

vector



DIGGING FOR THE TRUTH

Cool decision-
making in
a crisis

Safety in the
circuit

The value
of a CAN





// COOL DECISION-MAKING IN A CRISIS

Cover photo: A main rotor gearbox output flange for a Eurocopter ECB120B. See cover story on page 8.



// SAFETY IN THE CIRCUIT



// THE VALUE OF A CAN

In this issue...



// DIGGING FOR THE TRUTH

Cool decision-making in a crisis **3**
 All about BFRs..... **6**
 Digging for the truth..... **8**
 Safety in the circuit..... **10**
 Standard overhead join **14**
 The value of a CAN **16**
 Is that a design change?..... **19**

Occurrences dashboard **21**
 Singing from the same song sheet..... **22**
 Licensing reminder for the holidays..... **24**
 ADS-B grants update..... **24**
 The *Vector* archive is back..... **24**
 Flight manual pages **24**

Are you a keen photographer? **25**
 Aviation safety advisors **25**
 How to get aviation publications..... **25**
 Planning an aviation event?... **25**
 Accident briefs **26**
 GA defects **27**
 Summer traffic busy spots **28**



PUBLISHED BY THE Engagement and Communications Unit of the Civil Aviation Authority of New Zealand, PO Box 3555, Wellington 6140.

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

Published quarterly at the beginning of each season.

Design Gusto.

PUBLICATION CONTENT Unless expressly stated as CAA policy, the views expressed in Vector do not necessarily reflect the policy of the Civil Aviation Authority. Articles are intended for safety education and to stimulate discussion, and nothing in Vector is to be taken as overriding any

New Zealand civil aviation legislation, or any statements issued by the Director of Civil Aviation, or the Civil Aviation Authority of New Zealand.

LETTERS TO VECTOR

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

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

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

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

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

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

COPYRIGHT Reproduction in whole or in part of any item in Vector, other than material shown to be from other sources or named authors, is freely permitted, providing that it is intended solely for the purpose of promoting safer aviation, and providing that acknowledgment is given to Vector.



New Zealand Government
 ISSN 1173-9614



// In September 2020, Matt Rogatski (left) and Heath Bagnall (right) were awarded the Royal Humane Society of New Zealand Silver Medal award for courage by the Governor-General Dame Patsy Reedy.

When two jet boat occupants were thrown into a fast-flowing river, a pilot Heath Bagnall and his crewman Matt Rogatski leapt into lifesaving action. Despite the adrenalin rush, they never lost sight of what it meant to operate safely.



In late September 2020, the Governor-General, Dame Patsy Reddy, pinned a courage medal on the chests of Ahaura Helicopters pilot Heath Bagnall and crewman Matt Rogatski.

The New Zealand Police nominated the two men for the Royal Humane Society award after they rescued a man from the fast-flowing Taramakau River, near Kumara, in May 2019.

They also tried to save a second man.

Heath – who has 8000 hours’ flying experience – said he and Matt were on a weed spraying operation on 17 May last year, when Matt heard a bang and the engine stop of a jet boat that had been joyriding the Taramakau River for about an hour.

He radioed Heath, about five kilometres away, and told him he’d better come back should they be needed.

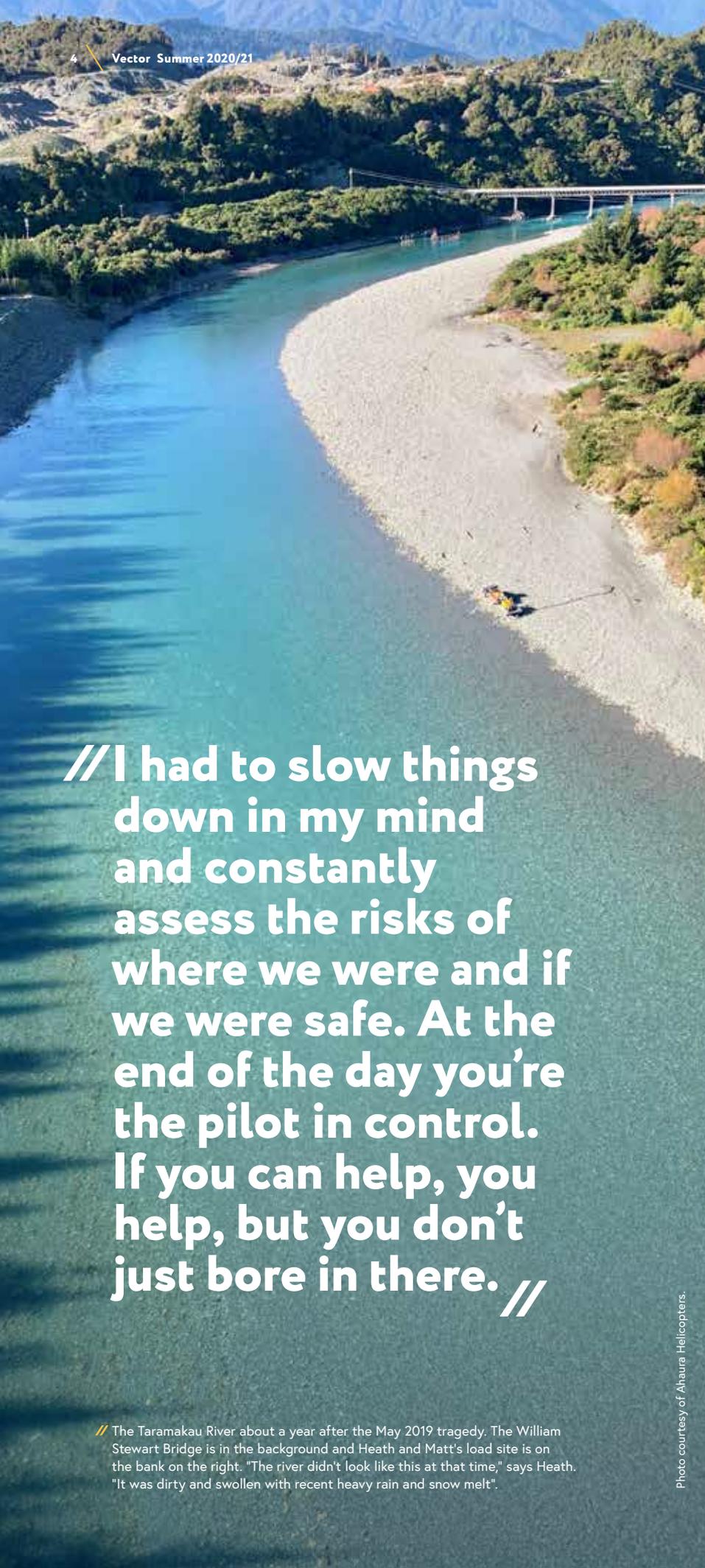
“About 10 seconds later,” says Heath, “Matt called me again and said he could see two guys in the river, without lifejackets, and I should get back as soon as I could.”

Heath jettisoned chemicals and water over some gorse to lighten the R44 and headed back to the load site on the banks of the river.

Matt, who’d already organised two empty fuel cans as makeshift flotation devices, climbed aboard just as the first man – about 80 metres ahead of the second – was being swept by in the dirty, swollen and fast-moving water – too fast for the men to swim to the bank.

“So we hovered up over this guy,” says Heath, “and were flying backwards to keep the helicopter into wind. The reverse flow also held the passenger door open.

“We were matching his speed – I’m guessing about 10 knots. »



// I had to slow things down in my mind and constantly assess the risks of where we were and if we were safe. At the end of the day you're the pilot in control. If you can help, you help, but you don't just bore in there. //

// The Taramakau River about a year after the May 2019 tragedy. The William Stewart Bridge is in the background and Heath and Matt's load site is on the bank on the right. "The river didn't look like this at that time," says Heath. "It was dirty and swollen with recent heavy rain and snow melt".

Photo courtesy of Ahaura Helicopters.

» "Matt got out onto the skid and threw out the first fuel can."

The two men had been in the cold water for a few minutes by then.

"We found out later this guy's name was Dan and he was just too weak and tired to grab the can. So Matt threw out the second one but Dan just couldn't get his arms out of the water."

So Matt climbed down and sat on the skid, and Heath lowered the helicopter so Matt's legs were in the water. Matt tried to grab Dan's shirt, and Dan was trying to grab Matt's leg.

"And then he just went under," says Heath. "I was in a pedal turn (hovering turn) looking out the passenger's door, and I saw him porpoise up but then he disappeared again. After he didn't resurface after about 20 seconds, we knew we couldn't do anything more for him."

The two men then had to make a most difficult decision. If they didn't now go to the second man, they may lose him too.

They hovered over to where he was furiously dog-paddling and struggling in the current.

"Again, we matched his speed flying backwards down the river. Matt was on the skid, hanging on to the fuselage, his legs in the water. But this time he managed to grab the guy and hold on to him."

Heath couldn't simply pick both men up out of the water and fly to the bank because of the likely impact on the helicopter's centre of gravity.

"The aircraft couldn't have handled it – too much forward weight. Matt wouldn't have been able to hang on to him in the flow either.

"I left them half-submerged and I just worked my way slowly to the bank.

“Matt and I were communicating the whole time. Every 10 seconds I was calling to Matt, ‘you all right?’ and he was looking right at me and calling back, ‘yeah!’

“We’ve worked together for 12 years and I could look at him and we’d know what each was thinking, but we were still really vocal that day.

“I was making sure he got the message. I wasn’t just assuming. I’d look at him in the eye, and make sure he understood and that he looked back at me and responded.

“He’s a commercial pilot too and well aware of the forward load factors at play, so I knew that if I’d said, ‘drop him’, or ‘I’m running out of CG’, he would have dropped the guy, no questions asked.

“Tough call but we couldn’t risk three lives to save one.”

Heath was also worried about becoming disoriented by constantly staring at the water rushing backwards at 10 knots, so repeatedly turned his gaze to the riverbank, to give him perspective.

It was an exacting few minutes of flying.

“It was sort of a cycle. I’m looking at Matt, ‘you ok, you ok?’ Then I’m looking forwards to keep a visual reference on how close I am to the surface of the water and with the bank I’m working towards. Then I’m looking at the bank so I don’t get disoriented, then I’m looking out my left side to check Matt again, then I’m looking right back over my shoulder at the tail rotor, to make sure it doesn’t contact anything.

“And there’s a big bluff coming up in about 150 metres.

“I *had* to get them out by then, because it would have been another kilometre before we had a place to drag the man ashore.”

They did make it to the bank, lowering the man onto solid ground. Heath hovered back and up, safely out of the way. A third man, one of the boaties’ mates, pulled the man further from the water.

The police arrived. Heath and Matt removed the spray booms and the passenger door and took off to try to find Dan’s body, with a police officer in the back seat.

Heath was talking with multiple agencies and decided it was too much distraction. “So I told the rescue chopper, ‘can’t talk to you’. I said to the control centre, ‘got people on board, I gotta go’.

In the end they were unsuccessful in finding Dan’s body which was finally located on a beach some weeks later.

Although the ‘mission’ could have induced Heath and Matt to forget safety for a few minutes, Heath says they were quite methodical.

“I even got Matt to shut the dump doors before we first took off. I didn’t want any chemical residue in the water. I thought back later, ‘why the hell did I remember to do that?’

“But we had to keep quite systematic and not get all caught up in the moment.

“I had to slow things down in my mind and constantly assess the risks of where we were and if we were safe. At the end of the day you’re the pilot in control. If you can help, you help, but you don’t just bore in there.

“We did it, but it wasn’t at all cost. We were in full control.”

Heath thinks it was all over in five or six minutes, although they searched for Dan’s body for an hour.

“It was good to use the helicopter to save a life. We had to file a Section 13a¹ on the basis we’d had an unrestrained person outside of the aircraft. But I’d assessed the risk of that and felt it was still safe because we’ve done hundreds of hours of hover entry/exit training and operations over the years.”

CAA’s human factors specialist, Matt Harris, says the thought of saving someone’s life can lead a pilot to take more risks or ‘push the limits’.

“And, of course, the danger is that you’re now operating with limited or no safety margins.

“But Heath said he slowed things down to keep quite systematic and ‘not get all caught up in the moment’.

“This is an example of threat and error management in practice,” says Matt. “Heath identified each threat, maintained his situational awareness and continually reviewed his decisions and actions, to manage the situation and ensure the safety of the aircraft and all on board.”

Heath says it was hard, originally, not to dwell on their unsuccessful attempt to rescue Dan. “But I realised that if we’d persisted in trying to get him, they could have both been dead.”

Heath says it was certainly difficult flying and he wouldn’t have done it 10 years ago.

“I wouldn’t have had the skills. I would have been gutted I couldn’t do it, but I just wouldn’t have even tried.” ➡

¹ A 13a form – which is submitted to the CAA – gives a pilot the ‘capacity’ to breach a rule. The breach can be only during an emergency when life or property is in danger and there are “no other reasonable means of alleviating, avoiding or assisting with the emergency”. The pilot has to be qualified and current, and the machine airworthy.

While no breach of the civil aviation rules is to be encouraged or endorsed, in this case, the submitting of the 13a form was justified, because all the criteria for the CAA to accept one were met.

ALL ABOUT BFRs

In an unhurried, well-planned, thorough biennial flight review, everyone wins. It's a great opportunity for pilots to hone little-used skills. And instructors can rest easy putting their name to a pilot's licence privileges.

The BFR is a dual instruction flight, not an assessment flight per se.

“What that means,” says CAA Flight Examiner Marc Brogan, “is that the pilot takes the opportunity to learn from their instructor, and improve their technique, until they reach the standard required to renew their flying privileges for another two years.”

And a good biennial flight review, the CAA's manager of licensing and standards David Harrison believes, takes a bit of time to complete.

“It needs planning ahead with an A-cat or B-cat instructor,” he tells pilots, “so you know what to expect, and what is expected of you. It can be tailored to suit your individual flying needs, and there's no better chance to practise things you haven't been able to perform much over the preceding two years.”

Unfortunately, David says, it's not uncommon for someone to try to organise a BFR with two days' notice, and to attempt to get it done and dusted in 40 minutes.

“If a BFR like that comes across our desk, we know that it cannot have covered all the things it's supposed to cover, and that something almost certainly has been left out.

“In that case, we would look to the instructor conducting the BFR to explain what went on.”

David says a biennial flight review could take up to three flights to complete, maybe over three weekends,

to avoid fatigue, and to make sure all exercises are properly achieved.

“You could brush up on your crosswind landing technique,” says Marc, “practising it one weekend, then demonstrating to the instructor that you know what you're doing, during the next weekend's flight.”

The BFR doesn't need to be conducted by the one instructor.

“For instance, you might fly advanced exercises with one instructor to upskill,” says Marc Brogan. “And those exercises may count towards some of the BFR exercises. So you could get your instructor to sign that bit off.

“All the instructors involved in your BFR need to communicate as to what is satisfactory and what is still to be completed. Once they do that, and they've completed their relevant parts of the BFR form, then one of them can sign off the form and complete the logbook entry.”

That signing instructor is ultimately responsible for the BFR so they need to have confidence in all aspects of the BFR.

To instructors, Marc says that while a good BFR has to meet the standard requirements of the licence to be exercised, it can be tailored to the individual pilot's needs.

“Let's say the pilot does most of their flying in a certain environment. Get them to show you how they fly within that region and give feedback and instruction as required. You use it as a teaching opportunity.



// While a good BFR has to meet the standard requirements of the licence to be exercised, it can be tailored to the individual pilot's needs. Jimmy Brar (left) discusses BFR pre-flight responsibilities with Benjamin Gray at the International Aviation Academy in Christchurch.

“Some pilots, who have a plane in a shed at the back of their property, may not see much of other pilots. Between BFRs, they have no-one to discuss things worrying them or how they can improve their flying.

“So it’s easy to settle into bad habits and then get a surprise when the BFR falls due.

“A good instructor has a conversation with that private operator about how and where they fly. Together they can plan a schedule that meets the pilot’s training requirements and also meets the required BFR standards.”

// A biennial flight review could take up to three flights to complete, maybe over three weekends, to avoid fatigue. //

Pilots who don't need a BFR

Commercial pilots and instructors have a different form of competency check.

Every year, an instructor has an annual instructor check, and every year, a VFR commercial pilot has an operational competency assessment, or OCA.

That means they don't also need to do a BFR every two years.

“The problem is,” says David, “that when a commercial pilot leaves the organisation they’re working for, their OCA is terminated due to it being a company standard.

“They therefore need to do another OCA at their next company.

“If an instructor stops being an instructor and returns to recreational flying, they must do a BFR when the validity of their instructor check expires. They also need to remember the instructor check lasts only one year, not two.”

Marc says another important, but often forgotten, feature of the OCA or instructor check is that when it expires, the pilot becomes a student pilot again, with only student pilot privileges – unless they undertake a BFR.

“That BFR then reinstates the operational privileges that may then be exercised, once the OCA or flight instructor renewal is undertaken.

“Lastly, note than an IFR renewal doesn't count as a BFR”. ➤

DIGGING FOR THE TRUTH

A part arriving at Part 145 Argus Aviation in Motueka with some odd-looking documentation had the engineers saying, ‘just hang on one minute’. Their due diligence has led to a four-country investigation.



Argus Aviation is a Part 145 maintenance organisation and, in accordance with its procedures, it formally inducts parts into its store.

A recent software upgrade had introduced a few more checks and balances on the authenticity of parts, including those provided by customers.

The part – an output flange¹ – worth more than \$US2000 – was brought to the maintainers by a helicopter customer.

Director Mark Stagg said he was alerted by the store’s controller and the engineering manager that the part’s documentation looked iffy.

“The part was initially presented without release documentation. All it had was a ‘pick ticket’ with a scannable barcode on it.

“So the part was initially rejected while we waited on the release document.”

When that arrived, the history of the part became even more mysterious.

“The electronic copy of the release document – FAA 8130-3 – really got my attention,” says Mark.

Someone had noted on the certificate that it met the ‘special [airworthiness] requirements of New Zealand’ and the date was for the middle of July 2020.

“We only had the helicopter into maintenance very late in August and at that time nobody knew we needed that particular part for the helicopter.

“I have seen that wording on certificates before, but combined with the date, it all seemed a bit peculiar.”

Argus Aviation began digging. They discovered that the Malaysian company, the name of which appears on the form in the ‘organization’ block, does exist, but it’s not an FAA-qualified repair station, so could not have issued the certificate.

“We don’t even know if the certificate came from that company. It was supplied to us electronically by the customer. No-one seems to know where it originally came from.”

They continued investigating. David Richards is an FAA-designated airworthiness representative and his signature appears to be at the bottom of the certificate.

“There’s a directory on the internet of all the FAA representatives, so I emailed him to confirm if the certificate was genuine,” says Mark.

“He came back within a couple of hours saying he’d never approved the part or certificate, so we realised by then we had a big can of worms.”

Mark says while the signature on the form appears genuine, “it could have been originally from an authentic certificate that was subsequently modified”.

While he cannot say so categorically, Mark believes the part is, in fact, genuine. He says it may have lost its paperwork at some point and someone was just trying to rid themselves of it by selling it internationally.

¹ An output flange sits in the main rotor gearbox which in turn connects to the tail rotor driveshaft. It provides direct drive to the tail rotor gearbox.

1. Approving Civil Aviation Authority/Country: FAA/United States		2. AUTHORIZED RELEASE CERTIFICATE FAA Form 8130-3, AIRWORTHINESS APPROVAL TAG			3. Form Tracking Number: 2020-2001-03 Export	
4. Organization Name and Address: [Redacted]				5. Work Order/Contract/Invoice Number: Project 356-2020-EUR		
6. Item:	7. Description:	8. Part Number:	9. Quantity:	10. Serial Number:	11. Status/Work:	
1	FLANGE OUTPUT	C632A2158201	1	S/N: PPT627	INSPECTED	
12. Remarks: Export Airworthiness Approval- This article meets the special requirements of New Zealand						
13a. Certifies the items identified above were manufactured in conformity to: <input type="checkbox"/> Approved design data and are in a condition for safe operation. <input type="checkbox"/> Non-approved design data specified in Block 12.			14a. <input checked="" type="checkbox"/> 14 CFR 43.9 Return to Service <input type="checkbox"/> Other regulation specified in Block 12 Certifies that unless otherwise specified in Block 12, the work identified in Block 11 and described in Block 12 was accomplished in accordance with Title 14, Code of Federal Regulations, part 43 and in respect to that work, the items are approved for return to service.			
13b. Authorized Signature:		13c. Approval/Authorization No.:		14b. Authorized Signature: 		14c. Approval/Certificate No.:
13d. Name (Typed or Printed):		13e. Date (dd/mm/yyyy):		14d. Name (Typed or Printed): David J Richards		14e. Date (dd/mm/yyyy): 14/ July /2020
User/Installer Responsibilities						
It is important to understand that the existence of this document alone does not automatically constitute authority to install the aircraft engine/propeller/article. Where the user/installer performs work in accordance with the national regulations of an airworthiness authority different than the airworthiness authority of the country specified in Block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts aircraft engine(s)/propeller(s)/article(s) from the airworthiness authority of the country specified in Block 1. Statements in Blocks 13a and 14a do not constitute installation certification. In all cases, aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.						
FAA Form 8130-3 (02-14)				NSN: 0052-00-012-9005		

// The faked FAA 8130-3 form that accompanied the output flange.

And what if the part wasn't genuine?

"Well," says Mark, "it drives the tail rotor on the helicopter. If it had failed, or hadn't been made to spec, the pilot would have had a tricky situation, trying to keep the aircraft under control."

Mark contacted CAA Airworthiness Chief Advisor Warren Hadfield who has, in turn, notified the FAA.

"We did have documentation showing the part originally came from Canada, so I've contacted Transport Canada as well," says Warren.

"This is a great example of a maintenance organisation carrying out due diligence in assessing the documentation of incoming parts," he says, "and questioning a document that didn't seem quite right."

"In the case of safety-critical components and high-value items, purchasers should ask to see a copy of the release documentation before committing to a purchase."

Mark Stagg has spent time overseas in the last decade and is quite aware of the possibility of bogus parts being passed off as genuine.

He advises other maintenance providers who may not have come across such a situation before, to "know your supplier and where your part is coming from."

"Customers are certainly entitled to supply a part. But if it's not from your known supplier, do due diligence, and be a bit curious. It's quite easy these days to manufacture documents on the computer so you do have to cross-check them."

Mark says that even customer-supplied parts have to be properly inducted into their store before they're approved and fitted to aircraft.

"And that's how the faulty document was identified. The good thing about all this was that it showed our procedures work. Surprisingly well actually," he says. 

SAFETY IN THE CIRCUIT



Photo of Paraparumu aerodrome courtesy of Rhyder Lane.

// Getting local knowledge about the procedures at an uncontrolled aerodrome is key.

The publication of new guidance in the AIP as to who has right of way in the unattended circuit is a good time to highlight general flying safety in this relatively high-risk area.

The AIPNZ has amended its guidance on who has right of way in the circuit. The advice relates to unattended aerodromes hosting a mix of VFR and IFR traffic.

Rule 91.229 *Right-of-way rules* stipulates that circuit traffic has right of way unless an aircraft is in the final stages of an approach to land.

VFR traffic in the circuit, however, should be aware that IFR aircraft conducting an instrument approach may join long final. In that case, circuit traffic still retains right of way, unless weather conditions dictate priority to the IFR aircraft, or if the IFR aircraft is in the final stages of an approach to land (AIP AD 1.5-3 *Circuit Joining Procedures*).

Of course, if a full IFR approach due to weather is needed, it will raise the question as to why there's any active VFR traffic at all in the circuit.

With the growth of performance-based navigation – which will enable more IFR approaches into uncontrolled aerodromes – the likelihood of traffic conflict may increase.

It may also increase with the possibility that air traffic services at some aerodromes may be withdrawn in the future.

Be seen, avoid

CAA Aeronautical Services Senior Technical Specialist John McKinlay says the AIP encourages IFR traffic to make more-than-usual position reports.

“This is to ensure that VFR circuit traffic knows where the IFR aircraft is and can safely sequence with it as it enters the circuit.”

To remind all pilots of their obligations in the circuit, the AIP also says that the principles of ‘see and be seen’ and ‘see and avoid’ apply at all times, and “pilots are ultimately responsible for achieving and maintaining safe separation whilst joining and operating in an unattended aerodrome circuit” (AIP AD 1.5-3, 2.1.3).

While those principles are both valid, pilots should also be mindful of the limitations of each and apply threat and error considerations.

The reminder is important because, as CAA Flight Examiner Katrina Witney says, pilots sometimes overlook the special circumstances encompassing IFR/VFR operations at unattended aerodromes.

“Because there isn't that mix of operations at every unattended airfield, some pilots won't have been exposed to that situation, so they're not situationally aware of who should be giving way to who.”

See

CAA Flight Examiner Marc Brogan observes that pilots flying in and around all aerodromes, but particularly unattended, need to be keenly aware of the way companies and clubs carry out their daily tasks and how those tasks affect other users.

“They also need to consider the itinerants and the broad range of aircraft types those visitors bring into the airfield and circuit,” he says.

John says it's a partnership in the circuit.

“You're looking out for other traffic. You make sure you can be seen, and you're also making appropriate

radio calls so other pilots are aware of you. It's a matter of communication to work out the safest and most expeditious way of joining and operating in the circuit.”

Helicopter consideration

Rule 91.223 notes that if helicopters cannot conform to the circuit, they can avoid it by, for example, making a direct approach, in which case they must give right-of-way to any circuit traffic.

CAA Flight Examiner (Helicopter) Andy McKay says it's also timely to remind helicopter pilots that they need to be aware of where the instrument approach is.

“This is so they can avoid coming face-to-face with someone on the approach as they break visual.”

Causes of heightened risk

John advises aerodrome operators to keep things standard, because when things are non-standard, there's the potential for confusion and greater risk.

“It's really important when safety committees help develop procedures for the AIP, they need to take into account itinerant pilots who might be coming to their aerodrome for the first time. If the procedures are too complex or non-standard, it can create significant problems for those out-of-towners.

“Equally, it's important for the pilots to brief themselves on circuit directions at an unattended airfield and what other operations are there,” says John.

Katrina says that at the other end of the familiarity spectrum, locals' complacency can increase risk.

“Locals think they know the area well and they don't always brief themselves as well as they should.”

John says multiple activities at aerodromes clearly bring about potential heightened risk.

“But if it's managed through a strong safety culture and appropriate standard procedures, it can be done quite safely.”

Plan for successful joining

The key to successfully joining the circuit is situational awareness and that begins with robust pre-departure planning.

One of your fundamental tasks here is to become thoroughly familiar with the aerodrome charts, in *AIP New Zealand*, Vol 4. The AIP is available, free, at aip.net.nz. While you're there, check if you need the aerodrome operator's approval to land. »

» Aircraft joining or vacating the circuit at an uncontrolled or unattended aerodrome must comply with the published circuit directions and procedures in the AIPNZ Volume 4 for that aerodrome. Rule 91.223 *Operating on and in the vicinity of an aerodrome* refers.

These procedures are established to ensure the greatest possible safety for pilots when operating at an uncontrolled or unattended aerodrome. (See “Non-conformance with uncontrolled or unattended aerodrome circuit procedures can be fatal” on aviation.govt.nz > safety > safety messages.)

Pilots should weigh the risk involved in different approaches to the circuit.

For instance, while the standard overhead join provides more time to assess the circuit, see other aircraft and work out wind conditions, some aerodromes have parachute operations and specifically dissuade pilots from joining overhead.

Getting local knowledge is key.

“It’s also important to slow down and allow yourself the time to identify the threats on the day, before proceeding into the overhead or circuit area,” says Katrina.

Situational awareness

It’s already been noted how pivotal to situational awareness and circuit safety, are the principles of ‘see and be seen’ and ‘see and avoid’.

Every ab initio pilot knows those involve constant lookout and regular radio calls.

“Be clear, confident and accurate with your position reports,” says Katrina. “Keep them short and standard, listen and build up a mental picture of what is evolving around you and how that will affect you.

“Help other pilots by providing your aircraft type if you’re at an unfamiliar airfield or in high-traffic areas.

“Also make sure to identify and confirm the correct runway and circuit direction.”

Once in the circuit, continue to communicate – for instance, if you’re changing runways. Be clear about your intentions and get agreement from everyone else. Consider using ‘plain English’ to avoid confusion.

Katrina says IFR aircraft need to incorporate geographical position calls in amongst their standard IFR calls, so VFR aircraft understand where they are.

“For example, an IFR aircraft might call ‘Kerikeri traffic, Alpha Bravo Charlie, final approach fix RNAV runway 33’.

“That means little to a VFR pilot. At an uncontrolled aerodrome the IFR aircraft should call ‘Kerikeri traffic, Alpha Bravo Charlie, Cessna 172, final approach fix, five miles south of the aerodrome, descending through 2000 feet, long final runway 33’.”

One of the most important radio calls is about how you intend to sequence.

Experienced microlight pilot and retired air traffic controller Bill Penman told *Vector* in 2016 that heightened risk accompanies aircraft on mid-base leg about to turn on to final.

“You have to ensure you’re sequenced correctly, and what’s more, that you communicate that sequencing.

“Have a really good look between the threshold, and three or four miles on final, to make sure you’re not cutting someone else off. If you’re unsure of the traffic sequence, speak up.”

That especially applies, of course, if there are IFR aircraft in the final stages of approach.

The radio should be used judiciously, however.

While radio calls are fundamental to circuit safety, there’s always a danger that pilots rely on them almost solely for their situational awareness.

But radio position calls can be inaccurate, there can be NORDO aircraft in the circuit, or there are irrelevant exchanges, and position calls hard to fathom through that chatter.

So, looking out can never be dismissed, although it, too, comes with conditions.

In the 2016 *Vector* article “Joining Uncontrolled”, Wanaka Helicopters CFI Simon Spencer-Bower warned of blind spots in a pilot’s vision.

“Pilots should understand where their blind spots make them vulnerable. A fixed-wing pilot can’t see down below the nose, and although a helicopter pilot has good visibility out front, they can’t see behind.”

“Keep it compact”

Rodger Ward, another experienced microlight pilot and air traffic controller, also told *Vector* that a standard circuit makes it easier for everyone.

“You don’t need to be doing a massive two NM-wide downwind ending up on a five-mile final. Keep it compact.

“Slow the aircraft down. Just because your aircraft can do 140 knots doesn’t mean you have to do it in the circuit. That makes the circuit a lot safer,” he said.



// Pilots flying in and around all aerodromes, but particularly unattended, need to be keenly aware of the way companies and clubs carry out their daily tasks and how those tasks affect other users. //

Photo courtesy of Timaru District Council.

Finally, if your listening and looking fails and you lose situational awareness, remove yourself from the circuit and give yourself time to rebuild the picture.

If conditions change

Rodger Ward also told *Vector* that when the wind changes, pilots need to step up and take ownership of the situation.

“During the middle of winter, and at Rangiora in particular, you might start off with a 5 kt westerly because of katabatic drainage down the valley, and then as the

day goes on, the wind slowly changes and it turns into an easterly. People just continue to use the original vector.

“After a period of time, someone really needs to step up and say, ‘hey guys, we’ve got a tailwind at the moment’. And that’s probably the most dangerous time, when all these aeroplanes have to reposition for the other runway. It can get quite messy.

“In my view the best move is to get away from the circuit and rejoin for the other runway, rather than doing orbits and 180s downwind. It’s easier to spend another 10 minutes, go away and come back.” 

Reported collisions and close calls at unattended aerodromes January 2015 – October 2020

Type	2015	2016	2017	2018	2019	2020	Total
Air proximity	34	31	39	31	27	13	175
Collision					1		1
Near collision	4	7	15	16	19	10	71
Total	38	38	54	47	47	23	247

STANDARD OVERHEAD JOIN

/// A few tips for joining overhead. ///

In a standard left-hand circuit pattern, aircraft joining from the non-traffic side should be crossing closer to the threshold, rather than outside the pattern – normally called ‘right of centre’.

Pilots get a much clearer view down on to the field, but they’re also out of the way of any traffic that may be going around. There could also be high-performance types climbing towards them.

Once in the overhead, the pattern should be rectangular to ensure plenty of wings-level flying. This is to maximise your lookout capability – a constant turn diminishes it.

Don’t make the pattern too large. And the whole way around, you should be evaluating where the next potential threat could be joining from outside the pattern.

There are three standard calls. At 5–10 miles out, communicate height, position and intentions. If you say you’re “joining overhead” that does mean you’re doing an overhead join.

/// If an aerodrome has both left and right-hand circuits, the procedure involves flying into the overhead, keeping the aerodrome and runways on the left. ///

Once you’re overhead, you again report your position, height and intentions, and that you’re joining for whatever runway you’ve deemed appropriate. You might be acknowledging your position relative to other traffic.

The next standard call is the downwind call when you’re established in the downwind for that pattern.

This doesn’t mean other calls shouldn’t be made. But make them only as required in terms of managing separation with other traffic.

Two big issues: radio congestion by pilots who ‘over-report’; and the reliance, by probably the same pilots, on radio calls while not looking out enough.

Lookout *is* the priority because this procedure is the appropriate one for NORDO aircraft when they’re joining at an unattended airfield.

Right-hand circuits

While most pilots negotiate the left-hand circuit overhead without too many issues, joining a right-hand circuit can be a different story.

If an aerodrome has both left and right-hand circuits, the procedure involves flying into the overhead, keeping the aerodrome and runways on the left.

If the right-hand pattern is in use, you should fly clear of the ‘overhead’ and then turn the aircraft to position for a right-hand joining procedure, as depicted in Diagram 1.

Still descend on the non-traffic side, still use the same radio calls, and fly the same shaped pattern. ➤

/// STANDARD OVERHEAD JOIN POSTER

To get a free 2016 ‘standard overhead join’ poster, email publications@caa.govt.nz.

THE VALUE OF A CAN



Aeroprakt owners around the country were galvanised into action, ordering new windscreens after the CAA issued a CAN – continuing airworthiness notice – highlighting the possibility of catastrophic windscreen failure.

What is a CAN?

When CAA Aviation Safety Advisor John Keyzer presents an airworthiness and maintenance workshop, he says to the participants: “Let’s say you’re the owner of an aircraft and you have a problem with it. On the other side of the room, someone has the same aircraft. Do you think they would want to know that you have this problem?”

“That,” says John, “is the basis for continuing airworthiness notices. It’s the CAA’s way of saying, ‘Heads-up – there might be a problem here you may want to check.’”

The CAA issues a continuing airworthiness notice about a concern that *doesn’t* meet the threshold of an ‘unsafe condition’.

An unsafe condition would warrant an airworthiness directive, or AD, and complying with one is mandatory.

A CAN alerts, educates, recommends and guides. Sometimes, it gives options to address the issue. And, unlike an AD, it’s up to the operator to decide if they’ll carry out any of the CAN’s recommendations.

A continuing airworthiness notice should also not be confused with a CAA Notice. That relates to rules and compliance with it is mandatory.

And a continuing airworthiness notice differs from manufacturer’s service information in that, typically, a CAN alerts operators and maintenance providers of an airworthiness concern identified by operators in this country, rather than overseas.

// It's up to the operator to decide if they'll carry out any of the CAN's recommendations. Complying with an airworthiness directive is mandatory. //

Getting the message out

Continuing airworthiness notices have featured in several campaigns to alert the New Zealand aviation community of a possible concern.

"In April 2020," says Matt Harris, a former CAA safety investigator, "we published a CAN after receiving participant reports of inflight occurrences of the folding ring becoming detached from the fasteners on certain monsoon buckets." (CAN 05-012).

Initial information indicated that the affected buckets had been used for years.

"Engaging with the manufacturer about the concerns raised meant the CAA could alert operators, and those responsible for maintaining the monsoon buckets, that the manufacturer had provided important safety information," says Matt.

The manufacturer also improved later models of the monsoon bucket.

Another CAN, published in August 2016, related to a spark plug fitted to a Cabri G2 helicopter.

The CAN was issued after it was found by a maintenance provider that the spark plug "may have been defective and contributed to an inflight fire which subsequently destroyed the aircraft shortly after landing" (CAN 74-002).

The CAN strongly recommended that, before an aircraft's next flight, affected operators/maintenance providers inspect the spark plugs already installed on the engine, inspect new spark plugs for defects, and replace them if any defects were found.

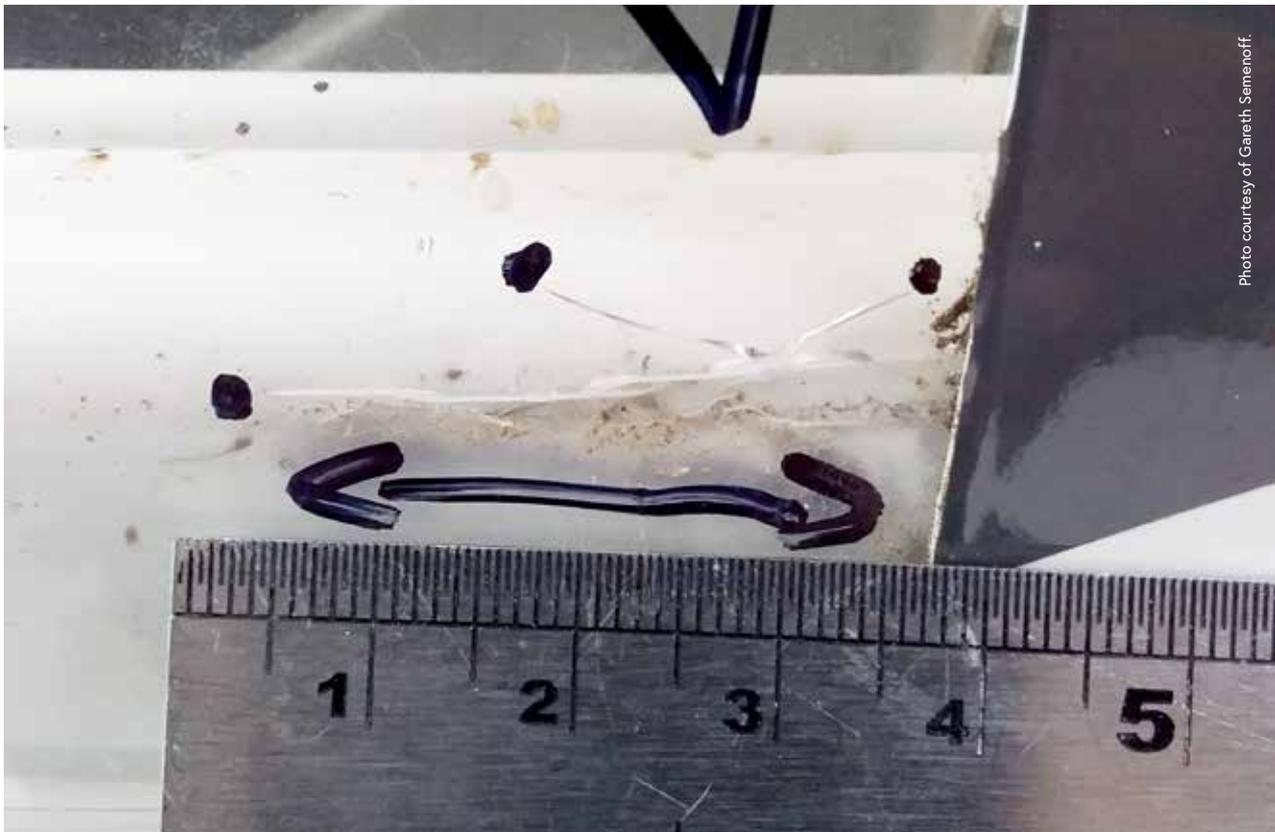
"No further instances of defective spark plugs were found," says Matt. "But the CAN meant people could be vigilant to the possibility of off-the-shelf parts being defective."

More recently, in August 2020, CAN 27-017 was issued after cracks were found in the brackets attached to the elevator bellcrank of two separate Cessnas.

The CAN strongly recommended an "intensive examination" of the affected parts, in the affected area under good light and, if necessary, with a magnifying glass. »



// Continuing airworthiness notice 27-014 was issued in February 2020 to "bring attention to a defect reported to the CAA of finding a severely cracked pilot to co-pilot tail rotor torque tube on a Hughes 369FF".



// A Taranaki engineer found this cracking in the Aeroprakt windscreen he was about to replace. The CAA was able to warn the rest of the Aeroprakt community with a continuing airworthiness notice, after the engineer reported it as a defect.

» The CAN and the windscreen

John Keyzer says the recent instance of a CAN raising awareness in the Aeroprakt-owning community about possible issues with windscreens is also a good example of its value.

“The manufacturer had issued a service bulletin in December 2019 regarding the windscreens. In February 2020 there was a catastrophic windscreen failure near Mercer aerodrome.

“Later in the year, an engineer in Taranaki was about to install a new windscreen – as a result of the service information from the manufacturer – when he noticed cracking in the original.

“Both the pilot in the Mercer incident and the engineer in the New Plymouth situation filed reports with the CAA, and the result was CAN 56-001 issued soon after.

“I understand a number of the 24 Aeroprakt owners in New Zealand have now ordered new windscreens from the manufacturer.

“I know at least five of them got together to order new windscreens and share shipping costs which reduced the price for each owner,” says John.

A trigger for sharing intel

John and Matt say publishing a CAN will often elicit even more information being shared with the CAA, and thus, the wider aviation community.

“People will read a CAN and say, ‘I’ve got the same problem’ and they let us know,” says John.

“This information-sharing is gold for safety.”

A CAN may request participants’ findings be reported to the CAA via the Part 12 process. This was the case with CAN 27-017.

Those findings might indicate the concern is more widespread and possibly more serious than first thought and an AD might be issued.

Matt says while some manufacturers are quite proactive, they’re often not on the ground in the New Zealand.

“So participants’ reports are vital – for the CAA, for other operators, and for the manufacturer.” ➡

IS THAT A DESIGN CHANGE?

Before installing something new on your aircraft, think about what it means for the aircraft's safety – its airworthiness – and if the installation can be done in accordance with Civil Aviation Rules.

If you're not absolutely clear whether what you propose doing is a 'design change' ask yourself 'did the aircraft leave the factory like this?'

If the answer is 'no', you're probably carrying out a design change.

In most cases a design change will be a modification (the other kind of design change is a repair) that will alter the way in which the aircraft is configured.

Any items to be permanently secured to the aircraft, ie, attachment points, should be regarded as fixed installations and are therefore design changes.

Examples include a bike or kayak rack, spray equipment or even simple items like permanently mounted GPS units and cameras.

Your next question is, 'do I have the acceptable technical data to do this?'

"Installing something in or on an aircraft in accordance with a good idea is not acceptable," says CAA aviation safety advisor, John Keyzer.



// A permanently mounted GPS – an example of a design change.

"Safety can be assured as much as possible by following the instructions in, and using, acceptable technical data."

A list of what is 'acceptable technical data' can be found in Part 21 Appendix D and includes:

- (1) the approval of a modification such as a New Zealand-designed and NZ-produced bike rack, by a Part 146 aircraft design organisation
- (2) data provided by the Director of Civil Aviation in an advisory circular, such as the installation of 'non-aeronautical' electronics equipment such as a cellphone or SAT phone
- (3) supplemental type certificates issued by FAA, CASA, or Transport Canada, such as a firefighting belly tank produced in the USA that meets requirements to be installed on a New Zealand-registered aircraft.

These are only three of the ten instances of what is acceptable technical data. Be aware some have conditions attached, as per paragraph (b) of Appendix D.

Your third consideration is, 'is the modification major or not major'? They will be handled quite differently, depending on your answer. »

MODIFICATION/REPAIR PROCESS

Part 1 – Definitions

Design change

A change to a type design or a change to any other part of a type certificate or type acceptance certificate that if incorporated would require the modification or repair of a product, its components, or an appliance.

Repair

A design change that is intended to return the product, component, or appliance to its original, or properly modified configuration.

Modification

A design change that generally results in a change to the configuration of a product, component, or appliance.

Definition (attached to delegation)

Major design change

A 'minor change' is one that has no appreciable effect on the:

- weight
 - balance
 - structural strength
 - reliability
 - operational characteristics
 - or other characteristics affecting the airworthiness of the product.
- All other changes are 'major changes'.

Part 21, Appendix D – Summary

Acceptable technical data

- NZ type certificate data sheets
- foreign type certificate data sheets used for the issue of a type acceptance certificate
- type design data for type certificated products
- approved design change data under 21.73
- data approved by the director under 21.505
- data provided by the Authority in an advisory circular
- airworthiness directives that give specific instructions for modification or repair
- supplemental type certificates^o issued by the:
 - FAA
 - CASA
- supplemental type approvals^o issued by Transport Canada
- manufacturer's specific instructions – ICAs, AMM, SRM, O/HM, CAD, SB etc.
- FAA AC43.13-1B
- data included, and specific to the category of an airworthiness certificate.

^o Refer to rule for provisos requiring written permission of STC holder.

NB: All acceptable technical data must be appropriate, directly applicable and not contrary to manufacturer's data.

Part 1 – Definitions

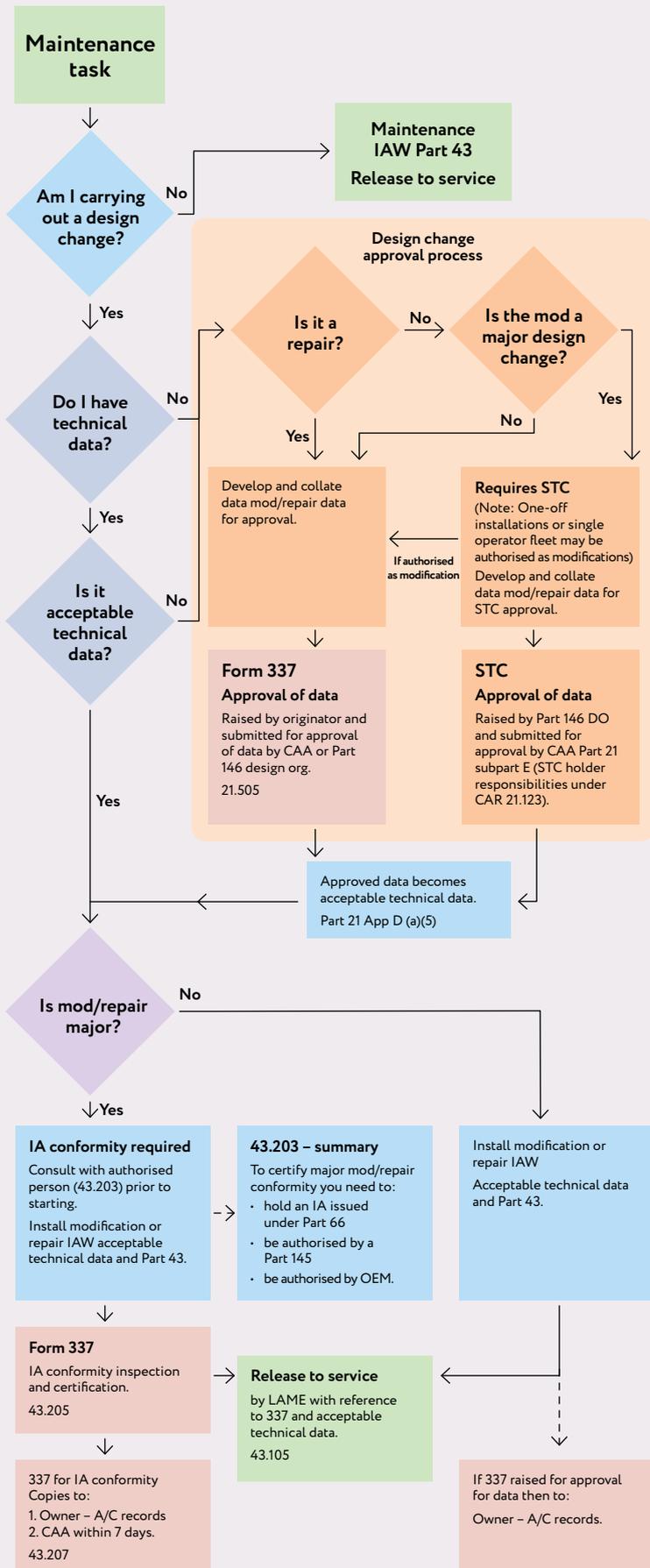
Major modification/repair

Could embodying a mod/repair that has the potential to affect the safety of an aircraft or its occupants, result in one or more of the following incidents:

- structural collapse
- loss of control
- failure of motive power
- unintentional operation of, or inability to operate any systems or equipment essential to the safety or operational function of the aircraft
- incapacitating injury to any occupant
- unacceptable serviceability or maintainability.

Use of form 337

Technical data	Design change	337 action
If acceptable	and not major	then no 337 action required
If not acceptable	and not major	then approval
If acceptable	and major	then conformity
If not acceptable	and major	then approval and conformity



Maintenance task

Am I carrying out a design change?

Maintenance IAW Part 43 Release to service

Design change approval process

Is it a repair?

Is the mod a major design change?

Develop and collate data mod/repair data for approval.

Requires STC (Note: One-off installations or single operator fleet may be authorised as modifications) Develop and collate data mod/repair data for STC approval.

Is it acceptable technical data?

Form 337 Approval of data Raised by originator and submitted for approval of data by CAA or Part 146 design org. 21.505

STC Approval of data Raised by Part 146 DO and submitted for approval by CAA Part 21 subpart E (STC holder responsibilities under CAR 21.123).

Approved data becomes acceptable technical data. Part 21 App D (a)(5)

Is mod/repair major?

IA conformity required Consult with authorised person (43.203) prior to starting. Install modification or repair IAW acceptable technical data and Part 43.

43.203 – summary To certify major mod/repair conformity you need to: • hold an IA issued under Part 66 • be authorised by a Part 145 • be authorised by OEM.

Install modification or repair IAW Acceptable technical data and Part 43.

Form 337 IA conformity inspection and certification. 43.205

Release to service by LAME with reference to 337 and acceptable technical data. 43.105

337 for IA conformity Copies to: 1. Owner – A/C records 2. CAA within 7 days. 43.207

If 337 raised for approval for data then to: Owner – A/C records.

» A *not-major* change is one with no appreciable effect on the aircraft's:

- weight
- balance
- structural strength
- reliability
- operational characteristics, or
- other characteristics affecting its airworthiness.

If, on the other hand, the modification could affect the safety of the aircraft or its occupants, it's *major*, and will need an IA certificate holder to carry out a conformity inspection.

Major or not major is a decision usually made by the certifying engineer.

Non-permanent installations

If you have an iPad®, and it's sitting in a seat pocket in the cockpit and charging via a USB port in the instrument panel, it's obviously carry-on luggage.

If, however, it's affixed in some way to the aircraft and wired directly into the aircraft's electrical system, it's considered a non-permanent fixed installation. As such, it must be installed in accordance with acceptable technical data.

"Sticky tape is not a solution," says John. "That's because if a device is carelessly taped or secured to the aircraft, it could dislodge during turbulence or other manoeuvres, jam aircraft controls, block crew vision, or even injure an occupant.

"Devices affixed in ways such as this make the aircraft un-airworthy and therefore unsafe. It's also a breach of rule 91.101."

In all cases the decision to use or to not use such items, and how they're used, rests with the operator or pilot-in-command.

Check what the rules say

Part 1 – *Definitions and Abbreviations*

Part 21, Subpart C – *Design Changes*

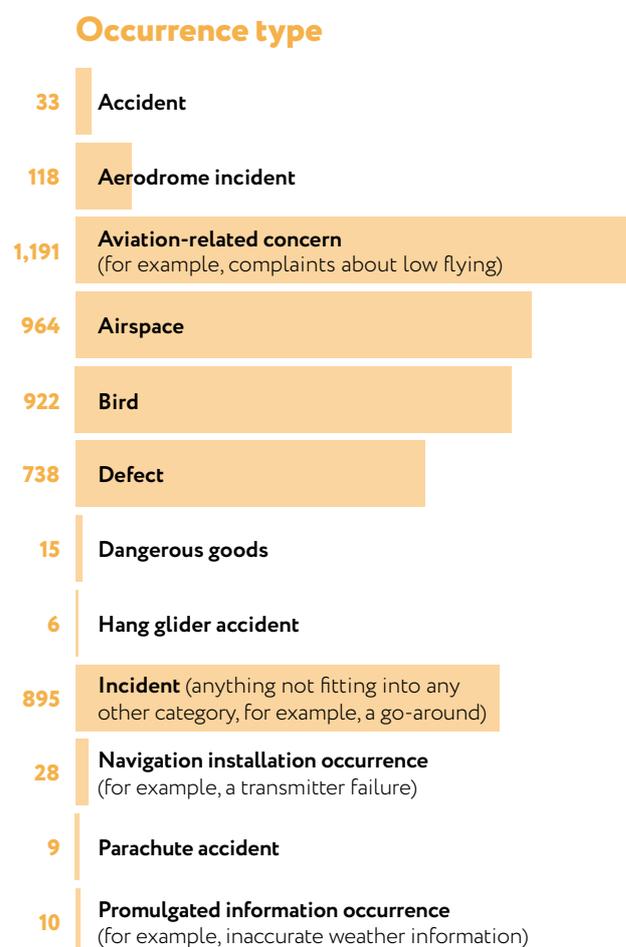
Part 91 Subpart F *Instrument and Equipment Requirements*; rule 91.501 *General requirements*

Part 21, Appendix D – *Acceptable technical data* ≡

OCCURRENCES DASHBOARD

The CAA receives thousands of occurrence reports each year. To give you a picture of the number, and types, of occurrences reported, we've created the chart below.

These occurrences were reported to the CAA between 01 January 2020 and 30 September 2020.

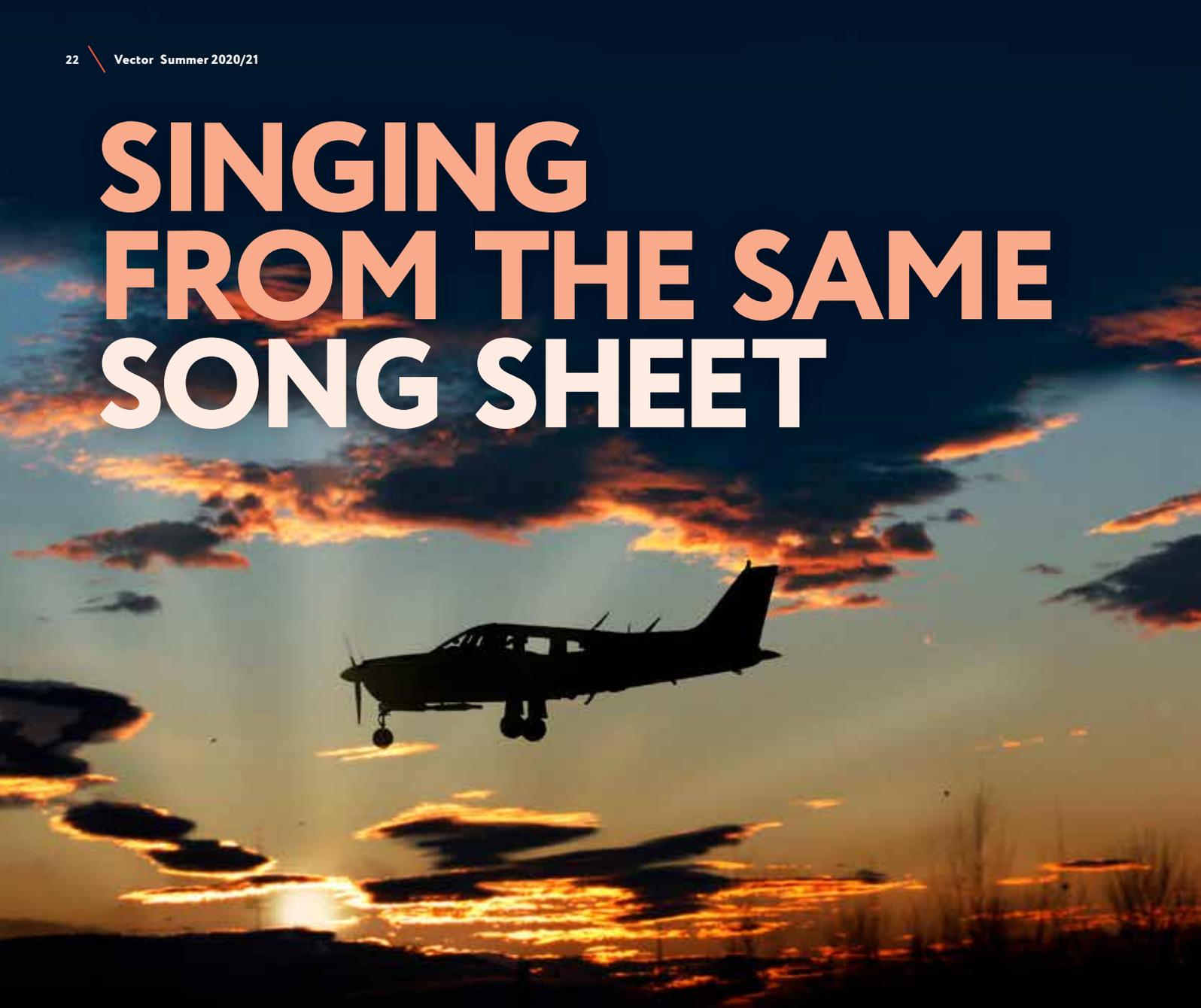


// BIRD HAZARDS



The *Bird hazards* Good Aviation Practice booklet has been revised. Email publications@caa.govt.nz for your free copy of the booklet.

SINGING FROM THE SAME SONG SHEET



The CAA now has a specialist ‘interventions’ team which is combining analysis, SMS processes and marketing principles to influence safety behaviour in the aviation community. Importantly, it will drive coordinated messages from the CAA about safety.



Intervening to avoid occurrences in high-risk areas has always been a part of the CAA’s declared mission.

But often, day-to-day workload – certification, surveillance, monitoring, advice-giving, email and phone answering – ate away at the intentions of CAA staff to do

what they could to prevent specific occurrences in specific areas.

A new regulatory interventions team, however, is now dedicated to designing campaigns to encourage safer practice in areas shown to be at higher risk of occurrences.

Jack Stanton leads the new unit.

“We’ll take the findings of the CAA data analysts as to trends and themes. We’ll apply SMS principles to those trends and themes, identifying and prioritising risk, and developing mitigations. Then we’ll come up with a campaign to encourage participants into safer practice.”

For illustration, Jack likens the design of a CAA intervention to a retail marketing campaign.

“Let’s say the analysis by a clothing retailer of sales data reveals purchases of winter coats have slowed.

“On the basis of those analytics, the retailer devises a strategy to revitalise sales of winter coats. They launch a new winter range, shoot photos of the range modelled in exciting places, and create marketing materials for shop front windows.

“They might back this up with something on the radio, TV, social media, bus stops and mail-out catalogues.

“The campaign is synchronised – each feature has the same messaging, branding and colours.

“Campaigns trying to influence safety behaviour are very similar. When Waka Kotahi – the New Zealand Transport Agency – runs a campaign about seatbelt safety, you see ads on television, hear them on the radio, you see signs on buses and on billboards. They have a coordinated message and a coordinated ‘look’.

“And it’s designed to focus your attention on specific safety issues, rather than just ‘drive safely’.

“This is the sort of informed and coordinated response we’re aspiring to in aviation safety.”

Jack emphasises the regulatory interventions will be fact-based and intelligence-led.

“Let’s say Part 12 reporting tells us that pilots not accessing weather information has contributed to a series of accidents.

“Armed with that insight the interventions unit will collaborate with other CAA units and sector stakeholders to design a programme to find the most effective way of encouraging pilots to consult official weather information.”

“The work of a CAA staff member in supporting that intervention may be the same as the work they’ve always done. Advisors will still advise, inspectors will still inspect, and for the period of this particular intervention, they may also focus on the importance of pilots accessing weather information.”

What success will look like

Multiple safety campaigns could be running at any one time. Some may be of only a few weeks’ duration, and some may run for months.

Jack says if the unit’s work is successful, interventions “will be the opposite of a secret.

“What we’re emphasising to participants and what we want from them will be really clear.

“They should see much more coordination and consistency in the messaging from, and interactions with, CAA staff, who should all be singing from the same song sheet.

“Participants will say, ‘every time I talk to any CAA staff lately, they’re asking me about accessing Met information?’”

The interventions team will continually assess the results of their campaigns to gauge their impact. The unit is adopting SMS principles to continuously track progress and adjust the plan.

“We’ll actually start designing the intervention by saying, ‘how do we assess the effectiveness of this campaign?’ That will make sure we’re designing something measurable, from the start.”

Jack says the campaigns will feature frontline CAA staff, and where possible, aviation community members.

“The experience of pilots, operators and engineers is vital in the management of aviation risk.”

Jack has seen just how powerful the testimony of an industry peer can be.

“It’s especially so when it’s someone you see as an industry leader.”

If you’re interested in being involved, Jack’s contact details are at the bottom of this article.

The campaigns will succeed, Jack believes, only if operators continue to make accurate occurrence reports, including their SMS ‘follow-on’ investigations.

“We need that Part 12 reporting ‘feedstock’. If people don’t report, or the quality of reporting and investigation falls off, the CAA will lose its understanding about what’s happening in the aviation community. Our interventions would become less and less relevant.” ➔

// FIND OUT MORE

Email jack.stanton@caa.govt.nz
or call 04 560 9568

LICENSING REMINDER FOR THE HOLIDAYS

If you want your licence issued or amended before the Christmas/New Year holidays, please get your applications in early. The lead-up to Christmas is a very busy time for the CAA's licensing staff.

The last day for the issue of licences in 2020 will be 24 December. Licences will again be issued from 11 January 2021.

Licence applications are dealt with on a first-in, first-processed basis. Calling the unit does not give your application greater priority, and only takes staff away from processing applications.

If you're applying for a new licence, you'll need to satisfy the Director of Civil Aviation that you meet the 'fit and proper person' (FPP) requirements of the Civil Aviation Act 1990.

Obtaining the necessary information can take several weeks. As a rough guide, allow up to six weeks before your flight test to complete the FPP process.

If you need to renew your medical certificate, take into account the time that may take, particularly if you require a specialist examination.

The CAA will be closed from 2pm Thursday 24 December 2020 until 8am Tuesday 5 January 2021.



ADS-B GRANTS UPDATE

As at 31 October 2020, the CAA's ADS-B grant scheme has approved 515 claims totalling just under \$1.6m (inc GST). More than 900 applications to enter the scheme have been received. The total number of aircraft equipped with ADS-B by the end of October was 1183.

All operators are encouraged to apply so they can continue to fly in controlled airspace, and start to reap the safety benefits of ADS-B, including ADS-B IN.

To apply, see the ADS-B website.



THE VECTOR ARCHIVE IS BACK

Read all *Vector* issues from 1998 to 2020 in our online archive.

The *Vector* team has painstakingly delved into the archives to bring back every issue since 1998 onto the CAA website.

To browse through the magazines, including some beautiful covers, visit aviation.govt.nz/vector. Here you'll find all the modern issues (since 2009), and a link to view earlier issues back to 1998.

FLIGHT MANUAL PAGES

The CAA is proposing that it stops issuing AIR pages for flight manuals and we want to know what you think about that.

Not issuing AIR pages would cut down unnecessary paperwork to reduce CAA administration and costs.

The AIR page specifies the basic aircraft manufacturer's document.

This same information is now available at aviation.govt.nz > aircraft > aircraft registration > aircraft register search > aircraft flight manual.

It's also in the aircraft type acceptance report, and the AIR number will remain on an airworthiness certificate.

The current blank pages to list the revision status and flight manual supplements are available at no charge by emailing certification@caa.govt.nz.

Please send any comments about this proposal as soon as possible to david.gill@caa.govt.nz.



ARE YOU A KEEN PHOTOGRAPHER?

The Vector team is always keen to have a supply of local aviation pics and many of you are great amateur photographers. For instance, the stunning cover shot of the spring 2020 Vector was taken by pilot Vaughn Davis. If you'd like to see one of your pics in the magazine, on the cover, or in one of our Good Aviation Practice booklets, send it to vector@caa.govt.nz for us to have a look at.

We need dramatic/unusual/action/people-at-work shots that are high-res and high-quality. Because the magazine is non-profit, we can't pay you, but you'll get bragging rights...

When you send your pic(s) through, let us know where it was taken, the date it was taken, what we're looking at, and who we credit it to – that is, the person who has the copyright.

Most likely we won't be able to publish your pic straight away, but we'll keep it until we can, and then contact you to let you know where we're going to use it.



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.

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

Mark Houston – North Island
027 221 3357 / mark.houston@caa.govt.nz

Neil Comyns – Maintenance, South Island
027 285 2022 / neil.comyns@caa.govt.nz

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

HOW TO GET AVIATION PUBLICATIONS

AIP New Zealand

AIP New Zealand is available free from www.aip.net.nz. Printed copies of Vols 1 to 4 and all aeronautical charts can be purchased from Aeropath on 0800 500 045, or shop.aeropath.aero.

Pilot and aircraft logbooks

These can be purchased from your training organisation, or 0800 GET RULES (0800 438 785).

Rules, advisory circulars, airworthiness directives

These are available free from the CAA website. Printed copies can be purchased from 0800 GET RULES (0800 438 785).

PLANNING AN AVIATION EVENT?

If you are planning any aviation event, the details should be published in an AIP Supplement to warn pilots of the activity. For supplement requests, email aero@caa.govt.nz.

To allow for processing, the CAA needs to be notified **at least one week** before the Aeropath published cut-off date.

Applying to the CAA for an aviation event under Part 91 does not include applying for temporary airspace or an AIP Supplement – the two applications must be made separately. For further information on aviation events, see AC91-1.

For more info, visit aviation.govt.nz > Safety > Airshows.

CAA cut-off date	Aeropath cut-off date	Effective date
02 Dec 2020	09 Dec 2020	25 Feb 2021
13 Jan 2021	20 Jan 2021	25 Mar 2021
10 Feb 2021	17 Feb 2021	22 Apr 2021
10 Mar 2021	17 Mar 2021	20 May 2021

Visit aviation.govt.nz/aip to view the AIP cut-off dates for 2020/21.

REPORT SAFETY AND SECURITY CONCERNS

Available office hours (voicemail after hours)

0508 4 SAFETY (0508 472 338)

isi@caa.govt.nz

For all aviation-related safety and security concerns.

ACCIDENT NOTIFICATION

24-hour 7-day toll-free telephone

0508 ACCIDENT (0508 222 433)

aviation.govt.nz/report

The Civil Aviation Act 1990 requires notification "as soon as practicable".

ACCIDENT BRIEFS



Robinson R44 II

Date and time:	14-Apr-2019 at 08:25
Location:	Ōtaki
POB:	1
Damage:	Minor
Nature of flight:	Agricultural

The pilot was conducting aerial spraying when the helicopter struck an electric fence wire. He was aware of the location of the wire and had avoided it during the other spray runs. He could not explain why he 'cut the corner' and hit the wire during that particular run.

He managed to execute an emergency landing. However the helicopter suffered extensive damage to the front canopy and rotor blade during the heavy landing.

[CAA Occurrence Ref 19/2728](#)

Robinson R44 II

Date and time:	22-Nov-2018 at 13:21
Location:	Fairlie
POB:	1
Damage:	Substantial
Nature of flight:	Agricultural
Pilot licence:	Commercial pilot licence (Helicopter)
Age:	48 yrs
Flying hours (total):	3012
Flying hours (on type):	2100
Last 90 days:	72

The pilot was spraying a field when he made a reversal turn. There was a puffing breeze at the time. As the helicopter turned downwind, the low RRPM warning horn sounded. The pilot dumped the load and made a run-on landing directly ahead. However a skid dug into the ground and the helicopter rolled over. The pilot was not hurt but the helicopter was substantially damaged.

The ELT activated during the accident triggering an immediate search and rescue response by the Rescue Coordination Centre (RCCNZ). However, they found that the ELT registration details had not been updated. This caused difficulties finding the correct contact so they could determine the level of response required.

Note: A large majority of ELT activations are accidental. Updating ELT registration details, therefore, is essential to reduce time and workload when RCCNZ are 'tracking' a beacon activation.

[CAA Occurrence Ref 18/8252](#)

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, www.taic.org.nz.

Pacific Aerospace 750XL

Date and time:	12-Dec-2016 at 09:02
Location:	North of Wairoa
POB:	2
Damage:	Destroyed
Nature of flight:	Agricultural
Pilot licence:	Private pilot licence (Aeroplane)
Age:	37 yrs
Flying hours (total):	8301
Flying hours (on type):	5807
Last 90 days:	345

The pilot of a Pacific Aerospace Ltd 750XL was conducting a positioning flight between aerial topdressing tasks in the Gisborne region. The pilot elected to detour en route, to an area where a pilot from the same operator was also conducting aerial topdressing. While flying low-level, the aircraft struck six 110 kV high-voltage power lines spanning the valley. The aircraft was witnessed trailing wires from the left wing and subsequently impacting terrain.

The safety investigation identified a number of human factors that influenced the pilot's decision-making to deviate from the original plan. The pilot had also not conducted a hazard brief for the area to be flown at low level and as a consequence did not have the most accurate and well-informed mental model of the environment and hazards to be faced. Due to the limitations of an individual's attentional resource, it is likely the pilot experienced inattentive blindness, leading them to strike the high-voltage power lines.

As a result of the safety investigation a number of safety actions have been raised regarding the purpose of the hazard identification process and its importance to pilots' mental models and decision-making. Furthermore, the implementation of a Team Resource Management approach to agricultural aviation operations will provide pilots the support required when plans change. Ensuring pilots have the appropriate and pertinent information at the time reduces the risk of heuristics and biases influencing pilots' decision-making.

[CAA Occurrence Ref 16/6701](#)

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

Eurocopter EC 120 B

While carrying out a logbook review, engine cycles for Ng & Nf were found with discrepancies. Multiple errors were recorded in previous USA logbooks and errors carried through. Incorrect cycles were stated on Transport Canada Safran Helicopters Engines Form 1 # BSAFO-2018-0183 dated 26th September 2018 due to carried errors. Incorrect cycle times carried through the initial issue of a New Zealand certificate of airworthiness.

A major issue identified, is that the VEMD only displays up to 999.9 cycles then reverts to 0 cycles. The first time the Nf & Ng clocked over 1000 cycles on the VEMD, the FAA logbook records reverted to 0 again instead of entering a 1 in front of the number. From 25th September 2006 to 22nd June 2018 there was no recording of engine cycles. The aircraft completed 735.5 hrs in this time.

The current cycles have been calculated via the information contained in the previous logbooks and using the VEMD current cycle counter. Using the information, an additional 2000 cycles for Ng & Nf have been added to the aircraft records.

[CAA Occurrence Ref 20/1221](#)

Piper PA-28-140

Lower Scissor Link Bolt

Part number:	AN5-22
ATA chapter:	3200
TTIS hours:	13189

The aircraft had just taken off when witnesses at the airfield saw the right main wheel assembly fall off. The pilot was advised of the situation over the radio and was unaware that anything had happened. Emergency services were alerted and the aircraft flew to Wanaka. The operator briefed the pilot over the radio on the best technique to use to land the aircraft and the pilot executed a textbook landing on the left main and nose wheel. The aircraft settled onto its right wing tip and slowly departed the runway onto the grass. No one was injured. It was found that the scissor link bolt had failed. It could not be determined when that bolt had last been manipulated by anyone, so further investigation was not conducted.

[CAA Occurrence Ref 19/7598](#)

GA defect reports relate only to aircraft of maximum certificated takeoff 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.

Cessna 172M

Mixture Cable

Part model:	0-360-A4M
Part manufacturer:	Lycoming
ATA chapter:	7100

Shortly after touching down, the pilot reported that the engine stopped and was unable to be restarted.

Maintenance investigation found that the mixture cable end was fouling on the carburettor mount, not allowing a full rich mixture to be achieved. The mixture cable adjusted to allow full travel.

[CAA Occurrence Ref 19/6743](#)

Piper PA-38-112

Carburettor

ATA chapter:	7320
---------------------	------

The Piper PA-38-112 experienced an engine failure in flight.

Inspection determined that the float level in the carburettor was incorrect. The float level was adjusted, the carburettor assembled in accordance with manufacturer's manual and returned to service.

No further issues were reported.

[CAA Occurrence Ref 19/5536](#)

Rans S-6ES Coyote II

Cooling fan belt

ATA chapter:	7520
---------------------	------

A forced landing was carried out due to engine overheating and subsequent power loss. There was no damage to the aircraft.

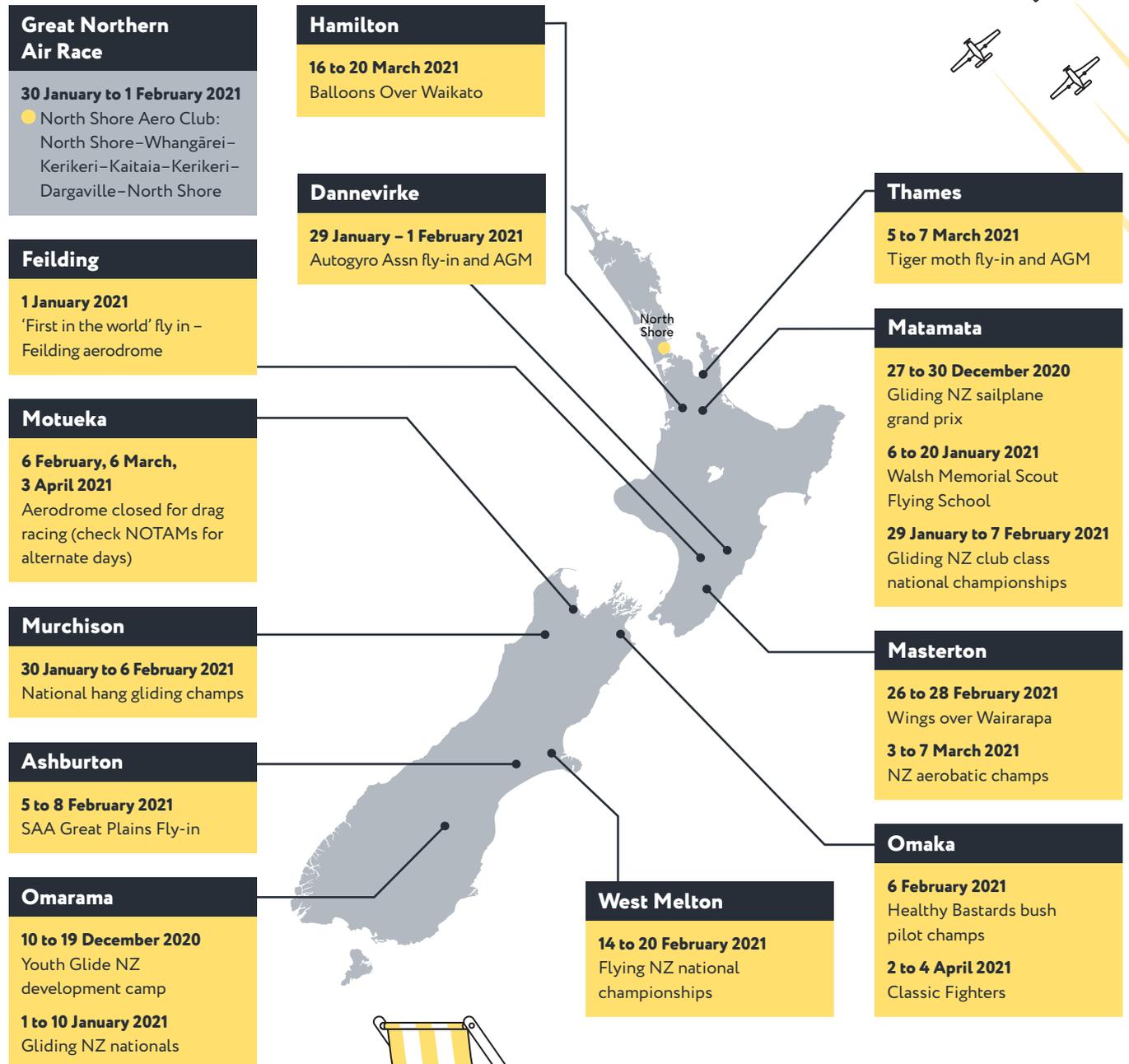
The Rotax 503 engine is cooled by a cooling fan driven by a belt from the crankshaft. The belt had failed in flight resulting in the engine overheating.

[CAA Occurrence Ref 19/4664](#)

SUMMER TRAFFIC BUSY SPOTS

Don't inadvertently fly into an aviation event – check AIP Supplements for planned events, and check NOTAMs on the day. If you don't subscribe, you can download AIP Supplements from www.aip.net.nz and NOTAMs from ifis.airways.co.nz.

This map shows the known flying events between December 2020 and early April 2021.



KEEP THESE EVENTS IN YOUR CALENDAR