

vector

WEATHER TRAGEDIES

AFFECT
AIR TRAFFIC
CONTROLLERS
TOO

‘It’ll never happen here’

I learned about near
misses from this

The new Act – what
you need to know



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// I LEARNED ABOUT NEAR MISSES FROM THIS

Cover photo: Cairns Airport control tower. Courtesy of Damian Beech.



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Survival skills for pilots

With forests covering more than a third of New Zealand, bush survival skills are a must for GA pilots and crews, says search and rescue veteran Mark Cannell.



// Mark Cannell

Mark, an air crew officer and winch operator with Northern Rescue Helicopters, says he has a healthy respect for the ability of our forests to “make an aircraft disappear”.

“An aircraft can hit at an angle and the bush can fold up over the top of it, so the aircraft disappears from view. You’re dealing with 4000 pounds of weight, and yet you might see a branch that’s broken, and that’s all.” »



Photo courtesy of Auckland Rescue Helicopter Trust

// Mark Cannell has seen his share of successful rescues, but also catastrophic events with multiple fatalities. He says pilots won't get a break from Mother Nature and they need to prepare.

» Show signs of life

Mark has become hyper-attuned to looking out for tell-tale signs of life, and he has ideas for what you can do if you're looking to attract the attention of aircraft overhead.

"Sometimes people don't have flares, torches, or devices to attract attention. But if the area is lightly wooded, is there a tree you can shake? Seeing a tree doing the crazy boogie will get our attention. If we see something with a bit of colour and contrast, some movement or an unusual shape, that will attract our attention too – for example, a survival blanket torn into strips and hanging in a tree. I've known people to turn silver ferns upside down in the creek bed."

Mark, who has more than 30 years' search and rescue (SAR) experience – including in New Zealand, Antarctica, and East Timor – says people need to recognise when they're lost.

"It takes mental strength to accept that you're lost. I've seen people press on because they don't want their family back at home to worry.

"Next thing, they take a tumble, and get cold and confused. They find themselves on the wrong side of hypothermia. The situation goes from being lost to a full-on medical emergency."

Be mentally prepared

Those who do the right thing when they get into a bad situation have often done some mental preparedness before their trip.

"Over the years I've seen that, in similar settings, some people survived and some didn't. The survivors had thought about what they might be faced with, so they were mentally prepared."

He says New Zealand's changeable weather is a crucial consideration.

"Mother Nature has been doing what she's been doing for millions of years. People need to realise they won't get a break from Mother Nature no matter what. So do the right thing by yourself and your family, and prepare."

Locator technology is vital kit

Mark is a massive advocate for emergency locator transmitters (ELTs) and personal locator beacons (PLBs) as an integral part of pilots' survival kits.

“Think about your ELT and your ability to turn it on as part of a developing emergency. Quite often, the beacon is not turned on until quite late in the piece. That can cause some issues including delayed detection and response, which can slow down SAR operations. There have also been cases where the ELT aerial has broken. So having a PLB as your own standalone system can be a very effective survival aid.”

He stresses, though, that they're of limited use unless you register them. “It costs you nothing to register them, but it can be a significant point of difference for a rescue crew.

“A registered PLB gives SAR authorities quick access to your emergency contacts, enabling a quicker and more efficient response. It also helps SAR to quickly identify false alarms.” (Go to beacons.org.nz).

“If they're not registered, SAR crews are going to a device in the bush and they don't know what's at the other end because they don't have those key details.”

Emotional effects are common

Mark has seen his share of successful rescues, but also catastrophic events with multiple fatalities. These include separate incidents involving two charter vessels with the loss of 13 lives in recent years in the upper North Island.

“During the rescue you're focused on stopping people dying. But in the aftermath, with the media follow-up, you get a clearer view of who the people were. Fathers, sons, daughters, husbands, wives. It resonates more after the fact. It definitely sits there. It won't be front of mind forever, but it never completely leaves you.

“And it can be difficult to recognise this within yourself. So we have debriefings, peer support, external expertise. Sometimes we have mandated debriefings for teams and individuals.

“It makes you more aware of the nuances around vulnerability. If I canvassed our team, for example, we would have above average ownership of PLBs and survival gear for our outdoor hobbies and interests. And there are places on State Highway 2 where I pay extra attention to the road because I've attended multiple fatalities over the years. You're more aware.”

And while search and rescue has been revolutionised by things like thermal imaging, twin-engine aircraft, better fuel capacity, and more full-time crew, there are still some basic things people can do to improve their chances of survival when things go wrong.

// Think about your ELT and your ability to turn it on as part of a developing emergency. //

Mark's top tips

Whether you're flying, or going out tramping or hunting, Mark recommends the following actions.

- Before you go, let people know where you're going, and when you expect to return.
- Carry a basic first aid kit, including items to stop a bleed.
- Carry a PLB, two torches, and a fully-charged cellphone in a waterproof case.
- Carry clothing that you can layer up and down, including windproof gear.
- Take plenty of water.
- If you have an accident or get lost, stay where you are.

And for those who are at home waiting for their mates or family to return, Mark's advice is clear. Know their route and expected arrival time, then use your common sense if they're overdue.

“If someone's not back on time, I'm not clock-watching, but I'll flick out a text or call to see how they're tracking. There's a difference if a 16-year-old is late versus someone who has been hunting for 30 years and has a track record of being a half-hour late.

“If you're concerned that someone's not back when they should be, call the police. They will coordinate with SAR teams and other emergency services,” says Mark. ☺

// NOW READ



The Good Aviation Practice booklet, *Survival*. Go to aviation.govt.nz/education > Good Aviation Practice booklets > In an emergency.

The Vector Winter 2024 article "Be ready for the emergency". Go to aviation.govt.nz/vector-online.

WEATHER TRAGEDIES AFFECT AIR TRAFFIC CONTROLLERS TOO



They may seem far removed from the cockpit, but air traffic controllers (ATCs) have skin in the game. If you don't get home safely, they're among those who never get over it.



// Dave Wiman

Two decades on, Dave Wiman – now with Airways NZ – still has nightmares about the day a Cessna disappeared from the radar, after nearly hitting the Cairns Airport control tower, in which Dave was working.

It was a balmy late morning near the end of winter in the Queensland city, as Dave began his shift. Further north at Margaret Bay, a Cessna pilot was preparing for his more than three-hour flight to Cairns.

On board was a deckhand who'd severed his fingertip and needed to get into surgery as quickly as possible. Also being carried was a valuable cargo of live seafood.

The pilot was VFR only and had flown 515 hours in the previous year, including 35 hours of charter flying, mostly on short, local, scenic, and aerial work flights.

The weather was looking good. The Cairns terminal area forecast (TAF) predicted VMC with rain showers, but no deterioration until 2000 hours – well after the pilot's planned daylight arrival at Cairns.

Take-off delayed

The pilot planned to leave Margaret Bay no later than 1500 hours, to make sure his ETA in Cairns was at least 10 minutes before civil twilight.

But cargo loading took longer than usual, and the pilot took off from Margaret Bay at 1520 hours, with an ETA in Cairns of 1835 hours – seven minutes after civil twilight – hoping to make up time on the way. Witnesses said he was visibly agitated about the delay, but that he was determined to get to Cairns.

Weather got worse

As the Cessna headed for Cairns, the TAF deteriorated to the point where it was no longer VMC.

En route, while flying over Cooktown, the pilot requested, and was given, the weather conditions at Mareeba, west of Cairns.

The pilot considered diverting to Mareeba but this didn't offer a better alternative to Cairns.

A landing at Cooktown would have taken surface transport eight hours to get to Cairns. That would have delayed treatment for the injured passenger and risked the loss of the perishable cargo. So the pilot continued towards Cairns rather than landing at Cooktown.

About 45 minutes later, around 1815 hours, the pilot contacted Cairns approach control and revised his ETA to 1838 hours – 10 minutes after civil twilight.

"The weather was absolutely crap," Dave Wiman says.

"The last jet of the day from Brisbane landed and, around the same time, we heard the radio crackle with the Cessna pilot calling approach, about 50 miles to the north.

"That's when my spidey senses started going off, and the hairs on the back of my neck stood up."

'This doesn't sound good'

"We knew this pilot was VFR-rated only. He was going to get here after dark. That made me think, 'This doesn't sound good'. We had thought he might land in Port Douglas to get on the ground before last light. But he carried on." »

// We're attuned to hearing what's in a pilot's voice – do they sound confident or fazed? //



// Cairns airport and air traffic control tower.

» At 1824 hours, four minutes before civil twilight, the pilot contacted Cairns approach again and reported he was 33 nautical miles north of Cairns – so close to his destination. He said he could see the coast, and confirmed he couldn't fly IMC.

The visibility at the time of the pilot's approach was about 1500 metres in heavy rain. The cloud base was 1100ft with lower patchy cloud, according to pilots flying IMC at the time.

The approach controller issued a clearance for the Cessna pilot to follow the coast, not above 1000 feet and to remain in VMC. ATC declared an uncertainty phase (code name INCERFA), used in situations where there's uncertainty about the safety of an aircraft and its occupants.

They notified the rescue fire service, which dispatched two fire trucks north of Cairns as a precaution, to cover the approach path.

The approach controller gave the pilot cloud and visibility information, and distance and ground speed details. He offered the pilot radar headings to establish the aircraft clear of terrain and positioned the aircraft for

an approach from over the water. The approach lighting was selected to maximum illumination.

To reduce the pilot's workload, the tower issued a landing clearance via the approach controller.

First approach aborted

When the Cessna was almost overhead the airport, the pilot reported he couldn't see the runway lights, so the approach controller instructed him to make a left turn for a second landing attempt.

During the turn, Dave watched in horror as the aircraft descended from 400ft to about 100ft. "He was in a dive towards the international apron, and there were aircraft there. I thought he was about to hit them."

Concerned the Cessna was about to crash, Dave grabbed the telephone and hit the crash alarm.

"PULL UP! PULL UP! PULL UP!"

He could hear the approach controller urgently repeating the instruction to the pilot over the radio.

"Somehow, he didn't crash."

Approach control guided the pilot out over the water to settle him before putting him on a gentle turn to bring him back around for another approach.

Believing the lighting intensity may have been a factor, the control tower reduced the runway approach lighting to stage 3 (omni-directional runway lighting rather than uni-directional) to help the pilot find the lights.

Terrifying second approach

A second approach was attempted.

Dave says, "Once again, the aircraft lost altitude, but this time its landing lights were coming straight at me, on a collision course with the control tower.

"I didn't move. I was thinking, 'This is it' – not because I thought I was going to die, but because my wife and baby daughter were waiting in the car park to pick me up from my shift, and I thought the plane would crash into them and they'd burn to death."

Dave still chokes up at the memory. He continues to have nightmares about the plane hitting the tower.

But again, the pilot somehow missed the tower and turned left towards the ocean.

The approach controller directed the pilot to take up a northerly heading, away from obstacles and terrain. The intent was to position the aircraft for a third approach along the extended runway centreline so the pilot would

// If you have a doubt, speak it out. Don't think twice about asking a question about the safety of your flight. //

be better positioned to use the approach lighting for guidance to the runway. The flight path took the aircraft over the water off Machans Beach.

Third approach

On the third attempt to approach and land, while being radar vectored onto a left base leg to runway 15, the aircraft disappeared from the radar and ATC lost sight of its NAV lights.

Rescue and firefighting services sprang into action, having earlier positioned themselves for such an eventuality, when the control tower declared an INCERFA.

The Cairns search and rescue helicopter could be seen scouring the water, and the rescue craft from airport rescue and firefighting services were illuminated in its beam, as they searched for survivors.

Some wreckage was quickly discovered, and two hours later, the body of the passenger was found near the reported accident site.

Damage to the recovered aircraft parts suggested the accident was not survivable.

Although more debris and wreckage were found in the following weeks and months, the body of the pilot was never recovered.

Make ATC part of your system

Dave would like pilots in New Zealand to treat air traffic controllers as part of their decision-making team.

“We may not be in your aircraft but make us part of your system. If you're concerned, speak up. We can help alleviate your workload and provide information to help your decision-making.

“We're all human. We can all end up in situations that aren't ideal. If you're concerned, speak up and we'll try to help you.”



// Map showing pilot's route towards Cairns.

He adds that in New Zealand, you're never too far away from controlled airspace where ATC is within radio contact.

“We're attuned to hearing what's in a pilot's voice – do they sound confident or fazed? Are things getting on top of them?”

“If you have a doubt, speak it out. Don't think twice about asking a question about the safety of your flight. There's always someone on the end of the radio you can talk to.”

Applying his learning

Dave eventually transferred from Cairns to Brisbane ATC and, in due course, took up a role in aviation safety education. His experiences of near misses and, unfortunately, fatal accidents – from an ATC perspective – were fertile ground for teaching pilots about safety. He now works as an operational safety advisor at Airways New Zealand, based in Christchurch. »

» Investigation report findings

The Australian Transport Safety Bureau (ATSB) found that the circumstances of this accident included high stress levels, fatigue, and lack of external visual reference.

These most likely contributed to the pilot experiencing spatial disorientation and subsequent loss of control, while manoeuvring the aircraft in darkness and poor weather, without adequate visual cues.

The ATSB investigation report said the main factors leading to the occurrence were that the pilot:

- left Margaret Bay later than planned, without certainty the flight could be completed in daylight
- continued to fly in weather conditions for which he was not qualified and the aircraft was not adequately equipped
- after receiving radar navigation assistance, was unable to see the runway lights
- possibly became spatially disorientated and lost control while manoeuvring in darkness and poor weather with inadequate visual cues.

Listen to your 'spidey senses'

Dave says pilots should also listen carefully to what their emotions and intuition are telling them about impending danger – what he refers to as the 'spidey senses'.

"The key message from me is listen to yourself. We can all relate to it. We might describe it as, 'I feel a bit unwell about this' or 'Why am I sweating'?"

"It's all about decision-making but tie it in with your senses. That's the cue for your decision-making. Know that you are trying to tell yourself something."

A local pilot's perspective

Mark Woodhouse (ATPL), a pilot trainer based in the South Island, endorses the idea of listening to what he calls 'the whispers' – those moments when your intuition is trying to get through to you.

"It's very hard for pilots, who are typically type A personalities – determined and bloody-minded – to make a decisive call not to go. Even when their guts tell them it's not a good idea to go. But this accident, and many similar ones since, teach us the importance of decision-making in marginal situations.

"The first opportunity to stop this tragic accident was for the pilot to declare to his supervisors a time by which he absolutely must be airborne (having included a healthy safety margin).

"But it's clear there were organisational pressures on this pilot when there should not have been.

"When it looked like the loading of the cargo wasn't going to be achieved in time, the second opportunity was to declare early that he would only go as far as Port Douglas.

"If he had made this declaration early, it would have given the organisation time to send land transport from Cairns to Port Douglas to meet him. This is a road trip of about an hour, so they had plenty of time.

"Also, Port Douglas has a reasonable medical centre for the injured deckhand. And the hospital at Mossman is just up the road.


A second pilot working for the same company, was also due to fly live seafood out of Margaret Bay on the same day. They made the decision to stay on the ground, after the fishing boat's late arrival meant it did not meet their specified latest departure time.

However, the subsequent accident report noted that the "lack of additional guidance or alternative arrangements did not provide an opportunity to influence the pilot's subsequent actions".

Mark Woodhouse says an aviation organisation has a responsibility to encourage all its pilots to make sure there's a good safety margin around the flight, and to support any decision they may make not to fly.

"One of my observations about changes in the aviation industry in New Zealand is the uptake of proactive safety management.

"Organisational culture is changing at the coalface, helped along by the very real threat of prosecution under the Health and Safety at Work Act 2015 (HSWA). I'm hearing many stories of organisations which have very robust Safety Management Systems, actively monitoring sensible safety margins in and around their operations.

"History has proven that telling pilots to make better decisions doesn't impact accident statistics. Organisations are also responsible for supporting their pilots in making conservative decisions around their operations." 

// MORE INFORMATION



Scan the QR code to read the three-part series on VFR into IMC at *Vector Online*. Or go to aviation.govt.nz/vector-online.

For a summary of the ATSB occurrence report, go to atsb.gov.au and search "VH-EFA".

Getting the best from

ADS-B

←-----
65% of all registered aircraft in the country are now equipped with ADS-B.

// **By Tom Gormley** Technical Advisor with the CAA's former ADS-B grant scheme

To make the most of the benefits you've paid for, you have to switch ADS-B on at the right time – and keep it on.

In the 18 months since ADS-B became mandatory to fly in controlled airspace, the number of aircraft equipped with the new technology has risen to more than 3150.

That's almost 65 percent of all registered aircraft in the country. That's a great percentage, given the number of pilots who fly only outside controlled airspace. (And incidentally, virtually 100 percent of aircraft owners known to have entered controlled airspace around the time the ADS-B grant scheme launched, are now ADS-B-enabled.) It indicates how dedicated to safe flying New Zealand pilots are.

However, in the same period, the CAA has received more than 350 reports relating to the transmission of 'non-compliant' ADS-B data.

Such data is information transmitted by an ADS-B kit which doesn't meet minimum standards, as set out in rule 91.257 *ADS-B system performance standards and requirements*.

For instance, the data it's sending out may be dangerously confusing to other pilots. An example is the data indicating the aircraft is on the ground, when it's actually airborne.

There's a number of reasons why data can be non-compliant – an increasingly common one is pilots inadvertently operating their transponders incorrectly.

Transponders should be turned on and switched to the correct mode following start-up but *before the aircraft moves*. Check the transponder's operating manual or see your avionics engineer if you're unsure which mode to use.

Transponders shouldn't be turned on as you start your take-off roll, in flight, or as you approach controlled airspace. That's because the system needs time to kick into action and acquire a GPS fix. Switching the transponder on, turning it off and on, or changing the mode in flight can cause real issues for the system. This is particularly the case if you're flying a different aircraft from the one you usually fly. The ADS-B transponder may look the same as what you're used to, but they can operate slightly differently in different aircraft.

Transmitting non-compliant ADS-B data actually breaches civil aviation rules because air traffic control has to have accurate data for separation. And outside controlled airspace, it significantly reduces the benefits to situational awareness that ADS-B is all about.

So make sure your ADS-B system is switched on and in the correct mode before you move, if you're going to transmit ADS-B data at any point during your flight. ➤

// **Make sure your ADS-B system is switched on and in the correct mode before you move.** //

// NOW READ

"Is your ADS-B switched on?" An enjoyable flight on a clear day becomes a terrifying near miss. An account from one of our readers, on **page 12** of this issue of *Vector*.

I LEARNED ABOUT NEAR MISSES FROM THIS



Is your ADS-B switched on?
How an enjoyable flight on a clear day became a terrifying near miss¹.

My wife and I had departed Pauanui aerodrome and were climbing to 2200 feet on a clear sky day, tracking south, just seaward off the coast towards Tauranga.

We were running two radios. One was on Peninsula traffic 124.5 MHz and the other on Harbour CFZ, so we could listen to Waihi Beach traffic if anything in that area transitioned between zones.

The ADS-B was switched on, and no immediate forward traffic was showing on the screen. We were dialled back, cruising at 155 knots indicated, better than 2.5 nautical miles per minute. Our landing lights were on ‘wig-wag’ (visibility-enhancing feature), we heard no immediate radio calls from traffic ahead, and both sets of eyes were ‘viewing outside’.

Looking forward, eyes outside toward Waihi Beach, there was a layer of distant cloud beyond Waihi on the skyline. We made a radio call at Opoutere.

A very close call

Two minutes later (~5NM), an aircraft called Whangamatā 1500 feet, tracking north on the coast. We were in the exact same location heading south, separated by 700 feet altitude.

We did not have eyes on a target and there was nothing showing on the ADS-B. I immediately made a same position report, calling 2200 feet. By that time, my wife was scanning forward and I was scanning low left, where the target should be.

In the next instant, an aircraft appeared immediately in front, same altitude, presenting itself in an avoidance turn away.

The total time from his call to avoidance manoeuvre was about 10 seconds, a closing speed of about 275 knots.

Time seemed to stand still. Our reactions were automatic – radio call, wig-wag check, and both of us scanning forward.

The sight of a vertically banked aircraft in front – so close that every detail seems etched in my mind – was downright scary.

The other aircraft continued north. I called them and pointed out they’d said they were somewhere that they weren’t.

I said that was about as close proximity as I ever wanted to come! I asked them if they had ADS-B and, if so, turn it on. They gave an affirmative response.

¹ This near miss was not near an unattended aerodrome, but many of its elements, including situational awareness and lookout, are regularly present in close calls at such aerodromes.



// In the circuit, you need every advantage you can have. Is your ADS-B switched on?

Photo: Carlton Campbell

// The sight of a vertically banked aircraft in front – so close that every detail seems etched in my mind – was downright scary. //

Another aircraft had departed Pauanui after us, and represented the nearest ADS-B target, some 8NM behind us. I called them and advised them to be vigilant because there was an aircraft coming their way calling where they weren't.

At that point, the north-bound aircraft suddenly appeared on ADS-B as a signature, having clearly been just turned on.

Within the next 24 hours, I tracked down the aircraft owner and we had a brutally frank chat. They had ADS-B but did not fly with it on unless they really needed to. They had their head down in the cockpit doing something and thought they were still at 1200 feet.

They had seen my wig-wags and said those were amazing, allowing them time to see and avoid me.

What can we learn?

From my perspective, there was little alternative action I could have taken at the time. We were scanning a distant, white-clouded horizon for an aircraft with no wig-wags, and no ADS-B turned on, that was moving directly toward us (appearing as a stationary target rather than moving across our vision line), and the pilot had made no response to my call.

It's quite possible I could have manoeuvred 'sight unseen' into the path of the aircraft while taking precautionary avoidance measures.

I got a fright, no doubt about that, and I was pretty uptight about it at the time, realising things could easily have turned out differently.

I believe the pilot of the other aircraft will turn on their ADS-B in future, pay more attention to their reporting, and keep their head up with eyes outside.

Having been in this situation, I can completely endorse the 'work together to stay apart' campaign.

I'm mindful that, in the circuit, you need every advantage you can have when light levels are low or the visual conditions are not helpful (for instance, setting sun, hazy, rain).

This also applies when there are lots of aircraft in the circuit at one time. This occurs at many unattended aerodromes at the weekends – with aerobatics happening over the airfield, low-level circuits by NORDO vintage aircraft, flight school training, private aircraft operations, and helicopters with their own joining procedures.

My three top tips

- When you're airborne and reporting your position, make sure you know, and say, *exactly* where you are.
- Keep your eyes outside the aircraft. Don't become distracted within the cockpit to the point that you lose touch with flying the aircraft.
- If you have ADS-B, turn it on – even if you believe you don't legally have to. [👉](#)

// MORE INFORMATION

Find out more about the CAA's *Work Together, Stay Apart* safety campaign for unattended aerodromes at aviation.govt.nz/wtsa.

Read our article about keeping ADS-B enabled, "Getting the best from ADS-B" on [page 11](#).

'It'll never happen here'



While it's tempting to think that security risks are consistently low at regional aerodromes, a recent event shows this isn't true across the board.

A serious incident at Tuuta Airport in the Chatham Islands, resulting in more than \$90,000 of damage to property and an aircraft, is an extreme example of what can happen when there's a determined effort to breach security.

The offender, who lives and works in the islands, was recently sentenced to 300 hours community service.

Airport manager Darron Kyle says the incident was a stark reminder that vigilance, even at small and remote aerodromes, is essential.

The airport, its staff, and its aircraft are a lifeline for the community.

After the incident, Darron led a comprehensive security review at Tuuta Airport that included engagement with the local community. This has helped give staff, stakeholders, and local folk renewed confidence that security safeguards are being continually improved and monitored.

While such a serious security breach at non-security designated¹ aerodromes is relatively rare, smaller deliberate and accidental breaches are part of life at all airports.

And a strong security culture is the biggest protection against that.

But what makes a strong security culture, especially at non-security designated aerodromes where security requirements are lower?

Vector spoke to security specialists at regional airports across New Zealand, to explore how aspects such as leadership, positive behaviours, and simpler reporting processes influence their security culture.

This article brings together their perspectives and some tips from the CAA's recently updated guidance – *Enhancing your organisation's security culture* (link at the end of the article).

¹ Non-security designated aerodromes have lower security requirements than security-designated aerodromes. This includes different specifications for aerodrome fences and other barriers.

“It starts at the top”

The guidance says, “A positive security culture means security is in the DNA of your organisation, and an integral part of everything people do”.

It’s a perspective shared by Mark Thompson, the former chief executive of Nelson Airport.

He reckons security culture, at its core, is about leadership.

“It starts at the top. If the leaders don’t ‘live’ safety, people hear the words, but then see behaviours that don’t support the words.”

Mark’s 30-year career in logistics and transport has seen him work internationally across ports, ferries, and trade operations.

One factor stays consistent across the board. “People have a right to come to work and go home safe. That’s non-negotiable. And there’s power in a culture where safety is everyone’s responsibility.”

CAA: Good security culture depends on an environment where managers and leaders – including those at the highest level – lead by example and support their staff to implement good security practice.

Mark set the standard early in his leadership role at Nelson Airport by attending safety meetings – something not every chief executive does. He made clear there were no limitations on continuous improvement and calling people out for breaches of security standards.

He was active in addressing careless security behaviour at Nelson Airport.

“I didn’t delegate this to our safety manager – I called the owner of the particular business at the aerodrome where I observed the behaviour. When other aerodrome users were aware of me making that call, it showed them that security is everyone’s responsibility.”

CAA: Complacency can creep in when security is not talked about, or when it seems far removed from employees who feel they may not have a role or responsibilities related to security. This can undermine the security culture of your organisation.

Mark says he prioritised strong engagement with the multiple aerodrome users operating within the airport and its wider precinct, reinforcing the importance of leadership involvement in day-to-day security.

Public trust and confidence

Ben Langley, a former commercial pilot and now group general manager of airport operations at Hamilton Airport, says, “We work hard to ensure we have the security presence that gives the public confidence they can travel through an airport, and onwards, safely.”

A big part of building trust, he says, is the “invaluable”, positive, people-focused approach adopted by the rescue fire and safety team at the airport, who provide security services as well as emergency response.

“The team’s very visible around the airport as part of their security activity. Unless someone is obviously deliberately breaching security, the team takes an educational approach that focuses on helping people understand why and how their actions need to be modified.”

From this strong base, Ben says, there’s a lot of effort put into establishing a collaborative security community, especially with more development of the airport precinct under way. It’ll bring new aeronautical tenants, and the need to encourage them to embrace the security culture.

CAA: Your security culture is only as positive as your work environment. Your work environment should make positive security behaviours easy, effective and an enabler of – not a hindrance to – daily tasks.

Vector spoke to one regional airport executive who described an inadvertent security breach that resulted in positive change.

The airport’s security team found a security gate had been left open twice in a week. It could have been dismissed as a coincidence.

However, the security team persisted and investigations revealed a new staff member had been using an airside security gate to go out for a smoke in an unauthorised area off the airfield. The security team worked with the smoker’s employer to prevent a repeat.

The incident exemplifies a just culture, where less serious security breaches with unintentional outcomes are approached with coaching and support, to make sure the behaviour doesn’t happen again. »

» A just culture

CAA: The type of culture built around your reporting system is crucial to ensure that staff feel encouraged to make a report, are comfortable with how their report will be handled, and understand the role reporting plays in the improvement of security practices. This is all part of establishing a 'just culture', where staff are supported to report incidents, and understand that honest mistakes will be free from repercussions.

At Hamilton Airport, Ben Langley says a just culture is integral to the success of their security operations.

It has helped create an environment where people feel encouraged and empowered to report security incidents and concerns, and he sees that as something to celebrate.

Using aviation-specific software enabling quick and easy reporting has also encouraged more reports.

Continuous improvement

CAA: Formal processes that review your workplace's security performance in a 'real-world' setting are important ways to measure the success of security culture initiatives.

Mark Thompson says he made sure there was an ongoing independent review of safety and security improvements as a core plank of Nelson Airport's continuous improvement approach. "To make sure what we were putting in place was best practice and the Board was comfortable we were complying and improving".

CAA: The aviation sector faces a complex set of threats. These threats are constantly evolving, becoming more sophisticated and are increasingly designed to undermine effective security measures implemented by the sector.

Airport as secure community hub

Despite the recent serious security breach at Tuuta Airport in the Chatham Islands, Darron Kyle says the airport will always be not just a lifeline, but also an essential social hub for the community. Everyone in the islands knows each other.

He says security has changed dramatically over the last decade.

"Ten years ago, everybody went out to meet the plane. They actually ran out to the aircraft.

"Since then, we've had security gates, fences, and other features including CCTV installed, so they can't run out to meet the plane. And everyone has a better understanding of why security is important.

"We take a patient and tolerant stand, though. We don't throw the book at residents who may create a minor security issue. But we're also careful not to get complacent, and we make sure operators and staff move people along if those people are where they shouldn't be."

Darron – who is "30 years into a two-year contract" on the islands, and who's also an Air Chathams pilot – says the recent security breach was a stark reminder that a determined person can have a devastating impact on an airport and a community.

The airport's a crucial piece of infrastructure for the 650 islanders. Its fleet of ATR 72s and its staff are also vital parts of the lifeline. Medical evacuations, bringing in essential supplies, and getting the islands' commercial fish and seafood catches to the mainland are all part and parcel of routine operations.

Darron says that's part of the reason why the thorough security review after the incident was so important. Community confidence in the airport and its operations is fundamental to island life.

Airport design is a factor

Marlborough Airport's operations manager, Steve Holtum, says good security starts with good design. Secure fencing and gates, as well as access control, are fundamental elements.

Airside rubbish and cargo gets delivered landside by the airlines, reducing the need for other personnel to move between these areas.



// A Cessna Caravan at Marlborough Airport.

// A positive security culture means security is in the DNA of your organisation, and an integral part of everything people do. //



// Nelson Airport.

The airport has some other factors helping to keep it exceptionally secure.

With its proximity to the Royal New Zealand Air Force Base Woodbourne, the airport has the advantage of additional layers of security, with patrols carried out 24 hours a day by both airport and air force security personnel.

And with nearby Omaka airfield being more popular with general aviation pilots than Marlborough Airport, its immediate stakeholders are airlines – Air New Zealand, Sounds Air, and the air force – along with maintenance flights to Airbus.

Steve says it's a tight group of stakeholders, and the cohesion improves their ability to run an effective and forward-looking users' group for security awareness.

Training and induction

CAA: Training should be present and prioritised at every stage of the employee lifecycle. Regular security training helps to ensure that strong security practices are part of the fabric of your organisation.

All workers at Marlborough Airport undergo security awareness training and, on their first day of work, learn how to report security incidents.

This, coupled with Steve's monthly walkabouts with airport managers, and thorough surveillance technology, makes for a strong security culture, he says.

We're here to help

If this article has prompted you to improve your airport security culture but you have some questions or you're not sure where to start, get in touch with the CAA's security regulation team who'll be happy to provide some advice. You can reach us at security.regulation@caa.govt.nz. 📧

// MORE INFORMATION

The CAA has published updated security culture guidance that can be used and adapted at non-security designated aerodromes of any size and location.



Download a free copy of the CAA's guidance, *Enhancing your organisation's security culture*.

If you have a question about the document, or any other matters relating to airport security, contact security.regulation@caa.govt.nz.

Other CAA security information and resources are found at aviation.govt.nz/security-culture.



Photo: iStock.com/BrianScantlebury

WHAT YOU NEED TO KNOW

The Civil Aviation Act 2023 comes into force on 5 April 2025.

The Act will not bring sudden and drastic change on the day it's introduced.

Rather, the Act modernises language, and updates legislation to allow for modern technology. It also introduces changes which will be phased in over time, meaning that on 5 April 2025, business will just continue as usual.

Expositions and operating specifications

Your expositions and operating specifications will remain in place until they're due for renewal, or until you need them to be amended for some other reason. That's when they'll need to be updated to reflect the new Act.

If a certificate or licence renewal falls before 5 April 2025, it will be processed under the 1990 Act.

Those received immediately after 5 April 2025 will be processed under the new Act, and we'll take a pragmatic approach with references to the 1990 Act.

The rules

All 50 existing Parts have been updated to modernise some of the language, remove old transitional rules, and make sure the rules align with the new Act. But the rules themselves are not being rewritten.

There are no changes to the intent and meaning of the existing rules, and – apart from some minor exceptions – existing Part numbers stay the same.

The draft rules, and summaries of the changes, are published on our website (see below for the link) so you can see how they're likely to look from 5 April 2025. You can have a look and let us know if you have any concerns.

Drug and alcohol management plans

The biggest change for some of you is the introduction of random drug and alcohol testing. This will begin after 5 April 2027.

It will affect the employees of about 300 certificated operators, who conduct 'safety-sensitive activities'. These are activities that could significantly affect the safety of anybody on board an aircraft, or an activity which, if not done safely, could cause or contribute to an aircraft accident.

As part of introducing testing, operators will need to develop drug and alcohol management plans (DAMPs).

The Act allows for these to be submitted to us, here at the CAA, for approval in two phases – the first by 30 September 2025, and the second by 30 June 2026.

The table at the end of this article shows the dates by which the affected operators will need to provide us with their DAMPs for approval.

A new set of rules – Part 99 *Drug and Alcohol Management Plans (DAMPs)* – and accompanying advisory circular (AC) are on our website.

The rules in Part 99 come into force on the same day as the Act, 5 April 2025, so that operators have time to prepare their DAMP and get ready for testing from 5 April 2027.

See the link to our website at the end of this article, and scan the QR code to see the draft AC.

The AC provides a template and process for developing these plans, to make it as straightforward as possible for operators.

We'll do a desk-based assessment of your DAMP application (we won't need to visit your premises). Once your plan is approved, it will become part of your exposition.


We'll keep you informed

We're still working on the policies that support the new Act, and how these will be introduced over time. There's also training for CAA staff alongside that, to make sure they have a shared understanding of the changes and their impact on the sector.

We'll provide you with more information about provisions in the Act over the coming months, before any changes occur.

This will include more information in *Vector* magazine and in *Vector Online*.

Questions?

If you have questions about the new Act, you can email us at CAACT2023@caa.govt.nz. 

// MORE INFORMATION

Find out more about the Act and read the draft rules at aviation.govt.nz > about us > what we do > Civil Aviation Act 2023 implementation.



Scan the QR code to see the draft AC99-1 *Drug and Alcohol Management Plans (DAMPs)*, containing details of, and processes for, DAMPs.

This table shows the dates by which relevant operators will need to provide us with their plans for approval.

Group 1 30 September 2025	Group 2 30 June 2026
Part 115 Adventure Aviation	Part 137 Agriculture Aircraft Operations
Part 119 Air Operations: 121 & 125 airline air operators	Part 119 Air Operators: 135 airline air operators and general aviation air operators
Part 145 Aircraft Maintenance Organisations – supporting 121 and 125 air operators	Part 145 Aircraft Maintenance Organisations supporting other than 121 and 125 air operators
Part 139 Aerodromes (Tier 1)	Part 139 Aerodromes (not Tier 1)
Parts 171 & 172 Aeronautical Telecommunication Services, and Air Traffic Service Organisations	Part 141 Aviation Training Organisations
Parts 173 & 175 Instrument Flight Procedure Service Organisations and Aeronautical Information Service Organisations	Part 146 Aircraft Design Organisations
	Part 147 Maintenance Training Organisations
	Part 148 Aircraft Manufacturing Organisations
	Part 174 Aviation Meteorological Services



// The Zenair 701 covered in firefighting foam. Only the undercarriage and engine were salvageable.

HOME-BUILT AIRCRAFT UP IN FLAMES

I learned that complacency about ageing parts can have explosive consequences.

Early in 2023, I walked into the hangar housing my Zenair 701, which had taken me nearly a decade of painstaking dedication to build from scratch.

On entering the hangar, I could smell the unmistakable stench of fuel.

I eventually found fuel dripping from a split in the fuel level indicator on the instrument panel.

I removed the floor mats from the aircraft and disconnected the battery, I drained the remaining fuel from the front gascolator.

I didn't ground the aircraft.

A plane ablaze

As I wiped the bottom of the sight tube, it fell out of its connection. With no warning, 20 litres of fuel poured out of the tube, and ignited on contact with the aircraft floor.

There was no way I could've stopped it.

I was utterly startled, but soon gathered my wits, and tried to put out the fire with an extinguisher – without success.

With my precious home-built now well ablaze, I dragged it outside. In my concern for the possibility of the hangar, too, going up in flames, I – perhaps carelessly – didn't

really think of my personal safety. I was very lucky to escape with just singes to my arms.

Once outside, I could do nothing but watch my years of hard work burn. I simply had to wait for the fire brigade to arrive and extinguish the blaze with foam.

A ticking time bomb

The fire investigator couldn't pinpoint the reason for the fire, but I suspect the plane had been leaking for several days – the collecting fumes turning the aircraft into a bomb.

All I could salvage from the Zenair, which I'd been flying for 17 years, was the undercarriage and the engine.

The aircraft was covered only by third party insurance.

I was, as you can imagine, a bit depressed about the whole thing for a while. Later on, I was also a bit angry because there were things I could have, and should have done, that I didn't.

I thought about rebuilding, but I've realised it's too big a job. I just need to accept it, and move on from thinking about it all the time.

But I hope other operators take notice of my experience. At least then, this whole sorry event won't be a complete loss. The message is quite simple.

Firstly, always ground your aircraft around any form of fuel handling, and make sure it's outside. Secondly, consider taking out more than third party insurance.

And most importantly, every couple of years, *always* change the plastic or rubber fuel lines. Don't leave it so long that your whole aircraft and life in flying goes up in flames. 🛑

Letters to Vector

Engineers respond to mental health article



Photo: CAA

I've just read the Vector article on mental stress (Winter 2024, "Engineers' mental health – from stress to strength") and wanted to say great work from all those who worked on the article.

I dealt with many of the issues in the article and eventually had to quit. The change from a job that I loved doing, but felt was overwhelming me, to being able to take a breath, was huge.

Dave Johnson
Feilding

In one of my earlier positions as a chief engineer, the stress was such that, at one point, I literally walked away from the role, and went building for 18 months!

LAME/AME workplace stress is real. It is common and it's harmful, but sadly, it's mostly suppressed and contained within the minds of the sufferers, driven by professional pride – a very real factor in our aviation industry – or fear of losing our jobs.

I'm sure all LAMEs and AMEs would be able to empathise with the gist of what the article covered and I'd like to think that the matters covered would be able to be propagated in an ongoing format or forum basis.

Garrick Andrews
Waikanae

I've just had a read of some of the current Vector. The article on engineers' wellbeing is so valid. John Keyzer's contribution is great, and so is Don McCracken's. Well done, team.

Bob Jelley
Christchurch

It's good to see the CAA acknowledging this widespread and significant issue.

I note this Vector article largely covers LAMEs putting themselves under pressure to satisfy customers, management, and other personnel. I strongly agree with this article, but it's mostly based on self-inflicted issues.

In my experience, while these self-pressures are real, the biggest and most frequent mental health challenges usually come from management, customers, and workmates.

A certifying LAME is responsible 24/7 as the aircraft are being used, when he/she is not on duty, and even while asleep, we're still responsible for dozens of aircraft carrying several hundred passengers and crew.

LAMEs are expected to get a job done promptly with minimal cost to the customer, make a profit for the maintenance organisation, be a Chicago lawyer, schedule and organise jobs, train AMEs, apprentices, owners, operators and pilots, order parts at best price with on-time delivery, and do a ton of paperwork. Occasionally, we're guidance counsellors for staff with personal issues.

Until the industry takes a holistic approach to fairly supporting staff, mental health risks to all engineering staff will only increase.

This holistic approach must extend to providing training for prospective engineering senior staff to become effective communicators and managers of staff.

Glenn Thompson
Dunedin

The 'buzz and break' at unattended aerodromes

The Autumn edition of *Vector* had a very good article regarding RNZAF operations at unattended aerodromes. (Autumn 2024, "The RNZAF at unattended aerodromes")

It mentioned that other users may expect the buzz and break procedure to be used. We appreciate that this procedure plays an important role in the expeditious recovery of fast military aircraft, and that it provides a spectacular cameo airshow. However, we have concerns about its use at unattended aerodromes.

A lot of good work has been done by the CAA education team recently on the description and use of the standard overhead join. But the buzz and break runs counter to the standard join in some respects.

With the use of a left-hand circuit the buzz and break could potentially work, albeit removing the overhead component. This is provided all other traffic established in the circuit (some possibly NORDO or ab initio) are given priority.

With the use of a right-hand circuit, however, the situation changes. Then the aircraft (again potentially NORDO or ab initio) joins overhead with the airfield on their left.

What if then they commence descent to circuit height and a right turn for crosswind and are confronted head on with traffic on initials at 250 knots?

This would be extremely unhealthy.

There appears to be very little documentation of this procedure in GA training documents.

There's certainly no mention of the associated FRT0 (flight radio telephony operation) phraseologies in AC 91-9 and AC172-1 *Radiotelephony Manual*.

From a flight safety and peacetime point-of-view, the buzz and break has no place at unattended non-MBZ aerodromes, where NORDO aircraft may be operating.

Less risk is posed if the procedure is used at an unattended aerodrome within an MBZ, where the vector-in-use is known and it's left-hand.

Virtually no risk is involved when the procedure is used at a controlled airfield.

Rodger Ward (RAANZ Operations)
Scott James (RAANZ CEO)

The CAA responds – Paula Moore, Team Leader of Certification Adventure & Recreation, and Marc Brogan, Chief Advisor of Standards

General aviation recreational pilots should *never* use the buzz and break procedure except for those of high performance ex-military fighters/trainers and those in a formation, all of whom have been specifically trained in the manoeuvre.

It's used by high-performance aircraft to reduce speed just before joining the traffic circuit without having to fly for an extended period at a low airspeed.

For aircraft formations, it's an efficient way to integrate into the traffic circuit, maintain sight of the other aircraft in the formation during the join, and space for a stream landing.

This provides the safest way for such aircraft to join the circuit.

All pilots using this procedure are appropriately trained, including on positioning and sequencing with other aircraft.

If the runway-in-use is not already known, the aircraft will overfly the aerodrome at above circuit height and then position to join via the 'initial' point, downwind from the runway-in-use threshold.

Depending on the size of the formation flying this procedure, it may take the aircraft beyond the vicinity, before turning back, to track to the left/right initial point.

The rules about operating in the vicinity of an aerodrome still apply, including priority for aircraft already operating in the circuit. As stated in the Autumn 2024 article, RNZAF pilots will give way to those aircraft who are ahead of them in the circuit.

The break procedure flown at airshows is a display manoeuvre and is different to the buzz and break normally flown, as it will often go below the minimum VFR heights, requiring the pilot(s) to hold a display approval.

Information is published in AIPNZ AD 1.6 section 10 *Buzz and break procedure* to give awareness to the other pilots operating in the vicinity of the aerodrome, when the manoeuvre is being flown in the circumstances described above.

The diagram depicted in that section for a left-hand circuit, which is reversed if the join is for a right-hand circuit pattern. That section also details the associated phraseologies used, which are generally the same as for any joining procedure, with only a couple of different calls.

The AIP will be amended shortly to clarify that the procedure is normally flown only by high performance aircraft or formations.



Forced landing without power

I was reading an article in *Vector* (Accident brief #22/6147, Summer 2023) concerning forced landing without power.

I learned to fly at RAF Biggin Hill in Kent England on Chipmunks. We were taught engines fail often, so once you closed the throttle on the downwind leg, if you need to touch the power again you've messed up the circuit and landing, so every landing was a forced landing without power.

It's common to see a student on 5NM finals nowadays – if the engine does stop, they'll never make it onto the runway.

On another point; I used to fly at RNZAF Whenuapai. There were often jumpers, but the jumpmaster always called out on the radio the numbers jumping.

We were in the habit of counting the parachutes as they opened. In that way it was safer for all. Another reason to fly low-wing aircraft.

David Wilding
Wellington



WHANGAPARAOA TRANSIT LANE

If you're flying inside the Whangaparaoa transit lane – be aware of how close you'll be to the Whenuapai CTR/D – or MBZ outside tower hours.

If you're operating within the transit lane but also hugging the coastline, it's easy to inadvertently slip into this airspace and cross over land. Not only might this place you in breach of minimum height rules, but also in breach of the requirements of operating in Whenuapai airspace. [↗](#)

// MORE INFORMATION



Have a look at the Good Aviation Practice booklet, *In, out, and around Auckland*, pages 9 and 58 for more information.

DEFECT REPORTING – A VITAL PART OF THE SAFETY SYSTEM

A recent event shows just how valuable a defect report to the CAA can be to worldwide safety.

A New Zealand engineer was carrying out routine maintenance on a Guimbal Cabri G2 helicopter in February 2024, when they noticed a hairline crack on the main rotor swashplate. They immediately called the CAA's South Island airworthiness Aviation Safety Advisor, Richard Lane (35+ years in engineering, PPL-holder).

“Given the direct and prompt communication from the somewhat concerned engineer,” says Richard, “I immediately contacted the CAA's Chief Advisor Airworthiness, Warren Hadfield (two decades in large aircraft engineering), to discuss it with him.”

The CAA promptly contacted the manufacturer.

Thanks to these prompt actions, Guimbal quickly deemed that a fleet-wide inspection was necessary to detect any other failed parts.

“The CAA is able to engage with manufacturers and overseas regulators in a way that's not possible for the individual operator or maintainer,” says Richard.

The CAA published Continuing Airworthiness Notice 27-027 *Guimbal Cabri G2 Main Rotor Swashplate Assembly Cracking* to raise awareness of the defect.

Then, direct discussions between Guimbal personnel and the New Zealand engineers who found the defect helped refine and clarify the details, ahead of the manufacturer issuing Service Bulletin SB24-001A.

Subsequently, the defect was the subject of Airworthiness Directive 2024-0071 from EASA (European Union Aviation Safety Agency), requiring global action to inspect the swashplate assembly.

Once again, our local engineers were sought out by EASA for their advice on the inspection criteria for the swashplate.

“The willingness of our New Zealand engineers to be open and forthright, and to support not only the CAA, but the manufacturers and other National Aviation Authorities, can save lives,” says the CAA's North Island airworthiness Aviation Safety Advisor, John Keyzer (24 years rotary-wing engineering).

“It also contributes to a culture of honesty and safety first.”

He credits Guimbal for being open to investigating the defect, in conjunction with regulatory and industry representatives.

Act straight away

Time is of the essence when a potential critical or major defect is first spotted, John says.

“If an engineer identifies something significant – and they are usually best placed to know – we prefer to hear about it immediately.

“Follow up with a CA005D and an investigation report as appropriate. This helps the CAA to expedite any actions it needs to take.”

Reporting a defect

Warren Hadfield acknowledges that investigating and reporting defects can be costly in time and dollars for the aviation industry.

“We're grateful for all the reports we receive, and for the efforts of the engineers and support staff involved with both investigating and reporting.

“The Guimbal incident highlights just how important it is for engineers to let us know when they see something that needs our attention.”

Warren says even defects less dramatic than a cracked swashplate should be reported to the CAA. Then the data is collated and assessed to build a better picture of a problem and analyse trends over time. An issue that seems irrelevant today could be identified as part of a bigger pattern in coming months and years.

Include as much detail as you can when submitting a report – including part number, serial number and utilisation.

Warren says photos of defects are incredibly valuable, especially if the CAA wants to share the findings with the original equipment manufacturer, or another national aviation authority.

If engineers have any questions or concerns about raising a report, they should contact the CAA aviation safety advisors (see [page 25](#) for their contacts) or call the CAA on 04 560 9400.

John Keyzer says while there's no room for complacency, he believes the recent Guimbal example indicates that New Zealand aviation maintenance engineers are among the best in the world in reporting airworthiness concerns.

“I'm very proud of the culture our aviation engineers have for reporting defects and sharing information and knowledge,” he says. ➤

// MORE INFORMATION

You can find the CA005D defect form at aviation.govt.nz/forms.

Vector notices

OCCURRENCES DASHBOARD

These are the number and type of occurrences reported to the CAA, 1 April 2024 to 30 June 2024.

Occurrence type

49	Aerodrome incident
11	Aircraft accident
545	Airspace incident
444	Aviation-related concern 97 laser strike reports
580	Bird strike
16	Dangerous goods
208	Defect
11	Hang glider accident 2 hang glider, 9 paraglider
15	Navigation installation occurrence (for example, a transmitter failure)
515	Operational incident (for example, encountering severe icing)
3	Parachute accident
6	Promulgated information occurrence (for example, inaccurate weather information)
2403	Total occurrences
15	Airborne conflict events at unattended aerodromes (3 critical)

CORRECTION

The footnote in our story "The value of an electronic CO detector" (*Vector*, Winter 2024) said, "The Australian Transport Safety Bureau investigation concluded the CO had leaked into the engine due to cracks in the exhaust system, then into the cabin's instrument panel that was missing some bolts". This was incorrect. The footnote should have read, "The Australian Transport Safety Bureau investigation concluded that it was very likely that cracks in the aircraft engine's exhaust collector ring released exhaust gas into the engine bay, which then entered the cabin through holes in the main firewall where three bolts were missing".

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 – Maintenance, 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 – Maintenance, North Island
027 213 0507 / john.keyzer@caa.govt.nz

RECEIVING MULTIPLE COPIES OF VECTOR?

Sometimes our readers receive more than one copy of each issue of *Vector* due to receiving a personal copy, as well as one through a business, or syndicate.

Email us at education@caa.govt.nz if you're receiving too many copies and let us know which one(s) you'd like us to stop.

ACCIDENT BRIEFS

Bell 206L-4

Date and time:	29-Dec-2022 at 07:56
Location:	Kai Iwi
Nature of flight:	Agricultural
Pilot licence:	Private Pilot Licence (Helicopter)
Age:	35 yrs

The pilot was undertaking agricultural spraying operations when the engine spooled down to ground idle, forcing the pilot to initiate an emergency landing. The helicopter impacted the side of the hill, skid first, and proceeded to roll approximately twice before coming to rest at the bottom of the hill.

Preliminary on-site inspection revealed the control pressure (Pc) safety valve body had failed and separated from the valve, leaving only the knob attached to the Pc line with the safety clip. This action would drop Pc sense air pressure for the fuel control unit to ambient pressure, and cause the engine to spool down to ground idle.

Initial non-destructive testing examination of the Pc safety valve determined that the fracture face on the valve spindle showed the valve had failed by the termination of fatigue cracking. It's likely that vibration played a significant role in the propagation of the fatigue crack. The fatigue crack had initiated along the straight edge of the flat on the spindle. This edge is likely to have acted as a stress-raiser. It did not identify any material defect in the valve spindle.

A follow-up lab report carried out by the manufacturer concluded the valve stem head fractured because of fatigue. The fatigue initiated at the 90° angle at the base of the cutout section in the stem. No material anomalies were found.

The manufacturer had previously issued Alert Service Bulletin (ASB) 206-07-112 in response to a possible over-torque of the valve stem, resulting in a shearing condition of the valve stem. The ASB warning stated that a minimum wait time after last engine operation before conducting the inspection is 45 minutes. This was attributed to thermal expansion of the valve restricting the rotation of the valve stem.

The CAA issued CAN 72-007 to draw attention to the valve failure and highlight the requirements of the ASB issued by the manufacturer.

[CAA occurrence number 22/7773](#)

More accident briefs can be seen on the CAA website, aviation.govt.nz > [safety](#) > [aircraft accident briefs](#).

Some accidents are investigated by the Transport Accident Investigation Commission, taic.org.nz.

Grob G103 Twin II

Date and time:	08-Nov-2023 at 14:00
Location:	Omarama
POB:	2
Damage:	Minor
Nature of flight:	Training dual
Flying hours (total):	8000
Flying hours (on type):	300
Last 90 days:	24

During a winch launch, a simulated cable break was conducted at 500 feet AGL as part of the instructor training programme. The P1 (instructor-trainer) handled the immediate action of pushing the nose down into a recovery attitude, but then held that attitude for a prolonged time (four seconds) while the trainee instructor in the rear seat first prompted "airspeed" and then "I have control" as he took over and began to raise the nose/recover to a normal attitude and speed.

During this recovery phase the airspeed increased to almost 100kts and the aircraft contacted the winch cable, which was invisible to the pilots. The cable contacted under the left wing, went over the canopy, then under the right wing. The winch driver had cut the throttle immediately, the glider was seen to release, and the drogue initially deflated and fell away 'normally'. It was then seen from the ground to re-inflate and 'behave strangely' when the aircraft contacted the cable and towed the drogue along behind it. As the cable tightened it moved well inboard and ran over the rear canopy. It wore a deep groove and also worked its way into the wing and fuselage gaps on both sides. The (trainee) instructor in the rear called "you have control" to the P1 instructor/assessor in the front seat, who landed the aircraft straight ahead on the grass runway.

[CAA occurrence number 23/8155](#)

ACCIDENT NOTIFICATION

24-hour 7-day toll-free telephone

0508 ACCIDENT (0508 222 433)

aviation.govt.nz/report

GA DEFECTS

KEY TO ABBREVIATIONS:

AD = airworthiness directive **NDT** = non-destructive testing
TIS = time in service **TSI** = time since installation

P/N = part number **SB** = service bulletin
TSO = time since overhaul **TTIS** = total time in service

Aero Commander 680-F

#5 cylinder

ATA chapter: 8500

During cruise flight at 5500ft, the pilot noticed an unusual vibration from the left-hand engine, so they decided to return to make a precautionary landing. On the return leg, the engine lost power so the pilot shut down the engine, feathered the propeller, declared an emergency, and made a safe single engine landing.

An initial engineering inspection revealed that cylinder #5 had failed and all oil had been lost from the engine. An overhaul agency stripped the engine and discovered that the cylinder had probably deteriorated in service due to broken piston rings. Examination of the maintenance logbook revealed that scheduled maintenance inspections had not been able to detect the impending failure.

CAA occurrence number 23/1497

Piper PA-34-200

O-ring

ATA chapter: 2900

During the downwind leg, the pilot selected the gear down normally, but the gear didn't extend. The pilot then conducted a manual gear extension, achieved three greens, and landed safely.

An engineering inspection found that the hydraulic reservoir level was low, and fluid was found under the nose locker floor panel. The aircraft was put on jacks and no leak was evident with the gear stationary. However when the gear was retracted, a leak was found at the power pack inlet fitting when the gear was in transit.

The O-ring in the fitting was found to have a large nick in it from installation. The hydraulic power pack was an overhaul exchange unit from the USA. The O-ring was replaced and the gear was cycled several times, with no leaks evident.

CAA occurrence number 23/5104

GA defect reports relate only to aircraft of maximum certificated take-off weight of 9000 lb (4082 kg) or less. More GA defect reports can be seen on the CAA website, aviation.govt.nz > aircraft > GA defect reports.

Airbus Helicopters AS 350 B3

Intake Screen Camloc

Part model: Arriel 2B1

Part manufacturer: Safran

After completing ground runs with no issues, an abnormal 'clinking' sound was detected during the engine shutdown process.

Further investigation revealed a fastener receptacle of the DART PA100 FOD screen assembly for the particle separator had broken off and was ingested into the engine air intake. As a result, damage occurred to the compressor of the engine. The FOD screen assembly has two types:

- QB21308, using ¼ turn fasteners and receptacles.
Note: This was installed on the aircraft.
- QB23753, using bolts and non-floating anchor nuts.
This is the latest model or the upgraded version.

In 2018, Dart Aerospace issued Service Bulletin SB18-4, warning operators about the risk of QB21308 FOD screen receptacles coming loose and causing FOD damage during engine ground runs and had recommended replacing the kit for the QB23753 (bolts and nuts). Note: The service bulletin did not have mandatory compliance requirements.

CAA occurrence number 23/5379

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.

2024 WTSA - CIRCUIT CERTAINTY SEMINAR

Wānaka

The Runway Lounge
Thursday, 19 September
6:00 pm

Whanganui

Whanganui Aero Club
Wednesday, 25 September
7:00 pm

Feilding

Colyton Hall
Thursday, 26 September
7:00 pm

Hamilton/Te Kowhai

Te Kowhai Aerodrome
Monday, 30 September
7:00 pm

Matamata

Matamata Aerodrome
Tuesday, 1 October
7:00 pm

Tauranga

Tauranga Aero Club
Wednesday, 2 October
7:00 pm

Gisborne

Gisborne Aero Club
Thursday, 3 October
7:00 pm

Kerikeri

Bay of Islands Aero Club
Monday, 14 October
7:00 pm

Whangārei

Whangarei Flying Club
Tuesday, 15 October
7:00 pm

Ardmore

Auckland Aero Club
Wednesday, 16 October
7:00 pm

North Shore

North Shore Aero Club
Thursday, 17 October
7:00 pm

Omaka

Marlborough Aero Club
Tuesday, 29 October
7:00 pm

Kaikōura

Kaikoura Memorial Hall
Wednesday, 30 October
7:00 pm

Online event

Tuesday, 5 November
7:00 pm



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



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