

# vector

## LESSONS FROM A **CYCLONE**

Cyber  
security

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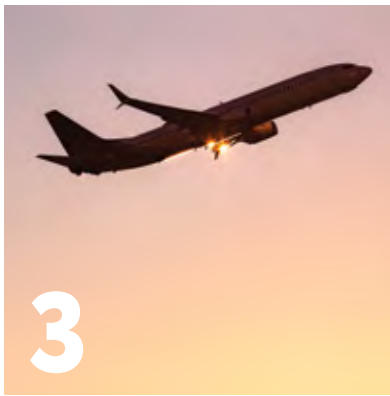
Everybody  
knew

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Drifting away  
from safety





// DRIFTING AWAY FROM SAFETY



// CYBER SECURITY – TIME TO TAKE IT SERIOUSLY



// EVERYBODY KNEW

Cover: Waiohiki Bridge, near Taradale, Tuesday 14 February 2023.

Photo courtesy of Cam Taylor. See our cover story on page 14.

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# DRIFTING AWAY FROM SAFETY



// By Alaska White, CAA Chief Advisor of Human Factors

This is about the risk you take to ‘get the job done’  
– you know, like NASA did with the space shuttle  
*Challenger* in 1986.





In psychology circles, it's called the 'normalisation of deviance'. In everyday language, it means gradually accepting, as ops normal, practices no longer matching genuine safety standards.

The disintegration of *Challenger*, 73 seconds into its January 1986 flight, is possibly the most high profile example of this.

The subsequent investigation revealed that erosion of rubber seals – the now-infamous 'O-rings' – led to hot gas leaking and igniting the shuttle's main fuel tank.

But the root cause was that the O-ring erosion had been known about for years by NASA and its engineers. They had assessed it as a "criticality 1" component, the failure of which would result in the loss of the shuttle and/or lives.

But numerous successful launches, despite the potential for disaster, had led to the issue being tolerated, then accepted, then normalised.

## We've all done it

We've all strayed from safe practices at some point. We've stood on a wobbly ladder or a chair to reach something, or we haven't worn our seatbelt on a quick car trip, or jaywalking instead of using a nearby crossing.

When this behaviour fails to lead to a bad result, we relax a little about doing it properly and, slowly, the unsafe practices become accepted into normal practice and culture.

Deviating from safe practices creeps in slowly and the result is that we become desensitised to it, and it no longer feels wrong. It establishes a new normal and a false sense of what is 'safe'.

Following the *Challenger* disaster, one of the managers responsible for the operations of the solid rocket boosters said:

"Since the risk of O-ring erosion was accepted and indeed expected, it was no longer considered an anomaly to be resolved before the next flight... the conclusion was, there was no significant difference in risk from previous launches. We'd be taking essentially the same risk on January 28 that we have been ever since we first saw O-ring erosion."

Without external intervention, such as audits, changes in procedures, or staff or contractors speaking up, the cycle of deviance continues, and is disrupted only when other factors line up and result in something bad – the lining up of the holes in the 'Swiss Cheese'.

## Intentional and unintentional

So-called 'deviant' actions can be intentional and unintentional, and those engaging in them often feel their deviance is justified (as the former manager demonstrated earlier) or they're largely unaware of their deviations.

But either way, their ability to accurately identify and understand the associated risks and potential outcomes is compromised. In NASA's case, they obviously didn't mean to cause harm and they genuinely believed nothing was wrong. All those successful flights...

When people in aviation – or in any high-risk industry – believe that what they think is a minor departure from defined procedures is acceptable, they've often started down a road that could easily lead to something terrible. The additional danger here is that it opens the door for further deviations.

We know that drifting from safe standards creeps in slowly, but what encourages and reinforces it?

## Pressure and rewards

When faced with a situation that puts you under pressure – for example, financial, client expectations, or time pressure – it's all too tempting to relax standards or bend the rules to 'get the job done'.

We're naturally vulnerable to succumbing to, and justifying, those shortcuts under pressure – all the more so when it's rewarded.

Rewarding behaviour – whether it's good or bad – powerfully reinforces that behaviour. Being given a financial reward or even just praise for a 'job well done' gives the brain a boost in dopamine (a 'feel-good' chemical in the brain). The brain likes that feel-good feeling, and when we like something, we seek it out, and so the behaviour continues.

1 To read more, go to SKYbrary.aero and search "swiss cheese model".



// A Boeing 737 MAX takes to the skies.

## Organisational culture and conformity

In any group, we're always looking for clues to how we should behave. We believe that others are more knowledgeable or experienced than we are, so we follow their lead. We're afraid of repercussions if we don't go along with the group – we don't want to look foolish or feel like an outsider, feel different, or be excluded.

A belief that it's better to 'go along to get along', 'it's not my job', or that there's no choice but to conform to 'how things are done around here' are all ways we justify our decisions or convince ourselves that something we know is not okay, is okay.

If we don't believe what we're doing is wrong, will we report it or challenge it? That's very unlikely, but it's very likely nothing will change until a catastrophic event unfolds.

### Space shuttle *Columbia*

Did NASA learn its lesson from 1986 and improve the organisation's culture? It didn't appear so because in 2003, the space shuttle *Columbia* disintegrated over Texas as it re-entered the earth's atmosphere. As with *Challenger*, it was a known technical issue that led to the shuttle's destruction. Many shuttle flights had returned successfully, despite bits of foam breaking off and damaging thermal insulating tiles.

Any risk was therefore downgraded and normalised to the point it was a "maintenance issue". Then, in February

2003, a piece of foam debris hit the shuttle's wing, puncturing a hole that proved fatal upon re-entry to the earth's atmosphere.

### *Costa Concordia*

In 2012, the giant cruise vessel *Costa Concordia* ran aground off the coast of Italy in relatively shallow water. The captain, and many captains before him, had intentionally and continually deviated from standard operating procedures (SOPs) for years.

There were no consequences to those deviations and that reinforced the belief that they were safe. The ensuing shipwreck killed 32 passengers and crew and seriously injured many more.

### Boeing 737 MAX

The Boeing 737 MAX airliner was introduced into commercial air travel in 2017. Soon after, two of them crashed, killing a total of 346 people. In March 2019, all 737 MAX aircraft were grounded by the FAA.

A US Congress report on the crashes concluded that Boeing was facing pressure to produce a rival of the Airbus A320neo, and this pressure led to safety and performance concerns being dismissed to meet production schedule and goals.

After changes by Boeing, the CAA assessed the aircraft in 2021 as meeting required safety standards, allowing it to fly in New Zealand airspace.

## Memo to CEOs

**"The standard you walk past is the standard you accept."<sup>2</sup>**

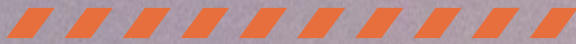
Normalisation of deviance is easier to prevent than it is to correct. Set the standard you refuse to walk past, and model safe behaviour yourself. Make sure your senior people do that too.

Create and maintain a culture where 'all the team' wins, not just one individual.

Silence is enabling and powerful. So create an atmosphere where staff feel okay to talk about their mistakes and »

<sup>2</sup> Lieutenant-General David Morrison, Chief of Australian Army, 2011-15.





» concerns, and where they can trust each other to give good constructive feedback. Encourage differing views and opinions. Encourage incident reporting. Maintain a routine of briefings and debriefings. Encourage robust discussion.

Reward safe behaviour – remember, we like dopamine’s feel-good effect – not just ‘job done’ results that may have pushed safety boundaries.

Know your company – pay attention to all aspects of your operation. Be active about this, because what you think is happening, from the comfort of your office chair, might be vastly different to what is actually happening on the ground.

**// You won't know you're deviating from safety, if you don't know what your procedures say to begin with. //**

Regularly look at, and be prepared to revise, your procedures. An exposition isn’t to be left on a shelf gathering dust, or buried in a computer file, never to be referred to once created. You won’t know you’re deviating from safety if you don’t know what your procedures say to begin with.

Stop, and think ahead – ask yourself ‘What if?’

And a key lesson from the *Challenger* disaster – don’t use past successes that involved deviant actions to achieve, to redefine acceptable performance and safety standards.

Finally, remember the observation of American physicist Richard Feynman, “When playing Russian roulette, the fact that the first shot got off safely is little comfort for the next.” ➤



# CYBER SECURITY

Cyber attacks are on the rise, with potential repercussions for aviation safety.

Both the frequency and severity of cyber attacks are increasing in New Zealand.

Recent high profile attacks include, in 2019, a \$30 million hack on Cryptopia, a cryptocurrency exchange based in Christchurch, a 2020 attack on NZX, the country’s stock exchange, a ‘ransomware’ attack on the Waikato District Health Board, and a data breach at the Reserve Bank, both in 2021.

Across the Tasman last year, 10 million Australians had their private medical records published on the ‘dark web’ – a part of the internet requiring a special browser to access – after the government refused to pay \$US10 million to the attackers, believed to be based in Russia.

Meanwhile, the GCSB – New Zealand’s lead agency for cyber security and resilience – says it’s prevented 200,000 cyber attacks on New Zealand since November 2021.

In its summary of activities and incidents for 2022<sup>1</sup>, Cert NZ – the government agency monitoring and reporting on cyber attacks – noted a 25 percent increase in financial loss since 2021, to \$20 million, from 8000 reported incidents.

Its research indicates attacks will become more common, harmful, and advanced. It also found the government doesn’t have the ability to keep New Zealanders safe from these attacks.

<sup>1</sup> To read more, go to [cert.govt.nz](https://cert.govt.nz) and search “2022 summary”.



# TIME TO TAKE IT SERIOUSLY

## But does it affect me?

It's already happened in New Zealand aviation. A serious attack was recently launched against a New Zealand aviation organisation, which disrupted its business for several weeks.

It's not just customer and financial data that's at risk. Jonathan Mayne, who leads the CAA's airworthiness certification team, says if maintenance records of aircraft get hacked, engineers will have no way of knowing the airworthiness status of those aircraft.

"More and more maintenance providers and maintenance control systems are online, so this is a valid time to take cyber protection seriously.

"Aircraft maintenance records might be on a basic spreadsheet held in cloud storage. A cyber attack may block your access to those records, so you have no idea when a component needs replacing, or when an engine is due for overhaul. It's clear the impact this would have on aviation safety."

Penny Stevenson, CAA Chief Advisor of Safety Management, agrees.

"A cyber security incident could absolutely present a threat to the safety of aircraft, aviation safety-related equipment, products, and services."

Penny says this is especially the case for larger organisations or those relying heavily on technology in their operation.

"Such an organisation may develop and use a security programme. In some cases they'll be required to, by the rules under which they're certificated.

"This programme is to minimise the risk of interference with their systems, where it may endanger the safety of operations.

"Any such programme would be expected to integrate with their safety management system."

## You're never too small to hack

Senior Threat Analyst with Cert NZ, Sam Leggett, agrees that organisations should make the risk from cyber attacks part of their standard risk process.

"That's because cyber attackers are opportunistic in nature.

"In many cases, they do go after low-hanging fruit. While you might think your business isn't a target, the reality is quite different."

You don't, for instance, have to be a big or rich organisation to be attacked.

The US-based *Avionics News*<sup>2</sup> made cyber security the cover story of its November 2022 issue saying, "Cyber criminals are actively going to start targeting aircraft digital networks.

"Aircraft industries are particularly vulnerable to financially motivated attacks as they contain sensitive personal and corporate data."

It went on to report that potential attacks can come from novice attackers – who can nevertheless cause a complete stop to operations – all the way through to large-scale criminal hackers, and state-sponsored hackers. »

<sup>2</sup> Go to [aea.net/avionicsnews/anarchive.asp](http://aea.net/avionicsnews/anarchive.asp) to read the November 2022 issue of *Avionics News*.

» Former CAA Security Specialist Reem Daoud says there are many different ways New Zealand organisations can be attacked.

“At one end, you have ‘phishing’ attacks, which are the most common form of attack. They’re fake emails pretending to be from a reputable source, but which are actually harvesting your credentials. And at the other end, you have ransomware attacks – as the name suggests, demanding money not to damage an organisation.

“But it can be as simple as a staff member innocently visiting a corrupted website, which then begins unauthorised downloads into the organisation’s technology.

“Or it could be a staff member downloading an infected file.”

### What can you do?

Sam Leggett recommends organisations patch and update their software regularly.

“That means installing the latest version of operating systems, software, and applications used on any corporate devices. Make sure these updates come directly from the vendor of that product.

“Making sure those applications are up-to-date is really key – those updates strengthen your security where it may be vulnerable.

“Also, implement some form of backup. If an incident does occur, you can start restoring from those backups and get back to normal business as quickly as possible.”

Sam says it’s worth regularly testing the backups to make sure they’re working as they should.

“Storing backups in a separate location – ideally somewhere that’s physically secure, and that only authorised people have access to – is crucial. That way, they’re separate from business operations if something untoward happens.”

## // Run regular security testing and security awareness training for staff. //

Sam says organisations can also implement an incident response plan, which can be as simple as outlining what to do if something goes wrong.

“Having this in place means if something happens, instead of wasting time trying to work out who to call and what to do, it’s already laid out for you, and it’s nice and clear.”

Penny Stevenson agrees. “Such a response plan could be included in the existing emergency response plan participants currently have in place within their safety management systems.”

Sam also advises operators to use complex passwords on personal and business accounts, and two-factor authentication.

“This is an extra layer of protection – the first is your username and password, and the second may be a code sent to your mobile number.”

Reem Daoud says it’s important to apply strong email security policies for any incoming or outgoing emails, such as using a trusted email service or creating effective spam filters.

She also recommends toughening systems up by adhering to the GCSB’s *New Zealand Information Security Manual*, and always observing best practice by keeping systems up-to-date and patching them consistently.

“Run regular security testing and security awareness training for staff.”

## // Aircraft industries are particularly vulnerable as they contain sensitive personal and corporate data. //



Reem says that ‘endpoint security’ is key to protecting yourself.

“This is just a way of protecting your devices, such as desktop computers, from any malicious attack.

“Installing antivirus software and firewalls is a great way to achieve endpoint security.”

Reem also says organisations should limit the degree to which employees have access to the organisation’s data. “Their access need only be enough for them to carry out their work,” she says.

“Also, educate your employees about the risks of an attack, and apply a ‘zero trust’ approach – that means *nothing* is assumed to be trustworthy – across the organisation.”

Reem says if your organisation is attacked, never pay a ransom to cyber criminals.

“Investigate to identify the source of the attack, and isolate the infected systems – for instance, disconnect from the entire network.

### Where to go for help

Anyone can report a cyber incident to CERT NZ – [cert.govt.nz](https://cert.govt.nz) – whether they’re an individual, a small business, or a large organisation. Also notify the CAA Security Regulation Unit at [security.regulation@caa.govt.nz](mailto:security.regulation@caa.govt.nz).

CERT NZ provides free and confidential advice to help deal with the incident, and help you move forward in a more cyber-secure manner. It also has a range of free resources on its website to help organisations improve their cyber security.

If you think the attack is of national significance, you can report it to the National Cyber Security Centre. [↗](#)

## // FOR MORE INFORMATION

For the last three years the International Civil Aviation Organization (ICAO) has been developing cyber security guidance for member states like New Zealand, to build on.

The CAA is considering what cyber security rules and guidelines are appropriate to New Zealand aviation and, in June 2023, is joining the second annual meeting of the ICAO Aviation Cybersecurity Panel, in Montreal, as an observer.

In 2021 EASA – the European Union Aviation Safety Agency – released a paper, *Opinion 03/2021 Management of information security risks*, outlining the need to protect the aviation system from, and make it more resilient to, what it’s calling ‘information security’ events and incidents.

And, in 2022, it launched an online community network – [easa.europa.eu/community/cybersecurity](https://easa.europa.eu/community/cybersecurity) – designed for aviation cyber security professionals to share information and collaborate on initiatives to combat attacks.



# LESSONS FOR ALL PILOTS

## FROM A

# FENESTRON TRAGEDY



Photo: iStock.com/Tim Starke

Know yourself. Know your aircraft.  
Know what it's doing right now.

**I**n December 2020, a privately owned helicopter was flying at low level, northeast of Kaikōura, when witnesses saw it begin to “corkscrew”.

Moments later it crashed into shallow water at the mouth of the Kēkerengū River.

The newly qualified pilot and his wife were killed. Their two children and a school friend survived, but two were seriously injured, and one, moderately.

### Inexperience was the factor

The investigation<sup>1</sup> by the Transport Accident Investigation Commission (TAIC) found the pilot was more likely focused on prepping to land than on ‘flying’ the Airbus EC120 B.

Tracking data obtained by TAIC indicated the pilot wasn’t monitoring the instrument panel for the aircraft’s airspeed–groundspeed relationship.

TAIC considers it very likely that as the pilot was focused on looking outside at an intended landing area, he was unaware of the aircraft’s reducing airspeed, which would have required more power to remain level.

At that point – and for an unknown reason – the pilot lowered the nose and increased power to accelerate away.

“The slow airspeed combined with increasing power caused the helicopter to suddenly yaw uncontrolled to the left, very likely startling the pilot,” the TAIC report says.

“The rate of yaw increased, and the pilot was unable to regain control before the helicopter crashed onto the beach.”

The pilot’s inexperience was the key factor in their inability to regain control after being startled by the sudden yaw, TAIC concluded.

It says that, with experience, the need for pedal input becomes more natural and intuitive – a pilot instinctively anticipates pedal changes as they increase or decrease power.

With less experienced pilots, pedal inputs can be mechanical and often after the helicopter has started to yaw.

### And again here

The accident has echoes of one in 2017, at Waikawa, in Horowhenua<sup>2</sup>.

The CAA investigation into that accident found a “loss of control on approach” and concluded the instructor pilot of the Cabri G2 “failed to anticipate and correct the development of a rapid left yaw”.

<sup>1</sup> TAIC report AO-2020-003

<sup>2</sup> aviation.govt.nz > safety > safety investigation reports > 17/5304



# // In both accidents, the pilots were not that experienced with the characteristics of the Fenestron tail rotor. //

They were unable to “arrest the yaw rate and regain control of the helicopter, and the aircraft struck the ground”. Both occupants survived, although with injuries.

In both accidents, the pilots were not that experienced with the characteristics of the Fenestron<sup>3</sup> tail rotor of their aircraft had on its handling.

CAA Flight Examiner (Helicopter) Andy McKay, says that Fenestron tails are, generally, slower to respond than standard tail rotors.

“And this affects the way Fenestrans handle. It takes more to control yaw, and this can catch out the pilot who’s more used to a conventional tail rotor.

“The key is anticipating and leading with pedal input before or as it’s needed, and understanding that more pedal travel may be required,” he says.

The report into the 2017 Waikawa accident agrees, saying, “Pilots, especially those with experience flying with conventional anti-torque systems, must familiarise

themselves with the techniques required in flying Fenestron-equipped aircraft.

“Anticipate the helicopter’s reaction to aerodynamic and environmental changes and be prepared to apply the large and rapid pedal inputs required.”


“Pedal travel is significantly more than that which is required for conventional tail rotor systems,” Andy McKay says. “Both these accidents were the result of the pilots not understanding or anticipating this, and thus not responding appropriately to the way their aircraft were performing.

“It’s critical that all pilots – not just those of helicopters with Fenestron tail rotors – know their aircraft systems and behaviour patterns thoroughly.”

## The basics, again.

The TAIC report into the 2020 tragedy agrees with Andy McKay. While it could not identify any new safety issues in the accident, the TAIC report did reiterate some familiar advice.

“Pilots need to be aware of the operating characteristics of the aircraft they are flying. Pilots need to know their limitations and ensure they retain an adequate margin of safety as they gain experience and competence. Pilots need to continually monitor the performance of their aircraft when flying, including the airspeed–groundspeed relationship when operating at low level.

“A pilot qualification, licence, or aircraft type rating does not in itself confer expertise. Pilots need to be familiar with the aircraft they are flying and their own capability as they gain experience. Pilots also need to ensure they are fully aware of the increased risks of flying at low level and monitor the performance of their aircraft accordingly.” 

<sup>3</sup> A Fenestron is a protected tail rotor of a helicopter operating like a ducted fan. Its manufacturer, Airbus, says the design improves performance and efficiency, reduces noise, and is more protective of people working around it on the ground.



# ADS-B DOES NOT REPLACE AN AIRWAYS VFR FLIGHT PLAN

It's undoubtedly a boon to aviation safety, but ADS-B won't automatically trigger a search for you.

**L**ike everyone else who gets ADS-B installed, South Canterbury Aero Club's CFI, Aaron Pearce, says it's "brilliant and convenient technology".

But he also knows that, like all technology, it has its limitations.

"If I fly inland from Timaru for just 10 kilometres where we teach TAWA (terrain and weather awareness), I'm in terrain where the ADS-B signal is lost.

"Even places where you think there should be great coverage, often have no receivers for ADS-B – for example, almost the entire Waitaki Valley near Oamaru."

Aaron says many pilots with ADS-B arrange informal flight following – their partner, or a mate, watching their track on a cellphone, for instance.

"But what happens if the 'follower' is distracted by the kids coming home from school, or a conversation with a fellow pilot? By the time they return to monitoring the flight, the signal could be gone – has the aircraft gone down, or is it just in terrain that blocks the signal? What happens now?"

## How a formal flight plan helps you survive

Let's say you've filed a VFR flight plan – and Flight Information is monitoring your SARTIME. If your flight plan is not terminated by the SARTIME, Flight Information will try calling you, and get other aircraft to try to call you. It'll also try the emergency phone number you've provided in your flight plan.

If, after just 15 minutes, Flight Information has been unsuccessful in getting hold of you or information about you, it'll declare what's known as an 'uncertainty phase' (INCERFA), and alert the Rescue Coordination Centre (RCCNZ) which will take over the search for you.

General Manager RCCNZ and Safety Systems, Justin Allan, says ADS-B reporting provides only part of their search and rescue picture.

"A fuller picture comes with the ADS-B track, *alongside a flight plan* [Vector emphasis].

"A flight plan contains important information about a pilot's intended route, destination, and frequencies they intend to be on. ADS-B tracking, alone, does not provide this critical information.

"So, for us, ADS-B and flight plans are complementary. The 'contextual' information offered by a flight plan sits alongside the 'positional' information provided by the tech."

## How to do it

Tragically, in New Zealand there have been accidents where the pilot survived the initial impact with terrain, but subsequently succumbed to their injuries at the accident scene. If rescuers had quickly known where they were, the outcome may have been more positive.

So it's surprising the number of pilots who operate on the principle of 'never done it, don't know how'. If potentially saving your life isn't enough of an incentive, remember that if you're flying more than 50 NM offshore, it's actually a rule – 91.307 *VFR flight plan* – that you file a flight plan.





So – here are the two ways to do it, from Airways:

You can go through the Internet Flight Information Service – [ifis.airways.co.nz](http://ifis.airways.co.nz). Using the internet service is the more economical option, at \$5.65 (from July 2023) plus GST.

Or, you can pick up the phone and call the National Briefing Office – 0800 626 756 or 03 358 1509. From July 2023, this option will cost you \$8.12 plus GST. Not much, considering it might save your life.

### Filing through IFIS

Using IFIS to file a flight plan is the easiest option – you can even do it from your phone.

You'll fill out a VFR flight plan activation template – [ifis.airways.co.nz](http://ifis.airways.co.nz) > flight plans > VFR flight plans > flight plan activation. You'll see on the form there's a link to a help function outlining the information you need to complete the form.

Not totally confident converting NZST to UTC? The VFR flight plan form on IFIS has a conversion clock which can help you check your calculations.

When filing a flight plan via IFIS, invalid or incomplete information will generate an error message with a brief description of what's required to correct the data.

If you're having difficulties, just call the National Briefing Office.

Before you leave the IFIS website, make sure you've received a message confirming your VFR flight plan has been accepted.

### Filing through the National Briefing Office

If you're filing your flight plan via the National Briefing Office, the flight service officer will talk you through each

of the fields in the flight plan. They'll be entering this information directly into an electronic form. If you aren't sure how to convert your SARTIME into UTC, the flight service person will help.

Once your flight plan has been accepted into the air traffic management system, an SSR transponder code will be allocated to the flight and the flight service officer will provide the code to you.

Some aircraft operators already have an allocated SSR code, and they'll need to provide that to the National Briefing Office when they're filing a flight plan.

### SARTIME

This is the time you nominate in your flight plan that you'll no longer need monitoring by air traffic services, because you've landed at your destination.

If you don't close – or 'terminate' – your SARTIME at the nominated time, air traffic services will start 'alerting action', including contacting RCCNZ – see previous page.

Give some thought to your SARTIME – will you have RTF coverage to be able to terminate in the air, for instance? If you don't, allow time to get yourself on the ground and to make the termination call on your cellphone. If you're outside cellphone coverage, you'll need to allow time to reach a phone. ☎

## // FOR MORE INFORMATION

See *AIPNZ ENR 1.10 Flight planning*.

Go to [aviation.govt.nz/vector-online](http://aviation.govt.nz/vector-online) > *Overdue*. Now what? to read more about the response by RCCNZ to an aviation incident.

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# LESSONS FROM A CYCLONE

Here's how local operators at Hawke's Bay Airport maintained safety in the chaotic aftermath of Cyclone Gabrielle. And what they learned about preparing for the next emergency.

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Mid-morning, Tuesday 14 February 2023, it finally stopped raining. But with up to 720mm of rainfall in the prior 24 hours, large swathes of Hawke's Bay and Tairāwhiti were devastated.

Napier was an island, cut off by flooded roads and damaged bridges.

At 7am, the power cut out, taking with it all electronic communications. Throughout the day, the waters continued to rise.

## Lesson 1

### The airport

Despite 176mm of rainfall in the past day – 56mm is the average for the entire month of February at the aerodrome – the airport was relatively unscathed and remained operational. At 5am on Tuesday, Hawke's Bay Airport Operations Manager Deb Suisted, began the first of four 16-hour days.<sup>1</sup>

"Every emergency has its own peculiar challenges," says Deb, "and you have to be flexible, be ready to make decisions on the spot, and be innovative."

"One of the biggest challenges for us was the complete loss of electronic communications. It affected everyone way more than we really anticipated."

"Our team had radio-telephones so we could reach each other, and the airport had a generator so we could communicate with agencies outside the region. But many local operators didn't have comms, so it was a matter of walking between my terminal office and their bases, several times a day, to stay in contact."<sup>2</sup>

The availability of backup power is Deb's first piece of advice to other airport companies, and airport users.

"It's absolutely essential. Operators couldn't pump fuel, ATMs didn't work, aircraft couldn't be maintained, and no one could access NOTAM information, or knew what the weather was going to do – all because of no power."

<sup>1</sup> Rising water levels meant Deb was evacuated from her home at 10.30pm that night. She arrived at the airport with her husband, sleeping bags, pillows, and a crockpot. They were to remain there for four days.  
<sup>2</sup> Despite recent knee replacement surgery, Deb walked about 18,000 steps each day in the first four days. "I just upped the meds, and got on with it."

## Lesson 2

### One person

Deb would also advise organising a single person, ahead of time, to be the information conduit through which all news of operator problems and activities would pass.

She did her best to be that person, walking around operators a couple of times a day, collecting information, offering her team's help, and – once electronic comms had been re-established – sending out a daily newsletter updating everyone on where everyone else was at.

She was also part of daily civil defence video updates, so could communicate to other agencies what was needed, and find out what was on its way. She put through requests for equipment and services, but could do this only if she knew they were needed.

"So organising someone that everyone knows about, ahead of time, to be the sole channel for information and requests for help would be a good way to go. That person also needs to actively ask each operator what they need." »

## // INNOVATION

A number of the 'roof rescues' who arrived at the airport terminal's pop-up welfare centre were accompanied by dogs as traumatised as them. Some of those dogs didn't have leashes, so quickly had their owners had to move to the relative safety of the house roof.

In anticipation that an anxious dog may suddenly escape airside, leashes were fashioned from the ropes of chocks.

## » One person

## // LESSONS ABOUT INTERNET ACCESS

Once it was generally known that the terminal had power, and therefore an internet connection, it was besieged by Napier locals, desperate to communicate with family and friends outside the region.

"People were hugging the power points with multiboards, charging devices," says Deb Suisted. "At one point, there were more than 600 people connected to our wifi. They were sucking so much bandwidth, I fell off the daily emergency briefing. I asked them all to stay off the wifi for just one hour. Not many obliged and I fell off the call again a few minutes later. So we cut the public's access to our wifi.

"What we learned was that our corporate wifi and public wifi were not separated. In the end, to reduce the number of people in the terminal, we capped wifi use to 30 minutes per device."



## // LESSONS ABOUT POWER

Two airport-based maintenance facilities had no power. Because of the implication of that for safe rescue and recovery flights, Deb put in a request through civil defence explaining that a large generator connected to a transformer was needed between the two workshops.

"Within 15 minutes, Unison (the central North Island power company) was at the airport, and soon after, power was restored to the whole airport precinct. It may have just been good timing, but it certainly meant safer operations in the cyclone's aftermath.

"The lesson from this is that you need to think about what others might need, because at times they're almost too busy to think about it themselves.

"Also, getting power to maintenance facilities is now on our checklist!"

## Lesson 3

## Risk versus reward

– a personal account by pilot Geoff Keighley

My cousin Fiona was the first to ask for help. Her voice message, early on Tuesday morning, was full of panic.

"Mum and Dad are on the roof, can you please help? Please hurry!"

I borrowed a Squirrel helicopter from a local horticulturalist, and the services of the owner's son, Cam, who knew his way safely around a helicopter, to act as crewman.

I emphasised to Cam that we weren't going to go in with that 'we have to save people at any cost' mindset.

I told him, "We're potentially going to see some stuff we don't want to see today. But first and foremost, it's about you and I getting home tonight.

"And we're not going to take any unnecessary risks. If you're not happy about something, or we can't agree on the safety of something, we don't do it. It's that simple."<sup>3</sup>

As we became airborne the sheer enormity of the task ahead became apparent. I'd never seen anything quite like this in my 50 years.

Fortunately, my uncle and aunty had already been rescued by boat crews, so we tracked towards Puketapu.

Our first task was to get about 100 RSE ('recognised seasonal employer' – mainly from Pacific Island countries) workers to high ground.

They were scattered along the stop banks of the Tutaekuri River. Over several journeys, we flew them to safety – some of them to the local landfill. Not many people can say they'd had a helicopter ride to a rubbish dump, but it was safe ground!

Once the RSE workers were all safe, we continued upstream.

My past experiences had conditioned me for days like this. I've done more than 20 years flying in

<sup>3</sup> After the brief, I looked down, surprised to see Cam was barefoot, I said, "Mate, that's not going to work!" He'd run from his house with only the clothes he was wearing. Fortunately, I had a pair of jetboat booties in my vehicle which he somehow managed to fit. Turns out the booties were Cam's best friend, as he traversed, Spider Man-like, across slippery roofs!





// After 11 hours of being increasingly muddied, Geoff and Cam agreed the hot shower afterwards was "gold".

Australia and Papua New Guinea – in construction, exploration, bushfire and flood recovery.

But you never totally feel comfortable in these environments – and you shouldn't. I knew where I could fit the helicopter, and where I couldn't, what was safe for me to do, and what wasn't.

We did everything as safely as we could in the circumstances, if not strictly according to the book<sup>4</sup>. For example, it was difficult to tightly fasten everyone's seat belt, due to the water swelling the belts themselves, and mud clogging the fastening mechanisms.

(Cam, however, was able to reach through the helicopter's open door, and 'muscle' the belt tight for the outside seat passenger.)

We loaded and unloaded passengers only from the non-tail rotor side of the aircraft. Main rotors are less of a risk than the fast-moving, near-invisible tail rotor blades.

But we assessed each area before we went in. We might have orbited it three, four times before we made a decision on how we were going to approach it – where the powerlines were, how close we'd be getting to trees, then how we were going to land on the building, and how Cam would load the passengers.

We'd talk about how to communicate to the people on the roof to get rid of FOD – blankets and sleeping bags and towels – anything that could be recirculated into the rotors, and then we talked about how we were going to depart out of there. We talked about all of this before we went in.

We worked in tandem with another bloke for a while during the afternoon. That was good because as an ag pilot, he was very aware of low-level hazards like power lines and trees. He'd hover off and assess the bigger picture as I got in close. It was an added level of situational awareness. Then we'd swap roles, and I'd be extra eyes as he went close in to pick someone up.

We made calls to each other only when we needed to, because the radio was chaotic. You could hardly get a message in edgewise at times.

It was all about assessing the risk and the reward. It wasn't always easy extracting people – some were very weak from being in water up to their necks for hours, some were really heavy, so keeping the machine steady as they clambered in, took some concentration. A good visual reference helped.

Some of it was quite distressing – little kids in just their underwear, terrified and blue with cold. Their parents visibly shaken and crying. It was really confronting. A couple of times I had to hold back emotion – the sight of children in such distress was something I'll never forget.

But my mindset was 'we have to stick to the task of helping these people as best we can'.

Cam worked out that, in the end we'd shuttled about 140 people to safety – some off stock banks, some from roads, and some off rooftops.

Eleven hours after we'd begun, we landed safely. We agreed we'd had a win and it was an astounding and unforgettable day.

It was also a day of sheer kindness, as strangers helped our passengers, offering them shelter and food, and most importantly, compassion.

<sup>4</sup> Vector comment: After his flights, Geoff submitted an s13A notification to the CAA. Section 13A of the Civil Aviation Act 1990 exempts pilots from the rules in some emergency situations – in this case, because people were in danger.

## Lesson 4

### “The saviour of the day”

As recreational aircraft from outside the region started to fly in, carrying supplies for friends and family, the airspace across the whole region became busy – even dangerous. The number of flights to Hawke’s Bay Airport in January increased by 300 percent in February (and by 350 percent in March).

In the very early days, some of the pilots had not planned well for their flight, so focussed were they on getting through with their precious generator or other supplies as fast as possible.

Some allegedly made no radio calls, no position reports, and just ‘appeared’ inside restricted airspace.

“So one of the biggest saviours of the day,” says local LAME Rob Mudgway, “was, without doubt, ADS-B”.

Rob, CEO of Red Airworx, believes ADS-B was the reason there wasn’t a disaster in the air in the post-cyclone commotion.

“There was so much going on in a relatively small airspace. There were helicopters hovering and rescuing people, helicopters transiting to and from Hastings, Napier and surrounding areas, and the weather conditions at times were not ideal.

“ADS-B allowed aircraft to see one another, alerting pilots of aircraft flying near them.

“Even me, flying back from a maintenance job in Gisborne – I’d just look at all the traffic on my device and go, ‘Oh well, I’ll just put my life jacket on and stay out off the coast and completely away, talk to the tower and they’ll just bring me in when they can. Easy.

“ADS-B is a game changer. It should be mandatory for every aircraft in New Zealand.”

Over at charter and training operator, Aroha Helicopters, its CEO and chief pilot Skiv Devescovi, agrees.

Skiv spent the first few days, post-cyclone, ferrying essential goods and generators to stranded, rural properties.

He flew almost triple his normal number of flights over the first two days, amidst a huge number of aircraft on cyclone recovery missions – but says almost everyone had ADS-B, and that made a huge difference.

“Even if they didn’t put in the radio calls, you could see them, and that was great in such busy airspace.”



Photo courtesy of Skyline Aviation.

Dylan Robinson, from the New Zealand Air Ambulance Service – Skyline Aviation – is also a fan.

“Particularly on the first weekend post-cyclone, we saw a lot of recreational pilots coming into the Hawke’s Bay from all around the country bringing in care packs and supplies.

“That’s where we saw the benefits of ADS-B. On a few occasions, we noted aircraft making incorrect or no position reports, but because they had ADS-B, we could see them on TCAS – that definitely helped us avoid a few dangerous situations.” 🛬

### // NOW READ...

The rest of the article at [aviation.govt.nz/vector-online](https://aviation.govt.nz/vector-online) or scan this QR code.





# EVERYBODY KNEW

“They were an accident waiting to happen” is a regular comment made to CAA’s fatal accident investigators.

“It makes really quite sad reading,” says CAA Safety Investigator Colin Grounsell, of a document sent to him, detailing the lead-up to a recent fatal flight.

The document was put together by a senior instructor, outlining the deceased pilot’s history and the attempts made to alter his approach to safety.

Colin says, “It appears he had been known quite widely for unsafe flying. And there had been attempts by fellow pilots – and clubs – to guide him into safer flying.

“I guess everybody hoped they could change his decision-making, but in the end, sadly, they couldn’t.”

The document’s author says he, and his fellow instructors, have to keep their finger on the pulse of what’s happening at their organisations.

“Sometimes, a pilot regularly infringes safety because they’re failing to appreciate their own lack of knowledge – often of conditions – or skill in managing those conditions with appropriate margins for safety.

“But you have some influence over someone in their biennial flight review. Don’t conduct just a 20-minute flight – if you and others have had concerns, make it an hour, or two hours. Challenge them, don’t make it just a box tick.

“Sometimes it’s hard to understand what challenges some pilots have, without a thorough BFR. This can be true for both low-hour pilots, and those who’ve reached the later years of their flying careers.

“Hence the importance of standards within organisations, and good assessment procedures.”

**// It appears the deceased pilot had been known quite widely for unsafe flying. //**

The instructor suggests that pilots, worried about the flying of a colleague, but unwilling to speak to them themselves, could tell a duty instructor.

“And, if nothing happens, you could approach the CFI.

“But the best way, probably, is to talk to them yourself.”

### How to approach

It’s never easy, however, to try to influence a fellow pilot’s flying, says CAA Safety Investigator Lou Child. “But it can be done in roundabout ways.

“Flying communities are quite tight. You could perhaps approach someone you know is a friend of the pilot concerned, and say, ‘Hey, you’re a good mate of theirs, how do you feel about talking to them about this? We’ve seen this and think they might need a bit of help. You might think the same thing’.

“Or maybe you go flying with them, and talk about what’s happening and why it’s happening, during the flight.

“So, getting the message through may be difficult but can be done, especially through connections.”

In handling a non-responsive pilot, Nelson Aviation College Safety Officer, Jackie Day, called on CAA Aviation Safety Advisor Carlton Campbell to talk to them.

“This pilot really respected Carlton so he did respond to Carlton’s intervention,” she says.

And even an innovative approach could work.

Some years ago, when he was safety officer for a flying organisation, the senior instructor, highlighted earlier, observed a Part 149 pilot using an inadequate homemade wooden seat in his aircraft.

“I realised the safety risk of this seat, so I just jumped on it and broke it! Just recently I met that pilot at a reunion. He told me that, once he’d stopped being angry, he really respected me for what I’d done.

“He realised it was better I broke it on the ground, than it broke mid-flight.”

### Reluctance to dob in a mate

Saying something, either to the pilot concerned, or about them to someone else, can feel uncomfortable, confronting, and daunting, says CAA Chief Advisor of Human Factors, Alaska White.

“But try thinking about what you want to do in a different way – so, from ‘dobbing in a mate’ to what it really is, which is expressing care and concern for someone else’s safety and wellbeing.”



The senior instructor, who wrote the document about more intervention in poor flying, says people should not worry about ‘dobbing in a mate’.

“I’d rather dob someone in – even if that puts a friendship on the line – than have them involved in a fatal, when I had done nothing to prevent that.”

### We should have done something

Flight Examiner Willie Sage told *Vector* that some years ago, a line pilot of his acquaintance was involved in a fatal CFIT accident.

The general manager who’d been employing that pilot observed, after the accident, that he’d had problems with the pilot and was about to take them offline.

“I wish I had,” he said to Willie, who says that comment has stayed with him ever since.

Willie told the aviation YouTube™ channel *Kiwi Tales*, that over the years, he’s been in charge of a lot of people and has had the responsibility of deciding whether or not they should go flying.

“If you have that gut feeling that you’re not happy about someone, or you’re worried, you’ve got to act on it.

“It’s no good thinking, ‘Oh yeah, that guy had issues, we should have done something about that.’”

Jackie Day has a similar regret. Some years ago, a convoy of visiting pilots caused “a bit of havoc” as they joined at Motueka.

“It was clear they weren’t prepared for landing at Motueka, but I didn’t say anything because I remember just being thankful that everybody had got on the ground safely, including our students.

“Eventually the convoy left but ended up having an accident at another aerodrome. And I kind of wonder to this day if I could have prevented that, by having a chat with them. Maybe it might have encouraged somebody to think twice about what they were about to do and kept them safe in the long run.”

### So how do you say this?

North Shore Aero Club CFI, Daryl Gillett, says pilots who repeatedly push the margins of safety are a “huge issue”.

But when he has to deal with such a pilot, he takes an educational approach.

“Most people are naturally defensive if someone corrects them, even gently, about their flying.

“But you can avoid that reaction if you couch the ‘correction’ as information. Maybe objectively dissect what’s happening, like, ‘I noticed you turned to the right after take-off. I’m wondering why you did that? To be safe, it’s really important we make left-hand turns because...’.

“Then they understand the reason for the advice, and that it’s more about education than ‘you broke the rules, and you’re going to be penalised’.

“If you’re aggressive and threatening, or voicing ‘I think you...’ type opinions, you’ll almost certainly fail to resolve the issue, and the other pilot will be reluctant to listen to advice in future.” »



» Jackie Day takes the same educational approach.

“It’s really important to get all the information you can first, before you start talking to a pilot about their flying.

“And it’s important those questions are asked in a non-confrontational way, like, ‘What do you think happened out there? What was going on for you guys?’”

Jackie gives this illustration of getting information first.

“A pilot joined our circuit when it was really busy. They cut off a few aircraft, had quite a close call, and they made some very poor radio calls.

“And I did go over to talk to them, to find out as much as I could first. It turns out they’d actually had an engine failure and their passenger was trying to make the radio calls, while the pilot was desperately aviating the aircraft to the ground.

“This is just a one-off, of course, but it shows how you don’t know what’s going on with people if you don’t gather your information first.”

Alaska White has other tips.

“Try explaining why you feel the way you do about their flying. Or get them thinking beyond themselves – hit them with some ‘home truths’ about the effect on family, friends, and fellow pilots, if something terrible were to happen to them.

“Make any alternative to continuing the flight that you come up with, beneficial to them. Like asking, ‘What’s the rush? Wait it out because it’s better to get there safe and unharmed.’”

Alaska says there’s “power in numbers”.

“We often think of peer pressure as a bad thing, but a number of people voicing their concerns can be effective in getting someone to change their mind about flying in poor conditions.

“Or you could try calmly asking the person to explain their decision and the reasoning behind it. When they have to explain themselves out loud, often people come to appreciate the reality of what they plan to do.”

### When they won’t listen

Some fatal accident reports in the CAA’s archives illustrate how sometimes fellow pilots have tried to intervene, say, with an offer of a bed for the night (VFR into IMC) or directly observing to the pilot concerned how dangerous a particular manoeuvre they just carried out was.

But, tragically, the recipient of that advice and help has sometimes just been determined to do it their way.

“You can’t chain someone to a post and force them to stay on the ground,” says Alaska White.

“At the end of the day, people will do what they want to do and what they think is right for them at the time.

“But it’s better to say something and try to persuade a pilot of a different course of action, than to wish you had.”

### CAA intervention

It’s easier for an aero club or flying school to prevent someone flying, if that person needs to hire an aircraft. This has happened, and the occasional flying school has been known to terminate a student’s training contract for repeated poor flying.

But if nothing seems to be working, contacting the CAA is an option – some would say the last option. And to be clear, that doesn’t mean the CAA will respond with punitive action.

In fact, the flight examiners who’re part of the CAA’s licensing and standards team have had real success in mentoring pilots who’ve previously been struggling to fly safely.

“In one particular case, we saw repeated occurrence reports coming through, including from Airways, about one pilot,” says Lou Child.

“So our licensing and standards team rallied, and acting proactively, did some one-on-one mentoring of the pilot concerned.

“It turned out the pilot wasn’t deliberately flying unsafely, but had learning needs that, once understood, were mitigated with a different form of instruction.

“That was a real success. We no longer have any reports of unsafe flying or rules breaches by that pilot.” ☺

**// Hit them with some ‘home truths’ about the effect on family, friends, and fellow pilots, if something terrible were to happen to them. //**



# LETTERS TO VECTOR

## Competence or confidence

I read with interest Jonathan Mauchline's article *Competence or just confidence?* in the Autumn 2023 *Vector*. However, as with many other forced landing articles, one important point was omitted from the FLWOP (forced landing without power) paragraph.

Some readers will recognise and agree that the best way to learn good emergency landing etiquette is to visit or join a gliding club. Every landing in a glider is a commitment to get down safely, regardless of whether it's a "planned" landing on an aerodrome or a "prepared" landing in a paddock.

As a glider pilot, I've studied different shades of green pastures, which could mean that there's a drain possibly hidden by long grass. Are there livestock around, and are they located in one part of the paddock? If so, there may be an electric fence restraining them. Are there transmission poles and towers, power lines, trees, and hedges to consider on finals? In a glider, pilots learn to assess how to land their glider in the safest spot, which

is achieved by planning a good circuit and how much flap and brake to apply at crucial moments.

I realise there are significant glide ratio differences between gliders and power planes, that things happen at different speeds, and landing choices may be fewer. That's why doing some glider landing lessons can prove invaluable. Glider pilots learn how to select a good or preferred paddock to land in, and with some gliding lessons, a power pilot can store some potentially useful selection processes in their memory bank to be rolled out at short notice 'one day'. There may not be a local gliding club linked to your flying club or school, so consider doing a cross country with an experienced power pilot to a gliding club, and book glider flights for both of you.

Peter Layne  
Tauranga

## Bird strikes

While looking over the occurrences dashboard in the recent Autumn issue of *Vector*, I was horrified to read of 570 bird strikes in only three months.

I was an NAC/Air New Zealand pilot for 24 years before retiring in 1984. I was also the Technical Director of NZ ALPA from 1981 to 1985. During those years, it was customary to use landing lights below 11,000 ft on climb out, and FL130 on descent. From memory, we had very few bird strikes.

An engineering friend (now deceased) lobbied the jet engine manufacturers to install lights in the nose cones of the engines. I'm convinced that had those lights been installed, the Airbus 320 crash into the Hudson River in New York wouldn't have happened.

Perhaps the use of landing lights on aircraft with this capability could help to prevent bird strikes?

David Clemow  
Auckland



Photo: iStock.com/imagepointpro

## // DEAR VECTOR...

Letters from *Vector* readers on aviation safety are welcome. Email [education@caa.govt.nz](mailto:education@caa.govt.nz). We may edit or shorten letters, or decide not to publish.

## DANGEROUS GOODS COURSES

We're running new courses throughout New Zealand to provide training and qualification for the carriage of dangerous goods (DG). The two-day course is targeted particularly at Part 135 and 137 operators who carry DG as part of their normal business, and is applicable to all personnel involved in the handling of DG. Private pilots and other commercial operators also require DG training, and should consider attending.

For information on course dates and to register, see [aviation.govt.nz/education](https://aviation.govt.nz/education) > courses and workshops.

## AIRWORTHINESS AND MAINTENANCE WORKSHOPS

The Airworthiness and Maintenance workshop is designed for a wide range of aviation participants, from airline maintenance planners to private aircraft owners.

The two-day workshop takes a practical approach. There is a limit of 18 participants for each workshop to allow for interaction.

For information on course dates and to register, see [aviation.govt.nz/education](https://aviation.govt.nz/education) > courses and workshops.

## A NOTE TO AIRCRAFT OWNERS

On 1 July each registered aircraft owner will be invoiced for the annual registration fee and participation levy for 2023-2024.

**Once issued, this invoice is the responsibility of the registered owner.**

Make sure any application to deregister, defer the participation levy, or change of possession paperwork, as well as the application fee, is submitted in time for it to be processed before 1 July.

## OCCURRENCES DASHBOARD

These are the number and type of occurrences reported to the CAA, 1 January 2023 to 31 March 2023.

### Occurrence type

16	Aircraft accident
54	Aerodrome incident
384	Aviation-related concern (for example, complaints about low flying)
483	Airspace incident
511	Bird strike
256	Defect
22	Dangerous goods occurrence
14	Hang glider accident (5 hang glider, 11 paraglider)
524	Operational incident (for example, encountering severe icing)
17	Navigation installation occurrence (for example, a transmitter failure)
2	Parachute accident
15	Promulgated information occurrence (for example, inaccurate weather information)

## 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](mailto:carlton.campbell@caa.govt.nz)

**Richard Lane** – Maintenance, South Island  
027 296 5796 / [richard.lane@caa.govt.nz](mailto:richard.lane@caa.govt.nz)

**Pete Gordon** – Operations, North Island  
027 839 0708 / [peter.gordon@caa.govt.nz](mailto:peter.gordon@caa.govt.nz)

**John Keyzer** – Maintenance, North Island  
027 213 0507 / [john.keyzer@caa.govt.nz](mailto:john.keyzer@caa.govt.nz)



# AIRSPACE OCCURRENCES

Airspace occurrences can be read on the CAA website, [aviation.govt.nz](https://aviation.govt.nz) > safety > airspace occurrence briefs.

Date:	23 January 2022
Time:	14:17 NZDT
Location:	Ardmore (NZAR)
Airspace:	NZAR circuit
Nature of flight:	Private and training

The pilot of a Van's RV-7 carried out a go-around and then had a near collision with a Piper PA-28 as they were both in the downwind leg. A passenger in the PA-28 saw the RV-7 and warned the pilot who took immediate avoiding action.

The RV-7 was returning to NZAR from NZWT and was joining a relatively busy circuit. Traffic included another RV-7, a Harvard, several other 'GA' aircraft and a Challenger 605 that broadcast it was soon to join straight in for 03 via Karaka. The RV-7 turned base leg when the Challenger was on a 4NM final. When on short final the RV-7 pilot elected to go-around as he was aware the Challenger was close behind him. The near collision event occurred just after the RV-7 turned downwind.

The CAA investigation noted the following contributing factors:

- Speed:** The RV-7 (and another RV-7 a few minutes ahead of it) both entered the MBZ at speeds of over 150 knots (approximately) and both only slowed down below 120 knots in the vicinity of their respective base legs. Neither aircraft complied with the following NZAR AIP speed requirement – "Airspeed not to exceed 120 kt or minimum safe cruising speed if greater than 120 kt".
- Joining:** The PA-28 did not accurately follow the AIP NZAR 'preferred' arrival procedure (from the east). It

flew from Clevedon almost directly to NZAR and was therefore well inside the position intended for joining downwind. The NZAR AIP wording is as follows – "Track via east of Clevedon then track towards Waterworks to join wide of crosswind leg to join downwind at 1100 ft".

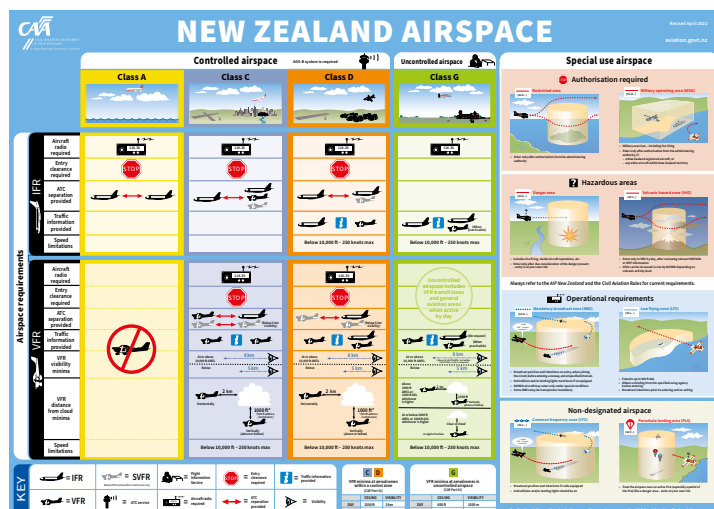
- Radio calls:** The RV-7's go-around call and the PA-28's joining downwind call crossed over each other. Neither call was repeated, which deprived an opportunity to enhance situational awareness. An opportunity to potentially negate the earlier go-around was also lost as neither the Challenger nor the RV-7 pilot spoke directly to each other. Instead they relied on general broadcast radio calls.

The operator of the PA-28 conducted an internal investigation and introduced new measures to address their role in this occurrence, while the CAA communicated directly with the RV-7 pilot.

The CAA reminds pilots that:

- published procedures in the NZAIP Landing Charts are required to be complied with, as per Part 91.127 (b) (1).
- safe speeds should be flown when operating in MBZs as they are areas identified as having increased numbers of aircraft movements.

CAA occurrence number 22/343



## // New Zealand airspace poster

If you're keen for your own copy of our *New Zealand airspace poster*, download a digital copy or order a printed copy (A1 size only) at [aviation.govt.nz/education](https://aviation.govt.nz/education).

# ACCIDENT BRIEFS

## Air Tractor AT-602

Date and time:	23-Apr-2022 at 15:05
Location:	Ruapapa
Damage:	Minor
Nature of flight:	Agricultural
Pilot licence:	Commercial Pilot Licence (Aeroplane)
Age:	43 yrs
Flying hours (total):	9234
Flying hours (on type):	607
Last 90 days:	232

The aircraft unexpectedly sank back to the runway just after lifting off, so the pilot commenced an emergency dump. However, the right wing abruptly stalled and dropped, causing it to contact the ground. The aircraft remained airborne and continued to climb out. During this time the pilot noticed there was damage to the outer wing so he nursed the aircraft back to the airstrip and landed.

After shutdown it was noted that the aircraft had sustained major damage to the right outboard section of the wing. A LAME assessed the damage, carried out some field repairs, and obtained a special flight permit to position the aircraft to a maintenance facility for permanent repairs.

The pilot reported the weather as a decreasing southerly breeze dropping to almost no wind and he felt there may have even been a slight tailwind. This was considered to be a contributing factor in this occurrence, along with a heavy load that was not adjusted to the changing environmental conditions.

[CAA occurrence number 22/2157](#)

## Air Tractor AT-502A

Date and time:	08-Sep-2022 at 12:00
Location:	Te Whanga
POB:	1
Nature of flight:	Agricultural
Pilot licence:	Commercial Pilot Licence (Aeroplane), Private Pilot Licence (Aeroplane)
Age:	38 yrs
Flying hours (total):	7700
Flying hours (on type):	536
Last 90 days:	73

The pilot landed too far down the strip and could not slow down quickly enough, which caused the right wing to hit the

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

Some accidents are investigated by the Transport Accident Investigation Commission, [taic.org.nz](http://taic.org.nz).

aircraft loader bucket, slewing the aircraft nose round to the right. This caused the prop to strike the rear upper-mounted taillights on the loader. There were no injuries but there was significant damage to the aircraft.

The pilot was new to the type variant, which handled differently on landing and was faster on approach and landing than other variants they were familiar with. In other models, the propeller ground mode (Beta) can be used at higher speeds to slow the aircraft on landing. However, in the XP variant, Beta mode is not as effective at slowing the aircraft down and more distance is required for landing.

The operator has introduced type variant specific training plans, as well as on the job supervision and check ins for when pilots transition onto the new models or sub-variants.

[CAA occurrence number 22/5362](#)

## Piper PA-32-260

Date and time:	09-Oct-2022 at 11:00
Location:	Rangiora
POB:	5
Damage:	Substantial
Nature of flight:	Private other
Pilot licence:	Private Pilot Licence (Aeroplane)
Age:	38 yrs

Immediately after take-off, during the climb, the pilot noticed a sharp reduction in engine power. The pilot applied carb heat which did not remedy the situation. The pilot elected to land straight ahead on farmland. Due to an attempt to avoid trees, one wing struck the ground and the aircraft landed heavily. One of the occupants suffered a minor injury and there was significant damage to the aircraft.

The aircraft had an engine monitoring system installed, the data from which revealed a drop off in the #6 cylinder temperature. The engine was stripped and the #6 cylinder inlet valve was found to have an irregular wear pattern in the tip face and localised heating associated with a valve not rotating as it should. This can lead to a stuck valve. No conclusive reason could be determined for the anomaly. The cylinder had completed approximately 400 hours time since new.

[CAA occurrence number 22/5940](#)

## ACCIDENT NOTIFICATION

24-hour 7-day toll-free telephone

0508 ACCIDENT (0508 222 433)

[aviation.govt.nz/report](http://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

### Cessna 172K

#### Roller

<b>Part manufacturer:</b>	McFarlane
<b>Part number:</b>	MC 0523920/1
<b>ATA chapter:</b>	2750
<b>TSI cycles:</b>	4000

The maintenance inspection of the wing flap system found that a flap roller was about to fail.

The operator calculated that due to the nature of their flight operations, the flaps are operated at least 4000 times per 100 hours of flight time.

Based on previous experience, the operator found that the rollers can easily do 15,000 cycles. However, as a preventative measure, the operator has put a finite life of 12,000 cycles on all flap rollers.

CAA occurrence number 21/4968

### Hughes 369HS

#### Turbine engine

<b>Part model:</b>	M250-C20
<b>Part manufacturer:</b>	Rolls-Royce
<b>TTIS hours:</b>	15357

During operations at sea for the purpose of fish spotting, approximately 20 minutes into the flight the engine failed. The pilot performed a successful autorotation landing onto the water and was picked up by their ship approximately one hour later.

The fuel source and the remaining fuel was inspected by the pilot immediately after the incident without any issues or concerns identified.

The helicopter was inspected by maintenance personnel once it arrived back in port 18 days later.

A maintenance investigation was carried out, which was unable to find a definitive cause for the engine stoppage.

The operator has reviewed its fuel supply and storage processes while at sea to gain further assurance that it is doing everything possible to ensure that fuel is not contaminated.

CAA occurrence number 21/4492

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](http://aviation.govt.nz) > aircraft > GA defect reports.

### Piper PA-34-220T

#### Trim indication pointer

<b>Part model:</b>	PA34-220T
<b>Part manufacturer:</b>	Piper
<b>Part number:</b>	68488-02
<b>ATA chapter:</b>	2732
<b>TTIS hours:</b>	4902.4

During scheduled maintenance the elevator trim indicator position was inadvertently changed while the associated covers were not fitted.

During preflight inspection, post maintenance, the pilot noticed the elevator trim appeared to be set well aft of neutral, so rolled it forward to the neutral position for take-off.

On the take-off roll the pilot had to pull the stick back with a lot of force to keep the nose from dropping down and the props striking the ground.

During the climb out, the trim appeared to be working normally but indicating incorrectly. After returning to land, the engineer reset the trim indicator into the correct position.

After reviewing this incident, the operator has brought it to the attention of its pilots and engineers that it is good safety practice to complete a functional check of the trim system before flight, following maintenance.

CAA occurrence number 21/5698

## REPORT SAFETY AND SECURITY CONCERNS

Available office hours (voicemail after hours)

0508 4 SAFETY (0508 472 338)

[isi@caa.govt.nz](mailto:isi@caa.govt.nz)

For all aviation-related safety and security concerns.



# Revised GOOD AVIATION PRACTICE BOOKLETS



This is a general update of the booklet (previously updated in 2018) and features 10 aerodromes, from Waiheke Island to Mercer.

Download a digital copy or order a printed copy at [aviation.govt.nz/education](http://aviation.govt.nz/education).



This is a general update of the booklet (previously updated in 2014) and also includes new rotary content.

Download a digital copy or order a printed copy at [aviation.govt.nz/education](http://aviation.govt.nz/education).

## Updated Flight Instructor Guide (FIG)

We've updated the FIG with a new section on visual navigation. As well as providing guidance on how to teach navigation, the section explains how lesson profiles and whiteboard briefings can be adapted to suit the local environment. Also included is material for teaching the recovery from an inadvertent entry into IMC, as well as advice for the supervision of solo cross-country flights. Instructional theory content has been reintroduced to support the Instructional Techniques Course.

Check out the online version or download a digital copy on [aviation.govt.nz/fig](http://aviation.govt.nz/fig). If you prefer a printed copy, you can purchase one from [vertia.co.nz](http://vertia.co.nz).



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