

# vector

## Balloon Maintenance

RPAS Update

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### RPAS Update

New rules have been in place since 1 August 2015 for Remotely Piloted Aircraft Systems (commonly called drones). Here's a reminder of the useful information available to everyone who wants to fly a Remotely Piloted Aircraft.



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Many private balloonists have been doing it for years, but that doesn't make it right. Operators maintaining their own aircraft without authorization, approval, or qualified supervision are breaching Civil Aviation Rules, and could be putting themselves and their passengers in danger.



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Learning to be assertive as an employee, and accepting employees' opinions as a manager, can lead to a safer, more robust and profitable aviation organisation.



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With every occurrence report you submit, you're feeding data into safety systems that may prevent you from having an accident in the future.

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Cover: Many private balloonists maintaining their own aircraft are unwittingly doing so in breach of Civil Aviation Rules, see story on page 4.

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

Tel: +64 4 560 9400,  
Fax: +64 4 569 2024,  
Email: [info@caa.govt.nz](mailto:info@caa.govt.nz).

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**Manager Safety Promotion** Bill Sommer.

**Editor** Peter Singleton.

#### The Vector Team

Charlie Brimmicombe, Lakshmi Guda,  
Aaron Hailwood, Pen Mackay, Rose Wood.

**Design** Gusto.

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# RPAS Update

New rules have been in place since 1 August 2015 for Remotely Piloted Aircraft Systems (commonly called drones). There's good information on the CAA web site, but confusion has been generated by some media reports.

The CAA is receiving lots of enquiries every day, says Rex Kenny, CAA's Manager Special Flight Operations and Recreational Aviation.

"A lot of people just want some clarification on the rules before deciding if they want to, or even need to, apply for certification to fly under Part 102.

"We're trying to make it simpler for people to understand if they need to be certificated. There's a matrix on the CAA web site so that people can work through the list and see if they can fly under Part 101. A lot of operators don't need to certificate if they fit in the scope of Part 101 – even for commercial operations.

"If they can't operate within the confines of Part 101, that's when they need to consider certificating under Part 102.

"When it comes to that, there's also a sample exposition to help them understand what's required.

"Applying for certification under Part 102 isn't a 'get out of jail free' card," says Rex. "Safety is paramount for us, so anyone applying for certification must show how they are mitigating risk.

"For example, if they want to fly over houses, they may choose to fly an octocopter rather than a quadcopter, because having more engines provides greater security should one fail. They could also ensure their RPA has a recovery parachute to prevent it from free-falling to the ground if one or more of its engines fail.

"Also, it's important to realise that certification under Part 102 doesn't override any other legislation, such as council by-laws.

## Yes, You Can Fly in the Park

You can fly in public spaces provided you meet the requirements of Part 101 and the owner (usually the local council or the Department of Conservation) allows that activity. You should avoid flying over people, but if required, you need their consent.

The Airshare™ web site has a handy guide to the councils who have policy on flying in parks, see [www.airshare.co.nz](http://www.airshare.co.nz), "My Flights – Property Owner Consent Information".

"It's similar for private property," says Rex. "You need the land owner's permission to fly over it."

## Training

A number of organisations are now providing training specifically for RPAS. For operators not familiar with the aviation system, getting some formal training is highly recommended. See the guide on the Airshare™ web site, "News – Profile: UAV Training Providers".

For more information about RPAS, visit the CAA web site at [www.caa.govt.nz/rpas](http://www.caa.govt.nz/rpas). If you have further queries after looking at the web site, email: [rpas@caa.govt.nz](mailto:rpas@caa.govt.nz).

For information about reporting any RPAS safety related concerns, see "The Value of Reporting" on page 23. ■



# Balloon Maintenance

## – Not for the Unqualified Operator

There's been disquiet for some years that private balloonists are illegally maintaining their own aircraft. But there seems to be a new appreciation of the potential danger in that.

**D**avid Norris, the chief pilot of Waikato Hot Air Balloon Club, has a mission.

He's concerned about the impact of private balloonists maintaining their own craft, without being authorized or approved, or without qualified supervision, and in breach of the Civil Aviation Rules.

"It goes back a long way," David says. "Everyone seems to have a different interpretation about what you can and cannot do to maintain a balloon."

So concerned was David, that he recently organised an information night for Waikato balloonists, with CAA Aviation Safety Adviser, John Keyzer, and LAME Paul Waterhouse, filling in the gaps in the balloonists' understanding.

"Because they've been doing their own maintenance, or at

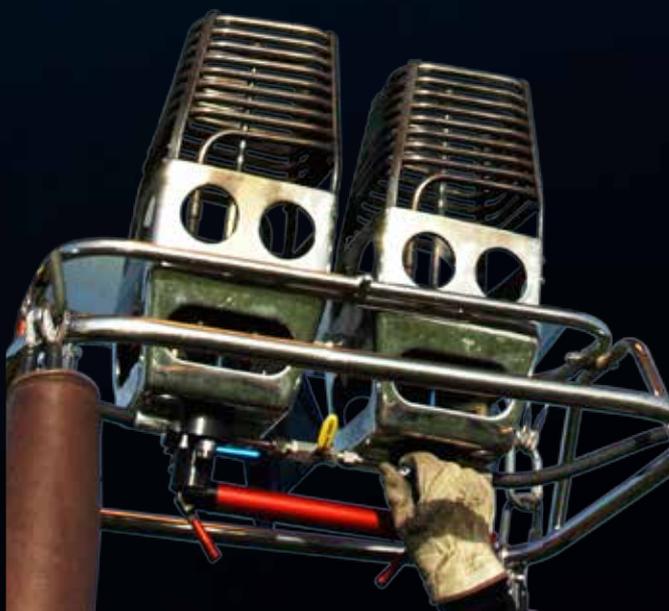
least some part of it, for the past 20 years, they think they can just keep on doing it," says John.

"They either don't understand how the rules work, or the restrictions the rules impose, or they don't care.

"But the rules are quite specific about what operator responsibilities are, what 'maintenance' is, who can carry it out, what they can do, and what conditions need to be met to hold an authorization."

CAA's Manager of Special Flight Operations and Recreational Aviation, Rex Kenny, says those concerns are legitimate.

"A few years ago, it emerged that operators were buying replacement regulator valves – from general engineering suppliers – that were actually designed for forklifts.



Multi-grip or poly grip pliers shouldn't be used anywhere on any aircraft. They can damage the fitting too easily.



“So if the fuel supply developed a leak, the forklift pressure regulator would shut off the fuel supply – potentially deadly in a balloon. They just didn’t realise that the same part numbers did not mean the same parts.

“That’s the essence of our concerns. Balloon owners need to know what they can and cannot do, according to the rules.

Wellington LAME and vice-president of the Ballooning Aviation Association, Scott Cursons, agrees, saying what might seem a simple task to the operator may in fact lead to further complications, and not just on the physical component.

“If maintenance is carried out on an aircraft by an unqualified person, then that maintenance can invalidate the operator’s insurance.”

Scott also says operators, coming into a paddock during a fast landing, do not need to be distracted by back-of-the-mind worries about, for instance, the reliability of a dodgy old fuel hose.

“Only equipment supplied by the manufacturer will give them complete confidence, and then they can get on with just flying.

“Really, if there’s any doubt, they should not have taken off in the first place.”

David Norris says there’s often confusion because a manufacturer’s maintenance manual may detail what an operator can do.

“A manufacturer allowing something doesn’t trump laws that prohibit an activity, or impose restrictions on it. In New Zealand, Civil Aviation Rules sit on top of the manual.”

In any case, says Scott Cursons, what pilots can do has been reduced, due to recent revisions to flight and maintenance manuals.

“I’ve just reviewed the flight and maintenance manuals of five balloon manufacturers, and really, the most pilots can do now is a pre-flight inspection, and basic servicing of the balloon – refuelling, basic cleaning – that sort of thing. Anything more has to involve a LAME with a ‘Lighter than Air’ rating.”

David says some Waikato club members were blown away by what they learned at the information night.

“One or two said it was a real eye-opener.”

Rex Kenny wants to remind GA (General Aviation) participants they, too, cannot maintain their aircraft outside the rules.

## Relevant Rules for Balloon Maintenance

91.603 – What is required in general maintenance

43.51 – Who can perform maintenance, what they can do, and the conditions they need to meet

43.53 – Criteria that needs to be met

43.69 – Keeping maintenance records

43.105 – RTS after maintenance

“Like private owners with a C-172 on the farm – they won’t get an engineer in if they’ve got a failed spark plug. They’ll just go and pull it out. How do they know that the problem isn’t actually something in the magneto?

“We don’t mind them doing it, but only as long as they’ve met the qualification requirement for pilot maintenance.”

Scott Cursons, understandably flying the flag for his profession, says operators should use LAMEs to maintain their balloons.

“Engineers accept the responsibility, and its corresponding liability, of correctly maintaining an aircraft. They have a particular mindset based on compliance with the rules, mitigation of risk, and of doing things in a procedural way.

“Operators need to realise that when something is worked on, serviced, maintained, fixed, modified, and inspected, it’s been done in a way only really understood by a LAME.”

Balloon owners wanting to contact a Lighter than Air LAME can go to the Balloon Aviation Association web site, [www.baan.co.nz](http://www.baan.co.nz).

Rex says the CAA would “absolutely” encourage balloonists to train as LAMEs.

“The AME licence requires just one exam, two law exams, and then the rating.

“And we generally say that if they do the Kavanagh Balloon course in Australia, we would accept that instead of the rating exam.

“So it’s not that difficult, and compared with the GA rating, it’s only a fraction of the cost.” ■

# Assertiveness in the



Being assertive is not easy. It's often easier to be aggressive or passive. So how does someone without natural assertiveness, learn the skill? And why is it important for aviation safety?

Organisation development specialist, Julie Rowlands, says if people want to develop assertiveness, they do have to screw up a bit of pluck.

"It's the courage to do what you know is right, in the face of being challenged about it. Or, when someone is testing you, and you don't like their style, and you don't like the impact they're having on you, it's having the confidence to do something constructive about that.

"It's not about being fearless in a confrontational situation. It's about managing your anxiety and remaining calm and quietly determined, despite the situation."

Julie says men, in particular, confuse assertiveness and aggressiveness. Being the loudest voice in the room, controlling the group, staring down people who disagree with you is not being assertive, it's being aggressive. And while organisational goals may still be reached by someone 'monsterring' their staff in such ways, morale will inevitably be low, output poor, and staff churn high.

Assertiveness, on the other hand, is built on respect – for one's own worth and for the worth of other staff.



Julie Rowlands



# Aviation Workplace

Photo: istockphoto.com/choja

“People wanting to develop assertiveness skills have to be prepared to initiate ‘the courageous conversation’,” Julie says. “Even if it doesn’t go perfectly, learning from each opportunity to attempt assertiveness will build the skill. Unless you actually start practising, it will always be a theoretical exercise.”

So what is ‘being assertive’?

“What underpins assertiveness is the acceptance that everyone in an employment situation has rights,” says Julie Rowlands.

“A manager has the right to expect a certain level of behaviour

and/or performance from those reporting to them. And an employee has the right to be able to offer suggestions if something is concerning them, without fear of ridicule or retribution – a ‘just culture’.

“Assertive people – managers and employees – recognise those rights and respect them, even while they might occupy different viewpoints.”

Julie Rowlands says in some workplace environments, managers do not welcome suggestions which they automatically regard as criticism, and if from less experienced staff, invalid.

## One go is all it takes – Richard’s story

*You could say I was a relatively passive person. I was pretty happy to go along with what everyone else wanted.*

*I was a commercial pilot with about 1500 hours, when the company I flew for was sold to a guy with a brand-new CPL. This guy decided that when there were no passengers, to save money, we would fly single-engine (carburetted) IFR, at night, over a known icing area.*

*I was really troubled by the prospect of making such high-risk flights. I tried to point out to this new guy the lunacy of what he was proposing. I told him of another pilot who’d been flying single engine on a similar route and who’d*

*had an extremely close call with carb icing.*

*But he wouldn’t budge. So I told him I wasn’t going to put my neck on the line and he would need to find another pilot.*

*Maybe if I hadn’t felt like my life might be in danger, I wouldn’t have been so assertive. But it marked the first time I hadn’t gone along with what the boss wanted. Made me realise it is worth standing up for what you believe is right.*

*As it happened, I got another job quite quickly flying IFR, and instructing.*

*I’ve had to be assertive on many occasions since then, but the confidence to be so, began with that first instance.*

Continued over >>

She advises employees in that environment to prepare themselves for defensiveness and attack.

“Anticipate it, and recognise that it’s normal, particularly if you have criticised someone else’s actions and behaviour. Then prepare to calmly reassert yourself again. And again. Sometimes it can take up to five ‘assertions’ to get your point of view seriously considered.”

Which works fine for the employee in an environment where five ‘assertions’ would be tolerated without the threat of job loss.

But as Julie observes, the aviation industry is very hierarchical. “At times it will be more difficult for the young engineer or pilot to challenge what they believe is unsafe or inappropriate.

“It’s easy to say to them, ‘You just have to say something because safety is at risk’, but we’re not the person who has to live with the consequences of that action. It’s something they, themselves, have to decide to do.

“If they do decide to challenge it, however, they have to do it assertively, which means raising the issue in a way that’s often

focused on a solution, rather than the problem. So instead of saying, ‘you shouldn’t be doing this, it’s wrong’ the words need to be something like ‘I’m genuinely concerned about this because of these reasons, but if you were willing to look at doing it this way, I think it might get a better outcome and a safer outcome.’

“In the face of a reasonably difficult CEO, who is short on time, something like that needs preparation so you can approach it in a composed way.”

But what about the situation where there is no time for such preparation – where someone is being asked to do something immediately, like sign off on a task they’ve had nothing to do with, and are possibly unhappy about?

“In that situation, it’s still being assertive,” says Julie, “to hit the ‘pause’ button, keep breathing calmly and ask for more information, and more time to consider the request.”

The Bulls-based flying doctor of *Healthy Bastards* fame, Dave Baldwin, says that situation is similar to that which many house surgeons used to face.

“You signed off on stuff when someone told you to, because you were a wee bit scared. Then something would go wrong, but you’d signed off on it, so you were responsible. That’s a maturing experience which had you more assertive in the future!

“After that, every time someone tried to get you to sign off on something you were unhappy with, you’d say ‘I’d rather go through this process and see what’s happening’ and they might respond with something like ‘No, hurry up, you have to sign this, we’re short of time here’ and the newly-assertive you would reply with ‘Well then, why don’t you sign it?’

“You learned from the school of hard knocks.”

Julie Rowlands says a trawl around the internet will uncover the many assertiveness courses, ‘courageous conversations’ workshops, and conflict resolution coaching now available.

## The Assertiveness – Safety Connection

Anyone who’s done a Safety Management Systems (SMS) course can tell you SMS is underpinned by the buying-in to a safety culture by all staff.



Dave Baldwin

## Assertiveness and Respect – Lynda’s story

*I was a first officer working with a European airline, and rostered to fly with a captain I’d not flown with before. When he greeted me with “oh no, it’s a bloody sheila” I knew then the duty was not going to be pleasant.*

*He was new to the airline and had no experience on the route we were flying. I was, however, very familiar with it.*

*I put up with this guy’s foul-mouthed, racist and sexist comments for the two-hour flight to the south of France. As we neared our destination, he became progressively high and fast on approach. The airline has standard challenge phraseology that first officers should use to bring any deviations to the captain’s attention. Despite my using these phrases, he continued to ignore me.*

*Nearing the ‘missed approach’ point, I escalated my terminology to the highest level to get him to act, with no response. It was now clear that he was way behind the aircraft, had lost situational awareness, and the aircraft was in great danger.*

*Finally abandoning all standard phrases, I ordered, “Go round now! We are going to die on those mountains ahead!”*

*That ‘reality statement’ finally jolted him out of his tunnel vision.*

*He was so surprised at being upbraided by this little ‘sheila’, he immediately followed all my directions until we landed safely.*

*He knew I’d saved the flight and I had his respect.*

## When Good Managers Go... Even Better – Joe's story

*I was a certification manager for an aircraft operator with a number of engineers reporting to me.*

*One of them had to review the applicability of Federal Aviation Authority Airworthiness Directives (ADs) to our fleet. But I became aware he wasn't thorough in that work, and was mistakenly assuming the ADs weren't applicable.*

*When I had to question him as to why he hadn't looked more deeply into a particular AD, he argued the toss, trying to convince me it was irrelevant.*

*I had a choice. I could 'come the heavy' with him and get the result I wanted, or I could keep calm but firm, and get the result I wanted.*

*Given the seriousness of the situation I gave him a 'lawful employment instruction'\* to complete his research thoroughly, document his findings and get back to me within an hour.*

*He returned in that time, apologising and admitting the AD was, indeed, applicable to our aircraft. Subsequently, he always researched ADs thoroughly, documenting his findings.*

*My assertiveness changed the engineer's behaviour in a positive way. I could have bullied him into compliance, but I would have ended up with a resentful employee.*

\*A 'lawful employment instruction' is one that an employer can give to an employee and the employee must legally abide by the instruction.

An SMS is at its most robust when all staff feel comfortable reporting occurrences and hazards, and even their own mistakes.

Neil Richardson, from the British aviation safety consultants, Baines Simmons, and recently in New Zealand to provide training on SMS, mulls a possible association between an organisation that gives genuine consideration to its employees' suggestions, the resulting quality of its SMS, and, quite possibly, the company's bottom line.

"What no senior management team needs is a nasty surprise like an aviation accident. You could call SMS, the 'Surprise Management System'. They don't need anything that upsets their broader business or strategic goals because an event of significance will punch a hole in their bottom line."

But while many organisations have a stated culture of allowing all staff to have their say on safety, Neil suggests that the reality is different.

"The regulator expects the organisation to have a safety culture and will offer a viewpoint, but when the door closes behind them as they leave, ongoing behaviour can be very different.

"It has to come from the leadership. If the senior managers don't understand or buy into it themselves, it becomes difficult to make it stick.

"Possibly the best motivator of senior management is to convince them that it is good business to allow even junior staff to voice their concerns about safety.

"While most organisations will not experience a significant accident, the precursors to such will be more prevalent. Operational errors, inadequate defences, and the like, will likely be causing financial stress as well as eroding safety margins. Whatever profit is being made, allowing all staff members to report their worries will at least help to preserve that profit."

Dave Baldwin – who estimates he sees about 20 per cent of New Zealand aviation operations as he tours the country carrying out medicals – says the type of manager who considers themselves "the general at the top", the guy – normally – with ego issues and what Dave describes as a "personality-disordered fly off-the-handle temperament", is disappearing.

"Thank goodness!" he exclaims. "That culture does seem to



Neil Richardson

have faded during my 25 years in aviation medicine. The demigods are disappearing. There is an emphasis now on teamwork, and questioning of the higher-ups is not seen as a bad thing."

Despite that, there is a small percentage of companies he deals with who he would class as having a bullying culture.

"When someone's genuine concerns are ignored, it's a form of bullying. For instance, forcing someone to do something they are clearly unhappy doing. It can be real tough stuff.

"The irony is that for a financially-stressed company, where everyone is being slapped around to save money, forcing your staff into doing things they are reluctant to do, only makes things worse. Their morale suffers, their physical health suffers, and their work performance suffers.

Neil Richardson says there is, however, a slow turning of the tide.

"Yes, it is slowly coming. Insurance companies, for instance, are switching on to the benefits of their client having a genuine SMS and just culture, and how it is an advantage not just to the organisation, but to them as the underwriter.

"People are beginning to look at the return on investment in these things." ■

# New Aerodrome Rules – A Safer Approach

The rules for aerodromes have changed. The CAA now has increased ability to oversee safety at non-certificated aerodromes – closing a gap in aviation safety.

**T**he CAA has been moving towards a risk-based approach to regulation.

“Our traditional approach to rule making has been quite prescriptive,” says Lisa Sheppard, CAA’s Principal Policy Advisor. “While prescription sometimes is needed, it doesn’t always allow for differing circumstances.

“This is part of a wider family of rules following the same approach, such as Safety Management Systems and Remotely Piloted Aircraft Systems.”

## What Has Changed

Under the Part 139 rule changes, the Director can assess and address risk on a case-by-case basis at non-certificated aerodromes.

“Until now, the CAA had limited ability to act on safety issues at non-certificated aerodromes. Now the rules are clear for operators.

“If there’s a significant change in activity at a non-certificated aerodrome, or if a serious safety concern is raised, the Director can request an aeronautical study from the aerodrome operator. From there, the rules set out a process to follow to address the risks identified in the study.”

However, Lisa says the amendments were specifically designed to minimise burden on the aerodrome operator.

“This process allows the CAA and operators to identify safety issues early, and work together to identify ways to resolve them. That way we can all deal with safety issues on an evidence-based, case-by-case basis.”

Nick Jackson in the CAA Aeronautical Services Unit is leading the implementation of this new approach.

“We’ll be getting in touch with non-certificated aerodrome

operators to start working with them to make sure they have safety risks under control. A good indicator that an aerodrome is on top of their safety risks is whether or not they already have good safety management systems in place,” says Nick.

## Qualifying Operator Certificate

If the risks can’t be resolved through the consultative process, the Director can now require any aerodrome operator to obtain a ‘qualifying aerodrome operator certificate’.

“This new certificate is also designed to be based on identified risk. The Director can select conditions that specifically address the safety concerns identified in the aeronautical study,” says Lisa.

## Data Reporting

With the exception of agricultural strips, all aerodrome operators now also need to report aircraft movements.

“This data will help the CAA understand the operational complexities at each aerodrome and support future trend analysis,” says Nick.

There’s a form for aerodrome operators to report their statistics. See the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), “Forms”.

## Certificated Aerodromes

For certificated aerodromes, the rule changes will further align our standards with ICAO.

## Further Information

Check out the rules and Advisory Circulars on the CAA web site. You can also email any questions to [aerodromes@caa.govt.nz](mailto:aerodromes@caa.govt.nz). ■

## Aerodromes in New Zealand

Aerodromes serving operations with more than 30 passengers on regular air transport operations are required to be certificated.

This includes all the international airports and major regional airports such as Nelson and Tauranga. There are 27 certificated aerodromes.

There are hundreds of non-certificated aerodromes, about 10 of these serve 9 to 30 seat aircraft, such as Koromiko, North Shore, and Milford Sound.

Then there are more than 50 serving tourist and smaller air transport operations, such as Wanaka and Kaikoura.

Hundreds more serve agricultural, recreational, and training activities.

# I Learned About Flying from That

A high-hours helicopter pilot learns that assumption is the mother of all foul-ups.

**O**n the day, I flew according to the conditions I expected, rather than those that really existed. I had 7500 hours flying, 2600 on the helicopter (MCTOW 4875 kgs) I was flying that day.

I was an instructor in flying that helicopter, and an aerobatic display pilot.

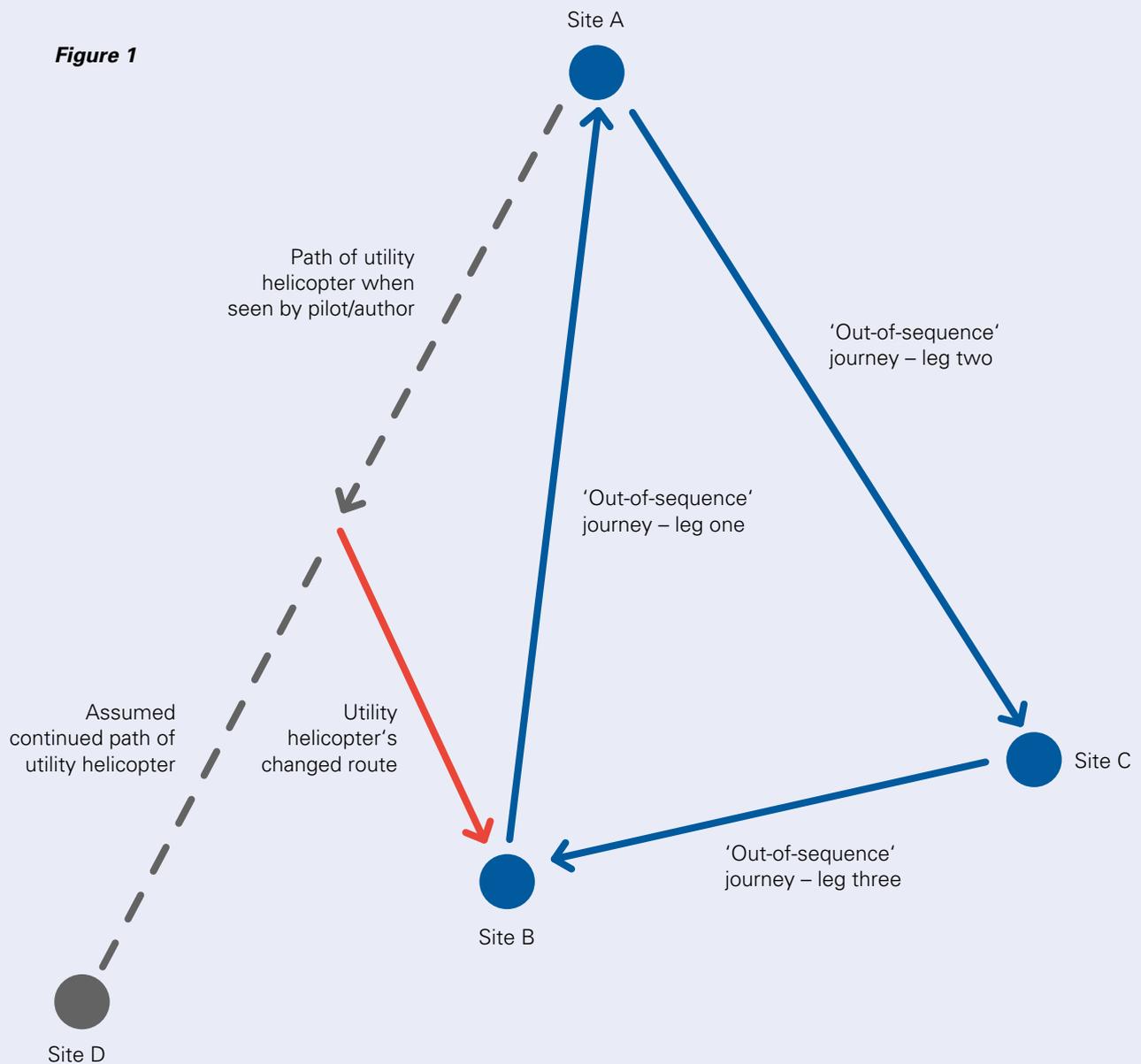
I tell you this so you know that what happened that day was no

rookie mistake. It came from familiarity and complacency.

I was operating amidst a high tempo of operations, moving people and cargo between three sites, (10 to 15 kilometres apart, see figure 1) almost on a 'bus timetable' type schedule.

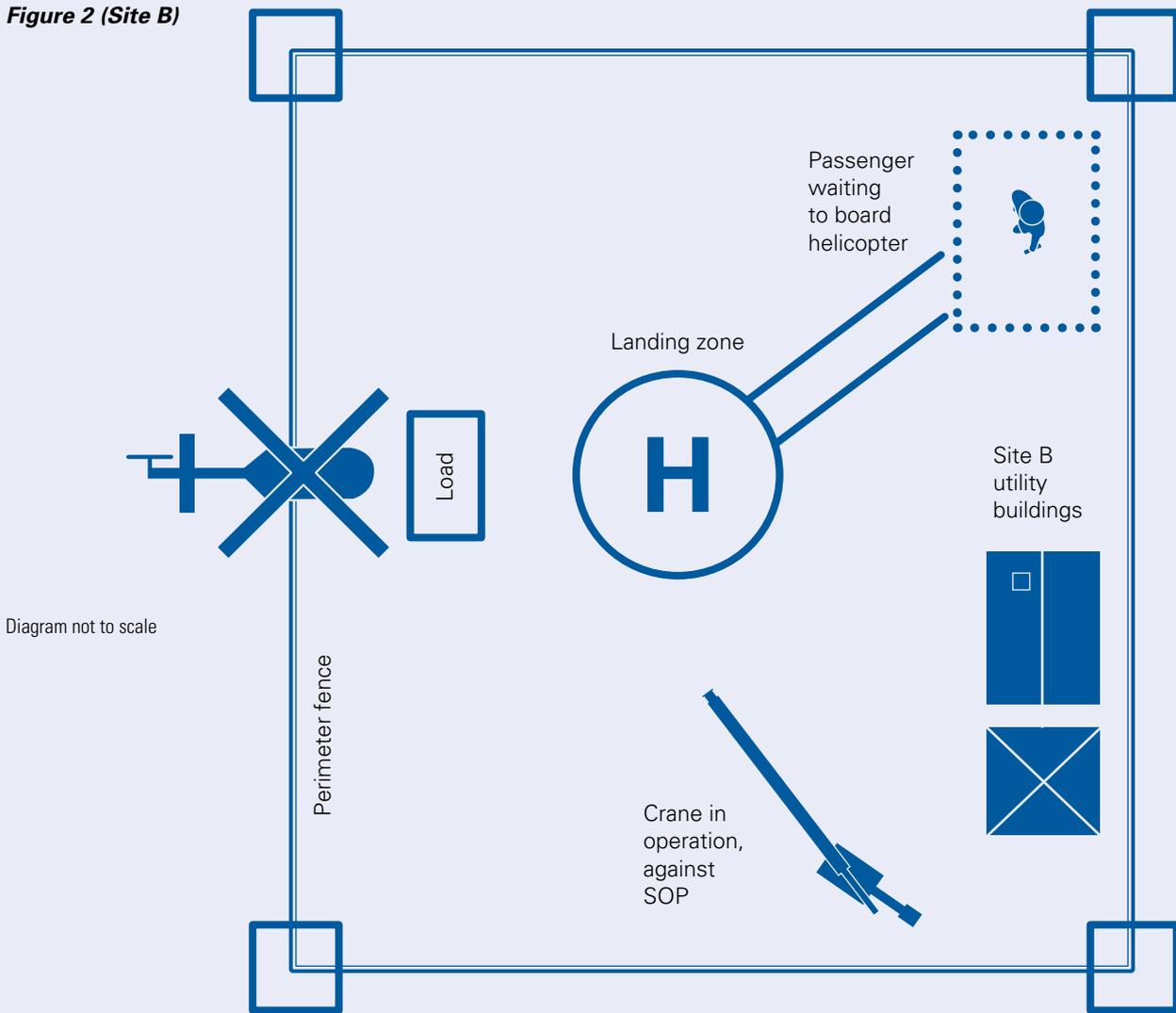
I was comfortable and familiar with the aircraft, with the programme, with the area, flying conditions, and the people I was flying with.

**Figure 1**



Continued over >>

Figure 2 (Site B)



I'd just lifted off from site B and was heading for site A, when I received an 'out-of-sequence' instruction to continue flying north to site A to pick up nine passengers, but then fly them to site B via C.

Flying from site B to site A, I noticed out the left hand window, a utility helicopter heading south, carrying an underslung load. According to the 'bus timetable' he would have been heading to site D.

I picked up the passengers from A, routed to C, dropped one person off, and picked up another.

I then headed back to where I'd lifted off from, just minutes before, site B.

The organisation I worked for had a policy of a pilot reconnoitre at 1500 ft over the landing zone, to check its suitability to land.

But I was under a time constraint, because this latest journey was squeezed into the timetable, and I'd been at site B only six to eight minutes before.

I'd also been into that locale maybe 1500 times, in total, and several times already that day.

So we went straight in across the top of the fence (see figure 2). My attention, and that of my co-pilot, was briefly drawn away by the crane in operation to our right, its jib

extended and swinging, breaching standard operating procedure (SOP) that it should not operate when a helicopter was landing.

As we established in the hover, the tail rotor struck a previously unseen object...

We later discovered that the helicopter I'd seen earlier heading south did not go to site D, but had 'mis-navigated', turning left behind me, and dropping its consignment of goods off in B.

The SOP was that an underslung load was to be dropped directly on top of the landing site, effectively closing it to helicopters.

That was supposed to encourage the ground crew to unpack the load as quickly as possible and clear the helicopter landing site.

But the utility helicopter did not do that.

It dropped the 12 ft high load between the fence and the landing site, just inside the fence, and in its shadow.

And nobody moved it.

Because of the low level at which I came in over the fence, I didn't see the cargo, nor did anyone else in my helicopter. We descended right on top of it.

The tail rotor hit it, and was stripped of three of its four blades. The gear box was smashed, and I lost tail rotor effectiveness.

The aircraft began to spin very fast (we were at a very high power setting), between five to ten feet off the ground.

The nose came up about 45 degrees and about 45 degrees left wing low. The centrifugal G-forces had thrown me onto the centre console and the other pilot was G-loaded against the left hand door – he couldn't do anything.

So with my left hand I reached into the roof – because that is where the engine condition levers are – and closed down both engines, and simultaneously with the palm of my right hand pushed the cyclic forward and right, which levelled the aircraft.

We spun round three full revolutions before landing very heavily on the skids, splaying them to a point where the helicopter's cargo hook imbedded in the concrete.

Several of the crew suffered minor back injuries. I carry the consequences of mine, today. But everyone managed to walk away.

We left behind us \$14 million worth of totalled machine.

I knew we had lost the tail rotor but couldn't understand why, as we had been well clear of the fence.

But after clambering out of the still upright aircraft I could see the cargo, and it immediately dawned on me what had happened.

I was in shock, firstly due to the violent nature of the incident, and more so at the thought that I had missed such a fundamental obstruction to my flight path. I was very experienced, I was familiar with the location, and with the type of operation.

My shock was shared by the whole crew.

The formal investigation exonerated me due to the 'extenuating circumstances' surrounding the crash. Those circumstances included the utility helicopter dumping its cargo at site B instead of site D, and not dropping the load squarely on the zone.

However, I cannot say I was snow white in this. My familiarity with the locale had made me blasé about the operation, and careless.

Had I carried out a reconnoitre, as required, I would have noticed the underslung load.

Had I used my radio and called the base to see if there was any difference, they would have told me about the utility helicopter just dropping the load off.

I made a number of assumptions that everybody would be following the SOPs.

My first assumption was that the utility helicopter was going to the correct place.

My second was that I didn't need to check the landing zone because I had just been in there.

I assumed there would be no change to the landing site, and I assumed it would be clear.

And I was wrong on all four counts.

Forty-eight hours later, one of the senior fliers in my organisation flew with me to do a post-crash debrief to make sure I was okay. He wanted to fly the same profile that I'd flown two days before, so I described it to him, and he flew it.

As we came over the fence at site B, and into the hover, he'd just started to lower the lever to land, and I said, "stop stop stop, hold the hover" which he did, and I said "just turn 180 degrees" and we turned, and the stack of goods was still sitting there...

Although it's hardly a new lesson, I've learned first-hand a very embarrassing one, "always check, *never* assume".

We all walked away from this, but it could have been a very different story. ■

# Precautionary Landings

If the one thing you could do to save your life and that of your passengers was to make a precautionary landing, why wouldn't you do it? You might be able to save the aircraft too.

Situations that call for a precautionary landing can arise due to many reasons: the pilot is lost; the aircraft is running out of fuel; there's not enough daylight left; the weather is deteriorating rapidly, the aircraft develops mechanical issues.

Grant Twaddle, CAA Team Leader Flight Operations Helicopter, and a 10,000-hour pilot, says such situations can happen to anyone, any time.

"Essentially, you should always be prepared and on the lookout. You must also be conscious of the wind. If you have those two sussed, 90 per cent of your planning is done. If you haven't done that planning, then time is your enemy."

Marc Brogan, A-Cat Instructor and CAA Aviation Examiner Flight Training and Flight Operations, says to expect the unexpected.

"Exercise due caution on every flight. Distractions and complacency can happen. Make sure you always think of an escape route, your options, and 'what-if' scenarios."

## The Biggest Challenge

Despite best intentions, things may not always go to plan.

Carlton Campbell, CAA Aviation Safety Adviser and experienced

instructor, says there could be many reasons for making a precautionary landing.

"But overall, it is likely to be the result of poor decision-making and inefficient flight management sometime earlier in the process. As the pilot, you have to face the fact that you've been pushed into that corner due to an earlier set of less-than-ideal decisions."

Marc says, "Deciding to make a precautionary landing is, to a degree, about giving up your pride. But often, there are other factors influencing it, such as passengers who may not be best pleased by a delay, peer pressure, or time constraints on the aircraft's return. People tend to change their personal limits, and stretch minima, when faced with such situations."

Carlton advises to just accept the mistake and don't make another one by pushing on.

"Making a precautionary landing is less stressful and easier than having to make an emergency landing (or worse).

"A controlled flight to landing gives you so many more options. Therefore, the longer you leave it, the more options you lose. And as soon as it becomes an uncontrolled flight, there's the increased potential for the landing to end up being a fatal – that is what statistics consistently tell us."

Always be aware of nearby aerodromes or landing strips, as well as keeping a lookout for potential places to land, should you need them.

Grant too recommends that, "If there is any doubt, then you should perform a precautionary landing – no one takes a dim view of it. The accident files are full of cases that could have been avoided had the pilots opted for a precautionary landing."

## Valuable Lesson

Experienced Massey School of Aviation flight instructor, Alistair Edwards, vividly recalls a precautionary landing he made more than 25 years ago.

"I was flying a PA28-140 from Christchurch to Wellington via Arthur's Pass. The general forecast wasn't too bad and indicated the flight was possible. However, north of Karamea, the weather started worsening. I made the decision to divert to Motueka as conditions would normally be more favourable east of the ranges.

"The weather was rapidly closing in and I felt I had no choice but to land as soon as possible. I couldn't get back to Karamea or Westport, and couldn't continue to Motueka. I wasn't able to get anyone on the radio either, as I was flying at about 500 ft to get below the cloud base.

"So I ended up making a successful precautionary landing in the Collingwood area. It was a on a flattish paddock. Shortly after landing, it began raining heavily and I'm thankful for the precautionary landing training I'd had.

"In hindsight, I should have turned back earlier. But as they say, the least experienced continue on into conditions the more experienced turn back from, to join the most experienced who never left the ground in the first place.

"It taught me a valuable lesson, and the secret to making a successful precautionary landing: once the decision has been made, stay calm, apply your training, and have faith in your ability to get onto the ground safely."

## 'Staying Alive'

Grant says helicopter pilots would not hesitate to make a precautionary landing. "These machines can land almost anywhere. The only hesitation would be about ditching in water."

Phil Janssen, a 10,000-hour helicopter pilot, was faced with such a situation recently.

"I was making a ferry flight to deliver an R44 to Rangiora. When I left Levin, it was calm and the weather forecast was good. While passing Paekakariki, I encountered turbulence. The airspeed was reducing and there was a severe downdraught, so I figured that turning around might mean that I would end up in the water – it is really important to know your aircraft limitations," says Phil, who has had more than 2000 hours on type.

"I thought then, 'maybe there's another way to do this, but I don't know what that is'. And so I made a precautionary landing on a deserted beach. At the end of the day, nothing's more important than staying alive."

## Just Do It

Mitch Jones, CAA Flight Operations Inspector, Helicopter, who holds ATPL H and ATPL A, and is also an A-Cat instructor, recalls some of the many precautionary landings he has made.

"To go by a very old aviation mantra, it's better to be down here wishing you were up there, rather than to be up there, and wishing you were down here. So, just do it."

## More Information

*Flight Instructor Guide*, available on the CAA web site, [www.caa.govt.nz/FIG](http://www.caa.govt.nz/FIG). ■

*"Deciding to make a precautionary landing is, to a degree, about giving up your pride."*

# Don't Throw Caution to the Windsock

When flying into a non-certificated aerodrome, the windsock doesn't have all the answers.

**Y**ou're on approach and the windsock is blowing straight out. Last minute questions bubble to the surface – is it a 25-knot sock? The sock's also positioned in the middle of the field, so will the wind at the threshold match the sock's indication?

Wind shift plays a role in almost 60 per cent of all weather-related accidents with more than 60 per cent of those accidents occurring during landing.

Recommended windsock standards for non-certificated aerodromes are outlined in Advisory Circular AC139-7 *Aerodrome Standards and Requirements – Aeroplanes at or below 5700 kg MCTOW – Non AirTransport Operations*.

## Aerodrome Operators

Thinking of putting up a windsock? It's important to know the strip and to know the area before putting your sock up.

The positioning is absolutely vital to provide the best information, says Mark Houston, CAA Flight Operations Inspector, who has more than 12,000 agricultural flight hours.

"For an airstrip, or other non-certificated aerodrome, the operator needs to take into account local terrain, obstructions to local wind flows, trees, buildings, and possible interference for aircraft on the landing surface. Often this doesn't happen, and the sock is positioned in the easiest, not necessarily the best, spot."

Bryan Jones, CEO and Chief Pilot of Southern Wings agrees.

"Consideration should be given to local weather, and obstructions that may lead to inaccurate wind indications – for example windsocks placed on buildings, or close to trees – can give erroneous indications. Where possible, socks should be placed in an appropriate location, usually to the left of the active threshold.

"If the aerodrome is listed in the AIP, windsock location needs to be accurately depicted on the airfield landing plate to assist with overhead joining," says Bryan.

Jeremy Anderson, Nelson Aviation College (NAC) Chief Flying Instructor, says that when taking obstructions into account, the opposite also applies.

"If there are obstacles that may disturb the wind at the runway (and therefore affect aircraft performance), it's important that the windsock is positioned close enough so that these disturbances are indicated. However, this isn't always possible."

## Not All Windsocks Are Created Equal

Smaller windsocks are common at back-country airstrips because, with the limited length sometimes available, a few knots on the tail can be quite critical. A larger windsock may not give an adequate indication of such light winds. Smaller windsocks are often placed lower to the ground than larger socks to indicate the wind at wing height.

When flying into non-certificated aerodromes, you need to understand the local wind patterns and realise how the wind strength indications from a small windsock differ from larger socks.

However, sometimes that is easier said than done.

"The size of the windsock can be difficult to identify accurately from the overhead," says Bryan.

"Some airfields appear to have home-made windsocks which make wind strength difficult to establish from the sock alone – many of these prove useful only for directional indication.

"Yeah, size is everything," Mark chimes in.

"Certificated airport socks tend to be larger to cater for all aircraft types. With smaller socks, the angle of the sock will only tell you the average wind speed relative to the sock's size. Get to know what the size is prior to using the airstrips."

## Variations in Strength and Direction

"Gusts are indicated by large fluctuations in the sock flying angle and inflation," says Mark.



“When the windsock changes from being saggy, to straight, and back to saggy in short succession, the degree of slack between straight and saggy periods indicates the relative size of the gusts. It’s not possible to assign a specific number to the visible change, but knowing the wind is either gusting ‘just a bit’ or ‘heaps’ is important.

“But be aware that light and variable conditions, where thermal heating is present, may also cause the windsock to ‘puff up’ intermittently. When you’re approaching to land, don’t base your assessment on a single glance.

“If in doubt, stay on the ground, or continue circling until satisfied with the information you can see,” says Mark.

Make use of multiple windsocks where available, Bryan advises.

“When approaching an airfield, the effects of valley or gully orientation on wind velocity should be considered in your assessment of expected conditions. At airfields with more than one windsock, the variation between the two or three windsocks can be used to identify gusts and direction change over the landing area,” says Bryan.

“But really, in gusting conditions, the windsock should be one of the later indicators – the pilot should already be aware these conditions exist – the windsock just provides the confirmation. Pilots should be situationally aware of the local conditions and possible threats brought about by varying wind conditions well before arrival at any airfield. The windsock is only one of the tools that assists with decision making.

“Consideration should be given to obstacles and features in the upwind position, as they may indicate possible threats, windshear, or directional change – especially when affected by a crosswind. Be aware of the standard indicators including: smoke, dust, water, trees, drift, along with current weather forecasts.

“Use your knowledge of meteorology to assess the likely conditions you are about to encounter, and keep continually updating your assessment. If you haven’t been to a

particular airfield previously, then talking to the locals is encouraged,” advises Bryan.

Mark adds, “Always watch to see if the sock is swinging vigorously on its mounting pole.

“That indicates possible changes to wind velocity and direction. Some aerodromes have windshear hazards listed on their landing charts.”

Shaun Ferris, Chief Pilot at Air Fiordland, says windshear should be anticipated in any landing.

“In places like Ryan’s Creek, or Milford Sound, a variable wind direction windsock is common, so choose the runway with the safest overshoot, rather than the runway that the wind is favouring.

“Situational awareness and peripheral vision help when identifying windshear. If the ground speed feels faster than normal, start thinking about going around. You should feel and see windshear before your instruments show signs of it.

“Additionally, where an airfield is near two or more valleys, the wind can alternate between them causing large direction shifts.

“Steep approaches due to terrain often place an aircraft in a positive lift zone, which can result in high sink rates on short finals,” says Shaun.

## Maintenance Required

Windsocks don’t last forever, says NAC’s Jeremy Anderson.

“Over time, the colour will fade and the material the windsock is made of will often fail, causing them to tear.”

Most socks are orange, although there are exceptions. When socks become faded, they become harder to see from overhead.

Bryan says, “Poor maintenance may lead to the sock being worn out, and therefore not indicating accurately.

“The swivel top may also seize, and therefore, won’t turn into wind correctly.” ■

# Director's Awards 2015

An outstanding instructor, one of the country's oldest flight training schools, and an enthusiast for all things aviation are recognised for their exceptional commitment to safe flying.

It would be fair to say that A-Cat instructor, flight examiner, and CAA Aviation Safety Adviser, Carlton Campbell, was ambushed by his win as 2015 Flight Instructor by the CAA.



Carlton Campbell

He told the gala dinner of the Aviation New Zealand Aviation Leadership Summit in Queenstown in July that he had absolutely no idea he was to receive the award.

"But after a couple of references from Graeme (Harris, the Director of Civil Aviation), I began to think 'wait, this is beginning to sound familiar!'"

The Director told the 430 dinner guests that while Carlton was an outstanding and highly respected instructor, particularly in the niche field of mountain flying, he (Graeme) had to think "long and hard" about making such an award to a CAA staffer.

But eventually he'd come to the conclusion that since the nomination had come from industry, if "someone stands out as the best in New Zealand aviation, they deserve to be recognised for their contribution – irrespective of who they work for."

Carlton says he was lucky enough to have had three terrific mentors – all former chief flying instructors with Wakatipu Aero Club – who'd passed on to him some valuable lessons.

"Never turn down an opportunity to learn more about flying, set a high bar in skill and safety, and understand in concrete terms, what good flying is."

The former school teacher says there is nothing more satisfying than providing students with experiences that enhance, reinforce or develop their learning.

"Flying is so unforgiving of poor decisions, and a lack of knowledge. You have to *teach* students how to fly well, not just *tell* them about it."

As a regular presenter of the CAA's annual AvKiwi Safety Seminars, Carlton says he enjoys helping pilots keep current.

"The seminars give you a good sense of purpose and you get great feedback."

Carlton has also taught at the Walsh Memorial Scout Flying School in Matamata for many years.

"Helping give the students the opportunity to go solo in just two weeks, seeing how they mature in such a short time, it really does remind you of what teaching flying is all about."

We have no desire to be the biggest aviation training school in the country, but we do want to be the best."



Bryan Jones

And that aspiration of Bryan Jones, chief executive officer of Southern Wings has been made real in 2015, with the company taking out the Director's Award for an Organisation.

Graeme Harris said that Invercargill-based Southern Wings – established in 1998 – led the flight training industry in teaching excellence, while "never forgetting that a safe, challenging, and rewarding experience is the most important outcome for all".

He said the company's experienced and long-standing instructors had risen to be leaders in the development of the current crop of pilots, and that Bryan Jones set "the highest standards in flight safety and training performance".

Graeme said the company maintained a “strong and uncompromising approach to safety” even while operating in some of New Zealand’s most challenging weather.

Bryan Jones agrees the weather can be testing for the company.

“We lose a fair amount of potential flying hours to the weather. It’s very changeable. There’s a significant amount of wind compared with other places in the country, and the freezing conditions mean we have to pick and choose when we get the work done.

“But we’re never tempted to say ‘let’s just fly anyway’ because you have limits, and you have to abide by them.”

Bryan says classes at Southern Wings are deliberately small – about 3.5 students to every instructor.

“We’re not here to get them to just pass their flight test, we’re here to turn them into pilots. They get quality training from our instructors who become quite invested in the students and their progress.

“The instructors enjoy making a difference. That’s why they stay with us for so long. We take these 18-year old school leavers and two years later there’s quite a transformation, and not just with their flying abilities.”

Echoing a sentiment from the other winners, Bryan says it’s fantastic to watch former students go out into the world and achieve good things.

“It’s great. An awful lot of them stay in touch. And a good number come back and continue to be involved with Southern Wings. To me, that says a lot about what they think of the organisation and its philosophy.”

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Perhaps the greatest commitment to flying safety is encapsulated by the Director’s Award for an Individual.



Photo: Fairfax/Rhiannon McConnell

In 2015 that person is Peter Vincent, described by Graeme Harris, as working for many years, “with dedication in a challenging sector, always maintaining excellent safety standards.”

Peter made the tough decision, in 2014, to close his 24-year old company, Vincent Aviation, after market conditions made continued trading untenable.

“I said to the CAA and others ‘I give you my word that if we cannot operate safely, then I’ll close the doors’. And that’s what we did.

“I think that’s where some companies come unstuck. Money gets tight, they skimp on things to cut costs, and that’s where an accident or serious incident can happen.

“Obviously, we wanted to keep the company going. Closing it down was not a fait accompli because we were working on some contracts. But events worked against us.

“I do think everyone in the company understood that at no point could we allow safety standards to be compromised so I guess we just had to be mature about that.”

Peter is understandably delighted that that huge and difficult decision has now been acknowledged by his peers.

Graeme Harris told the gala dinner that Peter was “held in high regard by all who have worked with him.

“Several of the many people who nominated him for this award commented ‘I can think of no person more worthy.’”

Graeme said while creating and growing Vincent in New Zealand and Australia, Peter continued to “bring young pilots into commercial aviation, monitor their progress and act as a mentor”.

Peter is a fan of the contribution small airlines can make to the training of pilots heading to the big airlines.

“It’s so important for those young people to have exposure to flying an Aztec or a Caravan or a PC-12. They learn good stick and rudder skills, they learn to make decisions in that ‘grey’ area of flying, they’re not just learning how to fly via a computer.”

Peter estimates as many as a thousand pilots would have passed through the doors of Vincent Aviation.

“I get so much pleasure in seeing where they’ve gone, what they’ve achieved. Those who left were generally following their ambition to fly larger aircraft.

“But a lot have stayed in touch and a frequent comment they make is ‘I didn’t realise at the time how much you did for me. The training and the variety of work and the comradeship at Vincent were great.’” ■



# Upcoming Military Exercise

From 2 to 28 November 2015, there is a significant military exercise taking place. It will be based in Westport, but with traffic throughout the country, some at low level.

**S**o the message is the same for any flight – do your preparation. Check AIP Supplement 85/15, and check NOTAMs for further updates.

Airways will be establishing a temporary control zone, Westport CTR/D to ensure safe air operations in the area for the duration of the exercise. Both fixed-wing and rotary aircraft will be operating day and night.

RPAS operations will also be conducted between Westport and Lake Station during the day, and below 400 feet agl.

Helicopters involved in the exercise include the NH90, known for wake turbulence that can pose a significant hazard to aircraft even hundreds of metres downwind.

Helicopters will be operating at low levels around Westport, Lake Station, Murchison, Okiwi Bay, and Titirangi Bay (Marlborough).

Fixed wing aircraft involved include BE20 Kingair, C130 Hercules, and C17 Globemaster.

Fixed wing aircraft will be based in Whenuapai, Ohakea, and Christchurch. They will fly daily to Westport using both high-level and low-level routes.

If operating in the vicinity of any of these aircraft, general aviation pilots should exercise caution because of the risk of wake turbulence.

This is a good time to review the article "Wake Up to Helicopter Wake" in the January/February 2012 *Vector* and read the *Wake Turbulence* GAP booklet available free by emailing [info@caa.govt.nz](mailto:info@caa.govt.nz).

AIP Supplements can be viewed on the AIP web site, [www.aip.net.nz](http://www.aip.net.nz). NOTAMs will be issued for updates on the activities as required. ■

Photo courtesy of the RNZAF



# New Aeronautical Charts

New Visual Planning Charts and Visual Navigation Charts are effective 12 November 2015. It's essential that you use the new charts from this date to be aware of various airspace changes. Some of the most significant changes affect VFR transit lanes in the Dunedin control zone.

**F**rom Thursday, 12 November 2015, the existing VFR transit lanes in the Dunedin control zone, NZT956 (Dunedin City) and NZT957 (Taieri), will be disestablished and replaced with three new VFR transit lanes: NZT955 (Dunedin City), NZ958 (Taieri), and NZT959 (Mt Hyde).

Dunedin City covers airspace up to 1500 ft amsl, Taieri up to 1100 ft amsl, and Mt Hyde up to 2500 ft amsl.

These VFR transit lanes will be published in an AIP Supplement 84/15, effective 15 October 2015, with the Visual Navigation Charts effective from 12 November 2015.

"These changes were made at the request of airspace users," says Paula Moore, CAA Aeronautical Services Officer.

"The users wanted to increase the upper limit of the VFR transit lanes to the north-western portion of the control zone to improve the terrain clearance."

Hadley Cave, Chief Controller at Dunedin Tower, says, "It's very important that pilots are aware of where the lateral boundaries of the transit lanes are, so they don't stray into controlled airspace."

"While pilots should be prepared for the new VFR transit lanes, if they have any doubt of where they are, they should call Dunedin Tower."

"Even if it's to say they're transiting to Taieri and won't be flying in controlled space."

"We won't bite", says Hadley, "And at least we know they're there – rather than having someone stray into the final approach area."

CAA's Paula Moore also draws attention to changes in Milford and Fiordland airspace, "Users of Milford airspace need to be aware of the changes effective 12 November, including the CFZ frequency boundaries."

You can order the charts online at [www.aipshop.co.nz](http://www.aipshop.co.nz), or by phoning 0800 500 045 between 10:00 and 14:30 Monday to Friday.

As always, don't forget to check the AIP Supplements and NOTAMs. ■



Continuing the analogy, the CAA may not immediately act on each and every report, but it does 'bank' them in the database, and that's where they start to earn interest.

"To be effective, the CAA needs to use its resources to deal with widespread or common problems, and not chase after isolated events," says Jack Stanton, CAA Intelligence, Risk and Safety Analysis Manager.

"Trends all start somewhere as an isolated occurrence. The CAA's Intelligence Safety and Risk Analysis unit does its work by first adding the individual reports into the combined database – about 7000 events a year. Once in the database, techniques are used to identify events and trends. Once a trend starts to emerge, we examine the raw data and see what factors are contributing to the trends.

"In particular we look for practical ways to address the issue that's been identified.

"By this process, the true significance of an event may not be identified until months, or even years, after a report has been received. That makes it hard to give an immediate response, but rest assured your report is being used in valuable ways, even if you do not get an immediate reply.

"However, if you feel there is something about your event that needs the CAA's immediate attention, simply write words such as, 'recommend CAA investigate' in the description section. Make sure you've included your contact details," says Jack.

## Insights from Accident Investigation

The CAA is conscious that participants who submit occurrence reports don't always feel they are getting direct value back from every individual report.

"We understand there's an overhead associated with completing reports," says Jim Burtenshaw, CAA Manager Safety Investigation. "But I can't stress enough that every piece of information we receive is vital in the big safety picture. To derive maximum value from our system, we need to cultivate a culture of accurate, timely, and complete reporting.

"All reports submitted are put to good use. They are reviewed individually as they are received, then reviewed again collectively in a weekly meeting.

"We use the information on a few different fronts.

"If the data from one operator shows an emerging trend, then chances are other operators are running into similar issues. When there's a perceived risk, we give other operators a heads-up regarding the emerging trend, while maintaining confidentiality of the original reporter's name and company.

"We also use reports to determine where breaches in the safety system are manifesting.

"For example, in recent times, a high number of occurrences at a particular aerodrome prompted a CAA safety review. Knowledge of these occurrences allowed us to talk directly to all the parties concerned.

"Occurrences don't just affect the operator; they have a flow-on effect to others within the aviation system. We spoke with stakeholders, including the aerodrome operator, ATC, user groups, and the local council. Work to reduce these occurrences is ongoing, but has so far proved beneficial," says Jim.

There's a newly-created work group within Safety Investigation which reviews large periods of occurrences to uncover underlying themes. It's called the Thematic and Systemic Investigation Team (TASIT).

"Safety investigation is often event-driven in nature, but this innovative approach focusses on holistic prevention," says Jim.

"The TASIT reviews occurrence data over 10 to 15 year periods. After identifying themes, they determine where system-level improvements can be made.

"Comparisons are made between New Zealand's trends and international data to see whether themes are New Zealand specific, and if so, why.

"There's quite a bit of deep level analysis going on," advises Jim.

## Dual-Flight Training Accident Review

Another example that illustrates the need for a robust database, and the value that can be derived, is the recent dual-flight training accident review by CAA's Personnel and Flight Training Unit.

"Through our analysis, we were hoping we'd be able to find a magic bullet that would halt dual-flight training accidents," says Bill MacGregor, CAA Principal Aviation Examiner.

"We didn't find that bullet, but we did identify 27 areas of concern with a common theme – accountability."

See *Vector* May/June 2015, "Improving Dual-Flight Training Through Accountability", for more information on the findings.

Bill continues, "Our database contains a bunch of useful information that can be used to answer a variety of different questions. For example, does occurrence data indicate a predominant aircraft type? Is there a correlation between airline recruiting, instructor shortage, and the occurrence patterns?

"We looked at 15 years of incidents and events related to the dual-flight training accidents. By digging deeper and studying this data from different angles and through different lenses, the 27 areas of concern emerged.

"Prior to the dual-flight training review, our audits sometimes felt like an 'expanded tick box exercise'. Now, armed with this information, our efforts are more focused and we know which questions to ask," says Bill.

"It's helped us get to grips with the way that training organisations actually do business, rather than looking at the way that they record their business."

## Working with Industry

"If you're thinking, or even half thinking of flicking in a report, just do it, in as much detail as possible. If you have an opinion, we want to hear it," says Joe Dewar, Regulatory Intelligence Analyst.

Joe works closely with the NZ Helicopter Association and the NZ Aviation Industry Association.

"The bodies are closely related and the membership is pretty similar. In a collaborative effort with industry experts, we've analysed every single accident from 2000 till present, and as a result we now have the 'safety story' for both of these groups.

"I'm committed to maintaining a constant information loop so operators are aware of the main accident types, and the associated causal factors. What we have to do now is push this information as far out as we can into the industry to bring down the accident rate, and stop operators from repeating the same types of accident."

# How to Report Occurrences

A brand new guide in the 'How to...' series is now available to help pilots, engineers, and operators through the process of reporting an occurrence.

Ever since Richard Pearce flew, aviators in New Zealand have been looking at accidents to find out what went wrong and prevent them happening again.

While the CAA believes it gets reports of all the accidents in New Zealand's aviation sector, and perhaps about half of the serious incidents, we believe we hear very little of the minor occurrences.

International research indicates that for every fatal accident, there are 10 serious incidents and 360 minor ones. And it's the minor occurrences that help the CAA build a more complete picture of where risk is.

*How to Report Occurrences* is now available to help you report accidents, incidents, and those small occurrences.

Easy-to-follow information on how to report, what to report, and who should report, will help you do your bit to keep New Zealand skies safer.

## Reporting RPAS Occurrences

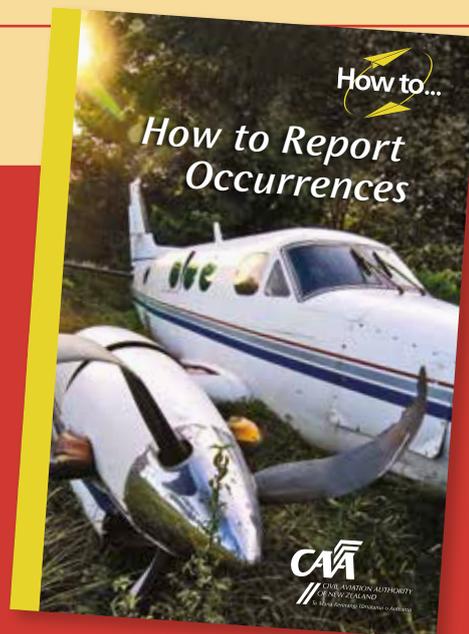
To fully understand the threats that RPAS pose, the CAA needs you to report RPAS occurrences. You can report them online, as you would for any other event, but in the description, describe the other aircraft encountered as an RPAS.

[www.caa.govt.nz/report](http://www.caa.govt.nz/report)

You will receive an email of your report, asking you to confirm or amend the details.

There are also forms on the web site that you can email or fax into the CAA.

For an update on RPAS, see page 3. ■



There's also a substantial section on what the CAA does with the information you supply. It tells you what you can expect after you've reported an occurrence. It also clears up some of the myths surrounding the purpose of any subsequent investigation.

Finally, there's a quick reference table at the back of the booklet that tells you, at a glance, exactly who should report what, and how.

The booklet is free of cost and shipping charges for New Zealand aviation participants. Email: [info@caa.govt.nz](mailto:info@caa.govt.nz), or ask your Aviation Safety Adviser for a copy.

Improved aviation safety will obviously make all our lives easier, but it will also further enhance the country's safe flying reputation, encourage tourism, and do its bit to make businesses relying on domestic and overseas visitors more profitable. ■

# Fit and Proper Person Process

The CAA recently published its handbook and policy document on the Fit and Proper Person (FPP) process.

The Civil Aviation Act 1990 requires that anyone holding or applying for an aviation document, or anyone who has control over the exercise of the privileges of an aviation document, must satisfy the Director of Civil Aviation that they are a fit and proper person to do so.

The FPP process focusses on the fitness of the applicant to perform the functions and duties of the aviation document they have applied for, or to perform the duties of the senior person position they have been nominated to hold, in a responsible manner.

The FPP handbook and policy document will enable participants to understand the process, and the steps carried out during an assessment.

You can see both documents on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz) "Pilots – Fit and Proper Person Process." ■

## How to Get Aviation Publications

### AIP New Zealand

AIP New Zealand is available free on the Internet, [www.aip.net.nz](http://www.aip.net.nz). Printed copies of Vols 1 to 4 and all aeronautical charts can be purchased from Aeronautical Information Management (a division of Airways New Zealand) on 0800 500 045, or their web site, [www.aipshop.co.nz](http://www.aipshop.co.nz).

### Pilot and Aircraft Logbooks

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

### Rules, Advisory Circulars (ACs), Airworthiness Directives

These are available free from the CAA web site. 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](mailto:aero@caa.govt.nz).

To allow for processing, the CAA needs to be notified **at least one week** before the 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.

CAA Cut-off Date	Airways Cut-off Date	Effective Date
12 Oct 2015	19 Oct 2015	7 Jan 2016
9 Nov 2015	16 Nov 2015	4 Feb 2016
21 Dec 2015	28 Dec 2015	3 Mar 2016

See [www.caa.govt.nz/aip](http://www.caa.govt.nz/aip) to view the AIP cut-off dates for 2015/2016.

## Aviation Safety Advisers

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

### Don Waters (North Island)

Tel: +64 7 376 9342  
Fax: +64 7 376 9350  
Mobile: +64 27 485 2096  
Email: [Don.Waters@caa.govt.nz](mailto:Don.Waters@caa.govt.nz)

### Carlton Campbell (South Island)

Mobile: +64 27 242 9673  
Email: [Carlton.Campbell@caa.govt.nz](mailto:Carlton.Campbell@caa.govt.nz)

### John Keyzer (Maintenance, North Island)

Tel: +64 9 267 8063  
Fax: +64 9 267 8063  
Mobile: +64 27 213 0507  
Email: [John.Keyzer@caa.govt.nz](mailto:John.Keyzer@caa.govt.nz)

### Bob Jelley (Maintenance, South Island)

Tel: +64 3 322 6388  
Fax: +64 3 322 6379  
Mobile: +64 27 285 2022  
Email: [Bob.Jelley@caa.govt.nz](mailto:Bob.Jelley@caa.govt.nz)

## Report Safety and Security Concerns

*Available office hours (voicemail after hours).*

**0508 4 SAFETY**  
(0508 472 338)

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

*For all aviation-related safety and security concerns.*

## Accident Notification

*24-hour 7-day toll-free telephone*

**0508 ACCIDENT**  
(0508 222 433)

[www.caa.govt.nz/report](http://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 web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Accidents and Incidents".  
Some accidents are investigated by the Transport Accident Investigation Commission, [www.taic.org.nz](http://www.taic.org.nz).

## ZK-LAW Cessna 207A

Date and Time:	02-Aug-13 at 22:42
Location:	Von Valley
POB:	2
Injuries (Serious):	2
Damage:	Destroyed
Nature of flight:	Training dual
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	40 yrs

The crew was carrying out an Operational Competency Assessment flight at a remote airstrip when the aircraft struck a small rise in the terrain approximately 200 m short of the threshold. The aircraft was completing a simulated forced landing approach, when it descended below the relevant flight profile and struck terrain.

The aircraft bounced a further 40 m before striking the ground again and overturning. Both pilots received serious injuries. It is believed that the nature of the terrain (barren tussock-covered ground), lighting from behind, and the high nose attitude of the approach, contributed to this accident.

Note: this occurrence has been published previously but is being published again to correct some of the information.

[CAA Occurrence Ref 13/3789](#)

## ZK-DXV Cessna 182P

Date and Time:	03-Apr-15 at 15:40
Location:	Tomahawk Beach
POB:	2
Injuries:	0
Damage:	Substantial
Nature of flight:	Private other
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	48 yrs
Flying Hours (Total)	203
Flying Hours (on Type)	38
Last 90 Days:	10

Due to an engine power loss, the pilot carried out a forced landing on to a beach, but to avoid people, he had no option but to land on the soft sand. The aircraft landed heavily on touchdown and nosed over.

Before the partial power loss, carburettor icing had been experienced and the pilot had cleared this by using carburettor heat.

During maintenance investigation, the engine was removed from the aircraft and installed in a test rig. The engine was successfully started and run up. Engine operation was normal with full power

available. It was thought likely that full application of carburettor heat may have momentarily worsened the situation, but with insufficient height available, the pilot was committed to a forced landing before power could be restored.

[CAA Occurrence Ref 15/1562](#)

## ZK-EDY Zenair CH701 STOL

Date and Time:	29-Dec-14 at 2:15
Location:	Whananaki
POB:	2
Injuries:	0
Damage:	Substantial
Nature of flight:	Private other
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	62 yrs
Flying Hours (Total)	480
Flying Hours (on Type)	80
Last 90 Days:	15

The engine 'missed' just after takeoff, followed by rough running and a power loss, requiring an immediate forced landing in shallow water covering a tidal mud flat.

The aircraft tipped over on landing, but both occupants safely evacuated the aircraft.

The owner's investigation was inconclusive. Possible causes were narrowed down to: a potential (unspecified) issue with the Bing carburettor as fitted to the Jabiru 3300 engine; carb icing; or an excessively rich mixture, possibly due to a sticking float needle valve.

[CAA Occurrence Ref 14/6082](#)

## ZK-LFG Aeroprakt A-22LS

Date and Time:	02-Nov-2014 at 13:20
Location:	Pukekohe East
POB:	2
Injuries (Serious):	2
Damage:	Destroyed
Nature of flight:	Private other

The pilot reported that he encountered windshear as he was about to land, and that resulted in a severe bounce. He applied full power to go around. By then, the aircraft was flying toward some trees, and that required the pilot to turn to maintain a safe flight path. It was during this turn the aircraft again encountered windshear that caused it to descend, strike the ground, and slide to a halt. The pilot has operated out of Pukekohe East for several years, and he was expecting slight windshear on the day, but the actual strength of the shear encountered was stronger than he expected.

[CAA Occurrence Ref 14/5114](#)

# GA Defects

GA Defect Reports relate only to aircraft of maximum certificated takeoff weight of 9000 lb (4082 kg) or less. More GA Defect Reports can be seen on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Accidents and Incidents".

## Diamond DA 40

### Distributor gear

Part Model:	4370
Part Manufacturer:	Champion Slick
Part Number:	K3008
ATA Chapter:	7410
TSI hours:	245
TTIS hours:	669.7

Rough running engine and large mag drop reported. Maintenance investigation found that the distributor gear electrode arm was free to rotate on the gear which caused severe misfiring. The distributor/gear assembly was replaced and magneto returned to service. CAA note: Continuing Airworthiness Notice (CAN) 74-001 Slick 4200, 4300 and 4700 Series Magnetos was issued to advise operators and maintainers that Champion Aerospace has issued Slick SB1-15 dated 7 February 2015 to introduce a replacement K3008 distributor gear assembly with improved electrode finger retention.

[CAA Occurrence Ref 15/3345](#)

## Robin R2120 U

### Navigation light circuit

Part Model:	2120U
Part Manufacturer:	Robin
ATA Chapter:	3340
TTIS hours:	4561

The pilot reported a burning smell and smoke within the aircraft cockpit. It was discovered that the main positive wire that supplies power to five navigation light switches had a damaged crimp that, with five switches on, caused the wire to get extremely hot, melting the insulation.

[CAA Occurrence Ref 14/4165](#)

## Diamond DA 42

### Trailing edge flap

ATA Chapter:	2750
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On completion of the flight, it was found that one of the flaps would not retract. Maintenance investigation found that the flap actuating mechanism had failed, preventing flap operation. During the flight, flap extension speeds had not been exceeded and flap was not used on the approach to land. It is suspected that a large wind gust may have overloaded the flap mechanism. The manufacturer has been advised, but no similar occurrences have been noted. The failure is considered to be a 'one-off' at this time. The aircraft was repaired and returned to service.

[CAA Occurrence Ref 13/5928](#)

## Piper PA-31-350

### #3 cylinder hold down studs

Part Model:	TIO-540-J2BD
Part Manufacturer:	Lycoming
ATA Chapter:	8530
TSI hours:	1267
TSO hours:	1267
TTIS hours:	14522

A Piper PA31-350 Chieftain experienced an engine shutdown while on a routine surveillance operation in the vicinity of Omaha. There were two occupants on board, the pilot and radar operator. The pilot reported that engine vibration was experienced with a loss of manifold pressure on the left engine. The left engine was shut down and the propeller feathered. An emergency was declared and the aircraft flew to Auckland (NZAA) making an uneventful landing. Inspection of the left engine revealed that #3 (centre inboard) cylinder had suffered the failure of seven cylinder base studs including two of the ½ inch crankcase through-bolts. Four of the nuts were found in the engine cowling with the broken section of stud still inside the nuts. The failure of the studs had allowed the cylinder to move relative to the crankcase and fretting damage was evident on the forward edge of the #3 cylinder where it had contacted the aft edge of the #1 cylinder. The movement of the #3 cylinder had shattered the attached exhaust manifold, observed by the pilot as a loss of manifold pressure, as the turbo charger was no longer being supplied sufficient exhaust gas pressure to maintain the selected boost. The induction tube, while still in place, had been disturbed sufficiently for the lower crankcase o-ring to have become dislodged and was visible outside the crankcase. The fuel manifold line to this cylinder was also found to be broken. No defects with the cylinder or piston assembly were noted that may have contributed to this incident. Both the engine oil suction screen and oil filter were analysed and no abnormal metal was found. As the engine was shut down quickly, it is possible any metal may not yet have become evident in the filters. Metallurgical analysis of the failed studs indicated that the initial failures were due to stress caused by over-torqueing. Subsequent stud failures were primarily overload failures as a result of the initial stud failure. It could not be determined when this over-torqueing error occurred. The operator had no record of maintenance that would impact on the cylinder base studs and their torque values while the engine has been in service on this aircraft. It is also possible that the normal operating environment and thermal cycling of the engine has had an effect on the torque values of the nuts over the 1267 operating hours since overhaul. The engine cylinder was removed on the day of the incident, however rectification work was not completed until 43 days after the initial failure, with at least three different licensed engineers working on the aircraft at different times. This period included the Christmas break period, but also included a period of financial assessment that delayed rectification work on the aircraft.

It was noted in the operator's Investigation Report that while non-engineering management has a responsibility to ensure financial viability of the operation, they must also be aware of potential implications to safety through lack of continuity of maintenance actions. The repaired cylinder was refitted. All #3 cylinder base studs and through bolts were replaced and nuts torqued in accordance with the Lycoming overhaul manual. All remaining cylinder base nuts including those on the right engine were checked and found to be satisfactory. The maintenance personnel stated that the procedure used to check the torque values would only confirm the values were not low. If the cylinder base stud nuts were over torqued, as the metallurgy report indicates in the case of the failed studs, this would not have been identified. It should be noted that the metallurgy report had not been completed at the time the check torqueing was carried out. The oil filter should have been re-checked after the engine had been re-assembled and the test runs carried out, prior to release to service. It was recommended that the operator reviews maintenance carried out after abnormal events, or significant defects, prior to the aircraft returning to service. These oversights have been addressed by the organisation.

CAA Occurrence Ref 13/6224

## Hughes 369E

### Main Rotor Head

ATA Chapter: 6200

During a ferry flight to maintenance a violent lateral imbalance suddenly occurred. The pilot carried out a successful forced landing without any damage or injury. It was discovered that a significant number of the laminations had cracked on one of the main rotor blade retention straps. The main rotor hub was sent to MDHI for scientific examination. They discovered that corrosion was evident on the surface of the strap packs and some laminates had been cracked for some time. Airworthiness Directive DCA/HU369/46A had been embodied, but there was no record of the increased periodic visual inspections required by the AD, nor any record of the pre-existing cracking found in the head components. It also appeared that appropriate daily maintenance had not been performed effectively in accordance with Part II of MD SB EN-44, Tri-Flow Wash Procedure.

CAA Occurrence Ref 14/2052

# Report Online



It's easy to report occurrences –  
just go to [www.caa.govt.nz/report](http://www.caa.govt.nz/report)

You will receive an email repeating your entries so you can check they are correct. No additional paper copy is required.

Remember that you must still notify an accident or serious incident as soon as practicable using

**0508 ACCIDENT**  
**(0508 222 433)**

[www.caa.govt.nz/report](http://www.caa.govt.nz/report)

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# Aviation Safety Coordinator Course



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 Coordinator.

Attend this free two-day course to understand the role of a safety coordinator, and to refresh and re-inspire existing ones –

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## Auckland

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Auckland

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