Pointing to safer aviation

Summer 2024

vector

MID-AIR COLLISIONS IN UNCONTROLLED AIRSPACE

The surprising findings

The foundation of a strong engineering culture

A new way to report health conditions

I learned about maintenance control from this

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

// A NEW WAY TO REPORT HEALTH CONDITIONS – INTRODUCING SAFE HAVEN

// I LEARNED ABOUT MAINTENANCE CONTROL FROM THIS...

// THE FOUNDATION OF A STRONG ENGINEERING CULTURE

Cover: All pilots, no matter how experienced, should read our cover story, "The surprising findings on mid-air collisions in uncontrolled airspace" on page 5.

Photo: iStock.com/Vesnaandjic

In this issue...

// THE SURPRISING FINDINGS ON MID-AIR COLLISIONS IN UNCONTROLLED AIRSPACE

vector

CIVIL AVIATION AUTHORITY OF NZ

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

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

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GO, NO-GO DECISIONS IN WILDFIRE SEASON

The wildfire season is underway, so it's timely to consider decision-making by pilots who are called on to help tackle blazes.

CAA Investigator Jason Frost-Evans says regardless of the pressure pilots feel to respond quickly to fires, it's essential to take a calm approach.

"As pilot-in-command, when you're deciding about responding to a request to help fight a fire, you need to operate safely, and therefore be on the right side of the law.

"And if you can't fully comply with the law and fly safely, then don't fly.

"Most people naturally have a powerful urge to help in an emergency. It takes professionalism, discipline, and internal strength to say no when the benefits don't outweigh the risks. We don't want to see people killed because they were trying to save some trees or a shed."

Fire and Emergency New Zealand's Aviation Lead, Stephen Bishop, says there's a range of well-established reasons pilots may feel compelled to respond to a request to fight a fire, including 'mission mentality' (a fixation on completing the mission without proper consideration of risk), and concerns about the consequences of deciding not to respond.

No pilot or operator, he says, should react to pressure – from any source – to fly when the situation indicates they should not.

> // An aviation tactical pause helps to improve situational awareness by considering all factors before a flight. //

"Fire and Emergency will support them totally when they feel they can't fly."

Over the next 12 months, Stephen will be discussing the idea of an 'aviation tactical pause', for go, no-go decisions, with the 90 aviation service providers Fire and Emergency hold contracts with.

"An aviation tactical pause helps to improve situational awareness by considering all factors before a flight. Fire and Emergency personnel, as well as pilots and operators, will benefit from honing this skill more finely for fire emergencies." »

Photo courtesy of Fire and Emergency New Zealand

Proper use of s13A[1]

Jason says pilots and operators need to think carefully about the use of section 13A of the Civil Aviation Act 1990 to breach aviation rules to fly in an emergency.

"Section 13A is primarily for unexpected events. Perhaps you're a pilot being called on to help because you happen to be flying near a sudden emergency. That's where s13A can be justified.

"Even then, there are only very specific circumstances in which you can use s13A. And the law is more restrictive if the emergency situation already exists *before* you take off. Make sure you understand the differences." (See *More information* at the end of this article).

Jason says emergency services "should have sufficient risk processes and resources to deal with most emergencies safely, without the need to breach the rules on a regular basis".

Tasking agencies (such as Fire and Emergency) have no legal power to direct operators or pilots to use s13A to fly during an emergency, Jason says.

"Operators and PICs shoulder most of the responsibility for making a flight that may require a s13A report. What tasking agencies can do is coordinate and communicate the information the operator and pilot need to decide whether to fly."

This should include the extent and nature of any threat to life and property, and the available alternatives. Pilots may need to proactively seek this information from tasking agencies.

Using monsoon buckets

Jason says it's also timely to remind pilots of the rules for carrying underslung firefighting buckets.

"There have been several helicopter accidents in New Zealand associated with firefighting operations, some of which were fatal. Many of these occurred while using firefighting buckets. Another serious but non-fatal accident is believed to have been caused by a malfunctioning bucket, which resulted in an emergency landing and the bucket being urgently jettisoned.

"Two separate CAA investigations in the last two years found that pilots flew with firefighting water buckets over congested areas while attending fires. They both contravened rules in Part 133 *Helicopter External Load Operations* when the s13A requirements were not satisfied.

1 From 5 April 2025, this moves to sections 15 and 16 of the Civil Aviation Act 2023.

> **// Everyone involved in a response has the same goal. Ultimately, we want everyone to come home safe at the end of the day. //**

"Inadvertent helicopter external load releases are regularly reported to the CAA," Jason says. "A fundamental safety requirement is that an external load should not be flown over people."

The rules say a helicopter PIC conducting an external load operation must take reasonable care to ensure the flight is conducted at a height, and on a route that allows the load to be released, and that the helicopter lands in an emergency, without creating a hazard to people or property on the ground.

This general emergency requirement goes further than the Part 91 requirement to consider only engine failures. Emergencies that are relevant to external load operations include those in section three of your aircraft flight manual, and those covered by licence and operational syllabuses.

We want everyone to come home safe

"We know wildfires are dynamic and unpredictable. They can evolve quickly and change due to wind, topography, fuel type, fire behaviour, and other factors," Stephen Bishop says.

"Everyone involved in a response has the same goal. Ultimately, we want everyone to come home safe at the end of the day."

// MORE INFORMATION

Read "The proper use of s13A" (*Vector*, Autumn 2022) at **aviation.govt.nz/vector**.

The surprising findings on

MID-AIR COLLISIONS IN UNCONTROLLED AIRSPACE

The results of brand-new research indicate that experience is no protection against the risk of a 'mid-air'.

The Massey University research, *Mid-air collisions in uncontrolled airspace: Common factors and ways forward*, analysed four general aviation accident reports from New Zealand, and 150 more from Australia, Canada, and the US, from 1999 through to 2022.

The research extracted findings and recommendations from the accident reports, to identify the common factors in mid-air collisions in uncontrolled airspace, and how future accidents might be prevented.

Most of the collisions happened between fixed-wing aircraft, on daylight recreational flights, and in VMC conditions. Nearly half of the accidents occurred in the vicinity of an aerodrome.

More than half of the accident report recommendations were directed at pilots, about one in six were aimed at regulators, and one in ten at operators.

The research, by Dr Isaac Henderson and Claire Walton, of Massey's School of Aviation, has lessons for all pilots, no matter how experienced, on the 'basics' – consistent use of 'see and avoid' techniques, making good use of the radio, and effective preflight planning. »

Photo: iStock.com/Gerrit Rautenbach

The link between poor planning and collision risk

The researchers found that the cause of more than half of the accidents related to pilot judgement and decision-making. The most common instances were a lack of vigilance (such as pilots not maintaining adequate lookout), pilots failing to maintain separation, making procedural errors (for example, conducting a non-standard circuit join), and failing to give way.

Claire, a commercial pilot of more than 25 years' experience, says this result was surprising, because there's a common assumption that collisions generally start and end with loss of situational awareness.

One in every six accidents did have a lack of situational awareness as a finding – for instance, loss of awareness of other aircraft, failing to recognise the risk of a collision, being preoccupied with other tasks, and incorrect assumptions about the other aircraft's intentions.

"But we found that the biggest precursor to collisions was poor judgement and decision-making," Claire says.

"For example, in failing to maintain adequate visual lookout, the pilot has already decided there isn't sufficient risk of a collision, and possibly also that there's no need to provide accurate position reports."

Claire says, as a pilot, her biggest lesson from the research was the importance of preparation.

"On a broad level, it's vital to continue my learning between biennial flight reviews.

"But on a more immediate level, it's important for me to think ahead about join procedures and give way rules.

"What do I need to know about the airspace I'm going into? What are the radio calls I'll need to make?"

These were questions that some of the pilots who would later be part of a mid-air collision did *not* ask themselves, nor prepare for, during what should have been the planning phase of their flight – before their aircraft even left the ground.

The contribution of visual limitations

Visual limitations contributed to half of the accidents in the study. Of these, the limitations of see and avoid were the most common. For Isaac, the lead researcher, this finding confirmed the importance of understanding what limits the ability of pilots to undertake an effective visual scan and sight other traffic[1].

Isaac highlights that many pilots don't understand the limitations of the see and avoid technique, and how to manage those limitations.

"The main limitation of see and avoid is that you won't see an aircraft you're on a collision course with unless you look directly at it. This is because there can be no relative movement between the aircraft – the angle between the two aircraft stays constant, and the conflicting aircraft will simply appear bigger and bigger in exactly the same spot on the windshield.

"That poses a problem for the human eye, because peripheral vision – where we don't see what we're directly looking at, but around it – only detects movement.

"That's why we need to look directly at a conflicting aircraft."

Isaac also believes that pilots need to move from *unaided* see and avoid to *aided* see and avoid, such as making and listening to radio calls to know where to visually scan.

How poor radio work plays a part

Poor communication was a factor in one in every four accidents. Of these, failing to make appropriate radio calls was the most common finding (for instance, not broadcasting intentions to enter a circuit).

Broadcasting on the wrong frequency was also a recurring factor, as was failing to hear and interpret radio calls, and failing to monitor radio frequencies.

"It seems obvious, but my recommendation, based on this research, is to use the radio so everyone else knows exactly where you are. And then listen *properly* to other radio calls, so you know where *they* are," says Isaac.

1 In some instances, a pilot did see the other aircraft but there wasn't enough time to respond – this figured in about one in 10 accidents.

You're not necessarily protected by experience

The research sample comprised 361 pilots, the majority of whom held a CPL or ATPL. The research indicated that the actions of pilots with significant flying hours were just as likely to show up in findings and recommendations, as were less experienced pilots.

While this was surprising, Claire says, it confirms that no one is exempt.

"You could be an A-cat instructor or a senior airline captain and still be at risk of a mid-air collision."

The only rider to that was that higher total flight hours made a pilot less likely to fall victim to their own visual limitations.

And generally, pilots who held any rating, such as an instructor or instrument rating, were less likely to have findings and recommendations about judgement and decision-making, personal limitations, their competence, or violations of rules.

Recommendations of the investigation reports

One in every four accident reports recommended that pilots improve their knowledge about traffic procedures. Of those, the most common recommendations were for pilots to make themselves familiar with give way rules in uncontrolled airspace, and to be familiar with traffic pattern entry practices at unattended aerodromes.

Similarly, one in every four accident reports recommended improved practice for managing 'visual limitations'. Of those, pilots maintaining *effective* lookout was the most frequent recommendation.

Isaac says this finding illustrates the need for pilots to understand the limitations of see and avoid, consciously scan their field-of-view, and help their see and avoid with other information to build situational awareness (for instance, listening to position reports).

Lack of vigilance figured in one in four accidents, communications failures in one in five, and faulty aircraft equipment was a factor in one in six.

"Simply put, if pilots aren't vigilant for collision risk, they won't look for other aircraft or listen to radio broadcasts in a way that will aid their situational awareness and their ability to avoid other aircraft," Isaac explains.

The recommendations for improving communications practice were simple – broadcast your intentions, listen to radio calls, and follow best practice (for example, using standard phraseology, and making calls at the right time). »

// You could be an A-cat instructor or a senior airline captain and still be at risk of a mid-air collision. //

// Claire Walton and Dr Isaac Henderson of Massey's School of Aviation.

Photo courtesy of Isaac Henderson

// The whole aviation sector needs to continue to work together to prevent future mid-air collisions in uncontrolled airspace. //

"The number of mid-air collisions where these things did *not* happen should be testament to the importance of getting the basics right," says Claire.

Aircraft equipment, where fitted, can also improve situational awareness of other aircraft – airborne collision avoidance systems (ACAS), lighting, and fitting transponders all come up as recommendations.

Flying near aerodromes

As noted earlier, just under half of the accidents occurred in the vicinity of an aerodrome. The research found two big factors in these accidents were poor communications, and poor field-of-view (for instance, if you're in a low-wing aircraft, you have poor downward field-of-view and should fix that by doing a couple of quick turns to move the wings and see if any traffic is present).

Recommendations for safer flying near aerodromes were predominantly directed at pilots – practise to build your flying competency, follow communications best practice, and be aware of your visual limitations.

Questions for the future

The researchers say there are other areas needing further consideration and research.

The first is whether human factors training needs to be re-thought.

"Even though I'd had two decades in commercial operations, I was really surprised with how much I learned when I began my university studies," Claire says.

"Understanding human factors in a more thorough way helped explain many of my experiences, and challenged some of my long-held assumptions about safe flying."

Claire also believes new training devices to help build core competencies, such as communications, will help future pilots avoid collisions in uncontrolled airspace.

"With new technologies like virtual reality and artificial intelligence, we have new opportunities to improve pilot training and better support student pilots as they learn."

Both authors highlight how important it is to keep the spotlight on safety in uncontrolled airspace.

"It's been great to see the Civil Aviation Authority's initiatives, such as the *Plane Talking* and *Circuit Certainty* seminars, and the *Work Together, Stay Apart* campaign," says Claire.

"But we need to keep up the momentum to prevent future accidents in uncontrolled airspace."

"Every one of the 308 flights in our sample set off as usual, and in the course of their flight, collided with another aircraft in uncontrolled airspace," says Isaac.

"It highlights our fallibility as humans and the possibility that this could happen to anyone.

"The whole aviation sector needs to continue to work together to prevent future mid-air collisions in uncontrolled airspace.

"We hope our research will play a small role in contributing to that."

// MORE INFORMATION

Read "Things that jeopardise your lookout" (*Vector,* Spring 2023) and "Skills, courtesy, and sound decisions" (*Vector,* Summer 2023) at **aviation.govt.nz/vector**.

Work together
Stay apart

Photo: iStock.com/AJ_Watt

A NEW WAY TO REPORT HEALTH CONDITIONS

Introducing Safe Haven

The CAA has helped create a new, separate space for participants to report on, and improve, their health.

Slightly more than half the number of pilots who are having health changes, that could affect their ability to fly safely, let the CAA know.

But the CAA's Chief Medical Officer, Dr Tim Sprott, says research indicates the number of pilots who don't report, or who avoid going to the doctor at all, is of concern.

"US and Canadian studies estimate a 40 to 50 percent under-reporting rate, and this has been confirmed by a recent New Zealand study," Tim says.

"There are a number of reasons for this.

"Pilots – especially commercial pilots – and air traffic controllers are concerned about what making a formal report about a health issue might mean.

"They're understandably worried about the potential impact losing their medical may have on their aviation career, businesses, family, and recreational flying, long-term.

"Although we know from our own research that 80 percent of pilots who lose their medical get it back, participants fundamentally distrust the reporting process[1].

"To improve that, the CAA medical team has developed new ways to work with pilots and air traffic controllers in a transparent and professional manner.

"The positive feedback we've received from participants vindicates this new approach." (See *Vector Online* article "What the hell is anxiety?")

Tim says the medical team, however, wanted to do more by making significant changes to the current system.

"The result of that is 'Safe Haven', which we hope will encourage participants to report, and to regularly seek health care.

"We hope it will also improve their trust in the reporting process.

"It's crucial we make ground here because there are major risks to the safety and wellbeing of pilots, air traffic controllers, and the public, posed by undisclosed medical issues."

Safe Haven

Designed by the CAA, the pilots' union NZALPA, and a specially created Safe Haven Board, the new programme aims to increase reporting by pilots and air traffic controllers.

It's doing that by changing the environment in which they report.

"Safe Haven allows participants to raise potential health concerns without direct contact with the CAA," says Tim.

Participants can still report directly to the CAA if they wish, but Tim says many of them want an initial discussion about their issues in a 'safe' environment – meaning, at a distance from the CAA.

"The CAA remains hands-off, and that allows participants to have more control over the process.

"It really just formalises what many medical examiners have been doing for years – working with a pilot or air traffic controller to get them back to flying or working, but not passing on that information to us.

"With Safe Haven, we're giving our approval to this approach, and providing protections for individuals who use the programme."

// US and Canadian studies estimate a 40 to 50 percent under-reporting rate, and this has been confirmed by a recent New Zealand study. //

1 Tim says participants' lack of trust in the reporting system is not unique to the CAA. "It's an issue facing all aviation authorities. An illustration of that, is that the new programme, Safe Haven, has been adopted by CASA in Australia, and Transport Canada is also interested in taking it up."

// It'll take time but we're hoping this programme will build trust between participants and the CAA. //

MESHs

A medical examiner who's been specially trained to work in the new programme is known as a 'Medical Examiner Safe Haven', or MESH.

The new MESHs have special delegations from the Director of Civil Aviation to make decisions about the participants who consult them.

"There's no danger of the CAA coming in and riding roughshod over the MESHs' support of their pilots and controllers," says Tim.

"It'll take time but we're hoping this programme will build trust between participants and the CAA.

"I want it to be the same high level of trust I have with pilots and air traffic controllers every time I fly."

Tim says the MESHs will first establish if a pilot or controller can keep working or flying.

"Maybe they can continue, but the MESH might also refer them, for instance, to a counsellor or psychologist.

"If a pilot does need to be grounded, the MESH will work with them to get their medical certificate back.

"The CAA will know that a pilot has been grounded but won't know the reason why, unless it's in exceptional circumstances – and such circumstances are rare.

"For instance, there might be a serious or immediate risk to the participant – such as having a condition like epilepsy – or to the public, where an individual has suicidal thoughts or intent.

"But the vast majority of concerns that participants have are temporary and not severe, and don't need to be reported to us[2]."

Through Safe Haven, pilots and controllers will have the same rights to appeal a decision, as they do now.

"If they want a convener review or a district court appeal about a decision made under Safe Haven, those rights remain.

"The only rider is that the appeal must be made to the CAA."

Medical Director for Safe Haven, Dr David Powell, says the new initiative is a more comprehensive support programme than the current system.

"Under Safe Haven, our MESHs are entrusted to deal with a wide range of matters themselves.

"Participants are provided with help, and a medical note for time off work as required, but minus the usual obligation for the medical examiner to provide the details to the CAA.

"Also, Safe Haven pays most of the costs associated with the simpler cases."

He says the MESH team is excited about Safe Haven.

"The initial cohort of half a dozen MESHs recently completed training and we hope to have the programme operating by the end of 2024 or early in 2025.

"It's a high trust arrangement between the CAA, participants, and the MESHs – and it's a programme every MESH really believes in.

"That's why they want to be a part of it."

// MORE INFORMATION

If you have queries regarding Safe Haven before it 'goes live' in the next few months, contact David Powell, **david@flyingmedicine.com**.

2 Under Safe Haven, there'll be updated definitions of what a 'temporary medical condition' is, exempting pilots, air traffic controllers, and the MESHs who treat them, from reporting to the CAA. Participants will be able to check the updated list of temporary conditions to see if their particular condition is likely to be dealt with under Safe Haven.

ICING IN SUMMER? YES, IT'S A THING

The CAA's weather expert says changing weather patterns mean there's a growing chance of encountering icing conditions all year round.

If you're a pilot who believes that icing is a problem restricted to the colder months, the CAA's Chief Meteorological Officer, Paula Acethorp, has some news for you.

"New Zealand's maritime location, temperate environment, and significant terrain means icing can be a problem at any time of the year.

"When the usual spring westerly flows across New Zealand, it ensures the air moves across the sea and so picks up moisture as it goes.

"When that air meets a perpendicular set of mountain ranges at speed (think the Southern Alps in a northwest gale), the air is forced up and over, forming 'lenticular' clouds (shaped like an eye lens) downwind of the ranges.

"If that wind flow is sustained, the resulting lenticular clouds may have a continuous supply of super-cooled water droplets – meaning if the air is cool enough the conditions may be perfect for severe icing."

Summertime afternoon convection can provide another great candidate for warm season icing potential.

"Afternoon heating of the ground in summer generates upward motion of air, and if the humidity is sufficient, cumuliform (puffy 'cotton wool') clouds form. Given the right atmospheric conditions, that convective cloud formation can gain momentum and result in cumulonimbus cloud with possible thunderstorms. The associated updraughts can carry super-cooled liquid water droplets aloft – a significant severe icing risk when the temperature drops below zero."

With the general warming of the atmosphere resulting in increased moisture in the air, Paula says climate change is expected to increase the chance of encountering icing conditions all year round.

"From summertime convection to picturesque lenticular clouds – if the air temperature in the cloud is below freezing, the risk of icing is there."

Paula's advice is to check the official aviation forecasts and warnings before you fly, at **gopreflight.co.nz**.

"Know the current state of the environment you're flying into."

Where it's likely

Induction icing – which affects your carburettor – is a risk on warm, humid days because warm air holds more moisture. As a result, condensation or ice is more likely to form as the air temperature is reduced.

Carburettor icing should be expected when the air temperature is between -10°C and +30°C, with high humidity and visible moisture present. But it's most likely between +10°C and +15°C, with the relative humidity above 40 per cent.

The closer the temperature and dewpoint readings, the greater the relative humidity, and the higher the risk of carburettor icing.

Preventing carburettor icing

Applying carburettor heat to incoming air is your most effective defence against induction icing.

It draws relatively warm air from around the exhaust manifold and then through the carburettor, raising the temperature to prevent ice, or to melt ice that's already formed.

Piston-engine helicopters and some aeroplanes have a carburettor air temperature gauge, so use it. While many pilots may be accustomed to using carburettor heat only in low-power situations, such as descent, you should use it as required to remain outside the icing range.

Photo: iStock.com/piskunov

Remember that when you use carb heat, the air is warmer and less dense. This can lead to a slightly degraded engine performance because the ratio between fuel and air won't be optimal, so expect the engine to change in pitch and power for a short time.

Ice being present and beginning to melt could possibly result in rough running because engines are meant to run on fuel and air only. It's vital to keep the carb heat applied though, even if the engine runs a little rough.

Ideally, you should notice an improvement as the ice melts. But if it takes a while, there's a temptation to remove the carb heat before all the ice has been removed, but this can lead to further rough running and a loss of power.

Recognise the symptoms

"If ice builds up, less air is drawn through the carburettor because the ice causes a restriction," says the CAA's Colin Grounsell (B-cat instructor, 5500 flying hours).

"This results in an overly rich fuel mixture going into the cylinders, which causes rough running and loss of power.

"Keep an eye on your RPM indicator gauge and manifold pressure gauge (if one is fitted) for reducing RPM and pressure indications."

Rough running and vibration are classic signs of carburettor icing, along with a lower exhaust gas temperature (EGT).

Left unchecked, ice build-up can freeze the throttle in place, especially when the throttle is in the same position for an extended period (for example, during the cruise phase of flight or during a long descent). The answer is to increase the power occasionally to prevent this.

In rare cases, if early signs of icing are not picked up, your engine can fail.

Surface icing

Should you encounter significant in-flight airframe icing, the best action is to immediately climb, or descend, until clear of the freezing band.

If already established in a descent, continue that descent, minimising any power, configuration, and attitude changes.

You should manually fly the aircraft to help identify how severe the icing is. If a tailplane stall does occur (probably identified by a lack of any normal pre-stall warning buffeting and a sudden stall at high speed), flaps should be raised to the last setting, immediate aft elevator applied, and if possible, the power reduced. Don't allow the airspeed to increase significantly.

Most helicopters in New Zealand have very little ice protection technology, and most aren't certified for flight in icing conditions.

"The main effect of ice on the rotor system is increased drag, followed by a loss of lift," says CAA Aviation Safety Advisor Pete Gordon.

"Helicopter icing may be evident through deteriorating performance, vibration, and visible icing accretion on the aircraft structure.

"The most effective option, if you notice icing, is to vacate the area, but depending on the rate of accretion you may need to consider landing immediately."

CAA Inspector Terry Curtis – and former ATR72 captain – says all pilots who experience severe icing should not hesitate to make a PAN PAN or MAYDAY call.

"That will get Airways' attention that you're in trouble and need help with a change in flight level or altitude.

"It will also alert other traffic in the vicinity to the severe icing."

// MORE INFORMATION

The CAA's *Aircraft Icing Handbook* is available free of charge as a PDF at **skybrary.aero** and can be purchased in printed form at **vertia.co.nz/products**.

Winter flying Good Aviation Practice booklet – go to **aviation.govt.nz/education** to download or order your free copy.

Photo: CAA

I LEARNED ABOUT **MAINTENANCE CONTROL** FROM THIS...

This maintenance controller learned a difficult lesson about the danger of making assumptions.

This is a story of honest errors, followed by delayed and dumb decisions. A story of mistakes and human error.

Enter, me, the highly qualified and experienced maintenance controller. I had never made a serious error in my 45-year career as an engineer, including my time spent as a maintenance controller.

We all make mistakes, but this was a big one. In fact, it was a series of big ones.

Several years ago, I took over the maintenance control of a helicopter for a certificated operator. I reviewed the logbooks as part of inducting the aircraft, and all appeared to be in order.

There were, as almost always, many out-of-phase maintenance items, which needed action at various points in the future.

The major component items were listed in the logbook, but some "additional items", which also required replacement, were not.

Why not? I don't know, but that's not the point – they still needed to be replaced.

Something wasn't right here...

A few days later, we carried out a check on the machine and were completing the relevant log entries when an engineer noticed that a component, a hydraulic pump, was well overdue for overhaul. What's worse, it was plainly entered in the components section of the logbook.

A review of the maintenance control spreadsheets on the computer told the story – the hydraulic pump was not in the spreadsheet at all!

This was a shock, indeed. How could this have been missed?

Bleedin' obvious

The answer was simple. I'd been using a generic spreadsheet previously given to me by an associate. I believed it was appropriate to this type and model of machine, but the hydraulic pump in question wasn't on there.

When I inducted the aircraft and entered the machine's details into my pre-prepared spreadsheet, I failed to notice that I hadn't entered the hydraulic pump, despite it being plainly listed in the logbooks.

I had totally missed the bleedin' obvious. »

It was a classic human error. All the information was there in front of me, but I was just filling out a form and not thinking clearly about each entry, and checking it off.

The domino effect

Having identified an issue with my tracking spreadsheet, I decided to review the logbooks and spreadsheet against the maintenance manual. It didn't take long to discover more errors.

Next up was another expired component, which had been replaced at the correct interval previously, but was now being tracked against a calendar inspection, rather than calendar and hours in service.

Because of the tracking error, the component had been inspected and refitted with a full calendar period to run, then entered in the logbooks and spreadsheet – job done.

Now we had a second expired component!

Once again, I put this situation down to human error. To make things worse, two senior licensed engineers had reviewed the relevant instructions for continued airworthiness (ICA) and confirmed my initial thinking. The first engineer suggested a component had 'life X' based on incorrectly interpreted maintenance data. The second engineer listened to the reasoning, checked the same information with the first engineer's guidance, and almost blindly accepted it as truth.

It's easy for anyone to see what we *expect* to see, based on information and an opinion from a respected colleague.

It just kept getting worse

The saga continued and several less critical, but still important, items hadn't been changed on time. This was because they hadn't been listed individually in the logbooks, and I'd failed to detect this.

Now we had a neat and tidy spreadsheet on the computer, full of nasty little surprises.

How the hell did we get here?

What I'd usually do when inducting an aircraft as a maintenance controller, would be to audit the records against both the manufacturer and CAA requirements. I'd verify each item one by one, and over the years, I've found some equally monumental stuff-ups through this process.

This process, of course, comes at a cost to the client. The client has spent every cent and more buying the machine, and isn't keen on spending more money on spreadsheets and auditing, especially when they've purchased a machine from a highly respected operator.

We see what we expect to see

In the case of this aircraft, three reviews of airworthiness (RAs) had been completed. Nobody had spotted the obvious overdue component, clearly entered in the logbooks.

Two of the RAs were done by the same person, probably using a similar spreadsheet as mine to check component times rather than the ICA. In this case, 'component A' was missing.

None of the other items were listed anywhere in the logbooks, so nothing raised a red flag there.

The final RA seemed to have been done by a different person, using the logbooks, who also failed to spot the 'obvious' error.

I went back and looked at the logbooks, trying to see why the error may have been missed. In my view, there's no single clear reason.

Unfortunately, all too often, we see what we expect to see. This is especially true when we're checking our own work, or the work of someone who we hold in high regard.

The numbers were small in size and, to be fair, I still had to look twice for 'component A' to stand out from the others.

It was near the bottom of the page, and there was a list of components above it, all of which had time to run and were due at the same time.

Component A just seemed to blend in, despite it being due at a different time.

Unfortunately, all too often, we see what we expect to see. This is especially true when we're checking our own work, or the work of someone who we hold in high regard.

How am I going to fix this?

What could I do? I freely admit that I felt a bit panicked, and shocked, by what had happened.

We've all experienced the hollow feeling when we realise we've made a big mistake. I felt responsible, and a failure. My biggest worry was, "How am I going to fix this monumental stuff-up?"

So I made a list of the items that needed changing and ordered them pronto. One item I found locally, and drove almost four hours to pick it up.

The right thing to do

My next problem was how to tell the aircraft owner. To be honest, I didn't know what to say. Having always been proud of my reputation and professionalism, I was literally dumbstruck by the situation I'd found myself in.

I did a risk assessment in my mind. My thoughts were that we'd inspected *one* of the items which was overdue – that one was in absolutely mint condition, and I felt it had almost no prospect of failing.

The machine could operate without too much drama if the other component failed, and the other items presented a lesser risk, so I felt a little better.

In the moment this seemed like a sensible approach, but in hindsight it was a decision made under immense personal and professional pressure.

At that time, it didn't occur to me that the safest option might be to ground the machine – obvious to you reading this story now.

But then, in the middle of another sleepless night thinking about it, I realised that was the first thing I should have done!

I'd managed to pull apart the whole dirty problem in my head, order parts to fix that problem, and decide that we'd do so as soon as those parts arrived.

So I grounded the machine, which I didn't like doing. The owner was quite good about it though, which made me feel even worse. However, it was the right thing to do, albeit later than it really should have been.

Here's what I know now

I fell for commercial pressure and decided not to induct the aircraft fully on arrival.

I justified this decision in my mind, because the machine came from a top operator with a good reputation.

I used a flawed maintenance tracking spreadsheet, which I didn't check against the aircraft ICA. Had I done an audit on the machine (against the ICA and logbook) when it arrived, I would've very likely discovered the missing components.

If I'd done an audit against the ICA, I would've also discovered the calendar inspections versus the time-in-service issue. All the big stuff from the airworthiness limitations section was there, but the other items, which had an hours-based life, were not.

I should've individually listed the items that *hadn't* been done, so they couldn't slip through the net later. There was nothing wrong with what *had* been done, but the way it was recorded didn't highlight those items due later.

Nobody is perfect

At the time of this incident, I felt like the guy looking back at me in the mirror was a genuine real-deal idiot.

Now, I know that nobody is immune to human error.

Have I seen this sort of thing before? Yes. So many times, I've lost count – it just hadn't involved me before.

Learn from my story, double-check your own work, but also check the work of people who you think wouldn't make a mistake.

We're all more than capable of getting it wrong.

The foundation of a STRONG ENGINEERING CULTURE

Three aviation engineering workshops, each unique in their own way, agree that open communication is at the heart of their approach to safety.

Photo courtesy of HeliSupport

Vector spoke to senior personnel at three different aviation engineering workshops to follow up on the *Vector* (Winter 2024) article, "Engineers' mental health – from stress to strength".

We wanted to explore how a strong safety culture can support aviation maintenance engineers to thrive in a highly challenging environment.

We found common themes useful to any aviation maintenance company if they want to improve.

It's safe to speak up

All three companies stressed the importance of creating an environment where people feel safe to speak up, disagree openly, and to bring up concerns without repercussions or pressure to sugarcoat bad news. In other words, creating psychological safety.

"You know you're getting quality feedback from the staff because it sounds a lot like complaining," says Jeremy Booth, the Chief Executive of Performance Engineering in Wānaka (and Safety Manager at Skydive Wānaka).

"The staff don't say, as they might in a more 'corporate' environment, 'Here's an opportunity'. They say, 'This isn't right, it's annoying me'.

"Don't shut down the 'complaining'. Listen closely, be willing to learn and find value in criticism. Then move the issue into the safety management system so you can track it."

He's certain this open style of communicating is helping to drive safety reporting. He says it's vital, however, that communication is a "two-way street".

"When people report safety concerns, we need to let them know how it's being dealt with. Unless we link the two, there's a gap between the value people see in participating in the safety management system, and what happens as a result."

Grant Stewart, the Safety Manager at HeliSupport in Wānaka, says open communication needs to extend to all parts of the organisation if it's going to be effective in creating psychological safety.

"Our owners, Jason and Kelly Buick, are hands-on, on the floor and talking to everyone from the chief engineer to our apprentices.

"People will speak up if the company has a robust just culture. This can mitigate 'resident pathogens' that, when triggered, can lead to an incident or accident."

> **//You know you're getting quality feedback from the staff because it sounds a lot like complaining. //**

Grant adds that Jason and Kelly don't just talk, they muck in and help. This is a positive piece of communication in itself.

"Everybody's looking after everybody else. We have 30 people, but we're really close-knit."

At aircraft manufacturers NZAero in Hamilton, the Chief Pilot and General Manager of Engineering, Ray Long, says when something goes wrong, "Our people can tell me what's happened, then we can deal with it and get it fixed".

He adds when people know that issues are dealt with calmly, they're "more likely to come and talk to me when they have a problem.

"If you don't get mad, but stay measured when something goes wrong, they're more likely to come and speak to you in other situations."

There's a team of 40 on the manufacturing side of the business, but Ray says it's not hard to identify when someone's feeling a bit off, even if they haven't spoken about it.

"I'll go to them and ask whether everything is okay, if there's anything they need, if there's any way we can help."

Preventing undue influence

Engineers feeling pressured by operators and clients was a strong theme in the winter *Vector* article on mental health.

Jeremy, Grant, and Ray describe measures they have in place to avoid undue influence in the first place, and deal with it promptly if it arises.

Scheduling work in advance, and communicating clearly with customers about time frames, are essential practices. »

// In our Monday morning meeting, we talk about fatigue and mental health because they have a significant effect on safety. //

Photo courtesy of Performance Aviation

At Performance Aviation, Jeremy says they have a new booking system helping them to forecast workflow for the year.

"We look at regular customers, and how often their aircraft will come in, and apply that to our forecasts. Then we look at big calendar items, such as engine overhauls. We let customers know our turnaround times, especially if they want us to do the work when we're busy."

The customers and their agents, when they visit, remain in a different part of the building from the engineers.

"At times, when a pilot is waiting in the vicinity of an engineer working on their aircraft, we'll invite the pilot to go and have a coffee or wait in the lunchroom, to remove that pressure from our team."

At NZAero, Ray Long says external client pressure isn't an issue for the manufacturing team, but as General Manager of Engineering he's careful to avoid putting any sort of pressure on their quality control personnel.

"It's deliberately a standalone operation, so they're in a position to make recommendations without undue influence from me.

"There are plenty of times when I've thought, 'Just make a decision – is it within tolerances or not?' But I've got to bite my tongue and let the process run its course."

At HeliSupport, which is an Airbus and Safran Service Centre, Grant Stewart says, "The engineering manager and workshop foremen are responsible for making sure commercial pressures don't reach the engineers on the shop floor."

Good forward planning, airworthiness meetings, strict contractual obligations, and efficient parts procurement are also essential ways of front-footing customer expectations and managing workflow.

"The largest risk is problems with parts procurement. That's what causes aircraft to stay on the ground. We don't want our customers to have aircraft on the ground, and we don't want our engineers to be working all hours to get them airworthy.

"We have to be very sharp around our approved supplier register, and we have to make sure we have a good supply of regularly needed parts."

Avoiding and managing fatigue

Fatigue is a well-established factor in maintenance engineering incidents globally.

Jeremy, Grant, and Ray all say the scale of their companies, and their ability to spread task load, are essential for avoiding and managing fatigue.

At HeliSupport, Grant says they're big on sticking to duty times, and they don't do night shifts or work on weekends.

HeliSupport pilots and maintenance engineers travel to Antarctica to support international logistics and operations. They're well-versed in the impact of 24-hour daylight on circadian rhythms before they go. They also have to manage the challenges of living in a small container with other people for months at a time.

Grant says he keeps a careful watch on staff who travel over "the hill" every day from Queenstown to the HeliSupport base at Wānaka Airport. He sees spikes in fatigue when winter driving conditions are bad.

Workers with young families can suffer from disturbed sleep, as can staff sharing flats in Queenstown with hospitality workers who come home from their shifts at different times of the night.

"In our Monday morning meeting, we talk about fatigue and mental health because they have a significant effect on safety."

Jeremy Booth says Performance Aviation has approached the risk of fatigue in several ways. One is to invest heavily in upskilling their staff with qualifications and ratings. This increases the pool of those who are qualified to work on and supervise jobs, and helps to spread the load.

"We're lucky that we're part of a bigger organisation. We can bring one or two engineers over from Australia if we're really busy. They've got a similar working culture and that's been really beneficial."

He says the scale of their operation in Wānaka also means their engineers don't carry all the burden of ordering parts, checking CAA rules, and putting work packs together. They have other staff who do that.

Caring about people

Jeremy, Grant, and Ray all discussed ways they take care of their people, not just because it's the right thing to do, but also because it's a smart business move.

At HeliSupport, for example, the company lays on free lunch twice a week for the staff. It's even cooked by a chef.

"It's quite a big thing," Grant says. "You don't want your people being hungry, and we're 15 minutes outside Wānaka so there isn't much access to good food during the day."

Excellent induction processes, paying their people well, and enabling their staff – including their apprentices – to advance within the company, are also high priorities.

"You get to be a market leader because people want to work with you," Grant says.

Ray Long says the shifts at NZAero are timed so the staff finish at 2pm on a Friday, giving them time to do life admin – getting a warrant for their car, or whatever it may be – so their weekends aren't taken up with those tasks.

Jeremy Booth says, "We all have lives outside work, so we're as flexible and considerate as possible with work hours for our staff, to help out when we can. A happy team is a cornerstone of good culture."

Photo courtesy of HeliSupport

// You get to be a market leader because people want to work with you. //

Lucky strike

It was supposed to be just another goat cull. But this pilot and his passenger narrowly escaped with their lives. Here's their story.

Photo: iStock.com/NataliaCatalina

I was contracted to do a goat shoot for a forestry company, which I've done for more than 25 years.

The night before the shoot, the forestry supervisor, who was also my shooter, advised me we had permission to also shoot on the neighbouring farm.

The day of the cull, a powerline at the top of the farm, near some gullies, remained at the front of my awareness.

Because I've sprayed these gullies every winter for the past 15 years, I was reasonably confident we were all good. I'd never had any issues in the past.

Inside one of the gullies we shot a mob of goats about 300 metres from the powerline.

I turned right and started climbing out, but immediately I felt something was wrong.

There was a lateral wobble and vibration.

As I turned to look out my door, I saw a momentary glint of a wire under my pilot's side skid, and at a 90-degree angle to it.

I knew straight away I'd hit a wire of a new electric fence and was now facing down the gully.

I screamed to the shooter to hang on as I was fighting the controls, and waiting to lose that battle at any second. I thought the wire would wrap around the rotor and that we were done for.

I identified a swamp as the closest and best option to land, and we descended towards it on a 10- to 15-degree angle.

The oscillation was getting worse, but I only had one thing in mind, 'Get to the swamp!'

I realised we were going to hit quite hard so I pulled collective, and to my astonishment the cyclic, collective, and pedals all functioned.

I flared a little, touching down harder and faster than normal, but thankfully, upright. I shut down immediately.

Mixed emotions overwhelmed me. Obviously I was massively relieved, but at the same time, I felt sick about what might have been.

> **// The jolting and oscillation I could feel were the insulators pinging off the fence on the opposite side of the gully. //**

A post-landing check revealed that the wire was still connected to the passenger side skid and had half hitched around it.

It had broken off at the top strainer and had threaded its way down with an insulator locking it in place around the skid.

The jolting and oscillation I could feel were the insulators pinging off the fence on the opposite side of the gully.

The wire hadn't touched anywhere except the passenger side skid. Truly unbelievable. I guess it was our lucky day – one from which I learned a number of lessons[1].

In hindsight, I should have rung the farm manager and asked if there were any new hazards on the farm. Because I knew that gully well, I was complacent in thinking that I also knew the hazards well. But the wire was new, and it caught me by surprise. It could have killed us both.

Today, I'm way more vigilant about hazard identification. Take it from me. It's not just a paper trail – it may save your life.

1 The pilot's report to the CAA identified contributing human factor issues, and the lessons from the occurrence that would avoid this happening again. The CAA did not undertake a subsequent investigation.

Vector notices

OCCURRENCES DASHBOARD

These are the number and type of occurrences reported to the CAA, 1 July 2023 to 30 September 2023 compared with 1 July 2024 to 30 September 2024.

Occurrence type

Aerodrome incident
Q3 2023: 77 | Q3 2024: 38 ↓

Aircraft accident
Q3 2023: 13 | Q3 2024: 13 –

Airspace incident
Q3 2023: 496 | Q3 2024: 547 ↑

Aviation-related concern
Q3 2023: 378 | Q3 2024: 321 ↓
(93 laser strike reports, Q3 2023 and 2024)

Bird strike
Q3 2023: 431 | Q3 2024: 390 ↓

Dangerous goods
Q3 2023: 10 | Q3 2024: 18 ↑

Defect
Q3 2023: 263 | Q3 2024: 180 ↓

Hang glider accident
Q3 2023: 8 | Q3 2024: 10 ↑
(8 paraglider, Q3 2023 and 2024)

Navigation installation occurrence
(for example, a transmitter failure)
Q3 2023: 29 | Q3 2024: 7 ↓

Operational incident
(for example, encountering severe icing)
Q3 2023: 685 | Q3 2024: 610 ↓

Parachute accident
Q3 2023: 6 | Q3 2024: 1 ↓

Promulgated information occurrence
(for example, inaccurate weather information)
Q3 2023: 7 | Q3 2024: 8 ↑

Total occurrences
Q3 2023: 2404 | Q3 2024: 2143 ↓

Q3 2024: 14 airborne conflict events at unattended aerodromes (4 critical)

YEAR-END LICENSING REMINDER

The last day for issuing licences in 2024 will be Friday 20 December. Licences will again be issued from 6 January 2025. Time is getting short for licence processing but please don't call the licensing unit – it won't give your application priority, and only takes staff away from processing applications.

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

REPORTING AN OCCURRENCE – NEW-LOOK WEB FORM, SAME PURPOSE

To file a CA005 online, go to 'Report an occurrence' on the homepage of **aviation.govt.nz**.

The web form for reporting Part 12 occurrences has been updated so it has a look and feel consistent with the rest of the website.

While the layout is a little different from before, the new-look form requires the same sort of information. You'll also have a new option to provide more details, although this is not mandatory.

You'll also continue to receive automatic email notifications from the CAA:

- containing a 'resume draft' button to use, should you stop your report part-way through, and finish it later
- confirming your submission has been received
- letting you know that your submission has been formally recorded as an occurrence, if it has.

Information from reports helps the CAA and the aviation sector reduce aviation risks and improve safety – for anyone in the skies and on the ground. Because this data is so important, it's also a legal requirement to report an occurrence.

AIRSPACE OCCURRENCE

Airspace occurrences can be read on the CAA website, **aviation.govt.nz > safety > airspace occurrence briefs.**

Date:	23 February 2024
Time:	11:55 NZDT
Location:	Omaka
Airspace:	T654 VFR Transit Class G

An itinerant student pilot had an undesirable experience joining at Omaka, such that an observing local instructor intervened on the radio to help.

While inbound the student selected the incorrect frequency for the WB ATIS and did not ascertain why they were not receiving anything. This potentially degraded the pilot's situational awareness as the flight proceeded to join overhead at Omaka. Once overhead the pilot saw an aircraft taxiing off runway 01 and made an assumption that runway 01 was in use, however it is likely that aircraft was only taxiing along runway 01 after landing on runway 30.

The pilot then mis-aligned the Omaka landing plate and made radio calls stating "joining for 30" but actually flying a left-hand circuit for 01 (01 is a right circuit). After two attempts to land on 01 with a tailwind, a local instructor gave advice on the radio and helped the student reposition correctly for 30. The aircraft had also entered the WB CTR twice during its arrival. The aircraft then landed safely. The instructor briefed the student after the occurrence and advised the pilot on the departure procedure. The aircraft departed without incident later that afternoon.

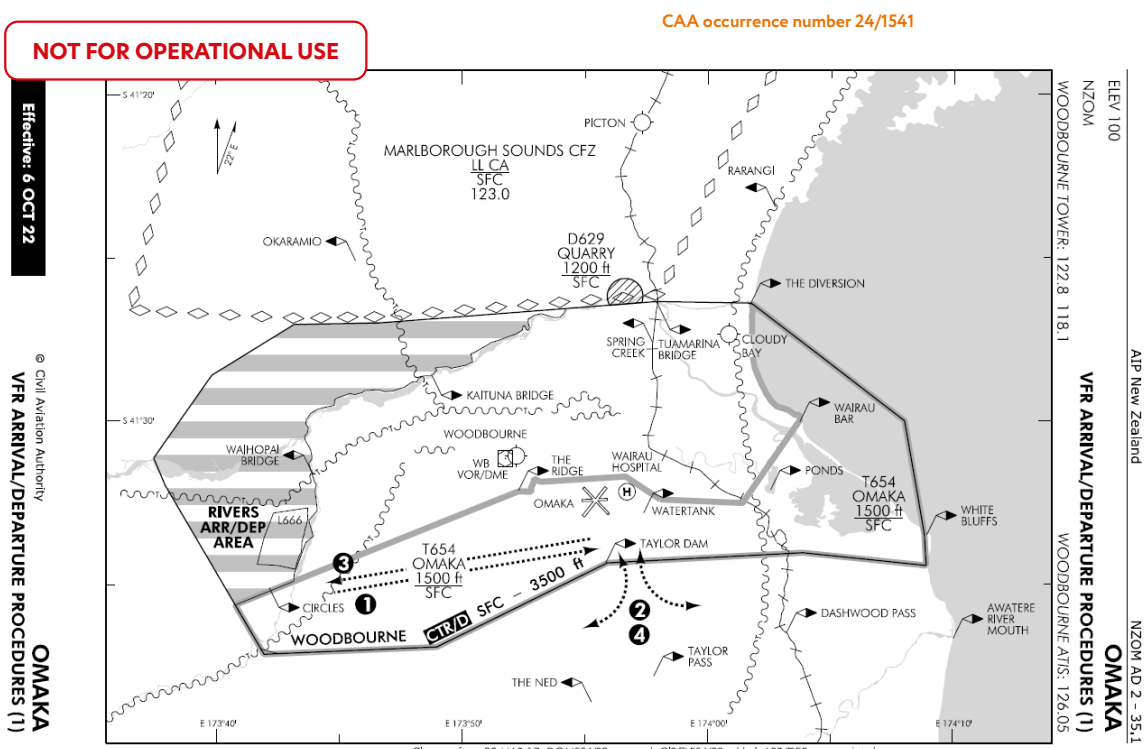
The training provider put the student through a remedial training program including SOHJ at a multi runway aerodrome similar to Omaka, revision of the go-around procedure, and additional training on recognising and mitigating stalling in a steep turn.

CAA investigator observations: Omaka is often busy and one of New Zealand's more challenging aerodromes to operate to and from due to a combination of factors, including:

- a narrow transit lane approach corridor from the east (due WB/CTR and/or terrain)
- multiple runway vectors
- left and right-hand circuits
- different runway lengths
- high terrain in aerodrome vicinity
- altitude restriction due to WB CTA above (LL1500)
- close lateral proximity of WB CTR boundary (that requires precise navigation)
- the geographic 'lay of the land' (the coastline/Ponds is E and Picton is N, of the aerodrome)
- numerous local activities to consider as well, including, flight training, glider operations, NORDO operations, and IFR flight to and from Woodbourne.

The CAA reminds pilots to more thoroughly brief themselves if they're unfamiliar with the area and intending to operate to or from Omaka.

CAA occurrence number 24/1541



// *AIPNZ* AD 2 - 35.1 Omaka VFR arrival/departure procedures (1) at the time of the occurrence.

ACCIDENT BRIEFS

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**.

Tecnam P92 Eaglet UL	
Date and time:	28-Aug-2022 at 12:30
Location:	Thames
POB:	1
Nature of flight:	Training solo
Flying hours (total):	340
Flying hours (on type):	7
Last 90 days:	2

An aircraft struck power lines across the road from Thames aerodrome while using grass runway 23. The pilot was conducting a local flight and three 'currency' landings. Grass runway 32/14 was closed due to recent heavy rain causing soft ground and the pilot believed that the ground at 05 end of grass runway 23/05 was also very soft. He therefore decided to practice the short field take-off and landing technique on first half of grass runway 23.

On the first circuit he flew a low final approach path to conduct a short field landing 'touch and go'. The flight then vacated the circuit for a local scenic flight. On returning to Thames the pilot decided to use the same technique and fly two more circuits. The pilot did not realise how low he was on his second approach until he saw the power lines in front of him, by which time it was too late to avoid them. The aircraft struck the power lines and dropped on to the road berm. He received minor injuries and exited the aircraft immediately.

It's noted that runway 23 has a 100m displaced threshold because of the power lines approximately 100m east of the runway.

The pilot has identified and acknowledged the causal factors regarding this accident (too low) and the local authorities have since placed reflectors on the power lines to make them more readily visible.

RAANZ describe the short field technique in their 'Flight Instructor Guide' on their website. It states; '… during this exercise the aeroplane sinks down the same or steeper approach path at progressively decreasing speeds. Only the attitude and airspeed are different. The approach profile should never be flat and low. The importance of selecting an attitude for the required speed, particularly the VTT, and trimming the aeroplane to maintain that attitude, cannot be over-emphasised. If the aeroplane is not properly configured by 200 feet AGL, or the landing is not assured for any reason – the student should be taught to go around. Do not allow the student to round off the approach or target threshold speeds to the nearest mark on the airspeed indicator. A full stop landing should always be made when flying this exercise'.

The CAA would like to remind pilots that displaced thresholds are designed to provide increased safety for pilots with consideration to any local hazards on final approach. The associated aerodrome 'Operational Data-Landing distances' as published in the AIP, are based on an aircraft crossing any threshold at a height of 50 feet agl. In this case the published landing distance for grass 23 was 607 meters.

CAA occurrence number 22/5057

Schempp-Hirth Duo Discus T	
Date and time:	19-Dec-2023 at 11:14
Location:	Matamata
POB:	2
Damage:	Minor
Nature of flight:	Training dual
Pilot licence:	Private Pilot Licence (Aeroplane)
Age:	70 yrs
Flying hours (total):	3641
Flying hours (on type):	245

During an aero tow launch, while climbing through approximately 250 feet, the canopy suddenly opened and separated from the glider. The canopy then struck the top of the right-hand wing and shattered. The crew onboard were able to land the glider without further issue.

The most likely reason why the canopy opened in flight is that it was not correctly locked closed. The canopy latch rods had failed to engage fully in the holes through the spigot pins on the side of the glider fuselage. The XL (T) versions have a longer canopy with a rubber sealing strip around the canopy requiring the canopy to be pushed down firmly to ensure the rods lock into the spigot holes. During summer, the canopy expands at a greater rate than the glider fuselage making it more difficult to engage the latch rods correctly.

Following repairs to the glider and replacement of the canopy, the maintenance provider advises that the canopy locking system has a much more positive locking action with the new canopy fitted.

CAA occurrence number 23/9374

GA DEFECTS

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**.

KEY TO ABBREVIATIONS:

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

Gippsland GA8-TC 320

When the aircraft departed, it was observed to be leaving a dark trail behind it. The pilot was advised, and they decided to return to land. No urgency was declared, and the pilot asked for, and was cleared for, a visual departure after coordination with the terminal. Over the airfield the pilot called PAN and was prioritised for landing, and landed safely.

The engine was running rough and so the FCU was removed for a bench check. The injector nozzles were removed, cleaned, and flow checked. The #4 cylinder spark plugs were found to have cracked ceramics and the #2 cylinder intake pipe was found to be loose and seal ring not seated. All other intake and exhaust pipes were inspected and check torqued in accordance with Lycoming standard practices. An engine ground run was carried out in accordance with the Lycoming TIO-540 Series operators manual. The engine was found to operate satisfactorily, with no rough running.

CAA occurrence number 23/8285

Bell 206L-3

Part manufacturer:	Bell
ATA chapter:	6300
TTIS hours:	10993.3

During flight, after scheduled maintenance, the pilot felt an intermittent vibration/shudder accompanied by a knocking noise at a lower frequency. Further inspection of the transmission mounting system revealed an AN3C3A bolt had lodged in the hole of the nodal beam where the nodal link attaches to the beam. This loose article had effectively limited the travel of the nodal link by approximately 10mm. The loose bolt was removed and the area inspected for any further damage. Nothing of concern was found. The bolt appeared to be a fire shield attachment bolt, but all of these bolts were found to be in place. The aircraft was released to service for a test flight which confirmed the vibration issue had been resolved. The aircraft was then returned to service.

CAA occurrence number 23/5791

Robinson R44 II

Engine Intake Manifold

Part manufacturer:	Robinson Helicopter Company
Part number:	D730-1

During a scheduled 100 hour / annual inspection, a single crack of 70mm in length was visually detected on the engine intake manifold weld, adjacent to the engine fuel control unit attachment flange, upper forward bolt hole.

The engine fuel control unit brace part number D730-8 Rev F, N.S.N. lot number 42, was also found to have a single crack 35mm in length adjacent to the upper aft attachment bolt hole.

The engineer thought that the cracked weld was likely caused from vibration fatigue over time. A replacement engine intake manifold and fuel control unit brace were installed. The engine cooling fan wheel dynamic balance was measured at 0.11 IPS and was found to be within the manufacturer's specified limit of 0.2 IPS.

CAA occurrence number 23/5163

Cessna 208B

During flight, the pilot noted the interstage turbine temperature (ITT) gradually increasing towards the maximum continuous limit. Power was reduced, and priority landing was requested. It was found to be an indication issue. As a result of this occurrence, the ITT harness was replaced and tested by engineering.

CAA occurrence number 23/7152

CAA GAP VIDEO

NEW 'CIRCUIT CERTAINTY' GOOD AVIATION PRACTICE VIDEOS

Watch our new video about flying safely in the circuit, particularly if you're mixing it up with pilots of aircraft different to yours. You can find the *Circuit Certainty* video at **aviation.govt.nz/wtsa** > resources.

The video covers themes like predictability, standard procedures, collaboration, and how to make the circuit work for everyone. The video includes interviews from a range of pilots to remind you of the people you're sharing the sky with.

This video has been a key resource for the *Work Together, Stay Apart* Circuit Certainty seminars, which have been held across the country over the past few months.

And three short interviews

Alongside the main GAP video, we've also published three extended interviews about operations in the circuit for gliding, IFR, and skydiving.

Gliding with Mike Strathern, glider and tow pilot, and engineer at Lake Station Gliding Club (8.01 min).

IFR with Jason Hobday, A-cat instructor and IFR trainer at the International Aviation Academy of New Zealand (7.45 min).

Skydiving with Stu Bean, tandem master, skydiver, jump pilot, and Safety Manager at Inflite (7.41 min).

Work together
Stay apart