

vector

Too Much Focus

Installation of Ballistic Parachutes

So you think you're prepared for an emergency?

Just the two of us



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Cover: Yak-52 aircraft fly in formation at Warbirds Over Wanaka, Easter 2018, See story on page 10.

Published by the
 Communications and Safety Promotion Unit
 of the Civil Aviation Authority of New Zealand,
 PO Box 3555, Wellington 6140.

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Published six times a year, in the last week
 of every odd month.

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 Reader contributions and correspondence
 regarding the content of *Vector* should be
 addressed to: *Vector* Editor, PO Box 3555,
 Wellington 6140, or email: info@caa.govt.nz.

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From the Director



It was a privilege for me, recently, to present the Director's Awards to three extremely deserving recipients, who are profiled in this issue of *Vector* (see page 6).

While the award winners have very different roles in aviation, they do share some common characteristics, including being driven by a natural sense that safety is the right thing to do, an ability to inspire and motivate people, and a sense of urgency when it comes to making aviation safer.

Whether it's reaching out to farmers and actively encouraging them to take wires down to keep agricultural pilots safe, or guiding and demonstrating best safety practice to trainee pilots, or providing practical assistance with safety management systems to other aviation organisations, these recipients are outstanding safety leaders.

However, we cannot leave it up to a small number of individuals who are singled out for recognition; safety is a shared responsibility and we all need to play our part in promoting it.

Some simple safety leadership tips:

- » In your own workplace or club, don't be backward in challenging the status quo if you can see a better way of doing things.
- » Be a great role model – put safety first and behave in a healthy and safe way on the ground and in the air.
- » Show personal concern for others' safety. Foster a team spirit where safety comes first and everyone looks out for each other.

Remember: a safety culture may be led by those with positional authority but it relies on *everyone* to identify, assess and manage risk. Remember that if you see a substandard practice and do nothing about it, then you are accepting it. We all share accountability for making the aviation system safe and those operating it have the greatest opportunity to make change.

On another topic altogether, I encourage you to participate in the website user survey announced on this very page. We want to develop a website that works best for you, the user, so please take a moment to complete the survey.

Regards

Graeme Harris

Have **your** say

We're improving our website and we'd like your ideas.

The CAA website is the one place you can access rules, ACs, ADs, determinations, forms, publications and more, and we want to make it easier for everybody to use.

If you'd like to have your say, please take a minute to fill out our anonymous online survey before 31 October 2018. Your feedback is important.



We want **your** stories

Wherever the *Vector* team go, we hear you say you want stories about pilots who got themselves in strife, and then out again. Close calls. *I learned about flying from that stories.*

We need *your* stories. Ones with really great safety lessons. They'll be de-identified, and you get to see what we've written, and make corrections, before it goes in *Vector*.

So if you're willing to share what happened to you for the benefit of others, email info@caa.govt.nz, and one of the team will be in touch. ■



Photo: istockphoto.com/BanksPhotos

Inexplicable

No-one will ever know why two experienced pilots made decisions leading to a Cessna hitting an unidentified spur deep in the hills south-east of Wanaka, killing the four occupants. But with the safety investigation complete, it now appears it was a classic 'Swiss cheese model' tragedy.



In March of 2015, a Cessna 185B Skywagon flew out of Wanaka aerodrome on a VFR flight to The Branches high country station near Coronet Peak.

On board were two pilots with almost 10,000 hours between them, both trained and experienced in mountain flying.

About 90 minutes later, the wreckage of their aircraft was spotted in the peaks above the Motatapu River North Branch, not far from its destination.

So what had gone so terribly wrong?

Weather was the major factor. The CAA's safety investigation found that before their flight, the pilots had discussed the weather with friends, and their likely route through to The Branches. Although they noted that Roys Peak (5177 ft AMSL) and its ridge above the Motatapu River were shrouded in cloud, they did not get a MetService weather briefing.

The pilot who first spotted the aircraft wreckage reported that flying conditions were marginal. The CAA's report notes that, "As the aircraft continued flying toward the head of the Motatapu valley, the flyable airspace between the terrain and the cloud base would have been reducing".

Examination of the aircraft at the accident site discovered "the aircraft's flaps were found extended 10 degrees consistent with the aircraft being configured to operate in reduced visibility".

When it seemed to become apparent that cloud was completely blocking their path, the pilot tried a 180-degree turn.

The investigation found the aircraft was probably not positioned optimally for such a reversal turn. As it approached the right-hand bend in the Motatapu valley, the best place to turn would have been from the southern side of the valley which would have allowed the aircraft to turn away to the right if needed.


But the report found the pilot had tried a descending left reversal turn. That's when the aircraft hit the spur, possibly seen by the pilots only in the last few seconds before impact, because of drizzle markedly reducing visibility and the visual definition of the terrain towards which they were flying.

The Swiss cheese model of accident causation

Professor James Reason of the University of Manchester maintains the threat of an accident materialises only when all possible defences against that fail. He likened those defences to slices of Swiss cheese, with the holes in the cheese representing the weakness in each defence. If the holes align, the threat of an accident gets through those holes and the result is an accident.

Equally, if just one slice of Swiss cheese – a single defence – remains robust, and its holes do not line up with the others, the accident is avoided.

The first defence available to the Cessna pilots was a MetService briefing. It would have provided them with important weather information, as the CAA's safety report notes.



“The amended Clyde area forecast issued at 1019 hours indicated a lower broken cloud base of 3000 feet AMSL with visibility reducing to 4000 metres in moderate rain or drizzle.”

A second defence would have been the decision to turn back when they encountered the combination of low cloud and rising terrain.

In such circumstances, they were no longer complying with the requirements of rule 91.301 *Meteorological Minima*. “Aircraft operating above 3000 feet AMSL or 1000 feet above terrain whichever is the higher must maintain a minimum distance from cloud of two kilometres horizontally and 1000 feet vertically. A minimum flight visibility of five kilometres is also required.”

The CAA safety report concludes that given how close the accident was to the pilots’ destination, it was also likely the result of ‘get-there-itis’.

Research by the Australian Transport Safety Bureau¹ into weather-related decision-making behaviours, concludes that the chances of a VFR into IMC encounter increase as the flight progresses, until those chances reach a maximum during the final 20 percent of the flight distance. This result highlights the danger of pilots ‘pressing on’ to reach their destination.

The CAA safety report notes, as they flew along the valley, the pilots were nearing the maximum chance of such a ‘VFR into IMC’ encounter.

The decision to turn back therefore was made too late, and possibly hurriedly, because the turn began from a geographical point in the valley that left little or no margin for error.

Defences against the inevitability of an accident included the aircraft having a valid Certificate of Airworthiness and having been maintained in accordance with the rules. There were no pre-accident aircraft defects, nor weight and balance issues.

More possible defences were the pilots’ high number of flying hours, their experience flying in mountains, and their knowledge of the route they were flying. One of them had recently attended an AvKiwi Safety Seminar on weather decision-making.

CAA Safety Investigator Colin Grounsell examined the causes of the accident. After his report was published on the CAA website, he told *Vector*, “We (the safety investigation team) talked a lot about what more we could have done that would have made a difference: were there any gaps that we could fill to help avoid such a catastrophe in the future?

“But in the end we decided that you can establish rules and educate for best practice, but ultimately pilots are free to make their own choice.” ■

1 ATSB (2005) General Aviation Pilot Behaviours in the Face of Adverse Weather.

Director's Awards 2018

A flight examiner with more than 24,000 hours logged, an organisation that has worked to improve safety across industry, and an individual who led a national wire safety campaign were recipients at the 2018 Director of Civil Aviation Awards.

CAA Flight Instructor Award

Mark Watson, Chief Pilot and Director of Wyndon Aviation

For more than 20 years, Mark Watson has been a flight examiner of candidates flying helicopters and fixed-wing aircraft for agricultural operations. To date, he's flown more than 24,000 hours across a number of aviation sectors.

Mark's had an interesting aviation career, beginning with flight instructing at Canterbury Aero Club. Since then he's been involved in the agricultural and helicopter sectors, and also worked in the airline sector, where he flew Dash 8s, BAe 146s, and Boeing 737s.

More recently, Mark's focus has been on testing the knowledge and skills of budding commercial pilots and flight instructors, from E-cats and A-cats.

Winning the CAA Flight Instructor Award was a "very pleasant surprise" for Mark.

"When I learned to fly, I never expected I would end up being a flight examiner – it wasn't on the radar at the time," Mark says.

For Mark, there's more to flight examining than just the testing component.

"You've hopefully left them with a few additional thoughts, and a bit more knowledge and experience.

"Often you'll talk to them about your career path and what you've done, so they realise that aviation offers some huge opportunities. But it's up to the individual to make the most of them."

He also tries to instil the right attitude towards safety in his candidates.

"You make sure they've built processes in how they think and manage things. Safety is all about attitude and culture."

In addition to flight examining, Mark also operates Wyndon Aviation, and runs his own mixed cropping and sheep farm.

While Mark plans to continue business as usual for the foreseeable future, he has his eye on something else too.

"It'd probably be quite good to do a little bit less flying and a little bit more fly fishing!"

Award for an Organisation

Oceania Aviation

Oceania Aviation has grown over the last 26 years to become a key industry player in maintenance, repair, and overhaul service; parts supply; and aircraft sales. With nine locations throughout New Zealand and 200 employees, Oceania supports the helicopter and fixed-wing industry.

What has made Oceania stand out is its practical desire to improve safety – not only within its own business but across the entire New Zealand aviation industry.

Oceania implemented Safety Management Systems (SMS) in its own organisation and the wider group, involving three certificated organisations, four certificate types, and multiple bases.

Led by CEO Don McCracken, Oceania has demonstrated a strong, positive safety culture. It has provided an excellent example of how an SMS can be implemented and a willingness to share this experience with others.



Mark Watson



An MD 500D helicopter approaching Oceania Aviation's base.

Photo courtesy of Mark Watson.

Photo courtesy of Oceania Aviation.

Winning the award “was a wonderful surprise” after “many years of work by our staff across the group,” says Don.

Don said that while they were initially unsure about how they would work through the certification process, by working with the CAA over a two-year period, they were able to get to where they needed to be.

“The outcome was a successful, smooth transition through to certification and we found the CAA SMS team to be professional and easy to deal with.”

Since becoming certificated themselves, Oceania has been working with industry to help other operators who are working to become SMS-certificated.

They have been helping a number of smaller organisations to understand the concept of SMS and how they can implement SMS “in a meaningful but not too onerous way”.

On a larger scale, Oceania organised and hosted the industry SMS Safety Summit in May 2018. The summit brought 16 speakers and more than 150 participants together from across New Zealand to share their experiences with SMS, and to share real-life insights and practical advice.

“The main thing is to pass on our experiences, and what we’ve learned, to other operators going through the process now,” says Don.

“We have to interact with each other and ensure that safety is a benefit for all.”

Award for an Individual

Alan Beck, CEO and Chief Pilot of Beck Helicopters

Alan is one of New Zealand’s most experienced agricultural and specialist lift pilots, with more than 20,000 flying hours in Bell 47, 206, and Iroquois helicopters, carrying out a variety of aerial work and air transport operations. He’s also a former chairman of the NZ Agricultural Aviation Association. Alan said he was blown away by winning the award, but he doesn’t believe it’s for ‘Alan Beck’. “I’m calling it the Director’s Award for the Down to the Wire campaign,” he says.

Alan’s aviation career started after he left school and opened his own ground spraying business. While he initially hired helicopters to do hill spraying for him, he soon learned to fly, himself. Fast forward to the early 1990s – Alan struck wires while flying a helicopter and was seriously injured. After this accident, he launched the Down to the Wire campaign, alerting farmers to the risk wires pose to agricultural pilots.

He expanded the Down to the Wire campaign nationally, getting ‘ambassadors’ support for it across New Zealand. Alan says they now have 32 ambassadors across the country, including Richie McCaw.

“Collectively, those ambassadors have given out hundreds of certificates to farmers who have taken down wires,” Alan says.

For Alan, the Down to the Wire campaign epitomises safety. “It’s about trying to be safer out there and encouraging people to take that little bit of time to look for wires and to be safe.”

Alan says he is “pretty damn proud” of how the industry has worked together to improve safety.

“Without safety we don’t have an industry.”

Alan doesn’t have any plans to slow down his work on the campaign. Later this year he’ll be travelling to Austria and Switzerland to talk to different groups of pilots. He’ll also soon be speaking to a group of 14 new entrants at Christchurch Helicopters about the dangers of wires.

“It’s an enjoyable yet terrible thing to talk about. But if pilots can recognise the wires when they are there, and miss them, hopefully we can save some lives.” ■



Aerodrome Signs 101

Pilots need a working knowledge of all aeronautical signs at aerodromes. When used with up-to-date aerodrome charts, they help you taxi to the right place and can reduce the risk of a runway incursion.

Signs tend to be more complex at major aerodromes such as Auckland, Wellington, and Christchurch, but most aerodromes have some signs accompanying airfield markings.

Signs are divided into two categories: mandatory, and information.

Mandatory signs

Mandatory instruction signs include:

- » Runway designation signs
- » Category I, II, or III holding position signs
- » Runway-holding position signs
- » Road-holding position signs
- » No Entry signs.

They are identifiable by having white characters on a red background.

A taxiing aircraft or vehicle should not proceed beyond a mandatory sign without obtaining ATC clearance, and visually confirming that it is safe to proceed.

Profiled here are runway-holding position signs and no entry signs.

Runway-holding position signs

Runway-holding position signs are located alongside the appropriate ground marking. These signs identify the holding position as well as indicate the direction in which the holding instruction applies.

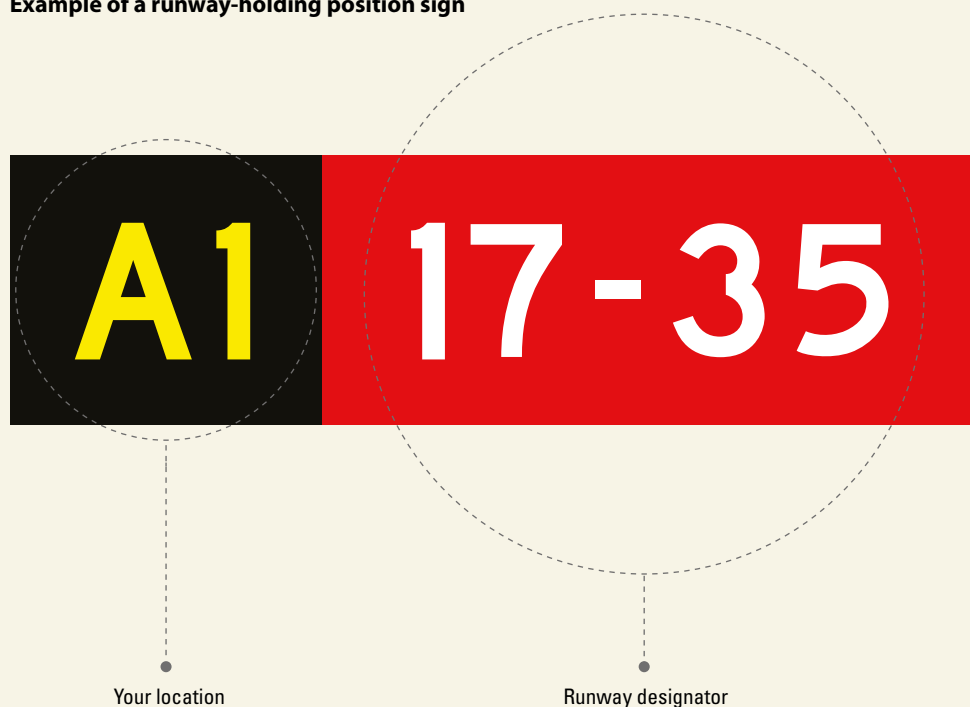
Where runway designators are shown on a sign, the first two digits of the runway magnetic heading rounded to the nearest whole 10 degrees will be used.

At airports with Category I, II, or III runways, signage to indicate the runway-holding position will display similar to the sign below.



25 CAT II

Example of a runway-holding position sign



No Entry signs

No Entry signs indicate an area of an aerodrome that has been withdrawn from use or is not suitable for aircraft operations.



Information signs

Information signs are provided at an aerodrome where there is an operational need to identify a specific location or routing (direction or destination) information. They are often located at intersections and help pilots maintain situational awareness.

Location signs

Location signs identify taxiways and, where necessary, runways. Location signs have yellow lettering on a black background. Taxiways are normally designated by a single letter of the alphabet (for example A, B, C). On some of the larger aerodromes in New Zealand with many taxiways, alphanumeric designators may be used to identify minor taxiways which join a main route (for example A1, B6).

Remember: Black square, you are there.



Direction signs

Direction signs consist of a route or destination label accompanied by an arrow pointing in the appropriate direction.

They have black characters on a yellow background and are normally accompanied by a location sign.



Direction signs inform pilots of an exit from a runway. In this situation they are called a runway exit sign and will not be accompanied by a location sign.

Remember: Yellow array points the way.



Destination signs are also used to indicate the direction to a specific location on the aerodrome, such as an apron or cargo area.



Intersection take-off sign

An intersection take-off sign (more commonly known as inset take-off position) indicates the remaining take-off run available from that point. It has black characters on a yellow background and is located opposite an intermediate taxiway.



While taxiing

Signage used together with current charts and aerodrome markings will help pilots improve their situational awareness. If you are in any doubt about a taxi clearance that you have received from ATC, ask for clarification.

Further information

For more information on aerodromes and aerodrome signs, including Advisory Circular AC139-6 *Aerodrome Design Requirements*, visit www.caa.govt.nz/aerodromes. ■



Too Much Focus

With the airshow and competition season approaching, it's a good time to talk about how too much focus impedes good flying.

"I was very pleased with my touchdown point. I was very pleased with the landing distance. I thought, 'gosh this is going so well, I'm going to apply just a bit more brake'."

And that's what happened just before Mark Woodhouse nosed over his Piper Cub at a Healthy Bastards event a few years ago. He was so focussed on getting the aircraft stopped in the shortest possible distance, he forgot what might happen if he applied brake, instead of easing off the pressure.

"I just didn't appreciate that the centre of gravity behind the wheels, and turning moment about the wheels, would overcome aerodynamics. Even with full aft elevator, there wasn't enough aerodynamic force on the tail to stop the nose from tipping.

"I kind of stepped outside my experience with that one.

"The irony is, had I executed that manoeuvre perfectly, I still would not have been anywhere near the competition leaders, so it was a pretty fruitless, and expensive, exercise.

"The other irony of me trying so hard to excel, was that I just let myself down."

John Lanham – former CAA general manager of General Aviation, 55 years flying and now with the New Zealand Airshow Association – remembers one or two occasions when 'over-focussing' almost brought him undone.

"I was leading a Strikemaster aerobatic team in the late 70s and we were carrying out a low-level barrel roll during practice. The team had had some difficulty with the manoeuvre so I was concentrating very carefully on flying the manoeuvre smoothly and precisely.

"About halfway round the manoeuvre, I realised I'd let the nose drop slightly and the manoeuvre was now becoming a bit marginal. So I concentrated very carefully on flying a little bit faster to get around, but very smoothly so the other pilots could keep up with me. We completed the manoeuvre but well below our safety altitude.

"There was silence in the formation for quite a few seconds and then from down the back came, 'that's your one mistake for the season boss'.

"The lesson I learned that day was that distraction of any kind in the air or on the ground can be a killer. I had lost overall situational awareness because I was distracted by my concentration on smooth flying."

John also knows the pressure of wanting to put on a good show, execute the perfect sequence and – especially among new display pilots – the desire to do something spectacular. All of them can be a form of insidious distraction.



The trick to good situational awareness is a combination of experience and practice.

"It's nothing we don't all know. You practise at a safe altitude and, as far as aerobatics are concerned, you never come down lower until you are certain you can fly your sequence perfectly at the higher altitude. Then come down a bit, practise again, then come down a bit more.

"Get mentored and tutored by someone experienced in what you are trying to do, whose opinion you value, and then practise, practise, practise."

Someone who wishes they'd had that advice was the competition flier who hit a fence during a precision circuit and landing contest.

When he'd first arrived at the competition aerodrome, carrying the bags of other team members, he'd landed successfully on the same runway he knew would be used during competition.

"On practice day I borrowed one of the locals to give me the approximate weight of a solidly built air judge, which was heavier than the luggage I'd arrived with. Everything went well, I put the plane down on the grid – I was flying exactly to the competition rules.

"I rolled through the competition box then throttled up, but the rate of acceleration was slower than I wanted, so I pulled the throttle, put the brakes on...and the plane just kept on going and I ended up in the fence.

"What I had not registered was that the marked-out landing grid was about two-thirds into the available landing length, which, in my experience of competitions, was unusual.

"I should have also realised that flying with more weight would have changed the flying characteristics from the previous successful landing. There was a lot of mass to slow down."

The pilot says that, ideally, he should have flown a number of circuits without landing, just to get a better lie of the land.

"Then after a few circuits and getting a really good look at the competition landing site, I should have done a few touch and goes with the added weight."

He says even a relatively minor occurrence such as the one he went through can cause an "awful lot of soul searching".

"Neither of us got a scratch, but we were shocked. We just sat there in disbelief for a moment. But there's an emotional aspect to something like this that takes a while to subside, it really rarks you up in a nasty way."

Chief flying instructor of South Canterbury Aero Club, Aaron Pearce, played host to the Flying NZ national champs in March 2018.

"Competitors become really fixated on getting the plane near where they want it to be or what they want it to do and their situational awareness goes. They stop looking out the window. Looking out for other traffic is the first load they shed – it's not really good enough that we accept that.

"We tell the judges, 'even if the competitor says 'clear left, right, ahead', but they don't actually move their head to look out the window, don't give them the airmanship points'.

"If they don't point out to the air judge any threats, the same applies, in my view."

John Lanham says competitions and airshows are no time to be spontaneous.

"You do what you've practised, you do nothing you've not done a hundred times before, and you don't get clever."

Sometimes, competitors or display pilots can get overwhelmed by the 'moment' – the crowd watching admiringly, the manoeuvre going perfectly, and they think, 'I'll just try this; it will blow them away'.

Dave Brown, chief flying instructor for the NZ Warbirds Association, which issues display approvals for New Zealand, agrees with John Lanham that lack of practice or lack of familiarity with the aircraft's limitations can lead to disaster.

"People might think, 'oh well, I'm only doing a few turns and I do turns all the time; I don't really need to go out and practise it'.

"But when you are actually doing it in a competition or an airshow, then you have a lot of extra pressure to stay 'inside the box'. You're trying to display correctly, so there's a lot of constraints and pressure that you don't have in your day-to-day flying."

Dave says people should practise manoeuvres – whether for displays or competitions – at altitude until they are 99 percent reliable.

Continued over »

» Continued from previous page

He also says many people might be surprised by how often an occurrence happens during a relatively straightforward manoeuvre.

“So during training we take pilots to the extremes of their aircraft performance, at altitude, so they know what to look for on the day.

“It’s not the aerobatics where many of the incidents happen. It might be in the positioning manoeuvre where they stall at low level, or during a turn.

“That was what happened in January last year when a Grumman Mallard crashed into the Swan River in Perth. It was a classic stall in the turn at low level with no altitude to recover.”

CAA Aviation Safety Advisor Carlton Campbell says that in competitions, focussing on ‘the spot’, to the detriment of flying the plane, is the sort of tunnel vision that can ruin the whole manoeuvre.

“This can apply to all pressure situations any pilot may be exposed to – busy traffic scenarios, joining at an unfamiliar aerodrome, deteriorating weather – and they become so focussed on one objective, they lose situational awareness of the bigger picture.”

Dave Brown says, in the fighter world it’s called ‘target fixation’.

“Aircraft hit the ground just past the target because the pilot is so focussed on trying to drop a bomb, or shoot the gun at the target, they lose awareness of what’s going on around them.”

So what does he say to people who are about to compete, and who he knows will be concentrating like mad on doing a perfect series of moves?

“The bottom line is, there’ll always be another day to have another go. The aim is to be around tomorrow to do that.” ■

John Lanham remembers

“Years ago, I was reading that the World War One ‘Red Baron’ – Manfred von Richthofen – would come back from one of those big 50-aircraft dogfights, and debrief not only his fight, but the fights of all of the other squadron pilots.

“He would talk to each pilot and say, ‘you did this, you did that, that was right, but this was wrong’.

“He had the ability to not only deal with his own immediate business but he was seeing everybody else’s as well.

“In World War Two, there was another famous fighter pilot, the RAF’s Johnnie Johnson. He would lead three squadrons of, say, 12 Spitfires – in other words, 36 aircraft – and the dogfight would begin and very rapidly could get out of control because of everything whirling around in the sky and every man for himself.

“Johnson was famous in the RAF for being able to control three squadrons of fighters longer in the dogfight than anyone else: keeping tactical control, directing the fight, telling the other pilots – even the other formation leaders – what to do. He saw exactly what was going on in the sky around him and wasn’t distracted by some guy shooting at him.

“I remember thinking when I read about them both, ‘good grief, that’s real situational awareness!’”

Flying NZ national competitions at Ashburton in 2016.



For more information about aviation event safety, visit our web page, www.caa.govt.nz, “Aviation Info > General Aviation > Aviation Events”.

Installation of Ballistic Parachutes

A recent defect reported to the CAA serves as a good reminder about correctly installing and checking your safety equipment.

In February 2018, a mistake was identified with the installation of a ballistic recovery system. An engineer had incorrectly connected a Kevlar® parachute strap when installing a system into a microlight aircraft.

This error was made and detected by the maintenance provider as they had procedures in place to check the installation.

The investigation revealed that a carabiner was clipped onto one of the 'looped folds' of the supplied Kevlar strap package (Figure 1).

Figure 1 Incorrect installation



Figure 2 Correct installation



Figure 3 Correct installation – but unfolded for clarity



If activated, this could have resulted in the rocket launching and pulling the Kevlar strap through the incorrectly fitted carabiner, therefore not deploying the parachute.

The maintenance provider advised the manufacturer of the error and suggested that the black heat wrap at each end of the strap be different colours to alert installers where the strap ends are (Figures 2 and 3).

Keep in mind...

Ballistic recovery systems can be found in a range of aircraft including microlights, light sport aircraft, amateur-built, and some type-certificated aircraft.

While BRS is a prominent brand, there is a range of other manufacturers. No matter what equipment you have, ensure the installation is completed as per the manufacturer's instructions, with guidance from your aircraft's manufacturer.

It's also important to note that, in the case of microlights, while the installation of a ballistic recovery system is not a major modification, it will affect the aircraft's weight and balance. Therefore, it will require the amendment of the aircraft's empty weight placard.

Extra care should also be taken during the ongoing maintenance of the ballistic recovery system, post-installation, to ensure it is still in good working order.

The maintenance provider's report illustrates the importance of carrying out checks of any installation and maintenance work you complete.

It's also a good reminder for all providers about the common factors related to these types of errors. These include distraction on the job, working in confined areas or in low light, and no or few checks of work completed.

The defect report, 18/661, can be read in GA Defects on page 26. ■



A complete ballistic recovery system showing the rocket (top), the canister holding the parachute, and the firing handle.



So you think you're **prepared for a crisis?**

Well, so did a South Island operator. Then they had a real crisis, and it taught them what they still needed to do.

The first thing that happened was the pilot, working remotely in from the West Coast, did not make his 'ops normal' call, and his helicopter stopped emitting signals from the automatic flight following system.

They waited 20 minutes and he missed the next prearranged ops normal call.

They rang somebody official, and the official told them the tracking software was still working.

So, disbelievingly, and quelling rising panic, they opened up their emergency checklist...

The law

Riki Tahau is the CAA's manager of health and safety. It's his role to monitor compliance with the principles, duties and rights of the Health and Safety at Work Act 2015.

"There's now a requirement for emergency preparedness to be planned for, and practised to an extent that is reasonably practicable, and that will work in relation to the nature and risk of the work carried out."

If there's the possibility of a life being lost, a business not only has a duty to manage the risk of that beforehand, but equally, to manage any emerging situation afterwards.

"There needs to be a plan," Riki says. "It needs to be documented. Everybody from senior management all the way to the shop floor should know what could go wrong inside the business, and be trained and confident in what to do if the worst happens."

It doesn't have to be complicated, but it does have to be effective.

Riki recommends starting with a brainstorm with all staff on what could go wrong – part of any Safety Management System – and who does what if the worst should happen.

"You'd be surprised what you can learn when everyone in the organisation is involved."

After a plan has been formally designed, Riki says it needs to be practised regularly.

"Sometimes there's no real emergency plan, so nobody is too sure what to do. Or there is a plan, but it's been locked away in a drawer and not rehearsed, so there's still indecision about what to do.

"People can die during the delay caused by poor decision-making after an event."

Riki says the 'lens' that health and safety law uses to assess what an organisation did after a fatal accident is, 'should they have reasonably known what to do?'

Phoning people

"The first thing we realised," says the CEO of the South Island operation, "was that our telephone list was out-of-date.

"When we rang the flight-following satellite phone on board the helicopter, my son, who was elsewhere, answered. Over time, there'd been a series of phones and a series of sim cards passed around, and my son had inherited the number."

"Everybody from senior management all the way to the shop floor should know what could go wrong inside the business..."

He also says to have a Plan B list.

"Because the key people on your A list may not be around, or answering.

"You can also get caught in a phone loop. The Rescue Coordination Centre ringing you back, the Department of Conservation ringing you back, and you can go round and round in circles on missed calls. So have a plan to divert your main line to a cell.

"Also, if someone's rung 111, that line won't be released perhaps for quite a while, so plan to use the cellphones of your staff."

A recent visit by staff from the Rescue Coordination Centre (RCCNZ) was fresh in the CEO's mind and one of his first calls was to them.

"You're not wasting their time, you're not troubling them, and they have access to resources you don't. Like contact with a local police officer who knows the area, and contact with air traffic control who in turn can ask airlines flying through the region to try to make contact with your missing pilot."

The RCCNZ says to call immediately an aircraft has missed its scheduled check-in time.

"Time is the difference between life and death in rescue situations," says Paul Craven, Deputy Manager of Operations.

"The sooner we find out, the faster our team can locate the aircraft. There's no cost for contacting RCCNZ in these situations, but a life is priceless.

"If you do find the aircraft safe and sound yourselves, you can always call us again and we'll stand down.

"We're here to help and it works out best for everyone that we're kept in the loop."

Something nobody would probably think about unless they'd been through it

Emma Tilyard from V3 Heli in Taihape says their emergency plan was based very much on their experience in three real-life emergency situations.

Her husband, Mark, helped to rebuild a company he was working for, after an accident involving another pilot. He then witnessed, and was first on the scene, at a second helicopter accident. And he was a passenger in a third accident.

Emma says being involved with anyone on board significantly adds to the emotional factor and can affect the way you respond.

"In those accidents, even though Mark was okay, I was floored – quite literally. When he called to say he'd survived, I went from standing up to being on the ground, because I knew other people involved."

Continued over >>



Emma says if anything does go wrong with their operation's single helicopter, it will be Mark at the controls, and she will need back-up if he has an accident.

"I went through the emergency plan detail by detail. For instance, who do I call to look after our children, while I'm dealing with any emergency?"

"We've now spoken to somebody we know really well – a very experienced SAR officer – who is not in aviation but who is now part of our emergency response plan.

"If the SOS goes off, he gets notified and will jump into coordinating our emergency response."

In her plan, one of Emma's first calls will be to RCCNZ.

"Rather than just 'box-tick' calling them, I rang them to ask what information they would need me to have ready and what happens once I've made that call. They were awesome and I now know that ringing them early is okay – they'd rather that than lose 20 minutes of you saying, 'oh, I'll wait just a bit longer'."

Because of their real-life experience being on the edge of three emergencies, Emma and Mark know communication is king.

"If Mark notices Spidertracks has stopped working, he'll call me to say he's fine. We use a personal locator beacon, a little hand-held device, that has different buttons on the face: a check-in button, an 'I'm ok but need help' button, and an SOS button that goes straight through to RCCNZ as well.

"Of course, somebody has to be conscious to press the button, but it is added peace of mind."

Emma says much of her plan was designed after Grant White and Matt Chappell, from the CAA's helicopter and agricultural unit, visited their operation.

"They were asking me things I hadn't thought about, like what would I do if the media start calling. Reporters can be really insistent and with social media, and people able to take cellphone pictures, reporters could hear about the accident even before you do.

"I'm going to prepare some media release templates that just need filling in with the details, so that will lighten the burden as well."

Emma says a "massive thing" for her was to talk to other operators.

"We could share 'lessons learned' especially with pilots who had been through an emergency."

The RCCNZ was only one call she made, to understand what would happen in an emergency.

"I've made sure I understand all about Christchurch Control and air traffic control and their role, and that of all the other contacts that seem to come up in emergency plans.

"I wanted the plan to fit us and our company. I didn't want a cut and paste where I said I would ring this number next, without understanding why I was calling that number.

"I think it's really important that your action plan is not just a series of box ticks."

"It gets a little bit dreadful"

Back at the South Island operation, the CEO was learning what the emotional aspect of having your pilot missing can do to your functioning.

"It gets a little bit dreadful quite quickly.

"I struggled to read out to RCCNZ the last coordinates from the tracking before it stopped, because I was so distracted by what might have happened; by what might be ahead of us.

"Grant White had been to see us not long before and he'd talked about that emotional side of things. He'd suggested we arrange for somebody, not as involved, to come in and give us a hand.

"That advice was fresh in our minds, so our office administrator contacted another operator and immediately they were at her side helping out."

The CEO also contacted other operators for help in the search. "They cut their scenic flights short, off-loaded their passengers, and headed off. Everybody pitched in."

The call came from RCCNZ. An Air New Zealand flight had made contact with the pilot. He was fine.

"That was wonderful to hear," says the CEO. "It was just so mountainous where our guy was, that it took a plane at 30,000 ft to be able to make contact."

It turned out, the 'somebody official' the CEO had first rung had got it wrong. The iridium satellite was out and had taken tracking with it. And the satellite phone. None of the other operators had been affected because their pilots were flying locally and were communicating by radio.

Forty minutes after the South Island operator activated their emergency response, the emergency was over.

Other operators who'd been called on to help, visited and told the CEO, "that was one hell of a drill". They said it had given them something to think about in terms of their own emergency plans.

"So our plan has been updated, in light of what we went through," says the CEO. "Now I would always go to the tracking provider first to check, and not rely on anyone else."

"We also changed our exposition with our re-certification to have hourly reporting.

"In the future, I'd also make use of Flightradar24.com. I know it's a bit of a novelty but it would give me the location of major aircraft in the search area."

The CEO has also learned any emergency planning needs to be practised.

"Even though we've been through it for real, we still need to drill, because ironically, the pilot didn't take part in the scare and there were other staff who weren't at work that day."

A back-up means of communication is also part of the updated emergency plan. Their aircraft have radios with access to the Department of Conservation repeater network, so the operation will use those repeaters to speak to DOC, to relay an 'I'm safe' message to base. An employee from a local café has also been trained up and is on standby to help the South Island operation in any future emergency response.

Grant White says they'll be someone a bit uninvolved who can answer phones and take notes, perhaps on an electronic device.

"You need someone who can document what each person does as they do it. It helps the internal investigation, and if the worst should happen and it ends up in court or subject to a health and safety investigation, you have to have all that documented.

"Somebody will 'ask the question' somewhere along the line, and if those notes are available it takes the pressure off."

Grant advises operators to refresh emergency response training every three months.

"Even if it's just looking over the flight follower's shoulder and asking, 'what would you do right now if that aircraft fails to make their standard ops-normal radio call?'"

Grant also suggests that all vehicles be equipped with a copy of the emergency procedures, and they should also be on everyone's electronic device.

"You cannot ever be too prepared." ■



Photo courtesy of Rescue Coordination Centre.

If your aircraft is overdue, call the RCCNZ straight away.

Just the **two** of us

Two-people certificated operations are required to establish a Safety Management System, just as much as the largest airline. Here, three operators talk about implementing their SMS plan.

With SMS implementation plans for all Group 2 participants now submitted, the time has arrived to put them into action.

Austin Healey, of the CAA's Safety Management System implementation team, is saying to small operators that they should keep on keeping it simple.

"Sometimes an operator – and not just small operators – will design a perfectly acceptable, simple, appropriate plan. But then, in putting it into practice, they do a virtual cut and paste from somebody else's manual, or of something off the internet. And all they've done is make it complicated.

"I say to operators, 'think about your manual, your exposition, as being like a contract. You sign the contract, and we've accepted the contract, so you don't want to put any extra stuff in the manual that you can't do, because then you're in breach of your contract'."

SMS specialist with the CAA Penny Stevenson advises operators to be methodical as they work through their plan.

"You've put a huge amount of work into the plan, so now just follow the plan.

"Go over it regularly with staff, make sure the tasks are being done. There will inevitably be more tasks as you go along, and you will find places where you realise a certain idea is crazy and it won't work. It's fine to change it to something else simpler and more appropriate. And call us if you need reassurance about changing stuff."

Winkie Sisson, who – together with her partner, Marc Mangan – owns Central Ag Air in Otago, believes there's nothing too scary once the plan is complete.

"I'm just going to do it the way it works best for us," says Winkie, who is going to get more training on implementing her plan.

"I've worked out how long things are going to take me, and I've set them out in the order that seems to work for us. I've got a board set up with my timeline and what things I have to do first myself, and what things I can work on together with Marc."

Winkie's top tip to other operators is to make use of the resources of the Safety Management International Collaboration Group or SMICG (see 'Resources').

"They're fantastic. Even though they don't give you everything in an exact format, they offer really sensible solutions for small organisations."



Kelly Cullen – safety manager at Campbell Copters in Whangarei – says her plan will also be put into practice systematically.

“Everything is going into our diaries. We all have tasks and goals for each month, we all have diary reminders, and we’ll all be constantly aware of where we’re supposed to be.”

Charlotte Mills, SMS specialist with the CAA, says that’s really important during the implementation period.

“Implementation involves monitoring how the plan is going, and reassessing resources and timeframes if you start falling behind.”

Trevor Jellie, of the CAA’s heli and ag operations unit, says the key for the smallest operators is being on the lookout for the forward-looking and proactive elements of their SMS, particularly if their plan changes as they put it into practice.

“From an operating perspective, they need to be able to recognise how activities such as investigations, internal audits, management of change, and reporting all feed into a central bucket of risk management.”

Trevor says the best plans he has seen have identified gaps, not just in the manual, but also in the day-to-day procedures of the operation.

“Stay focussed on those. Fixing gaps in manuals alone won’t give you an SMS.

“Sometimes it’s hard for two- or three-people organisations to look at their operation critically, which is a good reason to get further training, or ask for guidance from the SMS team.”

Charlotte Mills advises operators that, if they haven’t already done so, they should start getting buy-in from staff now.

“A huge part of managing change is keeping staff informed and ‘with’ the change. Then when your SMS implementation date comes around, the transition should be seamless.”

Certainly, the first step for Nigel Griffith from Patchett Ag Air in Blenheim has been staff engagement.

“We only have four staff and we work in pilot-and-loader driver pairs, and remotely from each other. So it’s important the guys take on board what SMS is about. I can’t be there with all of them all the time.”

Nigel, who has a spreadsheet with the steps he needs to implement SMS and the months he needs to implement them, is using a free application he downloaded from the internet which he says is a “really good hazard identification and incident reporting tool”.

“The guys just fill out the details on their phone and it comes alive on mine. I’m having to still prompt them about reporting; that will take a while but reporting has increased a bit. That’s good because they are beginning to realise its significance.”

Kelly Cullen agrees, saying the five full-timers and one part-timer at Campbell Copters “have an absolute role to play” in SMS, especially with reporting.

“That’s where we want them giving us feedback on what’s going to make their day better – how they can work smarter rather than harder, and how we can support them to work as safely as they can.

“The staff will become engaged, dependent on how we (Kelly, and the owners, Mal and Neil Campbell) put it across. But I think all staff like to be involved and they all like to be informed.”

Kelly’s top tip is “don’t pause”.

“Just because we’ve got our implementation plan in, we’re still moving it along. Otherwise it’ll be certification day and we won’t be ready.” ■

Resources

Visit www.caa.govt.nz/sms for links to:

- » Guidance for Part 137 operators (useful for other small operators too)
- » Booklet seven from CASA
- » SMICG, for small operators
- » EHASt, for rotary operations.

For help, email sms@caa.govt.nz.



Passenger Briefings

You can never assume a passenger knows about the safety features of your aircraft, even if they're labelled and you have a passenger briefing card.

Passenger safety briefings are essential. They're also mandated – rule 91.211 *Passenger briefing* outlines the requirements for all GA aircraft carrying passengers. The passenger briefing must cover what to do in flight, the location and use of exits, and the use of emergency equipment.

Ben Patterson, owner and chief pilot at Hokitika's Wilderness Wings, ensures his passengers are well informed.

"Our first safety briefing is in the office when people decide to go for a flight. That's where we cover dangerous goods, and our expectations for the operational area," he said.

"Once in the aircraft, passengers are told how to comply with the Civil Aviation Rules and Wilderness Wings requirements. We ensure they know how to operate their seat belts, and that they're not to touch the doors except in an emergency."

The consequences of a passenger accidentally turning the fuel shut-off valve or opening a door mid-flight can be dire, so it's crucial to alert them to such possibilities.

"It's also very important we tell them the location of safety equipment like the first aid kit, fire extinguisher, and axe. We then cover the use of the Emergency Locator Beacon, and tell passengers what to do in an emergency landing."

Even if a passenger is familiar with a type of airframe, there may be quirks specific to that aircraft.

"We fly a Cessna 206, and I've flown other Cessna 206s in which the location of emergency equipment has been completely different," says Ben.

Safety briefing cards

A passenger safety briefing card can be a valuable tool, providing not only a visual reference for the passenger, but also allowing them to read safety information at their own pace.

Safety information should also be easy to understand for everybody. Heliworks Queenstown Helicopters flies 8000 clients a year.

The General Manager, Richard Mills, says their safety briefing card is in Mandarin, Japanese, French, and German.

"If our clients are travelling with a tour guide, we ask that guide to do the safety briefing with us so nothing is missed, and the clients clearly understand what they must do to be safe around helicopters."

Helicopter briefings

The proximity of passengers to controls and rotor blades brings a special focus to passenger safety briefings for helicopter operators.

"There are considerable risks associated with clothing for example, and with passengers turning up with plastic bags. Procedures must be in place to deal with these issues, and pilots must be observant," says Grant Twaddle, CAA's helicopter operations team leader.

"Helicopters are noisy, and people have an inexplicable desire to hurry. Everything must slow down for a briefing."

Aside from the basics, it can also be helpful to offer tailored advice to passengers based on how they'll use the aircraft.

Richard Mills says whether it is a first flight for a tourist, or the passenger is well accustomed to flying in a helicopter, they receive the same briefing.

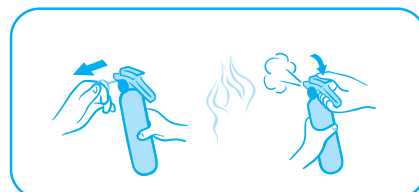
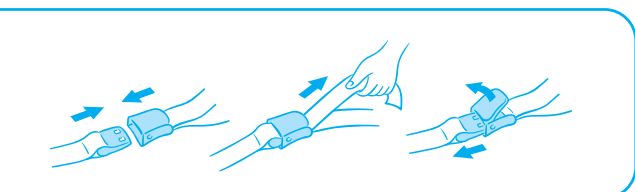
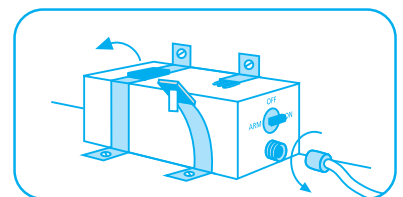
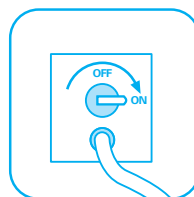
"We find that people who have more experience with helicopters can, at times, be as unpredictable in their behaviour as those who are taking their first helicopter flight."

Richard says if they have children flying with them, they emphasise to the parents how cautious they must be.

"We ask them to hold their child's hand while at the landing site, and keep a really good eye on them in the cabin during the flight."

Ben Patterson knows that incidents don't discriminate, and that consistency is the key.

"Whether you are flying your kids, or a prime minister; whether you're in a microlight, or a Cessna Caravan, it is extremely important for all pilots to give a good passenger briefing." ■



Microlight Type Ratings



An advanced microlight, a Tecnam
– about 600 kg, cruise 118 kt, stall 35 kt.

Microlights are hugely popular, and there's a great range to choose from, but they are not like for like.

If you're type-rated on a Quicksilver, you can't fly your friend's BushCat without a type rating for that aircraft.

Evan Belworthy, who's been involved with amateur-built aircraft for 25 years, says there's good reason for that.

"If you drove a Bentley versus driving a Toyota Yaris, for example, you'd need to have a different rating because you've got a far heavier vehicle that you need to understand."

There are three Part 149 organisations administering microlight operations, including issuing type ratings: Recreational Aircraft Association of New Zealand (RAANZ), Sport Aviation Corp (SAC), and Flying NZ.

Kevin Mattson, an Authorised Testing Officer (ATO) and Safety Officer with SAC, says if you want to fly an aircraft significantly different in type to what you're rated on, you must get a rating from a qualified instructor on that type.

Using Evan's car analogy, Kevin says a key factor in microlights is their low inertia.

"Part 61 licence holders require a type rating for microlight aircraft as well. They're moving from aircraft with much higher weight and inertia.

"We teach them to always keep a hand on the throttle and watch the airspeed. With low-inertia and high drag microlight aircraft, descent can be very rapid once the throttle is closed."

The CEO of RAANZ, Evan Gardiner, says there's a huge difference between some microlight types, "Particularly between first and third generation microlights.

"The latter are fast, composite aircraft that can cruise at 140 knots. You wouldn't get out of a Bantam or a Quicksilver, for example, and hop into something as radically different as that."

Kevin adds that even some differences between the same brand of microlight can mean a type rating is required.

"If a person hasn't flown that model with a constant speed propeller, or with a turbocharged engine, or retractable undercarriage, they would still need to get checked out by an instructor. The various models of Tecnam are an example."

Evan Belworthy is also an ATO with SAC and says the type-rating system is there for safety.

"With a very lightweight and high drag machine, if you lose power or close the throttle for landing, the aircraft descends very rapidly. If you've got a heavier and cleaner machine it will continue because the inertia's behind it. So you need to understand the performance limitations of a new aircraft."

The type-rating requirements for microlight aircraft are in Part 103, and the Part 149 organisations expand on that in their operations manuals.

Evan Gardiner says there's generally a good awareness of the type-rating system in the microlight community.

"We tend to accept as a philosophy, that anybody that's well trained as a pilot has, in that process, learned about good decision-making.

"That includes asking yourself, if you're going to hop into another aircraft, 'am I currently rated in this type', and if the answer's 'no', then you need to seek a type rating in that aircraft." ■



A basic microlight, a Solo Wings Trike
– about 350 kg, cruise 43 kt, stall 27 kt.

Updated Products

How to be a Pilot

Whether you want to fly a small aircraft during the weekends, or a Boeing 737 for an airline, you will follow much the same process initially. You will learn about yourself, the aircraft, the weather, the flying environment, and the rules pilots use to keep their flying safe.

This booklet has been updated to include the latest information on pilot licensing.

How to Report Occurrences

Ever since the Wright brothers – and Richard Pearce – flew, aviators have looked at flying accidents and near misses to find out what went wrong, and how they can stop it happening again. With easy step-by-step instructions on how to report, what to report, and who should report, *How to Report Occurrences* will help you do your bit to keep New Zealand skies safer.

 To order free copies, email info@caa.govt.nz.



Airbus Helicopters

A Safety Information Bulletin (EASA SIB 2018-13) has been issued following hydraulic failure on Airbus helicopters fitted with a single hydraulic power system.

It follows reports of incidents and accidents overseas during training. It is important to follow the training procedure described in Supplement 7 of the applicable aircraft Flight Manual.

The safety bulletin on the CAA website includes a link to a video for use by instructors and trainees to better understand and follow the hydraulic failure training procedure. ■

GPS jamming – report it!

Portable GPS jammers are illegal in New Zealand. But there's evidence they've already been used near international airports.

GPS jammers are radio frequency transmitters that interfere with the reception of a GPS signal.

Aviation is increasingly reliant on GPS technologies, including for air navigation and position tracking in air traffic management. So anything that interferes with an aircraft's GPS signal is an obvious threat to safety-critical aviation systems.

Portable GPS jammers typically plug into the cigarette lighter of a ground vehicle, or are battery-powered. They can block GPS signals up to 500 m in all directions – including up.

Under the Radiocommunications Act 1989 the penalties for using – or even just possessing – a jammer could include infringement and legal prosecution, possibly attracting a fine up to \$200,000.

Radio Spectrum Management – which sits inside the Ministry of Business, Innovation and Employment – has jammer detection equipment and uses it to track and identify jammer sources. Concern over the proximity of jammers to airports has increased their focus on this risk.

So if you suspect a GPS jammer is operating near you, report it to the Radio Spectrum Management team, info@rsm.govt.nz, or call 0508 RSM INFO (0508 776 463).

Any loss or degradation of GPS detected by any onboard or ground-based aviation system, and during any flight, is also a reportable incident under Part 12. Visit www.caa.govt.nz/report. ■



VRPs – make sure you're on the same page

There are 612 visual reporting points within New Zealand's domestic airspace and they're there for a reason.

VRPs assist safe conduct of flight by way of visual reference, says former CAA Aeronautical Services Officer Paula Moore.

"They could be places in uncontrolled airspace for instance, in addition to features already shown on the visual navigation charts, such as towns. They give people a place to report; they have a very good use.

"They're usually places that are easily recognisable, but not already labelled on charts. For example, the Waterworks at Ardmore, and the Karaka sale yards outside the Auckland CTR, are well-known VRPs."

Visual reporting points and their purpose are outlined in Part 71, under rule 71.251.

"They are based on a prominent geographical feature and they're identified by a name or designator that's easily recognisable in voice communications. Therefore they're not given long, complex names," says Paula.

They also help air traffic services with the progress of an aircraft, so they know when it has crossed a reporting point and is tracking towards another.

Paula says pilots need to avoid using locations not shown on the visual navigation charts.

"Pilots flying in their local area are tempted to use local place names or features that they and other local pilots are familiar with. But they may mean nothing to a transiting pilot and that's a potential hazard.

"The such and such intersection, or the bridge over such and such river might be fine between local pilots, but pilots who are not from that area won't know what you're talking about."

Don't confuse things

Jason Hobday, the IFR Training Manager and Flight Examiner at Canterbury Aero Club, says using official reporting points is something they try to reinforce.

"If you use local terminology, it will confuse a transiting pilot who doesn't know what you mean by 'the meatworks' for example.

"Using the official points takes away any element of doubt and everyone is on the same page."


Jason says VRPs have become more important than ever around Christchurch.

"Over the years we've lost a number of geographical references, with a lot of forest being cut down. Some pilots fell into the trap of using them as reporting points, but now we're trying to stick to the official VRPs, to be more precise."

He says VRPs are extremely useful for students flying into unfamiliar areas.

"Because they are normally associated with prominent features, they allow you to navigate around an area you're new to.

"They give you positive tracking information. You know where you are, or your position relative to that point, and you can let other people know exactly where you are, so there's no ambiguity about your location." ■



The Pier VRP

Photo courtesy of Matt Hayes.

Moving to ADS-B OUT

With the first stage of ADS-B coming this year, the CAA is encouraging operators to equip as soon as possible, even if operating below flight level 245.

As part of the New Southern Sky programme, Automatic Dependent Surveillance – Broadcast (ADS-B) will be mandatory for aircraft operating in controlled airspace above flight level 245, from 31 December 2018. ADS-B OUT is also proposed in all controlled airspace from 31 December 2021.

Vector talked to Andrew Tilby, an aircraft owner who only flies under flight level 245, and recently equipped his Cessna 185 with ADS-B.

Andrew said the process of upgrading his aircraft was very simple, starting from looking at what options were available that suited him from both a pricing and performance perspective.

It made sense to upgrade now, according to Andrew, as he was doing other upgrades at the same time.

“If you do it when you’re doing other upgrades, it’ll save you more in the long term when you consider the hours your LAME spends on your aircraft.”

The other consideration for Andrew was the potential waiting time if he delayed the ADS-B installation. As it was, he had a four-week wait, but that waiting time was only likely to extend as more operators moved to equip.

Andrew said he was glad he “took the pinch” and got it all done at once. He referred to an old saying – “quality is remembered long after the price is forgotten”.

“You can’t be skimping on things like that. If you spend that much on an aircraft, you don’t skimp on the small stuff.

“If you do it, get it done right, and get the good gear. You’ll soon forget about what you paid for it.”

For more information

- » For equipment options; choosing your transponder, GNSS position source, or your all-in-one ADS-B OUT system; and budgeting for and planning for ADS-B OUT installation, talk to your avionics shop, and your LAME or Part 145 organisation.
- » For questions about ADS-B OUT for your specific aircraft, contact airworthiness@caa.govt.nz.
- » For questions about the new ADS-B rule amendments, the proposed rule for below flight level 245, or policy on ADS-B, contact adsb@caa.govt.nz.
- » To read FAQs on ADS-B, visit www.nss.govt.nz, “Workstreams > Surveillance”. ■

Licensing Reminder

Please get your licence issue or amendment applications in early if you need your licence before the Christmas and New Year holidays, as that’s a very busy time for the CAA’s Personnel and Flight Training unit. The last day for the issue of licences in 2018 will be Friday 21 December. Licences will again be issued from 7 January 2019 onwards.

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 will 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 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 are found not to meet the required medical standards.

The CAA will be closed from 2 pm on Monday 24 December 2018 until 8 am on Thursday 3 January 2019. ■



Flight training stats

The first report specifically describing the activities and safety performance of the flight training sector has been uploaded to www.caa.govt.nz > Aviation Info > Safety Info > Safety Reports.

The aim is to produce safety reports for the flight training community on a quarterly basis.

Getting **too many** *Vectors*?

If you have more than one CAA participant in your household, you may be receiving more *Vectors* than you want. Just email info@caa.govt.nz and ask us to stop mailing to one of the participant numbers (you can see these on the mail label).

You can also request multiple copies for students or training purposes.

And did you realise that *Vector* is online? Visit www.caa.govt.nz/vector. You can also subscribe to receive an email when *Vector* is added to the CAA website, by visiting www.caa.govt.nz/subscribe.



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
26 Sep 2018	3 Oct 2018	6 Dec 2018
10 Oct 2018	17 Oct 2018	03 Jan 2019
07 Nov 2018	14 Nov 2018	31 Jan 2019

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.

Don Waters (North Island)

Mobile: 027 485 2096
Email: don.waters@caa.govt.nz

Carlton Campbell (South Island)

Mobile: 027 242 9673
Email: carlton.campbell@caa.govt.nz

John Keyzer (Maintenance, North Island)

Mobile: 027 213 0507
Email: john.keyzer@caa.govt.nz

Neil Comyns (Maintenance, South Island)

Mobile: 027 285 2022
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.

Eurocopter AS 350 B2

Date and Time:	12-Sep-2016 at 15:00
Location:	Queenstown
POB:	6
Injuries:	1
Damage:	Substantial
Nature of Flight:	Transport Passenger A to B
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	31 yrs
Flying Hours (Total):	2701
Flying Hours (on Type):	1245
Last 90 Days:	60

During approach to land, the helicopter landed heavily, bounced, and then rolled onto its side. One of the tourists on board received moderate injuries and was admitted to hospital.

CAA's initial investigation found that it was likely an unexpected change in wind conditions occurred during the latter stage of the approach, which was not detected by the pilot. This resulted in a high rate of descent in close proximity to the ground. The pilot attempted to turn the helicopter away from the rising terrain and arrest the rate of descent but was unable to do so. The helicopter subsequently landed heavily and rolled over.

The Transport Accident Investigation Commission report AO-2016-006 is available at www.taic.org.nz.

CAA Occurrence Ref 16/4800

Schweizer 269C-1

Date and Time:	07-Jan-2018 at 12:20
Location:	Greta Valley
POB:	1
Damage:	Substantial
Nature of Flight:	Private Other
Pilot Licence:	Private Pilot Licence (Helicopter)
Age:	30 yrs
Flying Hours (Total):	94.65
Flying Hours (on Type):	8.8
Last 90 Days:	8.3

Rotor RPM decayed at 100 ft on final approach, approximately 150 m from the landing point. The pilot was unable to recover from the situation, and autorotated on to a slope. The helicopter slid down 5-6 m, breaking the tail boom and one skid.

No defects were found. The pilot had very limited experience on the helicopter type and did not recognise the onset of low rotor RPM. This required proactive control inputs, including rolling on throttle. Due to the height above ground and the descent rate, impact with the ground could not be avoided.

Pilots are reminded to actively monitor the rotor RPM, and to manage the required control inputs.

CAA Occurrence Ref 18/21

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

Rans S-6ES Coyote II

Kevlar Strap

Part Model:	BRS-5 1350
Part Manufacturer:	BRS
TTIS Hours:	159

An engineer incorrectly connected a Kevlar® parachute strap when installing a ballistic recovery system into an aircraft.

The investigation revealed that a carabiner was clipped onto one of the 'layered folds' of the supplied folded Kevlar strap package, rather than one at each end.

If activated, this could have resulted in the rocket deploying and pulling the strap through the incorrectly fitted carabiner, and not launching the parachute. The error was noticed and rectified.

The installer advised the manufacturer of their error and suggested that the black heat wrap at each end of the strap be different colours to alert installers to where the strap ends are.

[See article on page 13.](#)

[CAA Occurrence Ref 18/661](#)

Cessna 152	
Elevator Trim	
Part Model:	C152
Part Manufacturer:	Cessna
ATA Chapter:	2732

During an operational check flight after maintenance on the elevator trim system, the pilot found that, when airborne, an excessive amount of back pressure had to be applied to the elevator to prevent the nose from pitching down. The pilot had applied full nose-up trim, but the elevator control was still very heavy with the aircraft tending to pitch down.

The maintenance investigation found the elevator trim tab actuator was out of rig. The elevator trim was checked, adjusted as per the maintenance manual, and the aircraft released to service.

Following the occurrence, the maintenance provider held a safety meeting to discuss and highlight the importance of correct procedures for maintenance on control surface components and conducting an operational check flight before release-to-service.

[CAA Occurrence Ref 18/4159](#)

De Havilland D.H. 104 Devon C.1	
ATA Chapter:	7910

During the flight, the left engine oil pressure was observed to be low and decreasing, so the pilot shut down the engine. The pilot made a PAN call and diverted to Woodbourne.

An engineering inspection found the left engine oil storage tank had developed a leak. The tank has since been repaired and the aircraft returned to service.

[CAA Occurrence Ref 18/1561](#)

Alpha R2160	
ATA Chapter:	5210

During an aerobatic flight, a loud clunk was heard. The crew found that the left side of the canopy had detached from the runners. The aircraft returned to the departure aerodrome without further incident.

The maintenance investigation found the canopy attachment hardware appeared to be worn, which allowed the canopy to become unsecured on the left side.

The canopy and attaching hardware are planned for replacement when spares are available.

A reinspection of the canopy has been added to every 50-hour inspection. If the wear gets to the point where it is no longer acceptable, the aircraft will be grounded until a replacement is sourced.

[CAA Occurrence Ref 18/3018](#)

Diamond DA 40

During an IFR flight, the carbon monoxide (CO) detector illuminated four times. It was cross-checked with the standby detector which had not discoloured. Both the instructor and student felt symptoms including lightheadedness and a reduction in cognition and coordination.

The crew declared a PAN-PAN and requested radar vectors to get a visual into Palmerston North. The Quick Reference Handbook was followed, with cabin heat turned off, air vents open, and emergency windows open. The indication continued to occur multiple times during the return. The aircraft landed safely.

The maintenance investigation discovered a hole in the scat ducting, linking the exhaust shroud to the heater valve box. This was assessed as a possible cause of the CO exposure but was not confirmed.

[CAA Occurrence Ref 18/4670](#)

McDonnell Douglas 500N	
Base Plate Bolts	
Part Model:	528-028-02
Part Manufacturer:	Onboard Systems
Part Number:	528-028-02
TSI Hours:	3.2
TTIS Hours:	33.9

During external load operations, the cargo hook attach-point bolts failed during a turn and the cargo hook assembly detached from the fuselage. The load released from the cargo hook, and the cargo hook remained attached to the helicopter by the hydraulic release line.

The engineering investigation determined the cause for the failure was the loosening of the mounting bolts for the base plate due to movement of the load.

The helicopter has an STC for the installation of an external cargo pod, which requires a mounting plate to be installed between the attach point and the fuselage. The STC instructs the installer to “Check thread engagement and grip length of attaching fasteners – replace with longer bolts of the same specification if required.”

When the STC was carried out, the installer also changed the cargo hook attach point from an OEM attach point to an Onboard Systems attach point. The OEM attach point is secured with NAS1304-6 or -10 bolts. The Onboard Systems attach point uses NAS6604-H14 bolts, which have a drilled head to allow them to be secured with safety wire. The bolts included in the Onboard Systems kit were not long enough for the application, so the option for longer bolts was applied.

The installer selected NAS6604-17 bolts as replacements. These are appropriate in the case of the NAS1304-6 or -10, but are not in the case of the NAS6604-H14 due to the non-drilled head. Following the incident, the bolts were replaced with NAS6604-H18 bolts and safety-wired.

The STC holder is being asked to consider the use of H bolts for all installations to allow safety wire to be installed.

[CAA Occurrence Ref 18/491](#)

Aviation Safety Officer Course

Auckland

22 – 23 November 2018

Sudima Auckland Airport
18 Airpark Drive, Airport Oaks

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 should have 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.