

POINTING TO SAFER AVIATION

# vector

May / June 2010

## Volcanic Ash

Winter Flying

Cellphone Use VFR

Separation Anxiety



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## Volcanic Ash

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**Cover:** The eruption of Mount Ruapehu in 1995 caused disruption to many flights in New Zealand. Photo: ©Photo New Zealand

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# Volcanic Ash

*Pilot reports are often the earliest indicators of volcanic activity.*

Volcanic ash is a very real threat – it can stop your engines.

The recent eruption of a volcano in Iceland raised awareness of the dangers of volcanic ash, and of the disruption it can cause to travel and commerce.

As a result of past incidents, an international advisory system is in place. New Zealand hosts one of the advisory centres in Wellington. Pilots also have a significant role to play in reporting any unusual volcanic activity.

## Real Damage

There have been many incidents in which volcanic ash has damaged aircraft. The most dramatic is damage to jet engines through wear, impact, and molten silica-type material fusing to the turbine parts (see photo left). But many parts of the aircraft can be damaged, from pitot sensors to fuel systems.

Particles can be present in air that looks clear, and damage has been recorded in aircraft that were flying thousands of kilometres away from the eruption itself.

## Detection

One difficulty with volcanic ash is that existing weather radar systems will not pick it up, and other detection systems are still awaiting development. At present the earliest warnings can come from geological seismic detection – but only where there are instruments to detect this. New Zealand is fortunate as our active volcanos all have detection systems in place. Existing satellite systems can assist in cloud/plume detection, but are not yet specifically geared up for volcanic ash.

This is where pilot reports come in. They are often the earliest indicators of volcanic activity, and are also the best way to confirm the other indications. Report any unusual volcanic activity to Air Traffic Control – they have a process for getting the information to MetService and other pilots.

## Advisory System

The first impact of volcanic ash on modern aviation in New Zealand followed the 1995 and 1996 volcanic eruptions from Mount Ruapehu. Many flights were cancelled, and many more diverted or re-routed.

Following that, the CAA implemented a targeted volcanic ash information system. The Volcanic Ash Advisory System is provided through aircraft operators, air traffic management, meteorological services, and the geological science agency. The CAA's role is one of facilitation and oversight.

Our volcanic ash advisory system is a local enhancement of the International Civil Aviation Organisation (ICAO) system. CAA's Peter Lechner is the chair of the ICAO International Airways Volcano Watch Operations Group. He is keen to see a positive outcome from the recent eruption.

"I'm hoping that this event in Europe will raise the political and economic determination to rapidly advance the development of remote sensing of volcanic ash, fast-track engineering modifications, and improve the national and international warning systems," says Peter Lechner.

For further information, see the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Meteorology – Volcanic Ash". ■



Damage to a turbine from a 747, flight BA009, in June 1982 in which all four engines failed. Photo courtesy of Captain Eric Moody.

Mt Ruapehu erupting, June 1996. Photo: ©Photo New Zealand

# Winter Flying

Winter Flying has unique rewards and challenges. It can be a spectacular experience, especially in the snow-covered Southern Alps. In order to keep it safe, think ahead and be fully prepared before venturing out into the winter weather.

## Preflight Inspection

A preflight inspection in winter is very different to a summer preflight inspection. There are a number of additional things to do – particularly if your aircraft has been picketed outside. It will take you longer to complete, so allow additional time for your preflight routine, and dress appropriately. Don't allow your preflight check to be less thorough, just because you are cold.

Check the drain holes in the wings, stabiliser, flight control surfaces, fuselage, tailplanes, and air scoops, to make sure they are unobstructed and capable of working. Aircraft that are left outside for any length of time in rain and frost conditions will tend to accumulate water in all of these places. It is easy for drain holes to freeze over, keeping the water and ice in. The expansion of water when it freezes can cause damage to the internal structures of wings, control surfaces, or fuselage bulkheads.

Aircraft fuel systems should be checked for water. A small amount of ice can prevent the proper operation of fuel pumps, selector valves and carburettors.

Pitot-static systems should also be checked, as water freezing in these could make the altimeter, airspeed indicator and vertical speed indicator unserviceable.

In winter there is a greater risk of water condensing in fuel tanks – completely full tanks will help minimise this. After refueling, allow fuel to settle before taking a sample to check for contamination. Check that all fuel vents are unblocked. A blockage could cause an engine to stop or a tank to collapse.

Wheel spats and fairings pick up mud and slush. If mud is allowed to accumulate in the spats, it can compact and add considerable weight. It can also create a braking effect on the wheels, and may eventually break the spats if they are not cleaned out regularly.

Ice buildup inside wheel spats tends to break up into blocks. These blocks could become jammed between the wheel and the spat. Check spats, fairings and undercarriage bays for ice accumulation and mud.

Snow or ice on the upper wing surface substantially increases drag and weight, thereby decreasing lift. The shape of the aerofoil is altered, it becomes much less efficient, and your stall speed is increased. Frost can be unpredictable in its effect. Even a small amount of ice on a helicopter's rotor blades could set up a vibration that leads to loss of control.

Snow, ice, or frost, must be entirely removed before flight. It is especially important to remove snow before it turns into ice. Check for ice by moving a bare hand or a thinly gloved hand over critical surfaces.

Hand brushing will clear what is not stuck to the surface. Patches of solid ice can then be removed by 'sawing' with a length of material or hemp rope backwards and forwards over the surface. Hard-edged tools must not be used.

If you choose to use a hot air blower, take care that the run-off is not allowed to pool and freeze unseen over drain holes or around hinges. Warm water mixed with de-icing fluid can also be used.

## Preflight Planning

When planning a winter flight, here are some additional things to think about.

Snow, slush, mud, and wet grass will lengthen the takeoff roll. Make sure you factor this into your performance calculations, and pick a 'decision point' which will allow sufficient runway to stop if you have not reached your nominated airspeed.

Obtain a comprehensive weather briefing before flight. Fog is much more common in winter and can be very widespread, potentially covering the

whole of either coast of the South Island. Don't assume the weather will be clear and fine when an anticyclone is present – this is when fog is most likely to form.

Other things to consider in winter are the surface condition of your destination aerodrome, and the amount of daylight remaining when you arrive. Daylight becomes even shorter when bad weather sets in. For VFR operations, plan to arrive at least 30 minutes before Evening Civil Twilight. This will give a safety margin for unexpected delays en route.

Plan your fuel requirements conservatively. Possible diversions around weather can add to flight time and

increase your fuel needs. The use of carburettor heat will also increase your fuel consumption.

Anywhere snow is falling should be avoided. Snow will transform reasonable visibility in rain to virtually zero visibility in heavy snow.

Always carry warm clothing in case a diversion or emergency landing is necessary. The risk of carbon monoxide (CO) poisoning increases with the use of cabin heat. Ensure you have a valid CO detector, and mix cabin heat with outside fresh air.

*Continued over* >>

*Snow, ice, or frost, must be entirely removed before flight. It is especially important to remove snow before it turns into ice.*

For more winter flying tips, see the *Winter Flying* GAP booklet on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), or email [info@caa.govt.nz](mailto:info@caa.govt.nz) for a copy.

## Night Flying

Most night flying is carried out in winter. If you are considering flying at night, make sure you do some practice with an instructor, and read the *Night VFR* GAP booklet. See the CAA web site, or email [info@caa.govt.nz](mailto:info@caa.govt.nz) for a copy.

## Flying With a Cold

Winter is cold and flu season, and most of us will succumb at some point. Don't be tempted to fly with a cold. Here's why.

A cold will affect your decision-making ability and your reaction time, making you less able to deal with emergency situations. It will also cause congestion in the nose, sinuses and ears.

The eustachian tubes link the inside of each ear drum to the back of the throat. Their main function is to keep the air pressure in the ear the same as that outside the body.

When you have a cold the tissues inside your nose and throat swell, and the tiny opening to the eustachian tube narrows, or closes over completely. This makes pressure equalisation difficult or impossible during climb and descent, and can lead to anything from slight discomfort and hearing loss, to intense and incapacitating pain, and even perforation of the ear drum – leaving you unfit to fly for many months.

Sinus cavities are also linked to the outside world via small tubes. Sinus pain occurs when these tubes are blocked by swelling tissue. Intense sinus pain is more likely during a climb.

A cold also increases your fatigue, and decreases your hypoxia tolerance, and G tolerance.

Colds are a viral illness, with no proven cure. Just be patient, and don't fly while suffering from cold and flu symptoms.

## Aquaplaning

Aquaplaning is where standing water on the runway causes the wheel of an aircraft to lose contact with the runway surface. Both braking and directional control can then be lost.

As a tyre rolls on a wet runway, it displaces the water it comes into contact with. At high speeds, this displacement creates hydrodynamic pressure that reacts on both the runway and the tyre. This pressure causes the wheel to rotate more slowly, although the aircraft groundspeed has not decreased.

As groundspeed increases, so does the hydrodynamic pressure, and a wedge of water starts to lift the tyre from the runway.

A water depth of only 3 mm is needed for aquaplaning to start. Once it has begun, it can be sustained over water depths that would not have led to its initiation, and at speeds lower than the speed at which it began.

A simple equation can be used to predict the minimum groundspeed at which aquaplaning will begin.

$V = 9 \times \sqrt{P}$ , where V is the groundspeed in knots and P is the tyre pressure in pounds per square inch (psi).

## Practical tips to prevent aquaplaning:

- » Make sure your aircraft has the correct tyre pressure.
- » Make sure it has sufficient tread.
- » Know your aquaplaning speed (using the formula above).
- » Ensure you achieve the target threshold speed during touchdown. This figure is normally found in your Aircraft Flight Manual.

» Ensure you make a positive touchdown – don't bounce and don't try to do a greaser. A positive touchdown helps break through the water and make effective contact with the runway surface.

» Depending on your aircraft type, application of gentle forward control column pressure can be useful after touchdown as this increases the weight on the wheels.

» If you have anti-skid, make sure it is on.

» If you have reverse thrust, use this in preference to wheel braking.

» Don't disable your anti-skid (except if there is a gross malfunction) since hard braking on a wet runway without this protection may lead to reverted rubber aquaplaning, and a decrease in deceleration due to locked wheels. Reverted rubber aquaplaning is where a skidding tyre generates enough heat to change the water film into a cushion of steam, keeping the tyre off the runway, and causing the tyre rubber to revert to its original uncured state.

» If you do not have anti-skid braking or reverse thrust, choose the longest into-wind runway available, and limit the use of wheel braking. Let the aircraft roll to a stop as much as possible.

» Avoid landing on a wet or contaminated runway when there is a cross wind.

» Check that sufficient 'wet runway' landing distance is available. This should be at least 115 percent of the landing distance required on dry runways (see rules 121.223, 125.225 and 135.225).

» Apply even brake pressure to maintain directional control.

» If you don't have anti-skid, use the 'apply and release' technique to reduce the chance of locking up the wheels. ■

# Two North, Two South

The CAA has reduced its Aviation Safety Adviser positions from five to four – two in the North Island, and two in the South.

In the North Island, Don Waters is your first point of contact for operational matters, and John Keyzer covers maintenance issues. In the South, Murray Fowler focuses on operations, and Bob Jelley covers maintenance.

In the past, there had been three ASAs covering the North Island – one maintenance expert, and two flight operations advisers.

General Manager General Aviation, John Lanham, says the new arrangement follows the retirement from the CAA this year of ASA Ross St George (who has returned to his former career, teaching at Massey University's School of Aviation).

"After Ross retired, I took the opportunity to reassess the ASA roles. It was clear that the general aviation community had developed significantly since the role was conceived in the 1990s," John says.

"That period saw unprecedented change in New Zealand aviation. The monolithic Ministry of Transport had been broken up into a CAA, Airways Corporation, MetService and privatised airports; the Labour government had introduced the user pays philosophy and the new CAA was replacing the old Regulations with the new Civil Aviation Rules.

"Operators were undergoing re-certification, writing expositions and introducing quality assurance processes. Several other events coincided with these changes, such as Y2K, the Round the World Yacht Races, the America's Cup, and the Rally of New Zealand.

"We felt the CAA needed to have a strong presence in the field, and we needed two flight operations ASA roles in the North Island, one for the top half, and one for the lower half.

"But time has passed and the general aviation community is now much more mature. The concepts underpinning the rules are well understood, and people know how to get hold of their ASA, and know what they can offer.

"At the same time, the number of helicopters on the CAA register has increased dramatically, from 470 in 2004, to 769 in April this year. That kind of increase, in mostly working helicopters, means the CAA needs to direct more resources to its Rotary Wing and Agricultural Operations Unit, and I intend to redeploy the additional ASA resource into that unit," John says.

The CAA is now actively advertising for two Airworthiness Inspectors and one Flight Operations Inspector in its Rotary Wing and Agricultural Operations Unit (see page 10).

"I would encourage operators and aviators in the lower half of the North Island who don't yet know ASA Don Waters to read more about his extensive experience here (see page 8), and to contact him direct with any queries, issues or safety concerns." ■



Aviation Safety Adviser  
Don Waters

# Meet Don Waters

When a helicopter pilot landed on the back lawn of a young Don Waters' family High Country Station at Lake Tekapo asking if he could shoot deer on the property, Don couldn't legally say no.

"Deer were gazetted as noxious animals back then so anyone could shoot them, but we wanted them for our own freezers. The pilot sweetened the deal by offering to let me come with him, and half an hour later there was a deer on the back lawn. I thought 'this is all right'."

It was Don's first introduction to helicopters and what they could do – and the end of any other career for the young man.

He trained as a pilot, initially on cheaper fixed wings, and gained his CPL (H) at age 30.

"But there were more pilots than helicopters."

Don did the hard yards as a loader driver and truck driver before landing an agricultural spraying job, and soon after a permanent role with Marine Helicopters at Raglan, flying the Hughes 300C on agricultural work. He built up about 3000 hours before being laid off in the economic downturn of 1982 and turning his hand to pulling logs out of the King Country with bulldozers.

It was to be another 18 months before Don found his way back into flying, forming a new flying partnership and gaining his C, B and E-category instructor ratings. In 1990, Don moved on to establish his own business, based out of Hamilton, doing a mix of flight training and agricultural work. He was

an early adopter of Part 137 *Agricultural Aircraft Operations* and Part 141 *Aviation Training Organisations – Certification*.

"I had to do Part 141 to keep my examiner privileges. It was hard work, my eldest daughter and I wrote our own manual, but once I got it accepted and in place, it was quite interesting what came out of those safety meetings. It did make you sit up and take notice of what was happening in your organisation," Don says.

By 2002, Don had built up about 8500 hours, and was "looking down the barrel of 60". He'd had a few dealings with the CAA's then Field Safety Adviser for the top half of the North Island, John Fogden, and had mentioned it was a job he thought he'd enjoy. When John was promoted to Manager Rotary Wing and Agricultural Operations, Don got John's old role (later renamed Aviation Safety Adviser).

"Initially it was quite a change, going from being an operator, to an ASA. You've got to learn to keep your trap shut, do a lot of listening and very little talking.

"It's a competitive environment out there and any little thing I might casually say about one operator can easily turn into a rumour flying around. The industry needs a high level of confidence in their ASA in order to gain their trust.

"Ninety-nine percent of all aviation personnel do their best to operate within

the rules, there's a little bit of ignorance, but usually people want to do things the right way," Don says.

For the past eight years, Don has been providing support and safety advice only to operators in the top half of the North Island. He will now cater to the whole of the North Island.

"I'll be aiming to drop by and visit everybody about twice a year. I don't usually tend to phone first, unless somebody's really far flung, but I'd encourage anyone who perhaps hasn't met me yet, to feel confident to give me a call. I've been an operator. I've flown fixed wing, rotary, agricultural operations and flight training. Now I'm here to help out, where I can.

"It's surprising how often a quick call can make a problem go away, before it becomes a real issue." ■

*Initially it was quite a change, going from being an operator, to an ASA. You've got to learn to keep your trap shut, do a lot of listening and very little talking.*





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# Join the CAA **Rotary Unit**

The number of helicopters in New Zealand has grown by 61 percent in the last eight years. In the same period, helicopters flying on operations certificated under Part 135 have achieved a result of zero fatalities.

**T**he CAA team responsible for oversight of general aviation helicopters, and of agricultural operations, is the Rotary Wing and Agricultural Operations Unit. There are currently three positions available within the unit for widely skilled and experienced people.

General Manager General Aviation John Lanham says the CAA is adding extra resources to the Unit in response to the rapid growth in this part of the aviation community.

"I am aiming to recruit one rotary flight operations specialist and two airworthiness experts as soon as possible. This includes the redeployment of the lower North Island Aviation Safety Adviser position to the unit," John says.

"I'm looking for people with a diverse background in this field, and who have solid reputations within the rotary and

agricultural industries. These are hands-on roles. Our people spend a lot of time in the field and they must command the respect of those they are regulating."

Rick Ellis is an Airworthiness Inspector within the unit and joined the CAA after maintaining military helicopters for 20 years, and general aviation helicopters for a further 20 years.

"It is a very challenging and busy role, and for me it's rewarding because the safety record of helicopter operators is strong and I feel part of achieving that.

"I use my industry experience all the time to support, assist and advise. The CAA's not a consultancy, but the guys will make suggestions where it will result in an improvement to safety. There's more to it than just being a regulator."

Position Descriptions for the roles of Flight Operations Inspector and Airworthiness Inspector are available on the CAA web site under "Public Info – Vacancies", and applications are invited. ■

# Farewell Foggy

The end of April saw the departure of Manager Rotary Wing and Agricultural Operations, John Fogden, from the CAA.

After 12 years of service, initially as the CAA's Flight Operations Aviation Safety Adviser for the top half of the North Island, John plans to rejoin the aviation community and says he's looking forward to furthering the aviation safety culture "from the inside".

John started flying helicopters in his late teens, getting his agricultural ratings before spending more than a decade capturing wild game in South Africa for conservation. He progressed to become the Rotary Wing Chief Pilot of an organisation operating 29 helicopters and held several senior roles on industry bodies in South Africa. John later flew in the Eastern Highlands of Papua New Guinea, culminating in a role as Chief Pilot in charge of 30 helicopters.

As a CAA Aviation Safety Adviser, John guided operators through the challenging events of recertification under Part 135 *Air Operations – Helicopters and Small Aeroplanes*, two America's Cup series, the Round the World Yacht race, Y2K, and the Rally of New Zealand. As Manager Rotary Wing and Agricultural Operations he has had significant involvement with emergency medical services, Part 137 *Agricultural Aircraft Operations* and the Agricultural Aircraft Review, and has led the introduction of night vision goggles into the air ambulance sector.

General Manager General Aviation, John Lanham, says John has made a significant contribution to the CAA.

"Foggy has led the CAA's work with this part of the industry through a fairly tumultuous period, and is now looking forward to continuing his active career back in the industry. We wish him every success." ■



# Cellphone Use VFR

On 10 November 2007, a Fletcher FU24-950EX aircraft collided with terrain while top-dressing near Opotiki. The pilot was killed in the accident and the aircraft was destroyed.

The aircraft was fitted with a cellphone hands-free kit, which enabled the pilot to speak on the phone through his headset. Phone records showed that the aeroplane's cellphone had been connected that day for more than 90 minutes, on 14 voice calls, and that the pilot was speaking on the phone at the time of the accident.

Earlier that year, the same pilot had been talking on the aeroplane cellphone while taking off on a top-dressing flight when the aeroplane hit a sheep on the airstrip.

The Transport Accident Investigation Commission (TAIC) report into the November 2007 fatal accident said, "No single conclusive reason, such as sudden incapacitation, was found to explain why the pilot did not pull up, but the circumstances suggested a combination of factors involving distractions and fatigue.

"The use of cellphones by agricultural pilots flying at low level was not uncommon, and the pilot evidently did so regularly...The accident occurred after more than 7 hours of work and more than 90 takeoffs and landings for that day."

The TAIC report recommended that the Director of Civil Aviation address

the safety implications of the use of cellphones during critical phases of flight while operating under visual flight rules (VFR). The Director has accepted this recommendation, and rule development will begin on this issue.

Until the rule development process has been completed it is essential that all pilots apply common sense to their use of cellphones for voice calls and text messaging while VFR. Just because there is no rule against it, doesn't mean it is a safe practice. Never let yourself be distracted from your core task of flying the aircraft, particularly during takeoff and landing, and low level operations.

Anecdotal evidence suggests that the use of cellphones by pilots is happening not just on private flights, and during agricultural operations, but also while on VFR air transport operations.

It can be tempting to divert your office landline to your cell and continue to do business, or organise your social life, while flying. The privilege of flying, however, comes with the responsibility of maintaining good airmanship and professionalism at all times. This applies equally to both private and commercial pilots. Make safety your top priority. ■



The pilot of this Fletcher was on the phone at the time of the accident. Photo courtesy of TAIC.

# Separation Anxiety

VFR aircraft in New Zealand are kept apart by the most sophisticated computational device the world has ever known.

**B**ut when are VFR aircraft formally separated by Air Traffic Control (ATC) according to specific vertical and horizontal distance criteria? Hardly ever.

Nowhere is VFR traffic separated from other VFR traffic. VFR pilots must keep themselves clear of other VFR aircraft. A good lookout, position reports, airmanship, situational awareness, and

adherence to the general operating rules are critical.

It can be surprising for a VFR pilot to realise that even though they have been given a clearance by a control tower, or are talking to a flight following service, they are not being separated from other VFR traffic.

*VFR aircraft are not separated by ATC from other VFR aircraft anywhere in New Zealand's airspace.*

*Continued over >>*



# Class C

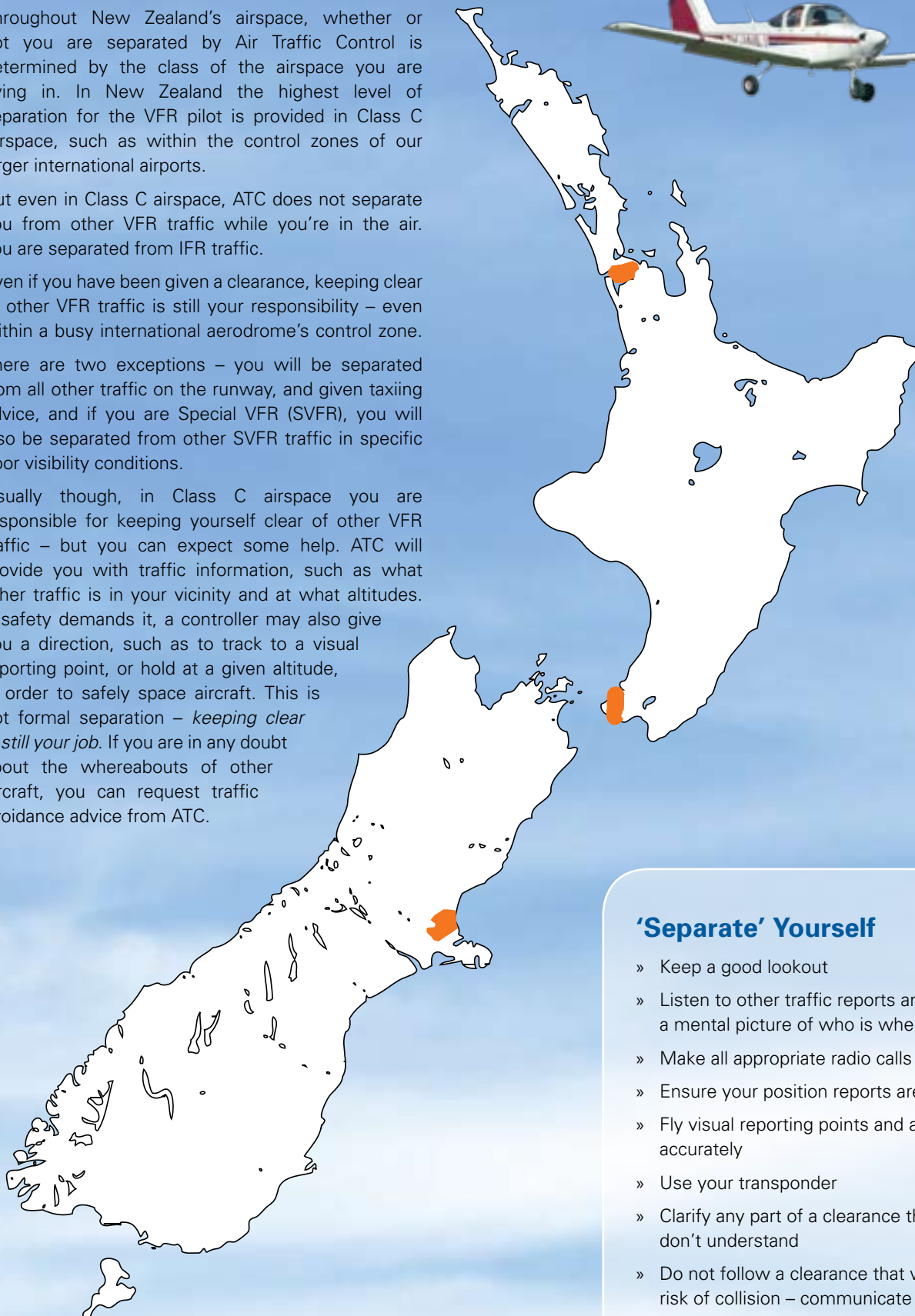
Throughout New Zealand's airspace, whether or not you are separated by Air Traffic Control is determined by the class of the airspace you are flying in. In New Zealand the highest level of separation for the VFR pilot is provided in Class C Airspace, such as within the control zones of our larger international airports.

But even in Class C airspace, ATC does not separate you from other VFR traffic while you're in the air. You are separated from IFR traffic.

Even if you have been given a clearance, keeping clear of other VFR traffic is still your responsibility – even within a busy international aerodrome's control zone.

There are two exceptions – you will be separated from all other traffic on the runway, and given taxiing advice, and if you are Special VFR (SVFR), you will also be separated from other SVFR traffic in specific poor visibility conditions.

Usually though, in Class C airspace you are responsible for keeping yourself clear of other VFR traffic – but you can expect some help. ATC will provide you with traffic information, such as what other traffic is in your vicinity and at what altitudes. If safety demands it, a controller may also give you a direction, such as to track to a visual reporting point, or hold at a given altitude, in order to safely space aircraft. This is not formal separation – *keeping clear is still your job*. If you are in any doubt about the whereabouts of other aircraft, you can request traffic avoidance advice from ATC.



## 'Separate' Yourself

- » Keep a good lookout
- » Listen to other traffic reports and build a mental picture of who is where
- » Make all appropriate radio calls
- » Ensure your position reports are accurate
- » Fly visual reporting points and altitudes accurately
- » Use your transponder
- » Clarify any part of a clearance that you don't understand
- » Do not follow a clearance that will put you at risk of collision – communicate why to ATC

NZ aerodromes that have Class C airspace. In Class C airspace VFR aircraft are not separated from each other. IFR aircraft are separated from both IFR and VFR.

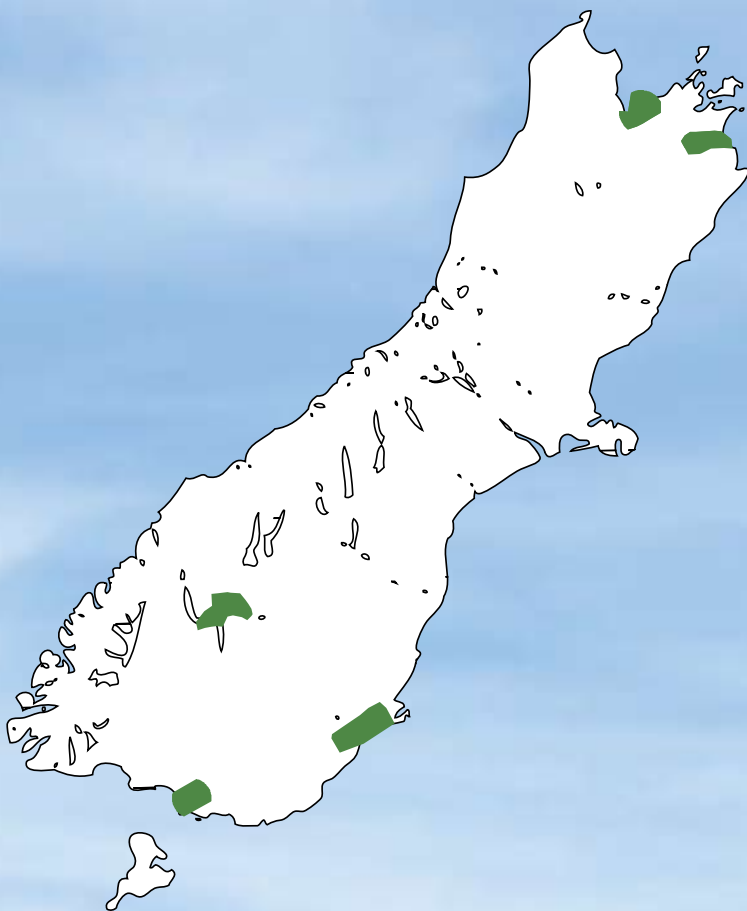
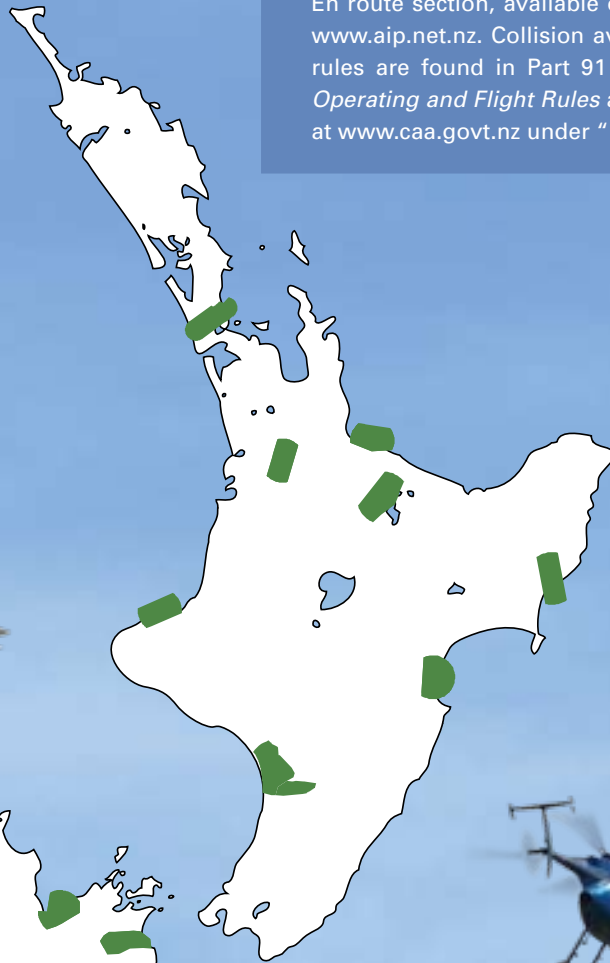
# Class D

The next type of controlled airspace is Class D, such as within the control zones of most of our regional airports. For VFR aircraft, there is no separation in Class D airspace (again with the exception of SVFR aircraft in specific poor visibility conditions). Air Traffic Control is responsible for passing information to you about both IFR and VFR traffic in your vicinity, but *you must keep yourself clear of other aircraft*.

Having good situational awareness is vital in ensuring the safety of your flight. If you are in any doubt about the whereabouts of other aircraft, you can request traffic avoidance advice from ATC.

## Learn More

The separation criteria are published in the *AIP New Zealand, Volume 1, En route section*, available online at [www.aip.net.nz](http://www.aip.net.nz). Collision avoidance rules are found in Part 91 *General Operating and Flight Rules* available at [www.caa.govt.nz](http://www.caa.govt.nz) under "Rules".



# Class G

ATC separation in uncontrolled airspace (Class G) is simple for the VFR pilot – there isn't any. You must keep yourself clear of other aircraft by using the fundamental skills of airmanship, which you demonstrated during your flight test, and which you have been demonstrating during your Biennial Flight Reviews ever since.

IFR pilots should also take note – you are not separated in Class G airspace either – even though you may be operating IFR or communicating with Air Traffic Services.

Note: These separation rules are exactly the same for Class C and D airspace en route and in TMAs. ■

NZ aerodromes that have Class D airspace. VFR aircraft are not separated by Air Traffic Control in Class D airspace. Air Traffic Control will pass traffic information about both IFR and VFR aircraft.

# What Lies Beneath?

Aviation Safety Adviser Bob Jelley highlights the hidden dangers of a seemingly minor taxiing accident.

You were taxiing along to the fuel pumps at a walking pace, positioning so as to clear another aircraft left unattended next to the pumps. Suddenly your aircraft comes to an un-commanded and abrupt halt – complete with a crunch! You shut the aircraft down and on inspection you find that the left-hand wing tip has struck a fuel pump vent that you hadn't seen.

The fiberglass wing tip's leading edge is smashed in, as is the navigation strobe-light assembly.

Some small relief takes over from your butterfly stomach angst, as it appears that only the wing tip is broken. These are readily replaceable, so you start to think things might not be so bad. Some duct tape over the wing tip leading edge should be all you need to ferry the aircraft back to home base.

Any problem with this scenario? Definitely!

Taxiing accidents do happen, but when they do you must consider the possibility of hidden damage – often well away from the impact point.

If an aircraft weighing about 840 kg (pilot and full fuel) is taxiing at a walking pace of 1.6 metres per second and then suffers a wing tip strike, there are some important things to consider.

The impact on the wingtip is about 600 lb of force. To calculate the damage at the fuselage, we multiply the force at the wingtip by the lever arm of the wing. For example, if the wing dimension from wing root to contact point is 3.65 metres, and the distance between the front and rear spar attachment to the fuselage is 1.47 metres, the ratio of the leverage is 2.48. The contact force has just multiplied to 1500 lbs, which is going to be transferred through the wing structure to the fuselage.

That's like being stood on by seven and a bit men – or to put it another way, in a dive, the inwards force on the wing at a  $V_{ne}$  of 148 knots is about 655 lb. So our impact with the pole is like putting the aircraft wing root through 2.3 x the stress it would experience at  $V_{ne}$ .

There is a very real possibility that hidden damage may have occurred.

Over the years I've seen numerous cases of Cessna 150s and 172s suffering rear spar compression failures, often between the inner and outer flap tracks, as a result of wing-tip strikes during taxiing.

In many cases, this damage was not found at the time of contact, and on occasion was not noticed until the wing tip or outer wing leading edge segments were being repaired or replaced.

Recently, a PA28 Cherokee suffered a wingtip strike confined to the tip fairing (see images). It looked like a comparatively light strike, however on further inspection the engineers found a wrinkle with a small area of paint missing on the upper wing skin (adjacent to the wing-to-fuselage rear spar attachment point). They discovered the wing front spar had been subjected to a tension load sufficient to fail the cabin frame near the attachment point.

They also found that the rear spar compression loads had been enough to cause the cabin through-rib to fail. This is serious structural damage and yet not that outwardly obvious. The damage seriously affected the structural integrity of the aircraft, and a subsequent flight in turbulent conditions could have been catastrophic.

Taxiing accidents do happen. It is vital to look carefully at the damage, enter it as an open defect in the aircraft technical log, and always have it examined on site by an appropriately rated and experienced maintenance provider before you have any thought of flying the aircraft.

If your operation is certificated under Part 119 *Air Operator – Certification*, this normally requires contacting your maintenance controller. ■

*“That took me two years and two weeks, and 1650 hours of labour. You could say I'm pretty much an aviation enthusiast.”*







## Meet Aviation Safety Adviser Bob Jelley

With approximately 2000 hours fixed wing and 250 hours rotary wing, South Island Aviation Safety Adviser Airworthiness, Bob Jelley, is a “fairly high time PPL”. Not bad for a career aircraft engineer with 35-odd years experience in both general aviation and airline maintenance, including many years as a Chief Engineer.

Bob started out as an apprentice with the Southern Districts Aero Club in 1968, straight from school. He’d become fascinated with aircraft as a young boy after watching top dressers at work on the family farm. Bob’s career took him to

Rex Aviation in Mosgiel, which became Dalhoff and King Aviation, and latterly Flightline Aviation. In 1995 Bob switched to airline aircraft maintenance, working for Ansett / Qantas New Zealand in Christchurch.

Bob joined the CAA in 2001 and says he enjoys this role at the general aviation coalface. He completed his amateur-built Vans RV7 in 2007 and it now has 140 hours on the clock.

“That took me two years and two weeks, and 1650 hours of labour. You could say I’m pretty much an aviation enthusiast.”

# Nominations for 2010 Director's Awards and Flight Instructor Award



The Director of Civil Aviation is again calling for nominations for his annual awards in recognition of remarkable efforts toward improving and ensuring aviation safety.

The Director will present an award to an individual, and to an organisation, at the Aviation Industry Association's annual conference at the end of July. The CAA will also present an award to an outstanding flight instructor at the conference in Palmerston North.

These awards have been presented to standout members of the aviation community since 1995. Each recipient has demonstrated an ethos in which safety comes first, often in the face of significant business pressure.

The awards are an acknowledgment of the skill and professionalism of the winners and recognise the strong example they set daily for others.

All nominations from the aviation community will be considered. Simply include a few supporting paragraphs to Manager Communications, Bill Sommer, by Monday, 21 June 2010.

Email: [bill.sommer@caa.govt.nz](mailto:bill.sommer@caa.govt.nz)

Fax: 0-4-569 2024

Post: P O Box 31-441, Lower Hutt 5040

## Free Aviation Safety Coordinator Training 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, or sport aviation, you need an Aviation Safety Coordinator.

Attend this free two-day course to train new aviation safety coordinators, and to refresh and re-inspire existing ones –

- » you will get a comprehensive safety manual;
- » access to all of the latest CAA safety resources and support; and
- » lunch is provided (accommodation, transport and other meals are not provided).

### Where and When:

**Tuesday 22 and Wednesday 23 June 2010**

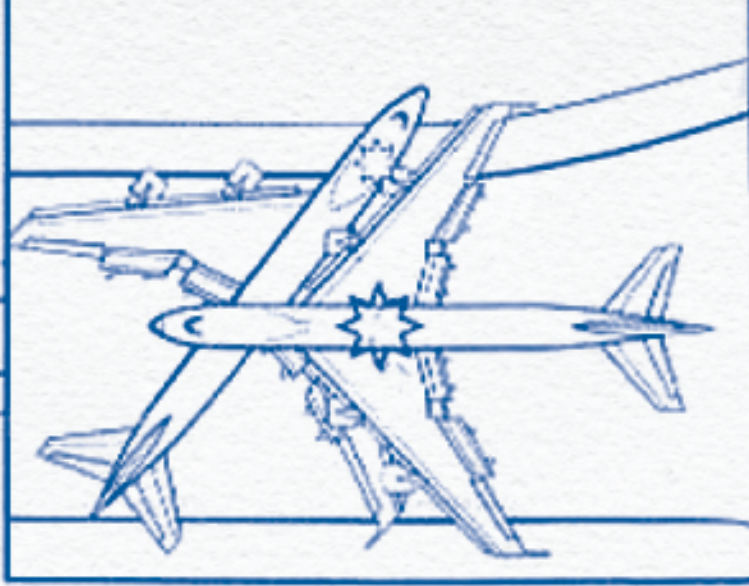
Brentwood Hotel  
16 Kemp Street, Kilbirnie  
**Wellington**

Check the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), under "Seminars and Courses" for an enrolment form and further information. Places are limited, and they fill up quickly, so enrol early.

Or contact Rose Wood,  
Tel: 0-4-560 9487,  
Fax: 0-4-569 2024,  
Email: [rose.wood@caa.govt.nz](mailto:rose.wood@caa.govt.nz).



583 people died when two B747s collided in thick fog at Tenerife in 1977.



# Runway Incursions

To help prevent runway incursions, Air Traffic Control will include the runway designator in all takeoff, landing, and touch-and-go clearances from 3 June 2010, and these must be read back in full.

A runway incursion involves the incorrect presence of an aircraft, vehicle, or person, on or near a runway. The world's deadliest aviation disaster was a runway incursion involving two Boeing 747s at Tenerife, Canary Islands, in 1977. 583 people died in that collision.

Accidents and incidents as a result of runway incursions, continue to occur at many aerodromes throughout New Zealand. They can happen day or night, in good weather, and in bad weather. Many factors contribute to causing a runway incursion, but they are often the result of a breakdown in communication and a loss of situational awareness.

Adding the runway designator to all takeoff, landing, and touch-and-go clearances will improve the situational awareness of all pilots and drivers listening on the aerodrome control frequency, and help reduce the potential for misunderstanding. It will also bring New Zealand's clearance phraseologies

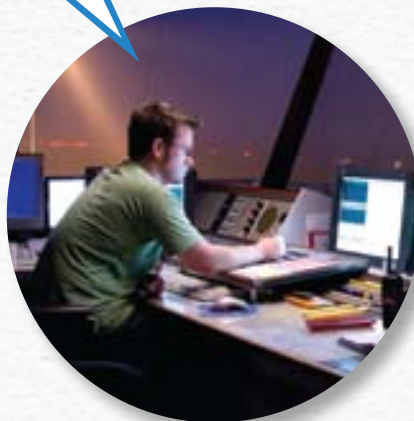
in line with International Civil Aviation Organization (ICAO) requirements.

A full readback of takeoff and landing clearances, including the runway designator, is necessary, and should be annunciated clearly. Clearance readback

requirements can be found in the ENR section of *AIP New Zealand*, and practical examples of correct radio use are available in Advisory Circular AC91-9 and AC172-1 *Radiotelephony Manual*. ■

XYZ RUNWAY 02  
CLEARED FOR TAKEOFF

RUNWAY 02 CLEARED  
FOR TAKEOFF XYZ



# Marks for Originality

Your aircraft's paint job may be beautiful – the logo looks great, the colour scheme vividly displays your personality – what more could you want from a flying billboard?

A clearly legible and compliant, registration mark.

**A**ircraft registration marks must meet the size, style and position requirements detailed in the Civil Aviation Rules. The CAA's Aircraft Certification Unit says it is increasingly seeing registration marks verging towards, and in some cases, crossing the line.

Team Leader Continuing Airworthiness, Jack Stanton, says advancements in printing technology means that high quality, multi-coloured, UV-resistant vinyls are now available far more cheaply than ever before.

"There's no end to what look you can design for your aircraft these days. While we can appreciate the artistry, the registration mark itself has to comply with the rule," Jack says.

"Yes, we've heard arguments that registration marks are a thing of the past – that they were put on aircraft in the days when controllers were looking out of the tower with binoculars and now widespread transponder use makes them less important.

"Some say we should remove the exemption that light aircraft need not have underwing registration marks, so a person on the ground can identify an aircraft buzzing overhead low level and make a complaint. Viewed from the ground standard size markings (250 mm) give a rough guide to an aircraft's height.

"If you can't read the underwing marks it was probably higher than 500 feet agl, providing the legibility and location guidelines have been followed. That's not possible with only fuselage or fin markings.

"While those are interesting arguments, the current rules are based around ICAO commitments and to date the CAA has no plans to change the rule and the existing requirements stand. There is a process to obtain relief from the requirements where the shape of the aircraft makes compliance impossible. In these cases the CAA applies judgement to ensure the intent of the rule is met – is the identity of the aircraft clear and unambiguous?

"The best advice I can give is that if you have just built an aircraft, or you are intending to change your colour scheme, and you think your registration mark may be close to the limits specified in the rules, then contact the Aircraft Certification Unit with an outline of your scheme before you pay for the artwork."

The requirements for registration marks are detailed in Part 47 *Aircraft Registration and Marking*, and are available on the CAA web site under "Rules".

In general, registration marks must be displayed to the best possible advantage with

regard to the construction or features of the aircraft, and be of one colour which contrasts clearly against the background colour. Marks must be in capital letters without ornamentation, and the width of all letters (except 'I') must be two-thirds of the height of the letters. The spaces between the letters must be at least one-quarter of the height of the letters. The font must use solid lines and the thickness of the letters should be one-sixth of the height of the letter. The usual height for each letter is at least 250 mm, although approval can be sought for lesser heights where space is an issue. Importantly, no symbol, logo or image can be placed on a mark that in any way obscures it.

The following images are made-up examples of potentially non-compliant registration marks. ■



**Correct display of registration**

## Poor displays of registration

Wrapping can make marks difficult to read on tubular shapes such as helicopter and glider tailbooms.



The spacing is too close.



Script or 'fancy' fonts



Football Jersey font with outline



Block serif lettering



Drop shadows distract from readability.

**ZK-MRK**

*ZK-MRK*

**ZK-MRK**

**ZK-MRK**

**ZK-MRK**

# Young Eagles News

young eagles  
RNZAC

**D**illon Tooth is ecstatic. For this 16-year-old Waitakere College student, winning a Ross Macpherson scholarship was a great thing in itself, as it meant he could pursue his passion – flying. But being awarded the Pickard Trophy was the icing on the cake.

“It gave me the confidence, showed me that enthusiasm and determination can help you succeed. Although I had wanted to be a pilot ever since I was six years old and saw an Anzac parade at dawn, we never had the money for that training. Now, thanks to this scholarship, I can do it,” says Dillon.

Dillon didn't actually expect to win the Pickard Trophy, though. “I was totally surprised and shocked, as there were some others who seemed more likely to be the winners. I think it was my enthusiasm and keenness to get into everything that made the difference.”

Dillon was also awarded a week's work experience with Sunair Aviation.

This year, 18 aspirants applied for the Ross Macpherson Memorial Flying Scholarships, under the Young Eagles programme. Dillon and five others were selected to receive the Scholarships.

The Scholarship winners for 2010 were:

**Amelia Ritchie**  
New Plymouth Aero Club

**John Harrison**  
Nelson Aero Club

**Joshua Wooding**  
Marlborough Aero Club

**Matthew Walton**  
Canterbury Aero Club

**Dillon Tooth**  
North Shore Aero Club

**Luke Van Lith**  
Tauranga Aero Club

These scholarships are awarded annually to members of Flying New Zealand's Young Eagles programme, which is made up of youth between the ages of 15 to 18, from aero clubs around the country.

Each scholarship is worth \$2000 and is to be used at the winning Young Eagle's aero club for flight training.

More aero clubs are participating in the Young Eagles programme, according to Young Eagles National Coordinator Kevin Lloyd. This accounts for the increase in the number of scholarship applications this year.

The scholarships were presented to the winners at Flying New Zealand's (Royal New Zealand Aero Club) national championships held at Bridge Pa Aerodrome, Hastings, in March 2010.

Three of the Young Eagles – Dillon Tooth, John Harrison and Matthew Walton – attended the national championships and competed for the Nola Pickard Trophy. They spent the morning covering aviation theory topics and demonstrating their preflight inspection skills. In the afternoon, they went for an air experience flight in a twin-engine aircraft at Napier, followed by a visit to the Napier control tower.

“It was heartening to see the joy on the Young Eagles' faces when we returned from the air experience flight in the twin,” says Mr Lloyd. To complete the day, the Young Eagles then sat a written examination which decided who the Pickard Trophy recipient would be.

The CAA is a major sponsor of the Young Eagles programme. Other sponsors are Aviation Services Ltd, Aviation Cooperating Underwriters Ltd, and the former Pine Park Flying Club.

The Young Eagles programme is conducted to promote aviation among youth. Many aero clubs have Young Eagles programmes, where the Young Eagles often visit aircraft museums, control towers, and maintenance workshops and get a chance to perform aviation-related activities. ■

Dillon Tooth (bottom left), John Harrison (top left), Kevin Lloyd, Young Eagles National Coordinator (top right) and Matthew Walton, at Flying NZ's national championships.

# New Products – Mountain Flying DVD

Mountain flying is a fantastic experience, but to do it safely and enjoyably you need the right knowledge, training, and experience behind you.

**B**etween 1995 and 2009, a lack of mountain flying training has been a cause of several fatal aircraft accidents – with at least 29 lives lost. That is why the CAA is adding mountain flying to the PPL and CPL syllabuses in 2011.

The CAA has also created an educational DVD on mountain flying, to help pilots visualise some essential mountain flying concepts before they begin training with an appropriately qualified instructor.

Filmed in the Wanaka, Queenstown, and Milford Sound areas, and packed full of spectacular air-to-air and in-cockpit footage, this DVD shows you actual mountain flying, as it is happening, from multiple perspectives.

The DVD has two sections, one specifically for fixed wing pilots, and the other tailored for helicopter pilots. Within each section, the DVD is divided into modules. Six modules are common to both the fixed wing and helicopter sections, plus there are five specific modules for helicopter pilots and five specific modules for fixed wing pilots.

With just under 60 percent of New Zealand's terrain considered mountainous, it's essential that all pilots learn, practice, and develop their mountain flying skills – so get your hands on a copy today.

You can borrow *Mountain Flying* from the CAA library. To request a copy, email [info@caa.govt.nz](mailto:info@caa.govt.nz). If you would like to buy a copy, see the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), under "Safety info – CAA Safety DVDs", for prices and how to order.

Copies can be purchased in NTSC format if required. ■



# Bird Incident Reporting

Civil Aviation Rule 12.55 *Notification of incident* requires the pilot-in-command of an aircraft involved in a bird incident to notify the CAA as soon as practicable.

Until now, AC12-1 has said that an acceptable means of notifying the CAA was to report bird incidents to an appropriate Air Traffic Services Unit, either during, or immediately after, a flight. AC12-1 is being revised to remove this as an acceptable means because, in future, Airways will only notify the CAA of bird incidents provided they are involved in the incident and it occurs in the vicinity of the aerodrome.

All pilots involved in a bird incident need to fill out the Bird Incident Notification form CA005B, regardless of whether you have reported the incident to an ATS Unit, or not. The CA005B form is available on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz). Completed forms can then be emailed to [ca005@caa.govt.nz](mailto:ca005@caa.govt.nz), or faxed to 0-4-560 9469. ■



## Maintenance Controller Course

**Final one for the South Island this year**

**14 - 15 July 2010 Nelson**

**Grand Mercure Nelson Monaco**

All Part 119, 137, and 141 organisations are required to have a designated Maintenance Controller.

If you are responsible for the maintenance of your organisation's aircraft, or even if you own your own aircraft, the CAA's Maintenance Controller Course will give you the building blocks you need to understand the planning and direction of maintenance.

**Places are limited – register now!**

**[www.caa.govt.nz](http://www.caa.govt.nz) – “Seminars”**

## Rules Poster Update

Enclosed in this issue of *Vector* is an updated *Civil Aviation Rules and Advisory Circulars* poster. The most up-to-date information on rules will always be on the CAA web site, but this poster is useful to have on the office or briefing room wall.

Make sure you replace old versions with this updated one – the colour is different to make updating easier.





# Letter to the Editor

## Woodbourne Control Zone Changes – January/February 2010

Your article on Woodbourne in the last Vector talked about the Omaka 01 circuit and a low level turn being required after takeoff to avoid controlled airspace. This is correct but I think it should have been pointed out that it is better airmanship to avoid this if possible. Two options, crosswind takeoff on runway 07 could be possible or get a clearance from Woodbourne before takeoff to enter the control zone. All factors have to be considered but I would discourage low level turns after takeoff.

Alistair Matthews

Thank you for suggesting two valid ways in which pilots using Runway 01 at Omaka can safely overcome the challenges created by the proximity of the Woodbourne Control Zone.

Editor

## 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

All these are available free from the CAA web site. Printed copies can be purchased from 0800 GET RULES (0800 438 785).

## GA Flight Examiner

4 & 5 August 2010  
Wellington

Topics include:

- Light Sport Aircraft
- Terrain Awareness
- Part 141
- Fatigue Management
- Threat and Error Management

Register early – places are limited.

See the CAA web site:

[www.caa.govt.nz](http://www.caa.govt.nz) – “Seminars”

Seminar

## 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
14 Jun 2010	21 Jun 2010	26 Aug 2010
12 Jul 2010	19 Jul 2010	23 Sep 2010
9 Aug 2010	16 Aug 2010	21 Oct 2010

## Aviation Safety Advisers

Aviation Safety Advisers are located around New Zealand to provide safety advice to the whole aviation community. You can contact them for information and advice.

### Don Waters

(North Island)

Tel: 0-7-376 9342 Fax: 0-7-376 9350

Mobile: 027-485 2096

Email: [watersd@caa.govt.nz](mailto:watersd@caa.govt.nz)

### John Keyzer

(Maintenance, North Island)

Tel: 0-9-267 8063 Fax: 0-9-267 8063

Mobile: 027-213 0507

Email: [keyzerj@caa.govt.nz](mailto:keyzerj@caa.govt.nz)

### Murray Fowler

(South Island)

Tel: 0-3-349 8687 Fax: 0-3-349 5851

Mobile: 027-485 2098

Email: [fowlerm@caa.govt.nz](mailto:fowlerm@caa.govt.nz)

### Bob Jelley

(Maintenance, South Island)

Tel: 0-3-322 6388 Fax: 0-3-322 6379

Mobile: 027-285 2022

Email: [jelleyb@caa.govt.nz](mailto:jelleyb@caa.govt.nz)

## Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

**0508 4 SAFETY**

(0508 472 338)

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

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).

Some accidents are investigated by the Transport Accident Investigation Commission, [www.taic.org.nz](http://www.taic.org.nz).

## ZK-KID Cessna A152

Date and Time:	26-Oct-07 at 15:55
Location:	Ureweras
POB:	2
Injuries (Fatal):	1
Injuries (Serious):	1
Damage:	Destroyed
Nature of flight:	Training Dual
Pilot Licence:	CPL (aeroplane)
Age:	21 yrs
Flying Hours (Total):	543
Flying Hours (on Type):	423
Last 90 Days:	93

At 1555 on Friday 26 October 2007, Cessna A152 ZK-KID was on a cross-country navigation training flight when it entered a narrow and rising valley at low level from which escape was impossible. As the instructor attempted to manoeuvre out of the valley, the aircraft struck several trees. The instructor was killed and the student suffered serious injuries, but was able to walk out and summon assistance. Abstract from TAIC Accident Report 07-011.

[CAA Occurrence Ref 07/3826](#)

## ZK-MSM Maule M-5-235C

Date and Time:	12-Apr-08 at 13:20
Location:	Arapuni
POB:	2
Injuries:	0
Damage:	Minor
Nature of flight:	Private Other
Pilot Licence:	PPL (Aeroplane)
Age:	61 yrs
Flying Hours (Total):	1310
Flying Hours (on Type):	288
Last 90 Days:	34

During the landing phase, in the flare, the aircraft dropped quickly onto the farm airstrip. The pilot suspects that he was caught by a slight windshear in the flare, and this caused him to touch down short on a small knoll. The heavy landing caused minor damage to the undercarriage support brackets and suspension.

[CAA Occurrence Ref 08/1523](#)

## ZK-ISM Robinson R44

Date and Time:	15-Sep-08 at 12:00
Location:	Hastings
POB:	1
Injuries (Serious):	1
Damage:	Destroyed
Nature of flight:	Agricultural
Pilot Licence:	CPL (Helicopter)
Age:	48 yrs

While conducting low-level spraying, the helicopter struck a set of 11-kilovolt power wires. The wires hit the mast fairing, wrapping around the rotor head and severing one of the pitch change links resulting in a loss of control of the main rotor. Ground scars from the main rotor and horizontal stabiliser indicate that the aircraft pitched nose up and rolled right before impacting on its righthand side and sliding for 30 metres before stopping. The pilot suffered serious injuries to the right side of his upper body and right arm.

[CAA Occurrence Ref 08/3896](#)

## ZK-GGR DG Flugzeugbau DG-1000S

Date and Time:	9-Nov-08 at 13:30
Location:	Papawai
POB:	2
Injuries:	0
Damage:	Minor
Nature of flight:	Training Dual
Pilot Licence:	PPL (Aeroplane)
Age:	53 yrs
Flying Hours (Total):	1078
Flying Hours (on Type):	17
Last 90 Days:	2

Glider sustained a heavy landing following an over-correction by the pupil during a simulated winch launch failure. The pupil had previously obtained a winch launch rating and was being checked for solo operation of the DG1000 glider. The overcorrection could not be neutralised before the round out for landing, and the glider impacted heavily on the main wheel. There is damage to fairings and the cockpit area.

[CAA Occurrence Ref 08/4764](#)

## ZK-HBG Robinson R22 Beta

Date and Time:	18-Dec-08 at 11:00
Location:	Springs Junction
POB:	1
Injuries (Minor):	1
Damage:	Substantial
Nature of flight:	Agricultural
Pilot Licence:	CPL (Helicopter)
Age:	26 yrs
Flying Hours (Total):	634
Flying Hours (on Type):	630
Last 90 Days:	113

The pilot attempted a down-wind departure at near maximum all-up-weight on agricultural operations. Despite having jettisoned the spray load, and having descending terrain, a successful departure could not be achieved. Rotor rpm decreased as a result of over-pitching, and the helicopter landed heavily in a creek-bed approximately 200 to 300 m away from the departure site.

[CAA Occurrence Ref 08/5219](#)

# 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).

## Key to abbreviations:

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

## Alpi Aviation Pioneer 200

### Landing gear truss

Part Manufacturer:	Alpi
ATA Chapter:	3200
TTIS cycles:	621
TTIS hours:	411

During a scheduled inspection, multiple cracks were found in the main landing gear truss, leaving the landing gear not directly attached to the fuselage. It is suspected that the cracks originated from the brackets at the bottom of the truss assembly due to aircraft operation on rough grass strips. The problem affects the earlier 80 hp models, however most of these aircraft have been modified with a later design truss mount. The NZ agent suspects that with this occurrence the cracks had been present for some time but had not been detected on earlier annual inspections.

[CAA Occurrence Ref 09/4365](#)

## Cessna 185B

### Wing structure

Part Manufacturer:	Cessna
ATA Chapter:	5700

During investigation into a broken flap track, the aircraft was found to be fitted with Cessna 180 wings. Maintenance investigation found that the wings had obviously been built without the use of an alignment jig and had been fitted ignoring the fact that they are not approved for installation on a Cessna 185. The strength of the wing structure is inadequate for the additional loading required by the Cessna 185 flying parameters. CAA investigation was unable to determine when the Cessna 180 wings were fitted to the aircraft as the aircraft had been operated in Canada, Zimbabwe, and Australia prior to being imported into New Zealand. The maintenance history available for the aircraft was not complete.

[CAA Occurrence Ref 09/4486](#)

## Colomban Cri Cri MC-15

### Big end bearing

Part Model:	3W 240
ATA Chapter:	8530

During the climb out in the circuit, the left engine seized abruptly causing the propeller to shear from the engine. An uneventful single engine landing was carried out. Initial investigation revealed

that the front cylinder big end bearing had seized. The engine was returned to the German manufacturer for repairs. They have now returned the engine but have not offered a possible cause for the failure.

[CAA Occurrence Ref 09/4365](#)

## Piper PA-28R-200

### Governor

Part Manufacturer:	Hartzell
Part Number:	F2-7A
ATA Chapter:	6120
TSO hours:	129.7

The pilot lost control of the propeller RPM in the cruise resulting in an over-speed of the engine. A precautionary landing was made at the nearest aerodrome. During initial maintenance investigation, the governor top cover was removed and it was observed that the speeder spring seat had unwound from the pilot spool due to the absence of a locking split pin. No evidence of a locking split pin could be found within the governor during investigation. The engine was removed and sent to the overhaul facility for an over-speed inspection which included a bulk strip – no defects were found.

The governor was last overhauled in July 2006. The company that completed the overhaul carried out an internal investigation into the lack of a split pin during the governor assembly. An amendment has been made to the companies governor overhaul worksheet to highlight the requirement to lock the speeder spring seats, and the need to inspect and sign for this locking. A meeting was held with staff to ensure correct procedures are followed and to raise staff awareness around signing for inspections.

[CAA Occurrence Ref 09/4488](#)

## Piper PA-44-180

### Gauge

ATA Chapter:	7930
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The instructor and two students were on a VFR navigation exercise when the right hand engine oil pressure was noted as being high in the red. The power was reduced but the indication remained in the red. The aircraft turned back to the departure aerodrome with reduced power on the right hand engine, and requested radar monitoring from ATC to return at 4000 feet. The pilot in command shut down the right engine for approach and landing as he considered there was a risk of engine failure and requested priority landing clearance. The aircraft landed safely. Maintenance investigation determined that the high oil pressure indication was caused by a mis-calibrated gauge. The gauge was recalibrated and the aircraft returned to service.

[CAA Occurrence Ref 09/3824](#)



## SAFETY SEMINARS

# Mountain Flying

You are never far away from a mountain, or from being affected by one, in New Zealand. Many pilots avoid flying in the mountains, while some underestimate the dangers and give themselves a scare.

You need a complete set of skills (ideally specialised training) to fly safely in the

mountains, and once you learn those skills, you and your passengers will have the opportunity to enjoy those flights. Those skills will also help you out when operating low level, or any time you can't see a clearly defined horizon.

Because of New Zealand's challenging terrain, mountain flying will be part of the pilot syllabus from 2011.

This year's AvKiwi Safety Seminars will give you a head start, along with some tips to help you fly safely and comfortably

in the mountains. When you attend you will receive a brand new CAA-produced DVD on mountain flying, completely free and before general release.

This year our presenters are Jim Rankin, RNZAF Instructor, and Carlton Campbell, CAA Training Standards Development Officer – both have spent years flying in the mountainous terrain of New Zealand.

Here is the final set of seminars. ■



### New Plymouth Aerodrome

Monday 14 June, 7:00 pm  
New Plymouth Aero Club

### Feilding Aerodrome

Wednesday 16 June, 7:00 pm  
Flight Training Manawatu,  
Cardinal Hangar

### Paraparaumu Aerodrome

Thursday 17 June, 7:00 pm  
Helipro Aviation Training

### Palmerston North

Tuesday 15 June, 3:00 pm  
Massey University Campus  
Japanese Lecture Theatre  
(opposite commercial complex)

### Wellington Aerodrome

Friday 18 June, 7:00 pm  
Wellington Aero Club

