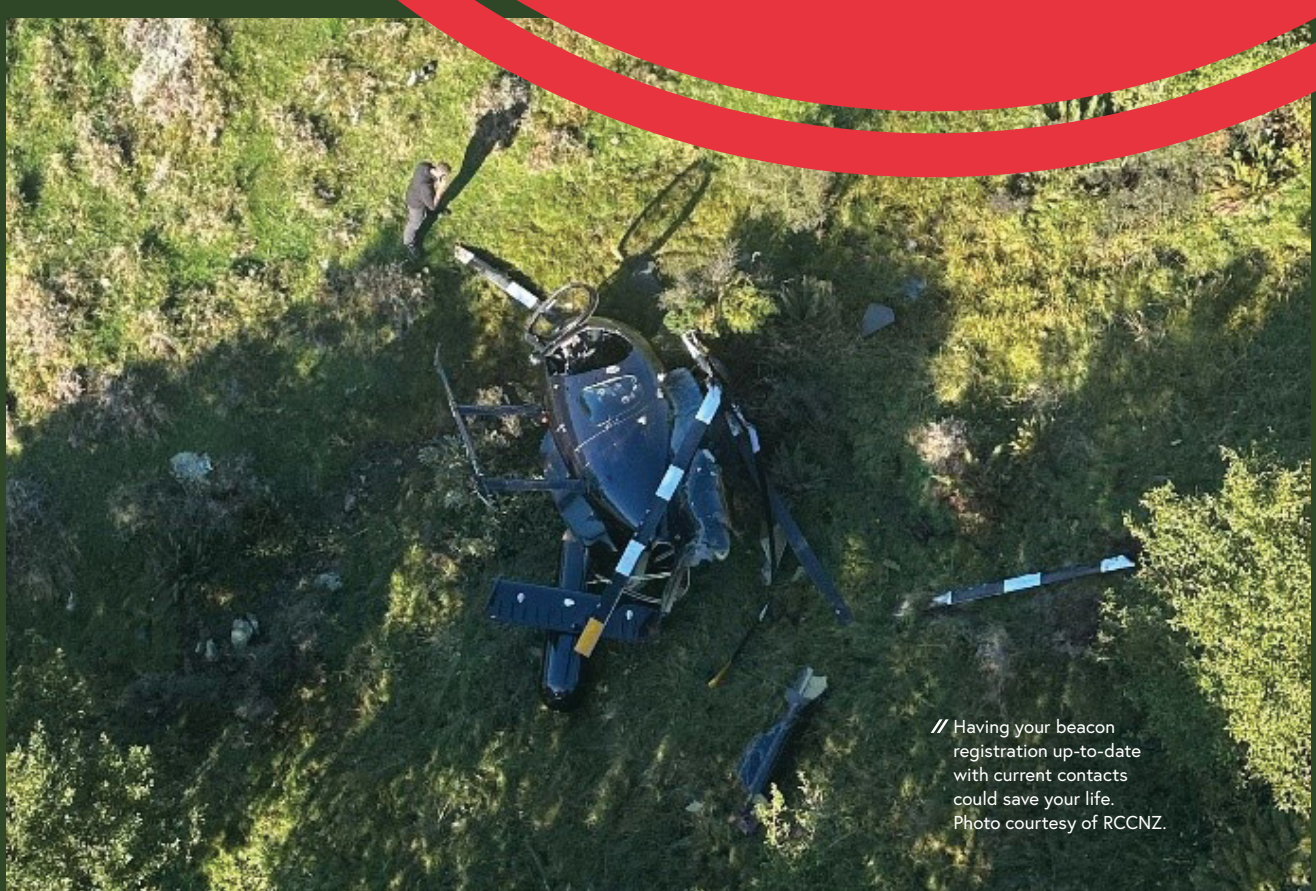
// MORE INFORMATION

Read about how a pilot and his passenger had help within minutes after their aircraft crashed in 2021, partly because the PLB registration was up-to-date. That's "The value of preparedness" (*Vector*, Autumn 2022).

Go to **aviation.govt.nz/vector**.

ACTIONS YOU CAN TAKE

- Save the RCCNZ's number to your phone now – **04 577 8030** – and call immediately if your ELT activates, for any reason.
- Make sure you regularly update your ELT or PLB registration.
- If you're an aircraft owner, now is a good time to check your details are correct. If you manage an aero club, all aircraft beacon registrations should be checked frequently, especially if there's been a turnover of staff.
- Not only is it good airmanship to keep your registration up-to-date, but, as an aircraft operator, you're required under CAR 91.529 *Aircraft emergency location system (AELS) and ELT* to inform RCCNZ of your relevant emergency contact details.
- If you aren't sure whether your registration is correct, contact **beacons@maritimenz.govt.nz** or call **0800 406 111** during office hours.



// Having your beacon registration up-to-date with current contacts could save your life. Photo courtesy of RCCNZ.

Training in MARGINAL WEATHER

A student pilot describes his first flight in windy weather with patchy rain. What does he learn?

With his PPL test just a week away, Tim Orlando-Reep and his instructor agreed it was time to take the plane up in marginal weather.

"Learning to fly in less-than-ideal conditions – when it's not just calm, fair and everything's rosy – is an important part of the syllabus," Tim says.

"It's good to familiarise yourself with imperfect conditions such as turbulence, to get used to how it feels."

As Tim drove to Te Kowhai aerodrome outside Hamilton that morning, patchy showers were flurrying through.

"I really wanted to get up, but looking at the forecast on PreFlight, I expected us not to get off the ground."

Tim's instructor, Bill Henwood of Classic Cubs Flight Training, says there needs to be value for the student's learning, from flying in marginal weather. The student's decision-making process on whether to fly is a core part of that.

"You're trying to help the student develop judgement about these conditions and whether it's suitable for them to fly. It's hard for them to judge that until they've experienced flying in less-than-perfect conditions. They must consider the legal limits, the comfort limits, and the aircraft limits. It's a balancing act."

Perfectly imperfect flying conditions

Towards lunchtime, the front passed through Te Kowhai. With the sky clearing but the wind increasing, the conditions were perfect for an imperfect flying experience.

"I asked Bill if he was happy to fly," Tim says. "I added that, if I was by myself, with my limited experience, I would wait.

"Bill talked through what to look for in marginal conditions and how, using his experience, he was satisfied we would be safe to get airborne and assess the situation from 1000ft. Bill's got better judgement on how fast weather travels, so he put my concerns at ease. Before we took off, we decided that staying in the circuit would give us the option and time to return to base if we felt we needed to."

After their run-ups, Tim and Bill were poised to take off. "On one side, visibility was closed out with heavy cloud," Tim says. "On the other side there was an area of fine weather, and I could see the top of the ridgeline.

"We took off and stayed in the circuit, within a nautical mile of the aerodrome, for one lap. We had height of 1100ft, and I could then see that the showers were localised. I could see behind and around them and see them coming across the landscape. I was able to judge whether they were moving fast or slow."

Airborne view shows more options

"Higher up, you get a better idea of how big these showers are," Tim says, "and we had an escape plan – we could head north, south, or east and wait there for 10 minutes until a shower passed. When you're airborne in these conditions, you're able to see options you can't see when you're on the ground."

Tim and Bill headed west along the ranges, staying at a height sufficient to avoid the worst of the turbulence. Tim practised steep turns and stalls and, once they reached the windward side of the ranges, he said it was informative to understand the effect of turbulence on those manoeuvres.

"I realised there's a heavy mental workload in marginal conditions. It was good to have some exposure to it with Bill beside me because, as a qualified pilot, you won't always fly in fair weather."

What Tim learned

After a few laps in the circuit, Tim and Bill returned to the aerodrome to debrief the lesson.

"By being exposed to marginal weather, I'll have more confidence if I end up in that situation," Tim says. "It's important not to panic, and by experiencing less-than-ideal weather as a student, I've learned to think more clearly and make better decisions.

"I don't think the experience will make me overconfident in terms of choosing to fly in marginal weather, though. It's not comfortable flying in those conditions, and as a freshly trained pilot there's still a lot of caution there. My biggest takeaway from this experience is if you're unsure, don't go."

A mainlander's perspective

Nelson-based ATPL and A-category instructor, Mark Woodhouse, and his students are no strangers to the vagaries of marginal weather. Anyone who flies in the South Island knows that the far-reaching influence of the Southern Alps, and the effects of northerly and southerly cold fronts, can rapidly create dramatic and hazardous flying conditions.

But, Mark says, even a minor change in the weather can present a challenge.

"All it needs is light rain on the windscreen, and it can seriously change a pilot's visibility and awareness."

Mark says it's vital the instructor has the right attitude towards flying in marginal weather.

"They must be confident the conditions are within their own capability. They should then consider each student individually and look for opportunities to guide them through their first one or two marginal weather flights. Start with conditions where there's the odd patch of drizzle around – that's still a heck of a challenge for a new student."

The flip side of this, he says, is when flight instructors take students up in only good weather, because they're targeting a performance level within the available flying hours. The problem with that is the student then has no learning to fall back on when they hit bad weather later.

"I celebrate opportunities to take a student up in marginal weather, even for just one circuit," Mark says.

"It's a chance to say to a student, 'you don't want to be here – this is hard'."

Mark firmly rejects the suggestion that taking students flying in marginal weather makes them prone to taking risks with the weather in future.

"A pilot whose attitude leads them to fly in conditions beyond their limitations will find a way to get into trouble – whether it's bad weather, low fuel, flying too close to the end of the day, and so on.

"In my early days as a student pilot, one of my flying instructors passed a comment that resonated with me and has stayed with me – 'It's okay to give it away'.

"Based on that tip, I've decided not to fly, or to divert, many times over the years.

"The first time it happens, it's hard to make that admission to yourself. But it gets easier. Instructors should look for opportunities to guide their student through their first couple of diverts. Then the student has that experience to fall back on."

Advice to other students

"With your instructor, it's a great time to practise staying calm under pressure," Tim says.

"The more you practise flying in different weather conditions, the more comfortable and skilled you'll become."

iStock.com/Jim Glab

Letter to *Vector*

Duplicate Inspections

I'm writing with regard to the duplicate inspections article in the Autumn 2025 issue of *Vector* magazine.

Over the years, I've conducted an unofficial survey, and I can say that a significant number of engineers will, when asked what the most fundamental and important part of a duplicate inspection is, identify the correct safety locking, installation of split pins, and so on.

It has been my experience that when pressed to identify something even more important, people often have to be prompted to say 'checking that the flight or engine control moves correctly in the direction commanded'.

Also of importance is that part two of the duplicate inspection is conducted independently. It's inappropriate that this person be told what to do!

For example, "You just need to see that there is a split pin in this bolt and that the turnbuckles are safely locked".

The use of ribbons to identify these parts which have been worked on is, in my view, a good idea – so long as the person doing part two of the duplicate understands that simply checking these items is probably not enough.

Pat Scotter
Rangiora

Vector notices

IT'S REGISTRATION FEE AND PARTICIPATION LEVY TIME AGAIN

If you're an aircraft owner, you'll soon be receiving an invoice, dated 1 July 2025, for the annual registration fee and participation levy.

Are you changing, selling, or purchasing an aircraft? You need to make sure:

- you've completed and signed the change of possession application form
- paid the application fee
- that the application has been actioned by us –

– all before the invoicing date of 1 July 2025.

Otherwise, the invoice has to be paid by the registered owner as at 1 July. Please include this requirement in your sale/purchase negotiations. Non-payment may result in your aircraft being de-registered.

Is your aircraft damaged, or under restoration or maintenance? If your aircraft is under maintenance or repair for more than three months from 1 July 2025, you can request that the participation levy be deferred. Please complete form 24047/13. The aircraft will remain registered, and you'll be charged only the annual registration fee. The aircraft must not fly while the levy is deferred.

Is your aircraft damaged, no longer airworthy, or you're exporting it? Please complete form 24047/05 and submit it to us to remove the aircraft from the aircraft register before 31 July. If it's deregistered after this date, the invoice for the levy and fee will still need to be paid.

To find both forms, go to **aviation.govt.nz/forms**.

Any questions, email **aircraftregistrar@caa.govt.nz**.

Note that levies and fees will increase as at 1 July 2025. To find out more, go to **aviation.govt.nz/fees**.

RESEARCH INTO LAME SHORTAGE NEEDS YOUR HELP

Southern Institute of Technology research is examining how organisations can be helped to address the projected shortfall of aircraft maintenance engineers in New Zealand by 2035.

If you're currently working in the aircraft maintenance field, your insights could help shape workforce strategies and long-term sustainability across the industry.

Scanning the QR code below will take you to an anonymous and confidential 15-minute (approx.) survey.

If you work in HR or management, you have an opportunity to take part in a follow-up interview.

The research is approved by SIT's Human Research Ethics Committee, and all data collected will remain anonymous and confidential.

You can request a copy of the final report, or get any other information, by emailing: **2023000604@student.sit.ac.nz**

AVIATION SAFETY ADVISORS

Contact our aviation safety advisors for information and advice. They regularly travel around the country to keep in touch with the aviation community.

Carlton Campbell – Operations, South Island
027 242 9673 / carlton.campbell@caa.govt.nz

Richard Lane – Airworthiness, South Island
027 269 5796 / richard.lane@caa.govt.nz

Pete Gordon – Operations, North Island
027 839 0708 / peter.gordon@caa.govt.nz

John Keyzer – Airworthiness, North Island
027 213 0507 / john.keyzer@caa.govt.nz

OCCURRENCES DASHBOARD

These are the number and type of occurrences reported to the CAA, 1 January 2025 to 31 March 2025 (Q1) compared with 1 January 2024 to 31 March 2024.

Occurrence type

Aerodrome incident
Q1 2024 **44** Q1 2025 **45** ↑

Aircraft accident
Q1 2024 **24** Q1 2025 **10** ↓

Airspace incident
Q1 2024 **610** Q1 2025 **773** ↑

Aviation-related concern
Q1 2024 **491** Q1 2025 **434** ↓

Bird strike
Q1 2024 **569** Q1 2025 **506** ↓

Dangerous goods
Q1 2024 **14** Q1 2025 **17** ↑

Defect
Q1 2024 **267** Q1 2025 **94** ↓

Hang glider accident
Q1 2024 **20** Q1 2025 **16** ↓
(1 hang glider, 15 paraglider accidents Q1 2025)

Navigation installation occurrence
(for example, a transmitter failure)
Q1 2024 **13** Q1 2025 **4** ↓

Operational incident
(for example, encountering severe icing)
Q1 2024 **643** Q1 2025 **488** ↓

Parachute accident
Q1 2024 **2** Q1 2025 **1** ↓

Promulgated information occurrence
(for example, inaccurate weather information)
Q1 2024 **9** Q1 2025 **5** ↓

Total occurrences
Q1 2024 **2706** Q1 2025 **2393** ↓

The number of occurrences in each category sometimes increase after we publish each dashboard. That's because some occurrences from that quarter are reported after the quarter ends.

ACCIDENT BRIEFS

More accident briefs can be read on **aviation.govt.nz/safety** or scan this QR code.

Robinson R22 Beta	
Date and time:	07-Mar-2024 at 08:20
Location:	Koranga Station Farm, Matawai
POB:	1
Nature of flight:	Private other
Pilot licence:	Private Pilot Licence (Helicopter)
Age:	33 yrs
Flying hours (total):	1030
Flying hours (on type):	680
Last 90 days:	30

On landing in a farm paddock, the pilot felt the helicopter was settling too much because the ground was soft. He decided to reposition the machine but as soon as he tried to lift off, the back of one skid remained stuck and the helicopter immediately rolled over before he could react to the situation. He was not injured.

CAA occurrence number 24/1831

Zenair CH701 SP	
Date and time:	10-Jul-2023 at 04:00
Location:	Te Anau
POB:	2
Damage:	Substantial
Nature of flight:	Private other
Pilot licence:	Private Pilot Licence (Aeroplane)
Age:	57 yrs
Flying hours (total):	1200
Last 90 days:	3

On landing, the PIC who was flying from the right-hand side, lost directional control of the aircraft which then veered off the runway and struck a fence on the aerodrome boundary. The pilot reported that it seemed they had no rudder control, as it felt like the rudder pedals had locked up. The aircraft was also not fitted with dual toe brakes, which may have assisted with directional control, had they been fitted. Contact with the fence caused significant damage to the wing's leading edges and to the nose undercarriage. There were no injuries. An inspection of the aircraft following the accident failed to find any defects with the rudder control system.

CAA occurrence number 23/4824

Tecnam P2008 JC	
Date and time:	05-Nov-2023 at 08:15
Location:	Oamaru
POB:	2
Damage:	Substantial
Nature of flight:	Training dual
Pilot licence:	Commercial Pilot Licence (Aeroplane)
Age:	21 yrs
Flying hours (total):	390
Flying hours (on type):	42
Last 90 days:	42

During a dual lesson, the student was practising a glide approach. At that time there was an approximate 9-knot headwind with a 7-knot crosswind component. During the landing flare, and just before touchdown with the speed at approximately 49 knots, a decision to go around was made. The student applied full power and raised the nose, however, the aircraft rolled to the left and the left wing hit a fence post. The aircraft descended further, landing on all three wheels, went through the fence, and rolled to a stop. The student and instructor shut down the aircraft and sought assistance to secure it. There were no injuries.

CAA occurrence number 23/8064

ACCIDENT NOTIFICATION

24-hour 7-day toll-free telephone

0508 ACCIDENT (0508 222 433)

aviation.govt.nz/report

REPORT SAFETY AND SECURITY CONCERNS

Available office hours (voicemail after hours)

0508 4 SAFETY (0508 472 338)

isi@caa.govt.nz

For all aviation-related safety and security concerns.

GA DEFECTS

GA defect reports relate only to aircraft of maximum certificated take-off weight of 9000lb (4082kg) or less. More GA defect reports can be read on **aviation.govt.nz/aircraft** or scan this QR code.

KEY TO ABBREVIATIONS:

AD = airworthiness directive
NDT = non-destructive testing
P/N = part number
SB = service bulletin
TIS = time in service
TSI = time since installation
TSO = time since overhaul
TTIS = total time in service

Pacific Aerospace 750XL

Elevator spar

Part model:	750 XL
Part manufacturer:	Pacific Aerospace
Part number:	11-31011-1
ATA chapter:	5500
TSI hours:	149.82
TTIS hours:	7413.4

During inspection, fretting was noted at the centre elevator attachment bracket and flex noted when applying pressure to the elevator during deflection. The elevator and fitting were removed, and a spar was found to be cracked at the fitting attachment. The spar was removed and the underlying rib assembly at the attachment bracket also found to be cracked.

The cracking was located near the upper and lower radiuses of the spar directly behind the centre hinge P/N 11-31025-2 and in the ribs behind this area of the spar. The anchor nuts for the centre hinge attachment bolts are fitted to these ribs. The nature of the cracking observed in the ribs behind the spar strongly suggests that the rib failure is related to a pre-load induced during elevator assembly or repair.

While cracks of this nature should be discovered during a Check 1, a Service Letter has been issued to highlight the importance of inspecting this area. To reinforce this, a specific reference to inspecting this area of the elevator will be added to the 750XL Maintenance Manual.

CAA occurrence number 23/2792

Cessna 421C

#6 nozzle

ATA chapter:	7320

The pilot reported a differential EGT of 350 degrees Fahrenheit between cylinders 4 and 6 on the right-hand engine while at altitude.

The engineer removed the injectors for inspection and cleaning. The nozzle from cylinder 6 was found blocked with grit/sand type material. The injectors were refitted and an engine ground run was carried out. The aircraft was released to service. The engineer was unable to determine how this material would have found its way to the nozzle.

CAA occurrence number 23/3453

MBB-BK117 B-2

Power turbine governor

Part manufacturer:	Honeywell
Part number:	4-301-212-05
ATA chapter:	7100
TSO hours:	2126.3

During a ferry flight home at the end of a day's work, the #2 engine gave two compressor stall 'pops' when the collective was lowered quickly, to commence a descent. A torque split between the two engines was noted by the pilot.

The pilot matched the torque and made power changes to try and establish if there was an issue with the #2 engine. The engine appeared to be making good power with parameters similar to the #1 engine.

When the pilot landed, they performed an on-ground power check of both engines. The #2 engine was within acceptable parameters and was in line with the power checks carried out over the preceding eight days. The pilot sought advice from engineering staff and the following morning they carried out another power check. They noted that the beep range on the #2 engine was different to the #1 engine, although the engine still passed the power check. The pilot shut down the aircraft and sought further engineering advice.

While the aircraft was idling prior to shut down, without warning, the #2 engine reduced from 68% N1 to 50% N1. The pilot shut the engine down without issue and grounded the aircraft to await appropriate engineering assessment and rectification.

The engineering inspection determined a faulty Honeywell power turbine governor P/N 4-301-212-05.

CAA occurrence number 23/3040

GAP
Good Aviation Practice

UPDATED
EDUCATIONAL RESOURCES

Civil aviation rules and advisory circulars | April 2025

GAP Good Aviation Practice · CAA Civil Aviation Authority of New Zealand · Te Kāwanatanga o Aotearoa New Zealand Government

All rules and advisory circulars are available at: **aviation.govt.nz/rules**

Definitions and interpretation
- Part 1 — Definitions and Abbreviations

Procedures
- Part 12 — Accidents, Incidents, and Statistics
  - ACT2-1 — Mandatory Occurrence Notification and Information
  - ACT2-2 — Occurrence Investigation

Administration
- Part 19 — Miscellaneous Rules
  - ACI00-1 — Acceptability of Parts
  - ACI00-3 — Storage and Distribution of Aeronautical Supplies
  - ACI19-1 — Test Pilot Approvals
  - ACI00-13 — Safety Management

Aircraft
- Part 21 — Certification of Products and Parts
  - ACI00-1 — Acceptability of Parts
  - ACI00-3 — Storage and Distribution of Aeronautical Supplies
  - ACI00-5 — Parts Documentation – CAA Form One – Authorised Release Certificate
  - ACI21-1 — Product Certification – Type Acceptance Certificates
  - ACI21-1 Amdt 1 — Product Certification – Type Acceptance Certificates
  - ACI21-2 — Aircraft certification – airworthiness certificates in the Standard and Restricted categories
  - ACI21-3 — Product Certification – Airworthiness Certificates in the Special Category
  - ACI21-4 — Special Category – Amateur-Built Aircraft Airworthiness Certificates
  - ACI21-5 — Approval of modifications covering aircraft ferry fuel systems and overweight operation
  - ACI21-6 — Identification of products and parts – identification information, provision, and replacement
  - ACI21-7 — Product Certification – Type Certificates
  - ACI21-8 — Design Changes – Supplemental Type Certificate
  - ACI21-9 — Special Flight Permits
  - ACI21-10 — Experimental Flight Testing Guidance
- Part 26 — Additional Airworthiness Requirements
- Part 39 — Airworthiness Directives
- Part 43 — General Maintenance Rules
  - ACI00-1 — Acceptability of Parts
  - ACI00-3 — Storage and Distribution of Aeronautical Supplies
  - ACI00-5 — Parts Documentation – CAA Form One – Authorised Release Certificate
  - ACI43-1 — Aircraft Maintenance
  - ACI43-2 — Aircraft Empty Weight and Empty Weight Centre of Gravity – Forms CAA 2102 and CAA 2172
  - ACI43-3 — Parts Documentation – CAA Form Two – New Zealand Domestic Part Label
  - ACI43-4 — On condition maintenance
  - ACI43-5 — Engine and propeller overhaul and testing
  - ACI43-6 — Emergency equipment
  - ACI43-7 — Calibration of Compasses and Surveying Compass Swing Sites
  - ACI43-8 — Non-destructive Testing
  - ACI43-9 — Modifications, Repairs, and the CAA 337
  - ACI43-10 — Aircraft radio station – form CAA 2120, Aircraft Radio Station Equipment Approval Levels
  - ACI43-11 — Aircraft Emergency Locator Systems
  - ACI43-12 — Non-aeronautical lead acid and reconditioned batteries
  - ACI43-13 — Calibration of tools and test equipment for maintenance of aircraft
  - ACI43-14 — Standard Design Changes: Acceptable Technical Data
  - ACI43-15 — Aircraft Software Configuration Management
- Part 47 — Aircraft Registration and Marking
  - ACI47-1 — Aircraft Registration and Marking

Personnel
- Part 61 — Pilot Licences and Ratings
  - ACI61-1 — Pilot Licences and Ratings – General
  - ACI61-2 — Pilot Licences and Ratings – Student Pilots
  - ACI61-3 — Pilot Licences and Ratings – Private Pilot Licence
  - ACI61-5 — Pilot Licences and Ratings – Commercial Pilot Licence
  - ACI61-7 — Pilot Licences and Ratings – Airline Transport Pilot Licence
  - ACI61-10 — Pilot Licences and Ratings – Type Ratings
  - ACI61-12 — Pilot Licences and Ratings – Aerobatic Flight Rating
  - ACI61-13 — Pilot Licences and Ratings – Glider Tow Rating
  - ACI61-14 — Pilot Licences and Ratings – Parachute Drop Rating
  - ACI61-15 — Pilot Licences and Ratings – Agricultural Ratings
  - ACI61-16 — Pilot Licences and Ratings – Pilot Chemical Rating
  - ACI61-17 — Pilot Licences and Ratings – Instrument Rating
  - ACI61-18 — Pilot Licences and Ratings – Flight Instructor Ratings
  - ACI61-19 — Pilot Licences and Ratings – Flight Examiner Ratings
- Part 63 — Flight Engineer Licences and Ratings
- Part 65 — Air Traffic Service Personnel Licences and Ratings
  - ACI65-1 — Air Traffic Services Personnel Licences and Ratings – General
  - ACI65-2 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Controller Licences
  - ACI65-3 — Air Traffic Services Personnel Licences and Ratings – Flight Service Operator Licences
  - ACI65-4 — Air Traffic Services Personnel Licences and Ratings – Flight Radiotelephone Operator Rating
  - ACI65-7.1 — Air Traffic Services Personnel Licences and Ratings – Aerodrome Control Tower Rating
  - ACI65-7.2 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Controller Ratings – Approach Control Procedural Rating
  - ACI65-7.3 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Controller Ratings – Approach Control Surveillance Rating
  - ACI65-7.4 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Controller Ratings – Area Control Procedural Rating
  - ACI65-7.5 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Controller Ratings – Area Control Surveillance Rating
  - ACI65-8.1 — Air Traffic Services Personnel Licences and Ratings – Flight Service Operator Ratings – Oceanic Air-Ground Rating
  - ACI65-8.2 — Air Traffic Services Personnel Licences and Ratings – Flight Service Operator Ratings – Aerodrome Flight Information Rating
  - ACI65-9.1 — Air Traffic Services Personnel Licences and Ratings – Flight Service Operator Ratings – Area Flight Information Rating
  - ACI65-9.2 — Air Traffic Services Personnel Licences and Ratings – Flight Service Operator Ratings – Area Flight Information Rating
  - ACI65-9 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Services Instructor Ratings
  - ACI65-10 — Air Traffic Services Personnel Licences and Ratings – Air Traffic Services Examiner Ratings
- Part 66 — Aircraft Maintenance Personnel Licensing
  - AC66-1 — Aircraft Maintenance Engineer Licence – General
  - AC66-2.1A — Aircraft Maintenance Engineer Licence – Examination Subject 1A Aeronautical Science – Mathematics & Physics
  - AC66-2.1B — Aircraft Maintenance Engineer Licence – Examination Subject 1B Aeronautical Science – Electrical Fundamentals
  - AC66-2.2 — Aircraft Maintenance Engineer Licence – Examination Subject 2 Aircraft Engineering Knowledge
  - AC66-2.3 — Aircraft Maintenance Engineer Licence – Examination Subject 3 Aircraft Material
  - AC66-2.4 — Aircraft Maintenance Engineer Licence – Examination Subject 4 Aeroplanes 1
  - AC66-2.5 — Aircraft Maintenance Engineer Licence – Examination Subject 5 Aeroplanes 2
  - AC66-2.6 — Aircraft Maintenance Engineer Licence – Examination Subject 6 Rotorcraft
  - AC66-2.7 — Aircraft Maintenance Engineer Licence – Examination Subject 7 Piston Engines
  - AC66-2.8 — Aircraft Maintenance Engineer Licence – Examination Subject 8 Turbine Engines
  - AC66-2.11 — Aircraft Maintenance Engineer Licence – Examination Subject 11 Aviation Law
  - AC66-2.13 — Aircraft Maintenance Engineer Licence – Examination Subject 12 Avionics 2
  - AC66-2.13 — Aircraft Maintenance Engineer Licence – Examination Subject 12 Electrical Systems
  - AC66-2.14 — Aircraft Maintenance Engineer Licence – Examination Subject 14 Instrument Systems
  - AC66-2.15 — Aircraft Maintenance Engineer Licence – Examination Subject 15 Radio Systems
  - AC66-2.16 — Aircraft Maintenance Engineer Licence – Examination Subject 16 Compass Compensation
  - AC66-2.17 — Aircraft Maintenance Engineer Licence – Examination Subject 17 Human Factors
  - AC66-2.18 — Aircraft Maintenance Engineer Licence – Examination Subject 18 Lighter-Than-Air Aircraft
  - AC66-2.20 — Aircraft Maintenance Engineer Licence – Examination Subject 20 Air Law – Written
  - AC66-2.21 — Aircraft Maintenance Engineer Licence – Examination Subject 21 Air Law – Oral
  - AC66-2.30 — Aircraft Maintenance Engineer Licence – Mechanical Group Ratings
  - AC66-2.31 — Aircraft Maintenance Engineer Licence – Avionic Group Ratings
  - AC66-2.32 — Aircraft Maintenance Engineer Licence – Certificate of Inspection Authorisation (Subject D2O)
- Part 67 — Medical Standards and Certification

Airspace
- Part 71 — Designation and Classification of Airspace
- Part 77 — Objects and Activities Affecting Navigable Airspace

Rules of the air and general operating rules
- Part 91 — General Operating and Flight Rules
  - ACI91-1 — Aviation Events
  - ACI91-2 — Assignment of Mode S Address
  - ACI91-3 — Aeroplane Performance Under Part 91
  - ACI91-4 — Reduced Vertical Separation Minimum (RVSM)
  - ACI91-5 — Operation of Portable Electronic Devices (PEDs) During Flight Under IFR
  - ACI91-6 — Aircraft Technical Log
  - ACI91-9 — Radiotelephony Manual
  - ACI91-12 — Aircraft maintenance programmes
  - ACI91-13 — Night Vision Imaging Systems – Helicopter
  - ACI91-16 — Light Aircraft Maintenance Programme – Aeroplanes
  - ACI91-15 — Aeroplane Standards and Requirements – Aeroplanes at or below 5700 kg MCTOW – Non-Air Transport Operations
  - ACI91-16* — Normally Aspirated Piston Engine TBO Escalation Procedures
  - ACI91-17 — Light Hazards to Aircraft
  - ACI91-18 — Aircraft Software Configuration Management
  - ACI91-19 — Piston Engine TBO Mixed Agricultural and Other Operations
  - ACI91-20 — Guidelines for the Approval and Use of Electronic Flight Bag Devices
  - ACI91-21 — Operational Approvals – Performance-Based Navigation
  - ACI91-22 — Aircraft Refuelling and Defuelling – Fire Prevention and Safety Guidance Measures
  - ACI91-24 — Automatic Dependent Surveillance-Broadcast (ADS-B) Systems
  - ACI91-25* — Passenger Safety Briefings
- Part 92 — Carriage of Dangerous Goods
  - ACI92-1 — Dangerous Goods Training
  - ACI92-2 — Carriage of Dangerous Goods
  - ACI92-3 — Dangerous Goods Packaging Approval
  - ACI92-4 — Dangerous Goods Manuals
- Part 93 — Special Aerodrome Traffic Rules and Noise Abatement Procedures
- Part 95 — Instrument Flight Procedures – Registration
- Part 101 — Gyrogliders and Parasails, Unmanned Aircraft (including Balloons), Kites, and Rockets – Operating Rules
  - AC101-1 — Remotely Piloted Aircraft Systems (RPAS) under 25 kilograms – Operating in compliance with Part 101 Rules
- Part 103 — Microlight Aircraft – Operating Rules
  - AC103-1 — Microlight Aircraft – Operating Rules
- Part 104 — Gliders – Operating Rules
- Part 105 — Parachuting – Operating Rules
  - AC105-1 — Parachuting – Operating Rules
- Part 106 — Hang Gliders – Operating Rules
- Part 108 — Air Operator Security Programme
  - AC108-1 — Air Operator Security Programme

Drug and alcohol management
- Part 99 — Drug and Alcohol Management Plans (DAMPs)
  - ACI99-1 — Drug and Alcohol Management Plans (DAMPs)

Safety management
- Part 100 — Safety Management
  - ACI100-1 — Safety Management

Certificated operators and other flight operations
- Part 102 — Unmanned Aircraft Operator Certification
  - ACI102-1 — Unmanned Aircraft – Operator Certification
- Part 115 — Adventure Aviation – Certification and Operations
  - ACI99-1 — Drug and Alcohol Management Plans (DAMPs)
  - ACI100-1 — Safety Management
  - ACI15-1 — Adventure Aviation – Operator Certification
  - ACI15-2 — Adventure Aviation – Hot Air Balloon Operations
  - ACI15-3 — Adventure Aviation – Parachute Drop – Aircraft Operations
  - ACI15-4 — Adventure Aviation – Tandem Parachute Operations
  - ACI15-7 — Adventure Aviation – Special Aircraft Operations
  - ACI15-8 — Adventure Aviation – Microlight Aircraft Operations
- Part 119 — Air Operator – Certification
  - ACI00-3 — Internal Quality Assurance
  - ACI99-1 — Drug and Alcohol Management Plans (DAMPs)
  - ACI100-1 — Safety Management
  - ACI19-1 — Air Operator Certification – Part 119
  - ACI19-2 — Air Operations – Fatigue of Flight Crew
  - ACI19-3 — Air Operator Certification – Part 135 Operations
  - ACI19-4 — Passenger, Crew and Baggage Weights
  - ACI19-5 — Aircraft maintenance programmes
- Part 121 — Air Operations – Large Aeroplanes
  - ACI00-3 — Internal Quality Assurance
  - ACI21-1 — Extended Diversion Time Operations and Polar Area Operations
  - ACI21-4 — The Training and Assessment of Human Factors and Crew Resource Management
  - ACI21-6 — Occupancy of Emergency Exit Rows
  - ACI21-7 — Ditching – Techniques, Hazards, and Survival
- Part 125 — Air Operations – Medium Aeroplanes
  - ACI25-2 — Ditching – Techniques, Hazards, and Survival
- Part 129 — Foreign Air Transport Operator – Certification
- Part 133 — Helicopter External Load Operations
- Part 135 — Air Operations – Helicopters and Small Aeroplanes
- Part 137 — Agricultural Aircraft Operations
  - ACI99-1 — Drug and Alcohol Management Plans (DAMPs)
  - ACI100-1 — Safety Management

Certificated organisations and agencies
- Part 109 — Regulated Air Cargo Agent – Certification
  - AC109-1 — Regulated Air Cargo Agent – Certification
- Part 140 — Providers of Aviation Security Services
  - ACI00-3 — Internal Quality Assurance
  - ACI99-1 — Drug and Alcohol Management Plans (DAMPs)
  - ACI140-1 — Aviation Security Service Organisations – Certification
- Part 141 — Aviation Training Organisations – Certification
  - ACI00-3 — Internal Quality Assurance
  - ACI99-1 — Drug and Alcohol Management Plans (DAMPs)
  - ACI100-1 — Safety Management
  - ACI141-1 — Aviation Training Organisations – Certification
- Part 145 — Aircraft Maintenance Organisations – Certification
  - AC00-2 — Storage and Distribution of Aeronautical Supplies
  - AC00-3 — Internal Quality Assurance
  - AC00-5 — Parts Documentation – CAA Form One – Authorised Release Certificate
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC145-1 — Aircraft Maintenance Organisations
  - AC145-2 — Technical Arrangement – Maintenance (TA-M) between New Zealand and Singapore – Advice for Aircraft Maintenance Organisations (AMOs)
- Part 146 — Aircraft Design Organisations – Certification
  - AC00-3 — Internal Quality Assurance
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC146-1 — Aircraft Design Organisations
- Part 147 — Maintenance Training Organisations – Certification
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC147-1 — Maintenance Training Organisations – Certification
- Part 148 — Aircraft Manufacturing Organisations – Certification
  - AC00-2 — Storage and Distribution of Aeronautical Supplies
  - AC00-3 — Internal Quality Assurance
  - AC00-5 — Parts Documentation – CAA Form One – Authorised Release Certificate
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC148-1 — Aircraft manufacturing organisations
- Part 149 — Aviation Recreation Organisations – Certification
  - AC00-3 — Internal Quality Assurance
  - AC100-1 — Safety Management

Aerodromes
- Part 139 — Aerodromes – Certification, Operation and Use
  - AC00-3 — Internal Quality Assurance
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC139-2 — Aerodrome Certification Exposition
  - AC139-3 — Aerodrome Inspection Programme and Condition Reporting
  - AC139-4 — Aerodrome Rescue and Firefighting
  - AC139-5 — Operational Safety During Works on Aerodromes
  - AC139-6 — Aerodrome Design Requirements:
    - All Aeroplanes Conducting Air Transport Operations
    - All Aeroplanes Above 5700 kg MCTOW
  - AC139-7 — Aerodrome Standards and Requirements – Aeroplanes at or below 5700 kg MCTOW – Air Transport Operations
  - AC139-8 — Aerodrome Design – Wildlife Hazards
  - AC139-9 — Notification of aerodrome data and information
  - AC139-10 — Control of Obstacles
  - AC139-11 — Use of displaced thresholds
  - AC139-12 — Aerodromes – Certification, Operation and Use – Aeronautical Information
  - AC139-13 — Aerodrome Maintenance – Runway Surface Friction Characteristics and Friction Testing
  - AC139-14 — Aerodrome Certification – Aerodrome Emergency Plan
  - AC139-15 — Aeronautical Studies for Aerodrome Operators
  - AC139-16 — Wildlife Hazard Management At Aerodromes
  - AC139-17 — Aerodrome User Groups
  - AC139-18* — Aerodrome Security
- Part 157 — Notice of Construction, Alteration, Activation, and Deactivation of Aerodromes
  - AC157-1 — Notice of intent to construct, alter, activate or deactivate an aerodrome

Certificated airways services
- Part 171 — Aeronautical Telecommunication Services – Operation and Certification
  - AC00-3 — Internal Quality Assurance
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC171-1 — Aeronautical Telecommunication Services – Operation and Certification
- Part 172 — Air Traffic Service Organisations – Certification
  - AC00-3 — Internal Quality Assurance
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC172-1 — Radiotelephony Manual
  - AC172-2 — Air Traffic Services – Aerodrome Air Traffic Control
- Part 173 — Instrument Flight Procedure Service Organisation – Certification and Operation
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC173-1 — Instrument Flight Procedure Design
- Part 174 — Aviation Meteorological Service Organisations – Certification
  - AC00-3 — Internal Quality Assurance
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC174-1 — Aviation Meteorological Service Organisations
- Part 175 — Aeronautical Information Service Organisations – Certification
  - AC00-3 — Internal Quality Assurance
  - AC99-1 — Drug and Alcohol Management Plans (DAMPs)
  - AC100-1 — Safety Management
  - AC175-1 — Aeronautical Information Service Organisations – Certification

* At the time of printing, this advisory circular is under development.

Every effort is made to ensure the information on this poster is accurate and up-to-date at the time of publishing, but numerous changes can occur with time. Readers are reminded to obtain appropriate up-to-date information. Go to **aviation.govt.nz/rules**.

aviation.govt.nz/education

iStock.com/BrianScantlebury

CAA CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa