

vector



Against the Clock

SMS for Part 135s

**Recording
of Maintenance**

**A cool bedroom,
blackout curtains,
and ear plugs**



vector

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From the Director



The Associate Minister of Transport has signed off on the rules mandating the use of Automatic Dependent Surveillance – Broadcast (ADS-B) above flight level 245. Now it's time for all of you who fly in controlled airspace below FL 245 to take a very close interest.

Our intent now is to move forward with the proposal to introduce ADS-B throughout New Zealand's controlled airspace from 31 December 2021.

This means you have about 40 months to get suitable gear installed to fly in controlled airspace. The new rules specify the equipment and performance standards applying to all new and existing ADS-B systems. If you already have an ADS-B system, you need to check it complies with the rules.

If you don't have ADS-B yet, the rules will tell you what standards your new system will need to meet, who can fit the equipment, and about the testing that needs to be done before you fly in controlled airspace. You'll find some helpful information about installation on page 18 of this issue of *Vector*.

Remember that while it is ADS-B **OUT** that will be required, for a bit more of an investment you can choose to equip with ADS-B **IN** and benefit from the additional situational awareness it can provide.

My message is, don't delay. You won't want your aircraft sitting on the ground waiting in a long queue for that avionics shop appointment.

Find answers to your questions in the ADS-B section on the New Southern Sky website, www.nss.govt.nz, or email adsb@caa.govt.nz.

Regards

Graeme Harris

Airworthiness and Maintenance Workshop

(Formerly called the Maintenance Controller Course)



Tauranga

3 to 4 October 2018

Oceanside Resort and Twin Towers
1 Maunganui Road, Mt Maunganui

Many owners and operators want to increase their understanding of the maintenance requirements of their aircraft. The Airworthiness and Maintenance Workshop is designed for a wide range of aviation participants, from airline maintenance planners to private aircraft owners.

The two-day workshop is hands-on and practical, so you can get the most out of it. Aside from the subject matter, the chance to network is invaluable.

Visit the CAA website, www.caa.govt.nz, "Quick Links > Seminars and Courses" for more information and to enrol online. Places are limited, and they fill up quickly, so enrol early. ■



SMS for Part 135s

How do you establish and maintain a robust reporting system? How do you engage staff? *Vector* asked three organisations – two already SMS-certificated, and one well along the way.

For Richard Rayward of Tekapo-based Air Safaris, leading from the top in SMS is crucial.

Richard has taken his own advice seriously, formally reporting his own occurrence of momentarily being caught out by a snow-created illusion, despite being in very familiar territory.

“Pukaki aerodrome, in the Mackenzie Basin, has a full length taxiway, parallel to the main runway. The snow was in patchy lines and I briefly lined up with the taxiway instead of the runway when turning finals.

“The value in that report was not so much what I said,” says Richard, “than the fact I said it at all. It showed I was willing to report which would encourage others to do as well.

“If you want commitment from the whole staff, you must lead from the top.”

In a small operation it's comparatively easy to report and deal with issues.

“At some point of almost every day, we're in the same room, so it's not hard to bring up issues, discuss and resolve them, and monitor the outcomes.”

As to documentation, the company has a simple paper-based reporting form that includes space for follow-up preventive action. The safety officer normally takes responsibility for documenting that.

While the paper-based system at Air Safaris is sufficient for the 12-employee company, at Blenheim-based Sounds Air an online system was introduced about 18 months ago.

The safety officer at Sounds Air, Craig Anderson, says the online system has increased reports by “quite literally, about a thousand percent.

“We have a predominantly younger crew and they think in an online way. With the paper-based system, we might have had 20 reported occurrences a year, whereas now we're getting 25 a month. I think that tells me staff wanted to do the right thing – management just had to give them a simple way of doing it.”

Massey Lynch, fixed wing operations manager with Philips Search and Rescue Trust, says his organisation introduced a computer program, meeting many of its training and operational needs, including occurrence reporting.

“All staff can file reports and see the hazard register easily and quickly, including on their cellphone. It does make everything more accessible, and especially suits our younger generation of employees.



"When a report or suggestion has been made, all the assigned personnel can view the investigation progress and add further comments, actions and suggestions – contributing to the direction of the investigation until it's been closed. That makes for an open and collaborative process which often results in much more effective outcomes than were perhaps previously able to be realised.

"The computer programme is a significant cost, but we see it as an investment."

Craig Anderson says Sounds Air staff know they'll always get an email or call from the part-time occurrence investigator for details of whatever incident they reported.

"People lose interest if they don't see things changing, so the investigator's sole job is dealing with occurrences, and follow-up with outside organisations, if necessary, like Airways, BP or the CAA."

Craig says the company making their SMS as practical as possible has also smoothed the way for staff engagement.

"We didn't make changes unless they were going to make things better, for instance, the current obsession with high-vis vests anywhere outside. These days, if you don't wear a high-vis vest you are more likely to stand out! So we made wearing one a requirement only in areas where it genuinely added to safety.

"So, practical, simple, and couched in plain language. Otherwise it won't work, especially in a small operation, because people don't have the time or resources for anything else."

Craig says the biggest change for Sounds Air under SMS was recording safety actions.

"We were actually doing quite a bit informally, but the resolution to an issue might have just been a conversation, and there was, I guess, the danger that everyone would eventually forget.

"So that required a change in thinking but you can be quite inventive. For instance, we had an email exchange about an issue, including how it was to be resolved. I took a screenshot of that exchange, and that was our documentation."

Richard Rayward says much of what's required by SMS should already be in a good QA system. But complacency is always a trap.

"After 50 years in business, it doesn't seem like there are many unknown hazards, as you can imagine! But things do change and there are variations in opinions about what constitutes a major hazard.

"We have a practice, on quieter days, of holding brainstorming sessions about hazards, everyone understanding we expect them to be alert to anything potentially dangerous. Sometimes we can get a bit too much reporting! But staff know we will always consider what they've said, and their suggestion won't be ridiculed or treated unfairly.

"While we do get some reports of things that don't really pose a safety hazard, you accept those as part of an open and robust reporting system. You don't dismiss them because you think they're too small. Besides, everyone has a slightly different idea of what constitutes an issue.

"At the other end of the spectrum, you have to be a wee bit careful that people don't start to question the value of a safety intervention, because nothing ever happens.

"For instance, in our very early days, we used to have multiple occurrences of people taking off with seat belts hanging outside the doors, or fuel caps left off or dipsticks still left on the aircraft. So we introduced a very formal walkaround to check those things. Since we introduced that, we've had no recurrence, so we need to keep newer staff members aware of why we do it."

Craig Anderson says one of the benefits of establishing an SMS is that management gets to know its business better.

"Often we discover that it's not so much that someone individually stuffed up, as that we have structured things in such a way that allows mistakes to happen.

"There've been quite a few cases where we've sat back, and said, 'hey, we need to do things a bit differently,' or 'gee, we never thought of that in the past, but perhaps we'd better'.

"That's why it's so important to involve your staff from the start. While someone has to drive SMS, it's the staff who have the ideas, which are often great – simple and sensible. We might have been about to put some complex decision in place, and they will come up with something brilliantly practical.

Continued over >>

"Air Wanganui's journey to SMS implementation began in September 2015, when Part 100 was in its draft form. We thought we'd get ahead of the game and, somewhat naively, rushed together an implementation plan for approval. Reality hit home when the business had its first plan returned in February 2016..."

"So, using the CAA SMS resource kit, we started again. Since then our focus has been on weaving SMS through our management systems, health and safety procedures, quality management processes, and most importantly, embedding it in our daily operations.

"We now have a very good understanding across the whole business, of the shift required regarding our approach to safety, and, critically, we have buy-in across the whole business organisation from the board down."

Dean Martin, CEO, Air Wanganui.



» Continued from previous page

"They help to drive – and they know they help to drive – decisions about safety."

Massey Lynch says SMS is an opportunity for an operator to tailor their safety processes to suit their own organisational culture.

"It compares well with the more inflexible Quality Assurance system, which was one size fits all.

"That makes it a lot easier to have a positive approach, 'hey, we're going to come up with something that works for us'. Anyone will become engaged when they see it directly benefitting the organisation, rather than being something they were forced to do because everyone else was doing it exactly the same way."

Massey views SMS not as an added burden, but a way of working smarter.

"It's tying a whole lot of individual safety elements together that perhaps already existed but weren't necessarily together before.

"It encourages and enables that overall coordination of safety processes which makes actions easier to track and monitor, which must be the ultimate positive safety outcome." ■

Themes regarding risk emerging from the Part 135 Sector Risk Profile (SRP) are at www.caa.govt.nz/srp.

These risk themes were identified by sector participants at four SRP workshops and will help Part 135 participants focus on their particular hazards and risks, as they begin the process to become SMS-certificated.

Photo: iStock.com/jollo

SMS Safety Summit

An industry-led summit on 9 May 2018 brought industry together to collaborate on safety management.

More than 150 industry participants gathered in Auckland in May for a day dedicated to safety management systems (SMS).

The summit, hosted by Oceania Aviation with the support of the CAA, aimed to facilitate communication, cooperation, and collaboration on safety within industry. The summit provided an opportunity for industry players to learn more about safety management, and to find out how it's being incorporated by others within the sector.

There were 16 speakers, representing different subsectors, including MetService, airlines, airports, adventure aviation, helicopter operations, and maintenance. They spoke about their experiences with SMS, providing real-life insights and practical advice. Topics ranged from understanding and implementing SMS, to engaging staff, and fostering positive and proactive safety cultures.

Neil Richardson of international aviation consultancy Baines Simmons opened the summit with Oceania's Don McCracken, and led a dedicated CEOs forum.

The summit was well-received by participants, with overwhelmingly positive feedback, and encouragement for similar events in the future.

Pip Ives from Heli Maintenance Ltd said the summit was "a very collaborative and informative day, and it was encouraging to hear examples of how others have implemented SMS".

For Mark Law from Frontier Helicopters, the practical tips shared by presenters and attendees were a highlight.

"Industry stood up to explain how they approached SMS, and what they did in their businesses. You could see how you could implement it, and what it could look like."

For more information on the summit, including access to the presentations and a safety forum, visit www.safetysummit.co.nz. ■



Recording of Maintenance

The highest priority for most engineers is the safety of the aircraft they work on. They're fastidious and want to do the right thing by their customers. But some – many actually – sabotage their bottom line by failing to keep accurate, up-to-date and tidy records.

The most obvious reason for keeping good records is their impact on aviation safety, including their capacity to 'follow the aircraft' as it moves around engineers.

A secondary benefit is the money that good records can save a company.

Work done, but not accompanied by proper documentation attesting to that work done, is pretty worthless. Worse, it can cost.

HNZ Global senior engineer Brian Dravitzki says if, for instance, the recordings of engine condition trend monitoring data and LCF cycle counting are inaccurate, the cost of the subsequent engine overhaul can be assessed by the OEM as a worst-case scenario. That could lead to hundreds of thousands of dollars in extra penalties.

Neil Morris of Kapiti-based Aviation Ltd also has a couple of horror stories.

"I've heard of a Cessna 'SIDs' inspection on the wing and strut attachments recorded incorrectly, and so they were done 6000 hours too early, costing thousands.

"A simple Challenger engine air filter is good for 2500 hours if it's maintained properly. But if it's not recorded correctly, it can be mistaken for a disposable filter and chucked at the next inspection, along with \$300. That sort of stuff adds up."

But the cost of badly kept records can cost in more intangible ways.

If work directed by an AD or mandatory inspection requirement has not been documented adequately, the work may have to be repeated if the initial inspection requirement is revised.

The cost of time consumed in trying to make sense of inaccurate, or inappropriate, or largely non-existent records is even less obvious, but it's still a direct hit on the company's bottom line.

Brian Dravitzki says good records take the guesswork out of coming to grips with the maintenance status of an aircraft.

"You do the job once, and you record that maintenance appropriately. Otherwise, you'll have maintenance control asking for it to be redone, because they have no evidence of it ever being completed."

He says HNZ's philosophy is that the better the paperwork, the higher the audit rating, which only enhances reputation.

"That means a less frequent audit schedule, and all of that saves the company money."

Neil Morris operates under Part 43 and says, unlike Part 145 organisations, the LAME effectively takes on the additional roles of QA manager, and maintenance controller.

"We are constantly checking that we're complying with the rules under Part 43, and one way of doing that is accurate record-keeping. It gives us 'traceability' and the ability to cross check everything."

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Photo: iStock.com/shironosov

Another not inconsiderable reason to keep good records is in the unlikely, but potentially ruinous, event of the aircraft being involved in an occurrence.

In the event of an incident or legal dispute, the devil is in what's *not* in the detail. Good records show clearly what has been done and what the intent was of the person doing the maintenance. A legal challenge is very difficult in those circumstances because it's clear the rules were complied with.

So, if an engineer or their company suspects their record-keeping is costing them, where to start?

Neil Morris advises, with the logbooks.

"If I come across an aircraft where the records have been migrated to the new format logbook (folder and loose-leaf entries) then I find the records are usually pretty tidy and things have been tracked properly.

"If they're still on the old logbooks where it can get very messy with ADs all over the place, and having to flick from one book to another, that's when I know I'm going to find some holes in the tracking."

Neil encourages other LAMEs to transfer aircraft records to the new format logbooks.

"I often do this at the Review of Airworthiness, if I haven't already done that. It takes a couple of hours, but it's money well spent because of the subsequent ease of paperwork. Just transferring the information to the new format starts to get things tidy.

"At the next 100-hr check, you're quicker to find stuff, you're more efficient and less likely to miss anything."

Neil says some companies invest in costly software but he uses a simple, but accurately kept, spreadsheet.

"It gives a complete snapshot of everything that's due.

For example a Cessna 172 or a 152 has more than 100 lines of maintenance tasks you need to track.

"You have to have it laid out so you can audit it easily to the technical data it's generated from. Knowing where to locate the technical data for the required maintenance saves time and encourages compliance.

"It's simple stuff but it can make a big difference."

Brian Dravitzki says recording what's been done should be an integral part of the job, and allowing engineers adequate time to complete good paperwork is essential.

"Commercial pressure is a big thing in our industry – it's that 'get that aircraft done and out the door' approach.

"But if you believe that the recording of what has been done is part of the core maintenance activity, it'll have benefits in every direction. If you fill out the paperwork as you go there's less reliance, later, on memory which can be faulty.

"Paperwork, particularly if you let it fall behind, can become a burden. But if the engineers can deliver constant and accurate records of maintenance, in time it just becomes second nature."

Brian says investing in good maintenance software definitely helps.

"Handwritten records can become arduous, so we do most of our paperwork on computer. We've put a lot of emphasis in the last couple of years on staged worksheets for the more complex tasks. What that does is not so much rewrite the OEM's maintenance manual but highlight what particular point the engineer is up to.

"As they go, they initial each stage, and if another engineer has to pick up the work, it's very safe and easy for them to do that, at exactly where the last LAME left it."



Photo: iStock.com/EvgeniyShkolenko

"Engineers are always faced with the challenge of doing the paperwork efficiently, spending the time and being able to charge for it," says Neil Morris.

"Without efficient maintenance tracking systems, one of two things can happen – you either spend the time but you don't charge for it because it just seems exorbitant, or you cut corners.

"My approach is spend the time on it initially to get it right, charge for it, and it will then save time and money, and improve accuracy in the long run.

"It's the same as doing a complete refurbishment on, say, a Cessna 152: you reset the whole thing and guess what? Every 100 hours it just flies in and out with reduced maintenance costs."

Brian Dravitzki tells his engineers that not only should their records be complete and up to date, but they should 'tell the story' of that aircraft.

"When you're making a record, if you write it in such a way that a lay person could pick it up and read the story, then accurately repeat back to you what they believe has happened with maintenance, then you've done a good job." ■



For aircraft logbooks, go to www.caa.govt.nz/forms



New ASA Neil Comyns

Aviation Safety Advisors (ASAs) play a key role in liaising between industry and the CAA. They are often a participant's first port of call for any issues they need to discuss.

In May 2018, Neil Comyns joined CAA's Communications and Safety Promotion team as the South Island's ASA (Maintenance), replacing Steve Backhurst.

Neil's aviation career began 28 years ago, when he began his mechanical engineering apprenticeship with Air New Zealand. After getting his licence, he worked for Ansett New Zealand before heading off on his OE, working for BAE Systems, British European, and Bombardier.

Since returning to New Zealand, Neil has worked in the airline and general aviation sectors, including for Origin Pacific, Emirates, Canterbury Aero Club, and Heli Maintenance. Immediately before joining the CAA, Neil worked for Air New Zealand's Christchurch Engine Centre.

When the ASA role came up, the chance to be a liaison between industry and the CAA instantly appealed to Neil, although this role is quite a change for him.

"From 28 years on the tools to having to wear tidy clothes!"

Neil says he has big shoes to fill following Bob Jelley and Steve Backhurst.

"I don't know the answers to everything, but I do know the people who can help. If I don't know the answers, I'll get you the answers."

For Neil, aviation is all about passion.

"I don't think you'll find anyone in the industry who switches off from aviation at the end of the working day. I think everyone would admit that – whether they're a pilot, engineer, or work for the CAA." ■



A cool bedroom, blackout curtains, and ear plugs

Some tips to minimise fatigue.

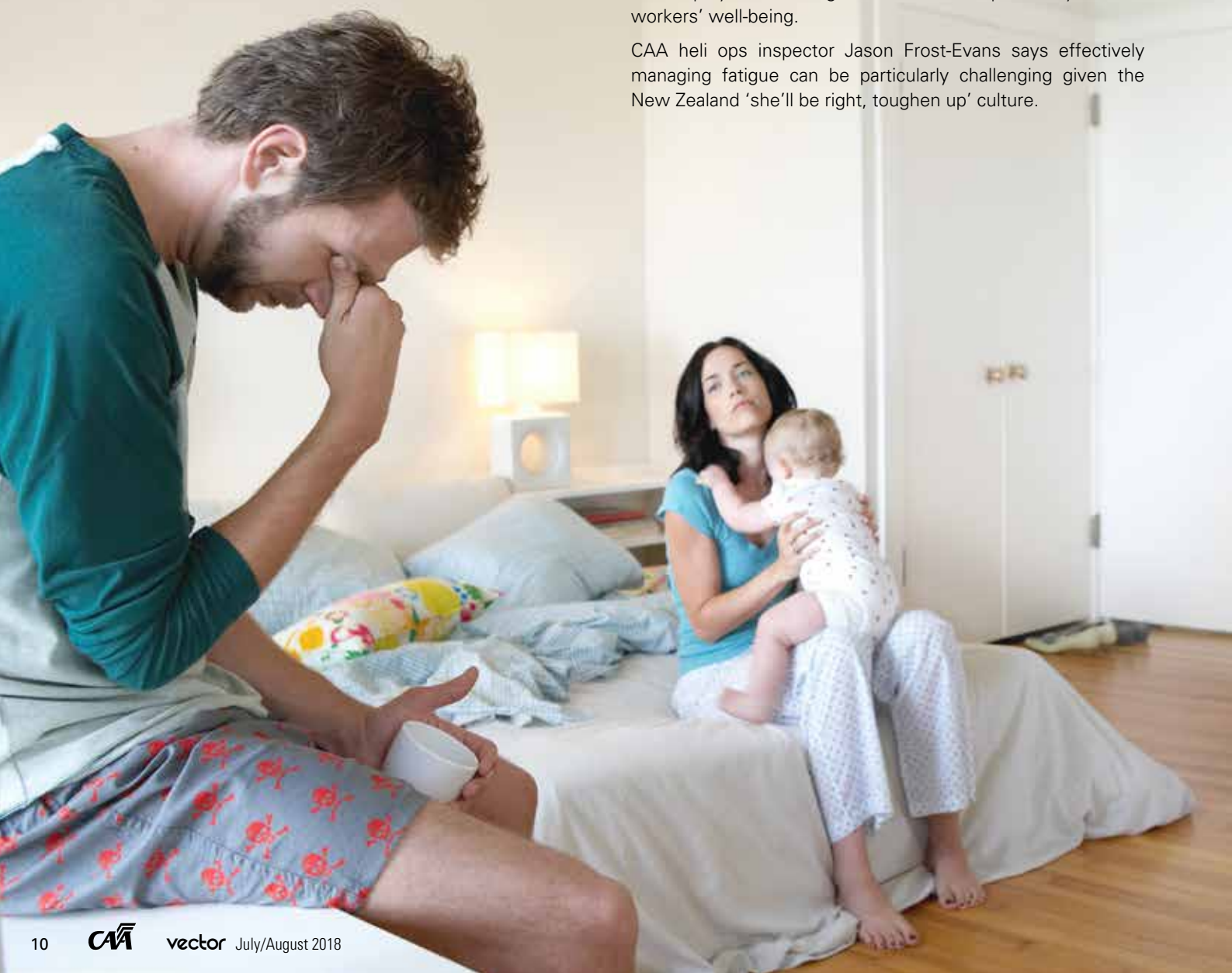
“ I’ve just got off the phone with operations who want me to conduct a job in excess of 17 hours of duty starting late afternoon and concluding the following day, which also happens to be my first two consecutive rostered days off in the last 24 days. Comments made to me during the conversation were ‘you can imagine how this is going to go down’ and ‘I don’t have another option, so is that how you are going to go on that?’”

These comments were part of the first survey of its General Aviation pilot members by the union, NZALPA.

The survey, published in June 2018, found that 40 percent of GA pilots felt pressure from their employer to exceed flight time, duty time or minimum rest limits, or to operate contrary to the provisions of the employer’s operations specification or manuals.

It illustrates how fatigue continues to be treated at some organisations, with pilots reluctant to raise legitimate concerns, and employers absolving themselves of responsibility for their workers’ well-being.

CAA heli ops inspector Jason Frost-Evans says effectively managing fatigue can be particularly challenging given the New Zealand ‘she’ll be right, toughen up’ culture.



Jason says fatigue is a “slippery customer” when it comes to being identified as a clear cause of an occurrence.

“Why a pilot made a poor decision or lost situational awareness that led to an incident might be hard to distinguish.

“If you can say, ‘they were up early the last three mornings; there’s a new baby in the house’ or the incident ‘happened at 4am’, then you might be able to pinpoint fatigue as a contributing factor. But otherwise, unless someone nods off, fatigue is very hard to establish as a clear cause of an accident.”

So, how much sleep is enough? As everyone knows, that varies from person to person. There are people who claim they need only four or five hours a night.

“But sometimes they’re performing at a suboptimal level,” says Jason. “It’s just that they’ve got used to it. It’s normalised for them.

“It’s only perhaps in an emergency that it becomes evident just how poor their performance is.”

You can however, assess your own needs by monitoring the hours you sleep during the third night in an at least three-day, non-work period.

The nights to be monitored need to be approached somewhat formally – no hard partying the evening before, no blue screens (computer and phone) for two hours before retiring, and of course, no alarm clock.

The first two nights pay back any cumulative sleep debt, and then the third night should reflect the body’s natural sleep requirement.

CAA’s Human Factors specialist Dr Laurie Earl outlines the concept of the ‘sleep bank’.

“For every hour someone is asleep, they earn two credits. After eight hours sleep, they have 16 credits in their sleep bank. For every hour they’re awake, they spend one credit, so with eight hours sleep, they can be awake and alert for 16 hours.

“If they’ve slept five hours, they earn 10 credits, and this will keep them going for 10 hours. After that, they’ll need to have a nap to top up their sleep bank, and get through the rest of the day, or at least to enable them to drive home safely.”

Of course, not all sleep is equal. Eight hours between 10pm and 6am will be of better quality than eight hours between 10am and 6pm.

Despite fatigue being hard to pin down as the originating cause of occurrences, it’s widely believed to be at least a contributor to many incidents.

Laurie believes that where appropriate and possible, establishing a fatigue safety committee would benefit both operators and pilots.

“Reports of fatigue should be encouraged and responded to like other occurrence reports – that is, not with discipline but with a strategy on how to avoid it in the future.

“The committee could also look at themes in reporting – a particular shift pattern, for instance, that seems to exacerbate tiredness.

“The message should be that no one flies if they are tired. The fatigue committee might want to know the reason why a pilot is tired – it might be a sick child at home, or a particular shift system, or a noisy hotel that the pilot was accommodated in – but the committee needs to know so it can collate trends and pass to a management team to action.”

Both the company and the pilot are responsible for fatigue mitigation – the company has to ensure adequate rosters to allow rest, and the employee is responsible for using that time to rest, not working on a side hustle, or partying up the night before returning to work.

The internet is awash with ways to promote good sleep and mitigate fatigue. Check the end of this article for links to resources.

But here are some tips to start you off.

Decide your sleep chronotype (night owl or morning lark). If you’re an owl, on the first day of your night shift, stay up late the night before and sleep in the next day. If you’re a lark, get up at the normal time but get into the practice of napping between 3pm and 5pm before your shift starts. (The dip in the circadian cycle at this time promotes sleep).

When you return home from overnight work, go to sleep straight away. Don’t be tempted to first have breakfast and take the kids to school and do the washing. Brain physiology means you’ll wake at your normal time. So if you sleep at 6am and you wake at midday, you get six hours. If you sleep at 11am, you will still wake at midday and get one hour’s sleep.

If in the middle of a shift, or about to start one, don’t nap for longer than 20 minutes. Beyond that, you run the risk of entering a deeper sleep, with the possibility of sleep inertia on waking – that groggy, disoriented feeling.

Continued over >>

More information

For more information on fatigue and resources, visit www.caa.govt.nz/fatigue.

Also have a look at the CAA’s Health and Safety Unit’s fact sheet on fatigue at www.caa.govt.nz/hsu.

To be kept up to date with the CAA’s fatigue management project, visit www.caa.govt.nz/subscribe, and select “Medical Matters”.

Finally, have a look at the AvKiwi *Personal Preflight* online seminar at www.caa.govt.nz/avkiwi.

Sleep working

Fatigue. Wake up to it.

» Continued from previous page

Shift patterns that move forward in time are more in tune with our circadian rhythm than the opposite. For example, earlies, lates, nights, rather than the other way round. In other words going forward with the clock.

On the ride home from overnight work, pulling over and napping is the only way to combat sleepiness. Caffeine, an open window and loud music will not prevent the potentially deadly 'micro-sleep', where the driver is moving in and out of consciousness without even realising it. (Not to mention the effect of this in flight during an approach.)

Sleep in a cool bedroom and invest in blackout curtains – light and heat do not make for a good sleep.

Neither, obviously, does noise. Invest in ear plugs, or something that supplies 'white' or 'brown' noise, and establish a family culture of quiet when you're asleep – never easy but sometimes necessary.

If you need to get up during the night, invest in a red lamp. It will give you light without stimulation.

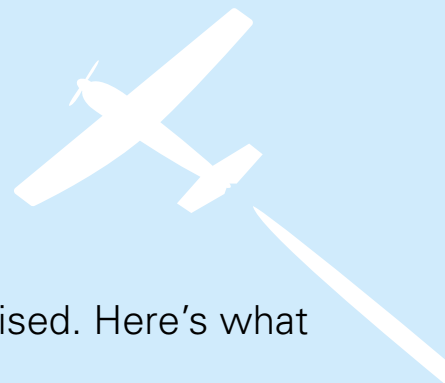
"Handling fatigue appropriately is not necessarily about spending more money," says Jason Frost-Evans.

"It doesn't have to be dealt with by just hiring more pilots, or establishing more rest periods. The risk could be reduced by providing fatigue training, and formalising cross checking between crew members, when the PIC flags a fatigue risk.

"And it's not solely about preventing fatigue, but also what to do when you are fatigued – doing what you can to mitigate fatigue to a safe level.

"It's about managing fatigue properly. When organisations work smart around fatigue, pilots may actually be able to work more hours, and certainly work them more safely." ■

Taxiway Signage Changes



The signage at runway-holding positions is being standardised. Here's what you need to know.

The next time you're taxiing at a New Zealand certificated aerodrome, the signs at the runway-holding position may look different.

That's because after 31 July 2018, all certificated aerodromes without a parallel taxiway will have standardised runway-holding position signage. These signs are positioned before the entrance to a sealed runway. Changes will be reflected in *AIP New Zealand*.

Standardising signage will help to reduce runway incursions by increasing the situational awareness of taxiway users. This will be supported by air traffic services using common phrases when issuing instructions "to hold".

The changes come under rule 139.51 *Aerodrome design requirements* that covers the transitional introduction of mandatory signs. This rule seeks to bring consistency to aerodrome layouts, and operations at aerodromes without parallel taxiways.

Taxiways will be identified sequentially, from A to Z, from one end of the aerodrome to the other. Runway-holding positions will be identified by a combination of the taxiway identification plus, if required, a number unique to that taxiway, starting from the main runway outwards with the number 1. The identifier, for example A1, should always denote the closest runway-holding position to the main runway on an airfield without a parallel taxiway. ■



Stay in Control

Pilots-in-command must resist the temptation to let their aviator-passenger 'have a crack' at piloting because things can quickly spiral out of control.

If you're a pilot, one of your responsibilities is to maintain control of your aircraft at all times.

Apart from some specific exceptions, only a qualified instructor can hand over control to a passenger, even if that person is an experienced pilot.

Yet CAA Safety Investigator and current flying instructor Colin Grounsell is concerned it happens anyway.

"Some pilots think it's okay to let the pilot sitting next to them take control of the aircraft, to get a feel of it, and have a go but that can be a bad idea."

He says the rules – 61.103 *General* and 61.105 *Solo flight requirements* – are there for good reason.

"The pilot you're sitting next to might not be type-rated on that aircraft. There are usually differences between the aircraft that they are used to flying and your machine, and that can lead to an accident."

What can go wrong?

Bill Penman is the Operations Officer at RAANZ (Recreational Aviation Association of NZ).

The experienced microlight instructor says you can never anticipate how someone will handle your aircraft.

"Years ago, before becoming an instructor, I took someone up and let them have a go with instructions along the lines of 'if you pull it back it goes up', and he yanked the whole stick back and heck we went up about 45/50 degrees or so. Gave me quite a fright so I was never going to allow that again."

Bill says over-controlling (using more movement in the control column than is necessary) is just one of a number of things

that can go wrong if you don't have intimate knowledge of the aircraft.

"If the person is not used to the aircraft, they could have difficulty looking at the horizon, keeping the wings level, and so on.

"Control columns, for instance, come in several different styles and can have a different feel and reactions. The passenger can also easily put their foot in the wrong place and set something off, which could be unsavoury."

Leave it to the experts

The CAA's Principal Aviation Examiner, David Harrison, says aside from some rare exceptions, the only time someone can take the controls of an aircraft is in the presence of a qualified instructor.

"A private or commercial pilot is not entitled to give control to another person whether they are a pilot or not, unless of course they are themselves a current instructor.

"Unlike the general pilot population, an instructor is trained to recognise when things are going wrong, and to take the appropriate remedial action. Instructors also use well-briefed procedures to hand over aircraft control to ensure that both pilots are not flying at the same time, or worse, that nobody is in control."

Bill says instructors are always monitoring the controls, ready to take over, and are trained to react quickly.

There's also a certain skill in taking back control again.

"The pilot has to get the aircraft back into its original flight path, and this requires the experience of an instructor," says Bill. ■



Against **the Clock**

Rushing to get into the air is never a remedy for 'hurry-up syndrome' or 'get-there-itis'.

When time pressure is a factor, mistakes are easy to make. The ticking of the clock can heighten stress and lead to potentially dangerous actions like skipping steps or attempting to multitask. Overcoming the pressure by remaining focused is key to keeping safe.

Time pressure has been a causal factor in many aviation accidents. Of note was its part in the collision of KLM Flight 4805 and Pan Am Flight 1736 at Los Rodeos Airport in Tenerife on 27 March 1977. This accident resulted in 583 fatalities, and only 61 survivors.

Leading up to the accident, both sets of flight crew were watching the clock, with their decisions significantly influenced by time pressures. The KLM crew were rushing their departure to return to Amsterdam within their duty time. In addition, both the KLM and Pan Am crews were rushing to beat poor weather conditions.

It isn't just pilots who can be affected by time pressure. A 2008 University of Illinois study into errors made by aircraft maintenance technicians found that time pressure was a key contributing factor among unsafe acts. Pressure has also been highlighted in Gordon Dupont's 'Dirty Dozen' list of preconditions relating to aviation maintenance errors.

CAA Aviation Examiner Marc Brogan says that pilots need to have discipline and good habits in their preflight planning and preparation, regardless of any time pressure.

He also emphasises the need for pilots to have a plan and stick to it. "People will always stretch their limits; they will always go that little bit further.

"And it's about having an attitude that 'she *won't* be right'. Think about it and prepare for any eventuality. Picture what you would do in the event that something goes wrong."

Skipping a step

From cooking through to aviating, skipping a step can be a recipe for disaster. It might seem like skipping ahead could save time, but it might end up costing more time, let alone safety. After all, processes are designed to help us complete tasks as safely and efficiently as possible.

Putting his instructor's hat on, Marc says the reason behind the way we do things is key, but it's something people often miss.

"The way instructors pass that knowledge on is extremely important. They must explain the how and why this has become a way of doing something, and the outcomes."

When first learning a process, such as trying a recipe for the first time, we often follow it to the letter to get it right. However, with time and experience, the written recipe is dropped and we rely on memory. Complacency can set in, with steps skipped consciously or unconsciously.

This is where actively working through your checklists is especially important.

CAA Aviation Safety Advisor Carlton Campbell described the risk of pilot complacency in a previous issue of *Vector*: "Complacency can affect pilots who fly routine days, particularly if they're doing repetitive short-leg flights. Or operating in a comfort zone of flying the same aircraft, on the same route, on the same day each week."

Marc believes that pilots can become complacent about what they are doing – flying.

"Air travel and flying for fun has become such a regular part of life. People forget that we are operating in an environment that we are not made for, so they need to stop and think about the outcomes, and what can go wrong."

Rushing through or skipping a step to save time, whether intentionally or not, can have significant consequences, especially once you're in the air. "You can't pull over; you can't stop and think about it – you have to keep flying," says Marc.

CAA's Ryan Nicholl, the team leader of 125/135 flight ops, says pilots should learn to recognise the feeling of being rushed as a cue that prompts them to slow down and go about their tasks more deliberately.


"When we rush, our focus tends to narrow and we lose the ability to make quality decisions that take into account all relevant information, and use all available resources to the full extent.

"Sometimes you just have to accept that you're going to run late."

Some key steps to give extra thought to include weather checks, fuel checks, and checklists.

Weather checks

Before every flight, it's important to conduct a weather check of your planned route, even if you fly it often. A previous "I learned about flying from that" story in *Vector* demonstrated the importance of this. The pilot hadn't checked the latest weather forecast before flying into deteriorating weather conditions. While the pilot was eventually able to land safely,



they could have avoided the situation by taking the time to check the weather before their flight.

Get up-to-date aerodrome forecasts and consider potential weather issues. This is especially important with certain types of terrain such as mountainous regions where weather can change very quickly.

Even if you're only planning a very short trip, it's a good idea to check the weather as thoroughly as you would for a longer trip. If you're not sure about the conditions, ask someone, says Marc Brogan, "Don't be afraid to ask local pilots".

Fuel checks

Fuel management errors have been identified as causal factors in aviation accidents and incidents, including when time pressure was present. A study by McElhatton and Drew in 2008 called *Hurry-Up Syndrome*, found 10 percent of time pressure-related incidents involved fuel errors.

CAA's AvKiwi series on fuel, *Fuel for Thought*, profiled an accident from June 2014 involving a Cessna 152. The aircraft ran out of fuel on final approach to Ardmore aerodrome despite the pilots having completed fuel checks before the flight. The investigation determined that the contributing factors included rushed fuel checks and relying on assumptions.

Ensure you have sufficient fuel loaded for your journey, taking into account the minimum legal fuel reserves required, and the weather forecast. It's also good practice to plan alternative refuelling points along the route, just in case. Remember to have fuel in your tanks and time up your sleeve.

Continued over >>

For more advice on fuel management, check out the CAA's *Fuel Management GAP* booklet which is available at www.caa.govt.nz, "Quick Links > Publications > *Good Aviation Practice* booklets". You can also order a free copy by emailing info@caa.govt.nz.

Checklists

Rushing through checklists or skipping over any sections is a dangerous idea. The notorious Spanair Flight 5022 accident at Madrid-Barajas Airport in 2008 involved a number of checklist-related failures. These included checks relating to the flaps/slats settings which led to the aircraft's stall and subsequent crash.

"When we rush, our focus tends to narrow and we lose the ability to make high quality decisions that take into account all relevant information, and use all available resources to the full extent."

A key risk when going through familiar processes such as checklists is that of confirmation bias – the tendency to seek information that will confirm a decision or fulfil an expectation. For example, assuming and accepting that a particular control is set correctly despite it actually being incorrectly set.

"People see what they want to see," says Marc. "They are set in their mind."

Confirmation bias can crop up with weather checks too, says Marc. "People can look at the weather reports, and see that on paper they're good to go. But despite seeing storm clouds out the window, they push on."

"You've got to challenge your decisions to check they are rational," says Marc.

Consider local knowledge again; perhaps go and ask the pilot who just landed.

To help combat confirmation bias, spend the right amount of time going through your checklists thoroughly, and challenge them, regardless of potential time pressure.

Managing distractions

Marc recommends completing preflight checks without anyone beside you, especially if you are under stress or time pressure.

"Some people will take their friends and explain to them what they're doing – that's fine, but if there's any element that adds burden to what they're doing, then they are prone to making mistakes."

If you're ever disrupted during a preflight, and you can't remember where you were up to, go back and start again.

Also, don't answer your phone during your preflight. "It could be something stressful or upsetting, which could distract you completely," Marc says.

The myth of multitasking

When time pressures are high and there are many things to do, multitasking might feel like the logical solution. But this can cause real headaches.

Multitasking is a much debated subject as seen in American psychiatrist Dr Edward Hallowell's book, *CrazyBusy*. Hallowell described multitasking as a "mythical activity in which people believe they can perform two or more tasks simultaneously".

In an aviation context, Key Dismukes (former Chief Scientist for Human Factors at NASA's Ames Research Center) suggested in an article for *Aviation Safety Magazine* in August 2017, that "when multitasking, performing a procedural step out of sequence, or substituting an atypical procedural step for an habitual one, treat the situation as if it had a red caution flag".

So multitasking can actually have the opposite effect to saving time, and can lead to a greater chance of making a mistake.

It's best to avoid multitasking, where possible, to maintain a high level of focus on one task at a time. In many situations you may need to switch between tasks in quick succession, but consciously moving between individual tasks is quite different to trying to tackle everything simultaneously.

Competing demands can encourage an attempt at multitasking. Take for example going through a checklist and receiving a call from ATC when you're midway through.

Marc says, "There's immediacy sometimes – you need to reply straight away." Perhaps ATC clear you to line up and take off, but you're not ready as you're still going through your checklist.

"You'd just say 'Negative, I need another 30 seconds', while you complete your checklist."

Always be very clear in your lines of communication as well as in your use of your checklist.

"Your checklist is in an order for a reason and if your order gets disrupted, the quality of what you're doing is gone."

Remember your reason why

While time pressure can certainly be distracting, it's crucial to not lose sight of the task at hand – and why you're doing what you're doing.

Marc's biggest message for recreational pilots is that flying is meant to be safe and fun.

"If you start to run behind, just remember, you're doing it for fun. Is it still fun? Are you actually now trying to make something work that has become so hard that you should just say 'You know what, I think today might not be our day'."

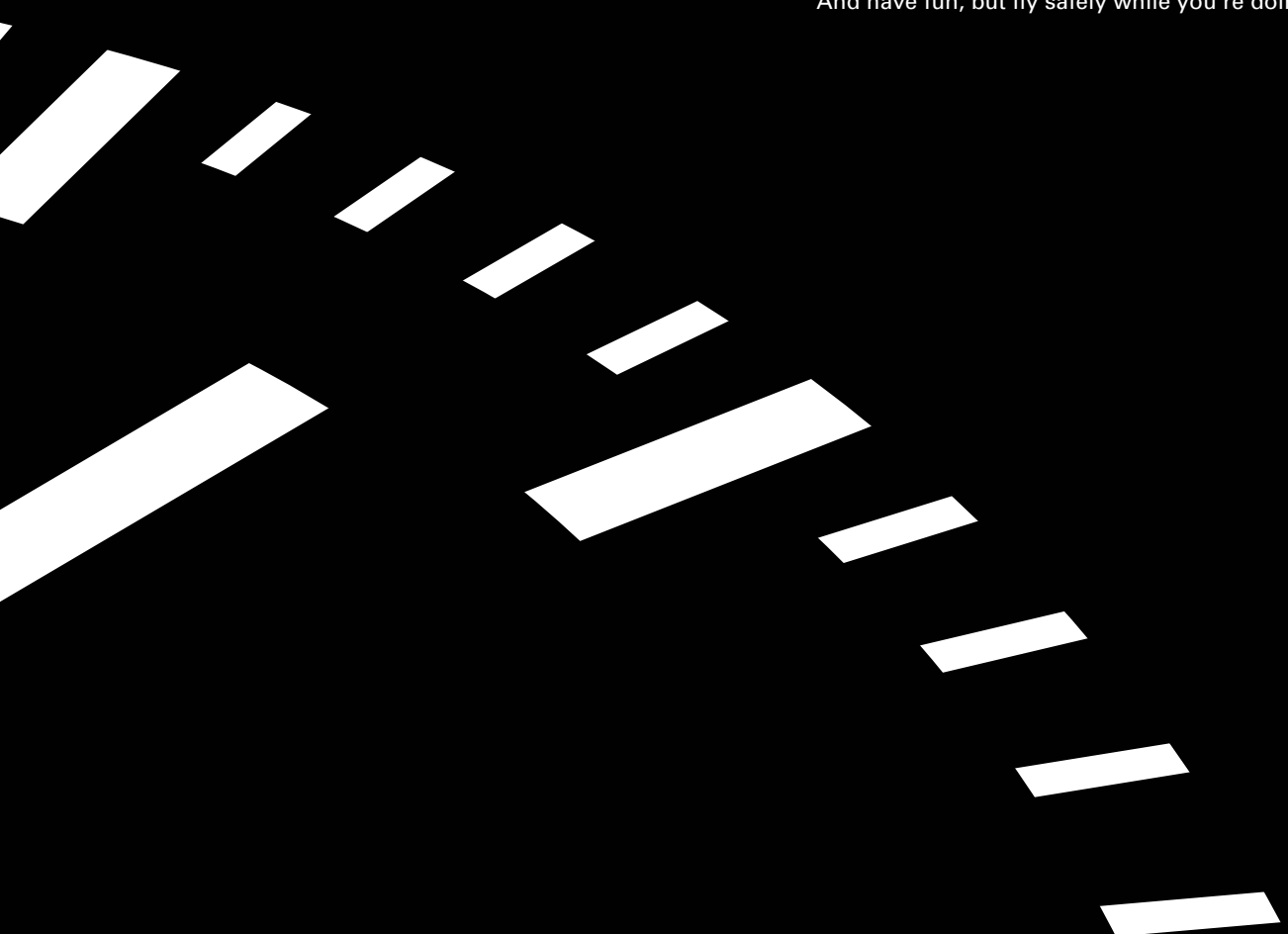
"After all, there's no way for you to be able to make up for the time that just went by," he says.

Additional pressure can come from not wanting to let people down, especially if you've said you would take someone flying.

"It's better to disappoint people by saying, 'Look, I don't think it's going to happen today' than to scare them, hurt them, or kill them."

"People need to stop and ask themselves whether it really is that important to fly that day. Consider that the real end goal is to put the machine away and go home."

"And have fun, but fly safely while you're doing it." ■



Installation of ADS-B and PBN Equipment

With ADS-B becoming mandatory in controlled airspace above flight level 245, aircraft owners will need to equip their aircraft with compatible technology.

New Zealand's surveillance radar system is being replaced by Automatic Dependent Surveillance – Broadcast (ADS-B). In July 2018, rule changes became effective that require ADS-B OUT for all aircraft flying in controlled airspace above flight level 245. The rule changes also set the standards for all ADS-B systems.

Aircraft that do not meet the new rule standards can operate in controlled airspace above flight level 245 by operating in Mode A and C, or Mode S until 31 December 2018.

However, from 31 December 2018, all aircraft operating in controlled airspace above flight level 245 are required to be equipped with transponders that meet the new rule standards for the ADS-B systems, and operate in ADS-B OUT mode.

The CAA is proposing to extend the ADS-B mandate to cover all controlled airspace from 31 December 2021. In preparation, the new rule requires any ADS-B systems already on, or being fitted to, aircraft will need to meet the rule requirements. You can now be certain about what ADS-B equipment you'll need to meet the 2021 mandate.

At the same time, New Zealand is progressing towards a full Performance Based Navigation (PBN) environment by 2023. This means IFR operators will be required to equip with GNSS capability if they want to use GPS as their primary method of navigation.

If you're thinking ahead, or need to replace your transponder or GNSS receiver now, there are three things to keep in mind:

- » For your transponder, look for TSO-C166(b).
- » For your GNSS receiver, look for TSO-C145 or 146.
- » Make sure your transponder and GNSS receiver are compatible.

You can now buy all-in-one ADS-B units that include the transponder and a GNSS receiver.

It's important to note that the Universal Access Transceiver system (UAT) used in the US will not be implemented here. Operators shouldn't buy or fit UAT equipment because it's not compatible with the 1090 MHz system (UAT operates on 978 MHz).



The installation of ADS-B or PBN equipment is considered a Design Change. Therefore, the installation of this equipment will require Acceptable Technical Data (ATD) and an approved installer.

ATD is defined in Part 21 *Certification of Products and Parts*, Appendix D. ATD for the installation of ADS-B or PBN equipment includes:

Service Bulletin

A Service Bulletin (SB) is the document used by manufacturers of aircraft, their engines or their components, to communicate details of modifications that can be embodied in aircraft. In some cases, these may be issued as a Mandatory SB in which case a corresponding Airworthiness Directive will be issued by the appropriate national airworthiness authority.

Supplemental Type Certificate

A Supplemental Type Certificate (STC) is an approval of a major modification covering those areas or aspects of an aeronautical product that were modified, including updates to the Flight Manual, user guides or manuals, and instructions for continuing airworthiness.

Approved Model List – Supplemental Type Certificate

An Approved Model List – Supplemental Type Certificate (AML-STC) is intended for installations that are identical or similar and that share baseline data between the models. This streamlines the certification effort by avoiding unnecessary testing and re-submission of data that is common to more than one model of aircraft. Your specific aircraft type and model must be listed in the AML-STC for it to be considered ATD.

If an SB, STC, or AML-STC is available for your aircraft type, an approved installer can use this ATD to install ADS-B or PBN equipment into your aircraft as a modification. Depending on the complexity of the associated equipment installation or test requirements, this modification may be classified as 'Major'. This requires conformity on a CAA337 *Conformity Certificate – Major Modification, Major Repair* by an IA or Part 145 *Aircraft Maintenance Organisation* equivalent.

If an SB, STC or AML-STC is not available for your aircraft type, support from a Part 146 *Aircraft Design Organisation* or OEM will be required to develop and certify ATD in accordance with the guidance set out in Part 21.

More information

- » Refer to Advisory Circulars AC21-5 *Approval of modifications covering aircraft ferry fuel systems and overweight operation* and AC43-14 *Avionics, Installations – Acceptable Technical Data*. Also, a simplified process flow chart is available on nss.govt.nz that depicts the process of using ATD for ADS-B or PBN equipment installation.
- » For any questions about the design change process, email airworthiness@caa.govt.nz.
- » For general questions about ADS-B or PBN, email adsb@caa.govt.nz or pbn@caa.govt.nz. ■



Introducing Don Huse

The new deputy chairman of the Board brings with him years of experience in airport management and governance...and a Tiger Moth tie.

The involvement in aviation of the newest Board member, Don Huse, stretches back to 1991.

In that year he was appointed chief executive of Wellington International Airport. In his eight years at the helm, the airport's terminal facilities were greatly upgraded, and the company moved from a Crown and city council joint venture to being partially privatised.

"That was my first exposure to the Civil Aviation Authority," says Don. "The CAA's responsibility for aviation safety and security aligns absolutely with the interests of an international airport, and I developed a deep respect for how the Authority went about its business."

As chief financial officer at Sydney Airport from 1998 to 2003, Don was again deeply involved in major airport development projects, culminating in privatisation in mid-2002.

Back home, as chief executive of Auckland International Airport for five years, Don was once more leading major airport development, closely interacting with all the major players in New Zealand's aviation sector. From 2008 until 2013, Don was a director of Sydney Airport Corporation.

He is greatly looking forward to his new role.

"Aviation is a dynamic industry, often at the cutting edge of many world-changing technologies, such as those we are now seeing with unmanned aircraft.

"Aviation makes a tremendous contribution to the national economy and to the country's security and well-being. It's a critically important sector to New Zealand.

"But to remain vibrant it must also be safe and secure. You cannot have one without the other."

And the Tiger Moth tie? "I wish I could tell you a fascinating tale of how it entered my possession," says Don, laughing.

"But I saw it in a shop in Sydney and – thinking of all the Tiger Moth aircraft assembled at Wellington Airport all those years ago – I just had to have it!" ■

Going Public **with Drones**

The CAA has launched a public campaign to encourage the safe use of drones at a time when the public can't seem to get enough of them.

A recent survey by Airways highlighted a gap in understanding and attitudes towards compliance, and a divide between commercial and recreational operators in New Zealand.

In responses gathered from 1460 drone pilots, commercial operators reported being more stringent about following rules, with 72 percent saying they always fully complied, compared to 51 percent of recreational users.

CAA unmanned aircraft specialist Mark Houston says it's hoped the campaign will address that disparity.

He says people who operate a drone under Part 102 are well versed in how to fly safely but not so much the purely recreational users, most of whom have had no training.

"It's the recreational type folk that we traditionally haven't captured, we don't know who they are and where they are. Those are the ones we're really trying to educate about the aviation system."

Mark says the CAA needs to up the ante with drones continually evolving.

"What we're seeing is people are moving away from toy-like drones to much more sophisticated ones. Some are now going for more than \$2500. So people are getting into more advanced machines very quickly and all they want to do is get the thing out and go flying."

Engaging the non-aviator

The CAA knows it has to do more to connect with a demographic that isn't from an aviation background.

A website dedicated solely to safe drone use has been set up to present the most basic rules in an easy-to-understand way, and includes the use of videos and animation.

Andy Grant is chair of UAVNZ, the association for UAV professionals, mostly made up of Part 102 certificate holders.

He says it's the recreational users outside Part 102 who are of concern.

"There's a lot of people getting into drones for recreational use who don't necessarily understand that rules exist, and the importance of them," says Andy.

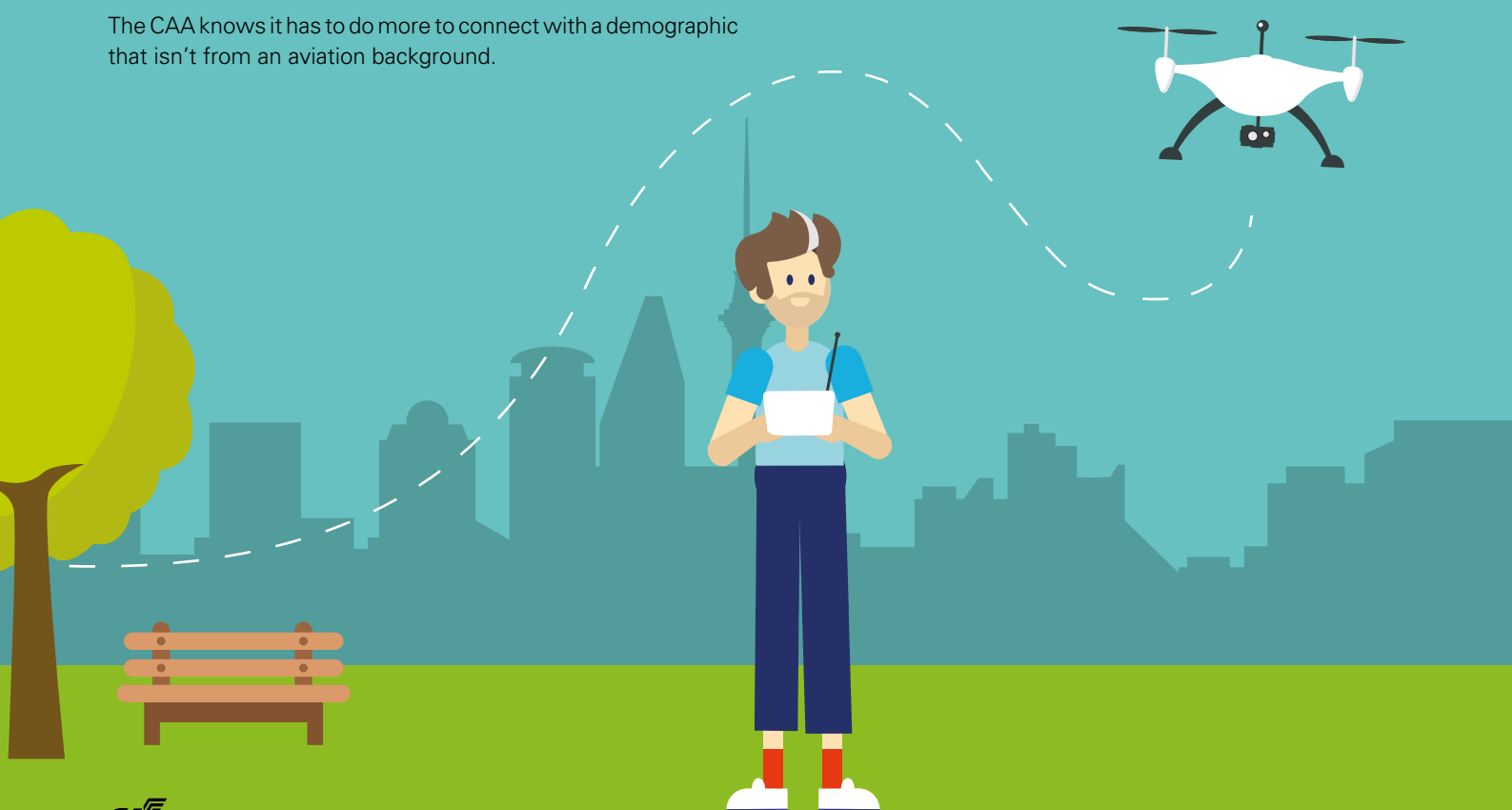
"If there's something that helps them understand the rules in the context of recreational flying, it should improve safety for everyone who uses the skies."

A new pamphlet *Fly the right way* is also being distributed at point of sale.

Changing attitudes

Mark says what they ultimately want is for drone operators to start behaving like aviators.

He says people need to appreciate that their drone is an aircraft, therefore they are a pilot.





"We want people to do a preflight check on their drone. Take time to look at the machinery to check for any defects. The propeller blades for example can pick up a loose stone on liftoff, nicking the blade. A little dint like that can lead to a crack. Sooner or later, if it's not replaced, the blade can fly apart, and the machine will crash."

Checking battery status is another routine that should become automatic.

"Have you got a fully charged battery? If not, what are you intending to do with the machine? There has to be enough battery to power the 'return home' function.

"Before people go flying, we want them to start thinking – what are you going to be doing, where are you doing it, and who are you going to affect?"

The new website is designed to make drone users think about some of those questions, and it includes a preflight checklist and frequently asked questions.

So what are some of the rules that cause the most angst?

"I think an understanding of where they are flying in relation to aerodromes is really the thing that appears to create the most apprehension," says Andy.

"I'm also aware the general public get annoyed by drones that appear to be potentially breaching their privacy."

The Airways survey also found respondents appeared to be less concerned about abiding by privacy regulations, with less than half saying they always ensure they have all the necessary land owner approvals.

There is a section on the website which addresses privacy with advice about seeking permission before you fly in certain areas.

"Before people go flying, we want them to start thinking – what are you going to be doing, where are you doing it, and who are you going to affect?"

He says if a Part 102 holder is approached by a member of the public querying what they are doing, having their credentials on them is useful.

"Also, all the Part 102 certificate holders are listed on the CAA website, so if you didn't have the physical certificate on hand, you could get your phone and show them you're listed there.

"Once that initial contact's been made and the drone operator has explained that they are doing a particular task and are certificated by the CAA, then generally the person's more interested than annoyed."

Mark says if you have just purchased a drone, putting in a little time at the start to educate yourself on the rules will go a long way.

"We want people to develop habits that will set them up for safe and enjoyable flying."

More information

Visit the new website: www.flyyourdrone.nz.

To order the free *Fly the right way* pamphlet, email info@caa.govt.nz.

For a list of Part 102 Unmanned Aircraft Operator Certificate Holders, www.caa.govt.nz, "Quick Links > Certificated Organisations" ■



Flying Around Animals

There are very few places in New Zealand where you don't need to worry about the effect of your flying on livestock.

The agricultural heli sector has been the source of a number of occurrences and aviation-related concerns over the years.

CAA aviation examiner Andy McKay can think of a number of instances where stock have been spooked by the noise or shadow created by an aircraft, and the consequences are nasty.

"Panicked horses running into fences breaking their legs, jumping fences, getting their feet wrapped in fences. Sheep darting out in front of aircraft on rural airstrips. Young animals and horses are the most at risk, although the worst example I witnessed in my career was a helicopter landing next to an ostrich farm. It was particularly messy."

Andy says a lot of issues occur around town and city boundaries.

"Rural land surrounding an urban area tends to comprise lifestyle properties, where you get a higher concentration of animals. We also see an increase in noise-related complaints around these boundaries."

Alan Beck, the CEO and chief pilot at Beck Helicopters in Taranaki, says small farms are worse because the stock have nowhere to run.

Andy says pilots who've grown up rurally tend to be more aware of the issues than somebody who's grown up in the city and is not used to being around animals.

Alan Beck agrees.

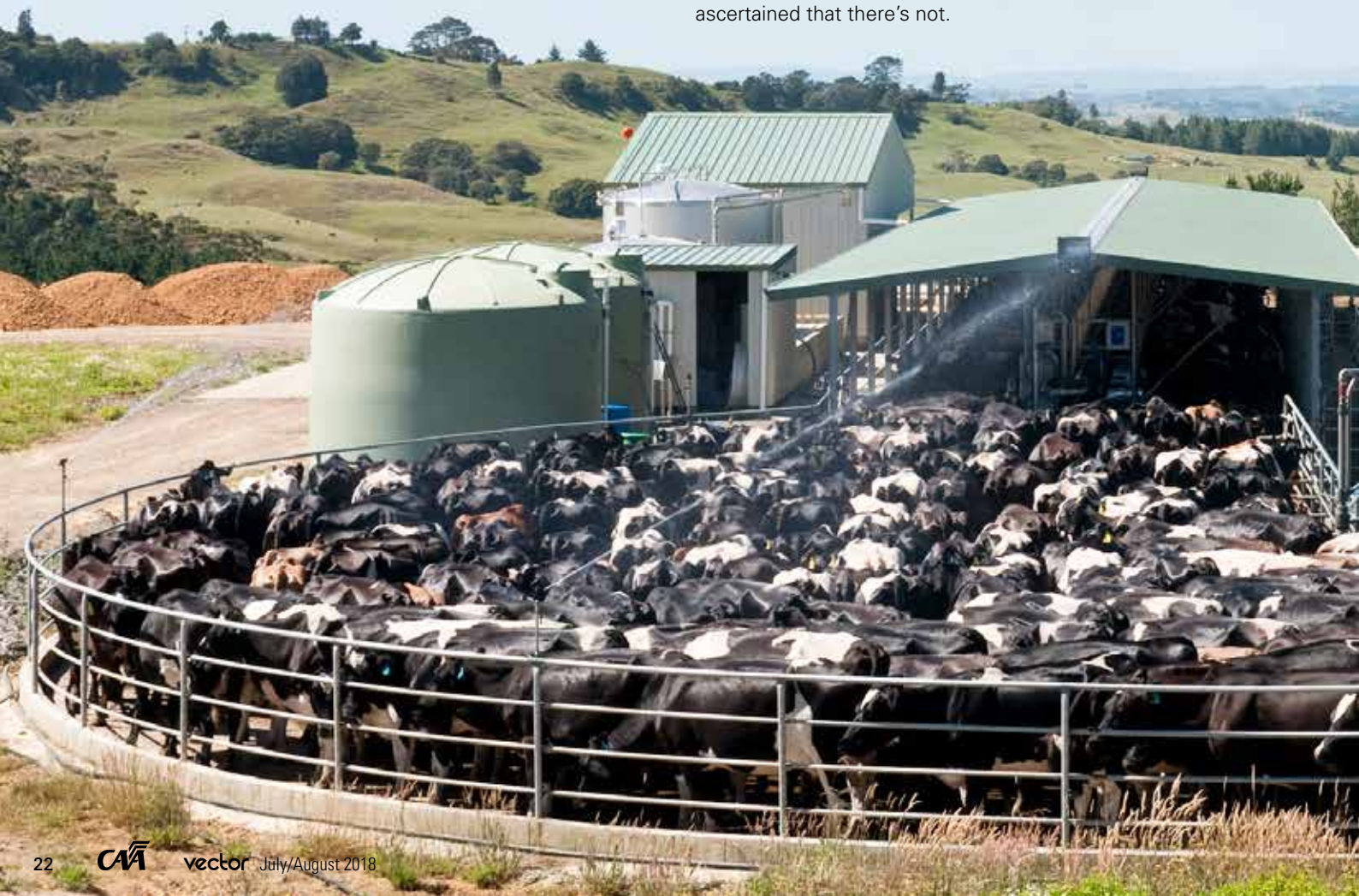
"The people that work in ag aviation are already well aware of the consequences if you put either the farmer's cows or the neighbours' cows through the fence. Urban pilots perhaps don't have that experience because they don't come across it as often as we do."

Andy says the risks can be higher depending on the season.

"In aviation, it's useful to know that in the north, lambing pretty much starts in late winter. In other parts of the country, they lamb a bit later because of the colder temperatures. That's relevant because lambs are a lot more flighty and the risk of mis-mothering (when a lamb is separated from its mother) is high. Someone with a rural background is going to be aware of that, whereas somebody from town probably hasn't even thought about it."

Reconnaissance

Andy says when landing any aircraft on a rural block you should always presume there are animals there until you've ascertained that there's not.



"You always need to do a proper reconnaissance looking for obstacles, including animals."

He says you should ring ahead and arrange for there to be no animals on the land if practical.

"If you're landing anywhere that has a boundary of trees, in summer the animals could be there in the shade and you might not be able to see them. As you suddenly come in, the noise may disturb them.

"It's just awareness. For example, being alert if there's a pony club meet on – be aware of your surroundings."

Think of the neighbours

Andy says a pilot might land two paddocks away from a herd of horses, thinking that's far enough for safety, but despite that distance, the horses are still spooked.

"In addition to being aware of where you're going to in the immediate vicinity, you also need to cast your eyes around to see whether there are horses or animals being disturbed in the distance and then make a graceful exit if you have to."

Alan, who's one of New Zealand's most experienced agricultural and specialist lift pilots, says each farm can have multiple neighbours.

"So you've got to work out how you're going to do an approach. You don't just glue your eye on the farm you're landing on, you look at where all the stock are."

Davin Mudford is the chief pilot at Heli A1 in the Waikato and on the committee of the NZ Agricultural Aviation Association.

He says ringing ahead and talking to the farmer or land owner in advance is key.

"You're always talking to farmers; it's flying neighbourly. Just having a big look around if there are horses, and so on.

Probably horses are the worst because when you spook them they take a long time to calm down.

"And let the neighbours know. The other day we had to work right next door to horse stables. We let them know we were coming and they put them all in the stables and it was fine. So it's communication," says Davin.

Approach with caution

Alan's main message is to take it easy and work out how you're going to do an approach.

"If you're landing on an airstrip, come in slowly and do a big circuit and find out where the stock are. You'll handle the stock a lot better if you let it run around in a circle so that they don't all go into one area and smother (where animals, typically sheep, suffocate in a panicking mob), than if you just come roaring in to land."

He advises not to push stock downhill.

"If there are sheep at the top of the hill and you fly over them and push them to the bottom, they could smother. The same with cattle – if you push cattle, they'll go straight over the fence. Try to land where the cows can't see you."

Alan says if you're doing a topdressing job and the stock are all in one spot, let them spread out a bit and do that area last.

"If you come tearing in and someone's pet pony starts running, you've got to make a decision early whether you're going to circle around and let it get used to you, or retreat. Whenever possible, avoid that situation by getting the owner to put it in a small yard so it can't get up any speed and break its legs when it hits a fence." ■



Photo: iStock.com/georgeclerk

Deferral of Defects

If you're a certificated organisation recording and managing defects, make sure what you're doing complies with the rules, and your own exposition.

It's the responsibility of the pilot-in-command to record on the technical log any defect discovered during the preflight, flight or postflight (AC91-6.2 *Completion and use of Form CA006 – Technical Log*).

But it's the operator's responsibility to ensure the ongoing airworthiness of their aircraft.

Recording defects identified on the aircraft contributes to aviation safety, and is therefore a requirement of the rules.

The CAA's continuing airworthiness team, however, is seeing an increasing number of instances where operators are not recording, controlling, nor managing in-service defects in accordance with their expositions.

Those expositions must detail procedures surrounding the recording and deferral of defects, and who is authorised to carry them out. It's the operator's responsibility to ensure there's adequate training on those procedures and that written authorisation is provided to employees, where applicable.

An accurate and up-to-date tech log (or its approved equivalent) is the means by which a pilot decides to accept, or not accept, an aircraft for a given operation. This includes any limitations for any applied Minimum Equipment List (MEL) items.

Examples seen during audits of operators, however, include:

- » defects recorded and conveyed on a document other than a tech log or alternative approved document
- » multiple defects raised on the aircraft entering maintenance but not previously noted on the tech log

- » defects sighted on aircraft but not recorded in the tech log
- » defects recorded in the tech log with no further action or release-to-service recorded and subsequent flight carried out
- » defects recorded in the tech log and released to service quoting the minimum equipment level (rules 91.537, 91.509).

None of these instances complied with the operators' accepted procedures.

Operators under Part 119 must rectify any defect before an aircraft's next flight, or carry out the deferral of defects in accordance with their exposition, which includes the approved maintenance programme, a CAA-approved MEL, or acceptable data.

It's important that when a defect is deferred in accordance with the MEL, the pilot or engineer releasing the aircraft to service under Part 43 ensures the specific recording requirements are met.

The application of an MEL item and its subsequent impact on other systems needs to be carefully considered and understood, as limitations may affect aircraft operations.

A defect being covered by the MEL does not mean the aircraft can be further operated without an entry and appropriate release-to-service in the tech log.

The defect has to be assessed and documented as deferred in accordance with the MEL – including an expiry time for the deferral – repaired at the earliest opportunity before that expiry time, and a return-to-service carried out for the aircraft. ■

Rule 43.107 states that a placard must be placed "on each inoperative instrument and on or adjacent to the cockpit controls of each item of inoperative equipment, marking each item inoperative".



Send in **those DL9s!**

As any RPL holder can tell you, every two years (every five, if they're younger than 40), they must pass a medical examination so they can continue to fly. They need meet only the standards set by a DL9 Ministry of Transport Class 2, 3, 4 or 5 passenger-carrying driving licence.

In exchange for this, and other considerable freedoms compared with the rest of the aviation sector and with recreational flying communities overseas, the CAA asks that a copy of the newly completed and signed DL9 is sent to licensing@caa.govt.nz.

But not many have been forthcoming.

The CAA licensing staff are waiting, patiently and expectantly, by the email inbox. Send in those DL9 copies folks.

New **Weather Card**

You'll receive a new edition of the *Weather Card* with this copy of *Vector*. The changes with the new GRAFOR, GNZSIGWX, and AAW are substantial, so throw out your old card. Don't know what the acronyms stand for? Then see the May/June 2018 issue of *Vector*, or visit www.caa.govt.nz/met. If you need more weather cards, email info@caa.govt.nz.



How to Get **Aviation Publications**

AIP New Zealand

AIP New Zealand is available free on the Internet, www.aip.net.nz. Printed copies of Vols 1 to 4 and all aeronautical charts can be purchased from Aeropath (a division of Airways New Zealand) on 0800 500 045, or their website, 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 the CAA: aero@caa.govt.nz.

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

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

For more information, see:

www.caa.govt.nz/general-aviation/aviation-events

CAA Cut-off Date	Aeropath (Airways) Cut-off Date	Effective Date
1 Aug 2018	8 Aug 2018	11 Oct 2018
29 Aug 2018	5 Sep 2018	8 Nov 2018
26 Sep 2018	3 Oct 2018	6 Dec 2018

See **www.caa.govt.nz/aip** to view the AIP cut-off dates for 2018.

Aviation Safety Advisors

Contact our Aviation Safety Advisors for information and advice. They regularly travel the country to keep in touch with the aviation community.

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Email: neil.comyns@caa.govt.nz

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)

www.caa.govt.nz/report

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

Accident Briefs

More Accident Briefs can be seen on the CAA website, www.caa.govt.nz, "Accidents and Incidents".
Some accidents are investigated by the Transport Accident Investigation Commission, www.taic.org.nz.

Piper PA-28-161

Date and Time:	06-Feb-2018 at 10:45
Location:	Paraparaumu
POB:	1
Nature of Flight:	Private Other
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	68 yrs
Flying Hours (Total):	57
Flying Hours (on Type):	40
Last 90 Days:	17

The weather forecast prior to the cross-country flight did not indicate any adverse conditions. On approach to runway 34 for a touch and go, the pilot was advised the wind was 270/10G20.

The pilot did not appreciate the significance of the gusting crosswind, and a gust caused the aircraft to rapidly drift right just before landing. The pilot reported that it happened too quickly to execute a go-around, and the aircraft struck a taxiway sign as it landed on the grass next to the runway. The flight was terminated, and the aircraft was removed from service due to minor damage.

The pilot's training provider has since ensured they completed 'strong crosswind' training. They also could not determine what 'degree' of crosswind the pilot had experienced during training. The provider now has their students specifically record crosswind circuits including a 'level of skill' comment in their logbooks, so instructing staff can better gauge their actual level of crosswind experience.

[CAA Occurrence Ref 18/521](#)

Pacific Aerospace 750XL

Date and Time:	08-Jan-2018 at 09:55
Location:	Inland Gisborne
POB:	1
Nature of Flight:	Agricultural
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	26 yrs

The aircraft was engaged in topdressing at a local farm. The pilot was familiar with the property but had not worked there before. However, he knew that a major set of 50kV power lines ran through the property.

During a sowing run, the pilot turned slightly left to minimise product drift over a fence onto a public road. In doing so, the left wing struck the three 50kV power lines, which snagged in the leading edge. The wires broke and the aircraft dragged a long length of them back to the airstrip, where they caught on a fence during landing, and pulled the aircraft off the airstrip into a ditch. The pilot was not hurt.

The investigation found that the pilot was too focused on minimising spray drift and did not realise his proximity to the power lines. The operator identified several other factors and these have been addressed internally.

[CAA Occurrence Ref 18/12](#)

MBB-BK117 B-2

Date and Time:	28-Jul-2017 at 11:20
Location:	Mt Cook
POB:	11
Injuries:	0
Damage:	Minor
Nature of Flight:	Transport passenger A to B
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	50 yrs
Flying Hours (Total):	5400
Flying Hours (on Type):	350
Last 90 Days:	60

The pilot elected to go around due to self-induced whiteout on the first approach to this unimproved landing site. During a second attempt, the left helicopter skid struck an object and buckled. The pilot aborted the landing and returned to the aerodrome.

The company conducted an internal investigation and completed a report of the incident, which found that 'flat light' conditions and self-induced whiteout on approach were contributing factors to the occurrence.

Rotor downwash at the site picked up and recirculated snow from the surface, resulting in a degraded visual environment.

This was the first flight of the day to the site. Freshly fallen snow was present, and the surface had remained in powder form due to the low temperature and lack of direct sunlight. The lack of direct sunlight created an additional environmental hazard – flat light – in which depth perception and the perception of obstacles is significantly degraded.

The pilot's training had included discussions about the effects of flat light and blowing snow, but the conditions were not present during the training session. Practical application of the considerations and techniques used when the conditions are present were not demonstrated.

The report by the company made recommendations including the establishment of pre-cut landing pads, and limiting the selection of instructors for these types of environmental conditions. Modifications to their training programme were presented, including mandatory recurrency training and specific training topics to be covered. The development of additional procedures particular to the client, and additions to the risk register, were also proposed.

The company established a pre-cut pad at the landing site and installed a pole for use as a visual reference for the pilots.

[CAA Occurrence Ref 17/4600](#)

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, www.caa.govt.nz, "Accidents and Incidents".

Key to abbreviations:

AD = Airworthiness Directive **TIS** = time in service
NDT = non-destructive testing **TSI** = time since installation
P/N = part number **TSO** = time since overhaul
SB = Service Bulletin **TTIS** = total time in service

Guimbal Cabri G2

ATA Chapter: 8500

A student and instructor were carrying out practice autorotations to the grass runway. On entry to the second autorotation, the throttle was rolled off, as required during this manoeuvre, and the engine stopped. The instructor was able to restart the engine at approximately 300 feet AGL and performed a precautionary run on landing.

The aircraft was inspected and no fault was found with the engine. The maintenance provider adjusted the idle settings and there have been no further issues.

[CAA Occurrence Ref 17/5076](#)

Hughes 369D

After emptying the load from the fertilizer bucket, the pilot decelerated while flying straight and level and the bucket fell from the cargo hook. The hook assembly was removed from the helicopter and sent for inspection.

On investigation, it was found that the outer cable had stretched. The cable's spiral cover had unwound, and the threaded ferrule was loose. There was insufficient length of the inner cable to allow full travel of the quadrant. The resulting preload on the cable release possibly left the hook vulnerable to inadvertent release as the cable moved in flight.

[CAA Occurrence Ref 17/6148](#)

MBB-BK117 B-2

Oil Pressure System

ATA Chapter: 7930

While en route, the pilot observed that the left transmission oil pressure light was reading less than one bar. The pilot elected to make a precautionary landing at the aerodrome where the maintenance provider is situated.

The aircraft was inspected by an engineer and a faulty pressure sender was replaced. It was also noted that the cannon plug was twisted. It was untwisted and reconnected, the system was tested, and the aircraft was released back to service.

[CAA Occurrence Ref 17/7028](#)

Robinson R44

Rotor and Drive System

Part Model:	R44
Part Manufacturer:	Robinson
ATA Chapter:	6300
TTIS Hours:	1304

Following an agricultural spray job, the pilot noticed a sizeable hole and visible bend in one of the main rotor blades while cleaning the helicopter. The pilot had not noticed the damage before going out to the last job, and also did not feel any unusual vibrations while flying.

It was determined that the damage most likely occurred while the helicopter was parked on the trolley, with one rotor blade over a boundary fence, before the last flight. It was likely that a forklift operating on the neighbouring property came into contact with the main rotor blade, and it is possible that the forklift driver had been unaware of this.

The pilot did not complete a comprehensive preflight of the helicopter before the last flight. It is not uncommon for a pilot, who solely operates a helicopter, to do a comprehensive preflight in the morning before the first flight, and a basic walkaround before subsequent flights.

Pilots need to be aware of the safety of their aircraft at all times, and should conduct a thorough preflight before departing. This is especially the case when they are away from the machine for any length of time.

[CAA Occurrence Ref 17/7816](#)

Diamond DA 42

Rudder Trim Knob

ATA Chapter: 2700

The rudder trim knob fell off during simulated asymmetric flight, meaning the rudder trim couldn't be moved from the full right position.

The flight continued back to the aerodrome with significant rudder pressure held throughout. A controllability check was carried out at approach speed, and an uneventful landing was carried out.

Maintenance investigation found that the grub screw securing the trim knob to the spindle had become worn. The supervising engineer submitted a report to the aircraft manufacturer and requested an improved design, which was provided.

The DA42 fleet is now inspected every 100 hours for similar issues. If a loose trim control knob is found, it is replaced with an improved design from the aircraft manufacturer.

[CAA Occurrence Ref 17/5253](#)

Aviation Safety Officer Course

Christchurch

13 to 14 September 2018

Sudima Christchurch Airport
550 Memorial Avenue

The number one function of any company is business success – safety is critical to business success.

If your organisation operates commuter services, general aviation scenic operations, flight training, sport aviation, or engineering, you need an Aviation Safety Officer.

Attend this free two-day course to understand the role of a safety officer, or for those who are already in a safety role, to refresh your skills.

You will receive comprehensive guidance material and access to all the latest CAA safety resources and support.

Lunches are provided (but you will have to arrange and pay for your own accommodation, transport, and other meals).

Check the CAA website, www.caa.govt.nz, "Quick Links > Seminars and Courses" for more information and to enrol online. Places are limited and they fill up quickly, so enrol early.

Take a step on the ladder to SMS